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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 4, 1975

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CONTENTS

Page

Patent and Trademark Notices

Conference of Parties in Trademark Inter Partes Proceedings 2
Board of Appeals 2
Title 37—Patents, Trademark and Copyrights 2
Patent Suits 3

Patent Notices

Certificates of Correction for the Week of March 4, 1975 4
Errata 4
Patents Available for Licensing or Sale 4
National Technical Information Service 6
Availability of Patents Official Gazette Jan. 28, 1975, Vol. 930/No. 4 . . 7
Condition of Patent Applications 8
Defensive Publications (T932,001) 9
Reissue Patents Granted (28,350) 12

Patents Granted

General and Mechanical (3,868,726) 17
Chemical (3,869,250) 192
Electrical (3,869,560) 275
Design Patents Granted (234,411) 331
Index of Patentees . . . . PI 1
Indices of Applicants of Defensive Publications, Reissues and Designs . . . PI 33

Classification of

Patents (Including Reissues) . . . . PI 35
Designs and Defensive Publications . . . . PI 37

Geographical Index of Residence of Inventors

Patents (Including Reissues) . . . . PI 38
Designs and Applicants of Defensive Publications . . . . PI 39

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PATENT AND TRADEMARK OFFICE NOTICES

Conference of Parties in Trademark Inter Partes Proceedings

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted :

> Whenever it appears to the Trademark Trial and Appeal Board that questions or issued arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Virginia, to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

PATENT AND TRADEMARK OFFICE

Board of Appeals

Present Vacancies To Be Filled by Appointment Under the Classified Civil Service

Notice is hereby given that, pursuant to the amendment of sections 3 and 7 of title 35, United States Code, by Public Law 93–601 (88 Stat. 1956), effective January 2, 1975, examiners-in-chief will no longer be appointed by the President, by and with the consent of the Senate, to serve on the Board of Appeals of the Patent and Trademark Office. In accordance with the provisions of section 7, as amended by Public Law 93–601, present (and future) vacancies on the Board of Appeals will be filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary in the range from $34,607 to $36,000 per annum.

Persons interested in being considered for these vacancies are invited to submit their applications to the address given below, or on or before March 21, 1975. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties : Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an Examiner-in-Chief, Participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and Rules 191 through 198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patents and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

Qualifications : Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of full signatory authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office ; (2) a law degree or be a member in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the constitution ; (3) a high degree of demonstrated competence in chemistry, engineering, physics or other major scientific discipline ; (4) ability to write clearly and logically ; (5) comprehensive experience in patent prosecution. examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will Be Considered in Evaluating the Candidates : Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals of past performance and potential. *Note* : The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce and by the U.S. Civil Service Commission before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit only a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to :

U.S. Patent and Trademark Office
Office of Personnel
Building 2, Room 9C05
Crystal Plaza
Arlington, Virginia 22202

Questions concerning this notice should be directed to Ms. Margaret M. Mazza, Office of Personnel, Room 2-9C05, Telephone (703) 557–3631.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

February, 1975.

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter I—Patent and Trademark Office, Department of Commerce

Name Change

Pursuant to authority contained in 35 U.S.C. 6, as amended (85 Stat. 364), Chapter I of Title 37 of the Code of Federal Regulations is amended as follows :

The heading of Chapter I is changed to read as set forth above.

Wherever the name "Patent Office," and the title "Commissioner of Patents," appear in Chapter I, they are changed to read, respectively, "Patent and Trademark Office" and "Commissioner of Patents and Trademarks."

Public law 93–596, 88 Stat. 1949, changed the name of the Patent Office to "Patent and Trademark Office," and the title of the Commissioner of Patents to "Commissioner of Patents and Trademarks."

It is the general policy of the Patent and Trademark Office to afford interested members of the public an opportunity to participate in the rulemaking process. However this amendment is entirely editorial in nature. Therefore, the public rulemaking procedure is waived and this amendment will become effective on February 4, 1975.

C. MARSHALL DANN,
Commissioner of Patents.

Approved :
BETSY ANKER JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 75–3135 ; Filed 2–3–75 ; 8 : 45 am]

Published in 40 F.R. 5158, Feb. 4, 1975

Patent Suits

Notices under 35 U.S.C. 290 ; Patent Act of 1952

2,445,322, M. C. Fridolph, BODY GARMENT ; **2,707,280,** E. G. Mayer, GIRDLES, **filed** Nov. 16, 1962, D.C., S.D.N.Y., Doc. 62–C–3797, *Sarong Inc.* v. *Lido Foundations Inc.* Filed stipulation and order of dismissal, Oct. 31, 1967.

2,707,280. (See 2,445,322.)

2,813,341, A. Di Mino, MULTIPLE PATTERN GRADER ; **2,972,188,** W. Kaufman, MAKING GRADED PATTERNS FOR GARMENTS ; **3,085,340,** A. Rashbaum, GRADING MACHINE, **filed** Nov. 1, 1967, D.C., S.D.N.Y., Doc. 67–C–4262, *William Kaufman, doing business as Precision Pattern* v. *Chevette Lingerie Inc., Stacy Ames, Inc., and Simplicity Pattern Co. Inc.* Filed order discontinuing action without cost, Apr. 18, 1973.

2,860,836, H. Jordan, MOUNTING SLEEVE AND CLAMP MEANS FOR DISPOSED DEVICES ; **2,879,949,** same, GARBAGE DISPOSAL APPARATUS ; **2,945,635,** same, RESILIENT HANGING DEVICE FOR WASTE DISPOSAL APPARATUS ; **2,965,318,** same, WASTE DISPOSAL DEVICE HAVING NOISE DAMPING MEANS ; **3,076,611,** same, GARBAGE DISPOSAL DEVICE, **filed** Feb. 4, 1974, D.C., C.D. Calif. (Los ANGELES), Doc. 74–293–DWW, *Waste King Corp.* v. *The Maytag Co., Inc.* Filed judgment and order thereon that plaintiff is the licensee of 2,860,836, 2,879,949 and 2,945,635 in suit and is the sole owner of 2,965,318 and 3,076,611. Defendant has infringed one or more of the claims of each said patent, entered Oct. 8, 1974.

2,879,949. (See 2,860,836.)

2,945,635. (See 2,860,836.)

2,965,318. (See 2,860,836.)

2,972,188. (See 2,813,341.)

3,076,611. (See 2,860,836.)

3,082,292, R. W. Gore, MULTICONDUCTOR WIRING STRIP ; **3,540,956,** Arnold and Gore, PRECISE CONDUCTOR CABLES, **filed** June 17, 1971, D.C. Del. (Wilmington), Doc. 4160, *W. L. Gore & Associates, Inc.* v. *Carlisle Corporation.* Judgment by order, Patent 3,540,956 is invalid. Patent 3,082,292 is valid and that claims 1–14 and 24–27 of said patent are infringed by the defendant, therefore the defendant is enjoined from infringing the plaintiff's patent, Oct. 11, 1974.

3,085,340. (See 2,813,341.)

3,153,435, H. C. Ober, SHREDDER AND CHOPPER, **filed** Oct. 3, 1974, D.C., N.D. Ohio (Cleveland), Doc. C–74–895, *Howard C. Ober* v. *Gravely-Ohio Co.*

3,232,761(*a*), Allen and Burness, HARDENING OF PHOTOGRAPHIC GELATIN LAYERS ; **Re. 26,601,** same, **filed** July 16, 1974, D.C. Del. (Wilmington), Doc. 74–147, *Eastman Kodak Company* v. *GAF Corporation.*

3,232,761(*b*), Allen and Burness, HARDENING OF PHOTOGRAPHIC GELATIN LAYERS, **filed** July 16, 1968, D.C.N.J. (Newark), Doc. 729–68, *Philip A. Hunt Chemical Corporation* v. *Eastman Kodak Company.* Stipulation and order of dismissal of action, July 16, 1974.

3,238,551, Cirino and Brenner, CAR WASHING APPARATUS ; **3,271,803,** same, VEHICLE WASHING APPARATUS, **filed** Jan. 26, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–155–HP, *Little Darling Corporation* v. *California Car Wash Systems.* Filed plaintiff's dismissal with prejudice of the action, the complaint and the first amended complaint as to defendant. Filed defendant's dismissal with prejudice of its counterclaim an order thereon, entered Oct. 17, 1974.

3,271,803. (See 3,238,551.)

3,293,405, R. J. Costanzo, ELECTRICALLY HEATED FOOTWEAR, **filed** Mar. 16, 1967, D.C. Conn. (New Haven), Doc. 11864, *Timely Products Corporation and Raphael J. Costanzo* v. *Stanley Arron, Patricia Sulzyski, Barbara Chervenak and Visa-Therm Products, Inc.* Judgment entered in favor of defendants, declaring Patents 3,293,405, 3,392,264 and 3,524,965 invalid, Sept. 9, 1974.

3,351,118, M. E. Ward, MEANS FOR SUPPLYING AIR TO A GAS BURNER ; **3,391,982,** same, GAS BURNER, **filed** Oct. 25, 1974, D.C. (District of Columbia), Doc. 74–1561, *Andro Corporation* v. *Weil McLain Co. Inc.*

3,389,814, J. H. Lemelson, LOAD RESPONSIVE CONTROL MEANS FOR A MATERIAL HANDLING APPARATUS ; **3,402,835,** S. Saul, CONTROL SYSTEM FOR A ZONED AUTOMATIC WAREHOUSE ARRANGEMENT ; **3,486,640,** J. H. Lemelson, MULTI-SPEED CONTROL SYSTEM FOR A LOAD CARRIER IN A WAREHOUSE SYSTEM, **filed** July 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2157, *The Triax Company* v. *Conco, Inc.*

3,391,982. (See 3,351,118.)

3,402,835. (See 3,389,814.)

3,426,952, Chew and Toth, ARC WELDER HAVING BUILT-IN SHEAR FOR JOINING STRIP ; **3,489,520,** Chartouni and Dawe, TITRATION RECORDING APPARATUS, **filed** Mar. 22, 1974, D.C., N.D. Ill. (Chicago), Doc.74c831, *Sargent-Welch Scientific Company* v. *Beckman Instruments, Inc.* Final judgment on consent, plaintiff is owner of patents. Patents are valid. Beckman has infringed patents and is permanently enjoined from further infringement. All counts of Beckman's counterclaim are dismissed with prejudice, Oct. 11, 1974.

3,440,525, C. P. Cardeiro, PH METER AND CONTROL SYSTEM, **filed** Aug. 28, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2212, *Universal Interloc, Inc.* v. *Leeds & Northrup Company.* Dismissal order, ordered complaint and counterclaim are dismissed without prejudice, Oct. 11, 1974.

3,478,700, Lundvall, Loomis and Breen, FLOOR LATCH STRIP FOR RAILWAY CARS ; **3,570,416,** J. A. Shook, FREIGHT-BRACING APPARATUS, **filed** Oct. 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2492, *Unarco Industries, Inc.* v. *Evans Products Company et al.* Action dismissed without prejudice, Nov. 2, 1973.

3,486,640. (See 3,389,814.)

3,489,520. (See 3,426,952.)

3,499,481, W. C. Avrea, PRESSURIZED LIQUID COOLING SYSTEM ; **3,601,181,** same, METHOD AND APPARATUS FOR PURGING AIR FROM INTERNAL COMBUSTION ENGINE COOLING SYSTEMS, **filed** Feb. 14, 1972, D.C. Ariz. (Phoenix), Doc. C–70–455 Phx, *Saf-Gard Products, Inc.* v. *Service Parts, Inc. et al.*

3,510,162, Smith and Binns, SELF-ADJUSTING LOCK ; **3,642,314,** same, GRAVITY-ACTUATED LOCK, **filed** Aug. 8, 1974, D.C., E.D. Tex. (Tyler), Doc. TX–74–96–CA, *Overhead Door Corporation* v. *Newcourt, Inc.*

3,540,956. (See 3,082,292.)

3,570,416. (See 3,478,700.)

3,585,277, P. E. Lewis, MIDSPAN ELECTRICAL CONDUCTOR SPACER, **filed** Oct. 18, 1974, D.C., N.D. Ala. (Birmingham), Doc. CA 74–G–1097–S, *A. B. Chance Company* v. *Continental Electric Company.*

3,601,181. (See 3,499,481.)

3,642,314. (See 3,510,162.)

3,706,156, E. L. Thornell, MUSICAL WRISTWATCH TOY ; **D. 224,661,** HOUSING FOR A TOY MUSIC BOX, **filed** Aug. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2233, *Marlin Toy Products, Inc.* v. *Sears, Roebuck and Co. et al.*

3,729,824, Baues, Marini and McCauley, ORTHODONTIC ARCH WIRE, **filed** Oct. 17, 1974, D.C., S.D. Calif. (San Diego), Doc. 74–490–T, *G.A.C. International, Inc.* v. *Lancer Pacific Incorporated.*

3,750,722, R. L. Nowak, FUNNEL, **filed** Oct. 21, 1974, D.C. Del. (Wilmington), Doc. 74–217, *Funnelcap Inc.* v. *Orion Industries, Inc. and Corporation Trust Company.*

Re. 24,992, E. E. Ellies, METHOD OF TREATING FRESH MEATS, **filed** Apr. 28, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–446, *St. Regis Paper Company* v. *Tee-Pak.* Stipulation and order settling and dismissing case with prejudice, Oct. 23, 1974.

Re. 26,601. (See 3,232,761(*a*).)

D. 224,661. (See 3,706,156.)

D. 232,075, H. Cooper, BOTTLE, **filed** Oct. 10, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2928, *Dog n Suds, Inc.* v. *Howard Cooper.*

Certificates of Correction for the Week of Mar. 4, 1975

Re. 28,291
3,282,492
3,672,327
3,701,753
3,714,215
3,714,234
3,721,242
3,726,644
3,728,459
3,732,298
3,736,084
3,751,287
3,759,788
3,770,928
3,778,280
3,782,760
3,786,260
3,790,966
3,791,778
3,798,515
3,801,672
3,803,176
3,804,303
3,804,861
3,809,571
3,810,867
3,810,874
3,810,890
3,812,205
3,813,067
3,814,682
3,817,952
3,820,711
3,822,459
3,822,863
3,823,589
3,826,163
3,827,089
3,827,207
3,828,764
3,829,392
3,829,559
3,830,295
3,830,390
3,832,035
3,833,234
3,833,736
3,835,097
3,835,240
3,835,632
3,836,734
3,836,799
3,836,975
3,838,221
3,838,474
3,838,774
3,838,799
3,839,856
3,840,299
3,840,401
3,840,517
3,840,602
3,840,673
3,841,130
3,841,595
3,841,602
3,842,174
3,842,438
3,842,811
3,842,884
3,843,773
3,843,931
3,844,052
3,844,641
3,844,994
3,845,146
3,845,562
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3,845,585
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3,846,180
3,846,400
3,846,638
3,846,957
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3,847,186
3,847,453
3,847,607
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3,848,159
3,848,181
3,848,232
3,848,251
3,848,323
3,849,083
3,849,371
3,849,425
3,849,427
3,849,518
3,849,603
3,850,073
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3,853,540
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3,853,924
3,853,939
3,854,153
3,854,319
3,854,424
3,854,618
3,854,779
3,854,785
3,855,138
3,855,277
3,855,343
3,855,363
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3,855,696
3,855,817
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3,856,426
3,856,427
3,856,456
3,856,516
3,856,591
3,856,665
3,856,922
3,856,940
3,857,151
3,857,165
3,857,230
3,857,313
3,857,434
3,857,510
3,857,758
3,857,819
3,857,900
3,858,022
3,858,084
3,858,170
3,858,226
3,858,390
3,858,435
3,858,633
3,858,658
3,859,113
3,859,137
3,859,197
3,859,261
3,859,610
3,859,627
3,859,665

Errata

All reference to Patent Number 3,854,857 to Stefan Fischer et al. for Mold Opening and Closing Device for an Apparatus Making Hollow Bodies from Thermoplastic Material, appearing in the Official Gazette of Dec. 17, 1974, should be deleted since no patent should have been granted.

All reference to Patent Number 3,863,768 to Melvin Cohen of Wayne, N.J. for Magazine Rack, appearing in the Official Gazette of Feb. 4, 1975, should be deleted since no patent was granted.

Patents Available for Licensing or Sale

D. 219,350. BREAD TRAY. Howard L. Rivenburk, P.O. Box 22, Teachey, N.C., 28464.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 11791.

3,270,920. APPARATUS FOR PRESSURE DISPENSING LIQUIDS. Charles G. Nessler, Correspondence to: Lawrence A. Cavanaugh, 155 Talcottville Rd., P.O. Box 2033, Vernon, Conn., 06066.

3,729,879. STICK ON INSULATORS. Andrew T. Franklin, P.O. Box 58, Togiak, Alaska, 99678.

3,739,905. CONNECTION DEVICE FOR CONTAINERS AND THE LIKE. Correspondence to: John F. McNulty, Paul & Paul, 1800 Land Title Bldg., Philadelphia, Pa., 19110.

3,743,227. LADDER SUPPORTED HOIST. Jack S. Sowery, 927 W. Main St., Troy, Ohio, 45373.

3,753,303. APPARATUS FOR HYDRAULICALLY RAISING ORE AND OTHER MATERIALS. Klein, Schanzlin & Becker Aktiengesellschaft, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,774,193. WATCHMAN'S TOUR ALARM SYSTEM. Tulio Vasquez Restrepo, Carrera 43A No. 30–91, Medellin, Colombia.

3,801,338. CEMENT ADDITIVES. Granville Whitaker, Correspondence to: Caesar, Rivise et al., Suite 804, Stephen Girard Bldg., 21 S. 12th St., Philadelphia, Pa. 19107.

3,807,672. KITE-FLYING CONTROL REEL. Dale E. Williams, 221 Crescent, Pasadena, Tex., 77506.

3,829,824. CLAMP BOLT FOR AN AUTOMOTIVE VEHICLE BATTERY. Edward L. Phillischafske, P.O. Box 965, Henderson, Nev., 89015.

3,832,743. BED SHEETS. Saundra L. Smith, Correspondence to: Cantor & Kraft, 2401 15th St., NW., Washington, D.C., 20009.

3,838,706. CONDUIT CLOSURE. Adam & Helmut Klenk, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,843,178. OVER HEAD HAND OPERATED DOOR LOCK. Alexander Eskoff, 4214 Euclid Ave., East Chicago, Ind., 46312.

3,842,522. METHOD FOR HYDRAULICALLY RAISING ORE AND OTHER MATERIALS. Klein, Schanzlin & Becker Aktiengesellschaft, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,851,429. DEVICE FOR ATTACHING A LATERAL CLADDING MOLDING ON THE EDGE OF A ROOF. Correspondence to: Holman & Stern, 2401 15th St., NW., Washington, D.C., 20009.

3,852,945. MOWER ATTACHMENT FOR GRADER BLADE. Ray J. Berry, 524 N. 33rd St., and Lonzo J. Simons, 2820 Morrow St., both of Waco, Tex., 76707.

3,857,537. HOLDER FOR PAINT PAIL AND APPLICATOR. Joseph E. Swalinkavich, Jr., 3440 Kyle Ave., N. Robbinsdale, Minn., 55422.

3,861,105. HANGARS FOR SUSPENDED CEILING STRUCTURES. Charles V. Starks, 3217 18th Ave., Rock Island, Ill., 61201.

The following 2 patents are offered by: Betty Lasiter, % Bradshaw & Albright, 1003 Plaza Blvd., Suite 229, National City, Calif., 92050.

3,391,778. VEHICLE UNLOADER.
3,563,342. STOWABLE TRUCK LADDER.

The following 2 patents are offered by: John O. Richards, 980 Mill Circle, Apt. 99, Alliance, Ohio, 44601.

3,578,840. REVOLVING REFLECTOR.
3,835,507. ROPE HOLDING DEVICE.

The following 5 patents have been issued on inventions resulting from the Inter-Industry Emission Control Program (also known as IIEC) and are available for licensing (non-exclusive) on reasonable terms for the purpose of reducing automotive pollution.

Inquiries regarding the availability of such licenses under the following patent may be addressed to: Ford Motor Company, The American Road, Dearborn, Mich., 48121, Attn.: W. D. Compton.

3,630,021. INTERNAL COMBUSTION ENGINE INCLUDING MEANS FOR REDUCING EMISSIONS.

Inquiries regarding the availability of such licenses under the following 2 patents may be addressed to: Nissan Motor Co., Ltd., 17–1, 6–chome, Ginza, Chuo-ku, Tokyo, Japan.

3,670,496. VEHICULAR AIR POLLUTANT REDUCING DEVICE HAVING A BYPASS MECHANISM.
3,673,993. AIR POLLUTION PREVENTIVE SYSTEM FOR MOTOR VEHICLES.

Inquiries regarding the availability of such licenses under the following 2 patents may be addressed to: Mobil Oil Corporation, 150 E. 42nd St., New York, N.Y., 10017.

3,885,388. METHOD OF PREPARING OXIDATION CATALYST FOR PARTIALLY COMBUSTED GASES.
3,861,143. HIGH TEMPERATURE PROTECTIONAL APPARATUS FOR ENGINE EMISSION CATALYTIC CONVERTER.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 39 patents.

Inquiries respecting licenses under these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

Re. 28,285. ARTICLE LABELING AND IDENTIFICATION SYSTEM.
3,851,948. HOLOGRAPHIC THERMOPLASTIC MEMORY SYSTEM.
3,852,105. FABRICATION OF DARK HEATERS.
3,852,664. MAGNETIC REED SENSOR SUITABLE FOR USE IN IGNITION TIMING SYSTEMS.
3,852,679. CURRENT MIRROR AMPLIFIERS.
3,852,680. AMPLIFIER USING A NEGATIVE RESISTANCE SEMICONDUCTIVE DEVICE OPERATIVE IN THE ANOMALOUS MODE.
3,852,761. LENS FED ANTENNA ARRAY SYSTEM.
3,852,771. ELECTRON BEAM RECORDING PROCESS.
3,852,808. COLOR AMPLITUDE CORRECTION IN PLURAL TRANSDUCER SIGNAL PLAYBACK SYSTEMS.
3,852,818. TAPE CARTRIDGE PLAYER MECHANISM.
3,853,391. FABRICATION OF LIQUID CRYSTAL DEVICES.
3,854,006. SWITCHABLE VIDEO AMPLIFIER.
3,854,905. STORAGE SYSTEM FOR TWO PHASE FLUIDS.
3,854,992. PROCESS FOR DEPOSITING ELECTRICALLY CONDUCTIVE INDIUM OXIDE COATINGS ON A SUBSTRATE.
3,855,419. PWM MULTIPLEX SYSTEM.
3,855,497. DUAL BIAS CONTROLLED STORAGE TUBES.
3,855,535. PROGRAMMING SYSTEM FOR A MOTOR-DRIVEN TELEVISION RECEIVER TUNING APPARATUS.
3,855,540. PUSH-PULL TRANSISTOR AMPLIFIER WITH DRIVER CIRCUITS PROVIDING OVER-CURRENT PROTECTION.
3,855,541. CURRENT PROPORTIONING CIRCUIT.
3,855,549. CIRCUIT, SUCH AS CMOS CRYSTAL OSCILLATOR, WITH REDUCED POWER CONSUMPTION.
3,855,550. TRANSISTOR OSCILLATOR WITH DIODE IN FEEDBACK CIRCUIT PROVIDING AMPLITUDE STABILIZATION.
3,855,562. CIRCUIT BREAKER WITH AMBIENT TEMPERATURE COMPENSATION.
3,855,605. CARRIER INJECTED AVALANCHE DEVICE.
3,855,607. SEMICONDUCTOR INJECTION LASER WITH REDUCED DIVERGENCE OF EMITTED BEAM.
3,855,611. THYRISTOR DEVICES.
3,855,613. SOLID STATE SWITCH USING AN IMPROVED JUNCTION FIELD EFFECT TRANSISTOR.
3,856,565. METHOD OF ELECTROLESSLY PLATING A METAL TO A BODY WHICH INCLUDES LEAD.
3,856,591. METHOD FOR MAKING BEAM LEAD DEVICE.
3,856,989. SENSORS HAVING CHARGE TRANSFER RECYCLING MEANS.
3,857,047. DETECTOR EMPLOYING A CURRENT MIRROR.
3,857,058. ELECTRODE SUPPORT STRAP.
3,857,105. CASCADE AMPLIFIER USING COMPLEMENTARY CONDUCTIVITY TRANSISTORS.
3,857,113. MICROWAVE ACOUSTIC DELAY LINE.
3,857,526. REEL MOUNTING APPARATUS.
3,857,733. METHOD OF ELECTROLESS METAL DEPOSITION.
3,858,036. SQUARE ROOT OF SUM OF SQUARES APPROXIMATOR.
3,858,138. TUNEABLE THIN FILM INDUCTOR.
3,858,198. FIXED FORMAT VIDEO DATA DISPLAY EMPLOYING CROSSED-LINE PATTERN FORMAT DELINEATION.
3,858,239. COLOR ENCODED HOLOGRAM PLAYBACK APPARATUS.

General Electric Company is prepared to grant non-exclusive licenses under the following 48 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following 3 patents may be addressed to: General Electric Co., Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,804,793. MAKING POLYAMIDE-ACID AQUEOUS DISPERSIONS FOR ELECTROCOATING.
3,809,862. OVEN TEMPERATURE CONTROL.
3,855,509. CONTROL SYSTEM FOR INDUCTION MOTORS.

Applications for licenses under the following 6 patents may be addressed to: Patent Counsel, STG-PRODS Division, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12345.

3,813,898. HIGH TORQUE CRYOGENIC COUPLING.
3,826,969. HIGHLY STABLE PRECISION VOLTAGE SOURCE.
3,826,983. DIGITALLY SCALED DIGITAL VOLTMETER.
3,831,050. ROTOR FOR A DYNAMOELECTRIC MACHINE.
3,835,650. STEAM AIR PREHEATER FOR A STEAM BOILER SYSTEM.
3,846,739. TWO-OUT-OF-THREE LOGIC TERMINAL BOARD.

Applications for licenses under the following 12 patents may be addressed to: Patent Counsel, General Electric Company, Wiring Device Products Department, 95 Hathaway St., Providence, R.I., 02940.

D. 229,667. WALLPLATE.
D. 230,699. WALLPLATE OR SIMILAR ARTICLE.
3,638,171. TERMINAL STRUCTURE FOR WIRING DEVICES.
3,657,936. DIMMER POTRENTIOMETER SWITCH.
3,680,031. GROUNDING DEVICE FOR MOUNTING STRAP.
3,718,894. RESILIENTLY REINFORCED NEMA CONTACT.
3,812,445. BE-CU CONTACT FOR NEMA CONTACT.
3,818,212. DECORATIVE GUIDE LIGHT.
3,818,213. CAST RESIN GLOW LAMP PRODUCT.
3,740,701. PROTECTIVE CONNECTOR DEVICES.
3,821,686. PROTECTIVE CONNECTOR DEVICES.
D. 230,700. WALLPLATE OR SIMILAR ARTICLE.

Applications for licenses under the following 15 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,537,132. HOUSEHOLD REFRIGERATOR WITH THROUGH-THE-DOOR ICE SERVICE.
3,537,273. HOUSEHOLD REFRIGERATOR INCLUDING EXTERIOR ICE SERVICE.
3,537,618. ICE PIECE DISPENSER INCLUDING STALL ELIMINATING MEANS.
3,704,964. HERMETIC REFRIGERATOR COMPRESSOR.
3,838,579. LOCKING AND SEALING SYSTEM FOR ROOM AIR CONDITIONERS.
3,838,580. AIR CONDITIONING CHASSIS GROUNDING SYSTEM.
3,838,635. COMPACTOR WITH RAM MEANS HAVING AN AUTOMATICALLY MOVABLE RAM HEAD.
3,841,677. COMBINATION LATCHING AND SWITCHING MECHANISM.
3,843,066. WASTE DISPOSER APPARATUS.
3,844,441. RADIUSED MOLD WALLS FOR PLASTIC TUBS.
3,847,111. FLOW-COATING APPARATUS.
3,850,008. ICE MAKER.
3,850,185. MEANS IN A DISHWASHING MACHINE FOR STARTING THE OPERATIONAL CYCLE THEREOF.
3,851,943. RACK SUPPORT ASSEMBLY IN A DISHWASHER.
3,854,579. PACKAGED ARTICLE INCLUDING BLOCKING AND CUSHIONING MEANS.

Applications for licenses under the following 22 patents may be addressed to: Division Patent Counsel, General Electric Company, Building 43, Room 529, 100 Woodlawn Ave., Pittsfield, Mass., 01201.

3,069,299. PROCESS FOR PRODUCING MAGNETIC MATERIAL.
3,096,222. GRAIN ORIENTED SHEET METAL.
3,099,552. METHOD OF MAKING LOW SULFUR STEEL.
3,108,912. MAGNETIC MATERIAL.
3,147,157. FABRICATION OF MAGNETIC MATERIAL.
3,147,158. PROCESS FOR PRODUCING CUBE-ON-EDGE ORIENTED SILICON IRON.
3,158,516. METHOD FOR PRODUCING ALLOY BODIES HAVING IMPROVED MAGNETIC PROPERTIES.
3,162,554. HEAT TREATMENT OF GRAIN ORIENTED STEEL TO OBTAIN A SUBSTANTIALLY CONSTANT MAGNETIC PERMEABILITY.

3,164,496. MAGNETIC MATERIAL AND METHOD OF FABRICATION.

3,184,346. GRAIN ORIENTED SHEET METAL HAVING A VANADIUM NITRIDE DISPERSION.

3,188,249. METHOD OF IMMERSING CUBE-ON-EDGE ORIENTED SILICON-IRON IN SILICON-IRON BATH FOLLOWED BY ANNEALING TO FORM A CUBE-ON-EDGE ORIENTED SILICON-IRON PRODUCT.

3,214,303. PROCESS OF RETAINING A DISPERSED SECOND PHASE UNTIL AFTER THE TEXTURE DEVELOPING ANNEAL.

3,223,602. IRON-SILICON ALLOYS AND TREATMENT THEREOF.

3,354,345. LIGHTNING ARRESTER SPARK GAP HAVING ARC-CONFINING CHAMBER WALLS OF GRADED POROSITY.

3,409,480. METHOD OF HEAT TREATING SILICON STEEL SHEET.

3,501,135. FURNACE WITH SEPARABLE SECTIONS FOR HEATING SILICON STEEL STRIP.

3,575,739. SECONDARY RECRYSTALLIZATION OF SILICON IRON WITH NITROGEN.

3,586,913. HIGH VOLTAGE LIGHTNING ARRESTER HAVING A DISCHARGE SURGE COUNTING DEVICE MOUNTED ON ITS TOP TERMINAL BY INSULATING MEANS.

3,614,532. TRIGGERED VACUUM GAP KEEP-ALIVE CIRCUIT.

3,619,766. VERNIER VOLTAGE REGULATOR.

3,819,892. FAIL SAFE VACUUM TYPE CIRCUIT INTERRUPTER AND ASSOCIATED LOAD CURRENT TAP CHANGER FOR ELECTRIC INDUCTION APPARATUS.

3,848,178. COMBINED POWER AND INSTRUMENT POTENTIAL TRANSFORMER.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case:

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 476,500. Method of Preparing Gas Tags for Identification of Single and Multiple Failures of Nuclear Reactor Fuel Assemblies. Filed June 5, 1974. PC $3.75/MF $2.25.

Patent application 481,262. Fast-Neutron Solid-State Dosimeter. Filed June 20, 1974. PC $3.25/MF $2.25.

Patent application 484,740. Phase Control in High Resolution Electron Microscopy. Filed July 1, 1974. PC $3.25/MF $2.25.

Patent application 486,924. Pipe Gripper. Filed July 9, 1974. PC $3.25/MF $2.25.

Patent application 487,323. Thermochemical Production of Hydrogen. Filed July 10, 1974. PC $3.25/MF $2.25.

Patent application 487,326. Failure Limiting Pipe Expansion Joint. Filed July 10, 1974. PC $3.25/MF $2.25.

Patent application 489,215. Method of Apparatus for Fabricating a Composite Structure Consisting of a Filamentary Material in a Metal Matrix. Filed July 17, 1974. PC $3.25/MF $2.25.

Patent application 489,305. Whole Blood Analysis Rotor for a Multistation Dynamic Photometer. Filed July 17, 1974. PC $3.25/MF $2.25.

Patent application 490,446. Displaced Electrode Process for Welding. Filed July 22, 1974. PC $3.25/MF $2.25.

Patent application 491,082. A Combined Coal Fired Process for Production of Power and Liquid Fuel. Filed July 23, 1974. PC $3.25/MF $2.25.

Patent application 491,095. Variable Thickness Double-Refracting Plate. Filed July 23, 1974. PC $3.75/MF $2.25.

Patent 3,797,804. Atmospheric Closure Mechanism. Filed Feb. 6, 1973. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,801,446. Radioisotope Fueled Heat Transfer System. Filed June 5, 1968. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,806,625. High-Voltage Feedthrough Assembly. Filed Mar. 16, 1973. Patented Apr. 23, 1974. Not available NTIS.

Patent application 474,547. Controlled Porosity Filter and Uniform Structure Composites. Filed May 30, 1974. PC $4.00/MF $2.25.

Patent 3,801,446. Radioisotope Fueled Heat Transfer System. Filed June 5, 1968. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,805,552. Radial Spline Guide Bearing Assembly. Filed Oct. 17, 1972. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,805,890. Helical Coil Heat Exchanger. Filed Dec. 12, 1972. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,807,257. Apparatus and Method for Delivering Vibratory Energy. Filed Nov. 17, 1972. Patented Apr. 30, 1974. Not available NTIS.

Patent 3,821,747. Recording System Having Piezoelectric Stylus Drive Means. Filed Apr. 23, 1974. Patented June 28, 1974. Not available NTIS.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 368,578. Enzyne Electrode. Filed June 11, 1973. PC $3.25.

Patent 3,843,974. Intimal Lining and Pump With Vertically Drafted Webs. Filed Jan. 5, 1972. Patented Oct. 29, 1974. Not available NTIS.

Patent 3,846,353. Nonthrombogenic Plastic Material and Method for Making the Same. Filed June 8, 1970. Patented Nov. 5, 1974. Not available NTIS.

DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va.

Patent 3,757,256. Surface Wave Transducers With Cancellation of Secondary Response. Filed Aug. 2, 1971. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,287. Sea Bottom Classifier. Filed Apr. 6, 1972. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,312. General Purpose Associative Processor. Filed Oct. 9, 1970. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,720. Control Surfaces for Submersible Vehicles. Filed Oct. 19, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,757,722. Submersible Underway Docking Unit. Filed Apr. 21, 1972. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,757,725. Right Spherical Segment-Glass Shell To Metal-Joint. Filed Sept. 24, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,071. Magnetically-Actuated Fluid Control Valve. Filed Nov. 1, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,382. Process of Freezing Blood Using a Hydroxyalkyl Starch as Cryoprotective Agent. Filed July 26, 1968. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,868. Noise-Riding Slicer. Filed Dec. 21, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,886. Versatile in Line Waveguide to Coax Transition. Filed Nov. 1, 1972. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,759,092. Differential Pressure Transducer and Readout for Sensing Claw Grip Force. Filed June 9, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,757,042. Pan and Tilt Underwater Optical Viewing System With Adjustable Source—Receiver Separation and Zoom Lenses. Filed Feb. 18, 1972. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,247. Frequency Selective Optical Isolator. Filed June 22, 1972. Patented Sept. 4, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patents Matter, NASA—
Code GP–2, Washington, D.C. 20590

Patent application 513,690. Zero Torque Gear Head Wrench. Filed Oct. 10, 1974. PC $3.25/MF $2.25.

Patent application 518,545. Translatory Shock Absorbers for Attitude Sensors. Filed Oct. 29, 1974. PC $3.25/MF $2.25.

Patent application 518,546. Apparatus for Measuring the Ferrite Content of Austenitic Stainless Steel Weld Material. Filed Oct. 29, 1974. PC $3.25/MF $2.25.

Patent application 518,685. An Improved Static Pressure Probe. Filed Oct. 29, 1974. PC $3.25/MF $2.25.

Patent application 521,006. An Improved Heat Exchanger. Filed Nov. 5, 1974. PC $3.25/MF $2.25.

Patent application 521,602. An Improved Portable Peening Gun. Filed Nov. 6, 1974. PC $3.25/MF $2.25.

Patent application 521,603. Carbon Monoxide Monitor. Filed Nov. 6, 1974. PC $3.25/MF $2.25.

Patent application 424,590. Hall Effect Magnetometer. Filed Dec. 13, 1973. PC $3.25/MF $2.25.

Patent application 500,982. Self-Energized Plasma Compressor. Filed Aug. 27, 1974. PC $3.25/MF $2.25.

Patent application 506,803. Bonding of Sapphire to Sapphire by Eutectic Mixture of Aluminum Oxide and Zirconium Oxide. Filed Sept. 17, 1974. PC $3.25/MF $2.25.

Patent application 506,804. A Holographic Motion Picture Camera. Filed Sept. 17, 1974. PC $3.25/MF $2.25.

Patent application 508,803. Method and Apparatus for Detecting Flaws in Elongated Bodies. Filed Sept. 24, 1974. PC $3.25/MF $2.25.

Patent application 512,825. Two Feed Dish Antenna Having Switchable Beamwidth. Filed Oct. 4, 1974. PC $3.25/MF $2.25.

Patent application 513,613. Catalytic Trimerization of Aromatic Nitriles and Triaryl-S-Triazine Ring Cross-Linked High Temperature Resistant Polymers and Copolymers Made Thereby. Filed Oct. 10, 1974. PC $3.75/MF $2.25.

Patent application 514,546. A Method and Apparatus for Compensating Reflection Losses in a Path Length Modulated Absorption-Absorption Trace Gas Detector. Filed Oct. 15, 1974. PC $3.25/MF $2.25.

Patent 3,835,318. Fast Scan Control for Deflection Type Mass Spectrometers. Patented Sept. 10, 1974. Not available NTIS.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,783,189. Television System for Precisely Measuring Distances. Filed June 1, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,800,256. Energy Storage and Switching With Superconductors. Filed Apr. 24, 1973. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,801,445. Thermionic Reactor Electrical Control System. Filed Sept. 28, 1972. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,803,416. Slotted Coaxial Germanium Gamma-Ray Camera. Filed Nov. 28, 1972. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,805,119. Superconductor. Filed July 12, 1972. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,816,771. Plasma Energy to Electrical Energy Converter. Filed Feb. 9, 1973. Patented June 11, 1974. Not available NTIS.

Patent 3,817,746. Ductile Superconducting Alloys. Filed Nov. 14, 1972. Patented June 18, 1974. Not available NTIS.

DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St. SW.
Washington, D.C. 20590

Patent application 516,448. Signal Conditioner Front-Ends. Filed Oct. 21, 1974. PC $3.25/MF $2.25.

ENVIRONMENTAL PROTECTION AGENCY
Room W513, 401 M St. SW.
Washington, D.C. 20460

Patent 3,635,034. Method of Plugging Mine Passages Having Water Emanating Therefrom. Filed July 9, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,672,173. Forming Self-Supporting Barriers in Mine Passages and the Like. Filed May 13, 1969. Patented June 27, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 508,784. Process for Fabricating Sic Semiconductor Devices. Filed Sept. 24, 1974. PC $3.25/MF $2.25.

Patent application 483,850. An Externally Supported Internally Stabilized Flexible Duct Joint. Filed June 27, 1974. PC $3.25/MF $2.25.

Patent application 483,857. Rapid Activation and Checkout Device for Batteries. Filed June 27, 1974. PC $3.25/MF $2.25.

Patent application 505,880. Improved Structure and Method of Producing Composite of Gapped and Ungapped Cores. Filed Sept. 13, 1974. PC $3.25/MF $2.25.

Patent application 510,677. Solar Cell Assembly. Filed Sept. 30, 1974. PC $3.25/MF $2.25.

Patent application 510,678. Method of Manufacturing Composite Superconductors. Filed Sept. 30, 1974. PC $3.25/MF $2.25.

Patent application 511,346. An Attitude Control System. Filed Oct. 2, 1974. PC $3.25/MF $2.25.

Patent application 511,894. Aircraft Mounted Crash Activated Transmitter Device. Filed Oct. 3, 1974. PC $3.25/MF $2.25.

Patent application 513,612. Hingeless Helicopter Rotor With Improved Stability. Filed Oct. 10, 1974. PC $3.25/MF $2.25.

Patent application 513,689. Miniature Hydraulic Actuator. Filed Oct. 10, 1974. PC $3.25/MF $2.25.

Patent 3,837,285. Open Tube Guideway for High Speed Air Cushioned Vehicles. Patented Sept. 24, 1974. Not available NTIS.

Patent 3,840,829. Integrated p-Channel MOS Gyrator. Patented Oct. 8, 1974. Not available NTIS.

Availability of Patents Official Gazette January 28, 1975, Volume 930/No. 4

Additional copies of the January 28, 1975, Patents OFFICIAL GAZETTE containing Patent Applications published under the Trial Voluntary Protest Program are available for public distribution.

Copies may be obtained at the single copy price of $6.60 each. Remittance must accompany order. Address orders to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

Feb. 18, 1975.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 2, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-26-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-30-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-20-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-25-74

Expiration of patents: The patents within the range of numbers indicated below expire during February 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,821,713 to 2,825,063, inclusive
Plant Patents	Numbers 1,677 to 1,685, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 4, 1975

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Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T932,001

ETHYLENE/ETHYLENICALLY UNSATURATED CARBOXYLIC ACID/UNSATURATED ESTER LOW MOLECULAR WEIGHT INTERPOLYMERS USEFUL AS ADHESIVES

George E. Waples, Jr., 503 Sycamore; Michael B. Smithers, 500 Williow Drive; and Ben W. Heinemeyer, 118 Pecan Lane, all of Lake Jackson, Tex. 77566

Continuation-in-part of abandoned application Ser. No. 169,869, Aug. 6, 1971. This application July 30, 1973, Ser. No. 384,155

Claims priority, application Canada, July 5, 1972, 146,369

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.8

No Drawing. 22 Pages Specification

Low molecular weight interpolymers of ethylene, ethylenically unsaturated carboxylic acid such as acrylic acid and ethylenically unsaturated ester such as ethyl acrylate or vinyl acetate which interpolymers have viscosities from about 500 to about 10,000 centipoises at 350° F. are useful as adhesives, particularly as adhesives in the lamination of non-adhering plastic materials to glass.

T932,002

PURIFICATION OF WET-PROCESS PHOSPHORIC ACID WITH METHANOL AND AMMONIA

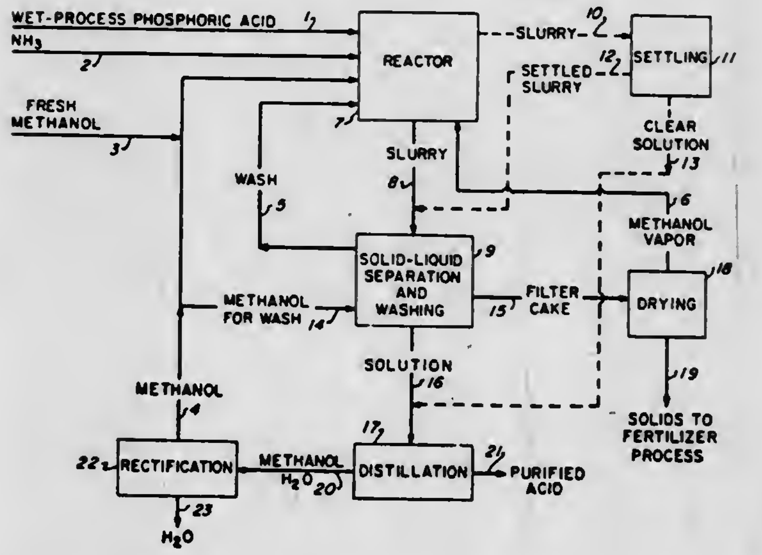
John F. McCullough, 2909 Alexander, and Leland L. Frederick, Rte. 5, Box 303-B, both of Florence, Ala. 35630

Filed Oct. 12, 1973, Ser. No. 406,103

Int. Cl. C01b *25/16*

U.S. Cl. 423—321

3 Sheets Drawing. 35 Pages Specification



Improved process for partial purification of merchant-grade wet-process phosphoric acid with co-production of impure phosphoric acid or solid fertilizer materials containing from 50 to 95 percent of the impurities originally present in the crude acid. Crude acid is treated with from 2.5 to 4.2 pounds of methanol per pound of P_2O_5 and with from 0.26 to 0.4 equivalents of a soluble ammonium compound per mole of P_2O_5 to precipitate most of the metallic and fluorine impurities and 7 to 14 percent of the P_2O_5 as solid ammonium metallic phosphates and fluoride compounds. The reaction mixture is maintained at temperatures from 35° C. to its boiling point (about 70° C.) for 15 to 90 minutes to form slurries that filter and settle rapidly. The solids are separated from the reaction mixture and methanol is distilled from the resulting clarified solution to form concentrated partially purified acid. The solid ammonium metallic phosphates contain from 44 to 54 percent P_2O_5, all of which is available and about 50 percent is water soluble by AOAC procedures. Alternately, the reaction slurry is separated into a clarified liquid fraction and a settled slurry fraction. Methanol is distilled from the settled fraction, which causes most of the impurities to redissolve, yielding impure phosphoric acid.

T932,003

YARN BREAK DETECTOR

Thomas J. Strawser, Frostburg, Md.

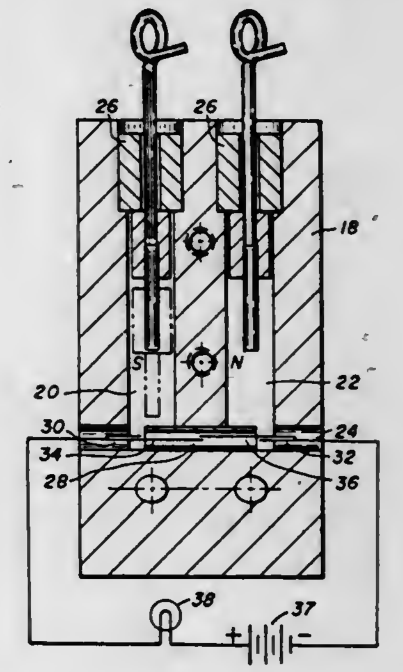
(℅ Celanese Fibers Co., Box 444, Cumberland, Md.)

Continuation of application Ser. No. 151,409, June 9, 1971. This application Nov. 30, 1973, Ser. No. 420,415

Int. Cl. G08b *21/00*

U.S. Cl. 340—259

1 Sheet Drawing. 9 Pages Specification



A yarn break detector suitable for yarns having tensions down to 0.1 gram and comprising a body provided with a passageway, a pin extending into said passageway so as to be movable longitudinally therein from a withdrawn position to a forward position, said pin being provided with a yarn guiding surface, a magnet connected to the end of said pin within said passageway so as to be movable therewith, a magnetically actuated switch positioned within said body at a location adjacent the magnet when said pin is in one of said withdrawn or forward positions, and an electrically actuated indicator whose circuit is opened or closed by said magnetically actuated switch, whereby when a yarn runs over the guide surface of said pin the tension in said yarn holds said pin and magnet in one of said two positions and the magnetic switch and indicator are in predetermined operating conditions, and upon a break in the yarn the release to their second positions, the magnetic switch and thus the indicator change their operating conditions so as to give an indication of the yarn break.

T932,004
AROMATIC POLYCARBONATES

Ronald George Feasey, Knebworth, and John Leslie Freeman, Huntingdon, England, assignors to Imperial Chemical Industries Limited, London, England

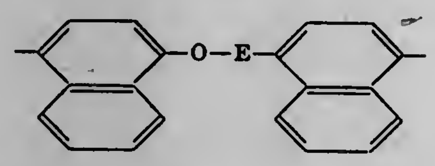
Continuation-in-part of application Ser. No. 252,555, May 12, 1972. This application Dec. 17, 1973, Ser. No. 425,282

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA

No Drawing. 12 Pages Specification

A polymer is provided having recurring units of the formula



where is preferably a direct link or may be a group having the formula —X—O— where X is a ketone or divalent polymethylene group.

T932,005
DETECTION OF POSSIBLY ERRONEOUS SEGMENTS FOLLOWING FAILURES IN PRIMARY STORAGE

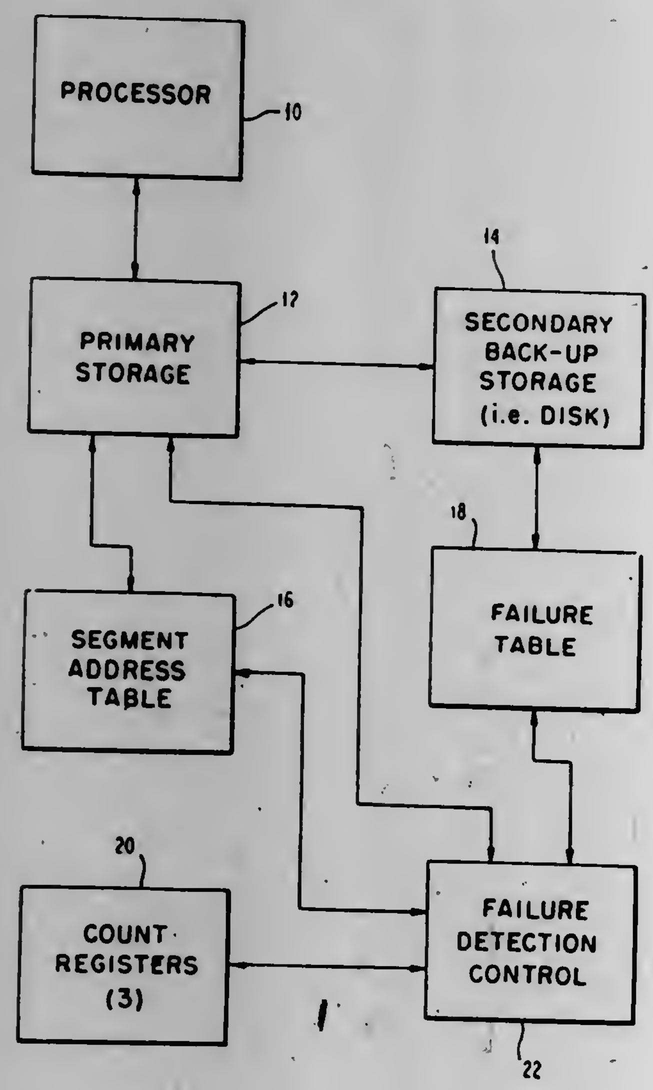
Vincent J. Kruskal, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,303

Int. Cl. G06f *11/06;* **G11c** *29/00*

U.S. Cl. 235—153 AM

15 Sheets Drawing. 23 Pages Specification



A method for detecting possibly erroneous memory segments in a hierarchical memory system having at least a primary and secondary back-up memory following failure in the primary storage of said system. The method generally includes keeping certain statistical data concerning the transfer of data segments into and out of said primary storage whereby automatic validity checking procedures can be performed to determine the probable accuracy of the current contents of said primary memory.

T932,006
SOLUBILIZED MONO AND DISAZO DYES

Hans Alfred Stingl, 852 Ocean View Drive, Toms River, N.J. 08753

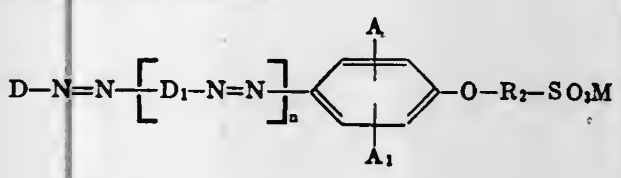
Continuation of abandoned application Ser. No. 180,493, Sept. 14, 1971. This application Jan. 7, 1974, Ser. No. 431,517

Int. Cl. C09b *29/10, 29/12, 31/06*

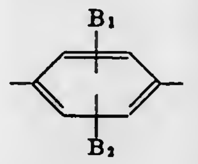
U.S. Cl. 260—163

No Drawing. 38 Pages Specification

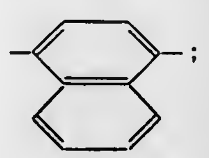
Dyestuffs of the formula



wherein D_1 is a phenylene group of the formula



wherein B_1 and B_2 are each independently hydrogen, C_{1-5}-alkyl, C_{1-5}alkoxy, chloro or bromo, or D_1 is a group of the formula



n is 0 or 1; A and A_1 are each independently hydrogen, lower alkyl, lower alkoxy and halogen; R_2 is a straight chain alkylene of from 2 to 4 carbon atoms or said alkylene substituted by methyl or ethyl on not more than 2 carbon atoms of said alkylene; D is a residue of the benzene series, naphthalene or sulfonamidonaphthalene-1 or 2, said D being free from acid solubilizing groups; and D may also be a residue of the heterocyclic series when *n* is 0; and M is hydrogen, alkali metal or ammonium.

T932,007
PROCESS FOR TEXTURING A FEED YARN

Donald Rocky Bradley, 10 S. Cliffe Drive, Wilmington, Del. 19809; George Daniel Null, Good Hope Road, #2, Landenberg, Pa. 19350; and Kenneth Bedros Takvorian, 22 White Clay Crescent, Newark, Del. 19711

Filed Feb. 19, 1974, Ser. No. 443,206

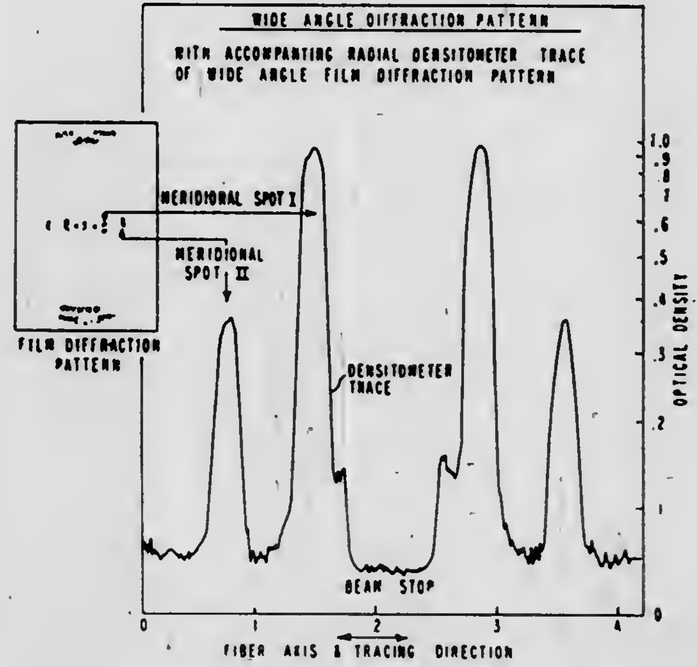
Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS

2 Sheets Drawing. 26 Pages Specification

A process for texturing a feed yarn is provided wherein the feed yarn is comprised of a plurality of continuous substantially straight filaments constituted at least 90% by weight of repeating polymeric units of bis(4-cyclohexylene) methane dodecanediamide (PACM-12) with at least 60% of the bis(4-cyclohexylene) methane (PACM) portion of the units being in the trans-trans isomer form and

have a crystallinity index less than 20. The process comprises false-twist texturing the said feed yarn by twisting the filaments to at least 50 turns per inch (t.p.i.), heating the twisted filaments until the crystallinity index increases by at least 0.5 units but not over a total of about 35 units, cooling and untwisting the filaments in a continuous operation to give an improved false-twisted yarn having adequate stretch, and fabrics therefrom having good wear-wrinkle recovery and good tailorability.



T932,008
APPARATUS FOR DETERMINING FIBER DIRECTIONALITY IN MOVING WEB STRUCTURES

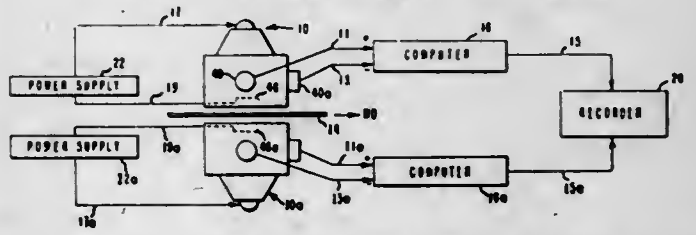
Latham S. Davis, 700 Minor Terrace, Winter Haven, Fla. 33880, and Richard A. Satterfield, 307 Shevel Drive, Goodlettsville, Tenn. 37072

Filed July 11, 1974, Ser. No. 487,816

Int. Cl. G01n *21/30*

U.S. Cl. 250—571

3 Sheets Drawing. 8 Pages Specification



An apparatus to determine fiber directionality in moving web structures. The apparatus uses a fiber property of directional reflectance of collimated light to establish fiber position (direction). Collimated light is projected onto a web surface and the scattered reflected light is sensed by multiple optical sensors. Since light is reflected greatest perpendicular to the direction of the fiber axis, a measure of overall fiber directionality is obtained by comparing the pickup of strategically placed photo sensors. The apparatus includes three sections: scanning heads for monitoring upper and lower web surfaces; electronic circuits to compare the signal outputs of the photo sensors in the scanning heads to obtain related values of fiber directionality; and a controlled power supply and illumination source. The degree of illumination is controlled by the general brightness of the material being measured so that a constant level of reflectance is maintained.

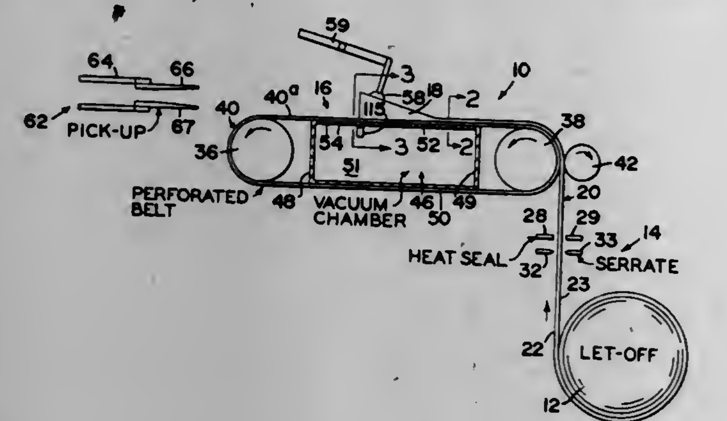
REISSUES

PUBLISHED MARCH 4, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,350
BAG HANDLING APPARATUS AND METHOD

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Bedford Heights, Ohio
Original No. 3,579,948, dated May 25, 1971, Ser. No. 731,672, Apr. 29, 1968. Application for reissue May 23, 1973, Ser. No. 363,122
Int. Cl. B65b *43/04, 43/30*
U.S. Cl. 53—29 **17 Claims**

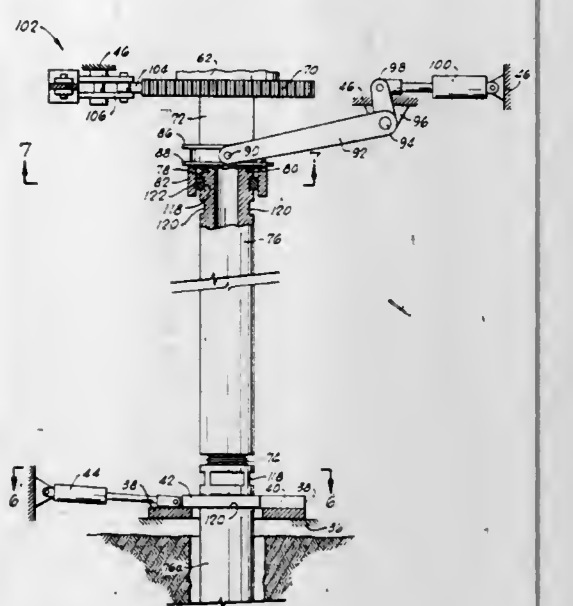


13. A method of opening a bag including:
a. advancing a chain of bags toward a loading station along a path of travel;
b. engaging and supporting a leading bag of the chain and at least a portion of a succeeding bag while advancing said chain;
c. opening an end of said leading bag with the open end facing in the direction of travel of said chain;
d. engaging said open end of said leading bag; and
e. detaching said leading bag from said succeeding bag while maintaining said succeeding bag engaged and supported on said path of travel.

28,351
PIPE HANDLING APPARATUS

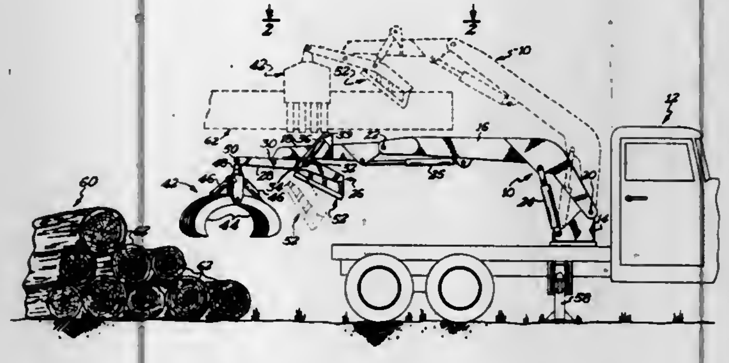
Norman D. Dyer, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Original No. 3,446,284, dated May 27, 1969, Ser. No. 667,957, Sept. 15, 1967. Application for reissue Dec. 5, 1969, Ser. No. 888,182
Int. Cl. E21b *19/16*
U.S. Cl. 173—164 **14 Claims**

1. Apparatus for unscrewing selected threaded connections between sections of pipe and the like wherein each pipe section has flats on the exterior thereof, said apparatus comprising:
rotating means engageable with one of the pipe sections for rotating the pipe, said rotating means including a chuck member slidingly mounted thereon, said chuck member having an opening extending coaxially therethrough with respect to the axis of said pipe;
moving means for displacing said rotating means and pipe along the axis of said pipe;
wrench means adapted to be positioned in the flats and sized to be received within said opening in engagement with said chuck member;
chuck actuating means for moving said chuck member into engagement with said wrench means holding said wrench means in said flats connecting said one pipe section and rotating means for common rotation; and,
slip means movable into holding engagement with the flats on said one pipe section, whereby the rotating means is rotated to break the connection between said one pipe section and the rotating means, and said slip means being movable into holding engagement with the flats on the subjecent pipe section upon movement of said pipe sections by said moving means, whereby rotation of the rotating means rotates said one pipe section engaged by the wrench means and unthreads the connection between the pipe sections.



28,352
HEEL BOOM LOG GRAPPLING APPARATUS

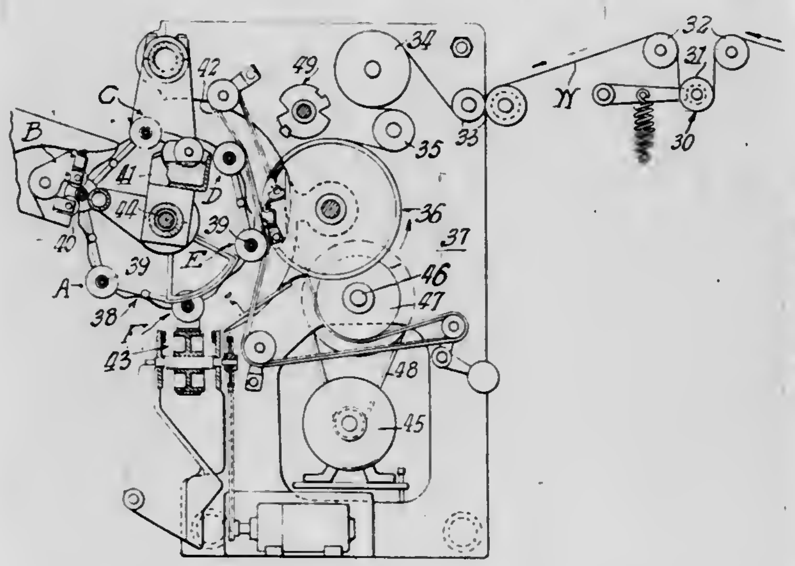
Robert W. Larson, Thunder Bay, Ontario, Canada, assignor to Dico Company, Inc., Des Moines, Iowa
Original No. 3,165,215, dated Jan. 12, 1965, Ser. No. 218,927, Aug. 23, 1962. Application for reisue Sept. 13, 1973, Ser. No. 396,679
Int. Cl. B66c *1/42*
U.S. Cl. 214—147 AS **8 Claims**



2. A heel boom log grappling apparatus comprising:
(a) a main boom assembly,
(b) a heel boom member,
(c) means mounting said heel boom member to the free end of said main boom assembly for pivotal movement in the general plane of said assembly,
(d) a grapple for picking up logs,
(e) means mounting said grapple to one end of said heel boom member for pivotal movement in the said general plane of said main boom assembly,
(f) downwardly facing cradle means fixedly carried at the other end of said heel boom member, and
(g) hydraulic means extending between said main boom assembly and said heel boom member for forcing said other end of the heel boom member downwardly to effect engagement of said cradle means to level a log held by said grapple.

28,353
WEB-WINDING APPARATUS AND METHOD

Ernst Daniel Nystrand, John J. Bradley, and Harvey J. Spencer, Green Bay, Wis., assignors to Paper Converting Machine Company, Inc., Green Bay, Wis.
Original No. 3,179,348, dated Apr. 20, 1965, Ser. No. 223,994, Sept. 17, 1962. Application for reissue Sept. 1, 1972, Ser. No. 285,877
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 A **19 Claims**

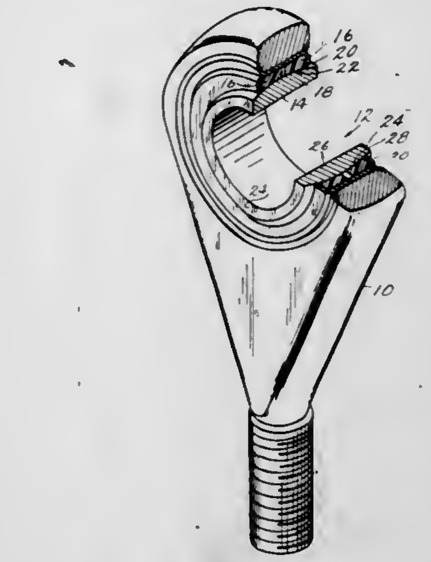


1. In web-winding apparatus equipped with a frame,
(A) a roll rotatably supported on said frame, means for rotating said roll, means for feeding a web onto said roll for travel therewith while in partial wrapping engagement with said roll,
(B) said frame also being equipped with a plurality of mandrels, means for moving said mandrels sequentially through a path in close proximity to the surface of said roll, the improvement comprising:
(C) means for transversely severing said web to provide a free leading edge on said web for approaching a mandrel on which said web is to be wound in said path, [and]
(D) *pin* means *extensibly mounted on said roll* for maintaining a web portion spaced from said edge in contact with said roll, *and pusher means extensibly mounted on said roll to urge said maintained web portion against an adjacent mandrel.*

28,354
BEARING CONSTRUCTION

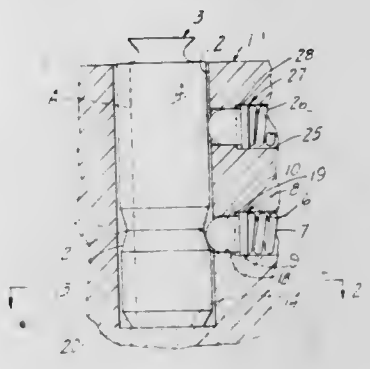
Stanley S. Orkin, Rockville, Conn., assignor to Kamatics Corporation, Bloomfield, Conn.
Original No. 3,685,878, dated Aug. 22, 1972, Ser. No. 40,200, May 25, 1970. Application for reissue Nov. 13, 1973, Ser. No. 415,492
Int. Cl. F16c *33/04*
U.S. Cl. 308—238 **2 Claims**

1. A self-lubricated bearing assembly comprising two bearing members having coengaging surfaces which are movable relative to one another, the surfaces of one of said members consisting essentially of a solid polymeric organic lubricant material selected from the group consisting of polyimide and polytetrafluoroethylene and the surface of the second of said members being provided by a body of ceramic material selected from the group consisting of aluminum oxide, chromium oxide, titanium dioxide, tungsten carbide, titanium carbide, chromium carbide and their mixtures, said body of ceramic material comprising a coating having a thickness ranging from [0.005] *0.0005* to 0.01 inch on a metallic substrate having a tensile strength ranging from 35,000 to 250,000 p.s.i., said metallic substrate consisting essentially of a metal selected from the group consisting of titanium, titanium base alloys, ferrous alloys, aluminum and aluminum base alloys.



28,355
MEANS FOR SECURING AN INSERT TO A BASE PIECE

Nello J. Petri, 2140 Jones St.,
San Francisco, Calif. 94133
Original No. 3,698,748, dated Oct. 17, 1972, Ser. No. 229,989, Feb. 28, 1972, which is a continuation-in-part of application Ser. No. 122,947, Mar. 10, 1971. Application for reissue Apr. 4, 1973, Ser. No. 347,714
Int. Cl. F16b *12/20*
U.S. Cl. 403—328 **3 Claims**



1. In the combination that includes a base piece and an element secured thereto:
said base piece being formed with [a bore] *an elongated cavity* opening outwardly of *and substantially at right angles to* one face thereof,
said element including a shank adapted to be received in said [bore] *cavity* through the open end thereof,
a first spring pressed element on one side of said [bore] *cavity* urging said shank transversely of said [bore] *cavity* toward the opposite side thereof,

said shank and [bore] *cavity* being formed in cross section to provide two spaced points of engagement between said shank and said [bore] *cavity* at said opposite side,

the cross sectional contour of said shank being smaller than the cross sectional contour of said [bore] *cavity* to provide clearance therebetween whereby the periphery of said shank is engaged only by said [force means] *spring pressed element* and said [bore] *cavity* at said two points to provide stability of said element relative to said base piece,

said [bore] *cavity* being provided with a bottom [rigid with] *fixed with respect to* said base piece and said shank being provided with a camming surface acted upon by said first spring pressed element to urge said shank against said bottom at the same time it is urged toward said opposite side,

a second spring pressed element axially spaced from said first spring pressed element for urging said shank against said opposite side.

28,356

ANTIBACTERIAL AND ANTIFUNGAL TREATMENT WITH SULFONES

Ivan C. Popoff, Ambler, Bernard Buchholz, Blue Bell, and Harold J. Miller, Newtown Square, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original No. 3,519,630, dated July 7, 1970, Ser. No. 797,255, Feb. 6, 1969, which is a continuation-in-part of application Ser. No. 636,026, May 4, 1967, which in turn is a continuation-in-part of application Ser. No. 553,615, May 31, 1966, both now abandoned. Application for reissue Mar. 26, 1971, Ser. No. 128,596

Int. Cl. A01n *7/00, 9/22*

U.S. Cl. 424—270 **10 Claims**

12. The process for controlling late blight infested plants which comprises contacting said plants with an effective plant bacteria and fungi inhibiting amount of [a compound defined in claim 1.] *2-methylsulfonyl-5-chlorobenzothiazole.*

28,357

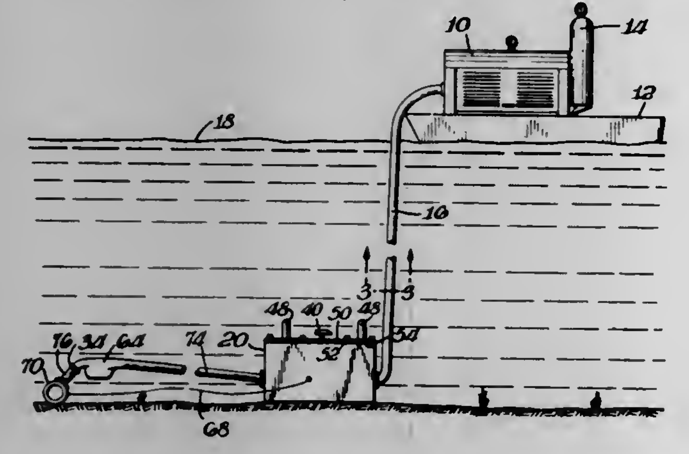
METHOD AND APPARATUS FOR UNDERWATER ARC WELDING

Ernest H. Berghof, Orlando, Fla., assignor to Anna Welding Corporation

Original No. 3,632,950, dated Jan. 4, 1972, Ser. No. 886,245, Nov. 13, 1969, which is a continuation-in-part of abandoned application Ser. No. 701,700, Jan. 30, 1968. Application for reissue July 2, 1973, Ser. No. 375,685

Int. Cl. B23k *9/16*

U.S. Cl. 219—72 **4 Claims**



2. [A method according to claim 1 which includes the step of:] *A method of underwater electric arc welding a workpiece in which an underwater electric arc is drawn between an electrode being issued from a feeding unit and said workpiece to effect welding on said workpiece and in which water is kept from contact with said arc and the weld area of said workpiece immediately adjacent said arc by:*

externally supplying a shielding gas under a pressure greater than the pressure of said water to said arc and said weld area,

providing said feeding unit with an enclosure and initially pressurizing said enclosure with said shielding gas under pressure greater than said water presure,

ejecting said gas as a stream about said electrode and said arc thereby to form an envelope about said arc and said electrode and to force said water away from said arc and said weld area, and

forming two streams, one being an inner annular gas stream coaxially about said arc and the other being an annular gas stream about said inner stream, each of said streams being directed toward said workpiece and both having a pressure exceeding that of said water, thereby to shield said arc and said weld area from said water.

28,358

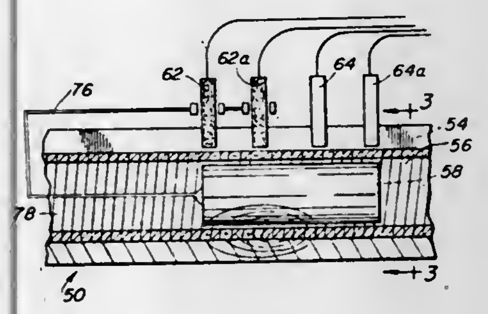
LINEAR AND ROTARY MAGNETIC MOTORS

Marcel R. Sommeria, Palos Heights, Ill., assignor to Atlanta/La Salle Capital Corporation and Joseph Lucas (Industries) Ltd., Birmingham, England

Original No. 3,534,203, dated Oct. 13, 1970, Ser. No. 686,412, Nov. 29, 1967. Application for reissue Oct. 12, 1972, Ser. No. 297,010

Int. Cl. H02k *37/00*

U.S. Cl. 310—14 **6 Claims**



1. A high-torque, rotary, constant-force electromagnetic machine functionally dependent upon leakage flux, said machine being devoid of permanent magnets, and motive force generated by said machine being produced by means of magnetic flux, which crosses a winding which winding itself produces said flux, said machine comprising:

a first element of readily magnetizable material,

a single magnetizing winding helically coiled about said first element,

a second element generally symmetrically disposed and concentrically supported with respect to said first element,

one of said elements defining within pheripheral bounds thereof a cavity, the other of said elements disposed for movement within said cavity and having a cross-section dimensioned to define a separation between said elements,

said first and second elements revolving relative to one another during energization of said machine,

brush means coupled mechanically to one of said first and said second elements for travel therewith relative to said other of said first and said second elements and in electrical contact with said winding to supply excitation current thereto and to produce a magnetic field within said cavity, to effect relative movement between said first and said second element,

two mutually isolated but substantially identical power sources, and

electrical conductor means connecting [respective] each of said power sources to [current carrying] said brush means to energize opposed sectors of electromagnetic fields of said machine.

28,359

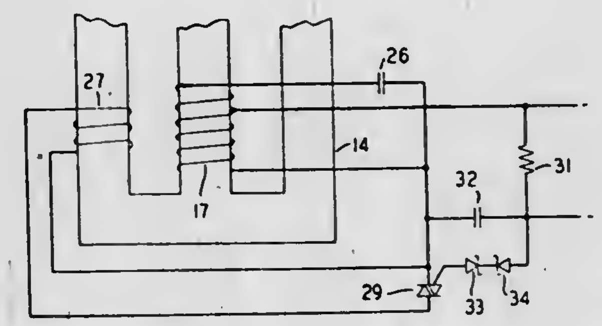
CLOSED LOOP FERRORESONANT REGULATOR

Harry Patrick Hart, Whippany, and Robert John Kakalec, Madison, N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Original No. 3,573,605, dated Apr. 6, 1971, Ser. No. 856,121, Sept. 8, 1969, which is a continuation-in-part of abandoned application Ser. No. 763,882, Sept. 30, 1968. Application for reissue Dec. 6, 1971, Ser. No. 204,848

Int. Cl. G05f *1/46, 1/64*

U.S. Cl. 323—56 **26 Claims**



15. A ferroresonant transformer including a magnetic core structure, a primary winding and a secondary winding wherein the core structure with the secondary winding includes two separate sections providing parallel magnetic paths for the secondary and resonant flux, a control winding on one of said sections, and switch means for opening and closing a circuit across said control winding, with no current source connected to said control winding whereby the only current in said control winding is self induced current resulting from flux in said one section.

28,360

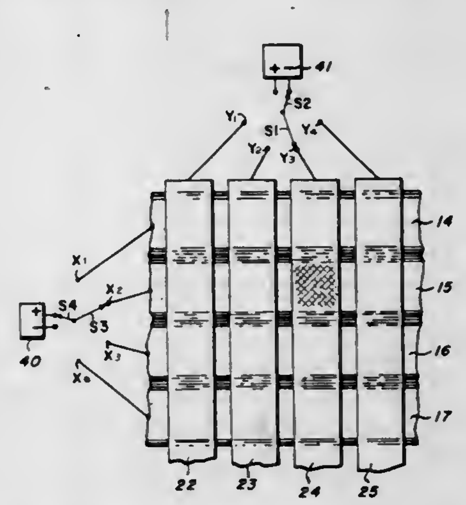
ELECTROPHORETIC COLOR DISPLAY DEVICE

Paul F. Evans and Harold D. Lees, Plano, Tex., and Martin S. Maltz, Rochester, and John L. Dailey, Pittsford, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Original No. 3,612,758, dated Oct. 12, 1971, Ser. No. 863,633, Oct. 3, 1969. Application for reissue Sept. 6, 1973, Ser. No. 394,953

Int. Cl. G02f *1/36;* **H04n** *5/66, 9/12*

U.S. Cl. 358—56 **15 Claims**



1. A visual display device comprising:

an [a] [colorless] insulating fluid containing particles of at least one color pigment in suspension, a substantial amount of said particles having a charge of one polarity;

first electrodes;

second electrodes spaced from said first electrodes, said fluid disposed between said first and second electrodes; and

means for selectively applying an electrical field across individual ones of said first and second electrodes whereby said particles migrate to the electrodes having a polarity opposite to their own causing a color image to be formed on said electrodes.

PATENTS

GRANTED MARCH 4, 1975

ERRATA

For CLASS	See PATENT NO.
100–45	3,868,903
123–188	3,868,953
190–13	3,869,034
148–37	3,869,037
206–229	3,869,062
179–15	3,869,080
403–225	3,869,157
423–544	3,869,257
149–41	3,969,320
260–326.45	3,869,407
424–236	3,869,539
240–52	3,869,696

PATENTS

GRANTED MARCH 4, 1975

GENERAL AND MECHANICAL

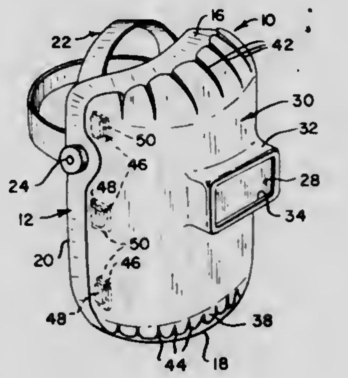
3,868,726
WELDING HELMET

David A. La Marre; Donald A. Smith, both of Woodstock, and Herbert F. Stickney, North Woodstock, all of Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed Mar. 4, 1971, Ser. No. 121,054

Int. Cl. F16p *1/06*

U.S. Cl. 2—8 **8 Claims**



1. A welding helmet comprising:

an opaque facepiece having a window;

means for supporting the facepiece upon the head when the helmet is worn;

a thin disposable covering of opaque, highly radiation-reflective sheet material extending over the major portion of the forward side of said facepiece around said window, said covering being spaced away from said facepiece and cooperating with said facepiece throughout at least a substantial portion of its extent thereover to form channel means adapted to permit circulation of environmental air between said facepiece and covering; and

means for detachably connecting said covering to said forward side of said facepiece.

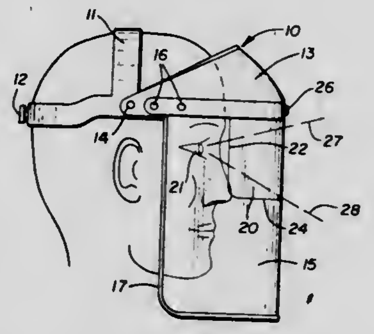
3,868,727
WELDING HOOD

James W. Paschall, 440 Garden St., Golden, Colo. 80401

Filed Sept. 24, 1973, Ser. No. 399,900

Int. Cl. A61f *9/06*

U.S. Cl. 2—8 **12 Claims**



1. A welding helmet for use during electric and gas welding operations comprising a head band for engagement on the user's head to provide support for the helmet, a face shield component mounted on said head band support for positioning to protect the user's face, a supplementary filter plate of lesser size than said shield engaged on said helmet for disposition forwardly of the user's eyes in a direct viewing area for electric welding operations to be undertaken, said face shield being of a shaded translucent material providing luminosity, infrared and ultraviolet transmittance characteristics corresponding to a shade number of at least 3 for the protection of the user's eyes during gas welding operations and for protecting the user's face from flash burns during electric welding operations, and said filter plate being of shaded translucent material providing together with said face shield a total increased eye protection whereby the desired electric welding operations may be undertaken without damage to the user's vision.

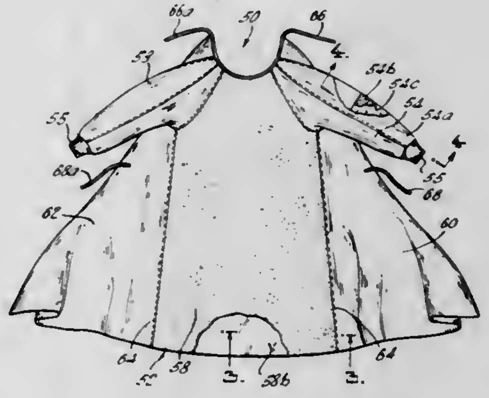
3,868,728
SURGICAL GOWN

Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Sept. 27, 1973, Ser. No. 401,301

Int. Cl. A41d *13/00*

U.S. Cl. 2—114 **10 Claims**



1. A disposable surgical gown comprising a main sheet having a front portion and side portions, said main sheet having sleeves attached thereto, said front portion having a central operative field comprising a liquid impervious material having an absorbent outer surface, said central operative field extending substantially to the bottom edge of said front portion; the remainder of said main sheet comprising a liquid repellent nonwoven fabric.

3,868,729
COMPOSITE ELASTIC BANDS AND GARMENTS INCORPORATING SUCH BANDS

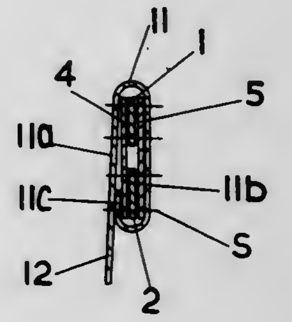
John Edward Lynam, Mapperley, Nottingham, England, assignor to Automatic Braiding Company (Nottingham) Limited, Sherwood, Nottingham, England

Continuation of Ser. No. 96,529, Dec. 9, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,834

Claims priority, application Great Britain, Jan. 6, 1970, 00580/70

Int. Cl. A41f *9/00*; **B32b** *3/04*, *7/08*

U.S. Cl. 2—237 **12 Claims**



7. A composite elastic band, as claimed in claim **6**, further including a garment wherein said cover forms a marginal part of said garment and is disposed folded over the outer edges of the core and strip material.

3,868,730

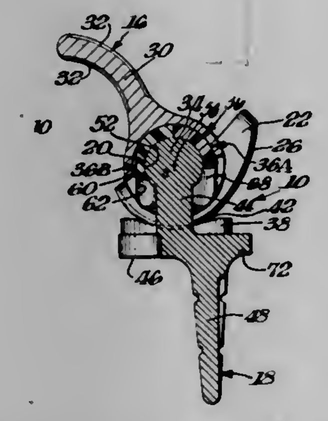
KNEE OR ELBOW PROSTHESIS

Herbert Kaufer; Larry S. Matthews; David A. Sonstegard, all of Ann Arbor, Mich., and Ian P. Murray, Hewitt, N.J., assignors to Howmedica, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 400,202, Sept. 24, 1973, abandoned. This application Feb. 6, 1974, Ser. No. 440,190

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **15 Claims**



1. A joint prosthesis suitable for a knee or elbow comprising a femoral component, a tibial component, a ball and socket connection coupling said components, said femoral component having a pair of spaced substantially parallel spherodically curved condyle runners straddling a hollow central housing, said condyle runners having a front lower portion with a relatively larger radius of curvature joining a rear upper portion having a relatively smaller radius of curvature as compared to said front lower portion, a slot in the bottom of said housing disposed substantially parallel to said runners, a femoral attaching means in the top of said femoral component, said tibial component having a base, tibial connecting means on the bottom of said base, a pair of spherodially curved spaced parallel concave sliding shoes on said base having upper surfaces substantially corresponding with the front lower portions of said condyle runners for intimately nesting them together when said joint is in the extended position, said ball and socket connection including a connecting rod rigidly fixed to and extending upwardly from said base of said tibial component, the ball of said ball and socket connection being disposed on the upper end of said connecting rod, said hollow central housing enclosing the socket portion of said ball and socket connection disposed for entry through its bottom, said ball portion being rotatably engaged in said socket portion, the smaller radius of curvature of said rear upper portions of said runners providing clearance between said shoes and said rear upper portions in flexed positions of said components, said connecting rod being disposed in said slot which permits said connecting rod to pivot through the angle of flexure of said joint, said connecting rod being narrower than said slot, said clearance between said shoes and said rear upper portions being limited to restrain the twisting and wobbling between interfering portions of said shoes and said runners whereby a natural degree of controlled joint twisting and wobbling is provided.

3,868,731

CLOSED CYCLE WASTE TREATMENT SYSTEM AND METHOD

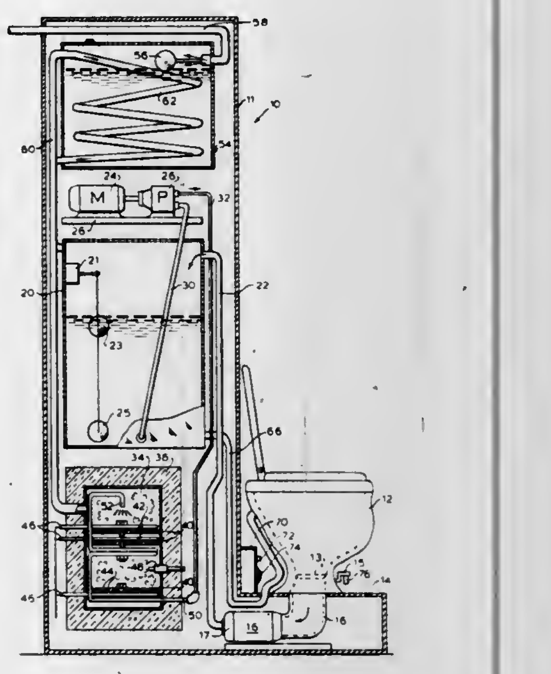
Oliver B. Stahl, 18 Garden Height Apts., Red Bud Rd., Calhoun, Ga. 30701, and Carmen J. Paris, 706 Briarwood Dr., Melbourne, Ill. 60458

Filed Nov. 15, 1972, Ser. No. 306,601

Int. Cl. E03d *11/02, 11/00;* **B60r** *16/04*

U.S. Cl. 4—10 **13 Claims**

1. A waste treatment system comprising:
means for supplying a waste carrying fluid, said supplying means adapted to be coupled to a waste collection facility;
means adapted to be coupled to said waste collection facility for receiving and comminuting fluid-carried waste therefrom;
means for vaporizing said comminuted fluid-carried waste; and



means for receiving and condensing said vaporized fluid-waste combination and returning constituents thereof to said supplying means.

3,868,732

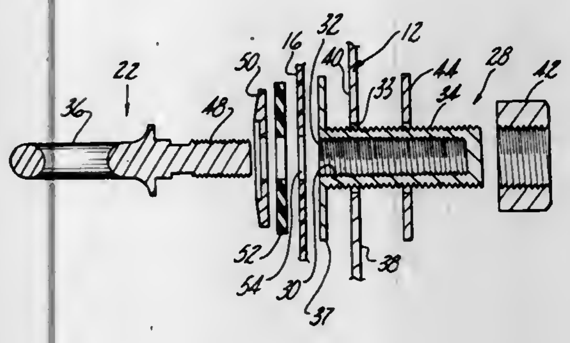
REMOVABLY MOUNTED SWIMMING POOL ACCESSORY ANCHORING DEVICE

John M. Engelhart, Clio, Mich., assignor to Quality Pool Supply Co., Clio, Mich.

Filed July 30, 1973, Ser. No. 383,818

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172 **9 Claims**



1. An anchoring device for a swimming pool, said swimming pool having a wall and a liner, said anchoring device comprising:
a sleeve having both internal and external threads, said sleeve being open to said internal threads at at least one end thereof;
a flange substantially perpendicular to the axis of said sleeve and secured to said sleeve at the open end thereof;
a nut threadably engageable with the external threads of said sleeve whereby to lock the wall of the swimming pool between said flange and said nut after said sleeve is inserted through said wall with the open end of said sleeve facing the interior of said swimming pool,
a shank having external threads insertable through a hole in said liner from the inside of said pool wherein the external threads of said shank threadably engage the internal threads of said sleeve to thereby removably mount said shank to said sleeve; and
attaching means secured to said shank.

3,868,733

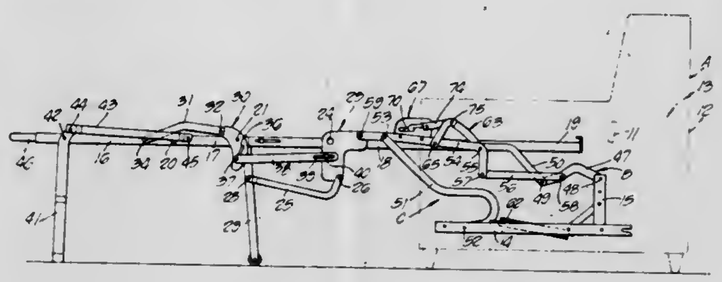
FOLDING SOFA-BED CONSTRUCTION WITH ADJUSTABLE HEAD SECTION

Melvin P. Spitz, Beverly Hills, and John W. Sproule, both of Laguna Hills, Calif., assignors to Bedline Mfg. Co., Whittier, Calif.

Filed Dec. 13, 1973, Ser. No. 424,475

Int. Cl. A47c *17/14, 17/40*

U.S. Cl. 5—13 **17 Claims**



1. In a bed frame structure:
a. a foldable frame with a supporting flexible fabric, said frame including a body section and a head section;
b. pivot means connecting the head section to the body section for swinging movements between a lowered position of use coplanar with the body section and a raised position of use extending at an angle to the body section;
c. an upstanding bracket plate fixedly mounted in association with the body section adjacent the pivot means, said plate having an elongate slot with a side portion providing a latching notch;
d. a linkage connection with the head section adjacent said pivot means including a link pivoted at one end for swinging movement and at its other end having a pin movable in said slot, and upon being positioned in said notch operating to latch the head section in said raised position of use; and
e. means operative in response to a raising movement of the head section for releasing said pin with respect to the notch and permitting subsequent lowering movement of the head section to said coplanar position of use.

3,868,734

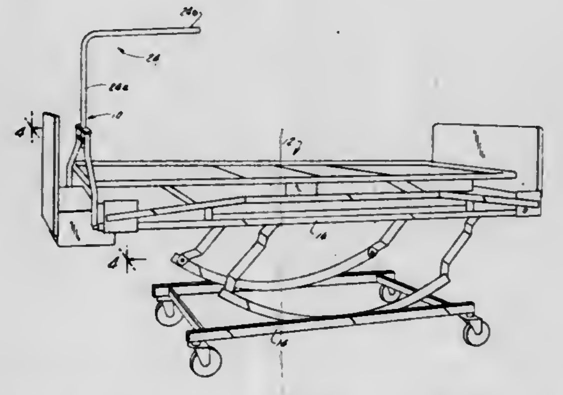
HOSPITAL EXERCISE BAR

Roland A. Benoit, and Edmond P. Guillot, both of Danielson, Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 263,356

Int. Cl. A47c *21/00;* **A61g** *7/10*

U.S. Cl. 5—317 B **9 Claims**



1. An exercise device which is adapted to be used with a bed frame having a pair of hollow tubular frame members at each side and spaced approximately the width of the bed member, comprising a bifurcated base portion whose lower ends spread to the width of the separate hollow tubular frame members and have a foot at each side which is telescopically engageable into the respective hollow tubular frame member at each side of the bed to sustain said base portion, an exercise bar support frame secured to the outer ends of the base member, and an excercise bar portion pivotally mounted on said base portion and extending upwardly and outwardly therefrom for location over the bed.

3,868,735

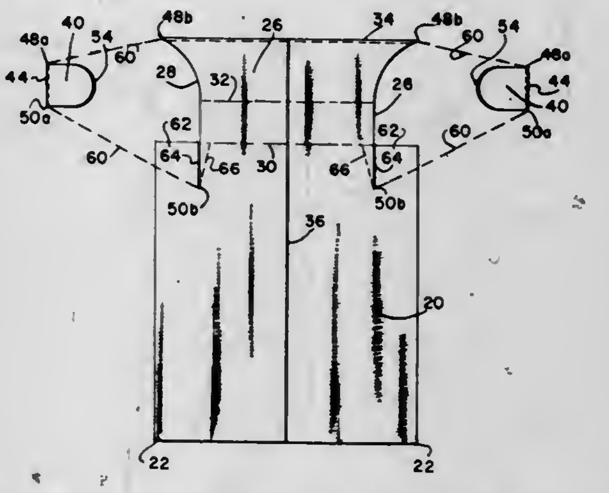
TOP-FITTED BED SHEET

Mary C. Ross, 421 E. 87th Pl., Chicago, Ill. 60616

Filed Nov. 6, 1973, Ser. No. 413,300

Int. Cl. A47g *9/00*

U.S. Cl. 5—334 C **1 Claim**



1. A top-fitted bed sheet comprising a single uniform, generally rectangular sheet of material having conventional rectangular corners at one end and a mattress-contoured, end-engaging portion at the other end, comprising essentially arcuate cut-out portions disposed along lateral sides of the sheet terminating in the adjacent corner thereof, side-pocket forming means sewn onto each of said arcuate cut-out portions for providing pockets formed to encompass and to contour with a mattress end portion, and a square-ended extension disposed along an adjacent portion to said arcuate cut-out portions for forming side cover flaps arranged along vertical sides of the mattress when fitted on the mattress, said sidecover flaps having their edges parallel to the sheet and being sewn to the sheet, elastic strips being inserted within a hem along a free side of the arcuate cut-out portions, the sheet material being formed in two parts joined by a hem formed along the mid-portion of the finished sheet, and an elastic strip being applied along the entire foot end of the sheet and the free ends of the cut-out portions.

3,868,736

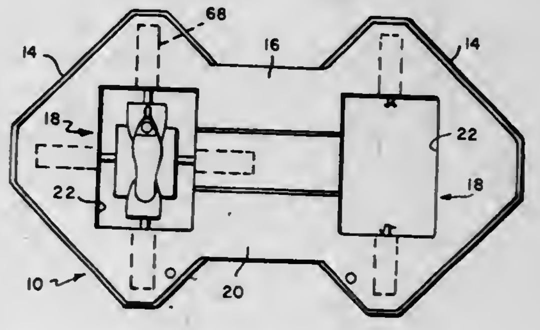
FOXING AND TOE CAP PRESS

Jaroslav F. Adamik, 30 Barden Ln., Warren, R.I. 08225

Filed June 13, 1973, Ser. No. 369,444

Int. Cl. A43d

U.S. Cl. 12—1 B **19 Claims**



1. Apparatus for applying foxing to the bottom part of footwear comprising a bottom support of smaller area than the bottom part so that the bottom part of an article of footwear placed on the bottom support projects beyond the support all around, longitudinally spaced end members situated at oposite ends of the support, transversely spaced side members situated at opposite sides of the support, said end members being constructed to embrace the ends of the bottom and having portions which extend from the ends toward the ball and

breast lines of the bottom and said side members being constructed to engage the sides of the bottom intermediate the ball and breast lines and having portions extending toward the toe and heel which overlap the portions of the end members extending toward the ball and breast lines, a top member situated above the support at the end comprising the forepart portion of the upper said top member being contoured to embrace the forepart of the upper at the toe, means for moving the end members into engagement with the ends of the bottom prior to moving the side members into engagement with the sides of the bottom and means for moving said top member into engagement with the forepart portion of the upper simultaneously with the movement of the side members into engagement with the sides of the bottom.

3,868,737
METHOD AND APPARATUS FOR COMBINED LASTING OF THE TOE, BALL AND SHANK AREAS OF SHOES

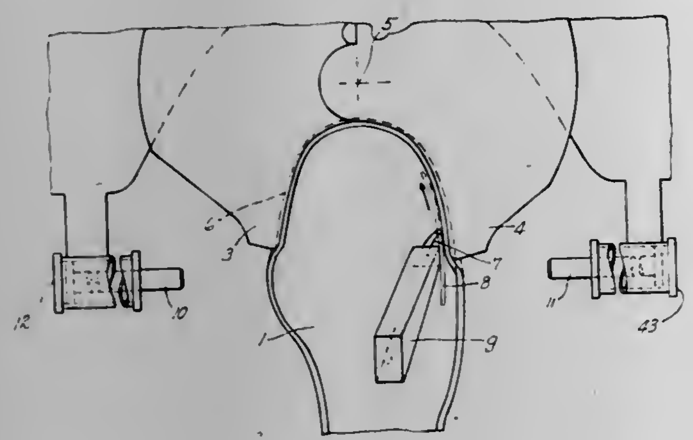
Rudi Fichtner, Rosbach, and Gerhard Lauckhardt, Frankfurt-/Main-Rodelheim, both of Germany, assignors to USM Corporation, Boston, Mass.

Filed Jan. 16, 1974, Ser. No. 433,673

Claims priority, application Germany, Jan. 22, 1973, 2303024

Int. Cl. A43d *21/00*

U.S. Cl. 12—12 **4 Claims**



1. Apparatus for the combined uninterrupted lasting of the toe, ball and shank areas of shoes including: means for applying a strip of cement to the bottom of a shoe around the toe end and extending heelward at least as far as the ball area of the shoe; means for folding and pressing limited portions of the shoe upper margin at opposite sides against the strip of cement near the heelward ends of the strip; means for progressively lasting the upper margin heelward from said limited portions; and lasting the forepart of the shoe as soon as the progressive lasting means has moved to non-interferring locations.

3,868,738
SELF-PROPELLED AUTOMATIC BOWLING LANE MAINTENANCE MACHINE

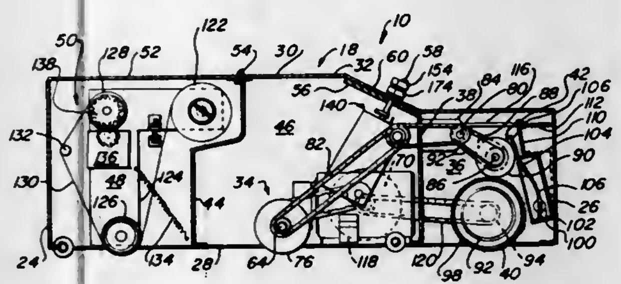
Daniel R. Horst, Erie, and Donald E. Ingermann, Arvada, both of Colo., assignors to Western Sales and Supply Co., Denver, Colo.

Filed Aug. 27, 1973, Ser. No. 392,026

Int. Cl. A47l *11/282*

U.S. Cl. 15—4 **11 Claims**

1. In combination in an automatic bowling lane maintenance machine: a carriage; a reversible drive mechanism housed within said carriage including a drive shaft and surface-engaging drive wheels mounted on said shaft operative to advance same along a predetermined course in a forward and reverse direction; lane-buffing means including a roller and drive therefor, said roller being journalled for rotation in lane-contacting relation about a horizontal axis extending transversely of the direction of machine travel; lane-dressing means detachably connectable to the lane buffing roller including a reservoir for the storage of a lane-dressing fluid and fluid transfer means, said reservoir being mounted adjacent the lane buffing roller for movement relative thereto between an extended and a retracted position, and said fluid transfer means being operative in the extended position of said reservoir to transfer fluid therefrom to the surface of said lane-buffing roller; cam-controlled means connected to the reservoir operative upon actuation and deactuation to shift same between its extended and retracted positions; cam means connected to the cam-controlled means operative to actuate and deactuate same; power transfer means connected to the carriage drive mechanism; and, manually adjustable means operative upon actuation to vary the distance over the forward and reverse travel of the machine during which the dressing is applied to the lane surface, said means comprising a yieldable friction clutch operatively interconnecting the power transfer means and cam means to define an adjustable driving coupling therebetween.



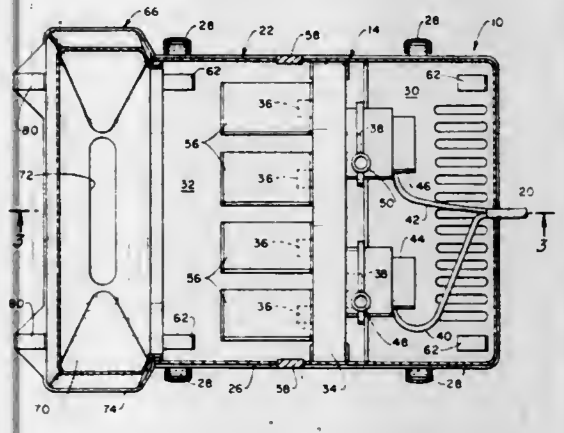
3,868,739
POOL VACUUM APPARATUS

Robert W. Hargrave, 7727 Lubao, Canoga Park, Calif. 91306

Filed Feb. 5, 1973, Ser. No. 329,302

Int. Cl. E04h *3/20*

U.S. Cl. 15—1.7 **7 Claims**



1. A pool vacuum apparatus comprising:

a casing being divided into a filtration compartment and a discharge compartment;

a completely enclosed hollow housing having an inlet and an outlet providing access into an interior chamber, said housing separating said discharge compartment and said filtration compartment;

a filtration means located within said filtration compartment and connected to said housing, said filtration means attached to said inlet whereby water to enter said interior chamber must pass through said filtration means;

pump means attached to said outlet of said housing and receives only water from said interior chamber, said pump means located within said discharge compartment, a discharge means connected to said pump means; and

a vacuum head attached to said casing and located adjacent said filtration means, said vacuum head adapted to permit entry of water and foreign material and guide such towards said filtration means whereby the water is conducted through said filtration means and into said housing and through said pump means and into said discharge means with the foreign material remaining exteriorly of, or caught within, said filtration means.

3,868,740
VERTICAL, FREELY-SUSPENDED ROTARY BRUSHES FOR AUTOMOBILE/VEHICLE WASHING MACHINES

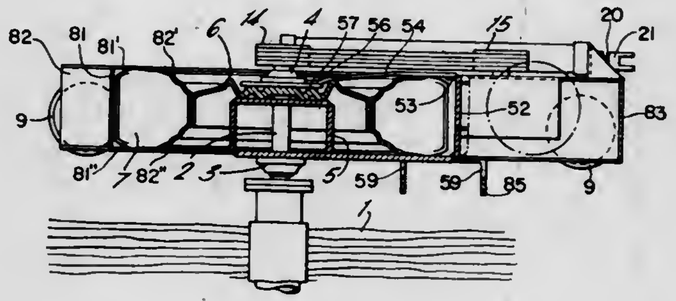
Aanen Brovig, Vagsbygd, Norway, assignor to Aa. Brovig A.S., Kristiansand, Norway

Filed June 4, 1973, Ser. No. 366,614

Claims priority, application Norway, June 13, 1972, 2094/72

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **6 Claims**



1. Apparatus for supporting a rotary brush of an automobile washing machine having a fixed frame comprising a sub-frame supported from said fixed frame, a circular plate, a shaft extending through the center of said circular plate and mounted for rotation with respect to said plate, a brush mounted to said shaft, means for rotating said shaft and brush, a flexible air-filled ring secured to said circular plate around the periphery thereof, said air-filled ring being supported by said sub-frame, and the periphery of said flexible air-filled ring being confined against substantial movement with respect to said sub-frame, whereby said brush is supported by said air-filled ring and movement other than said rotary movement when imparted to said brush during operation is transmitted to said air-filled ring and substantially absorbed thereby through flexing of said ring.

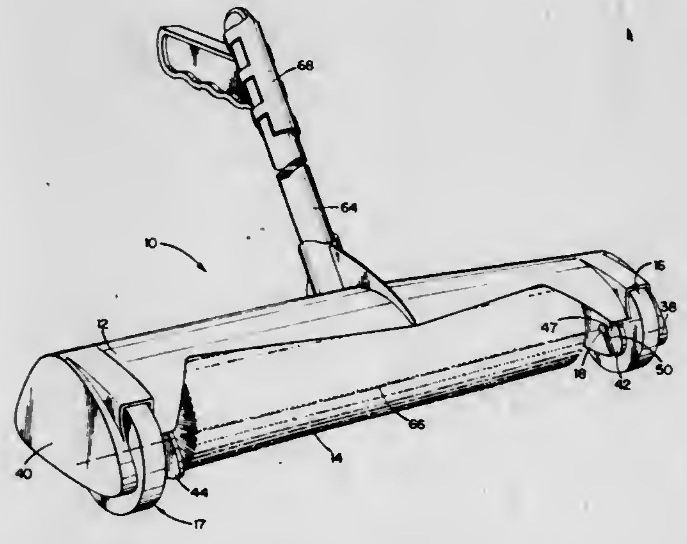
3,868,741
FRICTION DRIVEN ROTARY CLEANING APPARATUS

John H. Coult, 901 N. President St., Wheaton, Ill. 60187

Filed Feb. 23, 1971, Ser. No. 117,937

Int. Cl. E01h *1/05*

U.S. Cl. 15—79 **6 Claims**



1. An apparatus for cleaning dirt and debris from patios, sidewalks, and the like, comprising:

a cylindrical brush having bristles extending from a central shaft;

a pair of wheels, one wheel being disposed at each end of said brush, each of said wheels being mounted on a stub axle;

a one-piece injection-molded plastic housing means for rotatably supporting both ends of said brush shaft and for supporting said axle means such that said wheels turn on a common wheel axis;

transmission means coupling at least one of said wheels and said brush shaft such that wheel rotation causes said brush to rotate; and

a handle joined to said housing means such that said handle and said housing means pivot together about said wheel axis;

the improvement wherein said housing means includes a longitudinal body portion partially surrounding said brush to protect said brush and shield the user from flying debris, said body portion having substantial curvature in planes transverse to said brush shaft to provide structural rigidity for said housing means, said housing means having extending from said body portion a pair of integral end walls and substantially parallel therewith and between said end walls a pair of interior walls integral with said body portion, said end walls and said interior walls supporting for rotation both ends of said brush shaft and said stub axles, said interior walls acting to partially shield said wheels and said transmission means from dust and debris thrown by said brush, said interior walls including open-ended slot means for receiving in a snap-in fit at least one end of each of said stub axles and both ends of said brush shaft.

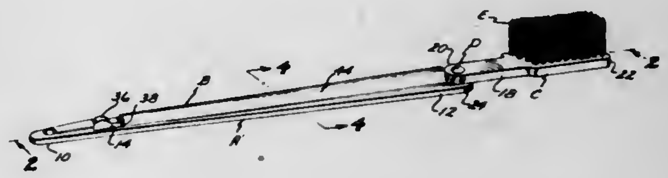
3,868,742
MANUALLY ADJUSTABLE TOOTH BRUSH

I. Edward Brenner, 800 W. Amerige Ave., Fullerton, Calif. 92632

Filed June 5, 1972, Ser. No. 259,443

Int. Cl. A46b *15/00, 9/10*

U.S. Cl. 15—172 **2 Claims**



1. A manually adjustable tooth brush that includes:

a. an elongate one piece rigid handle having first and second end portions, said handle having a first recess therein adjacent said first end portion, and a bore extending longitudinally through said handle from said first recess to said second end portion;

b. an elongate brush assembly that includes an elongate rigid member having first and second ends, a plurality of spaced bristles that extend outwardly from said member adjacent said second end, and said member at said first end defining a transverse semi-circular surface in which a plurality of circumferentially spaced cavities are defined;

c. first means for so pivotally supporting said brush assembly from said second end portion of said handle that said cavities may be successively axially aligned with said bore;

d. a rigid rod having first and second ends, said rod slidably mounted in said bore; and

e. an elongate rigid locking member pivotally supported on said first end of said rod and at least partially disposable in said recess when said locking member is in a first position, with said pivotal locking member when in said first position being axially aligned with said rod and snuggly engaging said recess to maintain said second end of said rod in fixed engagement with a selected one of said cavities to maintain said brush assembly at one of a plurality of possible positions relative to said handle, said pivotal locking member when in a second position in which it is angularly disposed relative to said rod being longitudinally slidable relative to said recess to the extent that said rod may be moved longitudinally relative to said handle towards said first end portion of said handle to permit disengagement of said second end of said rod from one of said cavities, and said brush assembly thereafter being pivotally movable on said second end portion of said handle to a desired position at which it may be locked relative to said handle by moving said pivotal locking member to said first position to in turn move said rod longitudinally towards said second end portion of said handle to dispose said second end of said rod in one of said cavities.

3,868,743
WIPER ASSEMBLY FOR A MOTOR DRIVEN VEHICLES

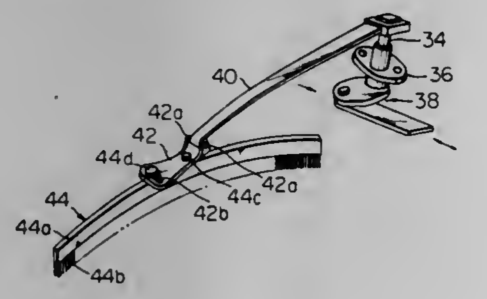
Tadao Kakizaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 16, 1973, Ser. No. 351,446

Claims priority, application Japan, Apr. 19, 1972, 47-46449

Int. Cl. B60s *1/40*

U.S. Cl. 15—250.23 **1 Claim**



1. A wiper assembly for wiping a surface of circular convex shape, comprising:

an annular member with an inner diameter greater than the peripheral diameter of the surface and adapted to be disposed concentric with the surface;

a wiper arm, means oscillatably moving said wiper arm between two limiting positions on the inner perimeter of said annular member;

a resilient wiper blade provided with two pins spaced longitudinally thereof; and

a holder spring hinge connected to said wiper arm and having formed therein a hole and a slot, said holder receiving said two pins in the hole and slot, respectively, for permitting limited rotation of said resilient wiper blade with respect to said holder and biasing said resilient blade to the surface.

3,868,744
CLEANING APPARATUS FOR HEATED PRESSURE ROLL FUSER

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 221,569, Jan. 28, 1972, abandoned. This application Nov. 24, 1972, Ser. No. 309,543

Int. Cl. G03g *15/12*

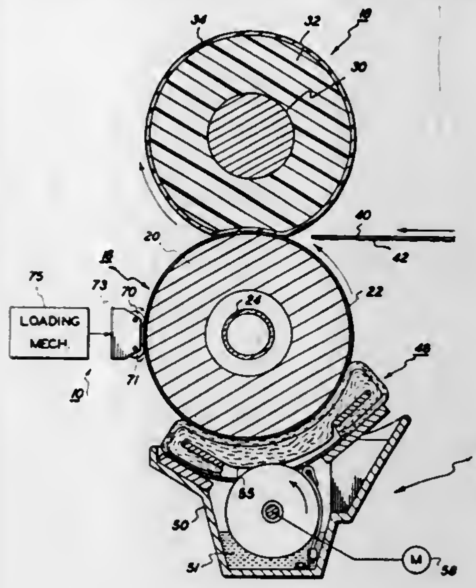
U.S. Cl. 15—256.52 **10 Claims**

1. In a fusing system for fusing toner images in an electrostatic copying machine in which a relatively hard heated roll surface is used to fix the toner images to copy sheet material, an improved cleaning apparatus for cleaning toner offset onto the heated roll surface comprising

a carriage means supporting at least one cleaning roller member in contact with the heated roll surface to be cleaned,

pressure loading means for urging said carriage means towards the heated roll surface at a predetermined pressure,

said cleaning roller being exteriorly coated with toner layer covered with a silicone oil film to create sufficient surface energy to collect toner from the heated roll surface,



said cleaning roller member further including a core member having a soft deformable thermally insulating cover means to conform to the surface of the heated roll to effect uniform cleaning thereof.

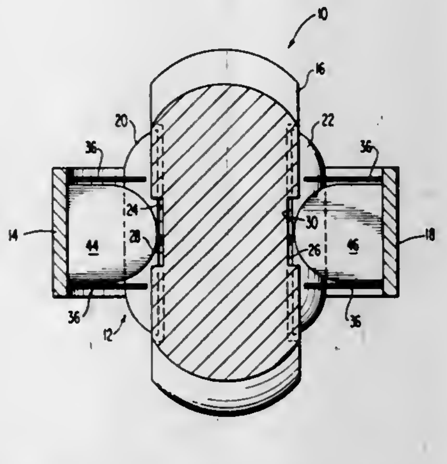
3,868,745
WHEELED CART

John P. Jamison, Rt. 1, Box 315, Mooresboro, N.C. 28114

Filed Apr. 8, 1974, Ser. No. 458,815

Int. Cl. B60b *33/00*

U.S. Cl. 16—41 **9 Claims**



1. An industrial truck caster having an increased tendency to be free from binding by foreign material which may be picked up and wrapped thereabout as the caster rolls along a floor, comprising:

an axle;

a wheel rotatably mounted about said axle;

a yoke, said yoke including a first bracket having a central portion bowed outward away from said wheel, a first flange portion including an aperture for receiving one end of said axle, and a second flange portion attached to the other end of said bowed central portion including means for attaching said first bracket to the industrial truck, said yoke also including a second bracket substantially parallel to said first bracket having a central portion bowed away from said wheel, a first flange portion connected to one end of said bowed central portion for receiving the other end of said axle, and a second flange portion attached to the other end of said bowed central portion including means for attaching said second bracket to the industrial truck;

fastening means for connecting said second flange portion of said first bracket to said second flange portion of said second bracket without interferring with the rotation of said wheel; and

cutting means mounted between said wheel and said bowed portions of said first and second brackets for cutting the foreign material picked up by the caster.

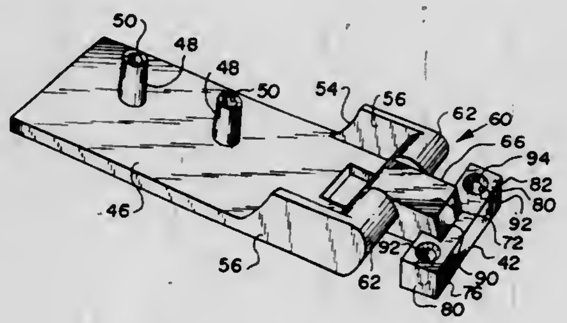
3,868,746
CAST HINGE AND METHOD OF FORMING

Lew Dobrjanskyj, Flushing; Ruediger Einhorn, Katonah, both of N.Y.; Frank D. Flagg, Westport, Conn.; Lee Richard Chasen, Port Chester, and Karl Hannes, White Plains, both of N.Y., assignors to Coats & Clark, Inc., New York, N.Y.

Filed May 15, 1972, Ser. No. 252,996

Int. Cl. E05d *1/100*

U.S. Cl. 16—128 **13 Claims**



1. In a hinge of the type including a hinge body adapted to be connected to a first element, a hinge tab adapted to be connected to a second element, and pivot means between said hinge body and hinge tab to permit swinging of said first and second elements relative to each other between opened and closed positions; the improvement wherein said hinge body has a first substantially flat surface adapted to face away from said first element, a second surface opposite said first surface and adapted to face towards said first element, and a cut out notched section in one end portion of said hinge body extending through said first surface, said hinge tab having a third substantially flat surface adapted to face away from said second element and a fourth surface opposite said third surface and adapted to face toward said second element, said third surface having a shape substantially the same as said cut out section, first pivot means in said hinge body on opposite sides of said cut out section, said hinge tab having second pivot means positioned to engage said first pivot means to allow said hinge body to swing relative to said hinge tab, with said third surface being substantially flush with said first surface and substantially filling said cut out section in the closed position of said elements, said second surface including first means for fastening said hinge body to said first element whereby said first surface has a continuous surface that is, absent of fastening means, said hinge tab further comprising a pair of legs on said fourth surface that extend beyond alignment with said third surface, said pair of legs extending from said hinge tab in directions parallel to the pivot axis formed by said first and second pivot means and being spaced from said end portion of said hinge body a further distance than said first and second pivot means, said legs extending a distance less than the overlying portion of said first surface in said closed position, second means for fastening said legs to said second element, whereby said legs and said second fastening means are aligned with and covered by said first surface in said closed position, flange means on said hinge body extending from the edges of said first surface substantially into alignment with said fourth surface in said closed position, thereby hiding said legs from view in said closed position.

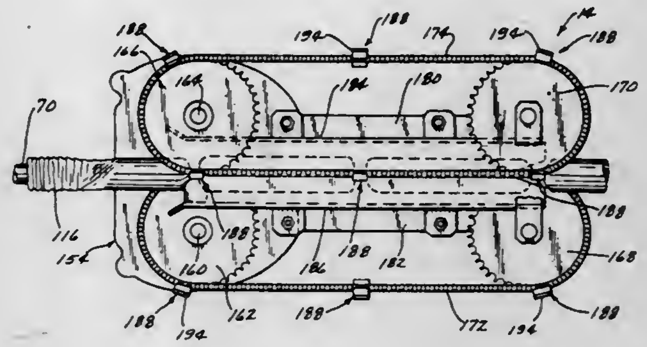
3,868,747
APPARATUS FOR ENCASING A PRODUCT

Ray T. Townsend, and Donald L. Beasley, both of Des Moines, Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa

Filed Oct. 2, 1972, Ser. No. 294,215

Int. Cl. A22c *11/00*

U.S. Cl. 17—34 **5 Claims**



1. Linking apparatus for use with a product encasing machine, said machine being adapted to expel an elongated casing filled with plastic product and being adapted to rotate said casing about its longitudinal axis; said linking apparatus comprising,

a support;

first and second sets of drive wheels rotatably mounted on said support;

means for rotating said drive wheels;

first and second loop members each comprising a chain trained around said first and second sets of drive wheels respectively, said wheels being adapted to move said chains past a linking station adjacent said casing;

a plurality of pinching members detachably mounted on each of said chains and having pinching surfaces thereon carried around said first and second sets of drive wheels, each of said pinching surfaces on said first loop member being positioned for cooperating with one of said pinching surfaces on said second loop member while passing said linking station so as to collapse said casing therebetween and reduce its cross sectional size,

said chains having a plurality of pairs of pin members extending therefrom;

each of said pinching members comprising a base portion having a pair of openings formed therein and a wall member extending upwardly from said base portion and having said pinching surface formed therein; said pair of openings receiving one of said pairs of pins on said chains; and

a resilient attachment means extending from said base portion for detachably partially embracing said chain to maintain said pinching member on said chain whereby each of said pinching members are independently quickly removable from said loop members.

3,868,748
TENDON GRIPPING AND RELEASE ASSEMBLY

William F. Kelly, 100 Bellaire Dr., New Orleans, La. 70124

Filed June 27, 1973, Ser. No. 374,128

Int. Cl. F16g *11/04*

U.S. Cl. 24—115 M **13 Claims**

1. A gripping and release assembly for steel tendons or the like, including:

a. a casing having a bore extending therethrough,

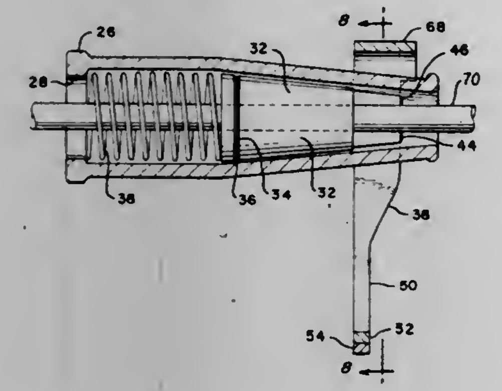
b. wedge means positioned within the bore of said casing, through which the tendon passes,

c. means on said wedge means for effecting gripping engagement with the tendon upon longitudinal movement of said wedge means in one direction within said casing,

d. spring means within said casing for urging said wedge means into gripping engagement within the tendon,

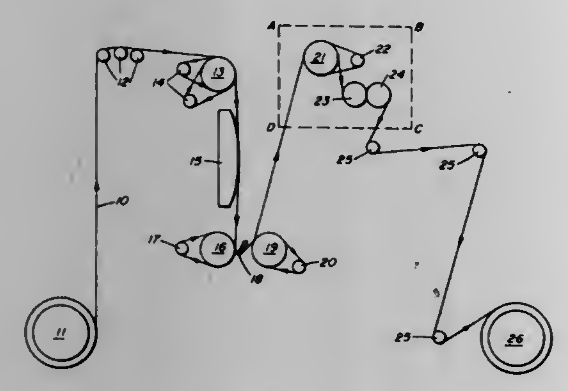
e. release means attached to, and movable transversely with respect to, said casing,

f. a portion of said release means being engageable with a terminal of said wedge means, and



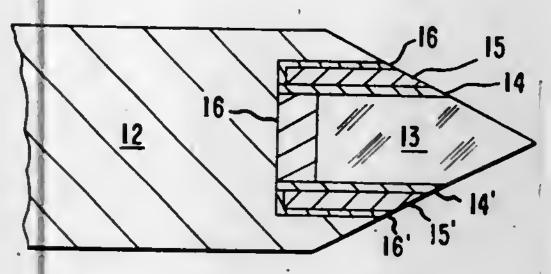
g. means on said release means for selectively forcing longitudinal movement of said wedge means in a direction to release the grip on the tendon upon transverse movement of said release means in one direction and to permit gripping engagement of said wedge means with the tendon upon transverse movement of said release means in the opposite direction.

3,868,749
METHOD OF TEXTURIZING THERMOPLASTIC YARN
Alan Clifford Cate, North Madison, Ohio, assignor to American Cyanamid Co., Stamford, Conn.
Filed Feb. 6, 1974, Ser. No. 428,173
Int. Cl. D02g *1/14*
U.S. Cl. 28—72.15 **8 Claims**



1. A process for texturizing untwisted yarn consisting of continuous thermoplastic filaments which comprises: heating the yarn to a temperature above its glass transition temperature but below its sticking temperature; drawing the yarn at such temperature over a sharp edge at an acute angle to induce a strain along one side of each filament length making up said yarn; cooling the yarn thus edge-drawn so as to set the strain and relax the yarn; reheating the yarn to a temperature sufficient to cause crimping while maintaining sufficient tension on the yarn to prevent crimp development from occurring during said reheating, said reheating temperature being below the edge-drawing temperature; immediately releasing the tension on the yarn when it is at the crimping temperature so as to cause the yarn to balloon and the individual filament to retract and develop crimp independently of and thereafter advancing the yarn under sufficient tension to remove temporarily the crimp thus developed.

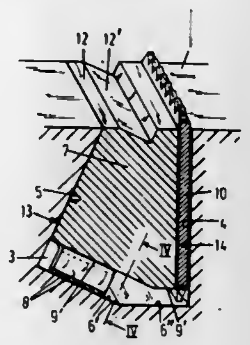
3,868,750
METHOD OF JOINING DIAMOND TO METAL
George S. Ellis, Newark; Thomas E. Kimble, New Castle, and James R. Sawers, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 21, 1974, Ser. No. 453,342
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 R **18 Claims**



13. An article of manufacture comprising a diamond, an alloy selected from the group consisting of gold-tantalum alloys containing from about 1 to about 25% by weight of tantalum, and gold-niobium alloys containing from about 1 to about 10% by weight of niobium; at least one metal blank adhered to said diamond by said alloy; a bonding medium; and a metal shank adhered to said metal blank by said bonding medium.

18. The article of claim 13 wherein at least a portion of said diamond is exposed to form a cutting edge.

3,868,751
CYLINDRICAL ROTOR FOR USE IN A RASPING MACHINE
Johannes Jacobus Holthuis, Veendam, Netherlands, assignor to Nederlandese Industrie voor Baggerwerktuigen Nivoba N.V., Veendam, Netherlands
Filed Apr. 10, 1973, Ser. No. 349,769
Claims priority, application Netherlands, Apr. 14, 1972, 7205104
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R **3 Claims**



1. A cutter assembly for use in rasping machines comprising, in combination:

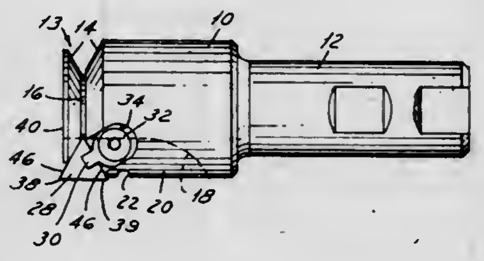
a cylindrical rotor body adapted to be rotated about its longitudinal axis and having a plurality of longitudinally extending grooves therein, each groove defining a radially extending side face, a supporting face spaced from said face and extending in radially outwardly converging relation toward said side face, and a bottom face having a seating face portion thereof disposed at right angles to said supporting face;

a cutting blade in each recess engaging a corresponding side face and projecting radially outwardly from its groove to perform a cutting action as said body is rotated about its longitudinal axis;

a locking rod associated with each cutting blade, each locking rod having opposite side surfaces disposed at that convergent angle defined between the side and supporting faces of each groove and each locking rod being dimensioned to fit within its groove with one side surface in face-to-face contact with said cutting blade and the other side surface in face-to-face contact with said supporting surface, each said locking rod also having a bottom surface having a portion disposed in spaced, parallel relation to said seating face portion when its opposite side surfaces are engaged with said cutter blade and said supporting surface so that each locking rod is radially inwardly slidable along its supporting face to retreat from and disengage its cutting blade to permit movement of the cutting blade within the gorrve; and

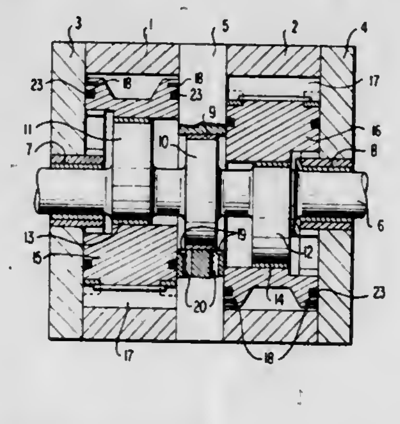
a flat, undulated spring seated within each groove between said seating face portion and said portion of the bottom surface of the locking rod parallel thereto normally urging each said locking rod in locking engagement with its cutting blade.

3,868,752
CUTTING TOOL
David Alan Hopkins, Detroit, Mich., assignor to The Valeron Corporation, Detroit, Mich.
Filed Nov. 16, 1973, Ser. No. 416,446
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 A **10 Claims**



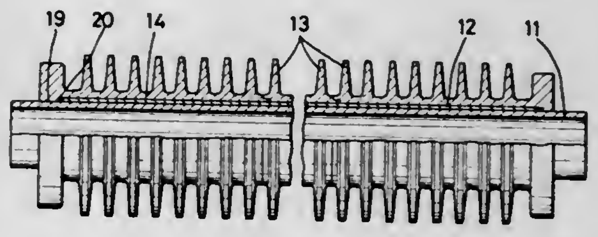
1. A cutting tool for indexable polygonal inserts comprising: a shank member having an axis, a circumferential groove at one end of said shank member, said groove having two locating surfaces engaging sides of said insert, and a bottom seat providing means to locate an insert with its cutting face in a negative radial rake plane and its side engagement in and delineating a radial plane containing said axis divergent from said seat in a radially outward direction, and means for securing a cutting insert in operating engagement on said seat.

3,868,753
METHOD FOR ASSEMBLY OF A ROTARY PISTON INTERNAL COMBUSTION ENGINE
Willi Springer, Faurndau, and Walter Bellmann, Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Jan. 30, 1973, Ser. No. 327,950
Claims priority, application Germany, Jan. 31, 1972, 2204341
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 R **5 Claims**



1. A method for the assembly of a rotary piston internal combustion engine which comprises a housing composed of two casing parts, of two end parts and of an undivided intermediate part, and two pistons which rotate on two eccentrics of an undivided eccentric shaft which includes a bearing pin intermediate the two eccentrics that is adapted to be supported in a bearing of the undivided intermediate part, the inner diameter of the bearing being larger than the diameter of an eccentric and the width of the intermediate parts being larger than the intermediate spacing between the bearing pin and each of the two eccentrics, comprising the steps of causing relative movement between the intermediate part and the eccentric shaft such that the intermediate part with inserted bearing is in effect moved axially to the eccentric shaft over an eccentric thereof until it abuts at the side of the bearing pin facing the intermediate part over a part of the circumference thereof with an area of the circumference thereof not abutting the bearing pin lyihg within an area over the eccentric, thereupon causing relative pivotal movement between the intermediate part and the eccentric shaft in such a manner that the intermediate part, with the area of its circumference not abutting at the bearing pin, comes to lie over the bearing pin and no longer lies within the area over the eccentric, thereupon causing radial displacement between the intermediate part and the eccentric shaft in such a manner that the intermediate part is displaced in effect radially with a simultaneous back pivoting until the positions of the center longitudinal axes of the bearing and of the bearing pin differ only slightly from one another, and thereafter completing the installation by causing relative movement between the intermediate part and the eccentric shaft in such a manner that the intermediate part is displaced in effect over the bearing pin under simultaneous complete pivoting back into its original position.

3,868,754
METHOD OF MANUFACTURING A FINNED-TUBE HEAT EXCHANGER
Hatsuo Kawano, No. 3330, Kagata, Kawachinagano-shi, Osaka-fu, Japan
Filed Dec. 14, 1973, Ser. No. 424,722
Claims priority, application Japan, Sept. 21, 1973, 48-10763
Int. Cl. B21d *53/02;* **B23p** *15/26*
U.S. Cl. 29—157.3 A **2 Claims**



1. A method for manufacturing a finned tube as a heat exchanger comprising the steps of: providing as an inner tube a tube which is made of steel; covering said inner tube with a thin-walled pipe made of aluminum having the properties of softness, high heating expansion coefficient and good thermal conductivity; fitting thereonto a cylindrical outer tube on which fins are arranged, both the cylindrical outer tube and the fins being made of cast iron; and internally expanding the inner tube by cold working so as to adhesively contact the thin-walled pipe with the inner tube which in turn then contacts the outer cylindrical member.

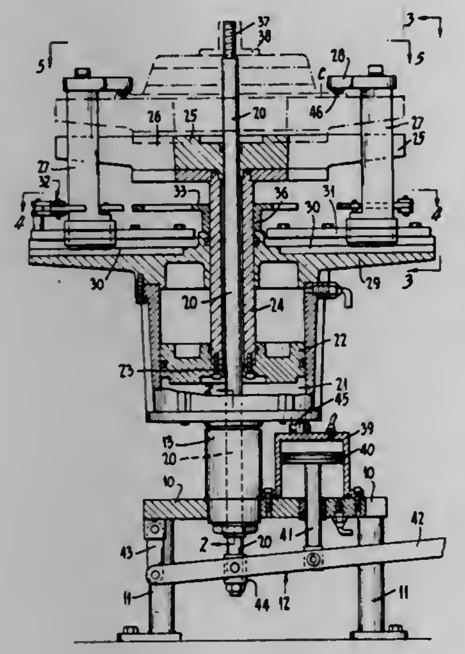
3,868,755
MACHINE FOR RECONDITIONING AND SETTING DIAPHRAGM TYPE AND LEVER TYPE CLUTCHES

Grigore Tongurian, 1/35 Pearson St., Gladesville, New South Wales, Australia

Filed Aug. 27, 1973, Ser. No. 391,123

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 J **2 Claims**



1. A machine for reconditioning and setting clutches comprising
- a base,
- a fluid pressure cylinder rotatably mounted on said base,
- a top cover secured to said cylinder,
- a piston mounted in said cylinder,
- a sleeve extending upwardly from the piston through said top cover for reciprocation between upper and lower positions in response to changes in the pressure within said cylinder,
- a shaft extending through the piston and sleeve,
- a table for supporting a clutch, said table being rotatably mounted with respect to said shaft and supported by said sleeve,
- a clamping member on said shaft above said top cover for holding a clutch between said clamping member and table when said table is in its upper position,
- clamping columns mounted on said top cover for radial sliding movement on said top cover in slots in said table,
- a spider having a plurality of arms and rotatably mounted on said sleeve beneath said table,
- linkage means connecting each spider arm to one of said clamping columns to radially reciprocate said columns as said spider rotates, and
- means for rotating said spider.

3,868,756
METHOD FOR PRODUCING IDENTICAL FLAT CARRIERS HAVING REPRESENTATIONS THEREON

Bruno Zumbach, Orpund, Switzerland, assignor to Zumbach Electronic-Automatic, Berne, Switzerland

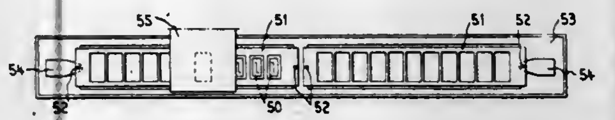
Filed Aug. 27, 1971, Ser. No. 176,767

Claims priority, application Germany, Aug. 31, 1970, 2043121

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **12 Claims**

1. A method of producing identical flat carriers having each an identical representation thereon, comprising providing reproducing means and a reproduction method wherein a sheet of flat material remains in a predetermined position fixed to supporting means while a number of representations are applied to said flat sheet each in a predetermined position with reference to reference marks common to all representations applied to the sheet by means of said reproducing means controlled from position to position according to a predetermined position control, and a separating method for cutting out of separate flat carriers having each a representation wherein a sheet of flat material previously prepared and carrying representations is applied to a support in a predetermined position relatively to said reference marks and to a cutting tool respectively, whereafter all positions adjusted during the reproduction method are again adjusted one after the other according to a predetermined position control in order to bring each of said representations into a position relatively to the cutting tool for cutting out a flat carrier having a representation.



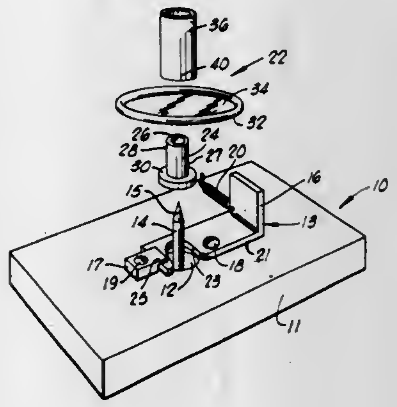
3,868,757
APPARATUS FOR ASSEMBLING AND DISASSEMBLING A DISPOSABLE EXTERNAL CATHETER

Toma O. Abbo, 1 Meadow Brook Dr., Oklahoma City, Okla. 72205

Filed July 26, 1973, Ser. No. 382,732

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 H **4 Claims**



1. An apparatus for assembling and disassembling a disposable external catheter used for tapping urinary discharge wherein the catheter includes a hollow cylindrical connector having an annular flange on the lower portion thereof, a prophylactic having the closed end punctured, and a drain hose, the upper portion of said connector and the closed end of said prophylactic being frictionally secured to one end of said drain hose which is comprised of:
- a base;
- an upstanding pointed post having the lower end secured to said base;
- a recess in said base having a diameter at least as large as the annular flange of said connector for receiving said annular flange; and
- a locking device secured to said base adjacent to said recess so that the annular flange of said connector can be held in a fixed position inside said recess by said locking device.

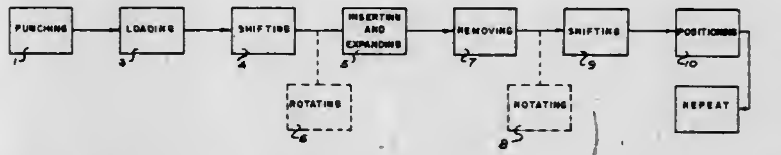
3,868,758
METHOD FOR CELL PLATE ASSEMBLY

Lawrance W. Wightman, St. Louis, and Howard C. Gebhart, Chesterfield, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 26, 1973, Ser. No. 327,018

Int. Cl. B23p *11/00*

U.S. Cl. 29—430 **10 Claims**



1. A method for automated cell plate assembly comprising the steps of:
- punching a plurality of plates including punching at least one small diameter opening and one large diameter opening in individual ones of said plate plurality;
- arranging said plates on a conveyor means so that alternate successive plates are rotated 180° with respect to one another;
- feeding said plates into one of at least two fixtures, each of said fixtures including a multiplicity of receptacle means for receiving and holding said plates, at least two of said successive plates forming a pair, said individual pairs being positioned in one of said receptacle means, successive ones of said pairs being selectively spaced apart by said fixture;
- coordinating said punching step with said two fixtures such that a first fixture is loaded with plates from said punching, arranging and feeding steps, while said second fixture has the following steps accomplished on it;
  - inserting at least one pair of tubular structures through said opening pair in said plates, expanding said tubular structures so as to mount alternate plates to alternate ones of said tubular structures, thereby forming an integral cell unit; and
  - removing said cell unit from said fixture.

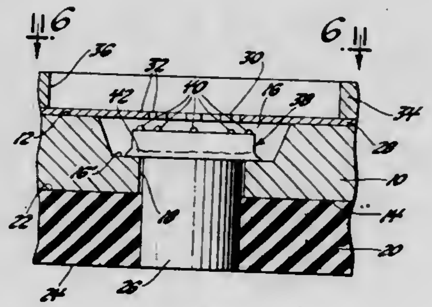
3,868,759
MAGNETIC PRE-ALIGNMENT OF SEMICONDUCTOR DEVICE CHIPS FOR BONDING

Ronald J. Hartleroad, Twelve Mile, and James P. Grabowski, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1973, Ser. No. 414,272

Int. Cl. B23q *3/18*

U.S. Cl. 29—464 **3 Claims**



3. A method of prealigning integrally leaded semiconductor device chips with conductive lead frame structures to promote a consistent precise subsequent engagement therebetween for bonding, said method comprising the steps of:
- placing a semiconductor device chip having a plurality of soft ferromagnetic integral leads on one face thereof into each of a plurality of recesses in one surface of a template, with said chip face oriented upwardly;
- positioning a conductive lead frame structure having sets of soft ferromagnetic fingers corresponding to the integral chip leads on said one template surface so that a set of lead frame fingers overlie each of the template recesses;
- placing a magnetic plate contiguous and coextensive with the backside of said template, said plate being a permanent magnet with the major faces of the plate serving as opposite poles of the magnet;
- holding said template, said lead frame, and said magnetic plate together in mutual registration to form a subassembly;
- vibrating said subassembly for a short period of time so that all of said chips are automatically prealigned, with the integral chip leads being in close proximity with their corresponding lead frame fingers; and
- transporting said subassembly to a bonding station without disturbing said prealignment, said prealignment promoting a consistent precision engagement after the chips have been magnetically transferred and oriented into engagement with the lead frame fingers for bonding thereto.

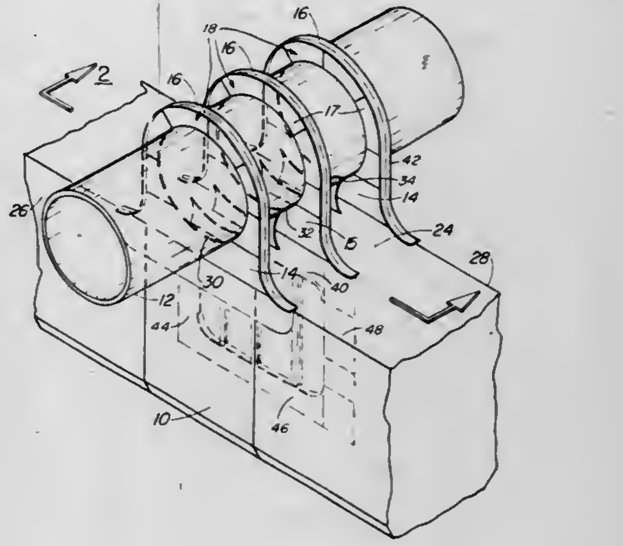
3,868,760
METHOD OF ORTHOGONALLY CONNECTING LONG STRUCTURAL MEMBERS OF CIRCULAR AND RECTANGULAR CROSS-SECTION

Mehmet D. Korkut, 3848 Veterans Hwy., New Orleans, La. 70002

Filed Sept. 7, 1973, Ser. No. 395,211

Int. Cl. B23k

U.S. Cl. 29—470 **3 Claims**

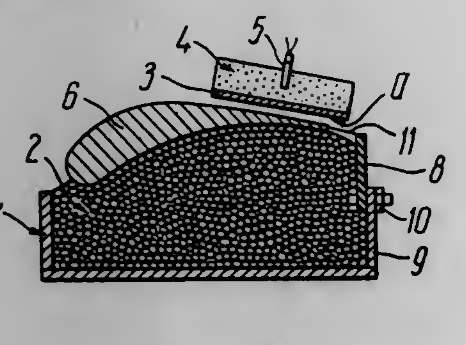


1. The method of orthogonally connecting two longitudinal hollow structural members comprising the steps of:
- a. framing one of said members with interior orthogonally connected trusses, said framing extending longitudinally and transversely therein for the length and width of a connection, said trusses being secured in said one member as a part thereof;
- b. Fastening, respectively, external flanges to said longitudinally extending framing to project parallel and outwardly from said one member in transversely spaced apart alignment, said flanges respectively defining center indentations having a common axis transverse said one member, said center indentations being adapted to conform to the external cross-sectional shape of the other of said members;
- c. Placing said other member in said indentations with its place of connection extending therein, thereby placing said other member in normal or orthogonal juxtaposition with said one member; and
- d. Assembling and fixing peripheral segments together and to said respective external flanges to externally frame said other member and connect it with said one member orthogonally or at right angles therewith.

3,868,761
METHOD OF CLADDING OF METAL PRODUCTS

Jury Ignatievich Apalikov, prospekt Lenina, 96, kv. 44; Leonid Leonidovich Bankovsky, ulitsa Isakova, 141, kv. 55, both of Barnaul; Alexandr Shmulievich Gelman, 3-ya Tverskaya-Yamskaya, 42/8, kv. 46, Moscow; Jury Alexeevich Konon, ulitsa Novaya, 6, kv. 41, Barnaul; Leonid Borisovich Pervukhin, ulitsa Jurina, 116, kv. 40, Barnaul; Boris Davydovich Tsemakhovich, prospekt Lenina, 69, kv. 41, Barnaul; Grigory Abramovich Bronovsky, ulitsa 7-ya Sovetskaya, 7, kv. 6; Vitaly Moiseevich Poretskin, prospekt Zanevsky, 28, kv. 201, both of Leningrad; Petr Pavlovich Tokarev, ulitsa Burjuzova, 8, kv. 47, Odintsovo, Moskovskoi oblasti, all of U.S.S.R., and Boris Agafonovich Barinov, deceased, late of prospekt Lenina, 63a, kv. 6, Barnaul, U.S.S.R. (by Raisa Alexeevna Alinina, administrator)

Filed Mar. 22, 1973, Ser. No. 344,028
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **5 Claims**

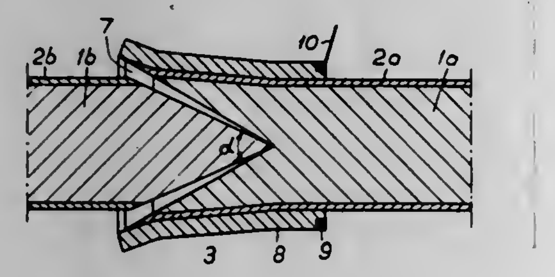


1. In a method of cladding metal products, wherein the workpiece being clad is placed on a support and subjected to cladding by the explosive-welding technique, the improvement which comprises the steps of providing a "pad" of metallic shot with which the workpiece being clad makes a direct physical contact so as to be the support for accommodating the workpiece; and selecting the material of the metallic shot having physico-mechanical characteristics substantially close to the material of the metal workpiece being clad.

3,868,762
METHOD OF JOINING WIRE OR RODS OF COMPOUND MATERIAL WITH ALUMINUM CORE AND COPPER CASING

Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 13, 1972, Ser. No. 217,512
Claims priority, application Sweden, Jan. 29, 1971, 1073/71; Mar. 11, 1971, 3106/71
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **9 Claims**

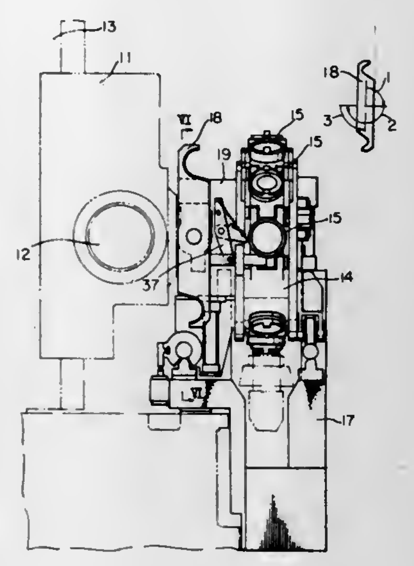


1. Method of joining wire of compound material having a core of aluminium and a casing of copper, which comprises shaping two ends of said wire to be joined to form male and female parts, inserting the male part so far in the female part that the inner surface of the casing of the female part partly covers the unpointed, unshaped part of the casing of the male part, applying a sleeve of explosive around the joint and detonating it so that the core and casing of one wire end are joined to the core and casing of the other wire end in one operation by means of explosion welding.

3,868,763
AUTOMATIC TOOL EXCHANGING APPARATUS

Mitsuharu Sato, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 29, 1972, Ser. No. 319,711
Claims priority, application Japan, Jan. 7, 1972, 47-4538
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **3 Claims**

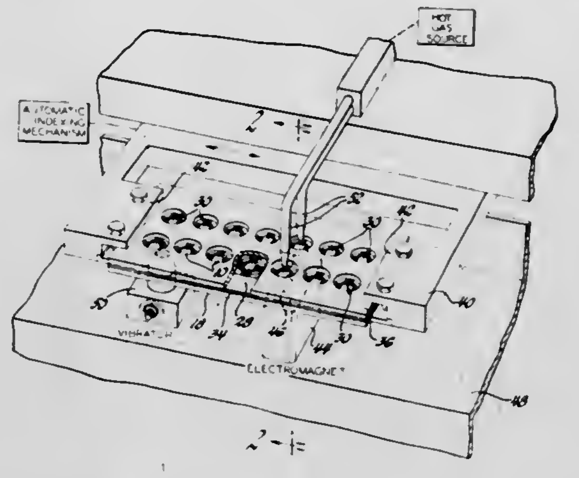


1. In an automatic tool exchanging apparatus for use in combination with a machine tool of the class having a tool carrying spindle for performing machining operations a plurality of key shaped tool code members, each tool code member formed with a tool code corresponding to a given tool, a tool storage magazine including a plurality of tool pots, each adapted to removably receive one tool and one tool code member, means to read the code of a tool code member in a given tool pot and operatively positioned for indexing said tool storage magazine to a tool exchanging position in accordance with the code of a tool code member in a given tool pot, and a tool exchanging arm positioned on said machine and adapted to exchange a tool mounted on the spindle of said machine tool and a tool in said given tool pot at said tool exchanging position, the improvement wherein each of said tool pots includes a cylindrical housing and a sleeve positioned within said cylindrical housing so as to be movable in the axial direction with respect to said cylindrical housing, said sleeve having an opening adapted to receive the shank of a tool and an axial groove on its outer surface for receiving therein a tool code member, tool code member exchanging means positioned coaxial with said sleeve and having two diametrically opposite tool code member receiving groove, means for rotating said tool code member exchanging means connected thereto about said housing cylinder axis for bringing a selected one of the tool code receiving grooves into axial alignment with the groove of said sleeve, means connected to said tool code member exchanging means for reciprocating said tool code member exchanging means toward and away from said given tool pot for exchanging tool code members therebetween, and means operatively positioned for interlocking said tool code member exchanging means with said tool exchanging arm for replacing said tool code member corresponding to the tool in said given tool pot for said tool code member corresponding to said tool on said spindle.

3,868,764
MULTIPLE MAGNETIC ALIGNMENT OF SEMICONDUCTOR DEVICES FOR BONDING

Ronald J. Hartleroad, Twelve Mile, and James P. Grabowski, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1973, Ser. No. 414,273
Int. Cl. B23k *5/00;* **H01l** *7/00*
U.S. Cl. 29—589 **4 Claims**



1. A self-aligning method of automatically transferring integrally leaded semiconductor device chips to a conductive lead frame structure for permanently bonding thereto, said method comprising:

placing a semiconductor device chip having a face with a plurality of soft ferromagnetic integral leads thereon into a recess in one surface of a template so that said chip face is oriented upwardly, said recess having a bottom portion substantially parallel to said one template surface, said template having a core of soft ferromagnetic material extending from said recess bottom portion to an opposite surface of the template;

positioning a conductive lead frame structure having a soft ferromagnetic convergent cantilevered finger set over said template so that said fingers are spaced above in closely spaced relation with the chip in the template recess;

applying a magnetic force generally perpendicular to the underside of said core to precisely align said integral chip leads with corresponding fingers of said lead frame and to concurrently magnetically raise the chip from the template recess up to said fingers to produce a precisely aligned engagement between all of the integral chip leads and their corresponding fingers; and

bonding said integral chip leads to said lead frame fingers while the magnetic force is still applied.

3,868,765
LAMINATED TEMPLATE FOR SEMICONDUCTOR DEVICE BONDING

Ronald J. Hartleroad, Twelve Mile, and James P. Grabowski, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

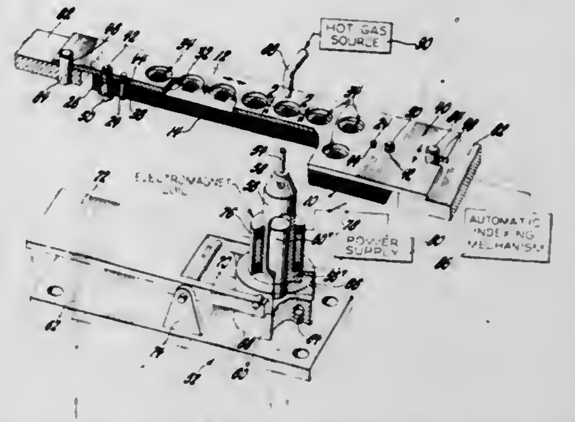
Filed Nov. 9, 1973, Ser. No. 414,501
Int. Cl. B23k *5/00;* **H01l** *7/00*
U.S. Cl. 29—589 **2 Claims**

1. A self-aligning method of automatically transferring integrally leaded semiconductor device chips to conductive lead frame structures for bonding thereto, said method comprising:

placing a semiconductor device chip having a face with a plurality of soft ferromagnetic integral leads thereon into a recess in one surface of a template so that said chip face is oriented upwardly, said template recess having a bottom portion which is substantially parallel to said one template surface, said template having an opening extending through the recess bottom portion to an opposite surface of the template;

positioning a conductive lead frame having at least one set of soft ferromagnetic fingers corresponding to said integral chip leads on the one template surface so that said finger set is in accurately spaced general alignment with the chip in the template recess;

applying a magnetic force to one end of a soft ferromagnetic probe so that magnetic lines of flux flow longitudinally therethrough;



extending said probe through the template opening to engage the back side of the chip within the template recess and raise the chip closer to the overlying set of lead frame fingers until the magnetic force transmitted through the probe precisely aligns the integral chip leads with their corresponding fingers and concurrently magnetically raises the chip from the probe up to the fingers to produce engagement between all of the integral chip leads and their corresponding fingers;

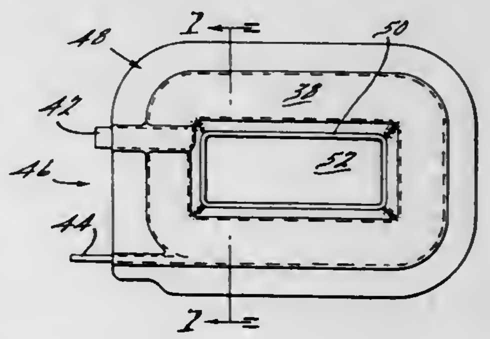
heating said integral chip leads and said fingers in engagement therewith to permanently bond said chip to said lead frame finger sets, and

terminating application of said magnetic force.

3,868,766
METHOD OF FORMING AN INSULATED COIL FOR A DYNAMOELECTRIC MACHINE

Donald L. Gramlich, Belleville; Ormond J. Jedele, Pinckney, and Robert M. Pearson, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1973, Ser. No. 393,700
Int. Cl. H01f *7/06*
U.S. Cl. 29—596 **7 Claims**



1. A method of forming an insulated electrical coil formed of a number of turns of a conductive member, the conductive member having a width dimension generally perpendicular to the plane of the coil and a thickness dimension generally in the plane of the coil, comprising the steps of:

associating a single layer of insulating paper with a single layer of the conductive member in such a manner that the paper covers a surface of the conductive member having a width dimension to form paper-covered conductive member;

coiling a finite length of said paper-covered conductive member into a coil form in which said paper layer is interposed between adjacent layers of the conductive member;

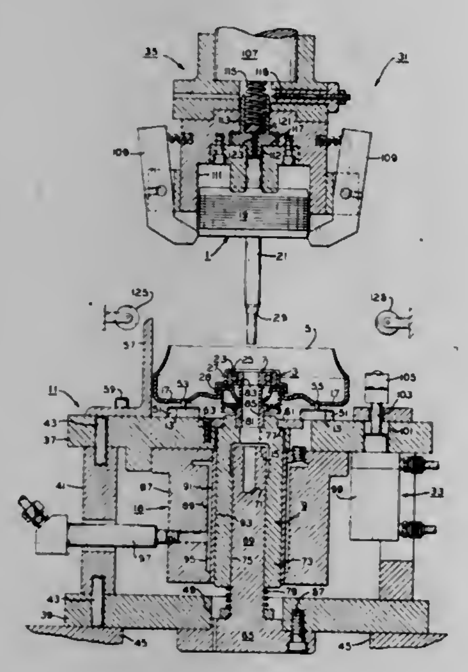
pre-cutting a pair of insulating paper sheets to provide sheets having dimensions which overlie the coil in each direction; and

inserting the coil form between the sheets and uniting the sheets about the coil form to provide toroidal encapsulation.

3,868,767
METHOD AND APPARATUS FOR ASSEMBLING COMPONENTS FOR A DYNAMOELECTRIC MACHINE

John M. Brunschwig, and William M. Stone, both of De Kalb, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 1, 1974, Ser. No. 456,479
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 **37 Claims**



1. A method of assembling a rotatable member with a bearing means mounted to a structural component for a dynamoelectric machine comprising the steps of:

a. disposing only an inner race of the bearing means generally coaxially of and in engagement with means for supporting it; and

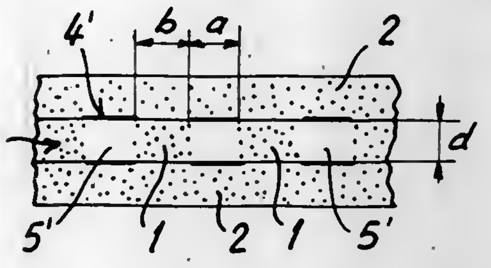
b. press-fitting the rotatable member through the inner race of the bearing means while transmitting the force of the press-fitting only to the supporting means and isolating all other anti-friction components of the bearing means from the force of the press-fitting.

3,868,768
METHOD OF PRODUCING A COMPOSITE SUPERCONDUCTOR

Gundolf Meyer, Birmenstorf, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 22, 1973, Ser. No. 362,776
Claims priority, application Switzerland, May 31, 1972, 8079/72
Int. Cl. H01v *11/14*
U.S. Cl. 29—599 **13 Claims**

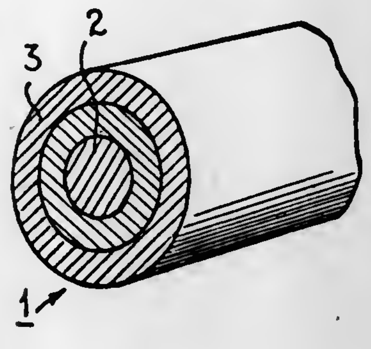
1. In the method for producing electrical super-conductors consisting of a great number of mutually spaced thin filaments of an intermetallic super-conductive compound by diffusion of a first metallic material from each of two outer layers of a three-layer metallic structure into a second metallic material of the intermediate layer therebetween, the improvements which comprise the steps of arranging at the interfaces between opposite faces of said intermediate layer and the adjoining faces of said two outer layers mutually spaced zones of a foreign substance extending in the longitudinal direction of the to be produced super-conductors, mechanically working the three-layer metallic structure as a unit to establish a metallurgically intimate connection between said layers, and subjecting the connected layers to a thermal treatment to effect the desired diffusion from said outer layers into said intermediate layer in mutually spaced longitudinally extending zones between mutually spaced longitudinally extending zones of said foreign substances said mutually spaced zones of said foreign substance functioning to prevent diffusion within said intermediate layer at its zones or to at least greatly reduce the superconductive properties of the intermetallic compound formed at its zones by diffusing into said intermediate layer.



3,868,769
METHOD OF MAKING SUPERCONDUCTORS

Jean Dosdat; Jacques Lanthiez, and Claude Levaire, all of Chauny, France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Continuation of Ser. No. 216,525, Jan. 10, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 396,794
Claims priority, application France, Jan. 8, 1971, 71.00518
Int. Cl. H01v *11/08*
U.S. Cl. 29—599 **4 Claims**



1. A method of making a stabilized transposed multifil superconductor made of an intermetallic superconductor composition crystallizing according to the crystalline structure A 15, comprising the following steps:

A. forming a monofil stock product having a core comprising one element of the intermetallic superconductor composition to be obtained, said core being coated with another element of said composition, and a first jacket surrounding said core, said first jacket being made of a ductile material having good heat and electric conductivity,

B. wiredrawing said monofil stock product to a desired diameter to obtain a wiredrawn monofil product wherein said jacket is in close engagement with said core,

C. forming a transposed multifil stock product having, as its interior element, a plurality of said wiredrawn monofil products and, as its exterior element, a second jacket surrounding said interior element, said second jacket being made of ductile material having good heat and electric conductivity,

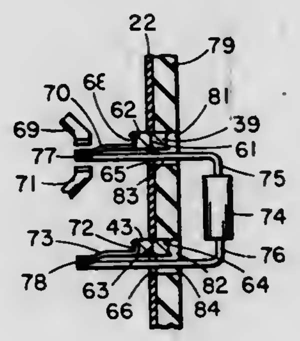
D. wiredrawing said transposed multifil stock product to a desired diameter to obtain a wiredrawn transposed multiful product wherein said first and second jackets form a homogeneous mass serving as a stabilizing jacket for the transposed multiful superconductor to be obtained and in which the cores are individually embedded, and

E. submitting said wiredrawn transposed multiful product to a heat treatment of a duration of from 5 minutes to 20 hours at a temperature between 600° C and 1300° C to effect an in-place diffusion reaction of the core material for transforming the latter into said intermetallic superconductive composition.

3,868,770
WELDED INTERCONNECTION PRINTED CIRCUIT BOARD AND METHOD OF MAKING SAME

Herbert T. Davis, Tempe, and James B. Reid, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 249,044, May 1, 1972. This application July 23, 1973, Ser. No. 381,826
Int. Cl. H05k *3/32*
U.S. Cl. 29—626 **19 Claims**



1. The method of making a printed circuit interconnect board comprising in combination the steps of:

providing first and second resistance weldable metallic film layers;

providing a dielectric layer impregnated with a thermosetting adhesive;

preforming a series of holes in said dielectric at points wherein weld-through connections are to be made;

disposing said first and second metallic film layers on opposite sides of said dielectric layer;

resistance welding said first metallic film layer to said second metallic film layer to form said weld-through connections in said series of holes in said dielectric layer to form a sandwich;

subsequently applying temperature and pressure for a predetermined time to said sandwich causing said thermosetting adhesive to flow into and fill said holes in said dielectric layer and surround said weld-through connections within said holes and to cure the impregnated adhesive in said dielectric layer for laminating said first and said second metallic film layers to said dielectric layer; and

masking and etching both sides of said laminate according to a predetermined pattern to form conducting metallic strips on both sides of said dielectric layer.

3,868,771
JOINTING METAL CABLE SHEATHS

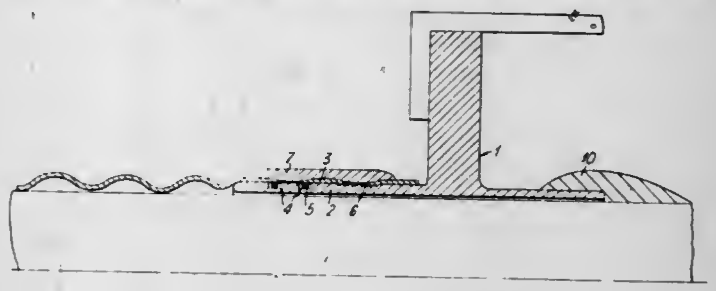
Graham John Smee, Gravesend, and Anthony Owen Miller, Fawkham, both of England, assignors to British Insulated Callander's Cables Limited, London, England

Filed May 4, 1973, Ser. No. 357,679
Claims priority, application Great Britain, May 8, 1972, 21407/72
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **7 Claims**

1. A method of sealing an end of an electric cable having at least one core and a surrounding metallic sheath to an end portion of an enclosure into which said end extends comprising:

a. shaping a length of said metal sheet adjacent an end thereof to space it from said core and forming a concentric assembly comprising said length of the sheath, a first metallic tubular member, a second metallic tubular member and an elastomeric sealing ring, said length of the sheath lying radially between said first metallic tubular member and said second metallic member, said elastomeric sealing ring lying radially between said first metallic tubular member and said length of the sheath, at least a part of the surface of said first metallic tubular member contiguous with said length of the sheath being roughened;

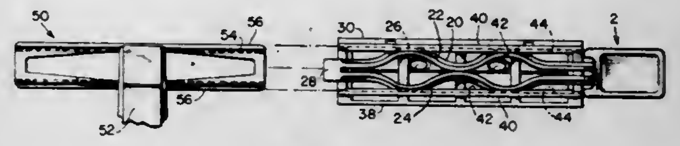
b. and after said assembly is formed permanently circumferentially inwardly compressing same until a substantially fluid-tight joint is formed between said metal sheath and said first metallic tubular member.



3,868,772
RAZOR CARTRIDGE AND ADAPTER ASSEMBLY

Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 294,482, Oct. 2, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 437,733
Int. Cl. B26b *21/40*
U.S. Cl. 30—34 R **9 Claims**

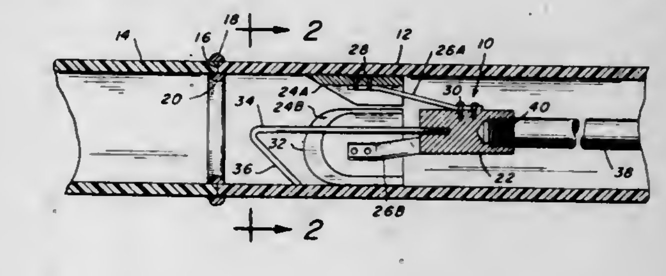


1. A razor cartridge assembly comprising, in combination, a razor cartridge and an adapter, said razor cartridge comprising a rigid platform member, a rigid cap member joined to said platform member, blade means fixedly disposed between said platform member and said cap member, a pair of elongated parallel rails extending from said cartridge and having inturned flanges at their free edges to form opposed parallel grooves, said adapter comprising a grip portion and a sabre portion extending from said grip portion, said sabre portion in its substantial entirety consisting of compressible wire-like means in engagement with interior portions of said parallel grooves, said cartridge being supported solely by said wire-like means.

3,868,773
BEAD REMOVAL TOOL

William F. Province, Bartlesville, Okla., assignor to Emerson Electric Company, St. Louis, Mo.

Filed Dec. 17, 1973, Ser. No. 425,156
Int. Cl. B23d *9/00;* **B29c** *17/10*
U.S. Cl. 30—130 **7 Claims**



1. A bead removal tool for removing the inner bead formed

while joining lengths of plastic pipe by heating the opposed ends and pressing them together, comprising:

a. an axial hub;

b. A plurality of blades, each formed as portions of a cylindrical wall to approximately fit the interior surface of said pipe, the leading edges of said blades being shaped and sharpened along the outer edge, said plurality of blades positioned in substantially contiguous relation around the inner surface of said pipe;

c. a plurality of spring means, one for each said blade, extending from said hub individually and resiliently outwardly supporting said blades, in contact with the inside surface of said pipe; and

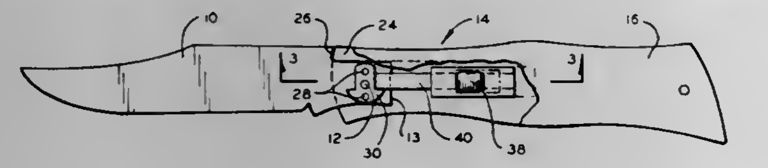
d. means to force said hub along the axis of said pipe, whereby when the sharpened edges of said blades contact an inner bead, said bead will be sheared off by said plurality of blades.

3,868,774
FOLDING BLADE KNIFE WITH BLADE LOCK

Nilo M. Miori, Solvay, N.Y., assignor to Camillus Cutlery Company, Camillus, N.Y.

Filed Sept. 12, 1973, Ser. No. 396,867
Int. Cl. B26b *1/04*

U.S. Cl. 30—161 **11 Claims**



1. A folding blade knife construction with blade locking means, said construction comprising, in combination:

a. a blade including a tang and a shoulder on the back edge;

b. means pivotally mounting said blade for movement between open and closed positions;

c. a handle having an outer cover and a two-piece liner defining a space therebetween for accepting said blade in its folded position;

d. manually engageable button extending through an opening in said handle cover and mounted for sliding movement longitudinally along said handle;

e. a leaf spring mounted between the pieces of said liner and having a deflectable end adjacent said tang for engagement therewith to bias said blade toward either of said open and closed positions, said open position being defined by engagement of said shoulder with said deflectable end;

f. an element affixed to and extending laterally outward from said tang and movable therewith; and

g. a locking member connected to said button and movable therewith between a locking position, wherein a portion of said locking member extends into the path of movement of said element when said blade is in said open position to prevent movement to the closed position, and an unlocking position, wherein said locking member is out of the path of movement of said elements.

3,868,775
SHOVEL MOUNTED WEED CUTTER

Robert L. Anderson, Great Falls, Mont., assignor to James R. Paul, Great Falls, Mont., a part interest

Filed Aug. 13, 1973, Ser. No. 387,654
Int. Cl. A01b *1/02, 1/22;* **A01d** *11/00*

U.S. Cl. 30—329 **6 Claims**

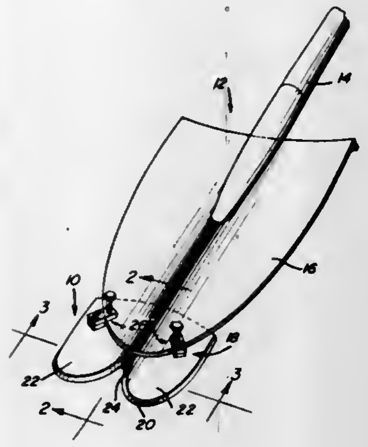
1. A weed cutter attachment for a round-headed shovel blade, comprising, in combination:

a. a body member;

b. blade means provided on the body member for cutting vegetation, the blade means including a bifurcated cutting surface formed on an edge of the body member and divided into two parts, each bifurcated part of the cutting surface being arcuate in plan and cooperatively meeting with the other part to form a substantially V-shaped recess; and

c. means mounted on the body member for attaching same to a round-headed shovel blade, the means for attaching including a pair of L-shaped clamp members, each clamp member mounted on a common surface of the body member and having a one leg arranged spaced from and parallel to the common surface, and spaced from the other clamp member, and means cooperating with the one leg for selectively, retentively engaging a round-headed shovel blade and clamping the attachment onto the shovel blade.

3. In combination with a shovel having a shovel blade, a weed cutter attachment, comprising, in combination:



a. a body member;

b. blade means provided on the body member for cutting vegetation, the blade means including a bifurcated cutting surface formed on an edge of the body member and divided into two parts, each bifurcated part of the cutting surface being arcuate in plan and cooperatively meeting with the other part to form a substantially V-shaped recess; and

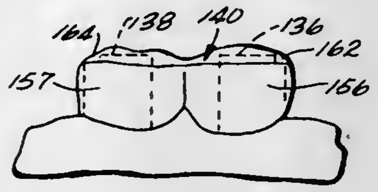
c. means provided on the blade means for attaching same to the shovel blade, the shovel blade being a round-headed shovel blade the means for attaching including a pair of L-shaped clamp members, each clamp member mounted on a common surface of the body member and having a one leg arranged spaced from and parallel to the common surface, and spaced from the other clamp member, and means cooperating with the one leg for selectively, retentively engaging the round-headed shovel blade and clamping the attachment onto the shovel blade.

3,868,776
REMOVABLE DENTAL BRIDGE AND METHOD FOR MAKING SAME

Mervyn C. Lasky, 1535 N. Poinsettia Pl., Hollywood, Calif. 90046

Continuation-in-part of Ser. No. 334,729, Feb. 22, 1973,. This application June 26, 1974, Ser. No. 483,164
Int. Cl. A61c *13/22*

U.S. Cl. 32—5 **10 Claims**



1. A patient-removable dental bridge system for removably mounting a pontic, the system comprising

a male supporting member affixed to an abutment tooth to serve as a bridge support,

the male member being a solid piece extending mesio-distally from the abutment tooth for about one-half the width of the pontic,

the male member having a pair of spaced apart, upright first and second edges which extend occluso-gingivally for a major portion of the height of the pontic, and a top edge extending mesio-distally between the first and second edges of the male member,

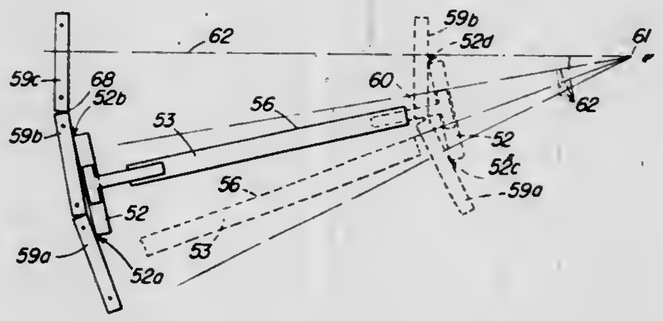
the top edge having a first portion extending from the first upright edge toward the second upright edge and traversing a major portion of the width of the male member, and a second portion which is recessed to form a relatively shallow notch in the top edge of the male member adjacent the abutment tooth, the depth of the notch extending for a minor portion of the height of the male member, and a female member rigidly secured to the pontic, the female member comprising a socket member shaped to be releasably mounted on the male member, the socket member providing spaced apart lingual and facial surfaces to be releasably engaged with opposite sides of the male member, and an occlusal cap shaped to be fitted on the top of the socket member, the occlusal cap including a bridge piece shaped to match the size and shape of the notch in the male member, the bridge piece being positioned relative to the male member to make a tight fit in the notch of the male member when the female member is mounted on the male member so the bridge piece and notch cooperate to prevent relative movement mesio-distally and occluso-gingivally between the pontic and the male member.

3,868,777
PERSPECTIVE LINE GENERATOR

Franklin D. Bell, P.O. Box 14, Eatontown, N.J. 07724

Filed Feb. 2, 1973, Ser. No. 329,132
Int. Cl. B43l *13/14*

U.S. Cl. 33—77 **7 Claims**



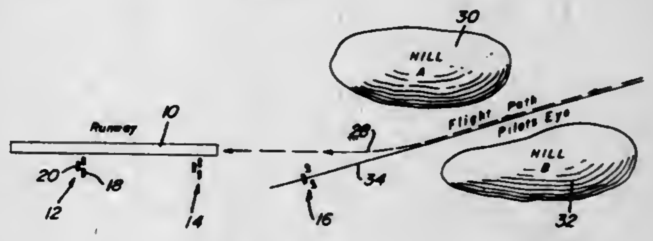
1. A perspective line generator comprising a guide of articulatable chordal segments of equal length used in conjunction with a drawing arm attached to a transverse chordal head, said head having identical dimensions to those of said segments, a contiguous plurality of said articulatable chordal segments forming a smooth continuous guide edge, said guide and said drawing arm cooperating to produce converging lines when the head of said arm is placed at various points of contact with said continuous guide edge when said chordal segments are articulated to positions other than in a straight line, means for articulating said segments to each other to form said continuous guide edge and wherein said means comprises a flexible membrane attached to said segments to form part of said continuous guide edge.

3,868,778
VISUAL APPROACH AND LANDING SYSTEM FOR AIRCRAFT

William O. Collins, 6258 N. Kensington St., McLean, Va. 22101

Filed June 14, 1973, Ser. No. 369,929
Int. Cl. B64f *1/18*

U.S. Cl. 33—227 **11 Claims**



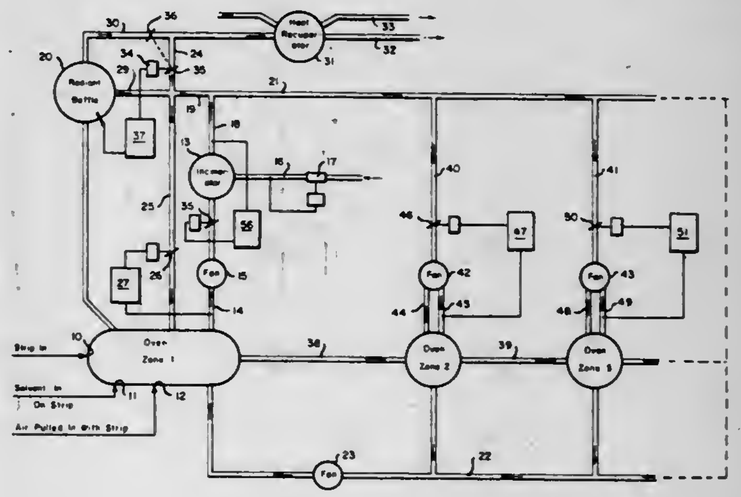
7. In combination with a runway, a landing guidance system including at least two direct viewing indicator devices mounted on the ground adjacent the runway for sequentially signifying initial approach to the runway and touchdown approach to the ground, each of said indicator devices including at least two horizontally aligned lateral bars, a central bar disposed in parallel spaced relation to said lateral bars in such a manner that said central bar is visually aligned horizontally between and closely spaced from the two lateral bars when approaching along a proper flight path.

3,868,779
INCINERATION CONTROL

Charles R. Wilt, Jr., and Floyd L. Schauermann, both of Pittsburgh, Pa., assignors to Salem Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1973, Ser. No. 396,668
Int. Cl. F26b *21/06*

U.S. Cl. 34—54 **10 Claims**



1. In a drying oven of the type having at least one zone in which solvents are evaporated during the drying process and exhausted with other gases to an incinerator for incineration, the improvement which comprises:

a. means providing a constant rate of supply of fuel to the incinerator,

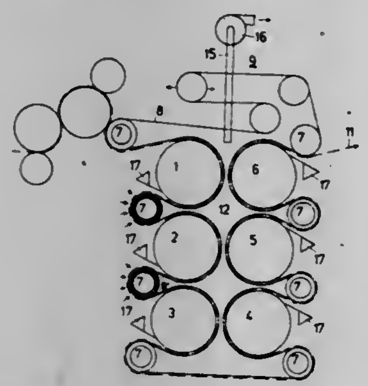
b. means regulating the temperature of the gases emitted from the oven during the drying process to a constant value, and

c. means controlling the quantity of air admitted to the oven as a diluent for the solvents in accordance with the variation of the temperature of the gases constituting the products of combustion of the incinerator exhausted therefrom.

9. In a drying oven according to claim **8**, wherein conduit means is provided for recirculating back to the oven a portion of the products of combustion of the incinerator, and wherein the temperature regulating means of clause (b) comprises valve means in said conduit means and thermally-responsive means exposed to the gaseous stream emitted from the oven which controls the operation of said valve means to so regulate the quantity of products of combustion of the incinerator admitted to the oven as a diluent for the combustible materials therein so as to regulate to a substantially constant value the temperature of the gaseous stream emitted from the oven.

3,868,780
GROUP OF DRYING CYLINDERS IN A MULTIPLE CYLINDER DRYER FOR A MATERIAL WEB, IN PARTICULAR FOR PAPER

Mauri Soininen, Naantali; Martti Koponen, and Vesa Holopainen, both of Jyvaskyla, all of Finland, assignors to Valmet Oy, Helsinki, Finland
Filed Nov. 2, 1973, Ser. No. 412,463
Claims priority, application Finland, Nov. 13, 1972, 3174/72
Int. Cl. F26b *13/08*
U.S. Cl. 34—116 **7 Claims**



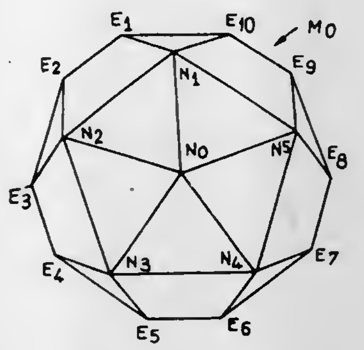
1. In a multiple cylinder dryer for web material, a drying cylinder group, comprising in combination
- a plurality of heatable drying cylinders arranged to be rotatable about their horizontal axis.
- guiding rolls between consecutive drying cylinders,
- an endless drying belt permeable to air, which is common to all drying cylinders of the group, zigzagging from one drying cylinder to the next drying cylinder in the group over the guiding roll,
- for the drying belt, guiding means which together with said guiding rolls direct the drying belt to travel so that all drying cylinders of the group lie outside the loop formed by the endless belt and said guiding rolls lie inside said loop,
- means by which the web to be dried is directed into the drying cylinder group so that on the drying cylinders the web will travel between a sector surface of considerable extent of the drying cylinders and the drying belt, and outisde of the drying belt when traversing said guilding rolls,
- and wherein the open sides of the drying belt are closed by walls in order to produce a closed space inside of the drying belt, and that in said closed space a vacuum has been arranged to act in order that the web when traversing upon the drying belt is attached to the same by suction,
- the entire combination being so arranged that the drying belt together with the web travels, with mutual contact between the two, the whole distance from one drying cylinder to the next drying cylinder group.

3,868,781
POLYGNOMONIC MAP OF THE WORLD COMPRISING TWO HEMISPHERES

Jean Thorel, 23, Rue des Volontaires, Paris, France
Filed Apr. 11, 1974, Ser. No. 460,011
Claims priority, application France, Apr. 27, 1973, 73.15594
Int. Cl. G09b *29/02*
U.S. Cl. 35—42 **2 Claims**

1. An assembly of six maps of the world or other spherical body, obtained from a polygnomonic map of the world or other spherical body, which consists of a regular icosahedron of which the twenty triangular sides carry a tracing of the elements of a globe of same centre as said icosahedron, said centre being that of the polygnomonic projection of said tracing on the icosahedron of which two vertices are advantageously coincident with the poles of the globe concerned and on whose respective sides all the major circles of said globe are represented in the form of segments of straight lines, characterised in that said six maps (M_0, M_1, M_2, M_3, M_4 and M_5) comprise each the representation of two opposite hemispheres, said six maps corresponding to the six vertices, respectively, of the first-projection icosahedron (N_0, N_1, N_2, N_3, N_4 and N_5) and to the six diametrally opposite vertices (S_0, S_1, S_2, S_3, S_4 and S_5), the two hemispheres thus represented on the first map (M_0) having as their centres the vertices (N_0, S_0) corresponding respectively to the North and South poles of the globe concerned, the hemispheres represented on the next maps (M_1, M_2, M_3, M_4 and M_5) having their centres constituted respectively by the auxiliary poles consisting of the other diametrally opposite vertices (N_1, S_1; N_2, S_2; N_3, S_3; N_4, S_4 and N_5, S_5) of said icosahedron (I), the representation of each hemisphere of a map comprising:

a. a first portion obtained by the orthogonal projection of all the points of the five triangular sides ($N_0N_1N_2$, $N_0N_2N_3$, $N_0N_3N_4$, $N_0N_5N_1$) of said icosahedron (I) which converge to the pole (N_0) of the hemisphere concerned, on the plane of the pentagon ($N_1N_2N_3N_4N_5$) formed by the five base edges (N_1N_2, N_2N_3, N_3N_4, N_4N_5, N_5N_1) of said five sides, said plane being parallel to the equator plane, and the projection of said pole (N_0) on said plane being coincident with the central point of the pentagon;

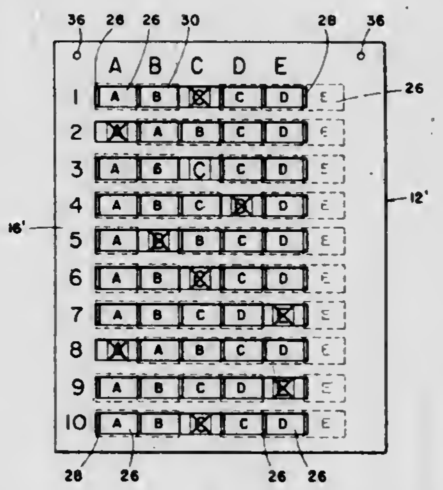


b. a second portion comprising five trapezoidal surfaces ($N_1N_2E_2E_1 \ldots N_5N_1E_{10}E_9$) each joined to one side ($N_1N_2 \ldots N_5N_1$) of said pentagon, said surfaces being obtained successively by taking them from triangles having corresponding bases ($N_1N_2, \ldots N_5N_1$) and limited by a real or auxiliary equator line ($E_1E_2, \ldots E_9E_{10}$) of a pentagon representing the central hemisphere portion of one of the other maps which is constituted around an auxiliary pole (S_4, S_5, S_1, S_2 and S_3) corresponding to the vertex of the triangle ($N_1N_2S_4 \ldots N_5N_1S_3$) of the central portion of said icosahedron (I) of which the base is the specific one of the sides ($N_1N_2, \ldots N_5N_1$) of the pentagon ($N_1N_2N_3N_4N_5$) to which the thus taken trapezoidal surface is to be joined;

c. and a third portion comprising five triangular surfaces ($N_1E_1E_{10}$, $N_2E_3E_2$, $N_3E_5E_4$, $N_4E_7E_6$, $N_5E_9E_8$) inserted successively between two adjacent trapeziums joined to the sides (N_1N_2, N_2N_3, N_3N_4, N_4N_5) of the pentagon ($N_1N_2N_3N_4N_5$), said triangular surfaces being obtained by taking the remaining triangular portions of the triangles constituting the central areas of the other five maps, after removing therefrom the trapezoidal portions necessary for constituting the representation of the second hemisphere, said triangular portions being converted topologically and filling thereafter any empty space between the trapeziums.

3,868,782
TEST SCORING DEVICE

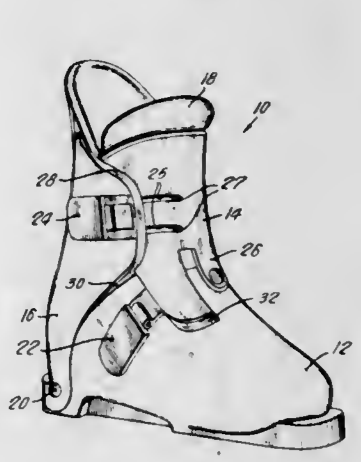
Joseph F. Burchette, P.O. Box 56, Jenks, Okla. 74037
Filed July 5, 1973, Ser. No. 376,612
Int. Cl. G09b *1/06*
U.S. Cl. 35—48 R **2 Claims**



1. For use in combination with an answer sheet for a multiple choice type examination wherein the answer sheet is divided into a plurality of vertically spaced horizontal rows, each row corresponding to a question on the examination, each row having at least a portion thereof subdivided into a number of horizontally aligned spaces equal to the number of answer choices for the question corresponding to that row, whereby the examinee can place a mark in one space on a given row, whereby the examinee can place a mark in one space on a given row to indicate his answer choice to the question corresponding to that given row; an examination scoring device comprising: a flat rectangular board adapted to be disposed over said answer sheet and having a plurality of vertically spaced and horizontally extending openings, said openings haaving a vertical spacing equal to the vertical spacing of said rows on said answer sheet and extending horizontally for a distance at least as long as the subdivided portions of said rows, each opening having a lower portion of a predetermined vertical width and superimposed over the vertical dimension of the underlying row on the answer sheet, said predetermined vertical width being sufficiently great to expose a major portion of the vertical dimension of the underlying row on the answer sheet, each opening also having an upper portion whose width is greater than the lower portion, the upper portion forming flat shoulders on opposite sides of the lower portion of said opening, a plurality of nontransparent rectangular slide members having a vertical width equal to the width of the upper portion of said opening and slidably disposed in each opening and resting on said shoulders for horizontal sliding movement backand forth in each opening, a cover member disposed on said board for retaining said slide members in said openings, said cover member having a plurality of vertically spaced and horizontally extending slots narower than the vertical width of said slide members and located over said openings, each of said slide members having a tab thereon projecting outwardly through its associated slot to permit horizontal movement of each slide member in its associated opening, the number of slide members in a given opening being such in relation to the horizontal length of said opening that all of the spaces in a row beneath sid opening will be visually obscured except for a predetermined space which represents the corrct answer for that row, so that, when said board is disposed over said answer sheet, the examiner can compare the answers selected by the examinee with the correct answers and determine the score, the horizontal length of each opening of said board being equal to the length of the subdivided portion of the underlying row on said answer sheet plus the length of one slide member, and the number of slide members in each opening being equal to the number of spaces in the underlying row.

3,868,783
SKI BOOT

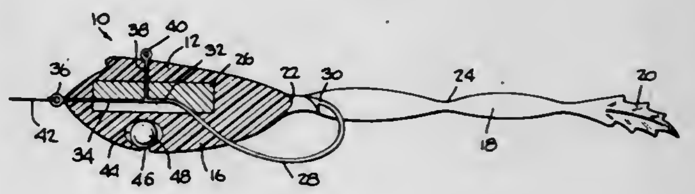
Domenico Caporicci, Ville St. Laurent, Quebec, Canada, assignor to Norstar Ski Corporation Ltd., Quebec, Canada
Filed Jan. 14, 1974, Ser. No. 433,148
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **7 Claims**



1. A ski boot comprising;
- a bottom section;
- a tongue section; and
- a back section;
- said tongue section comprising a portion which is U-shaped in cross section, at an edge of said tongue section;
- said bottom section comprising a portion which is U-shaped in cross section, at an edge of said bottom section;
- said U-shaped portion of said tongue section being interjoined with said U-shaped portion of said bottom section at a joint at the front part of the boot, said U-shaped portions being movable relative to one another at said joint;
- whereby said boot is flexible at said joint;
- wherein the legs of the U-shaped portions are interconnected by a slidable fastener.

3,868,784
FISHING LURE

Joseph J. Sabol, West Hazleton, Pa., assignor to Garcia Corporation, Teaneck, N.J.
Filed Apr. 12, 1973, Ser. No. 350,648
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.23 **10 Claims**

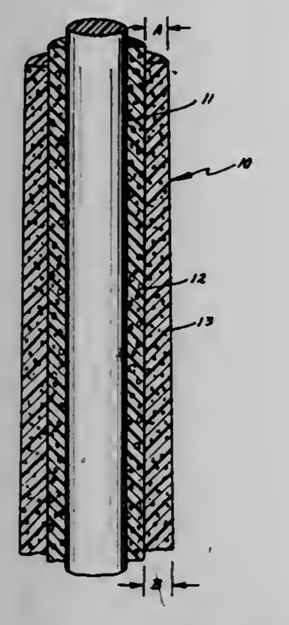


1. A fishing lure comprising in combination, a body portion having a belly portion, aa hook extending from the lower rear portion of said belly portion, said hook extending downwardly before curving upwardly in a substantially arcuate manner and terminating in a barbed point in spaced relation directly rearwardly of the body portion, a cork insert medially disposed within said body portion, said hook having a shank portion extending upwardly into said cork insert and having an extension passing forwardly through said body portion terminating in an eye disposed substantially medially of the front surface of the body portion, a second extension of said shank portion passing upwardly through the body portion and terminating in a second eye disposed substantially medially of the upper surface of said body portion.

3,868,785

FLYLINE FOR FISHING

Danny R. Foote, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Dec. 7, 1973, Ser. No. 422,715
Int. Cl. A01k ***91/00***
U.S. Cl. 43—44.98 **14 Claims**



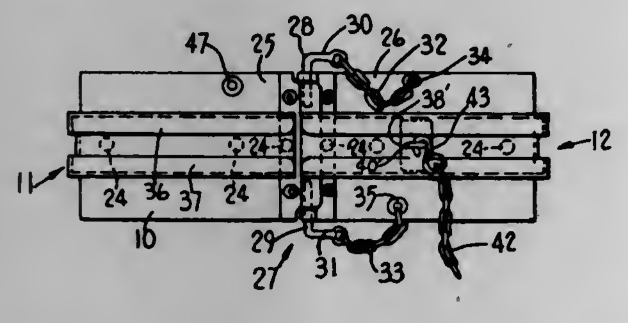
1. A flyline for fishing and comprising a core with a plurality of coatings applied thereover, said line comprising:

- a. a continuous filament core extending axially along said line;
- b. a first coating arranged coaxially over said core and comprising a plastic matrix retaining a plurality of first microballoons distributed therethrough and with said microballoons having a diameter ranging from between about 10 microns and up to about 105 microns; and
- c. a second coating arranged coaxially over said first coating and comprising a plastic matrix retaining a plurality of second microballoons distributed therethrough and with said second microballoons having an average diameter substantially less than that average diameter of said first microballoons and ranging in diameter from between about 10 microns and up to about 75 microns.

3,868,786

BELT OR COLLAR WITH RUNNER TRACK

Joan M. Lippe, 303 West Price St., Linden, N.J. 07036; Irving Goldfarb, 8101 Glenwood Rd., Brooklyn, N.Y. 11236, and Harry Jablon, 602 Birchwood Rd., Linden, N.J. 07036
Division of Ser. No. 27,486, April 13, 1970, Pat. No. 3,721,216, and a continuation-in-part of Ser. No. 832,400, June 11, 1969, abandoned. This application Jan. 2, 1973, Ser. No. 320,601
Int. Cl. A63h ***1/32***
U.S. Cl. 46—51 **7 Claims**

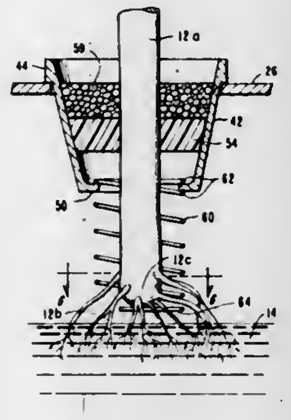


1. A belt-type toy or the like, of the character described, adapted to surround a portion of a wearer's body, comprising a generally annular belt having thereon an outwardly extending track of generally channel-shaped cross-section and outwardly extending flange members projecting beyond said track, said belt and said track thereon having at least two free end portions defining an opening through which the wearer's body portion is insertable within said belt, separate releasable connecting means independent of said belt and mounted thereon adjacent said opening and exteriorly of said track for maintaining said ends in substantially end abutting relation so that said track is uninterrupted about the wearer, and slide means retained within said track and adapted to move freely along the entire length thereof, said releasable connecting means comprising a separate generally channel-shaped member independent of said track and having flange portions adapted to overlap said oppositely extending belt flange members, said channel member being fixed to said belt adjacent one of said free end portions and extending longitudinally therebeyond, said channel member being adapted to receive said flange members of the belt adjacent the other of said free end portions, and means for holding said other free end portion within said channel member to maintain said free ends in substantially abutting relation; and an elongated flexible interconnecting member pivotally attached at one end to said slide and fixed at its other end to a toy, whereby said toy is adapted to be moved in a circular path by gyrations of the wearer's body and the associated movement of said slide member in said track.

3,868,787

APPARATUS FOR SUPPORTING HYDROPONICALLY GROWN PLANTS

Edward Wong, Jr., Los Angeles, Calif., assignor to Weingarten & Wong Enterprises, Inc., Los Angeles, Calif.
Continuation of Ser. No. 213,330, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 15,558, March 2, 1970, Pat. No. 3,660,933. This application July 2, 1973, Ser. No. 375,651
Int. Cl. A01g ***31/02***
U.S. Cl. 47—1.2 **17 Claims**



1. For use in a hydroponic system, plant-holding means including:

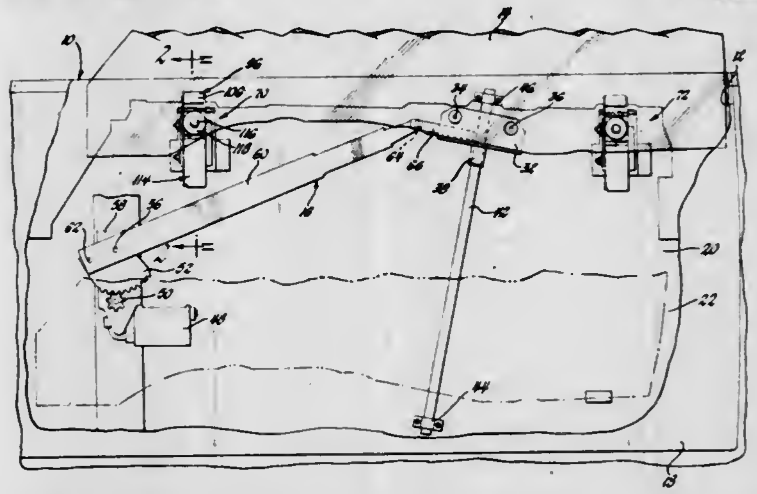
a receptacle for holding an individual plant having a stem, said receptacle having an inner side wall surface, an open top and an open bottom portion through which said stem is adapted to extend; and

means for supporting said plant laterally including yieldable means engaging said inner side wall surface and adapted to engage said stem and means for supporting said plant vertically, said vertically supporting means including a stirrup depending from said receptacle, said stirrup having an upper portion coupled to said receptacle and a lower portion forming a seat for the lower extremity of said plant stem.

3,868,788

VEHICLE WINDOW STABILIZING MECHANISM

Edward G. Podolan, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 19, 1973, Ser. No. 407,903
Int. Cl. E05f ***11/38***
U.S. Cl. 49—374 **3 Claims**

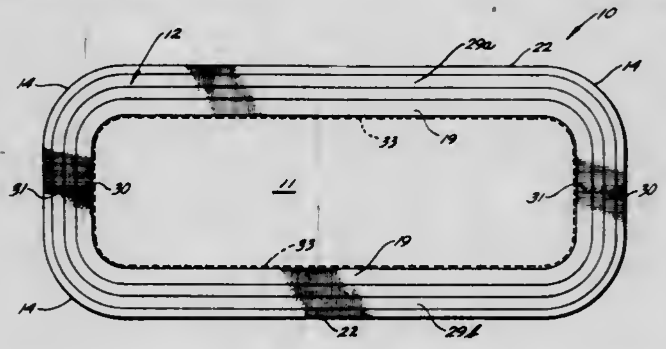


1. In a vehicle body having a window opening and a window panel movable relative to a body panel between open and closed positions with respect to the window opening, the combination comprising: stop means attached to the body panel, the stop means having upper and lower edge portions and a retrorse flange at the upper edge opening downwardly and toward the window panel, a stabilizer means attached to the lower edge of the window panel, the stabilizer means having upper and lower edge portions and a retrorse flange at the lower edge portion opening upwardly and toward the body panel, the stop means and stabilizer means being positioned on their respective panels for interlocking engagement with one another when the window panel is in the raised position, the upper edge portion of the stabilizer means being received in the retrorse flange of the stop means and the retrorse flange of the stabilizer means engaging and capturing the lower edge portion of the stop means whereby vertical movement of the window panel to raised position is stopped and the window panel is stabilized against lateral movement when in the raised position.

3,868,789

WINDOW WITH EXTRUDED SYNTHETIC FRAME AND METHOD AND APPARATUS FOR MANUFACTURE THEREOF

John I. Gates, Pasadena, Calif., assignor to Clifford C. Oliver, Newport Beach, Calif., a part interest
Continuation of Ser. No. 145,866, May 21, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,851
Int. Cl. E06b ***3/00***
U.S. Cl. 49—501 **10 Claims**

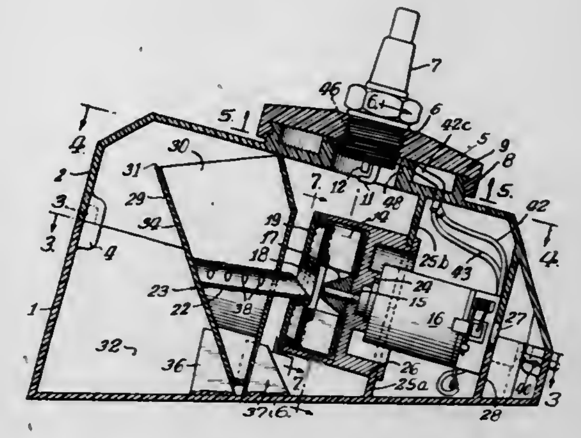


1. A window for boats, trailers and the like comprising a pane fabricated of a synthetic plastic material which is substantially arcuately curved along at least a portion of its periphery and free of abrupt corners, a first frame member extending essentially continuously circumferentially of the pane and mounting the pane therein, the first frame member being correspondingly arcuately bent to conform to the curvature of said pane peripheral portion, and a second frame member adapted to mate with and be affixed to the first frame member along the extent thereof by being arcuately bent to conform to the curvature of the first frame member, the frame members being fabricated of extrusions of rigid synthetic themoplastic material, the materials from which the pane and the first frame member are fabricated being soluble in a common solvent, the first frame member extrusion defining a web extending substantially normal to the pane and first and second spaced flanges extending from one side of the web and between which the pane is disposed and to one of which the pane is solvent welded, the first and second frame members defining means for mounting the window and including a mounting flange extending from the web of the first frame member away from the pane and a mounting flange extending from the second frame member for confronting the first frame member mounting flange when the frame members are mated, so that the mounting flanges are cooperable on mating of the frame members for engagement on opposite sides of structure defining a window opening and circumferentially of the opening for mounting the window in the opening.

3,868,790

SPARK PLUG CLEANER

Roy A. Fricke, 1034 Ashland Ave., River Forest, Ill.
Filed Aug. 17, 1973, Ser. No. 389,332
Int. Cl. B24c ***3/34***
U.S. Cl. 51—9 **18 Claims**



1. An enclosed spark plug cleaner comprising a closed main casing which includes a main body portion, a high speed motor and connected centrifugal particle projector in said main body portion, said projector comprising an impeller and an impeller housing having an axial inlet and a peripheral outlet, a hopper which opens upwardly for receipt of a charge of particulate cleaning material, and having a delivery outlet at its lower end communicating with the inlet of the impeller, a generally horizontally disposed feeder tube having inlet openings along its sides for a delivery of particulate material from the hopper through said openings into the tube, said tube leading into the central inlet of said impeller housing, said casing comprising a removable cover portion for said main body portion, said cover comprising a holder for the threaded end of a spark plug to hold the same with its open end in alignment with said impeller housing outlet.

3,868,791

ROTARY BUFFING SLEEVE

Russell W. Burns, Ventura, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.
Filed June 4, 1973, Ser. No. 366,318
Int. Cl. B24b ***5/04***
U.S. Cl. 51—34 J **6 Claims**

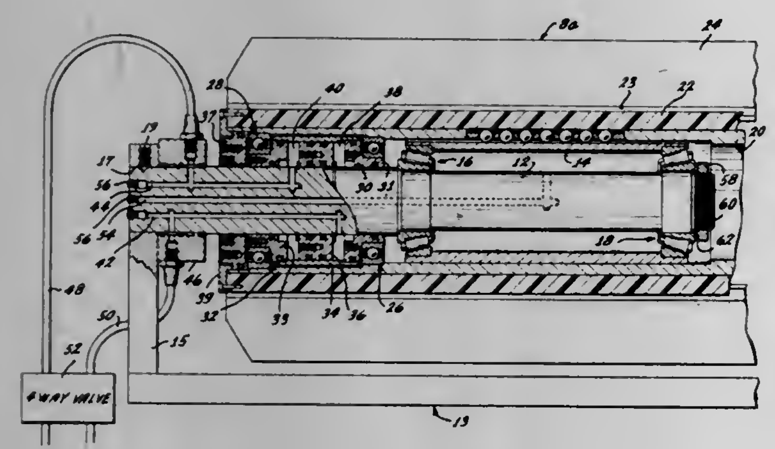
1. A reciprocable sander comprising:

a support shaft;

a rotatable support sleeve positioned about the shaft and in spaced relation thereto;

means interconnecting the sleeve and shaft;
pistons means positioned within the sleeve in operative engagement with the rotatable support sleeve with actuation of the piston means producing a reciprocating movement of the sleeve;
means to transmit rotational movement to the sleeve;
sanding means carried by said support sleeve;
said support shaft being stationary and said support sleeve being rotated and reciprocated with respect to said stationary shaft;
a rotatable support bearing positioned on said shaft, and
said bearing having an external surface in sliding engagement with said sleeve.

2. A reciprocable sander comprising:



a support shaft;
a rotatable support sleeve positioned about the shaft and in spaced relation thereto;
means interconnecting the sleeve and shaft;
piston means positioned within the sleeve in operative engagement with the rotatable sleeve with actuation of the piston means producing a reciprocating movement of the sleeve;
motor means positioned within said support sleeve for imparting rotational movement to said support sleeve, and sanding means carried by said sleeve,
whereby rotational movement of the sleeve provides contact between the sanding means and a surface with the relative position of the sanding means and the surface being varied through the reciprocatory movement of the sleeve.

3,868,792
PASSAGE STRUCTURE

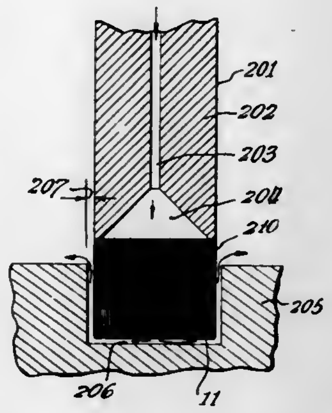
John A. Roberts, North Chelmsford, and Peter R. Roberts, Groton, both of Mass., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 3,931, Jan. 19, 1970, Pat. No. 3,373,367, which is a continuation-in-part of Ser. No. 471,123, July 12, 1965, abandoned. This application Feb. 16, 1973, Ser. No. 333,112

Int. Cl. B24b *35/00*

U.S. Cl. 51—204 **2 Claims**

1. A hole forming tool for use with an abrasive slurry comprising:
a shank having a first end and a second end and at least one internal passage extending between said ends; and,
a tip having a first and second end, a plurality of substantially parallel internal passages therebetween, each of said passages having preselected cross section shape, said tip secured at said first end to said second end of said shank, said shank passage continuously connected to said tip passages with said second end of said tip having a preselected peripheral and cross-sectional geometric shape, at least one of the passages of the tip having a diameter of less than 10 mils.



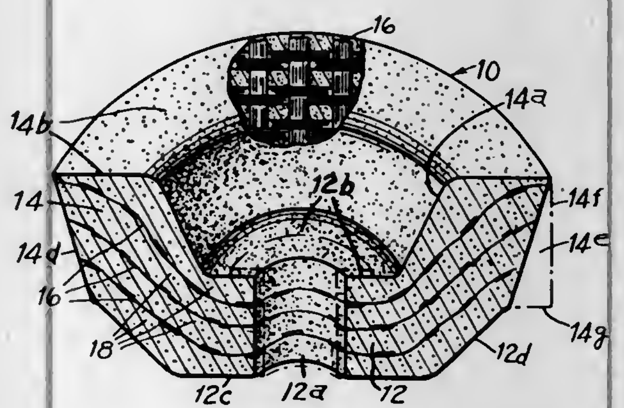
3,868,793
INTERNALLY SAFETY REINFORCED CUP GRINDING WHEEL

John J. Corcoran, Ashland, and Paul W. Kalinowski, Boylston, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed June 18, 1973, Ser. No. 370,938

Int. Cl. B24d *7/04*

U.S. Cl. 51—209 R **8 Claims**



1. An internally safety reinforced cup type resinoid bonded abrasive grinding wheel comprising:
a recessed central hub portion of predetermined axial thickness extending radially between a relatively deep recess in one side of the grinding wheel and an opposite side of the grinding wheel to an exterior peripheral surface of the hub portion and wheel and including substantially the entire opposite side of the grinding wheel;
means in the central hub portion for mounting and rotating the wheel about a central axis;
an annular sidewall portion of predetermined radial thickness and initial axial length reduceable during grinding, integrally molded with the hub portion, extending around the central axis and the recess and generally axially from the recessed central hub portion to the one side of the wheel and having
a radial grinding surface on the one side of the grinding wheel and
an external peripheral surface adjacent to and extending from the radial grinding surface to a junction with the exterior peripheral surface of the hub portion and wheel; and
at least one internal layer of safety reinforcing material integrally molded within and bonded to the central hub and sidewall portions and having a smoothly curved shape extending continuously generally radially outward through the central hub portion, then generally both axially and radially outward in a continuously curving path through the annular sidewall portion to an outer peripheral edge;
whereby the continuous internal safety reinforcing material is bonded to and continuously interconnects the central hub and sidewall portions of the wheel, has no sharp bends at which breake are likely to occur, permits the wheel to be operated safely at high speed, holds fragments of the wheel which may be accidentally broken together and thereby prevent them from being hurled at high speed and causing personal injury and the radial position of the outer peripheral edge once exposed at the radial grinding surface varies as the axial length of sidewall portion is reduced during grinding.

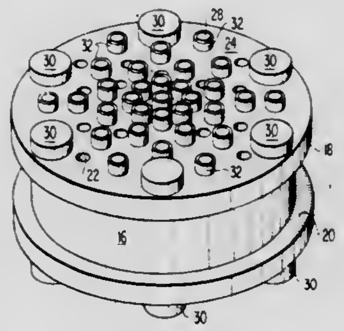
3,868,794
METHOD OF FINISHING LASER RODS AND FIXTURES THEREFOR

Wayne J. Zitkus, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 16, 1973, Ser. No. 379,399

Int. Cl. B24b *1/00, 7/24, 41/06*

U.S. Cl. 51—216 A **14 Claims**



1. In the method of finishing laser rods wherein an end surface of a laser rod blank is ground and polished to produce the required angular orientation and degree of flatness on said end surface, the improvement which comprises the steps of securing a laser rod blank in a rigid fixture with one end of said laser rod blank projecting outwardly from a planar surface of the fixture and having its longitudinal axis disposed at an angle with respect to said planar surface corresponding to a predetermined angular orientation of said axis relative to the finished end surface to be produced on said laser rod blank, releasably mounting a glass sleeve on the outer surface of said one end of said laser rod blank, mounting a plurality of glass feet on said planar surface at points spaced from said laser rod blank and from one another, and simultaneously finishing said one end of said laser rod blank, said glass sleeve and said glass feet in a plane parallel to said planar surface.

10. A rigid metal fixture for use in finishing laser rod end surfaces comprising a body, a pair of spaced apart planar surfaces on said body, a plurality of spaced parallel bores formed in and extending through said body and in which to accommodate a like plurality of laser rod blanks in slip fit relationship, sais bores each having a terminal end opening communicating with each said planar surface and having its longitudinal axis disposed at a predetermined angle with respect to each of said planar surfaces and therewith defining by such angle the angular planar surface orientation impartable to the end surfaces of said laser rods, and a plurality of glass discs projecting from each of said pair of planar surfaces at mutually spaced locations and laterally spaced from said bore openings.

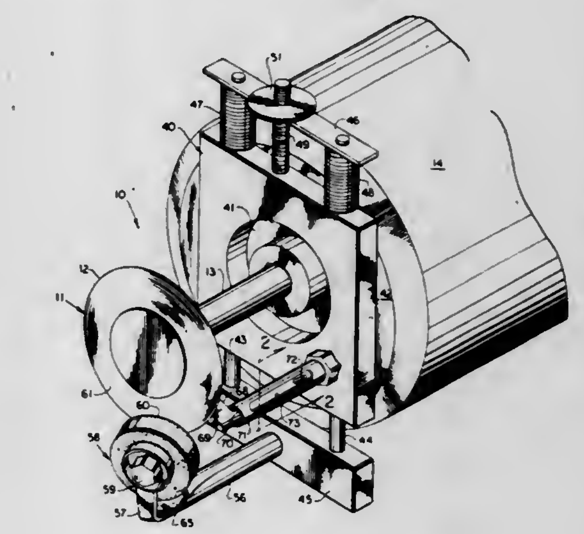
3,868,795
APPARATUS FOR CONTINUOUSLY SHARPENING A ROTARY BLADE

J. Samuel Rees, Rt. 1, Box 4, Preston, Ga. 31824

Filed Sept. 25, 1972, Ser. No. 291,734

Int. Cl. B24b *3/36*

U.S. Cl. 51—248 **9 Claims**



6. Apparatus for continuously sharpening the peripheral edge of a rotary blade mounted for rotation by a drive shaft, comprising:
a support member mounted in fixed relation to the peripheral edge of the rotary blade;
first support means adjustably connected to said support member for selective positioning in radial spaced apart relation to said peripheral edge;
said first support means including resilient means urging said first support means toward said selected radially spaced position and being resiliently yieldable in a direction of increased radial spacing;
a blade sharpening member mounted on said first support means maintained in blade sharpening contact with one side of said peripheral edge; and
deburring means mounted on said support member and urged into maintained deburring contact with another side of said peripheral edge, irrespective of said radial spacing of said blade sharpening member on said first support means.

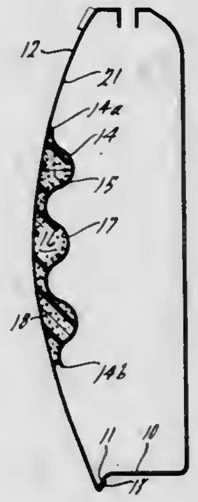
3,868,796
SIDE DOOR INTRUSION PROTECTION

George F. Bush, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1973, Ser. No. 347,960

Int. Cl. E04c *2/38*

U.S. Cl. 52—618 **2 Claims**



1. A reinforced door panel construction, comprising:

a. an annular frame having a peripheral flange lying substantially transverse to an axis of said frame and forming a mounting surface,

b. an outer door panel secured to said flange at least at circumferentially spaced locations of said flange,

c. a convoluted inner panel secured to said outer panel at least at two opposite edges thereof, said inner panel being formed from high strength cold-rolled steel having a strength level at least 90,000 ksi, the convolutions of said inner panel have a height no greater than three times the minimum thickness of said foam separating said panels, and each panel being formed of thin gauge sheet material no greater in thickness than 0.031, and

d. a rigid foam core effective to substantially occupy the entire space between said inner and outer panels and effective to provide the sole surface to surface bond between said panels, said panel and foam composite gradually deforming under load without abrupt crumbling.

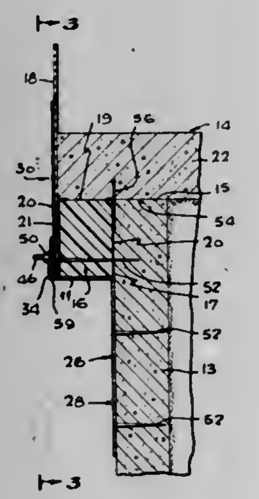
3,868,797
CANTILEVER DECK STRUCTURE

Harry Fox, and Alex Hardy, both of Los Angeles, Calif., assignors to Harco Products Inc., Los Angeles, Calif.

Filed Dec. 27, 1973, Ser. No. 428,754

Int. Cl. E04b *1/34*

U.S. Cl. 52—73 **13 Claims**



1. A cantilever deck form for a wall structure whose upper end follows an irregular curve, comprising a base portion and a wall portion, said base portion comprising a strip of polystyrene foam having a first surface adapted to lie against a generally perpendicular surface of the upper portion of the wall structure and a second generally horizontal surface constituting the base surface of the form, a plurality of brackets adapted to be connected to the wall structure, in spaced relation to each other along the said irregular curve, each bracket comprising a depending anchor portion adapted to abut and be secured to a surface of the wall structure, a support surface for said strip of polystyrene foam, and an upwardly projecting form supporting portion, said strip of polystyrene foam mounted on the support surface of the brackets and shaped so that when the strip of polystyrene foam is mounted on the support surface of the brackets, the second generally horizontal surface of the strip of polystyrene foam lies at least close to the upper end of the wall structure, said wall portion of the form comprising a thin sheetlike strip of fiber glass mounted edgewise on the support surface of the brackets and projecting upwardly above the upper end of the wall structure to at least the thickness of the cantilever deck, said strip of fiber glass supported both by the upwardly projecting form supporting portion of the brackets, and by said support surface, said thin strip of fiber glass sheet disposed generally perpendicular to the said second generally horizontal surface of the strip of polystyrene foam.

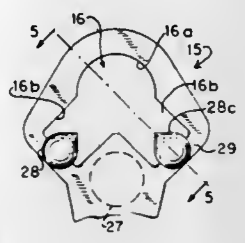
3,868,798
MODULES FOR THROUGH- AND UNDER-DRAWING FLOORING

Joseph P. Spica, 14337 Blackburn, Livonia, Mich. 48154

Continuation-in-part of Ser. No. 280,968, Aug. 16, 1973, Pat. No. 3,802,144. This application Apr. 8, 1974, Ser. No. 458,859

Int. Cl. E04c *2/10, 1/30*

U.S. Cl. 52—100 **10 Claims**



1. In a square integrally-formed molded plastic module adapted for laying interlocked with adjacent like modules in an array on a substantially flat and horizontal supporting surface, wherein a flat plate-like body has a multiplicity of apertures through the thickness of the body as through-drainage openings, integral equi-length feet projecting from the bottom for support of the plate spaced from the support surface to provide under-drainage spaces, the improvement comprising:

on a first side margin of the module a row of equally spaced short free-ended bar-like projections extending perpendicularly from a margin-adjacent a first straight portion of the body; certain of said feet being each located on said straight portion at a respective region of intersection by a said projection; along a second straight portion of the body at a second side margin, a row of equi-spaced like laterally projecting interlock lugs, having spacings equal to multiples of the spacing of said projections,

each lug downwardly offset from the plate top to extend under a like adjacent module and having a vertical aperture adapted to receive therein from above a foot on a said first side of a like adjacent module;

each lug having a pair of upwardly extending grip posts thereon inboard of said aperture thereof and adapted in shape and spacing to be resiliently displaced by and to receive and grip therebetween a top-entering respective projection of an adjacent module having a foot entering from above, and to be engaged in, the aperture of said lug.

3,868,799
BURIAL VAULT

Walter W. Hayward, 1805 Ponderosa Pl., Loveland, Colo. 80537

Filed Apr. 18, 1974, Ser. No. 461,911

Int. Cl. E04h *13/00*

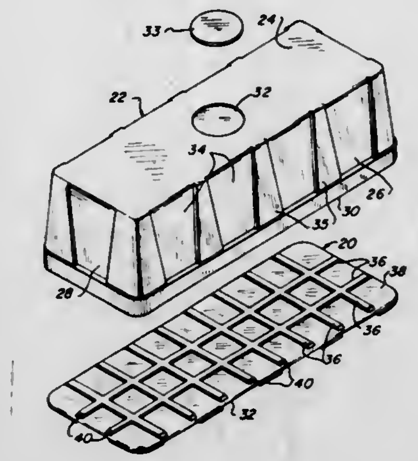
U.S. Cl. 52—131 **6 Claims**

1. In a burial vault having a generally rectangular base panel upon which is mounted a cover composed of a top panel from which resiliently flexible integral walls depend downwardly to define a peripheral skirt engageable with the perimeter of said base panel, the improvement comprising:

means distributed around the periphery of said skirt to define one part of a latching mechanism coupling said cover to said base panel;

means distributed around said perimeter to define the other part of said latching mechanism;

and sealing means extending continuously between said skirt and said perimeter to define a seal protective of the passage of fluids into the cavity defined by said cover and base panel together while permitting the egress of gases and liquids from said cavity, said sealing means including an inwardly opening continuous recess formed in the peripheral portion of said skirt and a flexible continuous flap projecting integrally outwardly from said perimeter a distance such that its free end is pressed only against the side wall of said recess in the latched position of said cover on said base panel.



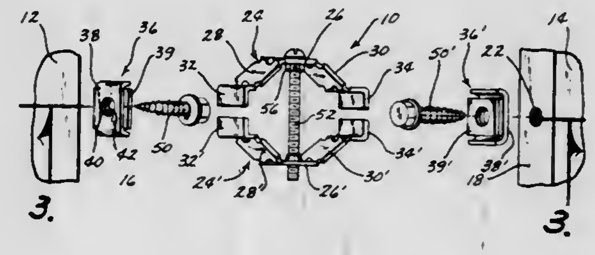
3,868,800
PANEL JACK CONNECTOR

David A. Peterson, Ames, Iowa, assignor to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Dec. 3, 1973, Ser. No. 421,250

Int. Cl. E04b *1/48;* **E04c** *1/10*

U.S. Cl. 52—285 **7 Claims**



1. A connector for joining adjacent panels having spaced apart adjacent edge portions, comprising,

a first connector arm having first and second ends,

a second connector arm having first and second ends and being spaced apart from said first connector arm,

a first receiver means removably secured to the first ends of said first and second connector arms,

a second receiver means removably secured to the second ends of said first and second connector arms,

first and second screw members extending through said first and second

receiver means respectively for threadable insertion into the adjacent edge portions of the panels,

a length adjustable member connected to said first and second connector arms and extending therebetween for selectively moving the first ends of said first and second connector arms with respect to the second ends of said first and second connector arms,

said first ends of said first and second connector arms being parallel to the edge portion of the adjacent panel, said first ends being spaced apart to define an opening therebetween, said second ends of said first and second connector arms being parallel to the edge portion of the adjacent panel, said second ends being spaced apart to define an opening therebetween, said screw members extending through said openings and through said receiver means,

said first and second ends of said connector arms having inner and outer sides, each of said receiver means comprising plate means bent upon itself to form first and second plate members having substantally a U-shaped configuration, said first and second plate members being positioned on opposite sides of the ends of the connector arms.

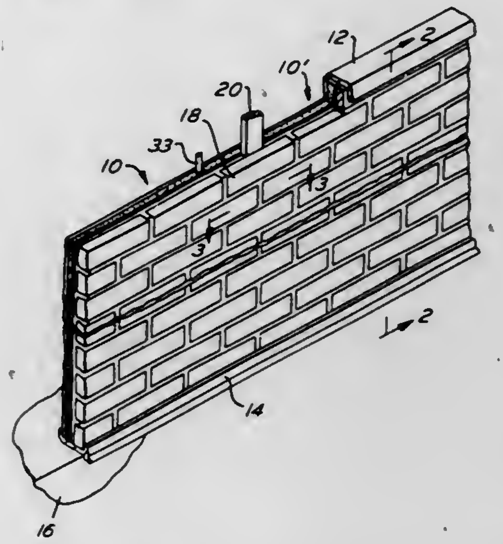
3,868,801
BUILDING PANEL

Gershen Weiner, 1125 N. 16th, Allentown, Pa. 18102

Continuation-in-part of Ser. No. 20,764, March 18, 1970, abandoned. This application Jan. 11, 1971, Ser. No. 105,686

Int. Cl. E04c *2/24*

U.S. Cl. 52—309 **6 Claims**



1. A prefabricated building panel adapted to be coupled with an adjacent building panel to form the wall of a building, said panel having an outer weathering or facing layer to define the outer surface of a building, said panel having an inner facing layer to define the walls of a room in a building, said outer facing layer being defined by a plurality of masonry members bonded together by a layer of polyester mortar, said mortar extending across the back of said masonry members and in the space between adjacent members, a layer of closed cell foam urethane polymer between the layer of mortar and the inner facing layer, said foam polymer bonding said inner facing layer to said layer of mortar, and a reinforcement wire mesh between said foam polymer and layer of polyester mortar.

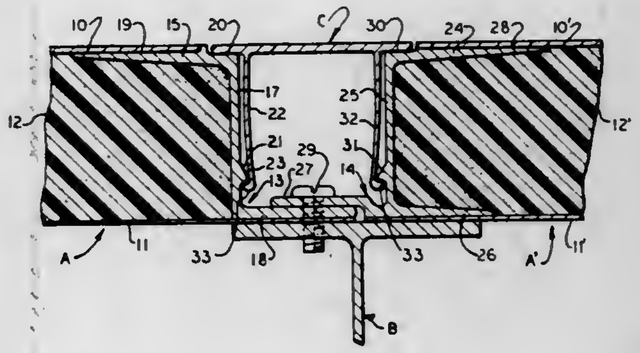
3,868,802
FLUSH JOINT STRUCTURE FOR ADJOINING PANELS

Theodor C. Schubach, Bonita, Calif., assignor to Rohr Industries Inc., Chula Vista, Canada and Rohr Industries, Inc., Chula Vista, Calif.

Filed Oct. 11, 1972, Ser. No. 296,517

Int. Cl. E04c *1/10, 2/08*

U.S. Cl. 52—471 **4 Claims**



1. A concealed flush joint structure comprising in combination with two generally similar structural floor panels mounted in edge-to-edge relation on an underlying supporting member, to define a common upper surface, adjacent edge faces of said first and second panels spaced slightly apart, and parallel, each of the panels having a marginal recess in an upper face thereof along its respective adjacent edge to receive the edge of a cover plate flush therein, each panel further comprising a parallel bottom facing sheet,

a first of said adjacent edge faces comprising an edge member of said first panel, of general Z cross sectional shape having an upper flange portion bonded to an underside marginal portion of a top facing sheet of said first panel and a bottom flange portion bonded to an upper side of a bottom facing sheet marginal portion of said first panel wherein said bottom flange portion projects outwardly in the direction of the adjacent floor panel,

a second of said adjacent edge faces comprising an edge member of said second panel of general channel cross sectional shape having an upper flange portion bonded to an underside marginal portion of a top facing sheet of said second panel and a lower flange portion bonded to an upper side of a substantially continuous bottom facing sheet with the open side of the channel facing laterally inwardly toward the interior of said second panel,

a flange projecting from the lower side of each second edge member and in relative overlapping engagement with the projecting flange from said one edge of the adjoining panel, the overlapping flanges holding the edge faces of the panels thereabove in spaced, parallel relation,

a core of light, structural material having high thermal and acoustical insulative properties filling the space interiorly of the facing sheets and edge members and bonded to said sheets and edge members,

a first latch step along the exterior face of the intermediate portion of the Z-shape of the first edge member,

a second latch step along the exterior face of the intermediate portion of the second edge member,

a plurality of fasteners penetrating the overlapping flange portions of the first and second edge members and the bottom facing sheet of said first panel, and directly connecting the same to said underlying supporting member, an extruded cover plate having load bearing structural integrity permanently flush fitted to and supported on said oppositely disposed upper marginal portions of the adjoining pair of panels to span the space therebetween, and

a pair of elongated latch fingers extending downwardly from the lower face of said flush plate, each latch finger being shaped and being in latching engagement with one of said latch steps when the plate is seated flush on such upper marginal panel portions.

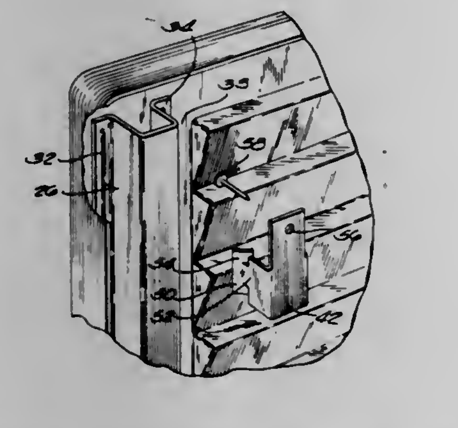
3,868,803
PLASTIC SHUTTER AND MOUNTING CLAMP THEREFOR

Donald A. Bice, Brookfield, Wis., assignor to Benson Mfg. Corporation, Menomonee Falls, Wis.

Filed June 4, 1973, Ser. No. 366,882

Int. Cl. E06b *7/08*

U.S. Cl. 52—473 **2 Claims**



1. A plastic shutter construction comprising a panel section including marginal frame sections having a peripheral flange, elongated mounting channel members fixed to a rear surface of said marginal sections and projecting inwardly from the marginal sections toward the building structure to which the shutter is to be fastened, said channel members having a generally rectangular cross section with outturned flanges secured to the marginal sections of the shutter by sonic weldments between abutting surfaces of said flange and said marginal sections including mounting clamps adapted to engage said channel members, said mounting clamps including a web portion and two upstanding leg portions, terminal portions which diverge outwardly from said leg portions, said terminal portions including barbs which extend inwardly into the gap defined by the leg portions for rigidly grasping and securing said clamp to said channel member, and connecting portions hingedly connecting said terminal portions with said leg portions intermediate the width of the terminal portions, said connecting portions having a width less than the width of said legs and the width of said terminal portions to afford outwad displacement of said terminal portions to admit said channel members.

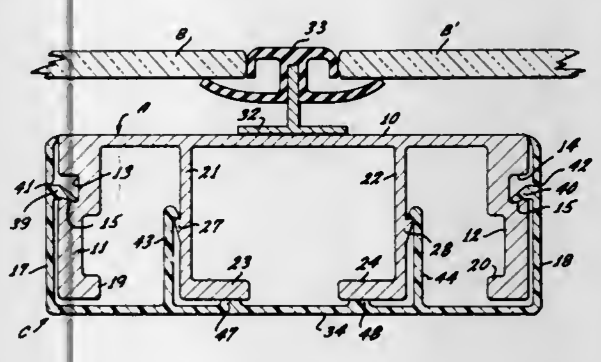
3,868,804
SNAP-ON MULLION COVER WITH SCORED BREAKAWAY FLANGE PORTIONS

Keith W. Tantlinger, Coronado, Calif., assignor to Rohr Industries Inc., Chula Vista, Calif.

Filed June 5, 1974, Ser. No. 476,736

Int. Cl. E04f *19/02;* **E06b** *3/00*

U.S. Cl. 52—98 **11 Claims**



1. In combination with one of a plurality of generally similar mullions mounted between adjacent windows of a transit type vehicle, each of the mullions having similar grooves extending lengthwise one along each side thereof, a mullion cover comprising:

a length breakaway channel material, comprising a bottom portion and two side flanges, fitted over the inwardly directed portion of said one mullion, each channel side flange being of a width normally to extend over and conceal the side groove in its respective side of said one mullion,

a scored breadaway line extending lengthwise along each mullion cover side flange to facilitate the removal of a selected portion of side flange material extending from the breakaway line to the free edge of such flange, each breakaway line extending along the mullion side groove therebenath and being so located as to expose a selected portion of such mullion side groove upon removal of such selected portion of side flange material, each portion of mullion side groove so exposed being of a width to receive therein a wall panel edge portion of knonw thickness.

3,868,805
DOUBLE GLAZING UNIT

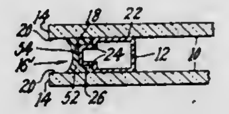
William R. Battersby, Lexington, Mass., assignor to USM Corporation, Boston, Mass.

Division of Ser. No. 137,274, April 26, 1971, Pat. No. 3,759,771. This application May 24, 1973, Ser. No. 363,363

Int. Cl. E06b *3/66*

U.S. Cl. 52—616 **3 Claims**

1. An improved double glazing unit comprising a spacer, panes of glass on opposite sides of said spacer, the spacer being spaced inwardly from the edges of said panes to form a channel defined by the outer face of said spacer and the surfaces of said panes in the areas from the spacer to the edges of said panes, said spacer being of generally rectangular cross-section including opposed surfaces fitting snugly against the inner surfaces of said panes to resist passage of material, a body of solidified stiff resilient thermoplastic resinous material cast from molten state in said channel with marginal edge portions of said panes extending beyond said body of resinous material, said body having first portions adjacent said panes and strongly adherent to said panes and having an interconnecting web portion extending between and joining said first portions, said web portion having a concave outer surface such that the web has a thin central portion for flexibility and increases in thickness to a maximum adjacent the glass, the central portion of said web portion having a thickness determined by the strength and stiffness of the resinous material used sufficient to hold said panes against separation but providing limited flexibility to accommodate relative movement of said panes caused by differences in thermal expansion due to differences in temperature of the panes.



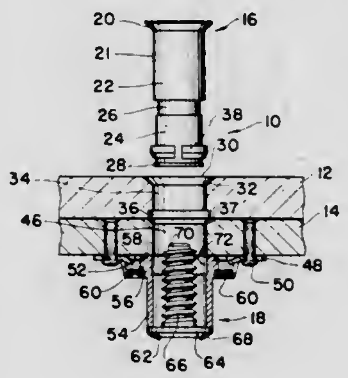
3,868,806
BARREL NUT ASSEMBLY

Ervin J. Dey, Santa Fe Springs, Calif., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed May 21, 1973, Ser. No. 362,175

Int. Cl. F16b *5/02*

U.S. Cl. 52—758 F **12 Claims**



1. A barrel nut assembly for use with a workpiece having an opening extending from one face thereof to the other face thereof, said assembly comprising a retaining plate adapted to be secured to one of said faces of said workpiece and having an opening formed therein, said assembly further comprising a barrel nut non-rotatably carried by said retaining plate and including a generally cylindrical shell having a bearing surface on one end and extending through said opening in said retaining plate, said opening in said retaining plate being larger than the outer diameter of said generally cylindrical shell adjacent said bearing surface whereby said bearing surface is adapted to bear against said one of said faces of said workpiece, the inner diameter of said bearing surface being no greater than the diameter of said opening in said workpiece at said one of said faces against which said bearing surface is adapted to bear, the other end of said generally cylindrical shell including thread means extending toward said one end of said generally cylindrical shell and terminating intermediate the ends thereof.

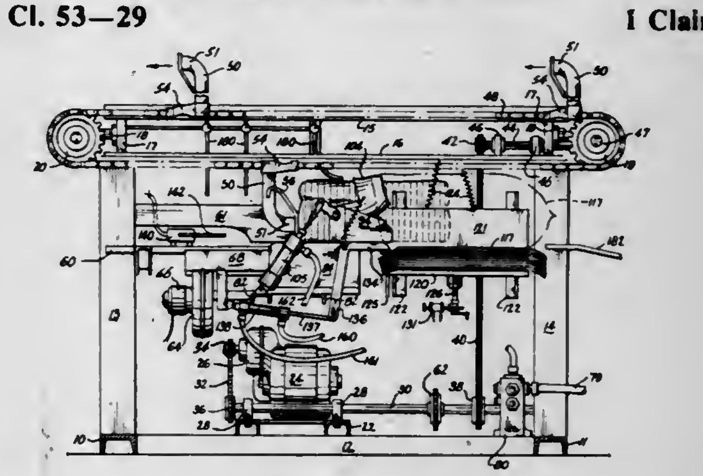
3,868,807
BAGGING PROCESS

Billy P. Noyes, and Howard L. Willard, both of Seattle, Wash., assignors to Alvin C. Formo, Seattle, Wash.

Continuation of Ser. No. 164,863, July 6, 1971, abandoned, which is a continuation of Ser. No. 15,763, March 2, 1970, abandoned, which is a division of Ser. No. 757,513, Aug. 5, 1968, Pat. No. 3,508,379, which is a continuation of Ser. No. 299,948, Aug. 5, 1963, abandoned. This application Apr. 23, 1973, Ser. No. 353,707

Int. Cl. B65b *5/06, 43/26, 57/12*

U.S. Cl. 53—29 **1 Claim**



1. In the process of automatically bagging successive articles including supplying a pack of bags at a bag-filling station, successively and intermittently placing articles to be bagged at a loading station ahead of the bag-filling station along the path of pusher means moving from the loading station to and past the bag-filling station, blowing air toward the mouth of the top bag in the pack for partially opening such bag mouth, and mechanically distending the partially-opened mouth of such top bag for receiving an article to be bagged by movement of such pusher means, the improvement which comprises moving pusher means continually and uninterruptedly always in the same circulatory sense along an orbital path past the loading station whether or not an article to be bagged is located at such loading station and then to and past the bag-filling station, initiating operation of an air jet automatically toward the mouth of the top bag only in response to arrival at the loading station of an article to be bagged, clamping the bags in the bag pack during such air blowing for partially opening of the mouth of the top bag and releasing the top bag as its mouth is mechanically distended, reclamping the bags in the bag pack below the top bag prior to moving the pusher means past the bag-filling station, continuing movement of the pusher means to and past the bag-filling station while the bags in the pack below the top bag are held in clamped condition, and by such movement of the pusher means past the bag-filling station removing the top bag from the stack only if the mouth of the top bag is mechanically distended and the pusher means moves an article to be bagged from the loading station into such distended mouth of the top bag, the pusher means otherwise passing over the top bag if its mouth is not distended.

3,868,808
APPLICATON OF CONTAINER CLOSURES

Henry Richard Preston, 18 Corella Ave., Melton, Victoria, Australia

Filed Nov. 12, 1973, Ser. No. 414,730

Claims priority, application Australia, Nov. 22, 1972, 1327/72

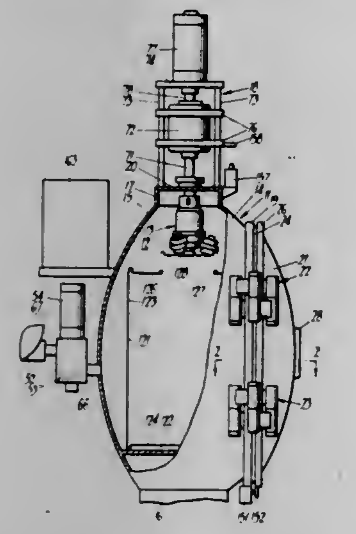
Int. Cl. B65b *31/02, 7/28*

U.S. Cl. 53—97 **10 Claims**

1. Apparatus for applying a lid to the opening of an open-topped container under vacuum conditions, the container opening having an upwardly rounded rim and the lid having an upstanding, outwardly hooked peripheral flange to fit over and around the container rim, which apparatus comprises a hollow vessel defining a vacuum chamber and including door means to provide access to the chamber whereby the open

topped container can be placed in the chamber; means to evacuate the chamber when the door means is closed; and lid applicator means to hold the lid within the chamber and operable to apply the lid to the opening of the container while the chamber is evacuated; said applicator means comprising

a. a rotary rolling head disposed in an upper-part of the chamber and including a working roller support structure rotatable about a vertical axis of rotation, working roller carriers pivotally mounted on the support structure for pivoting movement about respective horizontal pivot



axes, and working rollers rotatable on said carriers about upright roller axes disposed outwardly of said horizontal pivot axes;

b. lid holding means carried by the rolling head and effective to hold the lid beneath the rolling head;

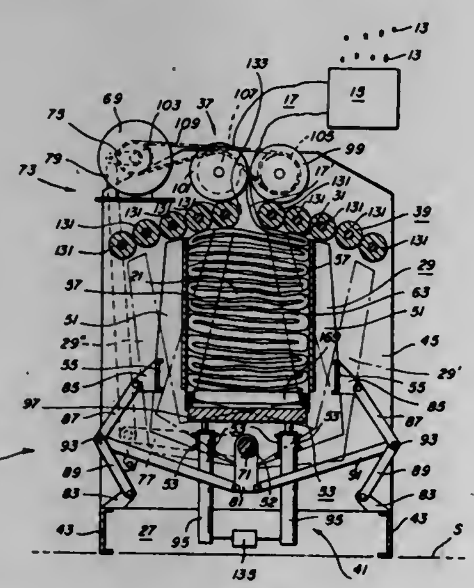
c. means to cause relative vertical movement between the container and the rolling head whereby to apply the lid to the container opening; and

d. means to rotate the working roller support structure to cause the working rollers to run on the peripheral flange of the lid.

3,868,809
FIBER BALING APPARATUS

Woodrow W. Bledsoe, 1112 Deramus St., Prattville, Ala. 36067

Filed Apr. 15, 1974, Ser. No. 461,153
Int. Cl. B65b *63/04, 63/02*
U.S. Cl. 53—117 **12 Claims**

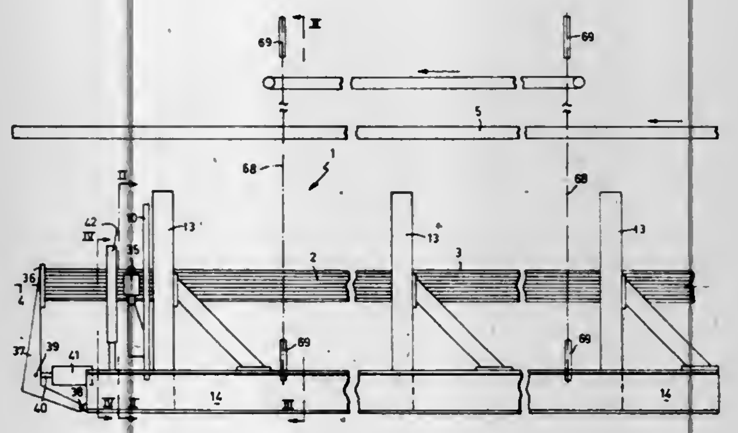


1. Fiber baling apparatus for compressing a bat of fibers into a tightly compressed bale, said fiber baling apparatus comprising frame means restingly supported upon a support surface, cradlelike receptacle means having an upwardly directed opening for receiving the fiber bat, platen means establishing a bottom of said receptacle means for supporting the fibers contained therein, rocking means coupled to said cradlelike receptacle means for causing said cradlelike receptacle means and said platen means to rock to and fro as the bat of fibers is being received in said receptacle means, means disposed above said upwardly directed opening of said receptacle means for delivering a thin bat of compressed fiber into said receptacle means, retaining means disposed above said receptacle means and coacting with said platen means for further compressing the bat while it is being received in said receptacle means as said receptacle means rocks, and receding pressure means attached to said platen means for yieldably supporting the weight of the compressed fiber and for maintaining compression on the fibers as said receptacle means is being filled with the fibers.

3,868,810
MACHINE FOR BINDING TOGETHER A NUMBER OF BARS, TUBES OR SIMILAR ELONGATED OBJECTS

Fredericus Antonius Jozef Bos, Enkhuizen, Netherlands, assignor to Polva-Nederland B.V., Enkhuizen, Netherlands

Filed July 31, 1973, Ser. No. 384,367
Claims priority, application Netherlands, Feb. 3, 1972, 7201437
Int. Cl. B65b *13/04, 27/10*
U.S. Cl. 53—198 R **9 Claims**



1. An apparatus for binding together a plurality of bars, tubes or similar elongated objects including;

a frame having a longitudinal axis, and including at least three supports transverse to said longitudinal axis;

a disc-shaped member rotatably mounted on each of said transverse supports, each of said disc-shaped members including a recess extending from a portion of the periphery of said disc-shaped member radially inwardly and having an inner portion, said inner portion of said radial inward extension of said recess extending beyond the axis of rotation of said disc-shaped member;

a substantially U-shaped support mounted on each of said disc-shaped members to coincide with said inner portion of said recess, said U-shaped support having first and second substantially vertical arms;

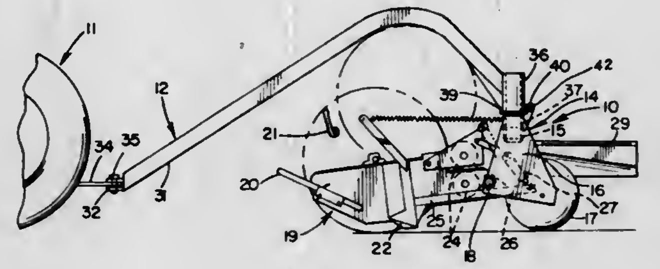
first and second claw members each being pivotally attached respectively to said first and second vertical arms; claw member pivoting means, mounted on said disc-shaped member, for pivoting said first and second claw members inwardly fo form with said U-shaped support an enclosure completely around the objects, said enclosure having an axis of rotation substantially coinciding with the axis of rotation of said rotating disc member;

rotating means for rotating said rotating disc member; and tape supply means for supplying and guiding tape to the objects rotating with said rotating discs from a direction transverse to said longitudinal axis.

3,868,811
METHOD AND APPARATUS FOR HARVESTING CROPS USING A TRACTOR-PULLED CROP HARVESTER

George B. Cicci, Broadview, Ill., and Guy O. Tufts, Phoenix, Ariz., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 20, 1973, Ser. No. 353,037
Int. Cl. A01d
U.S. Cl. 56—1 **7 Claims**



1. A crop harvester adapted to be pulled by a tractor having wheels on either side thereof comprising:

a frame;

a pair of ground wheels supporting said frame;

harvesting apparatus forwardly mounted on said frame and adapted to receive and harvest crops;

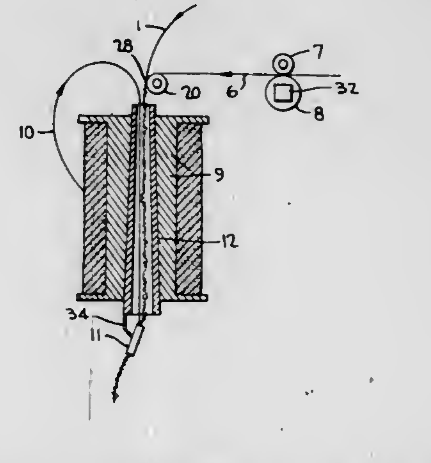
an arched hitching tongue having one end pivotally mounted to said frame about an axis located proximate to the transverse center of said frame, a distal end adapted for pivotal connection to a tractor hitch, and an intermediate portion capable of passing over said harvesting apparatus, said harvesting apparatus remaining in a forward orientation, said tongue being of sufficient length to permit said harvester to be operated with said harvesting apparatus outboard of said tractor wheels on either side thereof and substantially perpendicular to the path of travel; and

control means connecting said frame to said tongue to determine the relative angular position thereof to selectively permit placement of said harvester on either side of said tractor.

3,868,812
PROCESS AND APPARATUS FOR THE MANUFACTURE OF EFFECT YARN

Remy Chatin, Chavanoz, France, assignor to Moulinage Et Ritorderie De Chavanoz, Chavanoz, France

Continuation-in-part of Ser. No. 99,536, Dec. 18, 1970, abandoned. This application Nov. 23, 1971, Ser. No. 201,286
Int. Cl. D01h *7/88;* **D02g** *3/34, 3/38*
U.S. Cl. 57—12 **11 Claims**

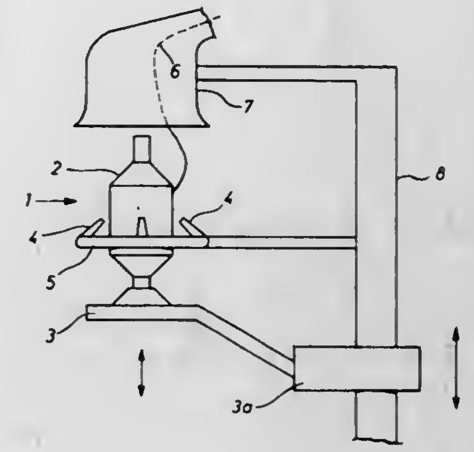


1. An apparatus for manufacturing fancy yarn including: means for supplying a core yarn to at least one overfeed point; at least one means for supplying an effect yarn to said overfeed point, the effect yarn being overfed in relation to the core yarn; false twist means spaced from said overfeed point to define a path of travel for the core and effect yarns from said overfeed point to said false twist means; the core and effect yarns being assembled into an intermediate yarn by said false twist means along said path of travel; means for supplying a binding yarn; means to bind the intermediate yarn with the binding yarn upon the reversal of the false twist forming a fancy yarn; and means for receiving the fancy yarn, the improvement which comprises means located along said path of travel for guiding the binding yarn substantially parallel to the intermediate yarn.

3,868,813
DEVICE FOR WINDING-OFF YARN ENDS

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano SA, Vernier-Geneva, Switzerland

Filed Feb. 4, 1974, Ser. No. 439,124
Claims priority, application Switzerland, Feb. 2, 1973, 1547/73
Int. Cl. D01h *13/00, 15/00*
U.S. Cl. 57—34 R **7 Claims**



1. A device for detaching and winding off the exposed yarn end from a body of wound-up yarn on a bobbin by means of compressed air, comprising a holder for a bobbin; a duct system for compressed air comprising an inlet duct, at least three outlet nozzles arranged concentrically around and directed towards the axis of said bobbin when mounted on said holder, and intermediate duct means connecting said inlet duct ot said nozzles; a driving device for effecting relative to-and-fro movement in the direction of the of said bobbin, between of said holder and said duct-system, said nozzles being directed to detach and wind off the exposed yarn end from said bobbin; and a reception tube mounted to receive said yarn end when detached from said bobbin, said reception tube having an open end directed towards said nozzles.

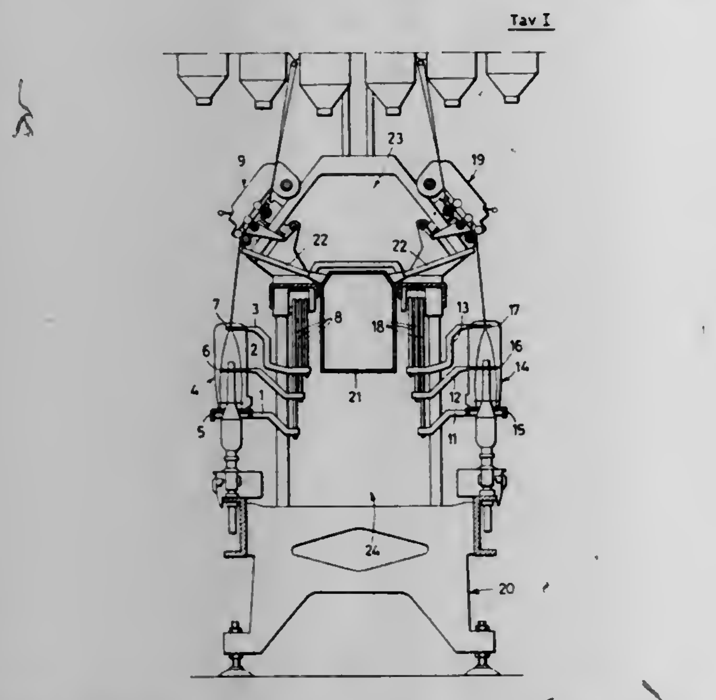
3,868,814
SPINNING FRAME HAVING TWO CONFRONTINGLY MOUNTED RING ROWS

Natale Chiari, Colgone Bresciano, Italy, assignor to Edera S.p.A. Officina Meccanica Tessile, Milan, Italy

Filed Sept. 24, 1973, Ser. No. 399,711
Claims priority, application Italy, Sept. 29, 1972, 29905/72
Int. Cl. D01h *5/68, 11/00*
U.S. Cl. 57—34.5 **4 Claims**

1. A single-control spinning frame having two confrontingly mounted spindle rows, in which each spindle row comprises three bars movable and respectively adapted to support the slider-carrying rings, the anti-ballooning containers and the thread guides, said three movable bars relative to one of the spindle rows being independent of those relative to the other spindle row, the inner space between the two machine fronts remaining thereby free of connecting cross-ties, an air-drawing manifold for grasping broken threads in the central

portion of said inner free space, air moving devices for cleaning the machine cylinder set in the upper portion of said inner free space, and air moving devices for cleaning the two machine fronts in the lower portion of said inner free space.



3,868,815
DRIVE AND BRAKE MECHANISM FOR AN OPEN-END SPINNING ASSEMBLY

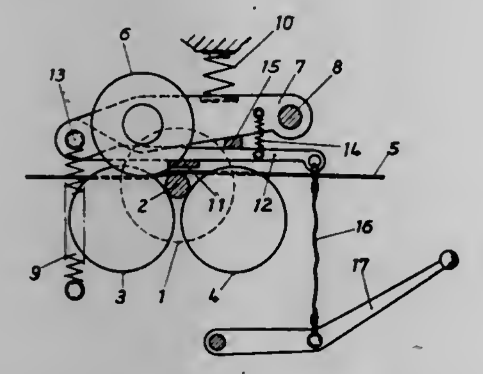
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Wilhelm Stahlecker, Reichenbach, Germany

Filed Aug. 18, 1972, Ser. No. 281,759

Claims priority, application Germany, Aug. 18, 1971, 2141276

Int. Cl. D01h *1/24, 7/22, 1/12*

U.S. Cl. 57—88 **55 Claims**



1. An arrangement for driving and braking a rotatable turbine shaft of an open-end spinning assembly comprising:

support means for supporting the turbine shaft in position, said support means including radial support means at one side of said turbine shaft for limiting radial movement of said turbine shaft toward said one side,

selectively engageable driving means for imparting rotational movement to said turbine shaft, said driving means including driving shaft contacting means which force said turbine shaft against said radial support means to aid in radially supporting said turbine shaft during driving thereof,

selectively engageable braking means for imparting braking forces to said turbine shaft, said braking means including braking shaft contacting means which force said turbine shaft against said radial support means to aid in radially supporting said turbine shaft during braking thereof,

and interconnecting means for transferring reaction forces experienced by said braking shaft contacting means during engagement of said braking means as disengaging forces which disengage said driving shaft contacting means with increased braking forces against said turbine shaft being accompanied by an automatic decrease in driving forces against said turbine shaft and with one of said driving shaft contacting means and said braking shaft contacting means forcing said turbine shaft against said radial support means at all times during engagement and disengagement of said driving and braking means, whereby a firm radial support of said turbine shaft is assured during transition between driving and braking theroef,

wherein said braking shaft contacting means is a brake lining, wherein said interconnecting means includes a brake arm and a movable element, said brake arm having said brake lining of the braking means attached thereto, wherein means are provided for moving said movable element with said driving shaft contacting means to force said driving shaft contacting means into driving engagement with said turbine shaft when said movable element is in a first driving engagement position, and wherein said brake arm and movable element are movably connected to one another for transmitting reaction forces acting on said brake lining to move said movable element from said driving engagement position.

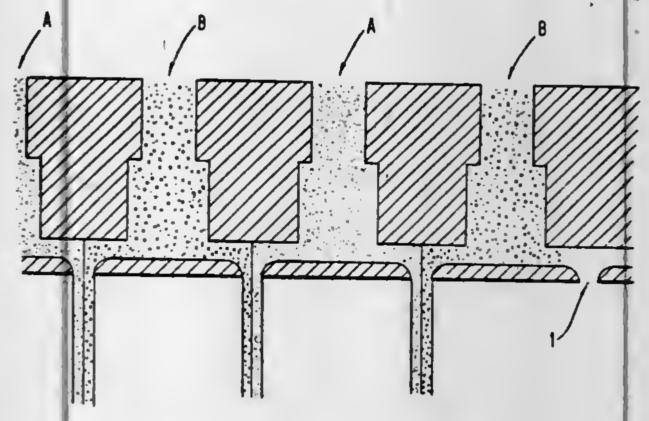
3,868,816
COMPOSITE ACRYLIC FIBERS AND SPUN YARNS

Yasuo Saji, and Shigeru Ikegami, both of Sunto, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Division of Ser. No. 848,796, Aug. 11, 1969, abandoned. This application Dec. 29, 1971, Ser. No. 213,726

Int. Cl. D02g *3/24, 3/02;* **D01d** *5/28*

U.S. Cl. 57—140 BY **14 Claims**



1. Composite acrylonitrile fibers comprising acrylonitrile copolymers *A* and *B*, said copolymers A and B comprising acrylonitrile and comonomers copolymerizable therewith; wherein the amount of said comonomers in said acrylonitrile copolymer A is shown by the following relationships:

$$2(M_a - N_a - 4.5)^2 + 9(M_a + N_a - 10.5)^2 \leqq 36 \text{ and}$$

$$19 \leqq M_a + N_a + 10L_a \leqq 32.5;$$

wherein the amount of said comonomers in said acrylonitrile copolymer B is shown by the following relationships:

$$0.16(\sqrt{24}\,M_b - N_b - 8\sqrt{24})^2 + (M_b + \sqrt{24}\,N_b - 8)^2 \leqq 25 \text{ and}$$

$$17 \leqq M_b + N_b + 10L_b \leqq 30;$$

wherein the compositions of said acrylonitrile copolymers A and B are related to satisfy the following relationships;

$$(M_a + N_9) - (M_b + N_b) > 1 \text{ and}$$

$$-0.35 \leqq L_a - L_b \leqq 0.35;$$

wherein *M* represents the amount, in weight percent, of hydrophobic comonomer in said copolymers A and B, said hydrophobic comonomer having a solubility in water at 20° C of less than 10 g./100 ml.; wherein *N* represents the amount, in weight percent, of hydrophilic comonomer, which does not contain an ionizable group, in said copolymers A and B, said hydrophilic comonomer having a solubility in water at 20° C of at least 50 g./100 ml.; wherein *L* represents the amount, in weight percent, in said copolymers A and B of an ionizable comonomer

selected from the group consisting of sodium allylsulfonate and sodium methallylsulfonate; and wherein a and b designate comonomers corresponding to copolymers A and B, respectively.

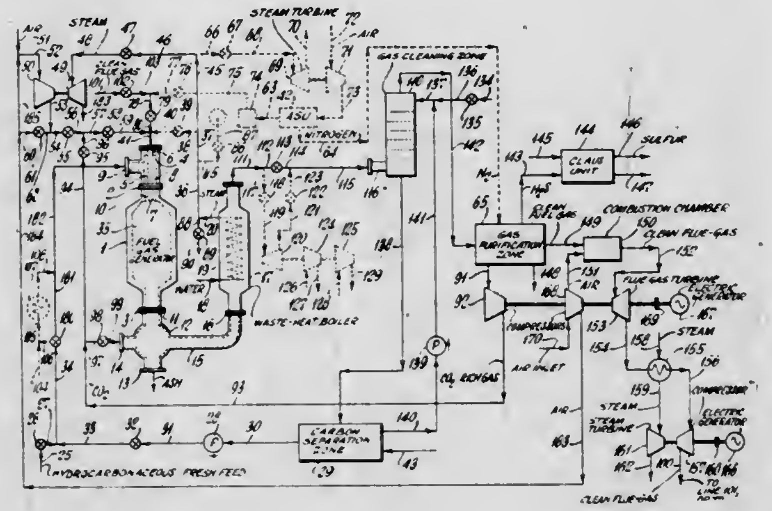
3,868,817
GAS TURBINE PROCESS UTILIZING PURIFIED FUEL GAS

Charles P. Marion, Mamaroneck, N.Y.; Warren G. Schlinger, Pasadena, Calif.; Albert Brent, Dix Hills, and James R. Muenger, Beacon, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,981

Int. Cl. F02b *43/12*

U.S. Cl. 60—39.02 **24 Claims**



1. A process for the generation of power by means of a gas turbine having a combustion chamber and an expansion turbine comprising:

1. reacting a hydrocarbonaceous fuel with a free-oxygen containing gas by partial oxidation in the presence of a temperature moderator selected from the group consisting of at least a portion of the CO_2-rich gas stream from step (3), at least a portion of the exhaust flue gas from step (4), and mixtures thereof in the reaction zone of a non-catalytic free-flow gas generator at an autogenous temperature in the range of about 1500°F to 3500°F and a pressure in the range of about 10 to 180 atmospheres absolute to produce an effluent gas stream comprising mixtures of H_2, CO, CO_2 and H_2O and one or more of the members of the group N_2, CH_4, COS, H_2S and Ar, and particulate carbon; and wherein the mole ratio (CO/H_2) dry basis of the effluent gas from the generator is at least 0.30;
2. cooling the effluent gas from (1) by indirect heat exchange with water thereby producing steam;
3. introducing the cooled effluent gas from (2) into a gas cleaning and purification zone and separately obtaining therefrom a stream of clean fuel gas comprising mixtures of H_2 and CO and one or more members of the group CH_4, N_2, H_2O, and CO_2; a CO_2-rich gas stream; a slurry stream comprising particulate carbon in a liquid vehicle; and optionally a gas stream comprising H_2S and COS; and
4. burning the stream of clean fuel gas from (3) with air in the combustion chamber of said gas turbine and passing the resulting flue gas as the working fluid through said expansion turbine to develop power and to produce exhaust flue gas.

3,868,818
AUTOMOTIVE GAS TURBINE ENGINE

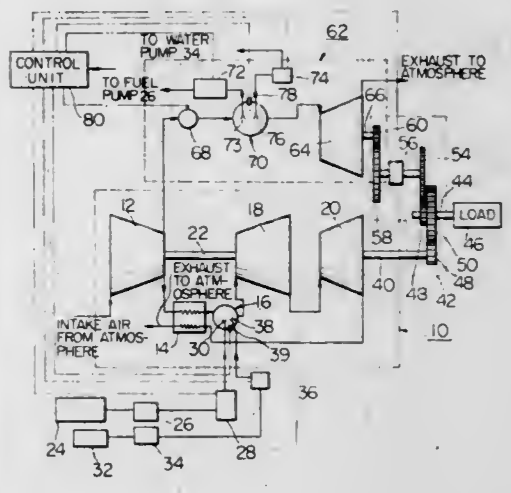
Takane Itoh, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Feb. 28, 1973, Ser. No. 336,760

Claims priority, application Japan, Mar. 3, 1972, 47-22039

Int. Cl. F02c *7/02, 1/06*

U.S. Cl. 60—39.15 **1 Claim**



1. A gas turbine engine for a motor driven vehicle comprising in combination, a first stage gas turbine including an air compressor, a combustor communicating with said air compressor and a source of fuel and generating working gases when said motor driven vehicle is running under light and heavy loads, a gas generator turbine communicating with said combustor and driven by said working gases delivered thereform, a shaft connecting said gas generator turbine to said air compressor, a power turbine coaxial with said gas generator turbine, means providing communication between said power turbine and said gas generator turbine and said power turbine being driven by said working gases delivered therethrough, a regenerator disposed between said air compressor and said power turbine, means providing communication between said regenerator with an outlet side of said power turbine of said first stage gas turbine to receive working gases therefrom for preheating air for deliverly to said combustor of said first stage gas turbine, a second stage gas turbine including a combustor communicating with said air compressor of said first stage gas turbine and said source of fuel, said last-mentioned combustor generating working gases when said motor driven vehicle is running under heavy load, and a power turbine rotatable about an axis parallel to that of said first stage turbine, the last-mentioned power turbine communicating with the last-mentioned combustor and driven by said last-mentioned working gases delivered therefrom, a flow control valve disposed between said air compressor of said first stage gas turbine and said last-mentioned combustor of said second stage gas turbine and providing communication therebetween when said motor driven vehicle is running under heavy load, a source of water, means for injecting water into said combustors of said first and second stage gas turbine when said motor driven vehicle is running under light and heavy loads, said water injecting means including respective water metering valves disposed between said source of water and said combustors of said first and second stage gas turbines for controlling the amount of water flow passing therethrough, first and second gear means connected to said power turbines of said first and second stage gas turbines, respectively, an output shaft connected to said first and second gear means, and a clutch mechanism disposed between said second gear means and said power turbine of said second stage gas turbine and providing a clutching and declutching drive connection between said output shaft and said power turbine of said second stage gas turbine.

3,868,819

EXHAUST GAS PURIFYING APPARATUS

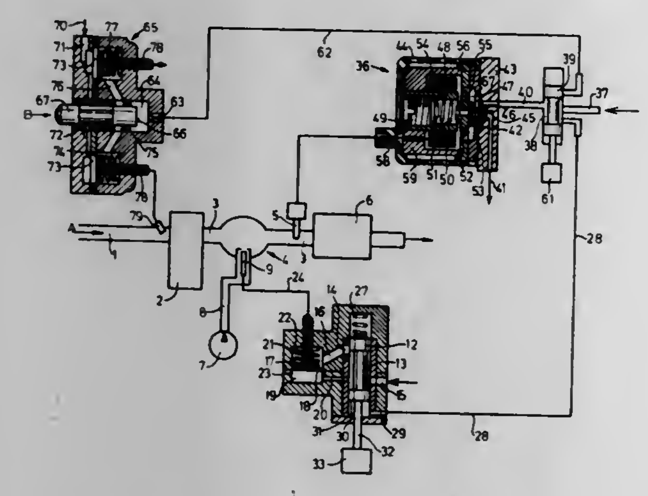
Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 24, 1972, Ser. No. 308,985

Claims priority, application Germany, Nov. 24, 1971, 2158119

Int. Cl. F02b *75/10*

U.S. Cl. 60—276 **4 Claims**



1. In an exhaust gas purifying apparatus for an externally ignited internal combustion engine operating on fuel continuously injected into its suction tube as primary fuel quantities, said engine having an exhaust conduit, said apparatus being of the known type that has (a) a catalyst situated in said exhaust conduit, (b) a thermal reactor situated in said exhaust conduit upstream of said catalyst and (c) a secondary air pump connected with said thermal reactor for supplying thhe latter with secondary air, the improvements comprising

- A. An oxygen sonde disposed in said exhaust conduit and emitting signals as a function of the oxygen concentration of the exhaust gases,
- B. means for supplying said thermal reactor with secondary fuel quantities,
- C. means coupled to said oxygen sonde for varying said secondary fuel quantities in response to said signals during the warm-up run of said engine when the temperature of said catalyst is above its reaction temperature and
- D. means for varying said primary fuel quantities in response to said signals during normal operational temperatures of said engine.

3,868,820

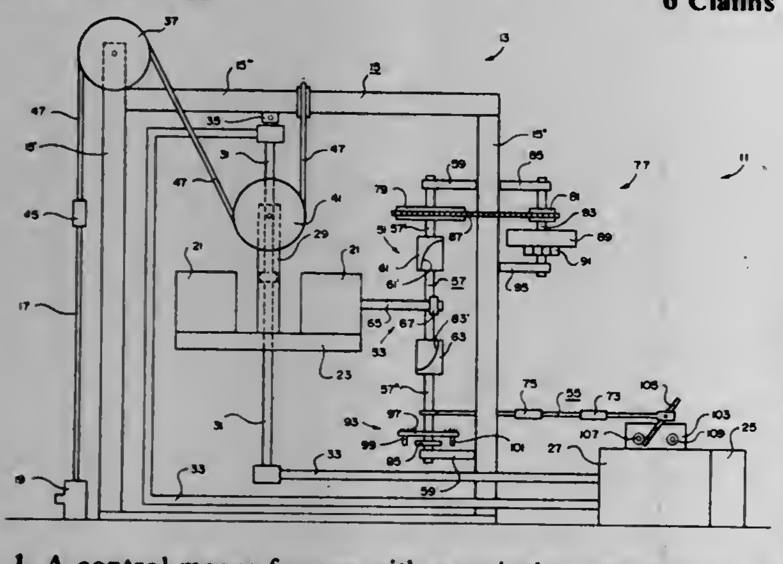
PUMP CONTROL MEANS

Joseph M. Lawson, P.O. Box 518, Natchez, Miss. 39120

Filed Feb. 25, 1974, Ser. No. 445,152

Int. Cl. F16h *39/46;* **F15b** *15/18*

U.S. Cl. 60—382 **6 Claims**



1. A control means for use with a typical counterbalanced pump unit including in general a frame, a pump rod, counterweights for offsetting the weight of the pump rod, means for driving the counterweights between upper and lower positions, and means causing the pump rod to move relative to the counterweights, said control means comprising:

- a. cammed means for mounting to the frame;
- b. cam means for fixedly mounting on the counterweights and for coacting with said cammed means as the counterweights are driven between the upper and lower positions to cause said cammed means to rotate;
- c. linkage means for connecting said cammed means to the means for driving the counterweights to regulate the means for driving the counterweights to cause the counterweights to move between the upper and lower positions in a smooth, even rate as said cam means causes said cammed means to rotate;
- d. means for temporarily storing the momentum of the rotation of said cammed means to cause rotation of said cammed means to continue after the counterweights have reached the upper or lower position;
- e. stop means for stopping the rotation of said cammed means after a fixed amount of rotation; and
- f. means for dissipating excessive momentum of said means for temporarily storing the momentum of the rotation of said cammed means after the rotation of said cammed means is stopped.

3,868,821

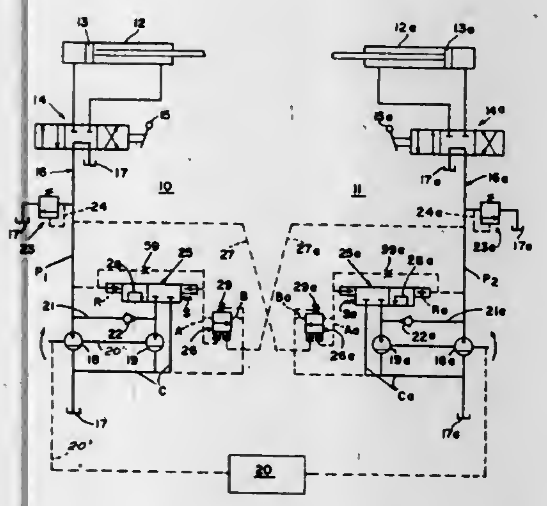
AUTOMATIC PUMP CONTROL SYSTEM

Frank W. Ratliff, Oak Forrest Estate, and James R. McBurnett, Corinth, both of Miss., assignors to Tyrone Hydraulics, Inc., Corinth, Miss.

Filed Mar. 20, 1974, Ser. No. 452,713

Int. Cl. F15b *18/00*

U.S. Cl. 60—421 **17 Claims**



1. In an hydraulic control system of the kind including a pair of hydraulic circuits each having a pair of fluid supply pumps to be driven by a prime mover common to both circuits, each having an actuator to be driven in either of two senses in accordance with the flow of fluid in the circuit, and each circuit further including means for controlling the flow of fluid to the actuator of that circuit, the improvements which comprise: means in each circuit movable to unload one pump of that circuit; and means for effecting such movement of the movable means in response to fluid pressure in the other circuit increasing above a predetermined value.

3,868,822

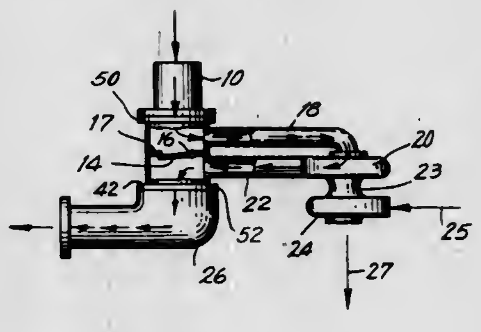
INTERNAL COMBUSTION ENGINE WITH PRESSURE RESPONSIVE SUPERCHARGER BYPASS

Robert A. Keller, Smithtown, N.Y., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed May 17, 1973, Ser. No. 361,203

Int. Cl. F02b *33/44*

U.S. Cl. 60—600 **12 Claims**



1. In combination with an internal combustion engine, the engine comprising a combustion chamber, induction means for forming a fluid fuel/air mixture, an induction conduit in fluid flow connection with the induction means and the combustion chamber, and means to exhaust fluid from the combustion chamber: 1) a first bypass conduit in fluid flow connection to a first upstream portion of the induction conduit; 2) a supercharging means having an inlet and an outlet, the inlet being in fluid flow connection to the first bypass conduit; 3) drive means for the supercharging means, designed and adapted to directly and continuously utilize the energy provided by the internal combustion engine to power the supercharging means whereby the outlet pressure of the supercharger increases directly as engine power output increases; 4) a second bypass conduit in fluid flow connection with a downstream portion of the induction conduit and with the outlet from the supercharging means, whereby the supercharging means is in parallel fluid flow connection with an intermediate portion of the induction conduit between the first bypass conduit and the second bypass conduit; and 5) valve means in the intermediate portion of the induction conduit, the valve means comprising a valve seat rigidly connected to the interior of the induction conduit and a valve member moveably connected to the interior of the induction conduit and having a first pressure surface exposed to the inlet pressure of the supercharging means upstream of the valve means and a second pressure surface exposed to the pressure of the outlet from the supercharging means downstream of the valve means whereby at low outlet pressures the valve member is located out of contact with the valve seat and at high outlet pressures the valve member is urged toward and placed in contact with the valve seat so as to prevent direct flow through the induction conduit and to cause the passage of all fluid flow around the valve and through the supercharging means via the bypass conduits.

3,868,823

CONCENTRATOR, METHOD, AND SYSTEM FOR UTILIZING RADIANT ENERGY

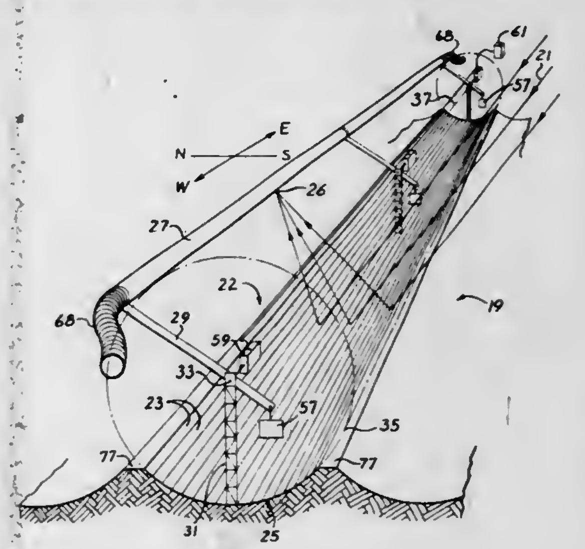
John L. Russell, Jr., La Jolla, and Eugene P. DePlomb, San Diego, both of Calif., assignors to Gulf Oil Corporation, San Diego, Calif.

Filed Apr. 6, 1972, Ser. No. 241,522

Int. Cl. F03g *7/00*

U.S. Cl. 60—641 **60 Claims**

1. A method of concentrating the heating effect of rays emitted from a source of energy moving in a path, comprising the steps of providing a plurality of linear primary reflective surfaces, reflecting the rays, converging the reflected rays on a linear focus which moves in a predetermined path in response to the movement of the energy source, providing a linear target to receive the converged rays, and moving the target in coincidence with said focus as it moves in its predetermined path.



3,868,824

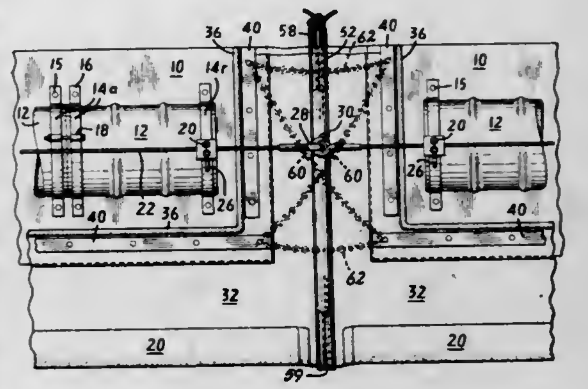
MODULAR OIL CONTAINMENT BOOM

Robert K. Thurman, Carmel, N.Y., assignor to Merritt Division of Murphy Pacific Marine Salvage, New York, N.Y.

Continuation-in-part of Ser. No. 78,801, Oct. 7, 1970, Pat. No. 3,751,925. This application July 2, 1973, Ser. No. 375,767

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **4 Claims**



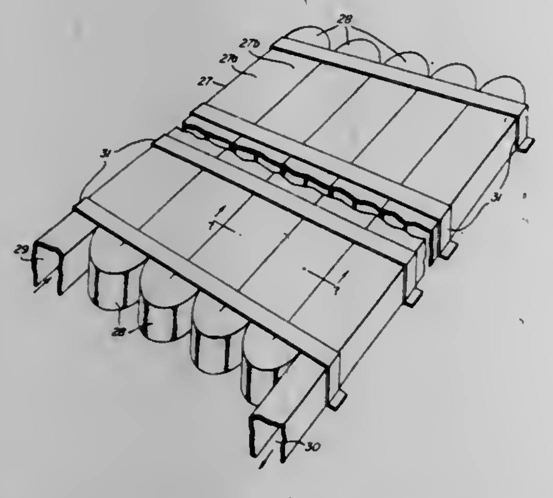
1. A module for an oil containment boom formed of a plurality of such modules connected end-to-end, comprising:

a vertical barrier member;

- at least one flotation unit secured to each side of said barrier member;
- a U-shaped panel of flexible waterproof material secured to said barrier member;
- means for securing said panel to said barrier including a welt formed on the inner edges of the panel and a batten secured to the barrier outside and adjacent the welt and clamping the panel to the barrier;
- a piping formed on said panel adjacent and parallel to each outside end edge thereof for cooperation with a similar piping on an adjacent module panel and a slotted tube to form a seal between adjacent module panels;
- linking means secured to the outboard extremity of said flotation units on each side of said barrier member for linking a plurality of said modules for towing and mooring as a boom without stressing said panel;
- means on each end of each linking means for releasable attachment to an adjacent end of a stress wire on an adjacent module; and
- auxiliary linking means connected to the top and bottom end corners of said barrier member for linking to the top and bottom end corners of the adjacent end of an adjacent module barrier member when said modules are assembled as an oil containment boom.

3,868,825
APPARATUS FOR WORKING FROZEN GROUND

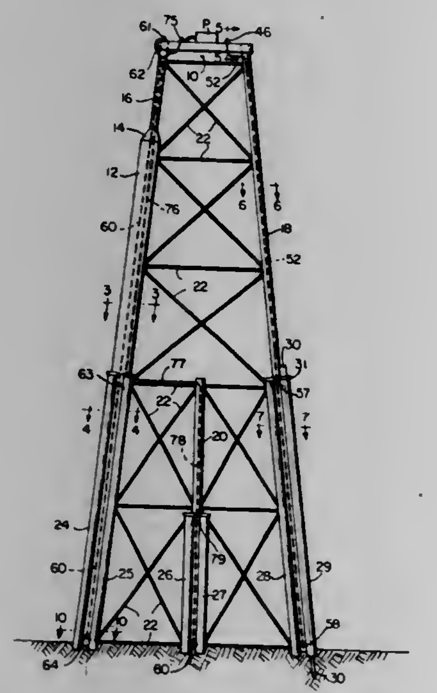
Jack R. Boyce, 442 S. 7th West, Tremonton, Utah 84337
Filed Jan. 26, 1973, Ser. No. 327,169
Int. Cl. E02d *3/00;* **F24c** *15/30*
U.S. Cl. 61—36 A **1 Claim**



1. Apparatus for thawing frozen ground, comprising an elongate, open-bottomed duct for placement on frozen ground with its open bottom facing said ground; means for substantially sealing the longitudinal margins of said duct to substantially prevent the escape of heated air flowing through said duct; and means in flow communication with said duct for blowing heated air through and along the length of the duct unidirectionally in traveling contact with said ground, said duct being made up of a plurality of substantially parallel, elongate, duct sections lying substantially contiguously side-by-side, and a plurality of end sections at opposite ends of said duct sections interconnecting a flow channel of one of said duct sections with a contiguous flow channel of a next adjacent duct section.

3,868,826
CLUSTERED AND PROTECTED PRESSURE LINES FOR SETTING SLEEVE PACKERS

Don B. Landers, Arlington, Tex., assignor to Oil States Rubber Company, Arlington, Tex.
Filed Apr. 10, 1974, Ser. No. 459,586
Int. Cl. E02d *5/14;* **F16j** *15/02*
U.S. Cl. 61—46.5 **6 Claims**

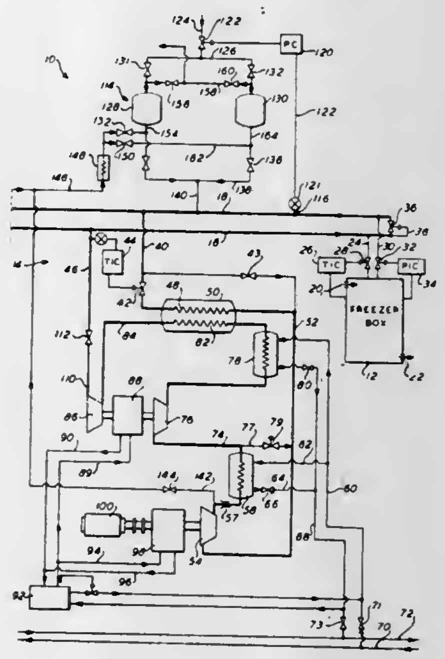


1. In an off-shore marine structure of the type having a platform supported by one or more legs extending beneath the surface of the water and resting on the bottom of the sea and said legs having piling guide sleeves shaped to receive piles driven therethrough into the bottom, and said platform having fluid pressure supply means for selectively inflating the individual packer means in the sleeves to seal the annulus between each sleeve and its pile, improved means for coupling said pressure supply means with each of said packer means, comprising:

- a. rigid main protector pipes extending down each platform leg to branching points at levels where packer means are located beneath the surface in the sleeves;
- b. rigid branch protector pipes branching out at said branching point levels from each main protector pipe and extending therefrom to the inflatable packer means in the sleeves at that level;
- c. manifold means in the vicinity of said pressure supply means and coupled to each main protector pipe at a level above the water surface; and
- d. a flexible pressure line attached to each packer means and extending through a branch protector pipe and through a main protector pipe and to said manifold means, and each flexible line including means for coupling said pressure supply means to it.

3,868,827
AIR CYCLE FOOD FREEZING SYSTEM AND METHOD

Hans D. Linhardt, Costa Mesa; Thomas A. Carter, Whittier, and James A. Kirk, Costa Mesa, all of Calif., assignors to Airco, Inc., Montvale, N.J.
Filed Apr. 5, 1973, Ser. No. 348,410
Int. Cl. F25d *25/13*
U.S. Cl. 62—63 **10 Claims**



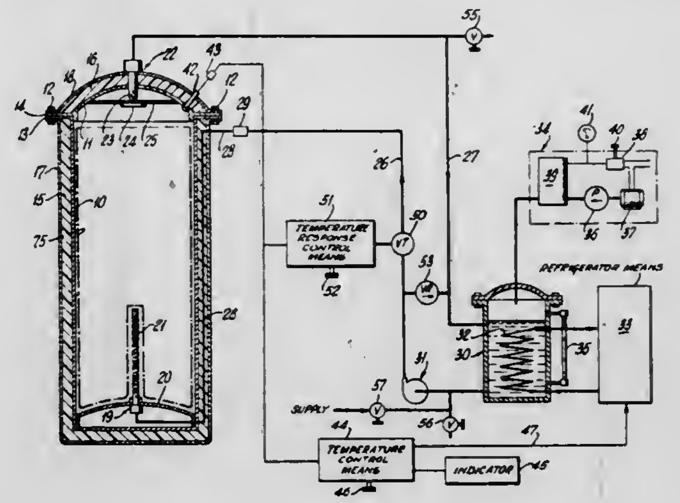
1. A food freezing system utilizing air as the working refrigeration fluid, comprising in combination:

a freezing chamber, having entrance and exit ports and means for passing a food product through said freezing chamber;
a refrigerant supply main connected to said freezer chamber for supplying refrigerant air to effect freezing operations;
a return main for receiving warmed air from said chamber;
first stage compressor means connected for receiving the output from said return main and compressing said air to a predetermined pressure;
intercooling means connected in the air stream flow line proceeding from said first stage compressor means, for cooling said compressed air;
second stage compressor means connected to receive the output from said intercooling means, and adapted to further compress said air;

aftercooling means positioned to receive the further compressed air output from said second stage compressor means, and cool said further compressed air;
regenerative heat exchanger means connected to receive the compressed air from said aftercooler means and further cool said air by heat exchange with at least a portion of the warmed air in said return main from said freezer chamber; and
expansion turbine means for receiving the further cooled air from said regenerative heat exchanger and cooling said air to cryogenic temperatures by extracting heat energy therefrom, said turbine means being connected to supply said expanded cooled air to said supply main.

3,868,828
METHOD AND MEANS FOR PRESERVING COMESTIBLES

Ralph E. Schwartz, Elgin, Ariz., assignor to Ovitron Research Corporation, Elgin, Ariz.
Division of Ser. No. 87,060, Nov. 5, 1970, Pat. No. 3,729,948. This application Mar. 2, 1973, Ser. No. 337,664
Int. Cl. F25b *41/06*
U.S. Cl. 62—196 **10 Claims**

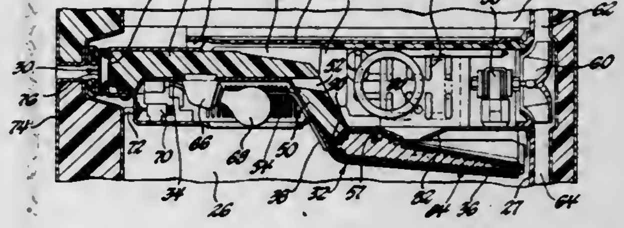

TEMPERATURE RESPONSIVE CONTROL MEANS
REFRIGERATOR MEANS
SUPPLY
TEMPERATURE CONTROL MEANS
INDICATOR

1. An apparatus for storing comestibles at reduced temperature and elevated pressure whereby the metabolic rate of said comestibles is lowered comprising a nondilatable comestible storage vessel, a heat exchange vessel, circulating means for causing a cooling liquid to circulate through said storage vessel and said heat exchange vessel without changing state, throttling valve means included in said circulating means connected to said storage vessel, thermostatic control means including a temperature sensitive probe for controlling said throttling valve, refrigeration means for causing a refrigerant to circulate through the heat exchange vessel, and pressurization means for supplying a pressurized gas to the heat exchange vessel whereby pressure is applied to the cooling liquid and transmitted to the storage vessel.

3,868,829
INSULATION DIVIDER FOR REFRIGERATOR CABINET

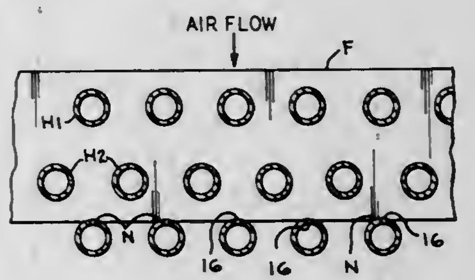
Leonard J. Mann, Kettering, and John A. Kemper, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 30, 1973, Ser. No. 420,528
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **3 Claims**

1. A refrigerator including a cabinet having insulated walls enclosing a compartment, a laterally extending dividing means within said compartment dividing said compartment into an upper freezer compartment and a lower fresh food compartment, door means for closing said compartments, said dividing means including a bottom supporting wall, a drain pan spaced above said supporting wall for supporting an evaporator thereon, wherein the improvement comprises an insulation separator on said supporting wall, said separator comprising an outer molded moisture impervious plastic shell having upper, bottom, front, rear and side walls forming an air-tight sealed chamber, said shell upper and bottom walls substantially conforming to and contiguous with said drain pan and said supporting wall, respectively; said sealed chamber completely filled with unfused, pre-expanded polystyrene contacting beads; each of said beads being substantially spherical in shape and having a diameter of about 0.060 to 0.100 inches, said beads forming a plurality of air spaces therebetween so that static air is confined in the air spaces whereby convection heat transfer between the upper and lower walls of said separator shell is obviated.



3,868,830
CONDENSATE REMOVAL DEVICE FOR HEAT EXCHANGER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Raymond B. Trusch, South Windsor, and Edward W. O'Connor, Simsbury, both of Conn.
Filed Aug. 31, 1973, Ser. No. 393,526
Int. Cl. F23b *9/08*
U.S. Cl. 62—290 **18 Claims**



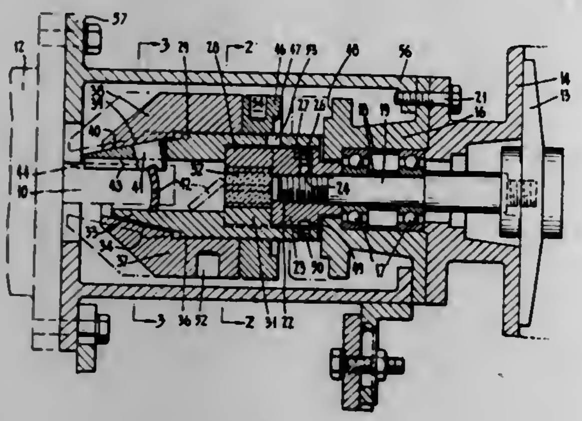
1. In a slurper in a heat exchanger of the type including a set of coolant tubes and an array of parallel plates or fins, said coolant tubes passing through said fins and being disposed for circulation therein of a liquid cooling medium while a gas flow is maintained between said coolant tubes and through said array of fins, vapors carried by said gas flow being precipitated onto said coolant tubes and fins in the process, the improvement comprising a set of slurper tubes disposed in contact with the gas outlet portions of said fins, each of said slurper tubes containing a plurality of small openings and being adapted for common connection to means for sucking fluids through said openings and passing them through said slurper tubes to an external discharge.

3,868,831
COUPLINGS

Ernest Rex Stock, McKinnon, Victoria, Australia, assignor to E. R. Stock Proprietary Limited, Cheltenham, Victoria, Australia
Filed May 24, 1973, Ser. No. 363,420
Claims priority, application Australia, Jan. 19, 1973, 1967/73
Int. Cl. F16d *3/22*
U.S. Cl. 64—16 **12 Claims**

1. A drive coupling comprising a body, a shaft mounted for rotation in the body, first coupling means on one end of the shaft, second coupling means axially orientated with respect

to the first coupling means, drive transmitting means between the first and second coupling means to transmit driving motion from one to the other, shaft engaging means on said second coupling means, releasable locking means to releasably lock said first and second coupling means together, adjustable aligning means axially movable on the second coupling means and having shoulder means on a radial surface thereof engagable with complementary shoulder means on said body to releasably align the second coupling means relative to the body, and locating means mounting said body to the frame of driving or driven apparatus.



3,868,832

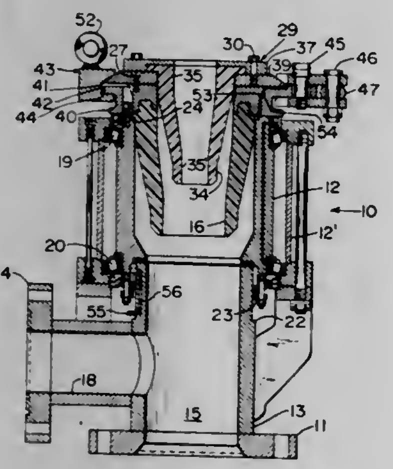
ROTARY DRILLING HEAD ASSEMBLY

Morris S. Biffle, 105 Cielo Vista, Odessa, Tex. 79761

Filed Mar. 8, 1973, Ser. No. 339,037

Int. Cl. F16d *3/06*

U.S. Cl. 64—23.5 **12 Claims**



1. A rotary drilling head assembly for well bore forming operations comprising a stationary housing, a seal assembly supported by the stationary housing; said seal assembly comprising a rotatable sleeve member, a stationary sleeve member at least partially surrounding the rotatable sleeve member so that a chamber is provided between said stationary sleeve member and said rotatable sleeve member, bearing means interposed between said stationary sleeve member and said rotatable sleeve member and disposed within the chamber;
  sealing means engaged with said rotatable sleeve member and said stationary sleeve member for precluding leakage of fluid through said chamber;
  a stripper mount means, a first stripper means for receiving a marginal length of a drillstring therethrough; said first stripper means being affixed to said stripper mount means;
  means by which said stripper mount means is removably affixed to the uppermost end portion of said rotatable sleeve;
  a second stripper means superimposed above and in axial alignment with the first recited stripper means; said first stripper means has a larger inside diameter relative to said second stripper means; and means removable mounting said second stripper means to said stripper mount means.

3,868,833

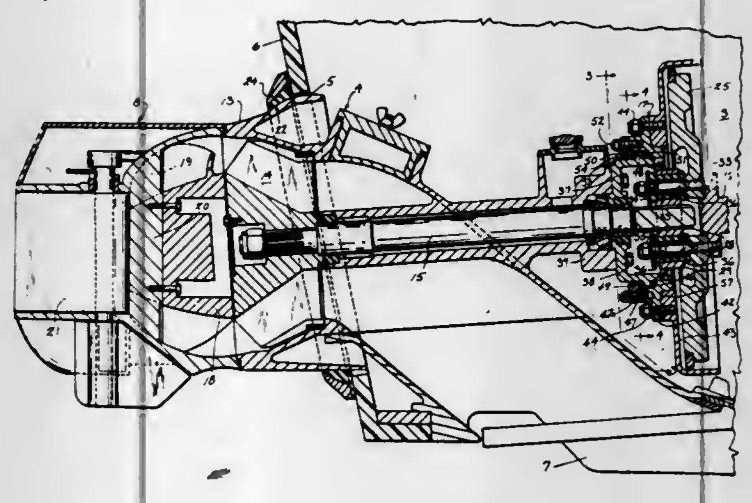
SHAFT COUPLING APPARATUS PARTICULARLY FOR MARINE INBOARD-OUTBOARD PROPULSION SYSTEMS

Gerald H. Noe, and William L. Woodfill, both of Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1972, Ser. No. 317,198

Int. Cl. F16d *3/14*

U.S. Cl. 64—27 NM **11 Claims**



1. A coupling for connecting the engine shaft of an engine carried by a boat hull to the drive shaft of an aft mounted drive means; said coupling comprising a circular coupling plate having an inner shaft opening means for receiving and connection to one of said shafts with a plurality of equicircumferentially spaced interconnecting projections, said plate having a plurality of coupling openings, a flywheel secured to the second of said shafts and extending outwardly of said circular plate, a plurality of circumferentially distributed resilient mounts secured one each within each opening in said coupling plate, each of said resilient mounts having a resilient tubular bushing extending axially of the coupling plate with an outer diameter essentially corresponding to the opening and having an inner sleeve having end faces inwardly of the ends of the bushing, an annular clamping plate abutting the outer face of said bushings, clamping bolt means extending through said clamping plate and said sleeves and into said flywheel and forcing said clamping plate against said bushings and said bushings against said flywheel to compress said bushings and to deform said bushing outwardly of the annular plate and thereby provide a firm resilient interconnection of the first shaft to said mounting member.

3,868,834

PORTABLE KNITTING DEVICE FOR USE AT HOME OR IN LIKE PLACES

George Humphrey Tichenor, 545 Sutter St., San Francisco, Calif. 94108

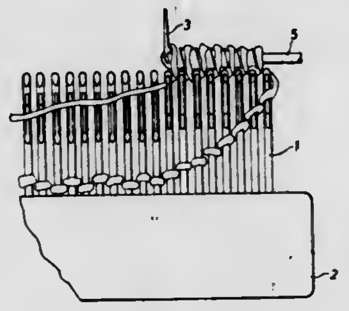
Filed May 1, 1973, Ser. No. 356,124

Claims priority, application Great Britain, May 17, 1972, 23195/72

Int. Cl. D04b *3/00*

U.S. Cl. 66—1 A **2 Claims**

1. A knitting device comprising:
  a needle bed;
  a plurality of equidistantly spaced, substantially parallel needles in the needle bed; and
  a sinker consisting of a shaft having a pair of opposed ends, a hook formed on one of said ends of said shaft, a bushing on said shaft in proximate relation to said hook, said bushing having a tapered leading thread, said thread having a larger root diameter adjacent said hook and a smaller root diameter as it approaches the other end of said shaft, whereby upon rotation of said sinker and movement of said sinker along said needle bed, working yarn or material can be sequentially drawn from between said needles.



3,868,835

COMBINATION WASHER-DRYER DRIVE ARRANGEMENT

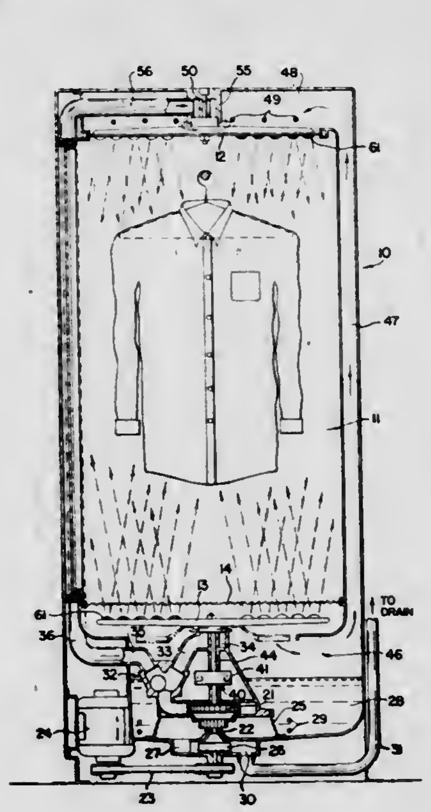
Leslie Todd-Reeve, Aylesbury, England, assignor to The Hoover Company, North Canton, Ohio

Filed Apr. 17, 1972, Ser. No. 244,828

Claims priority, application Great Britain, Apr. 27, 1971, 11717/71

Int. Cl. D06f *17/08*

U.S. Cl. 68—20 **10 Claims**



1. A washing machine having a compartment in which supported articles are to be washed and dried by being subjected to washing and rinsing liquid distribution and drying air flow, said compartment being in communication with a circulation pumping system which recirculates liquid drained from the articles,
  the improvement comprising a reversible motor having first and second directions of rotation, a circulation pump in said circulation pumping system, said pump being driven by said motor so as to be effective when said motor is rotated in said first direction, and ineffective when said motor is driven in said second direction, and a fan for providing air flow distribution, said fan being positively driven only when said motor is driven in said second direction.

3,868,836

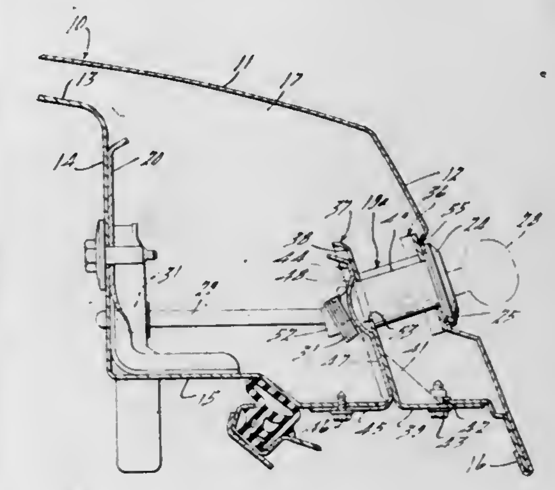
DECK LID LATCH AND LOCK ASSEMBLY

Louis A. La Roche, Cologne-Lindenthal, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1974, Ser. No. 447,447

Int. Cl. E05b *65/19*

U.S. Cl. 70—240 **6 Claims**



1. A deck lid latch and lock assembly for a vehicle deck lid having inner and outer spaced panels connected by a bridging panel forming a pocket in which a latch mechanism and a lock mechanism are housed in spaced relation to each other,
  the latch mechanism being mounted on the inner panel with its latch element projecting through an aperture in the bridging panel in a keeper device engageable position,
  the lock mechanism having an elongated and flanged housing at one end,
  the housing extending inwardly into the deck lid pocket through an aperture in the outer panel to a depth permitted by abutment of its flange with the outer surface of the outer panel,
  a key cylinder mechanism mounted in the housing having at its outer end a key receiving slot facing outwardly of the outer panel,
  and coupling means operatively connecting the key cylinder mechanism at its inner end to the latch mechanism within the deck lid pocket,
  wherein the improvement comprises:
  a combination bracket-shield mounted on the bridging panel and having an aperture through which the end of the lock mechanism housing opposite its flanged end projects,
  a first retention clip having interlocked engagement with the end of the housing projecting through the bracket-shield,
  the first retention clip engaging the lock mechanism to prevent twisting movement of the housing relative to the outer panel and having abutting relation to the bracket-shield to prevent longitudinal withdrawal of the housing from the support bracket aperture and the outer panel aperture,
  and a second retention clip having inerlocked engagement with the lock mechanism between the bracket-shield and the outer panel,
  the second retention clip abutting the inner side of the outer panel to provide seal pressure between the lock mechanism housing flange and the outer surface of the outer panel.

3,868,837

WHEELOCK FOR VEHICLE WHEELS

Charles A. Quimby, 403 S. Autry, Lafayette, Colo. 80026

Filed Oct. 3, 1973, Ser. No. 403,070

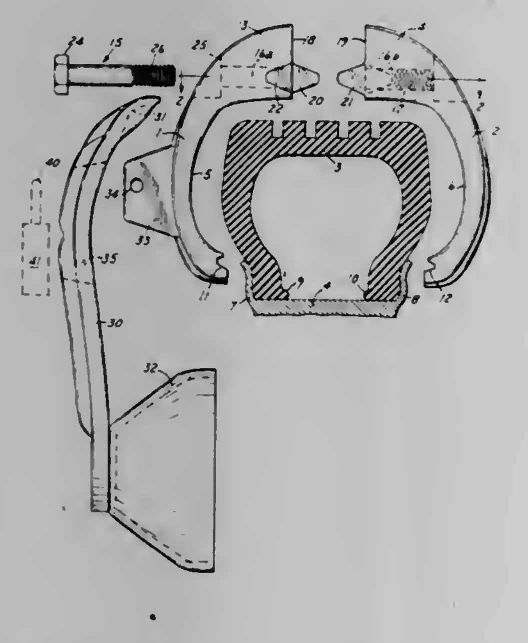
Int. Cl. B60r *25/00;* **E05b** *73/00*

U.S. Cl. 70—259 **5 Claims**

1. Apparatus selectively lockable about a peripheral section

of a vehicle wheel, restraining vehicle wheel rotation and restraining wheel removal from the vehicle axle comprising

a. a pair of mating members encompassing, in mated condition, a peripheral portion of a wheel-mounted tire, said mating members contacting the rim of the wheel on which it is mounted so as to restrain wheel rotation, said mating members having a bolt-accepting passage and each having at least one generally flat mating face arranged perpendicular to said bolt-accepting passage, the mating face of each member having at least one protruding tab and one receiving recess arranged on opposite sides of said bolt-accepting passage, the corresponding tab and recess on said mating faces are arranged to interfit and align with each other when said members are in a mated condition with said mating faces in contact;



b. means selectively securing said mating members in mated condition, said securing means having a bolt means extending through said bolt-accepting passage and arranged whereby when said bolt means is tightened, said mating members will be securely clamped to the rim of said wheel; and

c. arm means extending radially of said wheel and being selectively mountable and lockable at a point intermediate to its ends along one outerside of one of said mating members, said arm means being arranged whereby one end is disposed adjacent said mating member to cover at least a portion of said securing means and the opposite end having a cover means arranged to at least conceal a portion of a means securing the wheel to said vehicle axle to prevent removal of the wheel from said axle.

3,868,838

CYLINDRICAL LOCK COMBINATION CHANGER

Earl L. Zimmerman, Indianapolis, and Ronald F. Homeier, Plainfield, both of Ind., assignors to Code Key International Corporation, Indianapolis, Ind.

Filed Nov. 23, 1973, Ser. No. 418,471

Int. Cl. E05b *25/00*

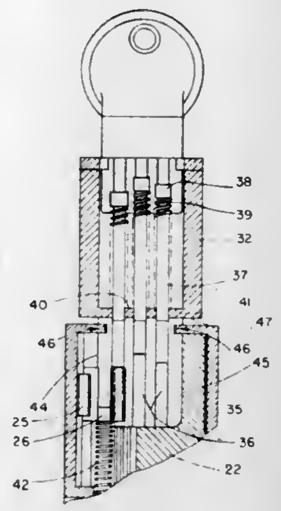
U.S. Cl. 70—383 **7 Claims**

1. An adaptor insertable into a first keyhole of a cylindrical combination lock to change the combination thereof corresponding from an original longitudinally ribbed key to a different longitudinally ribbed key comprising:

a main body having a blank key fittable into said keyhole and a key receiving housing attached to said blank key, said housing having a second keyhole sized to receive said original key and subsequent to the removal of said original key to then receive said different key, said blank key having at least one side with channels extending longitudinally thereon;

a plurality of bits slidably mounted in said channels;

a plurality of pushers connected to said bits and projecting into said second keyhole to contact ends of ribs of a ribbed key inserted into said second keyhole; and,



means within said main body and in contact with said pushers being operable to position said bits on said blank key in a manner identical to the positioning of ribs on a ribbed key inserted into said second keyhole.

3,868,839

SHAPING MACHINE WITH SERVO-ASSISTED FORMING TOOL

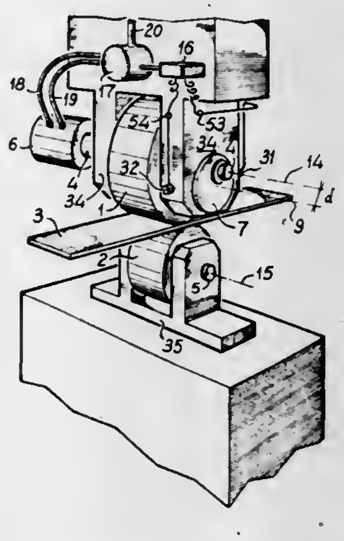
Michel Maurice Gerard Sentourens, St. Nazaire, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Dec. 21, 1973, Ser. No. 427,228

Claims priority, application France, Dec. 29, 1972, 72.46898; Dec. 4, 1973, 73.43157

Int. Cl. B21c *5/06*

U.S. Cl. 72—21 **17 Claims**



1. A shaping machine comprising two rotatable forming rolls with parallel axes between which items to be shaped such as sheet metal or panels are inserted and moved by a force external to the machine, said forming rolls being pressed against each other by a force which subjects the workpiece therebetween to a strain from which ensues a shaping thereof, at least one of said two forming rolls being mechanically connected to a motor associated with regulating means, said motor imparting to said forming roll a torque the magnitude of which is a direct function of the external force applied to the workpiece, said regulating means including an amplification chain comprising a power amplifier that energizes the motor as a function of the output signal from a differential amplifier across the inputs of which is connected a sensing device for measuring the magnitude and direction of the external force applied to the workpiece, shaping means in which a forming-roll shaft connected to said motor rotates in movable

bearings which effect small displacements, the magnitude and direction of which are measured by the sensing device and as a result of which the forming-roll axis accompanies the motions of the workpiece in response to the external force, said bearings moving away in such cases from a resting position in which the plane containing the forming-roll axes is parallel to the direction of the force which presses said forming rolls against each other.

3,868,840

TUBE MADE OF METAL STRIP BY MEANS OF SPIRAL SEAMING AND A DEVICE INTENDED FOR A SPIRAL SEAMING TUBE MACHINE FOR THE PRODUCTION OF SUCH A TUBE

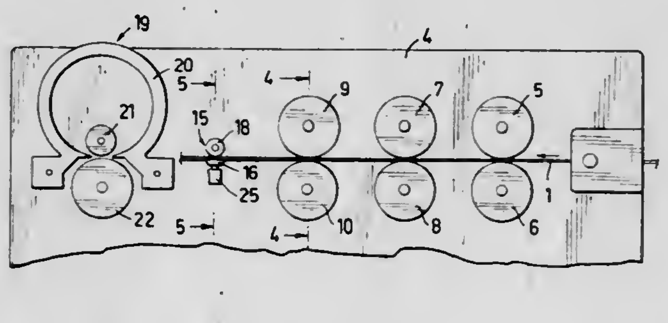
Arne Olavi Ekroos, Helsinki; Matti Kaarlo Merikoski, Westend, and Bernhard Erik Oswald Levander, Helsinki, all of Finland, assignors to Oy Nokia Ab, Helsinki, Finland

Filed Feb. 15, 1974, Ser. No. 443,036

Claims priority, application Finland, Feb. 9, 1971, 344/71

Int. Cl. B21c *37/12*

U.S. Cl. 72—49 **1 Claim**



1. A machine for forming a spirally seamed tube from a continuous metal strip formed with at least one integral stiffening ridge between the spiral seams formed at the longitudinal edges of said metal strip, said machine comprising in combination a machine frame, pairs of pre-bending rollers rotatably mounted in said frame and positively driven to feed the metal strip in the longitudinal direction thereof between said pairs of rollers and to form a pre-bent ridge in said metal strip, a pair of further rollers positioned after said pre-bending rolls with respect to the advancing direction of said metal strip and rotatably supported by said frame, the circumferential edges of said further rollers being mutually spaced to engage said pre-bent ridge from opposite sides thereof and to flatten said ridge only at the foot of said ridge in order to form in cross-section a loop, a space being formed between the walls of said ridge inside said loop, and further comprising a guiding unit for spirally bending the metal strip into a spiral tube the axis of which extends transversely with respect to said advancing direction of said metal strip and seaming means for joining together adjacent edges of the metal strip of said spirally bent tube to form said spiral seams.

3,868,841

PROCESS AND MEANS FOR MAKING THICK END TUBE AND PIPE

Richard Couchman, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 30, 1973, Ser. No. 346,264

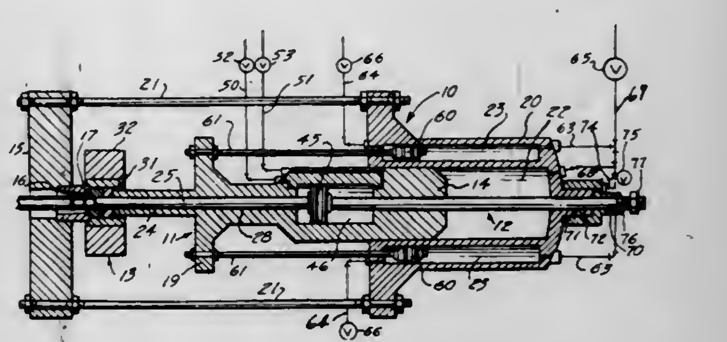
Int. Cl. B21c *25/08*

U.S. Cl. 72—260 **4 Claims**

1. In the operation of an extrusion press, a die having an extrusion opening therein, a container adapted to sealably close with said die, a ram adapted to move axially toward said die and into said chamber, and a mandrel having a stepped tip and being mounted to move axially within said ram and also into said chamber, the method of extruding a tube having a wall which is relatively thick at one location along its length, and relatively thin at another location along its length, which method comprises:

placing a charge of extrudable material in said container, positioning one of the stepped portions of the mandrel within the die opening,

moving the ram forwardly into the container and toward the die, thereby extruding some of such charge through said die opening to form a wall of one thickness on the extruded tube,



shifting the mandrel forwardly with reference to the die opening to form a wall of a different thickness on the extruded tube,

continuing the extrusion during the forward shifting operation of the mandrel,

stopping the forward movement of the ram and using only the mandrel to extrude material during the change over from extruding one wall thickness to another, and

maintaining an extrusion ratio of unity during such forward shifting operation.

3,868,842

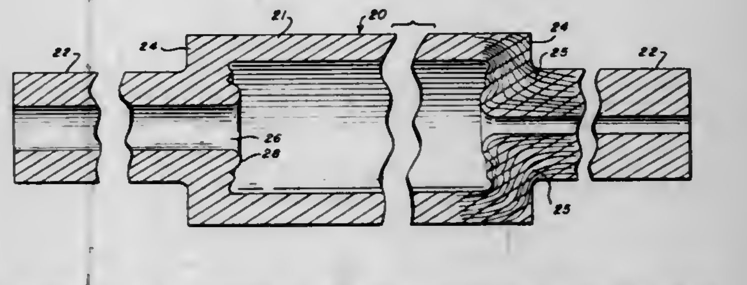
METHOD OF MAKING LAP PIN

William Edward Anthony, Lynwood Rd., Gastonia, N.C. 28052

Division of Ser. No. 188,193, Oct. 12, 1971, Pat. No. 3,807,649. This application Jan. 28, 1974, Ser. No. 436,872

Int. Cl. B21k *1/02*

U.S. Cl. 72—367 **3 Claims**



1. A method of forming a lap pin, comprising the following steps,

cutting a piece of high carbon tubular steel to preferred length,

heating both ends to forging temperature,

swaging both ends partially down to size, but retaining a hollow bore in the thus partially sized ends,

reheating the partially swaged ends to forging temperature, thereafter swaging the ends to correct dimensions,

and heat treating the resultant in a carburizing atmosphere.

3,868,843

METHOD OF ANALYZING ANGULAR MOTION OF A POINTER OF AN ALTIMETER

Paul W. Moseman, Jr., Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

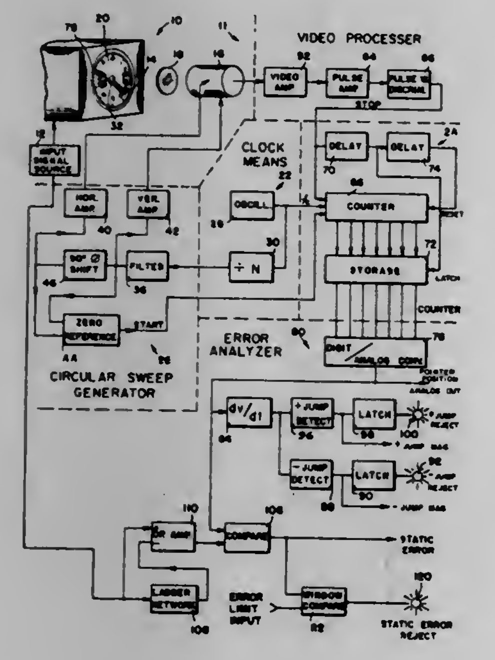
Filed Apr. 23, 1973, Ser. No. 353,827

Int. Cl. G01l *27/02*

U.S. Cl. 73—1 R **9 Claims**

1. A method of analyzing the angular displacement of a rotatable indicator with respect to an arcuate scale during a predetermined time period for estimating the accuracy of said indicator, comprising the steps of:

applying a uniform input signal to rotate said indicator;
scanning said indicator with a circular sweep generator having a selected resolution at a rate which uniformly divides the arcuate scale into segments;
recording each interception of the indicator and a circular trace within said segments;
counting the time period between a scan zero reference and each interception;
converting each time interval into a corresponding output signal;



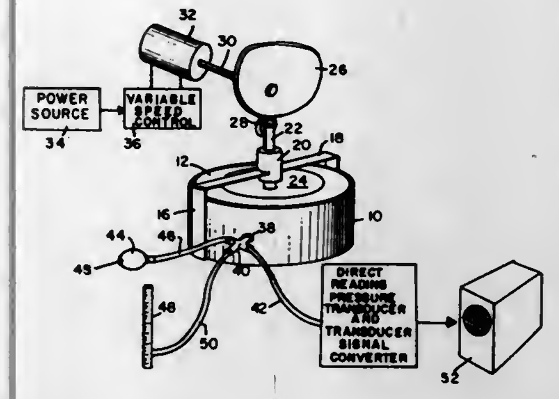
comparing the output signal with a master signal derived by measuring the rotation of a master indicator in response to a sequential test signal to determine if the input signal will produce a corresponding uniform displacement of the rotatable indicator;
detecting the duration and effect of any intermittent delay in the rotation of the rotatable indicator to determine if a stop-jump relationship exists between the input signal and the output signal;
identifying any variance between the output signal and the master signal; and
exhibiting said variance on a display to inform an operator a correction is required in said rotatable indicator.

3,868,844
DYNAMIC ARTERIAL BLOOD PRESSURE SIMULATOR

Burton Klein, 4 Ellsworth Ave., Cambridge, Mass. 02139
Filed May 11, 1973, Ser. No. 359,532
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 R **8 Claims**

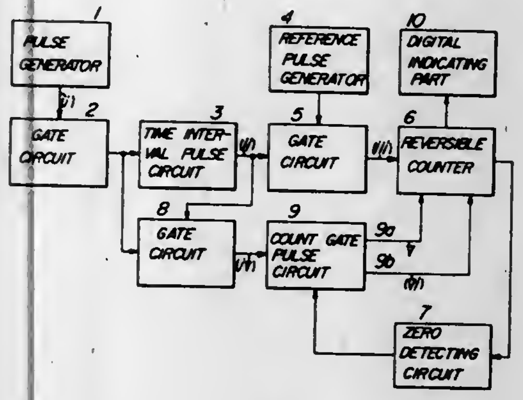
1. A dynamic arterial blood pressure simulator comprising in combination:

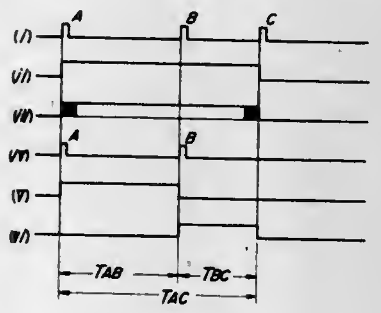
a. a pressure chamber having an outlet port;
b. a flexible member within one wall of said chamber;
c. cam means in communication with said flexible member for depressing said member into said chamber, said cam means having a shape proportionate to at least one hypothetical arterial blood pressure cycle; and
d. drive means for rotating said cam for producing a variable pressure proportionate to said cycle at said outlet port.



3,868,845
APPARATUS FOR MEASURING A DIFFERENCE IN TIME INTERVALS OF A TIMEPIECE

Hiroshi Shimizu, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1972, Ser. No. 216,531
Claims priority, application Japan, Jan. 20, 1971, 46-1228; Feb. 5, 1971, 46-4286
Int. Cl. G04d *7/12*; G01r *29/02*
U.S. Cl. 73—6 **2 Claims**



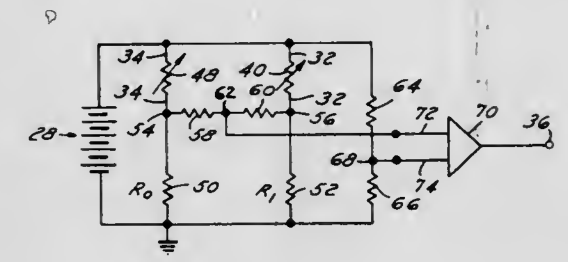


1. Apparatus for measuring the out-beat of a watch, clock or the like by measuring the difference between the duration of a first pulse interval of an impulse series produced by the watch, clock, or the like and a second pulse interval of said same impulse series comprising,

a reversible digital counter,
gating means at times responsive to said impulse series and at times to the attainment by said counter of a zero count for selectively producing a positive count gate pulse and a negative count gate pulse,
and said single source of trigger pulses applied to said counter and occurring throughout the total durations of said first and second pulse intervals,
said gating means producing said positive count gate pulse and controlling said counter to count said trigger pulses in a positive sense during said first pulse interval and producing said negative count gate pulse and controlling said counter to count said trigger pulses in a negative sense during said second pulse interval,
said gating means further being responsive to the attainment by said counter of a zero count during said second pulse interval for again producing said positive count gate pulse and controlling said counter to count said trigger pulses in a positive sense over the remainder of said second pulse interval,
whereby the count in said counter at the end of said second pulse interval corresponds to the difference in durations of said first and second pulse intervals irrespective of which is the longer.

3,868,846
CIRCUIT FOR CONVERTING A TEMPERATURE DEPENDENT INPUT SIGNAL TO A TEMPERATURE INDEPENDENT OUTPUT SIGNAL

Toshimoto Kushida, Dearborn, and Eleftherios M. Logothetis, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 2, 1973, Ser. No. 375,993
Int. Cl. G01n *27/12, 33/22*
U.S. Cl. 73—27 R **7 Claims**



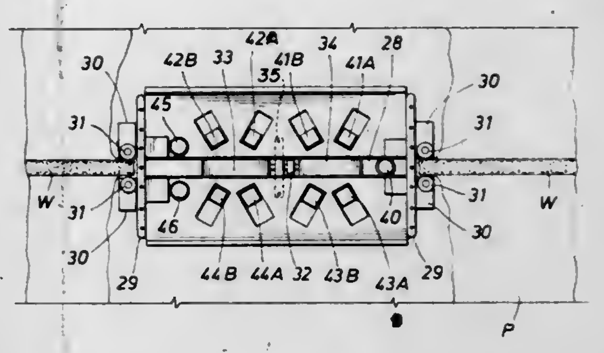
1. In combination with a resistive-type exhaust gas sensor for sensing the partial pressure of the oxygen content of the gas, a circuit connected to a source of electrical energy for reducing the dependency of the output signal upon the temperature of the sensor environment comprising:

first resistance means electrically in series with the sensor forming a current flow path for the source;
a first reference junction being formed between the sensor and said first resistance means;
a heater means operatively associated with the sensor;
second resistance means electrically in series with said heater means forming a second current flow path in parallel with the first current path, a second reference junction being formed between said resistance means and said heater; and
a first voltage divider means having an intermediate sensing terminal interconnecting said first and second reference junctions which is a selected fraction of the voltage differential between said first and second junctions.

3,868,847
SYSTEM AND APPARATUS FOR INSPECTING ELONGATED WELDS

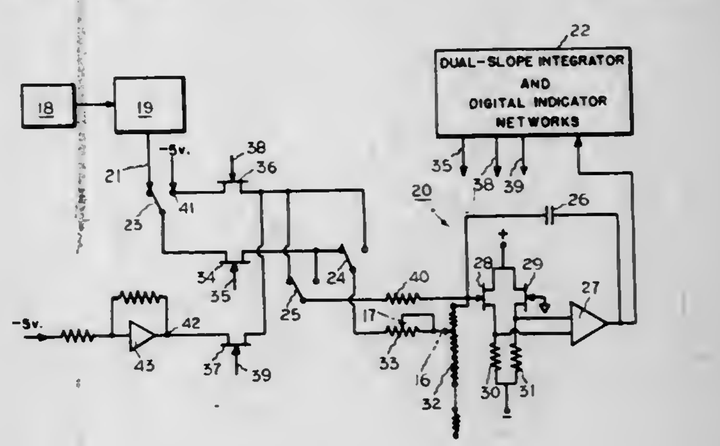
Walter A. Gunkel, 6515 Moss Oak, San Antonio, Tex. 78227
Filed Dec. 4, 1972, Ser. No. 311,800
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **12 Claims**

1. Ultrasonic apparatus for inspecting an elongated butt weld comprising, in combination: an inspection head adapted to be moved along and adjacent to the weld; a longitudinal wave ultrasonic transducer mounted on said inspection head and adapted to be positioned on said weld to move along its length for inspection through a substantial part of the heart of the weld; a plurality of shear wave ultrasonic transducers mounted on said inspection head to be positioned on each side of the weld to provide for inspection of the boundary zone of the weld, and means on the inspection head to restrain movement thereof to be longitudinally along the elongated weld without any substantial movement laterally of the weld.



3,868,848
SOLID STATE DIGITAL STRAIN INDICATORS

Donald A. Senour, Blaisdell Dr., Carlisle, Mass. 01741
Filed Sept. 14, 1972, Ser. No. 289,072
Int. Cl. G01b *7/16*
U.S. Cl. 73—88.5 R **9 Claims**



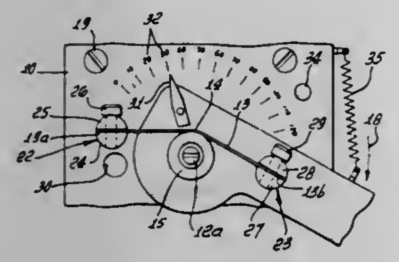
1. Electrical indicating apparatus accommodating signal inputs from input transducers having different sensitivities, comprising a dual-slope integrator wherein input signals are periodically up-integrated for a predetermined time and then down-integrated until the integrator output is restored to a predetermined signal level, a sensitivity-adjustment variable resistance and a fixed resistance, means providing visual displays responsive to down-integration times of said integrator, first means for applying a first reference signal as input to said integrator through said fixed resistance during up-integration times thereof and a second signal to said integrator through said variable resistance as a reference during alternate down-integration times thereof, and second means for applying signals from a transducer as input to said integrator through said variable resistance during up-integration times thereof and one of said first and second signals to said integrator through said fixed resistance as a reference during alternate down-integration times therof, whereby adjustment of said variable resistance to cause said visual display means to display the known value of sensitivity of the transducer during operation of said first means results in display of measurements compensated to account for sensitivity of the transducer during operation of said second means.

3,868,849
DUCTILITY TESTER

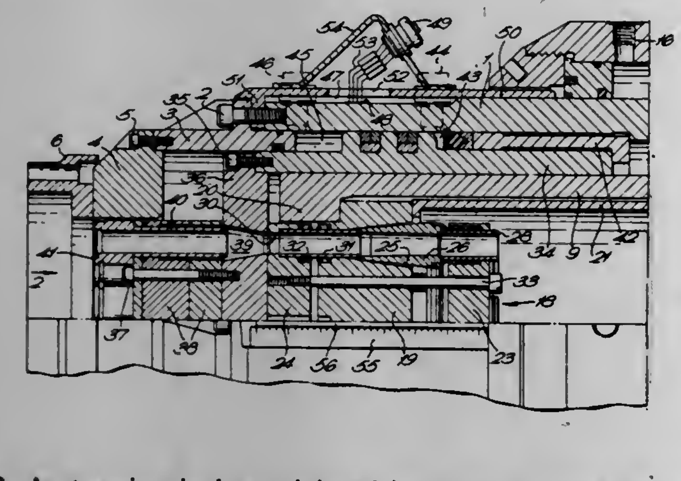
Csaba K. Hunyar, Sunland, Calif., assignor to United Artists Music and Records Group, Inc., Los Angeles, Calif.
Filed Aug. 16, 1973, Ser. No. 388,727
Int. Cl. G01n *3/20, 3/28*
U.S. Cl. 73—100 **10 Claims**

1. In a specimen strip ductility tester, the combination comprising

a. a support,
b. post means projecting at one side of the support and having a circularly curved surface presented for engagement by the strip,
c. a member pivotally connected to the support, said member comprising an arm having a pivot axis, the post means carried by the arm to rotate therewith in alignment with said axis and so the axis is apporixmately at the center of said curved surface, and
d. holder means on the support and on said member to grip and effect stretch wrapping of the strip partially about said curved surface in response to relative forward pivoting of said member with respect to the support.



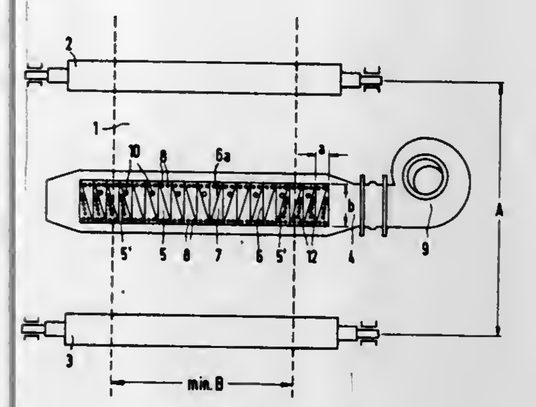
3,868,850
MULTI-STRAND STRESSING JACK
John Davison, Ash Vale, and Hugh Jeremy Willis Edwards, Cobham, both of England, assignors to CCL Systems Limited, Surbiton, Surrey, England
Continuation of Ser. No. 236,858, March 22, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,389
Claims priority, application Great Britain, Apr. 1, 1971, 8391/71
Int. Cl. G01l ***5/04***
U.S. Cl. 73—143 **13 Claims**



9. A stressing jack as claimed in claim 1, including strain gauge means attached to said main casing and being responsive to straining of said main casing, and means for transmitting from said strain gauge means and to a remote location signals indicating the stress applied to said wires or strands.

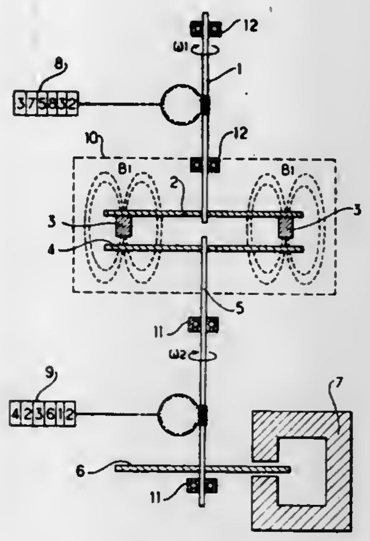
3,868,851
APPARATUS FOR DETERMINING THE TENSILE STRESS IN A CONTINUOUSLY MOVING WEB OF MATERIAL
Eberhard Breyer, Herrenberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 16, 1973, Ser. No. 416,348
Claims priority, application Germany, Nov. 22, 1972, 2257253
Int. Cl. G01l ***5/08***
U.S. Cl. 73—144 **6 Claims**

1. An apparatus for measuring the tensile stress of a continuously moving gas and liquid impermeable web of material, including a pair of rollers disposed therebeneath for deflecting the web of material, an elongated enclosed channel disposed between the rollers below the web having an axial length at least as great as the width of the web and an opening disposed therebeneath, a plurality of first orifices disposed in the channel opening, means coupled to the channel for supplying a gas thereto and to said orifices under contant pressure and thereby forming a static pressure cushion between the web and the channel opening, and means disposed in the channel opening for measuring the pressure of the cushion, the improvement comprising:



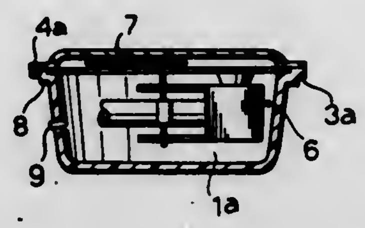
a plurality of triangular shaped chambers, axially disposed in series in said channel opening, and each including a partition member disposed parallel to the direction of movement of the web which forms at least one wall of each of said chambers, selected ones of said chambers at the axial ends of said channel including a plurality of additional orifices communicative with said channel and spaced apart from said first orifices; and
means, coupled to said selected chambers, for selectively controlling the supply of said gas to said additional orifices from said channel.

3,868,852
VOLUME GAS METER
Sylvain Janssen, Paris, France, assignor to Compteurs Schlumberger, Hauts de Seine, France
Filed May 18, 1973, Ser. No. 361,693
Claims priority, application France, May 19, 1972, 72.18005
Int. Cl. G01f ***1/02***
U.S. Cl. 73—233 **19 Claims**



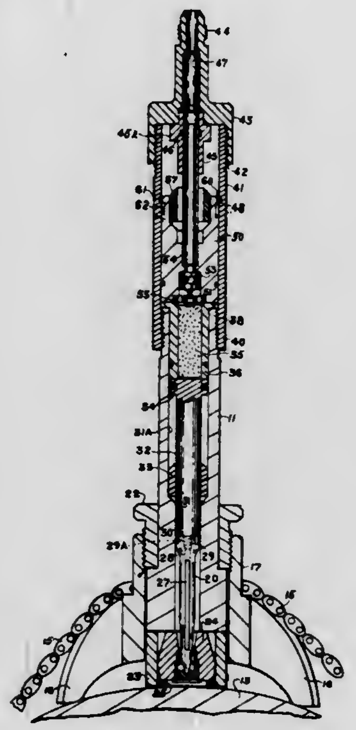
1. Volume meter for producing more accurate representations of the volume flow rate of a metered compressible fluid, comprising a first shaft for rotating at a first speed representative of volume flow rate of the metered fluid, a second shaft, slip connecting means between the first shaft and the second shaft for causing the second shaft to rotate at a second speed functionally related to the first speed, and means for braking the second shaft, the slip connecting means and the braking means being such that the second speed varies in reverse to the temperature of the metered fluid to compensate for any variation of the first speed as a result of a temperature caused density variation of the metered fluid, whereby the second speed provides a representation of the flow rate of the metered fluid which is corrected for variations of density thereof with temperature changes.

3,868,853
CASING FOR LIQUID-FILLED DEPTH GAUGE
Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy
Filed July 7, 1972, Ser. No. 269,675
Int. Cl. G01f ***23/14***
U.S. Cl. 73—300 **5 Claims**



1. A sealed casing for a liquid filled depth gauge comprising a concave shell element of flexible, transparent, plastic material, a transverse flexible plastic cover element for said concave shell element, both of said elements having complementary peripheral edges sealingly engaged with each other, a transverse diaphgram having indicia thereon, means mounting said diaphragm within said peripheral edges of said element of said sealed casing in substantially parallel spaced relation to said transverse element, a pressure responsive instrument, and means for mounting said instrument having indicating means within said casing on said diaphragm.

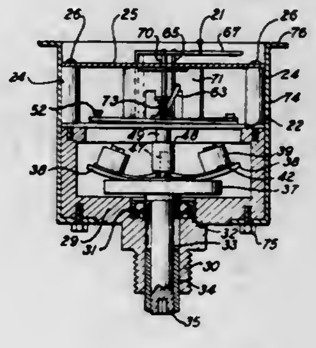
3,868,854
SAMPLING MECHANISM
Bruce W. Travor, Holland, Pa., and Lennord L. Pitney, Park Rapids, Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 2, 1973, Ser. No. 376,013
Int. Cl. G01n ***1/22***
U.S. Cl. 73—421.5 **7 Claims**



1. In a sampling mechanism having a grooved needle for sampling the contents of a container secured to said mechanism, a first piston responsive to fired cartridge gases for driving said needle in a first direction toward said container, and a first shock absorber for retarding motion of said first piston after predetermined movement thereof in said first direction.

a compensator piston responsive to fired cartridge gases for movement in a direction opposite to said first direction, a second shock absorber for retarding motion of said compensator piston after predetermined movement thereof in said opposite direction,
extraction orifice means in said needle, and
vulcanized rubber sealing said orifice means.

3,868,855
TACHOMETER INSTRUMENT
Frank W. Murphy, Jr., Tulsa; Lewis M. Carlton, Jenks, and Troy L. Teague, Broken Arrow, all of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.
Filed Jan. 3, 1974, Ser. No. 430,412
Int. Cl. G01p ***3/18***
U.S. Cl. 73—530 **8 Claims**

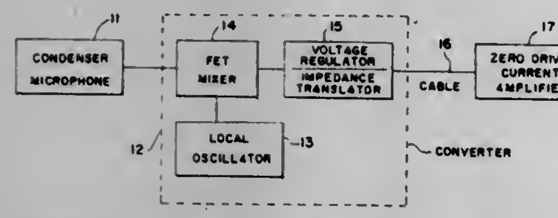


1. A tachometer comprising a primary support, a centrifugal fly ball assembly mounted for rotation on said support and adapted for connection with a rotary element of an engine or the like, said fly ball assembly including a rotary plate element having a flat face, a pair of opposed curved rocker plates engaging said flat face rockably, a bowed spring attached to the rotary plate element and also attached to the rocker plates and tensioned to maintain the exterior ends of the rocker plates elevated and their interior ends depressed relative to said flat face, fly ball masses attached to the rocker plates, a reciprocatory drive button in engagement with the interior ends of the rocker plates and adapted to be shifted thereby when said interior ends are elevated in response to an increase in speed of rotation of the fly ball assembly, a support plate attached to said primary support in spaced relation to the rotary fly ball assembly, a pivoted tachometer pointer on said support plate adapted to sweep over a dial having a scale indicating rotational speed, and a drive mechanism for said pointer on said support plate including a crank element, a movement pin for the crank element arranged in engagement with said drive button to be actuated thereby, said support plate having a clearance opening for the movement pin, and a resilient member attached to said movement pin and raised and lowered by displacement of the movement pin and underlying said crank element and contacting the same.

3,868,856
INSTRUMENTATION FOR MEASUREMENT OF AIR-CRAFT NOISE AND SONIC BOOM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Allan J. Zuckerwar, Youngstown, Ohio
Filed Apr. 25, 1973, Ser. No. 354,408
Int. Cl. G01l ***11/00***
U.S. Cl. 73—557 **6 Claims**

1. Instrumentation for measuring aircraft and sonic boom comprising:
a condenser microphone means for varying a capacitor in accordance with the noise picked up by said microphone means;

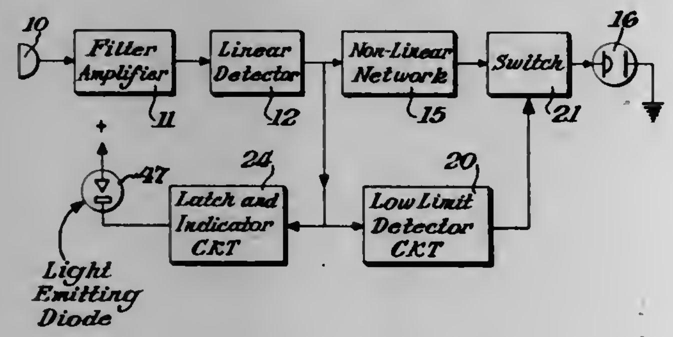
an oscillator for generating a carrier frequency;
a tank circuit including said capacitor tuned to said carrier frequency;
a field-effect transistor means connected to receive the outputs from said oscillator and said tank circuit for producing an electrical signal containing said carrier frequency and the variations of said capacitor; and
means for removing said carrier frequency from said electrical signal to obtain an electric current that is proportional to the sound pressure at the microphone.



3,868,857
AUDIO DOSIMETER

Edward L. Maddox, Lexington, and Robert A. Pease, Wilmington, both of Mass., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 16, 1972, Ser. No. 307,082
Int. Cl. G01h *5/00*
U.S. Cl. 73—558 **6 Claims**

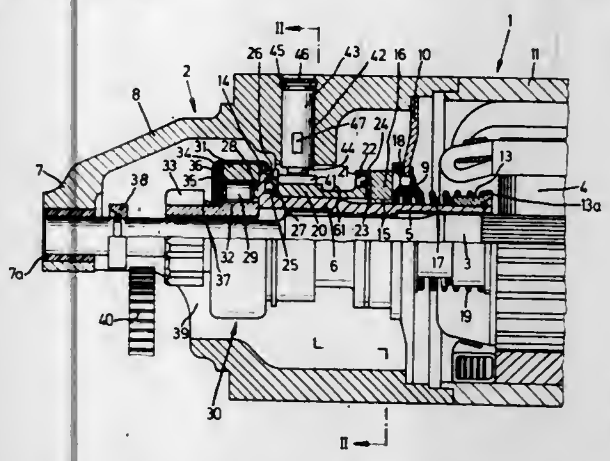


1. An audio dosimeter for individual use comprising, in series circuit in the order recited, electronic microphonic sound sensor means,
a filter-amplifier provided with a feedback circuit receiving the a-c voltage output of said sound sensor means, said filter-amplifier comprising an operational amplifier connected in circuit with a plurality of a-c filter networks each having individual band pass characteristics preselected to collectively interact to shape said a-c voltage output during transmission by said filter-amplifier to conform to the pattern of a preselected weighting network incorporating in said a-c voltage output the otolaryngologically (and psychologically) harmful contribution of ambient sound frequency,
linear detector means rectifying said a-c voltage output from said filter-amplifier, said linear detector means incorporating a pair of oppositely connected diodes as rectifying elements, and said filter amplifier feedback circuit incorporating a pair of oppositely connected diodes preselected to compensate the forward voltage drops of said pair of diodes in said linear detector means and an impedance preselected to provide the desired linearity of rectification for small signals connected between signal ground and the junction of said compensating diodes on the feedback delivery side of said compensating diodes,
a non-linear network shaping the d-c output current from said linear detector to the function required to produce a substantially straight line of correct slope in a plot of decibels referred to a preselected current level versus sound energy input level in decibels, and
an electrochemical integrating cell receiving the output current from said non-linear network measuring sound exposure in terms of sound pressure with weighted freqency and time of exposure conjointly.

3,868,858
STARTER FOR INTERNAL COMBUSTION ENGINES

Wolfgang Reichardt, Sevres; Lucien Blanchard, Mitry, and Jean Denamps, Asnieres, all of France, assignors to Robert GmbH Bosch, Stuttgart, Germany

Filed Feb. 7, 1974, Ser. No. 440,227
Claims priority, application Germany, Feb. 9, 1973, 2306364
Int. Cl. F02n *11/00*
U.S. Cl. 74—7 R **17 Claims**



1. In a starter for an internal combustion engine having a torque-receiving first gear, a combination comprising a motor having a drive shaft rotatable in a predetermined direction; operating means actuatable to start said motor; a second gear rotatably mounted on and movable axially of said shaft in a first direction from a disengaged first position to a second position of engagement with said first gear and in a second direction back to said first position; a shifting sleeve surrounding said shaft; an overrunning clutch mounted on said shaft and arranged to rotate said second gear in response to rotation of said shaft and to permit said second gear to rotate relative to said shaft in said predetermined direction when said second gear is driven by said first gear at a speed exceeding the speed of said shaft; displacing means having portions provided on said shaft and on said sleeve for moving said sleeve axially in said first direction when said sleeve is held against rotation with said shaft; means for connecting said second gear and said clutch to said sleeve so that said second gear moves toward said second position in response to axial movement of said sleeve in said first direction; and means for holding said sleeve against rotation with said shaft; comprising a blocking member rotatably mounted on said sleeve, arresting means actuatable to interrupt the rotation of said blocking member, and brake means interposed between said blocking member and said sleeve.

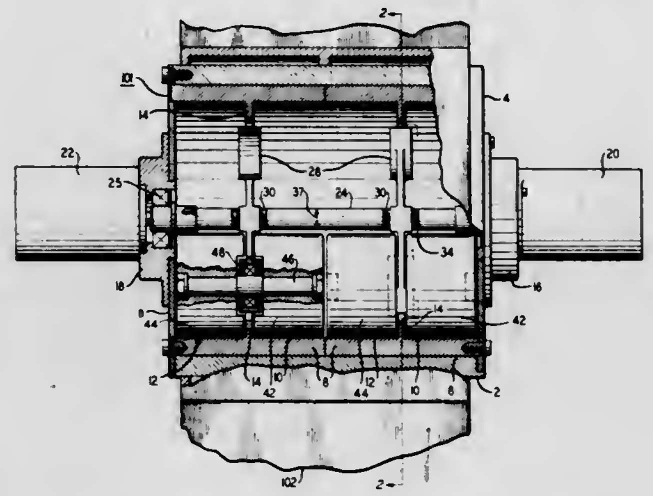
3,868,859
POSITIVE DRIVE VIBRATORY MECHANISM

Louis Joseph Scerbo, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 16, 1973, Ser. No. 379,584
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 **2 Claims**

1. A vibrating mechanism comprising, in combination:
a housing;
a bearing member within said housing providing a pair of substantially circular internal tracks;
a pair of rollers adapted for travel about respective ones of said tracks, said rollers being connected to a common axle;
an upstanding annular flange separating said tracks and providing a thrust shoulder for preventing sideways movement of said rollers because of thrust loads along said axle;

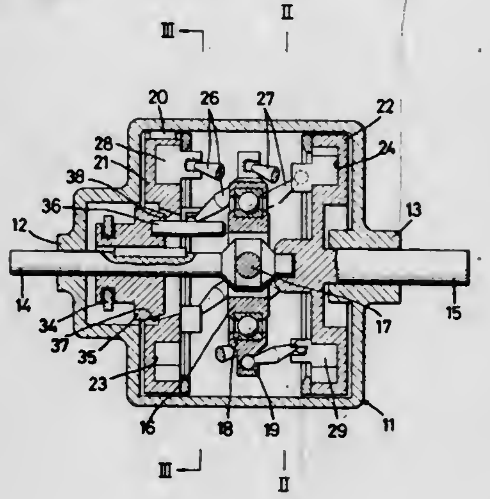
a drive shaft for driving said rollers about said tracks to generate vibratory movement of said mechanism; and
a rigid drive arm connecting said axle to said drive shaft, said arm including a bearing on one end thereof connecting said arm to said axle between said rollers to permit rotation of said axle with respect to said arm and to provide a balanced drive force for driving said rollers, said arm further including means for connecting said arm to said drive shaft in such a manner as to permit free movement of said arm along and transverse to said drive shaft while requiring said arm to rotate with said drive shaft, whereby said arm transmits rotational forces from said drive shaft to said rollers while isolating said drive shaft from radial and thrust loads on said rollers.

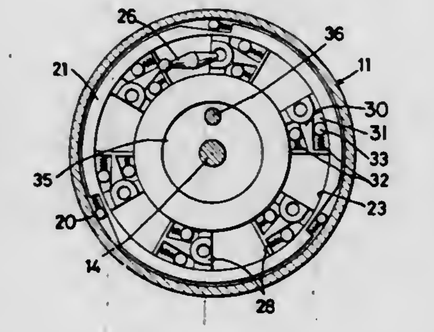


3,868,860
VARIABLE TRANSMISSION UTILIZING OSCILLATING LINKS AND ONE-WAY CLUTCHES

Bun-Ichi Ishimi, No. 5-15, 2 chome, Shimmori, Asahi-ku, Osaka, Japan

Filed Aug. 29, 1973, Ser. No. 392,468
Claims priority, application Japan, Aug. 30, 1972, 47-86956
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 **3 Claims**



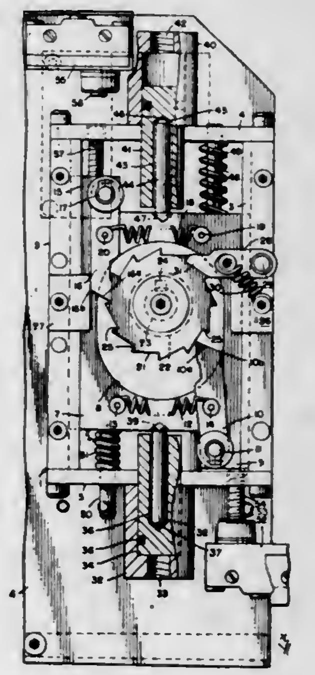


1. A variable speed transmission, comprising an input shaft, an output shaft coaxial with the input shaft, an inner wheel mounted on said input shaft for rotation therewith and for pivoting movement around an axis transverse to said input shaft, an outer wheel rotatably mounted on said inner wheel for rotation around the periphery of said inner wheel, an output disc fixed on said output shaft, a plurality of links each having one end pivotally mounted on said outer wheel and having the other ends in one way clutching engagement with said output disc and being inclined to the shafts, a fixable disc around said input shaft, means associated with said fixable disc for fixing it against rotation relative to said input shaft, a further plurality of links each having one end pivotally mounted on said outer wheel and having the other ends in one way clutching engagment with said fixable disc and being inclined to the shafts in the same direction as said firstmentioned plurality of links, the one way clutching engagement of said links with said discs being such as to produce clutching acting when said links are urged in a direction relative to the discs toward the obtuse angle between the links and the discs, and means engageable with said inner and outer wheels for pivoting them.

3,868,861
STEPPING MOTOR

Harold W. Scholin, Park Ridge, Ill., assignor to Scholin Industries, Inc., Chicago, Ill.

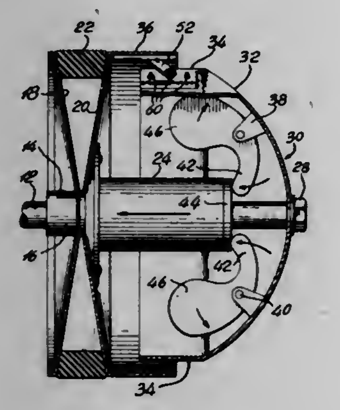
Filed Jan. 14, 1974, Ser. No. 433,102
Int. Cl. F16h *27/02*
U.S. Cl. 74—129 **24 Claims**



1. A stepping motor for driving a rotary member intermittently, comprising,
a. a supporting frame,
b. a driving member mounted on said frame for reciprocating movement in a linear path,
means for reciprocating said driving member,
d. a ratchet wheel mounted on said rotary member,
e. two pawls mounted on and reciprocable with said driving member in opposed relation to each other and in the plane of said ratchet wheel, whereby reciprocation of said driving member will advance said ratchet wheel one step for each direction of movement of said driving member, and
f. locking means associated with each of said pawls and cooperating therewith to restrain movement of said ratchet wheel in both directions when a pawl has completed its indexing movement.

3,868,862
EXPANSIBLE PULLEY WITH SPEED AND TORQUE RESPONSIVE MEANS

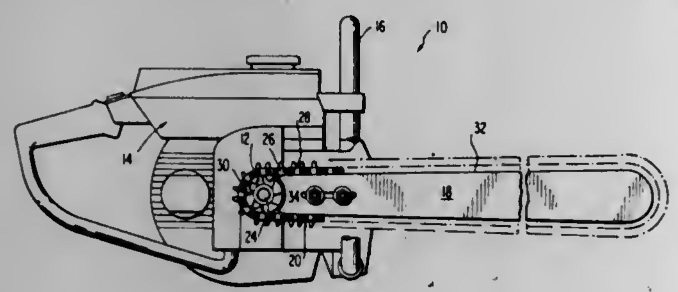
Georges Henri Bessette, 209 Boulevard des Seminaires, St. Jean, Comte Iberville, Quebec, Canada
Filed May 14, 1973, Ser. No. 360,341
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **19 Claims**



1. A V-belt pulley comprising:
a shaft;
a pair of axially spaced pulley plates carried by said shaft and defining therebetween a V-shaped belt groove, at least one of said pulley plates being axially slidable and rotatable on said shaft;
means connecting the other of said pulley plates to said shaft for rotating therewith;
a drive member fixed to said shaft adjacent said one pulley plate; and
at least one link pivotally connected at its ends to said one pulley plate and said drive member, respectively, whereby to drivingly connect said one pulley plate and said drive member, said link extending from said drive member to said one pulley plate in a direction generally tangential to said shaft whereby it may assume different angles relative to the axis of said shaft as said one plate slides toward or from said other plate and thereby transmit variable axial components of force between said drive member and said one plate in accordance with the axial spacing between said plates.

3,868,863
STAMPED SHEET METAL CHAIN SAW SPROCKET

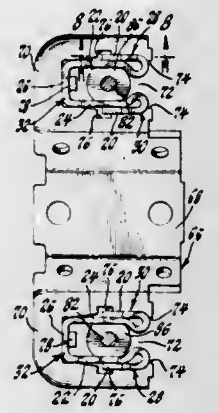
William Lavier Gasner, Carson, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 304,313, Nov. 7, 1972, Pat. No. 3,786,687. This application Oct. 19, 1973, Ser. No. 404,645
Int. Cl. F16h *55/00*
U.S. Cl. 74—243 CS **10 Claims**



1. A sprocket for driving a chain of a chain saw comprising: an annular stamped, sheet metal, chain engaging means for receiving a train of tangs on a saw chain comprising:
- an annulus having an endless series of circumferentially spaced apart faces disposed in alternate relative protruded and depressed positions;
- said faces disposed in said relative protruded position operable to define a first plane;
- said faces disposed in said relative depressed position operable to define a second plane;
- said first and said second planes being parallel and spaced apart a distance to define therebetween a generally planar saw chain travel path resistive of lateral saw chain displacement;
- sidewall means extending an entire annular width of said annulus and contiguous with said protruded and depressed faces for forming a series of tang receiving pockets extending an entire annular width of said annulus and open at both ends to provide a sprocket for receiving successive tangs on a chain of a chain saw.

3,868,864
STEERING COLUMN MOUNTING PAD

Lyle H. Durkee, Hemlock, and Lehman J. Connell, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 17, 1973, Ser. No. 398,156
Int. Cl. B62d *1/16*
U.S. Cl. 74—492 **3 Claims**

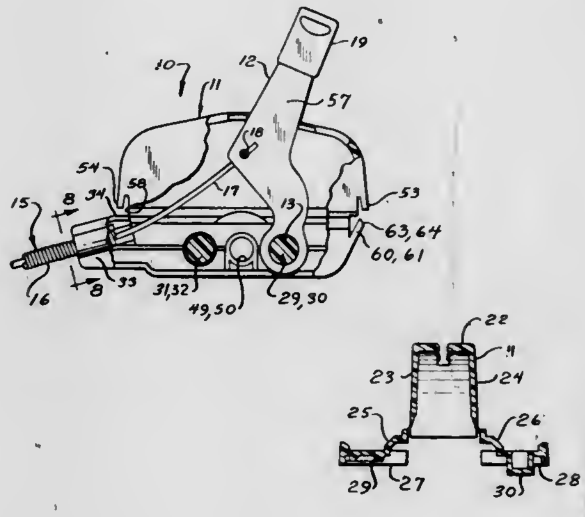


1. In a vehicle body having a rod rigidly disposed thereon and a collapsible type energy absorbing steering column assembly including a bracket member, a mounting pad for disposition between said bracket member and said rod comprising, in combination, a body portion defining an aperture bounded by a pair of parallel legs interconnected at one end by a web, an integral flange disposed on the distal end of each of said legs and oriented parallel to and in juxtaposition with the outboard surface of the corresponding one of said legs, and means on each of said flanges defining a slot extending the full length of the corresponding one of said flanges, said body portion aperture receiving therethrough said rod for rigid attachment to the latter and said slots slidably receiving said bracket member thereby to slidably support the latter on said rod while preventing movement thereof in a direction parallel to the longitudinal axis of said rod.

3,868,865
PUSH PULL CONTROL FOR LAWN MOWERS AND THE LIKE

James U. Neyer, Lake Bluff, Ill., assignor to Arens Controls, Inc., Evanston, Ill.
Filed Aug. 29, 1973, Ser. No. 392,429
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 R **16 Claims**

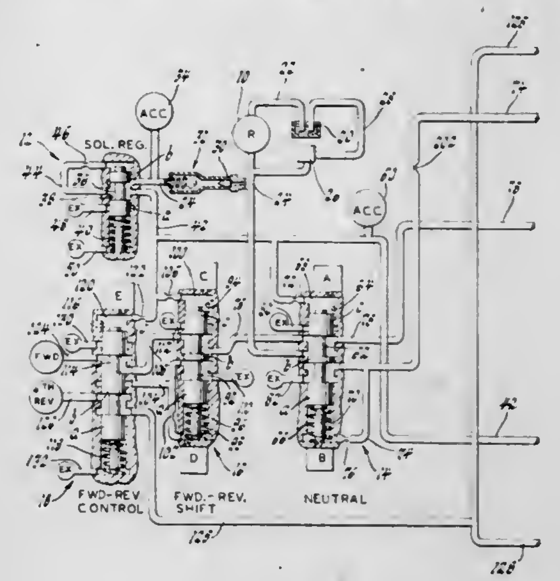
3. A control for operating a Bowden cable or the like, comprising a housing and a lever, the housing including a two-sided cover member and first and second base members, each base member dependently hinged from a side of the cover member and having at least one embossment formed to mate with an embossment on the other base member, the embossments, when joined together, securing a portion of the lever at a pivot point within the housing.

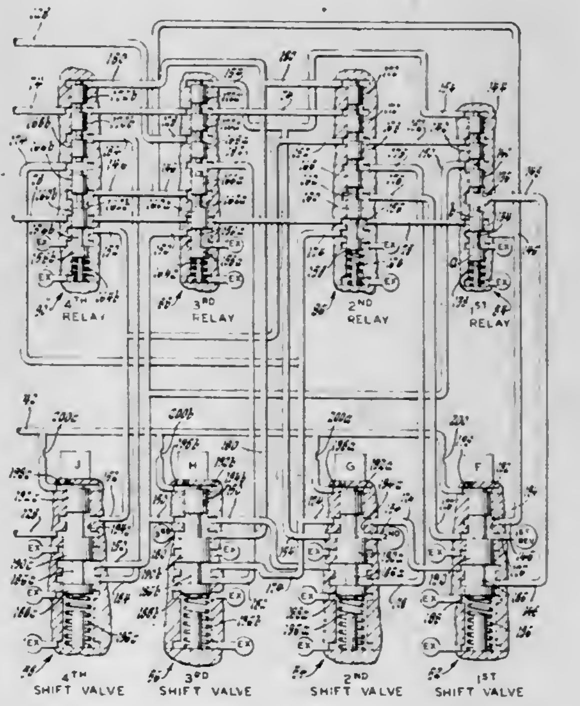


3,868,866
TRANSMISSION CONTROL SYSTEM

Carl A. Lentz, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 10, 1973, Ser. No. 395,621
Int. Cl. F16h *3/74*
U.S. Cl. 74—752 C **4 Claims**

3. A control for a multi-speed planetary gear transmission having a plurality of fluid operated selectively engageable drive establishing means for establishing drive ratios in the planetary gearing, said control comprising; pump means for providing a source of fluid pressure; first, second, third, and fourth relay valve means in fluid communication with said pump means and each being moveable to a spring set position and a pressure set position for controlling fluid from said pump means; first, second, third, and fourth shift valve means each being moveable to a spring set position and a pressure controlled position for controlling the engagement of first, second, third, and fourth of said drive establishing means respectively; first fluid passage means in fluid communication with said second relay valve means, said first, second and third shift valve means and said fourth relay valve means for providing pressurized fluid from said pump means through said second relay valve means when said second relay valve means is in the spring set position and providing an exhaust connection when said second relay valve means is in the pressure set position and for moving said fourth relay valve means to said pressure set position; second fluid passage means in fluid communication with said second shift valve means, said first and third relay valve means and the second drive establishing means for directing pressurized fluid in said first passage means to said first and third relay valve means to control movement thereof to said pressure set position, and to the second drive establishing means for controlling engagement thereof when said second shift valve means and second relay valve means are in the spring set position and for permitting exhausting of the pressurized fluid therein to control movement of said first and third relay valve means to the spring set position and for controlling the engagement pressure of the second drive establishing means when said second shift valve is in said pressure controlled position; third passage means in fluid communication with said first shift valve means and said first relay valve means and being in fluid communication with said first passage means when said first shift valve means is in said spring set position and to exhaust when said first shift valve means is in said pressure controlled position for directing fluid pressure to and from said first relay valve means to control movement thereof between the spring set and pressure set positions thereof; fourth passage means in fluid communication with said third shift valve means and said third relay valve means and in fluid communication with said first passage means when said third shift valve means is in the spring set position and to exhaust when said third shift valve means is in said pressure controlled position for directing fluid pressure to and from said third relay valve means to control movement thereof between the spring set and pressure set positions thereof; said first and second passage means remaining pressurized to prevent a ratio change from second to first and from second to third when said second shift valve means is in said spring set position; said first and third passage means remaining pressurized to prevent a ratio change from second to first when said second shift valve means is in said pressure controlled position and said first shift valve means is in said spring set position; said first and fourth passage means remaining pressurized to prevent a ratio change from second to third when said second shift valve means is in said pressure controlled position and said third shift valve means is in said spring set position; fifth passage means in fluid communication with said third relay valve means, said second, third, and fourth shift valve means and said first relay valve means for providing pressurized fluid from said pump means through said third relay valve means when said third relay valve means is in said spring set position and for providing an exhaust connection when said third relay valve means is in the pres-





sure set position, and for moving said first relay valve means to said pressure set position when said third relay valve means is in said spring set position; sixth passage means for providing fluid communication between said third shift valve means and said third drive establishing means to establish engagement thereof, said second relay valve means and said fourth relay valve means; seventh passage means for providing fluid communication between said second shift valve means and said second relay valve means; and eighth passage means for providing fluid communication between said fourth shift valve means and said fourth relay valve means; said fifth and sixth passage means remaining pressurized to prevent a ratio change from third to second and from third to fourth when said third relay valve means and said third shift valve means are in said spring set positions; said fifth and seventh passage means remaining pressurized to prevent a ratio change from third to second when said third relay valve means and said second shift valve means are in said spring set positions and said third shift valve means is in said pressure controlled position; said fifth and eighth passage means remaining pressurized to prevent a ratio change from third to fourth when said third relay valve means and said fourth shift valve means are in said spring positions and said third shift valve means is in said pressure controlled position:

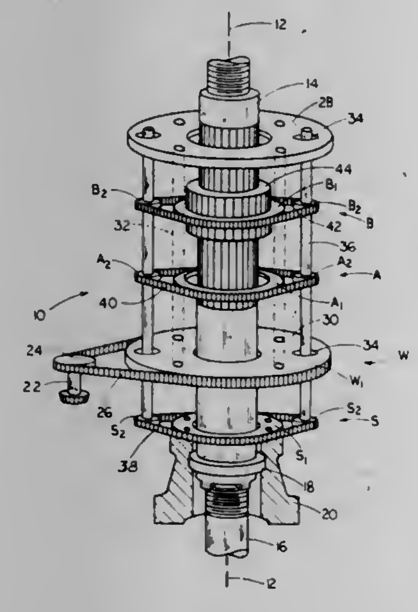
3,868,867
DIFFERENTIAL HARMONIC DRIVE

Pieter F. Hoos, Greensburg, Pa., assignor to Valve Systems International, Inc., Bala Cynwyd, Pa.

Filed Dec. 26, 1973, Ser. No. 427,634

Int. Cl. F16h *3/44, 57/10*

U.S. Cl. 74—773 **8 Claims**



1. A differential harmonic drive comprising:
- a rotary input member rotatable about an axis;
- a shaft on said input member displaced from and parallel to said axis;
- first and second planetary wheels rotatable together on said shaft;
- first and second complementary wheels on said axis;
- first and second engaging drive means between said first planetary and complementary wheels and between said second planetary and complementary wheels, respectively; and
- means preventing rotation of said first complementary wheel;
- said second complementary wheel being adapted to deliver a rotary output;
- the rotary drive ratio between said first planetary and complementary wheels being different than that between said second planetary and complementary wheels.

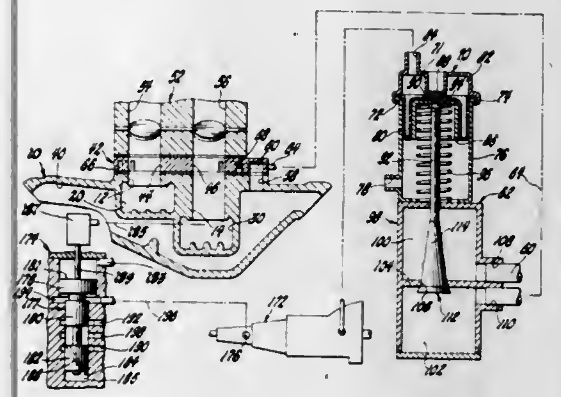
3,868,868
TRANSMISSION CONTROLLED EMISSION CONTROL SYSTEM

Howard E. Chana, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1973, Ser. No. 403,929

Int. Cl. F02m *25/06*

U.S. Cl. 74—856 **4 Claims**



1. An exhaust gas recirculation control system for use on an internal combustion engine having an induction passage for air flow to the engine, an exhaust passage for exhaust gas flow from the engine and a recirculation passage having a first portion extending from said exhaust passage and a second portion extending to said induction passage comprising: exhaust gas recirculation control valve means including an inlet connected to the first portion of the recirculation passage and an outlet connected to the second portion of the recirculation passage, means forming an orifice between the inlet and outlet, valve means located within the orifice including a contoured wall portion thereon movable with respect to the walls of the orifice, a valve actuator including a variable volume hydraulic chamber having a signal port thereto, an automatic transmission including a hydraulic supply and a speed responsive governor means for producing a hydraulic signal related to vehicle speed, modulator valve means in said transmission including means sensing engine induction passage pressure and said governor signal for producing an output signal related to induction passage pressure and speed, and control valve means including means responsive to said governor pressure and said modulator valve output signal to produce an exhaust gas recirculation control signal responsive to induction passage pressure, means for directing said exhaust gas recirculation control signal to said signal port of said actuator means for positioning said valve means with respect to said orifice to control exhaust gas recirculation from the exhaust passage to the induction passage in accordance with pressure in the induction passage.

3,868,869
AUTOMATIC TRANSMISSION CONTROL SYSTEMS

Norman Hunt, and John Noddings, both of Cawston, England, assignors to Associated Engineering Limited, Warwickshire, England

Filed Jan. 8, 1973, Ser. No. 321,677

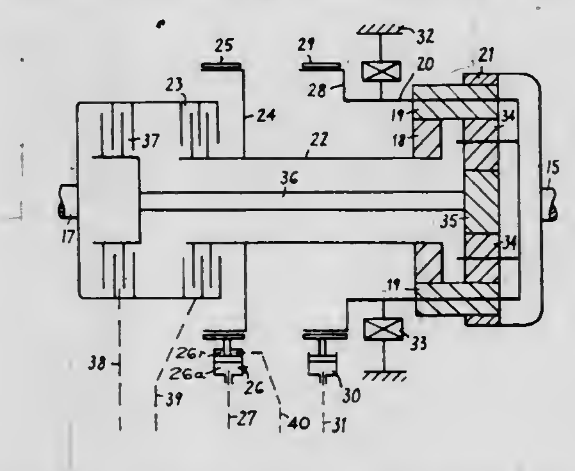
Claims priority, application Great Britain, Jan. 14, 1972, 1963/72

Int. Cl. B60k *23/02*

U.S. Cl. 74—866 **20 Claims**

1. For an automatic transmission including a frictionengaging element operable to change the drive ratio of the transmission, and a supply of pressurized fluid connected to the friction-engaging element, the friction-engaging element being actuated to effect a ratio change in dependence upon the supply of fluid thereto from said supply, a control system including a fluid-pressure actuated fluid-control valve having a valve housing, a cavity in said valve housing, a valve member located in said housing and movable therein, and fluid passage means connectable to said friction-engaging element and

pressurized fluid supply, said valve member being movable within with cavity between first and second positions, at one of which positions the valve member allows pressurized fluid to pass through said passage means to operate the friction-engaging element of the transmission in one direction, and at the other position the valve member vents the fluid to operate the friction-engaging element in the opposite direction, the control system further including an electrical solenoid-operated fluid-control valve for actuating said fluid-pressure actuated valve, fluid passage means connecting said solenoid-operated valve to the cavity of said fluid-pressure actuated valve, said solenoid-operated valve being operable to modify the pressure of pressurized fluid acting on said movable valve member, thereby to move the valve member in at least one direction, and electrical circuit means connected to the solenoid of said solenoid-operated valve to actuate the latter, said circuit being operable to supply a train of electrical pulses to said solenoid for a period after initiation of a change of drive ratio, the circuit means being adapted to vary at least one characteristic of the pulses in the train in dependence upon at least one variable operating parameter.



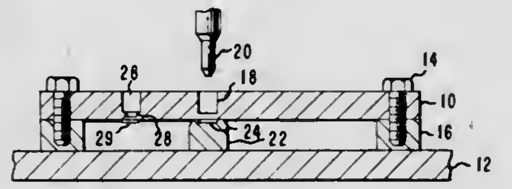
3,868,870
SPINNERET FABRICATION PROCESS

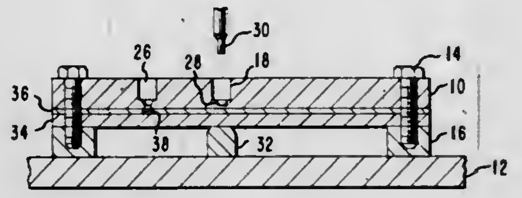
Robert Leroy Anthony, Martinsville, Va., and Samuel Francis Wray, Eden, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 2, 1974, Ser. No. 429,752

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 S **4 Claims**





1. In a spinneret fabrication process that includes the steps of forming a plurality of counterbores in one side of a spinneret plate, punching a countersink in the bottom of each counterbore to a preselected depth of penetration; and punching through the countersink to form a capillary, the improvement comprising: positioning each of said counterbores over a pin anvil having a head with a central indentation therein; supporting the area surrounding said capillary with said anvil while extruding metal from the other side of the spinneret plate into said indentation during the punching of said countersink; removing the metal extruded into said indentation during said countersink forming step; supporting the other side of the spinneret plate with a layer of dead-soft metal having a thickness of from about 0.001 to about 0.003 inch and metal plate; replacing the indented head anvil with a flat head pin anvil; then positioning each countersink over the flat head pin anvil; and supporting the immediate area of each countersink with said flat head anvil during the punching of the capillary.

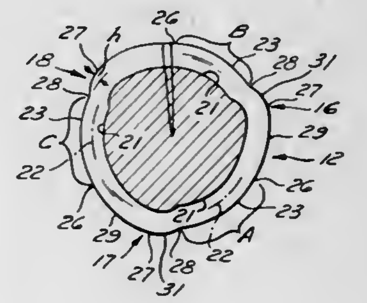
3,868,871
THREAD ROLLING DIES AND METHOD OF MANUFACTURING SAME

Herbert L. Yankee, North Royalton, and Richard H. Correte, Olmsted Falls, both of Ohio, assignors to NL Industries, Inc., New York, N.Y.

Division of Ser. No. 294,219, Oct. 2, 1972, Pat. No. 3,818,749. This application Apr. 18, 1974, Ser. No. 462,135

Int. Cl. B21k *5/20;* **B21d** *17/00*

U.S. Cl. 76—107 R **2 Claims**



1. A method of forming thread rolling dies for rolling threads having a principal pitch diameter and a plurality of helically arranged arrays of thread form projections comprising producing thread form convolutions in the face of an unhardened die block wherein said convolutions extend diagonally across the block with the lead angle of the threads to be formed and are spaced in the lengthwise direction of said die block a distance substantially equal to π times said blank diameter of the blank to be threaded, thereafter pressing diagonally extending troughs in said convolutions without changing the shape thereof wherein said troughs are spaced in said lengthwise direction by a distance substantially equal to π divided by the number of arrays to be formed times the sum of said blank diameter and two times the depth of said troughs, and thereafter hardening said die block.

3,868,872
INTERNALLY REACTIVE STRUCTURAL JOINDER SYSTEM

George S. Wing, 605 Paseo del Mar, Palos Verdes Estates, Calif. 90274

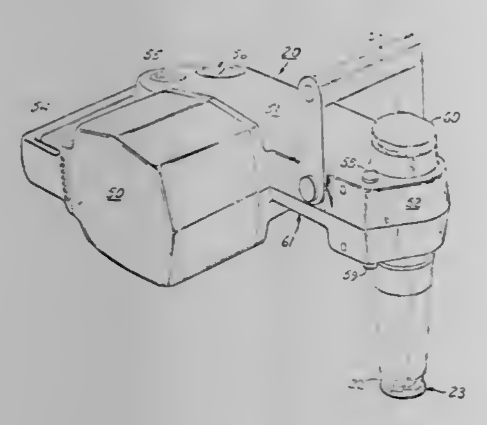
Division of Ser. No. 179,799, Sept. 13, 1971, Pat. No. 3,759,119. This application Apr. 3, 1973, Ser. No. 347,580

Int. Cl. B25b , *13/46*

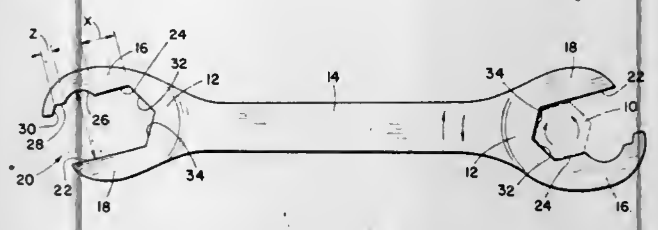
U.S. Cl. 81—52.4 R **2 Claims**

1. An internally reacting system for attaching one of its elements to another of its elements at a predetermined torque level and with a predetermined level of axial tensile preload, said system comprising a driver element, a fastener element having an axis, a workpiece element, and an interlinking element for interlinking the driver element and the workpiece element, said fastener element comprising a pin with a cylindrical shank having a central axis, a peripheral thread on said shank, and a collar including a peripheral flange, a peripheral bearing face on said peripheral flange, an axially-extending nose projecting beyond said bearing face bearing an outer wall, and an internal thread, said collar being adapted to be threaded and tightened onto the peripheral thread of the pin,

said workpiece comprising a body having a bounding surface and an aperture opening onto said bounding surface into which the shank fits, the peripheral thread projecting beyond said bounding surface, the pin being restrained against axial removal from the workpiece in the direction of the peripheral thread, said interlinking element comprising a washer including engagement surfaces, a central aperture at least in part defined by an inner wall to encircle and to pass the pin, and bearing surfaces to abut against the collar and against the workpiece when clamped between them by tightening the collar onto the pin, and the washer being restrained against rotation relative to the workpiece at least in part by frictional forces developed from compressive forces on the bearing surfaces, which forces are exerted on the washer by the collar through the said peripheral bearing face disposed on the said peripheral flange, the axially-projecting nose of the collar being adapted to be inserted into the central aperture of the washer, its outer wall having lateral dimensions such that when so inserted they are less than corresponding lateral dimensions of the inner wall, whereby the nose is radially spaced from the inner wall of the central aperture when the fastener element is fully assembled, at least the first three completely formed thread convolutions of the collar closest to the end of the nose most removed from the peripheral flanges lying axially within the nose, whereby to be located closer to the workpiece than the bearing face on the collar, said driver element comprising a frame, engagement means on said frame to engage the engagement surfaces on the interlinking element and restrain the frame against rotation relative thereto, a wrench having a central axis of rotation rotatably mounted to the frame and adapted to engage the collar to tighten it onto the peripheral thread, a lever arm attached to the wrench, projecting therefrom and adapted to be driven in an arc around the said central axis to turn the wrench, fluid motor means mounted to the frame and connected to the lever arm at a distance from the central axis to cause said driving of the lever arm, a source of pressure-regulated fluid, and valve means admitting said fluid to the fluid motor under pressure so as to drive the same with a predetermined force against the lever arm of predetermined length, whereby the interlinking means restrains the frame against rotation while the wrench tightens the collar onto the pin, and the fluid motor means applies a regulated and substantially constant force and the wrench thereby applies an accurately regulated torque, all independently of other restraints on the frame or on the workpiece, the applied torque being determined and limited by the applied fluid pressure, and there being no freedom of movement of any portion of the driver element from the fastener element when they are engaged which would enable a differential velocity to exist.



3,868,873
END WRENCH WITH RATCHETING CAPABILITIES
James P. Evans, 3233 S.W. 23 St., Oklahoma City, Okla. 74107
Continuation-in-part of Ser. No. 351,252, April 16, 1973,. This application Nov. 23, 1973, Ser. No. 418,453
Int. Cl. B25b *13/02*
U.S. Cl. 81—119 **5 Claims**



1. A combination open end wrench and ratcheting wrench for a hexagonal member wherein the member has a width across opposing corners of A, a width across opposing sides of B, and a length along one side of C, the wrench comprising: a wrench body portion having a handle portion extending in one direction therefrom and opposed, spaced apart jaws extending in the opposite direction, one of the jaws being a torqueing jaw and the other being a backup jaw, the backup jaw having a planar working surface facing the torqueing jaw, the torqueing jaw having:

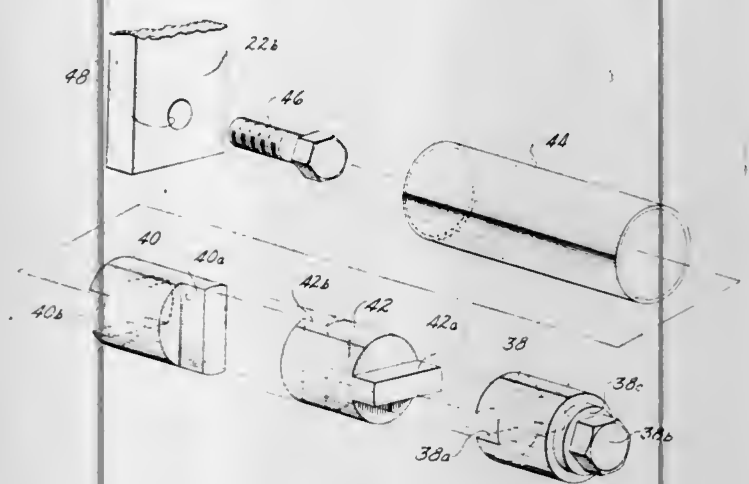
1. a breaking surface adjacent the body portion parallel the backup jaw and spaced from the backup jaw a distance slightly greater than B, the length of the breaking surface being greater than ½ C,

2. an arcuate surface adjacent said breaking surface, the distance of the arcuate surface from said backup jaw working surface as measured perpendicular the working surface being greater than A,

3. a ratcheting surface adjacent said arcuate surface, the ratcheting surface being parallel to said backup jaw working surface and spaced from it a distance slightly greater than B, the length of the ratcheting surface being less than ½ C, and

4. a retaining surface intersecting said ratcheting surface at an angle of 120°, the plane of the retaining surface intersecting the plane of backup jaw working surface at an angle of 60°.

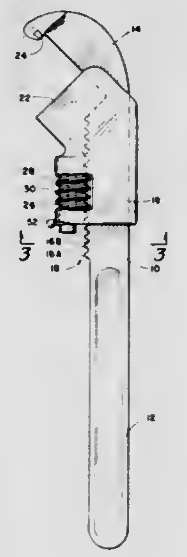
3,868,874
INSULATIVE TORQUE COUPLING ASSEMBLY FOR ELECTRICAL DEVICE TERMINALS
William F. Olashaw, Plainville, Conn., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 28, 1974, Ser. No. 455,638
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **10 Claims**



1. An insulative torque coupling assembly for use in making an electrical joint, secured by a bolt, said assembly comprising, in combination:

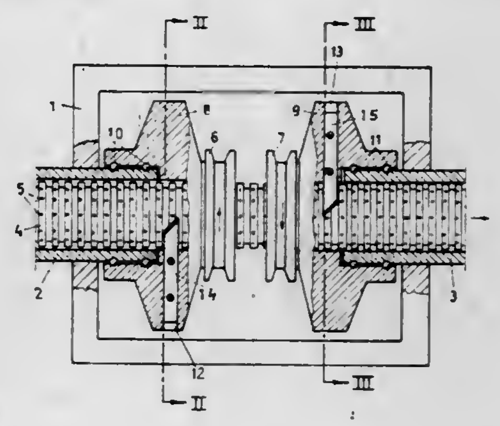
A. a metallic actuator couple having one end configured for engagement by a torquing tool;
B. a metallic bolt couple formed to engage the bolt;
C. an intermediate insulative couple having ends configured to interfit with ends of said actuator and bolt couples such as to transmit torque therebetween; and
D. means holding said couples in coaxial assembly.

3,868,875
QUICK ADJUSTABLE WRENCH
James P. Evans, 3233 S.W. 23 St., Oklahoma City, Okla.
Filed Sept. 17, 1973, Ser. No. 397,630
Int. Cl. B25b *13/16*
U.S. Cl. 81—158 **12 Claims**



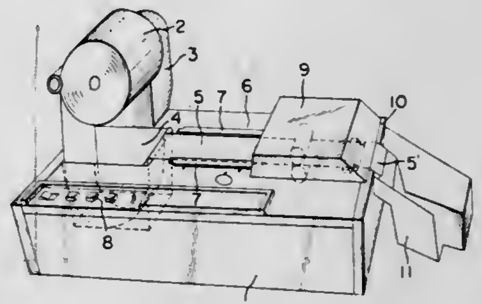
1. A quick adjustable wrench comprising:
a body having a handle at one end and a fixed jaw at the other;
a movable jaw slidably supported to said body providing movable spacing with said fixed jaw to receive variable sized members therebetween;
a rack portion formed on one or the other of said body and said movable jaw, the rack portion having spread-apart teeth, the floors of the valley areas between the teeth having irregular surfaces;
a rotatable eccentric axis supported by the other of said wrench body and said movable jaw, the axis being parallel to said rack portion;
a worm member rotatably supported by said eccentric axis, the worm member having a spiraled thread thereon, the outer surface of the thread being irregular; and
means for rotatably positioning said eccentric axis to three positions, in the first position the thread of said worm member being out of engagement with said rack portion whereby said movable jaw may be rapidly positioned relative to said fixed jaw, in the second position the thread of said worm member engaging the teeth of said rack portion whereby said movable jaw may be positioned relative to said fixed jaw by the rotation of said worm member, and in the third position the worm member being fully positioned towards said rack portion, said irregular outer surface on the worm member thread engaging the irregular floors of the valley areas between said teeth of said rack portion whereby said worm member is prevented from rotation to thereby lock said movable jaw relative to said body portion.

3,868,876
APPARATUS FOR MANUFACTURING PERFORATED TUBES
Erik Gustav Wendel Nordstrom, Box 84, 840 20 Ange, Sweden
Division of Ser. No. 181,540, Sept. 17, 1971, abandoned. This application Nov. 1, 1973, Ser. No. 411,724
Claims priority, application Sweden, Sept. 22, 1970, 12868/70
Int. Cl. B23b *21/00*
U.S. Cl. 82—20 **4 Claims**



1. Apparatus for forming perforations in the wall of a corrugated plastic tube having hollow projections provided thereon, said apparatus comprising a stationary frame, at least one guide sleeve fixed thereto and having an interior defining an internal guide for a tube to be fed therethrough, a drive wheel rotatively mounted on a terminal end of the sleeve and projecting axially outward therefrom, said wheel, beyond said terminal end, having a central bore forming a continuation of the guide defining interior of the sleeve and a guide for the tube passing therethrough, said wheel provided with drive means for rotating said wheel relative to said sleeve and the tube as the tube is moved through the sleeve, at least one knife blade positioned on the wheel outward of said terminal end and projecting into the bore of the wheel inward of the ends thereof in the path of the tube projections tangentially with the circumference of the tube, whereby movement of the tube through the terminal end of the sleeve and the wheel while simultaneously rotating the wheel will cause the blade to intersect the projections and cut the same away from the tube and expose the perforations.

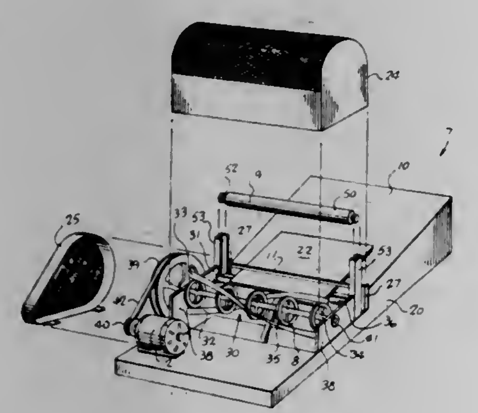
3,868,877
FILM CUTTING DEVICE
Akira Shoji, Yokohama; Takao Toda; Kano Tanaka, both of Tokyo, and Takashi Hirashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 315,822, Dec. 18, 1972, Pat. No. 3,822,624. This application Feb. 4, 1974, Ser. No. 439,255
Claims priority, application Japan, Dec. 2, 1971, 46/104,324; Dec. 24, 1971, 46/647; Jan. 14, 1972, 47/6531; Mar. 17, 1972, 46/27557
Int. Cl. B26d *5/32, 5/34*
U.S. Cl. 83—210 **18 Claims**



1. A film cutting device comprising:
at least two detecting means for detecting film cutting marks disposed on a film spaced apart by a predeter-

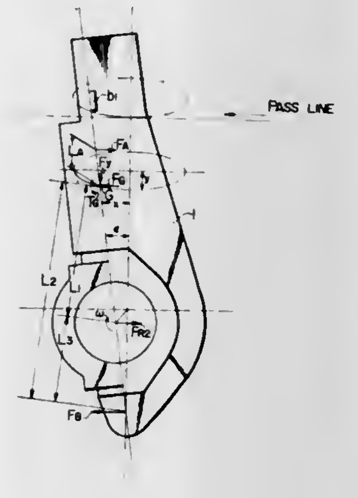
mined distance, said two detecting means being arranged to be disposed such that when a mark or the projection thereof comes to be located near to one detecting means, the mark or the projection thereof adjacent to said mark or projection comes to be located near to the other detecting means spaced apart by the predetermined distance in the direction of feeding of the film;
a film cutting means for cutting film;
a control means for operating said cutting means when each of the detecting means generates their respective detecting signals;
a feeding means for feeding said film into said detecting means and said film cutting means.

3,868,878
CUTTING DEVICE
Ben H. Peak, Holiday Hills Space 272, 2000 W. 92 Ct., Denver, Colo. 80221
Filed Oct. 9, 1973, Ser. No. 404,354
Int. Cl. B26d *5/20; 1/28*
U.S. Cl. 83—356.3 4 Claims



1. A cutting device, comprising:
cutting means;
means for positioning said cutting means at a cutting area for cutting material into strips at said area whenever said cutting means is being driven;
feed means for introducing material to be cut into said cutting area whenever said feed means is being driven, said feed means including a bottom rotatable feed roll and a top feed roll positioned above and contiguous to said bottom feed roll, said top feed roll being gravity biased towards said bottom feed roll so that different thicknesses of material can be readily handled;
means for driving said cutting means and said bottom feed roll of said feed means;
control means connected to said driving means for controlling driving of said cutting means and said bottom feed roll of said feed means, said control means including rate varying means for varying the relative driving rate between said cutting means and said bottom feed roll of said feed means to thereby readily adjust the width of said strips;
a feed table positioned forwardly of said cutting area and slanting downwardly theretoward; and
a bar extending across said feed table near said cutting area, said bar being positioned substantially parallel with the axis of said rotary cutting portion of said cutting element and said bar also being positioned above said feed table at a predetermined fixed distance therefrom so that paper to be cut must pass thereunder to thereby establish the maximum thickness of paper that can be cut by said cutting element.

3,868,879
OSCILLATING FLYING SHEAR
Yoshio Takakura; Yukio Otake, and Yukiyoshi Imai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 3, 1972, Ser. No. 303,471
Int. Cl. B23d *25/06*
U.S. Cl. 83—316 8 Claims



1. An oscillating flying shear comprising a shearing frame making an oscillatory motion in synchronism with the speed of a material being fed to be cut, a pair of cutters operated to be engaged with and disengaged from each other within said shearing frame, a mechanism for operating said shearing frame and said cutters, and means for applying to said shearing frame a righting force means for connecting said righting force means with said shearing frame, said connecting means being provided on said shearing frame at a predetermined distance from the center of gravity thereof toward said cutters, said predetermined distance being substantially equal to the distance computed in accordance with the equation:

$$L_A = (I\epsilon_o/Mx_o),$$

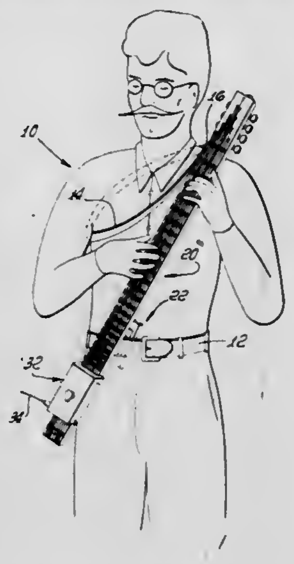
where:
L_A = said predetermined distance,
I = moment of inertia,
ϵ_o = maximum angle of inclination of said shearing frame,
M = mass of said shearing frame,
x_o = maximum amplitude of the shearing frame in the horizontal direction,

said righting force having a size proportional to the stroke of the shearing frame and is constantly directed toward the center of said stroke.

3,868,880
MUSICAL INSTRUMENT CONSTRUCTION
Emmett H. Chapman, 8320 Yucca Trl., Los Angeles, Calif. 90046
Division of Ser. No. 334,859, Feb. 22, 1973,. This application Apr. 3, 1974, Ser. No. 457,396
Int. Cl. G10d *1/08*
U.S. Cl. 84—267 5 Claims

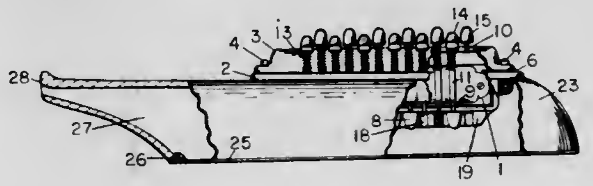
1. In a musical instrument having an elongated fretted fingerboard and a plurality of tensioned strings extending longitudinally of the fingerboard immediately thereabove, the tuning of said strings as follows:
a melody set of at least four strings tuned at intervals of perfect fourths,
and a bass and chord set of at least three strings including a bass string, tuned at ascending intervals of perfect fifths above the pitch of the bass string,

the second string of the bass and chord set above the bass string being tuned one octave below the pitch of that of



the third string of the melody set above the lowest pitched string of the melody set.

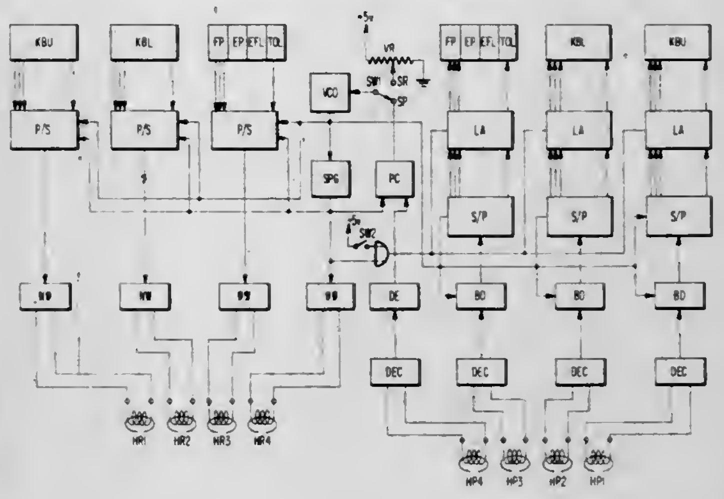
3,868,881
FINGERED HARMONICAS
Oran M. Heath, 1410 Crescent Drive, Corpus Christi, Tex. 78412
Filed Nov. 26, 1973, Ser. No. 419,126
Int. Cl. G10d *7/12*
U.S. Cl. 84—377 3 Claims



1. An air control system for a harmonica comprising a casing enclosing an air chamber; a harmonica-accommodating recess formed in said casing; a ventilated recess cover; valves positioned to open and close the multiple mouthpiece holes of a recessed harmonica; valve control means for opening said valves comprising a plurality of rods slidably extending through holes formed in said casing; a plurality of coiled springs surroundings a portion of said rods and normally biasing said valves in a closed position, said valves being affixed at the ends of said rods within said air chamber and finger pads affixed on the opposite ends of said rods located outside of said casing; and valve guide means for maintaining the valves in correct alignment with the mouthpiece holes of a recessed harmonica comprising a notched bar secured in said air chamber adjacent said valves.

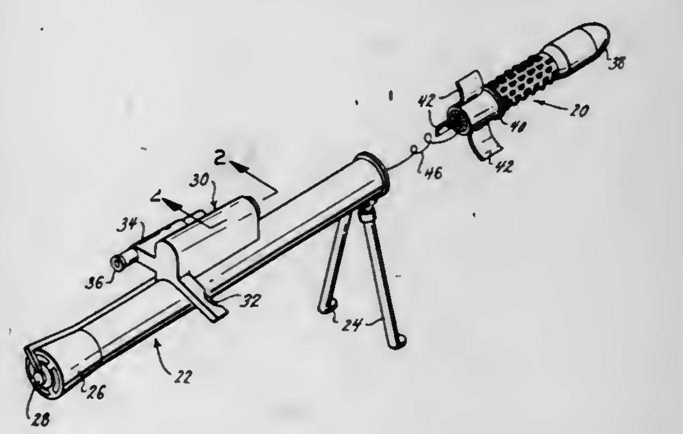
3,868,882
AUTOMATIC MUSICAL PERFORMANCE METHOD AND APPARATUS FOR A KEYED INSTRUMENT
Tutomu Fukui, and Tsutomu Suzuqui, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 19, 1973, Ser. No. 417,331
Claims priority, application Japan, Nov. 17, 1972, 47-115439
Int. Cl. G10g *3/04*
U.S. Cl. 84—462 9 Claims

1. A reproducing apparatus for use in an automatic musical performance apparatus for a keyed instrument, said reproducing apparatus accepting a prerecorded tape having recorded thereon a serial pulse line signal changing with time representing the operation of the keys of the keyed instrument and a synchronizing signal, said reproducing apparatus comprising:
a. reproducing means for reproducing the previously recorded synchronizing signal and the previously recorded serial pulse line signal representative of the key operation for producing the musical composition;
b. phase-locked loop means receiving said reproduced synchronizing signal for generating a clock pulse in accordance with the synchronizing signal;



c. serial-to-parallel converting circuit means coupled to receive said clock pulse for converting the serial pulse line signal into a parallel signal group;
d. latching circuit means coupled to said converting circuit means for storing the value of a signal group until the occurrence of the next synchronizing signal; and
e. means coupling said latching circuit means to the music producing elements of said instrument.

3,868,883
GUIDANCE SYSTEM
James M. Tucker, Kirkwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Feb. 20, 1964, Ser. No. 346,165
Int. Cl. F42b *15/04*
U.S. Cl. 89—1.8 16 Claims



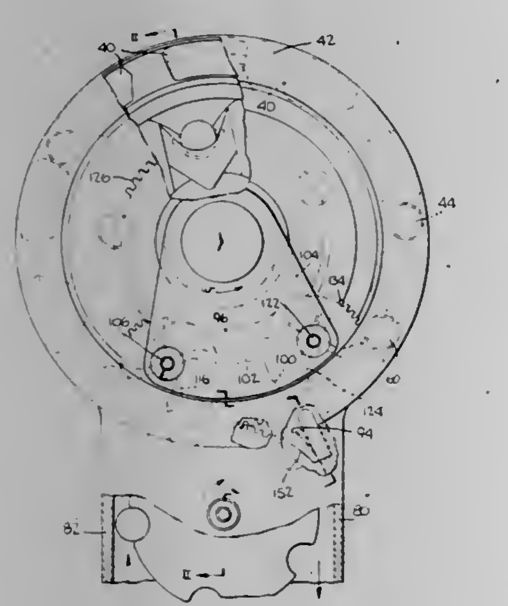
1. Means for guiding an object along a line-of-sight path from a launching site to a target comprising an object having an aerodynamically stable shape with a front to rear axis oriented during flight to extend substantially on the line-of-sight between the launching site and the target, means at the launching site for launching the object on a course toward the target, means for causing the object to roll about its axis at a predetermined roll rate, a light source mounted on the object in position to project light rearwardly therefrom, means at the launching site for aiming and sighting on the target, other means at the launching site oriented with the aiming and sighting means for tracking the object during flight, said tracking means including light sensitive means and means for focusing light from the light source on the object into a spot on the light sensitive means, the position of said spot on the light sensitive means corresponding to the position of the object relative to the line-of-sight between launching means and the target as determined by the aiming and sighting means, means

responsive to the vertical position and to changes in the vertical position of the light spot on the light sensitive means for producing first control signals, means responsive to the horizontal position of the light spot and to changes thereof for producing second control signals, means for sending commands corresponding to said first and second signals to the object, a plurality of one-shot thrust producing elements mounted at spaced locations about the surface of the object, means for sequentially exciting groups of said thrust producing elements to laterally displace the object in space, the combined thrust produced by each group of excited elements acting substantially through the center of gravity of the object, and means on the object responsive to said commands to control the frequency of excitation of succeeding groups of thruster elements and the angular orientation of the thrust produced by each group.

3,868,884
ARTICLE HANDLING SYSTEM

Richard S. Rose, Schenectady, N.Y., and Burton P. Clark, St. George, Vt., assignors to General Electric Company, Burlington, Vt.

Filed July 9, 1973, Ser. No. 377,396
Int. Cl. F41f *9/00*
U.S. Cl. 89—11 **6 Claims**

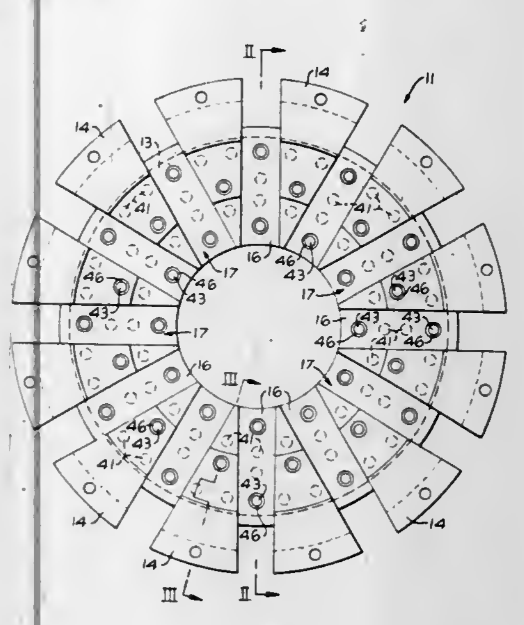


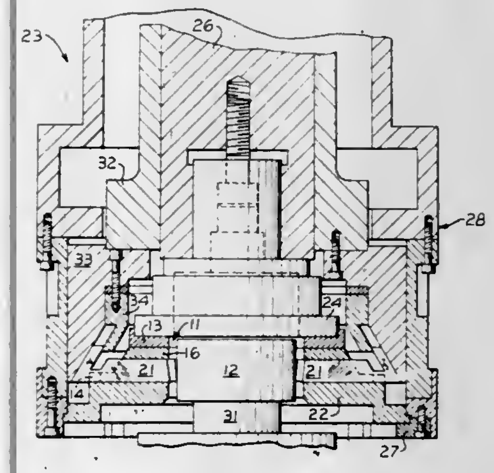
1. A machine gun comprising:
- a housing;
- a plurality of gun barrels fixed to said housing in an annular row about a central axis, each barrel having a respective chamber and gun bolt;
- a rounds distributor ring journalled to said housing for rotation about said central axis,
- said ring having
  - a first plurality of first pockets disposed in an annular row about said central axis, and
  - a second plurality of second pockets disposed in an annular row about said central axis;
- a feeder sprocket journalled to said housing for rotation about an additional axis for receiving rounds and for discharging fired cases;
- guide means journalled to said housing for oscillation between a first position whereat it guides a round from said feeder sprocket into one of said first pockets, and a second position whereat it guides a fired case from one of said second pockets into said feeder sprocket; and
- transfer means journalled to said housing for rotation about said central axis and having
  - first means for transferring rounds from said first plurality of pockets to said gun bolts, and
  - second means for transferring fired cases from said gun bolts to said second plurality of pockets.

3,868,885
CUTTER HEAD AND METHOD OF FORMING SAME

Joseph D. Menne, Canton, and George N. Sigulas, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 317,162, Dec. 17, 1973, Pat. No. 3,820,227. This application Feb. 1, 1974, Ser. No. 438,538
Int. Cl. B23f *21/12*
U.S. Cl. 90—11 A **2 Claims**





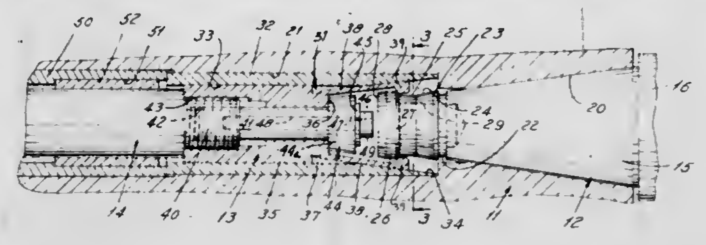
1. A cutter head for a cutting machine of the type wherein cutting tools are radially arranged in circumferentially spaced relation on the head, comprising an annular pressure plate, a plurality of uniformly dimensioned, wedge-shaped tool slot separators and a plurality of uniformly dimensioned, generally rectangular tool slot spacers, the separators and spacers being alternately arranged in circumferential and abutting relation on the annular pressure plate, the separators having a greater thickness than the spacers to form a plurality of slots for receiving the plurality of cutting tools, the uniformly dimensioned separators and the uniformly dimensioned spacers being selectively heat treated prior to mounting on the pressure plate in order to minimize stress concentrations.

3,868,886
TOOL HOLDING ASSEMBLY

Dale J. Bondie, Fowlerville, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Filed July 5, 1973, Ser. No. 376,634
Int. Cl. B23c *5/26*
U.S. Cl. 90—11 D **4 Claims**

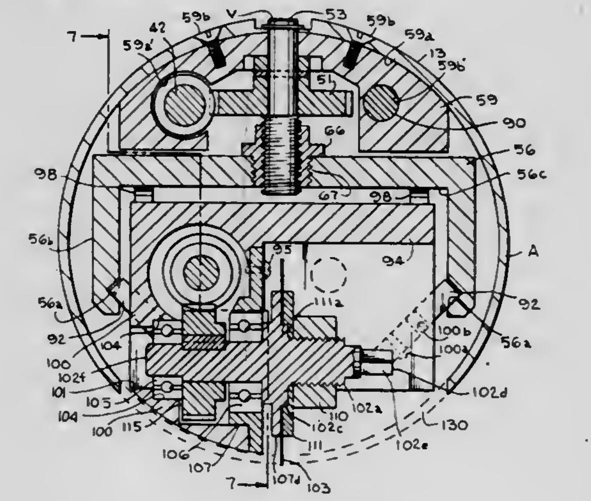
1. In a tool holder and tool holder seat assembly of the type wherein the tool holder seat is non-rotatably fixed to the rotary spindle of a machine tool and the tool holder is held in frictional non-rotatable engagement with the tool holder by a draw bar; said tool holder seat comprising a frusto-conical socket; said tool holder comprising a frusto-conical shank complemental to said socket and a draw bar connector portion projecting from the small diameter end of said shank, said draw bar connector portion having an enlarged end portion spaced from the small diameter end of said shank and defining a shoulder adapted to be engaged by expandable and contractible gripping means, a flared ramp portion on said draw connector portion spaced axially from said enlarged end portion toward the small diameter end of said shank, said ramp portion tapering radially and axially outwardly in the direction of the large end of said shank for causing expansion of such expandable and contractible gripping means when engaged thereby to release the tool holder therefrom.



3,868,887
CALIBRATED SLOT CUTTER

Alvin A. Sorenson, 5811 Flamingo, Houston, Tex. 77033

Filed Jan. 18, 1973, Ser. No. 324,676
Int. Cl. B23c *3/30*
U.S. Cl. 90—12 B **4 Claims**

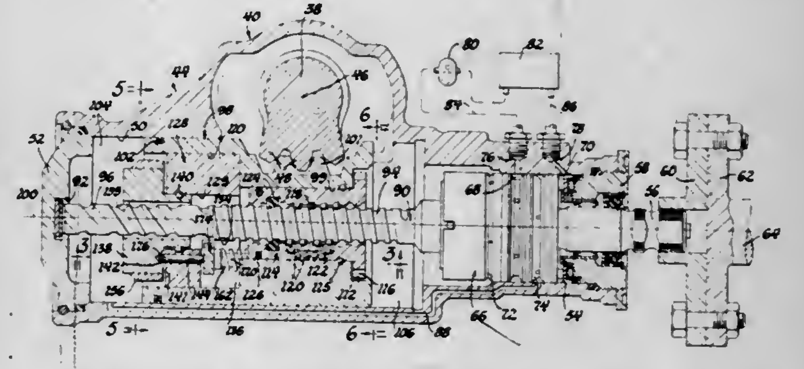


1. A cutter device for cutting a calibrated notch or groove in a substantially cylindrical workpiece member comprising:
- a. a longitudinal extending tubular housing adapted to be inserted into the workpiece member, said tubular housing including a motor drive unit at one end thereof and a cutter assembly unit at the other end thereof, said tubular housing substantially enclosing said cutter assembly unit;
- b. motor means mounted adjacent said motor drive unit, said motor means being mounted externally of said tubular housing;
- c. said cutter assembly unit comprising:
  1. axially spaced holding block means attached to said tubular housing;
  2. carriage support means supported by said holding block means and relatively movable thereto transversely of said tubular housing;
  3. a cutter carriage supported by said carriage support means and relatively movably thereto longitudinally of said tubular housing;
  4. cutter drive means in said cutter carriage;
  5. cutter means carried by said cutter drive means;
- d. means for moving said carriage support means with respect to said holding block means transversely of said tubular housing;
- e. means in said motor drive unit for actuating said means for moving said carriage support means transversely of said tubular housing;
- f. means for moving said cutter carriage with respect to said carriage support means longitudinally of said tubular housing;
- g. means in said motor drive unit for actuating said means for moving said cutter carriage longitudinally of said tubular housing;
- h. a first drive shaft rotatably mounted in said motor drive unit operably connected to said motor means;
- i. a second drive shaft rotatably mounted in said cutter assembly unit and operably connected to said cutter drive means;
- j. means for releasably connecting said first and second drive shafts together for driving said cutter drive means with said motor means; and,
- k. means for expansively locking said tubular housing in the cylindrical workpiece.

3,868,888
VEHICLE STEERING GEAR ASSEMBLY

Frederick L. J. Rehfeld, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,638
Int. Cl. B62d *5/06, 3/08*
U.S. Cl. 91—375 A **8 Claims**



1. In a vehicle steering gear of the type including a housing, an input shaft disposed on said housing for rotation about a first axis of the latter, a pitman shaft disposed on said housing for rotation about a second axis of the latter, a sector gear rigidly disposed on said pitman shaft and defining a plurality of teeth, and a rack member disposed on said housing for bodily shiftable movement along said first axis and defining a plurality of rack teeth engageable on said sector teeth for effecting rotation of said pitman shaft in response to bodily shiftable movement of said rack member, the combination comprising, a worm shaft disposed on said housing for rotation as a unit with said input shaft about said first axis, means on said worm shaft defining a first thread of predetermined lead, means on said worm shaft defining a second thread of predetermined lead less than said first thread lead, a first follower threadedly engaging said first thread, a second follower threadedly engaging said second thread, clutch means disposed on said rack member between said first and said second followers and actuateable between a first range condition connecting said first follower and said rack member and a second range condition connecting said second follower and said rack member, and control means associated with said clutch means responsive to the magnitude of torque experienced by said input shaft for actuating said clutch means between said first range and said second range conditions when said input shaft torque exceeds a predetermined minimum magnitude.

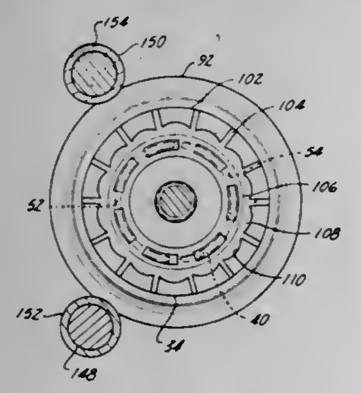
3,868,889
FLUID DEVICE HAVING MEANS FOR ALIGNING A CYLINDER BARREL

Wilfred S. Bobier, Bloomfield Hills, Mich., assignor to The Oilgear Company, Milwaukee, Wis.

Division of Ser. No. 60,333, Aug. 3, 1970, Pat. No. 3,739,691. This application Nov. 27, 1972, Ser. No. 309,649
Int. Cl. F01b *13/04;* **F04b** *49/00*
U.S. Cl. 91—506 **6 Claims**

1. A fluid pressure energy translating device of the axial piston type, comprising: a housing; a cylinder barrel rotatably

mounted within said housing, said cylinder barrel having a plurality of arcuately spaced cylinder bores and cylinder ports communicating each of said cylinder bores with one end of said cylinder barrel; a plurality of pistons with inner ends disposed for reciprocal stroking movement within said cylinder bores; a valve face having arcuate passages; said valve face and said one end of said cylinder barrel being disposed for relative rotary movement with said cylinder ports communicating successively with said arcuate passages in said valve face; thrust plate means comprising a yoke support fixedly mounted in said housing and a yoke movably supported by said yoke support, said yoke being in a driving relationship with the other ends of said pistons for imparting said reciprocal stroking movement to said pistons within said cylinder barrel bores as said cylinder barrel rotates; bearing means having an outer race carried within said housing, an inner race carried around a portion of the peripheral surfaces of said cylinder barrel, said bearing means providing radial support for said cylinder barrel, said bearing means being in contact with said yoke support at a plurality of circumferentially spaced locations for properly locating said cylinder barrel with respect to said yoke; said outer race being carried by said housing concentric with said housing bore; said means for varying the inclination of said yoke comprising a pair of sleeve members each disposed along an axis paralleling the axis of said shaft and radially outwardly spaced from the peripheral surface of said cylinder barrel, each of said sleeve members having one end of a piston member reciprocably mounted therein, the other ends of said piston members adapted to abut a portion of said yoke to pivot said yoke, said sleeve members being radially spaced a distance from the centerline of said shaft axis to abut the outer race of said bearing means at locations which are between said cylinder barrel and said sleeve members to maintain said bearing races in abutment with said yoke support, said piston members carried within said sleeves being so spaced from said longitudinal axis of said shaft to freely reciprocate in a spaced relationship from the outer periphery of said outer race.



3,868,890
SEAL FOR HYDRAULIC PRESSURE MODULATOR

James K. Roberts, and Edward M. Pauwels, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Oct. 1, 1973, Ser. No. 402,545

Int. Cl. F01b ***31/00***

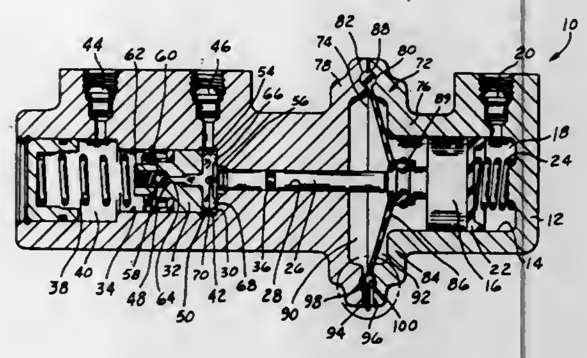
U.S. Cl. 92—86 **12 Claims**

1. In a hydraulic device:

a housing defining a bore therewithin,

a diaphragm secured to said housing and including a web extending transversely across said bore to divide the latter into a pair of compartments;

said housing defining a passage communicating said bore with the exterior of said housing, said diaphragm extending into said passage, said web dividing said passage into a first section for communicating one of said compartments with the exterior of the housing and a second section for communicating the other compartment with the exterior of the housing, and a pair of movable lips extending from opposite sides of said diaphragm for engagement with opposite walls of said passage and when in disengagement with said passage, permitting said communication between the respective compartments and the exterior of the housing.



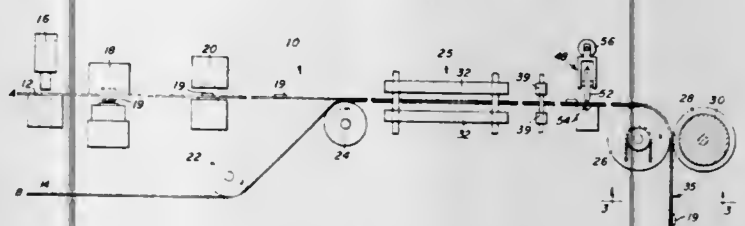
3,868,891
MACHINES AND METHODS FOR THE MANUFACTURE OF CONTAINERS AND THE PRODUCT THEREFROM

Frank T. Parish, Frederick, Md., assignor to Pressure Chemical Corporation, Charleston, W. Va.

Continuation-in-part of Ser. No. 78,023, Oct. 5, 1970, abandoned. This application May 25, 1971, Ser. No. 146,684

Int. Cl. B31b ***1/14, 1/84***

U.S. Cl. 93—8 W **8 Claims**



1. Apparatus for the mass manufacture of bags from first and second continuous lengths of plastic strips having grommets at predetermined bag-length intervals in said first sheet, comprising in combination:

a. first and second sources from which said strips extend to an end position,

b. drive means at said end position for pulling strips from said sources at regular time intervals of sufficient duration to move said strips one of said bag lengths,

c. guide means directing said first and second strips from their respective sources to a mating planar relationship with one another with their respective side edges in the same plane normal to the direction of strip movement,

d. first sealing means between said guide means and said drive means sealing said edges together at bag-length intervals,

e. second sealing means imparting end seals transversely of said strips between said edges at bag length intervals,

f. perforating means weakening said strips through said end seals an amount sufficient to permit separation of one bag from its adjacent bags by relatively light tearing force but insufficient to cause bag separation because of the pulling forces of said drive means, and

g. wherein said perforating means of paragraph (f) is a spiked wheel that moves transverse to said strip.

3,868,892
APPARATUS FOR MANUFACTURING BAGS WITH AN INNER BAG WHICH HAS A Z-FOLD

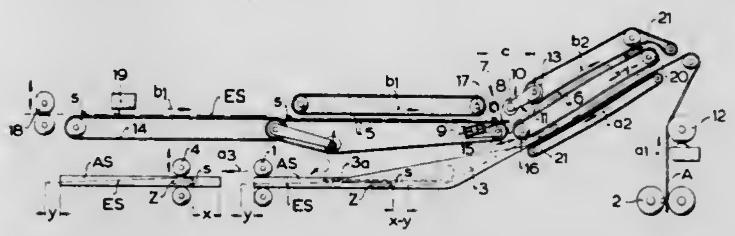
Aloys Winnemoller, Rhine, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Sept. 6, 1973, Ser. No. 394,818

Claims priority, application Germany, Sept. 12, 1972, 2244697

Int. Cl. B31b ***39/26***

U.S. Cl. 93—8 W **12 Claims**



1. An apparatus for manufacturing a carrying bag including an outer bag and an inner bag having a Z-fold formed therein comprising means for conveying a web having at least one layer for forming said outer bag in a first direction at a first speed, means for conveying a tubular material having transverse weld seams for forming the base of said inner bag, said tubular material conveying means including a first double-belt conveyor for conveying said tubular material in a substantially horizontal second direction at a higher speed than said first speed at which said web is conveyed, belt guide means positioned at the discharge end of said first double-belt conveyor and being movable forward and backward with respect to said second direction in which said tubular material is conveyed, a second double-belt conveyor positioned downstream from said first double-belt conveyor for conveying said tubular material at said first speed at which said web is conveyed and for depositing said tubular material onto said web, said second double-belt conveyor being positioned to convey said tubular material first slightly upwardly with respect to said substantially horizontal second direction and to then reverse the direction of travel of said tubular material so that it is traveling slightly downward in the opposite direction and in substantially the same direction as said first direction in which said web is conveyed, said belt guide means including first spaced apart belt guide rollers, spaced apart conveyor belts mounted on said first belt guide rollers, folding fingers mounted to be moveable forward and backward with respect to said first belt guide rollers, said folding fingers being mounted to be moved through the spaces between said conveyor belts and first belt guide rollers and to extend as far as the inlet end of said second double-belt conveyor, second belt guide rollers positioned at the inlet end of said second conveyor, spaced apart individual rollers mounted so as to be moveable forward and backward to cooperate with said second belt guide rollers, said individual rollers and the spaces between said rollers, respectively, being substantially in alignment with said first belt guide rollers and the spaces therebetween, means for shaping said web into tubular shape to form said outer bag and to envelop said inner bag, and means for dividing the resulting carrying bag from said web.

3,868,893
APPARATUS FOR PRODUCING COMPOSITE CONTAINERS

Brian Leo Chudleigh Sutch, Thames Ditton, England, assignor to Airfix Industries Limited, London, England

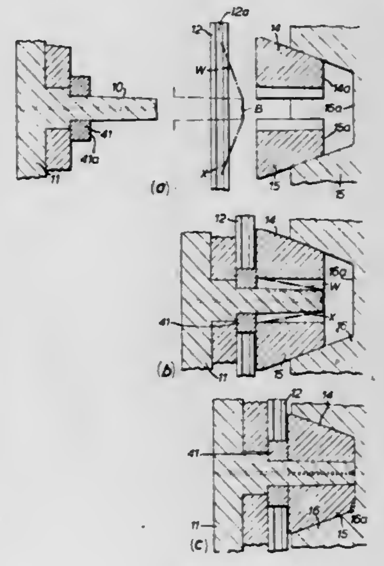
Filed Oct. 10, 1973, Ser. No. 405,103

Claims priority, application Great Britain, Oct. 10, 1972, 46582/72; Mar. 22, 1973, 14015/73

Int. Cl. B31b ***1/44, 1/62***

U.S. Cl. 93—50 **10 Claims**

1. Apparatus for producing a composite container from a blank comprising an end wall panel and side wall panels each of which projects from the end wall panel, the apparatus comprising a cavity tool having a cavity therein including side walls, a core tool movable relative to the cavity tool between an open and a closed condition, the cavity tool comprising cavity tool parts themselves slidably movable along said side walls between an open condition and a closed condition in the latter of which and with the core tool and the cavity tool in the closed condition a cavity is defined which corresponds to the shape of the container to be produced, a blank guide for receiving a blank and positioning the blank in the open condition of the core tool and the cavity tool between those tools and spaced therefrom and with the end wall panel in the path of relative movement of the core tool, relative movement of the core tool and the cavity tool in the closing direction, with a blank positioned by the guide therebetween, being operative to drive the end wall panel of the blank relative to the side wall panels and to the guide toward the cavity tool and to cause the core tool to move the cavity tool parts towards their closed condition, means being provided to inject material into vacant parts of the cavity defined by the core tool and the cavity tool in the closed condition to seam edges of the blank juxtaposed by relative movement of the core tool and cavity tool during relative closing movement.



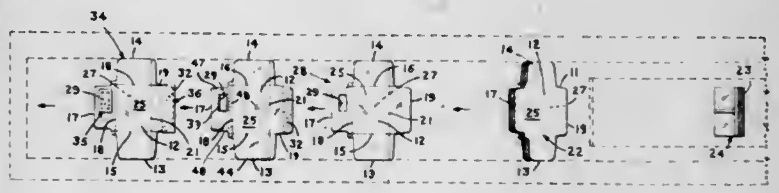
3,868,894
METHOD FOR MAKING TWO COMPARTMENT ENVELOPES

Charles S. Watson, Glen Ridge, N.J., assignor to Berlin & Jones Company, Inc., East Rutherford, N.J.

Filed Dec. 14, 1973, Ser. No. 424,876

Int. Cl. B31b ***49/04, 1/82***

U.S. Cl. 93—61 A **4 Claims**



1. A method for making a two compartment envelope from a unitary sheet of paper having an inward side and an outward side and having a rectangular back, a first and a second side flap each hinged on opposite edges of and foldable against the inward side of the back panel and overlappable to form a first compartment, a front flap of less width than the back panel and hinged on a remaining edge of the back panel and foldable against the side flaps to form a second compartment, a forth edge hinged to a closure flap which folds over into contact

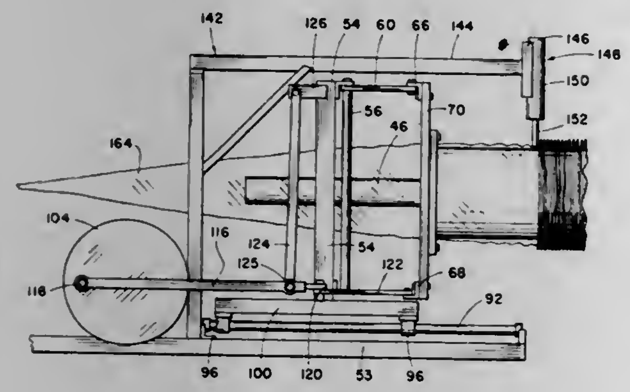
with the front panel to enclose both the first and the second compartments, the method comprising steps of:

advancing the sheet open with the inward side upward along a continuous path,
printing with ink on the outward side of the sheet,
die cutting a window in the front flap,
applying pressure sensitive adhesive to the closure flap and to a margin of the front flap about the window,
applying a strip of a release paper over the adhesive on the closure flap,
applying a patch of a transparent film over the window and in contact with the adhesive on the front flap,
drying the ink,
applying gum to a remote margin of one of the side flaps,
folding the side flaps against the inward side of the back panel with the ungummed flap overlapped by the gummed flap to define a first of the compartments,
applying gum to a proximal margin and to lateral margins of the front flap,
folding the front flap against the side flaps to define a second of the compartments, folding the closure flap against the front panel.

3,868,895

DEVICE FOR LOADING A PLASTIC SLEEVE ONTO A MANDREL

Robert J. Hart, and Milburn L. Hart, both of Tulsa, Okla., assignors to Commercial Resins Company, Tulsa, Okla.
Filed Oct. 12, 1973, Ser. No. 405,771
Int. Cl. B31f *1/08*
U.S. Cl. 93—84 TW **9 Claims**

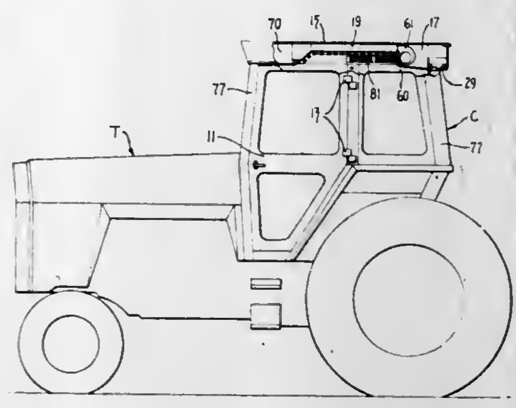


1. A device for loading a sleeve of plastic film onto a mandrel and comprising carriage means for supporting the mandrel in a substantially horizontal position, a loading assembly disposed in substantial alignment with the carriage means for movably receiving the mandrel and plastic film sleeve therein, reciprocating means for moving the loading assembly relatively towards and away from said carriage means, film engaging means carried by the loading assembly for loading the film onto the mandrel, connecting means provided on the loading assembly and operably connected with the film engaging means for moving the film engaging means inwardly into engagement with the film as said loading assembly is moved relatively towards said carriage means for loading of the film onto the mandrel in an accordian type operation, said connecting means moving said film engaging means outwardly away from said film as said loading assembly is moved relatively away from said carriage, whereby a relatively great length of film sleeve may be loaded onto a relatively short mandrel, and blower means provided on the carriage means for moving a column of air through the mandrel and into the plastic sleeve being loaded thereon for facilitating the loading operation.

3,868,896

VEHICLE CAB ENCLOSURE WITH VENTILATION MEANS

Robert M. Doll, Farmington; Joseph L. Jessup, Detroit, and Lawrence J. Stone, Livonia, all of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Mar. 28, 1973, Ser. No. 345,807
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.11 **7 Claims**

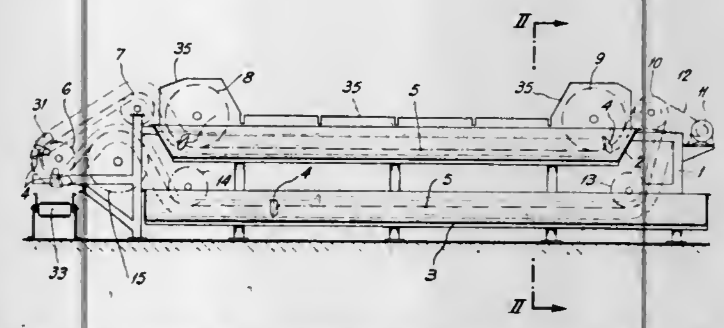


1. In a vehicle cab enclosure including a forced air ventilation system, a forced air means for drawing air from outside the cab, means for distributing air from the forced air means in the cab, an air intake opening connected to the forced air means and providing for air entering or leaving the cab, filter and screen in said air intake opening, a cab door swingable between an open position and a closed position, and characterized by said filter having a lower outwardly exposed surface facing downward and facing said opening so that air passing from outside the cab to said forced air means moves upward through the filter, said air intake opening constituting the major path for air leaving the cab when the door is closed so that as the door is rapidly swung from its open to its closed position there is sudden flow of air in a reverse direction through said forced air means and said filter and screen, whereby foreign particles collected on the lower outwardly exposed surface of the filter are loosened and fall away by gravitational force.

3,868,897

MACHINE FOR CONTINUOUS TREATMENT BY MEANS OF LIQUIDS, MORE PARTICULARLY FOR PASTEURISATION OF SUBSTANCES IN SACHETS

Claude Moreau, Nantes, France, assignor to Societe Financiere Et Industrielle Des Ateliers Et Chantiers De Bretagne, Loire Atlantique, France
Filed June 26, 1972, Ser. No. 266,399
Claims priority, application France, Apr. 17, 1972, 72.13392
Int. Cl. A23l *3/08*
U.S. Cl. 99—483 **7 Claims**

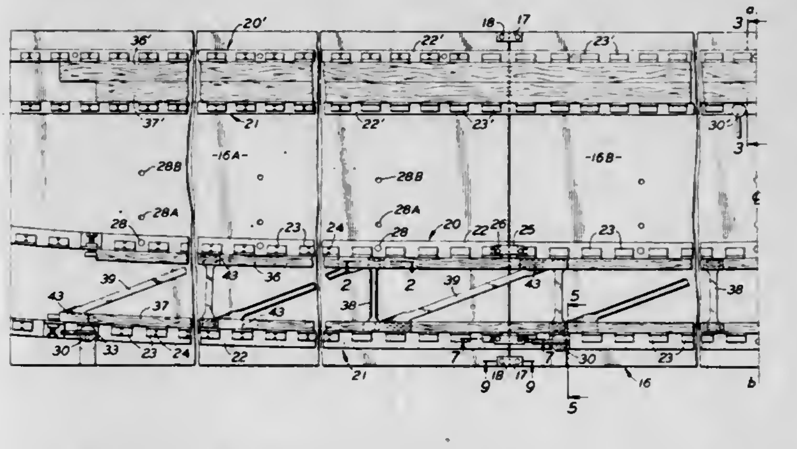


1. In a machine for continuously subjecting products to liquid treatment and comprising an endless conveyor having gear wheels at its ends which carries the products from a loading station to an unloading station as it passes through one or more treatment stations, the improvement comprising providing said conveyor with open work baskets to receive the products, said open work baskets being provided with a hinged cover urged into closure position and wherein cam devices are provided at the loading station and the unloading station for opening said cover as the basket passes the station, said loading and unloading stations being grouped at one end of the conveyor, said cam devices being common to these two stations, and wherein covers of said baskets have projections which cooperate with lateral cams disposed coaxially of the gearwheels of the corresponding end of the conveyor, the bottom run of the conveyor arriving obliquely downwards in the direction of said gearwheels and leaving the same obliquely upwards, the cams extending over substantially 180° from points situated slightly downstream of the lowest point of the conveyor.

3,868,898

ROLLING TRUSS JOINT CONNECTOR PLATES

Arthur Carol Sanford, 2308 Bay Drive, Hillsboro Shore, Pompano Beach, Fla. 33062
Continuation-in-part of Ser. No. 332,347, Feb. 14, 1973, abandoned. This application July 30, 1973, Ser. No. 382,321
Int. Cl. B30b *13/00*
U.S. Cl. 100—35 **19 Claims**



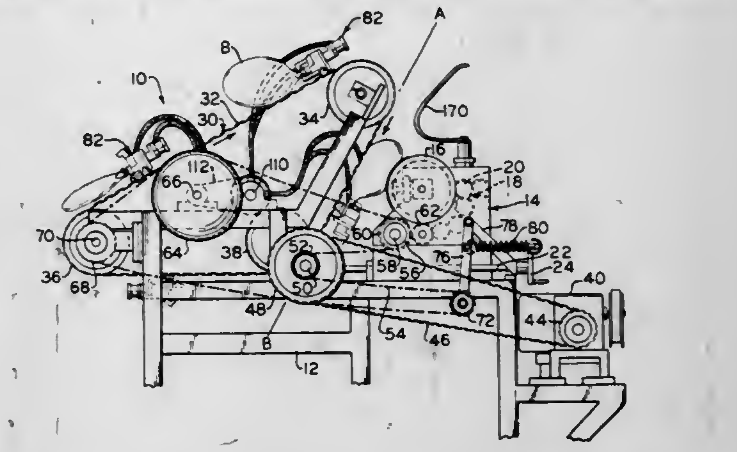
1. The method of fully embedding toothed connector plates in opposite faces of assembled truss components including wood components, comprising clamping the truss components in horizontal assembled position on a vertically flexible horizontal jig bed with the toothed plates located on the top and bottom faces of said wood components, positioning a pair of vertically spaced pressure rolls above and below said jig bed having the nip of the rolls positioned relative to the plane of the jig bed to conform the bed progressively during passage between the rolls to the curved area at the nip of the lower roll, and causing relative movement between the jig bed and the rolls, thereby embedding the top and bottom toothed plates into the wood components.

3,868,899

BALLOON PRINTING APPARATUS

Norman H. Nye, 1348 Highbridge Rd., Cuyahoga Falls, Ohio 44222, and Arthur T. Medkeff, 260 Fawnwood Dr., Tallmadge, Ohio 44278
Filed Apr. 30, 1973, Ser. No. 355,464
Int. Cl. B41f *17/00*
U.S. Cl. 101—35 **2 Claims**

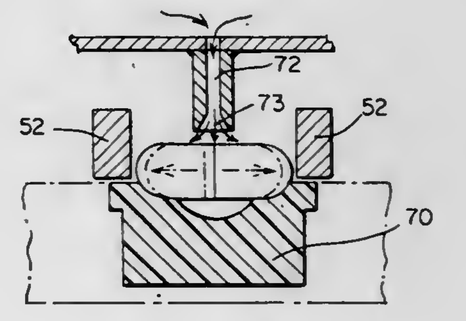
1. Apparatus for printing on balloons and including in combination a printing press comprising a rotary printing cylinder for carrying an inked printing plate and apparatus for moving inflated balloons through a path tangent to said printing cylinder and characterized by an endless conveyor movable through a fixed course including a straight portion adjacent a portion of the periphery of said cylinder and which straight portion would be tangent to said portion of the periphery of said cylinder but is spaced therefrom, drive means for said cylinder and said conveyor to drive them at correlated speeds, a balloon positioning means on said conveyor having a balloon engaging tube extending in the direction of movement of said conveyor, a fixed source of a compressed gas, rotary seal joint means connected to said gas source, and flexible tube means connecting said rotary seal joint means to said balloon engaging tube to connect to the interior of a balloon positioned on said engaging tube to connect the balloon to said gas source or to atmosphere to control the pressure in the balloon and inflate it prior to movement past said cylinder, the balloon being pressed against said cylinder for receiving a printed impression therefrom by said straight portion of said conveyor, said balloon engaging tube positioning any said balloon to extend directly rearwardly therefrom in relation to the direction of movement of said conveyor, to pull a balloon past said printing cylinder while held thereagainst by said straight portion of the fixed course of said conveyor, the conveyor and the periphery of said printing cylinder being adapted to be moved at substantially equal speeds.



3,868,900

CAPSULE PRECISION PRINTING APPARATUS AND METHOD

Edward M. Ackley, Stone Harbor, N.J., assignor to R. W. Hartnett Company, Philadelphia, Pa.
Filed Sept. 4, 1973, Ser. No. 393,964
Int. Cl. B41f *17/36;* **B65g** *47/24*
U.S. Cl. 101—40 **15 Claims**



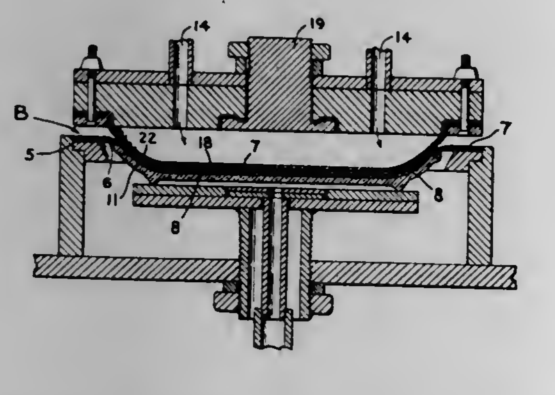
1. In an apparatus for processing a capsule having interfitted longitudinally relatively slidable body and cap members having a juncture therebetween, means for lengthening said capsule to a precision length while said cap and body members remain interfitted, said precision length being less than the total length of said cap plus the length of said body, comprising:

a. supporting means for carrying the capsule while said capsule has a length less than said precision length, with the longitudinal axis of said capsule arranged in a predetermined direction;
b. means for moving said supporting means and capsule along a predetermined path which is generally transverse to said predetermined direction while said capsule has less than said precision length;
c. a pair of stop members located at opposed sides along said path and spaced apart from one another at a predetermined distance corresponding to said precision length, and

d. positive pressure fluid jet means spaced from and located generally intermediate said stop members and aimed substantially at said juncture when said capsule is located between said stop members, thereby sliding the cap and body relative to each other to move the ends of said cap and body away from each other until they contact the respective stop members, whereby said capsule is expanded to said precision length while said cap and body remain interfitted.

3,868,901
APPARATUS FOR MECHANICAL CONTACT IN PRINTING ON CERAMIC TABLEWARE

Jose Valiela, New York, N.Y., assignor to Interspace Corporation, Parsippany, N.J.
Continuation-in-part of Ser. No. 255,738, May 22, 1972, Pat. No. 3,756,165. This application Aug. 9, 1973, Ser. No. 387,111
Int. Cl. B41f *17/00*
U.S. Cl. 101—41 **7 Claims**



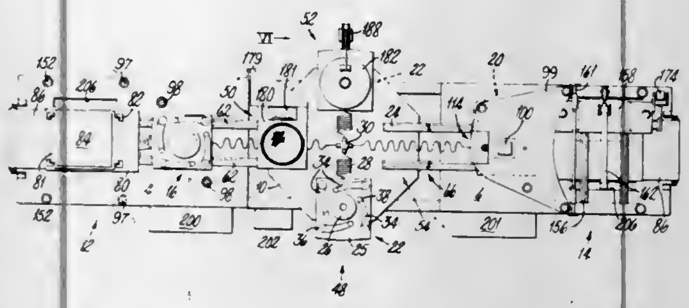
1. In an apparatus for applying a decorative colorant to an item of ceramic tableware; wherein the apparatus comprises in combination: a rigid planar ring defining a central opening, an elastic open mesh net secured to the ring and covering the opening, the net provided with a solid area having a total release transfer surface thereon within the area of the opening, the colorant printed on at least one area of the transfer surface, the net being resiliently displaceable out of the plane of the ring whereby to permit the colorant on the transfer surface to be engaged into contact with the tableware so that it is printed thereon, a gas inflatable and vacuum deflatable balloon operable against the net for biasing same in a direction to move the transfer surface into a quickly out of contact with the tableware; an improvement comprising a permeable flexible fabric interposed between the balloon and the solid area to obviate formation of gas pockets therebetween.

3,868,902
MULTI-STATION PRINTING MACHINE FOR CERAMIC WARE

Arthur Bradshaw, Audlem, and Frank William Meadows, Stoke-on-Trent, both of England, assignors to Service (Engineers) Limited, Staffordshire, England
Filed July 26, 1973, Ser. No. 382,698
Claims priority, application Great Britain, July 29, 1972, 35547/72
Int. Cl. B31f *17/00*
U.S. Cl. 101—44 **1 Claim**

1. A multi-color printing machine for use with ceramic ware comprising:

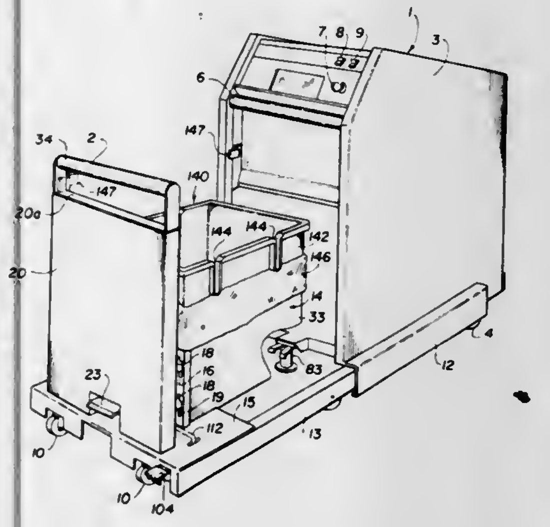
A. a frame for supporting the machine;
B. a turntable rotatably mounted on the frame;
C. a plurality of paired parallel tracks mounted on the turntable and extending radially on the turntable toward the outer periphery thereof;
D. ceramic ware support plates mounted for sliding movement on the paired tracks, said plates having suction means to receive and hold the ceramic ware;
E. means to rotate and stop the turntable at a plurality of transfer positions;
F. a plurality of printing stations mounted on the supporting frame at positions about the periphery of the turntable corresponding to the transfer positions, said printing stations having a printing pad at each printing station arranged to pick up a design in colored ink from an intaglio plate and to print the design onto the piece of ceramic ware, means for depositing ink onto the intaglio plate, and independently operated doctoring means for wiping the ink into the design on the intaglio plate;



G. paired tracks mounted on the frame at the printing station for alignment with the tracks on the turntable when said table is in a transfer position;
H. transfer means operatively associated with the ceramic ware support plate for moving said plate along the turntable tracks, onto the printing station tracks, and to the printing station and for returning said plate to the turntable after the printing is applied;
I. means mounted at the transfer position for sprinkling powder onto the newly printed ceramic ware to prevent marring of the design during subsequent printing operations; and
J. means for removing excess powder from the ceramic ware before subsequent printing operations.

3,868,903
PORTABLE COMPACTING APPARATUS

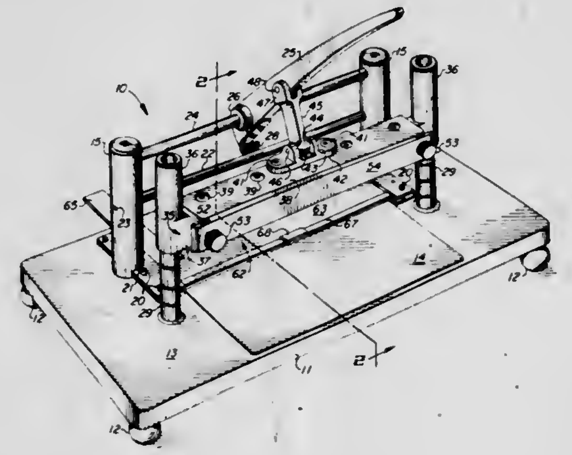
Anthony P. Montalbano, Freshmeadows, N.Y., assignor to Environmental Pollution Research Corporation, New Hyde Park, N.Y.
Filed Mar. 2, 1973, Ser. No. 337,567
Int. Cl. B30b *1/18, 15/14*
U.S. Cl. 100—45 **76 Claims**



1. A portable compacting apparatus comprising:
a portable, rollable power unit; and
a portable, rollable container unit adapted to be removably received in said power unit;
said power unit comprising:
means for receiving said container unit in said power unit;
a ram unit operable to compact material in said container unit when said container unit is received in said power unit; and said container unit comprising:
means for guiding said container unit into said power unit; and
a container for receiving material to be compacted, said container being in registration with said ram when said container unit is received in said power unit for compaction of said material; and
at least one of said power unit and container unit including at least one resilient rotatable member having a non-yieldably mounted axle mounted thereon, said at least one resilient rotatable member being engagable with the other of said power and container units for facilitating reception of said container unit in said power unit, said resilient rotatable member yielding upon compacting of material in said container unit.

3,868,904
BED AND PLATEN PRINTER

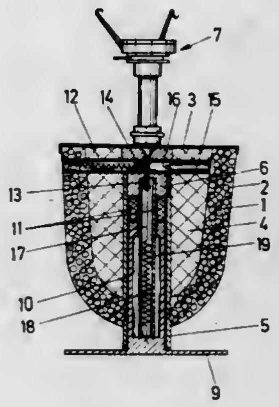
Kurt J. Wulf, 3624 E. Montecito, Phoenix, Ariz. 85018
Filed Mar. 21, 1973, Ser. No. 343,216
Int. Cl. B41f *1/02, 1/06*
U.S. Cl. 101—316 **1 Claim**



1. A miniature printer comprising:
a frame,
a horizontal positioned bolster plate fixed to said frame,
a pair of parallelly arranged spaced guide pins mounted on said plate in perpendicular arrangement thereto,
a platen mounted on said pins and arranged to extend therebetween for sliding movement therealong at right angles to said plate,
an actuating device on said frame operable for moving said platen during a printing operation into contact with said plate,
said actuating device comprising a lever pivotally mounted on said frame on a first shaft mounted on said plate parallel with said platen at a position spaced from said platen and said plate, and a link pivotally connected at one end to said lever and at the other end to said platen,
said actuating device when moving said platen toward said plate first moving said link at an obtuse angle with the direction of movement of said platen and then sequentially transcending into movement axially with the direction of movement of said platen,
latch means mounted on one end of said lever and actuated by movement of said actuating device for engaging a second shaft mounted on said plate spaced from said first shaft between said plate and said first shaft and in perpendicular arrangement to said plate,
said latch means comprising a flat spring curved at one end for engaging at the outer periphery of said curved end said second shaft for holding said lever in a given position on said frame until said actuating device is again actuated toward said plate,
means mounted on said plate for firmly positioning an item to be impressed below said platen, and
a composing stick holding type settings detachably mounted on said platen for engaging the item mounted on said plate upon movement of said platen toward said plate.

3,868,905
SPRINGMINE

Franz Ragailler, Eferding, Austria, assignor to Armaturen-Gesellschaft m.b.H., Schwanenstadt-Rustdorf, Austria
Filed Jan. 10, 1973, Ser. No. 322,490
Int. Cl. F42b *23/16*
U.S. Cl. 102—8 **2 Claims**



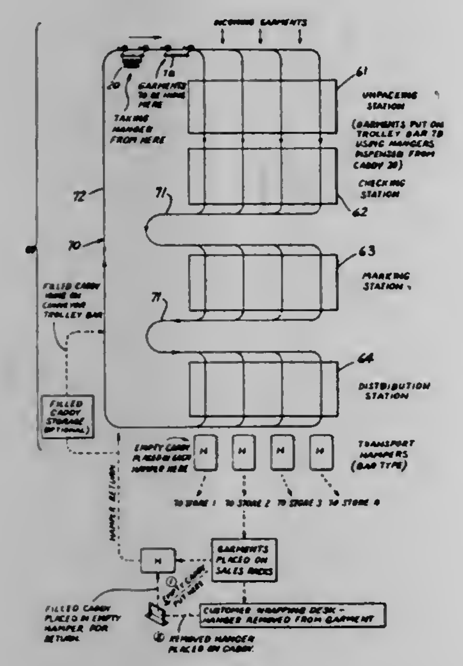
1. A spring mine including a mine body disintegratable into fragments under the action of a detonating bursting charge, a lower part of the mine body being formed arched downwardly so as to be substantially hemispherical and an upper part joined to the hemispherical lower part being formed generally cylindrical, said mine body consisting of metal particles embedded in a plastics material, a central, vertical bore in said mine body and being open in the region of the arched lower part, a guide plunger which is fixed to a base plate being received in said vertical bore, an ejector charge being disposed in the bore above the guide plunger, a drawing means is provided for detonating the bursting charge, said drawing means extending along the vertical central axis of said mine body, one end of said drawing means being anchored in the center of the base plate and the other end being connected to a securing element of a detonator for the bursting charge.

3,868,906
CONTROL AND HANDLING OF GARMENT HANGERS

Anson W. Cameron, 300 N. State St., Apt. 5818, Chicago, Ill. 60610
Filed Aug. 24, 1973, Ser. No. 391,217
Int. Cl. B61b *3/00*
U.S. Cl. 104—89 **9 Claims**

1. A caddy for garment hangers comprising, in combination, a stiff tubular member, a relatively stiff retainer strip substantially coextensive with the tube, latching members secured to the ends of the retainer strip, the tube having receiving openings at its respective ends for insertion of the latching members, the latching members being dimensioned to extend through and beyond the tube, the latching members being slideable in the receiving openings for broadwise movement of the retainer strip from a clamping position in which the retainer strip clampingly engages the hooks of a plurality of hangers assembled on the tube and a parallel retracted position in which the retaining strip is spaced free of the hooks, each latch member being formed of a strip having a movable latch portion presenting a latching surface which engages the wall of the tube to hold the retainer strip in clamping position and which is releaseable from the wall of the tube by finger pressure to permit movement of the retainer strip to its parallel retracted position, and stop means on each of the latching

members arranged to engage the wall of the tube for preventing complete retraction of the latching members from the tube so that the retaining member is captive at both ends on the tube in its retracted position.



3,868,907
HOOKING DEVICE FOR A SKI-LIFT TOW BAR AND SKI-LIFT INCLUDING SAID BARS

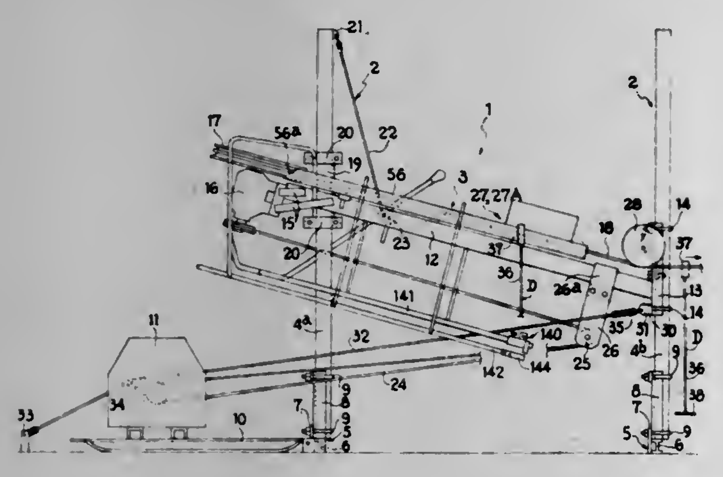
Jacob Kees Schippers, Le Touvet, France, assignor to Schippers Freres, Le Trouvet, France

Filed Sept. 5, 1973, Ser. No. 394,545

Claims priority, application France, Sept. 8, 1972, 72.32015; Sept. 8, 1972, 72.32016

Int. Cl. B61b *7/04*, *7/20*

U.S. Cl. 104—173 **17 Claims**



1. A ski-lift comprising an endless traction cable, a cable-driving station and a cable-returning station respectively located at opposite ends of a slope having an upper end and a lower end, the stations comprising pulleys around which pulleys the cable extends, the pulley pertaining to the cable-driving station being a drive pulley, a plurality of hooking devices engaged on the cable, each hooking device comprising a rigid support defining a passage for receiving the cable, the passage having in cross section a median enlarged part and two opposed V-section recesses located on opposite sides of the median enlarged part which enlarged part is such that the cable is freely movable through the enlarged part, the V-section recesses being capable of wedging against the cable so as to render the support rigid with the cable, the support having means defining a lateral opening communicating with the passage for laterally introducing the cable into the passage, means defining an abutment surface on the support, the station at the lower end of the slope comprising a reception magazine for storing the hooking devices which are not used and having an exit, the magazine comprising a slideway cooperative with the abutment surfaces of the hooking devices and a mechanism which includes locking means and is adapted to release the hooking devices one by one in accordance with the demand and is located at an end of the slideway, the slideway being adjacent the path of the cable and extending in the same direction as the cable at such level with respect to the level of the cable whereby, when the abutment surfaces of each hooking device is engaged on the slideway, the support is raised to a position with respect to the cable in which the cable can freely pass through the median part of the passage of the hooking device.

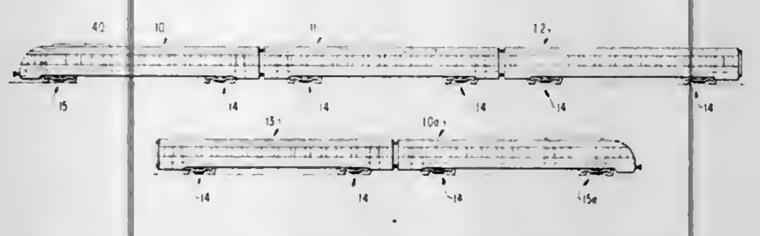
3,868,908
GAS TURBINE RAILWAY CAR

Andre E. Pelabon, 68 Avenue Henri Martin, Paris 16, France

Filed Apr. 13, 1973, Ser. No. 350,807

Int. Cl. B61c *5/00*, *9/34*; **B61d** *1/00*

U.S. Cl. 105—1 R **10 Claims**



1. A high-speed, self-propelled railway train comprising a plurality of cars, means for supplying propulsive power for the train, each of said cars including a pair of bogies for independently supporting each car in rolling engagement with a track system, at least one of the endmost cars of said train being a traction car, said propulsive power means comprising prime mover means contained in said traction car, and on engineer's compartment contained in said traction car for controlling operation of said propulsion power means and the starting, running, and stopping of the train, said prime mover means comprising, a single gas turbine engine of the variable output speed free running turbine type, variable speed ratio hydraulic transmission means connected to the output of said turbine, and fixed ratio transfer gear means for transmitting power from the output of said hydraulic transmission to at least one pair of wheels of a bogie supporting, said traction car whereby said train can be propelled at varying speeds from a standing stop by said free running turbine.

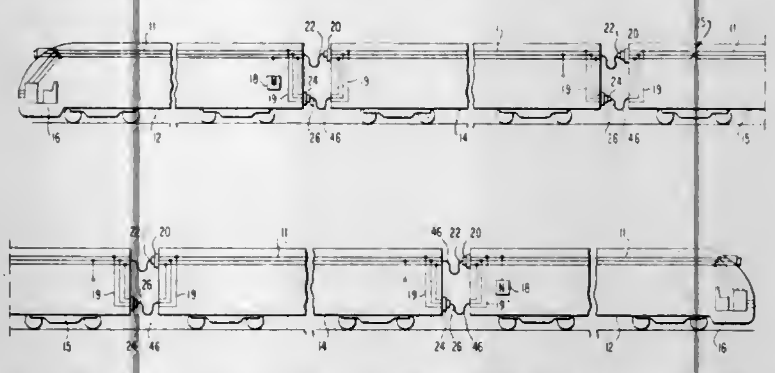
3,868,909
RAILWAY TRAIN CONTROL LINE ADAPTOR PLUG

Andre E. Pelabon, 68 Avenue Henri Martin, Paris 16, France

Filed Apr. 13, 1973, Ser. No. 350,809

Int. Cl. B61d *49/00*; **B61g** *5/06*; **H01r** *33/00*

U.S. Cl. 105—1 R **5 Claims**



1. In a railway train of the type normally having at least three cars coupled together, each of the endmost cars containing a train propulsion prime mover and an engineer's control station including indicators and control instruments for operating the train from either one of said control stations, the indicators and control instruments at both stations and the prime movers in both endmost cars being interconnected by electrical conductors extending throughout the length of the train and including interconnecting male and female plug connectors between each car, and wherein a third car normally coupled in the train between the endmost cars includes circuit modifying means for transposing certain of said conductors so that the indicators and control instruments at each of said control stations will present a similar array with regard to the prime mover in that car and the prime mover at the far end of the train, the improvement which comprises an adaptor plug for insertion between a male and female plug between adjacent cars when said third car is removed from the train, said adaptor plug including circuit modifying means similar to that of said removed third car.

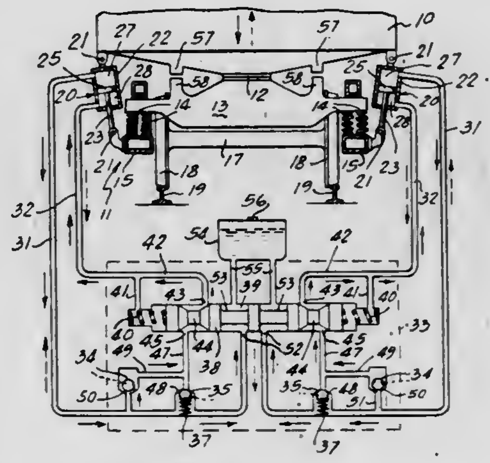
3,868,910
RAILWAY CAR SUSPENSION MOTION CONTROL SYSTEM

John C. Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Nov. 26, 1973, Ser. No. 419,107

Int. Cl. B61f *3/08*, *5/24*, *5/50*

U.S. Cl. 105—164 **22 Claims**



1. A system for controlling operational vibrations of a railroad car body relative to its suspension, comprising:

double-acting hydraulic fluid displacement units of the rectilinear piston and cylinder type wherein the piston rod extends from one end of the piston and the opposite end of the piston is free within the cylinder and having means for coupling the units to and between the respective opposite sides of the car body and suspension;

means providing hydraulic displacement connections between said units;

first valve means in said connections automatically responsive to hydraulic pressure in said connections as generated by said units for controlling displacement through the connections and thus damping relative bounce and pitch motions between the car body and the suspension;

additional pressure-sensitive valve means in said connections inactive relative to bounce and pitch but operating automatically responsive to hydraulic pressure in said connections as generated by said units to damp roll motion between the car body and suspension; and

accumulator means in said hydraulic displacement connections to accomodate piston rod displacement in said units.

3,868,911
RAILWAY CAR SUSPENSION MOTION CONTROL SYSTEM

John C. Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed June 22, 1973, Ser. No. 372,851

Int. Cl. B61f *3/08*, *5/24*, *5/50*

U.S. Cl. 105—164 **22 Claims**

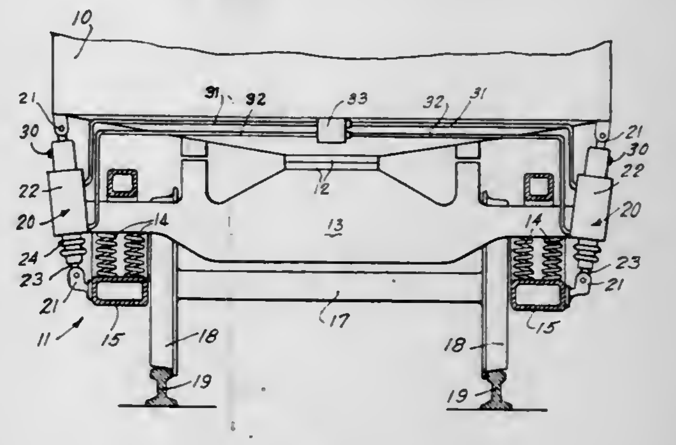
1. A system for controlling operational vibrations of a railroad car body relative to its suspension, comprising:

double-acting hydraulic fluid displacement units having means for coupling them to and between the respective opposite sides of the car body and suspension;

means providing hydraulic displacement connections between said units;

first valve means in said connections automatically responsive to hydraulic pressure in said connections as generated by said units controlling displacement through the connection and thus damping relative bounce and pitch motions between the car body and the suspension; and

additional pressure-sensitive valve means in said connections inactive relative to bounce and pitch but operating automatically responsive to hydraulic pressure in said connections as generated by said units to damp roll motion between the car body and suspension.



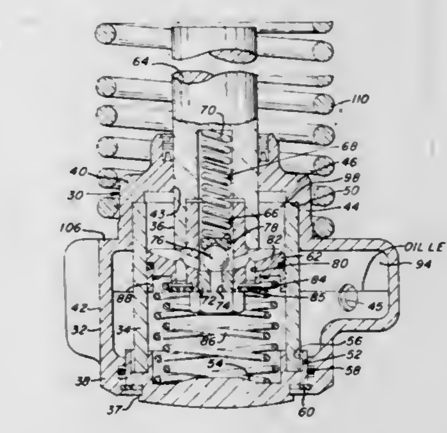
3,868,912
HYDRAULICALLY SNUBBED TRUCK

John H. Wagner, Bradfordwoods, and Donald Wiebe, Sewickley, both of Pa., assignors to A. Stucki Company, Pittsburgh, Pa.

Filed Apr. 27, 1973, Ser. No. 355,058

Int. Cl. B61f *5/12*, *5/50*; **F16f** *9/32*

U.S. Cl. 105—197 DH **14 Claims**



1. A snubber device comprising: a hollow housing; an annular cylindrical member releasably and rigidly received within said housing; a circumferential fluid reservoir defined by the inner periphery of said housing and substantially the entire outer periphery of an upstanding portion of said cylindrical member which is spaced therefrom; a piston assembly axially reciprocable within said cylindrical member; passageway means communicating between said reservoir and the interior of said cylindrical member adjacent the uppermost portion of said cylindrical member; said interior of said cylindrical member, said passageway means and said reservoir defining a closed hydraulic system for retaining a hydraulic fluid therein; and said passageway means being in communication with said reservoir below the operating level of the hydraulic fluid in said reservoir.

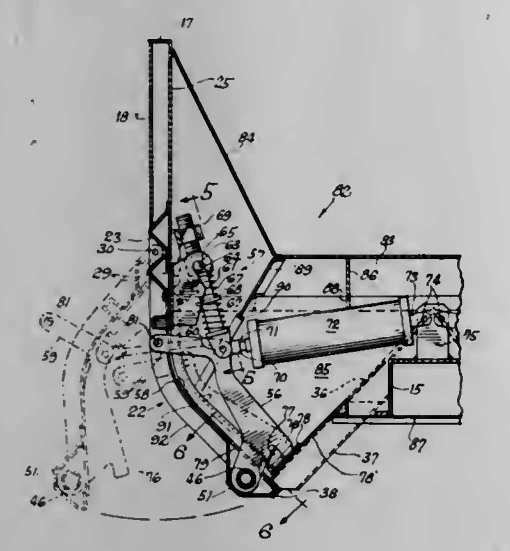
3,868,913
HOPPER VEHICLE

Peter W. Becker, Struthers; Albert E. Price, Brookfield; Erling Mowatt-Larssen, Warren, and Carl E. Becker, Masury, all of Ohio, assignors to General American Transportation Corporation, Chicago, Ill.

Filed Feb. 19, 1974, Ser. No. 443,217

Int. Cl. B61d *7/02*

U.S. Cl. 105—240 **32 Claims**



1. A hopper vehicle having a pair of bottom hoppers extending lengthwise of the vehicle on opposite sides of the vertical central plane of the vehicle, which comprises:

a supporting structure including support means extending from about one end of the vehicle to about the other end of the vehicle and located at the bottom portion of the vehicle for mounting on wheeled assemblies of the vehicle;

a body structure including:

end walls;

side walls;

an inverted generally V-shaped panel mounted on said support means and extending lengthwise of the vehicle and providing a part of said hoppers; and

a door assembly hingedly mounted at its upper margin on each of said side walls to swing outwardly and constructed to provide one side of one of said two hoppers of the vehicle;

a door-operating mechanism for each of said door assemblies and located intermediate the length of the door assembly, each of said door-operating mechanisms including:

a lever pivotally mounted at its bottom end on the bottom margin of said door assembly and having an inwardly directed extension that is constructed to function as a latching lug, said lever being movable between a first position abutting the inside of said door assembly when the door is unlocked and a second position spaced from the inside of said door assembly when the door is closed with said extension in its latching position to lock the closed door assembly;

power means mounted on said support means and operatively connected to said lever to provide a force in one direction for movement of said lever from said second position to said first position and to provide a force in the opposite direction on said lever for return movement of said door assembly to its closed position and subsequent movement of said lever from said first position to said second position; and

means operatively connected to said lever to provide against said lever, when in its first position, a sufficient force to prevent movement of said lever from said first position when said power means provides a force in said opposite direction greater than the force of gravity acting on door assembly for movement of said door assembly to its closed position; and

locking means mounted on said supporting structure in alignment with each of said levers to be engaged by said latching lugs provided by said extensions of said levers after said door assemblies are closed and said levers have been moved to their second positions,

said locking means and said latching lugs being constructed so that when each of said levers is in its said first position and the door assembly on which it is mounted is being moved to said closed position said latching lug clears said locking means with which it is engaged when said lever is moved to its second position after the door is closed.

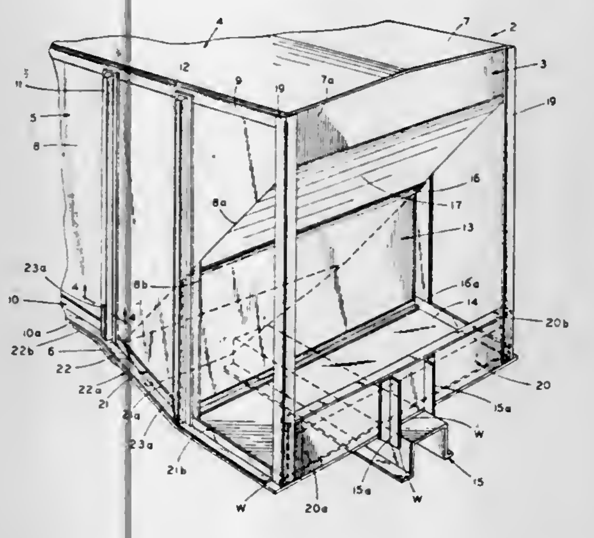
3,868,914
HIGH SIDE SILL RAILROAD CAR

Philip G. Przybylinski, Schererville, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 16, 1971, Ser. No. 181,140

Int. Cl. B61d *5/00, 7/00, 17/06*

U.S. Cl. 105—248 **8 Claims**



1. In a center sill-less railroad hopper car, a pair of opposed end portions and a central portion and side girders including side sills connecting with the end portions, each end portion comprising:

a stub center sill,

a flat horizontal shear plate beam mounted on the stub center sill below the side sills,

an upright bolster web beam mounted over a vehicle bolster and on the shear plate beam intermediate its ends,

said side sills each including a high side sill on each side of the car and extending through the central portion and into the end portions and spaced above the respective shear plate beams,

each side at each end portion of the car having a first side post lying generally in the plane of the bolster web beam and a second side post spaced inwardly of said first side post and a corner post at each end of the car,

each high side sill extending between each second side post and terminating lengthwise at each second side post,

a sloped and lower side sill structure connecting with each end of a respective high side sill and including a sloped side part connecting with each free end of the respective high side sill and extending in sloping manner downwardly and outwardly and connecting with the lower ends of said first and second side posts, said sloped and lower side structure further including a lower stub side sill being generally horizontal and connecting with the outer end of each sloped side sill part and with a respective corner post, said lower stub side sill on each end and side of the car connecting with a respective shear plate beam and lying in the same general plane therewith below the high side sill,

each of said high side sills and each sloped and lower side sill structure forming a single continuous formed side sill structure.

3,868,915
PALLETS

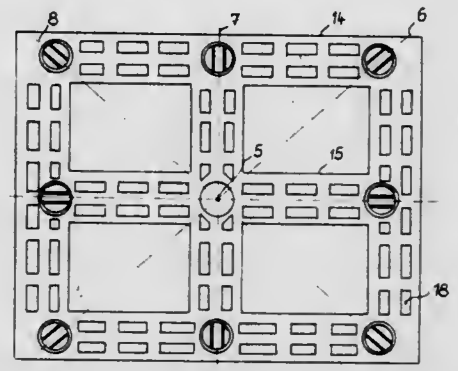
Erich Hafner, 4811 Leopoldshohe, Doktorkamp 11, Germany

Filed Dec. 27, 1972, Ser. No. 319,082

Claims priority, application Germany, Dec. 29, 1971, 2165341

Int. Cl. B65d *19/32*

U.S. Cl. 108—51 **10 Claims**



1. A pallet comprising an essentially flat upper part and an essentially flat lower part, said upper and lower parts having a common axis normal to the load bearing surface of the upper part and to the upper surface of the lower part, at least one of the parts including spacing pieces for maintaining the upper and lower parts in spaced relation, the upper part having a plurality of protrusions or depressions in a lower surface thereof each of which interengages with one of a corresponding plurality of depressions or protrusions on an upper surface of the lower part, each of a first group of said pluralities of said interengaging protrusions or depressions having an elongated longitudinal axis extending in a direction essentially along one of a plurality of radial lines projected from said common axis, and each of further groups of said pluralities of said interengaging protrusions or depressions having longitudinal axes extending in directions essentially along others of said plurality of projected radial lines, whereby relative movement of the two parts in a direction transverse to said surfaces is restrained, and means joining said upper and lower parts for connecting the two parts together while allowing limited relative movement therebetween.

3,868,916
SHELF CONSTRUCTION

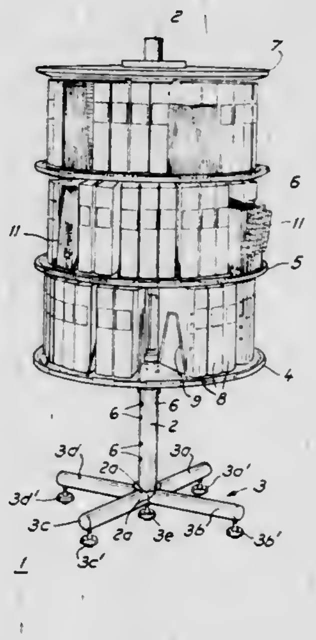
Kurt Lennart Ohlson, Moravagon 27, 161 42 Bromma, Sweden

Filed July 2, 1973, Ser. No. 375,474

Claims priority, application Sweden, July 7, 1972, 8976/72

Int. Cl. A47b *49/00*

U.S. Cl. 108—103 **3 Claims**



1. A rotatable shelf and the like comprising

a. a vertical stationary column;

b. a wheeled base supporting said column on a floor or similar support;

c. a sleeve surrounding said column;

d. a pair of vertically spaced bearing bushings rotatable about said column supporting the upper and lower ends of said sleeve at a spaced distance from the exterior surface of said column;

e. a pair of wheels mounted on the opposite ends of a shaft extending through said column and engaging the lower one of said bearing bushings to permit rotation of said sleeve about said column; and

f. a shelf member fixed to said sleeve for rotation about said column, extending therefrom in a horizontal direction, said bearing bushings being substantially L-shaped and having an annular slot forming a portion tapering upwardly towards the exterior surface of said column.

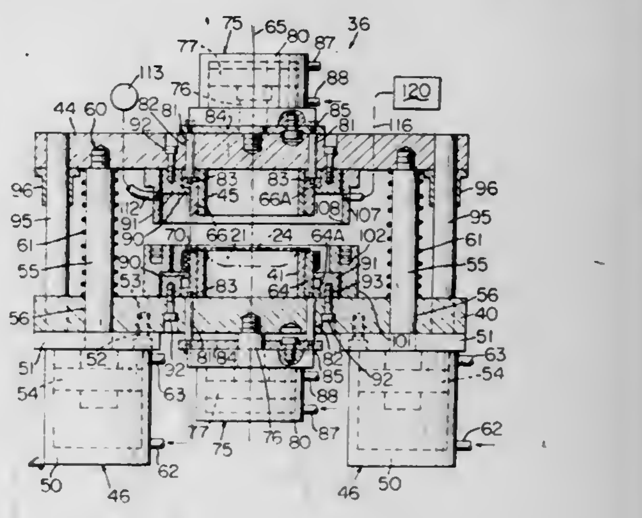
3,868,917
SEALED CONTAINER AND APPARATUS FOR AND METHOD OF SEALING SAME

Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 272,059, July 14, 1972, Pat. No. 3,752,387, which is a division of Ser. No. 49,492, June 24, 1970, Pat. No. 3,695,806, which is a continuation-in-part of Ser. No. 854,108, Aug. 29, 1969, abandoned. This application June 15, 1973, Ser. No. 370,319

Int. Cl. B21d *51/26*

U.S. Cl. 113—1 E **10 Claims**



1. An apparatus for sealing a closure having a peripheral flange portion provided with an annular sealable surface against the top of a dish-like container having a top peripheral flange provided with a cooperating annular sealable surface wherein at least one of said sealable surfaces has adhesive means thereon, said apparatus comprising a fixed support, a container supporting ring carried by said fixed support and having an annular top surface adapted to support said flange, a movable support, an actuating device for moving said movable support toward and away from said fixed support, a clamping ring carried by said movable support for clamping said closure against said annular top surface, and a pair of cooperating dies each carried by an associated support and each being movable relative to its associated support, one of said dies being supported around said container supporting ring and being axially movable relative thereto and the other of said dies being supported around said clamping ring and being axially movable relative thereto, said dies and rings being adapted to be moved together so that said sealable surfaces are bonded together by said adhesive means to form a multiple thickness bonded lamination comprised of an annular portion of said flange and a corresponding annular portion of said closure and said dies being adapted to be then moved in one direction to first define a substantially tubular laminated section and adapted to be moved in an opposite direction to form said section in the form of an annular bead having

a roughly circular cross-sectional outline, said clamping ring having an outside surface which defines the inside surface of said tubular section and said one die having an inside surface corresponding to and being spaced outwardly from said outside surface by a controlled thickness determined by the thickness of said multiple thickness bonded lamination.

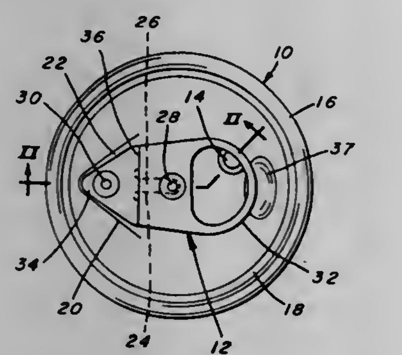
3,868,918
LOCK-DOWN FOR A PULL TAB ON A CONTAINER WALL

George L. Smith, Jr., Vandergrift, and Hans H. Diekhoff, Greensburg, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 212,562, Dec. 27, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,155

Int. Cl. B21d *51/26*

U.S. Cl. 113—121 C **2 Claims**



1. A method for forming an embossed hook in a container wall for retaining a tab thereon comprising the steps of
   - forming a hemispherically-shaped bubble with a hollow protrusion on the projecting end thereof in a sheet metal container wall,
   - reforming the bubble into a boss having a substantially vertical side wall around approximately one-half of its perimeter, an end wall sloping toward the container wall from the top of said side wall, and an upwardly projecting hollow protrusion near the top of the end wall adjacent the side wall of the boss; and
   - reforming the boss into a hook for engagement over an edge of a tab by partially collapsing the boss and reforming the top of the side wall and the protrusion outward to form a rounded nose on the hook.

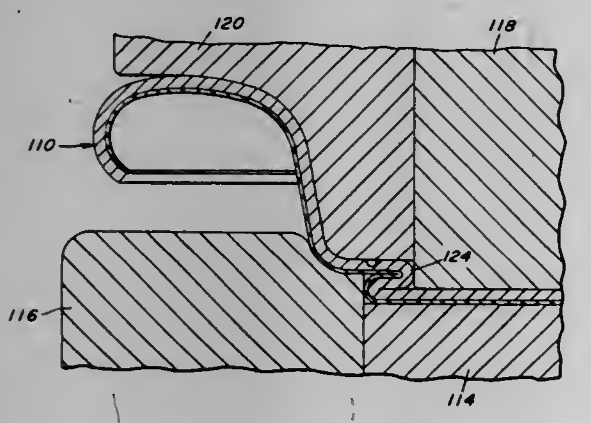
3,868,919
METHOD AND APPARATUS FOR FORMING EASY OPENING CONTAINER WALLS

Howard D. Schrecker, Hyde Park, and Hans H. Diekhoff, Greensburg, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 6, 1973, Ser. No. 422,292

Int. Cl. B21d *51/26*

U.S. Cl. 113—121 C **14 Claims**



1. In a method of forming a sheet metal easy opening container end wall having an annular score line therein defining a removable panel, an annular folded band in the removable panel adjacent the score line to shield the raw score edge on the panel after removal from the end wall, an upstanding chuckwall around the removable panel and a peripheral flange extending outwardly from the chuckwall for securement of the end wall to a container body, the steps comprising:
   - drawing the center portion of a generally circular sheet metal blank downwardly with respect to the peripheral edge portions of the blank,
   - drawing an annular U-shaped groove in the blank around the periphery of the center portion of the blank,
   - forming an annular lip and an upstanding chuckwall around the outer edge of the groove,
   - depressing the center portion of the blank and the inner wall of the groove to move portions of the groove radially outwardly to form a Z-wall connecting the center portion of the blank to the lip of the blank,
   - forming a score line in the lip around the blank and
   - collapsing the Z-wall to form an annular folded band adjacent the score line.

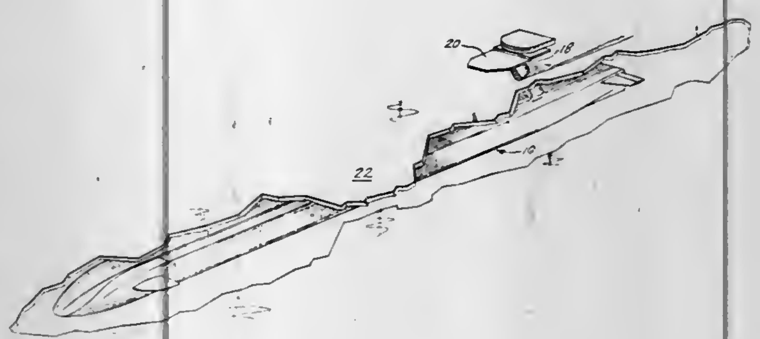
3,868,920
SEMI-SUBMERGED CARGO TRANSPORT SYSTEM

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 74,820, Sept. 23, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,633

Int. Cl. B63g *8/00;* **B63b** *35/12*

U.S. Cl. 114—16 R **46 Claims**



1. A transport system for the transportation of cargo under the surface of the ice which comprises:
   - a. a submergible cargo vessel comprising:
     - i. a navigational section containing means to adjust the depth of travel of said vessel;
     - ii. a cargo section containing a plurality of compartments for the storage of cargo, means to load said cargo compartments and means to maintain the vessel at a slight positive buoyancy during transit;
   - b. means to propel said vessel, said means containing the prime source of power and comprising:
     - i. a submergible propulsion section;
     - ii. a surfaced bridge containing at least means to monitor and control the operation of the transport system and quarters for the operating crew;
     - iii. a mast rigidly connected to said propulsion section and said surfaced bridge, said mast containing forwardly positioned powered ice cutting means movably mounted on said mast to chop ice into chips and form a path through ice which is at least coextensive with the width of said mast, at least said ice cutting means being at an angle of from about 10° to about 45° to the vertical in the bow direction to eliminate a pitch force due to the ice chopping function of said powered ice cutting means.

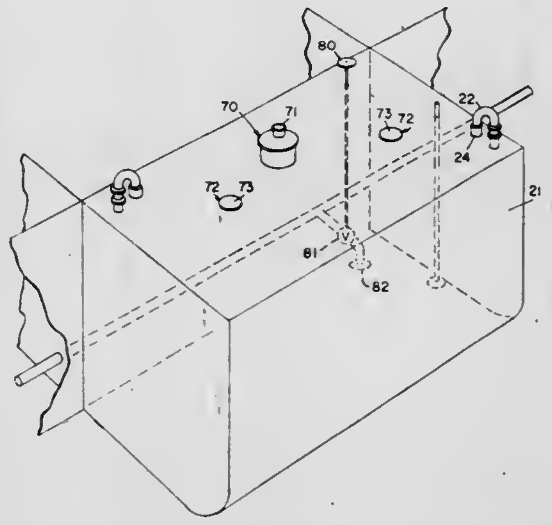
3,868,921
NORMALLY VENTED LIQUID-STORAGE TANK FOR SHIPS, WITH CLOSURE DEVICE FOR AUTOMATICALLY PREVENTING LEAKING IF THE SHIP SHOULD SINK

David Jackson Seymour; Norman MacRitchie, both of San Francisco; Parker J. Matthews, Millbrae, all of Calif., and Thomas A. Clark, Seattle, Wash., assignors to Jon G. Bowman; William E. Boeing and Wells McCurdy, part interest to each

Filed June 14, 1972, Ser. No. 262,741

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 R **20 Claims**



1. A shipboard storage tank for liquids, comprising in combination
   - a vent and overflow conduit having an outlet, and
   - an anti-pollution valve installed in said conduit and comprising
   - closure means for automatically closing said conduit against the passage of liquids to said outlet,
   - latching means for normally latching said closure means in the open position so as normally not to interfere with venting and overflow functions,
   - pressure-actuated means for unlatching said latching means upon the application thereto of a predetermined pressure well above atmospheric pressure,
   - a control conduit leading from the atmosphere to said pressure-actuated means and having orifice means therein preventing actuation of said pressure actuated means by transient effects while enabling prompt actuation by the permanent hydrostatic pressure exerted by water when the ship sinks, and
   - biasing means for normally holding the closure means closed after said unlatching, said biasing means including means for momentarily opening said closure means for inflow of ambient water through the outlet and into the interior of the storage tank when the ambient pressure outside the storage tank exceeds the internal pressure within the storage tank by an amount greater than the force exerted on the closure means by the biasing means.

3,868,922
AUTOMATIC LATCH/UNLATCH MECHANISM

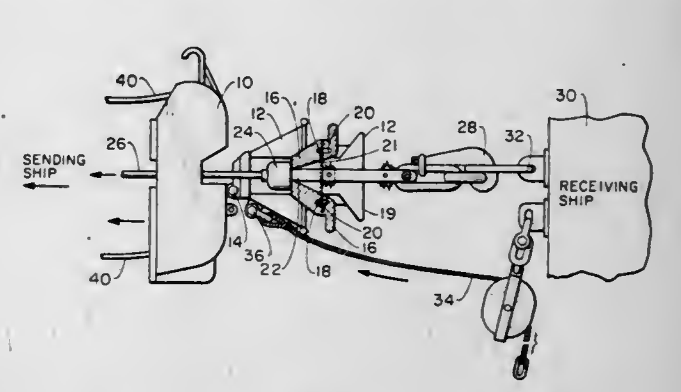
William E. Schulz, Westlake Village, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1974, Ser. No. 459,741

Int. Cl. B63b *21/00*

U.S. Cl. 114—235 A **7 Claims**

1. An automatic latch/unlatch mechanism comprising:
   - a. a probe having a head;
   - b. a housing having an opening capable of permitting the insertion and exit of said probe; and
   - c. means pivotally attached to said housing for engaging said probe head and preventing said probe's extraction therefrom when said probe head is inserted into said housing a specific first distance and then moved in the opposite direction a specific second distance, but allowing said probe's extraction therefrom after said probe head is inserted into said housing said specific first distance, then moved in the opposite direction said specific second distance, and then inserted into said housing a specific third distance.



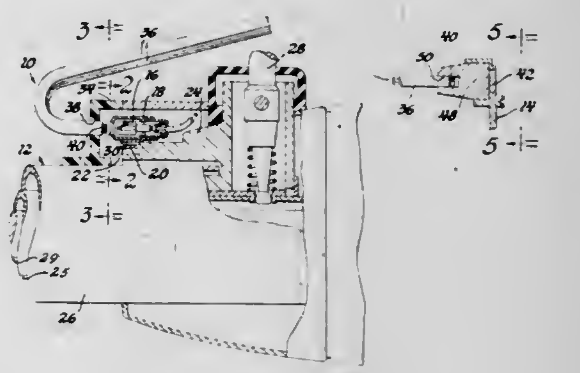
3,868,923
GEARSHIFT INDICATOR ARRANGEMENT

Theodore Lambiris, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1973, Ser. No. 408,805

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 R **5 Claims**



1. A vehicular gearshift indicator arrangement comprising a rotatable shift bowl-mounted light source, means for concentrating the light rays from said light source, a stationary housing having an open side thereof positioned adjacent said means, a plurality of arcuately aligned openings formed in a wall of said stationary housing opposite said open side, a plurality of fiber optic bundles, each of said bundles including a plurality of fiber optic tubes and each bundle being secured adjacent one end thereof in one of said arcuately aligned openings, an instrument panel-mounted transparent display dial, a plurality of spaced indicia formed on said display dial, there being predetermined lengths of spaces intermediate adjacent indicia, an instrument panel-mounted mounting block secured adjacent said indicia and said intermediate spaces, and a plurality of openings formed in said mounting block aligned respectively with said indicia and with said intermediate spaces, said plurality of fiber optic bundles being secured at their other ends in said plurality of openings, said bundles aligned with said indicia including a predetermined quantity of said fiber optic tubes while said bundles aligned with said intermediate spaces include a quantity of said fiber optic tubes less than said predetermined quantity such that the illumination of said intermediate spaces is at a lesser intensity than that of said indicia upon selected rotation of said shift bowl-mounted light source.

3,868,924
APPARATUS FOR INDIFFUSING DOPANTS INTO SEMICONDUCTOR MATERIAL

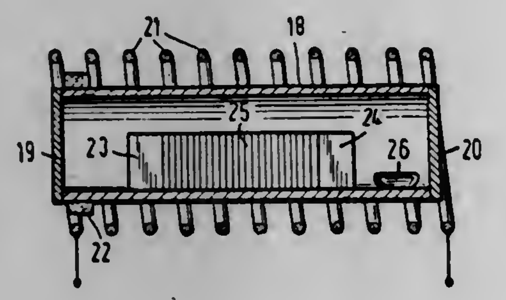
Konrad Reuschel, Vaterstetten; Wolfgang Keller, Pretzfeld; Arno Kersting, Erlangen, and Reimer Emeis, Ebermannstadt, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin/Munich, Germany

Continuation of Ser. No. 50,087, June 26, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,173

Claims priority, application Germany, June 30, 1969, 1933128

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **4 Claims**



1. Apparatus for indiffusing dopants into a semiconductor material which comprises a heatable tube of the same semiconductor material in which the semiconductor material is accommodated and in which the doping substance is found, the wall of the tube is from 0.5 to 20 mm thick, is virtually gas-tight under diffusion conditions, a relatively narrow high conductivity ring is on said heatable tube, and an induction coil surrounds the circumference of said heatable tube.

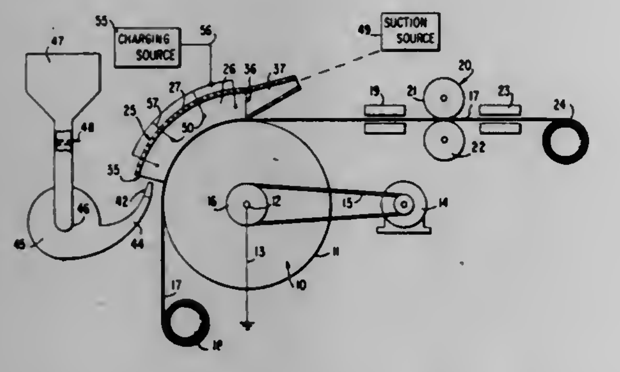
3,868,925
ELECTROSTATIC COATING OF METAL POWDER ON METAL STRIP

Edwin J. Smith, Winterville, and Robert B. Reif, Grove City, both of Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 63,896, Aug. 14, 1970, Pat. No. 3,745,034, which is a continuation of Ser. No. 660,787, Aug. 15, 1967. This application Jan. 8, 1973, Ser. No. 321,937

Int. Cl. B05c *5/02*

U.S. Cl. 118—621 **1 Claim**



1. Apparatus for applying a metal powder coating on metal strip comprising

means including non-electrically conductive wall means defining an elongated passageway having an entrance opening and an exit opening,

means for continuously moving metal strip to be coated through the passageway in a direction from the entrance opening to the exit opening and in out-of-contact relation with the wall means,

a plurality of charging wires in the passageway spaced longitudinally of the passageway in the direction of movement of the metal strip through the passageway, each charging wire extending transversely of the passageway and of the metal strip moving through the passageway,

a charging circuit for the charging wires including the metal strip and a source of charging potential connected to the charginig wires,

means for supplying a stream of carrier gas,

means for holding a supply of metal powder,

means for controlling flow of the metal powder from the last claimed means,

means for flowing metal powder from the supply into the carrier gas to suspend metal powder in the carrier gas to form a cloud of metal powder,

means for introducing the cloud of metal powder into the entrance opening of the passageway generally in the direction of the movement of the strip through the passageway, with metal powder suspended in gas passing between the charging wires and the metal strip, and

means including a source of gas suction for withdrawing metal powder suspended in gas at a point contiguous to the strip exit end of the passageway,

the means for introducing the cloud of metal powder into the entrance opening including

nozzle means located contiguous to the entrance opening and having a discharge opening facing in the direction of the entrance opening,

the cross-sectional area of the nozzle at its discharge end being substantially less than the crosssectional area of the entrance opening of the passageway,

means for feeding the metal powder suspended in the carrier gas to the nozzle means,

the relative shapes and dimensions of the nozzle means at the discharge end and the entrance opening of the passageway, acting with the source of gas suction, causing the carrier gas and suspended metal powder to induce ambient air to flow into the entrance opening.

3,868,926
AUTOMATIC WATER DISPENSER

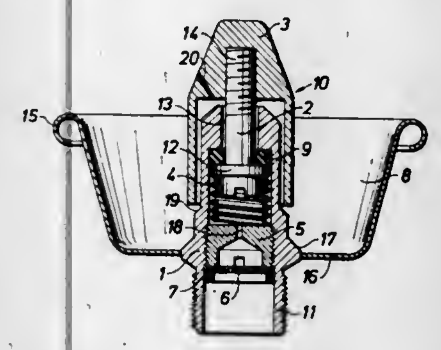
Jarl Rune Olde, Laduvagen 4, 752 47 Uppsala, Sweden

Filed July 18, 1973, Ser. No. 380,492

Claims priority, application Sweden, July 31, 1972, 9969/72

Int. Cl. A01k *07/00*

U.S. Cl. 119—75 **7 Claims**



1. An automatic water dispenser for small-mouthed animals, in particular poultry, comprising in combination an open-topped drinking bowl and a vertically extending valve device centrally disposed in said bowl for supplying water to the interior thereof, said valve device including an open-ended hollow body member fixed to the bottom wall of said bowl and having means at its lower open end for securing it to a source of water supply with its upper open end projecting above the horizontal plane of the top edge of said bowl, whereby the bore of said body member serves as a conduit for flow of water from said source to and through the top open end of said member, a valve seat formed interiorly of said body member intermediate its opposite open ends, a valve member operatively associated with said valve seat having a stem extending axially through said valve seat and the upper end portion of said body member, biasing means in said body member for normally biasing said valve member into valve-closing engagement with said valve seat, the bore through said upper end portion of said body member being of a diameter sufficiently greater than that of said valve stem as to permit the latter to be canted relatively to the axis of said last-mentioned bore against the restraining bias of said biasing means and thereby tilt said valve member into an open position relatively to its seat, and a hook-like member secured to the free end of said valve stem adapted to be engaged by the mouth or beak of the animal to thereby tilt said valve member into valve-opening position and so effectively enable water to be supplied to said bowl, said hood-like member being provided with a downwardly presenting socket disposed in concentric relation to said body member and having walls which spatially surround the upper portion of said body member to provide an annular passage between said body member and the surrounding walls of said socket for delivery of drinking water from the upper open end of said body member downwardly into said drinking bowl.

3,868,927
COMBUSTION CHAMBER

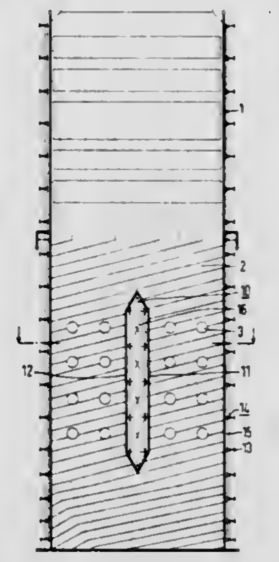
Georg Lösel, Uttenreuth, and Leonhard Eickenberg, Berlin, both of Germany, assignors to Kraftwerk Union AG, Mulheim/Ruhr and Borsig GmbH, Berlin, both of, Germany

Filed Oct. 15, 1973, Ser. No. 406,289

Claims priority, application Germany, Oct. 19, 1972, 2251396

Int. Cl. F22b *31/04*

U.S. Cl. 122—240 R **5 Claims**



1. A combustion chamber of a steam generator comprising combustion chamber walls, said walls being formed of tubes disposed substantially horizontally, a partition subdividing the combustion chamber and comprising two adjacent walls, said adjacent walls being each formed of tubes disposed in a manner similar to the tubes of the combustion chamber walls, each end of each tube of said partition being connected to a tube of the combustion chamber walls.

3,868,928
IGNITION SYSTEM FOR ROTARY INTERNAL COMBUSTION ENGINE

Kyuji Kishimoto; Toshiaki Tojima, and Hideto Ishii, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

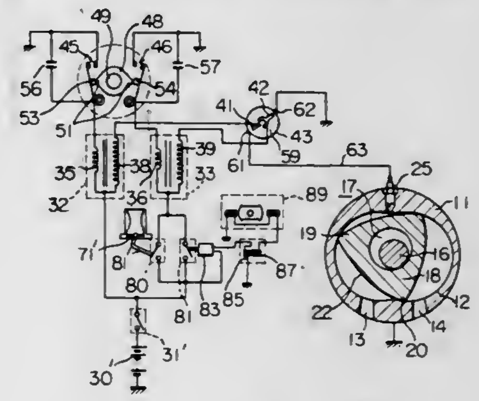
Filed Oct. 3, 1972, Ser. No. 294,585

Claims priority, application Japan, Oct. 7, 1971, 46-78998

Int. Cl. F02b *5/04*

U.S. Cl. 123—8.09 **4 Claims**

1. In an ignition system for a rotary internal combustion engine including an ignition switch, two ignition coils each having a primary winding and a secondary winding, two breakers each connected to the respective primary winding of each of the ignition coils, a spark plug for normally igniting a combustible air-fuel mixture in each consecutive compression chamber of the engine, a distributor for selectively connecting the secondary windings of the ignition coils to the spark plug to cause a spark to be incident to the opening of the breakers, and cams driven by the engine for opening the breakers, the improvement comprising an electromechanical switch member connected between one of the ignition coils and the ignition switch and responding to deceleration and idling conditions of the engine for controlling the firing of the spark plug to produce a spark in alternate compression cycles, in which



the electromechanical switch member for controlling the firing of the spark plug comprises a first normally closed switch connected between the ignition switch and one of the ignition coils, and a second normally closed switch connected in parallel with the first switch, the first switch being opened when the degree of throttle opening is of such a value as when the engine is idling, the second switch being opened when engine speed exceeds a predetermined value.

3,868,929
LUBRICATING OIL SUPPLY SYSTEM FOR ROTARY ENGINE

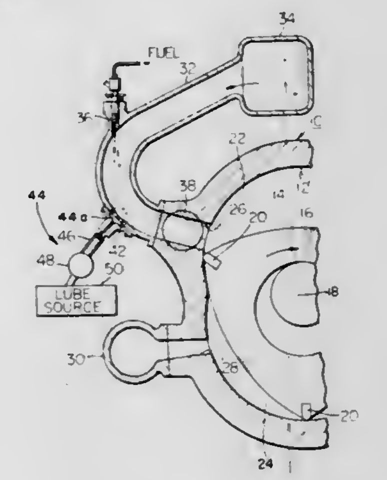
Yoshikazu Ishikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Apr. 2, 1973, Ser. No. 346,763

Claims priority, application Japan, Apr. 3, 1972, 47-33327

Int. Cl. F01c *21/04*

U.S. Cl. 123—8.09 **1 Claim**



1. In combination with a rotary internal combustion engine of the fuel injection type having an intake port, a mixture supply pipe connected to an air inlet and communicating with said intake port, a fuel injection nozzle mounted in said mixture supply pipe downstream of said air inlet and adapted for injecting fuel toward a limited part of a wall of said mixture supply pipe downstream of said fuel injection nozzle, a lubricating oil supply system comprising a source of lubricating oil, a metering pump communicating with said source of lubricating oil, a lubricating oil supply pipe communicating with said source of lubricating oil through said metering pump, a lubricating oil supply unit mounted on an outer wall of said mixture supply pipe and having a lubricating oil distributing chamber communicating with said lubricating oil supply pipe and opening into said mixture supply pipe at the limited part thereof,

and a diffuser mounted in the wall of said mixture supply pipe at the limited part thereof in the path of fuel spray from said fuel injection nozzle, said lubricating oil distributing chamber of said unit distributing lubricating oil into said mixture supply pipe through said diffuser, whereby the lubricating oil is uniformly diffused into fine droplets which are mixed with the mixture of air and fuel to be supplied to the engine.

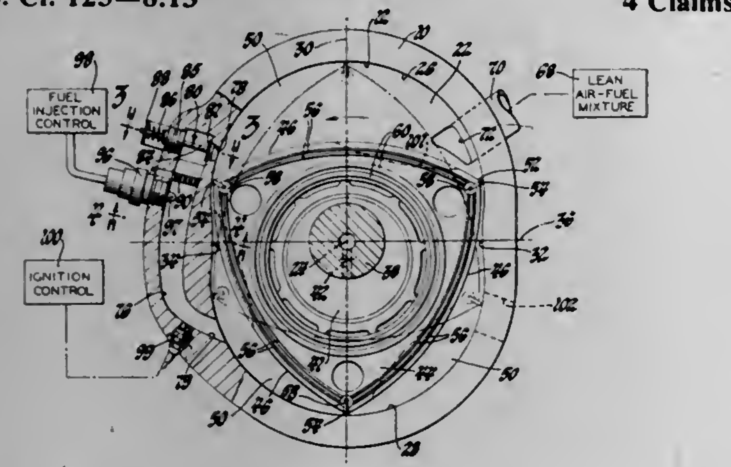
3,868,930
ROTARY ENGINE WITH AUXILIARY COMBUSTION CHAMBER

Edward D. Klomp, Mt. Clemens; James H. Wolgemuth, and Harold V. Wiknich, both of Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1974, Ser. No. 472,943

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.13 **4 Claims**



1. A rotary combustion engine comprising housing means having opposing end walls and a peripheral wall cooperatively defining a cavity, a crankshaft rotatably supported in said housing means having an eccentric located in said cavity, for providing a fixed speed ratio between said rotor and said crankshaft so that said crankshaft is caused to rotate as said rotor executes planetary motion with a fixed cyclic relationship, said peripheral wall and said rotor cooperatively defining with said end walls a plurality of working chambers that are spaced about and move with said rotor while varying in volume, said housing means having an intake port open to said cavity located relative to rotor rotation so as to be opened past said rotor to said working chambers as they expand in an intake phase, lean air-fuel mixture supply means for supplying a lean air-fuel mixture to said intake port, said housing means further having an auxiliary combustion chamber with an inlet open to said cavity located so as to be opened past said rotor to said working chambers as they contract in a compression phase and having an outlet open to said cavity located so as to be opened past said rotor to said working chambers as they expand in an expansion phase, check valve means in said inlet for permitting the lean air-fuel mixture in said working chambers to flow into said auxiliary combustion chamber above a predetermined pressure as said working chambers are contracting and preventing flow in the opposite direction, fuel injection means for injecting fuel into the lean air-fuel mixture in said auxiliary combustion chamber downstream of said check valve means after the working chamber from which the lean air-fuel mixture has been obtained opens to said outlet of said auxiliary combustion chamber, ignition means for igniting the enriched air-fuel mixture in said auxiliary combustion chamber while the working chamber from which the lean air-fuel mixture was obtained remains open to said outlet of said auxiliary combustion chamber, flame arrestor means between said fuel injector means and said check valve means for preventing flame in said auxiliary combustion chamber from progressing through said check valve means while open and then said inlet into said working chambers as they are contracting, and said housing means having an exhaust port open to said cavity at a location so as to be opened past said rotor to said working chambers as they contract in an exhaust phase.

3,868,931
INTERNAL COMBUSTION ENGINE

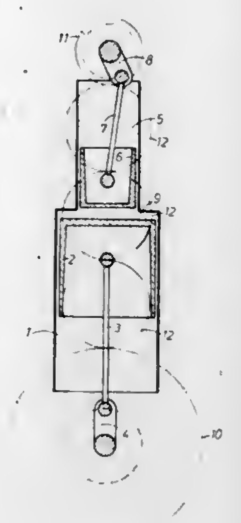
Jean Ernest Dutry, Steenweg op Brussel, 340, 1900 Overijse, and Alfred Hubert Feyens, Avenue Prince Baudouin 9, 1150 Brussels, both of Belgium

Filed July 16, 1973, Ser. No. 379,816

Claims priority, application Belgium, July 18, 1972, 11994

Int. Cl. F02b *75/04*

U.S. Cl. 123—51 R **6 Claims**



1. Internal combustion engine wherein there is associated with each working cylinder an additional cylinder communicating with the working cylinder and containing a piston which displaces a smaller volume than that of the piston of the working cylinder and co-operates with a crankshaft connected positively with the crankshaft of the piston of the working cylinder, the two crankshafts being angularly offset relatively to one another, characterised in that the frequency of the rotation of the crankshaft co-operating with the piston of the additional cylinder is more than double that of the crankshaft co-operating with the piston of the working cylinder.

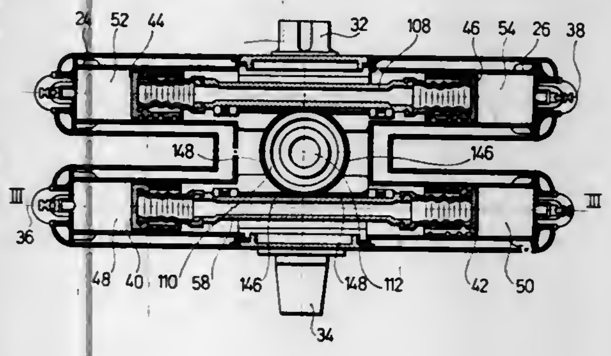
3,868,932
RECIPROCATING ENGINE

Jozsef Toth, 76, Oprendek Sandor utca, Miskolc III, Hungary

Filed July 21, 1972, Ser. No. 273,665

Int. Cl. F02b *75/28, 75/32*

U.S. Cl. 123—54 B **1 Claim**



1. A reciprocating engine comprising in combination a rigid structure, a drive shaft with an axial center line, means supporting said drive shaft in said rigid structure for rotation about said axial center line, two pairs of work cylinders arranged in said rigid structure pairwise along two substantially parallel lines equidistant from and substantially at right angles to said axial center line, the cylinders of each pair being coaxial and opposed to each other, work pistons arranged for reciprocating motion in each said work cylinders and defining work chambers therewith, a piston rod extending between the pistons of each said pair of cylinders, means yieldably interconnecting the pistons of each said pair of cylinders to opposite ends of the associated said piston rod, means for alternately admitting and withdrawing a work medium into and from said work chambers dependent on the mutual positions of associated work pistons and cylinders, power transmission means between said work pistons and said drive shaft for ensuring opposite reciprocating movements of said piston rods and for rotating said drive shaft in response to said reciprocating movements, said power transmission means including one-way motion transmission means for effecting unidirectional rotation of said drive shaft upon reciprocating movement of said work pistons, said one-way motion transmission means comprising a cam and roller free wheel mechanism, fuel injection means on each work cylinder, and control means for operating said fuel injection means, said control means comprising cam means on said piston rods and actuating linkages with rollers arranged for engaging said cam means, said power transmission means comprising flexible bands secured at their opposite ends adjacent opposite ends of said piston rods and drivingly surrounding said drive shaft.

3,868,933
COMBUSTION MOTOR

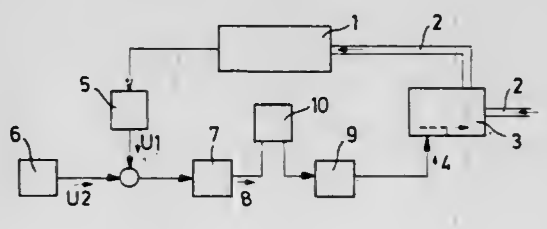
Erhard Bigalke; Werner Buttgereit, and Dieter Pundt, all of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of Ser. No. 90,606, Nov. 18, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,626

Claims priority, application Germany, Nov. 22, 1969, 1958816

Int. Cl. F02d *11/10*; B60k *27/00*

U.S. Cl. 123—102 **3 Claims**



1. A combustion motor comprising an air intake canal, throttle valve means in said canal determining the rate of air flow through said canal, a throttle valve switch operatively connected to said throttle valve means, said switch being closed during deceleration operation of the motor and said throttle valve means being moved into its closed position during deceleration operation of the motor and idling, a device for automatically controlling the motor speed during operation modes of the motor different from load and deceleration fuel shut off, said device comprising by-pass canal means bypassing said throttle valve means, a control throttle disposed in said by-pass canal means and comprising an electrical positioning arrangement, first means for measuring the actual value of the motor speed and deriving an electrical actual value signal therefrom, second means for providing an electrical desired value signal corresponding to the desired value of the motor speed, difference deriving means having input and output means, said first and second means being operatively connected to said input means of said difference deriving means, said positioning arrangement of said control throttle being operatively connected to said output means, switching means operatively connected to said input means, said switching means comprising a semiconductor device having a control electrode connectable via said throttle valve switch to an electrical potential adapted to block said semiconductor device and further connected to an electrical circuit point having an electrical potential also adapted to block said semiconductor device only during deceleration fuel shut off, said input means being connectable via said semiconductor device to an electrical potential adapted to block said difference deriving means, whereby during load operation and deceleration fuel shut off no electrical signal representing the difference between actual value and desired value of the motor speed is fed to said positioning arrangement from said difference deriving means.

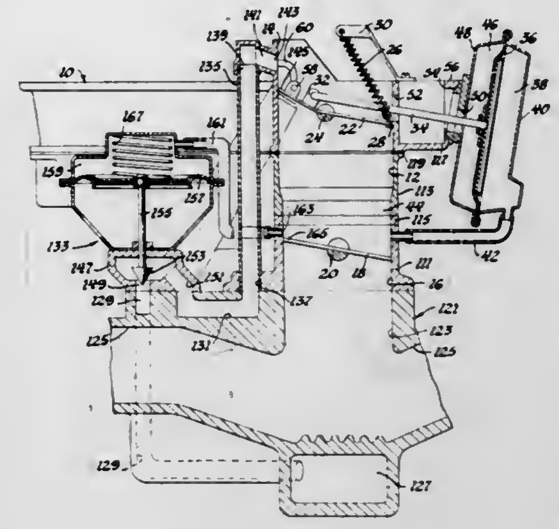
3,868,934
EXHAUST GAS RECIRCULATION

Stanley H. Mick, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,555

Int. Cl. F02m *25/00*

U.S. Cl. 123—119 A **2 Claims**



1. An internal combustion engine comprising an induction passage for air flow to the engine, an air valve disposed in said induction passage and rotatable between closed and open positions, means controlling said air valve to maintain a substantially constant pressure in a region of said induction passage downstream from said air valve, an exhaust passage for exhaust gas flow from the engine, and an exhaust gas recirculation passage extending from said exhaust passage to a port disposed in said induction passage adjacent the upstream edge of said air valve when said air valve is in said closed position and traversed by the upstream edge of said air valve as said air valve is rotated from said closed position to said open position whereby when said air valve is in said open position exhaust gases are recirculated into a region of substantially constant pressure in said induction passage to thereby provide recirculation of exhaust gases at a rate proportional to the rate of air flow, and whereby the proportion of exhaust gas flow to air flow may be increased from a minimum when said air valve is in said closed position to a selected value as the upstream edge of said air valve traverses said port.

3,868,935
AUTOMATIC CHOKE

Bernard Liebman, Pittsford, and David W. Rucinski, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

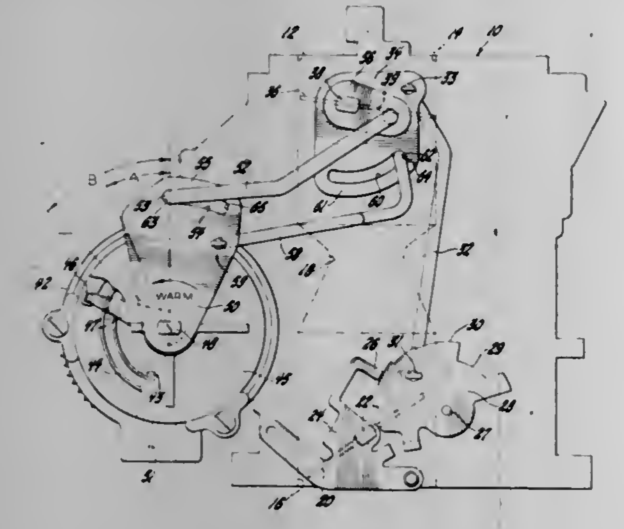
Filed Dec. 14, 1973, Ser. No. 424,883

Int. Cl. F02m *1/10*

U.S. Cl. 123—119 F **1 Claim**

1. For use in an internal combustion engine, a carburetor comprising an air intake, a throttle rotatably disposed in said air intake for controlling air flow to the engine, a throttle lever secured to said throttle for concomitant rotation through a selected path, a cam disposed in said path for variably limiting the rotation of said throttle lever in a throttle closing direction and thus controlling the idling position of the throttle valve, a choke shaft rotatably disposed in said air inlet anterior said throttle, a choke valve secured to said choke shaft, a choke lever secured to said choke shaft, a cam lever having an arcuate slot and rotatably disposed about said choke shaft, a cam link operatively connecting said cam lever and said cam, and positioning means responsive to temperature and including a housing, a thermostat shaft rotatably disposed in and extending through said housing, a bimetallic coil enclosed within said housing and having one end anchored to the housing and further having the other end positioning said thermostat shaft, a thermostat lever secured at one end to said thermostat shaft

outside said housing and having an arcuate slot adjacent the opposite end, a first link extending from said slot in said thermostat lever to said choke lever for limiting the opening of said choke valve, and a second link extending from the middle of said thermostat lever to said slot in said cam lever; whereby as the temperature responsive positioning means warms, said coil permits said thermostat lever, said first link, and said choke lever to allow said choke valve to blow open, whereby as said thermostat lever moves, said second link, said cam lever, said cam link and said cam move under their own weight to allow said throttle lever to close said throttle, and whereby said choke valve is permitted to open before said cam is permitted to come off.



3,868,936

FUEL INJECTION SYSTEMS

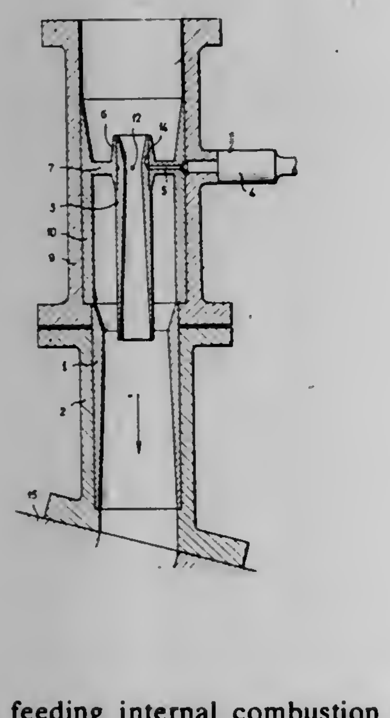
Jean-Pierre Rivere, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobile Peugeot, Paris, both of, France

Filed Mar. 16, 1972, Ser. No. 235,154

Claims priority, application France, Mar. 19, 1971, 71.09785; Jan. 27, 1972, 72.02682

Int. Cl. F02d *5/02*

U.S. Cl. 123—139 AW **5 Claims**



3. A device for feeding internal combustion engines by indirect injection applied independently to each cylinder into an induction pipe upstream of an inlet valve, comprising;

a. a first set of concentric stepped venturi means, disposed upstream of said inlet valve of each cylinder in an induction choke, for providing a substantially sonic gaseous flow of air;

b. a first adjustable injection means for delivering metered amounts of fuel at high engine speeds through an injection passage into the neck portion of the central venturi means of said first set of stepped venturi means, wherein an adjustable quantity of fuel is injected into the gaseous flow of air induced by said first set of stepped venturi means and wherein said central venturi means includes an external cylinder having a shoulder in which a circular groove is formed, and said first adjustable injection means includes a radial feed passage connected to said circular groove, said shoulder being fitted into a supporting socket, said central venturi means having at least two radial holes formed in diametrally opposite positions and symmetrically, in relation to said radial feed passage for interconnecting said circular groove and said neck portion of said central venturi means; and

c. a second adjustable injection means for delivering fuel at idling and low engine speeds into said induction pipe downstream of said first set of concentric stepped venturi means.

3,868,937

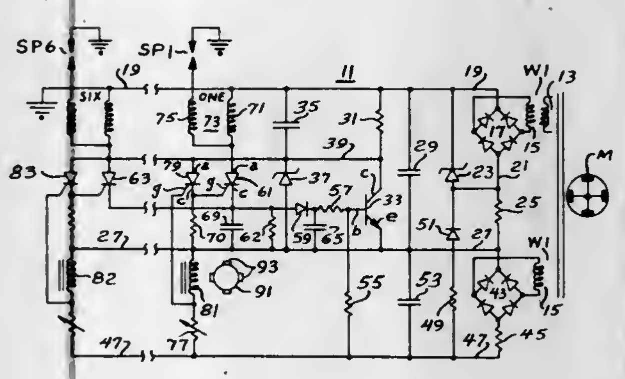
IGNITION SYSTEM WITH IMPROVED TRIGGERING CIRCUIT

Richard Zechlin, Beloit, and Robert M. Henderson, William Bay, both of Wis., assignors to Colt Industries Operating Corp. (formerly Fairbanks Morse, Inc.), New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,735

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 R **7 Claims**



1. An ignition system for generating ignition pulses for the spark plugs of an associated engine comprising, in combination, a storage capacitor, means for charging said capacitor to a predetermined level, an ignition transformer winding connected to said storage capacitor, a coupling capacitor circuit connected to be charged in parallel with said storage capacitor, a circuit for selectively discharging said storage capacitor including first and second solid state selectivity conductive devices, triggering means including rotatable means driven by the associated engine for developing cyclic triggering pulses and for imposing said pulses to trigger said first device to conduction, said first device connected in a series circuit including said coupling capacitor, said second device connected in a series circuit including said storage capacitor and said winding, and the first device being connected to control the initiation of conduction of said second device whereby when said triggering means triggers said first device to conduction, said storage capacitor initially discharges through said coupling capacitor and said first device, thereby first causing said first device to become conductive and initiate conduction of said second device and enabling said storage capacitor to provide its principal discharge through said second device and said winding to thereby initiate an ignition pulse.

3,868,938

TRANSISTOR IGNITION SYSTEM

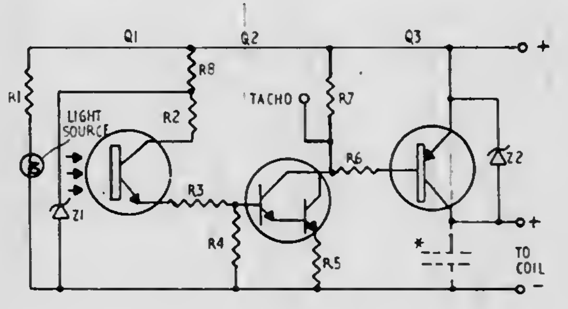
Alan Neville Trass, 44 Moyran Pile-2232, Grays Point, New South Wales, Australia

Continuation-in-part of Ser. No. 220,085, Jan. 24, 1972, abandoned. This application May 16, 1974, Ser. No. 470,675

Claims priority, application Great Britain, Feb. 11, 1971, 4460/71; Australia, Jan. 20, 1972, 38106/72

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **8 Claims**



1. A transistor ignition system, comprising:

means for controlling the timing of pulses delivered to an ignition coil; and

a transistor amplifier circuit coupled between said controlling means and said ignition coil and having positive feedback means coupled thereto for causing said amplifier circuit to produce an oscillatory voltage when the rate at which pulses are delivered to said ignition coil is relatively low and producing only single voltage pulses when said rate is relatively high, said positive feedback being provided by breakdown of the field of said coil, whereby a shower of sparks is produced at the spark plugs of the engine under starting and low speed conditions.

3,868,939

FUEL INJECTION SYSTEM ESPECIALLY FOR COLD STARTING AND WARMING UP EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

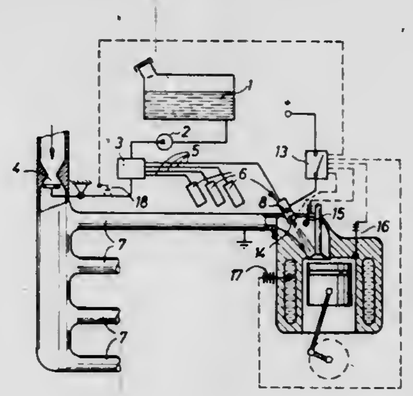
Karl-Hermann Friese, Leonberg; Friedbert Michel, Kornwestheim; Rudolf Krauss, Stuttgart; Gunther Jaggle, Stuttgart; Gerhard Stumpp, Stuttgart; Josef Steiner, Stuttgart, and Heinrich Knapp, Leonberg-Silberberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 2, 1973, Ser. No. 337,571

Claims priority, application Germany, Mar. 3, 1972, 2210250

Int. Cl. F02b *3/00*

U.S. Cl. 123—179 L **22 Claims**



1. In an internal combustion engine of the type having a combustion space and a fuel injection system comprising:

a. a discharge outlet for fuel to be injected and brought to said combustion space;

b. an electrical heating element for heating fuel to be injected, directly upstream of said discharge outlet;

c. a fuel entry means for feeding fuel into said heating element; and

d. temperature control means for controlling the heating of said fuel by said heating element, dependent on an engine temperature influencing the formation of a fuel/air mixture in said combustion space, said temperature control means causing the fuel to be heated, at temperatures below the optimal operational temperature of the engine, to such a degree that the preponderant portion of the amount of fuel to be injected is converted to the gaseous phase at the latest immediately after leaving said discharge outlet;

the improvement of said injection system comprising further an internal space adapted for the flow of fuel therethrough and extending from said fuel entry means to said discharge outlet, said space having a volume smaller than the volume of fuel injectable during about eight work cycles of said engine while the latter is idling.

3,868,940

INLET PORT FOR INTERNAL COMBUSTION ENGINES, IN PARTICULAR FOR DIESEL ENGINES

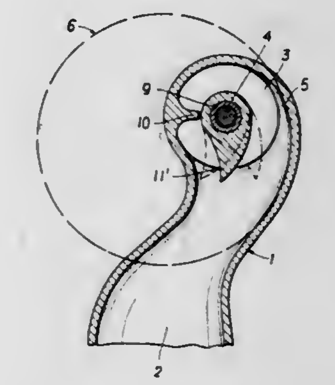
Karl Kirchweger, 87, Krottenhofstrasse, Graz, Austria (A 8010)

Filed Apr. 23, 1973, Ser. No. 353,575

Claims priority, application Austria, Sept. 15, 1972, 7961/72

Int. Cl. F02b *31/02;* **F02m** *35/10*

U.S. Cl. 123—188 M **4 Claims**



1. An internal combustion engine comprising:

at least one cylinder;

an inlet duct leading to the cylinder and having a circular aperture open to the cylinder;

an intake valve with a valve stem located within the inlet duct, said intake valve being eccentrically arranged in relation to the cylinder;

a valve guide bearing encompassing the valve stem;

said inlet duct including a feed duct for the admission of air for combustion and an adjoining annular chamber wound in a spiral-shape around the valve stem sloping off towards the circular aperture of said inlet duct;

a partition in said annular chamber extending from a section of the inner boundary wall of the inlet duct and lying in a plane containing the axis of the valve stem and dividing said annular chamber into two compartments; and

an airfoil-shaped member extending from said valve guide bearing in an upstream direction of said feed duct and dividing the feed duct into two separate branches, each of said branches being connected with one of the compartments of said annular chamber and said airfoil-shaped member being curved in the direction of the winding of the spiral-shaped portion of said inlet duct.

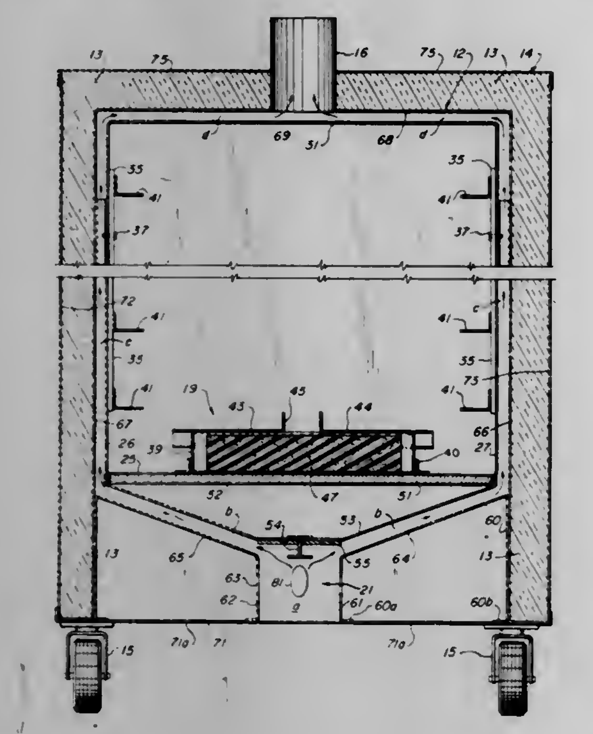
3,868,941
HEAT-HOLDING APPARATUS

Ronald R. Roderick, Evergreen, Colo., assignor to National Equipment Corporation, Denver, Colo.

Filed June 15, 1973, Ser. No. 370,328

Int. Cl. A21b *1/02*

U.S. Cl. 126—19 R **10 Claims**



1. In heat-holding apparatus for food and the like, the combination comprising:

an inner heat-holding compartment made of heat conductive material having bottom, top, opposed side and opposed front and rear imperforate walls connected in a box-like structure forming an inner substantially closed space, said front wall having an access opening, at least one movable door across the front wall for selectively closing off the compartment and providing access thereinto;

a layer of heat insulation extending across the bottom of the compartment and a generally truncated, V-shaped deflector with inclined sides located below the layer of heat insulation and forming a closed air space therebetween to limit the heat upwardly through the bottom wall to the extent necessary to provide a substantially uniform temperature along and heat transfer through the bottom, top and side walls of the compartment;

a source of heat under the deflector for producing heated gases;

an outer jacket for the heating of the compartment including jacket wall portions spaced from the side walls of the compartment to provide side flow passages on each side thereof, an upwardly and outwardly inclined lower baffle on each side of the burner terminating at their upper ends at the lower ends of jacket wall portions to provide upwardly inclined lower flow passages communicating with the side flow passages and a top jacket wall portion spaced from the top wall to provide a top flow passage in communcation with the side flow passages and leading through a top outlet in the top jacket wall portion; and

an outer housing and heat insulation outside the jacket to reduce heat loss from the inner compartment.

3,868,942
COOKING APPARATUS

Almor Lewis, 4398 Seebaldt, Detroit, Mich. 48204

Filed Jan. 10, 1972, Ser. No. 216,656

Int. Cl. A47j *37/07;* **F24b** *3/00*

U.S. Cl. 126—25 R **1 Claim**

1. In an outdoor barbecue apparatus the improvements comprising:

a right circular cylindrical drum member having a substantially uniform diameter throughout its length and having a central axis extending horizontally;

said drum member having end flat circular faces in a vertical plane;

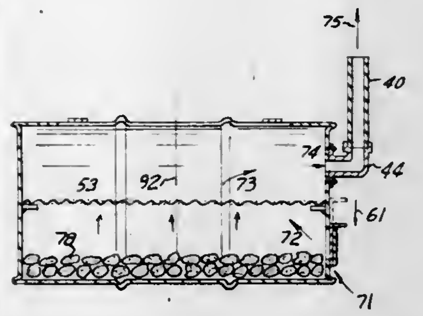
a hinged lid having a lip on the lower edge thereof, the upper half of said drum member being hinged and rotatable about a horizontal axis directly above and parallel to said central axis;

brackets extending horizontally inward slightly below the lip of said hinged lid;

means limiting the downward travel of said hinged lid;

a grille resting on said brackets;

a first venting assembly substantially below said grille on one of said flat circular faces and having a slidable door slidable vertically upwards;



a knob on said slidable door for manual actuation of the door;

a chimney member having a vertical opening above said grille at one end of said drum in the face thereof;

said chimney member selectively extending vertically upward from said opening;

foldable legs supporting said drum;

a silver colored heat resistant paint provided on the exterior surfaces and interior surfaces of the drum member;

said grille being divided into substantially two equal portions;

said foldable legs being foldable so as to substantially reduce overall height of the barbecue apparatus during moving of the apparatus;

said slidable door having sufficient friction with brackets holding said door to side of said drum, operable to hold said door in a preselected manually placed position.

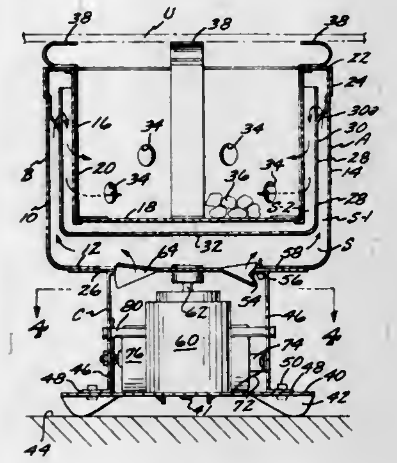
3,868,943
PORTABLE FORCED DRAFT SOLID FUEL BURNING COOKER

Fred W. Hottenroth, 1740 Interlachen, Seal Beach, Calif. 90740, and Fred W. Hottenroth, III, 3415 Lama Ave., Long Beach, Calif. 90808

Filed June 21, 1974, Ser. No. 481,500

Int. Cl. F24b *3/00;* **F24c** *1/16*

U.S. Cl. 126—25 R **8 Claims**



1. A portable forced draft solid fuel burning cooker that may be selectively disposed in either a first compact position for ease of transportation or in a second position in which said cooker is capable of supporting and heating a cooking utensil, which cooker includes:

a. a metallic heater assembly that includes a first outer cup shaped shell, a second inner cup shaped shell in which the solid fuel is disposed when the cooker is in said second position, a ring that joins free peripheral edges of said first and second shells, said second shell of substantially less transverse area than said first shell and said first and second shell cooperating with said ring to define a confined space of which a portion is of annulus shape, a third cup shaped shell interposed in a fixed position between said first and second shells that subdivides said confined space into inner and outer passages in which air is preheated by the combustion of said fuel after said air enters a first opening in said first shell in the portion thereof most remote from said ring to flow through said first and second passages and discharge from a plurality of spaced second openings in said second shell transversely across said fuel to support the combustion of the latter, and first means for supporting said third cup shaped shell in said fixed position;

b. a blower assembly that removably supports said heater assembly thereon when said cooker is in said second position, said blower assembly including a base of greater area than the transverse interior area of said second shell, electrically operated blower means mounted on said base for discharging a current of air through said first opening to flow through said first and second passages, said electrically operated blower means of such size as to be disposed within said second shell when the latter is free of fuel and said cooker occupies said first position with said base supported by said ring;

c. engaging means on said ring; and

d. engageable means on said base that removably engage said engaging means when said cooker is in said first position to hold said heater assembly and blower assembly together as an integral unit for ease of transportation.

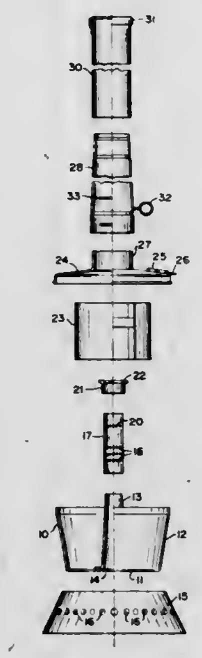
3,868,944
GROVE HEATER APPARATUS

James L. Hobby, deceased, late of P.O. Box 632, Eagle Lake, Fla. 33839 (Thelma T. Hobby, surviving spouse)

Filed July 26, 1971, Ser. No. 166,036

Int. Cl. A23b *1/04*

U.S. Cl. 126—59.5 **1 Claim**



1. A grove heater apparatus comprising in combination:

a. a burning pot having bottom and side walls and adapted for burning fuel contained therein;

b. a removable hollow truncated cone base member having a plurality of apertures therein for passing of air therethrough and being adapted for said burning pot to set on;

c. an air duct means passing through the bottom of said burning pot and forming an air passage through said burning pot and being adapted for the passage of air therethrough from an opening in said bottom wall through said air duct, said air duct being tapered from a larger passageway at the bottom of said burning pot to a smaller passageway at the top portion of said burning pot whereby an improved draft is obtained;

d. after burner means attached to said air duct for directing air passing through said duct into rising gases from said burner pot, said after burner having a hollow cylindrical member having a plurality of openings therein at predetermined locations and having a cap covering one end thereof;

e. a stack having a removable, cover, said stack covering said after burner means and being attached on said burner pot; and

f. soot remover means for removing soot from said after burner, said soot remover means including a plurality of member encircling said after burner means and having a handle attached thereto and extending through an opening in the side of said stack for moving said encircling members along the surface of said after burner without removing the stack means from said heater apparatus.

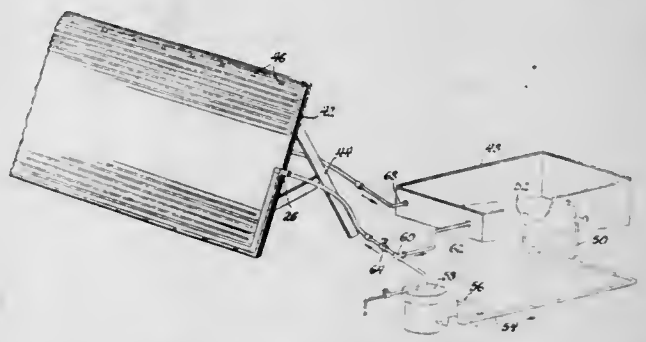
3,868,945
SOLAR HEATER FOR SWIMMING POOLS

Edward J. Konopka, Royal Oak, and Conan F. Fisher, Jr., Algonac, both of Mich., assignors to Fun and Frolic Incorporated, Madison Heights, Mich.

Filed Mar. 10, 1972, Ser. No. 233,518

Int. Cl. F24j *3/02*

U.S. Cl. 126—271 **10 Claims**



1. A heat exchanger for water consisting of a pair of sheets of plastic film of substantially identical configuration abutting one another with their edges sealed together and lines intermediate the edges sealed together so as to form a single continuous sinuous flow path formed of a plurality of straight line sections between a pair of end connectors which pass through the edges; and a plurality of sections wherein the pair of sheets are sealed together formed along such straight line sections and portions extending into the straight sections so as to interrupt laminar flow to create turbulence in the flow along the straight line sections and thereby enhance the heat transfer efficiency of the exchanger.

3,868,946
MEDICAL ELECTRODE

James S. Hurley, 120 Merwins Ln., Fairfield, Conn. 06430

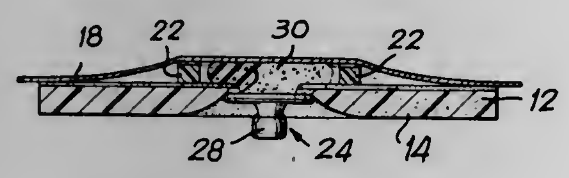
Filed July 13, 1973, Ser. No. 379,056

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 E **7 Claims**

1. A medical electrode comprising a non-porous soft sheet of material having top and bottom surfaces and being adapted to be placed on the skin, an electrical conductor member embedded with said sheet of material and having a flange portion forming the bottom of a well, a recess formed between

said bottom surface of said sheet of material and said flange forming a portion of the walls of said well and a non-porous wall member attached to and depending from said bottom surface, said wall member encircling said recess to form a barrier and form the remainder of the wall portion of said well, said electrical conductor member having a male electrical connector member projecting outwardly from the top surface of said sheet, a compressible sponge member saturated with an electrically conductive liquid located within said well and having a thickness greater than the depth of said well, said sponge member being in contact with said flange, said sheet of material having a self-stick adhesive on said bottom surface, and release paper means covering said bottom surface and compressing said sponge member totally in said well when said electrode is being stored prior to utilization, said well serving to form a barrier and contain said liquid to prevent said liquid from leaking when said electrode is stored.



3,868,947

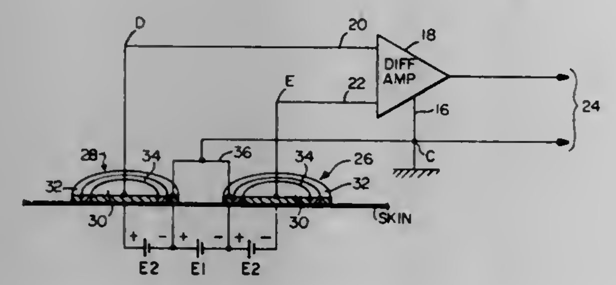
CONCENTRIC ELECTRODE CONSTRUCTION FOR AN ELECTROCARDIOGRAM TRANSMITTER

William P. Holsinger, Herndon, Va., assignor to The United States of America as represented by the Secretary for Department of Health, Education, and Welfare, Washington, D.C.

Filed Oct. 16, 1973, Ser. No. 406,870

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 E **2 Claims**



1. An electrode assembly for generating electrocardiogram bioelectric potential signals suitable for wave-form analysis, said assembly comprising: two separate transmitter electrodes adapted to be placed on a subject's skin in electrical contact therewith, each electrode comprising a flat exposed disc which includes an electrically conductive central disc member and an outer conducting ring disposed in surrounding relationship about the periphery of said central conductive member, said outer conducting ring being spaced from said central conductive member by an intermediate insulating annulus, said central conductive member, said outer conducting ring, and said insulating annulus being coplanar and concentrically disposed; means for electrically coupling said outer conducting rings of each said electrode in common and to a common ground of a differential amplifier; and means for electrically connecting said central conductive member of each said electrode to a different respective input of the differential amplifier, whereby a signal representative of the bioelectric potential is produced at the differential amplifier output.

3,868,948

MULTIPLE CHANNEL ELECTROCARDIOGRAPH

Ernest F. J. Graetz, Derry, N.H., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation of Ser. No. 281,074, Aug. 16, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 448,173

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 G **9 Claims**

1. In an electrocardiograph comprising a plurality of parallel signal processing channels, each one of said channels including means for amplifying signals, means for simultaneously applying a plurality of signals representative of different body electrical potentials including electrical potentials in the vicinity of the heart to said channels, and means for simultaneously recording signals processed by said channels, the combination comprising:

means for automatically changing said applying means to sequentially apply different pluralities of body electrical potential signals to said channels, at least one of said different pluralities of body electrical potential signals being chest signals representative of electrical potentials in the vicinity of the heart, and

means in each one of said channels responsive to said changing means for reducing the amplitudes of the chest signals.

3,868,949

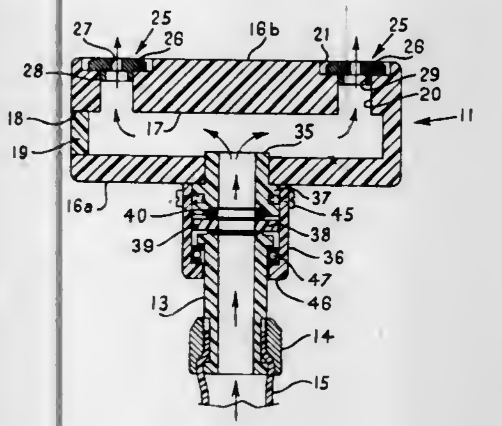
HYDROMASSAGE DEVICE

Howard M. Arneson, San Rafael, Calif., assignor to Arneson Products Inc., San Rafael, Calif.

Filed Aug. 8, 1973, Ser. No. 386,699

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **4 Claims**



1. A hydromassage device comprising a body member having an upper face, a lower face and a centrally located inlet on its lower face, means for connecting the body member by way of its inlet to a source of water under pressure, such means allowing free rotation of the body member, at least one jet nozzle on the upper face of the body member, said jet nozzle being substantially in or below the plane of said upper face and means for rotating the body member while water is issuing from the jet nozzle.

3,868,950

BODY TREATING APPARATUS

Yoshio Kato, 31, Nishinagasuhondori, Amagasaki, Japan

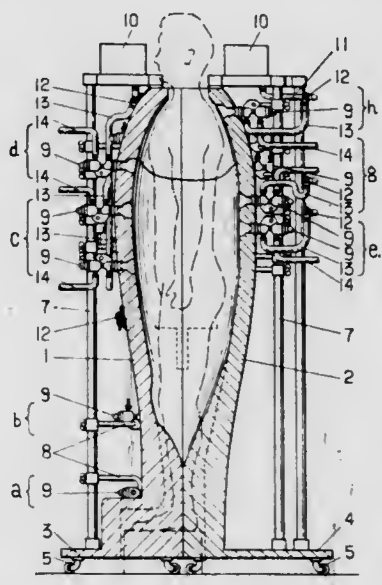
Continuation-in-part of Ser. No. 183,116, Sept. 23, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 413,807

Claims priority, application Japan, Sept. 24, 1970, 45-83974

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **10 Claims**

1. A body treating apparatus for massaging, bathing, cleaning, hydrokinetic procedures, and the application of solutions or substances, comprising: a casing member shaped to enclose at least parts of a person's body; at least one container for storing a solution; a plurality of nozzle assemblies for discharging the solution, provided in said casing member at designated areas of the person's body when positioned in said casing; fluid ducts to convey the solution from said container to said nozzle assemblies; and compressed-gas ducts linked to said nozzle assemblies for expelling the solution therefrom, whereby the latter is vigorously sprayed against the designated areas of the person's body; wherein said nozzle assemblies include each a discharge head, a member for regulating the amount of the solution being discharged, and at least one distribution chamber linked to one of said fluid and said gas ducts.



3,868,951

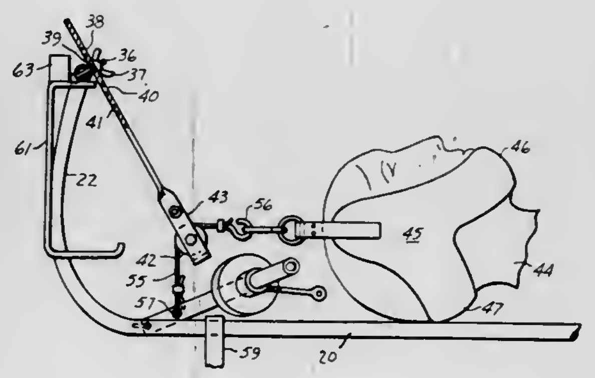
TRACTION DEVICE

Donald Albrecht, P.O. Box 1406, 831 Second St., Santa Monica, Calif. 90406

Filed Sept. 7, 1973, Ser. No. 395,161

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **23 Claims**



1. A physical traction apparatus for applying linear force through harness means to a portion of an anatomy which comprises:

a. a frame;
b. a lever arm member, said lever arm member pivotally mounted on said frame;
c. pulley means, said pulley means rotationally mounted to said frame;
d. cable means, said cable means engaged with said pulley means, one end of said cable means fixed to said lever arm member; and
e. weight means, said weight means adjustably mounted on said lever arm member, said cable means adapted to transmit force generated by said lever arm member and said weight means to said harness means.

3,868,952

INFLATABLE SHAPED STRUCTURES

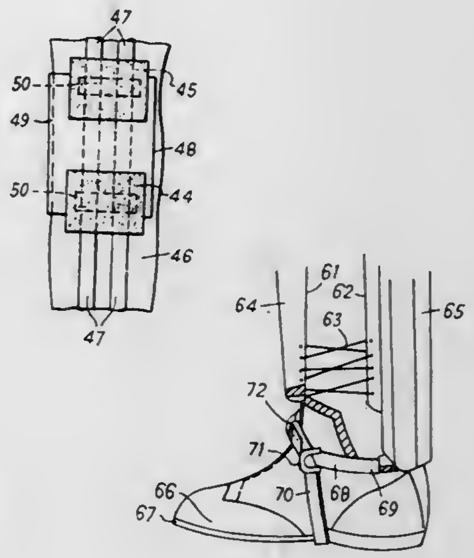
Gildas Hatton, Paris, France, assignor to Aerazur Constructions Aeronautiques, Paris, France

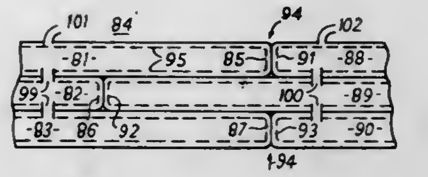
Continuation-in-part of Ser. No. 267,162, June 28, 1972, Pat. No. 3,823,711. This application Apr. 15, 1974, Ser. No. 460,917

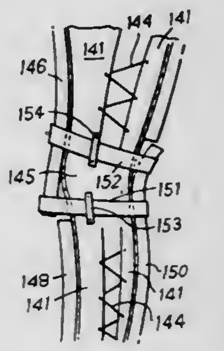
Claims priority, application France, Apr. 17, 1973, 73.14078; Apr. 17, 1973, 73.14079; Feb. 19, 1974, 74.05658; Feb. 19, 1974, 74.05659

Int. Cl. A61f *5/02*

U.S. Cl. 128—78 **13 Claims**







1. An orthopaedic device comprising, in combination, (i) an inflatable structure having at least two elongated fabric pipes of substantially square cross-section disposed in parallel relationship, each pipe including opposed plane side walls and having a base constituted by a portion of a sheet of air-permeable fabric to which said side walls are secured along their one longitudinal edge, the adjacent respective side walls of each adjacent pair of pipes being secured together substantially along their other longitudinal edge, and an inflatable tube of gas-tight resilient material in each said pipe, and (ii) at least one removable cushion secured on a face of said

structure and at right angles thereto for presenting towards an emaciation of the leg.

4. An orthopaedic device comprising in combination, (i) an inflatable structure having at least two elongated fabric pipes of substantially square cross-section disposed in parallel relationship, each pipe including opposed plane side walls and having a base constituted by a portion of a sheet of air-permeable fabric to which said side walls are secured along their one longitudinal edge, the adjacent respective side walls of each adjacent pair of pipes being secured together substantially along their other longitudinal edge, and an inflatable tube of gas-tight resilient material in each said pipe, and (ii) a boot, and means for connection between a lower part of said structure and said boot to maintain the sole of said boot in a direction substantially at right angles thereto, whereby when the device is fitted to the leg the boot is maintained substantially at right angles to the tibia and opposes transverse rocking of the ankle.

6. An inflatable structure having at least two elongated fabric pipes of substantially square cross-section disposed in parallel relationship, each pipe including opposed plane side walls and having a base constituted by a portion of a sheet of air-permeable fabric to which said side walls are secured along their one longitudinal edge, the adjacent respective side walls of each adjacent pair of pipes being secured together substantially along their other longitudinal edge, and an inflatable tube of gas-tight resilient material in each said pipe, the pipes having at least one discontinuity disposed in the vicinity of a zone of articulation of a limb on which the structure is provided, said discontinuity resulting in at least two distinct subassemblies of pipes which are each inflatable and deflatable independently of the other, each pipe of one of the subassemblies being an extension of an associated pipe of the other sub-assembly, and the portion where two associated pipes are separated being, for each pair of associated pipes, offset longitudinally of the structure with respect to the position of separation of each alternate pair of associated pipes.

10. An inflatable structure having at least two elongated fabric pipes of substantially square cross-section disposed in parallel relationship, each pipe including opposed plane side walls and having a base constituted by a portion of a sheet of air-permeable fabric to which said side walls are secured along their one longitudinal edge, the adjacent respective side walls of each adjacent pair of pipes being secured together substantially along their other longitudinal edge, and an inflatable tube of gas-tight resilient material in each said pipe, there being provided on the fabric adapted to surround the limb on which the structure is secured, about the zone of articulation of the limb, a first section of said structure for disposing on that side of said zone on which the limb is attached to the body, a second section extending the first section towards the extremity of the limb, inside the zone of articulation a third section disposed on that side of the zone on which the limb is attached to the body, a fourth section disposed as an extension of the third section and positioned towards the extremity of the limb, the first section overlapping the zone of articulation of the limb and the fourth section extending beyond the zone of articulation and not being stitched at its upper part, means being provided to enable the ends of the first and fourth sections to be secured together and released at each side of zone of articulation of the limb.

3,868,953
VALVE SEAT RING FOR THE FASTENING IN CYLINDER HEADS OF INTERNAL COMBUSTION ENGINES

Walter Roll, Jesingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

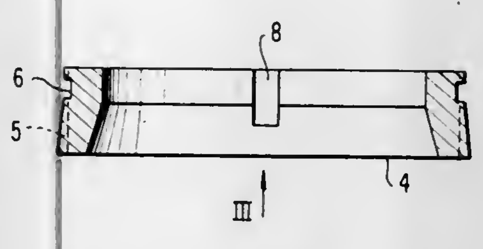
Filed Dec. 22, 1972, Ser. No. 317,780

Claims priority, application Germany, Dec. 23, 1971, 2164357

Int. Cl. F01l *3/22*

U.S. Cl. 123—188 S **15 Claims**

1. A valve seat ring for fastening in cylinder heads of internal combustion engines, characterized by the arrangement of a self-cutting thread at the valve seat ring, the self-cutting thread includes at least one cutting edge which extends in the axial direction of the valve seat ring.



6. A valve seat ring for fastening in cylinder heads of internal combustion engines, characterized by the arrangement of a self-cutting thread at the valve seat ring, and in that a groove for shavings is provided in the valve seat ring, which extends in the circumferential direction.

3,868,954
HEMADYNAMOMETER MICROPHONE

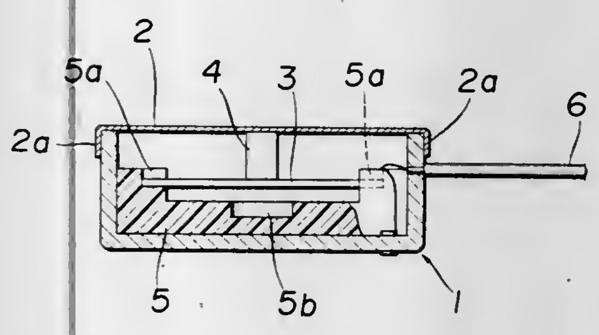
Kazuo Ueda, Tokyo, Japan, assignor to Ueda Works Co., Ltd., Tokyo, Japan

Filed June 5, 1973, Ser. No. 367,117

Claims priority, application Japan, Feb. 10, 1973, 48-017769

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 S **4 Claims**



1. A hemadynamometer microphone comprising:
a. a housing;
b. a support member in said housing, said support member being made of an elastic material and being constituted by a centrally recessed elongate body made of a single part and first and second longitudinal grooves symmetrically formed near the ends of said body in upwardly and inwardly opening fashion, said body having such a configuration as to permit the support member to be snugly and integrally fitted in the inner periphery of said housing;
c. a ceramic element positioned in and centrally of the housing, with the opposite ends thereof fitted in said first and second grooves and a substantially major central part thereof held in spaced relation from said support member, for serving to convert sounds into electrical oscillations;
d. an oscillating diaphragm means mounted over said housing; and
e. a relay member made of an elastic material disposed centrally of the ceramic element, between and interconnecting said ceramic element and said diaphragm, for transmitting the oscillation of said diaphragm to said ceramic element.

3,868,955
ALDEHYDE POLYSACCHARIDE DRESSINGS

Fred Harold Steiger, East Brunswick, and Judith Ann Siragusa, Hopewell, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Oct. 5, 1973, Ser. No. 403,749

Int. Cl. A61f *13/00, 13/18*

U.S. Cl. 128—296 **16 Claims**

1. In a product for absorbing body fluids comprising an absorbent body and having deodorizing properties, the improvement wherein said product comprises aldehyde polysaccharide having amine deodorizing properties.

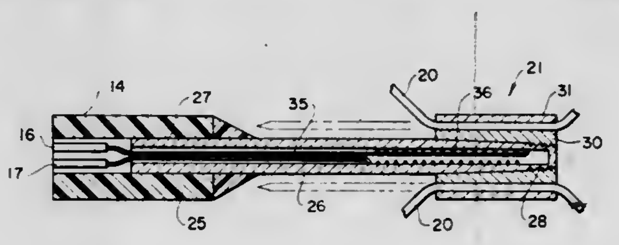
3,868,956
VESSEL IMPLANTABLE APPLIANCE AND METHOD OF IMPLANTING IT

Ralph J. Alfidi, 742 Coy Ln., Chagrin Falls, Ohio 44022, and William B. Cross, 746 Ecton Rd., Akron, Ohio 44303

Filed June 5, 1972, Ser. No. 259,463

Int. Cl. A61m *29/00;* **A61b** *17/00*

U.S. Cl. 128—345 **38 Claims**



1. An appliance for implanting within a vessel of an animal body, said appliance comprising a structure formed from a recovery material, compatible with living body tissue, said structure having a predetermined initial configuration which said structure tends to assume upon the controlled application of a stimulus to said structure, and said structure being deformable to a second configuration suitable for facilitating implanting, in a vessel in an animal body, whereby said controlled application of said stimulus to a said appliance, when implanted, will cause said appliance to assume a configuration within said vessel which configuration is substantially similar to said initial configuration.

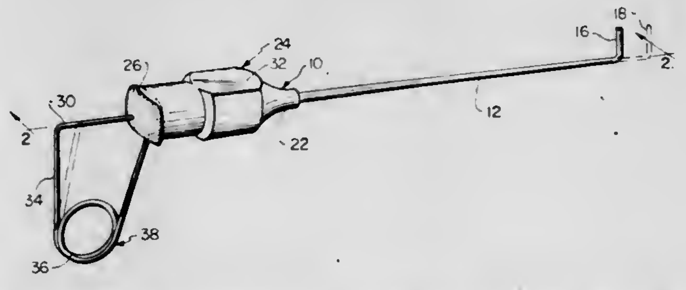
3,868,957
VASCULAR CLAMP

Harold W. Doddington, Gainesville, Fla., assignor to Board of Regents, State of Florida, Tallahassee, Fla.

Filed Oct. 3, 1973, Ser. No. 403,023

Int. Cl. A61b *17/12*

U.S. Cl. 128—346 **9 Claims**



1. A clamping implement, especially suitable for use as a vascular or hemostatic clamp, comprising a tubular shaft having open opposing end portions, one of said end portions defining a fixed clamping jaw angularly related to and extending from the shaft and a hand piece supportively engaging the other end portion, an elongated member slidably housed in the shaft and having opposing end portions, one of said end portions defining a movable clamping jaw and being angularly related to and extending from the member and being disposed in confronting complementary clamping relation with the clamping jaw on the shaft, said other end portion of the member being slidably received by the hand piece and extending therethrough and therebeyond and means structurally associated with said extending portion of the member to continuously urge the movable clamping jaw into claimping relation with the fixed clamping jaw.

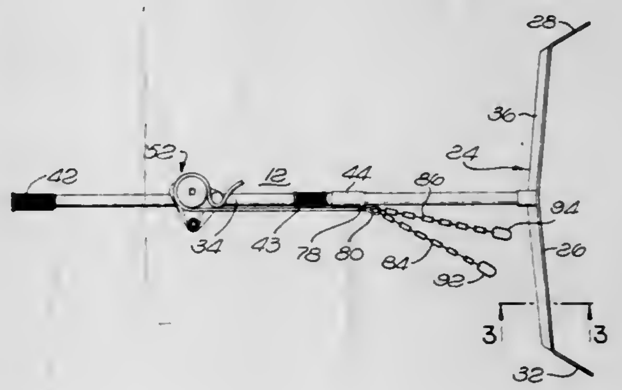
3,868,958
CALF EXTRACTION MECHANISM

Raymond E. Rarick, Mission Viejo, Calif., assignor to Inno-vet Instruments, Inc., Mill Valley, Calif.

Filed Nov. 26, 1973, Ser. No. 419,155

Int. Cl. A61d *01/08*

U.S. Cl. 128—352 **5 Claims**



1. A calf extraction mechanism comprising a combination:
a bracing member of generally U-shaped configuration and defined by a base having an arm extending from opposite ends of said base in a first direction, said bracing member being of generally planar cross-sectional configuration;
- a support rod having a first end extending from the center of the bracing member at a right angle at the junction thereof and in a second direction generally opposite from said first direction to a second free end;
- a winch secured to said support rod intermediate said support rod ends including pivotal means, a drum and an idler roller;
- gripping surfaces positioned on said support rod on opposite sides of said winch member;
- means for applying rotary forces to revolve said drum and simultaneously varying the spacing between said idler roller and said drum;
- a rope slidably movable between said idler roller and said drum and removable from said winch when said rotary forces are removed from said drum; and
- a chain member secured to one end of said rope.

3,868,959
HAIR SUPPORTING ELEMENT FOR A WEFTLESS OR REGULAR WIG

Hyung Chan Koh, 605-21, Soo U-Dong, Seong Buk-ku, Seoul, South Korea

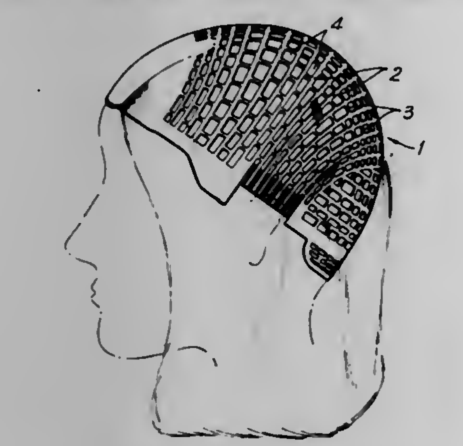
Filed Oct. 2, 1972, Ser. No. 293,803

Claims priority, application South Korea, Aug. 19, 1972, 5171/72; Oct. 2, 1971, 5136/71

Int. Cl. A41g *3/00*

U.S. Cl. 132—53 **1 Claim**

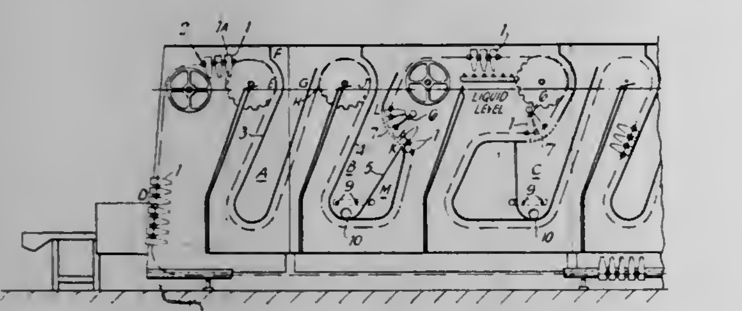
1. A wig comprising a plurality of elongated supports, bridges connecting the supports in spaced relation, and hairs implanted in said supports at regularly and longitudinally spaced positions along each of the supports and such that pluralities of hairs extend from respectively from said regularly spaced positions and are separated by bare expanses on annular diaphragm, said relief valve seat being situated coaxially and radially outwardly of said non-return valve seat; an annular portion of said first annular diaphragm situated co-



said supports, said supports being stretchable independently of the implantation of said hairs whereby said wig is adapted to stretch in the longitudinal direction of said supports, the supports being in the form of tubes.

3,868,960
MACHINES FOR WASHING BOTTLES AND LIKE CONTAINERS AND REMOVING LABELS THEREFROM

Anthony Raymond Cove, 413 Baker St., Enfield Middlesex, and Jack Tween, 26 Crutchley Rd., Wokingham, Berkshire, both of England
Filed Sept. 13, 1973, Ser. No. 288,554
Claims priority, application Great Britain, Sept. 16, 1971, 43335/71
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—73 **4 Claims**

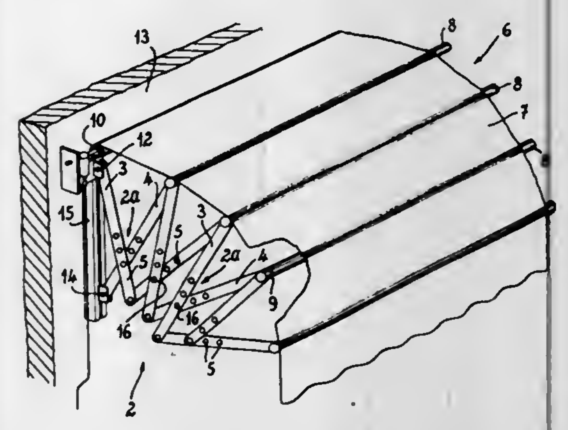


1. An apparatus for washing bottles and removing labels therefrom, comprising:

a washing tank for containing a cleaning fluid;
a conveyor for conveying bottles into and through said tank;
  a plurality of bottle pockets open at both ends mounted to said conveyor for holding said bottles while being conveyed through said washing tank, said pockets being arranged in a plurality of substantially aligned rows across at least a portion of the width of said conveyor;
means for retaining said bottles in said pockets while being conveyed through said washing tank;
nozzle means located in said washing tank adjacent said conveyor for expelling jets of fluid into and through said bottle pockets being conveyed past said nozzle means; and
means for bringing the neck portions of said bottle pockets, and bottles contained therein, in adjacent rows into close proximity with each other, and for correspondingly diverging the bottom portions of said adjacent bottle pockets and therein contained bottles, in the path of said fluid jets being expelled from said nozzle means, including a bottle guide mounted in said tank and having an arcuate portion for guiding bottles held in said pockets through an arcuate path, the center of curvature of said arcuate portion being substantially coincident with the location of said nozzle means.

3,868,961
EXTENSIBLE SUPPORT ELEMENT FOR PROTECTION CANVAS

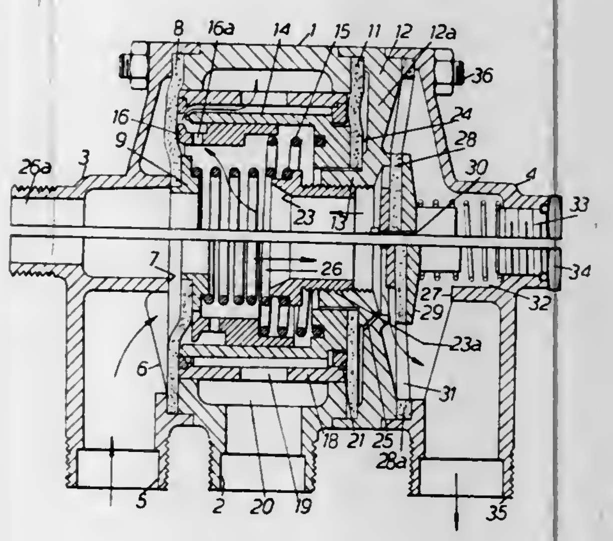
Pierre Sternis, 17, Avenue Paul Vailland Couturier, 94 Vitry-sur-Seine, France
Filed Oct. 9, 1970, Ser. No. 79,426
Claims priority, application France, Nov. 6, 1969, 69.38620
Int. Cl. A45f *1/16;* **E04f** *10/06*
U.S. Cl. 135—4 R **8 Claims**



1. Extensible support element for protection canvas, of the type comprising a plurality of pivotally interconnected toggle links, each pair of toggle links having a common pivot means, the common pivot means of the two links of each of the toggles being shiftable by a same value and in the same direction along the length of said links in relation to the longitudinal middle point of said two links.

3,868,962
BACK FLOW PREVENTOR

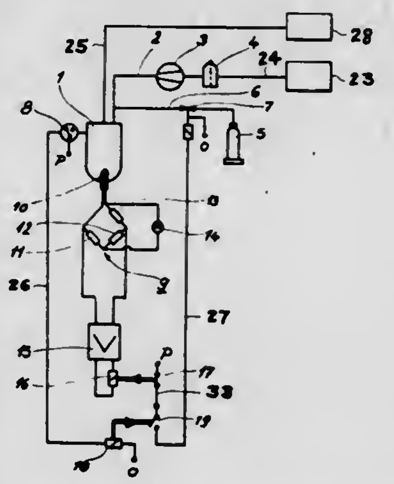
William Waterston, 73 Kaikorai Valley Rd., Dunedin, New Zealand
Filed May 29, 1973, Ser. No. 364,242
Claims priority, application New Zealand, May 26, 1972, 167291/72
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 **5 Claims**



1. A back flow preventor which comprises a casing defining a fluid chamber therein; means defining an inlet to said chamber; means defining an outlet from said chamber; means defining a relief outlet from said chamber between said inlet and said outlet; means defining a relief chamber in communication with atmospheric pressure, a first annular diaphragm mounted in said chamber between said inlet and said relief outlet; means defining an annular non-return valve seat on the upstream side of said first annular diaphragm; means defining an annular relief valve seat on the downstream side of said first annular diaphragm radially outwardly of said relief valve seat being in communication on its downstream face with said relief chamber; a thrust member provided within said relief chamber being in contact with an annular portion of said first annular diaphragm radially outwardly of said relief valve seat, the arrangement being such that said annular portion of the first annular diaphragm radially outwardly of the relief valve seat, upon which there acts a difference in pressure between a fluid pressure from said inlet and the atmospheric pressure, is supported by said thrust member, which thrust member is arranged to transmit the downstream fluid pressure to said annular portion to counter-balance this difference in pressure.

3,868,963
APPARATUS FOR MONITORING THE FILLING FACTOR OF CONTAINERS FOR COMPRESSED GAS

Reiner Muellerpoths, Schwetzinger, Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed May 11, 1973, Ser. No. 359,424
Claims priority, application Germany, May 31, 1972, 2226528
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 **7 Claims**

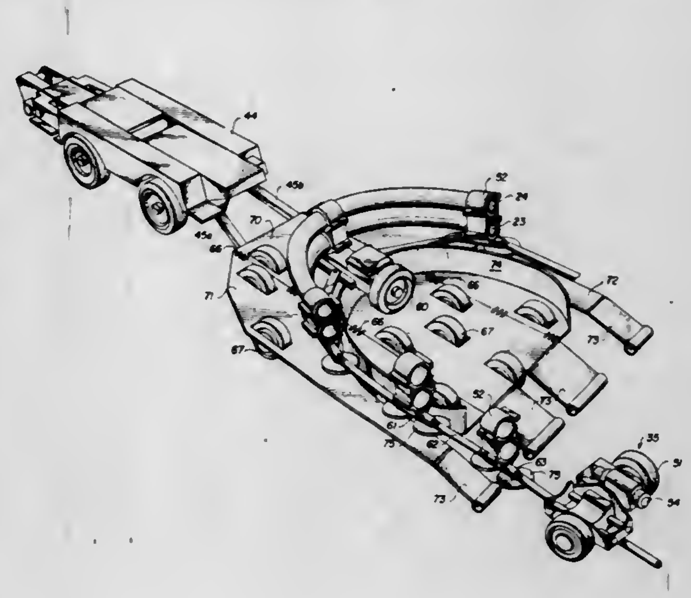


1. A gas supply plant particularly for use in supplying an insulating gaseous medium such as SF_6 to a switching installation insulated with the gas comprising a storage container receiving the gas in a pressurized state from a compressor drawing gas from the low pressure side of the switching installation and adapted to deliver the gas to the high pressure side of the switching installation, a heated ancillary pressurized gas container connected to said storage container by a pipe line including a control valve therein, a pressure gauge connected with said storage container for monitoring the gas pressure therein and which delivers a first control signal when the gas pressure falls to a predetermined level, a state measuring member located at the lowest part of said storage container and which is responsive to changes in the physical state of the medium therein from its gaseous state to its liquid state to produce a corresponding second control signal, and control means actuated by said first and second control signals acting conjointly to control the opening and closing operations of said control valve in said pipe line interconnecting said ancillary container to said storage container.

3,868,964
CONVEYER FOR SLURRY HOSE TRANSPORTATION SYSTEM

James H. Tarter, Royal Oak; Ronald G. Read, Birmingham; Valentino Colussi, Walled Lake, all of Mich., and David L. McCain, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Continuation of Ser. No. 297,113, Oct. 12, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 389,271
Int. Cl. H02g *11/00;* **B65g** *53/30*
U.S. Cl. 137—344 **6 Claims**

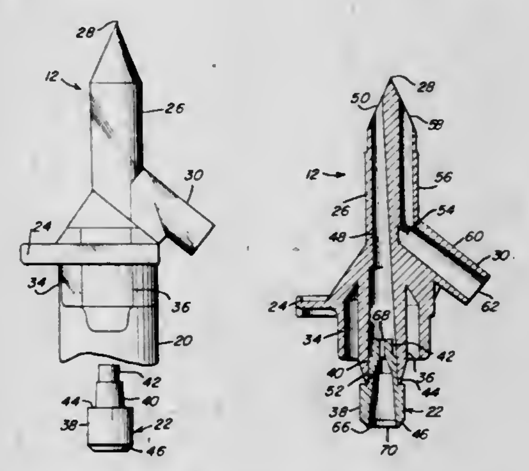
1. In a system for transporting a slurry from a mining machine in a mine having a floor, and which includes at least one flexible hose supported by a plurality of wheeled carts spaced along the length of the hose and links pivotally interconnected with one another and the carts for pivotal movement in a horizontal plane, and wherein the hose is required to be transferred in a 180° bend between a storage section and a parallelly located active section as the need for the hose changes, the improvement comprising:



a conveyer movably supporting the hose, carts and links off of the mine floor in the 180° bend portion of the hose, and means attached to the conveyer for moving the conveyer along the mine floor parallel to the storage section of the hose as the hose is being transferred between the active and storage sections.

3,868,965
DROP FORMER FOR INTRAVENOUS SET

Douglas G. Noiles, New Canaan, and Anthony D. Spasiano, Greenwich, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.
Filed July 3, 1973, Ser. No. 376,227
Int. Cl. A61m *5/16*
U.S. Cl. 137—559 **22 Claims**



1. A drop former for use with a drip chamber for determining the flow rate of a parenteral fluid, comprising:, body means defining a parenteral fluid passage therethrough, said parenteral fluid passage having an inlet opening for communicating with a source of parenteral fluid and an outlet opening for communicating with a drip chamber, said parenteral fluid passage defining a drop forming orifice for forming about 12 to 20 drops of parenteral fluid for each millimeter of fluid flowing therethrough at the pressures encountered in intravenous feeding, said outlet opening being at least as large as said inlet opening, and said body means being formed from a plastic which absorbs less than about 0.03 percent by weight water measured over about a twenty-four hour period so that

the size of said drops will not materially change with time or flow rate.

12. A piercer and flow meter for an intravenous set, comprising: a piercer having a base and a piercing member with a sharp end for piercing the closure of a parenteral fluid container, said piercer defining a parenteral fluid passage for transferring parenteral fluid from said container, said parenteral fluid passage having an opening in said piercing member for communicating with said container and a discharge opening in said base; a drip chamber attached to said piercer and communicating with said discharge opening; and a drop former attached to said piercer and comprising body means defining a parenteral fluid passage therethrough, said parenteral fluid passage having an inlet opening communicating with said discharge opening in said piercer and an outlet opening communicating with said drip chamber, said parenteral fluid passage defining a drop forming orifice for forming drops of parenteral fluid of predetermined size which can be visually observed while falling through said drip chamber for determining the flow rate of said parenteral fluid, said outlet opening being at least as large as said inlet opening, and said body means being formed from a plastic which absorbs less than about 0.03 percent by weight water measured over about a 24 hour period so that the size of said drops will not materially change with time of flow rate.

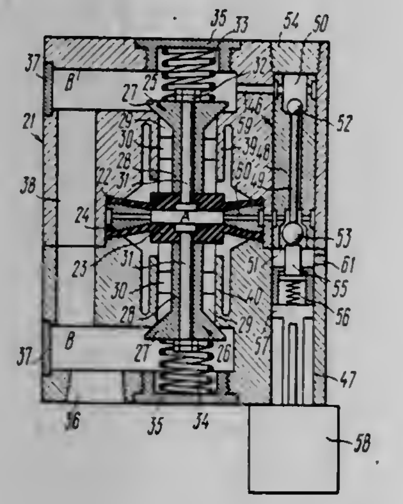
3,868,966
ELECTROPNEUMATIC VALVE

Petr Vasilievich Malygin, prospekt Ilicha, 22, kv. 45; Valentin Mikhailovich Kochetkov, ulitsa Snezhnaya, 19, kv. 14, and Alexei Efimovich Tolkachev, ulitsa Leskova, 10, kv. 59, all of Gorky, U.S.S.R.

Filed June 13, 1974, Ser. No. 479,265

Int. Cl. F15b *13/07*

U.S. Cl. 137—596.16 **2 Claims**



1. An electropneumatic valve for the control of motions of an actuating mechanism comprising: a body with channels for the delivery of compressed gas to an actuating mechanism and discharge of used gas into the atmosphere, and a space in its central part; two elastic diaphragms arranged parallel to each other in said body and forming a space between them; a spring-loaded closing element rigidly connected to one of said diaphragms and intended to shut off the channel for the delivery of compressed gas in said body; a servo-actuated valve intended to control said closing element; said servo-actuated valve with a space inside which is in constant communication with the channel in said body for the delivery of compressed gas and is periodically put in communication with the space between said diaphragms; channels for the delivery of compressed gas and a channel for the discharge of the used gas into the atmosphere, each of said channels provided with a branch for the delivery of compressed gas to, and its discharge from, another actuating mechanism; a second spring-loaded closing element installed in the branch of said channel for the delivery of compressed gas and rigidly connected with the other of said diaphragms; said spring-loaded closing elements with springs whose stiffness is different to ensure successive opening of said closing elements.

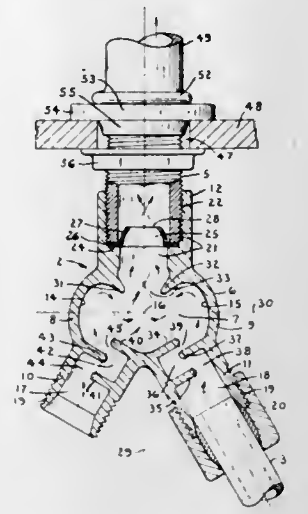
3,868,967
ADAPTER FOR MIXING FLUIDS

Donald D. Harding, Lagro, Ind., assignor to Kenneth W. Shropshire, Fort Wayne, Ind.

Filed Feb. 16, 1973, Ser. No. 333,191

Int. Cl. F16k *19/00*

U.S. Cl. 137—604 **3 Claims**



1. A device for mixing fluids comprising: a body having a central chamber having inner curved end surfaces, said body also being provided with an axially extending outlet passage having an inner end communicating with said chamber and with a pair of converging longitudinally extending inlet passages having inner ends which communicate with said chamber, said body adjacent said inner end of said outlet being provided with baffle means, said pair of passages having longitudinal axes which intersect the axis of said outlet passage, at least one of said inlet passages being provided with baffle means whereby when fluids of a different character are forced into said chamber via said inlet passages for mixing and flow out said outlet passage, said baffle means may assist in preventing back flow of the mixture into said one inlet passage, said last-mentioned baffle means comprising a pair of axially spaced abutments extending transversely in one direction to form a secondary chamber and a third abutment which extends transversely toward said secondary chamber to form an inlet port at the supply end of said one inlet passage and an outlet port to said central chamber for directing at least some of the fluid against one of said curved end surfaces toward said baffle means adjacent said outlet passage whereby to assist in the temporary retention of fluid in said central chamber prior to its flow through said outlet passage.

3,868,968
FLUID CONTROL MECHANISM FOR APPLIANCES

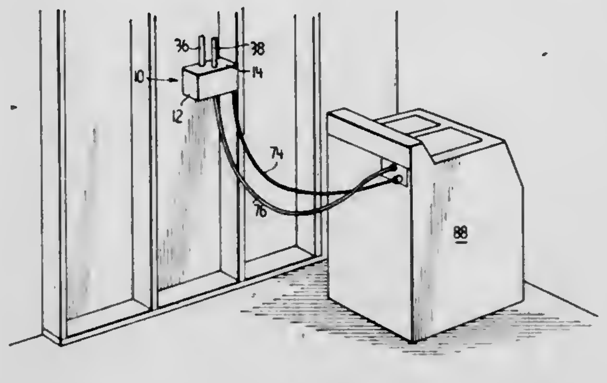
Manfred E. Fuhrmann, 24 Walnut St., White Plains, N.Y. 10607

Filed Aug. 17, 1973, Ser. No. 389,169

Int. Cl. B08b *3/00*

U.S. Cl. 137—624.18 **7 Claims**

1. A fluid control mechanism for selectively controlling the flow of a fluid from a supply pipe to a remotely located appliance using said fluid, said fluid control mechanism comprising in combination a supply pipe with only one exit port, an electrically actuatable valve assembly having an inlet port and an exit port, said inlet port of said electrically actuatable valve assembly being connected to said exit port of said supply pipe, said exit port of said electrically actuatable valve assembly being coupled to a pipe fitting which permits the detachable connection of said exit port of said valve assembly at a point in said appliance where a single conduit supplies the appliance with all of the fluid used therein and there are no controllable valves within said appliance which control the flow of fluid to said appliance, said electrically actuatable valve assembly comprising an electrically activated valve mounted within said electrically actuatable valve assembly for selectively controlling the flow of fluid from said inlet ports to said exit port of said electrically actuatable valve assembly, said electrically operated valve having control terminals adapted to be coupled to control terminals of a timer for said remotely located appliance which produce electrical control signals to selectively operate said valve.



3,868,969
MULTIWAY VALVE

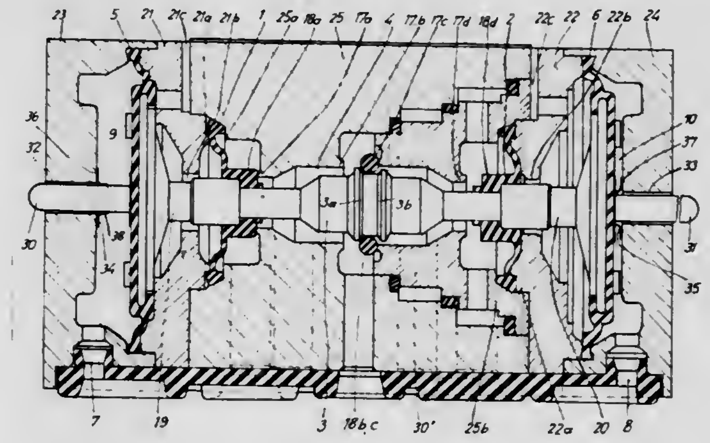
Willi Schwenk, Fuchshofstr. 28, Ludwigsburg, Germany

Filed Mar. 1, 1973, Ser. No. 336,943

Claims priority, application Germany, Mar. 1, 1972, 7207693

Int. Cl. F16k *11/02, 31/165*

U.S. Cl. 137—625.5 **1 Claim**



1. A multiway valve comprising a housing having a bore therein, a plurality of passages connected to the bore and to the outside of the housing, and a plurality of valve seats located between the openings of the passages into the bore, a valve member comprising an elongated spindle, means mounting said spindle for movement within the bore longitudinally thereof, said spindle having a plurality of seal means in the form of annular members each having a sealing surface engagable with each of the valve seats spaced therealong, said mounting means including means mounting the spindle to float in the bore out of frictional contact with the walls thereof and including support diaphragms adjacent each end of the spindle having their outer edges secured to the housing and supporting the spindle and closing the ends of the bore, control diaphragms spaced from and on the sides of the support diaphragms away from the bore, central pushrods carried by the control diaphragms coaxial with the spindle for actuating it, said end walls and said support diaphragms between them forming chambers at each end of the housing, and means to conduct pressure fluid to such chambers, said valve having *n* paths therethrough with "*n*–1" valve seats and "*n*–2" seal means, one of the diaphragms at each end of the casing being of the snap-action type, said housing having openings therein in the end walls facing said control diaphragms, actuating push rods slidable in said openings and extending outwardly of the end walls secured to the control diaphragms for manual movement thereof, and means for venting fluid from the spaces between the support diaphragms and the control diaphragms.

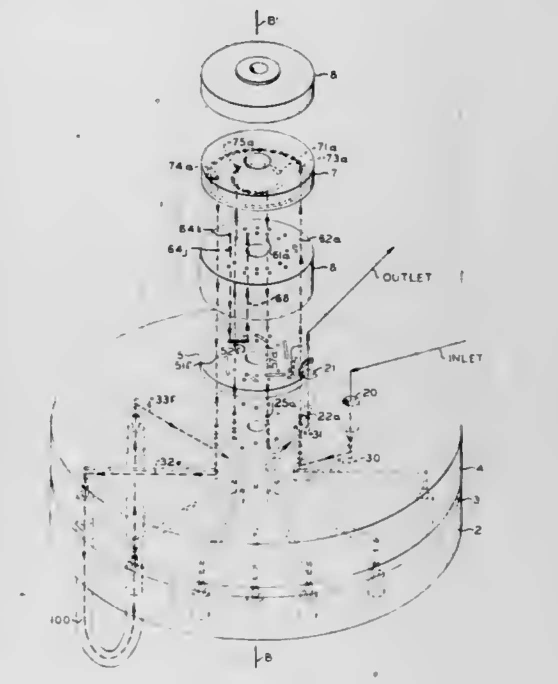
3,868,970
MULTIPOSITIONAL SELECTOR VALVE

Buell O. Ayers, and Lewis B. Roof, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 4, 1973, Ser. No. 366,728

Int. Cl. F16k *3/08, 11/02*

U.S. Cl. 137—625.46 **10 Claims**



1. An apparatus comprising:
a. an inlet;
b. a movably-positionable distributor comprising a first circular grooved channel in a rotatable plate, said first circular grooved channel in direct contact with a channel from said inlet, said first circular grooved channel having a second channel extending therefrom whereby by rotation of said plate registry can be maintained with any one of a plurality of openings located at the same direction in the same direction away from this first circular grooved channel;
c. a first plurality of openings, each of said openings connected to a conduit leading from said distributor; and
d. a first plurality of conduits each connected to one of said openings.

3,868,971
FUEL METERING DEVICE ESPECIALLY FOR THE COMBUSTION CHAMBER OF AN AEROJET ENGINE

Wilhelm Grunert, Dammarie-Les-Lys, and Jean Paul Francois Gilbert Briotet, Le Mee-sur-Seine, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Apr. 17, 1973, Ser. No. 352,003

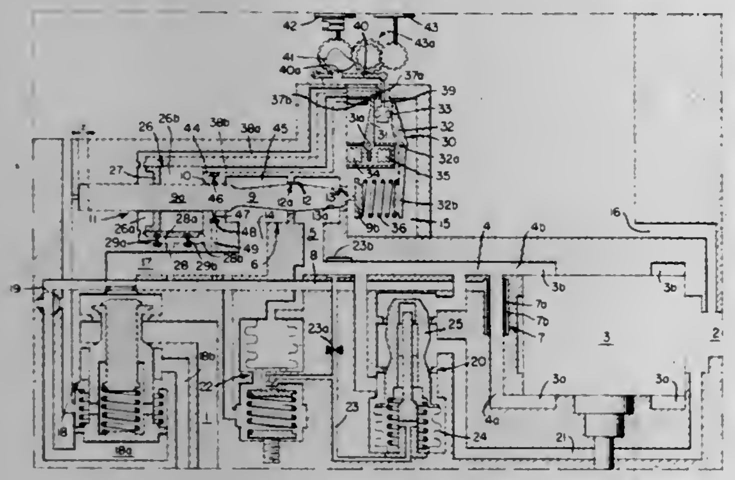
Claims priority, application France, Apr. 18, 1972, 72.13605

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.48 **5 Claims**

1. In a flow metering device for fuel containing or liable to contain solid impurities which comprises inlet and outlet chambers (5,45) connected by a regulating port (12), feed intake means (3,3*a*,3*b*,4) for supplying under pressure said fuel to said inlet chamber for passage through said port into said outlet chamber, fuel outlet means (17,1) for delivering said fuel from said outlet chamber, a flow metering needle (9) movable axially through said regulating port (12) to vary the cross-sectional area of said port and thus the rate of fuel flow therethrough, a partition (44) at one side of said inlet and

outlet chambers and having a bore (**10**) therein coaxial with said needle, an integral extension (*9a*) on said needle (**9**) slidably fitted in said partition bore (**10**) for axial movement therein, and control means (**11**) operatively associated with said needle extension to move the same axially in said partition bore, the improvement comprising an annular groove (46) formed in the surface of the bore (**10**) intermediate the ends thereof, and means (**7,8,49**) communicating with said fuel intake means for withdrawing therefrom a small secondary flow of fuel, filtering said small secondary flow, and delivering the same to said annular groove (**46**) under a pressure higher than the pressure of the unfiltered fuel acting on said partition (**44**) whereby the entry of said impurities into the clearance space between said bore (**10**) and said needle extension is prevented.



3,868,972

HYDRAULIC PRESSURE COMPENSATOR

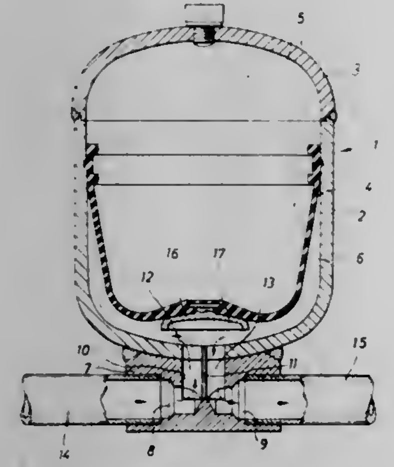
Wilhelm Zirps, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 27, 1973, Ser. No. 401,501

Claims priority, application Germany, Nov. 4, 1972, 2254032

Int. Cl. F16l *55/00*

U.S. Cl. 138—30 **7 Claims**



1. In a hydraulic system, a combination comprising a hydraulic conduit for the flow of hydraulic fluid; a pressure vessel having a chamber provided with an opening; a flexible partition wall subdividing said chamber into a first compartment communicating with said opening, and a second compartment containing a body of gas under pressure so that said partition wall is normally flexed into said first compartment and against said opening to close the same; and connecting means connecting said hydraulic conduit with said opening, said connecting means defining a first flow path for said hydraulic fluid which conducts said hydraulic fluid in its entirety through said first compartment when said flexible partition wall is out of contact with said opening, and a second bypass flow path for said hydraulic fluid which is open and bypasses said first compartment when said flexible partition wall is in contact with said opening.

3,868,973

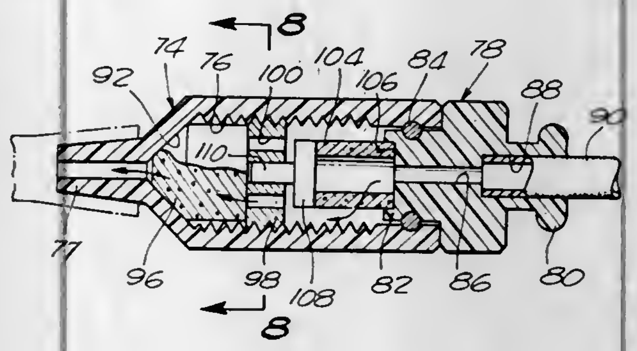
FLOW CONTROLLING OR METERING DEVICE

Howard R. Bierman, 152 N. Robertson Blvd., Beverly Hills, Calif. 90211, and John G. Mast, 7934 Kirkland Dr., Cincinnati, Ohio 45224

Filed Mar. 16, 1973, Ser. No. 341,915

Int. Cl. F15d *1/00*

U.S. Cl. 138—43 **8 Claims**



5. A flow controller for controlling a small, slow flow of liquid and having the capability of making fine adjustments in the resistance to flow comprising, in combination: a body defining a channel therethrough, a first flow resistance material having uniform flow resistance characteristics positioned within said channel so that liquid flowing therein passes through said first flow resistance material; a second flow resistance material in said body arranged and positioned in said channel for a series flow through the two resistance materials, said second resistance material having an adjustable flow resistance characteristic; and means for selectively adjusting the resistance characteristic of said second flow resistance material for selectively controlling and adjusting the flow of liquid through said flow controller, the density of said second flow resistance material being substantially less than said first flow resistance material even when adjusted to provide greatest flow resistance whereby selective adjustment of the resistance characteristic of said second resistance material operates to make a fine adjustment in the flow rate through said flow controller.

3,868,974

REINFORCED FLEXIBLE ARTICLES

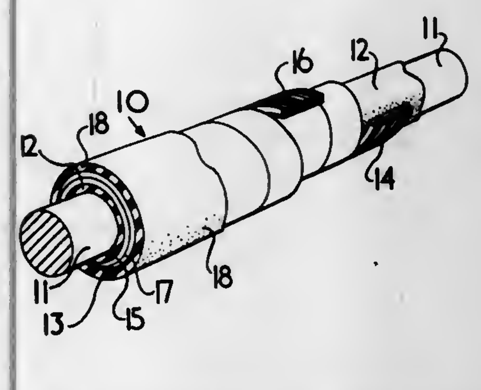
Eric Ball, Newcastle Upon Tyne, England, assignor to Dunlop Holdings Limited, London, England

Filed July 26, 1971, Ser. No. 166,021

Claims priority, application Great Britain, June 5, 1970, 27336/70

Int. Cl. F16l *11/10*

U.S. Cl. 138—129 **11 Claims**



1. A hose pipe comprising a reinforcement structure formed from at least one helically wound strip of reinforcement material, each reinforcement strip having an elongated carrier strip formed from a membrane of polymeric material, said polymeric material having a thickness not exceeding 0.010 of an inch and an elongation at break in any direction of not more than 100 per cent, and a plurality of reinforcing filaments extending substantially parallel to the longitudinal direction of the carrier strip and applied to the surface only of said carrier strip.

3,868,975

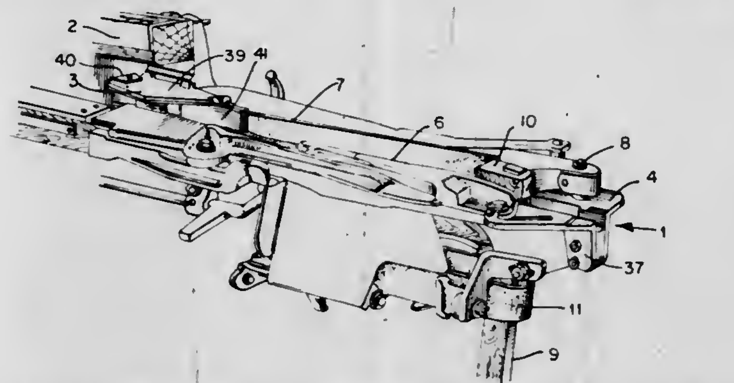
FLY SHUTTLE LOOM AND PARTS THEREOF

Joseph E. Stahl, Easthampton, and Allen L. Cudworth, Needham, both of Mass., assignors to J. P. Stevens Co., Inc., New York, N.Y.

Filed Apr. 27, 1973, Ser. No. 354,950

Int. Cl. D03d *49/00*

U.S. Cl. 139—1 R **10 Claims**



1. In a fly shuttle loom including loom drive, lay and shuttle boxes, cams, pick ball and pick shaft, and connections to picker sticks which force the shuttle to fly from side to side, the shuttle boxes on each end of the lay comprising leather lined side plates, one of them pivoted onto the lay and the other fixed, and a box back plate above the shuttle trajectory and a lay end plate at the bottom of the box in which plate the picker stick head moves, the improvement which comprises,

a. a composite lay end plate positioned to come into contact with and guide the shuttle, the metal portion of said plate having thickness less than the full thickness and cast noncellular thermosetting elastomer lining thereon to bring up to normal thickness, and

b. an elastomer lining on the side wall of the back box plate, whereby the elastomer linings reduce noise produced in the shuttle boxes and also redue transmission of vibrations to the loom structure.

3,868,976

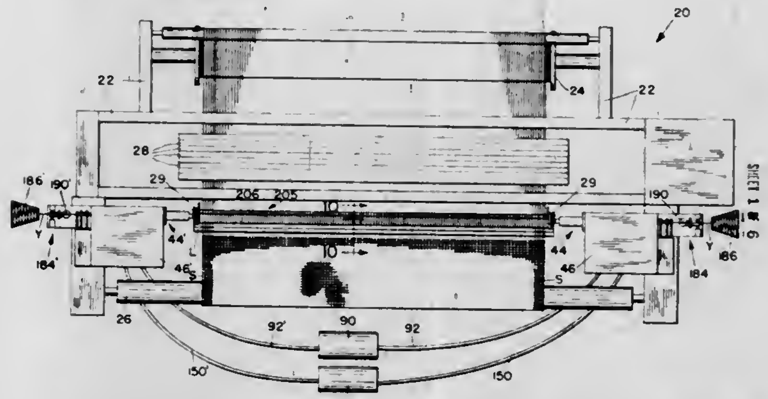
PNEUMATIC WEFT INSERTING MECHANISM

Karl W. Wueger, North Brookfield, Mass., assignor to Crompton & Knowles Corporation, New York NY, N.Y.

Division of Ser. No. 174,687, July 24, 1972, Pat. No. 3,831,640. This application Mar. 18, 1974, Ser. No. 452,492

Int. Cl. D03d *47/24, 49/60*

U.S. Cl. 139—126 **6 Claims**



1. In a loom having a lay and means for forming a warp shed, pneumatic filling inserting mechanism for inserting a filling pick into said warp shed from an outside supply package comprising:

a. a cylindrical projectile for guiding said filling through said warp shed and having at each end thereof, an annular outer edge which lies in a plane which is at a right angle to the longitudinal axis of the projectile, and an end surface, substantial portions of which do not extend beyond said edge;

b. means for propelling said projectile through said warp shed; and

c. a plurality of spaced guides supported on said lay, each of said guides having a circular aperture of a larger diameter than said projectile and a slot extending from said aperture to the outside of the guide, said guides being arranged on said lay so that they form a guide channel for said projectile within the warp shed and wherein said projectile will be stabilized and airborne throughout its flight through the warp shed at a subsonic projectile speed of more than 90 feet per second.

3,868,977

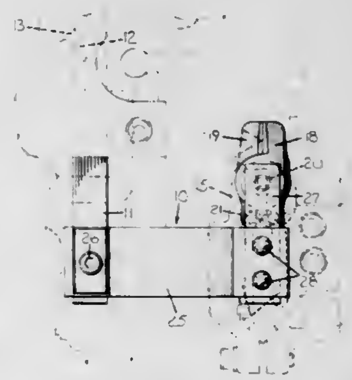
SPRING MOUNTED REMOVABLE SCISSORS FOR LOOMS

Maurice R. Flamand, Cumberland, R.I., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1973, Ser. No. 407,009

Int. Cl. D03d *49/70*

U.S. Cl. 139—302 **3 Claims**



1. A weft cutting assembly for use on a shuttleless loom where weft yarn is drawn for a stationary source, said assembly comprising drive means connected to a source of motive power for reciprocating substantially rectilinear movement, cam means mounted on the loom, scissor means including at least one movable member mounted for operative cooperation with said cam means, and means connecting said drive means to said scissor means, said connecting means including spring-like member of substantially greater width than thickness which is attached at one end to said drive means and at the other end to said scissor means.

3,868,978

RECHARGEABLE AEROSOL-TYPE DISPENSING DEVICE FOR WHIPPED CREAM

Karl Horst Knopf, Kohlfurth 50, 565 Solingen, Germany

Filed Nov. 23, 1973, Ser. No. 418,179

Claims priority, application Austria, Nov. 22, 1972, 9958/72

Int. Cl. B65b *3/04, 31/00*

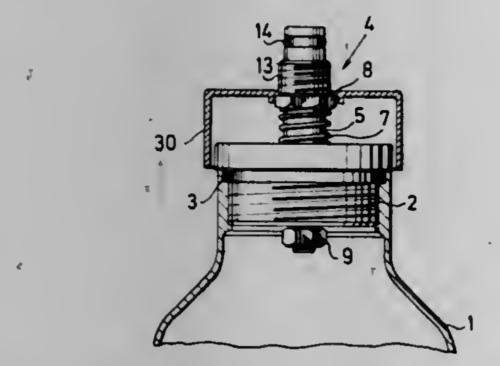
U.S. Cl. 141—19 **9 Claims**

1. An aerosol-type dispensing device which is rechargeable from a conventional gas cartridge, usable, for example, as a rechargeable whipped cream dispenser, comprising in combination:

a pressure-resistant container having a refill opening;

a removable end plug sealingly closing the container opening;

a valve arranged inside the end plug, the valve having a spring-biased plunger of which a length portion protrudes from the end plug and through which a normally closed axial valve passage leads to the outside of the container, thereby permitting discharge of the container contents, when the valve is opened; and a cartridge connecting socket which is removably attachable to the protruding portion of the valve plunger and which has a gas passageway which sealingly communicates with the axial valve passage, when the socket is



attached thereto, the socket further including means for opening its gas passageway to the inside of a gas cartridge, thereby permitting pressurized gas to flow from the cartridge into the container, when the valve is open.

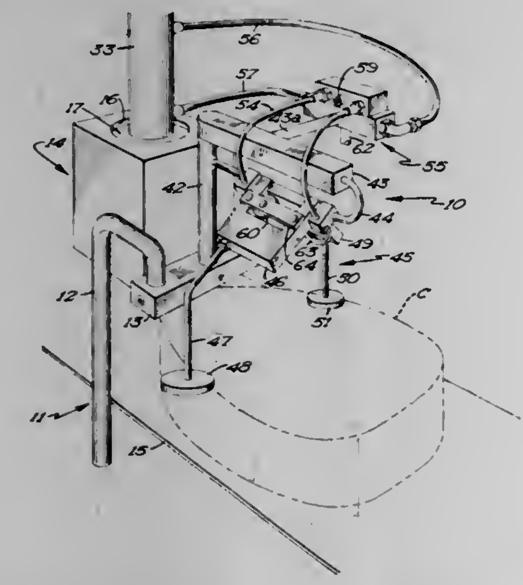
3,868,979
DISPENSING APPARATUS

Lyndon R. Leining, Austin, Minn., assignor to Geo. A. Hormel & Co., Austin, Minn.

Filed July 26, 1972, Ser. No. 275,323

Int. Cl. B65b *43/52*

U.S. Cl. 141—159 **10 Claims**



1. A dispensing device for dispensing flowable material into successively moving containers comprising:

a hopper adapted to contain a flowable material and having a discharge throat,

a shiftable volumetric valve in said hopper and being operable to dispense a predetermined volume of flowable material from said hopper,

a fluid pressure piston and cylinder unit connected with said volumetric valve and being operable for shifting the same, means for conveying containers in a predetermined path of travel below the throat of the hopper,

a control mechanism including a controlling valve connected in flow controlling relation with said piston and cylinder unit and operating the same,

a pair of laterally spaced apart, elongate vertically extending sensor arms, each mounted adjacent said hopper for vertical swinging movement about a substantially horizontal axis,

operating means supported jointly by said sensor arms and operatively interrelated with said control valve, said sensor arms being shiftable in response to engagement with a moving container to actuate said operating means and to thereby operate said control valve for shifting the piston and cylinder unit and volumetric valve from a closed position to a dispensing position and to thereby permit a predetermined volume of material to be discharged through said throat into a container as each container is moved along the predetermined path of travel.

3,868,980
METHOD AND APPARATUS FOR COMMINUTING TREE STUMPS

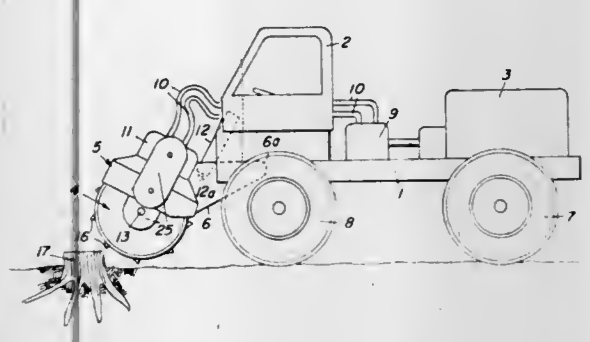
Hans Blum, Bobstadt, Germany, assignor to Hans und Heinrich Blum OHG, Hofheim/Ried, Germany

Filed Dec. 7, 1972, Ser. No. 313,067

Claims priority, application Germany, Mar. 21, 1972, 2213667

Int. Cl. B27c *9/00*

U.S. Cl. 144—2 N **13 Claims**



1. A vehicle for comminuting objects, such as tree stumps rooted in the ground, the vehicle comprising in combination, a heavy main frame having traction means mounted thereon for moving the frame over the ground surface, a carrier frame for a cutting roller extending across and adjacent to the front of the vehicle, at least one rigid swing arm fixed to the carrier frame and projecting generally normally therefrom and being pivotally mounted to the front of said vehicle frame for movement with the vehicle over the ground surface during a cutting operation and for movement in a vertical plane about a horizontal pivot axis to raise and lower the carrier frame, a large heavy cylindrical cutting roller having knives on its peripheral surface for chipping a stump upon rotating contact therewith, means suspending the cutting roller below the carrier frame for rotation about a horizontal axis relative to the carrier frame, means including a first motor for rotating said cutting roller relative to the carrier frame, means including a second motor secured to the main frame and having an output shaft connected to said carrier frame to pivot the same about said horizontal axis, and means including a third motor mounted on said frame for driving said traction means for moving the vehicle over the ground surface and for moving the cutting roller towards and away from a stump during a cutting operation.

3,868,981
APPARATUS FOR DELIMBING FELLED TREES

Georges Nadeau, 167 Golden Avenue Apt. 10, Timmins, Ontario, Canada

Filed Apr. 30, 1973, Ser. No. 355,735

Claims priority, application Canada, May 4, 1972, 141295

Int. Cl. B27c *9/00*

U.S. Cl. 144—2. Z **13 Claims**

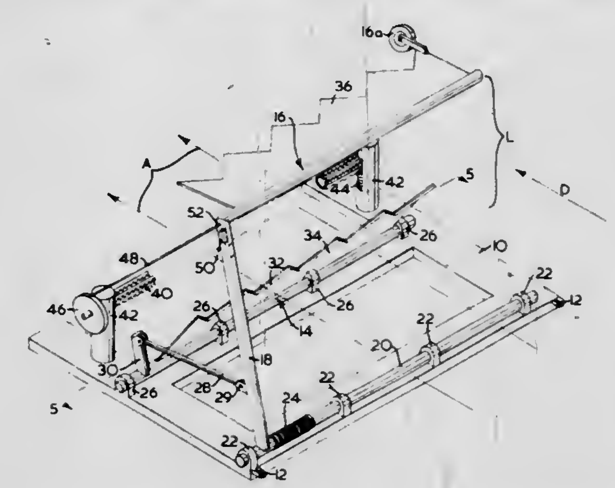
1. Apparatus for delimbing felled trees comprising:

a. a base adapted to be secured in a fixed position;

b. first and second groups of cutter blades,

c. support means attached to said base for supporting said first and second groups of cutter blades therealong, said supporting means for said blades being linearly elongated in a direction transverse to the direction of travel of the trees relative thereto during operation such that the blades are capable of simultaneously engaging a plurality of generally parallel tree trunks in such manner as to sever limbs from said trunks when the latter move longitudinally through said apparatus,

d. said means supporting said first and second groups of cutter blades being arranged to hold said first and second



groups of blades in limb severing engagement with first and second opposing sides, respectively, of said tree trunks as they are moved longitudinally through the delimbing apparatus, whereby to sever limbs from said tree trunks.

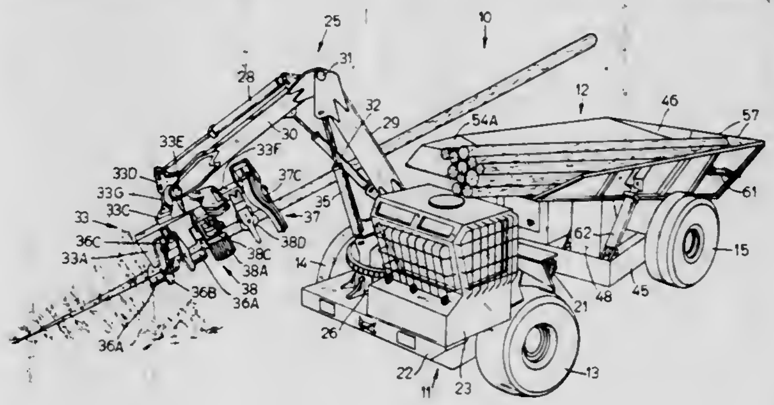
3,868,982
METHOD OF HARVESTING AND ACCUMULATING TREES

John Kurelek, Brantford, and Victor E. Locker, St. George, Ontario, both of Canada, assignors to Koehring Company, Milwaukee, Wis.

Division of Ser. No. 315,564, Dec. 15, 1972, Pat. No. 3,797,541. This application Aug. 23, 1973, Ser. No. 391,015

Int. Cl. A01g *23/00*

U.S. Cl. 144—309 AC **14 Claims**



1. A method for loading a log into an accumulating box comprising the steps of: providing log directing means near an end of said box, said log directing means having a portion over which a log in contact therewith can tip and down which said log can be laterally directed; supporting said log and moving it toward said box over said log directing means until the center of gravity of that portion of said log which is to be deposited in said box is past said log directing means; and releasing said log so that it rests on and pivots about said log directing means and is directed laterally downward thereby into said box by the force of gravity.

3,868,983
HAND TOOL

Dean R. Newcomb, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1973, Ser. No. 422,633

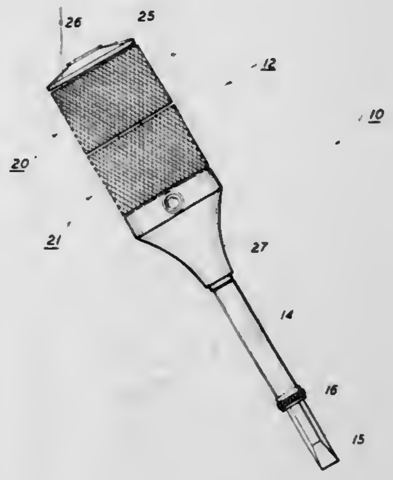
Int. Cl. B25b *15/04;* **B25g** *1/06*

U.S. Cl. 145—50 R **4 Claims**

1. Hand tool apparatus comprising

an elongated driven member adapted to receive a blade for driving a screw or the like,

segmented handle means including a plurality of drive rolls each having a passage therethrough, said passages being aligned to receive said driven member,



said drive rolls each including one way clutches to engage said driven member upon rotation in opposing directions and to disengage said driven member upon reversing the direction of the rotation thereof.

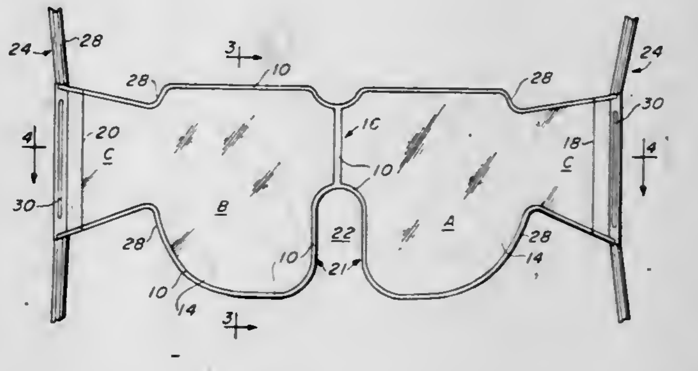
3,868,984
DUAL CONTAINER

Blanche I. Jorgensen, 1818C W. Norwood St., Chicago, Ill. 60660

Filed Feb. 25, 1974, Ser. No. 445,117

Int. Cl. A61f *7/00*

U.S. Cl. 150—2.3 **2 Claims**



1. A hot/cold receptacle of plastic material for use around the area of the eyes of the user and having an open area whereby no part of the receptacle touches the nose, comprising elongated upper and lower walls of preformed shape heat sealed together along the side edges of said walls, said walls being heat sealed together transversely to the long axis of said receptacle and medially of its ends to form a pair of separate end-to-end compartments, said upper wall being shorter in length than the length of the lower wall and the ends of said shorter wall extending inwardly of the ends of the longer wall whereby to form a filler opening in each end, a neck portion on the free ends of said receptacle, the side edges of said neck portions tapered inwardly towards said respective compartments, and an elongated tie strip secured medially to the free ends of said lower wall, with the free ends thereof extending laterally outwardly of the edges of said neck.

3,868,985
PROCESS OF ADHERING POLYESTER TEXTILE MATERIAL TO RUBBER AND THE PRODUCTS PRODUCED THEREBY

Louis W. Georges, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 123,011, March 10, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,755

Int. Cl. B60c *1/00;* B32b *25/10*

U.S. Cl. 152—330 R **9 Claims**

I. The process of producing an article by bonding a polyester textile material to a rubber compound comprising the successive steps of
combining (a) a latex of a copolymer prepared from a monomer mixture of at least 50% of a conjugated diene of from 4 to 8 carbon atoms and a polymerizable carboxy acid with (b) a water solution of an incompletely condensed resin which is a reaction product of a polyhydric phenol and an aldehyde of from 1 to 7 carbon atoms to form a dip mixture having a pH below 7,
treating the dip mixture with a volatile base to raise its pH to at least 7.5,
dipping the textile material in the dip mixture,
heating and drying the dipped textile material,
coating the textile material with an unvulcanized rubber compound,
and assembling and vulcanizing the coated textile material to form the finished article.

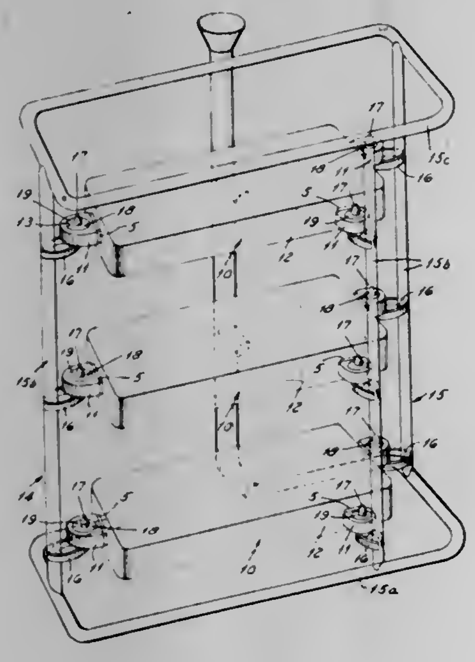
3,868,986
PATTERN ALIGNMENT MEANS FOR USE WITH LOST FOAM MOLDING PROCESS

Ralph A. Olsen, Grosse Pointe Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,972

Int. Cl. B22c *7/02, 15/22*

U.S. Cl. 164—7 **12 Claims**



1. Pattern apparatus for use in making multiple castings from a single pouring through a common sprue in a body of sand, the apparatus comprising:
a. a plurality of consumable foam type patterns which are combustible substantially without residue on subjection to a molten casting charge, each of said patterns having at least one ear effective to serve as a stabilizer,
b. a rigid stabilizing frame supported against movement, said frame having at least one extending finger for each of said patterns, each finger providing a support upon which said ear of one of said patterns may be journalled,
c. independent sprue means for conducting a molten metallic charge to said combustible patterns for consummation, and
d. means to prevent consummation of said frame during introduction of said molten charge.

3,868,987
METHOD OF ELECTRIC REFINING OF METALS BY SLAG, KNOWN AS THE E. S. R. METHOD, USING LIQUEFIED GAS TO ISOLATE THE SLAG AND ELECTRODE FROM THE AMBIENT AIR

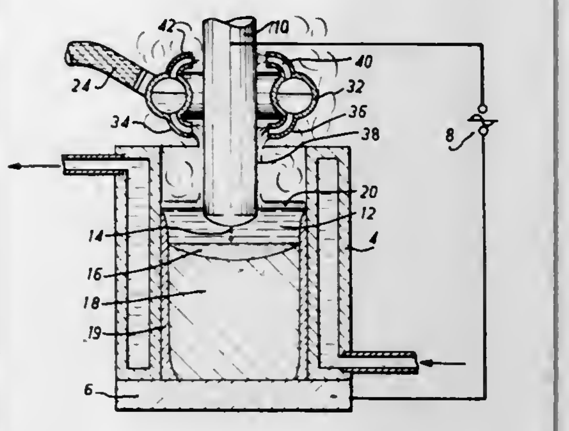
Jean G. Galey, Voisins Bretonneux, and Gerard Bentz, Elancourt-Trappes, both of France, assignors to L'Air Liquide-Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Feb. 12, 1973, Ser. No. 331,376

Claims priority, application France, Feb. 24, 1972, 72.06204

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **2 Claims**



1. A method of producing a high purity metal by electroslag refining at atmospheric pressure, comprising passing in electric current between a consumable electrode of the material to be refined and a mass of already refined metal through a molten and electrically conductive slag, and pouring a liquefied gas in liquid phase, which is substantially inert to said metal, downwardly along at least a lower part of the electrode to form a film over at least the lower part of the electrode which isolates said lower part of the electrode from the ambient air and then over the upper surface of the slag thereby to form a liquid layer on said slag from which it is separated by a continuous layer of vapor isolating said slag from the ambient air, the flow rate of said liquefied gas being sufficient to form said liquid layer.

3,868,988
METHOD OF CONTINUOUS CASTING MOLTEN COPPER IN A SEAMLESS-PIPE-SHAPED MOULD

Bror Olov Nikolaus Hansson, and Johan Olov Bror Hertsius, 97 Karlavagen, both of Stockholm, Sweden

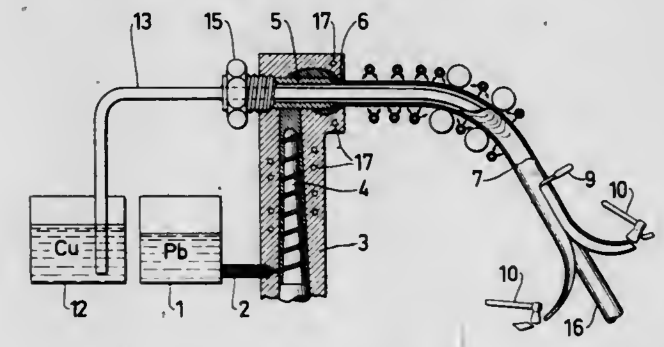
Filed Mar. 12, 1973, Ser. No. 340,151

Claims priority, application Sweden, Mar. 10, 1972, 3025/72

Int. Cl. B22d *11/00*

U.S. Cl. 164—69 **4 Claims**

4. A casting method for the continuous production of elongated metal ingots which comprises
a. continuously extruding a first metal so as to form a solid thin-walled mould having the general shape of a seamless pipe,
b. continuously injecting into the interior of said solid pipe-shaped mould a molten mass of a second metal,
c. regulating the rate of extrusion of said first metal and the rate of injection of said second metal so that the linear speed of said solid pipe-shaped mould and linear speed of the molten mass of second metal contained therein are substantially the same,
d. continuously regulating both the thickness of the pipe-shaped mould and the amount of cooling applied to its outside surface so that:
1. the inner surface of the solid pipe-mould will not melt from the heat contained in the mass of second metal that has been injected therein, and



2. the inner surface of the pipe-mould will not clad to the mass of second-metal that has been injected therein,
e. said first metal having a lower melting point than said second metal, and
f. removing the pipe-shaped mould from around said injected second metal after said second metal has solidified.

3,868,989
APPARATUS FOR CONTINUOUS CASTING WITH A NUMBER OF CASTING POSITIONS

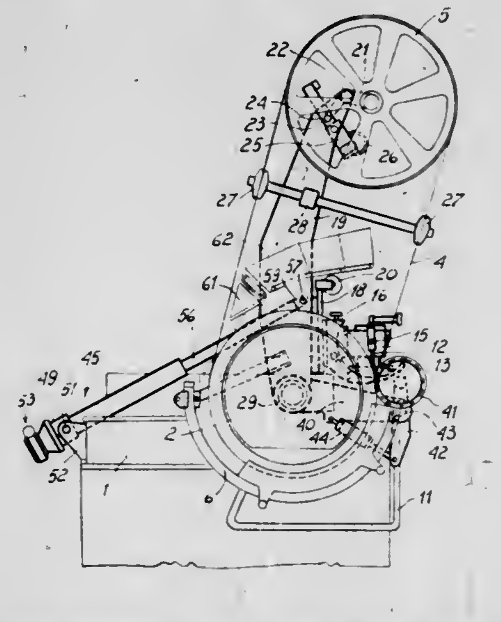
Giulio Properzi, Via Pietro Cossa 1, Milan, Italy

Filed May 8, 1973, Ser. No. 358,433

Claims priority, application Italy, May 10, 1972, 24182/72

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **4 Claims**



1. An apparatus for continuous casting of metal, comprising a frame, a casting wheel rotatably supported by said frame, a crucible for feeding molten metal to said casting wheel, a peripheral groove in said casting wheel, a metal band covering said groove along an arc portion to define a metal receiving mold therewith, a band pressing roller arranged substantially at the point at which molten metal is fed into said groove, an idle pulley for said band arranged at a distance from said casting wheel, a support structure for said idle pulley and for said band pressing roller, and means for cooling said casting wheel and said band, wherein said support structure includes a column supporting said idle pulley at one end and hinged at the other end to said frame coaxially with said casting wheel and an arm rigid with said column for supporting said band pressing roller, and wherein said crucible is adjustably supported by said column, the apparatus further comprising means for angularly displacing said column and means for displacing said crucible with respect to said column to position said crucible in any preferred casting position along a relevant arc of said casting wheel.

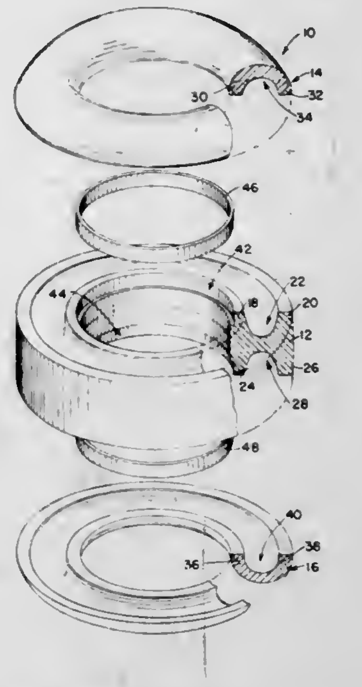
3,868,990
CORE MOLD AND METHOD FOR MAKING SAME

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 29, 1973, Ser. No. 392,617

Int. Cl. B22c *9/10*

U.S. Cl. 164—369 **11 Claims**



1. A core of material comprising:
a body in cross-section defining first and second outwardly extending legs and a depression therebetween, and third and fourth outwardly extending legs and a depression therebetween.
a first side portion in cross-section defining first and second legs fixed to the first and second legs of the body, and a depression therebetween positioned along the depression defined between the first and second legs of the body; and a second side portion in cross-section defining first and second legs fixed to the third and fourth legs of the body, and a depression therebetween positioned along the depression defined between the third and fourth legs of the body.

8. A method of providing a core of formable material comprising:
forming a core body defining first and second depressions;
forming a first side portion defining a depression;
forming a second side portion defining a depression;
fixing the first side portion to the body with the depression of the first side portion along the first depression of the body; and
fixing the second side portion to the body with the depression of the second side portion along the second depression of the body.

3,868,991
VALVE ASSEMBLY

William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.

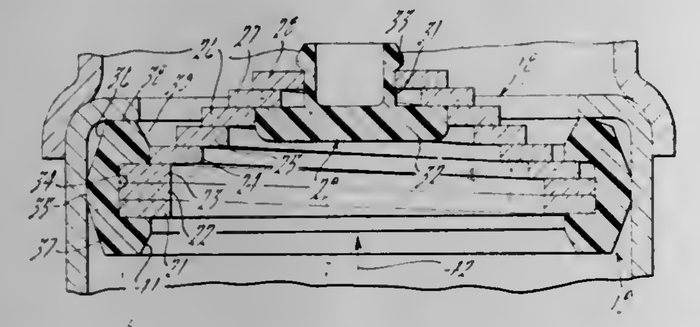
Filed Sept. 14, 1972, Ser. No. 288,934

Int. Cl. F16k *15/14;* G05d *11/02*

U.S. Cl. 165—38 **19 Claims**

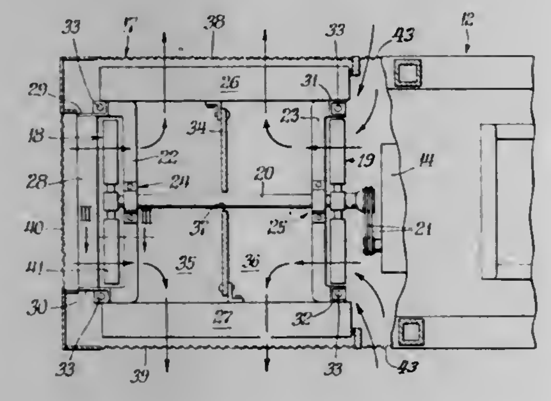
17. In a hot water system for supplying an automotive heater core, including a first conduit leading to the inlet of the heater core, a second conduit leading from the outlet of the heater core, and a by-pass conduit connecting the second conduit to the first conduit: a helical coil spring made of wire having a rectangular cross-sectional shape disposed with the by-pass conduit; the coils of said spring having a plurality of relatively large outer turns of constant diameter and successive turns of gradually decreasing diameter, said coils overlap-

ping one another so that the spring is normally closed; central plug means for preventing flow through the innermost spring coil, said coils being separable in response to a pressure differential in one direction to permit flow therethrough between the coils thereof; a generally annular element formed of an elastomeric material disposed in said by-pass conduit; means defining an outer peripheral surface on said element sealingly engaging the inside wall of said by-pass conduit; and means defining a continuous groove about the inside periphery of said element, the outer peripheries of said coils of constant diameter being disposed in said groove, the flexibility of said element being such that the next innermost coil from the ciols of constant diameter may move axially between open and closed positions during operation of the valve without interference by said element.



3,868,992
GROSS FLOW COOLING SYSTEM

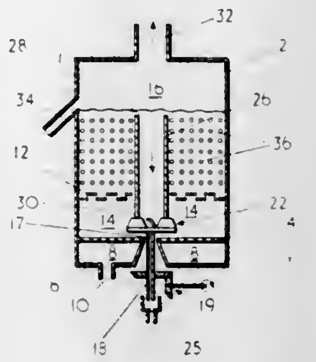
Marvin G. Getz, Morton, and Erwin J. H. Bentz, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 20, 1973, Ser. No. 333,684
Int. Cl. F24h *3/06*
U.S. Cl. 165—51 **11 Claims**



1. A cooling system, mounted on a frame, comprising:
a pair of axially spaced and rotatable first and second fan means for pumping air into chamber means defined therebetween,
drive means operatively connected to each of said first and second fan means for selectively rotating the same, baffle means comprised of a single plate disposed within said chamber,
said drive means comprising a drive shaft extending through said baffle means and connected at opposite ends thereof to said first and second fan means,
first fluid cooling means extending traversely between said first and second fan means to define a first side of said chamber means whereby air pumped into said chamber means will exit through said first fluid cooling means,
a second fluid cooling means extending traversely between said first and second fan means in at least generally parallel and laterally spaced relationship relative to said first fluid cooling means to define a second side of said chamber means,
further comprising a third fluid cooling means extending traversely between said first and second fluid cooling means and adjacent to said first fan means to define a third side of said chamber means, and each of said first and second fan means comprising a plurality of fan blades, a first chordal angle of the fan blades of said first fan means being greater than a second chordal angle of the fan blades of said second fan means.

3,868,993
METHOD AND APPARATUS FOR THE GENERATION AND TRANSFER OF HEAT

Whalley Vowe Battcock, Bletchley, England, assignor to Coal Industry (Patents) Limited, Lancashire, England
Filed Dec. 29, 1971, Ser. No. 213,685
Claims priority, application Great Britain, Jan. 29, 1971, 03458/71
Int. Cl. F28d *13/00*
U.S. Cl. 165—104 **14 Claims**

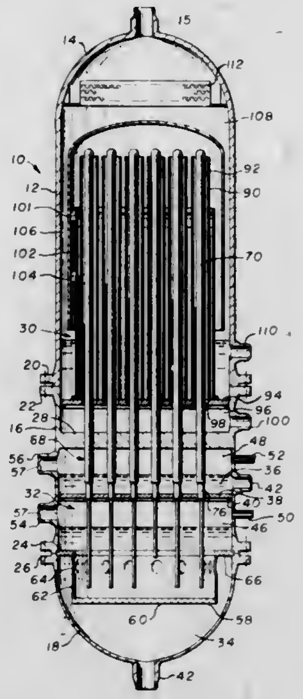


1. Heat generating and transfer apparatus including a combustor body, a gas permeable support plate located within the combustor body and adapted, in use, to support a first fluidised bed of particulate material, combustion-sustaining gas medium inlet means located below said plate, fuel inlet means located above the plate, a screen located within the combustor body and adapted in use to support a second fluidised bed of particulate material, said screen being situated above and spaced from the support plate and fuel inlet means, the screen being adapted to permit flow of the gas medium and heat conductive matter therethrough, fluid heat exchange means located above said screen and material transfer means adapted, in use, to transfer heat conductive matter.

3,868,994
LIQUID METAL OPERATED HEAT EXCHANGER

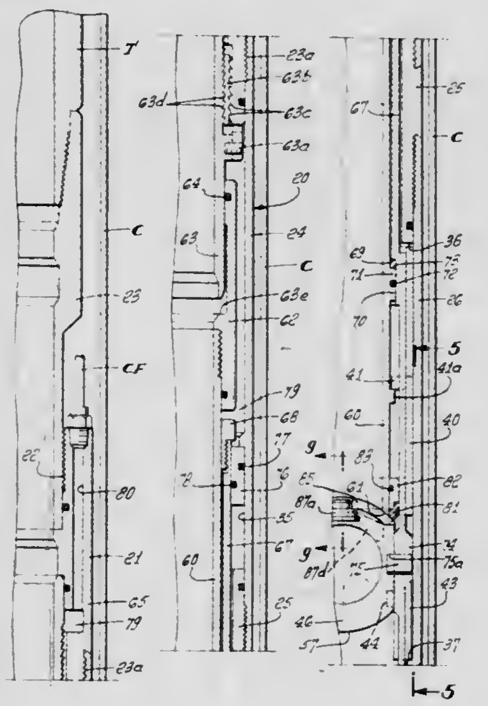
John Paul Petrek, Glastonbury, Conn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Feb. 26, 1973, Ser. No. 335,851
Int. Cl. F28d *7/12;* **F28f** *9/02*
U.S. Cl. 165—142 **13 Claims**

1. A shell and tube heat exchanger organization in which heating fluid is circulated in heat exchange relation with a fluid to be heated comprising:
a. a shell;
b. an outer tube having an open end and a closed end housed within said shell;
c. an inner tube having a pair of concentrically spaced walls defining an axial passage and a first annulus concentrically spaced therefrom and means for closing one end of said first annulus;
d. said inner tube having an external diameter less than that of the internal diameter of said outer tube and extending coaxially into said outer tube from the open end thereof with its leading end axially spaced from the closed end of said outer tube to define a second annulus in fluid communication with said axial passage;
e. means to direct a flow of heating fluid through said axial passage and said second annulus;
f. means for passing an inert gas into said first annulus; and
g. means for circulating fluid to be heated through said shell externally of said outer tube in heat exchange relation therewith;
said shell includes means forming a plenum in fluid communication with said axial passage and said second annulus in said inner tube, said plenum containing a body of heating fluid therein and a gas space thereabove and wherein the axial passage through said inner tube extends below the level of said body of heating fluid and said second annulus communicates with said gas space, said plenum having means for venting said gas space.



3,868,995
SUB-SURFACE SAFETY VALVE

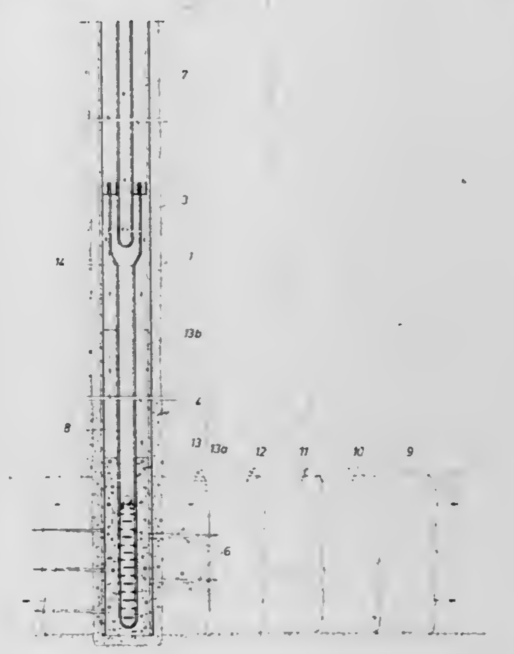
Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed June 15, 1973, Ser. No. 370,354
Int. Cl. E21b *43/12;* **F16k** *11/20*
U.S. Cl. 166—224 A **23 Claims**



1. In a subsurface shutoff valve for wells adapted to be supported in a well fluid production pipe: a body having a flow passage therethrough; shutoff valve means including a member shiftable between a first position closing said passage and a second position at which said passage is open; actuator means for shifting said member between said positions, including means defining a control fluid pressure chamber for moving said member to said second position and means responsive to the pressure of well fluid in the production pipe for biasing said member to said first position upon reduction in the pressure of control fluid in said chamber; said member including by-pass valve means for equalizing the well fluid across said shutoff valve means before said member is moved from said first position to said second position.

3,868,996
BUFFER-REGULATED TREATING FLUID POSITIONING PROCESS

James H. Lybarger, Metairie, La.; Ronald F. Scheuerman, Bellaire, and George Thomas Karnes, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed May 15, 1974, Ser. No. 470,101
Int. Cl. E21b *43/04, 43/26, 43/27*
U.S. Cl. 166—250 **21 Claims**



16. In a process in which the fluid is positioned in a selected remote location by forming a temporarily viscous fluid and flowing it into the selected location before the fluid viscosity is significantly reduced, the improvement which comprises:
dissolving in an aqueous liquid at least one each of a cellulose ether, a weak acid and a weak acid salt;
arranging the solution components to provide a weakly acidic solution having a viscosity that becomes significantly reduced in response to a time-temperature exposure of selected severity; and
flowing the weakly acidic solution into the selected location at a rate causing it to arrive at least substantially as soon as it has received a time-temperature exposure of the selected severity.

3,868,997
PROCESS FOR PREPARING AND USING AQUEOUS POLYACRYLAMIDE SOLUTIONS FOR THE SECONDARY RECOVERY OF OIL

Richard J. Pogers, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Jan. 3, 1973, Ser. No. 320,789
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **7 Claims**

1. A process for the secondary-type recovery of oil comprising in combination the injection into a subterranean oil-bearing formation of an aqueous polyacrylamide solution comprising the solution prepared by:
a. chilling a polymer gel comprised of polyacrylamide to about −30° to about −320°F.,
b. grinding the gel while chilled to form frozen particles of the polymer having an average particle size in the range of about 250 to about 1000 microns,
c. dissolving the ground particles of the polymer gel in water, whereby oil is displaced through said oil-bearing formation.

3,868,998

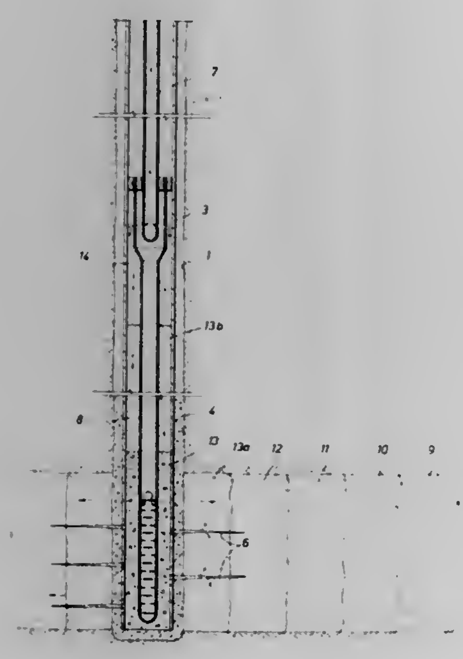
SELF-ACIDIFYING TREATING FLUID POSITIONING PROCESS

James H. Lybarger, Metairie, La.; Ronald F. Scheuerman, Bellaire, and George Thomas Karnes, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 15, 1974, Ser. No. 470,089

Int. Cl. E21b *43/04, 43/26, 43/27*

U.S. Cl. 166—278 **15 Claims**



10. In a process in which fluid is positioned in a selected remote location by forming a temporarily viscous fluid and flowing it into the selected location before the viscosity of the fluid is significantly reduced, the improvement comprising;

dissolving in an aqueous liquid at least one each of a cellulose ether, a fluoride salt, and a relatively slowly reacting acid-yielding material;

arranging the solution components to provide a self-acidifying, temporarily viscous solution in which the viscosity is significantly reduced in response to a time-temperature exposure of a selected severity; and

flowing the self-acidifying solution into the selected location at a rate causing it to arrive at least substantially as soon as it has received a time-temperature exposure of the selected severity.

3,868,999

METHOD FOR PREFERENTIALLY PRODUCING PETROLEUM FROM RESERVOIRS CONTAINING OIL AND WATER

Charles A. Christopher, Jr., Houston, and Abdus Satter, Conroe, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,786

Int. Cl. E21b *33/13*

U.S. Cl. 166—292 **5 Claims**

1. A method for increasing the relative permability to oil and decreasing the relative permeability to water in the vicinity around a production well penetrating a subterranean hydrocarbon reservoir comprising:

injecting a slug of fluid into the reservoir via the production well the fluid comprising a hydrocarbon solvent, colloidal silica, water and a polymeric material and

returning the well to production.

3,869,000

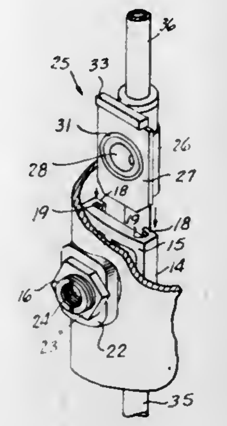
WELL COUPLING AND METHOD OF ATTACHING THE COUPLING OF A WELL CASING

Donald Hugh English, Box 82, RD. 1, Mt. Herman, N.J. 07825

Filed Aug. 31, 1973, Ser. No. 393,495

Int. Cl. E21b *33/03, 43/00*

U.S. Cl. 166—315 **8 Claims**



1. A pipe coupler for connecting a pipe through a casing to a line comprising:

a. a first coupler member having on one side thereof a vertical trackway with two open ends;
b. a bore extending through said first coupler member for communicating said pipe to said line;
c. a second coupler member having a plate formed thereon and adapted for sliding movement in said trackway through either open end thereof; and
d. a stop formed on said plate to limit the movement of said plate through said trackway.

3,869,001

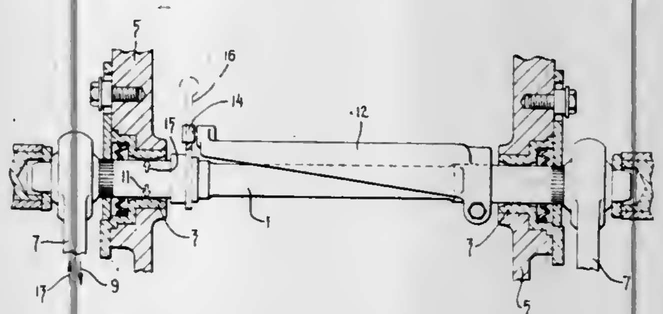
FULCRUM BUSHING ON THE RESILIENT BAR DRAFT SENSING

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Apr. 18, 1974, Ser. No. 462,003

Int. Cl. A01b *63/112*

U.S. Cl. 172—7 **5 Claims**



1. A draft sensing apparatus for a tractor having draft means for connecting an implement to the tractor, said apparatus including a resilient beam supported by a pair of spaced fulcrum bearings carried by the tractor, said means connected to the beam adjacent the ends thereof extending beyond said fulcrum bearings and adapted to cause bending of the beam about said bearings, deflection sensing means for measuring the deflection of the beam caused by draft forces acting on the beam through the draft means, said fulcrum bearings having internal arcuate surfaces tapering from a relatively large diameter to a small diameter and back to a large diameter, the internal surface formed so that a plane passing through the smallest diameter of the bearing extends at an acute angle to the axis of the bearing whereby the effective fulcrum point in said bearing contacts the rearmost portion of said beam at a variable point depending on the rotational position of the beam.

3,869,002

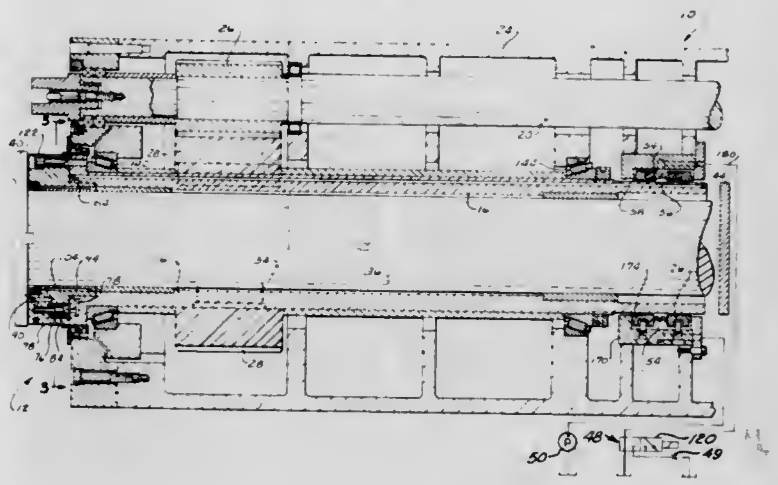
SPINDLE CLAMP

Carl F. Koenig, III, Montgomery, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 14, 1974, Ser. No. 433,233

Int. Cl. B23c *1/02;* **B23b** *39/02*

U.S. Cl. 173—166 **14 Claims**



1. An apparatus comprising a housing, a rotatable longitudinally extending drive sleeve at least partially disposed within said housing, said drive sleeve having an axially outer end portion, a longitudinally extending spindle telescopically disposed within said drive sleeve and movable axially relative to said drive sleeve between a retracted position and an extended position extending axially outwardly beyond said axially outer end portion of said drive sleeve, and clamp means connected with said drive sleeve and operable between an engaged condition holding said spindle against axial movement relative to said drive sleeve and a disengaged condition in which said clamp means is ineffective to hold said spindle against axial movement relative to said drive sleeve, said clamp means including a generally cylindrical metallic clamp member circumscribing said spindle, said clamp member including a rigid metallic body portion having a first radial thickness and a metallic membrane portion disposed in engagement with said spindle and having a second radial thickness which is less than said first radial thickness, said metallic membrane portion of said clamp member being resiliently deflectable radially inwardly under the influence of a first fluid pressure to grip said spindle upon operation of said clamp means from the disengaged condition to the engaged condition, first surface means cooperating with said body and membrane portions of said clamp member to define a pressure chamber, second surface means disposed axially outwardly of said axially outer end portion of said drive sleeve for at least partially defining a piston chamber which is at least partially disposed axially outwardly of said axially outer end portion of said drive sleeve, a piston disposed in said piston chamber and located axially outwardly of said axially outer end portion of said drive sleeve, said piston including a first end surface having a relatively large area and a second end surface having a relatively small area, means for exposing said second end surface of said piston to a body of fluid connected in fluid communication with and filling said pressure chamber, and actuator means for effecting operation of said clamp means from the disengaged condition to the engaged condition by exposing said first end surface of said piston to a second fluid pressure which is less than said first fluid pressure to thereby effect an increase in the fluid pressure in said body of fluid to a fluid pressure which is at least as great as said first fluid pressure.

3,869,003

PILE DRIVERS

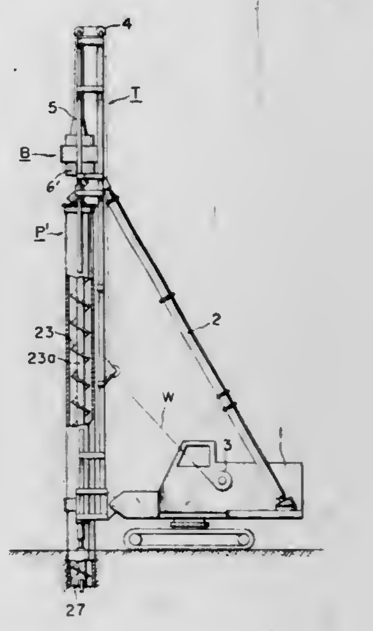
Shigeru Yamada; Mamoru Hamano, both of Tokyo, and Kaname Nakayama, Funabashi, all of Japan, assignors to Sanwa Kizai Kabushiki Kaisha, Toyko, Japan

Filed Dec. 26, 1972, Ser. No. 318,543

Claims priority, application Japan, Dec. 25, 1971, 47-1062; Apr. 13, 1972, 47-42895

Int. Cl. E02b *17/144*

U.S. Cl. 175—171 **8 Claims**



1. A pile driving apparatus comprising, in combination: a tower erected on a base, adapted to support a hollow pile to be driven into the ground; a plurality of reaction-receiving elements arranged in pairs vertically at suitable intervals along the length of said tower; a monkey slidably suspended from said tower and having stoppers attached thereto and successively engageable with said pairs of elements; said monkey constituting part of press-in means and being in the form of a framework with a central opening; an assembly support slidably suspended from said framework; actuating hydraulic cylinders disposed below said monkey for driving the pile into the ground by the pressing force provided by said cylinders; and earth auger means including an auger screw insertable into the hollow pile, whereby the latter can be driven into the ground by the combined pressing force provided by said cylinders, as aforesaid, and the excavating force of said screw.

3,869,004

METHOD OF FINE ADJUSTING BALANCES AND BALANCE FOR PERFORMING THIS METHOD

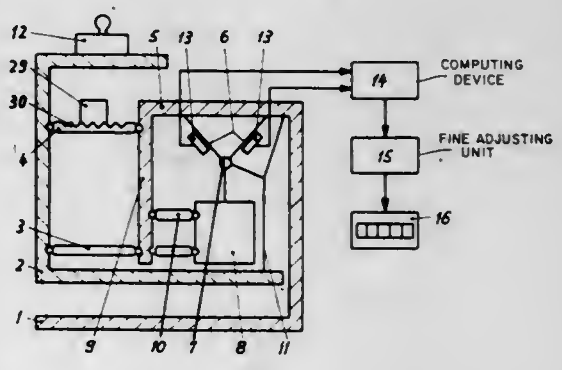
Mario Gallo, Kronleinstr. 1, Zurich, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,862

Claims priority, application Switzerland, Apr. 24, 1972, 6079/72

Int. Cl. G01g *3/14*

U.S. Cl. 177—25 **5 Claims**



1. A method of automatically fine adjusting balances comprising a computing instrument and digital display means, in which the load is determined throughout the measuring range in terms of *m* measuring units that are smaller than the units *d* of the digital display means, comprising, for each weighing, the steps of determining whether a measured value by the computing is within a predetermined zero range, if so deducting as many measuring units *m* from the measured value as correspond to half the multiple of measuring units *m* as are equal to one display unit *d*, and replacing a previously stored adjusting factor with the result of said deducting step as a fresh adjusting factor, and if not deducting the previously stored adjusting factor from the measured value determined by the computing instrument and indicating the result in multiples of display units *d*.

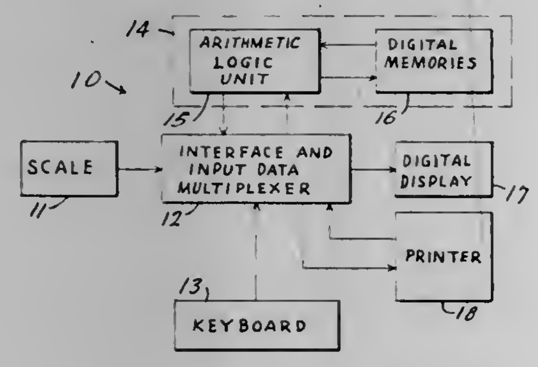
3,869,005
VALUE COMPUTING SCALE

Roger B. Williams, Jr., Sylvania, Ohio; Richard C. Loshbough, Temperance, Mich., and Edward G. Pryor, Toledo, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

Filed Apr. 17, 1974, Ser. No. 461,582

Int. Cl. G01g *23/22, 23/14*

U.S. Cl. 177—25 **4 Claims**



1. A weighing and computing scale comprising, in combination, integrated circuit microcomputing means including an arithmetic logic unit, a sequence controller and data registers, weighing scale means for generating gross weight data, data input means having a plurality of digit keys for sequentially entering data into said weighing and computing scale, buffer and memory means for receiving tare weight data and gross weight data from said scale means and price data from said digit keys on said data input means and functioning as an interface with said arithmetic logic unit, said buffer and memory means receiving and storing tare weight data selectively from said scale means and said digit keys on said data input means, the tare weight data, the gross weight data and the price data being related to each of a plurality of successive weighed articles, and digital display means for visually indicating the price data, computed net weight data and value data computed from such data, said sequence controller causing said arithmetic logic unit and registers to compute the net weight and the value of the weighed articles and controlling the supplying of such computed net weight and value and the price data through said buffer and memory means to said display means.

3,869,006
WEIGHT CONTROLLED FEEDER SYSTEM

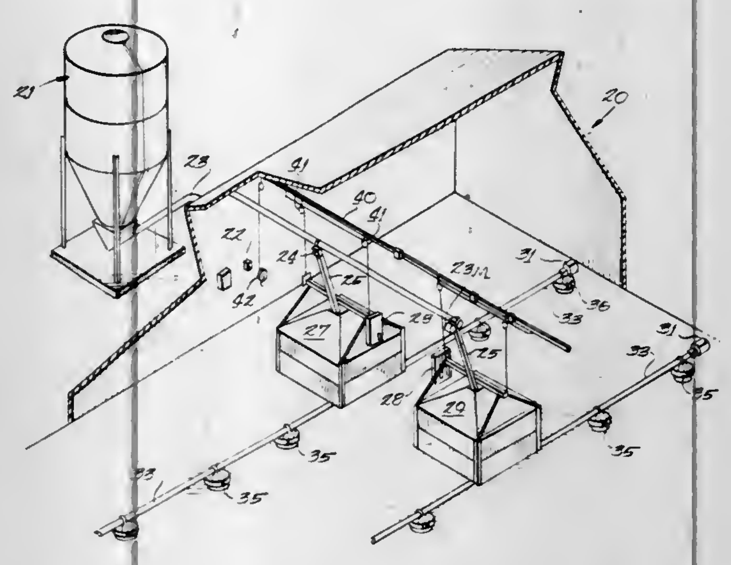
Eldon Hostetler, Middlebury, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Aug. 25, 1972, Ser. No. 283,724

Int. Cl. G01g *13/02*

U.S. Cl. 177—60 **3 Claims**

1. Feed weighing means for use with a feed dispensing apparatus including feed-receiving hopper means adapted to receive a flow of feed, hopper support means directly supporting the hopper means at a first location to prevent significant hopper movement when feed weight is added to the hopper, weight indicator means, means extending directly from a second location on the hopper means to the weight indicator means and connecting the feed receiving hopper means second location and the weight indicator means for moving the weight indicator means through a limited range of positions in response to the weight of feed received in the hopper means and transferred to the weight indicator means, and weighing switch means actuatable by the weight indicator means when a predetermined weight of feed has been received in the hopper means and the weight indicator means has been disposed in a predetermined corresponding position.



3,869,007
WEIGHING TABLE PARTICULARLY FOR A ROLLER CONVEYOR

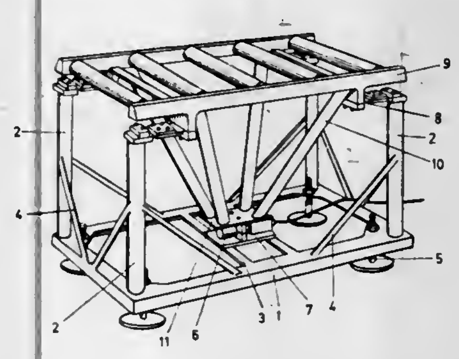
Rolf Paul Haggstrom, and Bengt-Ake Karlsson, both of Karlskoga, Sweden, assignors to AB Bojors, Bojors, Sweden

Filed Oct. 25, 1973, Ser. No. 409,573

Claims priority, application Sweden, Nov. 13, 1972, 14673/72

Int. Cl. G01g *3/14, 21/24*

U.S. Cl. 177—211 **8 Claims**



1. A weighing table especially adapted for use in a roller conveyor comprising in combination:

a supporting frame including a plurality of upstanding members,

an inner unit for carrying the load to be weighed,

a single force transducer having a first part thereof connected to said supporting frame,

said inner unit including a plurality of connecting members extending from said inner unit to a further element which is in turn connected to a second part of said force transducer,

a plurality of support means each connecting said inner unit to a respective one of said upstanding members adjacent its upper end, each of said support means comprising a thin, flat, flexible member but with high tensile strength, each of said members lying in the same horizontal plain, whereby said force transducer is subject to vertical loads but transverse force components on said inner unit are resisted by said plurality of support means.

3,869,008
BALANCE SCALE

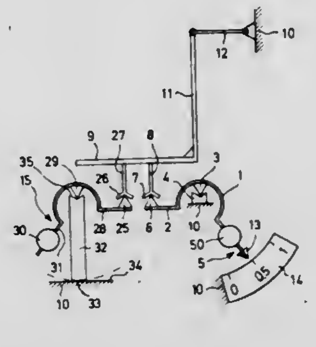
Ernst Kuhnle, and Josef Schwarz, both of Balingen, Germany, assignors to Bizerba-Werke Wilhelm Kraut K.G., Balingen/-Wurtt, Germany

Filed Jan. 11, 1974, Ser. No. 432,628

Claims priority, application Germany, Jan. 12, 1973, 2301361

Int. Cl. G01g *1/06, 1/02*

U.S. Cl. 177—217 **6 Claims**



1. In a balance scale, a combination comprising a load support; mounting means mounting said load support for movement in an upright path between a plurality of positions in each of which said load support has the same orientation; a first and a discrete second balance lever fulcrumed for separate pivotal movement in opposite directions; first and second knife edge bearings which respectively fulcrum said first and second balance levers; and means for coupling said load support with each of said balance levers for simultaneous pivotal deflection of both levers through identical angular increments but in opposite directions in response to movement of said load support in said upright path and vertical transmission of motion from said load support to said balance levers via said coupling means, said coupling means comprising a third knife edge bearing and a fourth knife edge bearing, each of said bearings comprising a first portion constituting a knife edge and a second portion constituting a bearing member, one portion of said first bearing being provided on said first balance lever and the other portion of said first bearing being rockable so that said one portion has limited freedom of displacement in a direction transversely of said path, one portion of said third bearing being provided on said first balance lever and the other portion of said third bearing being provided on said load support, one portion of said fourth bearing being provided on said second lever and the other portion of said fourth bearing being provided on said load support.

3,869,009
SCALE

Ernst Kuhnle, Balingen, Germany, assignor to Bizerba-Werke Wilhelm Kraut KG, Balinge/Wurttemberg, Germany

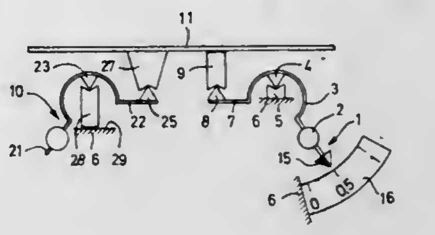
Filed Jan. 11, 1974, Ser. No. 432,629

Claims priority, application Germany, Jan. 12, 1973, 2301360

Int. Cl. G01g *1/06*

U.S. Cl. 177—217 **4 Claims**

1. In a scale, particularly a table scale, a combination comprising a balance lever fulcrumed for pivotal movement; a load support above said balance lever for supporting a load to be weighed; mounting means mounting said load support for movement independently of said balance lever in an upright path between a plurality of positions in each of which its orientation in space is unchanged; motion-transmitting coupling means coupling said load support with said balance lever to impose upon the latter angular incremental displacements which are indicative of the movements of said load support in said path; a fulcrumed additional balance lever below said load support; and additional coupling means directly coupling said additional balance lever with said load support.



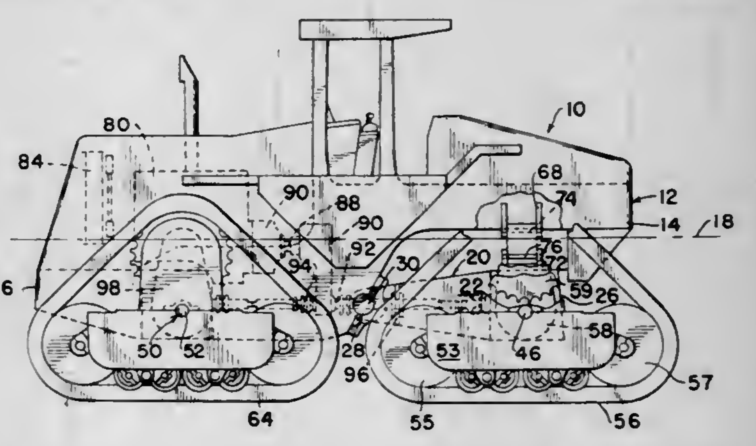
3,869,010
CRAWLER TRACTOR

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 11, 1972, Ser. No. 287,596

Int. Cl. B62d *55/00*

U.S. Cl. 180—9.5 **4 Claims**



1. A powered crawler tractor comprising: a rigid frame defining a pair of end portions; first and second axle members disposed on either side of one end portion; third and fourth axle members disposed on either side of the other end portion; four endless track assemblies, one track assembly being mounted on each of said axle members; means for allowing a degree of travel of the first and second axle members relative to each other and to the frame, in a back and forth path generally toward and away from the general plane of the frame; means for driving each of said four track assemblies; and wherein said means for allowing said degree of travel comprise a first elongated arm member and first pivot means connecting one end of the first elongated arm member and the frame, the other end of the first elongated arm member having said first axle member fixed thereto, and a second elongated arm member and second pivot means connecting one end of the second elongated arm member and the frame the other end of the second elongated arm member having said second axle member fixed thereto.

3,869,011
STAIR CLIMBING TRACKED VEHICLE

Howard Jensen, Huntington, N.Y., assignor to Ramby, Inc., Bronxville, N.Y.

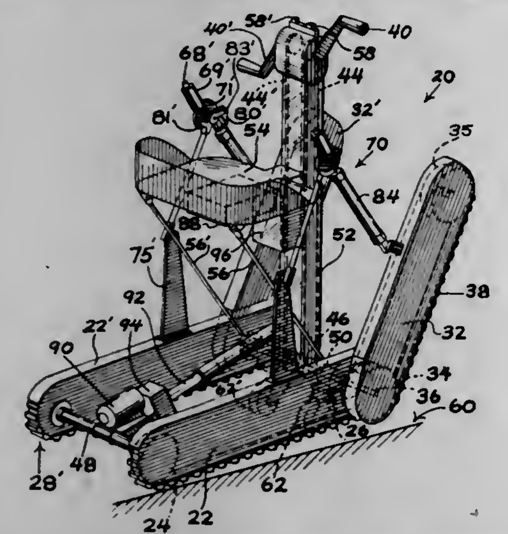
Filed Jan. 2, 1973, Ser. No. 320,115

Int. Cl. B62d *55/04;* **B62b** *9/02*

U.S. Cl. 180—9.24 **14 Claims**

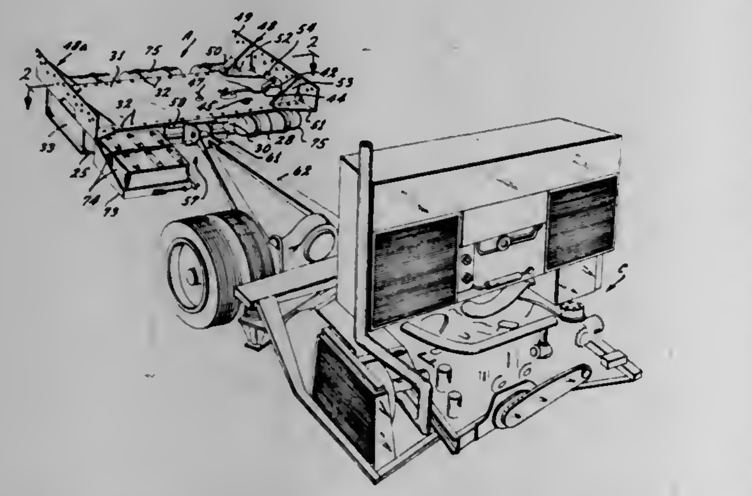
1. A stair-climbing vehicle comprising a pair of main tracks, a pair of auxiliary tracks each being aligned and pivotally joined to a main track adjacent the forward end of said respective main track, propulsion means for driving said main tracks, independently of each other when necessary, self-leveling seat means mounted on said vehicle, automatic pitch-control

means mounted to act between each prospective main track and its auxiliary track for limiting at least the rate of pivoting of said auxiliary track with respect to said main track from below said main track towards alignment therewith, said pitch-control means comprising an elbow linkage between each auxiliary and main track pair and having a hydraulic cylinder forming at least part of the linkage forearm and also having a locking means for maintaining the linkage and cylinder in the raised angled position and for locking the linkage and unlocking the cylinder in the lowered position.



3,869,012
UNITARY FUEL TANK-BOLSTER FOR BUS WITH REMOVABLE POWER UNIT

Theodor C. Schubach, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Apr. 18, 1974, Ser. No. 461,852
Int. Cl. B62d *21/16*
U.S. Cl. 180—11 **11 Claims**



1. A unitary bolster-tank for a bus or similar vehicle having a power unit removably docked in a space provided therefor in the aft end of the vehicle body, said bolster-tank comprising:

a bolster element of box cross-sectional shape extending transversely across the vehicle body forwardly of the space provided within the body for the power unit,

means connecting the ends of the bolster element to structural members on opposite sides of the vehicle body with sufficient strength to withstand and transfer to the vehicle body operating stresses imposed on the bolster element by the power unit,

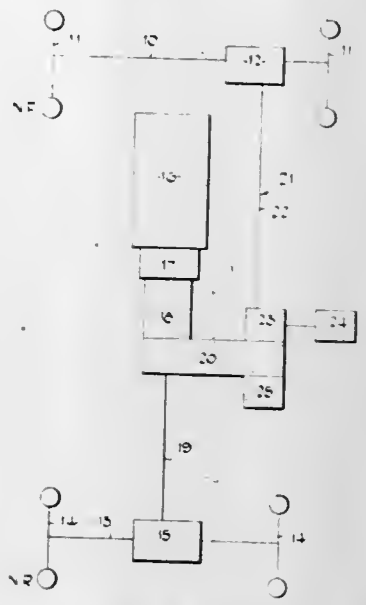
end means closing off and sealing each end of a selected portion of the interior of the bolster element to define between said end means a sealed space of sufficient volume to comprise a fuel tank for the vehicle in which the bolster element is mounted,

fuel tank accessory means operatively incorporated in the sealed space between the two end means to complete a unitary bolster-tank, and

hitch means mounted on a medial portion of the bolster-tank for releasably connecting to the bolster-tank a forward element of a power unit docked in the space provided therefor in the vehicle body.

3,869,013
FOUR-WHEEL-DRIVE VEHICLES

Brian Colin Pagdin, Sutton Coldfield, and Oswald Webb, Coventry, both of England, assignors to GKN Transmissions Limited, Birmingham, England
Filed Feb. 15, 1973, Ser. No. 332,765
Claims priority, application Great Britain, Feb. 15, 1972, 6857/72
Int. Cl. B60k *17/34, 17/30*
U.S. Cl. 180—44 R **8 Claims**

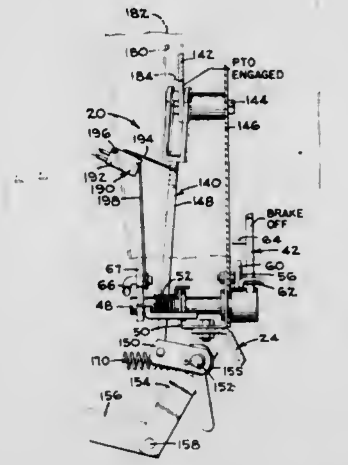


1. A four-wheel-drive vehicle comprising drivable front and rear sets of wheels, the wheels of at least one set being connected by a differential gear; a prime mover; change speed means having an input and an output, the input being arranged to be driven by the prime mover and the output being connected by a first driving connection to drive the wheels of said one set; a two-part second driving connection between the wheels of said other set and either the first driving connection or said output, the parts of said second driving connection being drivingly connected respectively to the wheels of said other set and said output or first connection; a gear pumping device comprising first and second meshing gear means connected respectively to said parts of the second driving connection, relative rotation of said gear means resulting from a difference in the speed of rotation of said front and rear sets of wheels causing pumping of non-gaseous fluid; a circuit for the pump fluid; and variable orifice means in the circuit and operable by the pressure of the fluid being pumped to increase the resistance encountered by fluid being pumped around the circuit with increase in the speed of relative rotation between the first and second gear means whereby, as said difference in the speed of rotation of said front and rear wheels increases, an increasing proportion of the torque previously applied to said one set of wheels by said prime mover is applied to said other set of wheels.

3,869,014
STARTING INTERLOCK SYSTEM

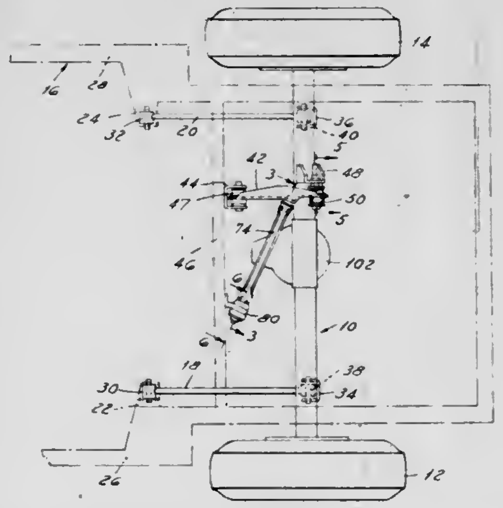
Joseph A. Federspiel, Port Washington, and Edward W. Pawlowski, Belgium, both of Wis., assignors to FMC Corporation, San Jose, Calif.
Filed Feb. 19, 1974, Ser. No. 443,662
Int. Cl. B60r *18/00;* **A01d** *75/18*
U.S. Cl. 180—53 R **14 Claims**

1. A starting interlock system for a vehicle powered by an engine which is started by a starter motor in a starting circuit receiving its power from a battery in response to closing a starter switch, the vehicle including wheels driven from the engine through a transmission and brakes for arresting movement of the wheels, the vehicle also including a power take-off mechanism for driving an implement; the improvement which comprises a single interlock switch in said starting circuit having a body and a switching element, and means responsive to movement of the brakes to their locking position and disengagement of said power take-off mechanism for partially completing said starting circuit for permitting starting of the engine upon closing of the starter switch.



3,869,015
MOTOR VEHICLE SUSPENSION

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 3, 1973, Ser. No. 421,473
Int. Cl. B60g *9/02*
U.S. Cl. 180—71 **13 Claims**



1. A suspension system for a motor vehicle having a pair of driving wheels, a rigid axle housing rotatably supporting said wheels and a vehicle frame structure,

said suspension system including a pair of axle positioning members operatively connected to said axle housing and said frame structure,

a suspension system including a pair of axle positioning members operatively connected to said axle housing and said frame structure,

a suspension arm interposed between said frame structure and said axle housing,

first pivot means connecting said suspension arm to said frame structure and second pivot means connecting said arm to said axle housing,

said first pivot means having a generally transverse pivot axis,

a suspension link,

a first connector means connecting one end of said suspension link to said frame structure,

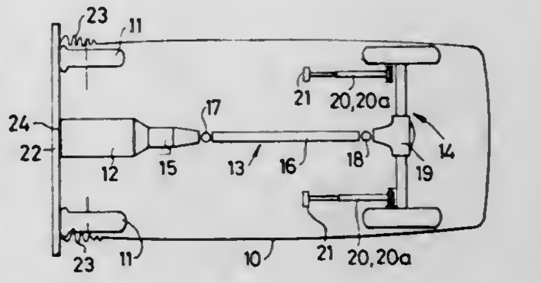
said first connector means being disposed on the pivot axis of said first pivot means,

second connector means connecting the other end of said suspension link to said suspension arm,

one of said connector means being constructed to permit limited displacement of said suspension link in a direction parallel to its longitudinal axis relative to one of said frame structure and suspension arm.

3,869,016
REAR AXLE SUSPENSIONS FOR MOTOR VEHICLES

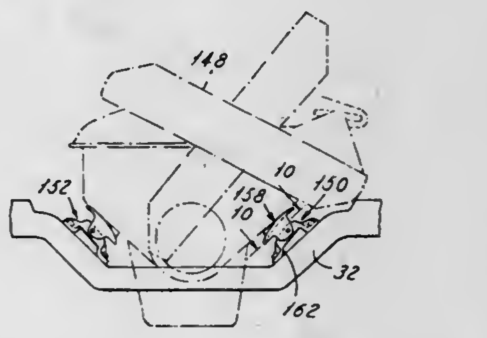
Karl Astheimer, Bischofsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 29, 1973, Ser. No. 346,131
Claims priority, application Germany, Apr. 20, 1972, 2219318
Int. Cl. B60r *19/00*
U.S. Cl. 180—73 R **8 Claims**



1. A motor vehicle having a body, an engine mounted in a front portion of the vehicle body, a rear axle, a transverse pair of pivotal link assemblies forming guide means for the rear axle and each comprising a control arm that extends in a direction generally longitudinally of the vehicle and has at respective ends thereof a connection to the rear axle and a pivotal mounting to the vehicle body, and a closed drive line interconnecting the engine and the rear axle of the vehicle and arranged, in the event of rearward displacement of the engine due to frontal impact of the vehicle, to transmit a rearwardly directed force to the rear axle, the pivotal link assemblies being designed, in response to a predetermined loading in excess of that occurring under normal braking and driving conditions of the vehicle, to yield and permit rearward displacement of the rear axle, with conversion of kinetic energy into deformation work by the pivotal link assemblies.

3,869,017
ENGINE MOUNTING AND ENERGY ABSORBING FRAME FOR A MOTOR VEHICLE

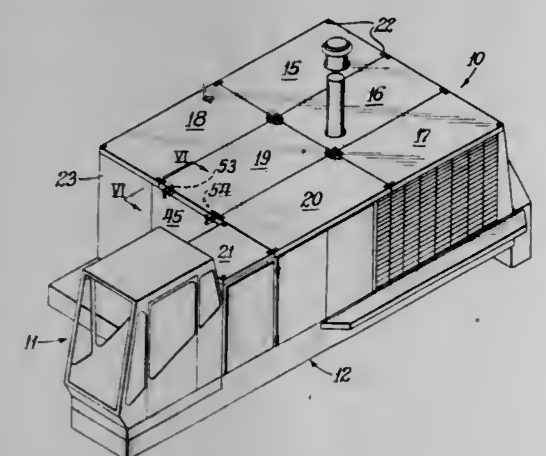
James R. Feustel, Taylor; Kenneth L. Hoyt, Farmington; Jonas Valukonis, Detroit, and John J. Corcoran, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 5, 1972, Ser. No. 295,378
Int. Cl. B60r *21/00*
U.S. Cl. 180—82 R **2 Claims**



1. An energy absorbing system for a motor vehicle comprising:

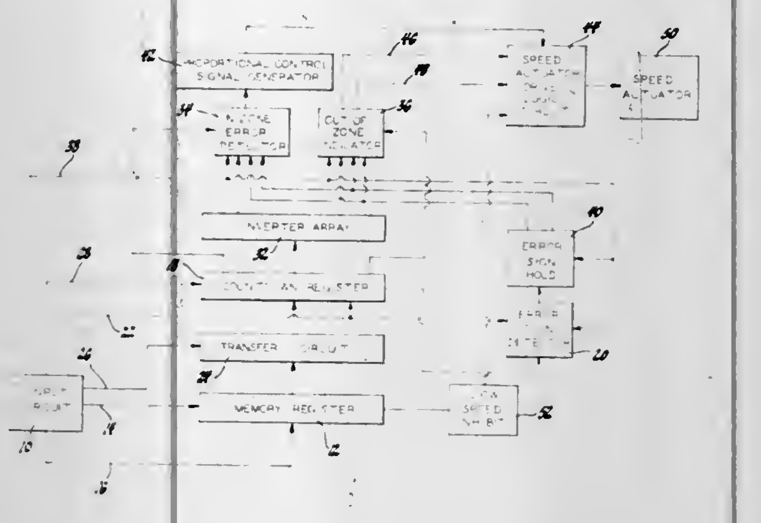
a vehicle frame assembly having plastically deformable energy absorbing frame sections,
a vehicle body and body mounting means supporting said body on said frame assembly,
a vehicle engine and one-way break-away engine mounting means connecting said engine to said frame assembly,
said engine mounting means and said body mounting means being constructed to support said engine and said body, respectively, on said frame assembly during normal vehicle operating conditions,
said engine mounting means including frangible means and abutment means,
said frangible means being constructed to fracture and permit the forward displacement of said engine with respect to said frame assembly under the effects of a rearwardly directed impact force imposed upon said frame assembly that equals a predetermined magnitude, said body mounting means being constructed to support said body on said frame assembly under the effects of a rearwardly directed impact force on said frame assembly that at least equals said predetermined magnitude whereby said energy absorbing frame sections support the mass of said vehicle body but not the mass of said engine when a rearwardly directed force of said predetermined magnitude is imposed upon said frame assembly,
said abutment means being operatively interposed between said engine and said frame assembly and constructed to support said engine on said frame assembly against a force tending to displace said engine rearwardly with respect to said frame assembly that at least equals said predetermined magnitude.

3,869,018
ENGINE ENCLOSURE FOR HYDRAULIC EXCAVATORS
Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 26, 1973, Ser. No. 326,996
Int. Cl. B62d *33/06*
U.S. Cl. 180—89 R **21 Claims**



1. A vehicle enclosure comprising:
a frame,
at least one pair of upright rear posts secured to a rearward end of said frame,
at least one pair of upright center posts secured to said frame and spaced longitudinally forwardly said rear posts ,
force transmitting means interconnecting upper ends of each pair of rear and center psots for transmitting loading forces imposed on said rear posts to said center posts and frame directly,
at least one top panel having mounting holes formed therethrough,
an upright side panel, having attachment holes formed on the upper end thereof, detachably mounted on said enclosure,
adjustment means, comprising a pin and slot connection positioned at each lateral end of said side panel and between said side panel and said frame, for selectively moving said side panel to align the attachment holes thereof into underlying relationship with respective ones of said mounting holes and
fastening means projecting through each one of said mounting holes and detachably engaging a respective one of said attachment holes.

3,869,019
DIGITAL SPEED CONTROL SYSTEM UTILIZING A COUNTDOWN REGISTER
Charles S. Cardani, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 24, 1970, Ser. No. 49,246
Int. Cl. B60k *31/00*
U.S. Cl. 180—105 E **8 Claims**

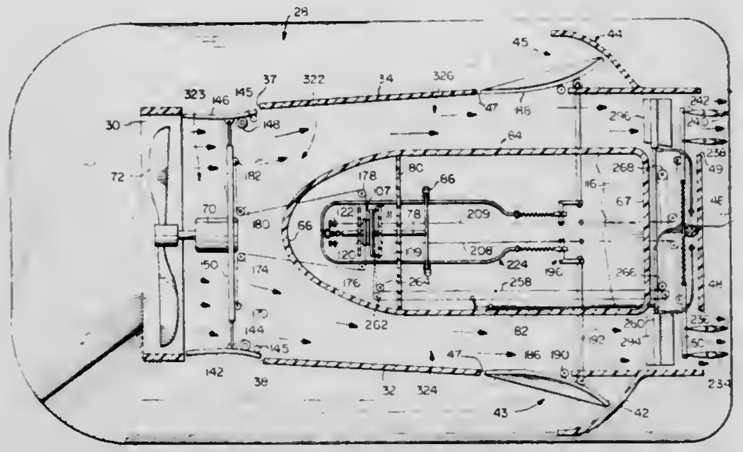


1. A digital speed control system for maintaining a desired speed of a controlled apparatus comprising, in combination, a memory register for storing a binary number; means for supplying a first pulse train having a number of pulses representing the desired speed of the controlled apparatus to the memory register, wherein the first pulse train steps the memory register to generate therein a binary number representing the desired speed of the controlled apparatus; a countdown register; means for cyclically transferring the binary number stored within the memory register to the countdown register, supplying a second pulse train having a number of pulses representing the actual speed of the controlled apparatus to the countdown register, and clearing the countdown register, wherein the second pulse train steps the countdown register to generate therein a binary number representing a controlled apparatus speed error; and means responsive to the binary number representing a controlled apparatus speed error for maintaining the desired speed.

3,869,020
AIR CUSHIONED VEHICLE
Douglas W. Holland, 6851 N. Fremont Rd., East Syracuse, N.Y. 13057
Filed July 12, 1973, Ser. No. 378,696
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **12 Claims**

1. An air cushioned vehicle comprising:
a body member;
a power plant mounted to said body member capable of producing an air stream;
means for directing a first portion of the air stream in a substantially downward direction to elevate said body member;
conduit means, carried by said body member, for conducting a second portion of the air stream in a substantially horizontal rearward direction,

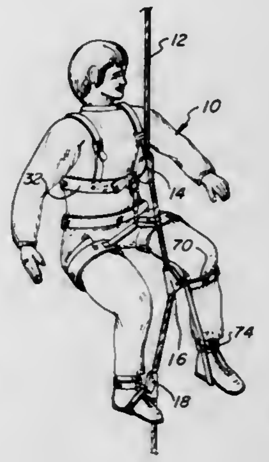
said conduit means having an inlet for directly receiving the second portion of the air stream produced by said power plant,
said conduit means additionally having an outlet enabling the air stream entering said inlet to pass through said conduit means and then to exhaust through said outlet to the atmosphere in a substantially rearward direction to propel said body member forward;
air stream deflecting means, pivotally coupled to said body member between said inlet and outlet of said conduit means, for deflecting the second portion of the air stream in a substantially horizontal forward direction and to the atmosphere;
control means, coupled to said body member, for manipulating said air stream deflecting means to a first position wherein none of the air stream is deflected so the vehicle moves forward, to a second position wherein substantially one-half of the air stream is deflected forward so the vehicle hovers in a fixed position, and to a third position wherein substantially all of the air stream is deflected forward so the vehicle moves rearward;



forward vane means, pivotally mounted to said body member adjacent said inlet of said conduit means, for deflecting a part of the air stream to the atmosphere in either lateral direction;
aft vane means pivotally mounted to said body member adjacent said outlet of said conduit means, for deflecting another part of the air stream to the atmosphere in either lateral direction; and
second control means, carried by said body member, for positioning said forward and aft vane means to deflect the air stream in the same lateral direction, when said control means has manipulated said air stream deflecting means to the second position, causing the vehicle to move in the opposite lateral direction without forward movement.

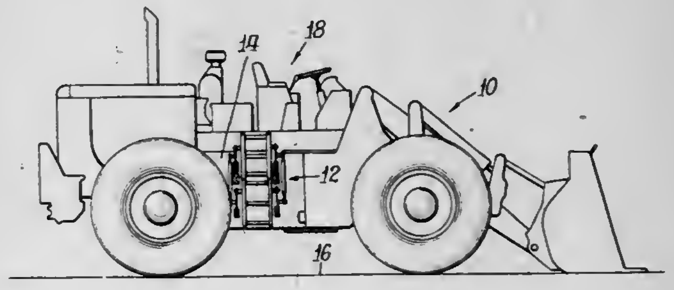
3,869,021
ROPE CLIMBING APPARATUS
Robert L. Sutherland, and Wayne M. Sutherland, both of P.O. Box 213, 1828 Steele, Laramie, Wyo. 82070
Filed May 20, 1974, Ser. No. 471,491
Int. Cl. A62b *1/14*
U.S. Cl. 182—3 **12 Claims**

1. Apparatus for climbing a rope, comprising:
chest means, including a flexible strap dimensioned to encircle the user's chest and a breast fixture securing the ends of said strap, for mounting upon the chest of the user;
hip means, including flexible straps to encircle the waist and upper thighs of the user, for mounting upon the hip region of the user;
knee means for mounting upon one leg of the user in the vicinity of the knee;
ankle means for mounting upon the other leg of the user in the vicinity of the ankle;
a first running clamp, permitting free movement of said rope therethrough in one direction while prohibiting movement of said rope therethrough in the other direction, affixed to said breast fixture;
a second running clamp, like the first, affixed to said knee means;



a third running clamp, like the first, affixed to said ankle means;
and tie means for flexibly securing said chest means to said hip means.

3,869,022
TELESCOPING STEP LADDER
Harold J. Wallk, Mendota, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 13, 1974, Ser. No. 479,170
Int. Cl. E06c *5/04*
U.S. Cl. 182—96 **7 Claims**

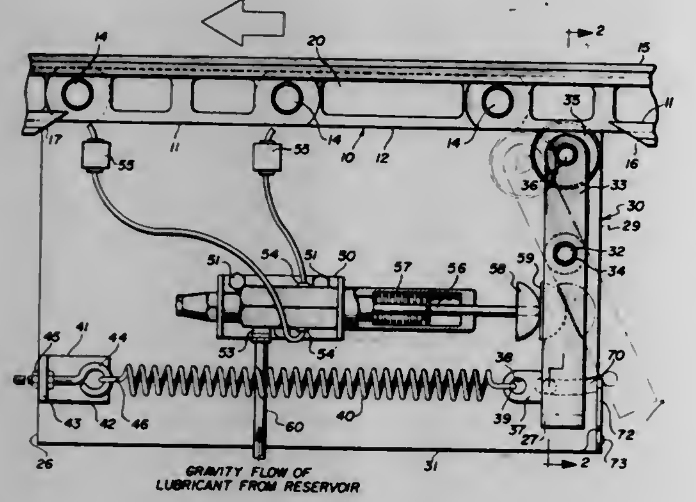


1. In a ladder assembly for attachment to a side support surface including a ladder having an upper frame portion and a lower frame portion, means for telescoping said ladder from an operative length and position to a shorter, stored length and position, and further including means for automatically extending said ladder from its stored length and position to its operative length and position in response to an operator thereon and for causing the ladder to be retracted to its stored length and position when released by the operator.

3,869,023
MECHANICAL LUBRICATING DEVICE AND METHOD
Ronald E. Thomson, Cambridge, and Philip J. Kast, Madison, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.
Filed Jan. 22, 1973, Ser. No. 325,660
Int. Cl. F16n *7/16*
U.S. Cl. 184—15 A **8 Claims**

1. The method of lubricating a conveyor system which passes a lubricating station according to the steps of:
contacting said conveyor system intermittently with a member as said system passes said lubricating station;
transmitting energy from said system through said member to an energy storage means in the period of contact with a conveyor system;
releasing the energy stored in said storage means in an

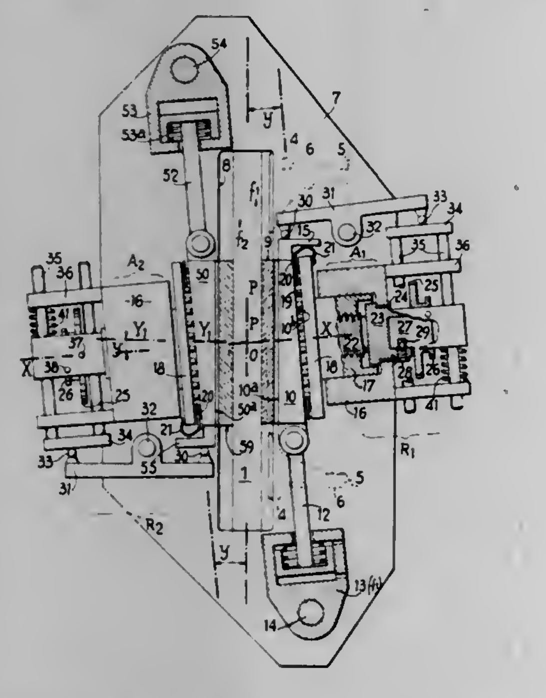
impulse action to drive pump means; and,
dispensing fluid from said pump means to said conveyor



system;
whereby said conveyor system can be lubricated.

3,869,024
SELF RELEASING BRAKE DEVICE

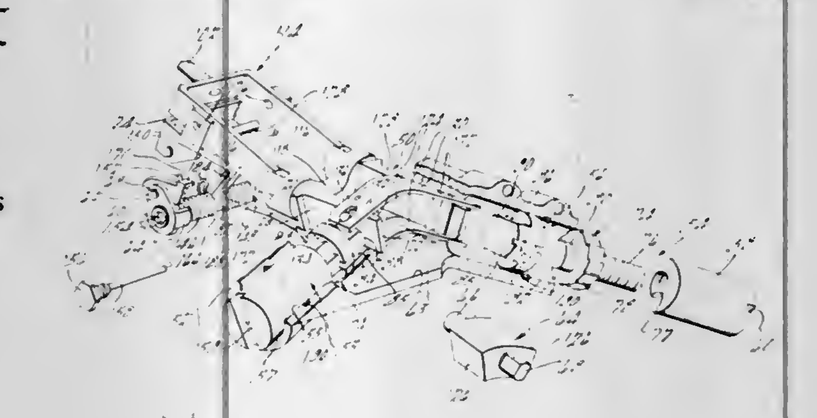
Jean-Marc Hauth, Pont-A-Mousson, and Roland Claude Michel Cheylac, Augny, both of France, assignors to Pont-A-Mousson S.A., Pont-A-Mousson, France
Filed July 6, 1973, Ser. No. 376,994
Claims priority, application France, July 7, 1972, 72.24727
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **15 Claims**



1. A self-releasing device for braking a moving element movable in opposite directions, such as a disc, having two parallel rubbing surfaces, the device comprising a support; two brake sub-assemblies disposed one on each side of the moving element on the support; each sub-assembly comprising support means fixed to the support and having a support surface slightly inclined with respect to the corresponding adjacent rubbing surface of the moving element, means defining a brake pad having a friction surface parallel to the corresponding rubbing surface and an inclined surface parallel to the corresponding support surface and co-operative with the support surface, actuating means connected to the pad and arranged to act on the pad in a direction for causing the pad to effect a given displacement relative to the support for braking; the two brake sub-assemblies being oriented in opposite directions on each side of the moving element so that, for a given direction of movement of the moving element and upon braking, a first of the two brake pads of the two sub-assemblies is self-releasing and a second of said two brake pads tends to be drawn along by the moving element in a direction corresponding to said displacement for braking and, in an opposite direction of movement of the moving element, said first brake pad tends to be drawn along by the moving element in a direction corresponding to said displacement for braking and said second brake pad is self-releasing, the support being capable of moving relative to the moving element in a direction substantially perpendicular to the rubbing surfaces; each sub-assembly having further means responsive to the direction of movement of the moving element for automatically arresting, in each direction of movement of the moving element, the braking displacement relative to the support of that one of the two brake pads which tends to be drawn along by the moving element in a direction for effecting its braking displacement before the other brake pad has reached the end of its given braking displacement relative to the support.

3,869,025
SELF-ADJUSTING BRAKE MECHANISM

James L. Oliver, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 10, 1972, Ser. No. 296,359
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 GE **22 Claims**



1. A braking mechanism for use with a brake assembly of the type including a pair of brake shoes each shoe having a first end opposite from one another, a brake drum, and means supporting the shoes for movement from an initial position, into contact with the drum for effecting braking of the drum; the brake mechanism comprising:

actuator means including at least one tine adapted to be operatively engaged with the first end of each of the shoes for effecting a first movement of the shoes tending to effect contact with the drum; and

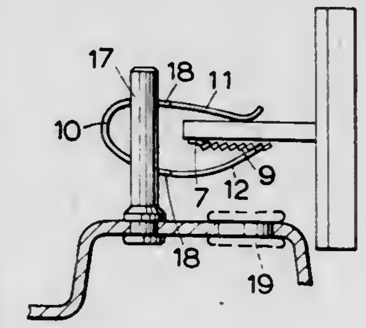
adjuster means operative concurrently with the operation of the actuator means and engaged with the tine and the first end of each of the shoes for effecting a second, further movement of the shoes toward the drum after the actuator means have moved the shoes beyond a predetermined distance toward the drum.

3,869,026
SHOE DRUM BRAKES

Frank Vernon Williams, Solihull, England, assignor to Girling Limited, Warwickshire, England
Filed Nov. 2, 1973, Ser. No. 412,121
Claims priority, application Great Britain, Nov. 17, 1972, 53120/72
Int. Cl. F16d *65/54*
U.S. Cl. 188—79.5 GT **5 Claims**

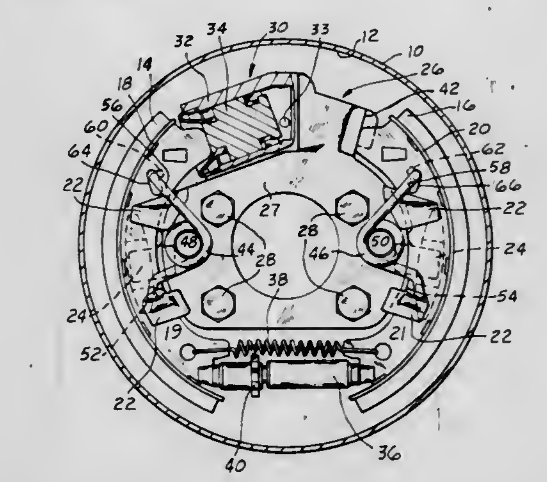
1. Means for adjusting the off position of a shoe in an internal shoe drum brake comprising a resilient pawl member and a ratchet member with which said pawl member is in co-operative engagement for relative movement in one direction, one member being mounted on the shoe and the other on the stationary backplate of the brake, wherein said pawl member

is a C-shaped member of resilient metal having two limbs of which the free ends are urged towards each other, one of said limbs bearing on one side of the shoe web and the other limb co-operating with ratchet teeth on the other side of the web.



3,869,027
DRUM BRAKE ASSEMBLY

Richard A. Chlebowski, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Oct. 24, 1973, Ser. No. 409,347
Int. Cl. F16d *51/14*
U.S. Cl. 188—340 **5 Claims**



1. In a drum brake assembly having a torque spider provided with a plurality of axially spaced-apart oppositely facing guide pads at the outer periphery thereof for slidably receiving a shoe web of an associated brake shoe between the guide pads and an actuator for moving the shoe into engagement with the drum, the improvement for maintaining the shoe from undesirable sliding into the drum during brake release, said improvement comprising:

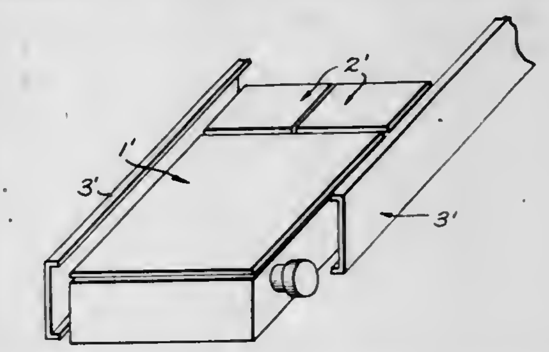
a brake shoe hold-down device supported and prestressed between one of the oppositely facing axially spaced-apart guide pads and the shoe web, urging the web against another of the guide pads to thereby preload the web between the guide pads to inhibit shifting of the shoe;

said hold-down device being a leaf spring having a central body portion carried on said one guide pad and laterally projecting arms having free ends prestressed against the web.

3,869,028
DOLLY USING A WARM-KEPT BATTERY AS ITS DRIVING POWER SOURCE

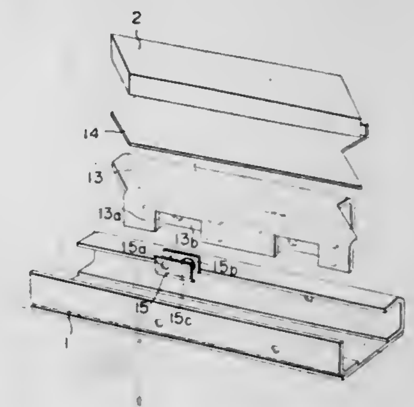
Yuji Sawada; Katsumi Takemoto, and Yasuro Maruoka, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1973, Ser. No. 412,139
Claims priority, application Japan, Nov. 2, 1972, 47-12702
Int. Cl. B60m *1/34*
U.S. Cl. 191—1 R **1 Claim**

1. A dolly using a warm-kept battery as its driving power source, which comprises a member for loading thereon an article to be conveyed and a shoe for feeding a required electric power from a trolley, and which is adapted to run along equipped rails for conveying said article; characterized in that said dolly is provided with a battery serving as a driving power source for said dolly which battery is covered by a heat insulating material and includes a heater associated with a thermostat and heated by an electric power fed from said trolley through said shoe, and plug portions which can be detachably engaged with members for forcibly discharging hydrogen gas produced upon charging said battery.



3,869,029
SLIDING SHOE IN VEHICULAR PANTAGRAPH COLLECTOR

Shibayama Kunio, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Oct. 5, 1973, Ser. No. 403,887
Claims priority, application Japan, Oct. 6, 1972, 47-10051
Int. Cl. B60l *5/38*
U.S. Cl. 191—49 **5 Claims**



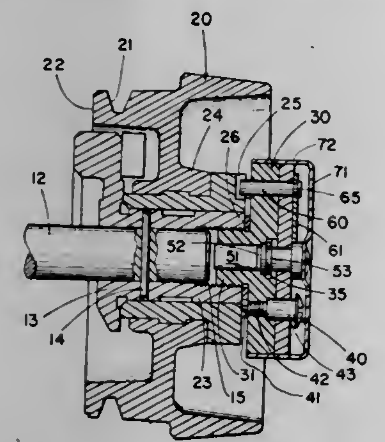
1. A sliding shoe in a pantagraph collector which comprises
a. a plurality of pan-plate pieces disposed in abutting end-to-end relationship in a row for following a power supply line;
b. a plurality of pan-plate supporting pieces disposed in abutting end-to-end relationship in a row corresponding to the pan-plate pieces, for supporting the latter respectively, the pan-plate supporting pieces being connected to the pan-plate pieces thereby forming assemblies respectively,
c. a sliding shoe frame for accommodating the assemblies, and
d. a plurality of elastic connecting means for elastically supporting the assemblies on the sliding shoe frame.

3,869,030
SEWING MACHINE CLUTCH

Noriyasu Masaki, Osaka, Japan, assignor to The Soryu Sewing Machine Mfg. Co., Ltd., Osaka, Japan
Filed Jan. 17, 1974, Ser. No. 434,056
Int. Cl. F16d *11/04*
U.S. Cl. 192—67 R **10 Claims**

1. A push-pull clutch for use in a sewing machine for selectively effecting rotation of a rotary drive shaft in the sewing machine, said clutch comprising a base member in driving relationship with one end of said drive shaft and rotatable therewith; a drive member coaxially mounted on said drive shaft and freely rotatable relative thereto, said drive member haivng a boss portion carrying a plurality of circumferentially spaced and axially extending pockets therein; a spline type

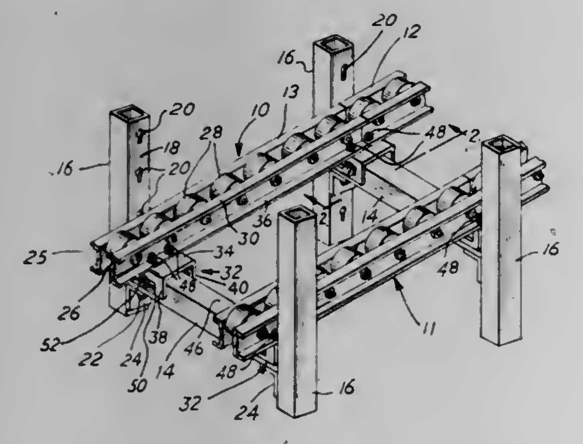
washer disposed between said base member and said boss and having at least one inwardly extending key engageable in a cooperating notch provided in the end of said drive shaft, whereby said washer is rotatable with said drive shaft, said washer having a plurality of outwardly extending circumferentially spaced splines; an operating member carried by said base member and movable between first and second operating positions in an axial direction relative to said boss and said base member; a transmission pin extending through aligned apertures provided in said base member and said operating member and between a pair of splines on said washer, whereby rotation of said operating member effects rotation of said base member and said washer and said drive shaft; and a drive pin carried by said operating member and axially movable therewith relative to said base member and said boss, said drive pin being spaced from said boss when said operating member is pulled to said first operating position, whereby said drive member is rotatable relative to said drive shaft, said drive pin being engaged within one of said pockets in said boss when said operating member is pushed into said second operating position whereby rotation of said drive member effects rotation of said drive shaft.



3,869,031
STRUCTURE LEVELLING ASSEMBLY

Bestor P..Coleman, Willow Springs, and Kennedy McConnell, Riverdale, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Apr. 4, 1973, Ser. No. 347,810
Int. Cl. F16c *25/00;* **B65g** *39/02, 13/00*
U.S. Cl. 193—35 R **11 Claims**

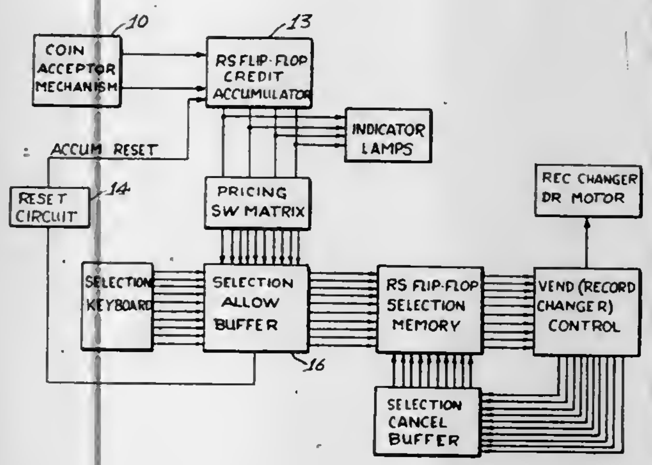


1. An adjustable levelling assembly comprising,
a U-shaped rigid bracket member having a substantially flat support surface and a pair of flanges extending from opposite edges of said support surface, said flanges being spaced from each other such that they are adapted to receive first frame means therebetween,
a plurality of first apertures extending through said support surface, first fastener means extending through said first apertures into a location between said pair of flanges such that they may contact the first frame means, said first fastener means selectively adjusting the distance between said support surface and the first frame means in response to the length of said first fastener means extending through said first apertures, said first fastener means also being adapted to fasten second frame means which are to be levelled to said surface, and
second apertures in said pair of flanges adapted to receive second fastener means therethrough for fastening said U-shaped rigid bracket member to said first frame means, said second apertures being shaped to allow adjustment of said bracket member in at least one of two directions perpendicular to each other as said length of said first fastener means is being adjusted.

3,869,032
SOLID STATE MONETARY ACCUMULATOR, CREDIT STORAGE, AND SELECTOR LOGIC CIRCUIT

Robert W. Wheelwright, Tonawanda, and William V. Machanian, Lewiston, both of N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,221
Int. Cl. G11b *19/08*
U.S. Cl. 194—1 N **3 Claims**

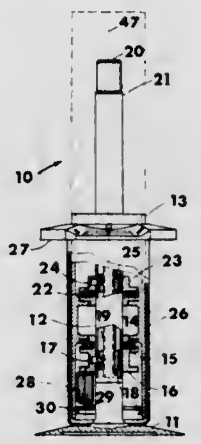


1. A monetary accumulator, credit storage, and selector logic circuit comprising, first circuit means for providing logic pulse signals which correspond to the value of coins sensed thereby, a plurality of memory circuits having inputs coupled to said first circuit means, said memory circuits providing discrete output terminals each corresponding to a different total accumulation of coins as registered by said first circuit means, each of the said output terminals arranged for connection to selector means to enable said selector means so that selections can be made corresponding to the total accumulation of coins as represented at the output terminal so energized, each of said plurality of memory circuit is formed by first and second cross-coupled logic circuits, each having a pair of inputs, one input of said first logic circuit being coupled to said first circuit means, one input of said second logic circuit being coupled to a second circuit means, and the output terminals of each of said first and second logic circuits being cross-coupled back to the other input of the other of said first and second logic circuits, to form an R-S flip-flop circuit, a capacitor connected between the output terminals of each of said logic circuits and ground potential, and said second circuit means being connected to said plurality of memory circuit and arranged for connection to said selector means to provide a reset signal to said plurality of memory circuits upon actuation of any one of the selector means.

3,869,033
MULTIPLEX TYPEWRITER FOR TECHNICAL DRAWINGS

Borislav S. Ivanov, and Raina V. Ivanova, P.O. Box 145, both of Toronto, Ontario, Canada (M6P3J5)

Continuation-in-part of Ser. No. 217,442, Jan. 13, 1972, abandoned. This application July 30, 1973, Ser. No. 383,633
Int. Cl. B41j *19/16*
U.S. Cl. 197—10 **13 Claims**

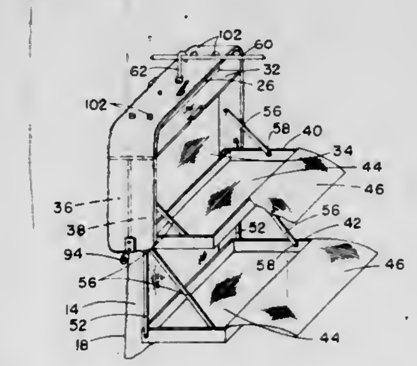


1. A multiplex typewriter for technical drawings having typing element faces of each typing head or set of typing keys provided with one standard size letters and numerals in standard technical style as fixed by the National Standards for Lettering Technical Drawings, said letters and numerals representing elements for lettering said drawings, a tubular vertical stationary column supported by a column base, a common cylindrical platen mounted on the column for longitudinal and rotative sliding movements in drive mode and step mode variants about its own axis, operator-controlled vertical-movement step motor means mounted on the upper end of the tubular column, mechanical means operatively connecting the step motor to the platen to move it longitudinally of the said axis, operator-controlled rotating-movement step motor means operatively connected with the platen for rotating it about the axis, and a plurality of typing mechanisms mounted around the common cylindrical platen on a stationary table, said table being supported by a housing connected with the base of the column.

3,869,034
WARDROBE APPAREL CASE

Henry M. Thornton, Jr., Wyndham Dr., York, Pa. 17404

Filed Jan. 29, 1973, Ser. No. 327,843
Int. Cl. A47b *61/02, 61/06*
U.S. Cl. 190—13 R **11 Claims**

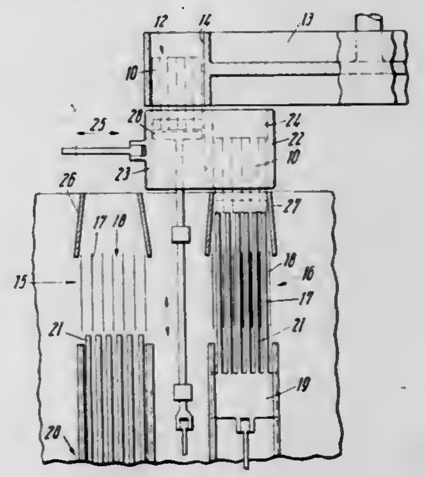


1. A suitcase for carrying wearing apparel and the like comprising in combination, a substantially U-shaped frame having longitudinally extending end panels and a connecting supporting panel adapted when in one arrangement to be carried by a handle and when in a second arrangement to be suspended from overhead means, a dividing partition extending between said end panels intermediately of the outer side edges thereof and perpendicular to said connecting supporting panel and said end panels to provide a pair of compartments in longitudinal back-to-back relationship, one or more tray-like members each having a bottom panel, pivot means connecting said tray-like member or members to said end panels of said frame in one of said compartments for movement between a compact folded position relative to said frame when said U-shaped frame is arranged to be carried and an outwardly extended substantially horizontal open position when said U-shaped frame is suspended to provide convenient access to apparel contained in said member or members, suspending means connected between said tray-like member or members and said end panels of said U-shaped frame and adapted to maintain said tray-like member or members in said substantially horizontal open position relative to said frame when the latter is suspended as aforesaid, and said other compartment comprising a wardrobe compartment.

3,869,035
APPARATUS FOR ALTERNATELY TRANSFERRING GROUPS OF CIGARETTES TO A ROTARY MAGAZINE VIA INTERMEDIATE RECIPROCATING CHAMBERS

Heinz Hermann Focke, Siemensstr. 10, Verden/Aller, Germany

Filed Jan. 26, 1973, Ser. No. 326,702
Claims priority, application Germany, Jan. 29, 1972, 2204268
Int. Cl. B65g *47/04*
U.S. Cl. 198—24 **7 Claims**



1. An apparatus for supplying groups of cigarettes to a cigarette packing machine, comprising:
a. a pair of adjacent cigarette feed hoppers having spaced discharge ends,
b. an intermediate receptacle having two adjacent chambers open at both ends in an axial direction, said receptacle being reciprocable back and forth across the discharge ends of the feed hoppers,
c. a rotary magazine positioned adjacent the intermediate receptacle and having a plurality of pockets around the periphery thereof open in an axial direction,
d. the relative positioning between the discharge ends of the feed hoppers, the intermediate receptacle and the rotary magazine being such that at each end of the reciprocating travel of the intermediate receptacle one of its chambers is aligned with the discharge end of a feed hopper in receiving relation thereto while the other chamber is aligned with a pocket of the rotary magazine in discharge relation thereto,
e. the intermediate receptacle further comprising means for compressing together a group of cigarettes in a chamber of the intermediate receptacle during the movement of such chamber from a position of alignment with the discharge end of one of the feed hoppers to a position of alignment with a rotary magazine pocket, said compressing means comprising two generally parallel members each having a pair of adjacent, chamber defining indentations on the facing sides of such members, and parallel linkage means pivotally mounted between and intercon-

necting the members, whereby the relative movement of the members in a first direction serves to contract the chambers defined therebetween in both height and width while such relative movement in a second, opposite direction serves to open the chambers,

f. a pair of slide ejection members alternately reciprocable in phase opposition for pushing a group of a fixed number of cigarettes from the discharge end of a feed hopper into an aligned chamber of the intermediate receptacle,

g. the reciprocating motion of the intermediate receptacle being in a direction perpendicular to that of the slide ejection members, and

h. a push rod positioned between the slide ejection members and reciprocable in parallel synchronism therewith at twice the cycle rate thereof for pushing a group of cigarettes from one of the chambers of the intermediate receptacle into an aligned pocket of the rotary magazine,

i. whereby while a group of cigarettes is being transferred from one of the feed hoppers to one of the intermediate receptacle chambers another group of cigarettes previously transferred from the other feed hopper to the other intermediate receptacle chamber is being loaded, by the push rod, into a pocket of the rotary magazine.

3,869,036

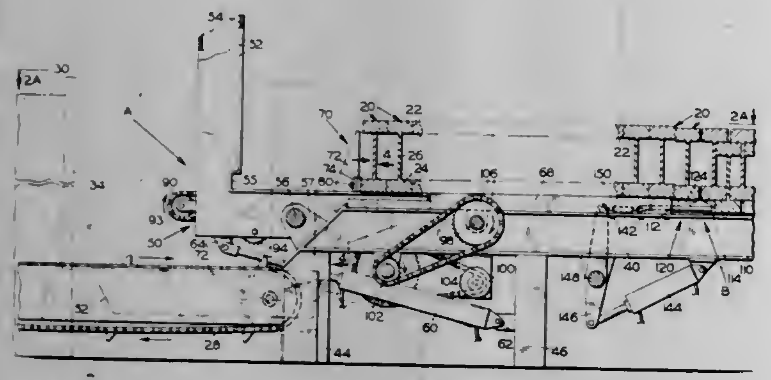
I BEAM NESTING AND STACKING METHOD AND APPARATUS

Charles W. Peters, and Larry K. Ebert, both of Eugene, Oreg., assignors to Trus Joist Corporation, Boise, Idaho

Filed Apr. 20, 1973, Ser. No. 352,879

Int. Cl. B65g *57/16*

U.S. Cl. 198—35 **21 Claims**



1. The method for nesting I beams comprising top and bottom chords and a connecting web, the method comprising:

a. arranging a plurality of I beams in side by side substantially aligned relation to each other,

b. advancing the I beams laterally,

c. shifting the first or leading I beam edgewise until its component chords lie on a different plane than do the chords of the second I beam,

d. advancing the second I beam laterally relative to the said first I beam until the leading portions of its chords lap the trailing portions of the chords of the first I beam, and

e. advancing laterally the third I beam relative to the second I beam in the plane of the first I beam until the leading portions of its chords lap the trailing portions of the chords of the second I beam, thereby arranging the I beams in nested relationship to each other.

3,869,037

FERROUS ALLOY AND ABRASIVE RESISTANT ARTICLES MADE THEREFROM

Richard J. Henry, Latrobe, and Robert A. Cary, Greensburg, both of Pa., assignors to Teledyne Mid-America Corporation, Los Angeles, Calif.

Filed Mar. 12, 1973, Ser. No. 339,656

Int. Cl. C22c *39/14, 39/26, 39/54*

U.S. Cl. 198—37 **12 Claims**

1. A ferrous alloy steel having the following chemical analysis:

Ingredients	Percent by Weight
Carbon	2.2–3.5
Chromium	2.5–5.0
Vanadium	6.0–10.0
Molybdenum	1.5–3.0
Silicon	0 –1.0
Sulfur	0 –0.03
Tungsten	0 –1.0
Nickel	0 –3.0
Phosphorus	0 –0.03
Manganese	0 –1.0
Cobalt	0 –5.0

the remainder consisting essentially of iron, the relationship between carbon and vanadium being determined by the equation:

$$C = 1.25 + 0.236\,[V_B - [0.7 + 0.18(V_B - 0.7)]]$$

where C is carbon, V_B is the level of vanadium within the range of 6.0 to 10.0% and $[0.7 + 0.18(V_B - 0.7)]$ is the amount of vanadium dissolved in the steel matrix, said composition capable of being forged, austenitized, quenched and tempered to produce a substantially tempered martensitic structure which shows a hardness of about 59-67 Rockwell "C" and a grindability index not exceeding approximately 0.3.

7. An abrasion resistant article formed by forging, austenitizing, quenching and tempering a ferrous alloy steel having a composition as claimed in claim 1, said article having a substantially martensitic structure, a Rockwell "C" hardness within the range of 59 to 67 and a grindability index not exceeding approximately .3.

3,869,038

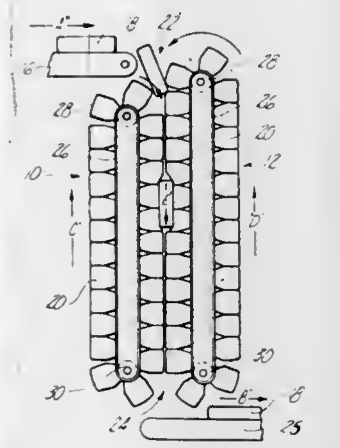
ARTICLE CONVEYING APPARATUS

Robert J. Piper, Detroit, and Frank K. Locke, Hudson, both of Mich., assignors to Stearns Manufacturing Co. Inc., Flat Rock, Mich.

Filed Aug. 9, 1973, Ser. No. 386,941

Int. Cl. B65g *15/14*

U.S. Cl. 198—165 **10 Claims**



1. In combination with an endless conveying apparatus of the type wherein a plurality of resilient flexible article engaging members engage an article to be conveyed, and wherein the resilient flexible article engaging members are connected to two parallel spaced continuous chain members disposed along opposite longitudinal sides of the apparatus and trained about head chain sprockets and tail chains sprockets, the improvement which comprises:

a pair of hinges comprising a first hinge and a second hinge connecting each article engaging member to the continuous chain members;

said first hinge connecting a leading edge of said article engaging member to each of the continuous chain members, the pivotal axis of said first hinge being generally transverse to the direction of movement of said continuous chain members,

said second hinge connecting a trailing edge of said article engaging members to each of the continuous chain members, the pivotal axis of said second hinge being generally transverse to the continuous chain members, and

said first hinge and said second hinge each comprising an elongated tubular member connected to said article engaging member, a mounting rod slidably receivable in said elongated tubular member thereby being mounted on said mounting rod for rotational movement about the longitudinal axis of said mounting rod;

means to removably mount opposite ends of said mounting rod to different ones of the two parallel continuous chain members, and

means to connect one end of said mounting rod to one of the continuous chain members to prevent axial movement of said mounting rod.

3,869,039

SCRAPER ASSEMBLIES FOR SCRAPER CHAIN CONVEYORS

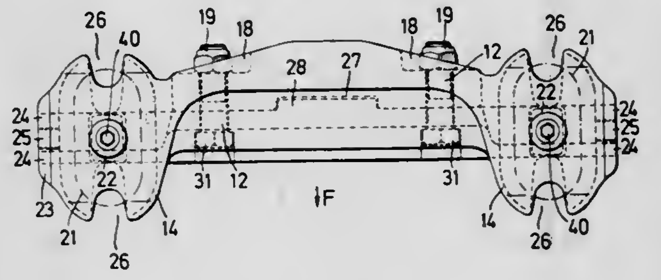
Helmut Temme, Waltrop, and Oscar Kohler, Lunen-Sud, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Westfalia, Germany

Filed May 8, 1973, Ser. No. 358,230

Claims priority, application Germany, May 18, 1972, 2224322

Int. Cl. B65g *19/00*

U.S. Cl. 198—175 **7 Claims**



1. a scraper assembly for use with scraper chain conveyors; said assembly consisting of a first one-piece component provided with a main body and shaped end portions and a second one piece component provided with a main body and end portions; the end portions of the first component each having grooves, which are curvilinear in plan view, on its undersurface for locating over an oval horizontal link of one of two spaced-apart chains, a depending spigot disposed between the grooves which projects into said horizontal link and vertical apertures at its front and rear sides which locate vertical links of the chain adjoining said horizontal link, the main body of the first component having an upstanding web and a widened head piece which projects over the main body of the second component and the end portions of the second component each having grooves, which are rectilinear in plan view, on its upper surface for locating under one of said horizontal links, the end portions of the first and second components being provided with a plurality of interengageable projections and recesses and the main bodies of the components having a centrally located interengageable projections and recesses and bores for receiving fixing means for securing the components together.

3,869,040

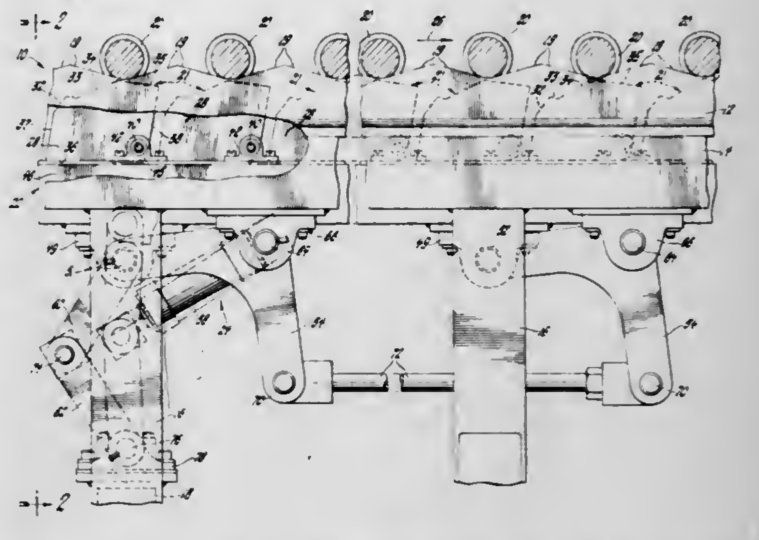
CONVEYOR FOR CYLINDRICAL PARTS

Daniel L. Rice, Lapeer, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1973, Ser. No. 357,950

Int. Cl. B65g *25/04*

U.S. Cl. 198—219 **3 Claims**



1. A conveyor for moving cylindrical parts is a direction substantially perpendicular to the longitudinal axes of said parts, said conveyor having an entrance end for receiving cylindrical parts and an exit end from which said cylindrical parts are removed and comprising a pair of laterally spaced support plates, a series of equally spaced and uniform notches formed in the upper portion of each of said support plates for supporting and spacing said cylindrical parts, a plurality of identically formed positioning members located between said support plates, the upper portion of each of said positioning members comprising first, second, third, and fourth angularly related surfaces for cooperation with said notches for controlling and guiding successive movement of the cylindrical parts from one notch to the next notch from the entrance end to the exit end of the conveyor, said first, second, third and fourth surfaces being arranged consecutively on each positioning member from the entrance end to the exit end and having the first and third surface inclined downwardly towards the entrance end and the second and fourth surfaces inclined downwardly toward the exit end, and means supporting each of the positioning members adjacent one of said notches so that when each of the notches is filled with a cylindrical part upward and then downward movement of the positioning members relative to the support plates causes the cylindrical parts to be removed from the notches by the first and fourth surfaces of each adjacent pair of positioning members and returned to the same notches from which the cylindrical parts were removed, but when one of said notches is empty upward and then downward movement of the positioning members causes the cylindrical parts preceding the empty notch to be cammed by the fourth surface of one positioning member onto the second surface of the adjacent positioning member and deposited thereby in the associated notch.

3,869,041

MACHINE FOR SEED CELLING PREVIOUSLY CORED APPLES

Malcolm W. Loveland, Orinda, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Division of Ser. No. 283,919, Aug. 25, 1972,. This application Nov. 21, 1973, Ser. No. 417,725

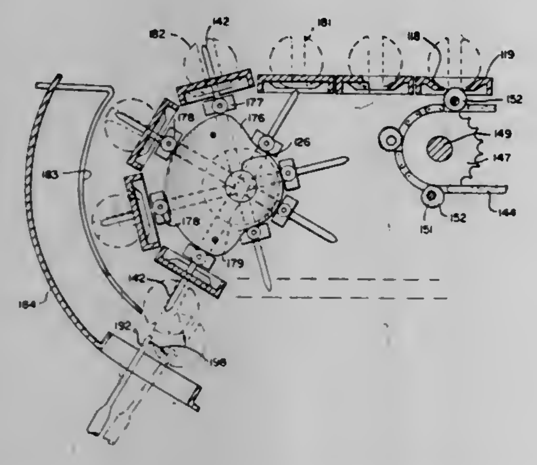
Int. Cl. B65g *47/24*

U.S. Cl. 198—259 **5 Claims**

1. In an apparatus for removing the seed cell from a previously cored apple including:

a. a conveyor having a plurality of cavities therein, each cavity being conical in shape and having an opening on the underside,

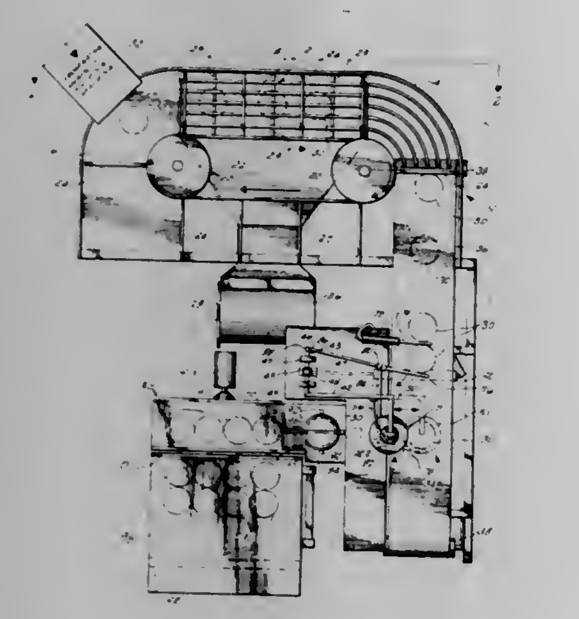
b. the conveyor being movable over a path having upper and lower horizontal runs connected by a semicircular run at each end,
c. a rotatable support provided within one of the semicircular runs of the conveyor,
d. a plurality of first pins slidably mounted on the rotatable support and extending radially from the support,
e. means for moving each of the first pins first to project into the opening in a cavity on the conveyor and then to extend into the core hole in an apple in said cavity and finally to be withdrawn from said core hole and the cavity after the apple has fallen down the first pin,



f. a curved plate having a curvature on a radius extending from the center of one of the semicircular runs of the conveyor to engage and support an apple on a first pin as the pin approaches a transfer point at the lower end of the semicircular run,
g. and a second pin movable over a path to follow the first pin at said transfer point to enter the core hole in an apple on the first pin and engage the apple as the apple falls down the first pin after which the first pin is withdrawn from the apple.

3,869,042
INSPECTING AND STACKING MACHINE FOR CONTAINERS

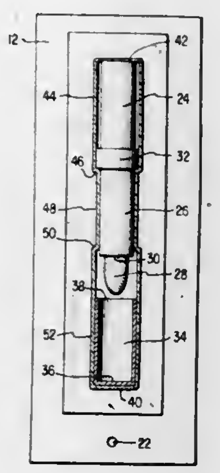
Wallace C. Floyd, 1110 S. 10th St., Arcadia, Calif. 91006, and Gregory W. Holcomb, 1930 N. Cambridge, Orange, Calif. 92667
Filed Aug. 25, 1972, Ser. No. 283,746
Int. Cl. B65g *47/24*
U.S. Cl. 198—267 **10 Claims**



1. Apparatus for orienting a supply of randomly positioned, tapered, bottom-heavy containers coming from a delivery source, the apparatus comprising:
an orientation station for receiving and orienting said randomly-positioned containers, the orientation station including an elongated support surface for confining downward movement of the containers to be moved along the length of the support surface,
a gas supply and means for directing the flow of gas from the gas supply to the underside of said support surface,
the support surface having spaced apart openings to allow the gas to flow upwardly through it,
means forming a series of spaced apart compartments movable above the support surface and along the length thereof from a front portion of the orientation station in the vicinity of the delivery source to an end portion of the orientation station so that containers admitted to the compartment means from the delivery source can be moved by the compartment means along the support surface, each compartment means forming an enclosure extending around a given randomly-positioned container coming from the delivery source, each enclosure being open at its bottom and at its top so that gas from the gas supply can flow upwardly through the enclosure, and
means generating a laminar flow of the gas through the support surface and the movable compartment means being in a direction substantially opposed to that of normal gravitational attraction and at an adjustable sufficient flow rate that the gas flows upwardly against substantially the entire randomly-positioned, downwardly-facing surface area of each container, and around, and past each container and so that the gas flow will orient each container in a substantially upright position within its respective compartment means, the moving compartment means cooperating with the gas flow to transfer the containers toward the end portion of the orientation station as the containers are being oriented by the laminar gas flow so that the containers are oriented in an upright position within their respective compartment means when they reach the end of the orientation station.

3,869,043
DISPLAY PACKAGE FOR LIPSTICK

Ronald C. Warner, Ottawa Lake, Mich., and Bobby R. Shepherd, Toledo, Ohio, assignors to Cameo, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 277,164, Aug. 2, 1972, Pat. No. 3,762,545. This application Sept. 17, 1973, Ser. No. 398,208
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.31 **7 Claims**

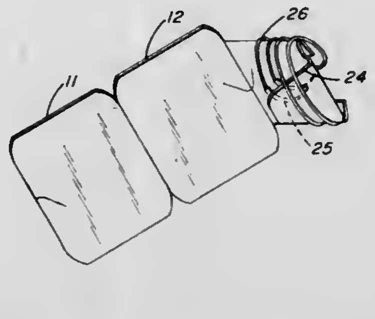


1. A display package which permits selective visual observation of the color of a product contained therein, said display package comprising:
a backing sheet;
a transparent cover sheet overlying at least the central portion of said backing sheet;

said transparent cover sheet having a portion spaced away from said backing sheet to form a raised blister;
chamber means formed between said backing sheet and said raised blister;
said product being disposed within said chamber means and including:
a first opaque section having a colored portion adjacent an end thereof, and
a second opaque section which fits over the colored portion and the end of said first opaque section to prevent visual observation of said colored portion;
said first and second opaque sections having a combined axial length which is less than the axial length of said chamber means;
said raised blister being engaged with one of said opaque sections to prevent axial movement thereof within said chamber means;
said raised blister forming a guide for the other of said opaque sections to permit it to slide axially within said chamber means to move toward and away from said one opaque sections;
said display package being selectively and manually movable between a display position and an inverted position;
said other opaque section being gravitationally moved by axial sliding within said chamber means, when said display package is manually moved to said display position, until said second opaque section fits over the colored portion and the end of said first opaque section to cover said colored portion and to prevent visual observation thereof;
said other opaque section being gravitationally moved by axial sliding within said chamber means, when said display package is manually moved to said inverted position, until said second opaque section is spaced away from the colored portion and the end of said first opaque section to expose said colored portion and to permit visual observation thereof through said raised blister.

3,869,044
REEL-LABEL FOR SMALL DIAMETER SUTURES

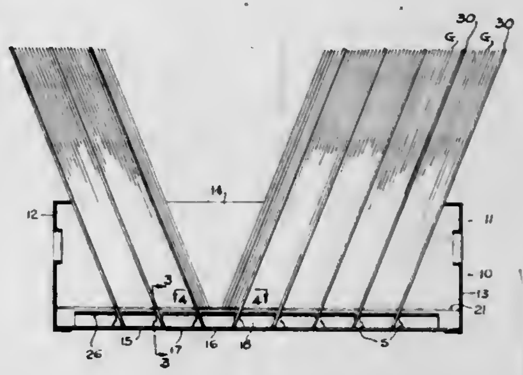
David Lawrence Olsson, Pearl River, N.Y., and Sol Singerman, E. Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Aug. 8, 1973, Ser. No. 386,662
Int. Cl. A61l *17/02;* **B65d** *73/00;* **B65h** *55/00*
U.S. Cl. 206—63.3 **1 Claim**



1. A surgical suture package comprising a sealed, sterile envelope having therein in sterile configuration a needled surgical suture on a reel-label, wherein the improvement comprises:
a one piece six panel reel-label of stiff sterilizable label stock consisting essentially of
a bottom fold panel,
a pocket panel,
a top fold panel,
a reel panel,
a rear panel, and
a face panel,
said bottom fold panel being short and attached to the bottom of said pocket panel, and folded along a score line to enclose the bottom of said reel panel,
said pocket panel being smaller than and attached to one side of said reel panel, and folded and held thereagainst by said bottom fold panel to form a needle pocket,
said top fold panel being short and attached to the top of the reel panel, and folded against the reel panel,
said back panel being attached to, larger than, and folded against the reel panel and needle holding pocket,
said face panel being attached to, essentially the same size as, and folded towards the rear panel to enclose therebetween the reel panel, pocket panel, and top and bottom fold panels,
said face panel having a diagonal cut therein to form a holding tongue,
said rear panel having a second diagonal cut therein to form a holding slit,
said holding tongue and holding slit being in interengaging relationship to hold the face panel and rear panel adjacent, and releasably closed, and
a surgical suture having a surgical needle attached thereto wound about the reel panel, the top fold panel and bottom fold panel, with the needle enclosed in the pocket formed by the pocket panel, reel panel, and bottom fold panel, thus protecting the suture from the armed edges of the needle,
said reel-label being particularly adapted for very fine sutures, by having the suture wrapped over folded rather than cut edges.

3,869,045
POSTING TRAYS

Joseph D. Lear, Snyder, N.Y., assignor to Posting Equipment Corporation, Buffalo, N.Y.
Filed May 30, 1972, Ser. No. 247,602
Int. Cl. B42f *17/12*
U.S. Cl. 211—11 **1 Claim**

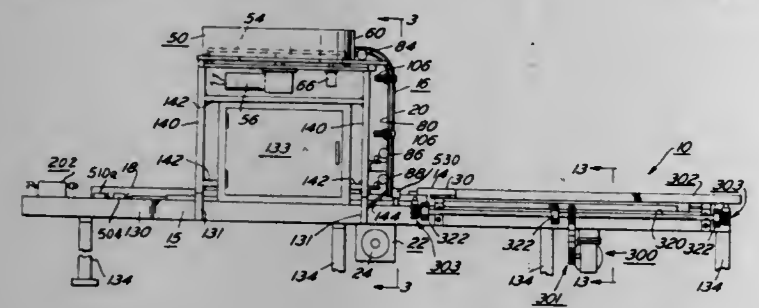


1. A posting tray of open box formation comprising a longitudinally extending bottom with a centrally disposed downwardly extending first channel extending longitudinally thereof, said channel having vertically spaced legs with a transverse horizontal leg extending between said vertical legs, a second inner central channel disposed within said first channel with a horizontal leg extending between vertical legs with said second channel vertical legs being spaced inwardly of said first channel vertical legs and being secured at their lower edges to the transverse leg of said first channel, and pivot slots having elongated transverse horizontal (slots) slot portions disposed in said second inner channel horizontal leg and extending inwardly of said inner channel vertical legs, and (angular slots) vertical slot portions disposed in said inner channel vertical legs, and (said) angular slots intersecting said (horizontal slots) vertical slot portions and having lower upwardly converging portions, and middle portions with horizontal walls extending toward each other to form a catch thereon, at the intersection with said vertical slot portions (and upper portions with vertical walls entering said horizontal slots,) a plurality of rectangular tilt plates in said tray each having a pair of spaced rectangular tabs extending from its lower margin with each plate having its spaced tabs disposed transversely in said horizontal (slots) slot portions and said tabs

having encircled openings therein positioned to be in transverse and longitudinal alignment with said angular slots and extending inwardly and outwardly thereof, to register therewith to permit said horizontal walls of said angular slots to extend into said openings to lock said plates therein when said plates are disposed angularly with a vertical plane.

3,869,046
AUTOMATIC CORE LOADER

James P. Gerhart, 1506 Pheasant Dr., Warminster, Pa. 18974
Filed June 6, 1973, Ser. No. 367,526
Int. Cl. B21c *47/28*
U.S. Cl. 214—1 R **18 Claims**

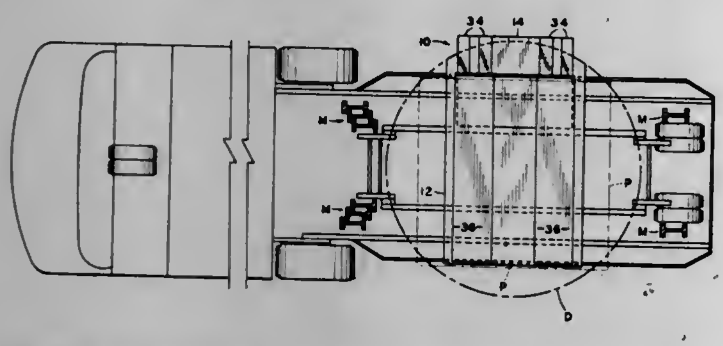


1. An automatic core loader for a plurality of cores comprising

- a core box,
- said core box including spatial support means for aligning said cores concentrically to each other and along the longitudinal axis of said core box,
- a mandrel upon which said cores are to be spatially placed, support and motive means for advancing said core box along the longitudinal axis of said mandrel and concentrically therewith so as to spatially place said cores along the outer surface of said mandrel, and
- means for supplying cores to said core box, said means for supplying cores while said core box is advancing to said core box comprises
- a hopper for storing said cores and dispensing said cores, and
- a chute in communication with said hopper at one end and with said core box at the other end.

3,869,047
LOAD EXTENDING MECHANISM FOR MATERIAL HANDLING VEHICLE

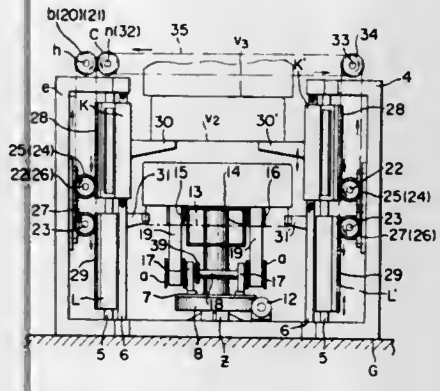
Derek K. Keene, and Louis C. Roll, both of Philadelphia, Pa., assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 1, 1974, Ser. No. 438,815
Int. Cl. B66f *9/14*
U.S. Cl. 214—1 BB **8 Claims**



1. Material handling apparatus for handling a load including a platform rotatable about a vertical axis, a load supporting shuttle mounted on said platform for extension and retraction relative thereto, first drive means operable to extend and retract said shuttle, a secondary load supporting member mounted on said shuttle for extention and retraction relative to said shuttle, and second drive means operable to extend and retract said secondary load supporting member, said first and second drive means being interconnected for simultaneous operation and said second drive means including a lost motion connection with said secondary load supporting member, whereby initial extension of said secondary load supporting member relative to said shuttle lags extension of said shuttle by a predetermined travel distance and full retraction of said shuttle lags full retraction of said secondary load supporting member by a predetermined travel distance whereby said load, shuttle and secondary member are shiftable from a fully retracted position to a position which allows them to rotate within a minimum swing radius.

3,869,048
APPARATUS FOR HANDLING BAKING PANS

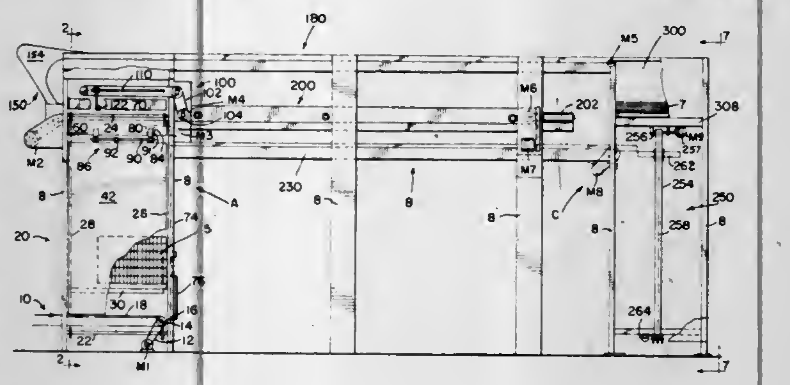
Katsushi Takahashi, No. 1021 Miyato, Asaka-shi, Saitama-ken, Japan
Filed June 30, 1972, Ser. No. 268,074
Claims priority, application Japan, July 13, 1971, 46-60847
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 A **2 Claims**



1. An apparatus for handling baking pans to separate each baking pan from a stack of rectangular baking pans piled up with a major axis of each pan placed perpendicularly to that of an adjoining pan, comprising a turn table mechanism provided with a conveyor belt and a pan receiving disc interposed between a loading conveyor line and an unloading conveyor line for said stack of baking pans, vertical guide posts secured to the machine frame at the each corner outside of the said turn table mechanism, the first and second elevator means slidably mounted respectively on said vertical guide posts and horizontal hook members projecting integrally from each of said first and second elevator means, said first and second elevator means being operated independently from each other by means by photoelectric means.

3,869,049
CAN DEPALLETIZER

Jerome A. Selusnik, Chicago; Robert W. Wolfe, Oak Lawn; William J. Cartwright, Palos Park, and Oliver C. Tate, Darien, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 29, 1973, Ser. No. 364,591
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **10 Claims**

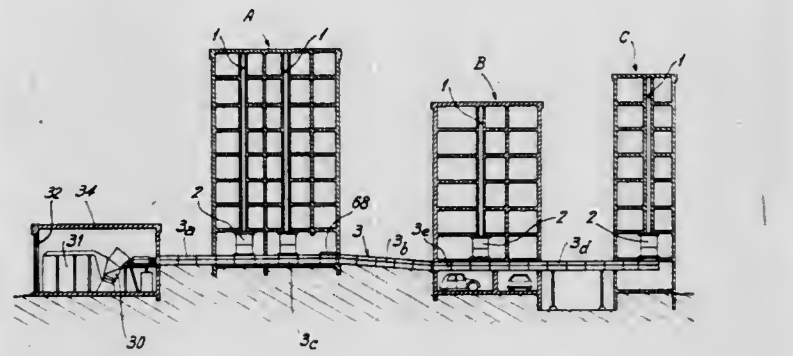


1. A container handling apparatus for unloading containers stacked in tiers separated by paperboard upon a pallet, said apparatus comprising:

- a. elevator means for receiving a loaded pallet, and for incrementally raising said pallet;
- b. separate discharge means adjacent the top of said elevator means for removing said containers, paperboard and pallet from said elevator means; and
- c. three horizontal conveyor means exending from the top of said elevator means for receiving said containers, paperboard and pallets and conveying same to separate collecting areas.

3,869,050
REFUSE COLLECTING APPARATUS

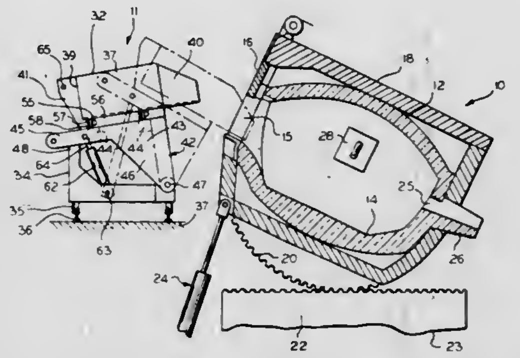
Jean-Claude Michel, Saint-Maur-des-Fosses, France, assignor to Societe Industrielle de Transports Automobiles (Societe Anonyme), Paris, France
Filed Oct. 30, 1973, Ser. No. 411,065
Int. Cl. B66c *5/02*
U.S. Cl. 214—16 R **22 Claims**



1. Apparatus for collecting refuse in a residential estate with multistorey buildings, wherein each said building has a refuse chute column, a collecting receptacle in which said column terminates at a low level thereof, at least one collecting vehicle for serving the collecting receptacles of all the buildings, a hollow casing situated underneath the said collecting receptacles and formed so as to provide a service path for said at least one vehicle, and a discharge along said service path, there being a general displaceable collecting receptacle at said discharge station.

3,869,051
FURNACE CHARGING APPARATUS

Stanley T. Sczerba, McKeesport, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed May 4, 1973, Ser. No. 357,507
Int. Cl. F27b *3/18*
U.S. Cl. 214—18 SC **5 Claims**

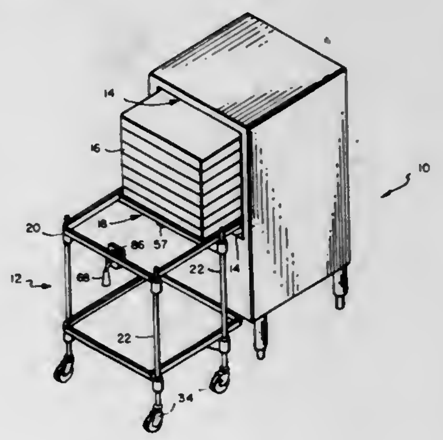


1. The apparatus for charging a metallurgical vessel which has at least one charging opening for receiving material, said apparatus comprising:

- transport means,
- container means for receiving material which is to be charged into said vessel,
- said transport means being constructed and arranged for being positioned adjacent said vessel to dispose said container means adjacent said vessel opening,
- frame means pivotally mounted on said transport means, said frame means including a first elongate frame portion extending generally vertically and being pivotally connected adjacent its lower end to said transport means on the side of said transport means adjacent said vessel, the pivotal axis of said first frame portion lying a substantial distance below said opening and extending in a direction generally parallel to said opening,
- said frame means also including a second frame portion affixed adjacent the upper end of said first frame portion and extending over said transport means in a direction generally away from said opening, container means mounted on the second portion of said frame means,
- operator means coupled to said second frame portion and operative to tilt said frame means about said pivotal axis and toward said vessel opening,
- said container means having an open discharge end disposed generally above the junction of said first and second portions, the pivotal movement of said frame means moving the open end of said container means a substantial distance toward said vessel and into said opening and tilting the opposite end of said container upwardly for discharging the contents thereof into said opening.

3,869,052
TRUCK FOR LOADING OVEN COMPARTMENTS

Richard M. Leahy, Malden, Mass., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Sept. 14, 1973, Ser. No. 397,357
Int. Cl. B60p *1/64*
U.S. Cl. 214—38 B **4 Claims**



1. The combination with a compartment having a front wall with an opening providing access to the interior for receiving a dolly, a mobile truck movable to a position confronting the front opening of the compartment, said truck comprising a shelf mounted thereon for adjustment to a height corresponding to the compartment such that when the truck is moved to said confronting position a dolly mounted on the shelf may be rolled therefrom into the compartment, docking means on the truck interengageable with the opening in the compartment, and locking means for locking the truck to the compartment while transferring the dolly from the shelf on the truck to the compartment and vice versa characterized in that said locking means comprises a rigid rod rotatably supported at the underside of the shelf and extending from the front to the back with a hook at the front end for engagement with a slot in the wall and a handle at the rear end for effecting manipulation of the locking means, said rod having an eccentric portion intermediate its ends, a latch plate situated on the eccentric portion perpendicular to the axis thereof with a portion extending upwardly through the shelf, said upwardly extending portion containing an opening, a lug on the underside of the dolly at a level to enter the aperture when the latch plate is elevated and to be locked to the latch plate when the latter is lowered,

said eccentric portion of the rod being rotatable by manipulation of the handle to effect elevation and lowering of the latch plate, the disposition of the hook with respect to the eccentric portion of the rod being such that when the hook is engaged with the slot in the wall the latch plate is elevated and when the hook is disengaged from the slot in the wall the latch plate is lowered.

3,869,053

LOADING RIGID SHEET MATERIALS

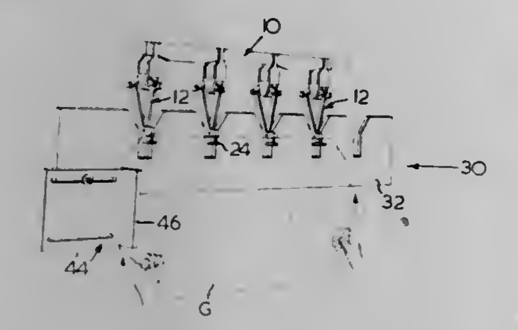
Roland E. Gilbank, Oshawa, Ontario, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,224

Claims priority, application Canada, Apr. 4, 1973, 167959

Int. Cl. B65g *67/04*

U.S. Cl. 214—41 **8 Claims**



1. Apparatus for assisting the loading of a rigid sheet into substantially simultaneous gripping engagement with a plurality of freely suspended self-closing tongs spaced apart along a given surface comprising tong pivotal motion limiting means adapted for positioning sufficiently close to the position occupied by each of said self-closing tongs when the latter are freely suspended and constructed and arranged to simultaneously limit the amount of pivotal movement of each of said freely suspended tongs in directions having components both normal to and parallel to said given surface and movement guide means associated with the tong pivotal motion limiting means to guide the movement of an upper portion of the rigid sheet in an upward direction along said given surface and arranged such that upward movement of the rigid sheet along said movement guide means brings said upper sheet portion into contact with the self-closing tongs to cause the tongs to open and receive said upper sheet portion, whereby said tongs remain in proper location or orientation relative to the rigid sheet and thereafter close to substantially simultaneously grip and support the sheet when a force on the sheet causing said upward movement is relieved.

3,869,054

BUCKET HAVING A MOBILE BACK

Rene V. Moreau, Ermenonville, France, assignor to Societe Anonyme: Poclain, Le Pleiss Belleville Oise, France

Filed Feb. 15, 1974, Ser. No. 443,030

Claims priority, application France, Mar. 21, 1973, 73.10167

Int. Cl. E02f *3/40*

U.S. Cl. 214—146 R **7 Claims**

1. Bucket having a mobile back comprising:

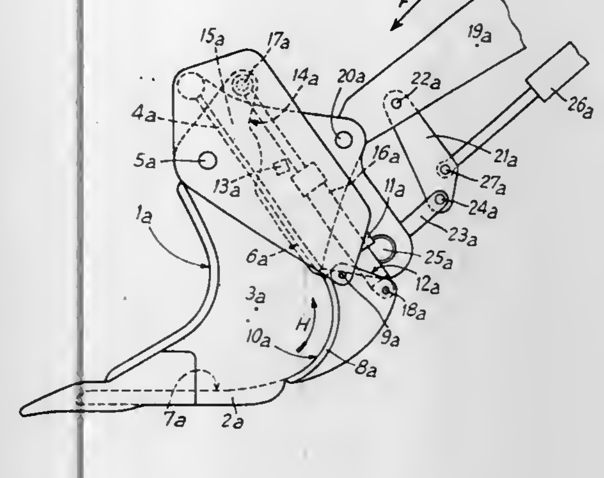
a shell,

the said mobile back, which is mounted to pivot on the said shell about an axis,

and a position adjustment organ, which is linked between the said back and the said shell to adjust their relative pivoting in at least two positions, in the first of which the said back bears against the shell and co-operates with the latter to form the complete bucket provided with a loading opening, and in the second of which this back is distant from the rear face of the shell on the side opposite to the loading opening relative to this shell, this rear face itself being opposite to the said loading opening, this rear face of the shell and the internal face of the said back in the second position defining therebetween a passage, in particular for evacuation of the material which may be contained in the shell, the back itself comprising

a main back which is mounted to pivot relative to the shell about the said axis,

and a connecting element which is arranged on the main back retractably relative to the internal face of the said main back, remote from the said axis, and which can occupy two positions, one known as the connected position, in which it forms a substantially contiguous extension of the internal faces of the shell and of the main back, and one known as the retracted position, in which it is effectively retracted relative to the plane of the internal face of this main back, and a second position adjustment organ being linked between the said connecting element and one of the said shell and main back.



3,869,055

TRANSFER APPARATUS

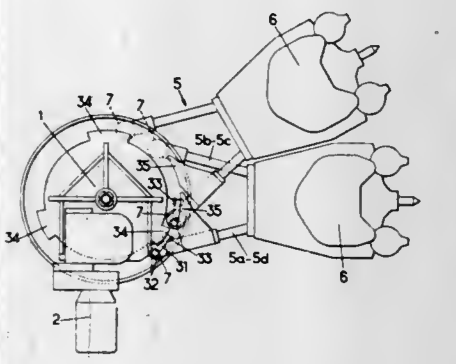
Henri Peltier, Chatillon; Pierre Chatourel, Chaville, and Roger Bailly, Meudon, all of France, assignors to Regie National des Usines Renault, Boulogne-Billancourt, France

Filed Sept. 4, 1973, Ser. No. 393,857

Claims priority, application France, Sept. 22, 1972, 72.33790

Int. Cl. B25j *11/00*

U.S. Cl. 214—151 **19 Claims**



1. An article transport apparatus comprising a pair of support tracks, drive means for driving one of said tracks at a slow speed and the other said track at a fast speed, an article carriage, first roller means mounted on said carriage and engaging said slow track, second roller means mounted on said carriage and engaging said fast track, said first and second roller means cooperating to support said carriage on said tracks, and braking means for braking said second roller means to thereby accelerate said carriage.

3,869,056

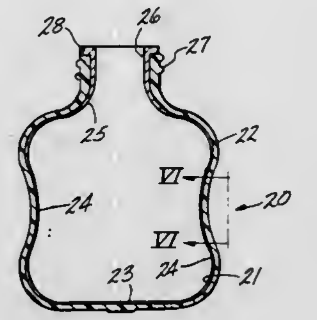
MULTILAYERED HOLLOW PLASTIC CONTAINER

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. Nos. 71,734, Sept. 14, 1970, Pat. No. 3,717,544, and Ser. No. 100,050, Dec. 21, 1971, Pat. No. 3,719,735. This application Dec. 26, 1972, Ser. No. 318,386

Int. Cl. B65d *23/08*

U.S. Cl. 215—1 C **9 Claims**



1. A multilayered hollow plastic container having a base portion, integral side walls and an integral open neck or rim portion, said container exhibiting the characteristics of blow orientation and having an inner drawn seamless thermoplastic layer and an outer solid seamless pressure molded layer, the two layers being adhered one to the other substantially over their entire contacting areas, the thickness of said layers at the neck or rim portion being greater than the thickness of said layers at the side walls, wherein the inner layer overlaps the outer layer at said neck or rim portion.

3,869,057

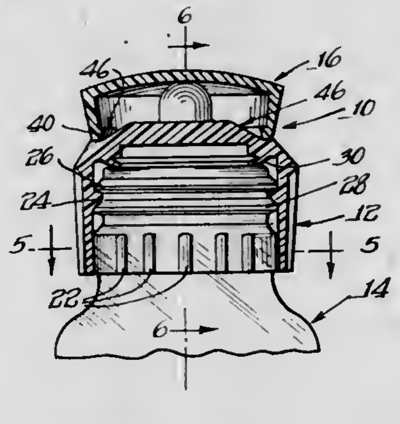
SAFETY CLOSURE DEVICE

Christian F. Miller, Palos Park, Ill., assignor to V.C.A. Corporation, Greenwich, Conn.

Filed Mar. 2, 1972, Ser. No. 231,337

Int. Cl. B65d *55/02*

U.S. Cl. 215—216 **8 Claims**



1. A safety closure device for an open-ended container including a first section for telescopic association with a container in the vicinity of the open end thereof, means for securing said section against unauthorized axial separation with respect to a container, a second shiftable section in the form of a closure member hingedly coupled with said first section and adapted in one shifted position to cover and in another position to uncover said first section, and means providing an interference fit for detachably interlocking said first and second sections in closed position, said second section being sufficiently flexible to become distorted in shape independently of said first section in response to opposed pressures applied manually to opposite areas of the periphery thereof for releasing the interference fit between the first and second sections permitting the latter to be moved to open position, and the means for detachably interlocking said first and second sections comprising interlocking protuberances, the first section having oppositely disposed inclined surfaces adapted to be engaged by adjacent peripheral portions of the second section to cause elevation of said second section upon distortion thereof.

3,869,058

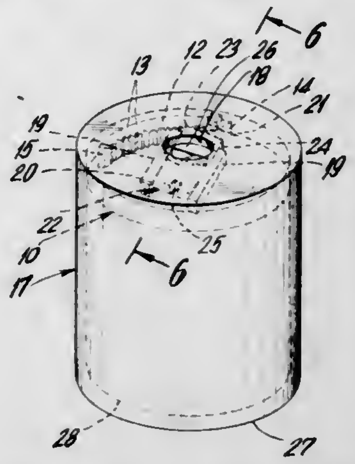
SAFETY CLOSURE FOR CONTAINERS

Clayton Bogert, 118 Lowell Rd., Glen Rock, N.J. 07452

Filed Jan. 26, 1973, Ser. No. 326,861

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—219 **5 Claims**



1. A safety closure for containers comprising:

an inner cap having a top portion and a rim,

a tapered raised member on said top having relatively flat surfaces at each edge and notches between said flat surfaces extending inwardly from the rim of the inner cap,

spring means on the top portion of the inner cap,

an outer cap having a top portion,

tracks on the underside of the top portion of the outer cap forming a guideway,

an aperture in said outer cap,

a movable slide disposed in said guideway and maintained in the guideway by the action of said spring means, said movable slide when partially moved out of said guideway engaging the flat surfaces and notches on said raised member when the outer cap is rotated in one direction and then the other.

3,869,059

STOPPERS

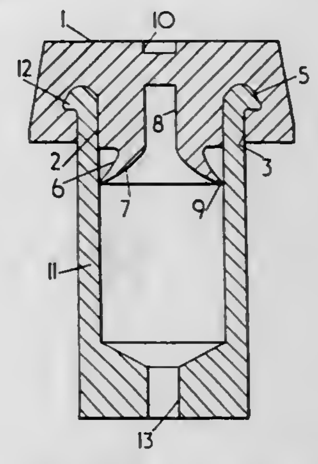
Gerard Ellis, Little Chalfont, England, assignor to Surgical Equipment Supplies Limited, London, England

Filed June 21, 1973, Ser. No. 372,498

Claims priority, application Great Britain, July 5, 1972, 31539/72

Int. Cl. B65d *41/28*

U.S. Cl. 215—320 **4 Claims**

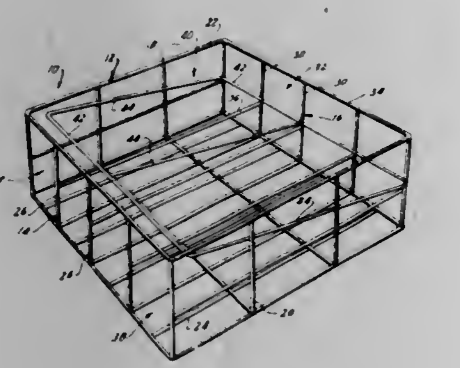


1. A stopper of rubber or rubber-like material suitable for use in in-bottle sterilization, comprising a body having an external generally cylindrical sealing surface for engaging the inside of the neck of a bottle, the body having an internal cavity extending inside the sealing surface and adapted to be exposed in use to the pressure within the bottle; and an integral flexible lip extending from said body to an edge substantially co-axial with said sealing surface for engaging the inside of the neck in substantial line contact, the configuration of said stopper being such that, in the unstressed state, the edge is of greater diameter than the sealing surface, and the lip has

an outer surface which is concave and an inner surface which merges into the cavity.

3,869,060
CONTAINER FOR RECEPTACLES

Esteban Jose Goyheneix, Urquiza 132, 10ºG., Acassuso, Argentina
Filed Feb. 2, 1972, Ser. No. 222,899
Claims priority, application Argentina, Feb. 9, 1971, 233925
Int. Cl. B65d *7/20, 25/10, 25/06*
U.S. Cl. 220—19 **10 Claims**

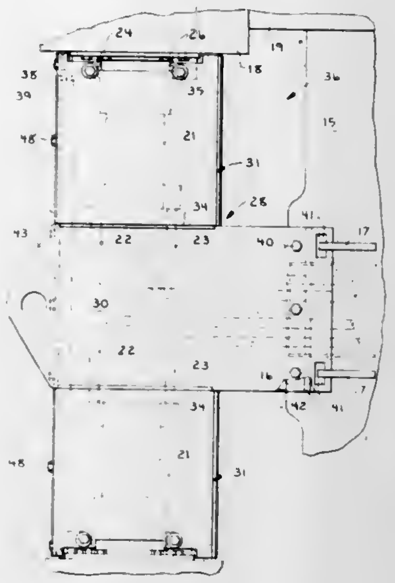


1. A container for storing, transporting and distributing receptacles, which container is adapted to be filled and unfilled automatically and comprises, a parallelepiped frame having a floor and a plurality of lateral sides, said frame being open at its top side opposite said floor and defining a hollow chamber for containing receptacles, a plurality of divider members extending across said cavity between one pair of opposed frame sides and dividing said cavity into a plurality of internal channels extending between said pair of opposed frame sides; at least one of said frame sides having a plurality of openings therein corresponding in number to and aligned with the channels defined in said cavity, said openings extending from said floor to a position adjacent the top edge of said at least one side to permit receptacles to pass therethrough into said channels, and means positioned in said cavity adjacent said openings for selectively blocking and unblocking said openings whereby when said openings are unblocked, receptacles may pass therethrough into said channels and when said openings are blocked, receptacles in said channel are prevented from movement through said openings out of said cavity; each of said pair of sides having a plurality of openings therein; and said blocking and unblocking means comprising at least a pair of bars positioned adjacent said openings and extending parallel to said pair of sides, said bars resting upon said divider members and being adapted to move vertically with respect thereto for selectively blocking and unblocking said openings.

3,869,061
GUARD ASSEMBLY FOR TRACK DRIVE MOTORS

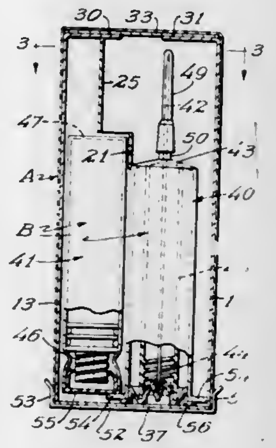
John C. Wanner, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 240,606, April 3, 1972, Pat. No. 3,797,598. This application Aug. 22, 1973, Ser. No. 390,347
Int. Cl. B65d *43/16*
U.S. Cl. 220—334 **7 Claims**

1. A generally horizontally disposed guard assembly attached to a frame for protecting at least one motor or the like comprising
separable upper and lower covers, each having a first end and an opposite second end, detachably mounted on said frame, said lower cover comprising a heavy-duty steel plate construction and
hinge means pivotally attaching the first end of said lower cover on an underside of said frame for selectively permitting said lower cover to pivot thereabout whereby said lower cover can be pivoted downwardly to expose the motor or the like protected thereby.



3,869,062
VIAL AND SYRINGE CARTON FOR EMERGENCY DRUGS

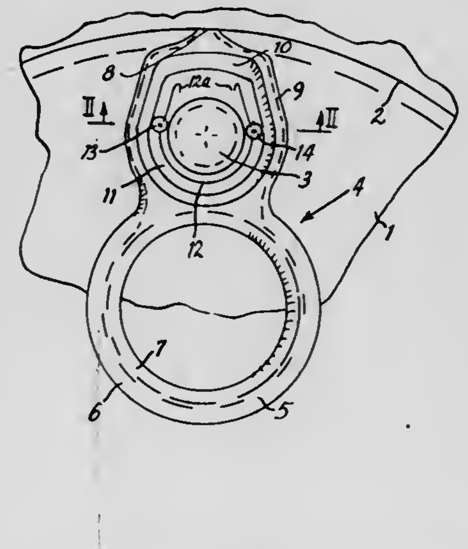
Harold R. Jaeschke, and Daniel J. Boyle, both of Milwaukee, Wis., assignors to Hoerner Waldorf Corporation, Ramsey, Minn.
Filed Sept. 24, 1973, Ser. No. 400,361
Int. Cl. B65d *79/00, 5/48*
U.S. Cl. 206—229 **5 Claims**



1. A syringe package for use with a syringe including an open ended cylinder having a hypodermic needle projecting coaxially therefrom and,
a plunger slidably adaptable in said cylinder, the plunger comprising a cylindrical body having a closed end and a plug of resilient material closing the other end of said plunger, said plunger containing the fluid to be dispensed, the cylinder including finger engaging ears adjoining the open end thereof, the package including:
a body including front, rear, and side walls connected in tubular relation.
top and bottom closures for said tubular body,
said body including the cylinder and plunger in side-by-side relation,
means in said carton body preventing slidable movement of said plunger in an axial direction,
an end of said plunger engaging one of said finger extending ears to prevent longitudinal movement of said cylinder supporting said projecting needle,
the open end of said cylinder substantially engaging said bottom closure.

3,869,063
EASY OPENING CLOSURE FOR CONTAINERS

Kurt Himstedt, Braunschweig, Germany, assignor to Schmalbach-Lubeca-Werke Aktiengesellschaft, Braunschweig, Germany
Filed May 14, 1973, Ser. No. 360,010
Claims priority, application Germany, June 13, 1972, 7222042
Int. Cl. B65d *17/20*
U.S. Cl. 220—270 **9 Claims**

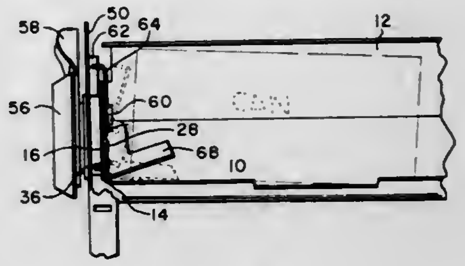


1. An easy opening closure for containers, said closure comprising a panel, at least one weakening line in said panel defining a displaceable panel portion, a pull tab for effecting the rupture of said panel along said weakening line and the displacement of said panel portion, means securing said pull tab to said panel portion with a part of said pull tab lying flatly against said panel portion, and interlocking means of the projection and socket type in said pull tab part and said panel portion for preventing rotational movement of said pull tab relative to said panel portion about said securing means, said interlocking means having the appearance of being simultaneously formed, said pull tab having a nose generally alignable with said weakening line and a grip portion, said nose and said grip portion being disposed on opposite sides of said securing means, and said interlocking means being disposed between a center of said securing means and said nose and projection being on said pull tab part and said socket being in said panel portion wherein said interlocking means are more forcibly engaged when said grip portion is moved away from said panel portion in a container opening operation.

3,869,064
MECHANICAL SOLD OUT FOR ROTARY SLANT SHELF

Harry R. Payne, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.
Filed Mar. 13, 1973, Ser. No. 340,672
Int. Cl. B65h *7/18*
U.S. Cl. 221—19 **6 Claims**

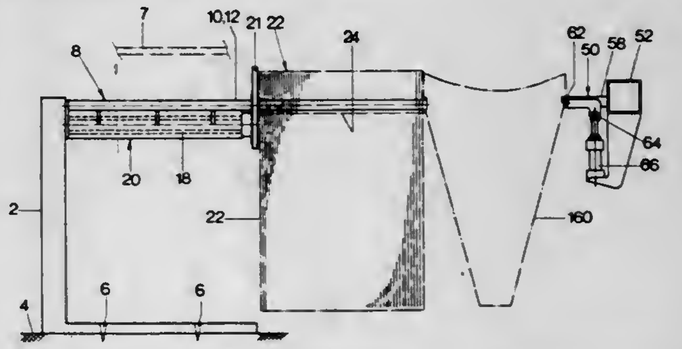
1. A vending machine of the type having a plurality of rotatable dispensing cradles, each adapted to support a single item to be dispensed, the improvement comprising, for each cradle,
a. a latch carried by the cradle, the latch in one position precluding rotation of the cradle, the latch in its other position being disengaged,



b. means carried by said latch responsive to the absence of an article in the cradle to prevent rotation of the cradle.

3,869,065
OPENER AND HOLDER FOR BAGS

Herman Wang, Oscarsgate 74, Oslo, Norway
Filed Nov. 17, 1972, Ser. No. 307,636
Claims priority, application Norway, Nov. 17, 1971, 4238/71; Nov. 2, 1972, 3976/72
Int. Cl. B65b *43/28*
U.S. Cl. 221—40 **8 Claims**



1. Apparatus for dispensing and holding carrying bags comprising an apparatus frame; a bag magazine for a supply of individual bags, said magazine including carrying rail means for extending through the handle openings in the bags; a carrier means; a bag pick-up and holding means supported reciprocably on said carrier means in the vicinity straight forwardly from said magazine rail means, said pick-up means operative to move substantially horizontally from an initial position to the foremost bag stored in said magazine and engage particular serrations or cut-outs in the outermost bag panel only, said pick-up and holding means comprising two laterally spaced hook members adapted to engage said cut-outs in said outermost bag panel only, said hook members arranged to strike upwardly when in engagement with said panel in order to release said panel from said magazine rail means; and means for returning said carrier means including said pick-up means to said initial position; said apparatus operative to dispense and hold one bag after the other in open position suspended between said magazine rail means and said pick-up means.

3,869,066
RAZOR BLADE DISPENSER

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plaines, N.J.
Continuation-in-part of Ser. No. 330,368, Feb. 7, 1973, abandoned. This application Dec. 10, 1973, Ser. No. 423,634
Int. Cl. B65h *1/12*
U.S. Cl. 221—102 **8 Claims**

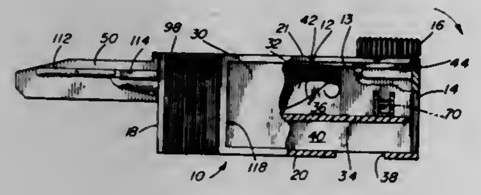
1. In a safety razor blade dispenser of the type in which the uppermost blade in a stack of blades is adapted to be pushed end-wise into shaving position in a head of an associated razor, the combination comprising:
a horizontally elongated body of molded plastic having top and bottom walls, a pair of side walls extending between

said top and bottom walls, and a forward end wall extending between said side walls at one end of said body, the other end of said body being opened between said side walls,

said stack of blades being located within and extending longitudinally of said body,

said forward end wall having a blade exit aperture formed therein, and said top wall having a longitudinal slot formed therein,

a blade pusher of molded plastic slidable in said slot and including a blade-engaging portion having a forward surface below said top wall for engaging the uppermost blade in said stack of blades when said pusher is moved from a rearmost position in said slot forwardly to push the uppermost blade through said blade exit aperture, said pusher further including a finger-engageable portion above said top wall, said finger-engageable portion including a narrow transverse undersurface support portion located forward of a transverse center line of said finger-engageable portion for sliding engagement with said top wall and beveled undersurface portions extending forwardly and rearwardly from said transverse undersurface support portion, whereby said pusher pivots rearwardly about said transverse undersurface support portion to bias said forward surface of said blade-engaging portion upwardly as said pusher is moved forwardly from said rearmost position in said slot,

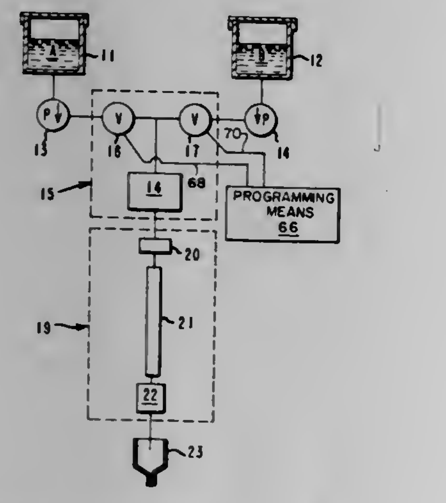


an end closure member positioned in said opened end of said body, and extending beneath said rearmost position in said slot, and

means in said body for biasing said stack of blades upwardly to position the uppermost blade in a horizontal plane defined by said blade exit aperture when said pusher is in said rearmost position in said slot.

3,869,067
APPARATUS FOR GRADIENT ELUTION

Howard L. Ashmead; Sydnor H. Byrne, Jr., both of Newark, and John P. Wolf, III, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 265,994, June 26, 1972, abandoned, which is a division of Ser. No. 36,633, May 12, 1970, Pat. No. 3,712,513. This application Jan. 14, 1974, Ser. No. 433,376
Int. Cl. G05d *11/02*
U.S. Cl. 222—70 **14 Claims**



1. An elution system comprising:

a. a source of first liquid;

b. a source of second liquid;

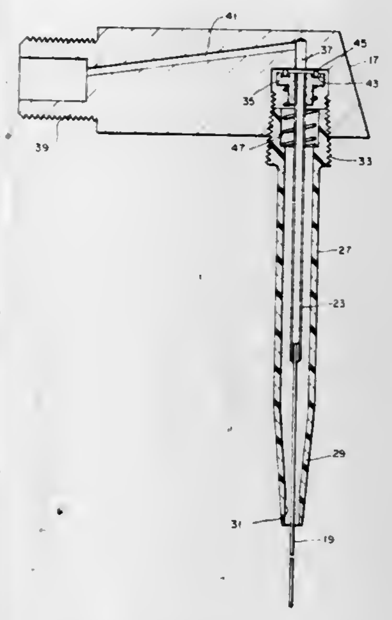
c. first liquid supply means connected to said source of first liquid;

d. second liquid supply means connected to said source of second liquid;

e. proportioning means comprising a mixing region, valving means connected to said mixing region, and programming means connected to said valving means for continuously changing the concentration of the first and second liquids in the mixing region, said valving means having at least two operative portions, a first operative portion connected between said first liquid supply means and said mixing region in a manner such as to supply said mixing region with said first liquid when said first operative portion is activated and a second operative portion connected between at least a portion of said second liquid supply means and said mixing region in a manner such as to supply said mixing region with said second liquid when said second operative portion is activated, said programming means being adapted to separately and periodically control the time during which each operative portion of said valving means is activated and thereby change the concentration of the liquids in the mixing region, said mixing region having a volume greater than the maximum volume of liquid entering said mixing region during the period when either operative portion of said valving means is activated, and comprising means to allow a portion of any liquid contained in said mixing region to be removed from said mixing region while the liquids are being added to the mixing region.

3,869,068
DILUTER PROBE ASSEMBLY

Bu Shing Chen, Coral Gables, Fla., assignor to Hyperion Incorporated, Miami, Fla.
Filed June 6, 1974, Ser. No. 477,152
Int. Cl. G01n *1/10*
U.S. Cl. 222—148 **8 Claims**



1. A probe assembly for use with a diluter of the type which, through a common conduit, aspirates to draw a relatively small sample and then discharges a relatively large quantity of diluent, said probe assembly comprising:

an outlet member having therein a port which is connected to the common diluter conduit;

an outer probe conduit connected to said outlet member peripherally of said port;

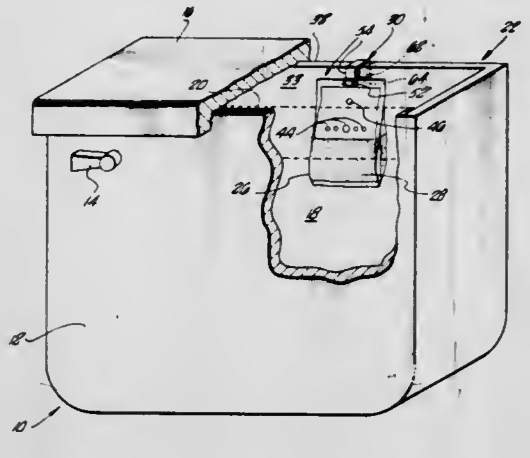
an inner probe conduit member including a needle-like portion extending through and below the lower end of said outer conduit, the upper end of said inner conduit member being of substantially larger diameter than said needle-like portion and being provided with means for forming a seal to said outlet member around said port; and

means for resiliently biasing said inner conduit member upwardly into sealing engagement with said outlet member,

whereby, when the pressure at said port during discharge of diluent overcomes said resilient means, diluent can flow through said outer conduit around said inner conduit at flow rates exceeding those possible through said needle-like portion of said inner conduit.

3,869,069
SUSPENDED DISSOLUBLE DISINFECTANT CONTAINER

John S. Levey; Sandra R. Miller, and Robert F. Levy, all of Los Angeles, Calif., assignors to Days-Ease Home Products Corp., North Hollywood, Calif.
Continuation of Ser. No. 48,896, June 15, 1970, abandoned, which is a continuation of Ser. No. 745,750, July 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 692,840, Dec. 22, 1967, abandoned. This application Oct. 11, 1972, Ser. No. 296,672
Int. Cl. B67d *3/00*
U.S. Cl. 222—180 **3 Claims**



1. In a system for dispensing chemicals in the water tank of a water closet, said water tank being filled and drained periodically to and from a full level;

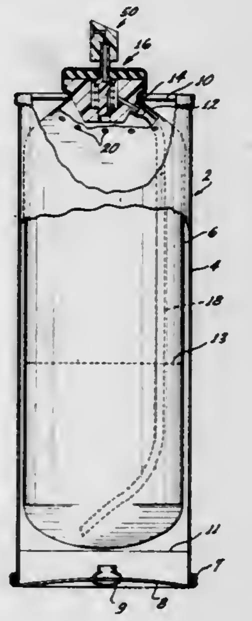
a closed container constructed of water impervious material with thin flexible thermoplastic side walls and having a pair of apertures spaced one below the other aperture through one of said side walls;

means for suspending said container in said tank with said aperture at a level which is at least partially below said full level;

a quantity of said chemicals partially filling said container; a thin, flexible water soluble strip adhesively secured to and flexibly conforming with said one side wall and closing the upper of said aperture, and water soluble means covering the lower of said apertures, both said water soluble strip and water soluble means sealing interior portions of the container until said strip is submerged in the water in said tank, said water dissolving said strip to open said aperture and admit said water into said container to dissolve a portion of said chemicals and cause said dissolved chemicals to flow into said water in said tank and be dispensed by said tank when said tank is periodically drained.

3,869,070
AEROSOL DISPENSING CONTAINER FOR SEPARATELY STORED FLUIDS

John C. Schmoegner, Sylmar, and Norman P. Burger, Culver City, both of Calif., assignors to MDT Chemical Corp., Gardena, Calif., by said John C. Schmoegner, a part interest
Filed Apr. 10, 1973, Ser. No. 349,827
Int. Cl. B65d *83/14*
U.S. Cl. 222—193 **10 Claims**



1. An aerosol dispensing container for separately packaging a liquid product and a liquid propellant comprising:

an outer container body;

an inner container body positioned within said outer container body;

said inner container body having an exterior opening;

said inner container body and said outer container body being sealed together adjacent said exterior opening;

an aperture in said inner container body providing flow communication for the passage of propellant vapor between said inner and outer container bodies;

said aperture being positioned adjacent the seal between said inner and outer container bodies;

said inner container body being closed to flow communication with said outer container body except through said aperture;

valve means sealingly positioned in said exterior opening;

said valve means having an open and a closed position;

said valve means providing an internal passage which communicates with an upper region of said inner container body;

a dip tube leading from said valve means to convey liquid product to said valve means;

said dip tube being closed to flow communication with the liquid propellant such that the liquid product is maintained separate from the liquid propellant as the liquid product is conveyed to said valve means through said dip tube;

said dip tube having an upper end opening in communication with said internal passage;

said upper end opening positioned with respect to said internal passage such that propellant vapor flows past said upper end opening with said valve means in its open position,

whereby, with said valve means in its closed position and said container charged with liquid product and liquid propellant, propellant vapor passes through said aperture to impose a propellant vapor pressure above the liquid product while the liquid product is separated from the liquid propellant and, with said valve means in its open position, propellant vapor flows into said internal passage from said upper region of the inner container body while liquid product is drawn up through said dip tube by flow of propellant vapor past said upper end opening with the liquid product and propellant vapor being mixed in said valve means and then being discharged through said open valve means.

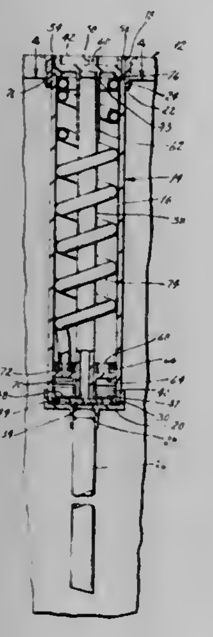
3,869,071
CONTAINER WITH INTEGRAL PUMP

Hess M. Roberts, 12 Crabapple Ct., St. Louis, Mo.

Filed Sept. 13, 1973, Ser. No. 396,780

Int. Cl. B67d *5/42*

U.S. Cl. 222—385 **9 Claims**



1. A device for holding and dispensing fluid comprising a container and means for delivering fluid from said container, said delivery means comprising a pump housing fastened at one end to said container and an actuator member comprising a handle seated in said pump housing when said delivery means is in a first inoperative position, said delivery means having a second operative position wherein said handle is movable with respect to said pump housing for dispensing fluid from said container, said pump housing defining a pump chamber, and said pump actuator member including a pump rod displaceable in said pump chamber, said pump rod having opposite ends, with a piston fixed to one of the rod ends and said handle affixed to the other rod end, said pump further including first and second cover means for defining opposite ends of said pump chamber, both said cover means being disposed at one end portion of said pump chamber when said delivery means is in said first inoperative position, said first and second cover means being respectively disposed at opposite ends of said pump chamber when said delivery means is in said operative position.

3,869,072
COMBINATION CHARGING AND DISPENSING VALVE FOR AEROSOL CONTAINERS

Homer F. Eyerdam, Roxboro, and Richard C. Leimbach, Durham, Both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

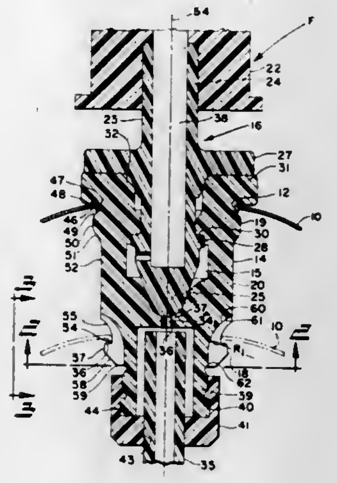
Filed Nov. 10, 1972, Ser. No. 305,384

Int. Cl. B65d *83/00*

U.S. Cl. 222—402.16 **7 Claims**

1. A two-stage [illegible]lve for charging and sealing a container through an opening therein, said valve having a resilient body of generally circular cross-sectional configuration and including longitudinally-extending contiguous first shoulder, second shoulder and intermediate portions, said intermediate portion being generally cylindrical and disposed between said first and second portions, said first portion having a first annular groove and at least one discontinuous recess extending longitudinally above and below and radially inwardly of said first annular groove for charging said container when the edge of said opening is received in said first annular groove, said second portion having a second annular groove for sealing engagement with the container when the edge of said opening is received in said second annular groove after said first and intermediate portions have entered said container, the improvement comprising:

a. said recess defined as having contiguous first and second areas;



b. said first area extending radially inwardly and longitudinally downwardly from said first annular groove to the bottom of said first portion, and having a predetermined laterally-extending width; and

c. said second area extending longitudinally from said first annular groove to a predetermined point on the exterior surface of said resilient body and defined by first and second arcuate surfaces, said first arcuate surface defined by at least one radius struck in a horizontal plane perpendicular to the longitudinal centerline of said valve and said second arcuate surface defined by at least one second radius struck in a longitudinal plane parallel to the longitudinal centerline of said valve.

3,869,073
PROCESS FOR FOLDING SHIRTS OR SIMILAR ARTICLES OF CLOTHING FOR PACKING

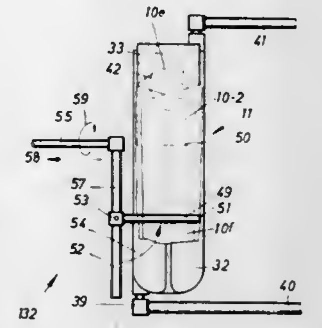
Heinrich Knappe, Eidinghausen; Karl-Heinz Nolte, Vlotho, and Reinhold Kempelmann, Bad Salzuflen, all of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Vlotho, Germany

Filed Feb. 25, 1974, Ser. No. 445,760

Claims priority, application Germany, Feb. 26, 1973, 2309592; Nov. 22, 1973, 2358175

Int. Cl. A41h *33/00*

U.S. Cl. 223—37 **5 Claims**



1. A process for transversely folding an article of clothing having a collar piece, for example a shirt, after the article of clothing has been longitudinally folded about a pasteboard insert and placed on a table plate movable between a plurality of operating stations comprising the steps of:

a. moving a first clamping device into operative position adjacent to said table plate;

b. clamping said article of clothing to said table plate with a first transverse clamping element at a distance from the collar piece approximately twice as great as the final transversely folded size of the article;

c. folding the portion of the article extending beyond the first transverse clamping element in the direction away from the collar piece over said first clamping element to form a first transverse fold;

d. moving a second transverse clamping element into position adjacent to said first clamping element so as to clamp the article of clothing therebetween;

e. moving said first and second transverse elements in a semi-circular path so as to form a second transverse fold in said article of clothing;

f. clamping said article of clothing at the first transverse fold with a second clamping device;

g. removing said first and second clamping elements from said article of clothing; and

h. unclamping said second clamping device.

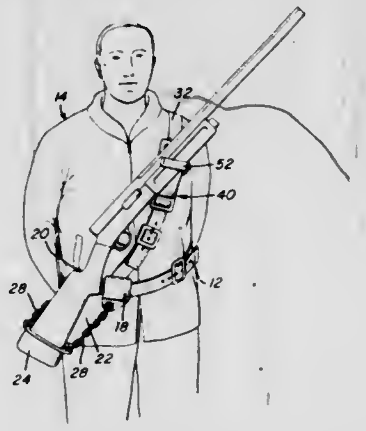
3,869,074
SHOTGUN-RIFLE HOLDER

Raymond F. Roach, P.O. Box 333, North Bend, Oreg. 97459

Filed May 17, 1973, Ser. No. 361,274

Int. Cl. F41c *33/00*

U.S. Cl. 224—1 R **4 Claims**



1. A weapon holder for rifles or the like comprising a belt positionable about the waist of a wearer, a shoulder strap positionable diagonally across the upper body of a wearer between the waist area on one side of the body and over the opposite shoulder, said shoulder strap having front and rear ends engageable with said belt at front and rear spaced points on one side of the body of the wearer, a butt pocket suspended from the belt generally below the belt engaged ends of the shoulder strap and freely telescopically receiving the butt of the weapon, and clip retaining means mounted on the shoulder strap in upwardly spaced relation to the front end thereof and supporting the weapon in diagonal position across the front of the wearer in accessible position for immediate withdrawal and use, said clip retaining means having an entrance opening facing inwardly of the wearer to enable swinging movement of the barrel portion of the weapon when engaging the clip retaining means, said butt pocket being suspended from the belt by front and rear means engageable with the belt immediately adjacent the points of engagement of the strap ends with the belt whereby the load of a weapon received within the butt pocket and clip retaining means provides a counterbalancing effect on the belt, a front loop and a rear loop mounted on the belt, the front end of the strap and the front means suspending said butt pocket being affixed to the front loop, and the rear end of the strap and the rear means suspending said butt pocket being affixed to the rear loop, said clip retaining means comprising a shaped block adjustably mounted on said strap, said block having a forward face, and a spring clip on said block in spaced overlying relation to said forward face for the retention of a weapon forestock or barrel therebetween, the forward face of said block being inclined downwardly and inwardly toward the shoulder strap.

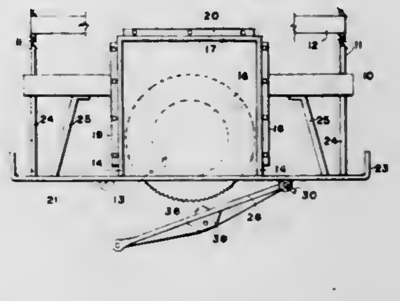
3,869,075
SPARE TIRE CARRIER, REAR BUMPER AND TRAILER HITCH ASSEMBLY FOR TRUCKS

Herbert G. Kissner, Box 1391, Assinibola, Saskatchewan, Canada

Filed June 25, 1973, Ser. No. 373,610

Int. Cl. B62d *43/04*

U.S. Cl. 224—42.06 **4 Claims**



1. A device for attachment to the rear of a truck underneath the frame thereof comprising in combination an enclosed boxing adapted to receive a spare wheel and tire assembly, means to support said boxing to the underside of said truck, an access door in the front of said boxing, and means in said boxing to partially eject the associated wheel and tire assembly when said access door is opened, said means including a curved band extending around the rear perimeter of the associated tire, and tension spring means extending between the ends of said band and an anchor point adjacent each side of the open side of said boxing, normally biassing said band towards said open side.

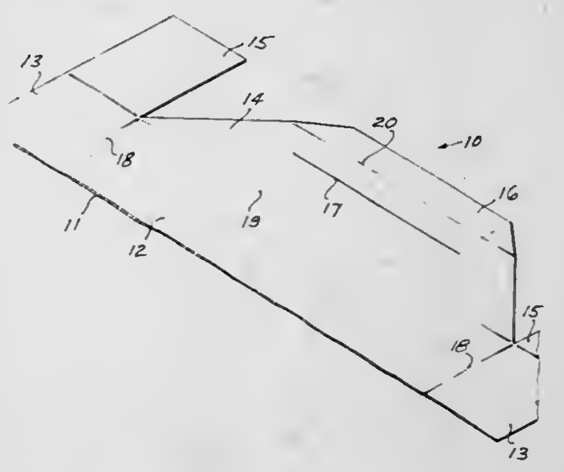
3,869,076
GARMENT BOX

Russell Chally, 1019 Sprace St., Morris, Ill. 60450

Filed Aug. 1, 1973, Ser. No. 384,407

Int. Cl. B65d *5/26*

U.S. Cl. 229—32 **3 Claims**



1. An integral fold-up box for garments or the like comprising a square or rectangular bottom wall; a pair of upstanding, opposed, side walls joined to said bottom by way of fold-up creases, each of said side walls extending the full length of the bottom and carrying a tab at each end joined to the side wall by way of a fold-in crease, each tab being disposed at a right angle to the side wall and extending in the direction of the opposing side wall, each tab and its associated side wall thereby forming a corner for the box; a pair of upstanding, opposed, end walls joined to said bottom by way of fold-up creases, each of said end walls having a trapezoidal shape with long and short parallel sides, the long parallel side of the

trapezoid extending the full width of the bottom and being joined thereto; a pair of tuck-in flaps joined to said short parallel sides of each of said end walls by way of fold-down creases, each of said flaps also having a trapezoidal shape with long and short parallel sides, the long parallel side of each flap coinciding with and being joined to the short parallel side of each end wall; and each of said end walls carrying a tuck-in slot disposed parallel to said parallel sides of the end wall, said slot being slightly longer than said short parallel side of the tuck-in flap whereby disposition of the marginal edge of the short parallel side of the flap within the slot locks the opposing corner tabs at each end of the box between the end wall and its associated tuck-in flap.

3,869,077

CARTON BLANK WITH TURN DOWN CLOSURES

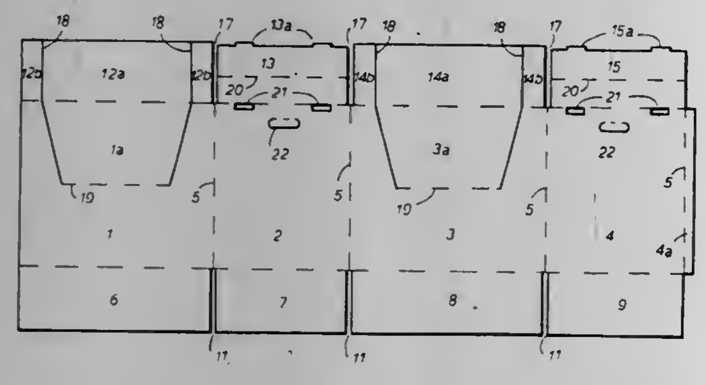
Martti Johannes Tuura, Janha, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Nov. 30, 1972, Ser. No. 310,850

Claims priority, application Finland, Nov. 30, 1971, 3424/71

Int. Cl. B65d *5/64, 5/16*

U.S. Cl. 229—16 D **5 Claims**



1. A carton blank which comprises a panel of sheet material divided into four sections connected to one another along respective fold lines that define the upright edges of the assembled carton, each section defining a corresponding upright side of the assembled carton; a plurality of first flaps each connected to a corresponding section along a fold line defining a respective bottom edge of the assembled carton, said first flaps together forming the bottom of the assembled carton; a plurality of second flaps each connected to a corresponding section along a fold line defining a corresponding top edge of the assembled carton, said second flaps together forming the top of the assembled carton; means defining in at least one of said sections and the second flap adjoining thereto a pair of spaced-apart cuts dividing the second flaps into three portions and continuing into the section to define therein a central portion connected to the central portion of the second flap and extending from a fold line located in the section intermediate the carton bottom and top edge fold lines thereof, said central portions of such second flap and section forming in the assembled carton a closure which can be turned down to render the entire interior of the carton accessible.

3,869,078

LIQUID PROOF FLAT END CONTAINER WITH RECLOSABLE POUR SPOUT

Eric A. Braun, Northville, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Dec. 18, 1973, Ser. No. 425,915

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 R **9 Claims**

1. In a paperboard container, the combination, comprising:

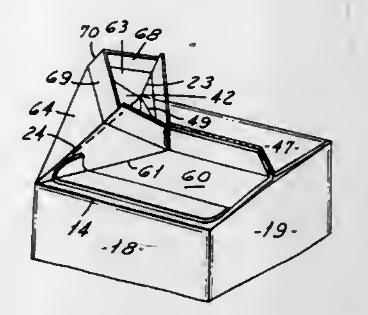
a. a tubular body having a flat end closure thereon;

b. said end closure overlying said body, and including first and second triangular panel members folded flat over the end of said body, and a pair of rectangular shaped panels defined as inner and outer roof panels which are folded over said triangular panel members;

c. each of said triangular panel members are flanked by a pair of fold back panels which join them to said inner and outer roof panels;

d. first and second pouring panels as part of said fold back panels flanking said first triangular panel;

e. first and second closure panels as part of said fold back panels flanking said second triangular panel;



f. a central sealing rib including said inner and outer roof panels, said first and second pouring panels and said first and second closure panels;

g. an outer sealing rib sealing the edge area of said outer roof panel to said inner roof panel; and

h. an opening means positioned between said central sealing rib and said outer sealing rib.

3,869,079

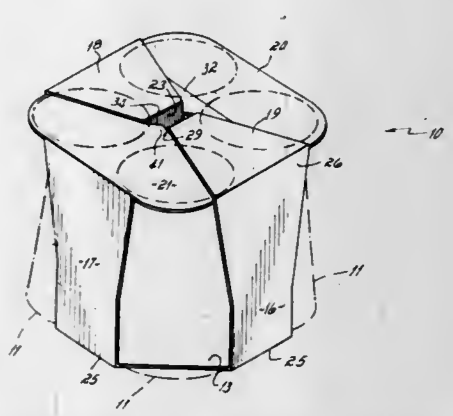
CARTON LOCK

Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 169,355, Aug. 5, 1971, Pat. No. 3,746,245. This application June 8, 1973, Ser. No. 368,054

Int. Cl. B65d *65/06, 75/14, 5/48*

U.S. Cl. 229—40 **4 Claims**



1. a carton blank adapted to be erected to form a package for glassware or the like,

said carton made of foldable sheet material and including a unitary top, four sides extending integrally from said top and comprising two opposed pairs oriented at right angles to the other pair, each side joined hingedly along a line to the top and being separated and spaced from the other sides along its side edges,

two foldable bottom panels associated with a first pair of said sides, each bottom panel being hingedly attached to a respective side along a line parallel to the line at which the respective side is attached to the top and being provided with a fully enclosed aperture proximate the outer margin of the panel,

the two bottom panels being overlappable to form a carton bottom, the apertures together then defining a common aperture in the carton bottom when said bottom panels are overlapped,

and two foldable locking panels associated with a second pair of said sides, each locking panel being hingedly attached to the respective side along a line parallel to the line at which the respective side is attached to the top, each locking panel including an integral tab end provided with locking means formed integrally from said sheet material, said second pair of sides being bendable with respect to said top so that they project from the plane of the latter, the locking panels being foldable to overlap the bottom panels, and said tab end and the locking means being jointly insertable into said common aperture to lock in position the locking tabs and their associated panels, and to lock the two bottom panels together, thereby to form an erected carton.

3,869,080

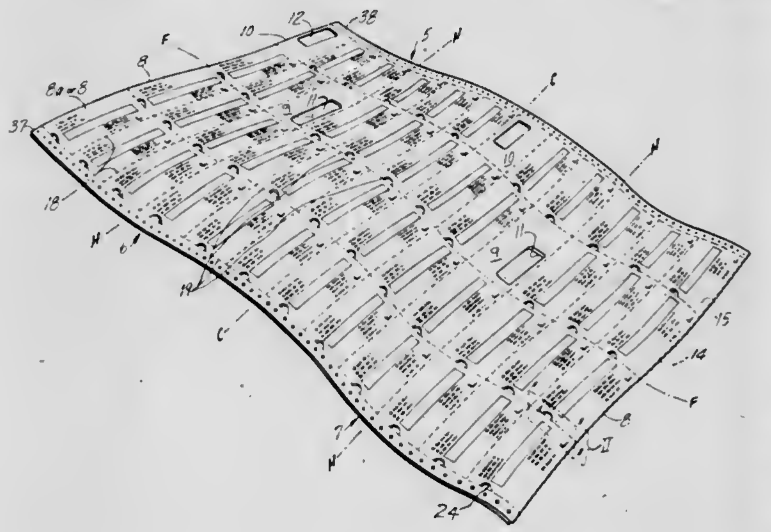
MAILABLE MULTIPLE-ENVELOPE PACKETS

Bret W. Anderson, Northfield, and Joseph A. Steffen, Solon, both of Ohio, assignors to Bret W. Anderson & Associates, Inc., Northfield, Ohio

Filed Feb. 5, 1973, Ser. No. 329,595

Int. Cl. B65d *27/10*

U.S. Cl. 229—69 **9 Claims**



1. A packet of potential envelopes formed of plies of paper and adhesive medium comprising:

a lower ply and an upper face ply of the same width overlaying the lower ply in longitudinal and transverse coextensive relation therewith;

said packet being perforated through both plies along longitudinal tear lines and transverse tear lines to form a rectangular grid pattern of longitudinal rows and cross rows of potential envelopes and window panels, each comprising an upper face element in the upper ply in back-to-back relation with a lower element in the lower ply;

said plies being joined by said medium between opposed marginal edges along three sides of superimposed elements adjacent said lines to form each of certain pairs of superimposed elements into a potential envelope of which the elements thereof are unadhered and separable along one end when said envelope is detached from the packet;

in each of said potential envelopes said face element having a first area for receiving mailor address indicia and a second area for receiving mailee address indicia, both of said areas being transversely offset with respect to any of said medium, the location of said areas on the face elements of said potential envelopes being identical;

said packet being foldable into two superimposed layers of potential envelopes along a middle or intermediate longitudinal line of said tear lines to place the face elements of one layer against those of the other;

one of said packet layers having two of said window panels, each comprising a pair of said back-to-back elements defining a window therethrough with the window of one panel adapted to be located in registry with said first address area of a face element of the other packet layer, and the window of the other panel adapted to be in registry with said second area of another face element of said other layer; and

each of said potential envelopes being notched to one side of the mid point along said open end, and in identical spaced relation with respect to said address areas of said envelope.

3,869,081

VALUE INPUT MECHANISM FOR CALCULATING MACHINES

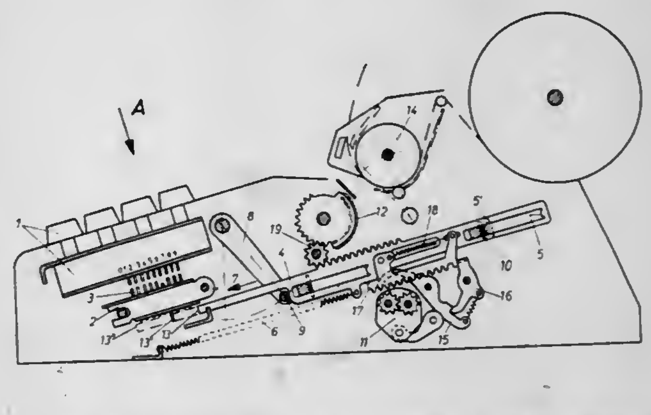
Otto Haberkorn, Gerstetten, Germany, assignor to Walther Buromaschinen GmbH, Gerstetten, Germany

Filed Oct. 11, 1972, Ser. No. 296,553

Claims priority, application Germany, Oct. 20, 1971, 2152159

Int. Cl. G06c *29/00*

U.S. Cl. 235—60 TK **4 Claims**



1. In a ten-key calculating maching, a value input mechanism responsive to the values introduced by actuating keys of a keyboard, comprising a single set pin carriage transversely moveable stepwise in response to actuation of the keys, a plurality of set pins on said carriage corresponding to the values of 1 to 9 and positioned in individual tens series, and a plurality of moveably mounted value selector members each comprising a movable toothed rack arranged in substantially a straight line and each selector member corresponding to an individual tens series of set pins, said value selector members being released by a collector shaft mounted on a pivotally mounted lever, totalizer and printer means operatively actuated by said value selector members to receive values therefrom, each value selector member having a portion thereon engageable with an actuated set pin in a corresponding tens series for actuated values of from 1 to 9, means connected to each value selector member for moving said members in an actuated direction, the set pins of each tens series being arranged in descending order from 9 to 1 in the actuated direction of said value selector members whereby, for all calculating operations each value selector member moves in the actuated direction through a number of value divisions corresponding to the complement of 9 as an indication of the value of the actuated key.

3,869,082

DATA STORAGE AND RETRIEVAL SYSTEM

Ludwig Ludin, Anglikon, Switzerland, assignor to Camille Bauer Messinstrumente AG, Wohlen, Switzerland

Filed Jan. 29, 1973, Ser. No. 327,504

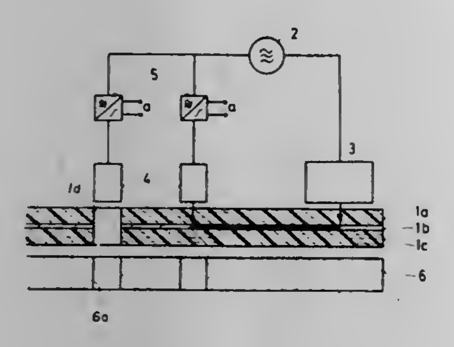
Claims priority, application Sweden, Feb. 2, 1972, 1548/72

Int. Cl. G06k *7/08, 19/06*

U.S. Cl. 235—61.11 H **10 Claims**

1. A data storage and retrieval system comprising in combination a reading device and a document card, said reading device comprising a plurality of sensing electrodes, a counter electrode and a source of alternating potential connected therebetween, said sensing electrodes being offset from said counterelectrode, said card comprising at least one conductive layer having an area in which at least one hole is adapted to be punched, said card being positionable in said reading

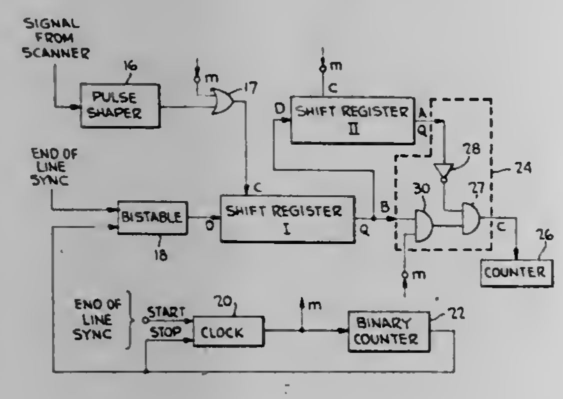
device so that said area in which said holes are adapted to be punched corresponds to the position of said sensing electrodes, said conductive layer functioning as a capacitive coupling between said sensing electrodes and said counter-electrode respectively, said reading device including discriminator means connected to said sensing electrodes by which the capacitance sensed by the sensing electrode may be derived.



3,869,083

METHODS AND APPARATUS FOR DETERMINING THE NUMBER OF OBJECTS IN AN ASSEMBLAGE

Arthur G. Malmon, P.O. Box 30211, Bethesda, Md. 20034
Continuation-in-part of Ser. No. 844,264, July 24, 1969, abandoned. This application July 24, 1972, Ser. No. 274,253
Int. Cl. G06m *11/02*
U.S. Cl. 235—92 PC **27 Claims**

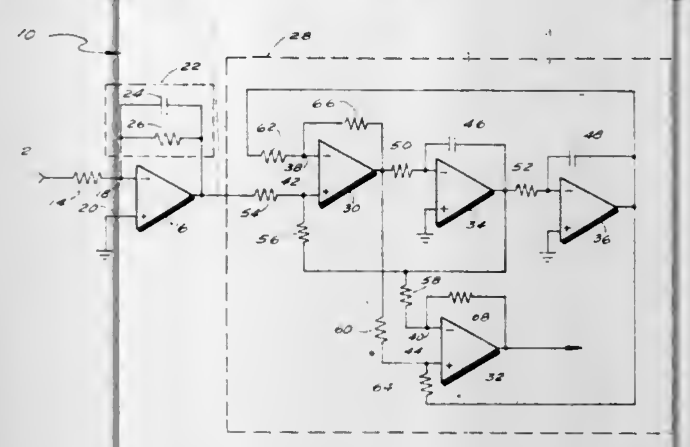


1. Apparatus for determining the number of objects in an assemblage comprising
   - means for scanning the assemblage line-by-line;
   - detector means for generating pulses corresponding to the number of objects encountered during each scan line;
   - accumulating means for storing said pulses generated during each scan line;
   - comparison means connected with said accumulating means and supplying difference signals corresponding to the difference in number of objects encountered during adjacent scan lines; and
   - translating means receiving and totalling said difference signals and providing an output representative of the total number of objects in the assemblage,
   - said translating means including tally counter means receiving said difference signals from said comparison means and edge overlap compensating means for compensating for overlapping edges of objects in the assemblage during a scan line, said edge overlap compensating means receiving said difference signals from said comparison means and supplying compensating signals to said tally counter means in response to the value of said difference signals.

3,869,084

METHOD FOR DESIGNING AN INTEGRATING CIRCUIT WITH A FINITE MEMORY AND THE RESULTANT APPARATUS

Millard Dumas Longman, Jr., Miami Beach, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Aug. 20, 1973, Ser. No. 389,422
Int. Cl. G06g *7/18*
U.S. Cl. 235—183 **8 Claims**

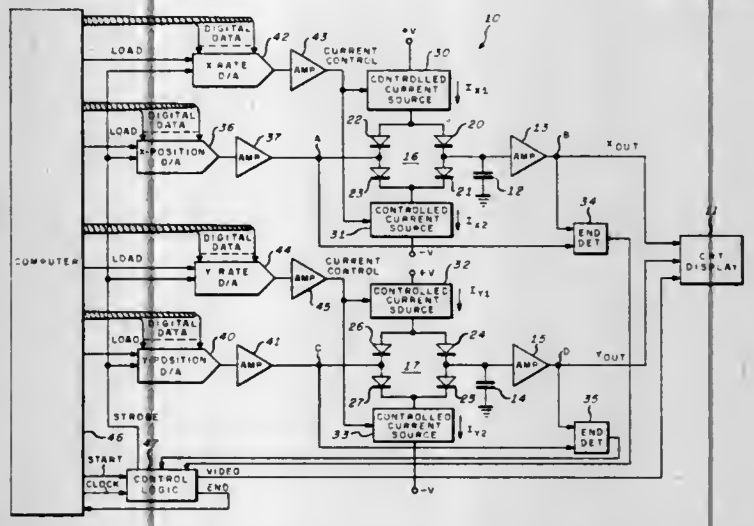


1. An integrating circuit with a finite memory for providing a signal output that is a function of the average of events over a time period just ended with the events occurring previous to the time period having minimum effect on the output signal, said circuit comprising:
   - a low-pass amplifying circuit for receiving input signals, said amplifying circuit responding to an impulse input signal coupled thereto such that an output signal from said amplifying circuit is an exponentially decaying function of time;
   - a biquadratic circuit coupled to receive the output signal of said low-pass amplifying circuit, said biquadratic circuit having an impulse transfer function which can be expressed as at least a second order polynomial expression such that an output signal of said biquadratic circuit, when said output signal from said low-pass amplifying circuit is coupled thereto, remains approximately constant for a period of time after which the output signal of said biquadratic circuit decays rapidly to a second lower constant level.

3,869,085

CONTROLLED CURRENT VECTOR GENERATOR FOR CATHODE RAY TUBE DISPLAYS

Paul F. Green, Glendale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 17, 1973, Ser. No. 425,578
Int. Cl. G06f *3/14*
U.S. Cl. 235—198 **10 Claims**



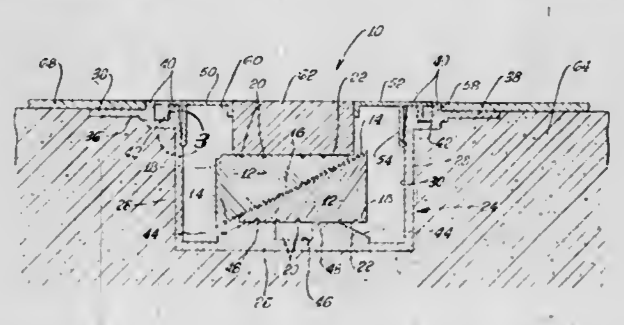
1. A vector generator for a cathode ray tube display having X and Y deflection means, comprising
   - X and Y capacitor means including means for coupling said X and Y capacator means to said X and Y deflection

   - means for storing first X and Y analog voltages, respectively, for determining the current beam position of said cathode ray tube,
   - X and Y position means for providing second X and Y analog voltages, respectively, representative of a new beam position to which a vector is to be drawn from said current beam position,
   - X and Y rate means for providing X and Y analog rate signals, respectively, representative of the X and Y drawing rates of said vector to provide a uniform drawing rate,
   - controlled current source means coupled to said X and Y rate means, respectively, for providing respective currents controlled in accordance with said X and Y rate signals, and
   - current control means coupled to said capacitor means, position means and controlled current source means for directing said controlled currents into said respective capacitor means from said controlled current source means until said first voltages are rendered equal to said second voltages respectively,
   - whereby a vector is drawn from said current beam position to said new beam position at a uniform drawing rate for all vectors.

3,869,086

ADJUSTABLE TRACK ASSEMBLY

Donald T. Heaney, 32316 Phantom Dr., Palos Verdes, Calif. 90501
Filed Dec. 22, 1971, Ser. No. 210,954
Int. Cl. E01b *2/00, 23/00*
U.S. Cl. 238—10 R **12 Claims**



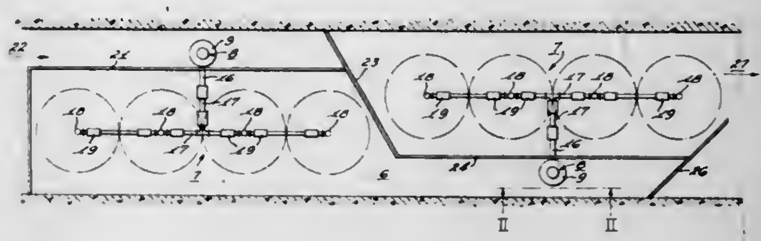
1. A track assembly for supporting a track bearing a carriage for files and cabinets, comprising:
   - a housing with a base having an abutment formed in its center portion with a longitudinal rib on its top surface and with two opposite side walls each having a longitudinal groove and an inward taper at the top portion of their inner surfaces and having a longitudinal groove formed at the top portion of each of their outer walls; and
   - a pair of wedge members each having a series of rows of teeth formed on the surfaces of their longest sides, said teeth interlocking with each other when said longest sides of said wedge members are superimposed, each of said wedge members having a groove formed in one of their remaining sides to receive said longitudinal rib of said abutment of said housing;
   - whereby said track assembly can be adjusted to maintain said track in a level position.

3,869,087

WATER SPRAY COOLING SYSTEM

R. Barry Erickson, Cincinnati, Ohio, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sept. 13, 1973, Ser. No. 397,130
Int. Cl. B05b *17/08*
U.S. Cl. 239—128 **6 Claims**

1. A system for cooling water in a continually flowing stream having a layer of relatively hotter water at the surface of said stream, said system comprising:
   - a plurality of pumps having their intakes located in said stream in spaced relation to one another;
   - a plurality of water spray heads connected to the discharge of said pumps to receive the hotter water therefrom and spray said water into the atmosphere above the stream to cool same; and

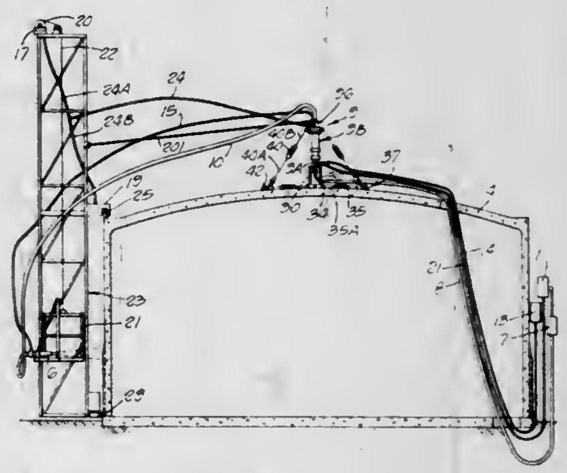


   - baffle means positioned in said stream defining a pump area and a spray head area, said baffle means prohibiting the flow of said hotter surface water from bypassing said pump intakes.

3,869,088

SWIVEL ASSEMBLY FOR GUNITE SYSTEMS

Maximiliaan J. Dykmans, 4434 Mayanan Dr., La Mesa, Calif. 92041
Filed Apr. 24, 1972. Ser. No. 247,139
Int. Cl. B05b *15/00*
U.S. Cl. 239—177 **10 Claims**



1. In a system for spraying a structure having a surface around a common point or line; a nozzle; swiveled conduit means; a plurality of sources of conveyable components; conduit means extending from said sources to said swiveled conduit means and conduit means extending from said swiveled conduit means to said nozzle; said swiveled conduit means incorporating wall means defining at least two separate passageways; and means for transferring said components from their corresponding source through a corresponding passage and to said nozzle; said swiveled conduit means including swivel bearing means and seal means between said wall means; liner means defining a conduit and protecting said bearing means and said seal means and spaced therefrom to define a space; and means flowing a material through said space to prevent material flowing through said conduit from entering said space between said liner and said bearing means; and said seal means.

3,869,089

TRIGGER ASSEMBLY FOR MANUALLY OPERABLE SPRAY APPARATUS

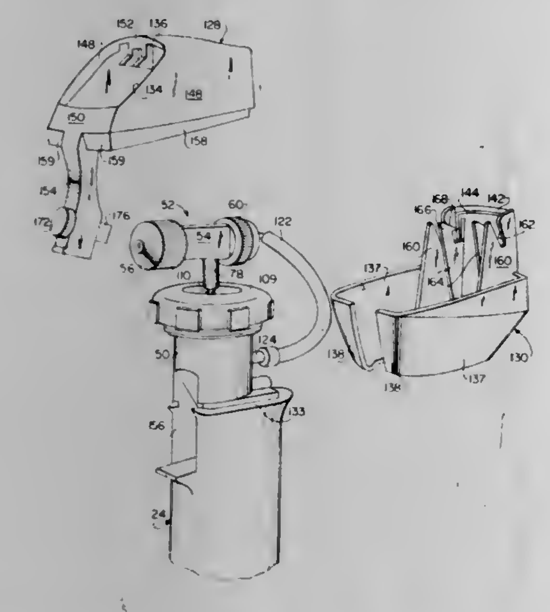
Alvydas Petras Karasa, Baltimore, Md., and Jonathan Durand Bell, Kooskia, Idaho, assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Jan. 3, 1974, Ser. No. 430,535
Int. Cl. B65d *83/14*
U.S. Cl. 239—338 **20 Claims**

1. A trigger assembly for a spray gun including a handle which supports a valve provided with a displaceable actuator

and a spray head mounted on the actuator in fluid communication with the valve, comprising:

a cup-shaped trigger saddle mounted on the handle and provided with an open top end surrounding the valve;

a manually operable, hood-shaped trigger member for engaging and moving the spray head to displace the actuator, said trigger member including an open bottom end



shaped to mate with said open top end of said cup-shaped trigger saddle; and

means for pivotally mounting said trigger member on said trigger saddle to permit movement of said trigger member into engagement with the spray head upon manual operation of said trigger member to displace the spray head and actuator to open the valve.

3,869,090
COMMINUTING APPARATUS AND METHOD

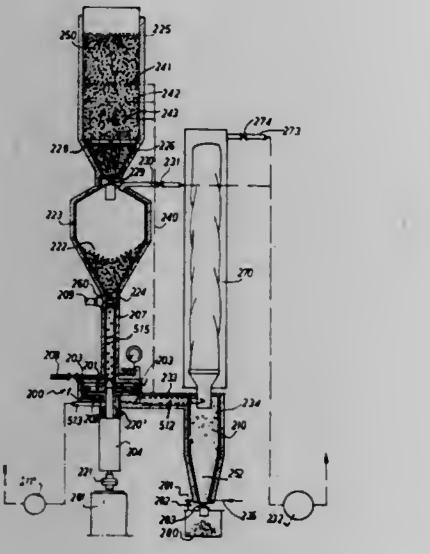
Jacques Roussel, St. Germain D Hauterives, and Georges Perrin, Vizille, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude, Paris, France

Filed July 23, 1973, Ser. No. 381,594

Claims priority, application France, July 27, 1972, 72.27028

Int. Cl. B02c *13/09*

U.S. Cl. 241—5 **19 Claims**



1. In an apparatus for grinding particles of solid material comprising:

1. a wall having substantially a shape of revolution about an axis and defining a grinding chamber,
2. at least one rotor disposed coaxially within said grinding chamber, comprising:
   — a body having a shape of revolution about said axis
   — centrifugal flow guide means for the particles to be ground, secured to said body, uniformly distributed angularly about said axis, each of said centrifugal flow guide means extending radially from an internal extremity for the extraction of said particles to be ground, located in an axial receiving zone for said particles, up to an external extremity for the projection of said particles, located at the outer circular periphery of said rotor, and each of said centrifugal flow guide means having a front surface with respect to the direction rotation of said rotor for displacement of said particles, said front displacement surface having a concave profile from said internal extraction extremity to said external projection extremity of said particles to be ground,
3. means for introducing said particles to be ground, in communication with said axial receiving zone of said rotor,
4. annular impact means disposed in said grinding chamber, and surrounding said rotor,
5. evacuation means for said ground particles, in communication with a peripheral grinding zone, adjacent to said annular impact means,
6. a driving shaft for said rotor passing through said wall of said grinding chamber;

the improvement wherein, in combination:

a. at said external projection extremity, the profile of said front displacement surface of each said centrifugal flow guide means forms an angle comprised between 0° and 10° with said outer circular periphery of said rotor, and

b. at said internal extraction extremity, the profile of said front displacement surface of each said centrifugal flow guide means forms an angle comprised between 0° and 10° with the inner circular periphery of said axial receiving zone.

3,869,091
TUBE MILL

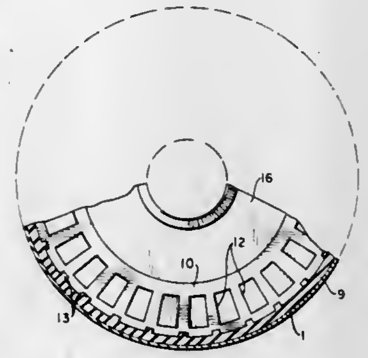
Torben Enkegaard, and Helge Carl Christian Kartman, both of Copenhagen Valby, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed May 8, 1973, Ser. No. 358,686

Claims priority, application Great Britain, May 10, 1972, 21884/72

Int. Cl. B02c *17/02, 17/22*

U.S. Cl. 241—183 **9 Claims**



1. A grinding mill for grinding a material charge which comprises a mill body having at least one grinding chamber, a lining of wear resistant non-metallic resilient material in said grinding chamber, lifting means in said grinding chamber mounted on the resilient lining for lifting and cascading the material to be ground, and a plurality of ring shaped partitions within said chamber, said partitions being substantially equally spaced along the axis of the mill and define at least a central opening and a plurality of openings arranged in a substantially circular pattern so as to provide additional lifting action on the material charge while permitting the material to pass therethrough without interruption in a substantially longitudinal direction.

3,869,092
ENDLESS TAPE CARTRIDGE

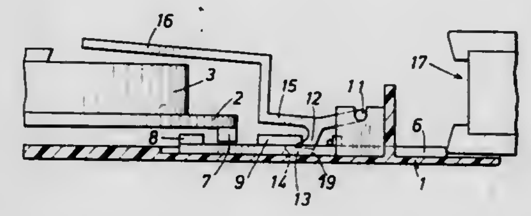
Kimio Tanaka, and Haruo Shiba, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,900

Claims priority, application Japan, Apr. 25, 1973, 48-48671[U]

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **8 Claims**



1. Apparatus comprising an endless tape cartridge; a reel rotatably mounted on said cartridge, said reel being adapted to carry an endless roll of tape; an arresting lever having structure for cooperation with a mating structure on said reel for arresting rotary movement of said reel, said arresting lever being slidably mounted on said cartridge for linear reciprocating motion along a path radial to said reel; a clamping lever pivotally mounted on said cartridge for clamping an endless roll of tape on said reel; and means extending between said levers for pivoting said clamping lever in a direction away from said reel in response to reciprocation of said arresting lever along said path toward said reel.

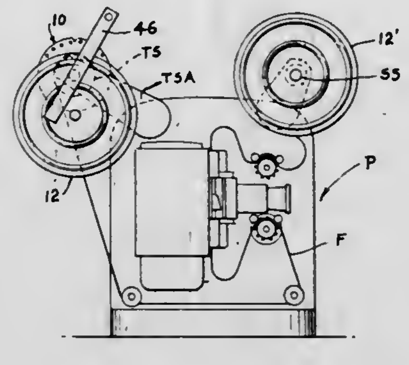
3,869,093
FILM HANDLING SYSTEM

Walter Thomas Ackermann, Watertown, Conn., assignor to Indevco Corporation, Watertown, Conn.

Filed Sept. 12, 1972, Ser. No. 288,254

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.21 **6 Claims**



1. For a motion picture projector, a film handling system which eliminates the need for rereeling comprising:

a. a take-up drive attachment adapted to be supported solely by and driven by the take-up drive shaft of a projector including a generally cylindrical hub having an axial opening a drive spindle journaled in the opening for rotation and having in one end an axial opening adapted to receive the take-up drive shaft of the projector in driving engagement, the opposite end of the spindle having a film-engaging sprocket with outward teeth to be received into the perforations in the film, guide means on the hub for guiding the film in spiral fashion from the said one end of the hub outward about the hub into engagement with the sprocket, support means on the hub immediately above the sprocket and means for keeping the hub from rotating when the shaft rotates;

b. a shallow cylindrical film container having a circular side wall and an end wall, the side wall having a slot for egress of the outer or leading end of the film, the end wall having a central opening adapted to fit into the film supply reel shaft; whereby the film container may be hung by the inside of its circular wall on said support means with the container end wall adjacent the sprocket, and the leading end of the film may be extended over the support means through the slot in the container and attached to the outside of the container so that as the film is driven by the spocket, it forces the rotation of the container and accumulates about the inside of the side wall of the container, winding from outside to inside, the support means engaging the last-deposited layer of film to support the container and whereby once the entire length of the film is in the container, the container may be removed from the attachment and mounted on the film supply shaft of the projector by its central opening, and the leading end may be fed into the projector for viewing without rereeling.

3,869,094
ADHESIVE TAPE DISPENSER

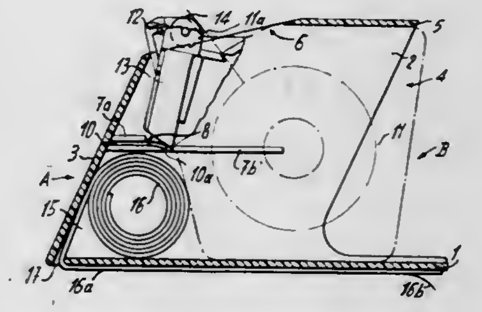
Heinz Hermann Weick, 94, rue de la Servette, Genf; Viktor Trueb, Oberhelfenschwil, and Walter Hesener, Meyrin, all of Switzerland, assignors to said Weick by said Trueb and said Hesener

Division of Ser. No. 218,930, Jan. 19, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,249

Claims priority, application Switzerland, Jan. 21, 1971, 1028/71; Apr. 29, 1971, 6372/71; Nov. 14, 1971, 16536/71

Int. Cl. B65h *19/02*

U.S. Cl. 242—55.53 **6 Claims**



1. In combination with a manually operated adhesive tape dispenser including a casing and having a movable sliding member for applying the adhesive tape, one end of said sliding member being adapted to deflect the adhesive tape and extending through an opening in a sliding surface integrally formed with said casing and the other end of said sliding member projecting from said casing outside said sliding surface for manual operation, a base adapted to receive and support said adhesive tape dispenser, said base comprising:

1. a bottom wall for securing said base to a support;
2. a front member extending from said base;
3. two side members extending from said base;
4. means provided on said side members to engage with said dispenser and releasably to hold said dispenser in said base;
5. resilient means attached to said base in the area of said front member and adapted to urge said sliding member of said dispenser when inserted into said base towards said opening in said sliding surface; and
6. a second adhesive tape on said bottom wall of said base adapted to secure adhesively the bottom wall of said base to a support.

3,869,095

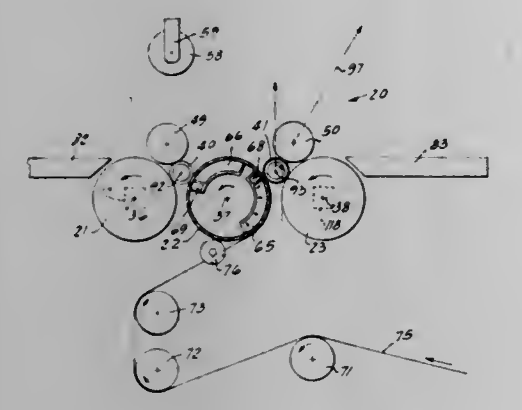
THREE DRUM WINDER

Jack L. Diltz, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 23, 1973, Ser. No. 408,537

Int. Cl. B65h *19/20, 17/08*

U.S. Cl. 242—56 R **25 Claims**



1. In a winder for a web of sheet material adapted for continuous operation the subcombination comprising

A. three axially revolvably mounted drums including mounting means therefor each having generally cylindrical side wall portions, the axes of said drums being generally aligned and in spaced, parallel relationship with each other, said side wall portions of said drums being in adjacent spaced relationship one to another, the two laterally outermost drums being displaced one from the other with the third drum being centrally disposed therebetween with the axis thereof not below the axes of said outermost drums, said third drum having a plurality of apertures defined in its said side wall portions,

B. means for axially revolvably mounting a pair of vacuumizable core shaft members, one such core shaft member being positioned with its circumferential side walls supported by one of said outermost drums and said third drum, the other of such core shaft members being positioned with its circumferential side walls supported by the other of said outermost drums and said third drum whereby said drums are adapted to rotatably drive said core shaft members,

C. a pair of stationary vacuum box means circumferentially located within but adjacent said cylindrical side wall portions of said third drum, each of said vacuum box means being circumferentially spaced from the other thereof, each one of said vacuum box means terminating at a position longitudinally across the circumference of said third roll which just precedes the position longitudinally where a different one of said core shaft members, when such is positioned in said means for axially revolvably mounting such, contacts said third roll initially, each one of said vacuum box members being adapted to exert a reduced gas pressure through said third drum, and

D. a pair of stationary pressurized box means circumferentially located within but adjacent said cylindrical side wall portions of said third drum, each of said pressurized box means being circumferentially spaced from the other thereof, each one of said pressurized box means commencing at a position longitudinally across the circumference of said third roll which just precedes the position longitudinally where a different one of said core shaft members, when such is positioned in said means for axially revolvably mounting such, contacts said third roll initially, each one of said pressurized box means being adapted to exert a superatmospheric gas pressure through said third drum.

3,869,096

HOUSINGS

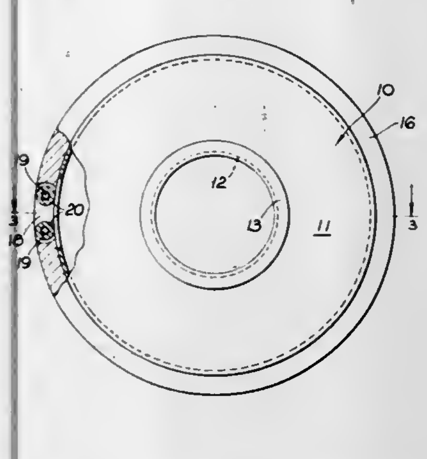
Brian David Hogan, Rowley Regis, and Dennis Frederick Poole, Solihull, both of England, assignors to Rabone Chesterman Limited, Birmingham, England

Filed Jan. 7, 1974, Ser. No. 431,491

Claims priority, application Great Britain, Feb. 3, 1973, 5477/73

Int. Cl. B65h *75/00*

U.S. Cl. 242—84.8 **5 Claims**



1. A housing for a reel carrying a flexible elongate element comprising a pair of substantially uniform side members provided with formations on which the reel is operatively journalled; characterised by a collar member attached between and spacing apart the side members and defining, in combination with edge portions of said side members, a mouth through which the elongate element can be withdrawn or rewound, said side members being discs and the collar member being circular so as to form a drum-shaped housing, and each side member comprising a dished element whose periphery has an axially extending flange edged by a radially outwardly projecting lip, and a side ring fitting around said flange for attachment to the collar member.

3,869,097

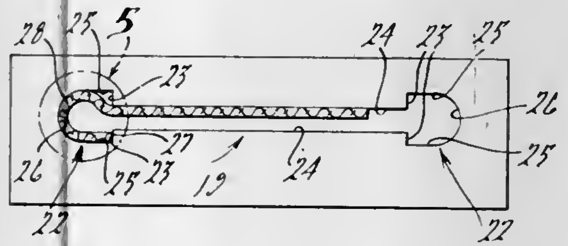
WEBBING SLOT FOR SEAT BELT RETRACTOR HOUSING

Richard E. Peel, Farmington Hills, and Arild O. Saethre, Troy, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,820

Int. Cl. B65h *25/48*

U.S. Cl. 242—107 **6 Claims**



1. A seat belt retractor housing having in a wall an elongated slot through which webbing of a seat belt segment coupled to a retractor within the housing may be protracted and retracted,

the width of the slot in a direction normal to its elongation being slightly greater than the webbing thickness,

the slot at each of its ends having an enlargement terminating in a rounded end wall,

and stop means inwardly of a rounded end wall to prevent reverse entry of the webbing into the slot upon any lateral shift of the webbing into engagement with the respective end wall as the webbing is protracted and retracted.

3,869,098

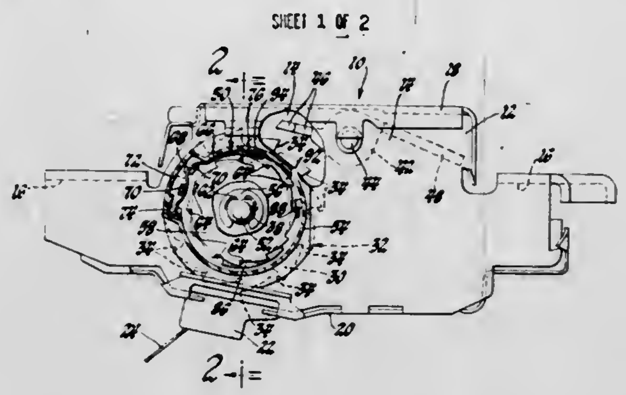
VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR

Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1973, Ser. No. 390,781

Int. Cl. A62b *35/02;* **B65h** *63/04*

U.S. Cl. 242—107.4 **2 Claims**



1. In a vehicle occupant restraint belt retractor including a housing adapted to be mounted on a vehicle, a belt reel rotatably supported by the housing, an occupant restraint belt wound and unwound from the reel upon reel rotation in opposite directions, means normally biasing the reel in the belt winding direction of rotation, and an inertia locking mechanism for selectively locking the belt reel against rotation in the belt unwinding direction, a mechanism for selectively preventing the biasing means from rotating the belt reel in the belt winding direction so as to hold the belt in an unwound condition for use, the mechanism comprising:

a circular ratchet configuration on the belt reel concentric about the axis of rotation thereof and having locking surfaces spaced circumferentially thereabout so as to face in the belt winding direction of reel rotation;

a detent member mounted on the housing for movement between a nonlocking position out of engagement with the circular ratchet configuration so as to permit belt winding reel rotation and a locking position in engagement with the ratchet configuration so as to prevent this belt winding reel rotation;

means biasing the detent member to the locking position;

the belt reel having an annular surface generated about the axis of reel rotation and rotatable therewith during belt winding and unwinding reel rotation;

a control disk rotatable with respect to the reel about the rotational axis thereof and having one side engaged with the annular surface of the reel, the control disk including a control portion that engages the detent member to move this member to the nonlocking position when the control disk rotates in the belt unwinding direction so that the reel is thereby free to rotate in the belt winding direction, a first pair of engageable surfaces on the control disk and the housing for limiting the rotation of the control disk in the belt unwinding direction after the detent member has been moved to the nonlocking position, and a second pair of engageable surfaces on the control disk and the housing for limiting the rotation of the control disk in the belt winding direction of rotation so that the total rotation of the control disk is less than one revolution;

a blocking disk rotatable with respect to the reel about the rotational axis thereof and being positioned on the opposite side of the control disk from the annular surface of the reel, the blocking disk having a blocking portion with a notch for holding the detent member in the nonlocking position after the control disk moves the detent member to this non-locking position, the detent member engaging the blocking portion to limit movement of the blocking disk in the belt winding direction, and a pair of engageable surfaces on the housing and the blocking disk for limiting rotation of the blocking disk in the belt unwinding direction so that the total rotation of the blocking disk is less than one revolution; and

a resilient spring means engaging the side of the blocking disk opposite the control disk so as to bias the blocking disk into frictional engagement with the control disk and to in turn bias the control disk into frictional engagement with the annular surface of the reel so that reel rotation rotates the control disk in a clutched manner between the limits of its rotation and rotation of the control disk rotates the blocking disk in a clutched manner between the limits of its rotation, the control disk being rotated by this clutching to its limit of rotation in the belt unwinding direction as the belt in unwound to thereby move the detent member to its nonlocking position, the notch in the blocking portion of the blocking disk engaging the detent member to hold the detent member in the nonlocking position so as to permit the reel to wind the belt and to concomitantly prevent the clutching of the blocking disk to the control disk from rotating the blocking disk in the belt winding direction with the control disk, the blocking disk being subsequently moved in the belt unwinding direction of rotation by the control disk as the belt is unwound so as to disengage the detent member and allow the bias thereof to move the detent member to locked position and to thereby prevent belt winding until the belt is subsequently unwound a sufficient extent to again engage the control portion of the control disk with the detent member so as to again move the detent member to the nonlocking position.

3,869,099

TAPE RECORDING AND/OR REPRODUCING APPARATUS AND TAPE CASSETTE FOR USE THEREWITH

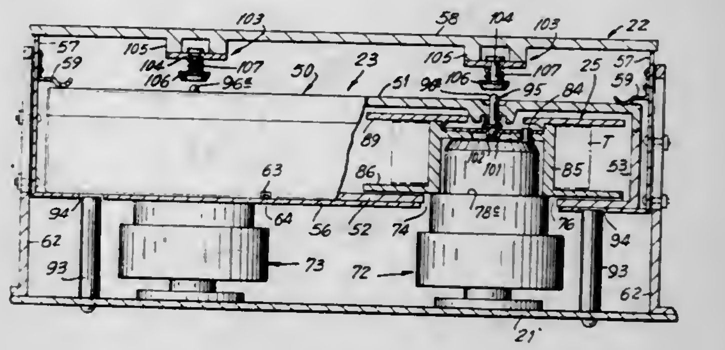
Katsu Inaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 415,220

Claims priority, application Japan, Nov. 13, 1972, 47-130617

Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*

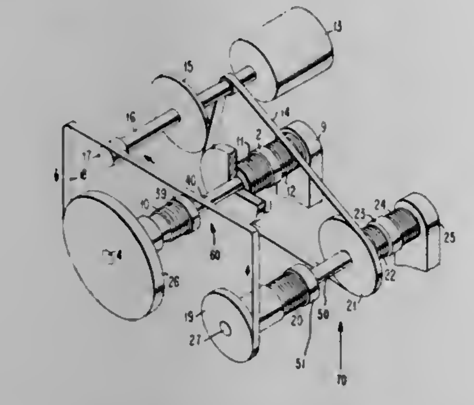
U.S. Cl. 242—199 **27 Claims**



1. A tape cassette comprising a housing having two substantially parallel opposed walls, at least one reel having tape wound thereon and being contained in said housing for rotation about an axis substantially normal to said walls and for axial displacement between said walls, one of said walls having a bore therein which is substantially centered in respect to said reel, a floating member axially movable in said bore and having means at the inner end of said floating member within said housing for engagement axially with said reel, means urging said floating member and said reel axially toward the other of said walls for normally disposing said floating member in a retracted position in respect to said one wall, and an aperture in said other wall which is substantially centered in respect to said reel and through which the latter is adapted to be engaged for controlling the rotation of said reel and for axially displacing the reel toward said one wall so as to similarly displace said floating member to a projecting position in respect to said one wall and at which said floating member is engageable outside of said housing for firmly establishing a predetermined axial location of said reel.

3,869,100
RECORDING TAPE DRIVE APPARATUS

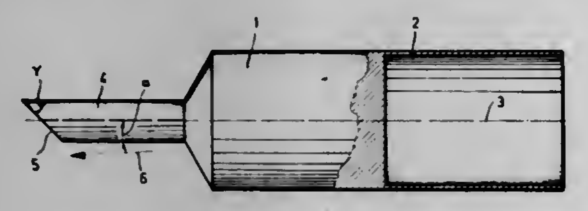
George Burdine Flippen, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 28, 1972, Ser. No. 293,252
Int. Cl. G11b *15/28, 15/32*
U.S. Cl. 242—201 **3 Claims**



1. A recording tape drive apparatus comprising:
- a. a first unit having 1) an input shaft, 2) an output shaft for tape reel means on and from which a tape can be alternately wound and unwound, and 3) a number of direction actuatable spring clutch means including a pulley clutch, a check clutch, and a drag clutch for connecting said input and output shafts of said first unit and providing, separately, slip, grip, and drag when said tape is driven in a first and a second direction, and arranged for effecting respectively and alternately, take-up and supply tensioning of said tape when driven in said first and second directions; and
- b. a second unit having 1) an input shaft, 2) an output shaft for tape reel means on and from which said tape can be alternately wound and unwound, and 3) a number of direction actuatable spring clutch means including a pulley clutch, a check clutch, and a drag clutch for connecting said input and output shafts of said second unit and providing, separately, slip, grip, and drag when said tape is driven in said first and second directions, and arranged for effecting respectively and alternately, take-up and supply tensioning of said tape when driven in said first and second directions; and
- c. drive means for driving said tape and said input shafts of said first and second units in said first and second directions.

3,869,101
INFANTRY MISSILE FOR COMBAT AGAINST GROUND TARGETS

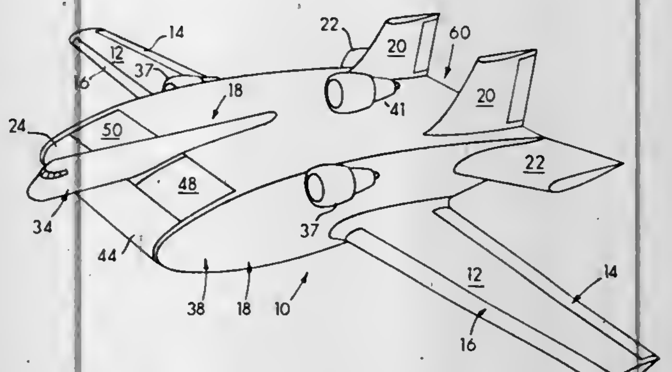
Werner Schnabele, Wolfratshausen; Georg Knoche, Furth, and Fritz Zeyher, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Postfach, Germany
Filed May 7, 1973, Ser. No. 358,079
Claims priority, application Germany, May 10, 1972, 2222785
Int. Cl. F42b *15/18, 15/10, 13/00*
U.S. Cl. 244—3.1 **13 Claims**



1. A nonrotational infantry missile, launchable from a launching device primarily for combat against ground targets, comprising:
- a cylindrical body, the rear part of said body comprising means for achieving an aerodynamically stable flight position without missile rotation, such means defining a hollow cylindrical jacket;
- a cylindrical forward extension coaxially fixed to said body; lift producing trim means fixed on the missile for straightening the flight path of the missile to make said path substantially rectilinear.

3,869,102
AIRCRAFT

Charles A. Carroll, Atlanta, Ga., assignor to International Husky, Inc., Bloomfield Hills, Mich.
Filed May 24, 1972, Ser. No. 256,394
Int. Cl. B64c *3/02*
U.S. Cl. 244—36 **6 Claims**

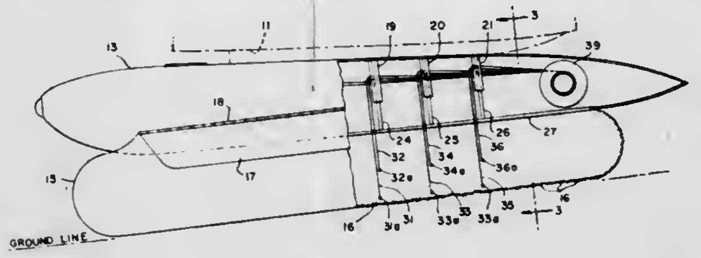


1. An aircraft comprising:
- A. a hull having a roll axis and including a plurality of juxtaposed hull modules, each module including:
  - i. a planar cargo support means extending substantially throughout the length and width of the hull module,
  - ii. an external covering surrounding said cargo support means, said covering means constituting an airfoil in the vertical cross sections parallel to the roll axis and being substantially rectangular in cross sections normal to the roll axis to thereby provide a substantially structurally unobstructed cargo space above said support means throughout said hull module, said hull module generating a lift in flight which substantially offsets the combined weight of said hull module and the cargo it carries,
- B. wings connected to said hull,
- C. means for controlling the aircraft in flight connected to said hull and wings,
- D. means for powering the aircraft, and
- E. a fuselage connected to an upper portion of said hull to be completely above said cargo space in one of said hull modules.

3,869,103
RETRACTION SYSTEM FOR DOUBLE POD AIR CUSHION LANDING GEAR SYSTEM

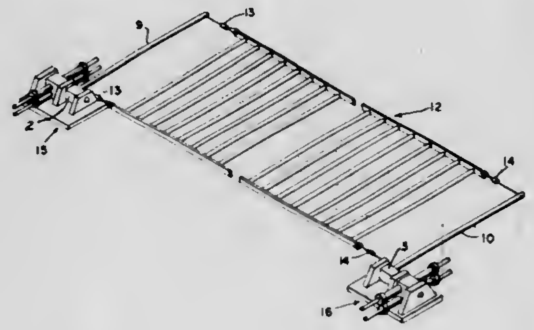
Bud D. Nelson, Kent, and William M. Brennan, Edmonds, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 12, 1973, Ser. No. 406,064
Int. Cl. B60v *3/08*
U.S. Cl. 244—100 R **14 Claims**

1. A retraction system comprising:
- rigid container means having an opening therein;
- an inflatable member sealingly attached to said container means at said opening to form an enclosure;
- a plurality of cords entirely within said enclosure and operatively connected at their respective one ends to the inner surface of said member at spaced intervals; and
- retraction means operatively mounted within said container means and operatively connected to the respective other ends of said cords for reeling in said cords and thereby retracting said member into said container means when said member is deflated.



3,869,104
AIRCRAFT BARRICADE NET ERECTION SYSTEM

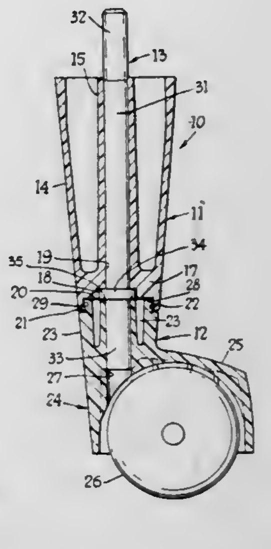
Eugene Gallo, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 28, 1973, Ser. No. 419,575
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **5 Claims**



1. In combination with an aircraft arresting system, said system comprising a crossrunway barrier member adapted to be engaged by an aircraft upon landing and supported at each end by a pair of stanchions mounted on opposite sides of the runway for movement between raised and lowered positions, a control means for raising and lowering said stanchions comprising:
- fluid powered stanchion actuator means connected to each stanchion for raising and lowering the same and including at least one rack and pinion arranged in cooperative relationship;
- hydraulic power pack means operatively connected to each said stanchion actuator means for supplying high pressure fluid to and exhausting spent fluid from said stanchion actuator means; and
- wherein said hydraulic power pack means includes,
- a three-position, solenoid-controlled distribution valve, said distribution valve having an internal pilot line arranged to prevent operation of said distribution valve in the absence of sufficient fluid pressure;
- an accumulator operatively connected to said stanchion actuator means by said distribution valve;
- means connected to said accumulator for recharging said accumulator;
- a flow control valve hydraulically connected between said distribution valve and said stanchion actuator means;
- said flow control valve including a free flow path and a variable orifice path parallel to said free flow path;
- said distribution valve arranged to channel high pressure fluid directly to said stanchion actuator means and to channel exhausted fluid through said free flow path when said barrier member is raised; and
- said distribution valve arranged to channel high pressure fluid to said stanchion actuator means via said variable orifice path and to channel exhausted fluid around said flow control valve when said barrier member is lowered.

3,869,105
FURNITURE LEGS

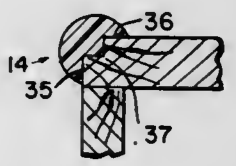
Raymond Robert James Daniels, Kings Lynn, England, assignor to Guy Raymond Engineering Company Limited, Norfolk, England
Filed Dec. 29, 1972, Ser. No. 319,498
Claims priority, application Great Britain, Jan. 7, 1972, 72/890; July 12, 1972, 72/32594
Int. Cl. B60b *33/02*
U.S. Cl. 248—188.8 **1 Claim**



1. A leg for attachment to an article of furniture comprising an upper leg portion, a lower leg portion and a tie rod extending through the upper leg portion and into the lower leg portion, an annular flange on the tie rod located between the upper and lower leg portions whereby the lower leg portion can rotate freely on the tie rod and substantially the whole of any forces applied downwardly to the tie rod or to the upper leg portion are transmitted to the lower leg portion through the flange, snap engaging annular lip and groove elements on said lower leg portion and said upper leg portion, respectively, for axially retaining said lower leg portion on said upper leg portion and enabling said lower leg portion to be rotatable relative to said upper leg portion and to be axially disengageable therefrom under normal working conditions.

3,869,106
SAFETY BUMPER FOR FURNITURE

Stephen Gregov, 3745 West 60th Pl., Chicago, Ill. 60629
Filed Nov. 22, 1972, Ser. No. 308,840
Int. Cl. A47b *96/00*
U.S. Cl. 248—345.1 **1 Claim**



1. A protective safety bumper intended for covering exposed sharp edges, corners, and the like of an article of furniture, the bumper comprising, in combination:
- a longitudinally elongated reusable strip of resilient maaterial adapted to straddle the exposed edge, exposed corners, and the like of the article of furniture and extend completely therealong;
- said strip of resilient material being of an elongated solid cylindrical configuration having a circular cross-section; said strip of resilient material being manufactured of a flexible polyurethane plastic material;

a notch extending longitudinally through a side wall of said strip of material completely between opposite ends of said strip of material;

said notch having a generally W-shaped cross-sectional configuration consisting of two adjacent parallely extending contiguous V-shaped cross-sectional configuration disposed side-by-side with the respective surfaces of each of the V-shaped configurations being in parallel relationship to each other, thus being a total of four surfaces defining the W-shaped configuration with a first pair of two of said surfaces being parallel to each other and a second set of two surfaces being parallel to each other;

said W-shaped notch being of a cross-sectional configuration complementary to the edge, corner and the like to be protected on the article of furniture;

the apex portion of said W-shaped configuration disposed along a diametric line of said strip material;

the two bottommost points of said W-shaped notch configuration lying co-planar along a diametric line of said strip of material;

a coating of pressure-sensitive adhesive material disposed completely along each of said four surfaces of said W-shaped notch, said adhesive adapted for removably securing said strip of material to said article of furniture with said notch surfaces straddling said edge of said article of furniture to be protected and with said notch surfaces being disposed in contacting juxtaposition with said complementary surfaces of said article of furniture;

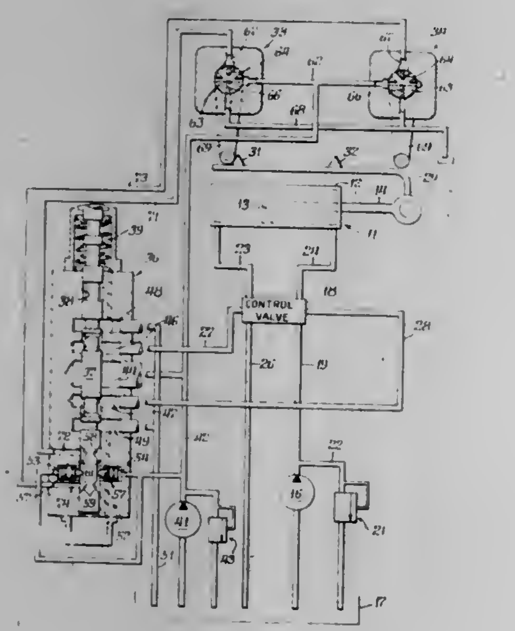
a thin flat elongated sheet of flexible plastic film-like material completely covering said coating of pressure sensitive adhesive, the film sheet adapted to be peeled from said pressure sensitive coating immediately prior to application of the strip of material to the surface of the article of furniture to be protected;

whereby said strip of resilient material defines a shock absorbing cusion disposed along the surface of said article of furniture to be protected thereby.

3,869,107

HYDRAULICALLY ACTUATED DETENT MECHANISM

Jesse L. Field, Jr., Braidwood, and Glen J. Medina, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 4, 1973, Ser. No. 394,189
Int. Cl. F16k *35/00*
U.S. Cl. 251—94 **8 Claims**



1. A hydraulic detent mechanism in a control valve having an elongated spool axially movable in a bore of a valve body for regulating fluid communication with a motor means, comprising

a portion of the spool forming axially spaced apart depressions,

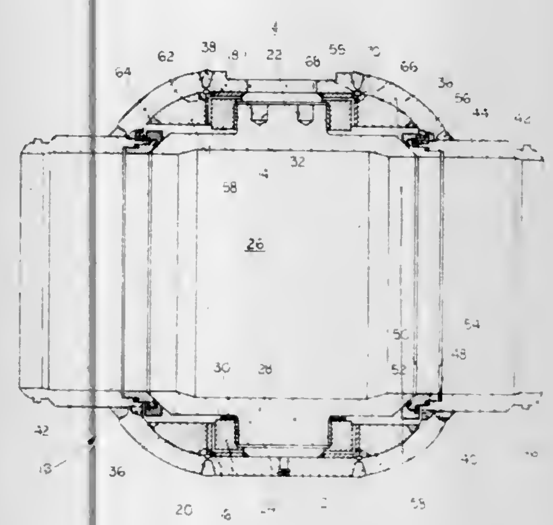
the valve body forming a plurality of circumferentially spaced apart, radial bores communicating at their inner ends with the valve bore and at their outer ends with a common pressurized fluid conduit,

a detent plunger slidably arranged in each of the radial bores, the detent plungers tending to be urged into balanced detent engagement with the depressions in the spool by fluid pressure in the outer ends of the radial bores.

3,869,108

WELDED VALVE BODY CONSTRUCTION

Donald E. Graham, San Leandro, Calif., assignor to Valve Systems International, Inc., Bala Cynwyd, Pa.
Filed Jan. 7, 1974, Ser. No. 424,541
Int. Cl. F16k *27/10*
U.S. Cl. 251—366 **4 Claims**



1. A fabricated quarter turn valve comprising:

a rotary plug member having opposite coaxial trunnions thereon;

a relatively narrow cylindrical central body band section;

a pair of bearing blocks welded in said central section and rotatably receiving said trunnions;

a pair of tapered tubular end closures, each of substantially the diameter of said central sections at its inner end and reduced to a smaller diameter at its outer end;

valve sealing means including resilient seal members carried adjacent said outer end;

a pair of support blocks welded into at least one of said end closures at diametrically opposite portions thereof; and

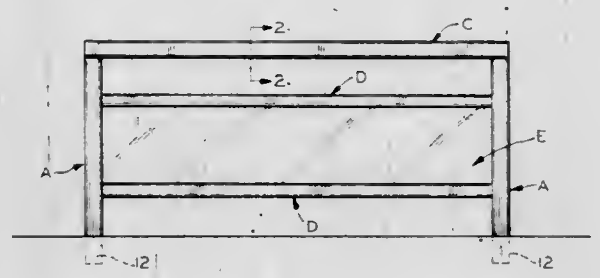
a pair of welds joining said inner ends and said central section so that said support blocks engage corresponding sides of said bearing blocks.

3,869,109

RAILING CONSTRUCTION

Dominic Russo, Cuyahoga, Ohio, assignor to Russo Ornamental Iron Products, Inc., Bedford Heights, Ohio
Filed July 9, 1973, Ser. No. 377,411
Int. Cl. E04h *17/14*
U.S. Cl. 256—59 **16 Claims**

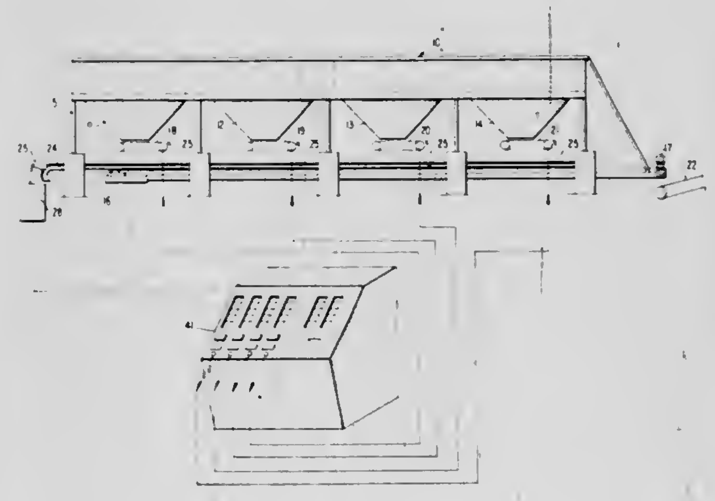
1. A railing construction including vertical posts and a top railing, a one-piece frame member positioned between said posts and having a substantially inverted U-shaped configuration comprised of a substantially horizontal upper portion and spaced vertical portions integral therewith at its ends and vertically extending channel members coacting with said vertical portions by means of integral cooperating interdigitated locking means to form the posts for said railing.



3,869,110

AGGREGATE ANALYSIS AND DELIVERY SYSTEM

James Donald Brock; Erbie G. Mize, and Henry G. Rylander, all of Chattanooga, Ga., assignors to CMI Corporation, Oklahoma City, Okla.
Filed Nov. 24, 1972, Ser. No. 309,112
Int. Cl. B28c *7/04*
U.S. Cl. 259—149 **2 Claims**



1. A method of delivering a mixture of aggregate particles within a prescribed range of particle sizes to an asphalt preparation plant or the like, comprising:

feeding aggregate particles from a plurality of aggregate storage bins to a common conveyor means, each of said bins containing aggregate of a specified size range differing from each of the other bins;

conveying the aggregate with the conveyor means to the asphalt preparation plant;

periodically retrieving a sample batch of aggregate fed from each storage bin;

releasing each sample batch of aggregate in a liquid medium above a weighing scale;

detecting the time lapse and the accumulated weight on the weighing scale;

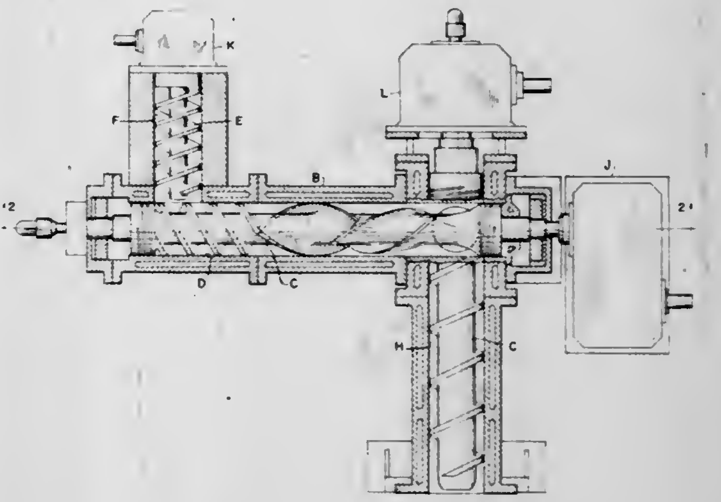
calculating the weight percentage of the particle sizes found in the sample batch; and

regulating the quantity of aggregate particles fed from each of the aggregate storage bins in response to the weight percentage of the particle sizes found in the sample batches.

3,869,111

APPARATUS FOR MIXING RUBBER, ELASTOMER, PLASTIC AND THE LIKE

James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio
Filed Dec. 10, 1973, Ser. No. 422,984
Int. Cl. B29f *3/02*
U.S. Cl. 259—192 **11 Claims**



1. In apparatus for processing materials including solid ingredients which become gelatinous at above ambient temperature, such as rubbers, elastomers, plastics and like mixes: structure forming a cylindrical tubular material processing chamber having a discharge opening adjacent to one end thereof; a rotor supported for rotation in said chamber and having material processing blade portions with convex leading sides, orientated more lengthwise of the axis of the rotor than circumferentially thereof and twisting in opposite directions with the ends thereof adjacent one another trailing; means for rotating said rotor; said structure also forming a material feed conduit communicating with said chamber adjacent the end thereof opposite said discharge opening and extending transversely of said chamber; a material feed screw supported for rotation in said feed conduit; means to rotate said feed screw; said structure also forming a hopper opening into said feed conduit; said structure forming said chamber and said conduit having passageways therein for the circulation of heat exchange medium in the walls thereof.

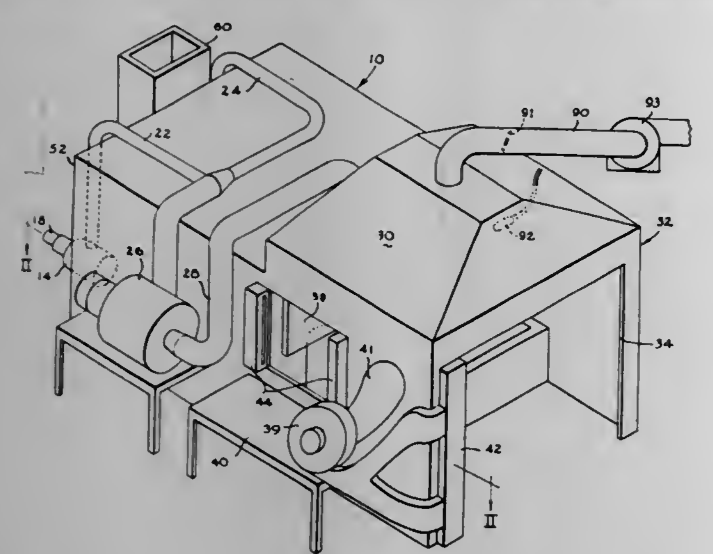
3,869,112

METHOD AND APPARATUS FOR MELTING METALS, ESPECIALLY SCRAP METALS

Khaled M. Habayeb, Wabash, Ind., assignor to Wabash Alloys Inc., Wabash, Ind.
Filed Sept. 18, 1973, Ser. No. 398,336
Int. Cl. F27b *19/00*
U.S. Cl. 266—33 S **7 Claims**

1. A reverberatory furnace having bottom, end, side and top walls and having a melting chamber portion in the lower region thereof, one of said end walls being provided with port means extending upwardly from the bottom and terminating near the top of said chamber portion, said chamber portion extending beyond said one end wall to form a charging well into which metal to be melted is charged, burner means positioned in the other end wall and a stack connected to said other end wall adjacent the burner means to convey exhaust gases from said furnace, an enclosure surrounding said charging well and including a dome at the top for collecting emissions given off by contaminated metal charged into the said charging well, blower means having suction means connected to said dome and having discharge means connected to said burner means to supply combustion gas thereto, said enclosure having at least one opening through which metal to be

charged into said charging well is conveyed into said enclosure from the outside, and an air curtain forming an air screen at



said opening to prevent the escape of emissions from said enclosure via the opening.

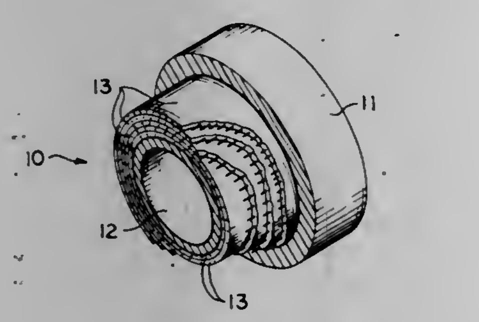
3,869,113
HIGH LOAD BUSHING

Thomas J. Dudek, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed July 16, 1973, Ser. No. 379,666

Int. Cl. F16f *1/16*

U.S. Cl. 267—57.1 R **23 Claims**



1. In a bushing comprising an outer rigid member, an inner rigid member spaced apart from said outer member and an integral elastomeric insert unit mounted in compression and in compressive elongation between said inner member and said outer member, the improvement wherein said insert unit comprises a composite of a convolution of a plurality of overlapping turns of a laminate having an array of flexible fiber cords disposed between layers of elastomer with said cords and said elastomer being bonded together to form said integral insert unit.

3,869,114
ROPE HAVING TENSION-CUSHIONING SHOCK ABSORBER

Herbert Schneider, Heimhausen, Germany, assignor to Rosan Enterprises, Newport Beach, Calif.

Filed Sept. 24, 1973, Ser. No. 399,947

Claims priority, application Germany, Sept. 26, 1972, 2247193

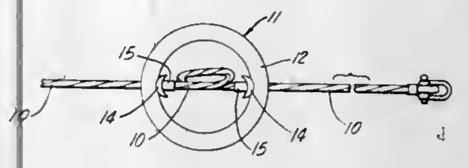
Int. Cl. F16f *1/46*

U.S. Cl. 267—69 **14 Claims**

1. A rope having a tension-cushioning shock absorber, comprising:

a rubber element having high extensibility as well as resilience, the cross section of which is as thick or thicker than its width;

a rope passing through oppositely arranged holes in said rubber element, said rope being secured to opposite ends of said rubber element by a plurality of clamp means and a plurality of abutment means in a manner whereby the length of the rope section situated between said abutment means corresponds to slightly less than the maximum extensibility of said rubber element so that said rope



section is in loosely wound form when said rubber element is in normal or lightly loaded position whereby said rope section is completely stretched out when under a full tension load.

3,869,115
APPARATUS FOR TEMPORARY STORAGE OF ARTICLES

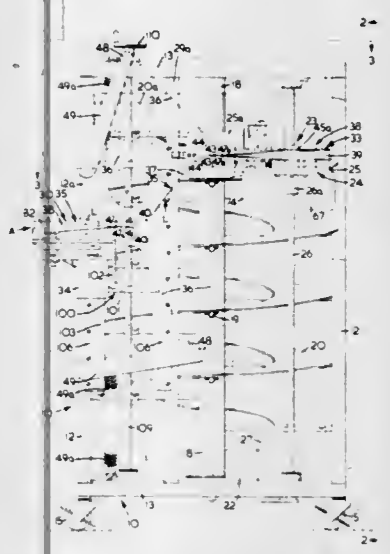
Ronald A. Barkley, P.O. Box 1118 Station H, Ottawa, Ontario, Canada

Filed Aug. 27, 1973, Ser. No. 391,097

Claims priority, application Great Britain, Aug. 29, 1972, 4004/72

Int. Cl. B65h *31/06*

U.S. Cl. 271—147 **21 Claims**



1. Apparatus for storing articles, comprising a storage unit in the form of a helical shelf with a vertical axis and which is mounted for rotation around said axis, conveying means providing for movement of said articles seriatim along a path between the shelf and a stationary delivery point outside the shelf, which path remains substantially fixed in lateral position as the shelf rotates and which leads directly to different positions along the shelf dependent on the rotational position of the shelf, and means for providing relative vertical movement between the storage unit and a part of the conveyor means adjacent the shelf so as to maintain a constant relationship between said part of the conveyor means and the surface of the shelf as the shelf rotates.

3,869,116
DECREASING LOAD DEFLECTION MECHANISM

Elmer Leroy Bob Kroeker, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,591

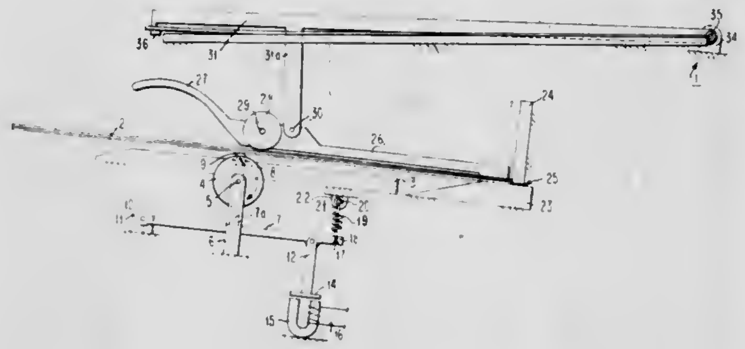
Int. Cl. B65h *1/06;* **B65l** *3/16*

U.S. Cl. 271—160 **9 Claims**

6. A card feed mechanism for applying a substantially uniform force to a card in contact with a card feed roller, comprising:

a card hopper having therein a stack of cards, a pressure plate applying a varying force to the card in said stack most remote from said card feed roller, and

means connected to said pressure plate for applying said varying force including means for producing a magnetic field with said connected means being force wise attracted to said means for producing said magnetic field in increasing amounts as cards are fed from stack by said card feed roller.



3,869,117
FLAT-ARTICLE SEPARATING APPARATUS FOR AN AUTOMATIC MAIL HANDLING SYSTEM AND THE LIKE

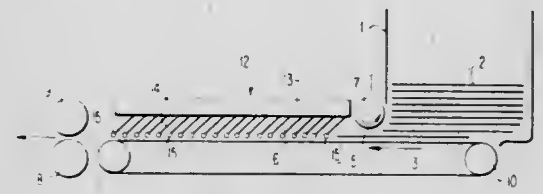
Shoichiro Yoshimura, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 24, 1973, Ser. No. 354,051

Claims priority, application Japan, Apr. 27, 1972, 47-42483

Int. Cl. B65h *3/46*

U.S. Cl. 271—270 **6 Claims**



1. A flat-article separating apparatus for an automatic mail handling system and the like, comprising:

an article transport path including a moving surface,

means for feeding flat articles along said article transport path, and

braking means installed on said article transport path for giving a braking force to said flat articles under transportation along said article transport path, said braking force being gradually increased toward the delivery and of said article transport path, said braking means including a braking surface juxtaposed to said moving surface whereby the uppermost of a stack of overlapping flat articles comes into substantial contact with the surface of said braking means and the lowermost of said stack comes into substantial contact with said moving surface thereby causing said stack to be progressively spread along the direction of movement of said moving surface, said moving surface and the surface of said braking means being made of materials which satisfy the relationship

$$K_1 > K_2 >> K_3$$

where K_1 is the coefficient of friction between said moving surface and a flat article to be separated, K_2 is the coefficient of friction between said braking surface and a flat article to be separated, and K_3 is the coefficient of friction between flat articles to be separated.

3,869,118
DEVICE FOR PROTECTING COVERINGS OF INFLATABLE TENNIS HALLS

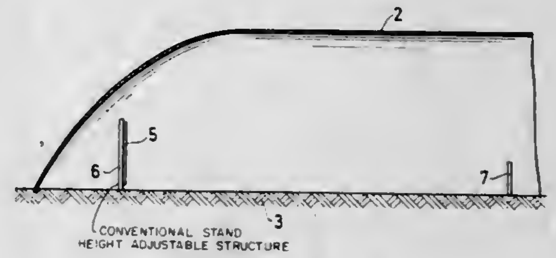
Vladimir Kranz, Munich, Germany, assignor to Steinhof Marketing Corporation Ltd., represented by the General Partners, Steinhof Associated GmbH

Filed Mar. 20, 1973, Ser. No. 342,954

Claims priority, application Germany, Mar. 24, 1972, 2214505; Aug. 2, 1972, 2238037

Int. Cl. A63b *61/00*

U.S. Cl. 272—3 **8 Claims**



1. In combination with an inflatable structure to be used to cover a tennis court, said structure having substantially vertical side walls and a base; said base including said tennis court positioned thereon, said court being provided with end boundaries and side boundaries, said court being further provided with a net structure positioned across the center thereof; in addition to said net structure, a plurality of protection devices which are positioned around at least some of the boundaries of said tennis court each of said protection devices comprising a plurality of stands mounted to said base at a distance spaced inwardly from said side walls toward said court and a resilient skirt mounted on said stands disconnected from and spaced from said side walls and substantially parallel thereto, said skirt having a height sufficient to ordinarily protect said side walls from tennis balls being hit thereagainst.

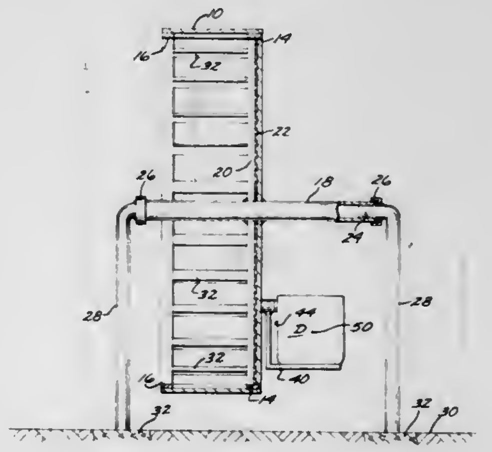
3,869,119
PLAYGROUND AMUSEMENT DEVICE

Louise V. Oxley, 2236 McNab Ave., Long Beach, Calif. 90815

Filed June 17, 1974, Ser. No. 480,002

Int. Cl. A63g *1/14*

U.S. Cl. 272—38 **10 Claims**



1. A playground amusement device for children that includes:

a. a rigid cylindrical shell that defines a curved interior surface, with said shell having first and second open ends;

b. a tubular sleeve concentrically disposed in said shell and located on the axis of rotation thereof, said sleeve having first and second ends;

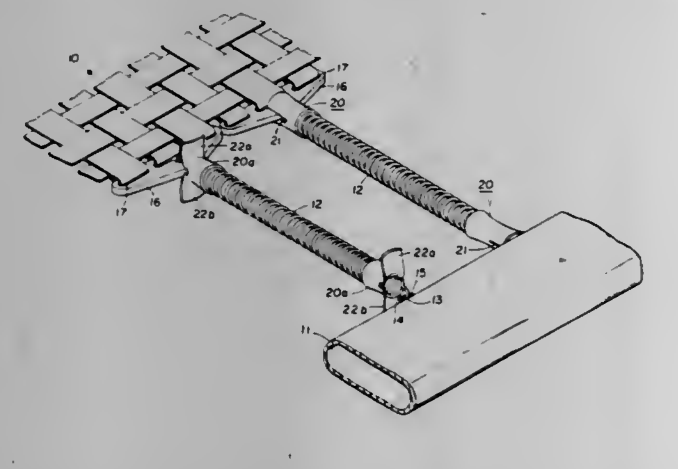
c. first means that rigidly connect said first end of said shell to said sleeve, with said first means obstructing entry into the interior of said shell through said first open end thereof;

- d. at least one horizontal shaft on which said sleeve is rotatably mounted;
- e. second means for rigidly supporting said shaft at a fixed elevation above the surface of said playground to permit said shell, sleeve and first means to rotate as an integral unit after a first child enters the interior of said shell through said second open end thereof and thereafter walks or runs relative to an upwardly inclined portion of said interior surface of said shell;
- f. a seat for at least one second child adjacently positioned to said first means and outwardly disposed therefrom;
- g. third means for pivotally supporting said seat from said first means, with said third means so positioned relative to said seat and first means that said third means is at all times positioned above the center of gravity of the combined weight of said seat and second child whereby the position of said second child is not tilted as said shell rotates, and said third means so pivotally supporting said seat from said first means that no portion of said seat or second child will be brought into pressure contact with said sleeve or second means as said shell, sleeve and first means are rotated as a unit by said first child; and
- h. fourth stationary means disposed in said shell that may be grasped by said first child when walking or running relative to said shell to maintain his balance, said fourth means rigidly secured to said second means.

3,869,120
PROTECTIVE END COVERS FOR THE RESILIENT SUSPENSION MEMBERS OF TRAMPOLINE BEDS AND THE LIKE

George P. Nissen, Cedar Rapids, Iowa, assignor to Nissen Corporation, Cedar Rapids, Iowa

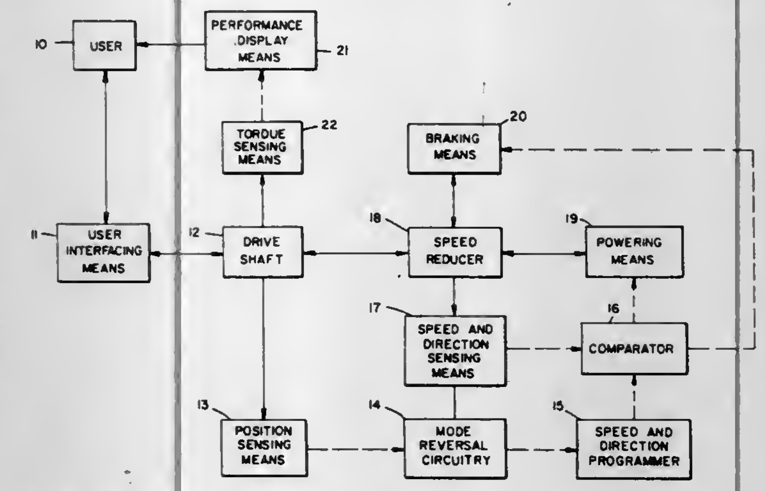
Filed Apr. 22, 1974, Ser. No. 462,662
Int. Cl. A63b *5/18*
U.S. Cl. 272—65 **3 Claims**



1. In apparatus for rebound of a performer in connection with trampoline, gymnastic and like activities, the apparatus having a frame, a flexible bed, and a plurality of elongated resiliently extensible members, each resilient member having a hook extending outwards from at least one of its opposite ends and releasably secured along one of the opposed marginal edges of the bed and the frame effective so that the bed is resiliently suspended from the frame, the hook terminating in an exposed end subject to contact by a performer, the improvement comprising: a protective sleeve of flexible material at said end of each resilient member, the sleeve having two portions, the first portion encompassing a portion of said end of the resilient member and resisting longitudinal movement of the sleeve relative to the resilient member, the second sleeve portion encompassing the hook at said member end portion, the wall of the second sleeve portion having a pair of slits therein extending in a longitudinal direction inwardly from the outer end thereof to form a flap portion effective to normally protectively overlie said hook end and to be foldable back toward the first sleeve portion to assist hooking or unhooking of the hook.

3,869,121
PROPORTIONED RESISTANCE EXERCISE SERVO SYSTEM

Evan R. Flavell, P.O. Box 6397, Astoria, Oreg. 94706
Division of Ser. No. 270,219, July 10, 1972,. This application July 5, 1973, Ser. No. 376,873
Int. Cl. A63b *21/24*
U.S. Cl. 272—79 R **15 Claims**



6. An exercise apparatus comprising

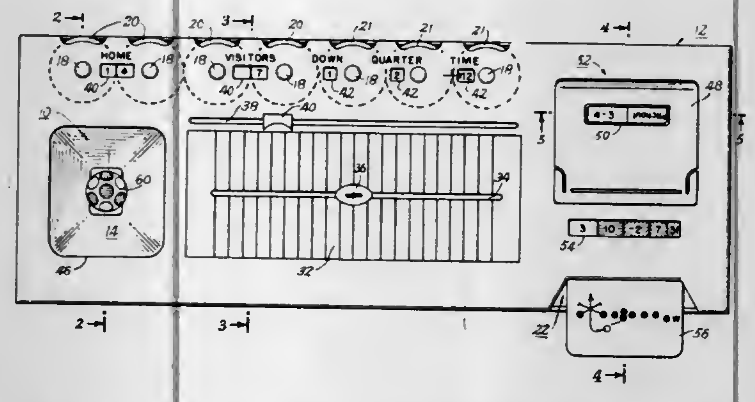
a movable device adapted for driving relation with a user, resistance means connected to said device for providing said device with exercise resistance by supplying driving power to said device in one direction of its movement and by supplying braking force to said device in the opposite direction of its movement, and

means connected to said device for automatically reversing the direction of movement of said device at each of two preset limits.

3,869,122
FOOTBALL GAME

Calvin L. Payne, Jr., Hastings-O-Hudson, and Vincent J. Gambello, New York, both of N.Y., assignors to Tudor Games, Incorporated, Brooklyn, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,901
Int. Cl. A63f *7/06*
U.S. Cl. 273—94 R **4 Claims**

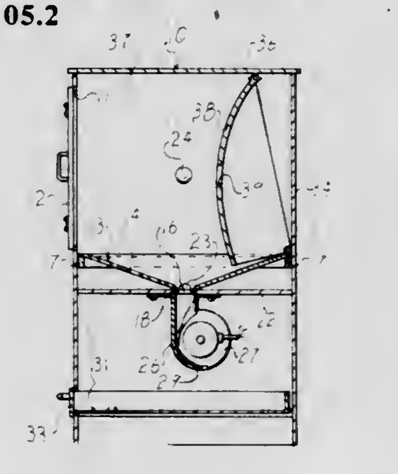


1. In a football board game, a board surface adapted to have superposed thereon a simulated football field, a container for said board surface bearing a simulated football field and having a slidable ball marker thereon, said board surface providing a defensive strategy region having an action slot formed therein, said action slot having formed therein a plurality of holes arranged in a column along each longitudinal edge of said slot and having defensive play indicia disposed proximate to each of said holes, pegs adapted to be selectively inserted in said holes, offensive play cards adapted to be inserted in said slot having play result indicia disposed on both surfaces thereof with the indicia on one surface being different from the indicia on the other surface and having a shoulder formed along each lateral edge thereof, one lateral shoulder being at a different longitudinal location from that of the other lateral shoulder on each play card, whereby one of said play cards may be inserted in said slot and its longitudinal penetration in said slot being determined by means of said pegs engaging one of said shoulders depending upon which side of the card is face up.

3,869,123
SHOOTING GALLERY WITH TARGET BALL SUPPORTED ON A COLUMN OF AIR

Bobby L. McDaniel, Columbus, Ga., assignor to Hugh P. Carter, Jr. and Woodford R. Thompson, Jr., both of Birmingham, Ala., part interest to each

Filed June 28, 1973, Ser. No. 374,472
Int. Cl. F41j *1/14*
U.S. Cl. 273—105.2 **1 Claim**



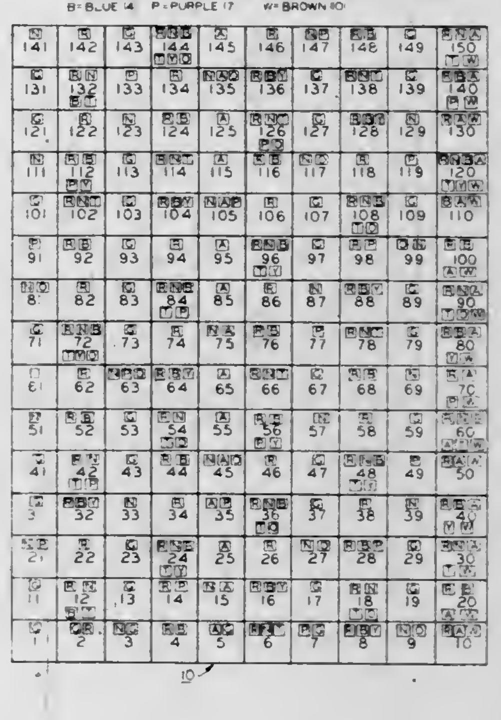
1. A shooting gallery comprising:
- a. a bottom member having an opening therein inwardly of the edges thereof and an inwardly and downwardly sloping upper surface which slopes toward said opening,
- b. means supplying and directing a moving stream of air upwardly through said opening at a velocity to move to an elevation above said bottom member,
- c. a lightweight spherical target of a weight to move upwardly with said stream of air and float thereon above said bottom member to provide a floating target until struck by shot and moved out of the path of movement of said stream of air,
- d. a deflector member extending upwardly and inwardly from at least one edge of said opening to an elevation above said opening in position to impart upward and inward movement to said target so that a target moving down said inwardly sloping upper surface moves into said moving stream of air,
- e. an upstanding flexible sheet attached ajdacent opposite edges thereof to supports at a side of said floating target and extending across the path of movement of shot after passing said target with the length of said sheet being greater than the distance between said supports with the intermediate portion of said sheet being drawn toward said floating target by the upwardly moving stream of air so that shot are deflected downwardly onto said inwardly sloping upper surface and then move into said opening, and
- f. there being an opening through said flexible sheet for receiving said target.

3,869,124
MATHEMATICAL BOARD GAME APPARATUS

Robert W. Stein, 4461 W. Sprague Rd., North Royalton, Ohio 44133, and Richard W. Stein, Litchfield, Ohio, assignors to said Robert, by said Richard

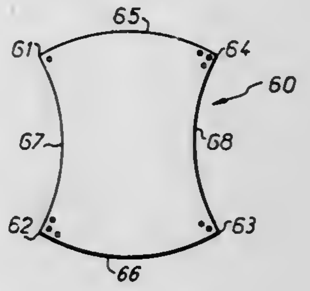
Filed Apr. 3, 1973, Ser. No. 347,564
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AC **3 Claims**

1. A numerical game comprising a game board having a series of demarcated areas arranged in horizontal rows and vertical columns, each of said demarcated areas having a separate, distinct number marked thereon, with said marked numbers each being different from the others and said numbers being organized in said rows and columns; at least two sets of a plurality of playing pieces each piece of a set having indicia marked thereon, each of said sets of pieces having means for distinguishing one set from all other sets; said indicia for a majority of said pieces being at least two identification numbers, which identification numbers each match a symbolically designated number on a selected demarcation area having a number which is a multiple of said identification number; and the other pieces having non-numerical indicia which may be said to match any symbolically designated number.



3,869,125
GAME WITH ARCUATE PIECES

Marc Odier, 85 Boulevard Exelmans, Paris 16, France
Division of Ser. No. 47,969, June 22, 1970, Pat. No. 3,687,455. This application July 10, 1972, Ser. No. 270,294
Claims priority, application France, Jan. 9, 1970, 70.00840. The portion of the term of this patent subsequent to July 22, 1989, has been disclaimed.
Int. Cl. A63f *9/20*
U.S. Cl. 273—137 D **9 Claims**

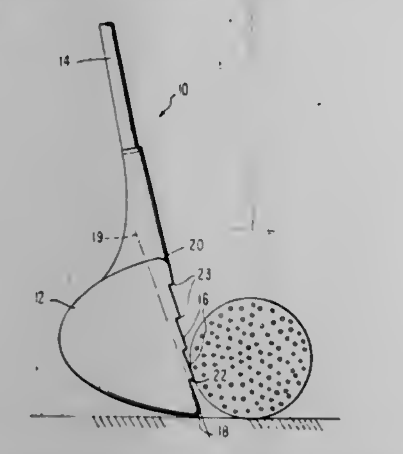


1. A game comprising at least one set of flat polygonal pieces, the pieces of said set being of identical size and shape, each piece having at each of its apices a value selected from M possible different values arranged in a predetermined order, the values of each piece being different from the values of each other piece of the set and the number of pieces of the set being sufficient for all the combinations of M values to be reproduced once and only once by the whole of the sequences carried by the pieces of the set, each piece having four apices and four sides, two of said sides being straight and the other two sides being arcuate, one said arcuate side being convex and the other said arcuate side being concave, both the said arcuate sides having the same length and radius of curvature.

3,869,126
GOLF CLUB FACE

Woodrow F. Thompson, Highway 80, West Forest, Miss. 39208

Filed Nov. 21, 1973, Ser. No. 417,836
Int. Cl. A63b *53/04*
U.S. Cl. 273—175 **1 Claim**

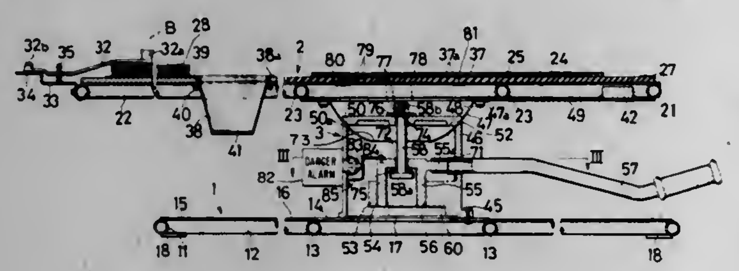


1. A golf club comprising a shaft and a head having a ball impact face thereon secured to said shaft, said face having a flat surface along the lowermost edge of the club face lying in an imaginery plane which defines the pitch of the club, a plurality of stepped flat surfaces disposed parallel to said plane and spaced progressively further from said plane as said stepped flat surfaces progress from said lowermost edge of the club face to the uppermost edge of said club face, and a plurality of risers interconnecting said flat surfaces with each riser being disposed at a maximum angle of 90° relative to the next highest flat surface to provide a plurality of edges adapted to bite into a golf ball upon impact to impart back spin to the ball.

3,869,127
GOLF-SHOT PRACTICING APPARATUS

Kiyotaka Kohori, No. 40-4,3-Chome, Aoyamadai, Suita, Japan

Filed Nov. 23, 1973, Ser. No. 418,566
Int. Cl. A63b *69/36*
U.S. Cl. 273—195 B **11 Claims**

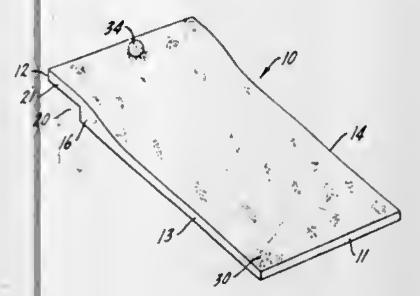


1. A golf shot practicing apparatus comprising:
a. a base;
b. a support board above said base for a person to have golf ball hitting practice having thereon a part on which a ball will be placed and a part allowing the player to take a stance toward the ball;
c. universal means by which the practice board above said base will be freely supported in any inclination in any direction and at any angle, said universal means including a support cylinder which is fixed to said base and a spherical plate which has a shape of the lower part of a hollow sphere and which is disposed upon the said support cylinder, while the peripheral rim thereof is fixed to the lower side of the said support board; and,
d. fixing means for said support board to fix the position thereof in a horizontal or inclined state inside the said spherical plate including a disc that presses the spherical plate to the upper side of the said supporting cylinder and a controlling device having a fixing cylinder that has a threaded inner periphery, a rotary elevating part that grapples with said fixing cylinder, a handle to rotate it and a tightening rod which passes through said spherical plate that connects said elevating part and the disc for pressing the spherical plate to said fixing cylinder.

3,869,128
DRIVING MAT FOR PRACTICING GOLF SHOTS

Reiji Ohashi, No. 25, 734-banchi, Osaka, Japan

Filed July 22, 1974, Ser. No. 490,487
Claims priority, application Japan, Dec. 6, 1973, 48-141250
Int. Cl. A63b *69/36*
U.S. Cl. 273—195 A **2 Claims**



1. A driving platform for practicing golf shots in the form of a mat having a body of flexible rubber-like material intended for resting on a flat supporting surface, the body being of smoothly tapering configuration having limited thickness at the rear end and substantially greater thickness at the front end, the front of the mat having a transversely extending relief on the underside to define a cantilevered lip several inches in extent which overhangs and is substantially uniformly spaced above the supporting surface, the top surface of the lip having means thereon for non-rolling support of a golf ball in striking position, the cantilevered lip being sufficiently thin so that when a golf club swung at the ball is swung too low, the lip, in the face of the impact, is free to yield by deflecting harmlessly downward toward the supporting surface thereby to minimize damage to the mat from the club head and to preclude any stinging or numbing sensation in the hands of the player.

3,869,129
SPEED CHANGER FOR PHONOGRAPH RECORD PLAYER

Arthur Katsumi Tateishi, 25 Warrender Ave., Apt. 202, Islington, Ontario, Canada

Filed Dec. 10, 1973, Ser. No. 423,068
Int. Cl. G11b *25/04*
U.S. Cl. 274—9 B **11 Claims**

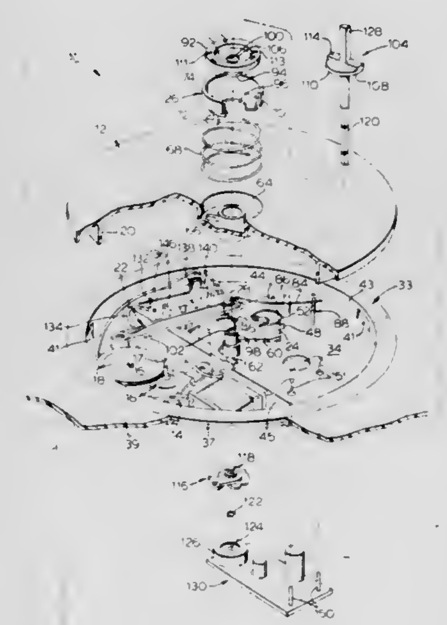
1. In an apparatus for playing phonograph records, where said apparatus includes a turntable driving apparatus having a constant speed motor with a vertically oriented motor shaft and horizontally disposed idler driven from said shaft to drive said turntable, the contact of said idler with said motor shaft and turntable being at the periphery of said idler in each case; said motor shaft having first and second sections of different diameter to cause said turntable to be driven at a first or second speed upon driving contact by said idler with the respective one of said first or second shaft sections, said first section being disposed below said second section; an improved speed changer for said turntable driving apparatus, comprising:

a horizontally disposed idler arm mounted for vertical movement from a first, lower, position to a second, higher, position said idler arm carrying said idler and having a bearing cam follower on the underside thereof; a cam plate mounted for swinging movement in a horizontal plane from a first to a second position and having a ramp-type cam formed on its upper surface and positioned for contact with the bearing cam follower on the underside of said idler arm, a shoulder portion on said cam plate disposed at a first elevation and to one side of the axis of rotation of said turntable, and a nose portion on said cam plate disposed at a second elevation below said first elevation and remote from said shoulder portion; and

a control element having a dog formed on the underside thereof, said control element being mounted for rotation with said turntable and for vertical movement from a first, higher, position to a second, lower, position;

said dog being adapted to orbit around the axis of rotation of said turntable at a first elevation being the elevation of said shoulder portion of said cam plate when said control element is in its first position, and at a second elevation being the elevation of said nose portion of said cam plate when said control element is in its second position;

said idler arm being biased downwardly so that said bearing cam follower bears constantly against said ramp-type cam;



the first position of said cam plate being such that said dog and said nose portion interfere if said control element is in its second position, so that continued orbital movement of said dog about the axis of rotation of said turntable causes said cam plate to swing to its second position; and said first position of said cam plate being such that said idler arm and idler are in their respective first positions, and no interference of either said nose or said shoulder portion occurs when said control element is in its first position;

the second position of said cam plate being such that said dog and said shoulder portion interfere if said control element is in its first position, so that continued orbital movement of said dog about the axis of rotation of said turntable causes said cam plate to swing to its first position; and said second position of said cam plate being such that said idler arm and said idler are in their respective second positions, and no interference of either said shoulder or said nose portion occurs when said control elements is in its second position;

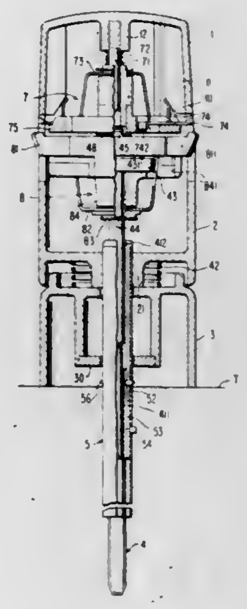
a control shaft being mounted for rotation independently of said turntable at the axis of rotation of said turntable, said control shaft being mechanically coupled to an electrical on-off switch for said turntable apparatus;

where a rotary cam is secured to said control shaft, said rotary cam having a first "off" cam position and a second "on" cam position, and a cam follower is mounted for horizontal movement against a post on the underside of said idler arm; and including an electrical contact arm biased towards a second electrical contact and towards said idler arm; so that when said rotary cam is rotated and the cam follower is no longer against said first cam position, said contact arm moves against said idler arm causing swinging movement thereof and sliding movement of said cam follower until said contact arm touches said second electrical contact.

3,869,130
SPINDLE ADAPTER APPARATUS

Toyonori Igata, Fukuroi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,734
Claims priority, application Japan, Oct. 12, 1972, 47-102270
Int. Cl. G11b *17/16*
U.S. Cl. 274—10 S **9 Claims**



1. A spindle adapter apparatus comprising:
1. a hollow cylinder the exterior of which is shaped to engage the central aperture of records to be played;
2. a first stop plate mounted in said hollow cylinder and movable between a first position in which it protrudes through the external cylindrical periphery of said cylinder and a second position in which it is located entirely internally of the external cylindrical periphery of said hollow cylinder, whereby said first stop plate is adapted to support one or more records above a turntable when in its first position;
3. a second stop plate mounted in said hollow cylinder a distance below said first stop plate equal to the thickness of one record, said second stop plate likewise being movable between a first position in which it protrudes from the external cylindrical periphery of said cylinder and a second position in which it is located entirely internally of the external cylindrical periphery of said hollow cylinder, whereby said second stop plate is likewise adapted to support one or more records above the turntable when in its first position;
4. an operative shaft mounted in said hollow cylinder coaxially thereof, axially movable therein among a fully extended first axial position, an intermediate second axial position, and a fully contracted third axial position, and rotatably movable therein between first and second rotary positions;
5. means for operatively connecting said operative axis to said first and second stop plates so that,
   a. when said first stop plate is in its first position, said second stop plate is likewise in its first position, and said operative shaft is moved by external means from said first axial position to said third axial position while being retained in said first rotary position, said first stop plate is moved from its first position to its second position, permitting one or more records to be slid down over said hollow cylinder to a position to be supported by said second stop plate,
   b. when said first stop plate is in its second position, said second stop plate is in its first position, and said opera-

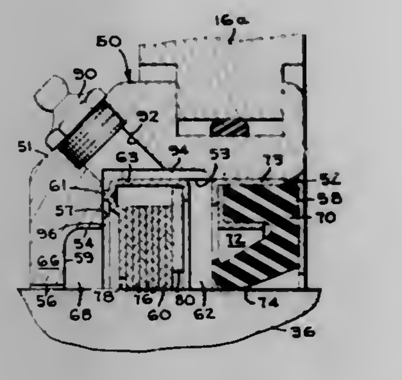
tive shaft is moved by external means from said third axial position to said second axial position while being retained in said first rotary position, said first stop plate is moved from its second position to its first position, wherein said first stop plate is in a position to support all but the bottom record of a plurality of records previously supported by said second stop plate,

c. when said first stop plate is in its first position, said second stop plate is likewise in its first position, and said operative shaft is moved by external means from said second axial position to said first axial position and from said first rotary position to said second rotary position, said second stop plate is moved from its first position to its second position, permitting a record supported by said second stop plate to be released, and

d. when said first stop plate is in its first position, said second stop plate is in its second position, and said operative shaft is moved by external means from said first axial position to said third axial position and from said second rotary position to said first rotary position, said second stop plate is moved from its second position to its first position and said first stop plate is moved from its first position to its second position, permitting any record discs supported by said first stop plate to slide down over said hollow cylinder to a position to be supported by said second stop plate.

3,869,131
MULTIPLE SEAL CARRIER

William J. Derner, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed June 20, 1973, Ser. No. 371,923
Int. Cl. F16j *15/36, 15/34*
U.S. Cl. 277—21 **11 Claims**

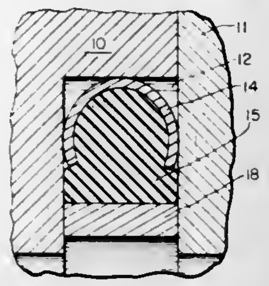


7. A seal carrier for receipt in a housing to protect bearings mounted in the housing inwardly of said seal carrier, said seal carrier having an inner and outer seal therein spaced apart to define therebetween a first annular grease chamber in the carrier surrounding the shaft, an outer wall in said carrier defining a circular opening for said shaft, the outer seal spaced from said wall to define a second annular grease chamber in the carrier surrounding said shaft, and means to supply grease under pressure separately to said first annular grease chamber for penetration between the seals and the shaft on either side of said first chamber and to said second annular grease chamber for discharge through the gap between the outer wall and the shaft to flush dirt and abrasives from the seal carrier.

3,869,132
FIRE RESISTANT SEALING RING COMBINATION

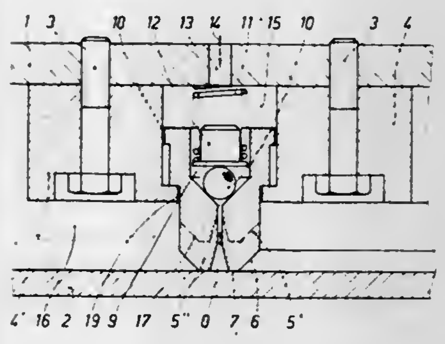
Dudley D. Taylor, Beltsville; Bernard J. Sadoff, Jr., Rockville, and Horace P. Halling, Laurel, all of Md., assignors to Pressure Science, Inc., Beltsville, Md.
Filed July 18, 1973, Ser. No. 380,200
Int. Cl. F16j *9/00*
U.S. Cl. 277—26 **9 Claims**

1. The combination of a pair of relatively movable flange members which define between them a cavity in which high pressures and temperatures may be encountered, a primary elastomeric sealing ring positioned in said cavity which provides a tight seal under normal operating conditions, a secondary deflectable metallic sealing ring situated in said cavity at a point remote from contact with the confined fluid which is under pressure, said metallic sealing ring having curved leg portions which at least partially surround a portion of said elastomeric sealing ring, and a metallic ring situated in said cavity contiguous to said elastomeric ring on the side opposite of said metallic sealing ring defining means for confining the fluid and the elastomeric ring, whereby said last mentioned metallic ring prevents substantial expansion of said elastomeric ring in the direction of the fluid being confined so that when said elastomeric sealing ring expands under conditions of high temperature, it expands in the direction of said metallic sealing ring and forces said metallic sealing ring into a tighter sealing engagement with said cavity.



3,869,133
FLEXIBLE SEALING DEVICE

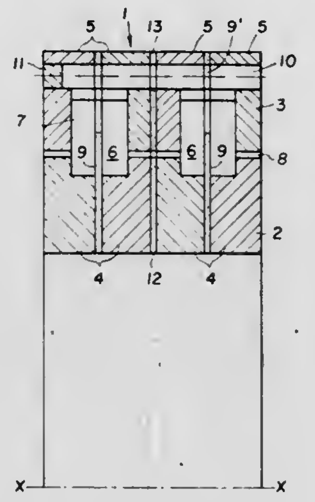
Alfred Pesendorfer, Rutihof/Ag, Switzerland, assignor to Brown Boveri Selzer Turbomaschinen AG, Zurich, Switzerland
Filed Apr. 9, 1973, Ser. No. 349,126
Int. Cl. F16j *15/40*
U.S. Cl. 277—27 **6 Claims**



1. In a flexible sealing device forming a separable joint between two components which comprises a series of metallic seal segments arranged in end-to-end relation, said seal segments being supported by one of said components and being pressed against the surface of the other component by spring means, the improvement wherein said series of seal segments operate within a gap formed between two holders which are secured to one of said components, wherein each said seal segment is composed of two halves separated by a longitudinally extending gap therebetween, wherein said spring means include loading springs and balls which serve to force the end surfaces of said seal segments into pressure contact with the other component and to force the sides of said seal segment halves laterally into pressure contact with the side of the corresponding holder, and wherein a sealing gas is caused to flow through the gaps between the halves of each seal segment to reach the seal junction between said seal segments and the surface of said other component.

3,869,134
PACKING SEALS

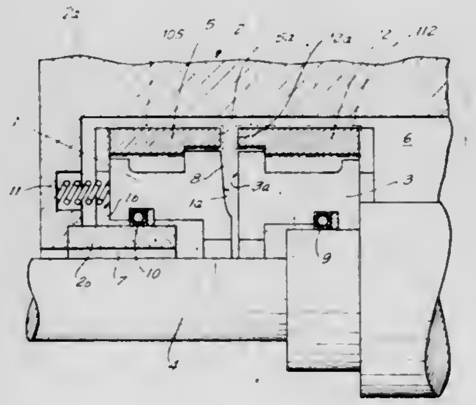
Hans Pittroff, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, Amsterdam, Netherlands
Filed Jan. 15, 1973, Ser. No. 323,660
Claims priority, application Germany, Jan. 19, 1972, 7201831
Int. Cl. B23p *11/00*
U.S. Cl. 277—56 **7 Claims**



1. A seal unit for rods, shafts and the like comprising a pair of concentric rings annularly spaced from each other for the passage of lubricant, the outer ring having an annular groove along its edge facing the inner ring along its periphery and at least one bore along its periphery communicating with said groove and opening axially outwardly of said ring for discharge of lubricant, the inner ring being formed of at least a pair of supporting disks and a flexible deflecting spacer located therebetween and being adapted to extend radially into said annular groove spaced from the sides thereof to deflect the lubricant to the periphery thereof into said bore.

3,869,135
CONTROLLED LEAKAGE FACE TYPE SHAFT SEAL

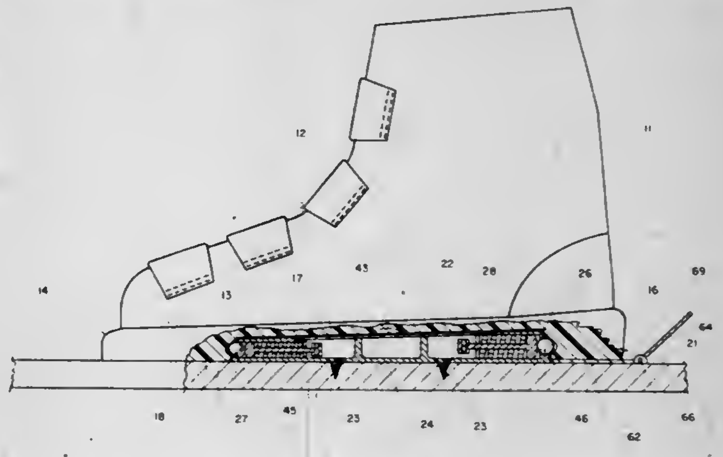
Herbert Diederich, Frankenthal/Pfalz, Germany, assignor to KSB Kernkraftwerkspumen GmbH, Frankenthal, Germany
Filed Mar. 25, 1974, Ser. No. 454,411
Claims priority, application Germany, Mar. 27, 1973, 2315190
Int. Cl. F16j *9/00*
U.S. Cl. 277—80 **10 Claims**



1. In a fluid seal arrangement, the combination of a shaft member; a housinng member spacedly surrounding said shaft member and defining therewith a fluid-containing pressure chamber and a low-pressure area adjacent to the periphery of said shaft member, one of said members being rotatable about the axis of said shaft member; first and second sealing rings coaxial with said shaft member, located in said chamber and respectively secured to said housing member and said shaft member, one of said rings being movable axially of said shaft member and said rings having neighboring front surfaces defining an annular gap for the leakage of fluid from said chamber into said area, said one ring further having a rear surface facing away from the respective front surface and being exposed to the pressure of fluid in said chamber whereby the fluid contained in said chamber and acting on said surfaces maintains the width of said gap within a predetermined range as long as the fluid pressure in said chamber exceeds a preselected value; and first and second magnets respectively provided on said first and second rings and having similar poles adjacent to each other to urge said one ring away from the other of said rings and to thus prevent excessive reduction of the width of said gap when the pressure of fluid in said chamber is less than said preselected value.

3,869,136
SKI RELEASE BINDING

Richard S. Jackson, 2897 S. Wolff St., Denver, Colo. 80236
Filed Nov. 28, 1972, Ser. No. 310,047
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 D **16 Claims**



1. A release binding for holding a ski in operative position during skiing activities and for release of the ski when forces active between the skier's boot and the ski exceed desired levels comprising a latch mechanism mounted on the ski in position beneath the skier's foot, a housing for said mechanism having end walls at the front and rear thereof, movable latch elements extending outwardly of said housing at arcuately disposed positions, structural means intermediate the skier's foot and ski, said structural means providing a socket receptacle of shape corresponding to the shape of said housing and having downwardly expanding tapered end walls in position corresponding with the end walls of said housing for mating engagement about said housing whereby clearances between said housing and receptacle will be increased as they are moved one away from the other, catch recesses in said socket receptacle disposed for engagement by said latches, said latch mechanism being positioned adjacent the axis of maximum torsional strength for a skier's leg, with said catch recesses, latch elements and tapered end walls being arranged to provide for multi-directional and rotating separation of said ski,

and a raised surface on said housing for contact with a surface of the socket receptacle provided by said structural means for limiting frictional interference between said housing and socket receptacle.

3,869,137
PORTABLE STORAGE CART

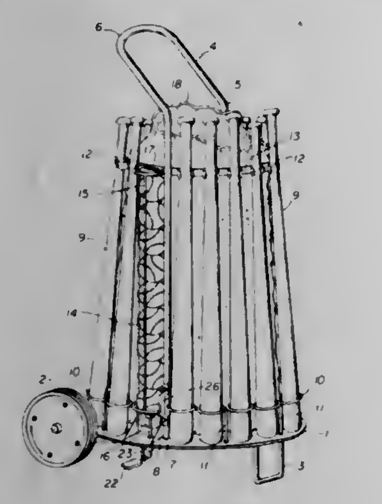
Raymond R. Byrom, Rt. 1, Cleveland, Okla. 74020
Filed Aug. 17, 1973, Ser. No. 389,144
Int. Cl. B62b *1/16*
U.S. Cl. 280—47.19 **5 Claims**

1. A combination carrier and storage cart for athletic equipment such as used in baseball, including,

a platform extended in a horizontal plane,

wheels mounted on the lower side of the platform by means of which the platform may be manually moved from place to place,

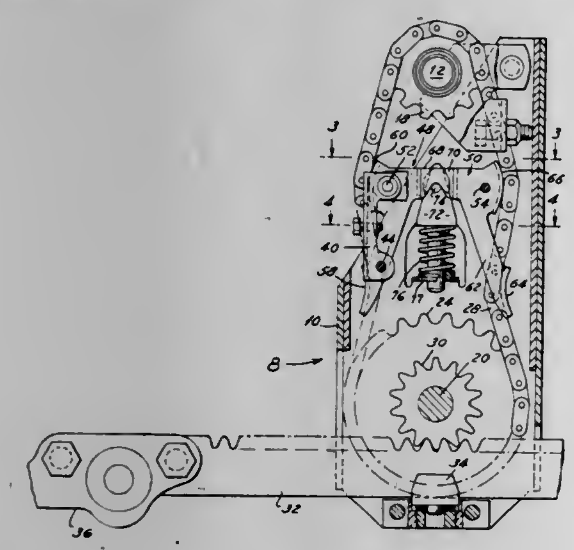
a handle mounted on the upper side of the platform to extend vertically,
a basic framework attached to the handle and platform and arranged to provide a cylindrical volume above the platform for storing articles of equipment,
brackets mounted on the outside of the framework for releasable securing elongated articles of equipment such as ball bats,



a storing framework comprised of rings spaced from each other with elongated rods attached to the rings in forming an open tubular retaining structure for balls which are in view the length of the framework,
and means mounted on the storing framework for the balls arranged for manually controlled release of the balls from storage.

3,869,138
STEERING DEVICE HAVING A CHAIN OPERATED STEERING GEAR ACTUATOR

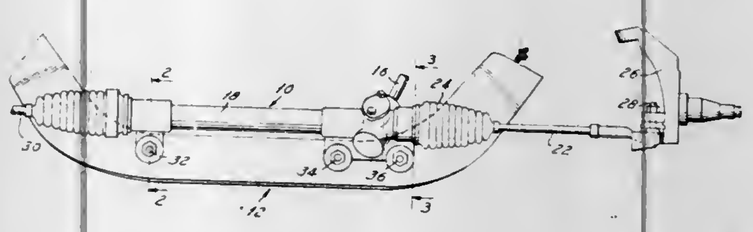
William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Division of Ser. No. 347,962, April 4, 1973,. This application July 1, 1974, Ser. No. 484,904
Int. Cl. B62d *3/02*
U.S. Cl. 280—93 **4 Claims**



1. A steering device for a motor vehicle including a steering gear actuator,
said steering gear actuator having an input sprocket constructed to be connected to a vehicle steering wheel,
said actuator having an output sprocket constructed to be connected to a steering gear;
a drive chain drivingly interconnecting said input and output sprockets,
a chain tensioner having a linkage system,
a pair of generally L-shape members supported by said linkage system,
spring means coupled to said members and urging each of said members into engagement with said chain at a pair of spaced locations,
said spring urged members biasing portions of said chain into generally ogee configurations.

3,869,139
STEERING GEAR MOUNTING

Raymond T. Gage, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 5, 1972, Ser. No. 312,414
Int. Cl. B62d *1/00*
U.S. Cl. 280—96 **1 Claim**



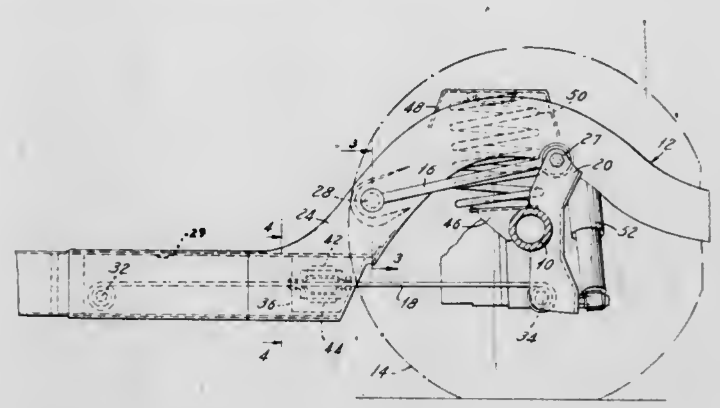
1. A rack and pinion steering gear for a motor vehicle and mounting means connecting said gear to a transverse vehicle frame component,
said rack and pinion steering gear having a housing containing a laterally displaceable rack,
said housing being arranged generally perpendicular in the plan view to the longitudinal axis of said vehicle,
said housing having a plurality of longitudinally oriented tubular mounting eyes,
a single cylindrical resilient element disposed in each of said eyes,
each of said resilient elements being of greater length then its respective eye and having fore and aft end portions that extend beyond the fore and aft ends of said eye,
a rigid sleeve disposed with in the center of each of said resilient elements,
each of said sleeves being of greater axial length than its respective eye and of lesser axial length than its respective cylindrical element when said element is in its unstressed state,
fore and aft thrust washers positioned at the ends of said resilient element and in butting engagement therewith,
a longitudinally oriented bolt extending through each of said sleeves and through each of said thrust washers exerting a longitudinally directed compressive load on each of said cylindrical resilient elements,
said end portions of each of said cylindrical resilient elements being formed into radial flanges at said fore and aft ends of its respective eye,
said sleeves being constructed to limit the compressive load exerted on said resilient elements by said bolts,
said mounting means being constructed to provide a lower spring rate to deflection of said rack and pinion steering gear in a longitudinal direction than to deflection of said steering gear in a direction perpendicular to the axis of said bolts,
said mounting means being constructed to substantially prevent pivotal displacement of said steering gear about a longitudinally extending pivot axis.

3,869,140
REAR SUSPENSION FOR MOTOR VEHICLES

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 5, 1972, Ser. No. 312,421
Int. Cl. B60g *11/36*
U.S. Cl. 280—124 R **17 Claims**

1. A suspension system for a motor vehicle having a chassis frame and an axle housing,

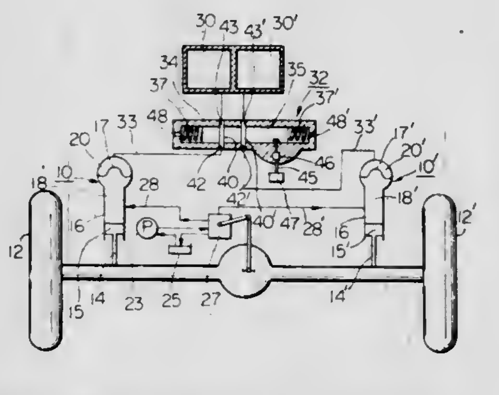
said suspension system including a plurality of suspension links interconnecting said axle housing and said frame,
at least one of said links comprising a leaf spring,
pivot means connecting one end of said spring to said frame, pivot means connecting the other end of said spring to said axle housing,
deflection limiting means engaging a portion of said spring intermediate its ends and vertically spaced apart from an adjacent portion of said frame,



said deflection limiting means being constructed to permit unrestricted vertical movement of said portion of said leaf spring relative to said portion of said frame for a predetermined vertical distance,
said deflection limiting means being constructed to restrain vertical movement in at least one direction of said portion of said spring relative to said portion of said frame that exceeds a predetermined amount.

3,869,141
VEHICLE SUSPENSION SYSTEM

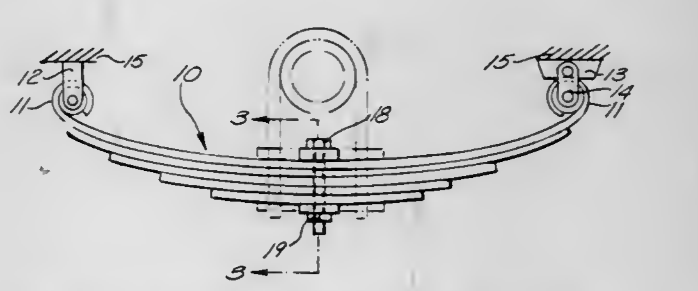
Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 20, 1973, Ser. No. 343,027
Claims priority, application Japan, Mar. 27, 1972, 47-29700
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **12 Claims**



1. A vehicle suspension system comprising:
first and second suspension struts each formed of a hydraulic shock absorber and a hydropneumatic spring means provided with a gas chamber;
levelling means comprising a fluid pump fed from a fluid reservoir to pump fluid under pressure through at least one levelling valve responsive to the vehicle level and arranged to communicate the fluid reservoir and the shock absorbers of the first and second suspension struts to automatically maintain the level of the vehicle constant independently of variation in vehicle load;
first and second auxiliary gas chamber means;
normally open valve means connecting the first auxiliary gas chamber means to the gas chamber of the spring means of the first suspension strut and also connecting the second auxiliary gas chamber means to the gas chamber of the spring means of the second suspension strut; and
sensing means to sense a horizontal component of force exerted on the vehicle, the sensing means being operatively connected to the valve means so as to close the valve means and isolate the first and second auxiliary gas chamber means from the respective gas chambers of the spring means of the first and second suspension struts in response to the horizontal component of the force being sensed.

3,869,142
VEHICLE SPRING ASSEMBLY AND METHOD OF CLAMPING SAME

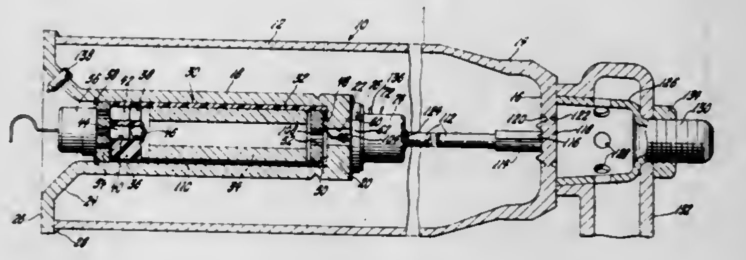
George L. Radamaker, Warren, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 23, 1973, Ser. No. 408,701
Int. Cl. F16f *1/20*
U.S. Cl. 280—124 R **8 Claims**



1. A vehicular suspension assembly comprising:
a. a plurality of spring leaves disposed in a stacked relationship and adapted for attachment to the vehicle at the ends thereof, each of said leaves having an aperture located in the central region thereof adapted for axle attachment, and
b. clamping means operative to exert a clamping force on said leaves to substantially prevent flexing of said leaves for a predetermined length in the region adapted for axle attachment, said means including,
  i. plate means adjacent the outer of said spring leaves, said plate means being substantially non-flexible, and
  ii. tension means received through each of said apertures in said spring leaves, said tension means being operative to cause said plate means to exert said clamping force on said leaves.

3,869,143
INFLATOR FOR OCCUPANT RESTRAINT CUSHION

Richard L. Merrell, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 25, 1973, Ser. No. 373,388
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **9 Claims**



1. An inflator comprising, in combination, a pressure vessel containing pressure fluid and provided with a normally closed outlet controlling flow of the pressure fluid to an occupant restraint cushion, a combustion chamber within the pressure vessel and including an outlet open to the pressure vessel, a gas generating charge of propellant within the combustion chamber, pressure sensor means overlying the combustion chamber outlet for sensing the pressure level in the pressure vessel, means sealing the pressure sensor means to the com-

bustion chamber to normally close the outlet thereof to the pressure vessel, means for initiating the charge of propellant to generate high pressure, high temperature gas and move the pressure sensor means from the outlet as the sealing means ruptures to thereby open the outlet from the combustion chamber to the pressure vessel, and means operative upon movement of the pressure sensor means for opening the pressure vessel outlet to the cushion.

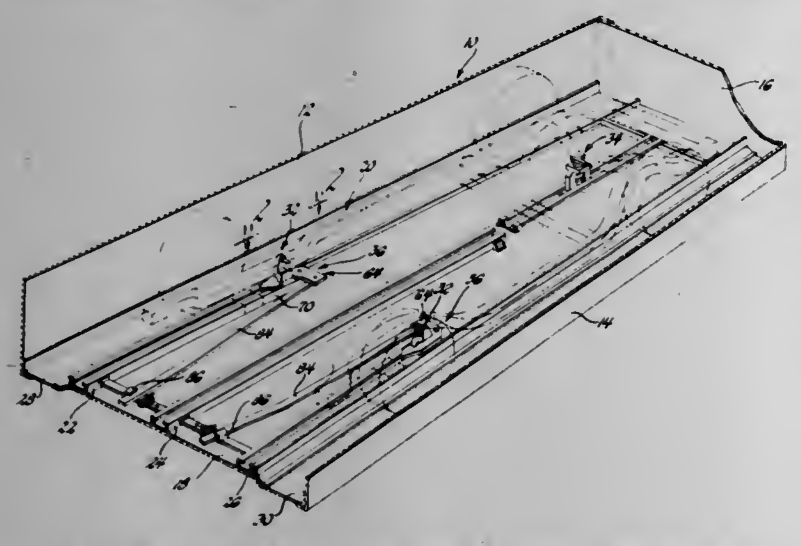
3,869,144
LATCHING MECHANISM FOR SECURING A VEHICLE TO A TRANSPORTER

Walter Cwycyshyn, Detroit, and Anthony Buccellato, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1973, Ser. No. 414,334

Int. Cl. B60p *7/08*

U.S. Cl. 280—179 R **3 Claims**



1. A latching mechanism for a vehicle tie-down device having an upper end formed with a projecting member which is received within an aperture in the side of a vehicle frame and has a lower end formed with a shoe member which is received by an elongated guide rail, comprising a base member located adjacent said guide rail, a lock lever formed with a pair of spaced stop surfaces, means connecting the lock lever to said base member for movement between a first position wherein said stop surfaces are located fore and aft of said tie-down device so that said tie-down device is restrained from movement along the longitudinal axis of the guide rail and a second position wherein said stop surfaces are spaced from the tie-down device to allow movement of said tie-down device along said longitudinal axis, means mounted on the lock lever for engaging the tie-down device and causing the latter to be forced laterally against the side of the frame and raised vertically against the guide rail to maintain the tie-down device in a fixed position when the lock lever is in the first position, and means for locking said lock lever in said first position.

3,869,145
SELF-APPLYING VEHICLE SAFETY BELT

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co. Ltd., Tokyo, Japan

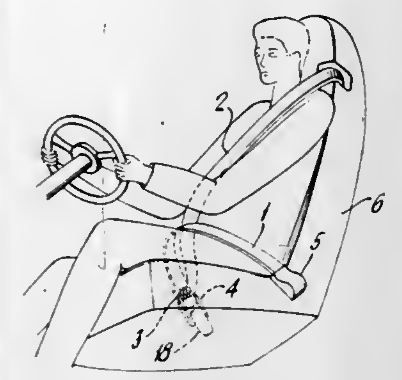
Filed Aug. 13, 1973, Ser. No. 388,000

Claims priority, application Japan, Aug. 23, 1972, 47-83698

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **9 Claims**

1. A vehicle safety belt system for use with a vehicle seat comprising an inflatable flexible tubular lap belt preformed to assume a longitudinally arcuate shape upon inflation thereof, said belt having a first end anchored to a first side of said seat, a coupling member secured to the second end of said belt opposite to said first end, a coupling device positioned at a second side of said seat opposite said first side for releasably engaging said coupling member, a source of compressed air, and control means responsive to the occupation of said seat for connecting the interior of said belt to said compressed air source to inflate and extend said belt from said seat first side to said coupling device and thereafter connecting the interior of said belt to exhaust in response to said belt extending to said coupling device.



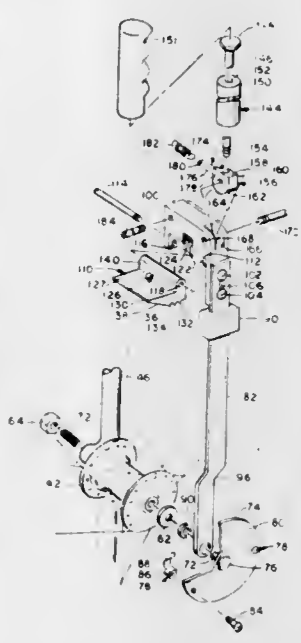
3,869,146
OCCUPANT ACTUATED MEANS FOR PROPELLING, STOPPING, DIRECTING, AND CURB HOPPING A WHEELCHAIR

Donald L. Bulmer, 15404 63rd Ave., Bothell, Wash. 98011

Filed Feb. 8, 1973, Ser. No. 330,865

Int. Cl. B62m *1/14, 29/02*

U.S. Cl. 280—242 WC **6 Claims**



1. A self-propulsion subassembly, which is self-contained and adjustable, for installation in pairs on wheeled carriers such as wheelchairs and wheelstretchers for the occupant to use in applying control forces to large wheels, comprising:

a. a stroke handle for radial operation having a hole at its bottom to be fitted over a wheel bearing bolt positioned horizontally on a wheeled carrier and a hole near its top to adjustably receive a head frame;

a head frame adjustably secured with its fasteners at the hole of the stroke handle in a transverse position and formed both with a receiving bottom, and with holes to receive fasteners and a pivot pin;

c. a driving dog positioned to contact a large wheel of a wheeled carrier and pivotally installed in the receiving bottom of the head frame by being formed with a transverse hole in which it has a pivot pin which in turn is secured in holes in the head frame;

d. a handle secured to the head frame; and

e. a braking shoe material placed on the stroke handle in a position to be transversely moved against a large wheel of a wheeled carrier to create a braking force.

3,869,147
ARTICULATED VEHICLE COUPLING

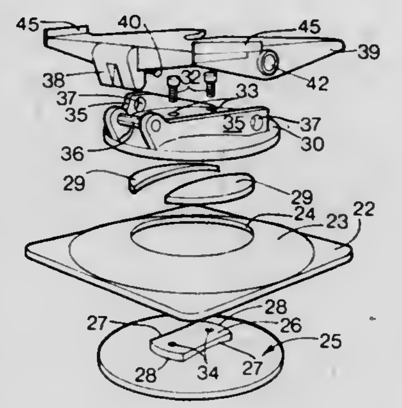
Timothy Selwyn Fry, Dunchurch, England, assignor to Bartel Engineering Limited, London, England

Filed July 16, 1973, Ser. No. 379,704

Claims priority, application Great Britain, July 21, 1972, 34162/72

Int. Cl. B62d *53/06*

U.S. Cl. 280—438 R **10 Claims**



1. A coupling for connection between a tractor and a semitrailer in an articulated vehicle of which the tractor includes a chassis and at least one front and one rear axle carried by said chassis, the coupling including a fifth wheel coupling plate to be mounted on one of the tractor and the semi-trailer to rotate relatively thereto about an upright axis, pivot means defining said upright axis, a domed plate having a central aperture therein, a complementary concave element engaging the upper surface of the domed plate, a complementary convex element engaging the lower surface of the domed plate, means extending through the aperture in the domed plate restraining the domed plate and the complementary concave and convex elements from axial separation one from another, means connecting together the complementary concave element and the fifth wheel coupling plate, the domed plate defining an arcuate path along which the complementary concave element and the fifth wheel coupling plate are slidable relatively to the domed plate and providing at the centre of curvature of said arcuate path an axis of vertical articulation between the tractor and the semi-trailer, said axis of vertical articulation positioned between the front and rear axles of the tractor and below the chassis thereof, and means constraining the fifth wheel coupling plate to move with the semi-trailer on relative pivotal movement between the tractor and the semi-trailer about said upright axis, the means connecting together the complementary concave element and the fifth wheel coupling plate including a two part latch, one of the parts of the latch being carried by the fifth wheel coupling plate and the other of said parts of the latch being carried by the concave element.

3,869,148
HAULING HITCH

William R. Iehl, Waterloo, Iowa, assignor to Construction Machinery Company, Waterloo, Iowa

Filed Aug. 10, 1973, Ser. No. 387,525

Int. Cl. B60d *1/12*

U.S. Cl. 280—457 **5 Claims**

1. A hauling hitch comprising,

an elongated tongue element having forward and rearward ends,

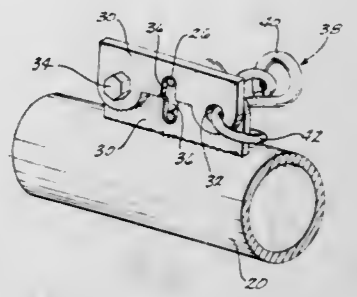
means on the forward end of said tongue element for connection to a towing vehicle,

a chain locking means on said tongue element rearwardly of the forward end thereof,

a safety chain secured at one of its ends to said tongue element, said safety chain extending forwardly from said tongue element to extend around an anchor on the towing vehicle thence rearwardly towards said locking means,

said locking means comprising means for selectively securing said safety chain thereto,

said locking means comprising a first jaw member secured to said tongue element, a second jaw member pivotally secured to said first jaw member and movable between open and closed positions with respect to said first jaw member, said chain being selectively received between said jaw members, and a keeper selectively maintaining said second jaw member in its said closed position.



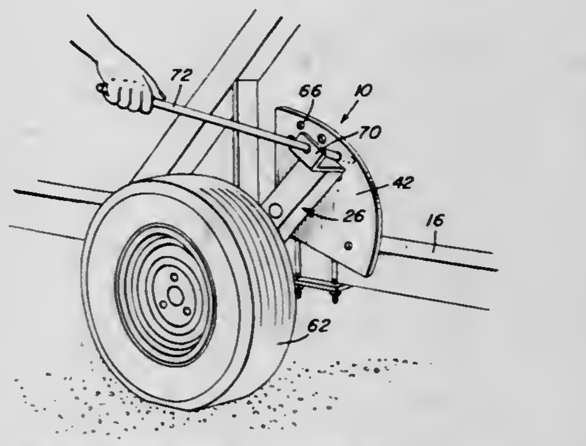
3,869,149
TRAILER TONGUE SPARE-LANDING WHEEL STRUCTURE

Ronald O. Dixon, Rt. 9, Box 430, Albuquerque, N. Mex. 87105

Filed Sept. 12, 1973, Ser. No. 396,371

Int. Cl. B60s *9/02*

U.S. Cl. 280—475 **11 Claims**



1. In combination with a trailer frame having a tongue adapted to be hitched to a towing vehicle, a jack wheel assembly mounted on the frame, including wheel carrier means pivotally mounted by the frame for displacement between a retracted position elevated above the ground and a plurality of load supporting positions, ground engaging wheel means rotatably mounted by the carrier means for engagement with the ground in the load supporting positions of the carrier means, releasable locking means for holding the carrier means in each of said load supporting positions, and jack means mounted on the carrier means and engageable with the locking means for incremental displacement of the carrier means under load relative to the frame between said load supporting positions.

3,869,150
MUD DIVERTING KELLY SAVER SUB

William Henry Brown, 13055-149 St., Edmonton, Alberta, Canada

Filed Feb. 16, 1973, Ser. No. 333,407

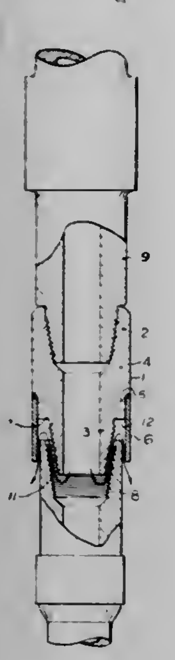
Int. Cl. F16l *55/00*

U.S. Cl. 285—13 **3 Claims**

1. In a sub for use with the kelly joint of a drilling string, said sub having a body member comprising at its lower end a shoulder and a tapered threaded pin of reduced diameter extending downward from the shoulder,

the improvement which comprises:

an imperforate circumferentially continuous tubular member concentric with the body member; and means permanently attaching said tubular member to said body member, whereby said tubular member forms a part of said sub, said tubular member extending below the shoulder and overlapping at least a portion of the threads to provide a deflecting surface for escaping drilling mud.



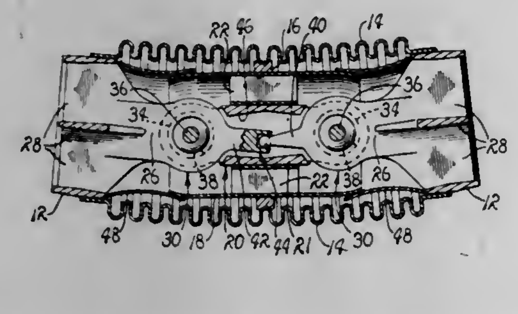
3,869,151
INTERNALLY SUPPORTED FLEXIBLE DUCT JOINT

James Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Ralph F. Kuhn, Jr., 24723 Mulholland Hwy., Calabasas, Calif. 91032

Filed Apr. 16, 1974, Ser. No. 461,477

Int. Cl. F16l *27/04*

U.S. Cl. 285—114 **7 Claims**



1. In a lightweight, flexible duct joint of the type including a convoluted, tubular bellows having opposite end portions adapted to be connected with adjacent segments of a pressurizable duct, whereby the duct joint operatively is subjected to internal pressure and angular deflections, the improvement comprising:

means for controlling angular deflection imparted to said tubular bellows including:

A. an elongated, rigid base disposed internally of the bellows and having an end portion disposed adjacent to each of the opposite end portions of said bellows,

B. means including a plurality of angularly related struts projected from said base for connecting the bellows with the base, and

C. means for interconnecting the opposite end portions of said bellows with the adjacent end portions of said elongated base including a pair of annular supports, each being affixed to one end portion of said bellows in concentric relation therewith. a pair of connecting bodies, each being rigidly affixed to one of said annular supports and pivotally connected to one end portion of said elongated base, and motion control means affixed to said connecting bodies for limiting angular motion imparted to said annular supports relative to said base.

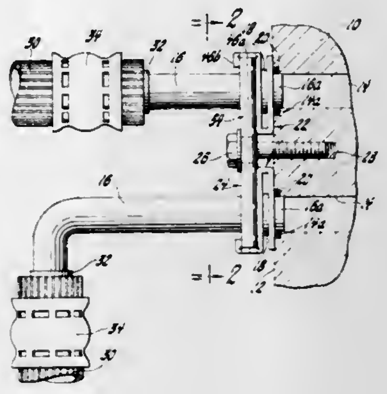
3,869,152
TUBE MOUNTING ASSEMBLY

Patsy DeVincent, Dayton, and James R. Steck, Brookville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1974, Ser. No. 455,049

Int. Cl. F16l *39/00*

U.S. Cl. 285—137 R **4 Claims**



1. A tube mounting assembly for securing N number of tubes to an accessory housing, the accessory housing having an N number of bored passages to receive the tubes, each of the tubes having an annular upset bead adjacent one end of the tube with a pilot tube portion extending therefrom for insertion into one of the bored passages, said tube mounting assembly including a fold-over clamp for each tube having a first leg and a second leg connected at one end by an integral bight, said first leg having an aperture therein to receive the pilot tube portion of a tube and the second leg having a slot therein of a size to slidably receive the tube, said fold-over clamp being secured to a tube with the pilot tube portion of a tube inserted into the aperture in said first leg and with the bead of the tube securely sandwiched between said first leg and said second leg, an O-ring positioned to encircle the pilot tube portion of each tube in abutment against said first leg of said fold-over clamp associated with the tube and, a split flange connector consisting of two brackets of identical shape, said brackets each having an N number of tube receiving slot openings extending from one side thereof to receive said N number of tubes, said brackets being positioned in opposed, overlapping, fixed relation to each other with the N number of tubes positioned in said slots whereby the tubes are entrapped between said pair of brackets, said brackets being positioned on the opposite side of each fold-over clamp from said O-ring associated therewith, each said fold-over clamp further including positioning tab means for engagement with said brackets to lock each said fold-over clamp and therefore a tube associated therewith against rotation relative to said brackets, said brackets having aperture means therethrough to receive fastener means for securing said brackets to the accessory housing with said clamp and O-ring sandwiched therebetween with said O-ring in sealing engagement with said first leg of the fold-over clamp and the accessory housing.

3,869,153
DOUBLE TUBE MOUNTING ASSEMBLY

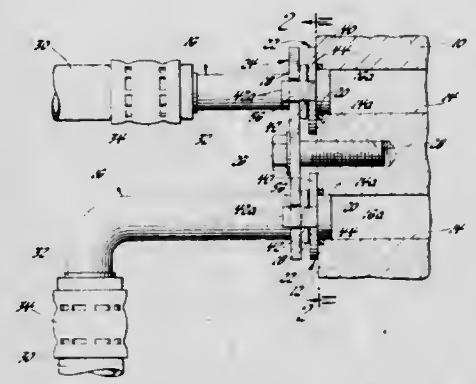
Patsy De Vincent, and John F. Wiechart, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 490,384

Int. Cl. F16l *39/00*

U.S. Cl. 285—137 R **4 Claims**

1. A tube mounting assembly for securing N number of tubes to an accessory housing, the accessory housing having an N number of bored passages to receive the tubes, each of the tubes having an annular upset bead adjacent one end of the tube with a pilot tube portion extending outboard from one side thereof for insertion into one of the bored passages, a yoke for each tube, each yoke having a centrally apertured disc encircling said pilot tube portion on one of said tubes in abutment against the outboard side of said bead, an annular weld means around said bead securing and sealing said bead to said disc, an O-ring positioned to encircle the pilot tube portion of each tube in abutment against said disc of said yoke associated with said tube and, a mounting plate having an N number of tube receiving slot openings on opposite ends thereof with one of the N number of tubes positioned in each of said slots, said mounting plate further including an N number of opposed sets of locking slots on opposite sides thereof for each said slot aligned with the axis of one of said tubes positioned in said slot, said mounting plate being positioned on the opposite side of said bead in abutment thereagainst from said disc of said yoke associated therewith, each said yoke further including spaced apart legs extending axially from said disc for engagement with one of said sets of locking slots to lock said yoke and therefore said tube associated therewith against rotation relative to said mounting plate, each said leg including a leg portion bent over to engage the opposite side of said mounting plate from said disc, said mounting plate having aperture means therethrough to receive fastener means for securing said mounting plate to the accessory housing with each said yoke and each said O-ring sandwiched therebetween with said O-ring in sealing engagement with said disc of said yoke associated therewith and the accessory housing.



3,869,154
BELL-SHAPED PIPE COUPLING HAVING CONNECTIONS FOR HOUSEHOLD SERVICE AND THE LIKE

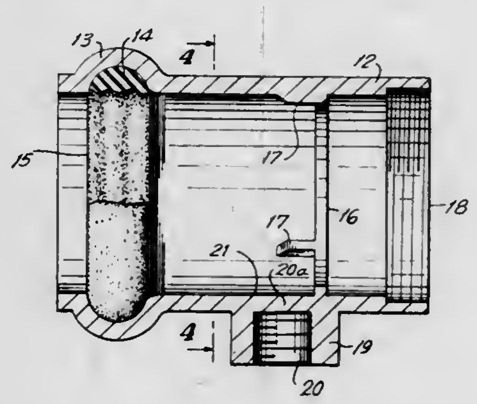
Rodolfo Leuze Sanchez, Calle 8 no. 1-B, Fracc. Ind., Alce Blanco, Naucalpan de Juarez, Estado De Mexico, Mexico

Continuation-in-part of Ser. No. 175,088, Aug. 26, 1971, abandoned. This application July 12, 1973, Ser. No. 378,639

Claims priority, application Mexico, Oct. 28, 1970, 123041

Int. Cl. F16l *41/00*

U.S. Cl. 285—156 **3 Claims**



1. A pipe coupling adapted to form connections for household service piping and the like, comprising a tubular body having an external annular enlargement in a first one of its ends in axial alignment with an internal annular hollow recess, an elastomeric material sealing ring being positioned in said recess and adapted to sealingly engage the periphery of a pipe inserted in said end of the tubular body, an annular radially inwardly projecting protuberance and a plurality of annularly spaced longitudinal ribs extending therefrom being formed in said coupling, at least one cylindrical connector boss integrally formed with and radially extending from said coupling, said annular protuberance being positioned to one side of said boss and said ribs extending axially into the plane of said connector boss so as to provide space for piping inserted into said coupling and to prevent said piping from blocking said boss, said connector boss being angularly offset relative to said longitudinal ribs, and a radially inwardly extending blind hole formed in said connector boss, said blind hole extending inwardly so as to form an inner wall coextensive with and of generally the same thickness as the wall thickness of said tubular body and adapted to be drilled through so as to form a flow connection between the interior of said pipe coupling and a household service piping said blind hole in said connector boss comprising an internal thread extending between the outside of said boss and the bottom of said blind hole adapted to be engaged by a complementary threaded household service piping.

3,869,155
CABLE GLANDS

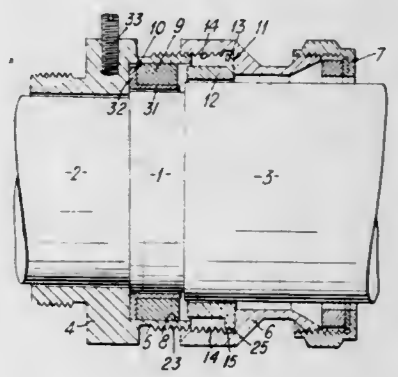
John Blundell Hutchison, Formby, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Dec. 8, 1972, Ser. No. 313,410

Claims priority, application Great Britain, Dec. 14, 1971, 57932/71

Int. Cl. F16l *5/02*

U.S. Cl. 285—158 **7 Claims**



1. A sealing gland for a cable having at least one metallic sheathing layer comprising: a first tubular gland member made of metal; a second tubular gland member aligned and in screw-threaded engagement with the first gland member; between said first and second gland members and aligned with them a third tubular gland member captively engaged with said second gland member and freely rotatable with respect thereto; and between said first and third gland members a composite annular seal comprising an elastomeric ring and insert of a soft metal which insert includes a tubular first part within the bore of said elastomeric ring and a second part located between said ring and said first gland member.

3,869,156
JOINTS

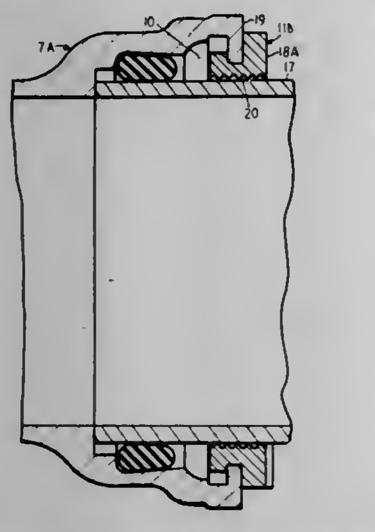
John Leslie O'Brien, 60 Rembrandt Dr., Middle Cove, New South Wales 2068; Bryan Finnimore, 126 Boundary Rd., Pennant Hills, New South Wales 2120, and Dallas John Arthur Hogg, 30 Thorney Rd., Fairfield, New South Wales, 2165, all of Australia

Filed Apr. 10, 1973, Ser. No. 349,840

Claims priority, application Australia, Apr. 10, 1972, 8546/72

Int. Cl. F16l *19/06*

U.S. Cl. 285—374 **3 Claims**



1. A socket and spigot pipe joint wherein the socket has an axially inward shoulder having an inner diameter smaller than the outer diameter of the spigot limiting axially inward movement of the spigot, a resilient sealing ring in the space between the spigot and socket compressed between the inside of the socket and the outside of the spigot and means for detachably retaining the spigot in the socket, said means comprising at least one radially inward circumferential flange on the outer end of the socket, each said at least one flange having at least one circumferential section, the free inward edge of each flange section being widely spaced from the outside of the spigot at one end and converging towards the outside of the spigot towards its other end, and a separate circumferential wedge having an outer portion and a depending portion extending therefrom received in the wide space of each said at least one flange, each said wedge depending portion being channelled along its outer edge receiving the respective flange and having a thickness, with respect to the radius of said spigot, greater at the trailing end than the leading end, each said wedge depending portion being circumferentially displaceable towards the narrow space of the respective flange so as to wedge the socket and spigot together against relative axial displacement.

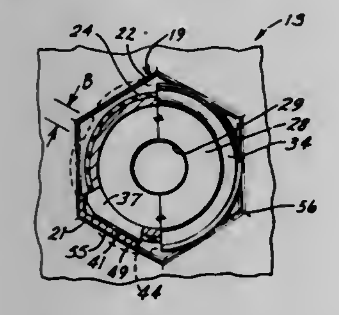
3,869,157
FAN WHEEL ASSEMBLY

Gerald P. Jolette, Kalamazoo, Mich., assignor to The Brundage Company, Kalamazoo, Mich.

Filed Jan. 27, 1972, Ser. No. 221,181

Int. Cl. B60b *27/06*

U.S. Cl. 287—52.04 **6 Claims**



1. In a plate and hub assembly for a blower wheel, the combination comprising:

a radially extended plate having an axially stepped, substantially polygonal central portion and a central opening in said central portion;

an annular hub having a substantially polygonal end portion of substantially similar configuration to said stepped portion of said plate and further having an annular flange extending axially from said end portion, said hub and plate being telescoped, the hub end portion and annular flange being received in the plate stepped central portion and central opening, respectively;

annular resilient isolator means snugly interposed between opposed surfaces of the hub and plate for reducing vibration transfer therebetween, said substantially polygonal portions of said hub and plate being close spaced and sandwiching a portion of said isolator means for preventing significant relative circumferential movement between said hub and plate, said annular flange extending radially outwardly at least at its outer end to firmly axially lock said plate and isolator means on said hub.

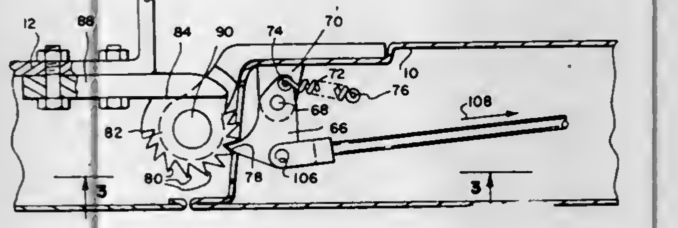
3,869,158
SAFETY LATCH MECHANISM FOR VEHICLE DOORS

Joseph Ciciulla, 1027 10th Ave., Yuma, Ariz. 85023

Filed Mar. 26, 1973, Ser. No. 344,649

Int. Cl. E05c *17/50*

U.S. Cl. 292—35 **8 Claims**



1. In a safety latch mechanism for vehicle doors; a door having inner and outer sides; a frame for said door; a hinge means pivotally connecting said door to said frame; a first latch means comprising first and second cooperably engageable latch elements on said door and frame respectively; door handle mechanism including manually operable latch release means coupled to said first latch element and adaped to disengage it from said second latch element on said frame to allow pivotal movement of said door relative to said frame; said hinge means including first and second hinge parts having a common pivotal axis and pivotally connecting together about said axis; said first hinge part fixed to said door and said second hinge part fixed to said frame; a hinge detent means havng an arcuate row of spaced apart detent abutments desposed concentrically about said pivotal axis; and releasable hinge latch means engageable with said detent abutments in correspondence with various pivoted partially open positions of said door relative to said frame for retaining said door in any one of said positions; force imposing means tending to maintain said hinge latch means in engagement with said detent abutments; and connector means coupling said manually operable latch release means and said hinge latch means whereby manual operation of said manually operable release means operates and releases said first latch means to release said door from said frame and whereby said hinge latch means is concurrently released to allow said hinge parts to pivot relative to each other and whereby said force imposing means causes said hinge latch means to hold said door in any one of various pivoted positions when said manually operable latch means is not manually operated thus preventing accidental pivotal opening movement of said door relative to said frame when said first latch means has been released and said door is partially opened relative to said frame.

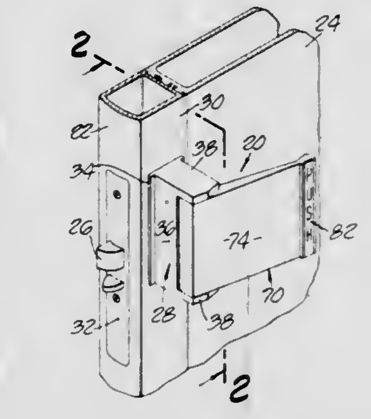
3,869,159
PUSH-PULL LOCK ACTUATOR

Charles L. Eads, Palm Springs, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.

Filed Aug. 10, 1973, Ser. No. 387,304

Int. Cl. E05c *15/02*

U.S. Cl. 292—92 **7 Claims**



1. A latch operating mechanism adapted to be mounted on a hinged door and operatively coupled with a latch of the type typically mounted in the free edge or nose of the door and requiring rotary actuation to retract the latch bolt thereof, comprising:

a. a housing affixed to the door and having laterally spaced apart first and second side walls;

b. a first means carried by said housing including a rotary spindle operatively connected with the latch;

c. a second means mounted within said housing proximate said first means and comprising a driver plate removably mounted within said housing proximate said first side wall thereof and having a slot formed therein adapted to operatively receive a driving pin provided on said first means, said driver plate being movable laterally within said housing toward said second side wall of said housing in a plane substantially parallel to the plane of the door;

d. a paddle operator pivotally carried by said housing comprising:

  1. a lever portion extending outwardly from said housing in a first direction; and

  2. a driving ear extending into said housing and so constructed and arranged as to be operatively received in the slot formed in said driver plate whereby pivotal movement of said paddle operator will impart lateral movement to said driver plate of said second means causing rotation of said rotary spindle of said first means in a first direction; and

e. biasing means comprising spring members disposed between said driving plate and said housing so as to yieldably resist lateral movement of said driver plate within said housing.

3,869,160
LATCHING DEVICE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and George W. Ulrich, 2815 Devonshire Dr., Florissant, Mo. 63033

Filed May 2, 1973, Ser. No. 356,555

Int. Cl. E05c *19/10*

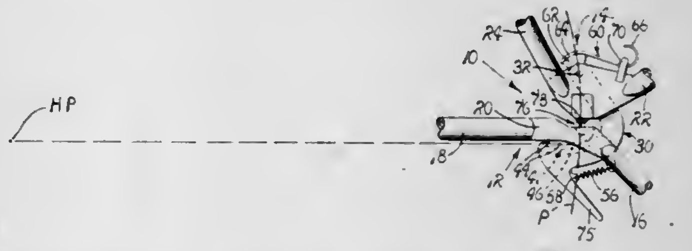
U.S. Cl. 292—108 **9 Claims**

1. An improved latching device comprising:

means including a substantially rigid receiver;

latching means for capturing the receiver when the receiver and latching means are in juxtaposition including a bracket, a restraining hook supported by said bracket for pivotal movement into restraining engagement with said receiver, and biasing means for continuously urging the hook into restraining engagement with said receiver;

support means supporting said latching means and said receiver for relative movement into juxtaposition;



said latching means including a protuberance mounted on said bracket having a distal surface of a spherical configuration and means defining within said receiver a conical seat for receiving said protuberance.

3,869,161
PUSH-BUTTON OPERATED SWITCH, MORE PARTICULARLY FOR DOORS AND THE LIKE

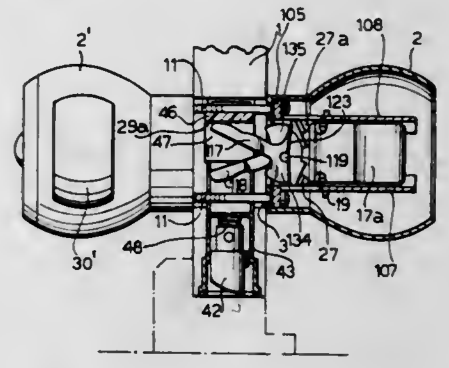
Giuliandrea Meroni, Nova Milanese, Italy, assignor to Cicala Establishment, Vaduz, Liechtenstein

Filed Dec. 8, 1972, Ser. No. 313,387

Claims priority, application Italy, Mar. 15, 1972, 21872/72; July 27, 1972, 27529/72

Int. Cl. E05c *1/12*

U.S. Cl. 292—166 **6 Claims**



1. A door latch mechanism of the type having a push-button control comprising a latch movably mounted in a door, at least one hollow knob having a central axis, means for non-rotatably securing said knob to a door with said central axis disposed perpendicular to the door, supporting means secured within said knob, latch control means pivotally mounted on said supporting means and operatively engaged with said latch, aperture means in said knob, a push-button movably mounted in said aperture for movement substantially transverse to said central axis and disposed in operative engagement with said latch control means, said latch control means being comprised of a pair of substantially scissors-like levers mounted on a common pivot carried by said supporting means, one end of each of said levers being operatively associated with said push-button and the other end of each of said levers being operatively engaged with said latch and resilient means engaging said levers to oppose spreading out of the levers.

3,869,162
LOCK ARRANGEMENT FOR BOX CAR DOORS

James J. Schuller, Chicago, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 22, 1973, Ser. No. 334,552

Int. Cl. E05c *19/08*

U.S. Cl. 292—283 **3 Claims**

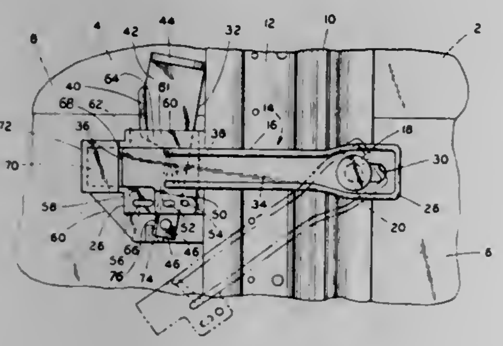
1. A device for locking relatively sliding doors of a railway car in a closed position, said device comprising

a hasp one end of which is pivotally mounted to the front of a first door for multiplanar pivotal movement and having a shank and a cam-shaped free end provided with a rear bevel edge portion that extends downwardly of the hasp and inwardly towards the pivotally mounted end of said hasp,

a keeper mounted on the front of the other door and being comprised of a backing means and a bracket element connected to said backing means, opposed portions of said bracket element and said backing means defining an opening for receiving the cam-shaped end of said hasp, the opposed portions of said bracket element and said backing means slidably engaging the cam-shaped end of said hasp when the cam-shaped end of said hasp is inserted in the hasp-receiving opening,

upper and lower bracket means affixed to said backing means and arranged in operable and spaced relationship to said bracket element, and defining a locking pin receiving opening located between said backing means and said upper and lower bracket means and arranged contiguous to and in open communication with the hasp receiving opening,

a locking pin having left side, top and right side edges and being slidably received within the locking pin receiving opening, one of the left and right side edges of said pin having a bevel edge portion that extends downwardly of the top edge of said pin and inwardly toward the other side edge of said pin, the bevel edge portion of said one edge of said pin being complementary to and for engagement with the bevel edge portion of said hasp, and being diposed to the rear of the shank of said hasp while the complementary bevel edge portions of said hasp and said one edge of said pin are in wedging engagement when said pin is received in the pin-receiving opening of said bracket means,



said complementary bevel edge portions of said hasp and said one edge of said pin in conjunction with the cam-shaped end of said hasp and the opposed portions of said bracket element and said backing means being in cooperative wedging engagement for effecting locking and retaining of said doors in a closed position,

said locking pin including upper and lower portions for abutting said upper and lower bracket means so as to retain said pin within the pin receiving slot during use of said device,

said pin including a shank portion disposed beneath the bevel edge portion of said one edge of said pin,

said shank portion of said pin having a bevel edge portion for initially engaging the bevel edge portion of said hasp when said hasp is connected to said keeper and said pin is in a raised position, and

a seat means mounted on said keeper below said lower bracket means for supporting said shank portion of said pin and said locking pin in a raised position.

3,869,163
HYDRAULIC SHOCK-ABSORBING BUMPERS

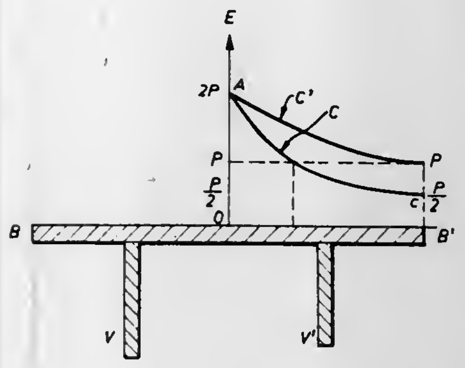
Alain Dera, and Daniel Besseau, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Mar. 23, 1973, Ser. No. 344,209

Claims priority, application France, Mar. 27, 1972, 72.10635

Int. Cl. B60r *19/06;* **B61f** *19/04;* **F16f** *5/00*

U.S. Cl. 293—63 **21 Claims**



1. A power absorbing bumper for automobile vehicles having a longitudinal axis, said bumper comprising:

a bumper bar,

a pair of hydraulic cylinder units pivotally connecting said bumper bar to the vehicle chassis and extending longitudinally between the latter and two intermediate symmetrical points of the bumper relative to said longitudinal axis,

said bumper bar having curved ends extending longitudinally,

resilient means connecting each curved end to said vehicle chassis so as to permit a longitudinal reversible displacement of each end; and

for each cylinder unit, means for resisting the movement of said cylinder unit in response to a transverse displacement of the bumper bar caused by impact forces, said displacement being in a transverse direction from said cylinder unit toward the other cylinder unit.

3,869,164
VEHICLE WITH IMPACT-ABSORBING END PORTION

Kurt Schwenk, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 18, 1973, Ser. No. 352,323

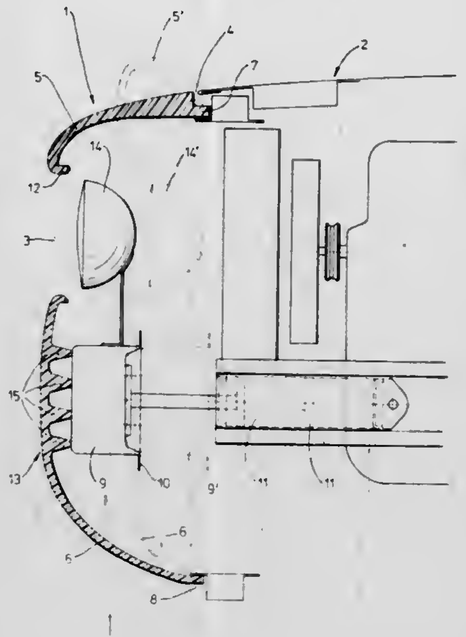
Claims priority, application Germany, Apr. 19, 1972, 2218927

Int. Cl. B60r *19/08*

U.S. Cl. 293—63 **7 Claims**

1. In a vehicle, such as an automobile, having a body and, mounted adjacent at least one end of the body, impact absorbing means including a bumper oriented transversely of the body, the improvement comprising an end portion for the body rigidly connected to the remainder of the body adjacent said one end and extending in a smooth surficial transition from the remainder of the body longitudinally of the vehicle beyond the impact absorbing means so that the impact absorbing means is arranged entirely within said end portion of the body, the end portion being distinct and separate from the

bumper and deformable independently of the impact absorbing means and being constructed so as to yield in such a manner that significant energy dissipation occurs only upon deformation of said impact absorbing means.



3,869,165
VEHICLE WITH REINFORCED IMPACT-ABSORBING END PORTION

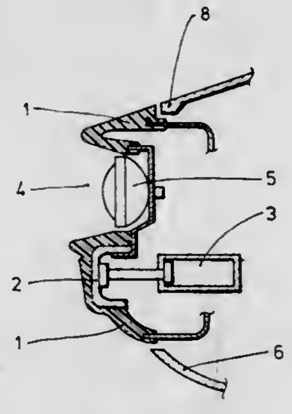
Michael Clendenin Miller, Morse, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 18, 1973, Ser. No. 352,327

Claims priority, application Germany, June 19, 1972, 2229782

Int. Cl. B60r *19/08*

U.S. Cl. 293—63 **8 Claims**



1. In a vehicle, such as an automobile, comprising an undercarriage; a main body portion; an independent body end portion made of resilient material and having an integrated, transversely extending reinforcement, all of the parts of said end portion being interconnected to form a unit; and impact absorbing means including a transversely extending bumper and at least one shock absorber extending between said bumper and said undercarriage, the improvement wherein said reinforcement of said end portion is constituted by said bumper; wherein said end portion is an extension of said main body portion forming, at the transition, a smooth continuous body surface; and wherein said end portion is deformable in and of itself so that, upon impact, said end portion will deform and subsequently return to its original shape.

3,869,166
FRONT END FOR INCREASING DYNAMIC WHEEL PRESSURE OF PASSENGER MOTOR VEHICLES

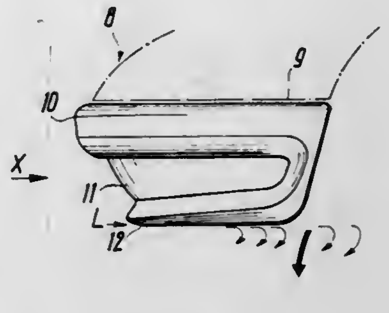
Hermann Burst, Stuttgart, and Rolf Wiener, Gartringen, both of Germany, assignors to Dr. -Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Nov. 14, 1972, Ser. No. 306,384

Claims priority, application Germany, Nov. 15, 1971, 2156588

Int. Cl. B60r *19/04;* **B62d** *37/00*

U.S. Cl. 293—69 R **6 Claims**



1. A front end for a vehicle of the type moving on wheels, said front end comprising:

a front end enclosing means for covering a vehicle front end,

a bumper means for absorbing forces acting on said vehicle front end, and

a means for increasing dynamic wheel pressure of said vehicle,

said means for increasing dynamic wheel pressure being arranged at a portion of said front end enclosing means, and

said portion extending below said bumper means and being formed integrally as a shaped part of said bumper means, wherein said portion of said front end enclosing means, said bumper means and said means for increasing dynamic wheel pressure are connected with each other in one piece,

wherein said means for increasing dynamic wheel pressure is constituted by a bulge-like enlargement of said portion, and

wherein said enlargement is V-shaped in cross section.

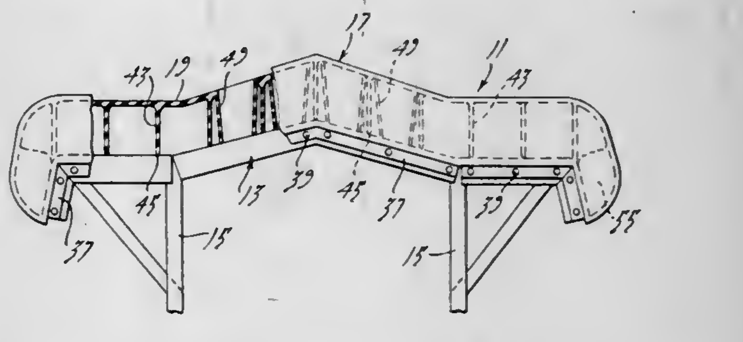
3,869,167
RESILIENT BUMPER ASSEMBLY

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1973, Ser. No. 402,521

Int. Cl. B60r *19/08*

U.S. Cl. 293—71 R **6 Claims**



1. A resiliently deformable bumper assembly for a vehicle or the like comprising:

a rigid elongate backing member fixed relative to the vehicle body or the like,

a resiliently deformable elongate outer shell,

means securing said outer shell to the backing member,

said outer shell and said backing member forming an elongate enclosure, said outer shell including a front wall portion and adjoining top and bottom wall portions,

a plurality of walled elements adjoining and extending rearwardly from said front wall portion toward said backing member, said walled elements circumscribing a void and having an open rearward end,

each said walled element protruding independently from said front wall portion and being spaced from adjacent walled elements,

said walled element being engageable with said backing member upon a frontal impact to said bumper assembly and collapsible to absorb impact energy.

3,869,168

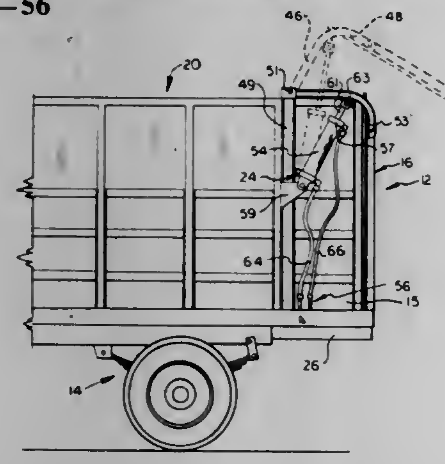
POWER GATE AND LIFT MEANS

Donald L. Matheson, Alton, Kans. 67623

Filed June 4, 1973, Ser. No. 366,781

Int. Cl. A01b *1/00*

U.S. Cl. 296—56 **5 Claims**



1. A power gate and lift means mountable on a truck bed, comprising:

a. a support means secured to said truck bed,
b. gate means pivotally connected to said support means to enclose a rear area of said truck bed and movable from opened to closed positions,
c. power means connected to said support means and said gate means to raise and lower said gate means,
d. said gate means having a tail gate assembly pivotally connected to actuator arms,
e. said actuator arms pivotally connected to said support means and said power means,
f. said tail gate assembly having anchor pin members engagable with said truck bed when in the closed position to prevent lateral movement of said tail gate assembly, and
g. said actuator arms of a J-shape having a long leg extended in a horizontal plane in the closed condition and a short leg extended downwardly from said long leg whereby the connection of said short leg to said tail gate assembly is located between the top and bottom portions of said tail gate assembly, thereby preventing rearward movement of said tail gate assembly in the closed condition.

3,869,169

RETRACTABLE FOOTREST MECHANISM

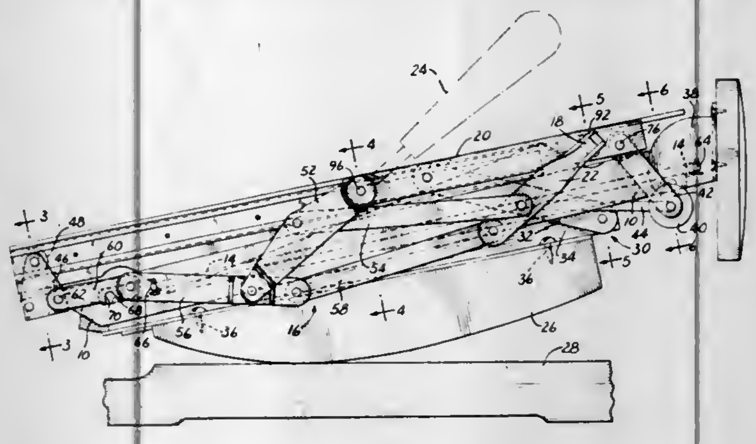
Carl B. Johnson, and Henry James, both of Pontiac, Ill., assignors to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed June 28, 1973, Ser. No. 374,486

Int. Cl. A47c *1/02;* **A61g** *15/00*

U.S. Cl. 297—84 **14 Claims**

1. A footrest extension mechanism for a reclining chair comprising a footrest pivoted to the ends of a pair of parallel rails supported on the chair for essentially endwise movement forwardly and rearwardly of the chair for extending and retracting the footrest, drive means connected to said rails to cause said movement, and means connected to said footrest to alter the angularity of the footrest relative to said rails as an incident to said endwise movement between a retracted position with its supporting surface in the front plane of the chair and a forward position facing upwardly to support the occupant's legs, said angularity-altering means being operable as aforesaid by connection with a portion of the chair with respect to which said rails are movable upon extension of the footrest to said forward position and being also thereby movable relative to said rails, said rails being shaped to provide protective masking of said angularity-altering means during movement thereof relative to said rails.



3,869,170

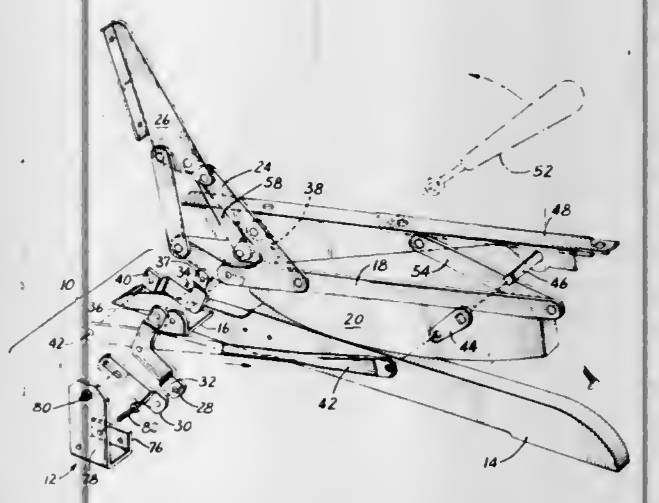
LOCKING MECHANISM FOR RECLINING CHAIRS

Henry James, and Carl B. Johnson, both of Pontiac, Ill., assignors to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed June 28, 1973, Ser. No. 374,356

Int. Cl. A47c *3/02;* **A47d** *13/10*

U.S. Cl. 297—270 **12 Claims**



1. In a rocker-recliner chair having a base portion for supporting a chair upon the floor, a rocking portion mounted upon the base portion for rocking movement thereon, and a body-supporting portion movable relative to said rocking portion from a generally upright sitting position to a recline position,

the improvement comprising a locking linkage selectively shiftable between alternate positions to lock the chair against reclining while permitting the same to rock, and conversely, to lock the chair against rocking while permitting the same to recline,

said linkage comprising a first pair of connected links each pivoted respectively to one of said base and said rocking portions on a first axis which is common to both and spaced from the rocking axis when the chair is in neutral balance, and from which the pivots of said first link pair are displaced by said rocking movement, and a second pair of connected links each pivoted respectively to one of said rocking member and said body-supporting portions on a second axis common to both when the chair is in said sitting position and from which the pivots of said second link pair are displaced by said relative movement to the recline position,

the links of said pairs pivoted to the rocking portion being connected together for movement in unison between said alternate positions at one of which said second link pair is aligned in opposition to said relative movement to the recline position, and at the other of which said first link pair is aligned in opposition to said rocking movement, each link pair being aligned to permit relative movement of its associated chair portions when the other pair is aligned in opposition as aforesaid,

and means for shifting said linkage between said alternate positions.

3,869,171

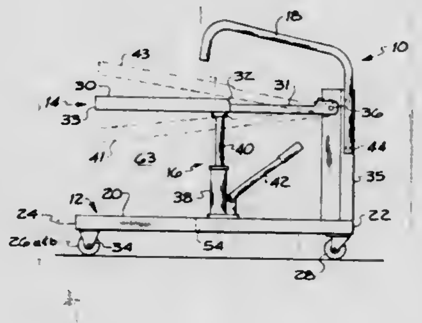
INVALID TRANSPORTER

Riley Wilson, 104 E. Sixth St., Hutchinson, Kans. 67501

Filed Dec. 13, 1973, Ser. No. 424,450

Int. Cl. A47c *3/20*

U.S. Cl. 297—313 **3 Claims**



1. An invalid transporting device of the type in which an invalid is transported in a sitting position, said device comprising:

a. wheeled base means including a substantially triangular shaped horizontally oriented base having a front end and a back end, a pair of laterally spaced wheels being located on a transverse axis and supporting said back end, and a wheel supporting said front end;
b. column support means attached to the front end of the base;
c. straddle and slide board means having a front end and a back end and a pivot arm portion being oriented above said base means in a substantially horizontal position with said board means pivotally attached to the column means for movement in a vertical plane;
d. jack means mounted on said base, spaced from the column means, the upper end of said jack means being attached to the board means approximate its mid-point, said jack means being effective to support said board means above said base means and being adjustable to vary the height of the back end of the board means above said base means.

3,869,172

CHAIR RECLINING MECHANISM

Henry James, and Carl B. Johnson, both of Pontiac, Ill., assignors to Pontiac Furniture Industries, Inc., Pontiac, Ill.

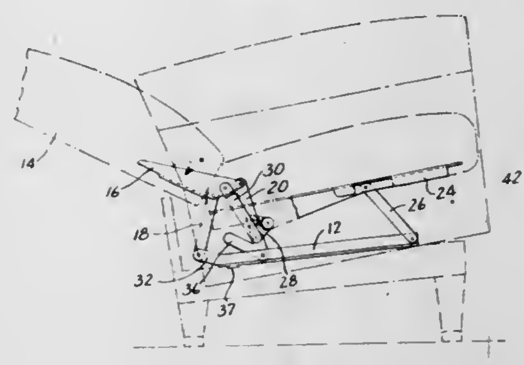
Filed June 28, 1973, Ser. No. 374,355

Int. Cl. A47c *1/02*

U.S. Cl. 297—316 **4 Claims**

1. In a reclining chair having a base, a seat, a back, and linkage means at each side of the chair interconnecting said back and seat and mounting the same upon said base for movement relative thereto and to each other from a sitting position to a reclining position,

the improvement wherein said linkage means supports the back upon the base for forward shifting movement through a fixed path relative to the base as an incident to recline of the back and includes at least one back link extending upwardly from the base to back and pivoted to both for rotation forwardly on the base by the recline of the back, a seat link connecting the forward portion of the seat to the base and being inclined rearwardly and upwardly from the base to the seat when in said sitting position, and a lever pivoted on said back link and connected by a control link to a portion of said chair other than said seat and with respect to which said back link is relatively movable upon the recline of the back, said lever being also pivoted to the rearward portion of the seat to support the seat and to move the seat forwardly relative to the base of the recline of the back.



3,869,173

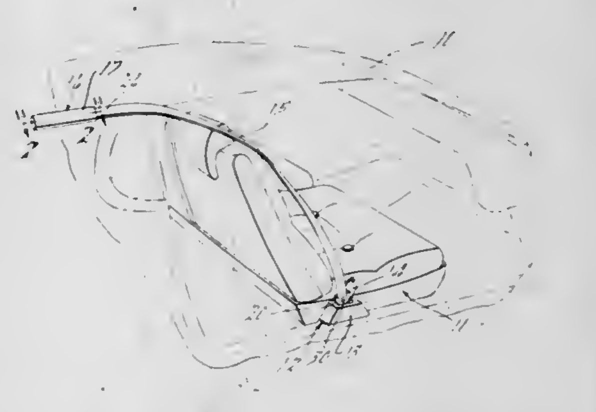
LINEAR RETRACTOR

William P Haller, Milford, and Thomas C. Holka, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1973, Ser. No. 421,380

Int. Cl. A62b *35/00*

U.S. Cl. 297—388 **9 Claims**



1. A linear retractor for a shoulder harness segment of a vehicle seat belt system, having:

an elongated housing of substantially rectangular cross section having opposite side walls and a base wall,

track means on the opposite side walls of the housing,

an arresting device supported on a cross shaft,

anchor means fixing one end of the segment to the housing with the segment extending longitudinally within the housing from the anchor means to a position over and around the arresting device cross shaft and exiting the housing in proximity to its anchored end,

the cross shaft having its ends extending laterally of the arresting device into engagement with the track means to support the arresting device for tilting movement within the housing and for movement longitudinally of the housing from a segment retracted position to a protracted position,

the housing having a plurality of lateral serrations in the base wall extending longitudinally thereof,

the arresting device having detent means at one lateral end edge positioned for engagement with the housing serrations to hold the arresting device against movement longi-

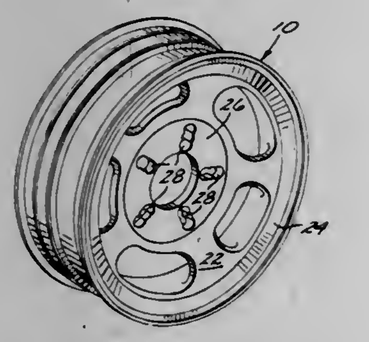
tudinally of the housing in segment protracting direction, wherein the improvement comprises:
cam means on the arresting device adjacent the detent means over which the segment passes,
the cam means in slack condition of the segment deflecting the segment from a straight line relation between its point of departure beneath the cross shaft and its point of departure from the housing,
a sudden protraction movement of the segment causing the latter to be pulled taut and to apply pressure on the cam means to tilt the arresting device toward the base to engage its detent means with the serrations thereby to lock the segment against protraction thereby to restrain a harnessed seat occupant against forward movement,
a first spring means normally urging the arresting device and segment away from the housing base toward retracted position,
and a second spring means providing minimal resistance to protraction of the segment in serration disengaged position of the arresting device.

3,869,174

WHEEL STRUCTURE FOR DIFFERENT BOLT CIRCLE DIAMETERS

Raymond C. Brown, Tarzana, and Ronald D. Bokovoy, Sherman Oaks, both of Calif., assignors to Superior Industries, Inc., Van Nuys, Calif.

Filed Mar. 25, 1974, Ser. No. 454,753
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **3 Claims**



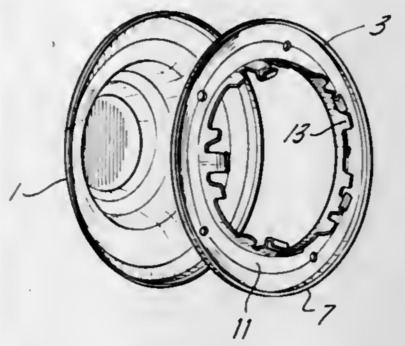
1. A wheel structure for different bolt circle diameters comprising:
- a wheel drum including a first plurality of circumferentially arranged, equally spaced lug bolts, said lug bolts having axes lying on a bolt circle of a first diameter;
- a wheel having a central web portion which includes a plurality of circumferentially arranged, equally spaced, and radially elongated lug bolt slots, each said slot having opposite, radially extending side walls terminating in semicircular end walls at the opposite extremities of said slot, said slots receiving said lug bolts, respectively, each said slot being elongated sufficiently to receive, instead of said first plurality of lug bolts, a second plurality or a third plurality of lug bolts lying, respectively, on bolt circles of second and third diameters different from said first diameter;
- a plurality of washers fitting over said first plurality of lug bolts, respectively, and substantially covering said slots;
- a plurality of flanged, internally threaded lug nuts threadedly connected to said first plurality of lug bolts, respectively, the flanges of said lug nuts bearing upon said washers, respectively, each of said lug nuts having an outer cylindrical bushing section extending through the adjacent one of said washers and into the adjacent one of said slots in close tolerance engagement with said side walls of the slot, said bushing sections being out of engagement with said end walls of the slot whether threadedly connected to said first plurality, said second plurality, or said third plurality of lug bolts whereby said wheel is self-positioning through said engagement between said bushing sections and said side walls and whereby operating loads are transmitted to said wheel through said engagement and through said bearing.

3,869,175

HUB CAP FOR VEHICLE WHEELS

Edward G. Spisak, Westland, Mich., assignor to S & S Product Engineering Service, Inc., Wyandotte, Mich.

Filed Aug. 2, 1973, Ser. No. 386,390
Int. Cl. B60b *7/00*
U.S. Cl. 301—37 R **4 Claims**



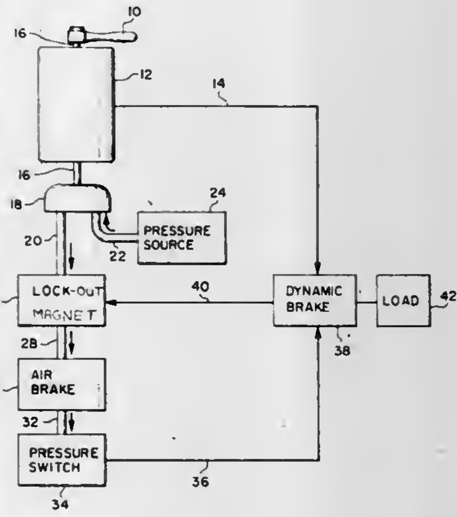
1. A hub cap assembly for attachment to a vehicle wheel having a plurality of circumferentially spaced holes for receiving threaded wheel attaching elements to which attach wheel fastening nuts and a plurality of resilient fingers attached to the wheel between said holes, said assembly including an outer decorative cap and an inner ring member attached to the cap, the ring member having an annular axially extending flange, a plurality of circumferentially spaced resilient fingers extending from the annular flange and adapted to engage the fingers on the wheel, a plurality of cut-away sections on said flange between said fingers and adapted to fit over wheel fastening nuts threaded on said threaded wheel attaching elements, the sections each defining stops positioned at approximately the same radial outward distance from the axis of the wheel as the nuts so that the nuts cooperate with the edges to prevent relative rotation between the wheel and the hub cap assembly.

3,869,176

APPARATUS FOR PREVENTING RAILWAY WHEEL LOCK

John Kessler, 38-14 Broadway, Long Island City, and Joseph Franco, 496 Park Ave., Uniondale, L. I., both of N.Y. 11106

Filed Apr. 13, 1973, Ser. No. 350,845
Int. Cl. B60t *17/18*
U.S. Cl. 303—3 **2 Claims**



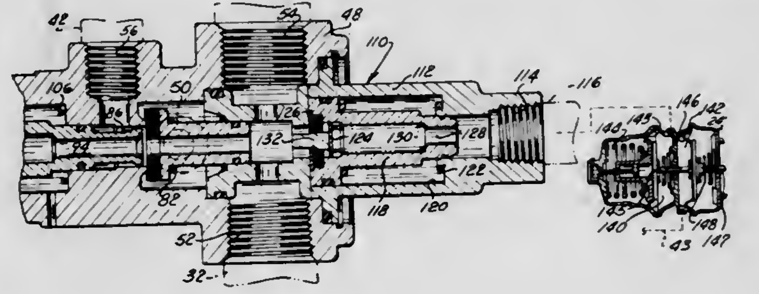
1. In a vehicle braking system of the type having a controller regulating the degree of brake application, an air valve, a pressure source whose application is goverened by the air valve, and including a dynamic brake having a load electrically connected across the dynamic braking motors, a lock-out magnet determining the application of the fluid pressure to an air brake in response to the dynamic brake, the air brake being connected through a pressure line to the output of the lock-out magnet, wherein the improvement comprises:
- a pressure switch connected to the pressure line at the output of the lock-out magnet for sensing the pressure in the air brake said switch being set at a predetermined pressure level;
- a solenoid located between the load and the dynamic brake for electrically disconnecting the load; and
- a conductor connected between said pressure switch and said coupling means so that when the lock-out magnet fails to regulate the application of the fluid pressure brakes and the dynamic braking motors, at the predetermined pressure level said switch sends an electrical signal through said conductor causing said solenoid to disconnect the load from the dynamic braking motors.

3,869,177

PNEUMATIC ANTI-SKID CONTROL BRAKE SYSTEM WITH AN EMERGENCY BRAKE CONTROL VALVE

John A. Urban, Livonia; Gary L. Hopkins, Southfield, and John Keith Armstrong, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 192,438, Oct. 26, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 354,631
Int. Cl. B60t *8/06, 15/02, 13/28*
U.S. Cl. 303—21 F **4 Claims**



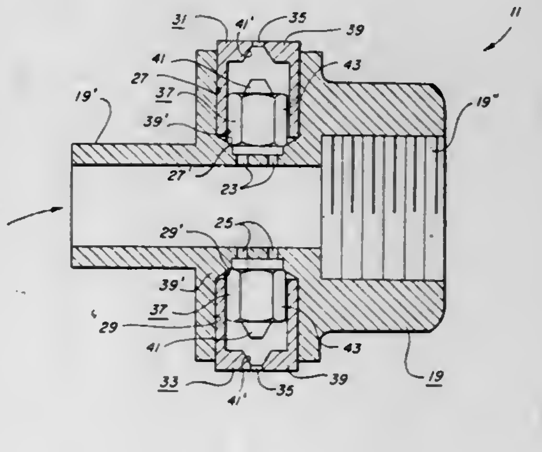
1. A brake control system for controlling the application of fluid operated brakes of a wheeled vehicle, said system comprising:
- A. a fluid operated brake actuator for applying the brakes of a wheel;
- B. a relay valve for controlling the application of fluid pressure to said brake actuator, said relay valve including
  - 1. a service port in communication with said brake actuator,
  - 2. a supply port,
  - 3. a pilot portion for communicating said supply port with said service port in response to a fluid pressure, and
  - 4. operator means for venting said pilot portion;
- C. a first source of fluid pressure;
- D. a second operator controlled source of fluid pressure;
- E. reservoir means connected with said first source and said supply port;
- F. control valve means connected to said reservoir means, said first source, said operator controlled source, and said pilot portion, said control valve means including
  - 1. means for selectively communicating said pilot portion with said operator controlled source of fluid pressure when the pressure from said first source is above a predetermined level, whereby normal braking of said wheel is provided by communicating said supply port with said service port in response to a fluid pressure from said operator controlled source of fluid pressure, and
  - 2. means for selectively communicating said pilot portion with said reservoir means when the pressure from said first source is below a predetermined level, whereby said emergency braking of said wheel is provided by communicating said supply port with said service port in response to the fluid pressure from said first source falling below said predetermined level;
- G. skid control means for detecting a skid at the braked wheel and generating a skid signal; and
- H. circuit means connecting said operator meand and skid means for actuating said operator means to vent said pilot portion when a skid signal is generated, thereby providing skid control of said braked wheel during normal and emergency braking.

3,869,178

DEVICE FOR PREVENTING PRESSURE OR VACUUM BUILD-UP IN PNEUMATIC BRAKE SYSTEMS

Leon E. Day, 3027 Juca Ln., Memphis, Tenn. 38116, and Amond B. Millican, Rt. 2, Box 200, Decaturville, Tenn. 38329

Filed Nov. 19, 1973, Ser. No. 417,219
Int. Cl. B60t *11/34*
U.S. Cl. 303—67 **3 Claims**



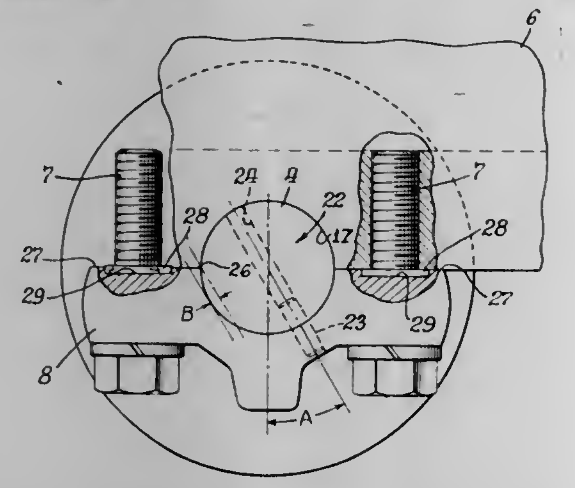
1. The combination with a pneumatic brake system having a pneumatic pump, a brake valve, and a pneumatic line leading from the pneumatic pump to the brake valve, of a device for preventing pressure or vacuum build-up in the pneumatic brake system when the pneumatic pump is deactivated, said device comprising:
- a. body means mounted in the pneumatic line intermediate the pneumatic pump and the brake valve, said body means including air passage means for allowing air to flow between the pneumatic pump and the brake valve through the pneumatic line, first and second valve chamber means substantially 180° opposed to each other, and first and second air bypass means between said air passage means and said first and second valve chamber means respectively for allowing ingress and egress of air between said air passage means and said first and second valve chamber means;
- b. first valve means mounted in said first valve chamber means of said body means for relieving pressure or vacuum build-up in said air passage means of said body means when the pneumatic pump is deactivated, said first valve means including housing means complementary shaped with said first valve chamber means, said housing means including air vent means for allowing ingress and egress of air between said first valve chamber means and the atmosphere, said first valve means including slide means for controlling the ingress and egress of air between said first valve chamber means and the atmosphere through said air vent means by controlling the size of said air vent means; and
- c. second valve means mounted in said second valve chamber means of said body means for relieving pressure or vacuum build-up in said air passage means of said body means when the pneumatic pump is deactivated, said second valve means including housing means complementary shaped with said second valve chamber means, said housing means including air vent means for allowing ingress and egress of air between said second valve cham-

ber means and the atmosphere, said first valve means including slide means for controlling the ingress and egress of air between said second valve chamber means and the atmosphere through said air vent means by controlling the size of said air vent means.

3,869,179
BRACKET AND BOLT-RETAINING MEANS FOR TRACTOR ROLLER ASSEMBLIES

John S. Ricca, Bartonville, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Sept. 17, 1973, Ser. No. 397,585
Int. Cl. F16c *25/00*
U.S. Cl. 308—34 **8 Claims**



1. In a roller assembly comprising a roller hub rotatably supported on a shaft,
   a. mounting means for mounting said assembly on a roller frame, said mounting means including,
   b. a mounting bracket including a pair of bolts on opposite sides of a central, journal portion receiving said shaft, said bolts being in spaced, substantially parallel relation and defining a bolt axis, said mounting bracket being retained within said assembly bracket-retaining means including,
   c. a lock pin, said lock pin being fitted within a bore extending from said mounting bracket and into said shaft and which is at an oblique angle to said bolt axis so that any tendency of said mounting bracket to move away from said shaft would be directed in the oblique angle direction by said pin.

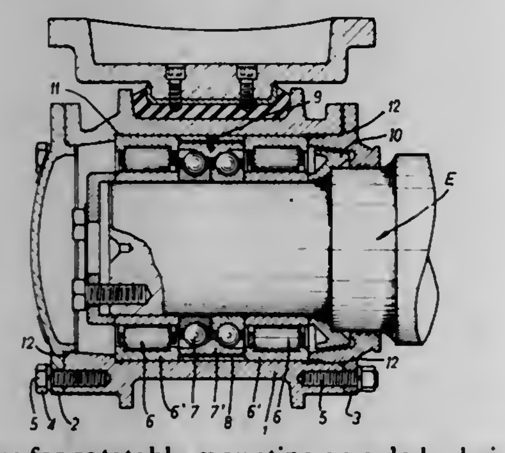
3,869,180
RAILWAY JOURNAL BOX BEARING RACE MOUNTING

Claude Sonnerat, Annecy, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Sept. 12, 1972, Ser. No. 288,261

Claims priority, application France, Sept. 30, 1971, 71.35299

Int. Cl. B61c *15/12, 15/20;* **F16c** *13/02*
U.S. Cl. 308—180 **4 Claims**



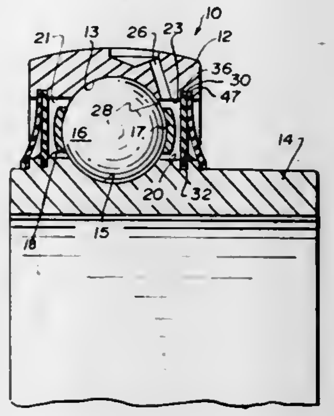
1. Apparatus for rotatably mounting an axle body in an axle box, comprising: a first set of outer roller bearing races fixed to said axle box; a first set of inner roller bearing races fixed to said axle body; a first set of cylindrical rollers disposed between said first sets of inner and outer bearing races for bearing substantially only radial loads developed between said axle body and axle box; a second set of outer roller bearing races fixed to said axle box and spaced from said first set of outer bearing races; a second set of inner roller bearing races fixed to said axle body and spaced from said first set of inner bearing races; a second set of cylindrical rollers disposed between said second sets of inner and outer bearing races for bearing substantially only said radial loads; a distance member axially clamped between said first and second sets of outer bearing races; at least one set of outer and inner ball bearing races disposed concentrically with respect to said distance member and between said first and second sets of roller bearing races; and at least one set of ball bearings located in angular or oblique contact between said outer and inner ball bearing races for bearing substantially only axial loads developed between said axle body and axle box, said distance member being ring-shaped and having an axial width greater than the axial width of said at least one outer ball bearing race.

3,869,181
RESILIENT MULTIPLE ELEMENT BEARING SEAL

Richard H. Barber, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Continuation-in-part of Ser. No. 194,641, Nov. 1, 1974, Pat. No. 3,748,003. This application Apr. 16, 1973, Ser. No. 351,432

Int. Cl. F16c *33/78, 33/80;* **F16j** *15/34*
U.S. Cl. 308—187.2 **3 Claims**

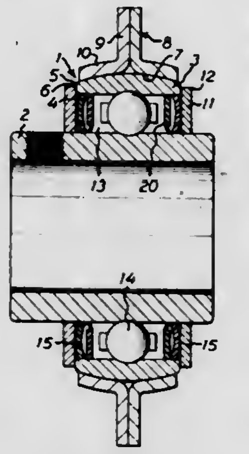


1. A bearing seal for sealing a bearing assembly including outer and inner annular members which are rotatable relative to one another and which are spaced apart for receiving antifriction elements and lubricant therebetween, said annular members having oppositely disposed grooves in each axial end thereof and at least one of said annular members having corner portions axially outwardly of the grooves, and a pair of annular sealing structures, one for each axial end of said members, each of said sealing structures including in combination,
   a first annular sealing ring comprising a radial body portion with an outer peripheral sealing portion extending radially outwardly therefrom and being positioned in the assembly to fit into a groove in said outer member and with an inner annular sealing portion extending radially inwardly therefrom and being positioned in the assembly to fit into a groove in said inner member, said first annular sealing ring further including a portion molded integral to said body portion and extending axially outwardly in an interference fit to provide a reservoir therebetween with the specified one annular member, and
   a second annular sealing ring comprising a radial body portion with an outer peripheral sealing portion extending radially outwardly therefrom and with an inner annular sealing portion extending radially inwardly therefrom, said second annular sealing ring being positioned in the assembly with one of said outer peripheral or inner annular sealing portions being positioned adjacent one of said outer peripheral and inner annular sealing portions of said first annular sealing ring positioned in the groove in the annular member opposite the specified one annular member, and the other of said outer peripheral and inner annular sealing portions extending axially outwardly from the assembly with said radial body portion extending across the space between the annular members to engage the corner portion of the specified one annular member in a running contact seal.

3,869,182
BALL BEARING

Nils Bertil Glifberg, Staffanstorp, Sweden, assignor to Svenska Sockerfabriks Aktiebolaget, Malmo, Sweden

Filed July 6, 1973, Ser. No. 376,987
Int. Cl. F16c *1/24*
U.S. Cl. 308—187.2 **4 Claims**

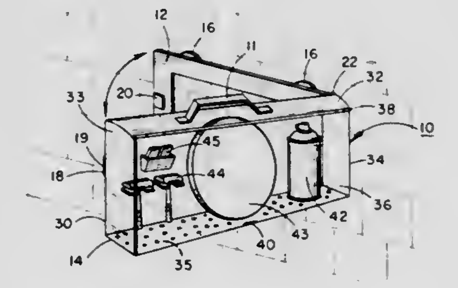


1. In a ball bearing assembly of the type including an inner bearing ring and an outer bearing ring supporting a plurality of balls therebetween, said inner bearing ring being in the form of a sleeve which projects axially outwardly of a side face of the outer bearing ring, said face being defined by inner and outer perhipheral edges, the space for the balls between the inner and outer bearing rings being protected by sealing means mounted in said space inwardly of said side face of the outer ring against entrance of water and dirt, the improvement wherein said bearing comprises a first rigid substantially plane washer of considerable thickness secured to the outwardly projecting end portion of said inner sleeve-shaped bearing ring, the outer periphery of said washer extending radially past said inner edge of said outer bearing ring, said washer overlying and adjoining at least a portion of the side face of said outer bearing ring, and a second protection means located inwardly of and adjacent said first washer within the space between said bearing rings.

3,869,183
SHOWER BATH CADDY

Mack Frank, Jr., P.O. Box 73, Oberlin, La. 70655

Filed Sept. 27, 1973, Ser. No. 401,295
Int. Cl. A47b *67/02*
U.S. Cl. 312—248 **1 Claim**

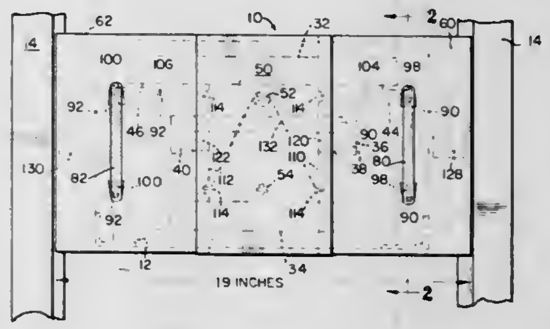


1. For use in connection with a shower bath, a caddy comprising a support bracket having suction cups thereon for removably securing the bracket to the wall of the shower bath; and
   a cabinet hingedly mounted on said bracket designed to hold miscellaneous toilet articles for shaving, said cabinet being rotatable toward and away from the user depending on the user's position within the shower bath, thereby allowing the user to comfortably shave after taking a shower or bath, said cabinet includes a base, four laterally extending side walls, a mirror within said cabinet and a transparent door hingedly secured to one of said side walls, to allow the user thereof to see into said mirror through said transparent door, and
   at least one of said side walls having perforations therein to ventilate said cabinet.

3,869,184
TWO-WAY TRAVEL FRONT PANEL

Ronald D. Lambert, and Jack R. Bradford, both of Indianapolis, Ind., assignors to Herbert S. Fall, Indianapolis, Ind.

Filed July 18, 1973, Ser. No. 380,339
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **20 Claims**



1. A cabinet structure comprising a cabinet frame having forward and rearward sides, a drawer having opposite sides and forward and rearward ends, said drawer having a width and height, a slide extending along each side of said drawer and supporting it in said frame for rectilinear movement forwardly and rearwardly from its normal position relative to said frame, and panel means mounted on one end of said drawer, said panel means providing a cover for said one end, said panel means including a pair of side panels and means for mounting said side panels for lateral movement on said drawer between respective outer positions and inner positions, said panel means having a width substantially equal to the width of said drawer when said side panels are in their respective outer positions, said panel means having a height substantially equal to the height of said drawer, said side panels being engageable with said frame in said outer positions to prevent movement of said drawer on said slides in at least one direction relative to said frame, said side panels having a height substantially equal to said drawer height, and said side panels being disposed laterally inwardly from said slides in said inner positions to permit movement of said drawer forwardly and rearwardly on said slides.

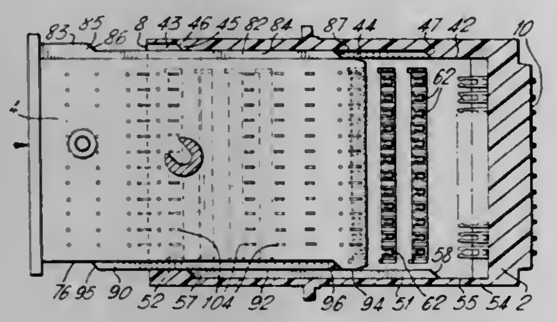
3,869,185
ELECTRICAL CONNECTOR ASSEMBLY

Wladimiro Teagno, Turin, Italy, assignor to AMP Incorporated, Eisenhower Blvd., Pa.

Filed Mar. 18, 1974, Ser. No. 452,093
Claims priority, application Italy, Mar. 29, 1973, 22340/73
Int. Cl. H01r *13/62*
U.S. Cl. 339—65 **5 Claims**

1. An electrical connector assembly comprising a first hollow insulating housing having an aperture which provides access to the hollow interior for a second insulating housing carrying a plurality of aligned rows of spaced electrical contacts which engage aligned rows of spaced electrical contacts in the hollow interior, the rows of contacts extending at right angles to the axial direction of movement of the second housing within the interior of the first housing on engagement and disengagement of the housings, surface means on

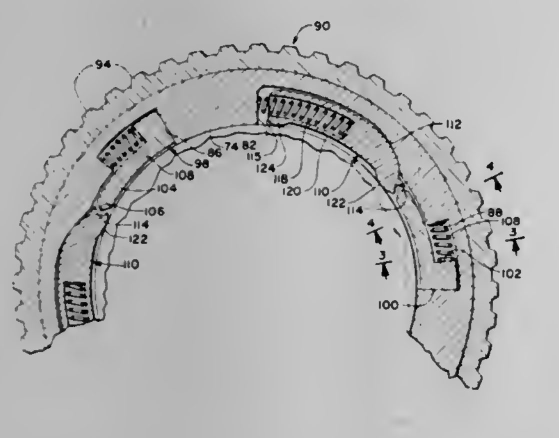
the first and second housings cooperating so that on initial axial movement of the second housing within the interior of the first housing on assembly of the housings, the contacts of the second housing are guided between the contacts of the first housing, a cam surface means on the second housing cooperating with a cam surface means on the first housing so that when the second housing reaches a predetermined position within the interior of the first housing, the second housing moves laterally relative to the first housing to align the contacts of the housings and further surface means on the first and second housings cooperating so that on further axial movement of the second housing within the interior of the first housing, the contacts engage.



3,869,186
ELECTRICAL CONNECTOR WITH AUTOMATIC THREAD LOCKING MECHANISM

Ottomar H. Vetter, Minneapolis, Minn., assignor to TRW, Inc., Minneapolis, Minn.

Filed Oct. 9, 1973, Ser. No. 404,648
Int. Cl. H01r *13/54*
U.S. Cl. 339—89 R **12 Claims**

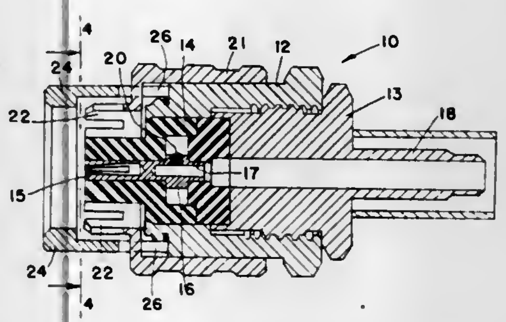


1. A connector comprising first and second components adapted to be mated together along a longitudinal axis, helical coupling means for causing mating and unmating of said components, drive means rotatable about said axis having means movable therewith for abutting against a portion of said coupling means to rotate said coupling means in one rotative direction to effect said mating when said drive means is rotated in said one rotative direction, and wedge means shiftable in a circular path about said axis relative to both said coupling means and said drive means, said coupling means having means thereon for shifting said wedge means in its said circular path in said one rotative direction when said coupling means is rotated in its said one rotative direction by said drive means and said wedge means resisting helical retraction of said coupling means in a reverse rotative direction opposite to said one rotative direction and hence unmating of said components, said abutting means on said drive means abutting said wedge means to render said wedge means ineffectual when said drive means is rotated in a reverse direction opposite to said one rotative direction.

3,869,187
QUICK CONNECT/DISCONNECT COAX CONNECTOR

Chalice Bingham, Oak Ridge, Tenn., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 12, 1974, Ser. No. 450,417
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 P **10 Claims**

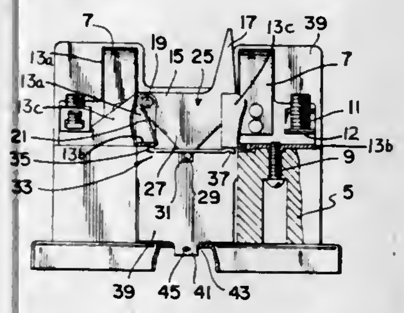


1. An electrical connector for a coaxial line comprising:
a. a female portion having a hollow axial connecting terminal surrounded by a tubular insulator, and including an outer conductive cylinder and an inner locking plug for holding the tubular insulator in place;
b. a locking sleeve slidably positioned on the outer conductive cylinder integrally connected to a plurality of locking fingers;
c. an annular shield secured to the outer cylinder formed with slots for the passage of a flange which supports the locking fingers; and
d. a male portion having an axial conductive extension for entering the connecting terminal and supported by a tubular cylinder formed with an annular groove for engagement by the ends of said locking fingers when the male and female portions are joined.

3,869,188
METER MOUNTING BOX

Ian Y. Morrison, Missisnauga, Ontario; Loudon C. Spark, Newmarket, Ontario, and Jelle J. Duyf, Toronto, Ontario, all of Canada, assignors to Murray-Jensen Manufacturing Ltd., Toronto, Ontario, Canada

Filed Mar. 26, 1973, Ser. No. 344,530
Claims priority, application Canada, Mar. 29, 1972, 138462
Int. Cl. H01r *13/38*
U.S. Cl. 339—95 R **3 Claims**

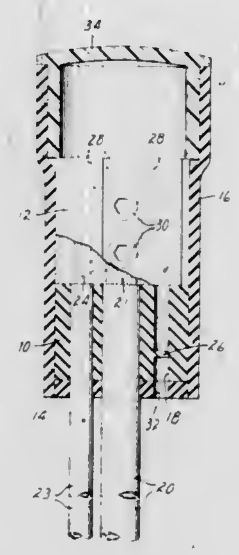


1. In a meter mounting device having a pair of jaw terminals for accepting terminal tongues of a meter when the meter is mounted; a lever pivotally mounted on one jaw terminal, said lever having a portion extending into position to be engaged by a meter when its tongues are accepted in said jaw terminals; a bridging bar mounted on and secured to said lever; and a contact surface on each jaw terminal, said contact surfaces being positioned to be engaged and bridged by said bar when said meter is absent, and said bridging bar being positioned to slidingly engage and disengage said contact surfaces as said meter is mounted and removed, thereby cleaning the contact surfaces; and a spring mounted at the pivoted end of said lever and presses against one of said jaw terminals and against said lever to bias said lever and bar into bridging position.

3,869,189
UNDERGROUND ELECTRICAL CONNECTOR

Bob C. McCurdy, P.O. Box 33427, White Bear, Minn. 55133

Filed Oct. 3, 1973, Ser. No. 403,161
U.S. Cl. 339—96 **3 Claims**

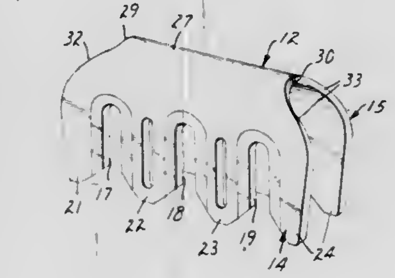


1. A multiple electrical conductor connector assembly comprising:
a resilient cylindrical adapter seal formed with a plurality of apertures extending therethrough parallel to its axis, each said aperture having a normal diameter less than that of a specified cable and being expandable to receive the same,
an electrically conductive metal terminal block connecting the conductors at the ends of a distribution cable extending through said apertures in said adapter seal and the conductors at the ends of feeder cables pushed through said apertures in said adapter seal to be tapped into said distribution cable,
a rigid stress relief ring lying adjacent said adapter seal and receiving the cables prior to their passing through said adapter seal, and
a cover having a closed end extending over said terminal block and forming with said adapter seal a watertight seal around said terminal block.

3,869,190
SOLDERLESS WIRE CONNECTOR

James H. Bazille, Jr., North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 29, 1974, Ser. No. 456,135
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **6 Claims**

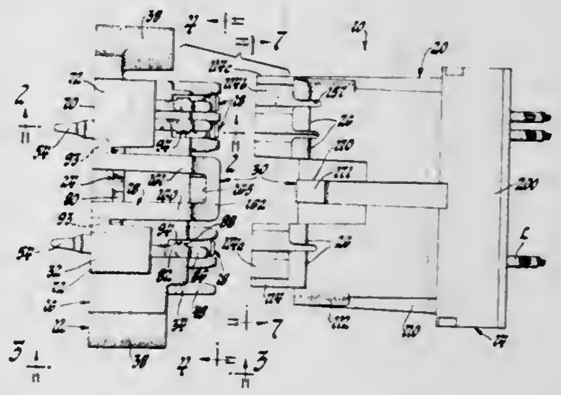


1. A spring compression reserve wire-connector contact, comprising a pair of spaced planar interconnected resilient contact elements having multiple wire-receiving slots defined by parallel extended legs, each slot in one element being aligned with a slot in the other element, and the portion interconnecting the contact elements being relieved at both ends, each relief extending inward from the end to alignment with the outer edge of the first wire receiving slot.

3,869,191
CONNECTOR MEANS HAVING SHORTING CLIP

Emil J. Tolnar, Jr., Warren, and Arthur H. Winyard, Cortland, both of Ohio, assignors to General Motor Corporation, Detroit, Mich.

Filed Oct. 11, 1973, Ser. No. 405,450
Int. Cl. H01r *13/12*
U.S. Cl. 339—111 **3 Claims**



1. An electrical connector means comprising: a first insulator housing having a plurality of first spaced apart cavities therein, a first plurality of metal terminals housed in said first cavities and having exposed forward end portions, a second cavity in said first insulator housing, a spring clip housed within said second cavity, said spring clip having a bridge portion extending transversely of the cavity and a plurality of spaced resilient fingers extending transversely of the bridge portion and overlying the respective ones of the first terminals, said fingers each having a depending portion which is engaged with one of the first plurality of terminals to provide a shorting path between the first plurality of terminals, said spring clip when disposed in the second cavity being self-biased toward a position in which their depending portions engage the respective first plurality of terminals, a second insulator housing which is matable with the first insulator housing, said second insulator housing having a plurality of spaced cavities therein, a second plurality of metal terminals housed in said cavities of said second insulator housing which are adapted to mate with the first plurality of terminals in the first insulator housing, said second insulator housing having a cam means intermediate its ends, said insulator housings when being connected together first causing said first and second plurality of terminals to matingly engage each other and then causing said cam means on said second insulator housing to engage the spring fingers of the spring clip to move the spring fingers in opposition to their self-biasing forces to disengage the spring clip from the first plurality of terminals.

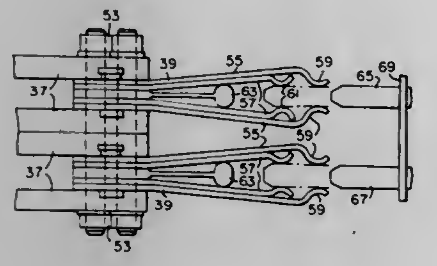
3,869,192
CIRCUIT BREAKER WITH PRE-LOADED TERMINAL CONNECTORS

Alfred E. Maier, Beaver Falls, and James O. Rexroad, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1973, Ser. No. 364,453
Int. Cl. H01r *3/00*
U.S. Cl. 339—147 **6 Claims**

1. A circuit breaker for use in drawout switchgear having spaced line stabs and including a circuit breaker and a stationary housing having stationary terminals, the stationary terminals being movable into and out of contact with the line stabs, the circuit breaker comprising a pair of separable contacts, means for moving the contacts between open and closed positions, first conductor means for connecting one of the contacts to one of the stationary terminals, second conductor means for connecting the other contact to the other terminal,

each stationary terminal comprising a quick detachable terminal connector, each connector including a pair of oppositely disposed flexible terminal contacts engageable with opposite sides of a line stab, said oppositely disposed terminal contacts being spaced from each other by a distance less than the thickness of a line stab when out of contact with said stab, and a spacer between each pair of said terminal contacts, said spacer being flexibly mounted to yield in response to pressure from either side of the spacer.



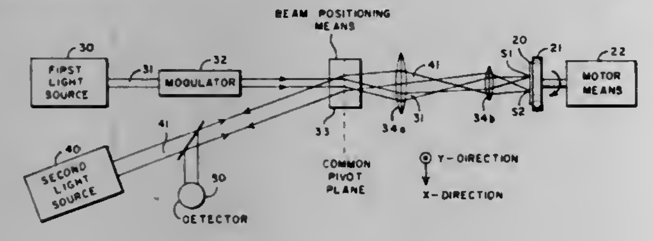
3,869,193
OPTICAL MEMORY WITH IMPROVED SIGNAL-TO-NOISE RATIO

Francis M. Schmit, Saint Louis, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Sept. 18, 1973, Ser. No. 398,364

Int. Cl. G02b *17/00*

U.S. Cl. 350—6 **8 Claims**



1. An optical memory comprising:
a memory medium;
first light source means for producing a write beam;
second light source means for producing a read beam angularly separated from the write beam in a first direction;
focusing means for receiving the write beam and the read beam and for focusing the write and read beams to first and second focused light spots respectively at the memory medium, the first and second focused light spots spatially separated from one another in the first direction, the read beam having a larger beam diameter than the write beam at the focusing means whereby the second focused light spot has a diameter which is less than the diameter of the first focused light spot at the memory medium.

3,869,194
FIBER FOR OPTICAL COMMUNICATION

Satoshi Shiraishi; Kunio Fujiwara; Yasuhiko Kumagai, and Shiro Kurosaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

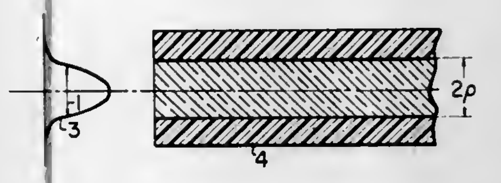
Filed July 3, 1973, Ser. No. 376,270

Claims priority, application Japan, July 3, 1972, 47-66554

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **1 Claim**

1. A method of exciting an optical fiber of the type consisting of a core of high purity fused quartz glass clad with an organic material having a lower refractive index than that of said core and selected from the group consisting of polytetrafluoroethylene, tetrafluoroethylenehexafluoropropylene copolymer, polychlorotrifluoroethylene, polyvinylidene fluoride, polytrifluoroisopropylmethacrylate, fluorovinylidenehexafluropropylene copolymer, and polyvinyl fluoride, comprising projecting a Gaussian light beam of 0.3 to 0.6 of $T/2\rho$, wherein T represents the half amplitude width of the light beam and ρ represents the radius of the core, over the cross section of the optical fiber.



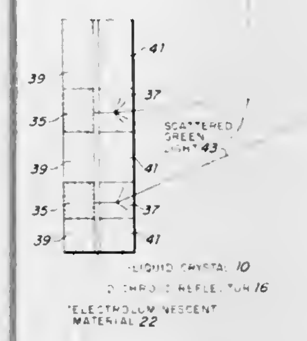
3,869,195
LIQUID CRYSTAL DISPLAY CONTAINING SEGMENTED SOURCE OF BACK-LIGHTING

Ralph E. Aldrich, Acton; Julius Feinleib, Cambridge, and Lawrence E. Schmutz, Arlington, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed July 2, 1973, Ser. No. 375,980

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **12 Claims**



1. A display which is illuminated by an external source of front lighting, comprising:
- a. a layer of liquid crystal material which exhibits dynamic scattering upon application of an electric field thereacross, said layer being positioned between a front transparent electrode and a back transparent electrode;
- b. means to selectively apply an electric field across discrete areas of said layer of liquid crystal material;
- c. a source of back-lighting;
- d. means to selectively activate predetermined areas of said source of back-lighting, said predetermined areas coinciding with discrete areas of said liquid crystal materials which are activatable; and,
- e. a dichroic reflecting layer positioned between said liquid crystal material and said source of back-lighting, said dichroic reflecting layer being one which transmits wave lengths emitted by said source of back-lighting and which reflects other wave lengths.

3,869,196
LIQUID CRYSTAL DISPLAY DEVICE

Kanemitsu Kubota, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

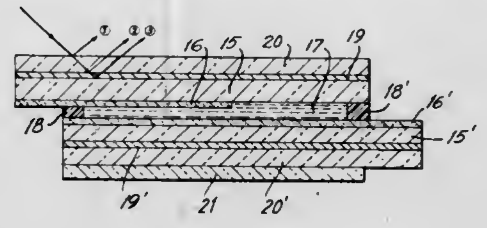
Filed Jan. 9, 1974, Ser. No. 432,117

Claims priority, application Japan, Jan. 11, 1973, 48-6090

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **2 Claims**

1. In a liquid crystal display device wherein liquid crystals in a cell formed of opposed glass plates rotate the plane of polarization of linearly polarized light through 90° in the absence of an electric field across said cell and which are non-rotatory in the presence of a sufficiently strong electric field, said cell having suitably disposed transparent conductive elements on the inner surfaces of said glass plates covering only part of said surfaces, said cell further having polarizer and analyzer members disposed with axes at right angles to each other exterior to either plate of said cell, the improvement wherein each of said polarizer and analyzer members comprises a polarizing film held firmly between inner and outer sheets of glass and said cell comprises the inner sheet of each of said polarizer and analyzer members.



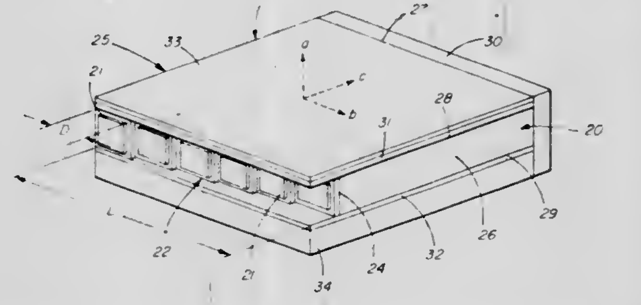
3,869,197
LIGHT-DEFLECTING SYSTEM FOR EFFECTING BRAGG DIFFRACTION OVER A WIDE BANDWIDTH

James C. Owens, and Richard N. Blazey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 30, 1973, Ser. No. 383,850

Int. Cl. G02f *1/32*

U.S. Cl. 350—161 **4 Claims**



1. An acoustooptic light deflecting system having an efficiency greater than a minimum predetermined efficiency and operable with respect to the center frequency of a predetermined bandwidth, comprising:
means for generating a beam of monochromatic light that is relatively narrow in width as compared to length and for directing the beam along a prescribed path;
oscillator means for generating an electrical signal of a preselected frequency that is generally within the bandwidth;
an acoustooptic medium responsive to a constant acoustical power and having center frequency that is offset with respect to the bandwidth center frequency, spaced, parallel incident and exit side surfaces and spaced, parallel ends, the medium being positioned in the prescribed path with the light beam intersecting the incident side surface at an angle to effect Bragg diffraction of the light beam and being displaced relative to the prescribed path in a direction to optimize the efficiency and resolution of the system;
transducer means comprising a number of piezoelectric elements, each of generally rectilinear shape, bonded to one end in spaced-apart relation and extending generally in the direction of the path, and phasing means associated with each of the elements for radiating the latter in phase, the elements providing an array, having a resonance frequency that is offset relative to the bandwidth center frequency and being responsive to the selected frequency for generating a number of series of acoustic waves in the medium in accordance with the number of elements; and matching circuitry having an offset center frequency for electrically balancing and interconnecting the oscillator means and piezoelectric elements, whereby the incident beam is diffracted at a different angle by each series of waves to produce a diffracted light beam uniquely associated with the selected frequency, and whereby the offset of the center frequency of the medium, the array and the matching circuitry increases the efficiency over and above that greater than the minimum predetermined efficiency.

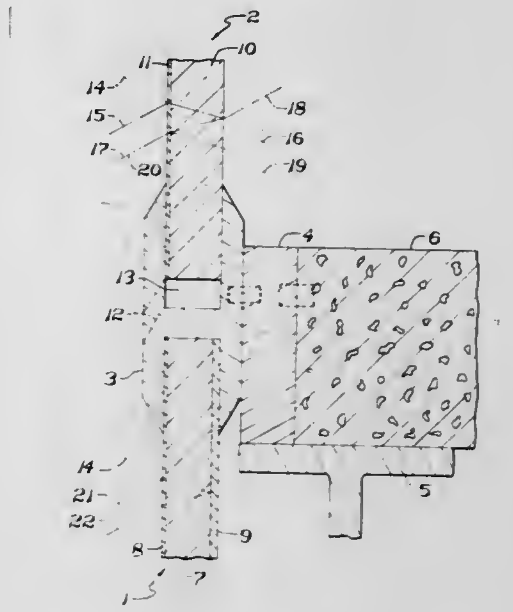
3,869,198
HEAT AND LIGHT REFLECTING SPANDREL

John D. Ballentine, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,430

Int. Cl. G02b *17/00*

U.S. Cl. 350—259 **14 Claims**



1. An article for reflecting visible light comprising:
a transparent substrate having a first major surface and a second major surface opposite to the first major surface; a transparent, reflective coating disposed over substantially all of the first major surface of said substrate to provide said substrate with (1) a transmitted dominant wavelength for visible light, which transmitted dominant wavelength is determined by transmittance to visible light of said substrate and said transparent, reflective coating, and (2) a reflectance to visible light which is determined by said transparent, reflective coating; and
an opaque, reflective coating disposed over substantially all of the second major surface of said substrate, said opaque, reflective coating having a reflective dominant wavelength for visible light substantially equivalent to the transmitted dominant wavelength to provide the article with a total reflectance to visible light that exceeds the visible light reflected from said transparent, reflective coating and a dominant wavelength substantially equivalent to the dominant wavelength of light transmitted through said transparent reflective coating.

3,869,199
SOLAR ENERGY ABSORBER

Richard D. Cummings, Reading, Mass., assignor to Itek Corporation, Lexington, Mass.

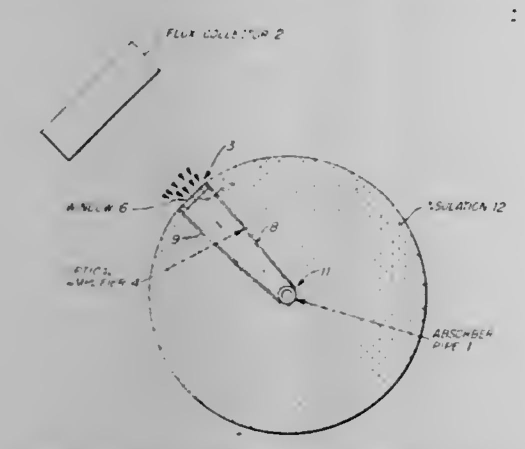
Filed Dec. 13, 1973, Ser. No. 424,589

Int. Cl. G02b *5/10*

U.S. Cl. 350—293 **12 Claims**

1. A solar energy absorber comprising:
- a. a conduit for containing a fluid to be heated by the sun's rays;
- b. at least one elongated optical amplifier for concentrating solar energy directed therethrough having a first terminal

portion for receiving solar energy and having a second terminal portion for directing solar energy at said conduit, said optical amplifier comprising a pair of reflective wall elements which converge in a direction from said first terminal portion toward said second terminal portion, the width of said first terminal portion being no greater than about 1½ inches and the width of said second terminal portion being no greater than about ½ of an inch; and



c. insulating means of solid insulating material covering at least a portion of said conduit.

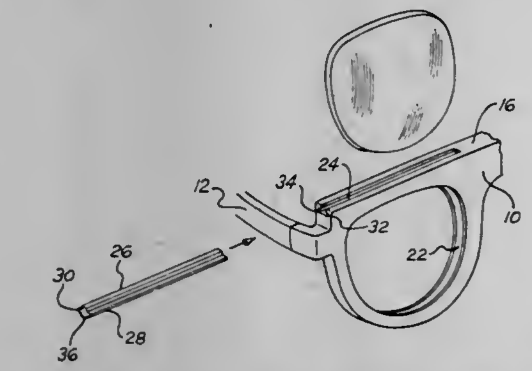
3,869,200
EYEGLASS FRAMES

David S. Danylewich, Burlington, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,413

Int. Cl. G02c *1/08*

U.S. Cl. 351—85 **5 Claims**



1. An eyeglass frame for a pair of lenses comprising a main frame having a pair of slots vertically extending to receive a pair of lenses respectively and a pair of horizontal slots of selected length extending across said vertical slots respectively, a pair of retaining bars frictionally and slidably disposed in said horizontal slots respectively and extending across said entire lengths respectively for directly engaging and for retaining said lenses, and a pair of earpieces mounted on said frame.

3,869,201
PHOTOPLASTIC FILM MICROFICHE INCLUDING A PROTECTIVE COVER

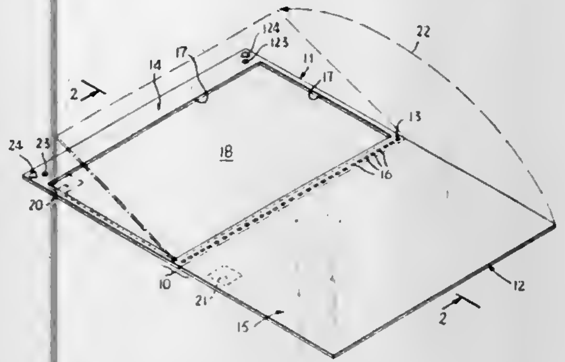
Gordon Lysle, Greenlawn, N.Y., assignor to Gordon Lysle, Incorporated, East Northport, N.Y.

Filed Oct. 12, 1973, Ser. No. 405,913

Int. Cl. G03b *21/11, 23/08*

U.S. Cl. 353—120 **11 Claims**

1. A photoplastic film microfiche assembly comprising
1. a rectangular photoconductive film sheet having a specular thermoplastic surface which includes a portion provided with a certain rectilinear pattern arrangement of a plurality of separate message image bearable panel areas that are selectively message image deformable; and
2. a flat rectangular base card structure of relatively rigid sheet material having a limited degree of flexibility and a top surface; characterized by
3. said base card structure being subdivided into a pair of lappable sections which are transversely hinged together in a manner to permit this card structure selectively to be hingedly folded to lap and sections together with their top surfaces opposed between the lapped sections and opened to substantial mutual alignment for defining together a relatively flat card structure;
4. a first one of said lappable card sections being provided with a rectangular window area and means anchoring thereto said photoconductive film sheet having its specular surface portion aligned with said window area and facing in the same direction as the top surface of this section to be covered by the other of said sections upon lapping the latter to said windowed section;



5. means to provide the top surface of the other second one of said card sections with the appearance of a guide grid pattern which is a substantial area replica of the rectilinear pattern arrangement of the panel areas of said film sheet specular surface portion when said second cover section is swung to its open flat alignment position relative to said first filmcarrying card section and the latter is inserted adjustably for use in a camera processing apparatus while said opened second section is exposed to view, these patterns of said second card section and of said film sheet carried by said first card section being so structurally related that each particular film panel area of the inserted film sheet will be accurately aligned with the axis of an optical path of such apparatus when a guide part of the grid area replica of this film panel area is moved to alignment of an observable fixed reference point of such apparatus.

3,869,202
ELECTROPHOTOGRAPHIC COPYING MACHINE

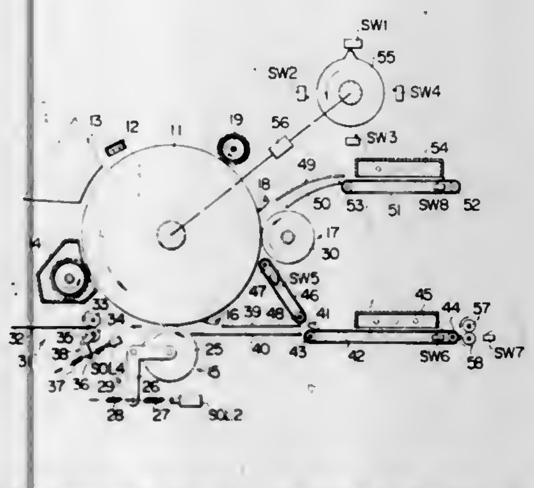
Yasuhiro Tabata, Yokohama, and Takeshi Ukai, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1973, Ser. No. 422,788

Claims priority, application Japan, Dec. 29, 1972, 47-3737

Int. Cl. G03g *15/00;* **B65h** *5/22*

U.S. Cl. 355—3 R **3 Claims**



1. An electrophotographic copying machine including a rotatable body of photosensitive material; an original receptacle for placing an original thereon; and a charger, an exposure unit, a developing unit and a transfer unit arranged in sequence around the periphery of the rotatably body along the direction in which the body is rotated, said charger being effective to charge the body when it is desired to obtain a copy, said exposure unit being effective to provide an exposure of an original placed on a predetermined surface of the original receptacle and projecting an image thereof onto the body to form an electrostatic latent image thereon, the developing unit being effective to develop the latent image with a toner, the transfer unit effecting a transfer of the developed toner image on the body onto one surface of a transfer sheet supplied thereto; and a fixing unit for fixing the transferred image on the transfer sheet; characterized in that the original receptacle has a first and second surface for placing a pair of originals thereon and is movable so as to selectively bring the first or second surface into a predetermined position, and that a second transfer unit is arranged around the periphery of the body at a position beyond the developing unit as viewed in the direction of rotation of the body, the machine being adapted to effect a two cycle copying operation wherein in the first cycle, an original placed on the first surface is copied on a first surface of a transfer sheet, which sheet is conveyed to and retained in said fixing unit until during the second cycle, a developed image of an original placed on the second surface of the original receptacle is formed on the body, whereupon the transfer sheet retained in the fixing unit is supplied to the second transfer unit for bringing its second surface into operative association with the developed image on the body.

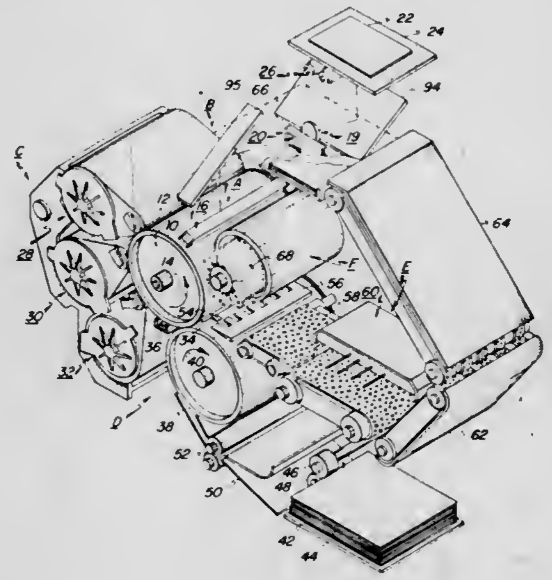
3,869,203
COLOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

Ernest H. Lehmann, Arcadia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1973, Ser. No. 398,342

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **18 Claims**



1. An electrophotographic printing machine, including:
a photoconductive member;
means for charging said photoconductive member to a substantially uniform level;
means for exposing said charged photoconductive member to a light image recording an electrostatic latent image thereon, said exposing means being adapted to form color filtered light images and a non-color filtered light image;
means for developing the electrostatic latent image recorded on said photoconductive member with toner particles, said developing means being arranged to develop the electrostatic latent image corresponding to the non-color filtered light image with black toner particles and the electrostatic latent image corresponding to the color filtered light images with toner particles complementary in color thereto, said developing means comprising first means for depositing black toner particles onto the non-color filtered electrostatic latent image recorded on said photoconductive members, first means for actuating said toner particle depositing means in response to the non-color filtered electrostatic latent image advancing to a predetermined location, whereby said first toner particle depositing means moves from an inoperative position spaced from the non-color filtered electrostatic latent image to a position adjacent thereto and in operative communication therewith, and first biasing means for resiliently urging said first toner depositing means from the position adjacent the non-color filtered electrostatic latent image to an inoperative position spaced therefrom;
means for transferring the toner powder image adhering to the electrostatic latent image recorded on said photoconductive member to a sheet of support material; and
means for fusing the toner powder image to the sheet of support material.

3,869,204
SCANNING OPTICAL SYSTEM

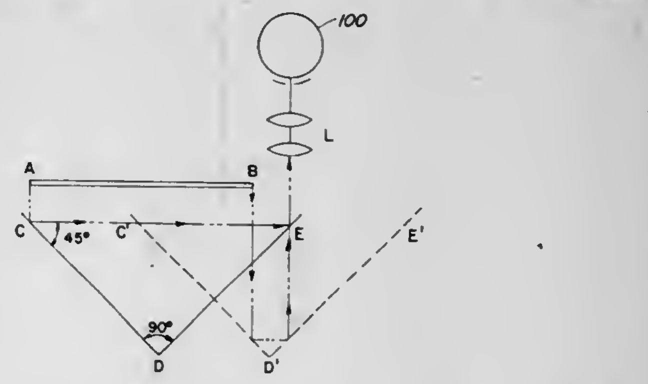
William Peter Lanham Wilby, 59 Carleton Rise, Welwyn, England

Filed Feb. 25, 1974, Ser. No. 445,528

Claims priority, application Great Britain, Mar. 1, 1973, 9983/73

Int. Cl. G03b *27/70*

U.S. Cl. 355—66 **5 Claims**



1. A scanning apparatus for reproducing a stationary original supported in a plane upon a platen of given length, the apparatus including optical means comprising means for progressively scanning the surface of the original and a lens means for receiving the image from said scanning means, and for projecting the scanned image on a photosensitive surface moving at a given velocity, the improvement wherein: said optical means continuously scans said original and comprises two plane reflecting surfaces facing inwardly of each other and arranged symmetrically at 45° to a normal to the platen, the length of each of said reflecting surfaces resolved along the platen being greater than half of the length of the platen, said reflecting surfaces moving parallel to the platen at a velocity of one-half the velocity of said photosensitive surface to scan said original.

3,869,205
ILLUMINATION SOURCE FOR XEROGRAPHIC EXPOSURE

Charles F. Gallo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

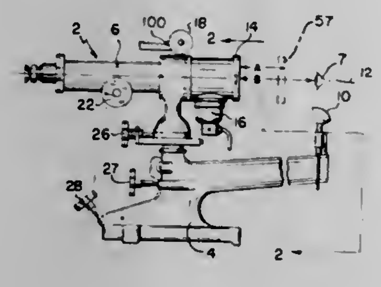
Filed Aug. 29, 1973, Ser. No. 392,581

Int. Cl. G03b *27/54*

U.S. Cl. 355—67 **3 Claims**

1. A xerographic system including an object surface, projection lens, an image surface in conjugate relationship to said object surface, and illumination means to irradiate objects disposed on said object surface for optimum object contrast, said illumination means being a narrow emission band light source emitting light in the yellow portion of the visible spectrum as the result of a sodium vapor discharge, and
a yellow-sensitive photoreceptor at said image surface.

3,869,206
OPHTHALMOMETER DEVICE
Joseph S. Nupuf, Canton, Ohio
Division of Ser. No. 76,171, Sept. 28, 1970, Pat. No. 3,640,610. This application Oct. 22, 1971, Ser. No. 191,854
Int. Cl. A61b *3/00*
U.S. Cl. 356—2 **6 Claims**



1. A method of determining the topography of an optic to be employed with an opthalmometer instrument of the type which includes a target assembly having mire elements defining a target image for producing a reflected image on the surface of an optic so as to define a zone thereon, said instrument including means capable of selectively varying the position of said mire elements in infinitesimal, incremental steps within a given range between a small image and a large image, and a telescopic optical system having a telescope for viewing the reflected image on the surface of the optic and a calibrated measuring lens system capable of making a direct measurement of the zone defined by the reflected image on the surface of the optic, said method comprising the steps of:

supporting the optic at a position along the optical axis of the telescopic system so that the reflected image produced by the mire elements thereon can be viewed,

selectively positioning the mire elements with respect to the optical axis of said instrument so that they produce a reflected image of any one preselected size within said range for defining one zone on the surface of said optic, taking a direct measurement of the radius of curvature of said one zone defined by said reflected image of said one predetermined size on the surface of said optice by said instrument,

selectively repositioning said mire elements with respect to said optical axis to produce a target image of any size within said range in any size incremental step to produce at least one other reflected image of a different size than said one reflected image for defining at least one other zone on the optical surface of said optic, and

taking a direct measurement by the instrument after each time the position of the mire elements is changed for directly measuring the radius of curvature for each of the zones defined thereon to obtain as complete a determination of the curvature of as much of the entire optical surface of the optic as desired.

3,869,207
LASER TELEMETER
Pierre Hermet, St. Cyr L'Ecole, and Rodolphe Laesser, Montrouge, both of France, assignors to Compagnie Generale D'Electricite, Paris, France
Filed May 30, 1973, Ser. No. 365,328
Claims priority, application France, May 30, 1972, 72.01935
Int. Cl. G01c *3/00*
U.S. Cl. 356—4 **2 Claims**

1. Laser telemeter comprising:

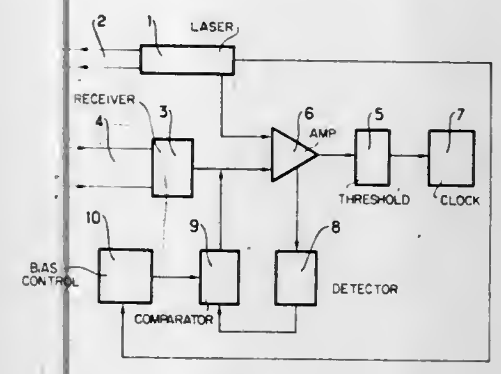
A laser generator capable of emitting a light pulse towards a target;

A photo-sensitive receiver constituted by a photodiode to receive an echo of said light pulse, said photo-diode operating in the breakdown region;

A threshold device responsive to the electric output pulses of said photodiode for blocking the electric pulses having a level lower than a predetermined threshold and for transmitting the electric pulses having a level higher than said predetermined threshold;

A measuring device triggered at the instant of emission of said light pulse and responsive to the electric pulses transmitted by said threshold device for measuring the interval of time separating the emission of said light pulse and the receiving of the electric pulse transmitted by said threshold device;

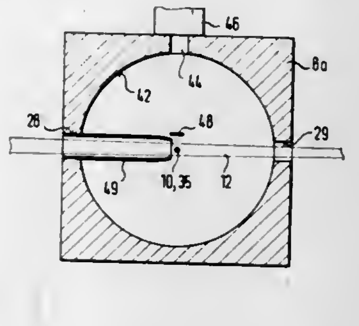
A servo-adjusting device receiving the output noise of said photo-diode and controlling the reverse polarization voltage in the breakdown state of said photo-diode to be maintained at a first level so as to hold said noise at a constant value, said first level being sufficiently high to enable the operation of the servo-adjusting device;



A device for lowering temporarily the bias level of said photo-diode, the duration of said lowering being less than the response time of said servoadjusting device;

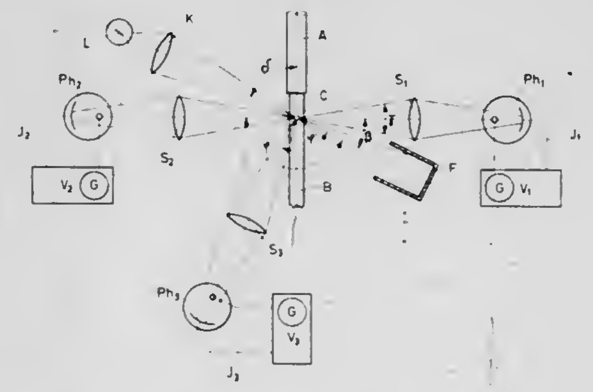
Characterized in that said temporary lowering device comprises means for holding said reverse polarization voltage at a second level during the interval of time separating the emission of said light pulse and the receiving thereof by sid photodiode, said second level being lower than said first level but sufficiently high for the level of the electric pulse sent out by said photo-diode on receiving said echo to be higher than said pre-determined threshold.

3,869,208
PARTICLE-SIZE SPECTROMETERS
Gerhard Lorenz, Gottingen, Germany, assignor to Sartorius-Membranfilter GmbH, Gottingen, Germany
Filed Jan. 10, 1973, Ser. No. 322,394
Claims priority, application Germany, Jan. 28, 1972, 2204079
Int. Cl. G01n *15/02, 21/00*
U.S. Cl. 356—102 **12 Claims**



1. A particle-size spectrometer in which a stream comprising a carrier fluid medium containing particles under test, is conducted through a slender beam of light, a photomultiplier being arranged to receive scattered light appearing on the particles, the concentration and/or size distribution of the particles being determined with reference to the output signals of the photomultiplier, said spectrometer comprising a chamber through which said stream containing the particles and said beam of light pass, said chamber comprising an Ulbricht sphere-type photometer for measuring stray light over substantially the full solid angle, a center of stray light being formed where said stream and said beam of light intersect, said chamber having an inner surface which surrounds the center of stray light at least along an arc which extends up to the edge of the beam of light both in front of and behind the center of stray light, said inner surface having a light exit aperture therein to receive and conduct the stray light to the photomultiplier which is connected to the chamber, the cross-sectional area of the aperture being small with respect to the surface area of the sphere, and a screen positioned in the chamber to shade the aperture from receiving direct light from the center of stray light.

3,869,209
APPARATUS FOR DETERMINING THE AMOUNT OF THE DISPERSED PHASE IN A SUSPENSION
Willy Sigrist, Ennetburgen, Switzerland
Continuation-in-part of Ser. No. 237,733, March 24, 1972, Pat. No. 3,758,787. This application Sept. 4, 1973, Ser. No. 394,520
Claims priority, application Switzerland, Mar. 29, 1971, 4551/71
Int. Cl. G01n *21/00, 21/06, 21/26*
U.S. Cl. 356—103 **5 Claims**



1. Apparatus for determining the amount of the dispersed phase in a suspension comprising, in combination:

a. nozzle means for discharging said suspension as a jet having a first longitudinal axis;

b. a light source;

c. first optical means for directing light of said source toward said jet as an incident beam having an optical second axis intersecting said first axis;

d. a photoelectric element;

e. second optical means for directing light of said beam scattered by said jet on said photoelectric element and for thereby causing said element to generate an electrical signal indicative of the amount of said scattered light,
   1. said second optical means having an optical third axis obliquely inclined relative to a reference plane defined by said second axis and a straight line perpendicular to said first and second axes through the point of intersection of said first and second axes,
   2. said second optical means being spaced from said plane;

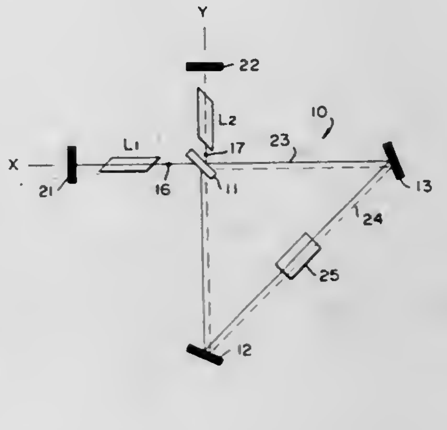
f. another photoelectric element;

g. third optical means having an optical fourth axis and directing light of said incident beam reflected from said jet toward said other photoelectric element,
   1. the axis of the portion of said incident beam linearly transmitted by said jet and said fourth axis defining an angle of 90° to 150°;

h. light trap means spaced from said point of intersection in the direction of said second axis away from said light source for absorbing the light of said source linearly transmitted by said jet; and

i. indicating means in circuit with each of said photoelectric elements for producing a visible indication of the amount of light directed toward said elements by the associated optical means respectively.

3,869,210
LASER SYSTEM WITH AN ANTIRESONANT OPTICAL RING
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Anthony E. Siegman, Stanford, Calif.
Filed Nov. 2, 1973, Ser. No. 412,080
Int. Cl. H01s *3/10*
U.S. Cl. 356—106 LR **14 Claims**



1. An optical system comprising:

an antiresonant optical ring including a beam splitter with a beam splitting face responsive to an optical beam directed thereto along a first axis for reflecting a first portion of said beam along a second axis, and for transmitting a second portion of said beam through said beam splitting face, and means for directing said reflected first beam portion back to said beam splitting face along said first axis and for directing said transmitted second beam portion back to said beam splitting face along said second axis, whereby said first and second beam portions circulate in said ring in opposite directions, said beam splitting face being characterized by a transmissiion coefficient definable as t_1 and a reflection coefficient definable as r_1 whereby said beam splitter reflects along said second axis some of said first beam portion which is directed thereto, and transmits some of said first beam portion along said first axis, and further reflects along said first axis some of said second beam portion which is directed thereto, and transmits some of said second beam portion along said second axis;

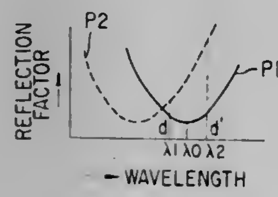
means exterior to said ring for directing said optical beam to said beam splitting face along said first axis; and

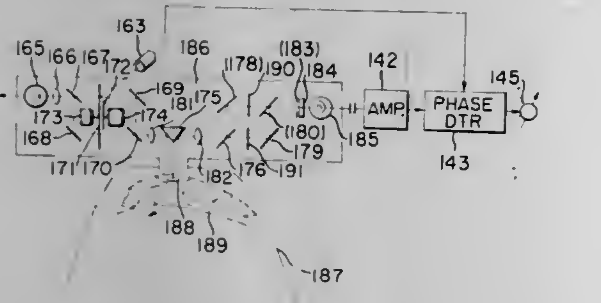
phase control means inside said ring for controlling the relative phases of the first and second beam portions circulating in said ring.

3,869,211
INSTRUMENT FOR MEASURING THICKNESS OF THIN FILM
Asao Watanabe; Tadayoshi Kasahara, both of Tokyo, and Noboru Sugahara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,694
Claims priority, application Japan, June 29, 1972, 47-65359; Dec. 18, 1972, 47-127424
Int. Cl. G01b *11/00*
U.S. Cl. 356—161 **10 Claims**

1. An instrument for measuring the thickness of a thin film deposited on a substrate surface comprising:

- light source means for emitting light to be projected upon said substrate and film;
- projection means for projecting alternately and in succession two light beams of different wavelengths λ_1, and λ_2 onto the substrate and film to be measured along the same light path, said two light beams being absorbed or reflected depending upon the thickness of the film to be measured;
- a first splitting means for splitting light beams transmitted through or reflected from the film to be measured into two bundles of light;
- a first filter means comprising a first filter for transmitting only the light beam of wavelength λ_1 and a second filter for transmitting only the ligth beam of wavelength λ_2;
- means for condensing said two light beams of wavelengths λ_1 and λ_2 derived from said filter means;
- a photo-electric converter for converting light beams condensed by said condensing means into electric signals;





- means for detecting the minimum difference between a first signal and a second signal from said converter, said first signal depending on the light beam of wavelength λ_1, said second signal depending on the light beam of wavelength λ_2.

2. An instrument defined in claim 1 wherein said light beam projection means comprises a second splitting means for splitting into two light beams the light emitted from said light source means, a second filter means comprising a third filter for transmitting only the light beam of wavelength λ_1 of the two light beams from said second splitting means and a fourth filter for transmitting only the light beam of wavelength λ_2 of the two light beams from said second splitting means, means for alternately chopping said two light beams from said second filter means, a second condensing means for condensing said two light beams from said chopping means, and a window for transmitting said two light beams derived from said second condensing means onto the substrate and film to be measured along the same light path.

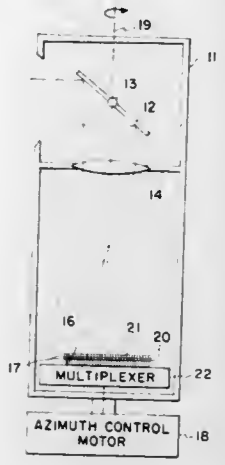
3,869,212
SPECTROMETER INTEGRATED WITH A FACSIMILE CAMERA

Ernest E. Burcher; Daniel J. Jobson, both of Newport News; Stephen J. Katzberg, Yorktown, and William L. Kelly, IV, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 2, 1973, Ser. No. 385,013

Int. Cl. G01j *3/48*, *3/42*

U.S. Cl. 356—189 **5 Claims**



1. Apparatus for integrating a spectrometry capability with the basic imagery function of a facsimile camera said facsimile camera including means for scanning a scene a-line-at-a-time and focusing the images of the scan on the focal plane of the camera comprising:

- a plurality of photodetectors in a linear array on the focal plane of said facsimile camera such that as said facsimile camera scans a line of a scene, the image of that scan will scan said linear array of photodetectors;
- a different narrow band interference filter centered over each of said photodetectors; and
- multiplexing means connected to the outputs of said plurality of said photodetectors for sequentially selecting one at a time the outputs from said photodetectors as a single specific scene element is scanned down the array of photodetectors whereby the output of said multiplexer contains spectral information about said single specific scene element.

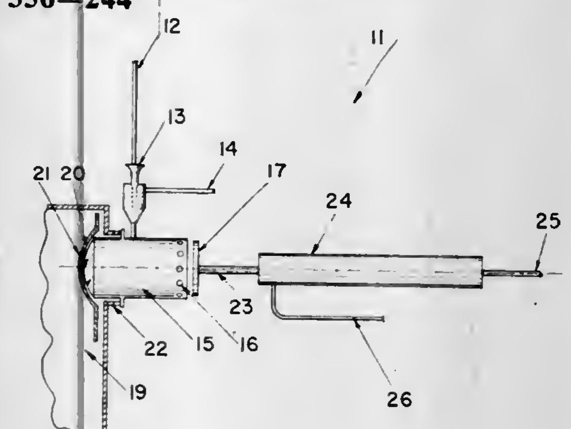
3,869,213
DEVICE FOR PRESENTING FIBROUS MATERIAL FOR SPECTROPHOTOMETRIC ANALYSIS

Gerald R. Greene, Anderson, S.C., assignor to Dow Badische Company, Williamsburg, Va.

Filed Jan. 11, 1974, Ser. No. 432,735

Int. Cl. G01n *21/16*

U.S. Cl. 356—244 **1 Claim**



1. A device for presenting a fibrous sample for spectrophotometric analysis, which device comprises:

- a. a cylindrical chamber for containing the sample to be presented, the chamber being open at one end thereof, and having:
  1. a convex, transparent wall forming the other end thereof, the outer surface of the transparent wall conforming to the interior configuration of the sample port of a spectrophotometer;
  2. an inlet tube secured hermetically at one end thereof to the cylindrical chamber in the vicinity of the transparent wall and terminating at the other end thereof in an aspirator orifice for receiving fibrous material, the inlet tube communicating along the length thereof with means for the supply of a gas thereto under pressure; and
  3. an exhaust aperture located in the wall of the cylindrical chamber in proximity to the open end thereof; and
- b. a piston mounted for slidable movement into and out of the cylindrical chamber, the piston being secured at its trailing surface to a rod which communicates with fluid actuating means for performing the sequential steps of:
  1. positioning the leading surface of the piston within the cylindrical chamber at a location between the open end of the chamber and the exhaust aperture;
  2. urging the leading surface of the piston toward the transparent wall of the cylindrical chamber at a chosen pressure; and
  3. retracting the leading surface of the piston from the cylindrical chamber.

3,869,214
CUVETTE ARRANGEMENT

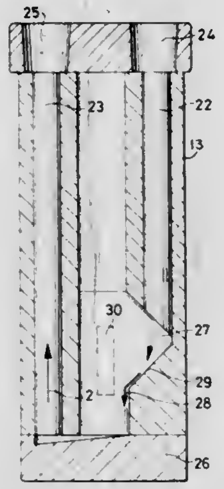
Bruno Egli, Rorschach, and Niklaus Manser, Goldach, both of Switzerland, assignors to Labtronic, AG, Zurich, Switzerland

Filed Apr. 24, 1973, Ser. No. 354,150

Claims priority, application Germany, Apr. 25, 1972, 2202118

Int. Cl. G01n *21/02*

U.S. Cl. 356—246 **7 Claims**



1. A cuvette for receiving a quantity of fluid for photometric absorption analysis, said cuvette being suitable for connection to a vacuum source and to a source of fluid to be analyzed and comprising:

- a hollow body having an enclosing wall and floor defining an elongated chamber suitable for receiving a quantity of fluid sufficient to establish a preselected level of fluid within said chamber;
- a wedge shaped recess in said enclosing wall of said chamber located below said fluid level, said wedge shaped recess having a pair of diverging faces, one of said faces slanting into said chamber;
- a fluid supply conduit connectable to the fluid source and having an opening in the other of said faces for discharging fluid onto said slanting face;
- means for passing light through the fluid beneath said fluid level; and
- a vacuum source connection opening into said chamber above said fluid level.

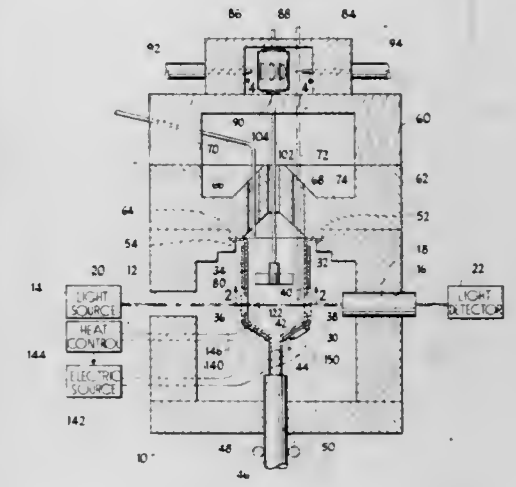
3,869,215
SAMPLE CELL ASSEMBLY HAVING A HEAT CONDUCTIVE CHAMBER SURROUNDED BY AN ELECTROTHERMAL HEATING LAYER

Gaillard R. Nolan, Acton, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Feb. 22, 1974, Ser. No. 445,313

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **22 Claims**



1. Apparatus for containing and heating a liquid sample to a desired temperature for photometric analysis, comprising:

- a cuvette having sample support walls at least the greater part of which are formed from a heat conductive material,
- an electrothermal conductor distributed around the heat conductive part of said sample support walls,
- said cuvette and conductor enabling the transmission of a radiation beam for photometric analysis through a sample contained within said cuvette,
- circulation means for moving a sample in closed circulatory movement between the interior wall surfaces and the inner portion of said cuvette, thereby distributing heat transmitted through the sample support walls from said electrothermal conductor throughout the sample,
- a temperature sensor mounted on the exterior surface of a sample support wall at a location sufficiently removed from said electrothermal conductor that the temperature of the support wall at the sensor is determined substantially by the temperature of a sample within the cuvette,
- means to apply an electrical energizing input to said electrothermal conductor, and
- means responsive to changes in the temperature sensed by said sensing means for dynamically controlling the said electrical input, thereby enabling the energization of said electrothermal conductor to be varied in positive proportion to the differential between the sample temperature and the devised analysis temperature.

3,869,216
MANUALLY OPERATED WASHING DEVICE

Stephen Cseke, 22 Brady Cres., Downsview, Ontario, Canada

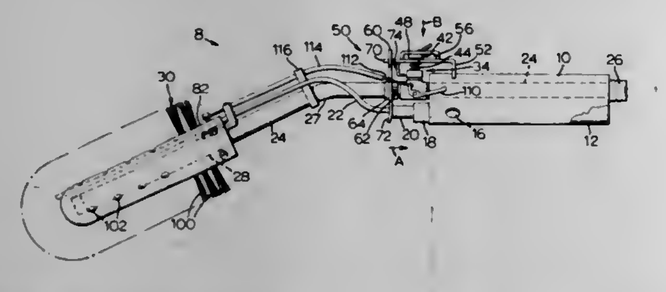
Filed Oct. 24, 1973, Ser. No. 409,266

Int. Cl. A46b *11/06*

U.S. Cl. 401—43 **5 Claims**

1. A manually operated washing device comprising: a detergent dispenser, said detergent dispenser including a detergent pump therein; a water conduit; means for connecting said water conduit to a source of water under pressure; means connected to said water conduit to spray water on an article to be washed; a water tap connected in said water conduit to

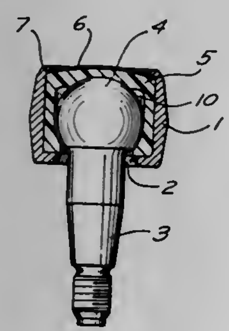
control the flow of water therethrough; a detergent conduit connected to said detergent pump for conveying pumped detergent onto said article; and combined operating means for operating said water tap and said detergent pump; said combined operating means comprising an operating member, and



linkage means connecting said operating member to said tap and to said pump, said linkage means permitting movement of said operating member in a first direction to operate said tap alone and in a second direction to operate said pump alone, and in a third direction representing said first and second directions combined, to operate said pump and tap together.

3,869,217
BALL JOINT

Katsuhide Nakata, 200 Plastspuma Ave., Sao Paulo, Brazil
Filed June 6, 1973, Ser. No. 367,421
Claims priority, application Brazil, June 19, 1972, 3952
Int. Cl. F16c *11/06*
U.S. Cl. 403—140 **6 Claims**

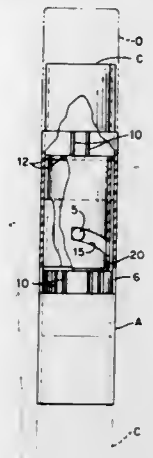


1. A ball joint, comprising a rigid socket having an end wall provided with an opening, and an open side located opposite said wall and bounded by a marginal portion; a pin having a first portion extending through said opening, and a ball-shaped second portion located with clearance in said socket; a cupped insert of resiliently yieldable material surrounding said second portion and filling said clearance, said insert having an aperture facing said opening of said socket, and a transverse wall spaced from said aperture and facing said open side, said insert having an inner circumferential surface partially in contact with said second portion and partially spaced from the same so as to define a pocket for accommodation of lubricating material; and a circular spring plate extending across said open side in retaining engagement with said marginal portion and in biased contact with said transverse wall of said insert so as to receive and transmit pressures from and to the insert in an equal and balanced manner.

3,869,218
SUPPORT STRUCTURE

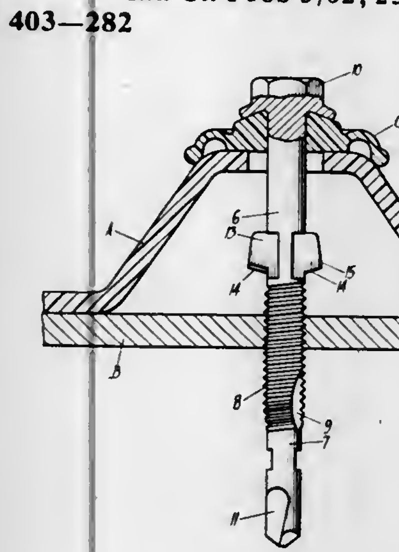
Alfred Stoeber, Parsippany, and Bruno Smialkowski, Irvington, both of N.J., assignors to Art Shelf Product Company, Parsippany, N.J.
Filed May 7, 1973, Ser. No. 357,584
Int. Cl. F16b *7/20*
U.S. Cl. 403—241 **11 Claims**

1. A structure for detachably supporting a panel or the like comprising a first, a second and a third member having a bore therethrough, said first member having a cut-out portion in its wall serving as a receptacle for said panel, said second member being of lesser outer diameter for telescopic mounting within said first member, a heart-shaped lug with an apex in the interior of said first member and recess means in said second member comprising a vertical groove having boss means and an inclined groove contiguous therewith, whereby when said second member is telescopically mounted within said first member and rotated, said lug apex interlocks with indentations of said inclined groove, said first and third member each having the upper portion of lesser outer size than the lower portion, whereby when the three members are assembled, an upstanding column results of uniform external dimensions, said second member having an annular flange with at least two projections at the upper end of said second member and at least two ridges in the interior of each of said first and third member, the ridges on said third member engaging said projections, said ridges extending only in the middle portion of each of said first and third member.



3,869,219
DRILL SCREW

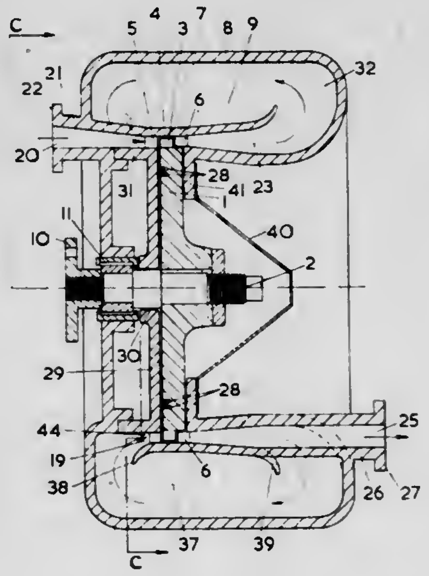
Robert Neil Wilson, 7 Redvers St., Surrey Hills, Victoria, Australia, and John James Hart, 6 Roseberry Ave., Brighton East, Victoria, Australia (3187)
Filed Oct. 29, 1973, Ser. No. 410,833
Claims priority, application Australia, Oct. 30, 1972, 1019/72
Int. Cl. F16b *5/02, 25/00*
U.S. Cl. 403—282 **5 Claims**



1. A drilling and reaming screw adapted to fasten a ribbed sheeting to a support surface, including a drilling tip, a threaded shank portion and a tool engaging head means, first reaming wings extending radially outwardly from the screw shank a predetermined radial extent and located between the threaded shank portion and the drilling tip, second reaming wings extending radially outwardly from the screw shank a predetermined radial extent greater than the radial extent of the first wings, said second reaming wings located between the head means and the threaded shank portion, an unthreaded shank portion extending between the second reaming wings and the head means, the radial extent of the first reaming wings being slightly greater than the crest diameter of the threaded shank portion and frangibly associated with the screw shank, whereby the screw will form a first hole in the ribbed sheeting of a size capable of providing vertical support for the shank while the drilling tip penetrates the support surface and whereby the second wings will thereafter enlarge the hole in the sheeting to permit relative movement between the sheeting and support due to thermal expansion and contraction.

3,869,220
ROTARY MACHINES

Colin Andrew Miller Tayler, Bristol, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Feb. 23, 1973, Ser. No. 335,162
Claims priority, application Great Britain, Feb. 23, 1972, 8278/72; Jan. 5, 1973, 726/73
Int. Cl. F01d *1/12*
U.S. Cl. 415—56 **10 Claims**

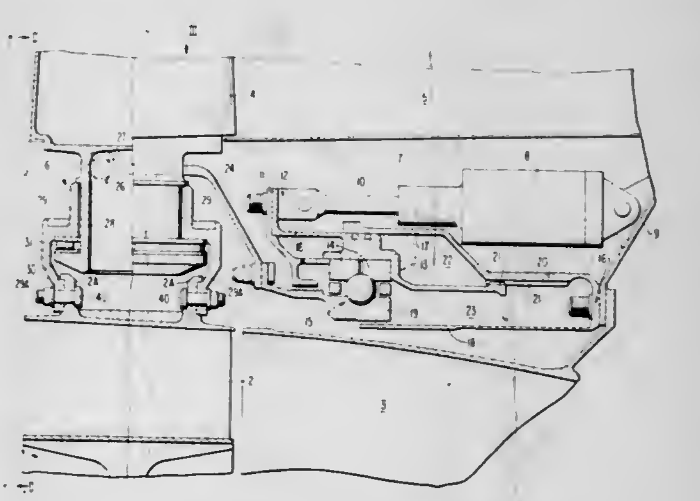


1. A compressor comprising a case and mounted within said case:

a. a rotor,
b. an annular aperture coaxial with said rotor and surrounding the periphery of said rotor,
c. at least one row of rotor blades circumferentially distributed on the periphery of the rotor and projecting into said annular aperture dividing the annular aperture into an upstream side and a downstream side,
d. a row of upstream stator blades radially directed and circumferentially distributed around the interior of said annular aperture, occupying the whole height of said annular aperture and disposed upstream of said row of rotor blades,
e. a row of downstream stator blades radially directed and circumferentially distributed around the interior of said annular aperture, occupying the whole height of said annular aperture, and disposed downstream of said row of rotor blades,
f. a rotor blade passage formed between said row of upstream stator blades and said row of downstream rotor blades wherein said row of rotor blades operates,
g. partitions provided in each row of stator blades, each partition occupying at least one stator blade pitch, each partition in the downstream row of stator blades being substantially opposed by a corresponding partition in the upstream row of stator blades,
h. a plurality of arcuate segmented flowpaths arranged around the periphery of the rotor intersecting said row of rotor blades in a direction substantially normal to the direction of travel of the rotor blades, each of said arcuate segmented flowpaths being formed between pairs of corresponding partitions in said upstream and said downstream rows of stator blades, the arcuate segmented flowpaths being arranged successively from a first arcuate segmented flowpath to a last arcuate segmented flowpath,
i. a plurality of confined return flowpaths, each of said return flowpaths being associated with an arcuate segmented flowpath except the last arcuate segmented flowpath, wherein each of the return flowpaths runs from the downstream side of its associated arcuate segmented flowpath to the upstream side of the next following arcuate segmented flowpath,
j. an inlet from without the case to the first arcuate segmented flowpath, and
k. an outlet from the last arcuate segmented flowpath to without the case.

3,869,221
ROTOR WHEEL FAN BLADE ADJUSTING APPARATUS FOR TURBOJET ENGINES AND THE LIKE

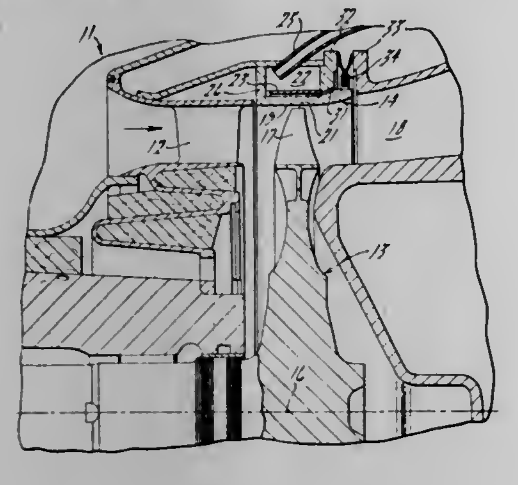
Walter Wildner, Munich, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany
Filed Feb. 19, 1974, Ser. No. 443,189
Claims priority, application Germany, Feb. 16, 1973, 2307656
Int. Cl. F01d *7/00*
U.S. Cl. 415—130 **17 Claims**



1. Fan blade adjusting apparatus for adjusting fan blades on a rotor wheel of a fluid flow machine of the type having compressor blades and fan blades circumferentially around said compressor blades on a common rotatable rotor wheel with the compressor blades supplying fluid to a primary flow duct of the flow machine and with the fan blades supplying fluid to a secondary flow duct of said flow machine; said apparatus comprising:

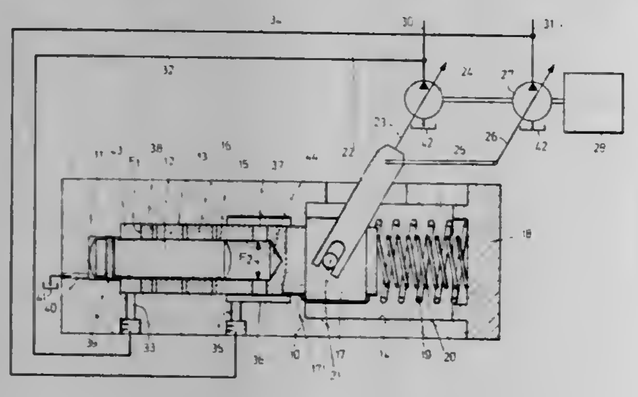
bearing means including an inner bearing race, an outer bearing race, and antifriction means interposed between said inner and outer races for permitting relative rotation of said races with respect to one another about the axis of rotation of the rotor wheel,
actuating force applying means engageable with one of said inner and outer races for axially moving said bearing means,
actuating force transmitting means connected to and movable with the other of said inner and outer races,
and coupling means for coupling said transmitting means to said fan blades such that axial movement of said transmitting means effects pivotal adjustment of said fan blades about fan blade pivot axes extending transverse to said axis of rotation of the rotor wheel.

3,869,222
SEAL MEANS FOR A GAS TURBINE ENGINE
Christian J. Rahnke, Roseville, and James K. Vallance, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed June 7, 1973, Ser. No. 368,003
Int. Cl. F01d *25/12, 25/14, 25/26*
U.S. Cl. 415—134 **5 Claims**



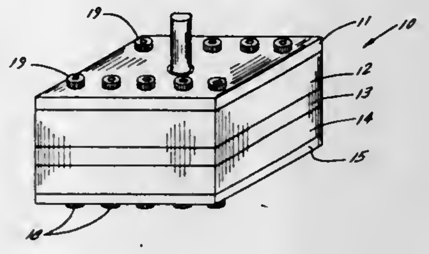
1. In a gas turbine engine having turbine rotor means constructed to rotate about a given axis,
annular shroud means surrounding said rotor means,
said shroud means including generally annular elements being axially separated to accommodate for thermal expansion of said elements,
annular seal means positioned within the axial separations between said elements,
said seal means having a pair of resiliently deformable fingers axially compressed between said elements,
said seal means having a generally Y-shaped cross section, said seal separating volumes of said engine having differing pressures,
the top of "Y" being exposed to the higher pressure whereby the pressure differential increases the sealing.

3,869,223
PUMPING SYSTEM
Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 8, 1973, Ser. No. 330,514
Claims priority, application Germany, Apr. 7, 1972, 2216680
Int. Cl. F04b *49/00*
U.S. Cl. 417—212 **6 Claims**



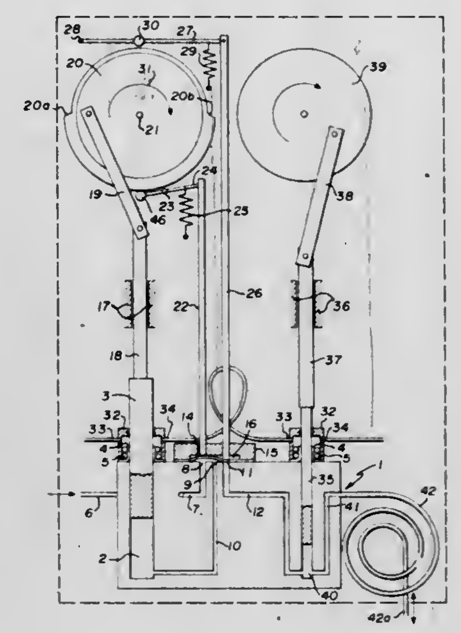
1. In a pumping system, a combination comprising a pair of pumps each having an outlet connectable with a different user; and a regulating unit for regulating the output of said pumps, comprising a housing having a first bore, a hollow regulating sleeve slidably accommodated in said first bore in operative association with said pumps for regulating the same and having one annular end face in part bounding a first pressure chamber, a piston accommodated in a second bore in said sleeve inwardly of the other annular end face of the same and having an axial end face in part bounding a second pressure chamber in said second bore, and a spring biasing said sleeve in one axial direction of the same, each of said pressure chambers communicating with a different one of said outlets.

3,869,224
ROTARY GEAR DEVICE TO PROVIDE PULSATING FLOW
Glen E. Brinkman, Oxford, Nebr. 68967
Filed Dec. 26, 1972, Ser. No. 318,601
Int. Cl. F04b *35/02, 43/06;* **F01c** *1/08*
U.S. Cl. 417—383 **7 Claims**



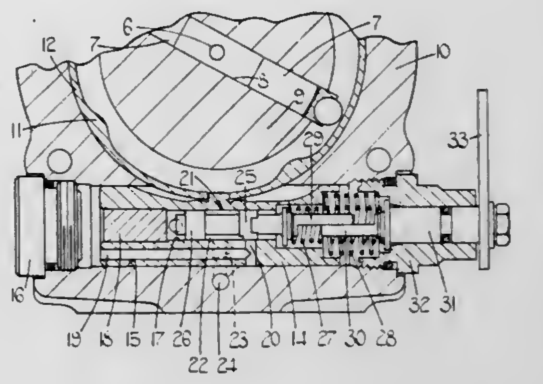
1. A rotary gear device to provide pulsating fluid flow, the device comprising:
a gear block having a gear cavity formed therein and a hole formed through one wall thereof which communicates with said cavity, said cavity having an inlet port and an outlet port;
a toothed power gear rotatably mounted in said cavity and having a shaft disposed in said hole and projecting axially from said power gear;
a first idler gear rotatably mounted in said cavity in meshing engagement with said power gear, wherein said gears are operable to pump fluid from said inlet port to said outlet port, said first idler gear having a plurality of adjacent mutilated teeth formed by removing a portion of said teeth and a portion of the gear hub adjacent thereto, thus maintaining said meshing engagement during a full revolution of said first idler gear and creating a passage between said gears during a portion of said revolution;
a fluid reservoir disposed in said gear block and fluidly connected to said inlet port;
a discharge conduit formed in said gear block and fluidly connected to said outlet port;
barrier means mounted in said discharge conduit, said barrier means being sequentially moveable between a first position and a second position by displacement of fluid in said discharge conduit; and
a second idler gear rotatably mounted in said cavity and disposed opposite said first idler gear in meshing engagement with said power gear, said second idler gear having a plurality of mutilated teeth formed by removing a portion of said teeth and a portion of the gear hub adjacent thereto, thus maintaining said meshing engagement during a full revolution of said second idler and creating a passage between said power gear and said second idler gear during a portion of said revolution, said cavity having a second inlet port and a second outlet port, wherein said gears are operable to pump fluid from said second inlet port to said second outlet port, said second inlet port fluidly connected to said reservoir, a second discharge conduit formed in said gear block and fluidly connected to said second outlet port, and second barrier means being sequentially moveable between a first position and a second position by displacement of fluid in said second discharge conduit.

3,869,225
METERING APPARATUS
Paul Sommer, Pratteln, and Hansjorg Tschirky, Ettingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed June 23, 1972, Ser. No. 265,890
Claims priority, application Switzerland, July 6, 1971, 9906/71
Int. Cl. F04b *39/00*
U.S. Cl. 417—430 **6 Claims**



1. A metering pump comprising a chemically inert pump body having a bore formed therein, a piston operably positioned in said bore, a fluid receiving chamber associated with said pump body, a portion of said fluid receiving chamber being defined by a wall comprising a part of said pump body, another portion of said fluid receiving chamber being defined by the inner surface of a flexible member, portions of said flexible member being selectively movable, one end of an inlet conduit means, a connecting conduit means and an outlet conduit means opening into said fluid receiving chamber, the other end of said connecting conduit means being operably associated with said bore, the said flexible member having a first stoppering portion in one position of the flexible member, adapted to overlie said inlet conduit, and a second stoppering portion in another position of the flexible member adapted to overlie said outlet conduit, a first actuating member secured to said flexible member and adapted to move said first stoppering portion between positions, whereby said one end of said inlet conduit means is opened or closed, a second actuating member secured to said flexible member and adapted to move said second stoppering portion between positions, whereby said one end of said outlet conduit means is opened or closed, actuating means comprising a control disc having an irregular boundary surface, and power source means for moving the control disc, said actuating means operationally connected to said piston means and said first and second actuating members whereby the first stoppering portion opens and the second stoppering portion closes on the suction stroke of the piston means and the first stoppering portion closes and the second stoppering portion opens on the pressure stroke of the piston means, and a second pump comprising a second bore formed in the pump body and a second piston operably positioned in said second bore, coupled via a piston rod means, guided vertically in a support means, a connecting rod means with a second crank disc adapted with a second power source means, is operably connected to the outlet conduit and has a helical conduit connected to said second bore.

3,869,226
FUEL PUMPING APPARATUS
Stanislaw Jan Antoni Sosnowski, London, England, assignor to C.A.V. Limited, Birmingham, England
Filed Sept. 12, 1973, Ser. No. 396,534
Claims priority, application Great Britain, Sept. 12, 1972, 42272/72
Int. Cl. F04b *19/02*
U.S. Cl. 417—462 **5 Claims**

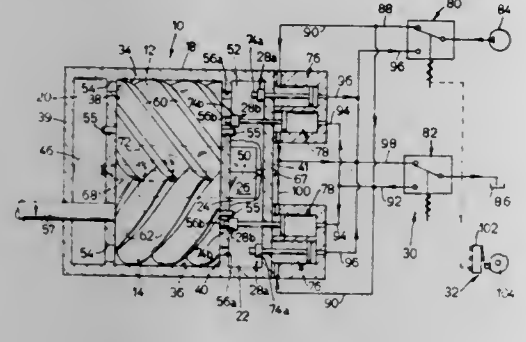


1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine, the apparatus being of the kind comprising a plunger located within a bore, cam means for effecting movement of the plunger, a fluid pressure operable piston for adjusting the setting of the cam means, an axially movable servo-valve for controlling the application of fluid pressure to the piston, said servo valve being subjected to a fluid control pressure generated within the apparatus, the apparatus also including a manual control whereby the quantity of fuel supplied to the engine at each injection stroke of the apparatus can be varied, a bore formed in the piston, said piston bore slidably accommodating said servo valve, passage means conveying said fluid control pressure so that it can act on the valve in opposition to the force exerted by resilient means, a port formed in the wall of the piston bore and through which fluid can flow to and escape from the cylinder accommodating the piston, a control land on said servo valve for controlling fluid flow through said port, said servo-valve and piston constituting a follow-up servo-system, means coupling said servo-valve with said manual control, said land being shaped so that angular movement of the servo-valve will, for a given axial position of the servo-valve, effect uncovering of the port thereby to cause axial movement of the piston and adjustment of said cam means.

3,869,227
VARIABLE CAPACITY ROTARY SCREW COMPRESSOR HAVING VARIABLE HIGH PRESSURE SUCTION FLUID INLETS
Erich J. Kocher, Milwaukee, and Whitney I. Grant, Muskego, both of Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.
Filed Mar. 8, 1974, Ser. No. 449,263
Int. Cl. F01c *1/16*
U.S. Cl. 418—15 **14 Claims**

10. A variable capacity rotary screw compressor comprising: a housing having a low pressure suction fluid chamber, a high pressure suction fluid chamber and a fluid discharge chamber, a low pressure fluid inlet port connected to said low pressure chamber, a high pressure fluid inlet port connected to said high pressure chamber and a discharge port connected to said discharge chamber, a pair of oppositely rotating constant mesh rotors having helical lands and intervening grooves defining working chambers, said rotors being mounted within said housing to provide pumping and compressing action, said working chambers being connected at one end to draw fluid from the low pressure chamber and at the other end to discharge compressed fluid to the discharge chamber, means for selectively providing fluid communication between said high

pressure fluid chamber and said working chambers, a slide valve movably mounted within said housing and including cut off means for controlling the capacity of said compressor, and means connected to said slide valve and to the high pressure fluid communicating means for controlling the point of admission of high pressure fluid from said high pressure chamber to said working chamber in relation to the position of said slide valve.



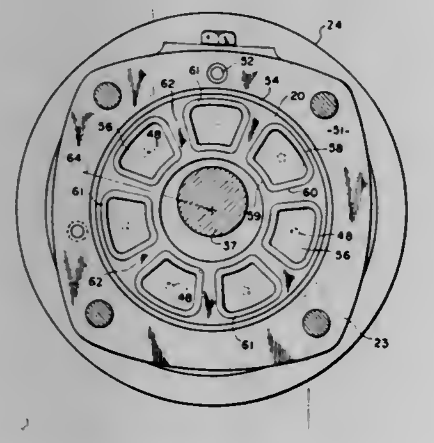
3,869,228
AXIAL PRESSURE BALANCING MEANS FOR A HYDRAULIC DEVICE

Nils Einar Swedberg, Chanhassen, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 21, 1973, Ser. No. 362,588

Int. Cl. F01c *19/08*

U.S. Cl. 418—132 **4 Claims**



1. An axial pressure-balancing system for use in a rotary hydraulic device of the type including an internally-toothed member and an externally-toothed member eccentrically disposed within said internally-toothed member for relative orbital and rotational movement therebetween, said members defining a plurality of volume chambers by tooth interaction therebetween, each of said volume chambers sequentially expanding and contracting during each relative orbit between said members, each of said volume chambers having a maximum cross-sectional area on a plane generally parallel to the plane of said rotational movement, the device further including commutator-type valve means for sequentially communicating high pressure fluid and low pressure fluid to each of said volume chambers during each relative orbit to define a pressure pattern rotating at the speed of said relative orbital movement between said members, said axial pressure-balancing system comprising:

a. a relatively thin sealing plate in generally sealing engagement with an axial end face of each of said toothed members;

b. a balancing member in engagement with an end face of said sealing plate, said sealing plate being disposed between said toothed members and said balancing members;

c. said sealing plate defining a plurality of fluid passages extending therethrough, each of said fluid passages being in fluid communication with one of said volume chambers;

d. said balancing member defining a plurality of sealed balancing areas, each of said balancing areas being in constant communication with one of said fluid passages and its associated volume chamber to contain, sequentially, both high pressure fluid and low pressure fluid during each relative orbit; and

e. each of said balancing areas being at least slightly larger than said maximum area of said volume chambers, to provide a net force on said sealing plate, in the area adjacent each of said balancing areas, biasing said sealing plate toward sealing engagement with said externally-toothed member to minimize leakage between adjacent volume chambers.

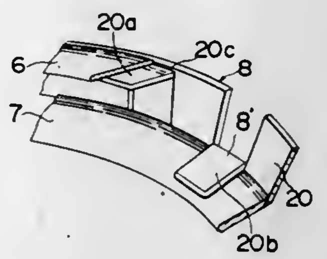
3,869,229
SEALING DEVICE FOR USE IN ROTARY PISTON ENGINE

Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-shi, Hiroshima-ken, Japan

Filed Mar. 26, 1973, Ser. No. 344,557

Int. Cl. F01c *19/00*

U.S. Cl. 418—142 **9 Claims**



1. A sealing device for use in a rotaty piston internal combustion engine having a rotor eccentrically rotatably accommodated in a rotor cavity formed by a center housing having a substantially epitrochoidally shaped bore for said rotor cavity and a pair of end walls secured to both ends of said center housing, said rotor having an annular groove on each of the opposite side surfaces of said rotor defined by a pair of outer and inner groove faces, the plane of each of which lies in parallel relation to the longitudinal axis of said rotor, and a bottom face facing towards a corresponding end wall; said sealing device comprising a first, substantially circularly curved sealing strip means and a second, substantially circularly curved sealing strip means, both slidably accommodated within said groove for sliding in a direction parallel to the longitudinal axis of the rotor; first biasing means for biasing said first and second sealing strip means flat against the respective groove faces in the radially outwards and inwards directions, respectively, comprising a circular member made of elastically deformable metallic material and having a plurality of elastic tongue members alternately radially outwardly and inwardly bent from the plane of said circular member in the same direction at intervals, a set of said tonuge members which are radially outwardly bent from said circular member acting to press one sealing strip means against the one groove face while another set of the tongue members, which are radially inwardly bent from said circular member act to press the other sealing strip means against the other groove face, and second biasing means within said groove for biasing said first and second sealing strip means outwardly of said groove, thereby causing one end face of each of said sealing strip means adjacent to the opening of said groove to tightly but slidably contact the corresponding end wall.

3,869,230
INTERNAL SEAL FOR THE PISTON OF A ROTARY ENGINE

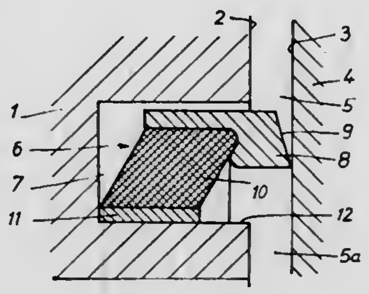
Wolfgang Schmadeke, Cacilienstrabe 29, Heilbronn, and Gottlieb Wilmers, Friedhofstrabe 25, Neuenstadt, both of Germany

Filed Apr. 2, 1973, Ser. No. 346,761

Claims priority, application Germany, Apr. 8, 1972, 2216965

Int. Cl. F01c *19/00;* **F04c** *15/00, 27/00*

U.S. Cl. 418—142 **8 Claims**



1. An internal seal for the piston of a rotary piston engine of trochoid type having a housing with two end parts and with a shell, having multi-arcuate interior surface, in which housing the piston is rotatably mounted on an eccentric, said internal seal having an axially movable scraper ring held in spring contact with the adjacent end wall of the housing, a coaxial supporting ring, a rubber-like elastic ring being adapted to be separated from the piston by the supporting ring, the scraper ring fixedly united to the coaxial supporting ring by the rubberlike elastic ring which is stressed predominantly in shear when the scraper ring moves axially relative to the supporting ring, the scraper ring, the elastic ring and the supporting ring being fixedly united and undetachably interconnected to form and function as a single unit.

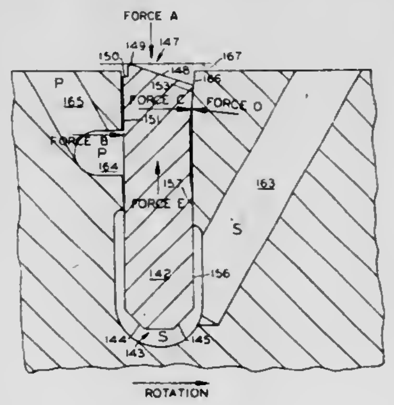
3,869,231
VANE TYPE FLUID ENERGY TRANSLATING DEVICE

Cecil E. Adams, Columbus, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,125

Int. Cl. F01c *1/00;* **F03c** *3/00;* **F04c** *1/00*

U.S. Cl. 418—267 **15 Claims**



1. A vane type fluid energy translating device comprising: a stator; a rotor; a cam surface formed on the stator; a plurality of vane slots formed in the rotor; a vane positioned in each vane slot for movement relative thereto and having a leading face, a trailing face, an inner end within the vane slot and an outer sealing lip engageable with the cam surface on the outer end thereof; wherein rotation of the rotor causes each vane to sequentially traverse intake, transfer, exhaust and sealing zones; each vane being subjected to a fluid at high pressure and a fluid at low pressure creating a pressure differential between the leading and trailing faces while traversing the transfer and sealing zones; said pressure differential in at least one of said zones creating a first force on one vane face thrusting each vane against the vane slot as the vane traverses said zone, said fluid at high pressure creating a second force on the outer end of the vane tending to bias the vane into its slot, means connecting the entire inner end of said vane to fluid at low pressure in said one zone; and cooperating means on each vane and the vane slot for effecting a mechanical reaction force opposing said first force which mechanical reaction force has a component greater than said second force biasing the vane outwardly of its slot and into engagement with the cam surface.

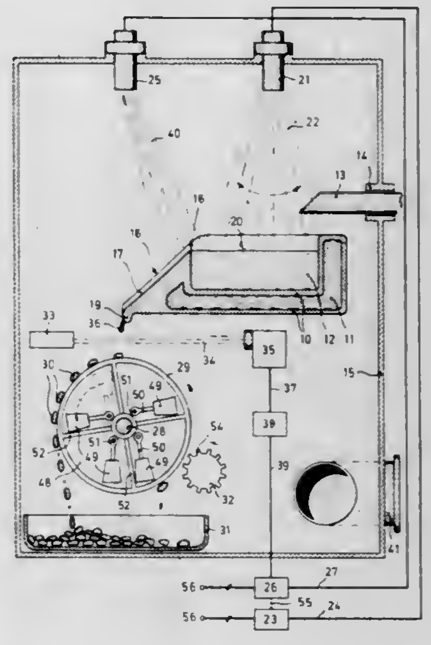
3,869,232
APPARATUS FOR PREPARING PELLETS BY MEANS OF BEAMS OF CHARGED PARTICLES

Waldemar Ruus, Somborn, and Herbert Stephan, Bruchkoebel, both of Germany, assignors to Leybold-Heraeus Verwaltung GmbH, Koln-Bayental, Germany

Division of Ser. No. 124,330, March 15, 1971,. This application June 13, 1973, Ser. No. 369,435

Int. Cl. B29c *23/00;* **B22d** *23/08*

U.S. Cl. 425—6 **4 Claims**



1. Apparatus for preparing pellets by melting of a starting material by means of a beam of charged particles in a vacuum or under a protective gas and by subsequently solidifying individual drops of the melt on a cooling surface, comprising at least one electron beam generator, a material feeding device, a melt container with dripping arrangement, and a cooling surface arranged below the drip-pin arrangement, said cooling surface being arranged predominantly in the radiation shadow of said melt container relative to said electron beam acting on the melt.

3,869,233
APPARATUS FOR RAPID ISOSTATIC PRESSING

Donald E. Witkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Division of Ser. No. 359,224, May 11, 1973,. This application May 28, 1974, Ser. No. 474,017

Int. Cl. B30b *5/02, 11/02, 3/00*

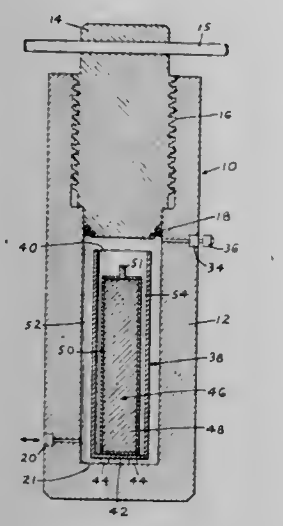
U.S. Cl. 425—78 **11 Claims**

1. Apparatus for compacting a preheated porous body by isostatically hot pressing the same comprising

a pressure vessel,

means for rapidly filling said pressure vessel with a liquid pressurizing medium and for rapidly increasing the pressure of said medium within said pressure vessel to a preselected compacting pressure, means for releasing the pressure within said pressure vessel at said preselected pressure,

means for emptying said pressurizing medium from said pressure vessel, and



means for avoiding contact of said pressurizing medium with said body until said pressure vessel is substantially completely filled with said pressurizing medium.

3,869,234
APPARATUS FOR MOLDING AND MEANS FOR TRANSFERRING A PREFORM FOIL TO THE MOLD

Brian Leo Chudleigh Sutch, Great Bookham, England, assignor to Airfix Industries Limited, London, England

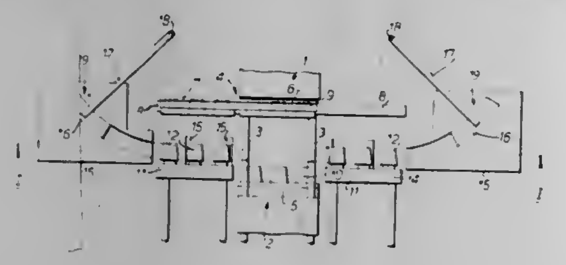
Continuation of Ser. No. 160,469, July 7, 1971, abandoned.

This application May 25, 1973, Ser. No. 364,091

Claims priority, application Great Britain, July 17, 1970, 34930/70; Dec. 9, 1970, 58558/70; Dec. 12, 1970, 1460/71

Int. Cl. B29d *3/00*

U.S. Cl. 425—112 **10 Claims**



1. The combinations of a moulding machine and a mechanism for feeding a foil to the moulding machine, the moulding machine comprising:

a. first and second mould tools;

b. means for moving said mould tools relative to each other in a moulding station to and from a moulding position in which said mould tools co-operate to define a mould cavity; and

c. means for moving said first mould tool laterally out of said moulding station; the mechanism comprising:

a. a carriage movable between first and second stations;

b. drive means for moving the carriage between said first and second stations;

c. a foil carrier comprising a body having an axis of symmetry and defining a circumferential surface for receiving a foil, port means in the circumferential surface and means for connecting said port means to a source of fluid at subatmospheric pressure;

d. means mounting said carrier on the carriage for rotation about said axis of symmetry;

e. drive means for rotating said carrier;

f. positioning means for positioning a foil tangentially of said circumferential surface of said carrier when said carriage is in said first station; and

g. control means for connecting said source of fluid at subatmospheric pressure to said ports and for causing said carrier drive means to be energised to rotate said carrier to cause a foil positioned by said positioning means tangentially of said carrier surface to be progressively applied to said surface when said carriage is in said first station, and for disconnecting said source of fluid from said ports when said carriage is in said second station and wherein the mechanism is mounted on said moulding machine such that the direction of movement of said carriage between said first and second stations is generally parallel to said direction of movement of said mould tools in said moulding station and said means for moving said first mould tool laterally of the said moulding station is adapted to move said first mould tool into said second station of said carriage.

3,869,235
APPARATUS FOR EXTRUDING A COVERING ON TO A CABLE CORE

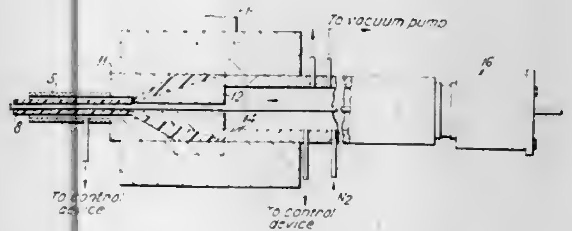
Alexander Joseph Moore, Marlow, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed June 18, 1973, Ser. No. 370,817

Claims priority, application Great Britain, June 19, 1972, 28682/72

Int. Cl. B29f *3/10*

U.S. Cl. 425—113 **7 Claims**



1. Apparatus for extruding a covering on to an advancing core and for continuously treating the covering with a fluid medium at super-atmospheric pressure, which apparatus comprises an extrusion machine comprising a core tube extending through the extrusion machine, and an annular extrusion orifice at the outlet of the extrusion machine defined by an outer die and an inner die or point mounted on the downstream end of the core tube; sealing means associated with the core tube which permits passage of the core therethrough; a treatment chamber which is hermetically sealed to the outlet end of the extrusion machine and through which the covered core emerging from the extrusion orifice is adapted to pass; means for introducing a fluid medium under super-atmospheric pressure into the treatment chamber; and means for injecting a fluid under pressure to the interior of the core tube, wherein the sealing means comprises at least one inflatable collar associated with the core tube in such a way that it will surround a core advancing through the bore of the core tube; and, positioned between the collar and said advancing core, a radially inner layer of a heat-resistant material of a low coefficient of friction; the arrangement being such that when the inflatable collar is at least partially inflated it will be constrained to effect a circumferential compressive force radially inward on the inner layer of heat-resistant material to cause the collar and the inner layer to effect a substantially fluid-tight seal between the core tube and the advancing core.

3,869,236
MOLDING APPARATUS INCLUDING ARTICLE COOLING

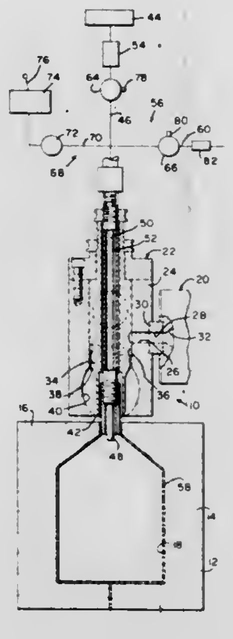
Roger L. Schonewald, Belle Mead, N.J., assignor to Improved Machinery Inc., Nashua, N.H.

Division of Ser. No. 295,591, Oct. 6, 1972, Pat. No. 3,807,927.

This application Nov. 12, 1973, Ser. No. 415,146

Int. Cl. B29d *23/03*

U.S. Cl. 425—144 **7 Claims**



1. Apparatus for blow molding a hollow article from plasticized material, comprising mold means defining a mold cavity contoured to the configuration of the article to be blow molded, means for supplying a parison of plasticized material to said mold means, conduit means for supplying pressurized blowing fluid to said mold means internally of a parison therein whereby such fluid blows the parison to the configuration of the article, and article cooling means for repeatedly causing the pressure of fluid within a blown article in said mold means to be alternately decreased and increased, whereby repeatedly fluid is alternately discharged from and additional cooling fluid is supplied to, the interior of the article for cooling the article, said article cooling means comprising receiver means communicating with said conduit means, piston means associated with said receiver means and cyclically driven to initiate such pressure decrease and increase only after the blowing of the article to the configuration of the mold cavity, exhaust conduit means, and means for controlling fluid flow through said conduit means and said exhaust conduit means.

3,869,237
MOLD ASSEMBLY

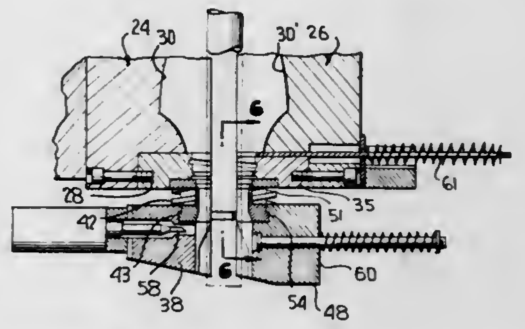
Ernest W. Hellmer, Chicago, and John P. Kinsley, Hanover Park, both of Ill., assignors to Continental Can Company, New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,926

Int. Cl. B28b *7/14, 11/12*

U.S. Cl. 425—292 **24 Claims**

1. A mold cavity having generally radially moveable means for blow molding a hollow member having a tubular end portion including a transverse shoulder, and axially moveable cutter means for trimming the hollow member at the transverse shoulder thereof while the hollow member is still in said mold.



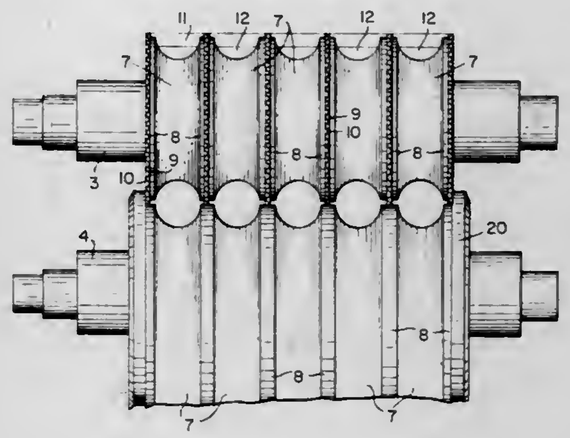
3,869,238
CANNELON AND STUFFED SPAGHETTI MOLDING APPARATUS

Terenzio Racca, c/o Jorge Newbery, no. 3261/63 St., Buenos Aires, Argentina

Filed Nov. 15, 1973, Ser. No. 416,271

Int. Cl. A21c *11/04, 11/24*

U.S. Cl. 425—294 **10 Claims**

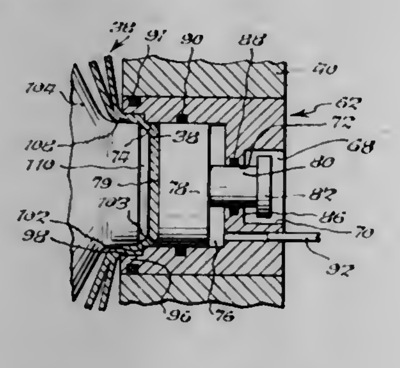


1. In an apparatus for working on a deformable, compressible material, a pair of rollers respectively having parallel axes of rotation and respectively having pairs of peripheral edges situated in a pair of planes which are perpendicular to said axes, the peripheral edges of one of said rollers engaging the peripheral edges of the other of said rollers along a line of contact which is parallel to said axes and which is in a plane which contains said axes, each of said rollers being formed between its peripheral edges with a circumferential groove so that said grooves form in said plane which contains said axes an opening extending across said line of contact, so that said rollers provide in each of said planes perpendicular to said axes a pair of engaging peripheral edges, and one of each pair of peripheral engaging edges being a circumferential cutting edge while the other of each pair of engaging peripheral edges is a circumferential anvil surface to be engaged by the circumferential cutting edge, and one of said rollers carrying an axially extending cutting blade extending between the peripheral edges of the latter roller and having an outer cutting edge extending parallel to the axis of the latter roller and directed away from the latter axis, said axially extending cutting blade having an inner edge directed toward the latter axis and said groove in the roller which carries said cutting blade extending closer to the axis of the latter roller than the inner edge of said cutting blade to define a gap with said inner edge, and transmission means interconnecting said rollers for rotating one of the rollers in a direction opposite to the other of the rollers, so that a material fed between the rollers will be shaped in accordance with the configuration of the opening defined by the grooves in the plane which contains said axes of rotation

and will be cut longitudinally at the peripheral engaging edges and transversely by said axially extending blade.

3,869,239
APPARATUS FOR BLOW MOLDING AND TRANSFER MOLDING THERMOPLASTIC MATERIAL

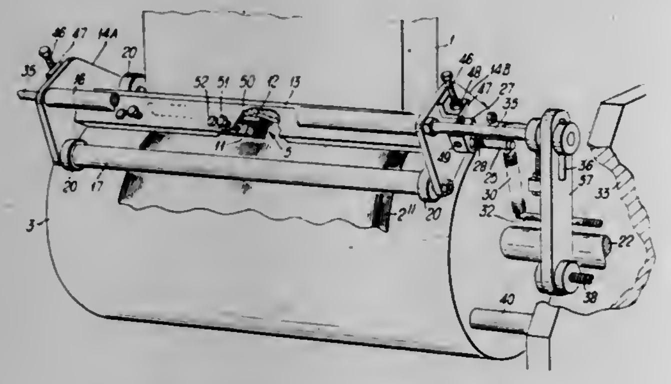
Raymond C. Confer, Gasport, N.Y., assignor to Air-Lock Plastics, Inc., Tonawanda, N.Y.
Filed Nov. 30, 1972, Ser. No. 310,896
Int. Cl. B29d *23/03*
U.S. Cl. 425—302 B **11 Claims**



1. A molding apparatus for forming a hollow body having a predetermined wall portion comprising: a pair of mold sections when engaged forming a mold cavity having the shape of the finished body, means introducing thermoplastic material between said mold sections, means closing said mold sections about said thermoplastic material for enclosing a portion thereof, opposed surfaces on said mold sections defining a space having the shape of said wall portion when said mold sections are closed, and opposed means on said mold sections defining a well adjacent said space for accumulating a portion of said thermoplastic material, said opposed means displacing at least a portion of said accumulated material from said well to said space to form said predetermined wall portion upon closing movement of said mold sections, one of said mold sections having fluid conducting means, and means for introducing fluid through said fluid conducting means into said enclosed thermoplastic material to expand the same into conformity with said mold cavity.

3,869,240
PLASTIC FILMS

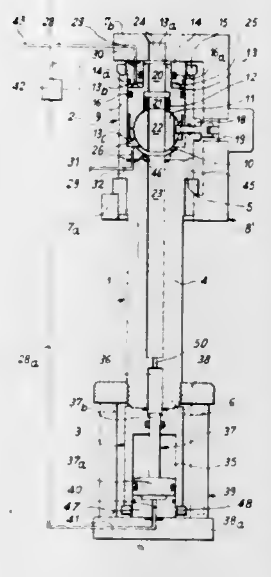
John K. P. Mackie, and Samuel McMeekin, both of Belfast, Northern Ireland, assignors to James Mackie & Sons Limited, Belfast, Northern Ireland
Filed Nov. 1, 1973, Ser. No. 411,826
Claims priority, application Great Britain, Nov. 7, 1972, 51233/72
Int. Cl. B29c *23/00*
U.S. Cl. 425—374 **16 Claims**



1. Apparatus for the profiling of films of synthetic organic polymers comprising a profiling member and a member cooperating with said profiling member to form a nip for the passage of film to be profiled, one of the said members being in the form of a roller having an axis and the other said member being static, means mounting said members in cooperating relationship whereby said members are yieldingly biased together and a spacer member, said spacer member bearing against the surface of said roller and being connected to said static member in such a way that any deviations of said roller surface from the concentric react against said spacer member so as to produce relative movement between said axis of said roller and said static member whereby to maintain the width of said nip between said roller surface and said static member at a predetermined value.

3,869,241
DEVICE FOR RAPID CLOSURE AND PRESSURIZATION OF A COMPRESSION CHAMBER

Jacques David, and Guy Gay, both of Orange, France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Jan. 7, 1974, Ser. No. 431,510
Claims priority, application France, Jan. 11, 1973, 73.00887
Int. Cl. B30b *5/02, 11/00*
U.S. Cl. 425—405 H **11 Claims**



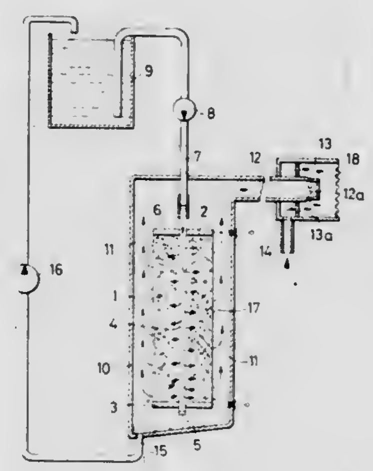
1. A device for the rapid closure and pressurization of a compression chamber comprising closure means mounted on a first extremity of the compression chamber, a pressure multiplier in communication with the second extremity of said chamber, pressure application means for the closure means and the pressure multiplier, wherein said closure device comprises:

- rapid closure means comprising an obturator with a removable jack disposed in a frame which is rigidly fixed to the compression chamber,
- a valve-seat lining applied against the first extremity of said chamber by said jack which is subjected to the action of means for application of pressure,
- an aperture formed in the base of the second extremity of said chamber and adapted to communicate with the pressure multiplier which is actuated by the pressure-application means.

3,869,242
PROCESS FOR VAPORIZING FUEL OIL

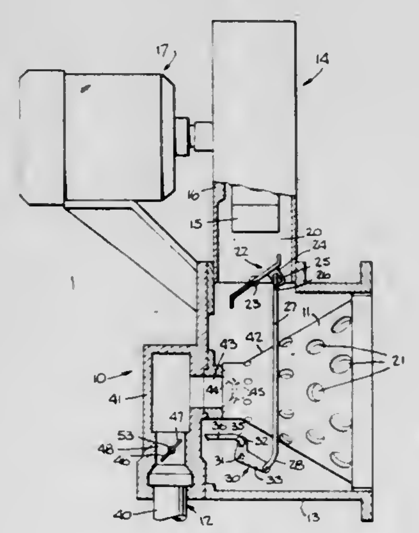
Hermann J. Schladitz, Plantschwez 74, Munich, Germany
Filed Dec. 21, 1973, Ser. No. 427,319
Claims priority, application Germany, Dec. 21, 1972, 2262673
Int. Cl. F23d *11/44*
U.S. Cl. 431—11 **5 Claims**

1. A process for vaporising fuel oil by passing liquid oil through a heated, porous, substantially cylindrical body consisting of polycrystalline metal whiskers connected with one another metallically at their points of contact, whereby the improvement comprises passing the oil radially, from inside to outside, through the body and supplying more fuel oil to the porous body than is vaporised.



3,869,243
AIR/FUEL RATIO CONTROL MEANS FOR DUAL FUEL BURNERS

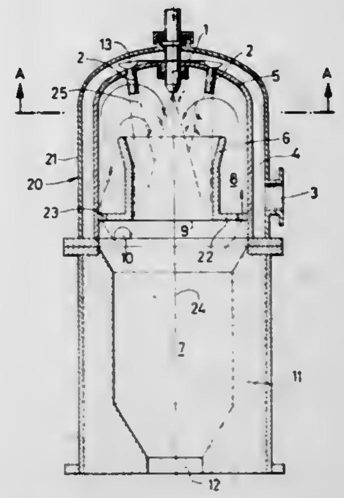
Walter R. Creuz, Chatham, N.J., assignor to Aero-Flow Dynamics, Inc. (The Wing Company Division), Linden, N.J.
Filed Nov. 2, 1973, Ser. No. 412,483
Int. Cl. F23n *1/02*
U.S. Cl. 431—90 **7 Claims**



1. In a burner of the type having a combustion chamber, fuel inlet means and air inlet means for admission of fuel and air to the combustion chamber, metering valve means in said fuel inlet means and damper means in said air inlet means, and a linkage between said metering valve means and said damper means, the improvement comprising means permitting lost motion in said linkage for permitting said metering valve means to be partially opened while the damper means remains closed and for opening said damper means only after said metering valve has been opened to a predetermined extent.

3,869,244
BURNER UNIT

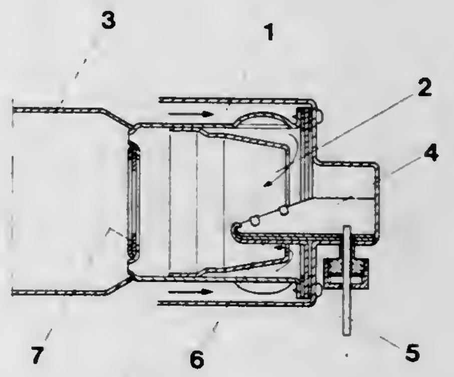
Robert Von Linde, Akilindastr. 56; Joachim Von Linde, both of Grafelfing, and German Kurz, Karlsfeld, all of Germany, assignors to said Robert von Linde, by said Joachim von Linde and German Kurz
Filed Jan. 14, 1974, Ser. No. 432,955
Claims priority, application Germany, Jan. 24, 1973, 2303280
Int. Cl. F23m *3/14*
U.S. Cl. 431—116 **7 Claims**



1. A burner unit comprising combustion chamber means, prechamber means, means to enable combustion gases to pass from said combustion chamber means into said prechamber means, mixing pipe means in communication with said prechamber means and said combustion chamber means, a fuel supply nozzle for distributing finely divided fuel towards said mixing pipe means into said recirculated combustion gases, and means for supplying oxygen-containing gas to the mixture of fuel and combustion gases, wherein said means for supplying oxygen-containing gas comprises a plurality of exit openings arranged symmetrically about the longitudinal axis of said fuel supply nozzle, said means for supplying oxygen-containing gas comprises pipes extending into the prechamber and arranged symmetrically about the fuel supply nozzle, the interstices between adjacent pipes forming passageways for the recirculated combustion gases into the space of the prechamber surrounding the fuel supply nozzle.

3,869,245
VAPORIZING BURNER DEVICE

Gustav Rune Hagman, Varberg, Sweden, assignor to Monark-Crescent AB., Varberg, Sweden
Filed May 21, 1973, Ser. No. 361,965
Claims priority, application Sweden, June 14, 1972, 7377860
Int. Cl. F23d *3/40*
U.S. Cl. 431—326 **3 Claims**



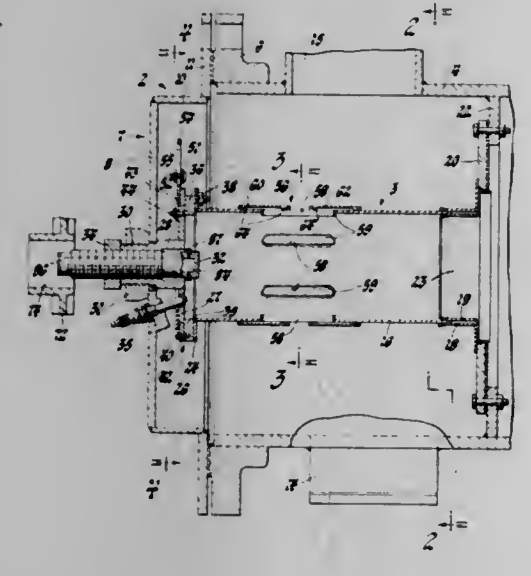
1. A vaporizing burner device comprising a flame chamber surrounded by spaced apart inner and outer elongated casings

forming an air passage into the flame chamber, the inner elongated casing terminating at one end in a flame holding baffle having a first central opening therein for enabling the egress of the spent combustion gas, the inner elongated casing terminating at the other end in a second central opening aligned with said first central opening for enabling the total ingress of fresh air from said passage, the elongated outer casing having an opening at one end for the intake of fresh air and being closed at the other end for directing air in the air passage through said second central opening, through said flame chamber and toward said first central opening, an elongated spoon bowl shaped body of heat conductive material lined on the inside of the bowl with a coating of capillary acting insulating material, means for supporting said spoon bowl with the elongated axis of the bowl being generally aligned with the elongated axis of said elongated casings, said bowl having a tip end extending from the inside of the outer casing through said second central opening and into said chamber with substantially free passage of said ingress air surrounding said bowl and moving toward said tip end, said bowl having a rear end extending back from said second central opening toward the closed end of said outer casing, and fuel inlet means for conveying liquid fuel into the rear end of said bowl at a rate whereby the capillary action of the insulating material conveys the fuel over the inside surface of the spoon bowl.

3,869,246
VARIABLE CONFIGURATION COMBUSTION APPARATUS

Dean C. Hammond, Jr., Warren, and Galal N. Matta, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1973, Ser. No. 428,430
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 **3 Claims**

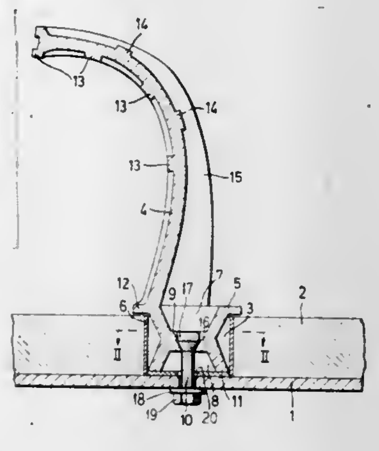


1. A combustion apparatus comprising a casing having an air inlet, a combustion liner of generally cylindrical configuration mounted in the casing, the liner having an upstream end and having a downstream end communicating with an outlet for combustion products, the liner defining primary air entrance means adjacent to the upstream end and secondary air entrance means intermediate the ends; and means adjacent to the upstream end for distributing fuel into the primary air; the said apparatus being characterized by variable configuration secondary air entrance means comprising a ring of ports through the liner; two valve sleeves reciprocable lengthwise of the liner, one sleeve being effective to obstruct variably the upstream ends of the ports and the other sleeve being effective to obstruct variably the downstream ends of the ports; and means for reciprocating the sleeves concurrently in the same direction to vary the effective location of the secondary air entrance means and for reciprocating the sleeves concurrently in opposite directions to vary the effective area of the secondary air entrance means.

3,869,247
COOLING PIPE FOR USE IN SATELLITE COOLERS OF ROTARY KILNS

Herbert Deussner, Bensberg-Refrath, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft

Filed Feb. 13, 1974, Ser. No. 442,085
Claims priority, application Germany, Feb. 14, 1973, 2307108
Int. Cl. F27b *7/14*
U.S. Cl. 432—80 **9 Claims**

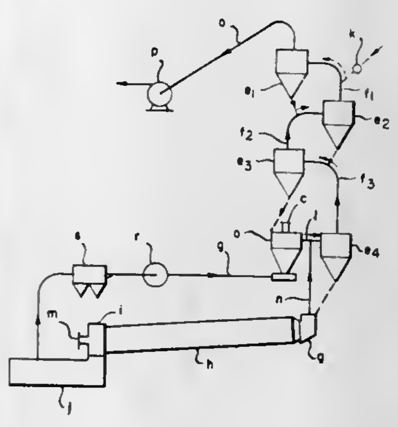


1. A cooling pipe for a satellite cooler on a rotary kiln, comprising:
- a pipe wall,
- an inner wall having a fireproof lining,
- a material lifting blade arranged on the inner wall,
- a recess in said inner wall for said lifting blade, said recess extending to said pipe wall,
- a metal sleeve lining said recess,
- a metal plate between said sleeve and said pipe wall,
- an aperture in said pipe wall,
- a fastening foot on said blade, and
- a fastening device extending through said aperture to fasten said foot to said pipe wall.

3,869,248
APPARATUS FOR BURNING MATERIALS OF CEMENT AND THE LIKE

Yoshio Hirai, and Yoshimi Yamamoto, both of Tokyo, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 18, 1973, Ser. No. 361,437
Claims priority, application Japan, May 20, 1972, 47-58985; Oct. 4, 1972, 47-99552; Jan. 8, 1973, 48-5032
Int. Cl. F27b *7/02*
U.S. Cl. 432—106 **2 Claims**



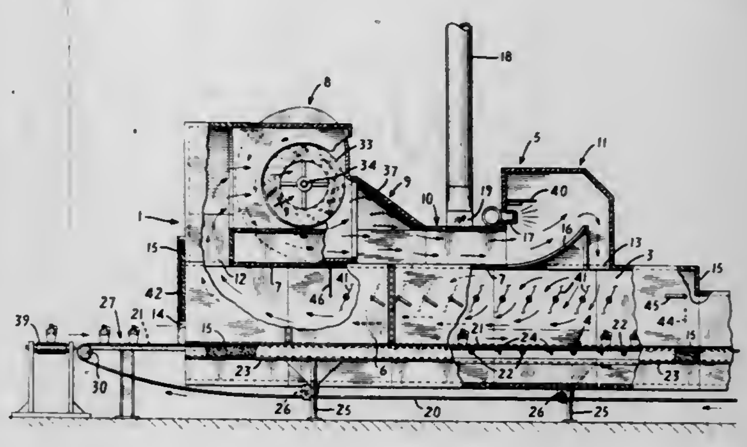
1. A suspension type rotary kiln apparatus for burning the materials of cement, comprising

a. a calcinating furnace (1) having at its bottom a combustion air inlet and at its top a feed inlet (5) and an exhaust gas outlet, said furnace including also a plurality of burners (2, 3, 4) for establishing a given burning ratio;
b. suspension preheater means including a plurality of cyclones (8, 9, 10) for feeding preheated raw meal to the feed inlet of said furnace;
c. a cyclone (11) having an inlet connected with the exhaust gas outlet of said furnace, said cyclone having an exhaust gas outlet connected with the lower portion of said suspension preheater means, and a raw meal outlet;
d. exhaust fan means (23) connected with the upper portion of said suspension preheater means for drawing exhaust gases therethrough;
e. rotary kiln means (16) having at one end an inlet chamber (15) provided with an inlet connected with the raw meal outlet of said cyclone, said inlet chamber including also an exhaust gas outlet, said rotary kiln means including at its other end an outlet;
f. cooler means (18) having an inlet connected with the outlet of said kiln means for receiving the burnt materials produced thereby, said cooler means including also a combustion air outlet;
g. a secondary air duct (6) connecting the combustion air outlet of said cooler means with the combustion air inlet of said calcinating furnace;
h. a branch duct (21) containing a reduced portion defining an orifice (25) for connecting the exhaust gas outlet of said inlet chamber with said secondary air duct adjacent said furnace, whereby the high temperature exhaust gas from the kiln is mixed with the high temperature combustion air from the cooler; and
i. damper means (26, 27) in said secondary air duct intermediate said cooler and said branch duct for regulating the quantity of the combustion air from the cooler that is mixed with the high temperature exhaust gases from the kiln and is supplied to the furnace, said damper means being so adjusted and the restriction of the orifice in said branch duct being so dimensioned that the pressure loss in the secondary duct system substantially equals the pressure loss in the kiln system, the capacity of said exhaust fan means being so selected relative to the burning ratio of the burners that the velocity of the combustion air introduced into the furnace from the secondary air duct is higher than the flame propagation speed, whereby almost no flame is generated and the finely divided fuel particles which are floating with the finely ground raw material are burnt at a relatively low temperature and without the formation of a high temperature zone in the furnace.

3,869,249
CURING OVEN

Dale George Frische, Belleville, Ill., assignor to Indian Head Inc., New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,828
Int. Cl. F27b *9/14*
U.S. Cl. 432—121 **7 Claims**



1. An oven for the curing of coated articles such as bottles which comprises a heating section and a cooling section, a segmented continuous duct passing through both these sections and having a coated article conveyor belt extending therethrough, at least one superstructure above the heating section segment of the continuous duct and separated therefrom by a top panel, each superstructure having interconnecting sequential air blower, air diffuser, vent stack and fuel burner chambers, the air blower and fuel burner chambers each being in separate communication with the heating section segment of the continuous duct.

3,869,250

PROCESS FOR THE PRODUCTION OF DIFFERENTIAL EFFECTS ON POLYMERIC OR COPOLYMERIC ACRYLONITRILE FIBERS

Hans Wegmuller, Riehen, and Manfred Motter, Neu-Aesch, Basel-Land, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

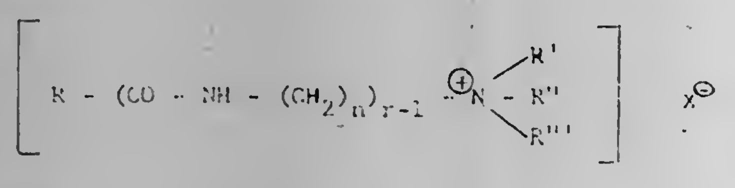
Continuation-in-part of Ser. No. 145,582, May 20, 1971, abandoned. This application June 25, 1973, Ser. No. 373,292

Claims priority, application Switzerland, May 22, 1970, 7573/70

Int. Cl. D06p *5/12*

U.S. Cl. 8—15 **7 Claims**

1. Process for the production of differential effects on copolymeric acrylonitrile fibers, wherein said fibers containing at least 80 percent by weight of acrylonitrile a) are treated at temperatures of at least 85°C with a pH-value of between 3 and 5, with an aqueous perparation consisting essentially of at least one cation active organic ammonium compound of the formula:



$$\left[R-(CO-NH-(CH_2)_n)_{r-1}-\overset{\oplus}{N}\begin{smallmatrix} R' \\ R'' \\ R''' \end{smallmatrix} \right] X^{\ominus}$$

wherein

R represents an alkyl radical having 8 to 18 carbon atoms,
R′ and R″ each represent hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, cyano-lower alkyl, cycloalkyl, or a polyalkylene glycol radical, or
R′ and R″ together with the nitrogen atom binding them represent piperidino or morpholino,
R‴ represents hydrogen, lower alkyl, aralkyl, or aralkyl substituted by hydroxyl or lower alkoxy, or
R′, R″ and R ‴ together with the nitrogen atom binding them represent pyridyl or lower alkyl-pyridyl,
r represents 1 or 2,
n represents 2 or 3, and
x represents the anion of an organic or inorganic acid,

and b) said acrylic fibers, treated according to a), are dyed together with untreated material made from said acrylic fibers in a dyebath consisting essentially of an aqueous liquor with at least one cationic dyestuff, wherein the proportion of the dyestuff absorbed by the fibers pretreated according to a) and by the untreated fibers is within 4:96 to 20:80.

3,869,251

APPARATUS FOR INTERMIXING MATERIALS IN A REACTION VESSEL CONTAINING FERROMAGNETIC PARTICLES

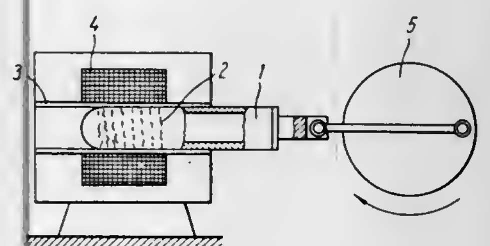
Karl Lazarevich Tsantker, ulitsa Gogolya, 19, kv.4; Dmitry Danilovich Logvinenko, ulitsa Kalinina, 5, kv.5; Oleg Parfirovich Shelyakov, ulitsa Kalinina, 5, kv.100; Vadim Pavlovich Verich, ulitsa Frunze, 106-a, kv.16; Alexandr Vasilievich Skrypnik, Kievskoe shosse, 78, kv.23, all of Poltava, and Nikolai Ivanovich Shishkov, ulitsa Karla Marxa, 22, kv.78, Dnepropetrovsk, all of U.S.S.R.

Continuation of Ser. No. 200,824, Nov. 22, 1971, abandoned. This application May 14, 1973, Ser. No. 359,889

Int. Cl. B01j *1/00*

U.S. Cl. 23—252 R **6 Claims**

1. An apparatus for handling materials comprising: a working vessel adapted to contain the materials being handled; a plurality of ferromagnetic particles located in said working vessel; stationary means embracing the working vessel for generating inside said vessel a rotary electromagnetic field involving said working vessel and said material being handled in order to cause said ferromagnetic particles to rotate and reciprocate and to retain said particles in the effective region of the magnetic field; and means for reciprocating said working vessel along its axis relative to the stationary means for generating said rotary electromagnetic field.



3,869,252

DOSE DISTRIBUTION MEANS

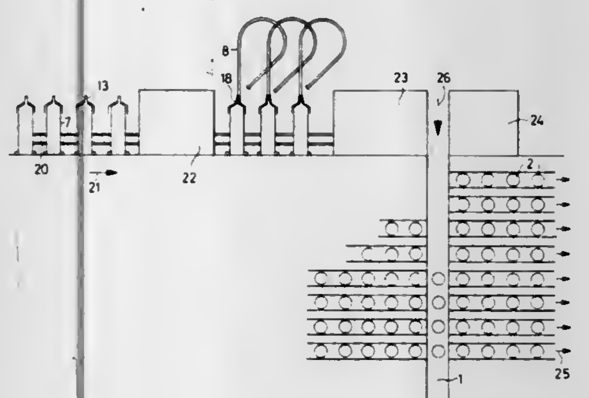
Hans Haug, 7 Stuttghrt 1, Lindpaintnerstr. 56, Stuttgart, Germany

Filed Apr. 20, 1973, Ser. No. 353,111

Claims priority, application Germany, Apr. 22, 1972, 2219862

Int. Cl. G01n *1/14*

U.S. Cl. 23—259 **7 Claims**



1. Apparatus for the distribution of dosed portions of liquid samples for clinical analysis from the hypodermic syringe used to obtain the same from the patient, said hypodermic syringe having a barrel and a piston located therein, comprising a primary conveyor moving along a predefined path, means for locating said syringe on said primery conveyor, means for coding said syringe, at least one secondary conveyor adapted to contain one or more dose receiving receptacles, said primery conveyor extending in a transverse path over the path of the secondary conveyor, means for indexing said conveyors individually with respect to each other to place a syringe in successive proximity to one or more of said secondary receptacles, a flexible tube connected to the outlet of said syringe to extend into each of the successively adjacent dose receptacles, means for indexing the plunger of said syringe to discharge a predefined portion of said sample from said syringe into selected ones of said dose receptacles, and means for coding said secondary receptacles receiving said dose correspondingly with the syringe.

3,869,253

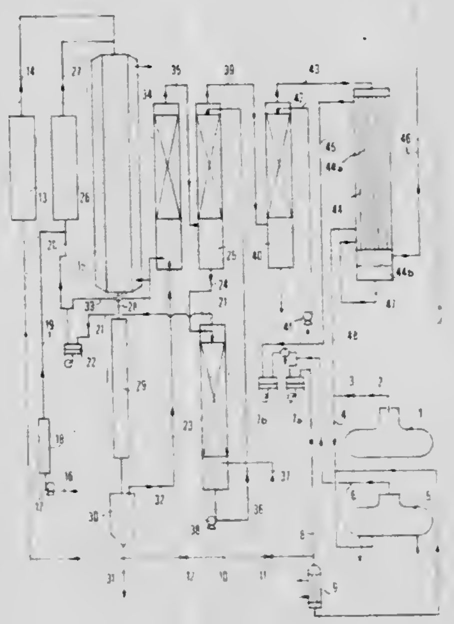
APPARATUS FOR PRODUCING NITROPARAFFINS

Pierre Lhonore, Douai; Guy Cohen, Paris, and Bernard Jacquinot, Douai, all of France, assignors to Societe Chimique de la Grande paroisse, Azote et produits Chimiques, Paris, France

Division of Ser. No. 299,173, Oct. 19, 1972, Pat. No. 3,780,115. This application Aug. 1, 1973, Ser. No. 384,508

Int. Cl. C07c *79/02;* **B01j** *1/00*

U.S. Cl. 23—260 **10 Claims**



1. An apparatus for the production of nitroparaffins from propane by nitration with nitrogen peroxide in the presence of oxygen introduced in the form of air, comprising:

a reaction vaporizer means for vaporizing nitrogen peroxide;
a combined vaporizer and superheater means connected to said reaction vaporizer means for preheating nitrogen peroxide coming from said reaction vaporizer means together with compressed air to a predetermined temperature;
preheater means for heating compressed propane to a predetermined temperature;
reactor means, connected to said combined vaporizer and superheater means and said preheater means, for receiving the preheated nitrogen peroxide, air and propane and in which takes place the nitration reaction;
rapid cooler means connected to said reactor means, for cooling the effluent from said reactor means;
separator means connected to said cooler means for separating liquid nitroparaffins from the remaining gaseous effluents from said cooler means;
concentrated nitric acid scrubbing column means connected to said separator means for circulating concentrated nitric acid counter-currently with the gaseous effluents from said separator means; and
degasifying means, connected to said scrubbing column means, for denitrating the nitric acid used in said scrubbing column means by degasification with compressed air, said nitric acid circulating in closed circuit between said scrubbing column means and said degasifying means.

3,869,254

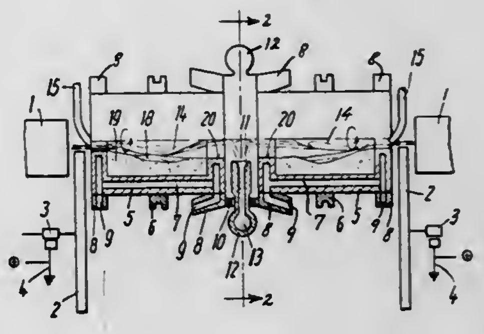
APPARATUS FOR CARRYING OUT HIGH TEMPERATURE REACTIONS

Tibor Kugler, Sins, Switzerland, assignor to Lonza, Ltd., Gampel, Valais, Switzerland

Division of Ser. No. 68,628, Sept. 1, 1970, Pat. No. 3,705,006. This application Oct. 12, 1972, Ser. No. 299,876

Int. Cl. B01j *1/00;* **C01g** *1/00*

U.S. Cl. 23—262 **3 Claims**



1. A device for carrying out endothermic high temperature reactions, comprising

a horizontally disposed elongated, cylindrical reaction vessel,
said vessel comprising two horizontally disposed, rotary, coaxial chambers and a stationary chamber connected between said rotary chambers,
driving means connected to said rotary chambers for rotation thereof,
said reaction vessel having opposite end walls with openings therein,
means for feeding reactant material substantially coaxial in opposite directions through the openings in the end walls of said vessel into said rotary chambers,
means connected adjacent said end walls for producing two plasma jets and directing them coaxially in opposite directions through the openings in the end walls of said vessel into said rotary chambers,
two coaxial annular baffles on said rotary chambers each forming a boundary between said stationary chamber and one of said rotary chambers,
annular means connected in said stationary chamber coaxial to and spaced from said baffles and provided with an annular central gap,
inlet means in said stationary chamber between said annular means and said baffles for feeding a medium into said stationary chamber, and
said annular means including an annular collector channel communicating with said annular central gap at the outer circumference thereof and having an outlet therein for reaction products.

3,869,255

CLOSED LOOP REFLUX SYSTEM

Robert De Witt, Centerville; Bernhart E. Jepson, Dayton, and Roger A. Schwind, Centerville, all of Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

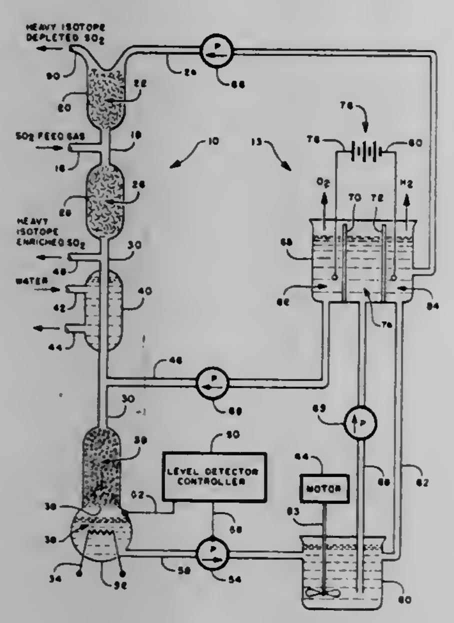
Filed Jan. 10, 1973, Ser. No. 322,566

Int. Cl. B01d *3/00, 59/12;* **C01b** *17/48*

U.S. Cl. 23—263 **5 Claims**

1. Apparatus adapted to separation of different isotopes of sulfur contained in a feed fluid wherein the chemicals used for the separation process are reacted with said feed fluid, regenerated and reused, comprising; a reaction vessel, a distillation vessel, output means on said reaction vessel for removing heavy isotope depleted fluid, initial conduit means for transferring reacted fluid from said reaction vessel to said distillation vessel, condensing means adjacent said initial conduit and said distillation vessel for condensing fluid from said distilla-

tion vessel in said initial conduit means, input means disposed on said reaction vessel for feeding one of said chemicals into said reaction vessel, first input means on said initial conduit for feeding said feed fluid into said initial conduit means, second input means disposed after said condenser and on said initial conduit for feeding another of said chemicals into said initial conduit means; output means for removing isotope enriched fluid disposed between said first input means and said condenser on said initial conduit means; a mixing vessel, means for transferring fluid interconnecting said distillation vessel and said mixing vessel; electrodialysis apparatus including a container, an anion permeable membrane and a cation permeable membrane disposed within said container and dividing said container into at least three compartments, a cathode disposed within a first of said at least three compartments, an anode disposed within a second of said at least three compartments, a power source electrically interconnecting said anode and said cathode; conduit means disposed on a third of said at least three compartments for transferring materials from said mixing vessel to said third compartment, said third compartment being adjacent said first and said second compartments, conduit means for transferring material from said first compartment to said mixing vessel, said input means interconnecting said first compartment and said reaction vessel for transferring said one of said chemicals from said first compartment to said reaction vessel, and said second input means interconnecting said second compartment and said initial conduit for transferring said another of said chemicals from said second compartment to said initial conduit.


HEAVY ISOTOPE DEPLETED SO2
SO2 FEED GAS
HEAVY ISOTOPE ENRICHED SO2
WATER
LEVEL DETECTOR CONTROLLER
MOTOR
10
34
36
50
54
56
60
80

3,869,256
CONTINUOUS FLUID BED REACTOR FOR FISSIONABLE MATERIAL

Donald L. Ziegler, Arvada, Colo., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 28, 1972, Ser. No. 293,177

Int. Cl. B01j *1/00;* **C01g** *56/00*

U.S. Cl. 23—284 **1 Claim**

1. A fluidized bed reactor system for continuously purifying plutonium feed materials and producing plutonium hexafluoride while maintaining a criticality safe condition at all times comprising:

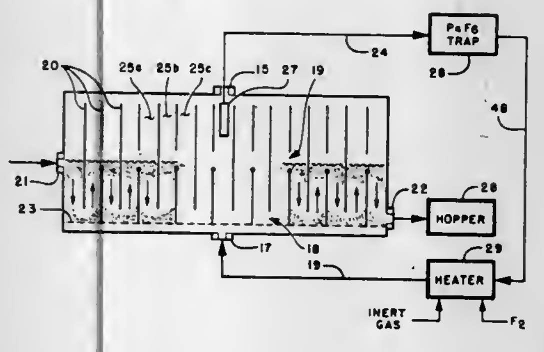
a. a generally horizontally disposed elongated vessel having an inlet port for solid particulate plutonium feed material at one end and an outlet port at a distal and lower end for removal of unreacted particulate feed material, said vessel having a closed top and closed bottom and including
   i. a lower reaction portion with generally parallel side walls, said lower reaction portion having a criticality safe essentially rectangular cross section of not greater than about 19.6 square inches taken in end view; and
   ii. an upper recovery portion communicating with said reaction portion and of greater width and volume than said reaction portion having oppositely disposed side walls diverging outwardly from the parallel side walls of said reaction vessel;

b. distributor plate means within said vessel located beneath said reaction portion for feeding fluidizing fluorine gas and an inert carrier gas;

c. means for removing plutonium hexafluoride gas from said recovery portion;

d. a first plurality of spaced apart baffles disposed within said vessel and having upper and lower edges and spaced from said distribution plate means and said vessel top; and

e. a second plurality of spaced apart baffles intermediate said first plurality of baffles having upper and lower edges and disposed within said vessel, said second plurality of baffles having their lower edges in contact with said distribution plate and said upper edges spaced from the top of said vessel, and each of said second plurality of baffles having an aperture adjacent the juncture of said divergent side walls of said recovery portion with said parallel side walls of said reaction portion to form a continuous passageway for passage of solid particulate feed material in a generally serpentine fashion through the vessel from said inlet port to said outlet port.



3,869,257
PRODUCTION OF NICKEL SULFATE

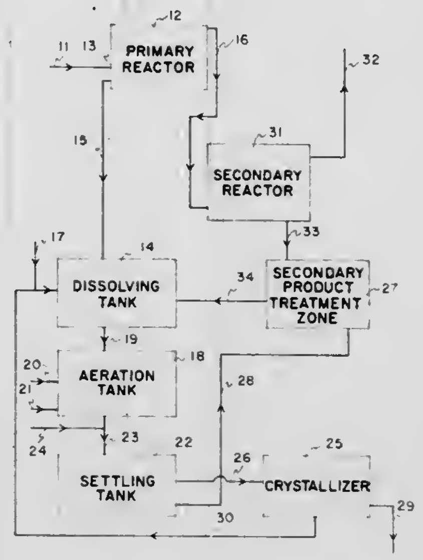
Heinz Paul Beutner, Englewood, Colo., and George Feick, Needham, Mass., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,486

Int. Cl. C01b *17/96;* **C01g** *53/02, 53/10*

U.S. Cl. 423—544 **8 Claims**

7. A process for the continuous production of nickel sulfate from nickel carbonyl comprising continuously reacting together nickel carbonyl, sulfur dioxide and oxygen at a temperature of about 80° to 150°C to provide solid reaction products consisting essentially of nickel sulfate, nickel sulfite and nickel oxide and gaseous reaction products, dissolving soluble solid reaction products in water to provide an aqueous solution of said soluble solid reaction products, treating solid reaction products insoluble in water in the presence of said aqueous solution of said soluble solid reaction products by aerating the solution, then acidifying the solution with sulfuric acid to maximize the nickel sulfate content of said aqueous solution, recovering nickel sulfate from said aqueous solution, recovering carbon monoxide from said gaseous reaction products and recycling said recovered carbon monoxide to form nickel carbonyl.



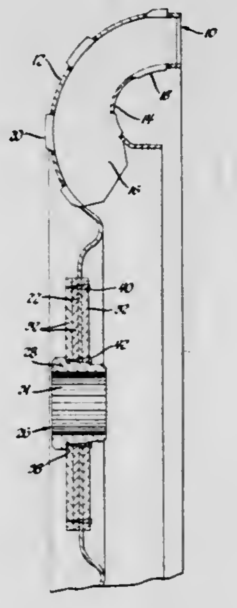
3,869,258
FLUID UNIT ROTOR AND METHOD OF MANUFACTURE

William B. Scott, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,159

Int. Cl. B23p *15/04*

U.S. Cl. 29—156.8 FC **3 Claims**



1. A method of making a torque transmitting rotor of a hydrodynamic unit for a power transmission comprising the steps of stamping sheet metal stock to simultaneously produce backing ring means for transmission disc clutches and circular disc means formed by the stamped centers of said backing ring means, providing a tubular rotor hub with an enlarged curved head portion and a reduced diameter cylindrical shank portion, forming a central opening with axially extending internal splines in said hub, making an enlarged annular opening in the center of each of said disc means with a diameter sufficiently large to permit a slip fit of said disc means onto said cylindrical shank portion of said rotor hub, making an annular rotor shell with a central flange portion, forming an annular opening in the center of said flange portion with a diameter sufficiently large to permit a slip fit of said rotor shell onto said cylindrical shank portion, inserting said rotor hub into the opening of first of said disc means so that said shank portion extends through the central opening in said first disc means and said head portion abuts against one side of said first disc means, loading said rotor shell on said hub member so that said shank portion extends through said central opening of said flange portion and so that said flange portion of said rotor shell contacts the adjacent surface of said first disc means, loading second disc means on said hub member so that said shank portion extends through the annular opening therein and said second disc means contacts the adjacent surface of said flange portion of said rotor shell, staking said disc means and said flange portion in an interleaved position on said shank portion of said hub, electron beam welding said disc means and said flange portion to each other with a first circular electron beam weld focused at a predetermined depth and extending through all of said disc means, and utilizing the same focal depth as said first weld to electron beam weld said disc means and said flange portion to each other and to said shank portion by a second circular electron beam weld which has a diameter smaller than said first circular electron beam weld and which extends to said head portion through all of said disc means.

3,869,259
COMPOSITE SLIDING MEMBER

David M. Lindsey, Taylor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1973, Ser. No. 356,611

Int. Cl. C22c *1/04*

U.S. Cl. 29—182.8 **4 Claims**

1. A liquid phase sintered metal-carbon composite sliding member formed of carbon uniformly dispersed in and metallurgically bonded to a phase of a copper base alloy, said copper base alloy consisting essentially, by weight, of 5% to 20% titanium, 3% to 22% lead, 0% to 15% tin and the balance copper, said carbon making up about 20% to 80% by volume of said composite member, said metallurgical bond comprising titanium carbide.

3,869,260
MANUFACTURE OF SUPPORTS FOR USE WITH SEMICONDUCTOR DEVICES

Sydney Jackson, Chadderton, and Joseph Bell Titterington, Worsthorn Burnley, both of England, assignors to Ferranti, Limited, Hollinwood, England

Division of Ser. No. 262,176, June 13, 1972, Pat. No. 3,771,212, which is a continuation of Ser. No. 27,478, April 13, 1970, abandoned. This application May 14, 1973, Ser. No. 359,872

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 **12 Claims**

1. An article of manufacture comprising a metal supporting member, a semiconductor device, means for bonding said semiconductor device to said supporting member, said means including at least one metallic particle of bonding material, a bonding joint between the semiconductor device and a selected part of the surface of the supporting member, said selected part of the surface being recessed to receive the particle, said recess being formed upon impaction of the particle into the surface of the supporting member by an impaction tool.

3,869,261

CORROSION-RESISTANT COMPOSITE COATING TO BE FORMED ON STEEL MATERIALS AND METHOD OF FORMING THE SAME

Kunio Katsuma, Tokyo, Japan, assignor to USUI Kokusai Sangyo Kabushiki Kaisha, Sunto-gun, Shizuoka Prefecture, Japan

Filed May 22, 1974, Ser. No. 472,132

Int. Cl. B23p *3/20;* **C23b** *5/50, 5/52*

U.S. Cl. 29—196.3 **4 Claims**

1. An article comprising a steel base and a corrosion-resistant coating thereon, said coating having been obtained by forming a three-layer structure on the steel material surface, said structure consisting of a zinc electroplating inner layer, a copper electroplating intermediate layer and then a tin electroplating outer layer, and forming a copper-tin alloy layer between the intermediate and outer layers through heat treatment of said three-layer structure.

3,869,262

FUEL AND ADDITIVE FOR THE PRODUCTION THEREOF

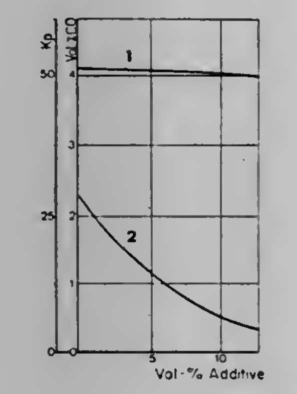
Herbert Mayerhoffer; Wilhelm Schneider; Hardo Nuring, and Wolfgang Exner, all of Wien, Austria, assignors to Oesterreichische Hiag-Werke Aktiengesellschaft, Vienna, Austria

Filed May 5, 1972, Ser. No. 250,548

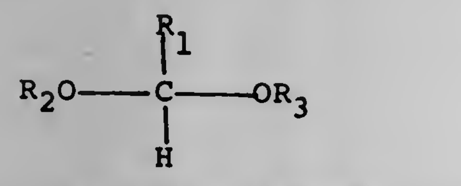
Claims priority, application Austria, May 5, 1971, 3933/71; Nov. 24, 1971, 10127/71

Int. Cl. C10l *1/18*

U.S. Cl. 44—56 **15 Claims**



1. A fuel for use in internal combustion engines having a substantially constant heating value and providing a reduced amount of carbon monoxide in the exhaust gases of the engine comprising gasoline containing from 0.2 to 12 volume % of an additive comprising at least one oxygen-containing compound of the general formula (I)



$$R_2O-\overset{\displaystyle R_1}{\underset{\displaystyle H}{C}}-OR_3 \qquad (I)$$

wherein R_1 is H or CH_3 and R_2 and R_3 are each CH_3, C_2H_5, C_3H_7 or C_4H_9.

3,869,263

ABRASIVE MEMBER

Harold Jack Greenspan, 5334 Holt Ave., Los Angeles, Calif. 90056

Filed Sept. 14, 1973, Ser. No. 397,371

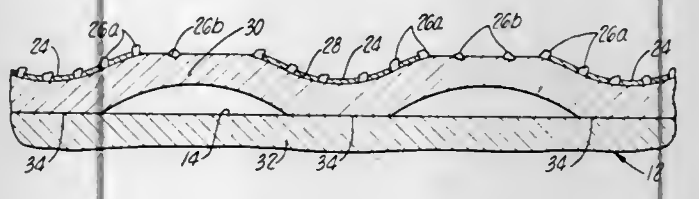
Int. Cl. B24d *3/08, 7/18*

U.S. Cl. 51—209 R **4 Claims**

2. An abrasive member comprising:

a. a rigid support member;

b. a working surface on said support member provided with a multiplicity of interspaced convex protuberances and concave depressions blended together so as to form smoothly rounded peaks and valleys extending over substantially the entire working surface, said working surface comprising a metal sheet material affixed to said support member, said support member providing a substantially continuous planar surface for supportable contact with said metal sheet; and



c. a multiplicity of abrasive particles fixedly positioned relative to said working surface so that at least portions thereof extend outwardly from the surfaces of the protuberances and depressions formed on said working surface.

3,869,264

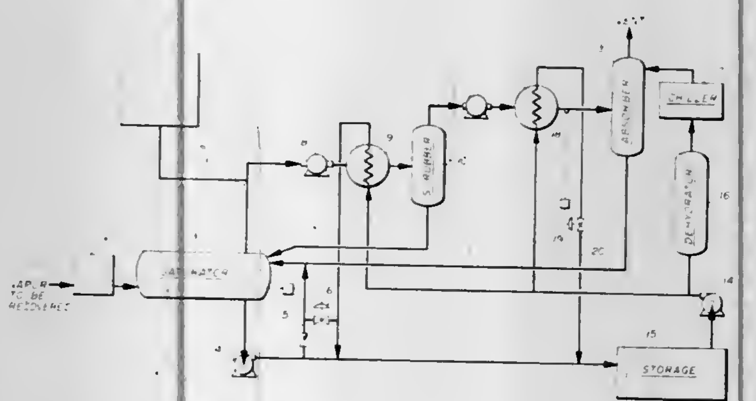
VAPOR RECOVERY METHOD AND SYSTEM

George W. Richards, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 449,124

Int. Cl. B01d *47/00*

U.S. Cl. 55—88 **9 Claims**



1. A method of liquefying vapors released when volatile liquid is transferred between containers, including,

collecting a mixture of the released vapors and air,
saturating the collected vapor mixture with the volatile liquid,
compressing the saturated vapor mixture a first time,
cooling the compressed vapor mixture with volatile liquid from a stored quantity of the liquid,
removing liquids condensed by the cooling of the compressed vapor mixture,
compressing the saturated vapor mixture a second time,
cooling the compressed vapor mixture with volatile liquid from a stored quantity of the liquid,
dehydrating a stream of volatile liquid from the stored quantity,
refrigerating the dehydrated stream,
contacting the compressed, saturated vapor mixture with the refrigerated and dehydrated stream of volatile liquid whereby vapors released by transfer are absorbed by the liquid,
and collecting the volatile liquid which absorbed the released vapors and using the liquid to saturate the collected vapor mixture.

3,869,265

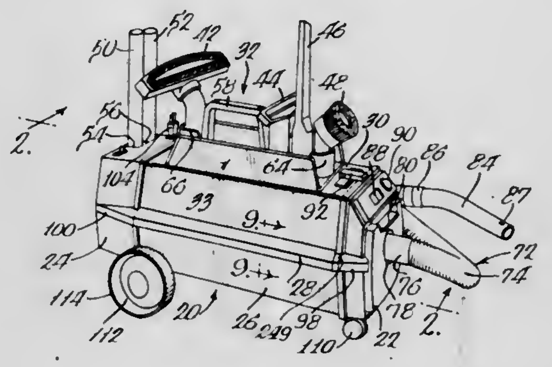
CANISTER TYPE VACUUM CLEANER

Gilbert R. Wolter, Elmhurst; Eugene B. Szymczak, Chicago, and Elmer Eugene Bruning, Normal, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed July 10, 1972, Ser. No. 270,421

Int. Cl. B01d *46/02*

U.S. Cl. 55—274 **10 Claims**



3. A canister-type vacuum cleaner comprising an elongated tank, a front cap closing off the front end of said tank and having an inlet aperture for receiving an inlet hose and hose release means for releasably securing said hose in said inlet aperture, means hingedly mounting said front cap on said tank whereby said front cap may be pivotally swung open when a new dust bag is to be inserted into the vacuum cleaner, latch means for securing said front cap over the front end of said tank during operation of the vacuum cleaner, a rear cap closing off the rear end of said tank, and having air outlet means, a dust bag holder mounted in the forward end of said tank, an electric motor mounted in said tank to the rear of said dust bag holder, a power cord for supplying electrical power to said motor, suction-producing means in said tank and adapted to be driven by said motor, means secured to said vacuum cleaner for providing for movability of said vacuum cleaner while it is in contact with the floor, said tank being formed of an upper shell and a lower shell, said upper and lower shells having respectively a pair of integrally formed lower flanges and a pair of integrally formed upper flanges which run for substantially the length of said tank in the direction of the elongated dimension of said tank, each of said upper flanges extending substantially horizontally outwardly on opposite sides of said tank in abutting relationship with one of said lower flanges, which also extend substantially horizontally outwardly on opposite sides of said tank, the outer edges of said upper and lower flanges being bent downwardly and upwardly, respectively, and a pair of elongated removable resilient bumpers, each of said bumpers being recessed in a manner to receive one set of abutting upper and lower flanges including the bent edges thereof whereby said bumpers are mounted on and substantially cover said flanges along substantially the length thereof.

3,869,266

SELF-CLEANING COALESCER

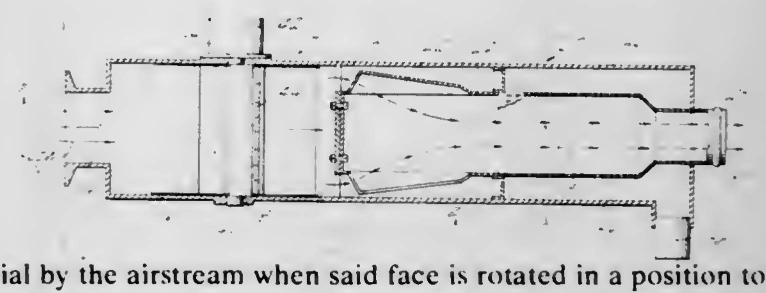
George C. Rannenberg, Canton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 26, 1974, Ser. No. 464,710

Int. Cl. B01d *46/40*

U.S. Cl. 55—309 **5 Claims**

1. A coalescer in combination with a water separator for aircraft air cycle airconditioning system which air contains foreign matter, a casing having an inlet and outlet, water separating means for centrifuging the heavy particles in the airstream out of the airstream in said casing, said coalescer in said casing between said inlet and outlet and upstream of said water separating means, said coalescer having coalescing material extending radially from an axis disposed transverse to said outlet in said casing and substantially continuously rotated about said axis so that the air flow from said inlet passes through said coalescing material depositing said foreign matter on the face of said coalescer material when facing said inlet before being admitted into said water separating means and said foreign matter being picked up from said coalescer material by the airstream when said face is rotated in a position to face said outlet whereby the foreign matter collected by the coalescer material is blown-off and discharged into the water separating means and separated out from said airstream thereby.



3,869,267

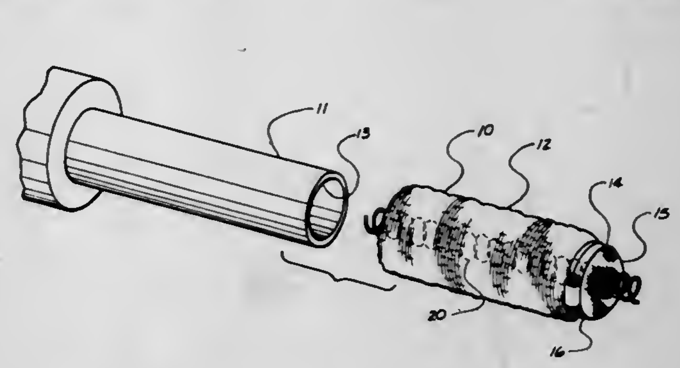
EXHAUST GAS FILTER

Josephine Gaylor, 203 Almenter, Rock Hill, Mo. 63119

Filed Sept. 4, 1973, Ser. No. 394,173

Int. Cl. B01d *39/06*

U.S. Cl. 55—492 **4 Claims**



1. A gas filter for an exhaust pipe comprising:

a. a body of fibrous filter material having a non-rigid periphery adapted to be received in the exhaust pipe,

b. a base member at one end of said body including a screen and an exhaust pipe mounting means, and

c. an elongate core member within said body attached to said base member in cantilever relation and extending substantially the length of said body to support said fibrous material and substantially expose the transverse area of the other end of said body to permit substantially unimpeded longitudinal flow of gas through the fibrous material.

3,869,268

METHOD AND APPARATUS FOR CHOPPING FIBERS

Thomas J. Briar, Trafford, and William L. Schaefer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1973, Ser. No. 423,838

Int. Cl. C03b *37/02*

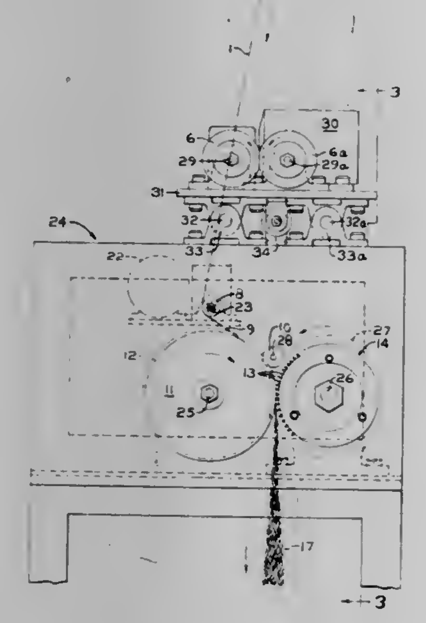
U.S. Cl. 65—2 **15 Claims**

1. A method of preparing particulate glass fiber strand comprising:

forming a plurality of continuous glass filaments from a glass fiber bushing;
applying a size to said filaments;
consolidating said filaments into one or more continuous glass fiber strands;
passing said strand or strands into an attenuation zone, attenuating said strand or strands and the filaments associated therewith in said zone;
passing the strand or strands from said attenuation zone to a cutting zone;
feeding said strand or strands between cutting blades and a resilient surface capable of being depressed by said cutting blades, to thereby cut said continuous strand or strands into discrete lengths;

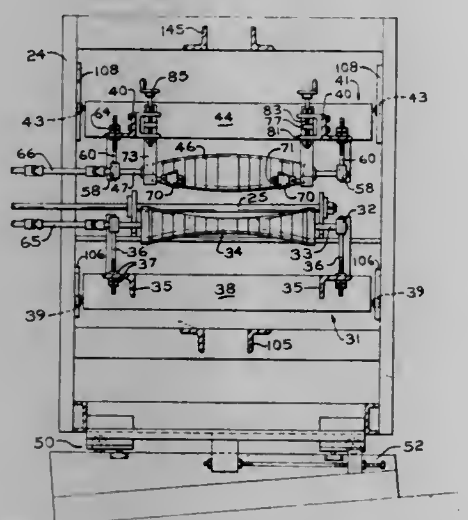
controlling the vibration of the cutting blades while cutting said strand into discrete lengths by holding said blades in a mounting maintained between 0.002 to 0.004 inch greater than the width of the mounting section of said blades; and

collecting said discrete lengths of glass fiber strand so formed.



3,869,269
METHOD AND APPARATUS FOR PRESS SHAPING HEAT-SOFTENED SHEETS

Isaac D. Knapp, Galion, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 20, 1973, Ser. No. 371,910
Int. Cl. C03c *23/02*
U.S. Cl. 65—106 **21 Claims**



1. Apparatus for shaping a deformable sheet by roll forming while continuously moving the latter through said shaping apparatus comprising

an upper set of rotatable shaping rolls,

a lower set of rotatable shaping rolls,

each shaping roll of one set having a longitudinally extending surface, each shaping roll of the other set having a longitudinally extending surface and each shaping roll of said one set having a shape complementary to a corresponding shaping roll of said other set, the longitudinally extending surface of at least one of said shaping rolls having a portion thereof which approaches the central longitudinal axis of that roll to provide a wide space between said portion of that roll and a corresponding portion of an adjacent roll of its set,

supporting means for mounting auxiliary roller means in said wide space in a position to contact a portion of said deformable sheet conveyed through said shaping apparatus, and

auxiliary roller means mounted on said supporting means.

3,869,270
GLASS COLOUR CHANGES

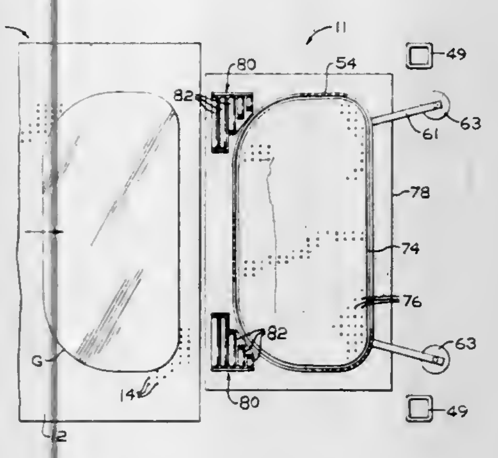
Michael Brungs, Concord, New South Wales, and John Burniston, Highgate, both of Australia, assignors to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia
Filed Aug. 7, 1973, Ser. No. 386,446
Int. Cl. C03b *5/16*
U.S. Cl. 65—134 **4 Claims**

1. A method of reducing foam formation in a furnace during a changeover from a glass melt of highly oxidized state of one colour to a reduced state of a different colour which comprises gradually, by a series of steps, changing the oxidation state by adding reducing substance to the batch until the melt is on the verge of colour instability and then introducing sufficient colourants and reducing substances to produce a stable reduced state.

3. A method of reducing foam formation in a furnace during a changeover from a glass melt of highly reduced state of one colour to an oxidized state of a different colour which comprises gradually, by a series of steps, changing the oxidation state by removing reducing substances from the batch until the melt is on the verge of colour instability and then removing colourant and sufficient reducing substances to produce a stable oxidized state.

3,869,271
SHAPING GLASS SHEETS

Paul D. Shaffer, Tyrone; Vaughn R. Imler, Claysburg, and Jack D. Morrissey, Tyrone, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 26, 1973, Ser. No. 383,021
Int. Cl. C03b *23/02*
U.S. Cl. 65—273 **12 Claims**



1. In an apparatus for conveying and shaping glass sheets along a horizontal path of movement, comprising

an elongated heating furnace and a shaping station disposed in end-to-end relation,

an outline shaping ring mold disposed in said shaping station,

a first porous bed within said heating furnace providing gas for supporting glass sheets in floating relation thereover during movement therethrough,

a second porous bed within said shaping ring mold providing gas for supporting one of said glass sheets at a time in floating relation thereover, said shaping ring mold having a trailing longitudinal edge and a leading longitudinal edge, at least one terminal portion of said trailing longitudinal edge being disposed so that a substantial space exists between said portion of said trailing edge and said first porous bed, and

roller means rotatably supported in said space so as to contact and support a portion of the glass sheet that sags below its horizontal path of movement.

3,869,272
MANGANESE MICRONUTRIENT

Richard J. Windgasen, East Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.
Continuation of Ser. No. 222,374, Jan. 31, 1972, abandoned. This application Sept. 19, 1973, Ser. No. 398,656
Int. Cl. C05f *11/00;* **C05d** *9/02*
U.S. Cl. 71—1 **5 Claims**

1. An aqueous ammoniacal divalent manganese plant nutrient solution, said solution containing from about 3 to about 8 weight percent soluble divalent manganese metal and having a pH of from about 9 to about 12, said solutin consisting of (A) an amount of a divalent manganese-affording compound soluble in said solution sufficient to provide said amount of manganese metal, (B) at least one mol of citric acid anion per mol of divalent manganese metal, (C) from about 0.01 to about 5 weight percent sodium bisulfite, (D) an amount of ammonia sufficient to provide said solution pH, and (E) water.

3,869,273
COMPOSITIONS AND METHOD FOR ALTERING PLANT GROWTH WITH AN ALKYLENEBISDITHIOCARBAMATIC COMPLEX

Robert L. Noveroske, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 138,751, April 29, 1971, Pat. No. 3,755,394, which is a continuation-in-part of Ser. No. 39,899, May 22, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 353,196
Int. Cl. A01n *21/02, 9/00*
U.S. Cl. 71—77 **13 Claims**

1. A method comprising contacting plants, plant parts and their habitats with a plant growth-altering amount of a metallic zinc-containing alkylenebisdithiocarbamate:ethylenepolyamine complex compound wherein the metal is from 30 to 100 mole percent zinc and from 70 to 0 mole percent of additional metal consisting of one or more of manganese, nickel, iron, cobalt or copper; the ethylene polyamine corresponds to one or more compounds of the formula

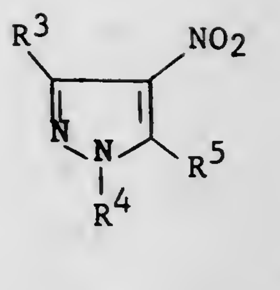
$NH_2—(CH_2CH_2NH)_n—H$

in which *n* represents an integer from one to five, inclusive; and the molar ratio of zinc to the polyethylenepolyamine is from 8:1 to 3:1, inclusive.

3,869,274
METHOD AND COMPOSITION FOR INDUCING FRUIT ABSCISSION

Aldo Joseph Crovetti, Lake Forest; Donald Sykes Kenney, Northbrook; Don Murl Lynch, Waukegan, and Robert George Stein, Kenosha, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 21, 1972, Ser. No. 282,889
Int. Cl. A0ln *9/22*
U.S. Cl. 71—92 **6 Claims**

1. A method of inducing the abscission of fruit from fruit-bearing plants comprising the step of treating plants bearing substantially mature fruit with a composition comprising an effective amount of a compound having a formula



where R^5 is halo, R^4 is hydrogen, and R^3 is alkyl, in an agronomically acceptable carrier.

3,869,275
HERBICIDAL MIXTURES

Friedrich Arndt, Aich, and Gerhard Boroschewski, Berlin, both of Germany, assignors to Schering AG, Berlin and Bergkamen, Germany
Continuation of Ser. No. 95,410, Dec. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 760,692, Sept. 18, 1969, abandoned. This application Feb. 26, 1973, Ser. No. 335,704
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **3 Claims**

1. A process for the selective control of weeds without substantial damage to crop plants which comprises the post-emergence application of a herbicidal composition consisting essentially of herbicidally effective amounts of 3-cyclohexyl-5,6-trimethylene uracil and a carbamate selected from the group consisting of methyl-N-(3-N′-(3′-methylphenyl)-carbamoyloxy)-phenyl)carbamate, methyl-N-(3-N′-phenylcarbamoyloxy-phenyl)-carbamate, ethyl-N-(3N′-(3′-methylphenyl)-carbamoyloxy)-phenyl)-carbamate, and methyl N-(3-N′-(3′-, 5′-dimethylphenyl)-carbamoyloxy)-phenyl)-carbamate, the ratio of the weight of said uracil to the carbamate being about 1:1.

3,869,276
NOVEL INDUSTRIAL WEED CONTROL COMPOSITIONS

Michael A. Priola, Briarcliff Manor, N.Y., and Ernest C. Carver, Hazlet, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 1, 1972, Ser. No. 249,033
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **21 Claims**

1. A liquid herbicidal formulation consisting essentially of (a) about 8–20 percent by weight pentachlorophenol, (b) about 20–40 percent by weight 2,4-bis(isopropylamino)-6-methoxy-s-triazine, and (c) about 20–40 percent by weight of a non-water soluble surfactant, in admixture with a dipolar, aprotic, organic solvent.

3,869,277
HERBICIDAL COMPOSITION AND METHODS

Julius Berger; David Pruess, both of Passaic, and James Parnell Scannell, Bloomfield, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Filed May 16, 1973, Ser. No. 361,013
Int. Cl. A01n *9/20*
U.S. Cl. 71—113 **2 Claims**

1. A method of controlling undesirable plants by postemergent treatment which comprises applying to said plants a herbicidally effective amount of a composition comprising a herbicidal adjunct and, as the active ingredient, a herbicidally effective amount of a compound selected from the group consisting of L-trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid and acid addition salts thereof.

3,869,278

HYDROXYLAMINES AND DERIVATIVES THEREOF AS ABSCISSION AGENTS

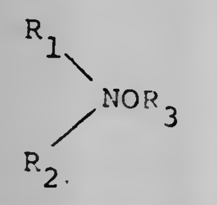
Merrill Wilcox, 2911 N.W. 30th Ter., Gainesville, Fla. 32601

Continuation-in-part of Ser. No. 275,657, July 27, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,312

Int. Cl. A01n

U.S. Cl. 71—121 **7 Claims**

1. A method of aiding in the harvesting of fruit wherein abscission is included, which method comprises applying to the fruit bearing plant an effective amount of a compound of the formula:



wherein R_1 and R_2 represent independently hydrogen, C_1–C_6 alkyl radicals; and R_3 represents hydrogen, C_1–C_6 alkyl, alkylcarbonyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, phenylcarbonyl or phenylcarbamoyl; the alkyl substitution on the R_3 groups containing from 1–6 carbon atoms; or the acid, alkali and alkaline-earth metal salts thereof.

3,869,279

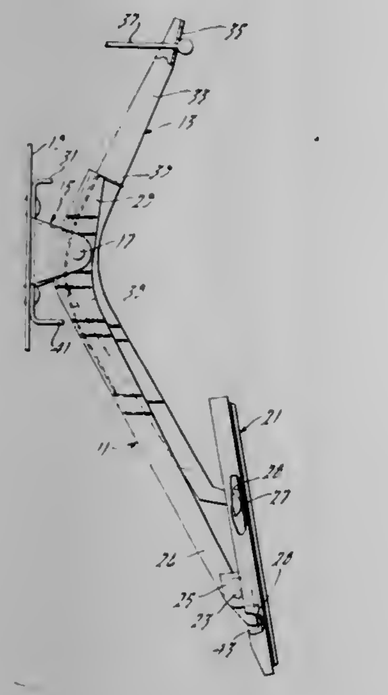
ACCELERATOR PEDAL ASSEMBLY

Delmar C. Grimes, Flint, and Raymond Stocker, Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,821

Int. Cl. G05g *1/14*

U.S. Cl. 74—513 **7 Claims**



1. A pedal assembly suitable for use as an accelerator for an automotive vehicle, said pedal assembly comprising:

a first lever,
a second lever,
mounting means secured to the body of the automotive vehicle or the like,
said first and second levers being attached to said mounting means to pivot about a common axis,
said first lever being pivotable relative to said second lever,
a pedal pad pivotally attached to one end of said first lever,
said second lever being connected at one end to motion transfer means to connect the pedal assembly and remote element,
said second lever at its other end slidably engaging the pedal pad.

3,869,280

PROCESS FOR GOLD PRECIPITATION

Darwin James Langlois, Lewiston, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1973, Ser. No. 353,913

Int. Cl. C22b *11/04*

U.S. Cl. 75—.5 A **4 Claims**

1. In a process for preparing finely divided gold powder by reductive preciptiation of gold from an aqueous solution of gold chloride, the improvement of adding to the aqueous solution of an amount of polyvinyl alcohol effective to reduce agglomeration of the gold precipitate, whereby a substantially nonagglomerated fine gold powder of reduced bulk density is produced, which is fireable over a wide temperature range to films of enhanced brightness and continuity.

3,869,281

REMOVAL OF NICKEL FROM MOLTEN MAGNESIUM METAL

George S. Foerster, Monmouth Jct., N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,367

Int. Cl. C22b *45/00*

U.S. Cl. 75—67 **2 Claims**

1. A process for removing nickel metal from magnesium metal, in which the nickel content is present in amount up to about 0.2%, which comprises adding zirconium metal and aluminum metal to said magnesium metal to form a ternary phase Zr-Al-Ni which is insoluble in said magnesium metal, and separating the ternary phase from the resultant purified magnesium metal.

3,869,282

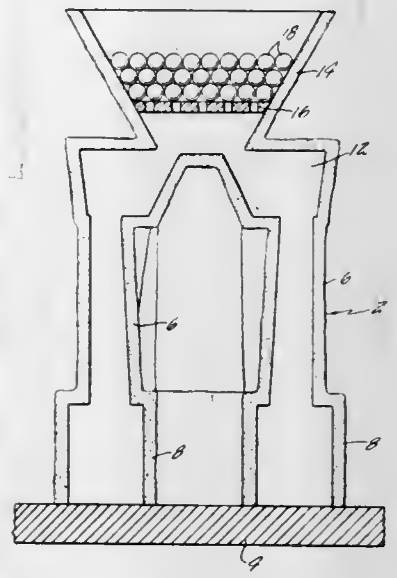
METHOD OF CLEANING NICKEL ALLOY BY FILTERING

Patrick M. Curran, Center Rd., Tolland, Conn. 06084; Geoffrey R. Brazer, 1404 McClelland, Salt Lake City, Utah 84105, and John S. Erickson, RFD No. 1, Waterhole Rd., Colchester, Conn. 06415

Division of Ser. No. 291,126, Sept. 21, 1972, Pat. No. 3,815,661. This application Mar. 20, 1974, Ser. No. 452,856

Int. Cl. C22c *1/00*

U.S. Cl. 75—82 **2 Claims**



1. The process of cleaning a molten nickel base alloy containing a dross said alloy including as an essential element a metal subject to oxidation during preparation of the molten alloy and said dross comprising an oxide of said metal, by removing the dross from the alloy, said removal comprising the steps of heating a ceramic filter consisting of a bed of a plurality of substantially spherical ceramic particles made of an oxide, said bed having more than one layer of said ceramic particles in contact with one another, and pouring the molten alloy containing dross through said filter whereby metal oxides of the dross are caused to adhere to the particles and be retained thereby, and recovering substantially dross free alloy.

3,869,283

ALLOYING STEELS

Emrys Davies, Brymbo, near Wrexham, Wales, and John Roy Rippon, Sheffield, England, assignors to British Steel Corporation, London, England

Continuation of Ser. No. 80,553, Oct. 14, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,451

Claims priority, application Great Britain, Oct. 15, 1969, 50609/69

Int. Cl. C22c *33/00*

U.S. Cl. 75—129 **16 Claims**

1. A method of adding an alloying addition to a particular steel, the method comprising the steps of heating the steel in a furnace to a temperature substantially above that at which said particular steel is normally heated for tapping into a ladle for teeming into ingot molds, tapping the steel from the furnace into a ladle while it is at a temperature substantially above that at which it is customarily tapped from the furnace for teeming into ingot molds, passing gas through the steel in the ladle, the passage of gas being such that turbulence is created in the steel and a turbulent zone is created at the surface thereof, simultaneously adding said alloying addition to the steel in the region of said turbulent zone while said steel is at a temperature sufficient to ensure solution of said alloying addition, removing any toxic fumes generated by the alloying addition, continuing to pass gas through the steel so as to maintain turbulence therein and permitting the steel to cool until the temperature thereof reaches the customary teeming temperature for said particular steel, and teeming the steel into molds.

3,869,284

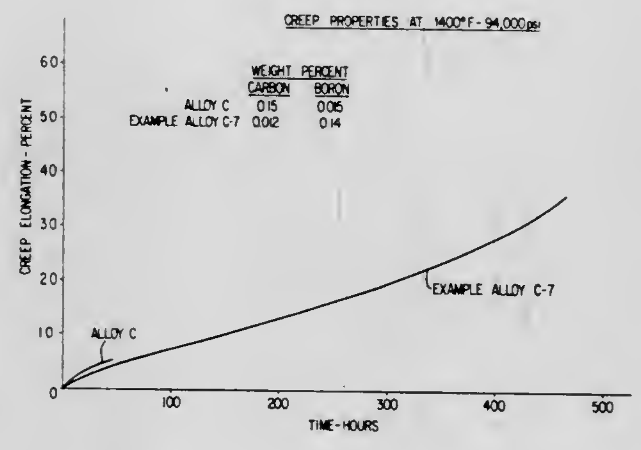
HIGH TEMPERATURE ALLOYS

James French Baldwin, 220 Mac Farlane, Delray Beach, Fla. 33444

Filed Apr. 2, 1973, Ser. No. 346,815

Int. Cl. C22c *19/00*

U.S. Cl. 75—134 F **53 Claims**



1. A nickel base alloy for use at relatively high temperatures consisting essentially of the following elements in the weight percent ranges set forth:

Elements	Percent
Chromium	5–22
Aluminum	0.2–8
Titanium	0.5–7
Boron	0.07–0.25
Carbon	less than 0.05%
Cobalt	0.00–20
Columbium	0.00–3
Molybdenum	0.00–8
Tantalum	0.00–10
Vanadium	0.00–2
Tungsten	0.00–20
Rhenium	0.00–2
Zirconium	0.00–1.00.

the balance of the alloy being essentially nickel and minor amounts of impurities and incidental elements which do not detrimentally affect the basic characteristics of the alloy, said nickel being present in an amount of from about 35% to 85% by weight.

3,869,285

PLATE-MAKING MASTER AND METHOD FOR PRODUCING A PRINTING PLATE WHICH DOES NOT REQUIRE DAMPENING WATER

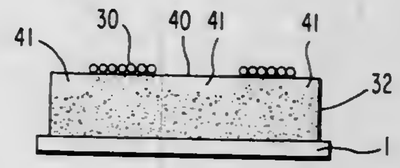
Asaji Kondo; Shinzo Kishimoto; Kenichiro Yazawa; Shizuo Miyano, and Satoru Honjo, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed May 15, 1973, Ser. No. 360,511

Claims priority, application Japan, May 15, 1972, 47-47977

Int. Cl. G03g ; G03f *7/02*

U.S. Cl. 96—1 R **14 Claims**



1. A method for producing a printing plate that does not require dampening water during printing, which comprises electrostatically charging a plate-making master, said master comprising a support and a photosensitive layer formed thereon consisting essentially of a mixture of a photoconductive substance and a silicone rubber in a ratio of 6-0.1:1, uniformly in a dark place, exposing it through an original, developing it with a toner, fixing the toner by heating thereby to form on said master an ink receptive portion having the toner adhered thereto and an ink repelling portion free from the toner, and then treating the resulting plate with an acid to thereby dissolve the photoconductive substance at the portion free from the toner.

3,869,286

PHOTOELECTROPHORETIC IMAGING WITH COPPER-REE CHLOROPHYLL IN THE CARRIER LIQUID

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1973, Ser. No. 425,015

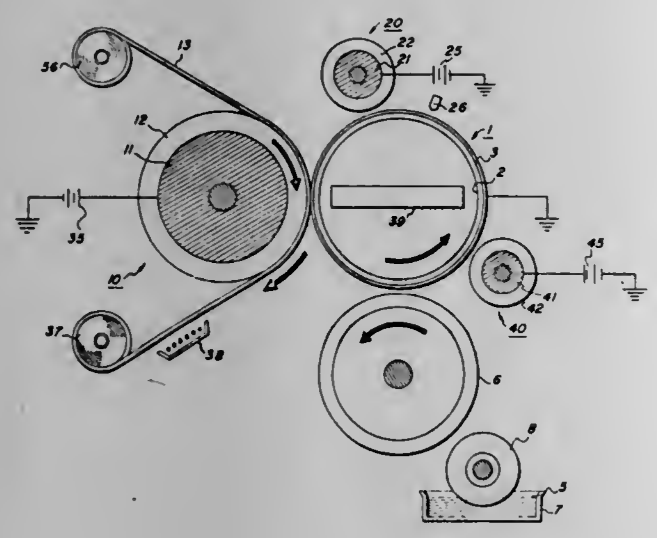
Int. Cl. G03g *13/22*

U.S. Cl. 96—1 PE **7 Claims**

1. A method of imaging which comprises:

a. providing a layer of a suspension of electrically photosensitive particles in an insulating carrier liquid on a first electrode, said imaging suspension also containing copper-free chlorophyll;
b. exposing said suspension to a pattern of electromagnetic

radiation to which at least a portion of said particles are responsive, and



c. applying an electrical field across said suspension until an image is formed.

3,869,287
COLOR PHOTOGRAPHIC MATERIALS

Tadao Sakai; Nobuo Yamamoto; Masakazu Yoneyama; Masao Sawahara, and Takeshi Hirose, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1973, Ser. No. 360,507

Claims priority, application Japan, May 16, 1972, 47-48451

Int. Cl. G03c *7/16, 5/52, 7/24*

U.S. Cl. 96—22 **10 Claims**

1. A color photographic material comprising a support having thereon at least one blue-sensitive silver halide emulsion layer containing a yellow dye-forming coupler, at least one red-sensitive emulsion layer containing a cyan dye-forming coupler, at least one green-sensitive emulsion layer containing a magenta dye-forming coupler, and at least one silver halide emulsion layer containing a bleach inhibitor having at least two oxyethylene groups, said silver halide emulsion layer substantially not being capable of forming a dye image for picture recording.

3,869,288
METHOD OF DEVELOPING COLOR FILM

Leopold S. Godowsky, 19 Stony Point Rd., Westport, Conn. 06880

Continuation of Ser. No. 118,515, Feb. 24, 1971, abandoned. This application July 25, 1973, Ser. No. 382,470

Int. Cl. G03c *7/16*

U.S. Cl. 96—22 **8 Claims**

1. The method of developing exposed color film having a photographic emulsion comprising a plurality of layers each containing a silver halide and a different color coupler which comprises subjecting the exposed film emulsion to contact with an inactively-acidic aqueous color developer solution for a sufficient period of time for the developer solution to pervade the emulsion and thus establish a uniform concentration of the developer in and throughout each of said layers, and immediately thereafter effecting permeation of the thus-treated emulsion with a spray of small droplets of a strongly alkaline aqueous solution substantially exclusively by diffusion free from agitation into said emulsion layers and thus rendering substantially the entire content of said developer in each layer reactive with respect to the exposed silver salt and coupler therein. .

3,869,289
NOVEL COMPOSITIONS AND PHOTOGRAPHIC PROCESSES

Charles F. Amering, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 104,690, Jan. 7, 1971,. This application Feb. 15, 1973, Ser. No. 332,964

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.3 **10 Claims**

1. A photographic developing composition comprising water, a silver halide developing agent and reaction products of a thioamine which is cysteine, cystine, DL-penicillamine, DL-homocysteinethiolactone or 2-aminoethanethiol with glutaraldehyde or with glutaraldehyde bisulfite in which said reaction products are obtained by reacting a mixture having a molar ratio of from about 4 to 1 to about 1 to 60 of said thioamine to glutaraldehyde or glutaraldehyde bisulfite.

3,869,290
PHOTOGRAPHIC SILVER HALIDE ELEMENTS OF THE LIPPMANN-TYPE

Herman Adelbert Philippaerts, Edegem; Robert Joseph Pollet, Vremde; Antoon Leon Vandenberghe, Hove, and Jozef Frans Willems, Wilrijk, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

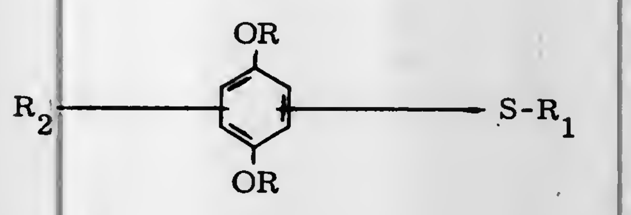
Filed Nov. 3, 1972, Ser. No. 303,403

Claims priority, application Great Britain, Nov. 10, 1971, 52289/71

Int. Cl. G03c *1/34*

U.S. Cl. 96—76 R **5 Claims**

1. Photographic silver halide emulsion including a silver halide and hydrophilic colloid binder, said emulsion being of the Lippmann type having an average grain size of less than 100 nm and comprising from 20 mg to 2 g per mole of silver halide of a compound of the formula:



wherein:

R is hydrogen, acyl, haloacyl or acyl carrying a quaternary ammonium group,

R_1 is an aliphatic, aromatic or heterocyclic group, and

R_2 is hydrogen, the group -S-R_1 or one or more substituents selected from alkyl, aryl, halogen, hydroxyl and alkoxy;

the ratio of silver halide to hydrophilic colloid binder in the emulsion being from 1 : 2 and 4 : 1.

3,869,291
SILVER HALIDE LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL CONTAINING COLOR COUPLER MASKING COMPOUND AND DEVELOPMENT INHIBITOR RELEASING COMPOUND

Helmut Mader, Odenthal-Hahnenberg; Rigobert Otto, Leverkusen; Paul Marx, Cologne, and Walter Puschel, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 205,282, Dec. 6, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 419,996

Claims priority, application Germany, Dec. 8, 1970, 2060196

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **3 Claims**

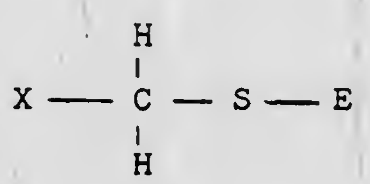
1. In a light-sensitive color-photographic material comprising at least one light-sensitive silver halide emulsion layer, which layer contains the following compounds:

a. a colorless non-diffusing color coupler I which gives a non-diffusing image dye on reaction with color developer oxidation products;

b. a non-diffusing mask former II which forms, during photographic processing, a color mask suitable for masking the side density of the image dye; said mask former being selected from the group consisting of an osazone, an amidrazone, and a colored masking coupler;

c. a colorless non-diffusing non-preformed DIR-compound III which is a thioether and which splits off a diffusing development-inhibiting substance during reaction with color developer oxidation products;

the improvement according to which the non-preformed DIR-compound III does not contribute towards formation of the image dye during photographic processing and has the formula



$$X-\overset{\displaystyle H}{\underset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-S-E$$

in which

E represents aryl or an aromatic heterocyclic group; and

X represents a benzoyl group carrying at least one substituent which contains an alkyl radical with at least 10 carbon atoms.

3,869,292
LIGHT-SENSITIVE COMPOSITIONS AND LIGHT-SENSITIVE MATERIALS SUCH AS PRINTING PLATES

Martinus T. J. Peters, Venlo, Netherlands, assignor to Oce-van der Grinten, N.V., Venlo, Netherlands

Filed May 3, 1973, Ser. No. 357,025

Claims priority, application Great Britain, May 5, 1972, 21191/72

Int. Cl. G03f *7/08;* **G03c** *1/52*

U.S. Cl. 96—115 R **10 Claims**

1. A light-sensitive composition for graphic arts such as for sensitizing printing plates, comprising a mixture of a light-sensitive diazo or azido compound and, per part of said compound, about 0.2 to 20 parts by weight of a vinyl phenol resin produced by normal vinyl polymerization and selected from the group consisting of homopolymers and copolymers of ortho-, meta-, and para-vinyl phenols and wherein, when said resin is a copolymer, the comonomer of the copolymer is another vinyl compound.

3,869,293
INORGANIC COATING COMPOSITIONS AND A METHOD

Robert J. Brumbaugh, Pottstown, Pa., assignor to Teleflex Incorporated, North Wales, Pa.

Continuation-in-part of Ser. No. 169,854, Aug. 6, 1971, abandoned. This application July 23, 1973, Ser. No. 381,642

Int. Cl. C04b *35/04;* **C09d** *1/00*

U.S. Cl. 106—14 **15 Claims**

1. A composition consisting essentially of a dispersion of inorganic solid particulate material in an aqueous solution the solute of which consists essentially of a combination of inorganic compounds selected from the group consisting of phosphoric acid, chromic acid, molybdic acid and the metal salts of said acids, the combination of compounds in said solution being such as will provide at least 1 mol per liter dissolved phosphate, at least 0.3 mol per liter dissolved material selected from the group consisting of chromate and molybdate, and at least 0.5 mol per liter dissolved metal, said solid particulate material being present in an amount of from about 10 to 2000 grams per liter of said solution, at least about 1% by weight of said solid particulate material being an alloy containing at least about 3% by weight aluminum and at least about 0.5% by weight magnesium, and at least about 0.5% of the total weight of said solid particulate material being magnesium alloyed with aluminum, the aluminum and magnesium constituting more than 50% by weight of said alloy, said composition being heat curable upon drying thereof to a substantially water insoluble material with said solid particulate material being bonded therein.

12. An article of manufacture comprising a solid substrate having deposited thereon a layer formed by drying and heat curing to water insolubility a coating consisting essentially of a mixture of powder in an aqueous solution the solute of which consists essentially of a combination of inorganic compounds selected from the group consisting of phosphoric acid, chromic acid, molybdic acid and the metal salts of said acids, the combination of compounds in said solution being such as will provide at least 1 mol per liter dissolved phosphate, at least 0.3 mol per liter dissolved material selected from the group consisting of chromate and molybdate, and at least 0.5 mol per liter dissolved metal, at least about 1% by weight of said powder being an alloy containing at least about 3% by weight aluminum and at least about 0.5% by weight magnesium, and at least about 0.5% of the total weight of said powder being magnesium alloyed with aluminum, the aluminum and magnesium constituting more than 50% by weight of said alloy said powder being present in said solution in an amount of about 250 to 1000 grams per liter of said solution and being bonded in said layer after curing thereof.

3,869,294
PHOSPHONITRILE POLYMER

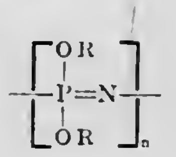
Carroll W. Lanier, Zachary, and James T. F. Kao, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 5, 1973, Ser. No. 337,825

Int. Cl. C09d *5/18*

U.S. Cl. 106—15 FP **9 Claims**

1. A process for producing a fire retardant phosphonitrilate polymer comprising the steps of (a) heating an organophosphazene of general formula



$$-\left[\overset{\displaystyle OR}{\underset{\displaystyle OR}{\overset{|}{\underset{|}{P}}}}=N\right]_n-$$

wherein R is an organic radical of 1 to 8 carbon atoms and n is an integer of at least 3 to about 35 where R has 8 carbon atoms up to about 90 where R has 1 carbon atom with from about 1 to about 50 weight percent of a phosphonitrilic halide of general formula

$$(PNX_2)_n$$

wherein X is a halogen and n is an integer of at least 3 to about 90 to drive off an organic halide, and (b) reacting the resultant polymer with from about 1 to about 15 weight percent based on the weight of said resultant polymer of aqueous solution containing from about 5 to about 50 weight percent of alkali or alkaline earth metal hydroxide.

3,869,295
UNIFORM LIGHTWEIGHT CONCRETE AND PLASTER

Andrew D. Bowles, and Samuel J. Parsons, both of box 2405, Anchorage, Alaska 99501

Continuation-in-part of Ser. No. 24,022, March 30, 1970, Pat. No. 3,764,357. This application Mar. 23, 1973, Ser. No. 344,431. The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **26 Claims**

1. In a method of preparing lightweight building material wherein

- a lightweight aggregate comprising expanded polystyrene beads is admixed with an aqueous medium and inorganic cementitious material in amounts to produce a coherent formable uncured lightweight matrix which sets upon standing,
- said matrix is formed into a body of uncured lightweight self-setting building material having a desired configuration and
- said body is maintained in the desired configuration until it sets and the resulting set body is cured to form cured lightweight building material,
- the improvement which comprises preparing the coherent formable uncured lightweight matrix from an aggregate consisting essentially of polystyrene beads expanded in hot water, the said polystyrene beads containing water from the expansion thereof in the hot water and the said water content causing the polystyrene beads to have a weight of at least 3 pounds per cubic foot, the polystyrene beads being admixed with the aqueous medium and inorganic cementitious material in the absence of an added homogenizing agent which aids in coating the polystyrene beads with the cementitious material, and the said body upon setting and curing being coherent and substantially free of cracks.

3,869,296

AQUEOUS STARCH-PIGMENT PAPER COATING COMPOSITIONS CONTAINING GLYOXAL-UREA INSOLUBILIZER

George Bernard Kelly, Jr., Gaithersburg, Md., and Robert Howard Lowery, Alum Creek, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 239,331, March 29, 1972, abandoned. This application June 20, 1973, Ser. No. 371,606

Int. Cl. C08b *25/02, 27/02*

U.S. Cl. 106—214 **5 Claims**

1. A paper coating composition of a pigment, starch and a latent water insolubilizer for said starch, said latent water insolubilizer being the reaction product of from 0.5 to 0.75 mole of urea per mole of glyoxal and having an average molecular weight of from 250 to 325, and being present in said composition at a concentration of from 2 to 10 percent by weight based on the weight of the starch.

3,869,297

ALUMINUM COATINGS BASED ON CLAY-EMULSIFIED ASPHALTS

Robert C. Bellomy, Baltimore, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 15, 1970, Ser. No. 46,518

Int. Cl. C08h *13/00;* **C08k** *1/62;* **C09d** *3/24*

U.S. Cl. 106—277 **6 Claims**

1. A coating composition consisting essentially of (1) about 750 parts by weight of a clay base asphalt emulsion having a non-volatile residue of from 30 to 55 percent weight and a clay to asphalt ratio of from about 0.05–0.40:1, wherein said asphalt has a penetration of 0 to about 250 at 77°F., a softening point in the range of from about 80° to about 300°F., and a mean particle size of from 4 to about 100 microns; (2) from about 50 to about 250 parts by weight of aluminum paste, the aluminum of said aluminum paste having been treated with an inhibitor to prevent reaction of the aluminum with water; (3) from about 50 to about 150 parts by weight mica; (4) from zero to about 2.5 parts by weight of a mixing stability additive; (5) from zero to about 250 parts by weight additional water; and (6) from zero to about 5 parts by weight sodium citrate hydrate with the proviso that the ratio of clay emulsion solids from said clay base asphalt emulsion to aluminum metal from said aluminum paste is in the range of from 1.5–8.0:1.

3,869,298

IRON OXIDE PIGMENTS AND PROCESS FOR THE PRODUCTION THEREOF

Morio Suzuki, Koube; Masayoshi Tachibana, Ikeda, and Takayoshi Moriai, Takatsuki, all of Japan, assignors to Teikoku Kako Co., Ltd., Osaki-shi, Japan

Filed Nov. 13, 1972, Ser. No. 305,987

Claims priority, application Japan, Nov. 12, 1971, 46-89786

Int. Cl. C09c *1/24*

U.S. Cl. 106—304 **12 Claims**

1. An iron oxide pigment consisting essentially of plate-like iron oxide particles having a smooth surface and a metallic luster, said surface being covered with a high refractive index transparent coating selected from titanium dioxide, hydrated titanium dioxide, zirconium dioxide and hydrated zirconium dioxide.

3,869,299

METHOD OF PREPARING A CALCIUM CARBONATE-MAGNESIUM HYDROXIDE PIGMENT

John Neil Periard, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 31, 1973, Ser. No. 393,703

Int. Cl. C09c *1/02*

U.S. Cl. 106—306 **21 Claims**

1. In a method of preparing a magnesium hydroxide-calcium carbonate product wherein dolime is slaked to hydrate calcium oxide to calcium hydroxide and magnesium oxide to magnesium hydroxide and the slaked dolime is carbonated to convert the calcium hydroxide to calcium carbonate, the improvement which comprises slaking the dolime in an aqueous solution containing a water soluble boron compound, thereby further enhancing the optical properties of the resultant magnesium hydroxide-calcium carbonate product.

3,869,300

METHOD OF INTERNALLY COATING DUCTS WITH SYNTHETIC RESIN

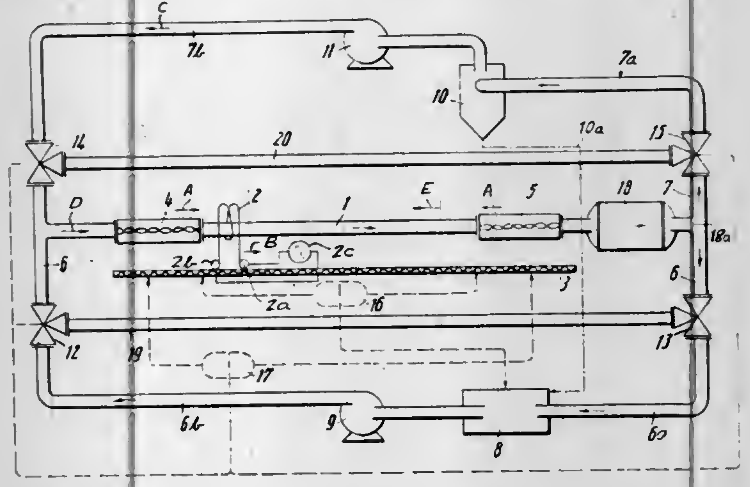
Werner Scheiber, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 22, 1971, Ser. No. 191,940

Claims priority, application Germany, Oct. 24, 1970, 2052314; Dec. 3, 1970, 2059548; Sept. 4, 1971, 2144342; Sept. 4, 1971, 2144377

Int. Cl. B44d *1/094, 1/095*

U.S. Cl. 117—17 **6 Claims**



1. A method of coating a surface of an elongated metal pipe, comprising the steps of:
   - a. clamping said pipe between seals and incorporating it in a closed gas-circulating system;
   - b. relative by displacing said pipe in a first direction through an induction coil to heat said pipe along at least the inner surface thereof;
   - c. sweeping a gas stream along said heated inner surface at a velocity between 3 and **10m/sec** with reference to said surface;
   - d. charging said gas stream with particles of a synthetic resin flowable at an elevated temperature, said particles having a particle size of 5 to 300 microns and being charged into said gas stream at a rate of 1,200 to 2,000 g/m^3 (STP) thereof whereby said gas stream entrains said particles and said particles are fritted to said inner heated surface;
   - e. cooling said gas stream upon its emergence from contact with said inner heated surface;
   - f. recharging said cooled gas stream by metering additional synthetic resin particles at substantially the same rate at which said synthetic particles are fritted onto said inner heated surface;
   - g. recirculating said recharged cooled gas stream into contact with said inner heated surface to frit additional synthetic particles onto said surface;
   - h. separating excess resin particles nonadherent to said inner heated surface from said gas stream upon its emergence from contact with said inner heated surface to form a particle free gas stream;
   - i. cooling said particle free gas stream;
   - j. recirculating said cooled particle free gas stream while simultaneously induction heating said pipe with said coil to effect coalesence of the resin particles fritted to said inner surface by relatively displacing said pipe and said coil in the opposite direction to the movement in step (h); and
   - h. cooling said resin coated pipe to room temperature.

3,869,301

HOLOGRAPHIC RECORDING MATERIAL FOR INFRARED RADIATION

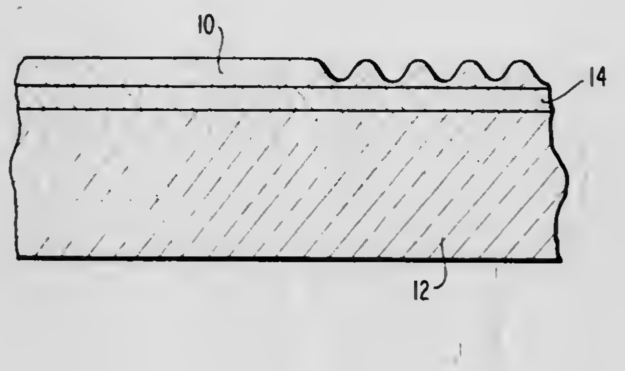
Gernot Decker, Garching; Hans Herold, Oberschleissheim, and Horst Rohr, Garching, all of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschafton e.V., Gottingen, Germany

Filed June 11, 1973, Ser. No. 368,987.

Claims priority, application Germany, June 16, 1972, 2229476

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.1 **6 Claims**



1. A holographic rrcording assembly for use with infrared radiation comprising, in combination: a surface layer which is relatively transparent to the infrared radiation and is vaporizable by the effects of infrared radiation, and a substrate which is relatively highly absorbent of infrared radiation for receiving the infrared radiation passing through said surface layer, and wherein the surface layer, which is vaporizable by the effects of infrared radiation absorbed by said substrate, is deposited on said substrate; whereby vaporization of the actual recording layer takes place primarily beneath this layer in the vicinity of said substrate on which said surface layer is deposited by virtue of the infrared radiation absorbed by saaid substrate after passing through the surface layers.

3,869,302

METHOD FOR MANUFACTURE OF GRAPHITE FLOUR

Frederick L. Shea; Mack P. Whittaker, both of Johnson City, and Lloyd I. Grindstaff, Elizabethton, all of Tenn., assignors to Great Lake Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 61,808, Aug. 6, 1970, abandoned. This application Aug. 1, 1972, Ser. No. 276,990

Int. Cl. C01b *31/04*

U.S. Cl. 117—46 CC **7 Claims**

1. A method for the manufacture of graphite flour which comprises:
   - a. nebulizing a graphitizable, carbon-forming pitch of coal or petroleum origin into spheres of about 10 to about 3000μ diameter;
   - b. coating the surface of the spheres with a thermosetting resin and setting the resin to prevent coalescence thereof when heating to above their melting point while in contact therebetween; and
   - c. carbonizing and graphitizing the coated spheres by heating to about 800°C.–1,000°C. then to about 2,500°C. – 3,000°C. in an inert atmosphere.

3,869,303

METHOD OF SURFACE MODIFICATION OF POLYMER MATERIALS

Vladimir Alexandrovich Orlov, Smolenskaya ulitsa, 10, kv. 101; Vera Dmitrievna Zaitseva, Novo-Gireevskaya, 4, kv. 109; Viktor Alexeevich Sinitsyn, ulitsa Festivalnaya, 24, kv. 100, and Ekaterina Efimovna Rostovtseva, Mosfilmovskaya ulitsa, 18, kv. 18, all of Moscow, U.S.S.R.

Continuation of Ser. No. 55,289, July 15, 1970, abandoned. This application Sept. 22, 1972, Ser. No. 291,344

Int. Cl. B44d *1/092*

U.S. Cl. 117—47 A **4 Claims**

1. A method of surface modification of a polymer selected from the group consisting of isoprene rubber, styrenebutadiene rubber, and natural rubber, to thereby improve substantially the surface adhesion properties thereof, comprising treating said polymer with an aqueous solution comprising a mineral acid, a mineral oxidant selected from the group consisting of potassium bromate, potassium permanganate, and sodium perchlorate and a member of the group consisting of sodium, potassium, and zinc salts of hydrochloric, hydroiodic and hydrobromic acids, the water, said mineral acid, said mineral oxidant and said salt in said aqueous solution being taken in a weight ratio of 50–1000:0.3–7:0.1–7:1–15, respectively.

3,869,304

FABRIC COATING BY EXTRUSION DIE-CALENDERING APPARATUS AND METHOD

Jan Janusz Bogulslawski, New York, N.Y.; Paul Geyer, Detroit, Mich., and Frederick Nishwitz Taff, Roxbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

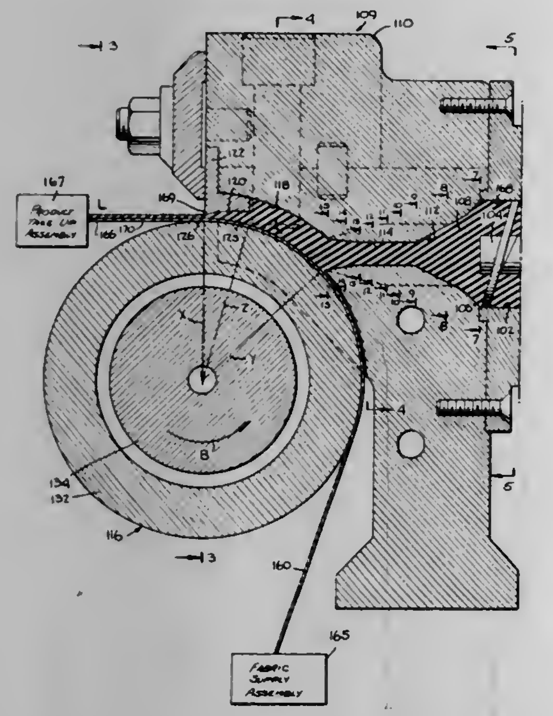
Filed Nov. 20, 1972, Ser. No. 308,142

Int. Cl. B44d *1/44*

U.S. Cl. 117—65.2 **4 Claims**

1. A method of coating a fabric with elastomeric stock wherein improved impregnation of the interstices of the fabric is achieved, said method comprising concomitantly feeding a fabric and extruding elastomeric stock in progressively increasing pressurized contact with said fabric between mutally confronting stationary and movable surfaces, one surface converging toward the other and cooperatively defining a wedge shaped pressure chamber terminating in a restriction orifice; and moving said movable surface in the direction of feed of both said stock and fabric to frictionally carry and wedge said stock and fabric into and through both said cham-

ber and restriction orifice during which interstices of said fabric are increasingly impregnated by said stock as the latter undergoes a reduction in cross-sectional thickness under increasing pressure.



3,869,305

METHOD FOR PRODUCING AN OPAQUE COATING

Ehrlich M. Eiland, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 170,647, Aug. 10, 1971, Pat. No. 3,788,886, which is a continuation of Ser. No. 781,977, Dec. 6, 1968, abandoned. This application Oct. 29, 1973, Ser. No. 410.684. The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.

Int. Cl. B44d *5/06;* **B32b** *15/08*

U.S. Cl. 117—66 **5 Claims**

1. A process for continuous production of an opaque coating on a substrate which comprises:

a. dispersing an organic liquid comprising at least 85% by volume paraffinic hydrocarbons and having a boiling point of at least about 300°F in a lacquer comprising as essential ingredients at least one cross-linkable resin comprising cellulose acetate proprionate or cellulose acetate butyrate having an hydroxyl content of at least about 4%, a cross-linking agent compatible with said resin, and an acid catalyst adapted for promoting cross-linking of said resin with said cross-linking agent, said boiling point being higher than the boiling point of said solvent, thereby forming a substantially clear coating composition comprising a dispersion of droplets of said organic liquid;

b. applying said coating composition to said substrate; and c. heating said coating composition applied to said substrate sufficiently to first drive off said solvent and partially cure said lacquer on said substrate and thereafter drive off said organic liquid, with reaction between said resin and said cross-linking agent, thereby replacing said droplets with voids without any substantial precipitation of said lacquer, said voids scattering light sufficiently to form an opaque coating without requiring the use of dyes or pigments.

5. A process for continuous production of an opaque coating on a coil substrate which comprises:

a. unwinding the coil;

b. dispersing an organic liquid comprising at least 85% by volume paraffinic hydrocarbons and having a boiling point of at least about 300°F in a lacquer comprising as essential ingredients at least one cross-linkable resin comprising celulose acetate propionate or cellulose acetate butyrate having an hydroxyl content of at least about 4%, a cross-linking agent compatible with said resin, a solvent for said resin and said cross-linking agent, and an acid catalyst adapted for promoting cross-linking of said resin with said cross-linking agent, said boiling point being higher than the boiling point of said solvent, thereby forming a substantially clear coating composition comprising a dispersion of droplets of said organic liquid; c. coating said unwound substrate with the clear coating composition of step (b);

d. heating curing said clear coating composition by heating said coating composition applied to said substrate sufficiently to first drive off said solvent and partially cure said lacquer on said substrate and thereafter drive off said organic liquid, with reaction between said resin and said cross-linking agent, thereby replacing said droplets with voids without any substantial precipitation of said lacquer, said voids scattering light sufficiently to form an opaque coating without requiring the use of dyes or pigments; and

e. rewinding said substrate into a coil.

3,869,306

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, toledo, Ohio

Continuation of Ser. No. 398,305, Sept. 22, 1964, abandoned. This application Apr. 17, 1972, Ser. No. 244,589

Int. Cl. B32b *17/04, 17/10*

U.S. Cl. 117—72 **2 Claims**

1. In a glass fiber reinforced elastomeric product in which an elastomeric material constitutes a continuous phase in which the glass fibers are distributed, the improvement in the bonding relationship between the glass fibers and the elastomeric material in which the glass fibers are distributed wherein the glass fibers are in the form of a bundle of a plurality of glass fibers, each of the glass fibers having a thin size coating on the individual surfaces thereof consisting essentially of an anchoring agent in the form of an organo silicon compound having an organic group attached directly to the silicon atom which contains an amino group and an impregnant in the bundle to separate the glass fibers each from the other, said impregnant consisting essentially of a combination of a resorcinol-formaldehyde resin and a rubber.

3,869,307

RECEPTIVE COPY SHEETS AND PROCESS

Douglas A. Newman, and Albert E. Brown, both of Glen Cove, N.Y., assignors to Melvin Sharkey, Hewlett, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,881

Int. Cl. C09j *7/02;* **B41m** *5/02*

U.S. Cl. 117—122 PA **12 Claims**

1. Receptive copy sheet comprising a flexible foundation having on the surface thereof a receptive coating which is capable of being imaged by means of ball-point pen ink, pressure-sensitive transfer compositions and liquid inks, said receptive coating comprising from about 25 percent to 90 percent by weight of a solid adhesive resinous binder material and from about 10 percent to 25 percent by weight, based upon the weight of said binder material, of polymer spheres consisting of an inert synthetic organic polymer and having an average particle size of from about 1 to 40 microns, said coating having said spheres at the surface thereof and being non-adhesive to the touch and said adhesive resinous binder being exudable under the effects of imaging pressure at ordinary room temperatures to displace the polymer spheres and render the surface of the coating adhesive in the impressed areas.

3,869,308

FORMING SIZE FOR GLASS FIBERS AND RESULTING PRODUCT

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 27, 1973, Ser. No. 355,238

Int. Cl. C03c *25/02*

U.S. Cl. 117—126 GB **14 Claims**

8. An improved glass fiber strand suitable for the application of resin thereto and having disposed on the glass fibers an amount from about 0.80 percent to about 2.5 percent by weight of the glass, the dried residue of an aqueous size consisting essentially of 28 percent to 75 percent by weight of a starch; 4 percent to 52 percent by weight of the salt of a polyaminofunctional polyamide resin, said polyaminofunctional polyamide resin salt being formed from the condensation reaction product of a polycarboxcylic acid and a polyamine, said polyamine having greater than 2 amino groups per molecule and the carboxcylic acid having 1 to 5 carbon atoms; 5 to 25 percent by weight of a wax from the group consisting of animal waxes, vegetable waxes, mineral waxes and synthetic waxes and 9 percent to 77 percent by weight of a fatty triglyceride.

3,869,309

ANTISKID AGENT FOR BAGS

Gunnar Johan Fonne, Porsgrunn, and Thor Helge Jahnsen, Siljan, both of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Mar. 21, 1973, Ser. No. 343,473

Claims priority, application Norway, Mar. 21, 1972, 909/72

Int. Cl. B44d *5/00*

U.S. Cl. 117—138.8 **4 Claims**

1. The method of securing stacked bags having plastic surfaces to prevent the slipping of such surfaces in relation to each other, comprising the application of a coating in the form of an aqueous or predominantly aqueous solution of a soluble lignin compound to the surface of the bags, wherein the concentration of the lignin solution is in the range from about 2.5–40% by weight, said aqueous solution being devoid of polymerization promoting components.

3,869,310

FLEXIBLE SHEET MATERIALS

Osamu Fukushima; Kunio Kogame, and Masami Sato, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 22,390, March 24, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,130

Claims priority, application Japan, Apr. 2, 1969, 44-25781; Apr. 24, 1969, 44-32082; Apr. 26, 1969, 44-32463

Int. Cl. B44d *5/00;* **B32b** *27/24*

U.S. Cl. 117—138.8 A **12 Claims**

1. A process for preparing a fibrous sheet, comprising forming a non-woven fibrous mat of mixed-spun fibers comprising at least two kinds of polymeric materials selected from the group consisting of polyamides, N-methoxymethylated polyamides, polyesters, polystyrene, polyolefins, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, polymethacrylates, polyvinyl alcohol, polyacrylonitrile and polyurethane elastomers, said at least two kinds of polymeric materials having different solvent solubilities,

impregnating said mat with a first liquid which is a solvent for at least one of said polymeric materials but a non-solvent for the other polymeric materials at a temperature sufficiently low that said liquid substantially does not dissolve the polymeric materials for which it is a solvent;

heating the impregnated mat to a temperature at which said polymeric material is partially or wholly dissolved, and the solution of said polymeric material is distributed through the fibrous mat, while substantially none of the other polymeric materials are dissolved into the first liquid, and

coagulating said polymer solution by treating said mat with a second liquid which is a non-solvent for all of the polymeric materials which constitute said mixed-spun fibers and which is at least partially miscible with said first liquid to form a porous polymeric structure which is substantially nonbonded to the fibers of said fibrous mat.

3,869,311

APPLICATION OF PRECIPITATES OF METHYLENE-UREAS AND PRODUCTS OBTAINED

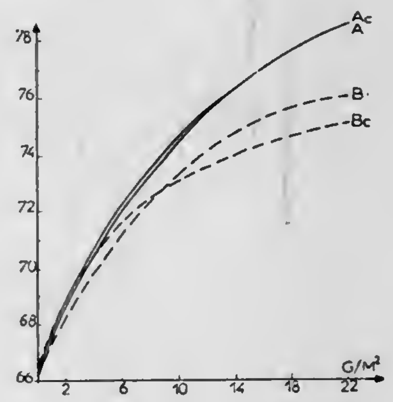
Guy Jacquelin, and Solange Sangenis, both of Grenoble, France, assignors to Centre Technique de l'Industrie des Papiers Cartons et Celluloses, Isere, France

Filed May 28, 1970, Ser. No. 41,374

Claims priority, application France, June 3, 1969, 69.18236

Int. Cl. D21h *1/28*

U.S. Cl. 117—155 L **3 Claims**



1. A paper to which has been applied a filler product having as a base an insoluble and pulverulent methylene urea precipitate having a low degree of polymerization, the methylene urea precipitate having the following properties:

index of refraction between about 1.4 to 1.6,

diffuse reflection factor higher than 95% for an illumination of maximum wavelength between about 0.42 to 0.68 microns,

melting point between about 230° to 250°C.,

volume-mass between about 1.00 to 1.70 g/cu.cm.,

pH value of the isoelectric point between about 4 to 7, and a percent of nitrogen between about 30 and 38%.

3,869,312

ELECTRODES AND ELECTROCHEMICAL PROCESSES

Keith Graham Moss, and Nicholas William James Pumphrey, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 233,354, March 9, 1972,. This application Sept. 4, 1973, Ser. No. 394,394

Claims priority, application Great Britain, Mar. 18, 1971, 7211/71

Int. Cl. B44d *1/18*

U.S. Cl. 117—215 **11 Claims**

1. A method for manufacture of an electrode for use in electrochemical processes wherein said electrode comprises a support member made of a film-forming metal or an alloy thereof having a coating thereon consisting of at least one layer of a mixture of the oxide of at least one platinum group metal in a proportion of 20–80 percent by weight and a film-forming metal oxide and superimposed on the said layer a

layer consisting of a film-forming metal oxide which comprises the steps of (1) applying on said support member at least one coating of a composition comprising a thermally-decomposable compound of at least one platinum group metal and a thermally-decomposable organo-compound of a film-forming metal in an organic liquid vehicle, drying each coating by evaporation of the liquid vehicle and then heating each coating in an oxidizing atmosphere at a temperature of at least 350°C to convert the compounds of the platinum group metals and the film-forming metal to mixed oxides of these metals, and (2) applying over the layer of mixed oxides thus produced on the support member at least one coating of a thermally decomposable organo-compound of a film-forming metal in an organic liquid vehicle, said last-mentioned coating being free from any platinum group metal or compound thereof, drying each coating by evaporation of the liquid vehicle and then heating each coating in an oxidizing atmosphere to convert the organo-compound of the film-forming metal to the oxide of the metal.

3,869,313

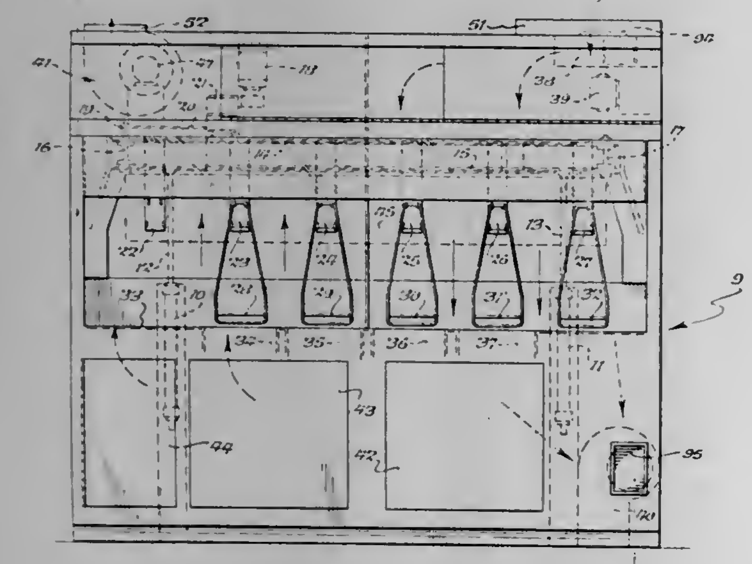
APPARATUS FOR AUTOMATIC CHEMICAL PROCESSING OF WORKPIECES, ESPECIALLY SEMI-CONDUCTORS

Harold F. Jones, Dover; David L. Ousterling, Mountain Lakes, and Roland W. Anderson, Sparta, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,621

Int. Cl. B08b *3/02, 11/02*

U.S. Cl. 134—73 **11 Claims**



1. Apparatus for continuously treating workpieces with liquids comprising:

a. a plurality of treatment chambers

b. at least one of which is a dip chamber adapted to contain a liquid and

c. at least one of which is a spray chamber equipped with means to spray liquid on workpieces suspended within said chamber,

d. means for controlling the temperature of the treating liquid in at least one dip chamber,

e. means for maintaining the composition of a liquid mixture in at least one dip chamber within predetermined limits, and

f. conveyor means for automatically transferring the workpieces from treatment chamber to treatment chamber and lowering the workpieces through the top of the treatment chambers according to a predetermined timed cycle.

3,869,314

VENTED ELECTROCHEMICAL CELLS

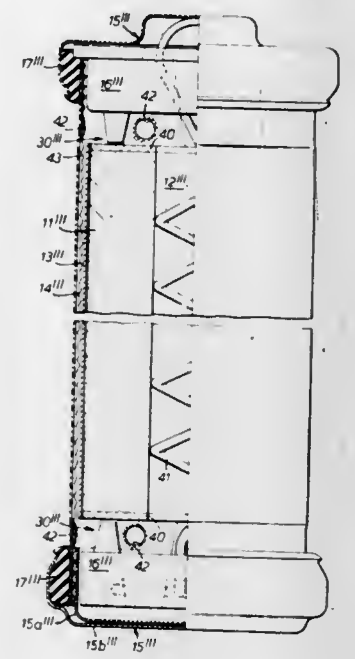
Peter James Gillespie, Basingstoke, England, assignor to Energy Conversion Limited, London, England

Division of Ser. No. 94,009, Dec. 1, 1970, Pat. No. 3,762,956. This application Feb. 8, 1973, Ser. No. 330,509

Claims priority, application Great Britain, Dec. 3, 1969, 58918/69

Int. Cl. H01m *29/02*

U.S. Cl. 136—86 A **10 Claims**



1. A gas depolarized cell comprising:

a. an anode electrode, the anode electrode being apertured to contain electrolyte for the cell,

b. a cathode, the cathode including a layer of electrolyte-phobic material and surrounding the anode electrode,

c. an end cap closing at least one end of the cathode and structurally joined to the cathode, the cathode forming at the interior thereof a space, the electrolyte-phobic material of the cathode providing a surface through which gas within said interior space of the cell may pass to the exterior to allow gas pressures interiorly and exteriorly of the cell to equalize; and

d. an outer casing pervious to gas engaging the end cap and surrounding the cathode in spaced relation thereto.

3,869,315

LANYARD OPERATED MECHANICAL INITIATOR

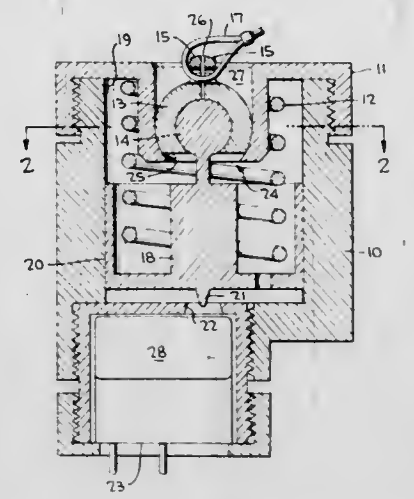
Darrel D. Dolgner, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1973, Ser. No. 403,139

Int. Cl. H01m *17/00*

U.S. Cl. 136—90 **10 Claims**

1. A mechanical actuation device comprising a housing having a bore extending thereinto from the open end thereof; a piston positioned at the other end of said housing; a hole located at the other end of said housing beneath said piston; a projecting member centrally connected to said piston; a ball located at the end of said member; a cap having an aperture therein, said cap located on said open end of said housing; a cylindrical depression in said cap; said aperture located in said cylindrical depression; said ball being located in said cylindrical depression; a hollow spherical collet split substantially in half and having a flat face orthogonal to said split; a round hole located in said face and smaller than said ball; said collet located around said ball; a spring located between said cap and said piston; and, two small flat rings, one attached to each portion of said collet.



3,869,316

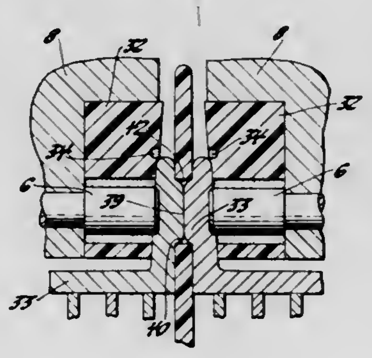
ALLOY FOR THROUGH-THE-PARTITION INTERCELL CONNECTORS FORMED BY AN EXTRUSION-FUSION TECHNIQUE

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,462

Int. Cl. H01m *13/10*

U.S. Cl. 136—134 **1 Claim**



1. A method of making substantially liquid-tight intercell connections for lead-acid storage batteries of the type having (a) nonconductive partitions dividing the case of the battery into compartments, (b) apertures in the partitions connecting adjacent compartments, (c) cell groups in the compartments, (d) a plate connector strap on each cell group, and (e) upstanding lugs on the connector straps with the lugs facing each other on each side of the apertures, the lugs being thicker than a said partition and having face portions on their face sides adapted to fully engage the immediate surface area of the partitions around the apertures and joint-forming portions circumscribed by said face portions and adapted by fusion to link one lug to the other through the apertures, said method comprising the steps of:

positioning the cell groups with their associated straps in the compartments so that the lugs of the straps overlay the apertures of the partitions with the face portions adjacent the immediate surface area around the apertures, said lugs being cast from a lead alloy consisting essentially of about 2 to 4.5 percent by weight antimony, at least 0.03 percent and less than about 0.3 percent by weight tin and less than 0.001 percent by weight sulfur and comprising a fine grained solid containing a major portion of antimony-lean-phase and a minor portion of antimony-rich phase;

positioning tool means on the back sides of the lugs, the tool means for each lug including a clamp portion, a bore in the clamp portion and a conductive plunger in the bore, the bores and plungers for opposing lugs being aligned with a substantial area of their associated aperture;

actuating said tool means to cause the clamp portions to engage the lugs with a sufficient clamping force to seal off the apertures with the face portions of the lugs, the joint-forming portions being spaced from each other midway through the apertures and with the partitions defining apertures which are substantially free of lug material;

while maintaining the clamping force, squeezing the plungers with sufficient plunger pressure (a) to cause the plungers to sink into the back sides of the lugs to a depth less than their thickness and short of the mouths of the apertures to extrude said lead alloy from the joint-forming portions of the lugs into the apertures to bridge the space therein and make a contact area between the lug extrusions approximately midway through the apertures, said contact area comprising about 15 to 75 percent of the area of the aperture as viewed in a direction normal to the partition, and (b) to store sufficient rapidly-expendable potential energy in appropriate means behind said plungers to cause quick and forceful flow of said lug extrusions in immediate response to a lessening of the lug extrusions' resistance to flow;

while maintaining pressure on the plungers and force on the clamp portions, passing electrical current through the plungers and lug extrusions in gradually increasing amounts to effect staged physical transformations in the lug extrusions including first softening the lug extrusions prior to fusion, then melting the antimony-rich-phase of the alloy at said contact area and finally melting the antimony-lean-phase of the alloy at the contact area, throughout which transformations the said stored potential energy rapidly expends itself as a continuous application of sufficient plunger pressure on the extrusions to cause flow of the melted antimony-rich-phase from near the center of the weld outwardly against the walls of the apertures before any sustantial melting of the antimony-lean-phase occurs thereby forming an antimony-rich annulus around an antimony-leaner weld center;

deenergizing the electrical current and allowing the fused lead alloy in the apertures to progressively solidify from the center of the weld zone radially outward toward the aperture walls while continuing to maintain the clamping force and plunger pressure to keep the apertures filled during the solidification whereby the cell groups are electrically joined by the lugs by liquid-tight, substantially void-free, through-the-partition connections having metallurgically strong antimony-rich annuli and metallurgically weaker antimony-lean centers; and

monitoring the quality of the weldments so made by selecting test samples and twisting the intercell connectors of the test samples in the plane of the partition until rupture occurs whereby antimony-rich and antimony-lean rupture zones are displayed, comparing the size of the antimony-lead alloy rupture zone against predetermined standards of acceptability and, if necessary, adjusting the welding conditions to bring the process back to within the acceptable range defined by those standards.

3,869,317

PRODUCING PROTECTIVE COATINGS ON METAL

Joachim Marx, Schwerinstr. 34-38, Muelheim, Ruhr-Styrum, Germany

Filed June 12, 1972, Ser. No. 261,854

Claims priority, application Germany, Dec. 8, 1971, 2160784

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.15 R **11 Claims**

1. The process for the production of a protectively coated metal object which comprises applying to said metal object a material consisting essentially of at least one condensable phosphate of the formula

$Me_nX_2P_nO_{(3n+1)}$
in which
each X is a hydrogen or ammonium ion,
n is from about 4 to 100,
Me is an alkali metal ion which may be partially replaced by a hydrogen, ammonium or equivalent of a polyvalent metal ion,
and thereafter heating said phosphate to a temperature of about 600° to 1150°C whereby it undergoes condensation to produce a glass-like protective coating.

3,869,318

MOULD FOR MANUFACTURING PLASTIC ARTICLES, AND METHOD OF MANUFACTURING THE MOULD

Per Ingvar Hellman; Jan Ivar Sondell, and Bo Christian Jershed, all of Soderfors, Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Filed May 24, 1973, Ser. No. 363,412

Claims priority, application Sweden, May 26, 1972, 72006990

Int. Cl. B29c *1/02;* **C22c** *41/02, 39/30*

U.S. Cl. 148—12.3 **4 Claims**

1. A steel mould for manufacturing plastic articles which consists essentially of a precipitation-hardened alloyed steel of 0.005% to 0.03% carbon, 6 to 7% nickel and 5.5 to 6.5% manganese, less than 0.4% silicon, up to 1.2% molybdenum, less than 0.035% phosphorus, less than 0.035% sulphur, and less than 0.01% nitrogen, balance iron.

3,869,319

WEAR RESISTANT DEPOSITED STEEL

Joo Ishihara; Hiromi Kagohara; Masaichi Nagai, all of Hitachi, and Yasushi Ohuchi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1973, Ser. No. 324,645

Claims priority, application Japan, Jan. 19, 1972, 47-6970

Int. Cl. C22c *39/50;* **B32b** *15/04, 15/18*

U.S. Cl. 148—31.5 **6 Claims**

1. Wear resistant structure comprising a metal substrate and a layer of steel deposited thereon, said steel consisting essentially of, in weight percent, 32 to 40 percent of vanadium, 2 to 4 percent of nickel, and 0.5 to 3 percent of manganese, carbon of 0.3 to 0.6 percent higher than one-fifth of the vanadium content, and the balance being iron and impurities accompanying therewith, said steel having vanadium-carbide structure educed in a matrix mainly comprising martensite.

3,869,320

EXPLOSIVE COMPOSITION CONTAINING BIOPOLYMERIC MATERIAL, METHOD OF PREPARING AND USING

Horace William Walter Brett, Aberfeldie, and Richard Fox, Hawthorn, both of Victoria, Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

Continuation of Ser. No. 214,414, Dec. 30, 1971, abandoned. This application July 27, 1973, Ser. No. 383,046

Claims priority, application Australia, Jan. 11, 1971, 3673/71

Int. Cl. C06b *15/00*

U.S. Cl. 149—41 **19 Claims**

1. An aqueous, pumpable water-resistant slurry explosive composition suitable for use in wet boreholes, said composition consisting essentially of at least one oxygen releasing salt; water; at least one fuel; finely divided aluminum passing a 300 mesh sieve as sensitizing additive and biopolymeric material prepared from a carbohydrate which has been reacted with a microorganism of the genus *Xanthomonas*, the composition being free of any material capable of crosslinking the biopolymeric material.

3,869,321

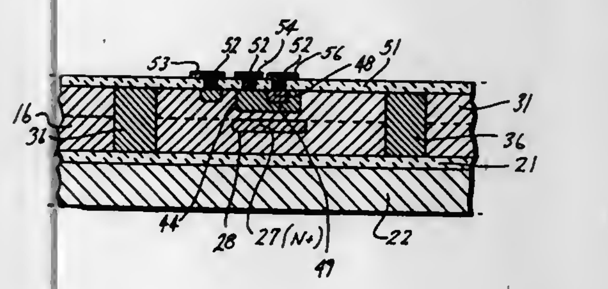
METHOD FOR FABRICATING PRECISION LAYER SILICON-OVER-OXIDE SEMICONDUCTOR STRUCTURE

Stanley R. Davis, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 219,542, Jan. 20, 1972, abandoned, which is a continuation of Ser. No. 38,754, May 19, 1970, abandoned. This application June 27, 1973, Ser. No. 373,940

Int. Cl. H01l *7/36, 27/04*

U.S. Cl. 148—175 **1 Claim**



1. In a method for forming a silicon-over-oxide semiconductor structure with a precision layer, providing a semiconductor body of single crystalline silicon having first and second surfaces forming a layer of silicon dioxide on said first surface, forming a support structure on said layer of silicon dioxide, removing a portion of the body of single crystalline silicon by removing material from said second surface to provide a continuous layer of single crystal semiconductor material of a predetermined thickness adherent to said layer of insulating material, forming a buried layer of the same conductivity type as the semiconductor body in said body through said second surface, forming a region of opposite conductivity type in said body through said second surface and surrounding said buried layer, epitaxially growing a layer of single crystalline silicon on said second surface of said body to provide in combination with said body a combination layer which has a precise and uniform thickness throughout and which has a substantially planar surface, forming a layer of silicon dioxide on said planar surface, causing said region of opposite conductivity type to diffuse upwardly and downwardly so they extend between the first named layer of silicon dioxide and the layer of silicon dioxide on said planar surface so that the portion of semiconductor material enclosed within the opposite conductivity material is junction isolated from the other portions of the semiconductor material and forming a transistor in said epitaxial layer overlying said buried layer.

3,869,322

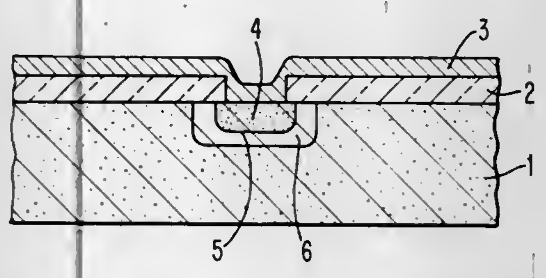
AUTOMATIC P-N JUNCTION FORMATION DURING GROWTH OF A HETEROJUNCTION

Jerome J. Cuomo, Bronx, and Harold J. Hovel, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,415

Int. Cl. H01l *7/36*

U.S. Cl. 148—188 **18 Claims**



1. A process for the preparation of a p-n homojunction between regions of differing conductivity in a semiconductor substrate and a heterojunction at the surface of said substrate comprising

growing aluminum nitride or gallium nitride on the substrate to form said heterojunction whereby gallium atoms from said said gallium nitride or aluminum atoms from said aluminum nitride diffuse into said substrate in the regions of said substrate adjacent said aluminum nitride or gallium nitride to form said homojunction in said substrate.

3,869,323

METHOD OF POLISHING ZINC SELENIDE

Jagtar Singh Basi, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,240

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **11 Claims**

1. A method for polishing a zinc selenide surface to a high degree of surface perfection comprising:
maintaining said zinc selenide surface continuously wetted with an excess quantity of an aqueous chemical polishing solution comprising an alkali metal or alkaline earth metal hypohalite; and
continuously wiping the zinc selenide surface with a firm surface using a substantial pressure while maintaining a relative movement between the zinc selenide surface and the firm surface to remove the zinc selenide from the high points of the zinc selenide surface.

3,869,324

METHOD OF POLISHING CADMIUM TELLURIDE

Jagtar Singh Basi, Wappingers Falls, and Eric Mendel, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,420

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **10 Claims**

1. A method for the chemical-mechanical polishing of a cadmium telluride surface to a high degree of surface perfection comprising:
maintaining said cadmium telluride surface continuously wetted with an excess quantity of an aqueous chemical polishing solution comprising an alkali metal or alkaline earth metal hypohalite and an alkali metal carbonate, the alkali metal carbonate being at least equimolar to the alkali metal hypohalite; and
continuously wiping the cadmium telluride surface with a firm surface using a substantial pressure while maintaining a relative movement between the cadmium telluride surface and the firm surface to remove the cadmium telluride from the high points of the cadmium telluride surface.

3,869,325

METHOD OF MAKING A CONVOLUTE TUBE

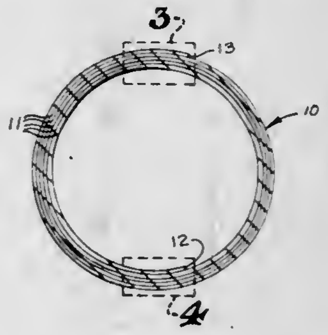
Werner Witzig, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 835,393, June 23, 1969, Pat. No. 3,704,730. This application Sept. 21, 1972, Ser. No. 291,134

Int. Cl. B31c *1/00*

U.S. Cl. 156—192 **4 Claims**

1. A method of making convolutely wound, adhesively secured tubes of at least two plies from elongate sheet material having opposed first and second surfaces and first and second longitudinal side edges and being characterized by eliminating the necessity of having a high moisture content in the adhesive for holding the wound tube together immediately following winding and thereby avoiding a subsequent drying step, said method comprising the steps of,
applying relatively slow acting, low moisture adhesive to a major portion of the first surface of the sheet material while leaving a first longitudinally extending band free of slow acting, low moisture adhesive in close proximity to the first longitudinal edge but spaced slightly therefrom allowing the slow acting, low moisture adhesive to be also positioned immediately along the first longitudinal edge, and while leaving a second longitudinally extending band free of slow acting, low moisture adhesive adjacent the second longitudinal side edge of the sheet material,
applying relatively fast acting adhesive along the first longitudinally extending band free of slow acting, low moisture adhesive on the first surface of the sheet material,
applying a lubricant along the second longitudinally extending band free of slow acting, low moisture adhesive on the first surface of the sheet material,
applying relatively slow acting adhesive on the second surface of the sheet material along a portion adjacent the second longitudinally extending edge, and



convolutely winding a predetermined length of the elongate sheet material transversely of the length into a convolute tube with the second surface of the sheet material forming the outside surface of the tube and with the second longitudinal edge having the lubricant adjacent thereto on the first surface and the adhesive adjacent thereto on the second surface forming the leading inside edge of the tube and the first longitudinal edge having the relatively fast acting adhesive adjacent thereto forming the outside trailing edge of the tube for immediate adherence of the trailing edge portion to the outside surface of the convolute tube to retain the convolute tube in the wound condition during activation of the slow acting, low moisture adhesive to bond the convolute tube in the wound condition.

3,869,326

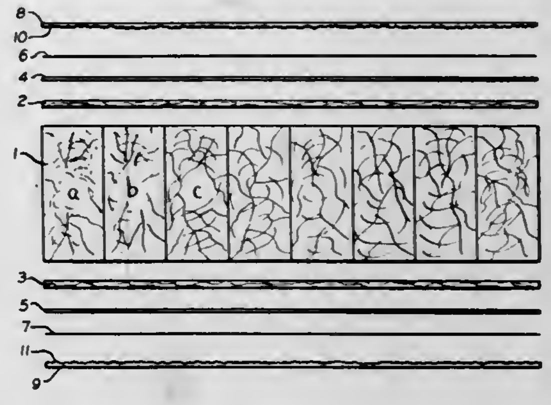
TEXTURED FILM FINISHED PANELS AND METHOD THEREFOR

William A. Matzke, 609 Somerset Dr., Green Bay, Wis. 54301

Continuation-in-part of Ser. No. 172,670, Aug. 18, 1971, Pat. No. 3,738,900. This application Mar. 7, 1973, Ser. No. 338,968

Int. Cl. B31f *1/00*

U.S. Cl. 156—209 **5 Claims**



1. A process for the manufacture of a uniformly embossed face film on a substrate which comprises: positioning between press plates of an embossing press a veneer sheet on a rigid substrate including an adhesive between their adjoining surfaces; applying a sheet of loosely bonded cellulose fibers impregnated with a thermoplastic resin to the veneer sheet; positioning a sheet of deformable thermoplastic film on the

cellulose fiber sheet, said deformable film having a thickness within the range of 0.0005 to 0.003 inches; and compressing the sheets and substrate in the embossing press under a die while heating the sheets to a temperature within the range of 200°F to 400°F to simultaneously effect lamination of the composite and embossment of the face film.

3,869,327

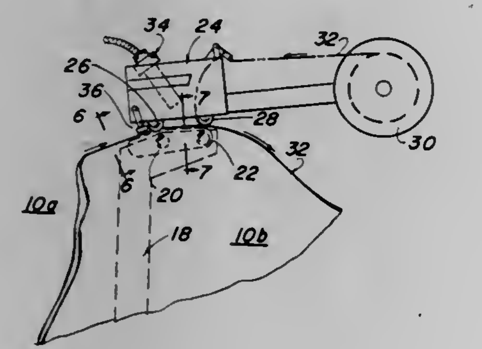
WATER TIGHT SEAMING OF FLEXIBLE THERMOPLASTIC SHEET MATERIAL

Everette M. Lambert, Littleton, and Richard L. Ball, Denver, both of Colo., assignors to Drake, Crandell & Batchelder, Ft. Collins, Colo.

Filed Sept. 5, 1972, Ser. No. 286,181

Int. Cl. B29c *27/02;* **A47c** *27/08*

U.S. Cl. 156—256 **2 Claims**



1. The method of making a water-tight reinforced envelope from a pair of flexible water impervious thermoplastic sheets by bonding said sheets to each other in face-to-face engagement along their peripheral edges to form a closed envelope bonded with a first peripherally continuous water-tight seam, wherein the improvement comprises the steps of:

cutting a slit in one of the sheets for receiving a sealing head adapted for positioning within the interior of the envelope for compressive sealing cooperation with a moveable head in juxtaposition therewith exterior of the envelope, inserting said sealing head through said slit and positioning said sealing head within said envelope,

feeding an elongate peripherally extending strip of thermoplastic material into overlying exterior relationship with said first seam and with said first seam extending along substantially the longitudinal center line of said strip,

heating said envelope and seam immediately in front of the point of contact between said envelope and said strip,

continuously compressing said strip to said heated envelope sheets along second peripherally continuous seams spaced from and on opposite sides of and parallel to said first seam to form two continuous spaced parallel bands respectively adjacent the side edges of said strip with said second seams continuously bonding said strip to respective ones of said sheets around the entire periphery of said envelope,

compressing said strip to each of said heated envelope sheets at a plurality of spaced discontinuous central bonding zones extending generally transversely intermediate said spaced parallel bands and said first seam and in spaced relationship with respect to said bands and first seam,

feeding said strip to cover the entire first peripheral seam and thermally bonding the ends of said strip to each other,

and sealing said slit after withdrawal of the interior head from the envelope, thereby to form a water-tight leak-proof reinforced seam envelope.

3,869,328

REELING SELF-ADHESIVE LABELS

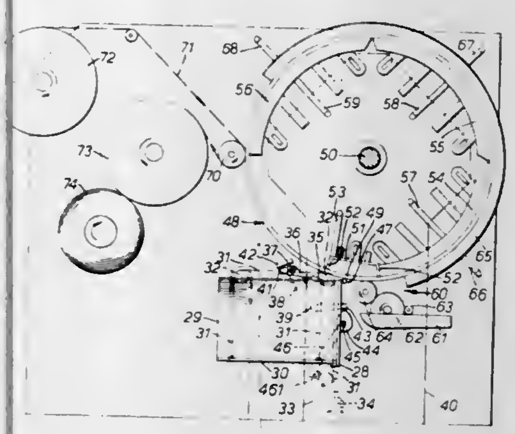
David John Instance, West Malling, England, assignor to David J. Instance Limited, Tombridge, Kent, England

Filed Mar. 15, 1973, Ser. No. 341,636

Claims priority, application Great Britain, Mar. 16, 1972, 12384/72

Int. Cl. B29c *17/00*

U.S. Cl. 156—285 **11 Claims**



1. A process for the production of a continuous reel of self-adhesive labels, wherein the labels are produced as separate flat sheets cut to finished size and stacked, the separate labels are then fed in succession from the stack onto the surface of a drum and held thereon by vacuum means while being fed to an applicator by which they are coated individually on their reverse sides with a pressure-sensitive adhesive composition, the adhesive is dried by passing the labels through a hot air chamber extending about a substantial part of the periphery of the drum and the labels are applied successively by their adhesive coated sides to a continuous web of release paper which moves against said drum and which is then reeled.

6. Apparatus according to claim **4** wherein the applicator comprises a doctor blade.

3,869,329

METHOD OF SEALING NYLON FILM USING BOILING WATER OR STEAM

Arthur J. Schweitzer, Jr., South Orange, and Eugene Schupak, Dover, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 23, 1971, Ser. No. 156,063

Int. Cl. C09j *5/02;* **B32b** *31/12;* **B29d** *9/00*

U.S. Cl. 156—308 **3 Claims**

1. A method for sealing polycaproamide film surface which comprises exposing said surface to boiling water or steam only as the adhering solvent and thereafter contacting said exposed surface with at least one other polycaproamide film surface whereby a seal is effected between the contacted surfaces.

3,869,330

APPARATUS FOR APPLYING A LABEL TO A PACKAGE

Andrew W. Anderson, West Caldwell, and John P. Mullin, Scotch Plains, both of N.J., assignors to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Jan. 27, 1972, Ser. No. 221,336

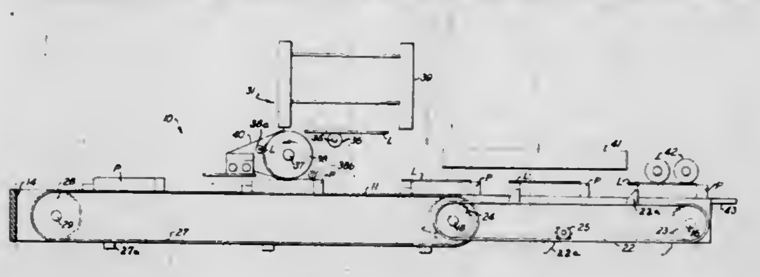
Int. Cl. B32b *31/20;* **B65b** *61/26;* **B65c** *9/36*

U.S. Cl. 156—380 **12 Claims**

1. In a labeling machine including means for moving a package in a path along a support means, the combination comprising:

a. securing means for positionally securing a label to the package solely along one edge portion thereof and in a direction parallel to the direction of movement of the package along said path,

b. means for applying pressure progressively pressing the balance of the label from said edge portion across the surface of the package to obtain a complete and uniform bonde between the label and the package.



3,869,331

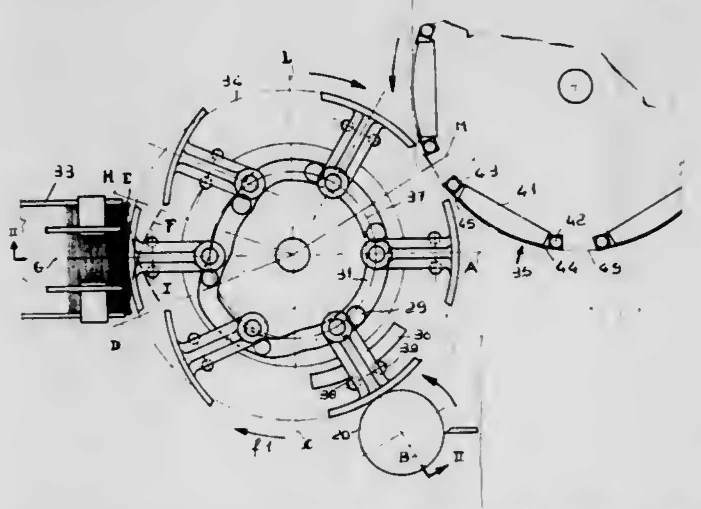
DEVICE FOR WITHDRAWING LABELS FROM A STORE IN LABELLING MACHINES

Vittorio Saso, Via Irnerio 12/3, Bologna, Italy (40100)

Filed Nov. 13, 1972, Ser. No. 306,111

Int. Cl. B65c *9/08, 11/04*

U.S. Cl. 156—571 **3 Claims**



1. A device for withdrawing labels from a pack of labels contained in a fixed store of a labelling machine, comprising a base, a drive shaft rotatably supported by said base and driven with continuous motion, a plate rigid with said shaft, a plurality of oscillating elements pivotally supported by said plate in positions angularly spaced in a circle concentric with said shaft and each comprising a cylindrical segment portion having a development substantially equal to the length of the labels and lying on a circle substantially tangential to the front label of said pack of labels contained in said store, each of said oscillating elements further comprising an arm pivoted to said plate and extending substantially radially thereto and provided at its free end with said cylindrical segment portion and at its pivoting end with a lever having at least an idle roller for engagement with a groove defining a radial fixed cam, whereby the movement of said roller along the path of said groove causes each of said cylindrical segment portions to perform a rolling movement on the front label of said store, thereby progressively withdrawing said front label therefrom, said device further comprising a gumming roller for applying a film of glue on said cylindrical segment portions before they come into engagement with said labels and means for removing the labels from said oscillating elements, said means including a turntable provided with a plurality of blocks of substantially elastic material having a cylindrical external surface portion substantially equal to that of said cylindrical segment portions for contacting a corresponding one thereof during rotation of said plate and said turntable, said blocks being laterally provided with rods extending substantially parallel to the axis of said turntable and each provided with a pincer member projecting towards said cylindrical external surface portion, said rods being movable from a position in which said pincer members are spaced from said cylindrical external surface portion for engaging said labels held by said oscillating elements into a position in which said pincer members hold said labels into contact with said blocks.

3,869,332

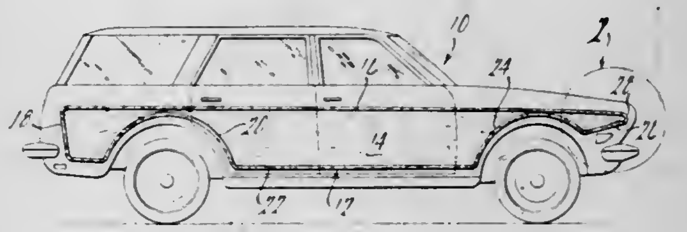
AUTO TRIM

Theodore Loew, Schenectady, N.Y., assignor to The Standard Products Co., Dearborn, Mich.

Filed July 27, 1973, Ser. No. 383,242

Int. Cl. B37b *33/00*

U.S. Cl. 161—31 **2 Claims**



2. In a method of trimming the sides of a vehicle with a simulated wood decorative assembly which includes the steps of: bonding a panel of plastic material having a simulated wood exterior surface to the sides of the vehicle, bonding a plurality of relatively straight moldings of plastic material having a simulated wood exterior surface about the periphery of said panel with the end portions thereof spaced from one another, forming an annulus of plastic material having a radial cross-section and exterior finish similar to that of said moldings, cutting corner sections from said annulus, and bonding said corner sections between said spaced end portions so as to have the outer edge of said moldings disposed tangentially related to the outer periphery of said corner sections.

3,869,333

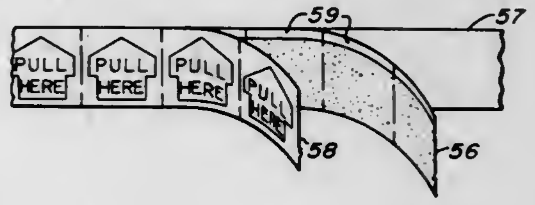
WEB OF DOUBLE-FACED PRESSURE-SENSITIVE STICKERS

Samuel B. McMaster, Deerfield, Ill., assignor to Do-It Corporation, Highland Park, Ill.

Division of Ser. No. 104,420, Jan. 6, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,623

Int. Cl. B32b *3/10;* **B33b** *7/06;* **C09j** *7/02*

U.S. Cl. 161—39 **1 Claim**



1. A web of double-faced pressure-sensitive stickers having the pressure-sensitive coatings arranged on opposite faces along a longitudinally extending zone extending less than the full width of the web, leaving each sticker with an edge portion bare on both faces by which it may be manipulated, said adhesive portions each being covered by a carrier strip guarding one face, and a guard strip guarding the other face and extending over the bare edge portion of each sticker whereby the edges of the sticker and guard strip may be jointly curled and grasped for joint removal from the carrier strip, the double-faced web and said guard strip being jointly readily separable along successive predetermined transverse lines while the carrier strip is relatively tear-resistant as compared to the double faced web and guard strip, whereby successive separate stickers, each with its guard piece portion of the guard strip, may be jointly pulled loose from the carrier strip by grasping the uncoated zone, then jointly applied to one of two things to be joined; the guard piece then being removed by grasping its free edge.

3,869,334

INSULATING MATERIALS

John Thomas Hughes, Mamble, near Kidderminster, and Joseph Anthony MacWilliam, Kidderminster, both of England, assignors to Micropore Insulation Limited, Kidderminster, England

Division of Ser. No. 151,970, June 10, 1971,. This application Sept. 11, 1973, Ser. No. 396,295

Int. Cl. B32b *5/16, 5/22*

U.S. Cl. 161—87 **3 Claims**

1. A rigid thermal insulating panel consisting essentially of an envelope of glass fibre cloth containing a pressure-consolidated mass of microporous silica aerogel being bonded to said cloth by penetration of the microporous silica aerogel into the pores of said cloth from the application of said pressure and said cloth being in a state of tension.

3,869,335

IMPACT RESISTANT INORGANIC COMPOSITES

August C. Siefert, Goose Ln., Granville, Ohio 43023

Division of Ser. No. 120,932, March 4, 1971, Pat. No. 3,702,240, which is a continuation-in-part of Ser. No. 820,015, April 28, 1969, abandoned. This application Aug. 9, 1972, Ser. No. 278,905

Int. Cl. B32b *17/04;* **C03c** *23/20*

U.S. Cl. 161—143 **9 Claims**

1. A strong light-weight composite useful at elevated temperatures and exhibiting apparent ductility comprising: generally parallel glass fibers having a silica content of at least approximately 50 percent by weight, a uniform sheathing of a thickness between 0.00005 and **0.001** inch of a metal from the group consisting of aluminum, copper, nickel, lead, zinc, tin, magnesium, indium, cadmium, antimony, bismuth, titanium, chromium, molybdenum, zirconium, and iron around the individual fibers, said sheathed fibers being bonded together in a glass matrix by a matrix glass of a composition different from that of said fibers and which has a softening point below the melting point of the metal sheathing, said matrix glass being fused to the metal sheathing on the fibers, the glass fibers and metal sheathing occupying from approximately 20 to approximately 70 percent by volume of the composite, and said sheathing effectively isolating the glass of said fibers from said matrix glass to provide a glass composite that is deformable and shatter resistant.

3,869,336

TRANSFER SHEETS FOR TRANSFER PRINTING

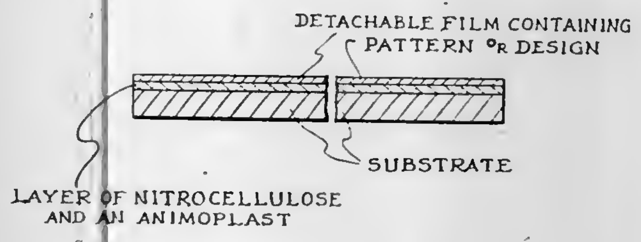
Pierre Sander, and Christian Mullier, both of Tourcoing, France, assignors to Trentesaux-Toulemonde S.A., Tourcoing, France

Continuation of Ser. No. 75,988, Sept. 28, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 311,725

Claims priority, application Switzerland, Sept. 26, 1969, 14585/69; Aug. 6, 1970, 11832/70

Int. Cl. B41m *3/12;* **B32b** *7/06*

U.S. Cl. 161—146 **19 Claims**


DETACHABLE FILM CONTAINING PATTERN OR DESIGN
SUBSTRATE
LAYER OF NITROCELLULOSE AND AN ANIMOPLAST

1. A transfer sheet for transfer printing which comprises a paper or regenerated cellulose substrate carrying on at least one of its faces a detachable film layer containing a pattern or design, said film being separated from the substrate by a layer consisting essentially of a mixture of nitrocellulose and an aminoplast selected from the group consisting of urea-formaldehyde and melamine-formaldehyde resins said layer containing 40 to 60% nitrocellulose.

17. A transfer sheet as claimed in claim 1 wherein the detachable film layer carries an aluminum foil which is coated on its side opposite that side adjacent to the detachable film layer with a vinyl chloride polymer or copolymer, an acrylic resin or a polyamide.

3,869,337

COMPOSITE NON-WOVEN MATS AND FOAM PLASTIC ARTICLES REINFORCED THEREWITH

Peter Hoppe, Troisdorf; Helmut Leyer, Opladen, and Johann Muller, Cologne, all of Germany, assignors to Beyer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1972, Ser. No. 225,666

Claims priority, application Germany, Feb. 12, 1971, 2106729

Int. Cl. B32b *5/18*

U.S. Cl. 161—159 **2 Claims**

1. In a foam plastic article or foam core having marginal zones reinforced with a fiber mat, the improvement which comprises using as the fiber mat, a composite non-woven synthetic fiber mat consisting of a non-woven mat of crimped synthetic polyamide staple fibers having a titer of 40–100 dtex and a weight of 80–200 gm/m² and a second non-woven mat of fine titer textured synthetic staple fibers or textured synthetic filaments, said second non-woven mat having a titer of 2–10 dtex and a weight of 50–500 gm/m² and being firmly bonded to one surface of the non-woven polyamide fiber mat and said second non-woven mat being positioned adjacent to the outer surface of the marginal zone wherein the coarse fibers comprise from about 25 percent to about 60 percent of the combined weights per square meter of the coarse and the fine fiber mats.

3,869,338

TUBING FOR CRYOGENIC USE

Sheldon Kavesh, Whippany, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 14, 1972, Ser. No. 234,636

Int. Cl. F16i *55/04*

U.S. Cl. 161—165 **10 Claims**

1. Tubing suitable for use at cryogenic temperatures, said tubing being composed of a copolymer of ethylene and a comonomer selected from the group consisting of vinyl acetate and ethyl acrylate, wherein the molecular weight of said

copolymer is such that its melt index, as determined by the test procedure of ASTM-D-792-60T, is not greater than the value of the relationship:

$$\frac{\text{Weight per cent comonomer in copolymer}}{6}$$

and wherein the ratio of the outside diameter to the inside diameter of said tubing is at least about 1.5.

3,869,339

PREPARATION OF FLEXIBLE SHEETS OF POLYCRYSTALLINE ALUMINA-CONTAINING FIBERS

Ashok Kumar Dhingra, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1973, Ser. No. 350,127

Int. Cl. B32b *27/04, 27/12*

U.S. Cl. 161—170 **10 Claims**

1. A flexible, integral sheet of a composite consisting essentially of

A. continuous filament polycrystalline refractory oxide fibers containing at least about 60% Al_2O_3 by weight and which have a fiber diameter of between about 5 and about 50 microns, said fibers being substantially uniaxially aligned in the composite and being present in the composite in an amount of between about 15 and about 80 percent by volume, and

B. a substantially amorphous organic polymer having a glass transition temperature of about 20°C. or less, has a modulus of elasticity of less than about 0.1×10^6 psi., and which undergoes a substantially residue-free thermal decomposition at temperatures between about 300° and about 800°C.

3,869,340

PHOSPHORUS ORGANOSILANE ADHESIVES

Hans-Joachim Kotzsch, Rheinfelden; Jurgen Amort; Hans Junger, both of Troisdorf; Heinz Nestler, Niederkassel, and Franz Weissenfels, Siegburg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

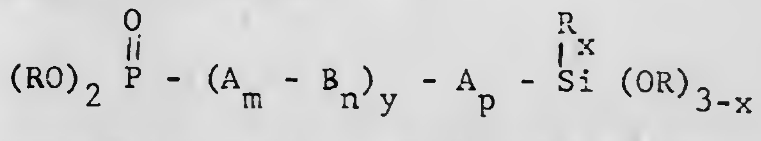
Filed Oct. 27, 1972, Ser. No. 301,700

Claims priority, application Germany, Nov. 3, 1971, 2154590

Int. Cl. B32b *9/04, 17/06*

U.S. Cl. 161—182 **6 Claims**

1. A composite article comprising a polymeric organic substance and an inorganic oxidic surface or metallic surface, said composite having at the interface between the metal or oxidic surface and the organic substance a phosphorus organosilane of the formula



$$(RO)_2\overset{O}{\overset{\|}{P}} - (A_m - B_n)_y - A_p - \overset{R_x}{\overset{|}{Si}}\,(OR)_{3-x}$$

wherein *m*, *n*, *p*, *x* are 0 or 1; *y* is 1 to 20; R is independently a substituted or unsubstituted aliphatic radical; A is independently a bivalent alkylene group, a bivalent arylene group, a bivalent oxyalkylene group joined by its oxygen atom to the phosphorus atom or a bivalent oxyarylene group joined by its oxygen atom to the phosphorus atom; and B is a radical selected from the group consisting of a bivalent oxygen radical, an —NH—radical, an —NR— radical and an —S— radical, when p is equal to 1.

3,869,341

PLYWOOD COMPRISING IONIZING RADIATION CURED CROSS-LINKED DIALLYL PHTHALATE ACRYLONITRILE POLYMER AND METHOD OF MAKING

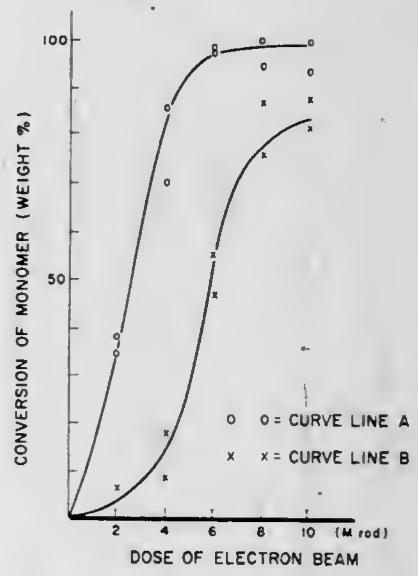
Masao Gotoda; Kenji Yokoyama, both of Osaka; Yoshimi Kono, Amagasaki; Shigekazu Toyonishi, Osaka; Kunio Hiwano, and Takaitsu Shimoyama, both of Hiroshima, all of Japan, assignors to Japan Atomic Energy Research Institute, Minato-ku, Tokyo, Japan

Division of Ser. No. 35,644, May 8, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,862

Claims priority, application Japan, May 9, 1969, 44-35236

Int. Cl. B32b *21/04;* **B05c** *5/00;* **B01j** *1/10*

U.S. Cl. 161—270 **12 Claims**



11. A wood-polymer composite plywood consisting essentially of a plurality of laminated thin wooden layers, at least one of the thin layers being impregnated with an ionizing radiation cured, cross-linked diallyl phthalate-acrylonitrile polymer; said cured polymer being intimately united with said wooden layers.

3,869,342

CATIONIC THERMOSETTING RESIN COMPOSITION FOR IMPROVING WET STRENGTH OF PAPER

Francis S. Munjat, Philadelphia, and Samuel Ho Kim, Haverford, both of Pa., assignors to E. F. Houghton and Company, Philadelphia, Pa.

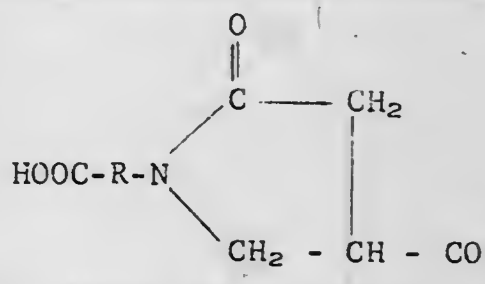
Filed June 7, 1973, Ser. No. 367,801

Int. Cl. D21h *3/58;* **C08g** *41/04*

U.S. Cl. 162—164 **10 Claims**

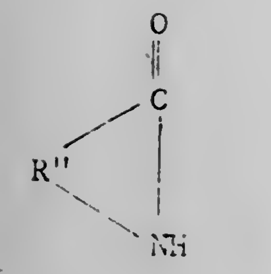
1. A cationic thermosetting resin composition comprising a mixture of a first polyamine polyamide polymer A, and for each mol of polymer A, from about 0.5 to about 14.4 mols of a second polyamine polyamide polymer B or C or a mixture thereof, said polymer A having been prepared by heating at a temperature of from about 150° to about 165°C. a mixture of:

a. a heterocyclic dicarboxylic acid of the formula:



where R is an alkylene radical containing from 1 to 10 carbon atoms or an arylene radical, and for each mol of dicarboxylic acid;

b. an amino carbonyl compound which is an amino acid of the formula $H_2N{-}R'{-}COOH$ or a lactam of the formula:



where R′ is an alkylene radical containing from 1 to 10 carbon atoms or an arylene radical, and R″ is an alkylene radical containing from 3 to 10 carbon atoms;

c. a portion of the total amount of an amine which is a diamine of the formula $H_2N-R'''-NH_2$ or a polyalkylene-polyamine of the formula $H_2N-(R^{iv}-NH)_n-H$ where R‴ and R^{iv} are alkylene groups containing from 2 to 6 carbon atoms, and n is an integer from 1 to 5; cooling the resulting first intermediate reaction product VIII, combining

d. itaconic acid with said first intermediate reaction product in an amount so as to provide an excess of itaconic acid with respect to carbonyl groups to amine groups of said first intermediate and heating the mixture to a temperature of from about 110° to about 140°C. under reflux to obtain a second intermediate reaction product X, adding a further quantity of reactant (c) to said second intermediate reaction product and effecting condensation and removal of water by heating the mixture to a temperature of about 185°C., to form a water-soluble polyamide polyamine polymer XI, the proportions of reactants employed being from 0 to 4 mols of reactant (b), 1 to 3 mols of reactant (c) and 1 to 2 mols of reactant (d) for each mol of reactant (a),

said polymer B having been prepared by heating together at reflux at about 105°C a mixture of from 1 to 5 mols of reactant (b) and from 1 to 4 mols of (c) to obtain intermediate polymer XIII, cooling said reaction mixture and adding thereto incrementally from 1 to 3 mols of epichlorohydrin to form intermediate XIV, heating the reaction product to a temperature of from 160° to 185°C. to obtain polymer XV;

said polymer C having been prepared by heating together at a temperature of from about 135° to about 165°C. under reflux conditions a mixture of reactant (a), and for each mol of reactant (a), from 0 to 5 mols of reactant (b) and from 1 to 3 mols of reactant (c), adding water to said reaction mixture and cooling said mixture to a temperature of from about 80° to about 90°C., adding slowly to said reaction mixture from 1 to 3 mols of epichlorohydrin and heating the resulting mixture to a temperature from about 165° to about 215°C. to remove water of condensation to obtain a polymer containing the repeating units XVII and XVIII

adding to said mixture of polymers from about 0.5 to about 1.8 mols of epichlorohydrin per secondary amine group in said polymers and heating the resulting mixture at a temperature of from about 70° to about 76°C. until a Gardner-Holdt viscosity greater than J is obtained.

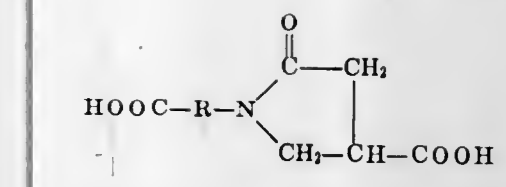
3,869,343
CATIONIC THERMOSETTING RESIN FOR IMPROVING WET STRENGTH OF PAPER

Francis S. Munjat, Philadelphia, and Samuel Ho Kim, Haverford, both of Pa., assignors to E.F. Houghton and Company, Philadelphia, Pa.

Filed June 7, 1973, Ser. No. 367,802
Int. Cl. D21h *3/58;* C08g *20/20*
U.S. Cl. 162—164 **10 Claims**

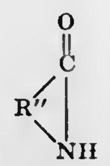
1. A cationic thermosetting resin prepared by heating at a temperature of from about 150° to about 165°C. a mixture of:

a. a heterocyclic dicarboxylic acid of the formula:



where R is an alkylene radical containing form 1 to 10 carbon atoms or an arylene radical, and for each mol of dicarboxylic acid,

b. an amino carbonyl compound which is an amino acid of the formula $H_2N-R'-COOH$ or a lactam of the formula:



where R′ is an alkylene radical containing from 1 to 10 carbon atoms or an arylene radical, and R″ is an alkylene radical containing from 3 to 10 carbon atoms;

c. a portion of the total amount of an amine which is a diamine of the formula $H_2N-R'''-NH_2$ or a polyalkylene-polyamine of the formula $H_2N-(R^{iv}-NH)_n-H$ where R‴ and R^{iv} are alkylene groups containing from 2 to 6 carbon atoms, and *n* is an integer from 1 to 5; cooling the resulting first intermediate reaction product VIII, combining

d. itaconic acid with said first intermediate reaction product in an amount so as to provide an excess of itaconic acid with respect to carbonyl groups to amine groups of said first intermediate and heating the mixture to a temperature of from about 110° to about 140°C. under reflux to obtain a second intermediate reaction product X, adding a further quantity of reactant (c) to said second intermediate reaction product and effecting condensation and removal of water by heating the mixture to a temperature of about 185°C., to form a water-soluble polyamide polyamine polumer XI, the proportions of reactants employed being from 0 to 4 mols of reactant (b), 1 to 3 mols of reactant (c) and 1 to 2 mols of reactant (d) for each mol of reactant (a), diluting said polyamine polyamide polymer with water to provide a solution containing from about 18 to about 25% by weight of polymer, adding to said polymer solution from about .05 to about 1.8 mols of epichlorohydrin per secondary amine group in said polymer while maintaining the temperature of said polymer solution at from about 40° to about 60°C., and thereafter heating said polymer solution to a temperature of from about 70° to about 80°C. to provide a cationic thermosetting resin.

3,869,344
FLEXIBLE CERAMIC MEMBER HAVING A PRE-LOADED TENSILE FORCE APPLYING MEANS

Robert F. Hunt, Concord, Tenn., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 273,308, July 19, 1972, abandoned. This application July 10, 1973, Ser. No. 377,894
Int. Cl. D21f *1/48;* D21g *3/00*
U.S. Cl. 162—274 **7 Claims**

1. In a system including at least two members one of which is movable relative to the other and in frictional engagement therewith, such as members in a papermaking system, the improvement wherein the other member is an elongated flexible ceramic element comprising

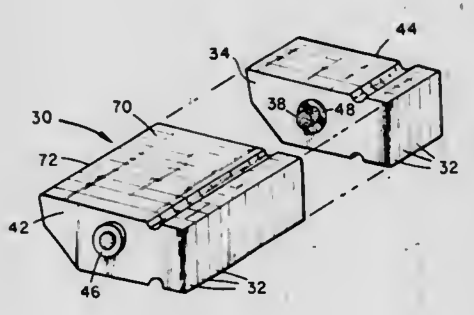
a plurality of ceramic segments, each having at least two opposite surfaces that are substantially flat and parallel, said segments being aligned with their flat faces in abutting face-to-face relation and in respective planes that are oriented substantially perpendicular to the composite length of said plurality of segments,

tension means anchored to opposite ends of said element and forcing said segments toward each other in a direction along their composite length and substantially perpendicular to their respective parallel faces with a preload force on said tension means, when said latter member is in an undeflected condition, that is at least the force calculated by the equation:

$$P = \frac{E_c A_c \dfrac{8dh}{l^2 + 4d^2}(L)}{2} + \frac{(\alpha_s - \alpha_c)\,\Delta T}{\dfrac{1}{A_s E_s} \qquad \dfrac{1}{A_c E_c}}$$

where:

P is the preload of said tension means, in pounds;
E_c is the modulus of elasticity of the ceramic material;
A_c is the cross-sectional area of a ceramic segment in a plane perpendicular to the composite length of said elongated ceramic element in square inches;
d is the maximum anticipated deflection of said elongated ceramic element, in inches;
h is the dimension of a ceramic segment in the plane perpendicular to the composite length of said elongated ceramic element and in alignment with the direction of said deflective force, in inches;



l is the overall length of said latter member;
α_x is the coefficient of thermal expansion of said tension means;
α_c is the coefficient of thermal expansion of said ceramic;
Δ_T is the degree of temperature change anticipated, in degrees F.;
A_x is the cross-sectional area of said tension means,
E_x is the modulus of clasticity of said tension means, and
L is the length of a ceramic segment, in inches,

but less than the amount of preload force which will compress said ceramic to over about one-half of its maximum compressive strength,

whereby loading forces exerted upon said elongated ceramic element are directed thereagainst in a direction substantially perpendicular to the longitudinal dimension thereof and deflection of said elongated ceramic element pursuant to such loading forces is compensated for in said compressed segments by further compression of said segments in those portions of the abutting faces thereof disposed along the inside of the line of curvature of said elongated ceramic element and by relief of less than all of the compression in those portions of said abutting faces that are disposed along the outside of said line of curvature of said elongated ceramic element without physical separation of said segments at their abutting faces.

3,869,345
LIMONOATE DEHYDROGENASE AND PREPARATION THEREOF

Shin Hasegawa, Pasadena, and Linda C. Brewster, Carson, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 323,466, Jan. 15, 1973, abandoned, which is a division of Ser. No. 250,764, May 5, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 399,890
Int. Cl. C12d *13/10*
U.S. Cl. 195—62 **3 Claims**

3. The enzyme, limonoate dehydrogenase, produced by culturing *Arthrobacter globiformis* on a nutrient medium containing limonoate ions, which has the specific ability of converting limonate A-ring lactone into 17-dehydrolimonoate A-ring lactone, which exhibits optimum activity at a pH of about 9.5, and which requires for its activity the presence of nicotinamide-adenine nucleotide.

3,869,346
PROCESS FOR THE PREPARATION OF ANTIMYCIN A

Claude Vezina; Rene Saucier, and Surendra N. Sehgal, all of Montreal, Quebec, Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 128,523, March 26, 1971, Pat. No. 3,746,623. This application Jan. 29, 1973, Ser. No. 327,370The portion of the term of this patent subsequent to July 17, 1990, has been disclaimed.
Int. Cl. A61k *21/00*
U.S. Cl. 195—80 R **1 Claim**

1. In the process of producing Antimycin A by propagation in a suitable aqueous fermentation medium containing containing animal or vegatable oils or fats, a source of carbohydrate, ammonium sulfate, calcium carbonate, and other necessary nutrients, of a strain of Streptomyces capable of producing Antimycin A when so propagated under aerobic conditions, the improvement which comprises optimizing yields of Antimycin A by a combination of steps including

a. continuous adding to the fermentation medium a source of assimilable carbon selected from the class consisting of carbohydrates, vegetable oils and animal oils at the rate of from 0.5 to 2.0 volume percent of the fermentation medium per day while controlling the pH of the fermentation medium at approximately 6.0 by discontinuously adding during the course of the fermentation a pH 6 maintaining amount of either a mineral acid or an inorganic alkaline solution, the assimilable carbon addition beginning within about 24 to 36 hours after commencement of fermentation and the pH control commencing when the fermentation medium pH falls to approximtely 6.0, and

b. recovering Antimycin A by adjusting the pH of the fermentation medium to approximately 9.0, maintaining said pH for approximately 30 minutes, adjusting the pH of the fermentation medium to approximately 2.5, filtering the fermentation medium in the presence of an added solid filter aid material, separating the filter cake having associated therewith the fermentation mycelium, extracting the filter cake and associated mycelium with methylene chloride, ethylene chloride, chloroform or benzene, drying and evaporating the solvent extract under subatomspheric pressure to obtain an oily residue containing antimycin A, and separating the Antimycin A from the oily residue.

3,869,347

PROCESS FOR THE PRODUCTION OF NEW PEPSTATINS HAVING ANTI-PEPSIN ACTIVITY

Hamao Umezawa, Tokyo; Tetsuji Miyano, Nagoya; Kohtaro Funaishi, Okazaki; Tomio Takeuchi, Tokyo, and Takaaki Aoyagi, Fujisawa, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

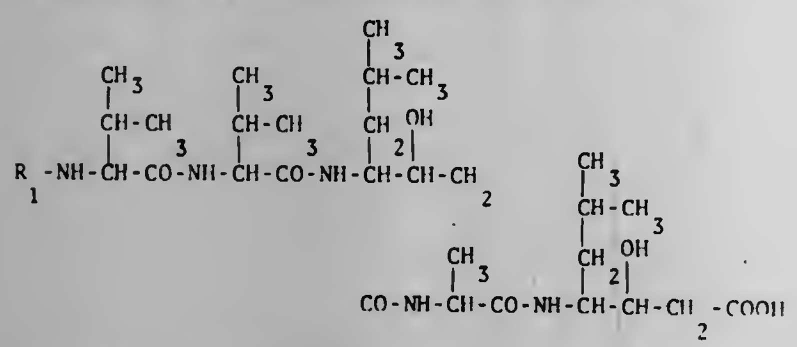
Continuation-in-part of Ser. No. 233,533, March 10, 1972, abandoned. This application Aug. 9, 1973, Ser. No. 387,139

Claims priority, application Japan, Mar. 26, 1971, 46-17292

Int. Cl. C12d *13/02*

U.S. Cl. 195—80 R **2 Claims**

1. A process for the production of pepstatin derivatives acting as pepsin inhibitors, which have the formula



$$R_1-NH-CH(CH(CH_3)CH_3)-CO-NH-CH(CH(CH_3)CH_3)-CO-NH-CH(CH_2CH(CH_3)CH_3)-CH(OH)-CH_2-CO-NH-CH(CH_3)-CO-NH-CH(CH_2CH(CH_3)CH_3)-CH(OH)-CH_2-COOH$$

wherein R_1 is n-caproyl or iso-caproyl or an alkyl ester thereof wherein the alkyl group contains 1–4 carbon atoms characterized in that *Streptomyces testaceus* ATCC No. 21469 or *Streptomyces argenteolus* var. *toyonakensis* ATTC No. 21468 is cultivated in a nutrient medium containing assimilable carbon sources and nitrogen sources for 3–10 days under aerobic conditions, the culture medium extracted with n-butanol, the extract concentrated to a syrup, precipitation effected by adding water to said syrup, and the pepstatin derivatives thus precipitated are purified by the aid of methyl esterification.

3,869,348

DETERMINATION OF AMYLASE

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Feb. 26, 1973, Ser. No. 335,736

Int. Cl. G01n *31/14, 33/16*

U.S. Cl. 195—99 **10 Claims**

1. An aqueous solution useful for the detection of amylase activity comprising an aromatic nitro containing compound reducible by lower sugars to give a reduced compound having a different color or color intensity, a color stabilizer, sufficient base to raise the pH above about 10, and at least about 0.03 mole/100 ml of a higher alkali metal cation, said color stabilizer being an iminodiacetic acid containing chelating compound having substantially no reducing properties.

3,869,349

METHOD FOR THE ENZYMATIC HYDROLYSIS OF CHOLESTEROL ESTERS

Charles T. Goodhue, and Hugh A. Risley, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,659

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **10 Claims**

1. In a process of assaying an aqueous proteinaceous liquid containing cholesterol esters for total cholesterol content in which said ester is hydrolyzed to liberate all of said cholesterol followed by determining the amount of cholesterol, the improvement comprising effecting said hydrolysis by treating said aqueous proteinaceous liquid with both a lipase having cholesterol esterase activity and a protease.

3,869,350

PROCESS FOR A THERMAL PRETREATMENT OF COKING BITUMINOUS COAL

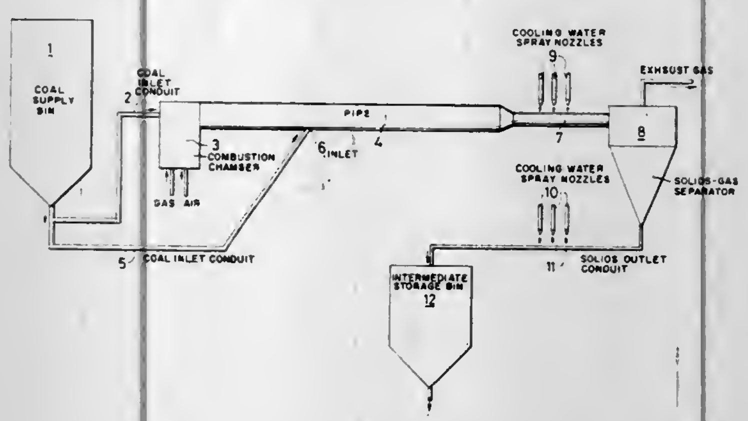
Walter Goossens, and Wolfgang Hermann, both of Bardenberg, Germany, assignors to Eschweiler Bergwerks-Verein Aktiengesellschaft, Kohlscheid, Germany

Filed June 5, 1972, Ser. No. 259,957

Claims priority, application Germany, June 11, 1971, 2128949

Int. Cl. C10b *49/08*

U.S. Cl. 201—32 **6 Claims**



1. In a process for thermally preparing, in a heating gas stream, coking bituminous coal having a swelling index smaller than five, for the subsequent hot briquetting, the improvement comprising providing a horizontally flowing heating gas stream, supplying the bituminous coal as raw material having a substantially unsifted grain size of up to 14,000μ into said heating gas stream, assuring an average heat-up speed of about 1,000° C per second to bring the material to an average end temperature of about 400° C at the most by exposing different portions of the raw material to the heating gas stream for different lengths of time by supplying the different material portions to the heating gas stream at different locations downstream of a first feed in location, and upon reaching said end temperature, suddenly cooling the material by means of cooling water, whereby predrying and milling of the raw material have been obviated.

3,869,351

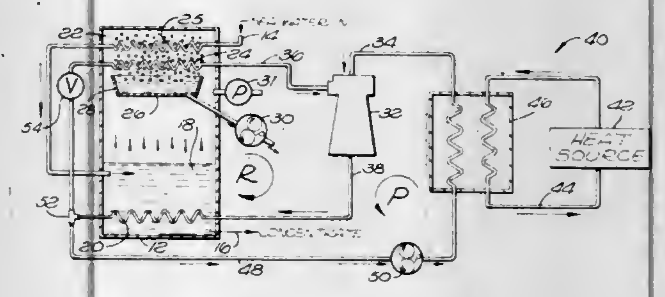
EVAPORATION SYSTEM AS FOR THE CONVERSION OF SALT WATER

Everett H. Schwartzman, Palos Verdes Estates, Calif.

Filed Nov. 9, 1973, Ser. No. 414,600

Int. Cl. B01d *3/02, 3/10*

U.S. Cl. 202—172 **9 Claims**



1. An evaporation system, as for the conversion of salt water by heat energy, comprising:
  means for containing fluid to undergo conversion in a liquid phase and a gaseous phase and including means for removing condensed liquid from said gaseous phase;
  first working-fluid means in heat-transfer relationship with said liquid phase;
  second working-fluid means in heat-transfer relationship with said gaseous phase;
  heat source means for transferring said heat energy to said working fluid to provide high-temperature working fluid;
  compressor means connected to be activated by said high-temperature working fluid to provide pressurized working fluid;
  means for supplying said pressurized working fluid through said first working fluid means, then through said second working-fluid means to said compressor means;
  means for supplying working fluid from said first working-fluid means to said boiler means;
  means for securing a temperature difference between said first working fluid and said second working fluid;
  means for obtaining and maintaining said contained fluid under vacuum.

3,869,352

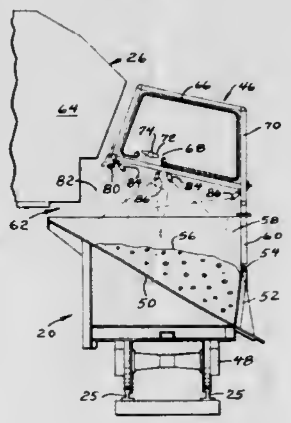
POLLUTION-FREE COKE QUENCHING SYSTEM

John E. Allen, Lake Forest, Ill.; John F. Hanley, Jr., Roswell, Ga.; Frank K. Armdur, Flossmoor; Frederick G. Krikau, Dolton, and Richard S. Patton, Flossmoor, all of Ill., assignors to Interlake, Inc.

Filed Jan. 17, 1972, Ser. No. 218,189

Int. Cl. C10b *39/04*

U.S. Cl. 202—227 **3 Claims**



1. In a coke quenching system, the combination comprising: means defining at least one vehicle having a coke receiving cavity, a coke admitting opening communicating with said cavity and a coke releasing exit communicating with said cavity, and adapted to travel between a coke receiving station and a coke dumping station;
  a hood on said vehicle means over said coke receiving cavity and adjacent one side of said coke receiving opening;
  exhaust means on said vehicle means in fluid communication with said hood for withdrawing gases within said coke receiving cavity and including two-phase jet means for inducing a draft and for scrubbing gases withdrawn from said cavity to remove particulate material therefrom;
  de-misting means on said vehicle means for receiving material from said two-phase jet means;
  a plurality of quench spray jets on said vehicle means, all directed at the interior of said cavity;
  and means establishing fluid communication between said de-misting means and said quench spray jets whereby liquid separated from gases thereby may be subsequently used for the quenching of coke in said cavity.

3,869,353

PROCESS FOR REGENERATING CONTAMINATED PERCHLORCETHYLENE

Ernst Schubert, Gunzburg, Danube, Germany, assignor to Chemische Fabrik Richard Geiss, Danube, Lusshof, Germany

Filed Dec. 10, 1973, Ser. No. 423,502

Claims priority, application Germany, Feb. 28, 1973, 2309997

Int. Cl. B01d *3/34;* **C07c** *21/04*

U.S. Cl. 203—38 **9 Claims**

1. A process for regenerating contaminated perchloroethylene, comprising the step of subjecting the contaminated perchloroethylene to a distillation operation to form a perchloroethylene distillate after the addition of about 0.01 to 1.0 percent of an organic peroxygen compound which is readily soluble in perchloroethylene and does not cause decomposition of the perchloroethylene under distilling conditions; said organic peroxygen compound decomposing at a temperature of between 30° and 120°C, and boiling together with its byproducts at a temperature above 121°C and not forming an azeotropic distillate with perchloroethylene.

3,869,354

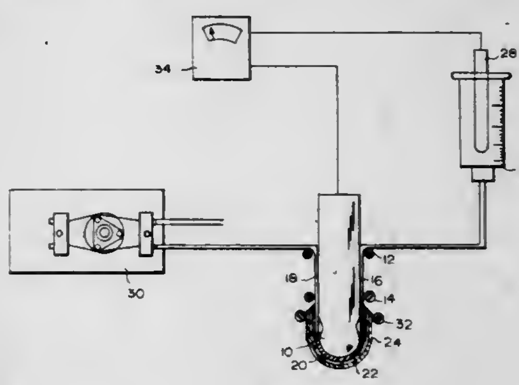
AMMONIUM ION SPECIFIC ELECTRODE AND METHOD THEREWITH

Joseph G. Montalvo, Jr., New Orleans, La., assignor to The Unites States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Apr. 6, 1973, Ser. No. 348,673

Int. Cl. G01n *27/30, 27/46, 3/14*

U.S. Cl. 204—1 T **10 Claims**



1. An ammonium ion specific electrode, comprising:
  a monovalent cationic electrode having an active surface portion thereon sensitive to ammonium ion;
  an ammonia permeable, cation impermeable membrane surrounding the active surface of said electrode; and
  a layer of electrolyte between said membrane and said electrode, said electrolyte being buffered to maintain a constant pH therein as ammonia diffuses thereinto.

9. An apparatus for selectively detecting ammonium ion in the presence of interfering cations comprising:
  an ammonium ion specific electrode in accordance with claim 1;
  a reference electrode in contact with said buffer-electrolyte layer; and
  a potentiometer means for measuring the potential difference between said ammonium ion specific electrode and said reference electrode.

10. A method for selectively detecting ammonium ion in the presence of interfering cations comprising:
  placing the apparatus of claim 9 into a solution to be tested; and
  buffering the test solution to a pH more basic than the pH of said buffer-electrolyte,
  whereby the presence of ammonium ion will be selectively detected by said apparatus to a high sensitivity and will appear on said potentiometer.

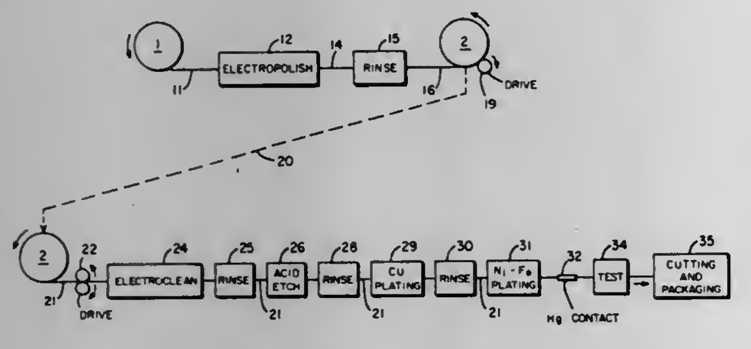
3,869,355
METHOD FOR MAKING A MAGNETIC WIRE OF IRON AND NICKEL ON A COPPER BASE

Joseph S. Mathias, Riverton, N.J., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 689,042, Dec. 8, 1967, abandoned, which is a division of Ser. No. 443,399, March 29, 1965, Pat. No. 3,370,929. This application May 1, 1970, Ser. No. 31,866

Int. Cl. C23b *5/50, 5/58, 3/06*

U.S. Cl. 204—32 R **11 Claims**



1. The method of making a plated-wire memory element haivng an information-storing magnetic film covering a wire-like non-magnetic wire strand which comprises the steps of:

a. producing a relatively smooth and clean surfaced non-magnetic wire strand;

b. electroplating a controlled rough non-magnetic metallic surface on said non-magnetic wire strand using a copper cyanide electrolyte with a plating current of about 15–100 milliamperes;

c. electroplating on said controlled rough surface a magnetic film having a ratio of about 80% nickel and 20% iron with a trace of cobalt;

d. the plating current utilized during the second- mentioned step producing a controlled surface roughness, which is effective to control at least the coercive force, H_c, of the magnetic film;

e. carrying out the third-named step in the presence of a bias current flowing in said wire strand; and

f. said bias current establishing a circumferential easy axis of magneitzation in the magnetic coating on said wire,

said magnetic film having a non-destructive read-out characteristic.

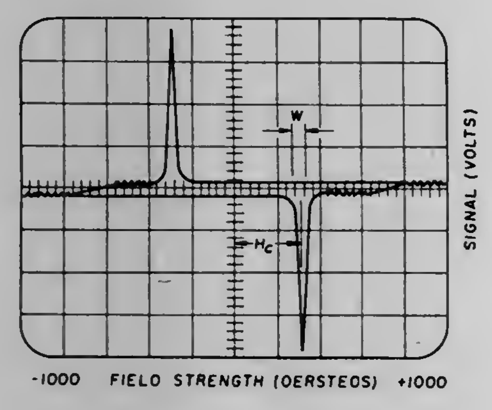
3,869,356
METHOD OF MAKING A THIN, FLEXIBLE MAGNETIC MEMORY LAYER

Kenneth E. Long, Cleveland Heights, Ohio, and David W. Taylor, Edgemont, Pa., assignors to Nico Magnetics Inc., Wilmington, Del.

Filed July 5, 1973, Ser. No. 376,855

Int. Cl. C23f *17/00;* **C23b** *5/08*

U.S. Cl. 204—38 R **14 Claims**



1. Method of producing an electromagnetic tape comprising:

a. coating a surface of a thin film substrate with a smooth layer of a copolymer of acrylonitrile and vinylidine chloride and containing gold,

b. thereafter chemically depositing a layer of copper upon said smooth layer from an electroless plating bath containing copper formate as the source of copper ions,

c. electrodepositing a layer of cobalt on top of the copper from a plating bath containing cobalt ions and buffered in a pH range of between about 3.6 and 5.8 with a low molecular weight substituted or unsubstituted carboxylic or dicarboxylic acid, and

d. applying a protective coating over the layer of cobalt.

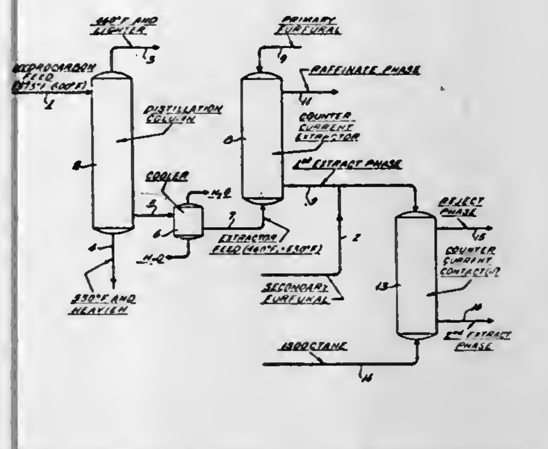
3,869,357
PURIFICATION OF ALKYL NAPHTHALENES BY DISTILLATION AND FURFURAL EXTRACTION

Wesley R. Cherry, Prospect Park, Del., and Kenneth A. Scott, Swarthmore, Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.

Continuation of Ser. No. 214,317, Dec. 30, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,285

Int. Cl. B01d *3/34;* **C07c** *7/00*

U.S. Cl. 203—43 **8 Claims**



1. Process for separating mono and dimethylnaphthalene from a hydrocarbon feed comprising alkylnaphthalenes including methylnaphthalenes and dimethylnaphthalenes and non-naphthalenes including monocyclic hydrocarbons and non-aromatic hydrocarbons, said feed boiling in the range from 375°–600°F. and containing 25–97% aromatics and over 25% alkylnaphthalenes which comprises:

a. distilling said hydrocarbon feed in a distillation zone;

b. withdrawing from said distillation zone a hydrocarbon fraction boiling mainly in the range of 460°–530°F;

c. countercurrently extracting said hydrocarbon fraction boiling mainly in the range of 460°–530°F. comprising alkylnaphthalenes, monocyclic aromatics, tricyclic aromatics and non-aromatic hydrocarbons with furfural solvent at a temperature in the range of 10° to 150°F., the ratio of furfural to the total aromatics in the charge fraction being in the range of 0.75:1 to 7:1 by volume;

d. separating an extract phase from a raffinate phase;

e. countercurrently contacting the extract phase at a temperature in the range of 10° to 150°F. with saturated hydrocarbon of the C_5–C_8 range in amount of 0.5 to 2.0 volumes of said saturated hydrocarbon per volume of extract in the extract phase, whereby said saturated hydrocarbon mainly dissolves in the diluted extract phase and displaces therefrom non-aromatic hydrocarbons and a minor amount of the monocyclic aromatics to form a reject phase containing displaced non-aromatics, monocyclic aromatics and only a minor proportion of said saturated hydrocarbon;

f. removing the reject phase

g. removing the furfural phase containing most of the mono and dimethyl naphthalenes and most of the C_5–C_8 saturated hydrocarbon; and

h. separating the mono and dimethylnaphthalene concentrate of higher than 95% purity from said furfural phase.

3,869,358
ELECTROLYTES FOR THE ELECTROLYTIC DEPOSITION OF ZINC

Fred I. Nobel, and Barnet D. Ostrow, both of Roslyn, N.Y., assignors to Lea-Ronal, Inc., Freeport, N.Y.

Continuation of Ser. No. 268,920, July 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 17,302, March 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 640,339, May 22, 1967, abandoned. This application Nov. 5, 1973, Ser. No. 412,817

Int. Cl. C23b *5/46*

U.S. Cl. 204—55 Y **10 Claims**

1. An aqueous alkaline zincate bath suitable for depositing bright metallic zinc deposits and containing less than about 2 oz./gal. of cyanide therein, said bath comprising an aqueous alkaline solution having dissolved therein:

a. a soluble zinc compound capable of being plated by electroytic deposition; and

b. at least about 0.1 gm./l of a water soluble polymer containing repeating tertiary and/or quaternary amine groups, said polymers having been prepared by (i) polymerizing an aliphatic amine with an epihalohydrin, said polymerization being carried out for a sufficient length of time, and said reactants being present in such a molar ratio, so as to produce a polycondensate having repeating tertiary and/or quaternary amine groups ahd having a molecular weight above about 250 but below that which would render the polycondensate water insoluble or insoluble in the alkaline zincate bath.

3,869,359
METHOD OF MAKING INTIMATELY ADMIXED METAL OXIDES

Henri Bernard Beer, Heide-Kalmthout, Belgium, assignor to A.G. fur Oxydenchemie, Vaduz, Liechtenstein

Filed June 25, 1973, Ser. No. 373,296

Int. Cl. C01b *13/14*

U.S. Cl. 204—96 **23 Claims**

1. A method of making intimately admixed metal oxides, comprising placing into an electrolyte a pair of electrodes the anode of which is a metal electrode the metal of which is to form one of the intimately admixed metal oxides and which metal will form a hydroxide of said metal upon electrolysis of said electrolyte, adding to the electrolyte a poorly soluble compound of at least one second metal which is to form the other of the intimately admixed metal oxides, providing in said electrolyte a source of oxygen, carrying out electrolysis of said electrolyte by means of said electrodes while agitating the electrolyte, and recovering the precipitated intimately admixed oxides of the metal of the electrode and the metal of the compound.

3,869,360
REDUCTION METHOD FOR SEPARATING METAL VALUES FROM OCEAN FLOOR NODULE ORE

William S. Kane, Wicomico, Va. 23184, and Paul H. Cardwell, Zanoni, Va. 23191

Continuation-in-part of Ser. No. 251,089, May 8, 1972, abandoned, which is a continuation of Ser. No. 40,586, May 26, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,604

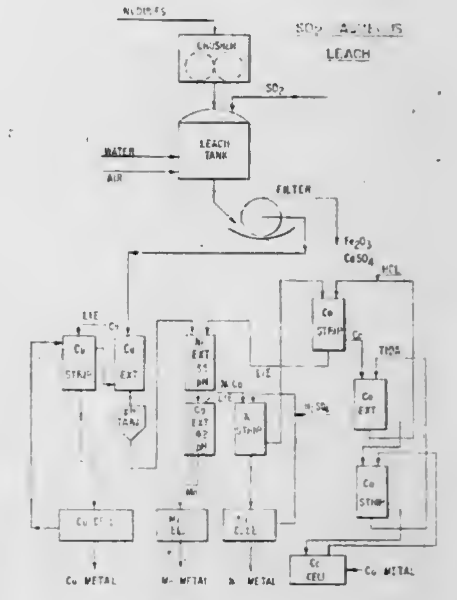
Int. Cl. C22d *1/24, 1/14, 1/16*

U.S. Cl. 204—105 R **14 Claims**

1. A process for separating metal values from ocean floor nodule ores, the ore comprising as primary components the oxides of manganese and iron and as secondary components compounds of copper, cobalt and nickel, the process comprising the steps of:

1. reacting the nodule ore, in the presence of oxygen, with a sulfur dioxide acidic reducing agent to form as reaction products the water-soluble sulfates of divalent manganese, nickel, cobalt and copper (2) contacting the metal values with sufficient oxygen to convert substantially all of the iron present to insoluble iron oxide. (3) leaching the reacted ore with an aqueous leach liquid to form an aqueous pregnant leach solution comprising the water-soluble salts of divalent manganese, copper, nickel and cobalt;

(4) separating the solution from any insoluble residue of the ore;



(5) separating out an individual metal value by treating the aqueous solution in a liquid ion exchange process to form a solution of the individual metal in the form of a water-soluble salt;

(6) reducing the metal value to the elemental metal by cathodically electroplating from the solution of the water-soluble salt.

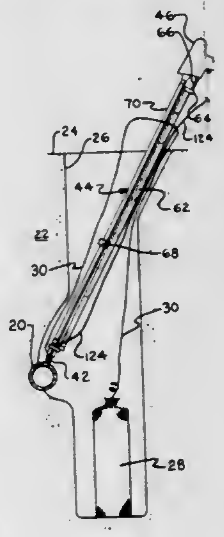
3,869,361
METHOD FOR MAKING AN ELECTRICALLY-CONDUCTIVE CONNECTION SPECIFICALLY FOR UNDERGROUND LINES

John C. Jenkins, Lorain, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 26, 1972, Ser. No. 318,191

Int. Cl. C23f *13/00;* **B23k** *11/04;* **H02g** *15/08*

U.S. Cl. 204—148 **7 Claims**



1. A method of connecting an electrically conductive wire to an external surface of an underground metal pipe, said method comprising forming a hole from the surface of the ground above the pipe down to a location near the pipe so that a portion of the surface of the pipe is exposed to the surface of the ground, affixing an electrically conductive wire to a

weldable stud at a portion spaced from a weldable end thereof, and subsequently welding the weldable end of said stud to said portion of the surface of said pipe by placing the stud in a chuck of a stud welding tool, holding the tool above the surface of the ground, inserting the stud and the chuck into the hole and contacting the pipe with the weldable end of the stud, and initiating a welding cycle for the stud welding tool.

3,869,362
PROCESS FOR REMOVING NOXIOUS GAS POLLUTANTS FROM EFFLUENT GASES BY IRRADIATION

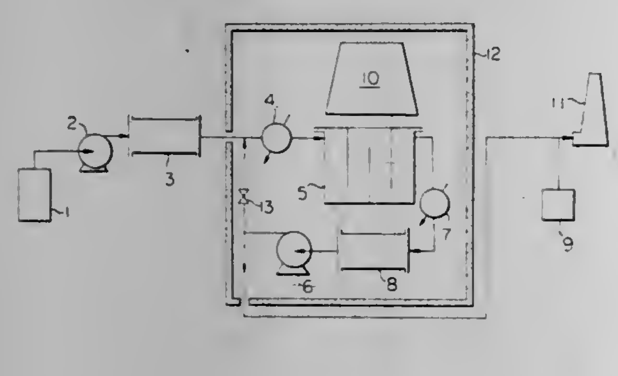
Sueo Machi, Takasaki; Keita Kawamura, Yokohama; Waichiro Kawakami, Takasaki; Shingi Aoki, Fujisawa; Shoji Hashimoto; Keiichi Yotumoto, both of Takasaki, and Hiromi Sunaga, Isesaki, all of Japan, assignors to Ebara Manufacturing Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Jan. 9, 1974, Ser. No. 431,925

Claims priority, application Japan, Jan. 11, 1973, 48-5607; Jan. 19, 1973, 48-7827; Aug. 15, 1973, 48-91547

Int. Cl. B01j *1/10*

U.S. Cl. 204—157.1 R **9 Claims**



1. A process for removing NOx and SO_2 from effluent gases comprising

regulating the ratio of the NOx content to the SO_2 content so as to be in the region of 0.1 - 3.0 before the gases are delivered to a reaction chamber inlet,

moving said gases through said reaction chamber and at the same time irradiating them with an ionizing radiation or ultraviolet light from a radiation source which is placed near or in said reaction chamber, thereby converting gaseous pollutants including NOx and SO_2, to mist and/or solid particles, and then

collecting the particles thus produced by a mist and dust collector.

3,869,363
GENERATION OF PHOTOFLUORESCENT MATERIALS BY SHORT WAVELENGTH ULTRAVIOLET IRRADIATION OF NON-FLUORESCENT BIS-DIARYLCHLOROMETHYL-1,3,4-OXADIAZOLES

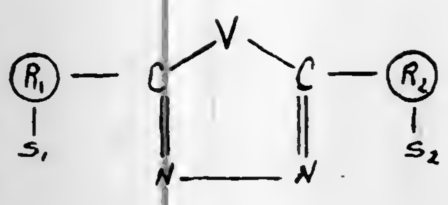
Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 13, 1973, Ser. No. 424,268

Int. Cl. B01j *1/10;* **G01n** *21/00*

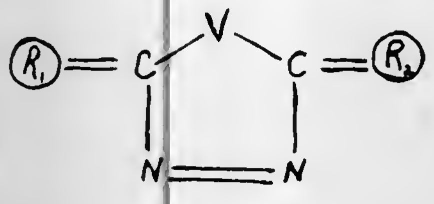
U.S. Cl. 204—158 R **10 Claims**

1. A method for the transcription of expressions to a member incorporating a cyclic azo compound of the formula:



(non-luminescent)

by directed photochemical short-wavelength light generation of a fluorescent cyclic azo compound, in situ, of the formula:



(luminescent)

which fluorescent transcription is made discoverable by longer wavelength radiation; wherein R_1 and R_2 represent a symmetrical bis aromatic methyl or polycyclic aromatic radical remnant and S_1 and S_2 respectively represent sublating substituents chlorine, bromine or $-CO_3\,BU^t$ and V represents oxygen, sulfur or N-Z where N represents nitrogen and Z represents lower alkyl, alkaryl or aryl.

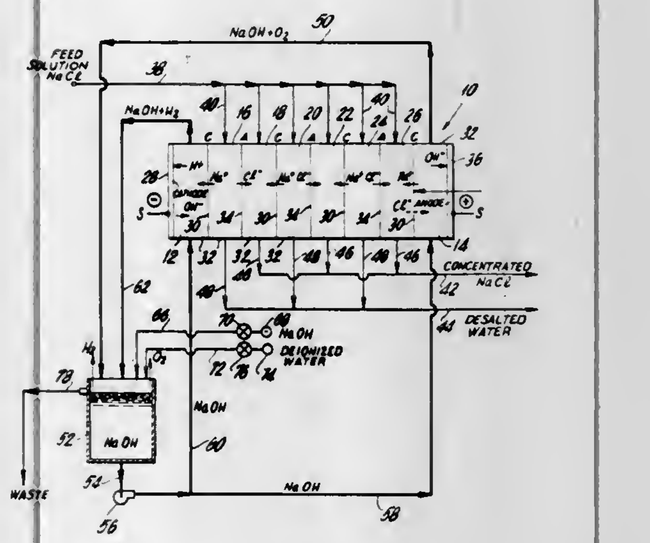
3,869,364
SYSTEM FOR INHIBITING ATTACK ON A FERROUS ANODE ELECTRODE IN AN ELECTRODIALYTIC CELL

Alvaro R. Tejeda, New York, N.Y., assignor to J. Vast Associates Inc., New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,333

Int. Cl. B01k *5/00*

U.S. Cl. 204—301 **4 Claims**



1. An electrodialytic apparatus for the treatment of electrolytic fluids, said apparatus comprising several serially disposed compartments including a first end compartment having a ferrous cathode electrode disposed therein, a second end compartment spaced from said first end compartment, said second end compartment having a ferrous anode electrode disposed therein, plural intermediate compartments between said first end compartment and said second end compartment, ion permselective membranes separating each compartment from the compartments immediately adjacent thereto, means for introducing into and removing electrolytic fluid from all the intermediate compartments, means for impressing a direct electric current across said cathode and said anode electrodes, and means for continuously introducing into and removing an aqueous caustic solution from said end compartments.

3,869,365
METHOD IN COUNTER FLOW ISOTACHOPHORESIS

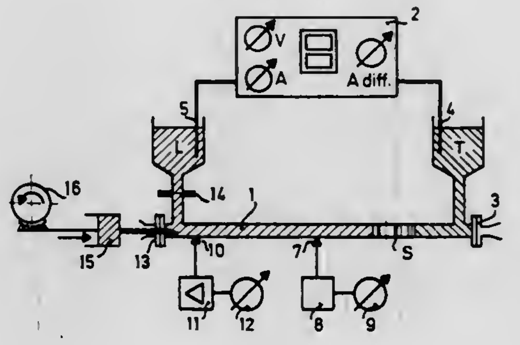
Bengt Fritiof Sunden, Alvsjo, Sweden, assignor to LKG-Produkter AB, Bromma, Sweden

Filed Dec. 12, 1973, Ser. Nc. 423,997

Claims priority, application Sweden, Dec. 19, 1972, 16594/72

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **8 Claims**



1. Method in counter flow isotachophoresis of the type wherein a sample comprising ions of the same polarity to be separated is introduced into a column provided with first and second electrodes, with a first electrolyte between the sample and said first electrode and a second electrolyte between the sample ans said second electrode, the first and second electrolytes comprising ions of higher and lower mobilities respectively than the ions of the sample and an electrical potential is applied between said first and second electrodes having a polarity such that the sample ions will tend to migrate towards said first electrode and a pressure difference is applied between said first and second electrolytes, the improvement which includes the steps of:

independently adjusting the value of said electrical potential and the value of said pressure difference to produce with the aid of a current differential detector an electrical current flow having a constant value such that the influence of said constant current flow equalizes the adjusted opposing counter flow of electrolyte to maintain the sample at a desired position in the column.

3,869,366
METHOD FOR ELECTROCOATING

Tameyuki Suzuki, Zushi; Junichi Yasukawa, Chigasaki; Teruhiko Ishii, Chiba; Giiichi Minami, Kobe; Yukihiro Manabe, Amagasaki, and Mitsuo Nishimura, Nishinomiya, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Sept. 29, 1972, Ser. No. 293,545

Claims priority, application Japan, Oct. 6, 1971, 46-79076

Int. Cl. B01k *5/02;* **C23b** *13/00*

U.S. Cl. 204—181 **13 Claims**

1. A method of electrocoating which comprises immersing an electrically conductive metallic article as a cathode in an aqueous electrodeposition bath containing a cationic binder resin and a non-ionic synthetic resin powder dispersed therein, the amount of the latter being 100 – 5000 parts by weight per 100 parts of the former, applying a voltage between said cathodic article and an anode to cause electric current flow through said bath so that a resinous coating comprising said binder resin and non-ionic resin powder is electrodeposited on the cathodic article, taking the coated article out of the bath and baking the same to form an adherent resinous film on said article.

3,869,367
PROCESS FOR MANUFACTURING A CONDUCTIVE FILM FOR A THIN FILM INTEGRATED CIRCUIT DEVICE

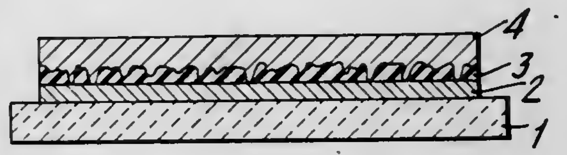
Akio Sato, and Shigehiko Sato, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Jan. 3, 1973, Ser. No. 320,706

Claims priority, application Japan, Dec. 27, 1972, 47-130072

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **3 Claims**



1. A process for manufacturing a highly conductive thin film for use in thin film integrated circuits comprising the steps of: forming a film of a first high-conductivity metal on an insulator base plate;

forming a diffusion preventing insulator film on said metal film; and

sputtering a second metal susceptible to anodic film forming oxidation onto said insulator film, said insulator film being of such a thickness as to permit particles of said second metal to penetrate said insulator film at a multiplicity of locations, while leaving intact a sufficient insulating film to substantially prevent the formation of an alloy of said first and second metals, whereby a composite film is produced having a specific conductivity higher than that of either of said first or said second metals.

3,869,368
METHODS OF SPUTTER DEPOSITION OF MATERIALS

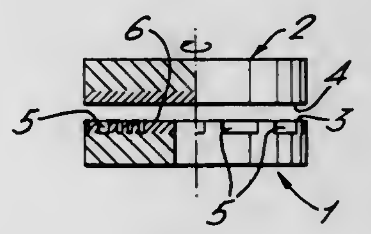
Geoffrey Beardmore, Cheltenham, and Hugh N. Evans, Bristol, both of England, assignors to Smiths Industries Limited, London, England

Continuation of Ser. No. 786,892, Dec. 26, 1968, abandoned. This application July 8, 1971, Ser. No. 160,913

Claims priority, application Great Britain, Dec. 29, 1967, 59139/67

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **2 Claims**



1. In a method of sputter deposition of a particular material from a target onto a surface of a substrate to form thereon a projection from said surface comprising the steps of:

A. Applying a negative potential to said substrate so as to sputter substrate material from the surface thereof,

B. Thereafter applying a negative voltage to a target formed of said particular material which voltage increases in amplitude while concurrently the voltage applied to the substrate is decreased to thereby increase the rate of sputtering from the target progressively from zero while concurrently the rate of sputtering from the substrate decreases progressively to zero,

C. And thereafter continuing to apply said negative voltage to the target to sputter therefrom onto the substrate while the voltage on the substrate is maintained at substantially zero voltage until the desired amount of target material is deposited on the substrate in accordance with the desired thickness of the projection.

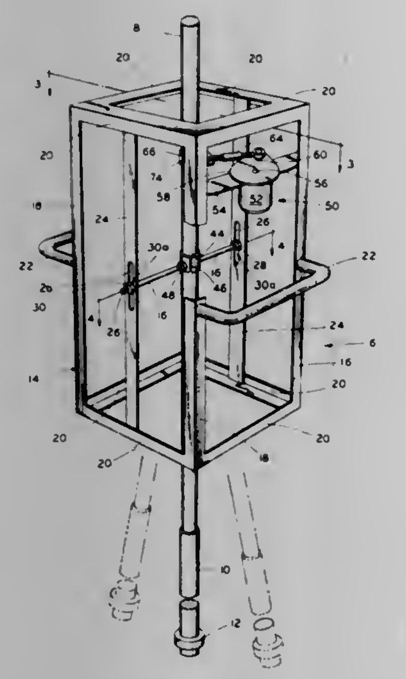
3,869,369
VIBRATING OXYGEN PROBE

Yi-Chung Chang, Murrysville; Nicholas M. Rymarchyk, and Robert B. Greenstine, both of Pittsburgh, all of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Jan. 26, 1973, Ser. No. 326,904

Int. Cl. G01n *27/46;* **C21c** *7/00*

U.S. Cl. 204—195 S **10 Claims**



1. An apparatus for measuring the oxygen content of molten metal, comprising:

- an elongated lance having an upper portion and a lower portion having an oxygen probe at its lower end, said oxygen probe having a solid electrolyte for measuring the oxygen concentration in the molten metal,
- a mounting frame supporting the lance upper portion and including trunnion means pivotally mounting the upper lance portion on the frame,
- drive cam means on the frame and operatively connected with the lance upper portion in vertically spaced relation from the trunnion means for imparting periodic movement to the oxygen probe, and
- a motor means carried by the frame and drivingly connected with said cam means to provide for said periodic movement of the oxygen probe.

3,869,370
METHOD AND APPARATUS FOR CONTINUOUSLY SENSING THE CONDITION OF A GAS STREAM

Donald A. Sayles, 1337 Beechwood Blvd., Pittsburgh, Pa. 15217

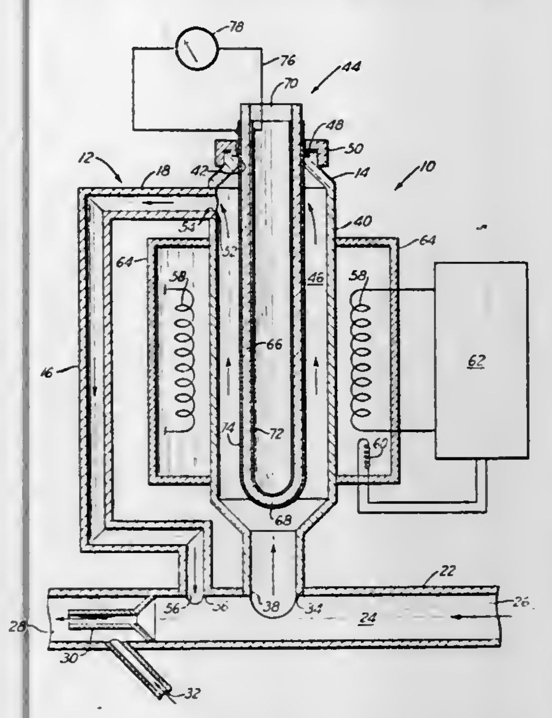
Filed May 7, 1973, Ser. No. 357,627

Int. Cl. G01n *31/00;* **B01k** *3/00*

U.S. Cl. 204—195 S **5 Claims**

1. Apparatus for continuously sensing the condition of a gas flowing in a main passageway comprising,

- a sample gas flow conduit having an inlet opening and an outlet opening connected to spaced openings in the main passageway,
- said sample gas flow conduit having a gas inlet leg extending upwardly at an angle to the earth's surface and a gas outlet leg extending downwardly at an angle to the earth's surface, said gas inlet leg and said gas outlet leg arranged in spaced relation to each other and operable to provide a difference in static head therebetween,
- means to heat said gas inlet leg and maintain a temperature differential between said gas inlet leg and said gas outlet leg so that a sample stream of gas is withdrawn from said gas flowing in said main passageway by convection and at a preselected flow rate,
- said gas inlet leg includes an enlarged portion, and
- a ceramic oxide electrolyte electrochemical cell positioned in said enlarged portion of said gas inlet leg of said gas flow conduit to measure the oxygen partial pressure of said stream of gas flowing through said sample gas flow conduit.



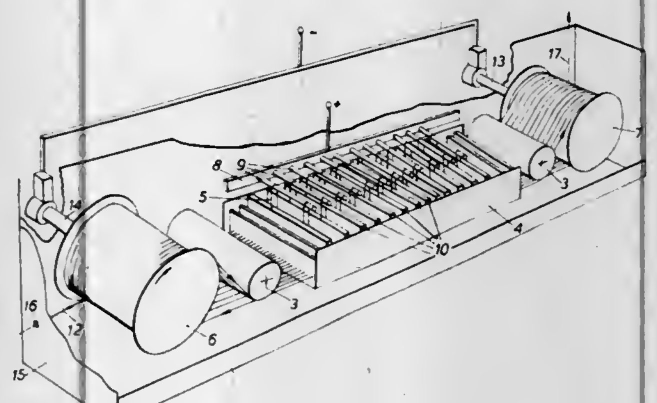
3,869,371
ELECTROTINNING WIRE

James Delves-Broughton, Mathern, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 23, 1973, Ser. No. 381,954

Int. Cl. C23b *5/68, 5/58, 5/14*

U.S. Cl. 204—206 **6 Claims**



1. Apparatus for continuously depositing a metal coating on a longitudinally moving wire comprising a housing, a tank in said housing for a bath containing an electrolyte including a salt of the metal to be deposited, means for passing said wire a plurality of times through said bath and end walls of said tank, said means including a pair of rotatable electrically conducting drums respectively positioned within said housing at opposite ends outside of said tank directing said wire into a plurality of loops, direct current supply means, at least one of said drums being connected to the negative terminal of said supply means, a pair of grooved rollers positioned respectively between said opposite ends of said tank and said drums to cause the portions of said wire loops passing through said bath to be in a substantially common horizontal plane with alternate wires moving in opposite directions, and a plurality of anodes positioned along said tank in said bath and connected to the positive terminal of said supply means, said anodes being of the metal to be deposited, said housing collecting electrolyte escaping from said tank and providing a source of electrolyte for said tank.

3,869,372
ELECTROPLATING OF THE CUT EDGES OF SHEET METAL PANELS

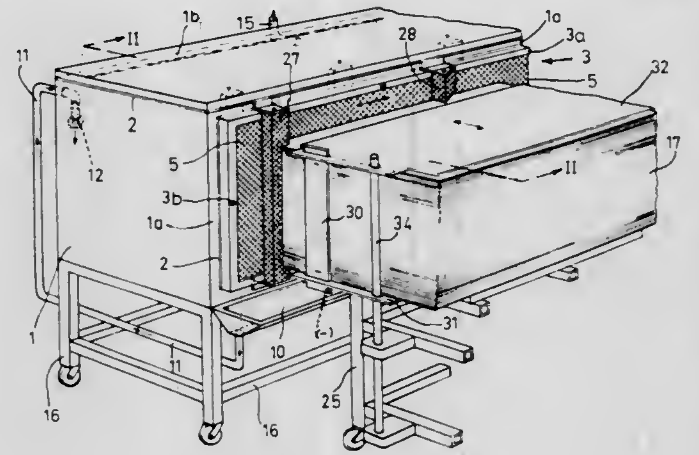
Otto Alfred Becker, 59 Robert Koch Strasse, T-6600 6 Saarbrucken, Germany

Division of Ser. No. 835,116, June 20, 1969, abandoned. This application Dec. 2, 1971, Ser. No. 204,385

Claims priority, application Germany, June 20, 1968, 1771645; Aug. 1, 1968, 1771933; Oct. 17, 1968, 1803474

Int. Cl. C23b *5/68*

U.S. Cl. 204—224 R **13 Claims**



1. Apparatus for electroplating the cut edges of sheet metal panels comprising:

- a. a container for the electrolyte, a lid for the container, and means for retaining said lid air tight on said container;
- b. means separate from said container for supporting a stack of said sheet metal panels and substantially aligning the edge portions of said panels on at least one side thereof;
- c. at least one anode mounted in said container;
- d. means for directly electrically contacting each sheet metal panel for connecting the same to the cathode of a direct current source, and
- e. means for conducting current to said contacting means whereby said cut edges are electroplated.

3,869,373
CONTACT DEVICE FOR ELECTROCHEMICALLY DEBURRING WORKPIECES

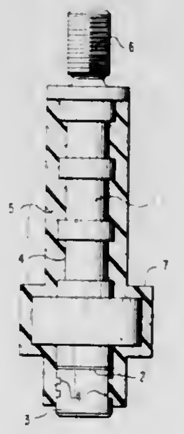
Hans-Dieter Schacher, Bernhausen; Reinhold Fischer, Burgstetten, and Matthias Kunst, Hohenacker, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed May 11, 1973, Ser. No. 359,416

Claims priority, application Germany, May 12, 1972, 2223152

Int. Cl. B23p *1/02;* **C23b** *5/68;* **B01k** *3/00*

U.S. Cl. 204—224 M **7 Claims**



1. In a device for the electrochemical deburring of workpieces that are to be connected as anodes which includes a shaped tool electrode serving as cathode and adapted to contain an electrolyte flowing between anode and cathode, wherein the supply of energy to the workpiece takes place via an anode contact means surrounded with an insulating material except for an electrical current cable connection at one end and a contact surface at the other end, the improvement which comprises said anode contact means including a contact body means made of a metal consisting essentially of tungsten for providing said contact surface and a contact carrier means frictionally welded to said contact body means and made of a metal consisting of a copper-chrome alloy, and said insulating material forms a casing for the contact body means and the contact carrier means, at least one of said contact body means and said contact carrier means being provided with circumferentially extending grooves at least at places corresponding to an end of the insulating casing adjacent to an end of the anode contact means, said casing engaging in said grooves.

3,869,374
COUNTERCURRENT EXTRACTION COLUMN FOR LIQUID-LIQUID EXTRACTION AND SIMULTANEOUS ELECTROLYSIS

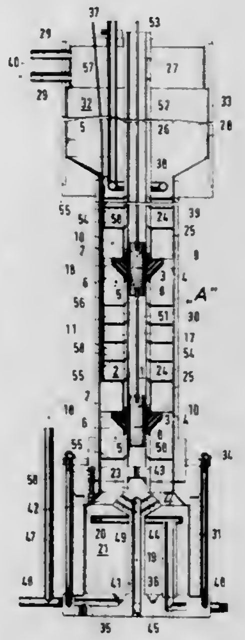
Hubert Goldacker, Karlsruhe; Helmut Hausberger, Bad Langenbrucken, and Helmut Schmieder, Karlsruhe, all of Germany, assignors to Gesellschaft fur Kernforshung mbH, Karlsruhe, Germany

Filed Mar. 23, 1973, Ser. No. 344,151

Claims priority, application Germany, Dec. 13, 1972, 2261018

Int. Cl. B01k *3/00*

U.S. Cl. 204—273 **21 Claims**



1. A countercurrent extraction column for carrying out a liquid-liquid extraction of two phases which are insoluble in each other, one of which phases is a conducting phase and the other of which is a non-conducting phase with the use of simultaneous electrolysis, the column comprising, in combination:

- a. means forming an upright column having a longitudinal axis;
- b. an upright tube within said column, said tube extending in the direction of said column and dividing a portion of the same into inner and outer compartments through which may flow, in countercurrent, said two phases, one of said compartments being an anode compartment and the other of said compartments being a cathode compartment; said tube including at least one tube section separating said cathode compartment and said anode compartment;

c. an anode in said anode compartment;
d. a cathode in said cathode compartment; and
e. communicating means establishing communication through said tube between said two compartments, said communicating means defining orifices situated in one of the compartments each orifice being oriented in a direction having a component parallel to said axis, the directional components all pointing in the same sense; said communicating means including a nozzle means terminating in said orifices, each orifice having a cross section, the plane of which intersects said axis; said nozzle means including an annular member surrounding said tube section, said annular member defining an annular space between said anode compartment and said cathode compartment, said annular member having outer openings in its upper surface, which outer openings open into said cathode compartment and form said orifices; said outer openings being positioned on concentric circles around the center axis of said column and having outwardly increasing diameters; and inner openings in its inner surface, which inner openings open into said anode compartment and include bores inclined upward in said tube.

3,869,375
GASKET STRUCTURE

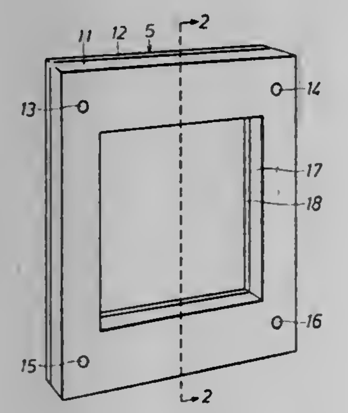
Hiroshi Ono, and Mitsuo Yoshida, both of Noveoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1971, Ser. No. 211,359

Claims priority, application Japan, Dec. 23, 1970, 45-117140

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **3 Claims**



1. A gasket structure for preventing leaks, said gasket structure comprising at least three gasket substructures, at least two of said substructures each including a first sheet of hard material and a second sheet of soft material wherein said sheet of soft material is thinner than said sheet of hard material and wherein said first and second sheets have a central opening and guide passages formed therein; said at least two gasket substructures being held together by pressure sufficient to compress said soft sheets without substantially compressing said hard sheets whereby leaks are prevented and said central opening and guide passages are not deformed and said third gasket substructure includes a sheet of soft resilient material and guide wall members of hard, resilient material said third gasket substructure having a central opening and guide passages corresponding to said central opening and guide passages formed by said at least two gasket substructures wherein said guide wall members are positioned within the central opening of said soft sheet and at least one of the guide passages of said third gasket substructures commuincates with said central opening.

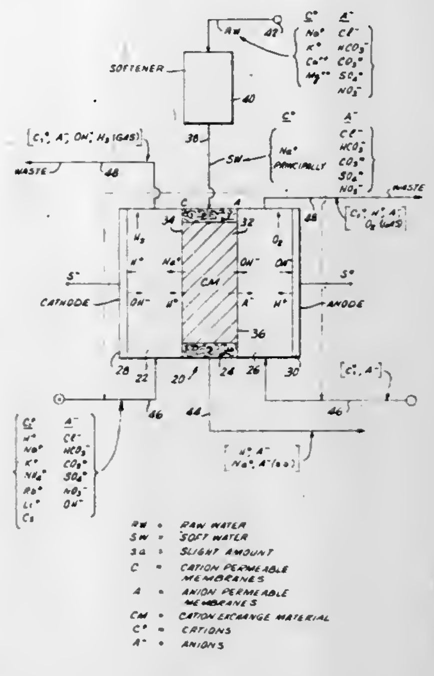
3,869,376
SYSTEM FOR DEMINERALIZING WATER BY ELECTRODIALYSIS

Alvaro R. Tejeda, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,702

Int. Cl. B01k *5/00*

U.S. Cl. 204—301 **4 Claims**



1. An electrodialytic apparatus for the treatment of soft water, said apparatus comprising at least nine serially disposed compartments including a first compartment having a ferrous cathode electrode disposed therein, a second compartment immediately adjacent said first compartment and separated therefrom by a cation permselective membrane, a bed of cation exchange material disposed within said second compartment, a third compartment immediately adjacent said second compartment and separated therefrom by an anion permselective membrane, a fourth compartment immediately adjacent said third compartment and separated therefrom by a cation permselective membrane, a bed of anion exchange material disposed within said fourth compartment, a fifth compartment immediately adjacent said fourth compartment and separated therefrom by an anion permselective membrane, a sixth compartment immediately adjacent said fifth compartment and separated therefrom by a cation permselective membrane, a bed of anion exchange material disposed within said sixth compartment, a seventh compartment immediately adjacent said sixth compartment and separated therefrom by an anion permselective membrane, an eighth compartment immediately adjacent said seventh compartment and separated therefrom by a cation permselective membrane, a bed of cation exchange material disposed within said eighth compartment, a ninth compartment immediately adjacent said eighth compartment and separated therefrom by an anion permselective membrane, said ninth compartment having a ferrous anode electrode disposed therein, means for introducing soft water into the second, third, fifth, sixth and seventh compartments, means for removing fluid from the second, third, fifth, sixth and seventh compartments, means for introducing fluid removed from the second compartment into the fourth compartment, means for introducing fluid removed from the sixth compartment into the eighth compartment, means for removing fluid from the third, fifth and seventh compartments and leading the same to a treatment means, means for removing fluid from the fourth and eighth compartments, combining the same and leading the combined fluids to an outlet for use, and means for impressing a direct electric current across said cathode and anode electrodes whereby the fluid leaving the fourth compartment is deionized water at an alkaline pH, the fluid leaving the eighth compartment is deionized water at an acidic pH, and the combined fluids comprise deionized water at a substantially neutral pH.

3,869,377
PRODUCTION OF EXTRAPURE AROMATICS

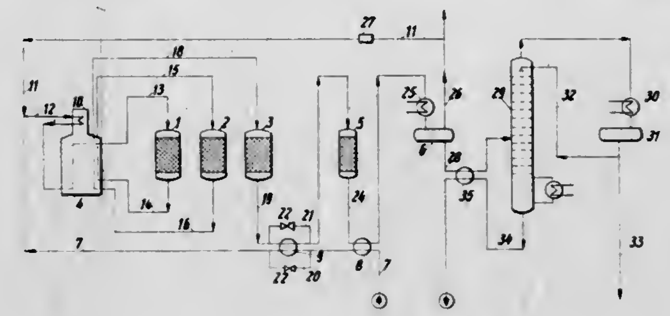
Karl-Heinz Eisenlohr, Buchschlag; Helmut Markwort, and Berthold Scholz, both of Weisskirchen, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Maine, Germany

Filed Dec. 13, 1972, Ser. No. 314,636

Claims priority, application Germany, Dec. 14, 1971, 2161973

Int. Cl. C10g *39/00*

U.S. Cl. 208—66 **11 Claims**



1. In a process for producing substantially pure aromatics whereins a gaseous reaction mixture which contains hydrogen, olefins, diolefins and aromatic compounds is subjected to a hydroforming operation with a noble metal catalyst at about 500° to 600°C and a pressure of about 15 to 50 atmospheres, and wherein subsequently the aromatics are separated in the substantially pure state from the hydroformate, the improvement which comprises cooling the hydroformate to a temperature of 100 to 400°C directly after hydroforming and passing it still in gaseous state through a reactor filled with a hydrogenation catalyst comprising cobalt and molybdenum on an inorganic oxide carrier under a lower pressure than the hydroforming operation, whereby the olefins and diolefins are substantially eliminated.

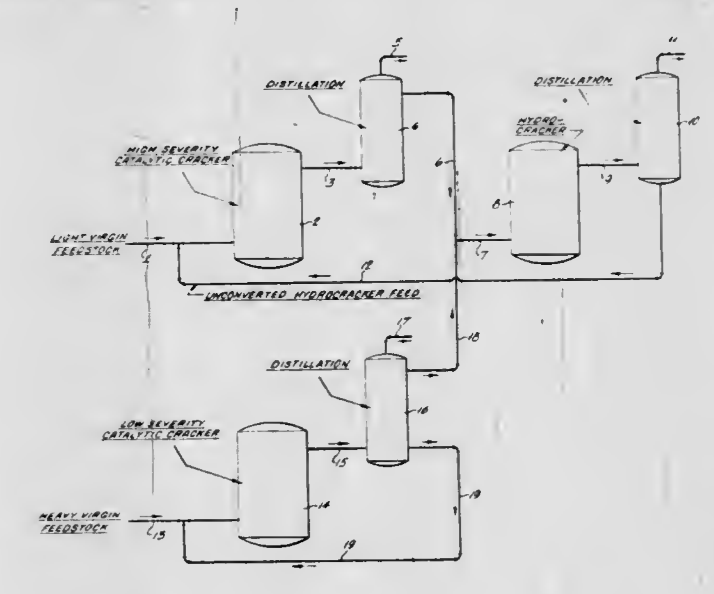
3,869,378
COMBINATION CRACKING PROCESS

Andre W. Pollock, and James M. Durrett, both of West Chester, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 16, 1971, Ser. No. 173,699

Int. Cl. B01j *9/20;* **C10g** *37/02*

U.S. Cl. 208—78 **2 Claims**



1. A process for treating petroleum which comprises
a. catalytically cracking, in a first cracking zone, a heavy virgin feedstock at a temperature of at least about 900° F.,
b. catalytically cracking, in a second cracking zone, a light virgin feedstock at a severity essentially higher than that in step a,
c. separating in a distillation zone an aromatic cycle oil from the cracked products of steps a and b,
d. catalytically hydrocracking the aromatic cycle oil produced in step c in a hydrocracking zone,
e. separating the bottom fraction boiling above at least about 400° F. from the effluent of step d in a distillation zone, said bottom fraction, being of sufficient paraffin content, that is at least about 70 percent due to the catalytic hydrocracking of step d to comprise an acceptable catalytic cracker feedstock without further processing and
f. recycling said bottom fraction produced in step e to the catalytic cracking zone of step b.

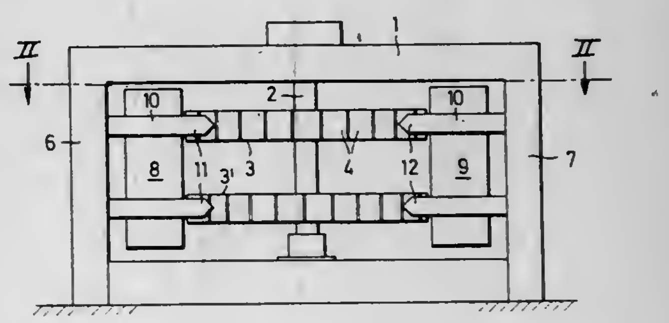
3,869,379
MAGNETIC SEPARATOR

Hans-Jurgen Vorster, Cologne; Paul Kunath, Cologne-Mauenheim, and Karl-Wilhelm Bethmann, Aachen, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Continuation of Ser. No. 129,681, March 31, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,168

Int. Cl. B03c *1/14*

U.S. Cl. 209—222 **3 Claims**



1. In a magnetic separator, a stationary frame; a vertical drive shaft rotatably mounted in said frame; at least two rotors secured to said drive shaft one above the other, each of said rotors including a plurality of plate sets of substantially equal length in the circumferential direction of the rotor and uniformly distributed along the periphery thereof, the plate sets of one of said rotors being circumferentially offset in relation to the plate sets of the adjacent rotor by an amount substantially equal to the length of a plate set divided by twice the number of rotors; and pole shoes secured to said frame and having curved surfaces adjacent and substantially conforming in shape to the peripheries of said rotors.

3,869,380
TREATMENT OF WASTEWATER

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

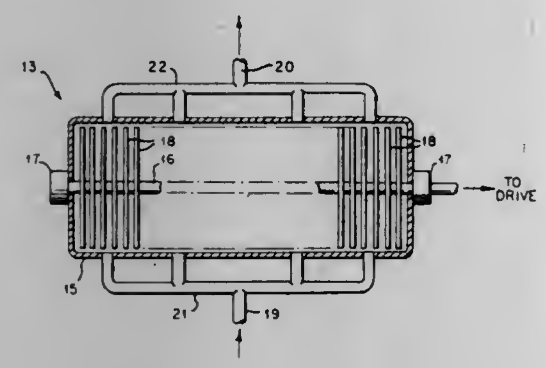
Division of Ser. No. 293,594, Sept. 29, 1972, Pat. No. 3,817,857. This application Nov. 14, 1973, Ser. No. 415,677

Int. Cl. C02c *1/04*

U.S. Cl. 210—17 **8 Claims**

1. A method for treating wastewater containing carbonaceous pollutants measured as BOD_5 and ammonia nitrogen in a weight ratio of at least 3.6:1 respectively, comprising the steps of supplying said wastewater at a predetermined rate to a biological treatment unit that includes not more than a single rotatable shaft supporting a plurality of partially submerged biological contactors having surface area for the growth and maintenance of orgnisms, creating a flow of said wastewater through said biological treatment unit in a direction generally perpendicular to said rotatable shaft and rotating said shaft to impart a predetermined peripheral velocity to said biological contactors to alternately expose said surface area to wastewater and an oxygen containing atmosphere, said predetermined rate and peripheral velocity being chosen to simultaneously

oxidize at least about 83 weight percent of said carbonaceous pollutants measured as BOD_5 and at least about 46 weight percent of said ammonia nitrogen on the same surface area of said contactors.



3,869,381

PROCESS AND APPARATUS FOR CHEMICAL CONDITIONING OF WATER

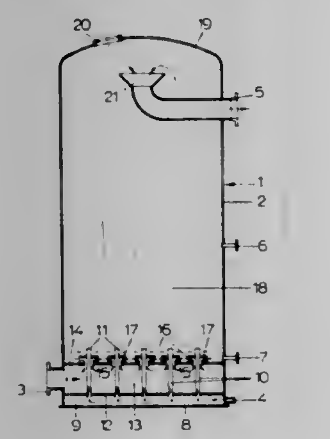
Antonie Graveland, Maarsen; Wouter Louis Prinsen Geerligs, Amstelveen, and Mohamad Ali Arafien Soleman, Amsterdam, all of Netherlands, assignors to Ingenieursbureau Dwars, Heederik en Verhey B.V., Amersfoort, Netherlands

Filed Mar. 28, 1973, Ser. No. 345,760

Claims priority, application Netherlands, Apr. 4, 1972, 720447

Int. Cl. B01d *43/00*

U.S. Cl. 210—20 **17 Claims**



1. A process for chemical conditioning of water containing hardness constituents comprising adding a solution of an alkali metal hydroxide to the water in a reactor with a fluidized granular bed and removing the hardness constituents in granular form, wherein the water and the alkali metal hydroxide solution are separately injected into the reactor in such a manner that the outflow direction of the water forms an angle with the general current direction in the reactor and the alkali metal hydroxide solution discharges above the level of the water discharge openings.

3,869,382

METHOD AND APPARATUS FOR DETERMINING EXHAUSTION OF A MASS OF ION EXCHANGE MATERIAL AND A DEVICE USING THE SAME

Alvaro R. Tejeda, New York, N.Y., assignor to J. Vast Associates, Inc., New York, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,464

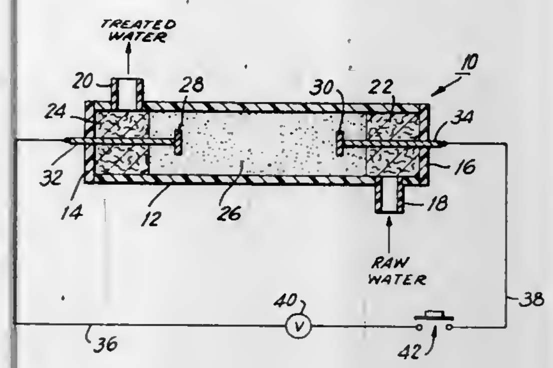
Int. Cl. B01d *15/04*

U.S. Cl. 210—30 **32 Claims**

32. A method for detecting the exhaustion point of a porous mass of ion exchange material extending in a container from an inlet boundary to an outlet boundary and originally wholly being substantially uniformly charged to an original state with desirable ions selected from the group consisting of desirable cations and desirable anions, said method comprising:

A. flowing a liquid to be treated and containing undesirable ions through the mass between the boundaries so as to progressively change the ionic state thereof to a final ionic state while exchanging desirable ions on the material for undesirable ions in the liquid,

B. providing electrodes spaced from one another in the direction of flow of the liquid and with at least a portion of said material therebetween so that said mass between said electrodes in the presence of said liquid constitutes a battery wholly disposed within the container,



C. an electric potential of one value being generated solely by said battery between the electrodes when the liquid in the upstream portion of the material is in an ionic state differing from the ionic state of the liquid in the downstream portion of the material while the downstream portion of the material still is in its original state,

D. an electric potential of a different value being generated solely by said battery between the electrodes when the downstream portion of the material approaches its final state, and

E. observing the electrical values of said potentials and by determining when the potential of different value is generated that the material is substantially exhausted so as to need regeneration or replacement thereof.

3,869,383

PROCESS FOR TREATING WASTE PHOTOGRAPHIC PROCESSING SOLUTIONS

Isao Shimamura, and Haruhiko Iwano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1972, Ser. No. 307,265

Claims priority, application Japan, Nov. 17, 1971, 46-92115; Dec. 30, 1971, 46-63472; Mar. 6, 1972, 47-22907

Int. Cl. B01d *15/06*

U.S. Cl. 210—32 **18 Claims**

1. A process for treating a waste solution from a photographic treatment which solution contains at least one of ferricyanide and ferrocyanide ions comprising contacting the waste solution having a pH of 7 to 9 with a weakly basic anion exchange resin in the free base form in the presence of a buffering compound added in an amount to maintain a buffering action at a pH of 7–9, thereby adsorbing said ions on said weakly basic anion exchange resin.

3,869,384

TAILINGS DISPOSAL SYSTEM FOR TAR SANDS PLANT

Robert Schutte, Sherwood Park, Alberta, Calif., assignor to Canada-Cities Service Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Ltd. and Gulf Oil Canada Limited

Filed Jan. 21, 1974, Ser. No. 435,226

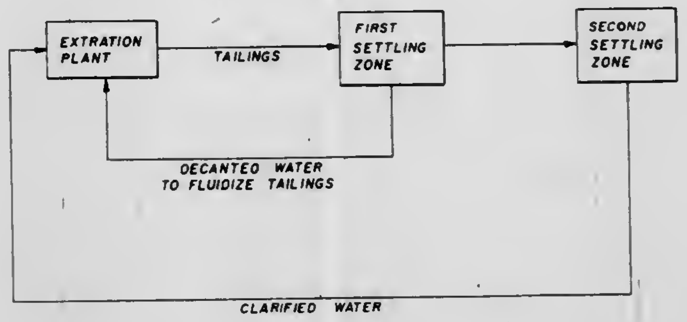
Int. Cl. B01d *21/00*

U.S. Cl. 210—44 **2 Claims**

1. In the process of extracting bitumen from tar sand wherein the tar sand is combined with hot water and subjected to flotation to produce separate froth and tailings streams, said tailings stream comprising coarse solids particles and fine solids particles, the improvement which comprises:

providing first and second settling zones separate from each other and located adjacent the process plant;

pumping the tailings stream into the first settling zone to settle out the coarse solids particles and form a beach, thereby trapping a portion of the tailings water and suspended fine solids particles in the void spaces in the beach and producing decanted water containing suspended fine solids particles;



withdrawing a portion of the decanted water and combining it with the tailings stream, leaving the flotation operation, to dilute it and render it pumpable whereby it may be pumped to the first settling zone; and

withdrawing a second portion of the decanted water and transferring it to the second zone for settling of suspended fine solids particles.

3,869,385

PROCESS FOR CONTAINING OIL SPILLS

William L. Stanley, Richmond, and Allen G. Pittman, El Cerrito, both of Calif., assignors to The Unites States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 18, 1971, Ser. No. 190,320

Int. Cl. C02b *9/02*

U.S. Cl. 210—53 **8 Claims**

1. A process for containing an oil spill on a body of water, which comprises

applying to the oil spill a polyisocyanate and a polyamine, in such amounts as to furnish free isocyanate groups in approximately equimolar proportion to amino groups, and

wherein both the polyisocyanate and the polyamine have a density less than that of the water in said body and are at least partially miscible with oil but essentially immiscible with water.

3,869,386

REMOVAL OF HEAVY METAL IONS FROM PLATING WASTES

Wladyslaw Izdebski, San Mateo, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Oct. 24, 1972, Ser. No. 300,133

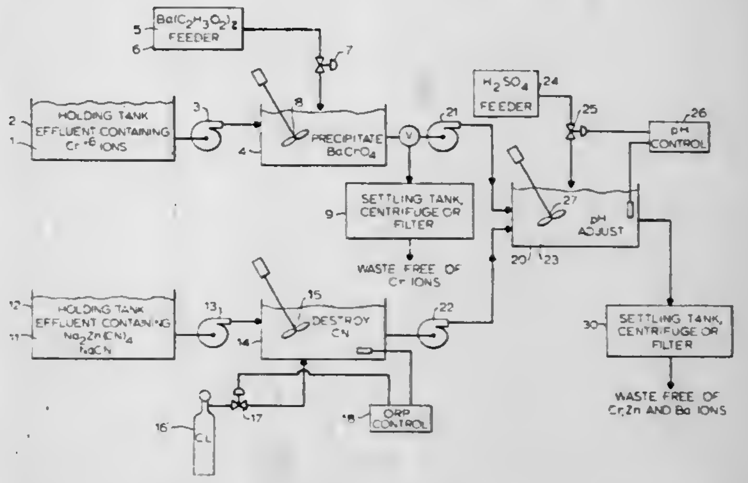
Int. Cl. C02c *5/02*

U.S. Cl. 210—53 **14 Claims**

1. A process for treating plating plant effluent containing hexavalent chromium ions to remove the chromium ions comprising

adding thereto barium acetate in an amount sufficient to precipitate substantially all of the hexavalent chromium ions as barium chromate and

separating the barium chromate precipitate from the solution, to provide a solution from which the chromium ions have been quantitatively removed.


$Ba(C_2H_3O_2)_2$ FEEDER
5
6
7
H_2SO_4 FEEDER
24
25
26
pH CONTROL
2
1
HOLDING TANK EFFLUENT CONTAINING Cr +6 IONS
3
8
4
PRECIPITATE BaCrO4
V
21
SETTLING TANK, CENTRIFUGE OR FILTER
9
WASTE FREE OF Cr IONS
27
pH ADJUST
20
23
12
11
HOLDING TANK EFFLUENT CONTAINING Na2Zn(CN)4 NaCN
13
15
14
DESTROY CN
22
16
CL
17
18
ORP CONTROL
30
SETTLING TANK, CENTRIFUGE OR FILTER
WASTE FREE OF Cr,Zn AND Ba IONS

3,869,387

PROCESS FOR THE EXTRACTION OF PHENOL FROM WASTE WATERS IN THE FORM OF UREA-FORMALDEHYDE-PHENOL CONDENSATES

Silvio Vargiu; Sesto S. Giovanni; Giorgio Mazzoleni, all of Milan, and Silvestro Pezzoli, Biassono, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed June 12, 1973, Ser. No. 369,345

Claims priority, application Italy, June 13, 1972, 25583/72

Int. Cl. C02b *1/18*

U.S. Cl. 210—54 **3 Claims**

1. Process for the extraction of phenol from waste water in the form of urea-formaldehyde-phenol condensates, characterized in that

a. formahldehyde, urea, and a waste water containing phenol in a concentration of about 0.01 to about 5 wt.% are reacted for about 15 to 60 minutes at temperatures of about 60 to about 95°C and a pH of about 9.5, the molar ratio of formaldehyde to phenol being from 2500 : 1 to about 100 : 1 and that of formaldehyde to urea about 2 : 1 to about 2.7 : 1 to obtain a first reaction product with a viscosity of about 20 to about 35 seconds measured at 25°C in a No. 4 Ford cup,

b. the first reaction product is thereafter kept at temperatures of about 60° to about 95°C and at a pH of about 4.0 to about 5.5 for about 4 to about 10 minutes to obtain a second reaction product with a viscosity of about 35 to about 60 seconds measured at 25°C in a No. 4 Ford cup, the second reaction product is thereafter reacted with additional urea and waste water containing phenol for about 60 to about 240 minutes at temperatures of about 60° to about 95°C and at a pH of about 5.7 to about 6.8, the molar ratio of formaldehyde to phenol being about 2000 : 1 to about 80 : 1 and that of formaldehyde to urea being about 1.40 : 1 to about 1.65 : 1 to obtain a third reaction product with a viscosity of about 75 to about 110 seconds measured at 25°C in a No. 4 Ford cup,

d. the third reaction product is thereafter brought to a pH of about 8 and said urea-formaldehydephenol condensate formed is isolated.

3,869,388

OIL WATER SEPARATION

Richard M. Vennett, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 25, 1973, Ser. No. 373,566

Int. Cl. B01d *12/00*

U.S. Cl. 210—70 **5 Claims**

1. A method for separating and preventing microbial growth between oil and water in storage vessels by adding a liquid inert to and insoluble in both oil and water and having a

specific gravity higher than the specific gravity of said oil and lower than the specific gravity of said water to form a layer between said oil and said water, said liquid being selected from the group consisting of dimethylpolysiloxane silicone fluids and methylphenylpoly siloxane silicone fluids and containing an antimicrobial agent.

3,869,389
PROCESS AND APPARATUS FOR FILTERING SUSPENSIONS

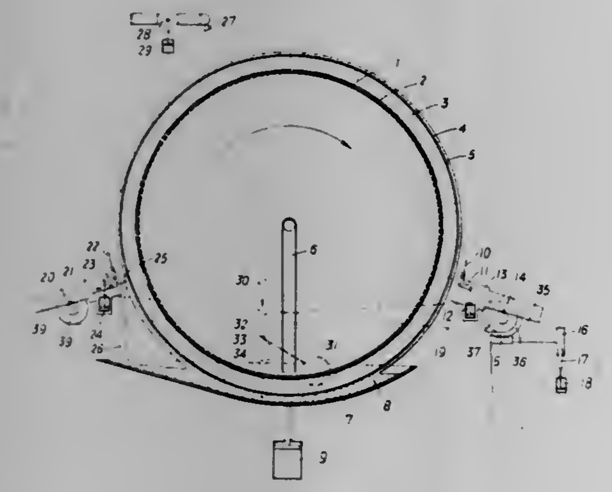
Karl Rokitansky, Vienna, Austria, assignor to Vogelsbusch Gesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 113,009, Feb. 5, 1971, abandoned. This application July 23, 1973, Ser. No. 381,624

Claims priority, application Austria, Feb. 13, 1970, 1328/70; Feb. 5, 1971, 227/71

Int. Cl. B01d *33/06*

U.S. Cl. 210—77 **15 Claims**



1. The method of filtering a suspension of solids in a liquid carrier with a hollow, cylindrical, rotary vacuum type filter which comprises the carrying out of a cycle including the steps of: effecting continuous rotation of said filter about a horizontal axis; while said filter is rotating, maintaining the pressure within said filter at a level below the pressure exteriorly of the filter to thereby create a force capable of effecting the flow of liquids from the exterior of the filter through said filter to the interior thereof; applying the suspension to be filtered to the exterior of the filter until a layer of at least a selected minimum depth has been formed thereon; then terminating the application of the suspension to the filter; thereafter and without applying additional suspension to said filter or removing any of the solids in said layer, continuing the rotating of the filter and keeping the pressure within the filter at the level below the pressure exteriorly thereof for at least one complete revolution and until the liquid content of the material applied to the exterior of the filter has been reduced to a selected level by the passage of liquid from said layer through the filter to the interior thereof; and subsequently removing material of reduced liquid content from the exterior of the filter, the removal of said material being carried out entirely after the formation of the layer on the filter is completed and the liquid content of the material reduced to the selected level and while the application of the suspension to the filter is interrupted, whereby the removal of liquid from the layer on the filter can be made independent in length of time from the formation of said layer thereon.

3,869,390
ELECTROMAGNETIC FILTER

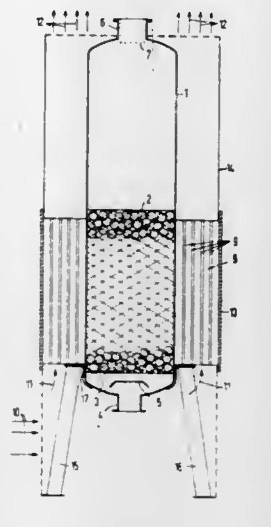
Hans-Gunther Heitmann, Erlangen-Buckenhof, and Gerhard Donath, Erlangen, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim/Ruhr, Germany

Filed Dec. 22, 1972, Ser. No. 317,772

Claims priority, application Germany, Dec. 22, 1971, 2163696

Int. Cl. B01d *35/06*

U.S. Cl. 210—222 **3 Claims**



1. Electromagnetic filter for removing iron oxides from the feed water of boilers in steam power plants of the type having a cylindrical filter vessel, a filter bed of hard-magnetic steel balls and being enclosed by an excitation coil having passages for the passage of coolants, wherein the field intensity produced by said excitation coil is considerably above the saturation field intensity of the steel balls; a magnetic yoke comprising a protective steel jacket surrounding the coil, the wall thickness of said jacket being proportioned in the vicinity of the excitation coil, so as to serve as a magnetic yoke, the ball filling of the filter bed and the thickened part of the protective jacket extending upwardly and downwardly beyond the excitation coil, and an annular body provided with recesses located below the excitation coil and the filter vessel for the support thereof.

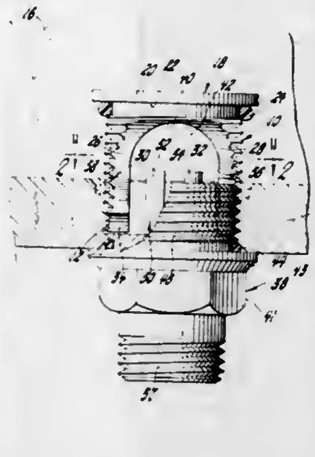
3,869,391
MAGNETIC DRAIN PLUG ASSEMBLY

William L. Kramer, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1974, Ser. No. 456,685

Int. Cl. F16k *37/00*

U.S. Cl. 210—222 **3 Claims**



1. A magnetic drain plug assembly comprising: a valve having a large diameter solid head portion thereon adapted to be located interiorly of an oil sump including seal means thereon and two dependent leg portions, each of said leg portions having an outer surface with threads formed thereon adapted to be threadably received within an internally threaded oil sump housing bore, a plug having a magnet on one end thereof and an externally threaded flange in surrounding spaced relationship therewith, said flange having locator grooves formed therein, seal means on said plug below said externally threaded flange, said valve and said plug being coupled by insertion of the legs on said valve within said locator grooves when said valve is threadably located within the housing bore so as to locate the seal means thereon in sealing engagement with the housing to prevent oil drainage from the sump, said coupled plug and valve being threadable inwardly of a bore to position said magnet within the sump and to locate the seal means on said plug in sealing engagement with the housing to prevent drainage from the sump when the seal means on said valve is located in spaced relationship to the housing to maintain free communication between the sump and the magnet on said plug.

3,869,392
FILTER CARTRIDGE

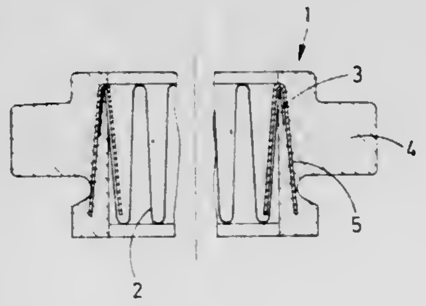
Max Wolf, Stuttgart, Germany, assignor to Knecht Filterwerke Gesellschaft mit beschraenkter Haftung, Stuttgart, Germany

Filed Jan. 29, 1973, Ser. No. 327,452

Claims priority, application Germany, Feb. 3, 1972, 7203991

Int. Cl. B01d *27/06*

U.S. Cl. 210—493 **2 Claims**



1. A filter cartridge comprising a filter body consisting of a sheet of impregnated fibrous filter material pleated in a dense, zig-zag arrangement of uniform parallel folds forming a self-supporting rectangular body terminating in a complete fold at each of its transverse ends and an edge at each of its longitudinal ends, a metal reinforcing strip bent along its length to form a V-shaped member having two legs of a width equal to that of said fold and of a length substantially equal to that of said transverse end folds, said metal strip being located solely over each of said transverse end folds, a frame consisting of a flexible molded plastic material surrounding the perimeter of said filter body, said frame extending over the longitudinal edges and embedding same therein and having a groove for receiving one leg of each of said transverse end folds and said associated metal strip together and embedding the same therein, the other leg of said end fold and said metal strip extending into the interior of said frame.

3,869,393
SOLID LUBRICANT ADHESIVE FILM

Aylwin Reed Booker, Tarzana, Calif., assignor to Everlube Corporation of America, N. Hollywood, Calif.

Continuation-in-part of Ser. No. 39,484, May 2, 1970, abandoned. This application Apr. 7, 1972, Ser. No. 242,137

Int. Cl. C10m *7/26*

U.S. Cl. 252—12.2 **3 Claims**

1. A solid lubricant adhesive film which comprises a film of a normally tacky, pressure-sensitive, adhesive composition selected from the class consisting of polymers of esters of acrylic acid, esters of a methylacrylic acid, esters of vinyl alcohol, ethers of vinyl alcohol, and copolymers of esters of acrylic acid and acylonitrile, methacrylonitrile, acrylic acid, and alphamethylacrylic acid, said film having an adhesive surface and a nonadhesive lubricant surface impregnated with a finely powdered solid lubricant selected from the group consisting of molybdenum disulfide, graphite, lead, tin, silver, polytetrafluoroethylene, and mixtures thereof.

3,869,394
LUBRICANT COMPOSITION AND METHOD

David A. Daniels, Kendall Park, and Nicholas F. DeGeorge, Metuchen, both of N.J., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 152;435, June 11, 1971, abandoned. This application July 16, 1973, Ser. No. 379,821

Int. Cl. C10m *1/46, 1/38*

U.S. Cl. 252—46.7 **19 Claims**

1. A lubricant composition comprising:

a. about 100 parts by weight of a carboxylic acid ester lubricant;

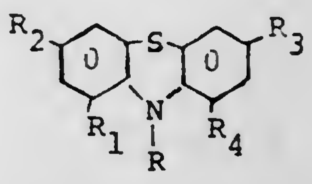
b. a minor stabilizing amount of;

i. a secondary amine selected from a first group consisting of diphenylamine, N-phenyl-1-naphthylamine, N-phenyl-2-naphthylamine, p,p′-dicotyldiphenylamine, N-4-octylphenyl-1-naphthylamine, N-4-octylphenyl-2-naphthylamine, and N-4-octylphenyl-1-octyl-2-naphthylamine; or

ii. a tertiary amine selected from a second group consisting of

N,N-bis-4-octylphenylbenzylamine,
N,N-bis-4-octylphenyl-2-phenylethylamine,
N-4-octylphenyl-N-1-naphtylbenzylamine,
N-4-octylphenyl-N-1-naphthyl-2-phenylethylamine,
N-4-octylphenyl-N-2-naphthylbenzylamine,
N-4-octylphenyl-N-2-naphthyl-2-phenylethylamine,
N,N-bis-4-octylphenyl-2-methylbenzylamine,
N,N-bis-4-octylphenyl-4-methylbenzylamine,
N,N-bis-4-octylphenyl-2-chlorobenzylamine,
N,N-bis-4-octylphenyl-4-chlorobenzylamine,
N,N-bis-4-octylphenyl-2,4-dichlorobenzylamine,
N,N-bis-4-octylphenyl-3,4-dichlorobenzylamine,
N,N-bis-4-octylphenyl-α,α-dichlorobenzylamine,
N,N-bis-4-octylphenyl-2-fluorobenzylamine,
N,N-bis-4-octylphenyl-4-fluorobenzylamine,
N,N-bis-4-octylphenyl-4-nitrobenzylamine, and
N,N-bis-4-octylphenyl-2,2-dimethyl-2-phenylethylamine;

c. a minor stabilizing amount of a phensthiazine having the formula



in which R_1 and R_4 are hydrogen, R_2 is an alkyl group having 1–12 carbon atoms, R_3 is an alkyl group having 1–12 carbon atoms, and R is a radical selected from a third group consisting of 2-chlorobenzyl, 4-chlorobenzyl, 2,4-dichlorobenzyl, 3,4-dichlorobenzyl, and α,α-dichlorophenylmethyl;

d. from 0 to about 1 part by weight of a triazole selected from a fourth group consisting of 3-amino-1,2,4-triazole, 4-amino-1,2,4-triazole, 1,2,3-benzotriazole, 5-methyl-1,2,3-benzotriazole, and 5,5′-methylene-bis-(1,2,3-benzotriazole); and

e. from about 0 to about 10 parts by weight of a phosphorus containing ester selected from a fifth group consisting of triethyl phosphate, tributyl phosphate, triisooctyl phosphate, tricresyl phosphate, and triphenyl phosphate.

3,869,395

2-AMINO-5-HYDROCARBYLDITHIO-1,3,4-THIADIAZOLE AND COMPOSITIONS THEREOF

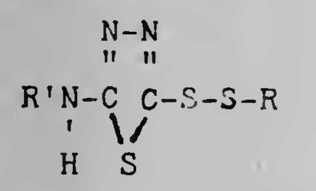
James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,384

Int. Cl. C10m *1/38*

U.S. Cl. 252—47 **9 Claims**

1. A composition comprising a major amount of a hydrocarbon oil of lubricating viscosity and between about 0.01 and 50 wt. percent of an amino hydrocarbyldithio thiadiazole characterized by the formula:



where R is alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons and R′ is hydrogen or alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons.

3,869,396

LUBRICATING OIL COMPOSITIONS

Eduard J. Van de Kraats, and Johannes De Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1972, Ser. No. 248,261

Claims priority, application Great Britain, May 5, 1971, 13211/71

Int. Cl. C10m *1/28*

U.S. Cl. 252—56 R **3 Claims**

1. A lubricating oil composition consisting essentially of a wax-containing hydrocarbon lubricating oil having a viscosity of less than about 10 cS at 210°F and dewaxed to a pour point of about 0°F or less and from about 0.01 to 2 percent by weight of oil-soluble copolymer of polyalkyl methacrylates having (a) a molar percentage of alkyl methacrylates with branched alkyl chains from 5 to 25 percent, (b) at least eight alkyl chains with a different number of carbon atoms in which the number of alkyl chains of 9 carbon atoms is from 2 to 10 percent of the total number of alkyl chains, and (c) a number average molecular weight between 5,000 and 500,000, wherein the alkyl groups in said alkyl methacrylates contain 9 to 18 carbon atoms with an average of from 12.8 to 13.5 carbon atoms.

3,869,397

ELECTROSTATIC TONER COMPOSITION

J. C. Tristan Tellier, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,885

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **7 Claims**

1. An electrostatic liquid toner comprising
   a. an electrically insulating carrier liquid comprising a hydrocarbon wherein said carrier liquid has a dielectric constant of less than 3 and a volume resistivity in excess of 10^{10} ohm centimeter;
   b. from about 0.01 to about 10 percent of a pigment;
   c. a metallic soap; and
   d. from 0.1 to 1 part by weight, per part by weight of said pigment, of a copolymer of an alkyl vinyl ether and maleic anhydride wherein the alkyl group of said alkyl ether contains 12 to 40 carbon atoms.

3,869,398

DIELECTRIC PORCELAIN COMPOSITION

Nobutatu Yamaoka, Takasaki, and Yasunori Takahashi, Tokyo, both of Japan, assignors to Taiyo Yuden Kabushiki Kaish and Sony Corporation, both of Tokyo, Japan

Filed Aug. 23, 1973, Ser. No. 390,948

Claims priority, application Japan, Sept. 20, 1972, 47-93697

Int. Cl. H01b *3/02*

U.S. Cl. 252—63.5 **1 Claim**

1. A dielectric porcelain composition comprising a sintered product consisting essentially of above 2% by weight but below 31% by weight of lead titanate ($PbTiO_3$), above 35% by weight but below 83% by weight of strontium titante ($SrTiO_3$), above 3% by weight but below 19.1% by weight of bismuth oxide (Bi_2O_3), above 0.5% by weight but below 18% by weight of titanium oxide (TiO_2) and above 2.8% by weight but below 20.1% by weight of calcium titanate ($CaTiO_3$), the weight ratio of titanium oxide (TiO_2) to bismuth oxide (Bi_2O_3) being between 0.2 and 2.0.

3,869,399

LIQUID DETERGENT COMPOSITIONS

Jerome Howard Collins, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1972, Ser. No. 222,363

Int. Cl. C11d *1/83, 9/46, 17/08*

U.S. Cl. 252—118 **3 Claims**

1. A liquid fabric cleaning detergent composition consisting essentially of
   a. from about 30 to about 60 percent by weight of a nonionic surfactant having an HLB of from about 8 to about 15 produced by the condensation of ethylene oxide with an organic hydrophobic compound selected from the group consisting of alkyl phenols wherein the alkyl group contains from about 6 to 12 carbon atoms in either straight chain or branched chain configuration; aliphatic alcohols containing from about 8 to 22 carbon atoms in straight chain or branched chain configuration; the condensation product of propylene oxide with propylene glycol said condensation product having a molecular weight of from about 1,500 to about 1,800; and, the reaction product of propylene oxide and ethylene diamine, said reaction product having a molecular weight of from about 2,500 to about 3,000;
   b. an anionic surfactant mixture present in a quantity sufficient to provide a weight ratio of nonionic surfactant to the anionic surfactant mixture in its free acid form of from about 2.5:1 to about 3.5:1; said anionic surfactant mixture consisting of
      i. an ethanolamine alkyl benzene sulfonate having a linear alkyl chain which averages about 12 carbon atoms in length; and
      ii. an ethanolamine soap containing from about 10 to about 20 carbon atoms in the fatty acid moiety of said soap;

the ethanolamine moiety of the sulfonate and soap being selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine and said anionic surfactant mixture containing sulfonate and soap in quantities sufficient to provide a weight ratio of the acid form of the sulfonate to the acid form of the soap of from about 4:1 to 8:1;
   c. an ethanolamine selected from the group consisting of monoethanaolamine, diethanolamine, triethanolamine and mixtures thereof, present in an amount effective to provide at least about 1 percent by weight of the composition of free ethanolamine;
   d. from about 25 to about 45 percent by weight of a solvent, said solvent being a water-ethanol mixture having a water to ethanol weight ratio of from about 4:1 to about 7:1; and

   e. from about 1 to about 3 percent by weight of potassium chloride; and
   f. an ethanolamine citrate in a concentration based on the citric acid form of from about 0.05 up to about 1 percent by weight of composition.

3,869,400

PROCESS FOR PRODUCING AN AQUEOUS REACTION PRODUCT SLURRY OF A DIAMINE AND A DIACID

Albert Thomas Strand, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 17, 1972, Ser. No. 298,304

Int. Cl. C09k *3/00*

U.S. Cl. 252—182 **3 Claims**

1. A process for producing a stable, pumpable aqueous slurry consisting essentially of about 10–35 percent by weight of a salt which is the reaction product of essentially equivalent amounts of diamine and diacid, the diamine being at least 75 mol percent bis(4-aminocyclohexyl)-methane and the diacid being at least 75 mol percent 1,12-dodecanedioic acid comprising producing a water solution of the salt(s) at a temperature above 100°C. and at autogenous or greater pressure, the salt solution having a concentration of about 50–70 percent, adding the salt solution to sufficient water at about 20–50°C. and under agitation to form a salt slurry of not over 35 percent concentration, measuring the pH of the slurry and adjusting it to a predetermined value by addition of diamine or diacid, and maintaining the slurry in pumpable condition under agitation or recirculation until required for use.

3,869,401

STABILIZED ACIDIC HYDROGEN PEROXIDE SOLUTIONS

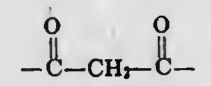
Richard Edward Ernst, Memphis, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1972, Ser. No. 311,975

Int. Cl. C01b *15/02;* **B01d** *53/00*

U.S. Cl. 252—186 **9 Claims**

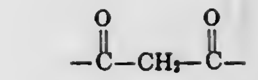
1. A concentrated, acidic, aqueous solution of hydrogen peroxide stabilized against chloride ion-induced degradation by about **5** to **50,000** ppm by weight of a stabilizer selected from the group consisting of:
   a. dihydroxybenzenes, alkyl derivatives of phenol and dihydroxybenzenes, said derivatives containing one or two lower alkyl substituents, and mononitrophenols;
   b. unsaturated aliphatic amines having a chain length of three to five carbon atoms;
   c. compounds containing a dicarbonyl methylene group



$$-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-$$

and capable of enolization in acid media;
   d. sodium styrene sulfonate; allyl acetate; and mixtures of the foregoing.

4. An aqueous, acidic oxidizing solution stabilized against chloride ion-induced degradation at temperatures from ambient to about **90°** C. containing about **0.1** to **5** percent by weight hydrogen peroxide, about **30** to **85** percent by weight of a strong acid selected from the group consisting of H_2SO_4, mixtures of H_2SO_4 and H_2SO_5, CH_3COOH, and their mixtures and about **5** to **50,000** ppm by weight of a stabilizer selected from the group consisting of:
   a. phenol, dihydroxybenzenes, and their alkyl derivatives containing one or two lower alkyl substituents, and mononitrophenols;
   b. unsaturated aliphatic alcohols and amines having a chain length of three to five carbon atoms but excluding unsubstituted alkynyl alcohols;
   c. compounds containing a dicarbonyl methylene group



$$-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-$$

and capable of enolization in acid media;
   d. sodium styrene sulfonate; allyl acetate; and mixtures of the foregoing.

3,869,402

METHOD FOR MAKING ANTIHALATION LAYER

E. Scudder Mackey, and Albert J. Neschleba, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed July 5, 1972, Ser. No. 269,059

Int. Cl. G03c *1/84*

U.S. Cl. 252—300 **8 Claims**

1. A process for the preparation of an anti-halation layer which comprises (a) reacting an alkali metal permanganate with a reductant compound of the formula

$R\text{-}(OH)_x$

wherein

R is a C_2 to C_8 aliphatic radical and x is 2 to 4 and when R is C_6 to C_8 x may also be 1, the ratio of oxygen atoms to carbon atoms being at least 1:2 and where x is 1, the ratio is at least 1:5; (b) thereafter adding gelatin to the reaction product produced in (a).

3,869,403

NEODYMIUM DOPED ACETATE GLASS EXHIBITING FLUORESCENCE AT 1.06 MICROMETERS

Robert R. Shaw, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 11, 1973, Ser. No. 322,679

Int. Cl. C09k *1/02;* **C03c** *3/28, 3/12*

U.S. Cl. 252—301.3 R **4 Claims**

1. An acetate glass which exhibits fluorescence at a wavelength of 1.06 um consisting essentially of about 6 weight percent of $Nd(C_2H_3O_2)_3$ in a host glass selected from a group consisting of $Pb(C_2H_3O_2)_2$, $KC_2H_3O_2$, $NaC_2H_3O_2$, $Ca(C_2.H_3O_2)_2$, and combinations thereof, the $Nd(C_2H_3O_2)_3$ contributing trivalent neodymium ions to the glass.

3,869,404

NEODYMIUM DOPED $NA_2O{\cdot}P_2O_5\text{-}ZNCL_2$GLASS EXHIBITING FLUORESCENCE AT 1.06 MICROMETERS

Robert R. Shaw, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 11, 1973, Ser. No. 322,678

Int. Cl. C09k *1/06;* **C03c** *3/28, 3/16*

U.S. Cl. 252—301.6 P **6 Claims**

1. A glass which exhibits fluorescence at a wavelength of 1.06 um consisting essentially of 98 to 99 weight percent of a host glass consisting essentially of 30 to 50 mol percent of $Na_2O.P_2O_5$ and 50 to 70 mol percent of $ZnCl_2$ and 1 to 2 weight percent of a compound contributing trivalent neodymium ions where the compound is selected from a group consisting of Nd_2O_3, NdF_3 and $NdCl_3$.

3,869,405

GLASS EXHIBITING FLUORESCENCE AT 1.06 MICROMETERS

Robert R. Shaw, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 11, 1973, Ser. No. 322,670

Int. Cl. C09k *1/04;* **C03c** *3/28, 3/12*

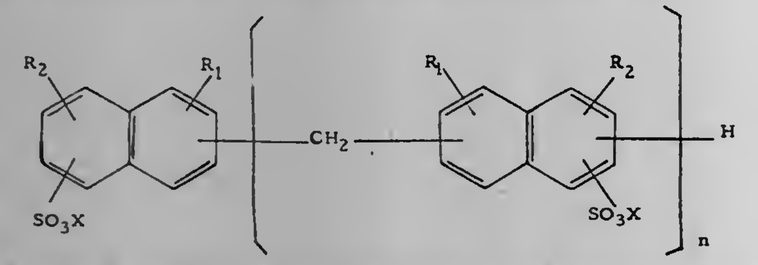
U.S. Cl. 252—301.6 S **2 Claims**

1. A sulfate glass which exhibits fluorescence at a wavelength of 1.06 μm consisting essentially of 98 weight percent of a host glass which consists essentially of 90 mol percent of

the glass former $ZnCl_2$ and 10 mol percent of the glass modifier Na_2SO_4 and 2 weight percent of $Nd_2(SO_4)_3$.

3,869,406
PROCESS FOR PREPARING MICROSCOPIC CAPSULES
Hirohara Matsukawa, and Keiso Saeki, both of Fujimiya, Japan, assignors to Fuji Photo Film, Kanagawa, Japan
Filed May 24, 1972, Ser. No. 256,493
Claims priority, application Japan, May 24, 1971, 46-35316
Int. Cl. B01j *13/02;* **B44d** *1/02*
U.S. Cl. 252—316 **11 Claims**

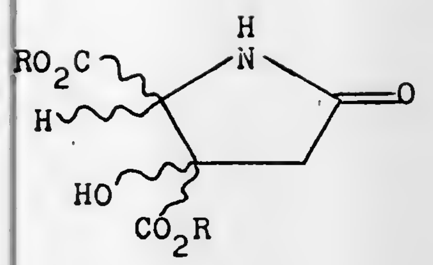
1. In a process for preparing microcapsules by coacervation using a solution containing at least two hydrophillic colloids having opposite electric charges, at least one of said colloids being gellable, comprising emulsifying or dispersing a hydrophobic oil or dust in said solution, causing coacervation of said colloids to form a coacervate wall, gelling said coacervate wall, and hardening said coacervate wall, the improvement comprising on hardening the coacervate wall, at a temperature not higher than the gel point of said gellable colloid, adding an aqueous solution of (1) a high molecular weight electrolyte having an anionic functional group in a shock-preventing amount which is sufficient to prevent a rapid increase in viscosity and coagulation of the system, and (2) a condensate represented by the following general formula in an amount sufficient to accelerate the shock-preventing action of the high molecular weight electrolyte (1), which condensate is different from the high molecular weight electrolyte (1);



wherein R_1 and R_2 can each represent a hydrogen atom or an alkyl group having from 1 to about 18 carbon atoms, so long as at least one of R_1 and R_2 is an alkyl group, X represents a hydrogen atom or an alkali metal atom and *n* is a positive integer, wherein said anionic high molecular weight electrolyte is selected from the group consisting of an anionic cellulose derivative selected from the group consisting of carboxymethyl cellulose, carboxyethyl cellulose and the metal salts thereof, and cellulose sulfate, cellulose phosphate and metal salts thereof, an anionic polysaccharide selected from the group consisting of pectin and pectin acid, a polyvinylbenzenesulfonic acid copolymer selected from the group consisting of vinylbenzenesulfonate-acryloylmorpholine copolymer, vinylbenzenesulfonate-morpholinomethyl acrylamide copolymer, vinylbenzenesulfonate-vinylpyrrolidone copolymer and vinylbenzenesulfonate-methoxymethylacrylamide, a polyacrylic acid copolymer selected from the group consisting of acrylic acid-acryloylmorpholine copolymer, acrylic acid-morpholinomethyl acrylaminde copolymer, acrylic acid-acrylamide copolymer, acrylic acid-vinylpyrrolidone copolymer and acrylic acid-methoxymethylacrylamide copolymer, and an anionic starch derivative selected from the group consisting of carboxymethyl starch, carboxyethyl starch, starch sulfate, starch phosphate and starch xanthate.

3,869,407
AMINO CITRIC ACID DERIVATIVES
Robert William Guthrie, Fairfield, and Richard Wightman Kierstead, North Caldwell, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Division of Ser. No. 204,290, Dec. 2, 1971, Pat. No. 3,799,951.
This application Jan. 21, 1974, Ser. No. 435,146
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.45 **8 Claims**

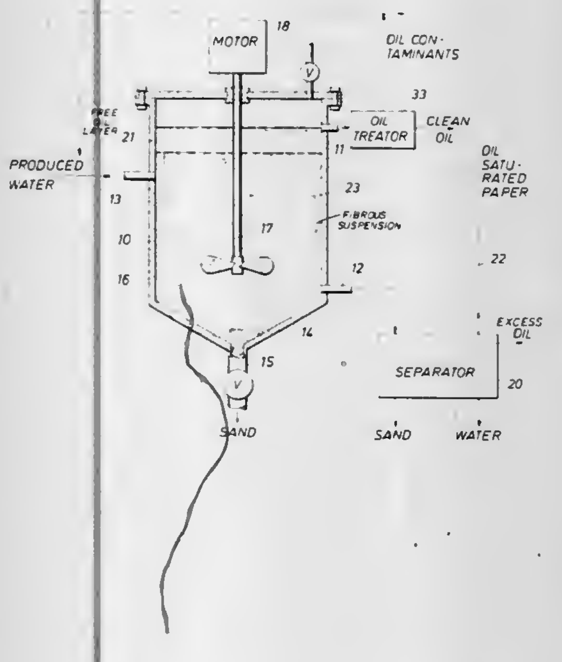
1. A compound of the formula



wherein

all R groups are hydrogen or the same lowr alkyl, lower and the stereoisomers, optical antipodes and pharmaceutically acceptable salts thereof.

3,869,408
METHOD AND APPARATUS FOR CONTINUOUSLY SEPARATING EMULSIONS
John A. Herce, Bellaire, and James E. Heath, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed July 13, 1972, Ser. No. 271,441
Int. Cl. B01d *19/00*
U.S. Cl. 252—361 **8 Claims**



1. Apparatus for continuously separating oil and water from an oil-in-water emulsion comprising:
- a vessel;
- an aqueous suspension of preferentially water wet, substantially oil-saturated, oil-trapping, oil-coalescing, non-granular, disassociated, cellulosic, fibrous material contained within the vessel;
- agitating means for agitating the aqueous suspension of substantially oil-saturated, oil-trapping fibrous material contained within the vessel in such a manner that oil and water separate;
- oil outlet means adjacent the top of the vessel for withdrawing a separated oil phase from the vessel;
- said agitating means lying below said separated oil phase;
- aqueous phase outlet means positioned on said vessel below the oil outlet means for continuously withdrawing an aqueous phase from the vessel; and
- means for admitting an oil and water emulsion into the vessel at a point remote from said oil and water outlets.

3,869,409
PROCESS FOR PREPARING A WIDE-PORE ADSORBENT FOR USE IN CHROMATOGRAPHY
Natalya Karlovna Bebris, ulitsa 26 Bakinshikh komissarov, 4, korp. 4, kv. 52; Andrei Vladimirovich Kiselev, Leningradskoe shosse, 120, korp. 3, kv. 4; Jury Stepanovich Nikitin, Leninskie Gory, MGU, Zona M, kv. 160, all of, Moscow, and Yakov Ivanovich Yashin, propsekt Tsiolkovskogo, 50, kv. 143, Dzerzhinsk Gorkovskoi Oblasti, all of U.S.S.R.
Filed June 8, 1972, Ser. No. 260,734
Int. Cl. B01j *11/06, 11/36*
U.S. Cl. 252—446 **9 Claims**

1. A process for preparing a wide-pore silicon-containing adsorbent for chromatography, comprising preparing a suspension of a finely dispersed non-porous silica having a specific surface 30 to 380 m^2/g in a suitable liquid dispersion medium containing a modifying component selected from the group consisting of alkalis, alkali metal salts, alkaline-earth metal salts, carbon black, polyphenyldisiloxane, and a condensation product of phenolphthalein and phthalic acid; and drying said suspension at a temperature of about 15° to 200°C to form a silica xerogel.

3,869,410
CATALYST CARRIER FOR EXHAUST GAS PURIFIER
Tsuchio Bunda, Okazaki; Itaru Niimi, Nagoya; Yasuhisa Kaneko, and Fumiyoshi Noda, both of Tokyo, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Sept. 1, 1972, Ser. No. 285,594
Claims priority, application Japan, Sept. 3, 1971, 46-67922
Int. Cl. B01f *11/06*
U.S. Cl. 252—455 R **5 Claims**

1. A method for manufacturing a catalyst carrier of a sintered-bonded mass of coated hollow alumina balls for an exhaust gas purifier, comprising:
- a. immersing a plurality of hollow alumina balls having a size of 2–5mm in outside diameter in a mixture of colloidal silica and colloidal alumina,
- b. air-drying the hollow alumina balls coated with said silica and alumina,
- c. placing said coated alumina balls in a mass so that the balls are in contact with each other,
- d. sintering said mass of alumina balls to form a sintered-bonded mass,
- e. immersing said mass of alumina balls in colloidal alumina, and
- f. air-drying, heating and cooling said mass of alumina balls.

3,869,411
NOVEL FRAGRANCE MATERIALS
John B. Hall, Rumson, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed Apr. 9, 1973, Ser. No. 349,180
Int. Cl. C11b *9/00*
U.S. Cl. 252—522 **4 Claims**

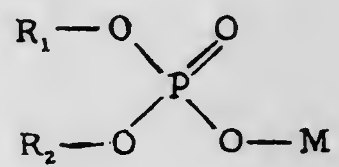
1. A perfume composition comprising from 3.0% up to 50% by weight of said composition of 2,5,5 trimethylacetylcycloheptane, and a suitable perfume carrier.

3,869,412
SURFACE-ACTIVE COMPOSITIONS HAVING CONTROLLED FOAMING PROPERTIES AND PROCESS FOR CONTROLLING FOAM THEREWITH
Ake Waag, Kattfotsvagen 3, Stenungsund, Sweden
Continuation-in-part of Ser. No. 648,248, June 23, 1967, abandoned, and a continuation-in-part of Ser. No. 117,073, Feb. 19, 1971, Pat. No. 3,741,913, and a continuation-in-part of Ser. No. 16,250, March 3, 1970, abandoned, and a continuation-in-part of Ser. No. 32,430, April 27, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,161
Claims priority, application Sweden, June 23, 1966, 8678/66; Mar. 4, 1969, 2944/69
Int. Cl. C11d *3/075, 1/78, 1/83*
U.S. Cl. 252—527 **28 Claims**

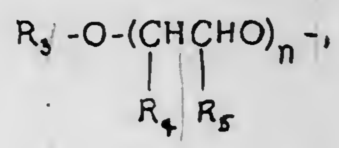
1. A surface-active composition having controlled foaming properties, and consisting essentially of, in combination, a surfactant selected from the group consisting of anionic sulphonate and sulphate surfactants, a nonionic surfactant selected from the group consisting of polyoxyalkylene ether, -ester and -glycol surfactants, and a polyoxyalkylene phosphate ester surfactant, the combination of the polyoxyalkylene ether, -ester or -glycol surfactant and polyoxyalkylene phosphate ester surfactant having a low foaming property which is controllably increased by the proportion of anionic sulphate or sulphonate surfactant, the relative proportions of the anionic, nonionic and phosphate surfactants falling within the ranges:

	% by weight
Anionic sulphate or sulphonate surfactant	1 – 95
Nonionic Polyoxyalkylene ether, -ester or -glycol surfactant	1 – 95
Polyoxyalkylene phosphate ester surfactant	1 – 95

the polyoxyalkylene phosphate ester having the formula:



wherein R_1 and R_2 are selected from hydrogen and polyoxyalkylene ether radicals, and no more than one of R_1 and R_2 is hydrogen, the polyoxyalkylene ether radical being of the form



$$R_3\text{-O-}(\underset{R_4}{\underset{|}{C}}H\underset{R_5}{\underset{|}{C}}HO)_n\text{-},$$

wherein *n* has a value greater than zero up to about 30, and denotes the average number of oxyalkylene units in the chain, R_4 and R_5 are hydrogen or methyl, and R_3 is a primary or secondary straight or branched chain saturated or unsaturated radical having from about 10 to about 24 carbon atoms, or a mono-, di-, or trialkyl-substituted phenyl radical having from about 6 to about 24 carbon atoms; and *M* is hydrogen or a water-soluble salt-forming cation.

3,869,413
FLEXIBLE POLYURETHANE FOAMS

Larry Thomas Blankenship, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 410,136, Oct. 26, 1973,. This application Mar. 4, 1974, Ser. No. 448,166

Int. Cl. C08g *22/44, 41/04*

U.S. Cl. 260—2.5 BE **22 Claims**

1. Flexible polyurethane foams prepared by subjecting to foaming conditions a composition comprising

1. a polyol composition consisting essentially of
   A. from about 50 to about 98 parts by weight of a polyether polyol or mixture of such polyols having from 2 to 3 hydroxyl groups per molecule and an OH equivalent weight of from about 900 to about 2300 and
   B. from about 50 to about 2 parts by weight of a solid polymer of one or more ethylenically unsaturated monomers free from groups reactive with NCO or OH groups under urethane-forming conditions, said solid polymer having a molecular weight of at least about 5,000; said polyol composition having been prepared by adding Component (B) in the form of a latex having an average particle size of from about 1000 A to about 7000 A to Component (A) and subsequently removing water therefrom to the extent that the resulting mixture contains from zero to that quantity of water desired to be employed in the foaming reaction by the formation of CO_2 through reaction of such water with a polyisocyanate; and
2. an organic polyisocyanate;

wherein Components 1 and 2 are employed in quantities such that the NCO:active hydrogen ratio is from about 0.80:1 to about 1.5:1.

3,869,414
WAX EMULSIONS CONTAINING PROTEINACEOUS EMULSIFIERS

Craig C. Campbell, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,413

Int. Cl. B01j *13/00*

U.S. Cl. 260—6 **5 Claims**

1. An emulsion suitable for use as a coating or waterproofing agent consisting essentially of, by weight, from about 25 to about 70 percent wax, from about 0.2 to about 10 percent of an amphoteric proteinaceous emulsifier, from about 0.5 to about 10 percent of a clay, from about b **0.5** to about 15 percent of an urea-formaldehyde resin and water in an amount sufficient to form the emulsion.

3,869,415
RESINOUS POLYMER CONTAINING WATERPROOFING PLASTER COMPOSITIONS

John Williams, Maidstone, England, assignor to Temec Limited, Wembley, England

Continuation-in-part of Ser. No. 106,900, Jan. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 727,037, May 6, 1968, abandoned. This application Aug. 14, 1973, Ser. No. 388,143

Claims priority, application Great Britain, Apr. 4, 1968, 16352/68; Jan. 16, 1970, 0276/70

Int. Cl. C08f *45/04, 45/24*

U.S. Cl. 260—17 R **23 Claims**

1. A plaster composition having water-resistance properties comprising 30 to 60% by weight of calcium sulfate plaster solids, 0.25 to 15% by weight of a low molecular weight resin selected from the group consisting of polyvinyl chloride, polyvinyl acetate, petroleum and coal tar hydrocarbon polymer resins and styrene and acrylic copolymers, 4 to 48% of a substantially water-immiscible organic solvent for said resin and 20 to 50% by weight of water, said organic solvent having the property of evaporating from the composition at a rate similar to the rate of evaporation of water therefrom.

3,869,416
REINFORCED WAX COMPOSITIONS HAVING UNIVERSAL ADHESION

George Lok-Kwong Hoh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 22, 1973, Ser. No. 343,684

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 R **10 Claims**

1. An adhesive composition comprising (I) petroleum wax reinforced with ethylene/olefin copolymer reinforcing resin wherein the olefin comonomer is C_3–C_{18} alpha-olefin and/or unconjugated diolefin and (II) an adhesion promoting system consisting essentially of:

a. a polar polymeric additive selected from
   1. an ethylene/organic ester copolymer containing at least 85 mole percent copolymerized ethylene and at least 9.5 mole percent of a copolymerized vinyl alcohol ester of a C_1–C_4 saturated monocarboxylic acid or at least 7 mole percent of a copolymerized C_1–C_5 saturated aliphatic alcohol ester of acrylic or methacrylic acid, and
   2. an ethylene/carboxylic acid or anhydride copolymer containing at least 85 mole percent copolymerized ethylene and 0.15–5 mole percent copolymerized acid, or acid partial ester with C_1–C_5 alcohols, or anhydride, and

b. a tackifying resin selected from wood rosin or derivatives thereof; said polar polymeric additive (a) being present in an amount of 10–30 parts and said tackifying resin (b) being present in an amount of 25–50 parts, both based upon 100 weight parts of (I).

3,869,417
MODIFICATION OF ASPHALT WITH ETHYLENE-VINYL ACETATE COPOLYMERS TO IMPROVE PROPERTIES

Ray D. Ramsay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 16, 1971, Ser. No. 115,538

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **7 Claims**

1. A coating composition consisting essentially of 95 weight percent of an oxidized asphalt having a penetration at 77° F., after oxidation, of about 35 and a ring and ball softening point, after oxidation, of about 165° F. and about 5 weight percent of an ethylene-vinyl acetate copolymer having a vinyl acetate content in the range of 17 to 19 weight percent, a melt index in the range of 2.1 to 2.9, and a ring and ball softening point of about 390° F.

3,869,418
CARBOXYLATED GRAFT COPOLYMER AND EMULSION CONTAINING SAME

William R. Peterson, and Walter N. Johnson, both of Chattanooga, Tenn., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 171,006, Aug. 11, 1971, abandoned. This application June 15, 1973, Ser. No. 370,420

Int. Cl. C08d *1/09, 3/02;* **C08f** *7/14, 19/06*

U.S. Cl. 260—29.7 T **14 Claims**

1. A stable aqueous emulsion comprising an emulsion polymerized graft polymer, comprising a polymeric N-vinyl lactam substrate and at least one monomeric olefinically unsaturated aliphatic carboxylic acid and at least one monomer selected from the group consisting of aliphatic conjugated dienes and monoalkenyl aromatic compounds, graft polymerized thereon, the weight ratio of polymeric N-vinyl lactam to the total monomeric mixture varying from about 1:99 to about 20:80, the weight ratio of monoalkenyl aromatic monomer to conjugated diene varying from about 5:95 to about 75:25, and the unsaturated aliphatic carboxylic acid is employed in proportions of about 0.5 to about 20 parts by weight per 100 parts of total monomeric mixture.

3,869,419
ANISOTROPIC DOPES OF POLYAMIDES FROM FUMARIC AND/OR MESACONIC ACID

Paul Winthrop Morgan, West Chester, Pa., and Terry Carl Pletcher, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1972, Ser. No. 301,292

Int. Cl. C08g *51/46, 51/47*

U.S. Cl. 260—30.8 R **3 Claims**

1. A anisotropic dope of a polymer in concentrated sulfuric acid within the concentration range of about 96–105% H_2SO_4 or in fluorosulfonic acid, said polymer consisting essentially of repeating units of the formula:

$$—HN—R_1—NHCO—R_2—CO—$$

wherein R_1 represents an aromatic radical selected from the group of 1,4-phenylene; methyl-1,4-phenylene; chloro-1,4-phenylene; bromo-1,4-phenylene, fluoro-1,4-phenylene; 4,4′-carbonamidodiphenylene; 4,4′-biphenylene; 3,3′-dichloro-4,4′-biphenylene; 3,3′-dimethoxy-4,4′-biphenylene; and 3,3′-dimethyl-4,4′-biphenylene; R_2 represents an organic radical selected from the group of trans-vinylene and trans-methylvinylene radicals; with the proviso that up to 90 mole percent of the R_2 radicals may be replaced by radicals selected from the group of 1,4-phenylene and chloro-1,4-phenylene, the said polymer having an inherent viscosity of at least about 1.0.

3,869,420
SMOKE-RETARDANT HALOGEN-CONTAINING POLYMER SYSTEMS

Thomas C. Mathis, St. Louis, Mo., and Albert W. Morgan, Collinsville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1972, Ser. No. 317,040

Int. Cl. C09k *3/28*

U.S. Cl. 260—30.6 R **13 Claims**

1. A vinyl chloride polymer composition comprising

1. from about 10 to about 30 parts per hundred parts resin of a reactive modifier selected from the group consisting of
   a. Dawsonite,
   b. oxide, hydroxide or salt of a metal selected from the group consisting of sodium, potassium, magnesium, barium, zirconium, manganese and iron, and
   c. mixtures thereof; and
2. from about 10 to about 100 percent based on total plasticizer of at least one halogen-free neutral phosphate ester the minimum amount of total plasticizer being about 10 parts per hundred parts of resin.

3,869,421
RESILIENT OIL-EXTENDED POLYURETHANE SURFACES

George G. Sapp, San Pablo, and Joseph L. Goodrich, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 129,130, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 54,013, July 10, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 314,060

Int. Cl. C08g *51/28*

U.S. Cl. 260—33.6 AQ **11 Claims**

1. A resilient surface up to about 2 inches in thickness prepared from a workable mixture consisting essentially of 1 part by weight of a polyurethane prepared in situ from a polyisocyanate and a polyol, wherein said polyol is at least 50% by weight of a diol of from 1,000 to 5,000 molecular weight selected from polybutadiene diols, polyisoprene diols, polybutadiene-styrene diols and polybutadiene-acrylonitrile diols and said polyisocyanate is used in an equivalent ratio of from 0.8 to 1.50 isocyanate groups to one hydroxyl group from said polyol, (2) from 0.6 to about 4.5 parts by weight of an extender oil having an aniline point in the range of from about 75° to 130°F and a viscosity of from about 200 to 6,000 SUS at 100°F, (3) from about 0.25 to about 4.5 parts by weight of resilient aggregate, wherein said resilient aggregate has a maximum dimension of not more than 1.0 inch, all of which will pass through a No. 3 U.S. standard sieve, not more than 30% by weight of which will pass through a No. 16 U.S. standard sieve, and not more than 5% by weight of which will pass through a No. 30 U.S. standard sieve, (4) from 0 to about 1.8 part mineral filler having a size in the range of 20 mesh, U.S. standard sieve to dust, (5) from 0 to about 0.5 part drying agent or its hydrated form, (6) from 0 to about 0.5 part of a polyurethane catalyst, and (7) from 0.08 to about 0.45 part carbon black; wherein said extender oil is present in an amount of from about 12 to about 60 weight percent of the total composition and said polyurethane is present in an amount of from about 5 to about 35 weight percent of the total composition.

3,869,422
BLEND OF POLYMERS

James Wilkinson Dawes, Clinton, Iowa; Kurt Lothar Seligman, Wilmington, Del., and Stanley George Smith, Beaumont, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 8, 1972, Ser. No. 313,360

Int. Cl. C08f *37/18, 45/08*

U.S. Cl. 260—42.47 **5 Claims**

1. A water-impermeable heat-sealable thermoplastic film of a uniform blend of a polymeric composition consisting essentially of:

a. 40–80 weight percent of a crystalline copolymer of ethylene and an α,β-ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid, or mixtures thereof, wherein said carboxylic acid is present in the copolymer in amounts of from about 5–15 weight percent, and said carboxylic acid is free of neutralizing metal ions,

b. 20–45 weight percent of an amorphous elastomeric copolymer of ethylene containing 20–60 weight percent propylene and up to about 10 weight percent of a nonconjugated diene.

3,869,423
ORTHO-SUBSTITUTED HYDROXYPHENYL ALKYLENE-ARBOXY-ALKYLENE-1,3,5-TRIAZINES AND ANTIOXIDANT AND SYNTHETIC RESIN COMPOSITIONS

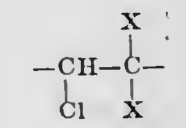
Motonobu Minagawa, Koshigaya, and Kuniaki Nomura, Ohmiya, both of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,751

Int. Cl. C08f *45/58;* **C08g** *51/58*

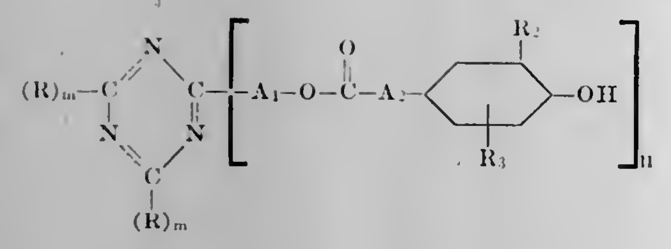
U.S. Cl. 260—45.8 NT **9 Claims**

1. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350°F., comprising a polyvinyl chloride resin formed at least in part of the recurring group



$$—\underset{Cl}{\underset{|}{CH}}—\overset{X}{\overset{|}{\underset{X}{\underset{|}{C}}}}—$$

and having a chlorine content in excess of 40 percent, where X is either hydrogen or chlorine; and from about 0.001 to about 5 percent by weight of an ortho-substituted hydroxyphenyl-alkylene carboxyalkylene-1,3,5-triazine having the general formula:



wherein:

- n is an integer from 1 to 3;
- m is an integer from 0 to 2;
- A_1 is selected from the group consisting of alkylene having from one to about four carbon atoms and alkyl alkylene, the alkyl having from one to about fourteen carbon atoms and the alkylene having from one to about four carbon atoms, and amino NHA_3, wherein A_3 is selected from the group consisting of alkylene having from one to about four carbon atoms and alkyl alkylene, the alkyl having from one to about fourteen carbon atoms and the alkylene having from one to about four carbon atoms;
- A_2 is alkylene having from one to about four carbon atoms; R_2 and R_3 are selected from the group consisting of hydrogen and alkyl having from one to about four carbon atoms; R_2 is ortho to the hydroxyl, and R_3 can be ortho or meta to the hydroxyl;
- R is linked to carbon and is selected from the group consisting of oxo, alkyl, aryl, cycloalkyl and hydroxy alkyl, and NHR_1, R_1 being selected from the group consisting of alkyl, cycloalkyl or hydroxyalkyl;
- the R alkyl groups having from one to about eighteen carbon atoms, the R cycloalkyl groups having from three to about eight ring carbon atoms, any remaining carbon atoms being in alkyl substituents attached to the ring, the R aryl groups having six carbon atoms, ten carbon atoms, and fourteen carbon atoms.

3,869,424

POLYACRYLATE PLASTIC COMPOSITIONS CONTAINING BIS-ARYLOXY FLAME RETARDANTS

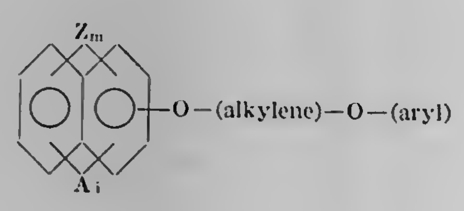
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,794The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.

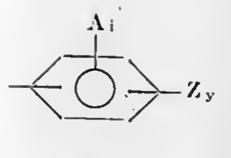
Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **18 Claims**

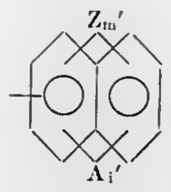
1. A plastic composition containing polyacrylate having incorporated therein a flame retardant which is a bis-aryloxy compound having the formula:



wherein aryl is from the group



and



Z is selected from the group consisting of bromine or chlorine; m and m' are integers having a value of 1–7; y is an integer having a value of 1–5; i and i' are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halophenyl, benzyl or halo-benzyl; and alkylene is a straight or branched chain alkylene group having from one to six carbon atoms.

3,869,425

POLY(PHENYLENE OXIDE) PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANTS

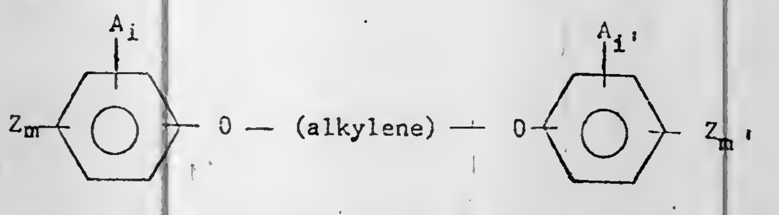
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,791. The portion of the term of this patent subsequent to May 4, 1991, has been disclaimed.

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R **17 Claims**

1. A plastic composition containing poly(phenylene oxide) having incorporated therein an effective amount of a flame retardannt which is a bis-phenoxy compound having the formula:



wherein Z is bromine; m and m' are integers having a value of 1–4; i and i' are integers having a value of 1 or 2; alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms; and A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl, with the proviso that when m or m' is 4, i or i' respectively is 1.

3,869,426

POLYESTER PLASTIC COMPOSITIONS CONTAINING BIS-ARYLOXY FLAME RETARDANTS

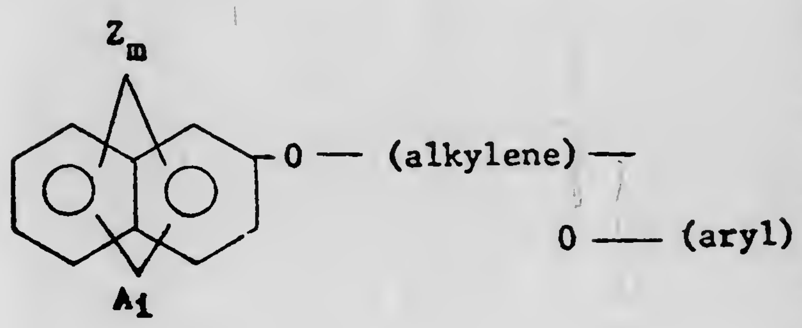
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,859. The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.

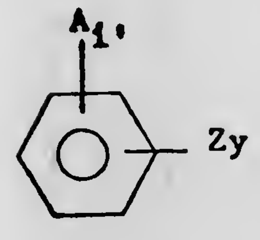
Int. Cl. C08q *51/60*

U.S. Cl. 260—45.9 R **18 Claims**

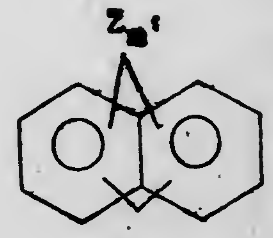
1. A plastic composition containing polyester having incorporated therein a flame retardant which is a bis-aryloxy compound having the formula:



wherein aryl is from the group



and



Z is selected from the group consisting of bromine or chlorine; m and m' are integers having a value of 1–7; y is an integer having a value of 1–5; i and i' are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl or halo-benzyl; and alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms.

3,869,427

TREATMENT OF LINEAR POLYESTER WITH ORGANIC MONOEPOXIDE

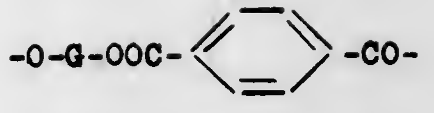
Robert Walter Meschke, Kinston, and William Harrison Watson, Grifton, both of N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 533,454, March 11, 1966, abandoned. This application Nov. 23, 1966, Ser. No. 596,429

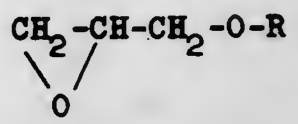
Int. Cl. C08g *17/14*

U.S. Cl. 260—47 EP **8 Claims**

1. In the preparation of synthetic linear terephthalate condensation polyester in which at least about 85% of the recurring structural units are units of the formula:



wherein —G— represents a divalent organic radical containing from about 2 to about 18 carbon atoms which is attached to the adjacent oxygen atoms by saturated carbon atoms, the improvement which comprises reducing the content of free carboxyl groups in the polyester by mixing the polyester in molten form for 1 minute to about 45 minutes with a liquid organic monoepoxide represented by the formula:



where R is a monovalent phenyl or n-hexyl radical, the organic monoepoxide being added to the polyester after polymerization of the polyester to an intrinsic viscosity of at least 0.56, when determined for solutions of the polyester in phenol/trichlorophenol at 25°C., and being added in an amount providing less than 3 mol per cent based on the polyester and at least 0.1 mol per equivalent of free carboxyl groups present in the polyester prior to addition of the monoepoxide.

3,869,428

ENAMEL COMPOSITION FOR THE MANUFACTURE OF SOLDERABLE ENAMELED WIRES

Hans Mosimann, Breitenbach; Peter Heim, Basle, and Charles Borer, Grindel, all of Switzerland, assignors to Schweizerische Isola-Werke, Breitenbach, Switzerland

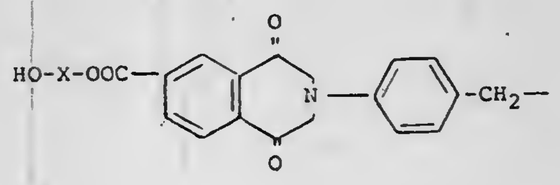
Continuation-in-part of Ser. No. 37,355, May 14, 1970, abandoned. This application May 2, 1973, Ser. No. 356,451

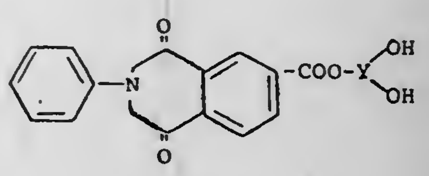
Claims priority, application Switzerland, May 14, 1969, 7362/69

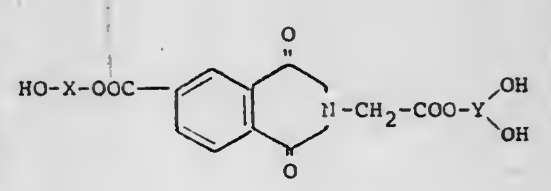
Int. Cl. C08g *22/06, 53/20*

U.S. Cl. 260—77.5 AQ **2 Claims**

1. A varnish composition to be used for the manufacture of solderable enameled wires consisting essentially of the polyurethane reaction product of a hydroxyl compound A and an isocyanate compound B selected in respect to each other so that at least one thereof contains imide groups and reacted with each other in a stoichiometric ratio of the hydroxyl groups and isocyanate groups and wherein said compound A is selected from alcohols of the formulae:







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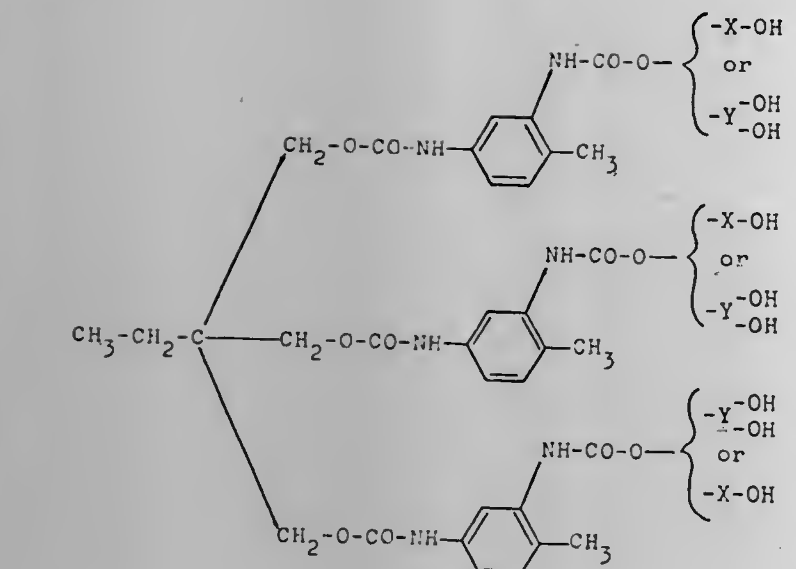
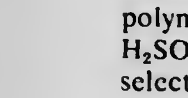


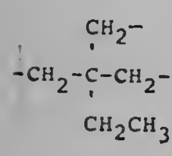
wherein X means

$$-(CH_2)_m-, -(CH_2CH_2O)_n-CH_2CH_2- \text{ and}$$

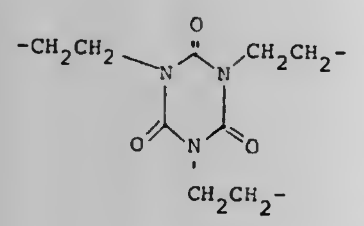


$$-CH_2\underset{OH}{C}HCH_2-$$

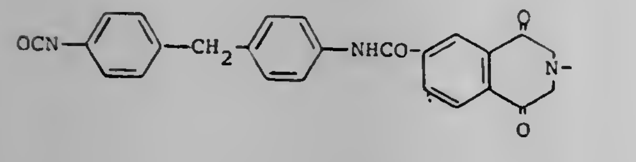
m being an integer from 2 to 4 and *n* being an integer from 1 to 2 and Y means

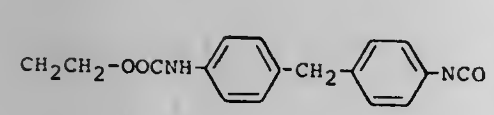


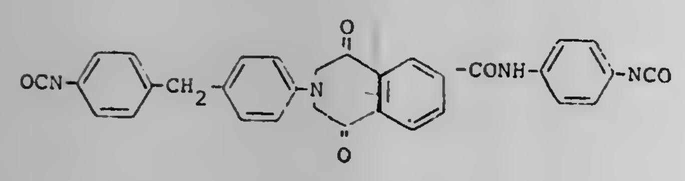
and

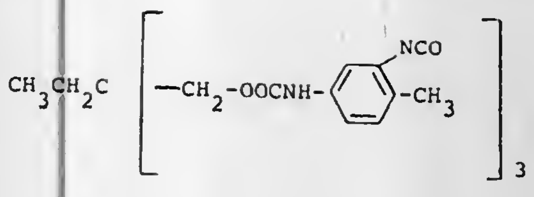


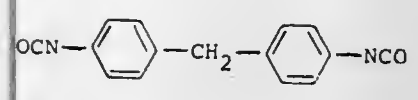
and the ratio X:Y is of from 1:2 to 2:1, and said compound B is selected from isocyanates of the formulae:











and mixtures thereof.

3,869,429

HIGH STRENGTH POLYAMIDE FIBERS AND FILMS

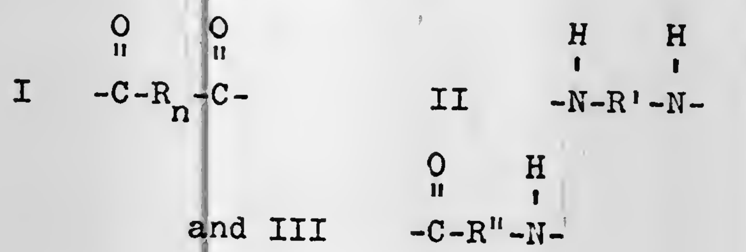
Herbert Blades, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 172,572, Aug. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 138,180, April 28, 1971, abandoned. This application June 30, 1972, Ser. No. 268,057

Int. Cl. C08g *20/20, 20/38*

U.S. Cl. 260—78 S **12 Claims**

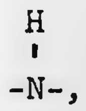
1. Fiber or film of polyamide having an inherent viscosity of at least 2.5 as measured at a concentration of 0.5 gram of polymer in 100 ml. of concentrated sulfuric acid (95–98% H_2SO_4) at 30°C. and consisting essentially of recurring units selected from the group consisting of:



$$\text{I} \quad -\overset{O}{\overset{\|}{C}}-R_n-\overset{O}{\overset{\|}{C}}- \qquad \text{II} \quad -\overset{H}{\overset{|}{N}}-R'-\overset{H}{\overset{|}{N}}-$$

$$\text{and III} \quad -\overset{O}{\overset{\|}{C}}-R''-\overset{H}{\overset{|}{N}}-$$

wherein units I and II, if present in the polymer are present in substantially equimolar amounts, R, R′ and R″ groups, which may be the same or different, are divalent radicals, *n* may be zero or the integer one and at least about 95 mol % of the total R, R′ and R″ radicals in the polymer are single rigid radicals with chain extended bonds or a series of such radicals which are linked together directly by chain extended bonds, said rigid radicals being selected from the group consisting of single ring and fused multiring aromatic carbocyclic radicals, 2,5-pyridylene, 4,8-quinolylene, trans-1,4-cyclohexylene, and 1,4-[2,2,2]-bicyclooctylene radicals, which rigid radicals may be linked by azo or azoxy groups, and trans-vinylene and ethynylene radicals, with the proviso that vinylene or ethynylene cannot serve as R′ or that portion of a R″ radical attached to



$$-\overset{H}{\overset{|}{N}}-,$$

at least 75 mol % of the said rigid radicals being aromatic carbocyclic radicals, the chain extending bonds of such radicals being essentially coaxial or parallel and oppositely directed, said fiber or film having a filament or film tenacity of at least about 18 grams per denier, a filament or film elongation of at least 4.5 percent, and crystalline regions with a primary apparent crystallite size (PACS) of less than 52A as determined from an X-ray deffractogram scan along a lone perpendicular to the fiber or film axis using the equation:

$$PACS = \lambda/(\beta \cos \theta)$$

where λ represents the wavelength in A of the X-rays used; θ is the Bragg angle and β is the line breadth in radians, corrected for instrumental broadening, at half intensity of the major reflection located at the smallest value of 2θ.

3,869,430

HIGH MODULUS, HIGH TENACITY POLY(P-PHENYLENE TEREPHTHALAMIDE) FIBER

Herbert Blades, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 172,514, Aug. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 138,209, April 28, 1971, abandoned. This application June 30, 1972, Ser. No. 268,053

Int. Cl. C08g *20/20, 20/38*

U.S. Cl. 260—78 S **3 Claims**

1. A high tenacity, high modulus fiber having a density of at least 1.40 grams per cubic centimeter and consisting essentially of poly(p-phenylene terephthalamide), the polymer of said fiber having an inherent viscosity of at least 4.0 as measured at a concentration of 0.5 gram of polymer in 100 ml. of concentrated sulfuric acid (95–98% H_2SO_4) at 30°C. and said fiber having 1) a lateral birefringence, Δn, of at least 0.022 as determined from measurements on oblique fiber sections of thickness, T, in microns, with a polarizing microscope equipped with a compensator, using the equation:

$$\Delta n = (K \lambda \sin 2\phi)/T$$

where K is the instrumental constant of the compensator, λ is the wavelength in microns of the light used and 2ϕ is the difference between the angles of the compensator to produce extinction along the minor and the major axis of the section, 2) crystalline regions with an apparent crystallite size, ACS, of greater than 58A as determined from an X-ray diffractogram scan along a line perpendicular to the fiber axis using the equation:

$$ACS = (K \lambda)/(\beta \cos \theta)$$

where K is taken as one; λ represents the wavelength in A of the X-rays used; θ is the Bragg angle and β is the line breadth in radians, corrected for instrumental broadening, at half intensity of the major reflection located at the smaller value of 2θ, and 3) an orientation angle no greater than 13° with the proviso that the ratio of the apparent crystallite size to the orientation angle is at least 6 A/degree.

3,869,431

POLYAMIDES AND THEIR PRODUCTION

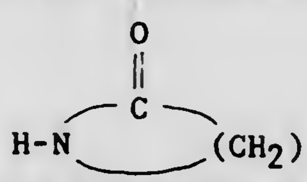
John Walter Spiewak, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 12, 1973, Ser. No. 340,125

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L **7 Claims**

1. The process of producing a solid polyamide which comprises heating an aliphatic and/or aromatic amino-imide to liberate lactam and thus obtain polyamide, the lactam having the formula



in which x equals 3 to 5, the reaction when in the solid state being carried out at a temperature of 100° to 400° C., and when carried out in suspension in a solvent being carried out at a temperature of 100° C. to the boiling point of the solvent.

3,869,432

STYRENE-MALEIC ANHYDRIDE COMPLEX AND PROCESS FOR MAKING SAME

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, New York, N.Y.

Division of Ser. No. 32,736, April 28, 1970, Pat. No. 3,765,934. This application Mar. 22, 1973, Ser. No. 343,924

Int. Cl. C08f *15/02*

U.S. Cl. 260—78.5 R **3 Claims**

1. A process for forming a solid, stable, complex of styrene and maleic anhydride which comprises heating an equimolar mixture of styrene and maleic anhydride to a temperature sufficient to form a single phase composition and thereafter cooling said composition to below about 35°C.

3,869,433

ARYLENE SULFIDE POLYMERS

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,772

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **18 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacing at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one base selected from the hydroxides of magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, at least one organic amide and at least one alkali metal bisulfide selected from bisulfides of lithium, sodium, potassium, rubidium and cesium; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,869,434

SOLUBLE ARYLENE SULFIDE POLYMERS

Robert W. Campbell, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,783

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **15 Claims**

1. A method of producing polymers which comprises:

a. contacting at least one m-dihalobenzene, at least one p-dihalobenzene, at least one alkali metal sulfide selected from the group consisting of sulfides of lithium, sodium, potassium, rubidium and cesium, and at least one organic amide to form a composition;

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer, said m-dihalobenzene being employed in an amount within the range of from about 35 to about 90 mole percent of the total moles of said m-dihalobenzene and said p-dihalobenzene with said m-dihalobenzene and said p-dihalobenze being contacted in an amount within the range of from about 0.9 to about 2 moles total per mole of said alkali metal sulfide; and

c. recovering said polymer.

3,869,435

METHOD FOR CROSS-LINKING RUBBER

Chester D. Trivette, Jr., Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1971, Ser. No. 200,595

Int. Cl. C08c *11/54;* **C08d** *9/00;* **C08f** *27/06*

U.S. Cl. 260—79.5 C **16 Claims**

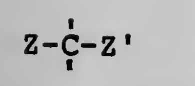
1. The method of cross-linking which comprises incorporating into diene rubber a cross-linking amount of

$$AccS\text{-}S_x\text{-}R\text{-}S_x\text{-}SAcc$$

where AccS is the same or different accelerating moiety, x is 1, 2, 3 or 4 and R is a divalent organic radical of 1 to 24 carbon atoms of the formula

$$-(X)_n \quad -Y-(X)_n \quad -(Y-(X)_n \quad -)_m$$

where each *n″ independently is* 1 to 23, *m* is zero, 1 or 2, X is

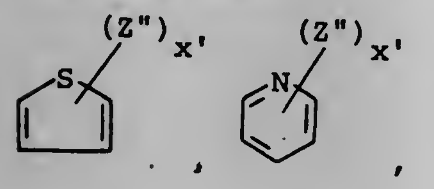


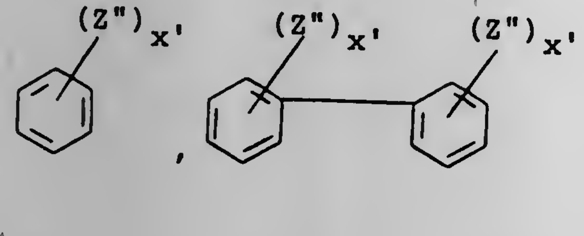
$$Z{-}\overset{|}{\underset{|}{C}}{-}Z'$$

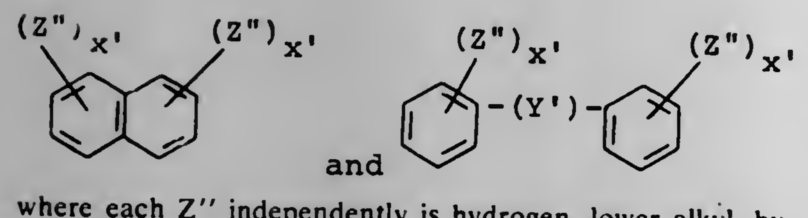
where Z and Z′ independently are hydrogen, alkyl, cycloalkyl, benzyl, or phenyl and Y is oxygen, sulfur, —SO₂—,

HN<, C_6H_5N<, lower alkyl-N<,

—C(O)O—, divalent cyclic radical each valence of which is on a ring carbon atom of an aliphatic ring said radical being the radical derived from removal of hydrogen from carbon in monocyclic, bi(monocyclic), bicyclic or tricyclic hydrocarbon or said hydrocarbon having up to two ring carbon atoms replaced by oxygen or divalent aromatic radical selected from the group consisting of anthrylene and radicals derived by removal of hydrogen from two ring carbon atoms of a compound of the formula

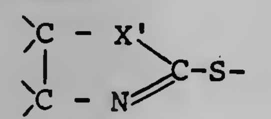






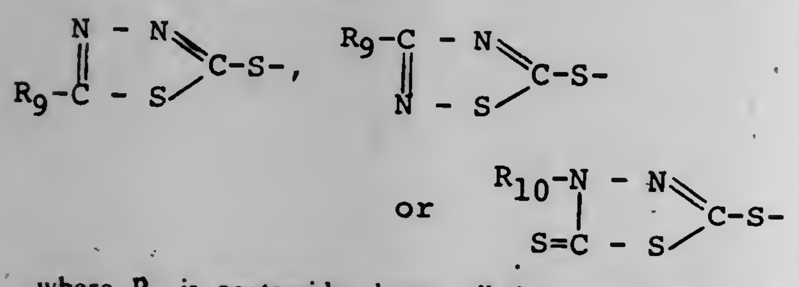
where each Z″ independently is hydrogen, lower alkyl, hydroxy, lower alkoxy, acetyl, phenyl, chloro or nitro, Y′ is oxygen, sulfur, —SO₂, —CO—, lower alkylene or lower alkylidene and *x′ is* 1 to 4, where the accelerating moiety is selected from the group consisting of

1. radical of the formula



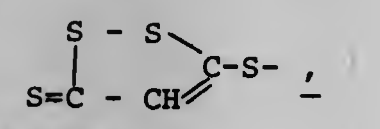
where the unsatisfied valences on the vicinal carbon atoms are satisfied independently by hydrogen, lower alkyl, benzyl, acetyl, carboalkoxy, phenyl, by one on each carbon together forming a double bond or by said carbon atoms being members of an unsubstituted aromatic or alicyclic ring, or aromatic ring substituted by a member of the group consisting of lower alkyl, halo, nitro, hydroxy, carboalkoxy, acetyl, lower alkoxy and phenyl and X′ is S, O, or NH,

2. radical of the formula

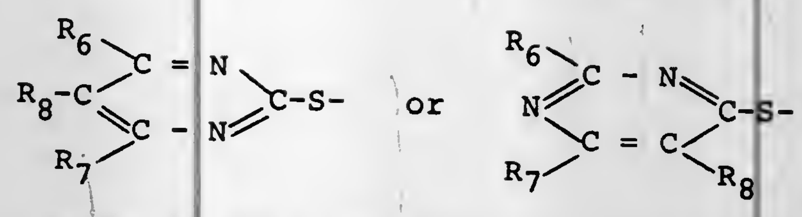


where R₉ is acetamido, lower alkyl, phenyl, chloro or bromo, and R₁₀ is lower alkyl or phenyl,

3. radical of the formula

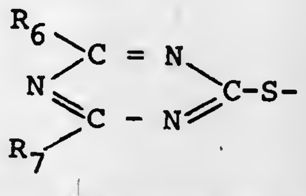


4. radical of the formula



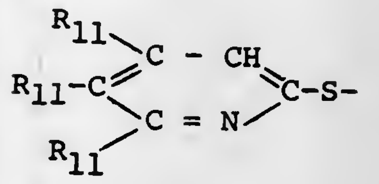
where R₆, R₇ and R₈ independently are hydrogen, lower alkyl, lower alkoxy, phenyl, nitro, chloro, lower alkylthio, lower alkylamino, lower dialkylamino, lower dialkenylamino, heterocyclic amino or R₇ and R₈ along with the adjacent carbon atoms to which they are attached form ortho arylene; and the corresponding dihydro and tetrahydro radicals,

(5) radical of the formula



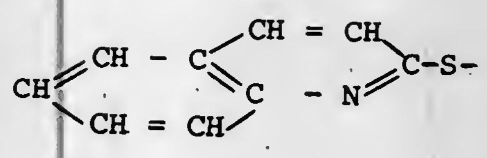
where R₆ and R₇ are independent and independently have the same meaning as before,

6. radical of the formula



where each R₁₁ independently is hydrogen or lower alkyl, and

7. radical of the formula



and effecting cross-linking of the rubber.

3,869,436

METHOD FOR FRACTIONATING PLASMA PROTEINS USING PEG AND ION-EXCHANGERS

Falksveden, Lars-Gunnar Albinsson, Stockholm, Sweden, assignor to Statens Bakteriologiska Laboratorium, Solna, Sweden

Continuation of Ser. No. 148,541, June 1, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,839

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 B **5 Claims**

1. A method of fractionating plasma proteins, comprising the following steps:

a. removing blood corpuscles and cell fragments from the plasma in the blood;
b. precipitating the globulins in the plasma with polyethylene glycol having a molecular weight of approximately 6000 in a concentration of 10 to 15% by weight and at a pH of 6.5 to 8.0 at room temperature;
c. centrifuging out all of the precipitate from the remaining solution;
d. dissolving the precipitate at pH 5.8 in 0.05 M sodium acetate-acetic acid buffer and centrifuging out undissolved fibrinogen, plasminogen and IgM;
e. adsorbing the globulins from the solution containing β-lipoproteins, α-macroglobulins, lipids, precipitated albumin and IgG obtained in step (d) on carboxy methyl dextran cation exchanger at a pH of 5.8, thereby leaving in the solution the β-lipoproteins, α-macroglobulins, lipids, precipitated albumin and a lesser amount of IgG; and eluting the cation exchanger with 0.2 M sodium chloride in 0.05 M phosphate buffer at pH 7.5 to 8.0 to obtain the adsorbed globulins including IgG;
f. precipitating the eluate from step (e) with additional polyethylene glycol at pH 6.5 to 8.0, centrifuging and dissolving the precipitate in 0.2 M phosphate buffer at pH 6.6;
g. adsorbing all the globulins in the solution from step (f) excluding IgG on an anion exchanger at pH 6.6;
h. cooling the IgG solution to −0.3°C. and precipitating IgG with ethanol in a concentration of 25% by volume of the total system at −5° to −10°C, said use of ethanol being the first use of ethanol in said process;
i. separating the precipitate, suspending and washing with 25% by volume ethanol at pH 7.0 at −5° to −10°C., and then renewing centrifuging;
j. dissolving in 0.1 M glycine and sterile-filtering; and
k. freeze-drying and preparing at 16 to 16.5% IgG solution in 0.3 M glycine for injection.

3,869,437

MONO-, DI, AND N^{A1}, N^{B1}, N^{B29}-TRI-ACYLATED INSULIN

David Gordon Lindsay, Hove, and Sydney Shall, Lewes, both of England, assignors to National Research Development Corporation, London, England

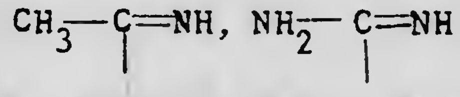
Continuation-in-part of Ser. No. 89,816, Nov. 16, 1970, abandoned. This application Aug. 21, 1973, Ser. No. 390,216

Claims priority, application Great Britain, May 8, 1970, 22342/70

Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *17/02*

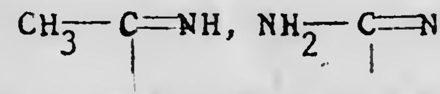
U.S. Cl. 260—112.7 **17 Claims**

1. A physiologically-acceptable, substantially-pure mono-, di- or tri-substituted insulin in which the terminal amino group of the B chain (B₁ phenylalanine) is protected by an acyl or other blocking substituent containing up to seven carbon atoms selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropanecarbonyl, aceto-acetyl, benzoyl, 2,2-dimethyl-3-formyl-L-thiazolidine-4-carbonyl, carbamyl, methylcarbamyl, thiocarbamyl, methylthiocarbamyl,



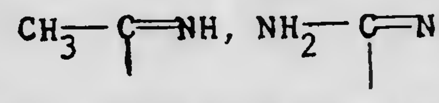
$$CH_3{-}\underset{|}{C}{=}NH,\ NH_2{-}\underset{|}{C}{=}NH,$$

HOOCCH₂CO— and H₂NOCCH₂CO—, the terminal amino group of the A chain (A₁ glycine) is either free or protected by an acyl or other blocking substituent containing no more than four carbon atoms and no free primary amino group selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropane-carbonyl, acetoacetyl, carbamyl, methylcarbamyl, thio carbamyl, methylthiocarbamyl,



$$CH_3{-}\underset{|}{C}{=}NH,\ NH_2{-}\underset{|}{C}{=}NH,$$

NOCH₂CH₂CO—, HOOCCH₂CO— and H₂NOC—CH₂CO— and the amino group of the B₂₉ amino acid (lysine) is either free or protected by an acyl or other blocking substituent containing no more than four carbon atoms and no free primary amino group selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropanecarbonyl, acetoacetyl, carbamyl, methylcarbamyl, thiocarbamyl, methylthiocarbamyl,



$$CH_3{-}\underset{|}{C}{=}NH,\ NH_2{-}\underset{|}{C}{=}NH,$$

HOCH₂CH₂CO—, HOOC—CH₂—CO— and H₂NOC—CH₂CO—.

3,869,438

PROCESS FOR ISOLATING OIL-SEED PROTEINS USING LIQUID FLUOROCARBONS

John W. Finley; Earl Hautala, both of Martinez, Calif., and Charles E. Walker, Valley City, N. Dak., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 342,119, March 16, 1973, Pat. No. 3,828,017. This application May 20, 1974, Ser. No. 471,627

Int. Cl. A23j *1/14*

U.S. Cl. 260—123.5 **7 Claims**

1. A process for isolating protein from a pulverized oil seed, which comprises

a. forming a slurry of said pulverized oil seed in a liquid fluorocarbon containing sufficient low-density hydrocarbon solvent to provide a density of 1.35 to 1.45,
b. centrifuging the slurry to partition the components of the oil seed into separate fractions, including a protein fraction floating on said fluorocarbon liquid, and
c. collecting said protein fraction.

3,869,439

PIGMENTS COMPRISING SALTS OR COMPLEXES OF POLYVALENT METALS AND AZO-BARBITURIC ACID

Karl-Heinz Schundehutte, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 28, 1971, Ser. No. 213,221

Claims priority, application Germany, Dec. 28, 1970, 2064093

Int. Cl. C09b *45/18, 45/20, 45/22*

U.S. Cl. 260—146 D **4 Claims**

1. A polyvalent metal salt or a polyvalent metal complex of azo-barbituric acid; prepared from 1 mole of azo-barbituric acid and about ½ to about 3 moles of a polyvalent metal salt; wherein said polyvalent metal is selected from the group consisting of magnesium, barium, strontium, aluminum, zinc, manganese, iron, cobalt, nickel, copper and cadmium.

3,869,440

METAL-COMPLEX AZO DYESTUFFS CONTAINING A 5-UBSTITUTED-2,3-DIHYDROXYPYRIDINE AS COUPLING COMPONENT

Gerhard Back, Loerrach, Germany, and Alfred Fasciati, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

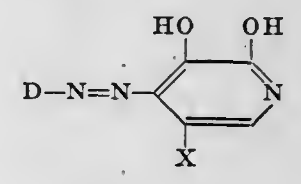
Filed Jan. 11, 1972, Ser. No. 217,041

Claims priority, application Switzerland, Jan. 14, 1971, 550/71

Int. Cl. C09b *45/14, 45/18, 45/20*

U.S. Cl. 260—146 R **9 Claims**

1. The heavy metal complex of an azo compound of the formula



where

D is the residue of a heterocyclic diazo component and is selected from pyridyl; benthiazolyl that is unsubstituted or substituted by chloro, nitro or methoxy; indazolyl that is unsubstituted or substituted by chloro, methoxy or nitro; triazolyl; carboxytriazolyl; 4-phenyl-5-methylpyrazolyl; 1-phenyl-2,3-dimethylpyrazolyl-5-one; benztriazolyl; benzimidazolyl; thiazolyl; methylthiazolyl; thiadiazolyl that is unsubstituted or substituted by phenyl, pyridyl, acetylamino, phenylsulphonyl, chloro, carbomethoxy, methylthio, ethylthio, phenylthio, cyclohexylthio, methylsulphonyl or methyl; quinolyl that is unsubstituted or substituted by sulfo, chloro, bromo, acetylamino, methyl, sulfophenylazo, or sulfophenylazo containing a fibre-reactive acylamino group where acyl is selected from chloroacetyl, bromoacetyl, β-chloropropionyl, β-bromopropionyl, α,β-dichloropropionyl, α,β-dibromopropionyl, chloromaleyl, acrylyl, β-chloroacrylyl, β-bromoacrylyl, α-chloroacrylyl, α-bromoacrylyl, α, β-dichloroacrylyl, α,β-dibromoacrylyl, trichloroacrylyl, chlorocrotonyl and propiolyl; or benzisothiazolyl that is unsubstituted or substituted by methyl, ethyl, methoxy, chloro, bromo, cyano, nitro, N-methylsulphonamido, N,N-dimethylsulfonamido or methylsulfonyl; or

D is phenyl or naphthyl that contains an OH, NH_2 or COOH group in the position ortho-to the azo bond, said phenyl or naphthyl being further unsubstituted or substituted by chloro, bromo, nitro, cyano, lower alkyl, lower alkoxy, lower alkylsulphonyl, sulfonic acid, carboxylic acid, sulphonamide, N-lower alkyl-sulphonamide, N-lower hydroxyalkyl-sulphonamide, N,N-diethylsulphonamide, N,N-di(β-hydroxyethyl)-sulphonamide, phenylazo, naphthylazo, formylamino, acetylamino, benzoylamino, benzenesulphonamide, p-toluenesulphonylamino, methanesulphonylamino, carboxymethoxyamino, carboethoxyamino, dimethylamino-sulphonylamino or isopropoxyamino, and

X is hydroxy, alkoxy of 1 to 4 carbon atoms, phenoxy, naphthoxy, benzyloxy, amino, alkylamino of 1 to 4 carbon atoms, β-hydroxyethylamino, γ-methoxy-n-propylamino, isopropoxy-n-propylamino, N,N-diethylethylenediamine, cyclohexylamino, piperidyl, morpholyl, phenylamino, carboxyphenylamino, sulfonaphthylamino, mercapto, methylthio, β-hydroxyethylthio, phenylthio, carboxyphenylthio, naphthylthio, thiazolylthio, methylsulphonyl, phenylsulphonyl, methyl-phenylsulphonyl, sulfo or fibre-reactive acylamino where acyl is selected from the group consisting of chloroacetyl, bromoacetyl, β-chloropropionyl, β-bromopropionyl, α,β-dichloropropionyl, α,β-dibromopropionyl, chloromaleyl, acrylyl,β-chloroacrylyl, β-bromoacrylyl, α-chloroacrylyl, α-bromoacrylyl, α,β-dichloroacrylyl, α,β-dibromoacrylyl, trichloroacrylyl, chlorocrotonyl and propiolyl.

3,869,441

3-SECONDARY AMINOMETHYLENE-4-LOWER-ALKYL-AZO-6-HYDROXYPYRID-2-ONE DYESTUFFS

Nigel Hughes, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

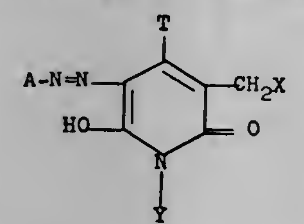
Filed Dec. 27, 1971, Ser. No. 212,634

Claims priority, application Great Britain, Jan. 4, 1971, 292/71

Int. Cl. C09b ***29/36;*** **D06p** ***3/70***

U.S. Cl. 260—156 **3 Claims**

1. A water soluble salt of an azo dyestuff free from sulphonic or carboxylic acid group of the formula:



wherein

A is 2-nitrophenyl, 3-nitrophenyl, 4-nitrophenyl, 2-methoxy-4-nitrophenyl, 4-methoxy-2-nitrophenyl, 4-methyl-2-nitrophenyl, phenyl, 2-methylphenyl, 3-methylphenyl, 4-methylphenyl, 2-methoxyphenyl, 4-methoxyphenyl, 4-acetylaminophenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-nitro-4-chlorophenyl, 2-chloro-4-nitrophenyl, 2-bromo-4-nitrophenyl, 4-sulphonamidophenyl, 4-(phenylazo)phenyl, 4-(2′-methylphenylazo)-2-methylphenyl, 1′-naphthyl-, 4-(2′,4′-dinitrophenyl)aminophenyl, 4-(phenylazo)-2-chlorophenyl, 4-(4′-methylphenylazo)-phenyl, 4-(2′-nitrophenylamino) phenyl, or 6-methyl-2-(4′-aminophenyl) benzthiazole;

T is methyl, ethyl, propyl or phenyl;

Y is hydrogen, methyl, ethyl, propyl, hydroxyethyl, methoxypropyl, 1-naphthyl, phenyl, p-tolyl, o-tolyl, p-methoxyphenyl, p-nitrophenyl, or p-chlorophenyl; and X is amino of the formula $—NR^1R^2$ wherein R^1 and R^2 each independently are methyl, ethyl, propyl, hydroxyethyl or cyanoethyl, or together with the nitrogen atom to which they are attached form a hetercycle selected from piperidino, morpholino, thiomorpholino, hexahydroazepino and 2-methylpyrrolidino, with an acid selected from the group consisting of hydrochloric, sulphuric, phosphoric, sulphamic, boric, formic, acetic, propionic, citric, oxalic, and mono-, di- and trichloroacetic acids.

3,869,442

PHENYL-AZO-N-ACYLAMIDOETHYLANILINE COMPOUNDS

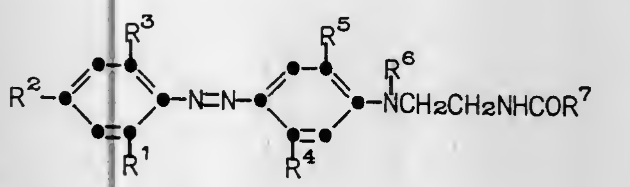
Max A. Weaver, and Clarence A. Coates, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1971, Ser. No. 194,047

Int. Cl. C09b ***29/08, 31/04;*** **D06p** ***3/24***

U.S. Cl. 260—207.1 **8 Claims**

1. A compound having the formula



wherein

R^1 is hydrogen, chlorine, bromine, or lower alkylsulfonyl;

R^2 is phenylazo or lower alkylsulfonyl;

R^3 is hydrogen, chlorine or bromine;

R^4 is hydrogen, lower alkyl or the group $—NHCOR^7$;

R^5 is hydrogen or lower alkyl;

R^6 is hydrogen, alkyl of up to about eight carbon atoms or cyclohexylmethyl; and

R^7 is lower alkyl; lower alkyl substituted with chlorine, hydroxy, lower alkoxy, cyano, carbamoyl, lower alkanoyloxy or cyclohexyl; lower alkoxy; cyclohexyl; phenyl; phenyl substituted with lower alkyl, lower alkoxy or chlorine; or 2-furyl.

3,869,443

N,N′-HEPTAMETHYLENEBIS(4-TRIFLUOROMETHOXYBENZAMIDE)-β-CYCLODEXTRIN INCLUSION COMPLEX

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 119,029, Feb. 25, 1971, , which is a continuation-in-part of Ser. No. 62,186, Aug. 7, 1970, abandoned. This application May 29, 1973, Ser. No. 364,289

Int. Cl. C08b ***25/02;*** **C07c** ***103/30***

U.S. Cl. 260—209 R **1 Claim**

1. N,N′-Heptamethylenebis(4-trifluoromethoxybenzamide)-β-cyclodextrin inclusion complex.

3,869,444

ESTERS OF ERYTHROMYCIN OXIME

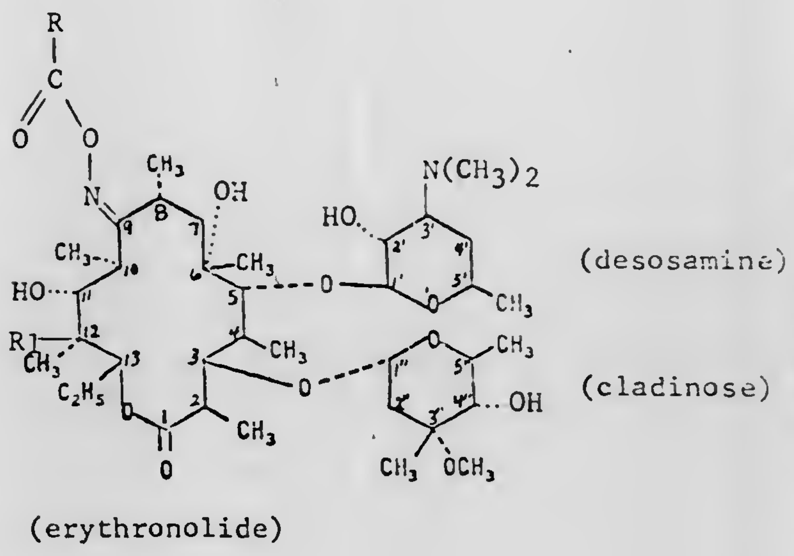
Leslie Alan Freiberg, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 10, 1972, Ser. No. 296,431

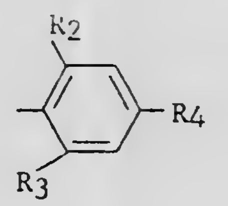
Int. Cl. C07c ***47/18***

U.S. Cl. 260—210 E **14 Claims**

1. The compound 9-(0)-(2,6-dimethyl-4-carbomethoxy)benzoylerythromycin A oxime having the following general structural formula



where R_1 is hydrogen or hydroxy, and R is a bulky alkyl group of 1–4 carbons, or a substituted aryl group, said substituted aryl group having the structural formula



where R_2 and R_3 are loweralkyl of 1–4 carbons and R_4 is selected from the group consisting of carboxamide, a C_1–C_4 alkyl, carboxyalkyl, carboxylic acid, aminoalkyl, substituted aminoalkyl, carboxyaminoalkyl, and salts of lower carboxylic acids.

3,869,445

4″-O-SULFONYL ERYTHROMYCIN-9-O-OXIME DERIVATIVES

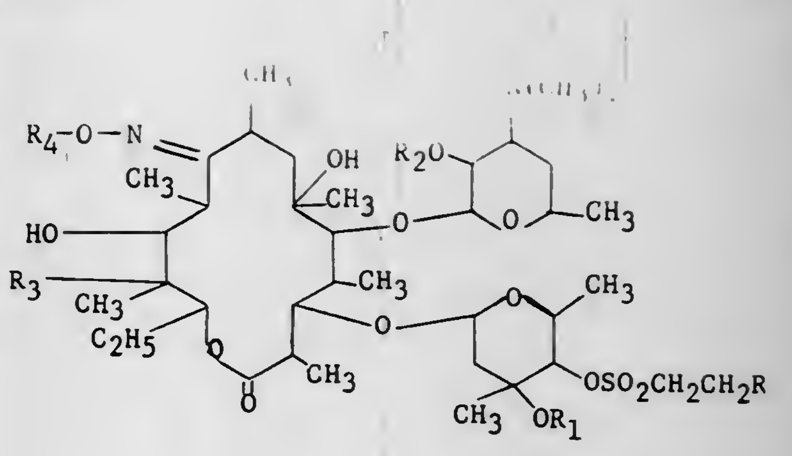
Robert Hallas; John Soloman Tadanier, both of Waukegan, and Anne Mary VonEsch, North Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 356,988, May 3, 1973, abandoned. This application Dec. 10, 1973, Ser. No. 423,652

Int. Cl. Co7c ***129/18***

U.S. Cl. 260—210 E **5 Claims**

1. A 4″-O-sulfonyl erythromycin-9-O-oxime derivative of the following structural formula:



where R is selected from the group consisting of amino, monoalkyl amino, C_1–C_6 dialkyl amino, alkoxy, morpholino, piperazino, piperidino, C_1–C_6 alkylthio, C_1–C_6 alkylsulfonyl, arylthio, arylsulfonyl, thiamorpholino, aziridino, benzylthio, thiamorpholinosulfone, benzylsulfinyl, arylsulfinyl, benzylsulfonyl, cyanoalkyl, halocyanoalkyl, haloalkanoate, dialkanoate, ketoalkyl, ketoalkanoate, benzylamino, benzoxy, phenoxy, and benzylcyano; R_1 is hydrogen or methyl, R_2 is hydrogen or loweralkanoyl, R_3 is hydrogen or hydroxy, and R_4 is selected from the group consisting of a C_1–C_6 loweralkyl, cycloalkyl, aryl, and benzyl.

3,869,446

PROCESS OF PREPARING 6-AZAPYRIMIDINE RIBONUCLEOSIDES

Alois Piskala, Frantisek Sorm, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

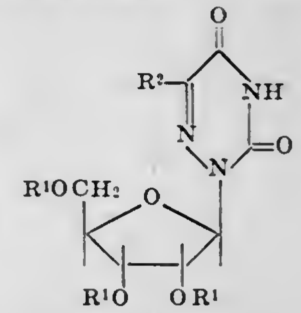
Filed Nov. 15, 1972, Ser. No. 306,838

Claims priority, application Czechoslovakia, Nov. 18, 1971, 8085-71; Nov. 23, 1971, 8163-71

Int. Cl. C07d ***51/52***

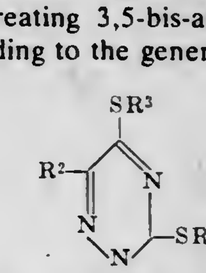
U.S. Cl. 260—211.5 R **4 Claims**

1. Process of preparing 6-azapyrimide ribonucleosides according to the general formula I



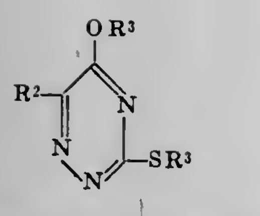
(I)

wherein R^1 is hydrogen or an acetyl or benzoyl and R^2 is hydrogen or an alkyl consisting of 1–6 carbon atoms, which process comprises treating 3,5-bis-alkylthio(or benzylthio)-1,2,4-triazines according to the general formula II



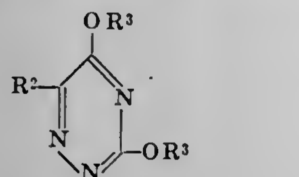
(II)

wherein R^2 is the same as in formula 1 and R^3 is an alkyl consisting of 1–6 carbon atoms or the benzyl group, at room temperature with an equimolar amount of alkali metal alkoxides, preferably sodium alkoxides, in alkanos consisting of 1–6 carbon atoms or in benzyl alcohol, thereby forming 5-alkoxy(or benzyloxy)-3-alkylthio(or benzylthio)-1,2,4-triazine according to the general formula III



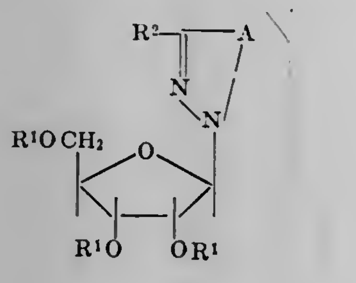
(III)

wherein R^2 and R^3 are the same as in formulae I and II, treating the latter compound III with an excess of alkali metal alkoxides, preferably sodium alkoxides, in alkanols consisting of 1–6 carbon atoms or in benzyl alcohol, in the presence of alkylating agents, preferably methyl iodide, or in the presence of anhydrous salts of heavy metals, preferably mercuric salts, at elevated temperatures, preferably at 60°–100°C, thereby forming 3,5-di-alkoxy(or benzyloxy)-1,2,4-triazines according to the general formula IV

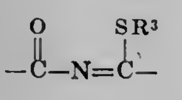


(IV)

wherein R^2 and R^3 are the same as in formula II, condensing the aforesaid compounds III or IV with peracylribofuranosyl halides, thereby forming (from compounds III) the 2-(2,3,5-tri-O-acyl-β-D-ribofuranosyl)-3-alkylthio(or benzoylthio)-1,2,4-triazin-5(2H)-ones according to the general formula V

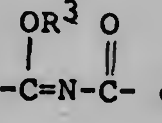


wherein A is a



$$-\overset{\overset{O}{\|}}{C}-N=\overset{\overset{SR^3}{|}}{C}-$$

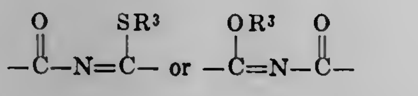
group and R^1, R^2 and R^3 are the same as in formulae I and II, or forming (from compounds IV) the 2-(2,3,5-tri-O-acyl-β-D-ribofuranosyl)-5-alkoxy(or benzyloxy)-1,2,4-triazin-3(2H—ones according to the aforesaid general formula V, wherein A is a



$$-\overset{\overset{OR^3}{|}}{C}=N-\overset{\overset{O}{\|}}{C}-$$

group and R^1, R^2, and R^3

are the same as in formulae I and II, dealkylating or hydrolyzing selectively the aforesaid compounds according to the general formula V, wherein A is the



$$-\overset{\overset{O}{\|}}{C}-N=\overset{\overset{SR^3}{|}}{C}- \text{ or } -\overset{\overset{OR^3}{|}}{C}=N-\overset{\overset{O}{\|}}{C}-$$

group and R^1, R^2, and R^3 are the same as in formulae I and II, thereby forming the 6-azapyrimidime nucleosides according to the general formula I, wherein R^1 is an acetyl or benzoyl and R^2 is hydrogen or an alkyl consisting of 1–6 carbon atoms and converting the latter compounds, if required, by known procedure, namely, amonolysis or alcoholysis into compounds according to the general formula I.

3,869,447

2,3,4,5-TETRAHYDRO-4-PHENYL-1H-1,4-BENZODIAZEPINE-1-CARBOXIMIDAMIDE AND RELATED COMPOUNDS

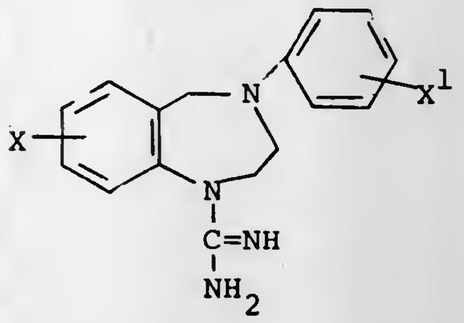
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 13, 1974, Ser. No. 469,172

Int. Cl. C07d *53/06*

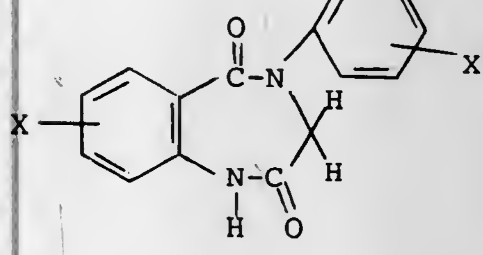
U.S. Cl. 260—239 BD **7 Claims**

1.. A compound of the formula



wherein X and X^1 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo, and trifluoromethyl and the acid-addition and quaternary salts thereof.

7. The method of producing the compound of claim 1 comprising reducing a compound of the formula



with a strong reducing agent, converting this intermediate to its acid-addition salt form, and reacting with cyanamide by heating.

3,869,448

2-LOWER ALKYLSULFINYL-1H-1,4-BENZODIAZEPINES

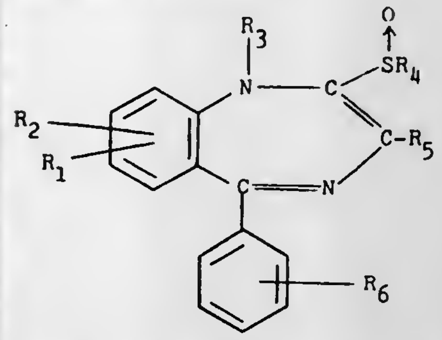
James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 187,836, Oct. 8, 1971,. This application June 5, 1974, Ser. No. 476,352

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula



wherein R_1 and R_2 are each selected from the group consisting of hydrogen, halogen, trifluoromethyl and nitro; R_3 is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl-lower alkyl and di-lower alkylamino-lower alkyl; R_4 is lower alkyl; R_5 is hydrogen or lower alkyl; R_6 is selected from the group consisting of hydrogen, and halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,869,449

NEW PENICILLIN ESTERS, SALTS THEREOF, AND METHODS FOR THEIR PREPARATION

Wagn Ole Godtfredsen, Vaerlose, Denmark, assignor to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

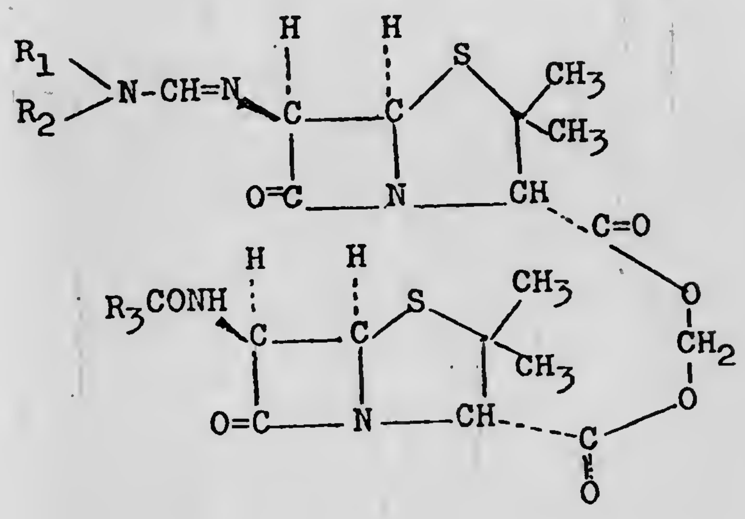
Filed Apr. 13, 1972, Ser. No. 243,855

Claims priority, application Great Britain, May 5, 1971, 13358

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **9 Claims**

1. A penicillin ester of the formula I



I

in which R_1 and R_2 together with the nitrogen atom to which they are attached represent hexahydroazepinyl; R_3 represents a member selected from the group consisting of benzyl, phenoxymethyl, 3-(2′-chloro-6′-fluorophenyl)-5-methyl-4-isoxazolyl,D(-)-alpha-azidobenzyl, D(-)-alpha-aminobenzyl and 3-(o-chlorophenyl)-5-methyl-4-isoxazolyl; and pharmaceutically acceptable, non-toxic salts thereof.

3,869,450

S-TRIAZOLO (4,3-D) (1,4) BENZODIAZEPIN-6(7H)-ONES

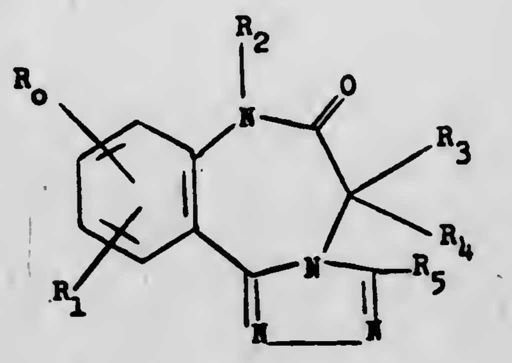
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 18, 1973, Ser. No. 370,917

Int. Cl. C07d *53/06, 55/00, 99/02*

U.S. Cl. 260—239.3 T **7 Claims**

1. A compound of the formula



wherein:

R_0 and R_1 each independently represent hydrogen, halo having an atomic weight of about 18 to 80, alkyl of 1 to 4 carbon atoms, nitro or trifluoromethyl provided that at least one of R_0 and R_1 is halo, preferably chloro, when R_2 is hydrogen, and

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, and

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, unsubstituted phenyl or phenyl mono-substituted with halo having an atomic weight of 18 to 80

R_4 is hydrogen, and

R_5 is unsubstituted phenyl or phenyl mono-substituted or disubstituted with halo having an atomic weight of 18 to 80, or a pharmaceutically acceptable acid addition salt thereof.

3,869,451

ANAESTHETIC STEROIDS OF THE PREGNANE AND 19-NORPREGNANE SERIES

Gordon Hanley Phillipps, Wembley; Christopher Earle Newall, London, and Barry Edward Ayres, Amersham, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

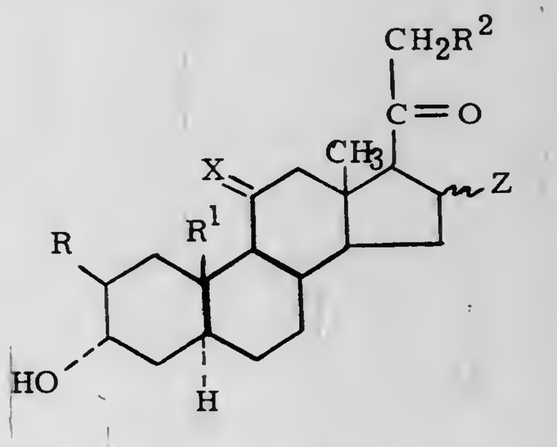
Filed Nov. 11, 1971, Ser. No. 197,915

Claims priority, application Great Britain, Nov. 12, 1970, 53911/70

Int. Cl. C07c *169/32*

U.S. Cl. 260—239.5 **21 Claims**

1. A 3α-hydroxy steroid of the pregnane or 19-norpregnane series selected from the group consisting of a compound of the formula



wherein:

R is a bromine, fluorine or iodine atom; $(C_1–C_6)$ alkanoyloxy; $(C_1–C_6)$ alkanoyloxy substituted with at least one of a halogen atom or a diethylamino, morpholino or piperidino group; $(C_1–C_6)$ alkoxy; allyloxy; cyclohexyloxy; phenoxy; benzyloxy; $(C_1–C_6)$ alkylthio; $(C_1–C_6)$ alkoxy substituted by at least one of a halogen atom or hydroxy, $(C_1–C_6)$ alkoxy, $(C_1–C_6)$ alkoxycarbonyl, morpholino, tetrahydrofuranyl, or $(C_1–C_6)$ alkanoyloxy substituted with at least one of a halogen atom or a diethylamino or morpholino group; alkyl containing up to 9 carbon atoms; hydroxy; nitrooxy; azido; or tosyloxy;

R^1 is hydrogen or methyl;

R^2 is hydrogen, halogen or $(C_1–C_6)$ alkanoyloxy;

X is 2 hydrogen atoms or an oxo group; and

Z is 2 hydrogen atoms,

a hydrogen atom and a halogen atom, or a hydrogen atom and a $(C_1–C_5)$ alkyl group; and its pharmaceutically acceptable $3α-(C_1–C_5)$ alkanoyl ester or such an ester substituted by at least 1 halogen atom or carboxy or diethylamino group and its 20-ethylene ketal, R^1 being hydrogen only when R is $(C_1–C_6)$ alkoxy, X is oxo and Z is 2 hydrogen atoms.

3,869,452

14BETA,18-(EPOXYETHANOIMINO) STEROIDS

Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg-/Zurich, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

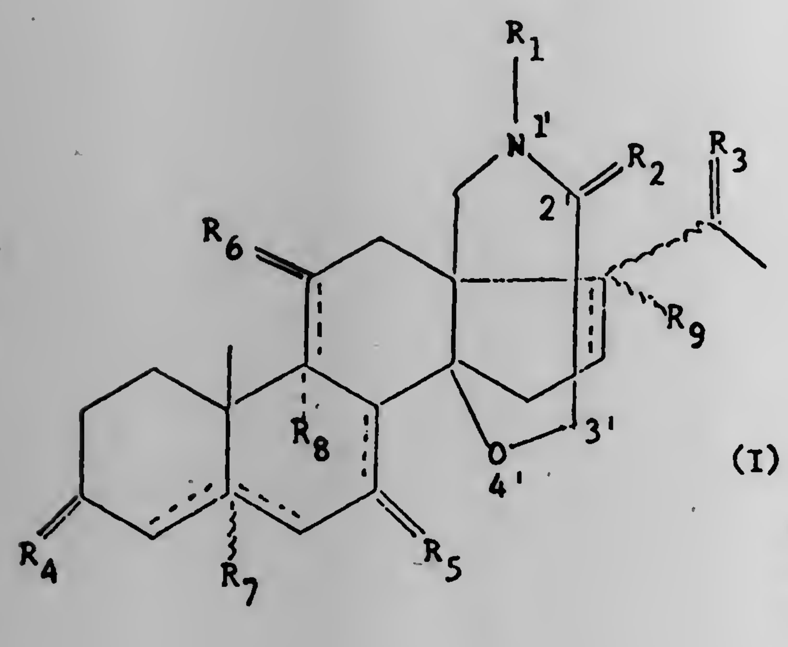
Continuation of Ser. No. 82,183, Oct. 19, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 298,913

Claims priority, application Switzerland, Oct. 24, 1969, 15902/69; July 24, 1970, 11242/70

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.55 R **14 Claims**

1. A compound of the Formula I



(I)

wherein

- R_1 represents a lower alkyl group, the benzyl group or hydrogen,
- R_2 represents an oxo radical or two hydrogen atoms,
- R_3 represents oxo or a ketal derived from a lower alkanediol or lower alkanols, or hydroxyl, hydroxyl esterified with a lower alkanoic acid or hydroxyl etherified with a lower alkanol or benzyl alcohol and a hydrogen atom,
- R_4 represents oxo or a ketal derived from a lower alkanediol or lower alkanols, or hydroxyl, hydroxyl esterified with a lower alkanoic acid or hydroxyl etherified with a lower alkanol or benzyl alcohol and a hydrogen atom, or hydroxyl, hydroxyl etherified with a lower alkanol or benzyl alcohol and together with R_8 an epoxy radical,
- R_5 and R_6 each independently represent oxo or a ketal derived from a lower alkanediol or lower alkanols, or hydroxyl, hydroxyl esterified with a lower alkanoic acid or hydroxyl etherified with a lower alkanol or benzyl alcohol and a hydrogen atom, or two hydrogen atoms, or, when occurring at a double bond, one hydrogen atom,
- R_7 represents an α- or β-oriented hydrogen atom,
- R_8 represents an α-oriented hydrogen atom, an α-oriented hydroxyl group, or together with R_4 an epoxy radical, and R_9 represents an α- or β-oriented hydrogen atom, or hydroxyl, hydroxyl esterified with a lower alkanoic acid or hydroxyl etherified with a lower alkanol or benzyl alcohol,

whereby double bonds may be present in the positions 5 or 4, when R_4 represents a free oxo radical, as well as 7, 9 (11) and 16 corresponding to the dotted lines with the elimination of R_7, R_8 and/or R_9,

as well as pharmaceutically acceptable acid addition salts of a compound of Formula I in which R_2 designates two hydrogen atoms with the exception of Batrachotoxinin A.

3,869,453

IRON CARBONYL COMPLEX OF AROMATIC AZO COMPOUNDS COMPLEXED WITH PARTICULAR PHOSPHINE ARSINE OR STIBINE COMPOUNDS

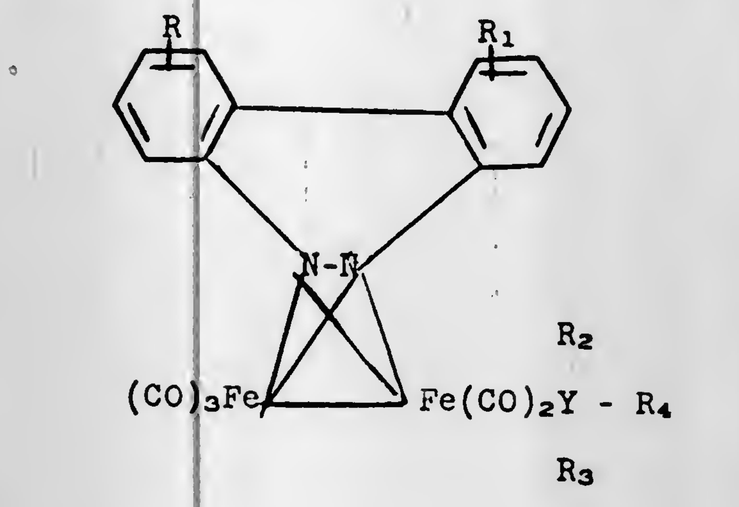
Robert Putnam Bennett, Bridgewater Township, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 154,667, June 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 775,188, Nov. 12, 1968, abandoned. This application Jan. 29, 1973, Ser. No. 327,270

Int. Cl. C07d *51/10*

U.S. Cl. 260—242 **6 Claims**

1. A diiron pentacarbonyl complex of a benzo(c)cinnoline having the formula:



wherein R and R_1 are hydrogen, methyl or halogen, Y is phosphorus, arsenic or antimony and R_2, R_3 and R_4 can be hydrogen or lower alkyl and at least one of R_2; R_3 or R_4 is not hydrogen.

3,869,454

NOVEL DIAZAMEROCYANINES AND THEIR USE FOR DYEING KERATINOUS FIBERS

Gerard Lang, Epinay-sur-Seine, and Andree Bugaut, Boulogne-sur-Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed June 5, 1972, Ser. No. 259,689

Claims priority, application France, June 4, 1971, 71.63287; Jan. 6, 1972, 72.64565

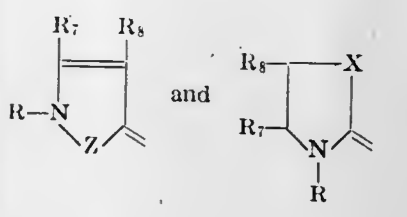
Int. Cl. C07d *87/22*

U.S. Cl. 260—244 R **2 Claims**

1. A diazamerocyanine, including the mesomorphic form thereof, having the formula

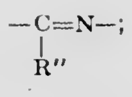
$$A = N - N = B'$$

wherein A is a nitrogen heterocycle selected from the group consisting of



wherein:

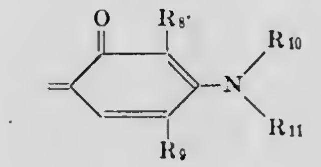
- R is lower alkyl having 1–4 carbon atoms or phenyl;
- X is a member selected from the group consisting of oxygen, sulfur, —NR′—, where R′ is lower alkyl having 1–4 carbon atoms; —CH=CH—;



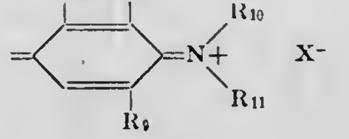
$$-\underset{\underset{R''}{|}}{C}=N-;$$

where R″ is hydrogen or lower alkyl having 1–4 carbon atoms; or —C(R″)(R″)—, where R″ each independently have the meaning above;

- Z is —CH=CH— or —NR‴, where R‴ is lower alkyl having 1–4 carbon atoms
- R_7 is hydrogen, lower alkyl having 1–4 carbon atoms, or phenyl;
- R_8 is hydrogen or lower alkyl having 1–4 carbon atoms, or R_7 and R_8, when taken together with the carbon atoms to which they are attached form a benzene ring, a halogen-substituted benzene ring, a benzene ring substituted with lower alkyl having 1–4 carbon atoms, a benzene ring substituted with lower alkoxy having 1–4 carbon atoms, or a nitro-substituted benzene ring; and B′ is a member selected from the group consisting of



and



where R_8 and R_{10}, together with the carbon and nitrogen atoms to which they are attached, form a morpholine group and R_9 is hydrogen and R_{11} is hydrogen or lower alkyl having 1–4 carbon atoms, or R_9 and R_{11}, together with the carbon and nitrogen atoms to which they are attached, form a morpholine group, and R_8 is hydrogen and R_{10} is hydrogen, lower alkyl having 1–4 carbon atoms and alkanoyl having 2 to 5 carbon atoms; and X^- is a halide, fluorborate, perchlorate, sulfate, disulfate or acetate anion.

3,869,455

PYRROLIDIDES AND MORPHOLIDES OF 4,5-DIPHENYL-OXAZOLE-2-ALKANOIC ACIDS

Enzo Marchetti, Rome, Italy, assignor to Instituto Farmacologico Serono S.p.A., Rome, Italy

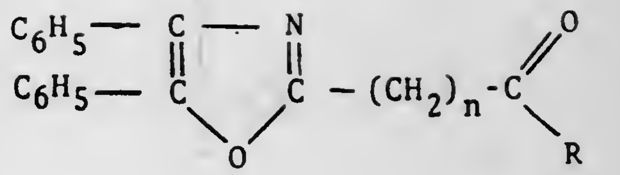
Filed Mar. 1, 1971, Ser. No. 119,832

Claims priority, application Italy, Mar. 5, 1970, 21550/70

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 E **7 Claims**

1. A carboxylic acid amide of the formula:



wherein *n* is 0, 1 or 2 and R represents pyrrolidino or morpholino.

3,869,456

SYNTHESIS OF 5-PYRIMIDINECARBINOLS

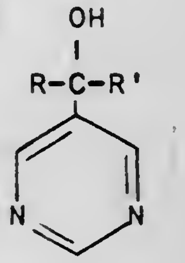
Harold M. Taylor; James D. Davenport, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 234,339, March 13, 1972, which is a continuation-in-part of Ser. No. 888,949, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 829,844, May 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 685,315, Nov. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 634,074, April 27, 1967, abandoned. This application Dec. 13, 1973, Ser. No. 424,537

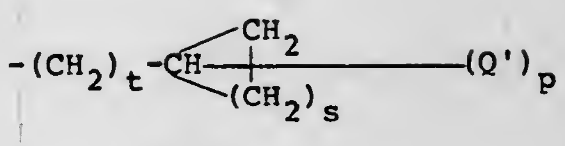
Int. Cl. C07d *51/18, 51/36*

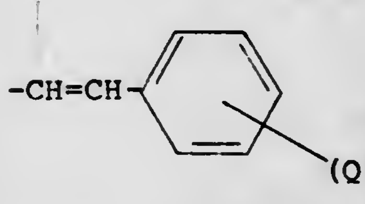
U.S. Cl. 260—251 **5 Claims**

1. In the preparation of a 5-pyrimidinecarbinol of the formula

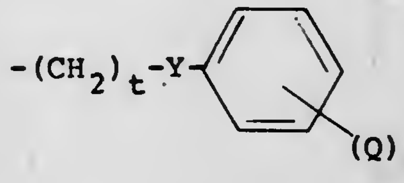


wherein R is
- C_1-C_{13} alkyl,
- C_2-C_{12} alkenyl,



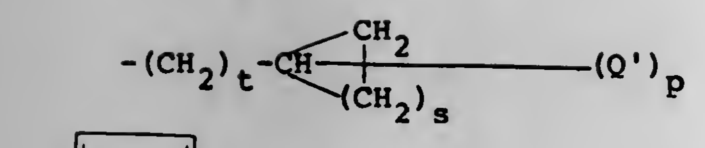


, or



;

R′ is
- C_2-C_{13} alkyl,
- C_2-C_{12} alkenyl,
- norbornen-2-yl,
- 2-norbornyl,
- adamantyl,
- 3-pyridyl,



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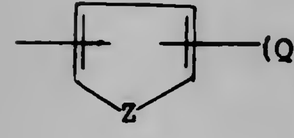

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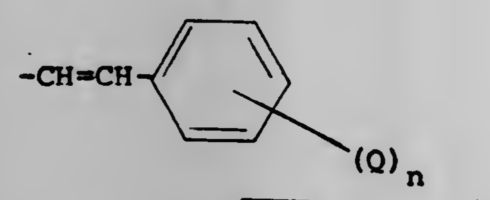
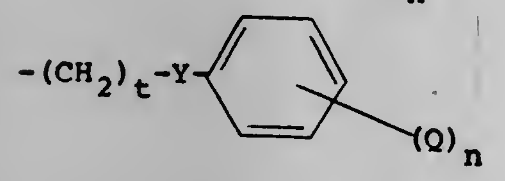
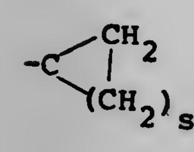


, or



; or

R and R′, taken together with the carbon atom to which they are attached, form a ring of the formula



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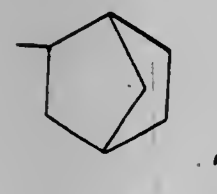

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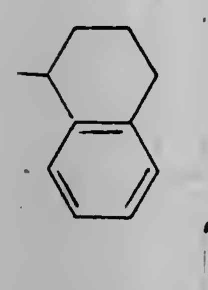

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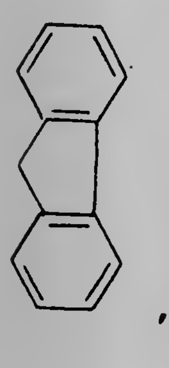
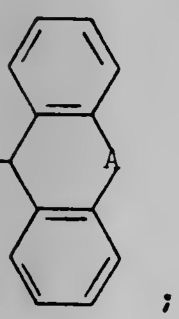


, or

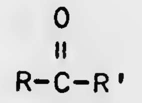


;

wherein

Q is C_1–C_4 alkyl, C_1–C_8 alkoxy, C_1–C_4 alkylthio, halo, hydroxy, trifluoromethyl, C_1–C_4 alkylsulfonyl, nitro, or di(C_1–C_4 alkyl)amino, or two Q's attached to adjacent carbon atoms of a benzene ring form a methylenedioxy group;
Q′ is C_1–C_4 alkyl or methoxy;
Y is oxygen, sulfur, or a carbon-to-carbon bond;
Z is oxygen or sulfur;
A is oxygen, sulfur, CH_2, CH_2—CH_2, or CH═CH;
n is 0 to 5;
m is 0 to 2;
p is 0 to 3;
s is 1 to 6; and
t is 0 to 5,

by the halogen-metal interchange between an alkyllithium and 5-bromopyrimidine followed by reaction of the intermediate 5-pyrimidyllithium with a ketone of the formula



$$R-\overset{O}{\overset{\|}{C}}-R'$$

wherein

R and R′ have the same significance as hereinabove, the improvement which comprises commingling 5-bromopyrimidine and the ketone at a temperature of from about −70° to about −125°C., and adding thereto an alkyllithium at such a rate that the reaction temperature remains below about −70°C.

3,869,457

2,3,5-SUBSTITUTED-6-TRIFLUOROMETHYL-1,3-DIAZIN-4-ONES

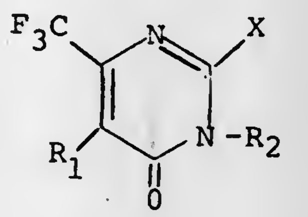
Albert William Lutz, Princeton, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanimid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 737,308, June 17, 1968, abandoned. This application Mar. 24, 1972, Ser. No. 237,936

Int. Cl. C07d ***51/30, 51/38***

U.S. Cl. 260—260 **7 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or halo
R_2 is alkyl of 1 to 12 carbon atoms, cyclohexyl, phenyl, allyl, mono or dihalo substituted alkyl of 1 to 12 carbon atoms, monocarb(loweralkoxy) substituted alkyl of 1 to 12 carbon atoms, mono or dihalo substituted phenyl, or mono or di CF_3 substituted phenyl, and
X is hydrogen or hydroxy and where X is hydroxy, the tautomers and water soluble sodium, potassium, ammonium and tri(C_1–C_4 alkyl) ammonium salts.

3,869,458

3′-O-ACETYL-18′-GLYCYRRHETYL-N-CARBOETHOXY PIPERAZINOAMIDES

John Cameron Turner, West Wickham, and Rosalind Po Kuen Chan, London, both of England, assignors to Biorex Laboratories, Limited, London, England

Filed July 8, 1970, Ser. No. 53,322

Claims priority, application Great Britain, July 28, 1969, 37692/69

Int. Cl. C07d ***51/70***

U.S. Cl. 260—268 PC **2 Claims**

1. 3′-O-acetyl-18β′-glycyrrhetyl-N-carboethoxy-piperazinamide.

3,869,459

N_1-(BENZOYL)ALKYL-N_2(PHENOXY-2-HYDROXY-PROPYL AND N_1-(BENZOYL)ALKYL-N_2-(PHENYLTHIO-2-HYDROXYLPROPYL) PIPERAZINE

Wolfgang Milkowski, Burgdorf; Horst Zeugner, Hannover; Klaus-Wolf Von Eickstedt, Isernhagen N. B., and Werner Stuhmer, Eldagsen, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

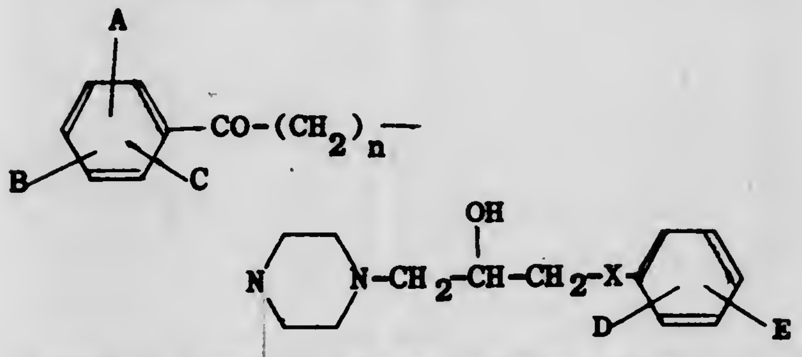
Filed Sept. 12, 1972, Ser. No. 288,321

Claims priority, application Germany, July 26, 1972, 2236679; Sept. 13, 1971, 2145683

Int. Cl. C07d ***51/70***

U.S. Cl. 260—268 R **45 Claims**

1. A compound having the formula



in which A, B and C are each a hydrogen, halogen, or an alkoxy group, the alkyl moiety of which has up to 4 carbon atoms, D and E are each a hydrogen, halogen, trifluoromethyl, nontertiary alkyl, or alkanoylamino group, the alkyl moiety of which has up to 4 carbon atoms, or a nonadjacent nitro group, X is oxygen or sulfur, and n is 2 or 3, and pharmaceutically acceptable acid addition salts thereof.

3,869,460

I-ADAMANTYL CARBONYL-3,3-DIPHENYLPIPERAZINES

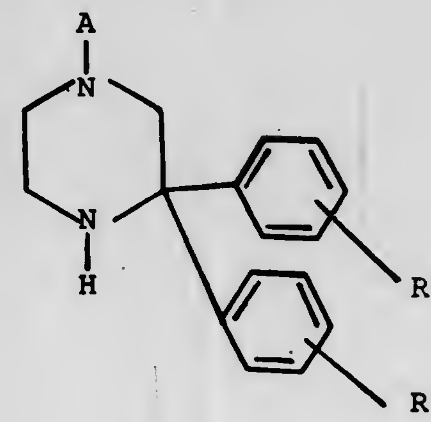
Meier E. Freed, Paoli, and Scott J. Childress, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 161,322, July 9, 1971, Pat. No. 3,749,725, which is a division of Ser. No. 786,367, Dec. 23, 1968, Pat. No. 3,631,047. This application Apr. 4, 1973, Ser. No. 347,940

Int. Cl. C07d ***51/72***

U.S. Cl. 260—268 PC **2 Claims**

1. A compound having the formula:



Where A is adamantylcarbonyl; and R^1 and R^2 are the same or different members selected from the class consisting of hydrogen, halogen, lower alkyl and lower alkoxy.

3,869,461

INTERMEDIATES FOR QUININE, QUINIDINE AND DERIVATIVES THEREOF

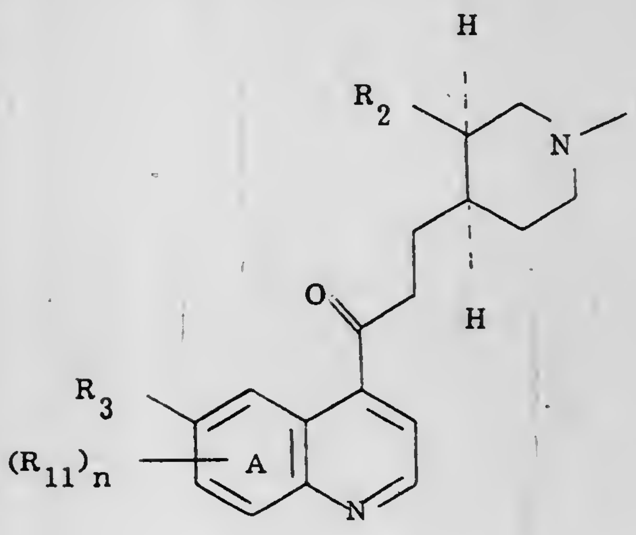
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,648, Dec. 27, 1971, Pat. No. 3,753,992, which is a continuation-in-part of Ser. No. 104,785, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,304, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,913, July 2, 1968, abandoned. This application Apr. 26, 1973, Ser. No. 354,838

Int. Cl. C07d ***33/50***

U.S. Cl. 260—284 **20 Claims**

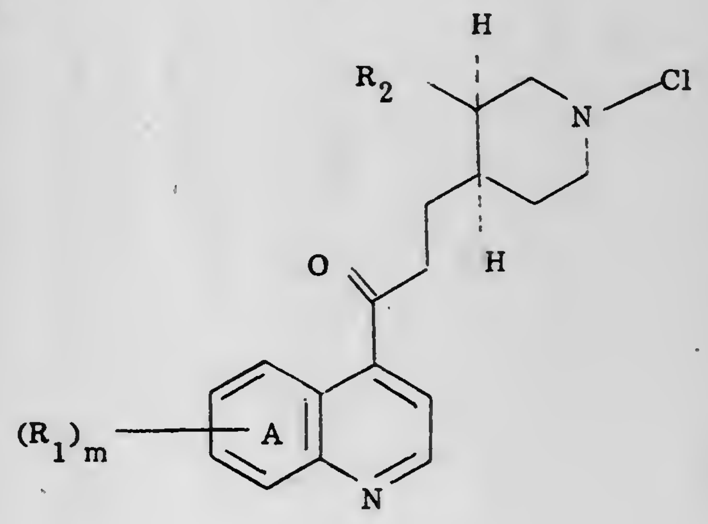
1. A compound of the formula



IIIc

wherein *n* is 1 or 2; R_2 is ethyl or vinyl; R_{11} is hydrogen, hydroxy, methyl, ethyl, propyl, butyl, methoxy, trifluoromethyl, or chloro, or when *n* is 2, R_{11} taken together with an adjacent R_{11}, is also methylenedioxy; when R_{11} is hydrogen, R_3 is methyl, ethyl, propyl, butyl, trifluoromethyl, or chloro; when R_{11} is other than hydrogen and *n* is 1, R_3 is methoxy, methyl, ethyl, propyl, hydrogen, trifluoromethyl, or chloro, or taken together with an adjacent R_{11}, is methylenedioxy; and when R_{11} is other than hydrogen and *n* is 2, R_3 is hydrogen, antipodes or racemates thereof.

10. A compound of the formula



IV

antipodes or racemates thereof,
wherein m is 0 to 2; R_1 is hydrogen, hydroxy, halogen, methyl, ethyl, propyl, butyl, methoxy or trifluoromethyl, or when m is 2, R_1, taken together with an adjacent R_1, is also methylenedioxy; and R_2 is ethyl or vinyl.

3,869,462

PROCESSES AND INTERMEDIATES FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

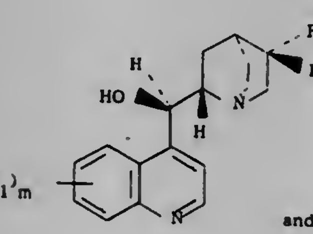
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffman-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 164,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,767

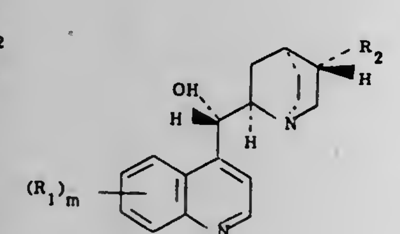
Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **2 Claims**

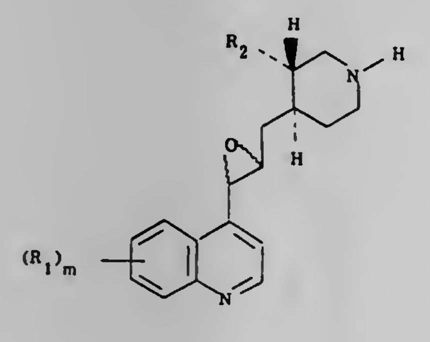
1. A process for preparing compounds of the formulas



and



wherein m is 0, 1 or 2; R_1 is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl or butyl, or when m is 2, R_1, taken together with an adjacent R_1, is also methylenedioxy; and R_2 is vinyl or ethyl; their antipodes and racemates,
comprising the step of treating a compound of the formula



wherein R_1, R_2 and m are as above its antipode and racemate
with a weak organic or inorganic protonic acid selected from the group consisting of water, ammonium chloride, lower alkanols and Lewis acids.

3,869,463

N-PHENYL DERIVATIVES OF ALKANOYLAMIDO PIPERIDINES

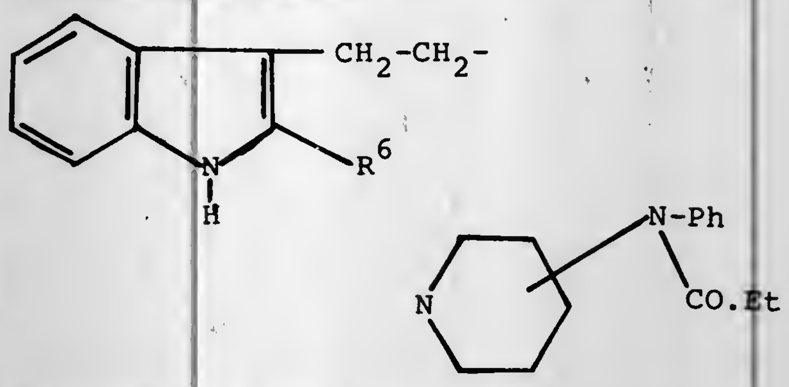
John Leheup Archibald, Windsor, England, assignor to John Wyeth & Brother Limited, Maidenhead, Berkshire, England

Filed Jan. 17, 1973, Ser. No. 324,462

Int. Cl. C07d *31/42*

U.S. Cl. 260—293.61 **4 Claims**

1. A compound selected from the group consisting of compounds having the formula



and the pharmaceutically acceptable acid addition salts of the said compounds, in which R^6 is selected from hydrogen and methyl.

3,869,464

PREPARATION OF 1-ALKYL-1,4-DIHYDRO-7-SUBSTITUTED-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS VIA THE 3-HYDROXYMETHYL ANALOGS

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,734

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 B **12 Claims**

1. The process consisting of reacting 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine with aqueous formaldehyde under alkaline conditions to produce, 1,4-dihydro-3-hydroxymethyl-4-oxo-7-Q-1,8-naphthyridine, reacting the latter with a lower-alkylating agent to produce 1-(lower-alkyl)-1,4-dihydro-3-hydroxymethyl-4-oxo-7-Q-1,8-naphthyridine, and reacting said 1-(lower-alkyl)-3-hydroxymethyl compound with an oxidizing agent capable of converting $—CH_2OH$ to $—COOH$ to procude 1-(lower-alkyl)-1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxylic acid, where Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,869,465

DISPERSIONS OF POLYMER FLUORINE-CONTAINING ACRYLIC ACID DERIVATIVES

Karl Waldmann, Frankfurt/Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

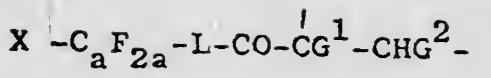
Continuation-in-part of Ser. No. 238,521, March 27, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,070

Claims priority, application Germany, Mar. 29, 1971, 2115139; Belgium, Mar. 29, 1972, 115698; Great Britain, Mar. 27, 1972, 162068/72; France, Mar. 29, 1972, 72.11000; Great Britain, Mar. 29, 1972, 14803/72; Netherlands, Mar. 24, 1972, 7203992; Italy, Mar. 27, 1972, 22441/72; Japan, Mar. 28, 1972, 47-30431; Yugoslavia, Mar. 28, 1972, 834/72; Austria, Mar. 27, 1972, 2610/72; Poland, Mar. 28, 1972, 154380; Romania, Mar. 28, 1972, 70302; Switzerland, Mar. 27, 1972, 4530/72; U.S.S.R., Mar. 27, 1972, 2039; Mar. 28, 1972, 1767499; Hungary, Mar. 29, 1972, HO 1465

Int. Cl. C08f *3/64, 45/24;* **D06m** *15/00*

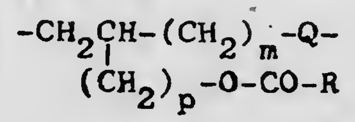
U.S. Cl. 260—29.6 F **11 Claims**

1. An aqueous emulsion or dispersion of a polymeric acrylic acid derivative consisting essentially of equal or different recurring units of the formula



$$X-C_aF_{2a}-L-CO-\overset{|}{C}G^1-CHG^2-$$

in which a is a number of 4 to 14, X is hydrogen or fluorine, L is a group of the formula
$—(CH_2)_h—Q—$,
$—Z—NR—(CH_2)_i—Q—$,
$—Z—NR—CH_2)_k—NR—$ or



$$\begin{array}{l}-CH_2CH-(CH_2)_m-Q-\\ \quad\;\; | \\ \quad (CH_2)_p-O-CO-R\end{array}$$

in which Q is oxygen or sulfur, R is hydrogen or lower alkyl, Z is $—CO—$ or $—SO_2—$, h is a number of 1 to 12, i is a number of 2 to 6, k is a number of zero to 4 and m and p are numbers of 1 to 10;
G^1 is hydrogen, chlorine, methyl, cyano or a group of the formula

$$—CH_2—COOG$$

in which G is hydrogen, lower alkyl or fluoroalkyl of the formula

$$—L—C_aF_{2a}—X$$

in which a, L and X are as defined above; and
G^2 is hydrogen or a group of the formula

$$—COOG$$

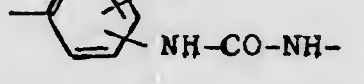
in which G is as defined above;
obtained by emulsion polymerization of acrylic acid derivatives of the formula

$$X—C_aF_{2a}—L—CO—CG^1{=}CHG^2$$

in which a, X, L G^1 and G^2 are as defined above, with the aid of about 0.5 to about 25% by weight, referred to the content of solid substance of a Bunte salt as an emulsifier of the formula

$$\begin{array}{c}X—C_aF_{2a}—(CHR^1)_b—(O)_c—(Z)_d—(NR)_e—(E)_f—(CH_2)_g—\\ {}_2O_3M\end{array}$$

in which X, R, Z and a are as defined above, R^1 is defined as R, b, c, d, e and f are zero, 1 or 2, g is a number of 1 to 12, E is a group of the formula
$—CH_2—CH_2—O—$,
$—CH_2—CHOH—$,
$—CH_2—CH_2—O—CO—NH—$ or



wherein R''' is methyl or a group of the formula

$$—NH—CO—C_aF_{2a}—X$$

in which a and X are as defined above; or, if g is different from 2, E is further $—CO—$ or $—SO_2—$, and M is an alkali metal or an ammonium ion.

3,869,466

4-CYANO-3,5-ISOTHIAZOLEDIYLBIS(THIOMETHYLENE)DITHIOCYANATE

Craig E. Mixan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 30, 1973, Ser. No. 384,156

Int. Cl. C07d *91/12*

U.S. Cl. 260—302 S **1 Claim**

1. 4-Cyano-3,5-isothiazolediylbis(thiomethylene)dithiocyanate.

3,869,467

17-β-HYDROXY-17-α-METHYL-5-α-ANDROSTANO[3,2-C]OR [2,3-D]ISOXAZOLES

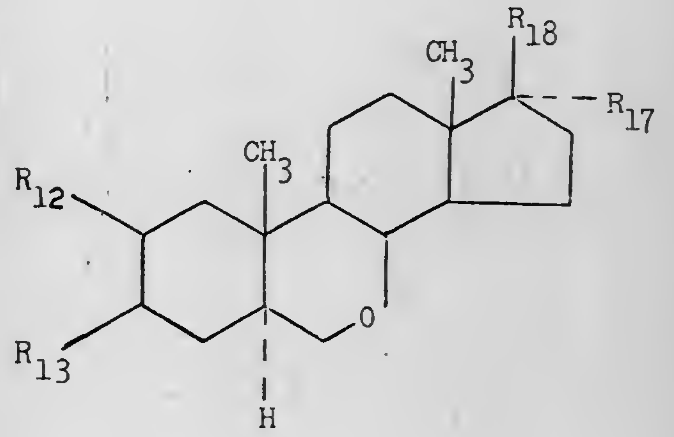
Robert William Guthrie, Fairfield; Richard Wightman Kierstead, and Ronald Andrew LeMahieu, both of North Caldwell, all of N.J., assignors to Hoffmann-LaRoche, Inc., Nutley, N.J.

Filed June 5, 1972, Ser. No. 259,526

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 D **3 Claims**

1. A compound of the formula:



wherein R_{18} is hydroxy, or hydroxy esterified with trifluoroaceticacid or lower alkanoic acid where the lower alkanoic acid has from 2 to 6 carbon atoms; R_{17} is hydrogen or lower alkyl having from 1 to 7 carbon atoms; and R_{12} taken together with R_{13} from isoxazole.

3,869,468

2-SUBSTITUTED OXAZOLE-4,5-DICARBOXAMIDES

Giorgio Tarzia, Roma, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

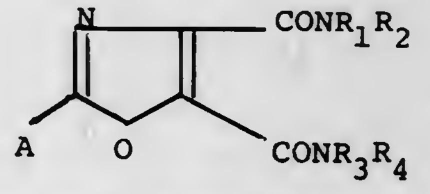
Filed Nov. 6, 1972, Ser. No. 304,001

Claims priority, application Italy, Nov. 15, 1971, 31096/71

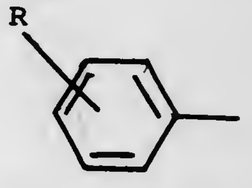
Int. Cl. C07d *85/44*

U.S. Cl. 260—307 R **13 Claims**

1. A compound represented by the formula



wherein A represents cyclohexyl, 2-thienyl or a group corresponding to the formula



wherein R represents p-phenyl or one to three substituents selected from the group of hydrogen, hydroxy, lower alkyl, halo, halo-lower alkyl, and lower alkoxy; R_1 and R_3 are selected from the group of hydrogen, lower alkyl, lower alkenyl, 5 to 8 carbon atom cycloalkyl, phenyl, phenyl-lower alkyl, hydroxy-lower alkyl, 2 to 4 carbon atom straight-chain alkanoyloxy-lower alkyl, hydroxy, amino, lower alkylideneamino, 5 to 8 carbon atom cycloalkylideneamino and benzylideneamino; R_2 and R_4 are selected from the group of hydrogen, lower alkyl, lower alkenyl, 5 to 8 carbon atom cycloalkyl, phenyl, phenyl-lower alkyl, hydroxy-lower alkyl, 2 to 4 carbon atom straight-chain alkanoyloxy-lower alkyl; each of the pairs R_1R_2 and R_3R_4 are the same; and each of the pairs R_1, R_2 and R_3, R_4 may also form with the amino nitrogen atom pyrrolidinyl, piperazinyl, piperidinyl or morpholinyl.

3,869,469

7-TRIAZOLYL-3-ARYL COUMARIN COMPOUNDS

Otto Neuner, and Alfons Dorlars, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

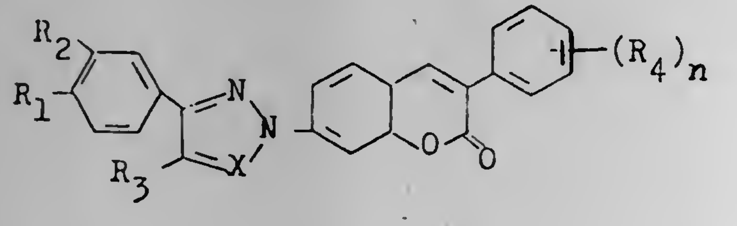
Filed Feb. 15, 1972, Ser. No. 226,528

Claims priority, application Germany, Dec. 10, 1971, 2161343

Int. Cl. C07d *99/04;* **C09k** *1/02*

U.S. Cl. 260—308 A **5 Claims**

1. Coumarine compounds of the formula



in which

R_1' represents phenyl, phenoxy, benzyloxy or cyclohexyl;
R_2' denotes hydrogen or together with R_1' forms a $-(CH_2)_4-$radical or $-CH=CH-CH=CH-$radical,
R_3' denotes methyl, ethyl, propyl, isopropyl, phenyl or cyclohexyl which can be substituted by methyl or chlorine;
R_4' denotes hydrogen, methyl, chlorine, nitrile, COOH, methoxy carbonyl, ethoxy carbonyl, hydroxy ethoxy carbonyl or methoxy ethoxy carbonyl;
n represents the number 1 or 2 and
X is N.

3,869,470

DEHYDROGENATION OF PYRROLIDINES

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 31, 1973, Ser. No. 384,378

Int. Cl. C07d *27/00*

U.S. Cl. 260—313.1 **8 Claims**

7. A process according to claim 1 wherein a mixture of at least cis- and trans-2,5-dimethylpyrrolidine are dehydrogenated in the presence of the catalyst.

3,869,471

ALPHA-THIOCYANOACETAMIDES

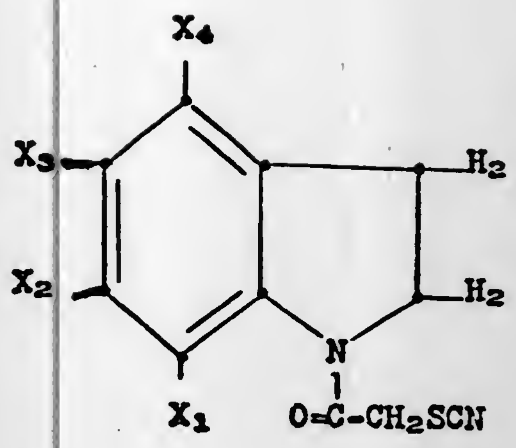
Sidney B. Richter, Chicago, and Alfred A. Levine, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 165,348, July 22, 1971, Pat. No. 3,723,439, Continuation-in-part of Ser. No. 732,822, May 29, 1969, abandoned. This application Aug. 28, 1972, Ser. No. 284,295

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 R **2 Claims**

1. A compound of the formula



wherein X_1, X_2, X_3 and X_4 are independently selected from the group consisting of hydrogen, lower alkyl, chlorine, bromine, trifluoromethyl, lower alkoxy and nitro provided that only one of X_1, X_2, X_3 and X_4 is nitro or tertiary lower alkyl and that at least two of X_1, X_2, X_3 and X_4 are hydrogen.

3,869,472

3-INDOLYL ALIPHATIC ACID DERIVATIVES

Hisao Yamamoto, Nishinomiya, and Masaru Nakao, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

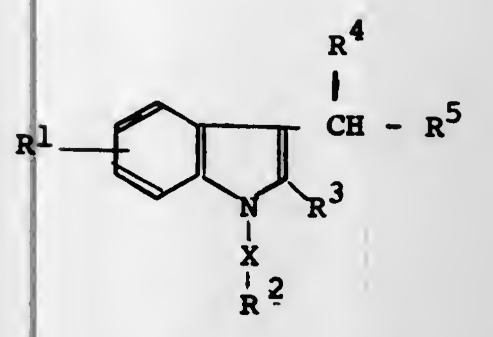
Division of Ser. No. 46,827, June 16, 1970, Pat. No. 3,743,004, which is a division of Ser. No. 622,076, March 10, 1967, Pat. No. 3,544,563. This application Dec. 6, 1972, Ser. No. 312,717

Claims priority, application Japan, Mar. 15, 1966, 41-16236; Mar. 18, 1966, 41-17085; Jan. 24, 1967, 42-4951

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.12 A **15 Claims**

1. A compound of the formula



wherein R^1 is a hydrogen atom, a halogen atom, an alkoxy group having 1 to 2 carbon atoms, an alkylthio group having 1 to 2 carbon atoms or an alkyl group having 1 to 3 carbon atoms; R^2 is phenyl, halophenyl, pyridyl, furyl, thienyl or pentadienyl; R^3 and R^5 are respectively carboxy groups or alkoxycarbonyl group having 2 to 5 carbon atoms; R^4 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; and X is a carbonyl or sulfonyl group.

3,869,473

METHOD FOR THE PREPARATION OF 3-(3'-CARBOXY-4'HYDROXY-1-NAPTHYL)-3-(3''-CARBOXY-4''HYDROXY-1''-NAPTHYL) NAPHTHALIDE

Yunn H. Chiang, Woburn, and John W. Sparks, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 11, 1972, Ser. No. 314,097

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.2 R **16 Claims**

1. A method of preparing 1-naphthol naphthalide indicator dyes which comprises:

A. reacting (a) about 1.0 to 1.5 moles of a 3-OX-3-(3'-lower carboalkoxy-4'-hydroxy-1'-naphthyl)naphthalide wherein X is an acyl radical of an organic mono- or dis-

carboxylic acid and (b) about 1.0 mole of a 2-carboxy-1-naphthol in an inert organic solvent at a temperature not exceeding about 85°C. in the presence of about 0.01 to 2.0 moles of non-water producing organic base having a pKa of not less than about 2 to form the corresponding 3-(3'-lower carboalkoxy-4'-hydroxy-1'-naphthyl)-3-(3''-carboxy-4''-hydroxy-1''-naphthyl)naphthalide dye precursor and

B. hydrolyzing said dye precursor to form the corresponding 3-(3'-carboxy-4'-hydroxy-1'-naphthyl)-3-(3''-carboxy-4''-hydroxy-1''-naphthyl)naphthalide dye product.

3,869,474

3,4-DIHYDROXY-BENZYLALCOHOL AMINO DERIVATIVES

Yuji Miura, Kawaguchi; Taku Nagao, Warabi; Masanori Sato, Toda; Hiromichi Nakajima, Yono, and Masazumi Kawanishi, Tokyo-to, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

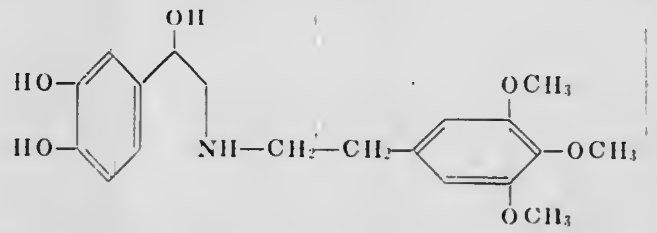
Filed July 22, 1971, Ser. No. 165,374

Claims priority, application Japan, Aug. 7, 1970, 45-69536

Int. Cl. C07c *91/16*

U.S. Cl. 260—343.7 **2 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof.

3,869,475

2,6-METHANO-BENZOXACIN COMPOUNDS

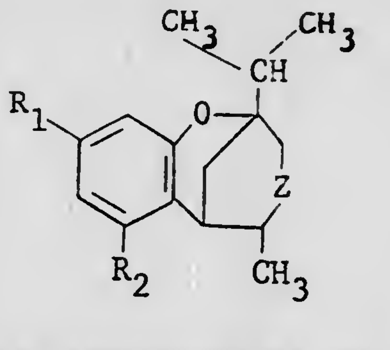
Raphael Mechoulam, Jerusalem; Shlomo Houry, Ramat-Gan, both of Israel, and Bernard Loev, Broomall, Pa., assignors to Yissum Research Development Company, Jerusalem, Israel, by said Mechoulam and Houry and SmithKline Corporation, Philadelphia, Pa., by said Loev

Continuation-in-part of Ser. No. 348,421, April 5, 1973, abandoned. This application Oct. 11, 1973, Ser. No. 405,343

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **6 Claims**

1. A compound of the formula:



in which:

one of R_1 and R_2 is hydroxy and the other is straight or branched alkyl having 5 to 12 carbon atoms and

Z is $>C{=}O$, $>CH{-}OH$ or $>CH_2$

3,869,476

THERAPEUTICALLY ACTIVE ISOVALERIC ACID ESTERS

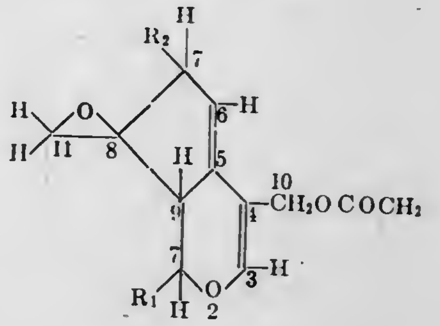
Peter Willibrord Thies; Walter Kucaba, both of Hannover, and Siegfried Funke, Hannover-Kirchrode, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Continuation-in-part of Ser. Nos. 339,581, Jan. 23, 1964, Pat. No. 3,422,090, and Ser. No. 385,021, July 24, 1964, abandoned. This application Sept. 27, 1967, Ser. No. 676,667

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **4 Claims**

1. A therapeutically active isovaleric acid ester selected from the group consisting of the isovaleric acid ester of the empirical formulae $C_{22}H_{30}O_8$, $C_{22}H_{32}O_8$ and $C_{24}H_{32}O_{10}$, respectively, and of the structural formula



in which one of the two radicals R_1 and R_2 is isovaleroxy and the remaining one of R_1 and R_2 is isovaleroxy or acetoxyisovaleroxy and the ester wherein both R_1 and R_2 are isovaleroxy and the 5,6-position is dihydrosaturated.

3,869,477

TOCOPHERYL-P-CHLOROPHENOXYISOBUTYRIC ACID ESTER

Hideyasu Shindo, Tokyo; Toshio Kumagai, Kawagoe, and Kengo Dot, Miyoshi, all of Japan, assignors to Kowa Yakuhin Kogyo Kabushiki Kaisha, Tokyo-to, Japan

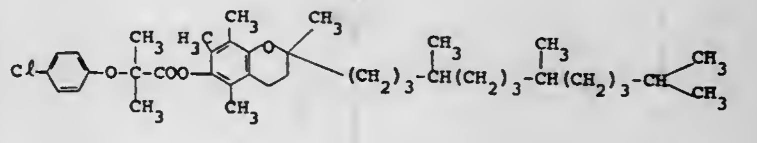
Filed Jan. 30, 1973, Ser. No. 328,021

Claims priority, application Japan, Feb. 4, 1972, 47-12672

Int. Cl. C07d *7/22*

U.S. Cl. 260—345.5 **1 Claim**

1. α-tocopheryl p-chlorophenoxyisobutyrate of the formula



3,869,478
(2,3-DIHYDRO-2-BENZOFURANYLMETHYL)AMINOGUANIDINES

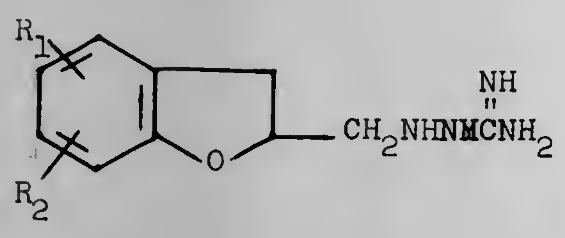
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 204,309, Dec. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 723,234, April 22, 1968, Pat. No. 3,700,697. This application July 30, 1973, Ser. No. 383,715

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R **3 Claims**

1. A compound of the formula



where R_1 and R_2 are each hydrogen, halo, lower-alkyl or lower-alkoxy.

3,869,479
REMOVAL OF IMPURITIES DURING THE RECOVERY OF CRUDE PHTHALIC ANHYDRIDE

Hans Dieter Barth, Gruner, and Erich Brand, Maarweg, both of Germany, assignors to Chemiebau, Dr. A. Zieren GmbH & Co., K.G., Cologne-Braunsfeld, Germany

Filed Feb. 8, 1971, Ser. No. 113,278

Claims priority, application Germany, Feb. 7, 1970, 2005628

Int. Cl. C07c *63/18*

U.S. Cl. 260—346.4 **12 Claims**

1. In a cyclical process for recovering solid phthalic anhydride in a separator from a gas containing phthalic anhydride vapor obtained by catalytic air oxidation of o-xylene in contact with a V_2O_5 containing catalyst, comprising continuously repeating in sequence the steps of: (a) passing said gas containing phthalic anhydride vapor over cooled heat exchange tubes to precipitate solid phthalic anhydride on the surfaces thereof; (b) passing a hot fluid having a temperature of about 145°–190°C through said heat exchange tubes to heat the surfaces thereof to at least 130°C and melt off resultant precipitated phthalic anhydride; (c) collecting resultant molten phthalic anhydride from said heat exchange tube surfaces; and (d) cooling said heat exchange tube surfaces by passing a fluid having a temperature of about 45°–55°C therethrough; the improvement comprising flushing said heat exchange tube surfaces at the heat transfer surfaces thereof proximate to the gas outlet side of said separator towards the end of at least one step (b) with externally added molten phthalic anhydride having a temperature of 130°–280°C, whereby there is substantially prevented a buildup in difficult-to-remove, firmly adhering deposits of impurities which otherwise would cause a shut-down in the process.

7. In a cyclical process of recovering solid phthalic anhydride in a separator from a gas containing phthalic anhydride vapor obtained by catalytic air oxidation of naphthalene in contact with a V_2O_5 containing catalyst, comprising continuously repeating in sequence of steps of: (a) passing said gas containing phthalic anhydride vapor over cooled heat exchange tubes to precipitate solid phthalic anhydride on the surfaces thereof; (b) passing a hot fluid having a temperature of about 145°–190°C through said heat exchange tubes to heat the surfaces thereof to at least 130°C and melt off resultant precipitated phthalic anhydride; (c) collecting resultant molten phthalic anhydride from said heat exchange tube surfaces; and (d) cooling said heat exchange tube surfaces by passing a fluid having a temperature of about 45°–55°C therethrough; the improvement comprising flushing said heat exchange tube surfaces at the heat transfer surfaces thereof proximate to the gas inlet side of said separator towards the end of at least one step (b) with externally added molten phthalic anhydride having a temperature of 130°–280°C, whereby there is substantially prevented a buildup in difficult-to-remove, firmly adhering deposits of impurities which otherwise would cause a shut-down in the process.

3,869,480
PROCESS FOR PREPARING SPIRO COMPOUNDS

Teruaki Mukaiyama, Tokyo; Moriaki Higo, and Harumi Katsuyama, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

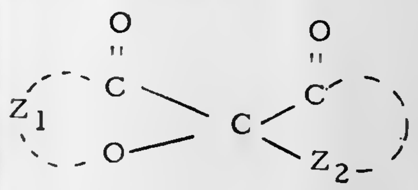
Filed Mar. 16, 1972, Ser. No. 235,320

Claims priority, application Japan, Mar. 17, 1971, 46-14842

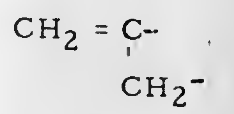
Int. Cl. C07d *5/04*

U.S. Cl. 260—347.8 **10 Claims**

1. A spiro compound having the formula

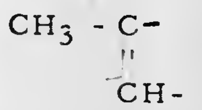


wherein Z_1 is selected from the group consisting of $—CH_2)_n$, in which *n* is an integer of from 2 to 4;



$$CH_2=\underset{\textstyle CH_2-}{\overset{}{C}}-$$

with the CH_2— end being attached to a keto carbon atom of the spiro compound; and



$$CH_3-\underset{\textstyle CH-}{\overset{}{C}}-$$

with the CH— end being attached to a keto carbon atom of the spiro compound; wherein Z_2 is a bonding group $—CH_2)_m$, in which m is an integer of from 3 to 6, forming an alicyclic paraffin ring.

3,869,481
17ALPHA-ALKANOYLOXY-6ALPHA-METHYL-3BETA-TRIALKYL-SILOXYPREGN-4-EN-20-ONES

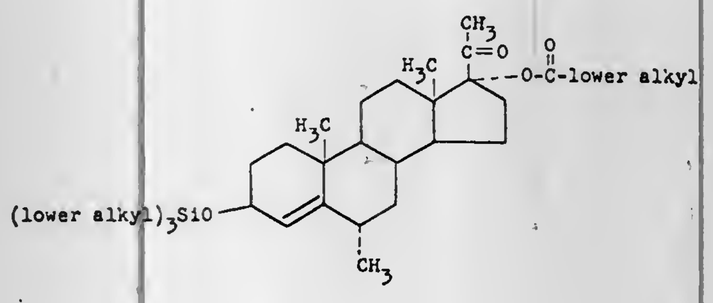
Paul B. Sollman, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 181,230, Sept. 16, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,458

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.4 **3 Claims**

1. A compound of the formula



3,869,482
METHOD OF PRODUCING HIGHLY PURIFIED PHOSPHATIDES

Werner Wolfe, Vienna, Austria, assignor to Etapharm chem. pharm. Laboratorium G.m.b.H., Wien XIX, Austria

Filed July 27, 1973, Ser. No. 383,041

Int. Cl. A23j *7/00;* **C07f** *9/02*

U.S. Cl. 260—403 **10 Claims**

1. A method for producing highly purified phosphatides from a total lipoid extract derived by organic solvent extraction from animal organs, said method comprising:

a. admixing a total lipoid extract which contains phosphatides with an alcohol-containing solvent having a boiling point which does not exceed 100°C and thereafter subjecting the lipoid extract to evaporation in vacuo at a temperature not greater than 40°C to present a dried phosphatide containing extract;

b. repeating step (a) a plurality of times to thereby prepare a multiple solvent extracted, dried phosphatide containing material;

c. mixing said multiple solvent extracted, dried, phosphatide containing material with petroleum ether and allowing such mixture to stand under the protection of an inert gas at freezing cabinet temperatures until proteins originally present in said dried material are precipitated;

d. separating precipitated proteins from the remainder of the mixture and removing the petroleum ether from the latter to thereby present a dry intermediate substance containing phosphatides which are contaminated with substantially less protein aceous matter than said multiply solvent extracted, dried, phosphatide containing material;

e. removing water-soluble substances from the phosphatides from which proteins have been separated in step (d) by admixing such phosphatides with a polar solvent which is incapable of permitting the formation of micellar structures from phosphatides, washing such admixture with neutral aqueous sodium salt solutions and water, and thereafter separating the polar solvent and water from the phosphatides which are thereby substantially free from water-soluble substances; and

f. mixing the phosphatides from which proteins have been separated in step (d) with a non-polar solvent in which phosphatides form miscellar structures, contacting the mixture of phosphatides and non-polar solvent with silica gel, and thereafter separating the non-polar solvent from the phosphatides which are thereby free of impurities capable of being adsorbed by said silica gel.

3,869,483
QUATERNARY AMMONIUM SALTS OF N-SUBSTITUTED PALMITAMIDES

Robert R. Mod; Frank C. Magne; Evald L. Skau, and Gene Sumrell, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 23, 1972, Ser. No. 265,869

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **3 Claims**

1. (2-palmitoylaminoethyl)propargyldimethylammonium bromide.

3,869,484
COATING COMPOSITION AND NOVEL COMPLEXER THEREFOR

Roger E. Burke, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Dec. 4, 1972, Ser. No. 311,452

Int. Cl. C08h *17/36*

U.S. Cl. 260—404.5 **7 Claims**

1. A metal amine complexer, contained in an aqueous solution, consisting essentially of:

a. zinc;

b. from 0.9 to 6 moles, per mole of the metal, of a polyalkylene polyamine having the formula:

$$NH_2[(CHR)_aNH]_nH,$$

where *a* is from 2 to 3, *n* is from 2 to 5, and each **R** is selected from the group consisting of hydrogen and methyl; and

c. at least one aliphatic, monocarboxylic acid having from six to 18 carbon atoms.

3,869,485
PREPARATION OF ACID CHLORIDES WITH PHOSGENE IN THE PRESENCE OF A CATALYST

Richard C. DeLong, Snyder, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,161

Int. Cl. C11c *3/00*

U.S. Cl. 260—408 **5 Claims**

1. A process for the preparation of a monocarboxylic acid chloride which comprises reacting a monocarboxylic acid or anhydride thereof with at least an equimolecular proportion of phosgene at a temperature between about 100° to about 180°C. in the presence of about 0.5 to 5 percent, by weight of the carboxylic acid or anhydride, of a catalyst selected from the group consisting of, methylbenzimidazole, and methylbenzotriazole.

3,869,486
IMPROVED MANGANESE ETHYLENE BISDITHIOCARBAMATE COMPOSITION

Krijn Van den Boogaart, and Meelis Nicolaus Louis, both of Vlaardingen, Netherlands, assignors to Penwalt Corporation, Philadelphia, Pa.

Filed July 16, 1973, Ser. No. 379,692

Claims priority, application Netherlands, July 18, 1972, 7209992

Int. Cl. C07f *13/00*

U.S. Cl. 260—429 K **16 Claims**

1. The process which comprises reacting in aqueous medium 0.90 to 0.99 mole of water-soluble salt of manganese with one mole of water-soluble salt of ethylene bisdithiocarbamic acid to form a precipitate of manganese ethylenebisdithiocarbamate in aqueous suspension containing unreacted water-soluble salt of ethylene bisdithiocarbamic acid, contacting said suspension with 2 moles to 25 moles of a water-soluble salt of zinc per mole of the unreacted salt of ethylene bisdithiocarbamic acid to precipitate zinc ethylenebisdithiocarbamate, and separating the diprecipitate product of manganese and zinc ethylenebisdithiocarbamates from the aqueous medium.

3,869,487
ALKYLTIN POLYSULFIDE THIOESTERS

Thomas G. Kugele, Cincinnati, and Robert E. Bresser, Sharonville, both of Ohio, assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Filed Sept. 24, 1973, Ser. No. 400,127

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **14 Claims**

1. A compound of the formula:

$$(R_xSn)_n\,(—SR'COOR'')_{(4-x)n-2m}\,(—S_y—)_m$$

where the tin is tetravalent, **R** is alkyl of 1 to 8 carbon atoms or benzyl, **R′** is alkylene of 1 to 4 carbon atoms, **R″** is alkyl of 1 to 18 carbon atoms, alkenyl of 2 to 18 carbon atoms, cycloalkyl having 5 to 6 carbon atoms in the ring, *x* is 1 or 2, *y* is 2 to 4, *n* is 1 to 10 and *m* is 1/2 *n* to *n*.

3,869,488

WERNER CHROMIUM COMPLEXES AND METHODS FOR THEIR PREPARATION

John Edwin Bride, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 117,045, Feb. 19, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,662

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 C **20 Claims**

1. A composition of a Werner complex of trivalent chromium atoms coordinated with acido groups of saturated aliphatic, hydroxy-containing, monocarboxylic acid having less than six carbon atoms and not more than three hydroxyl groups, and providing said complex composition with a ratio of total chromium atoms to total acido groups about within the range of 1:0.7 to 1:2.9, said complex composition being further characterized by containing coordinated chlorine atoms and having a ratio of total chromium atoms to total chlorine atoms about within the range of 1:0.1 to 1:2.3.

3,869,489

PROCESS OF MANUFACTURING TERT.-BUTYL P-TERT. BUTYLPERBENZOATE

Jacques Tiquet, and Jean-Louis Cros, both of Verneuil-en-Halatte, France, assignors to Societe Chimique des Charbonnages, Courbevoie, France

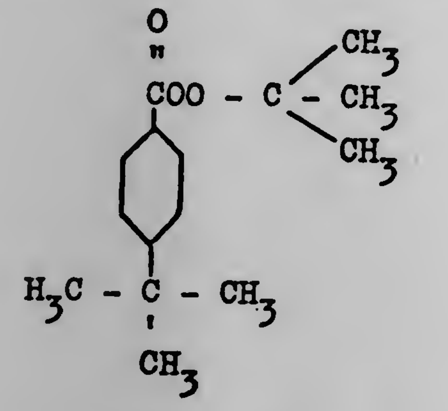
Filed July 3, 1973, Ser. No. 376,215

Claims priority, application France, July 5, 1972, 72.24371

Int. Cl. C07c *73/10*

U.S. Cl. 260—453 R **4 Claims**

1. In a process for manufacturing tert. butyl-4-tert. butyl perbenzoate having the formula



comprising reacting 4-tert. butyl benzoic acid chloride with an aqueous alkaline solution of a tert. butyl hydroperoxide salt. the improvement comprising carrying out said reaction at a temperature between 40° and 45°C.

3,869,490

ESTERS

Gerhard Jager; Carl Metzger, both of Wuppertal-Elberfeld; Ludwig Eue, and Robert Schmidt, both of Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

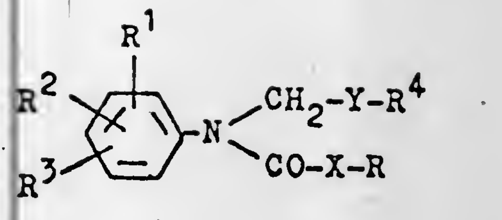
Filed June 23, 1972, Ser. No. 265,926

Claims priority, application Germany, July 9, 1971, 2134173

Int. Cl. C07c *155/02*

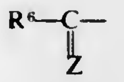
U.S. Cl. 260—455 A **30 Claims**

1. N-aryl carbamic acid thiolester compound of the formula



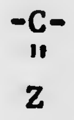
(I)

R is aliphatic hydrocarbyl, halo-aliphatic hydrocarbyl or hydroxy-aliphatic hydrocarbyl of 1 to 8 carbon atoms;
R^1, R^2 and R^3 are individually hydrogen, alkyl of up to 4 carbon atoms, cycloalkyl of from 5 to 7 carbon atoms, alkoxy of from 1 to 4 carbon atoms, haloalkyl of up to 2 carbon atoms, or halogen;
R^2 and R^3 taken together represent a $-(CH)_4-$grouping to form a fused benzene ring with the phenyl ring of formula I;
X is sulfur;
Y is oxygen;
R^4 is straight-chain or branched alkyl of from 1 to 18 carbon atoms, haloalkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 10 carbon atoms, haloalkenyl of from 2 to 6 carbon atoms, alkynyl or haloalkynyl of from 3 to 6 carbon atoms, formyl, alkoxyalkyl or alkylthioalkyl of from 1 to 4 carbon atoms in the alkoxy or alkylthio moiety and 2 to 4 carbon atoms in the alkyl moiety, alkoxycarbonylalkyl or alkylthiocarbonylalkyl of from 1 to 4 carbon atoms in the alkoxy or alkylthio moiety and 1 to 10 carbon atoms in the alkyl moiety, alkylcarbonylalkyl of from 1 to 4 carbon atoms in the alkylcarbonyl moiety and 1 to 10 carbon atoms in the alkyl moiety, optionally substituted cycloalkyl or cycloalkenyl of from 5 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms in the aryl moiety, aralkyl of from 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety, aroxyalkyl or arylthioalkyl of from 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety, or R^4 can be the group



$$R^6-\underset{\underset{Z}{\|}}{C}-$$

wherein
Z is oxygen and
R^6 is the same as R^4 except that R^6 cannot be the groups



$$-\underset{\underset{Z}{\|}}{C}-$$

and formyl.

3,869,491

HALOSULFONYL SULFOOXONIUM COMPOUNDS

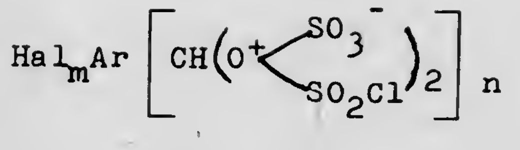
Victor Mark, and Carol A. Mark, both of Ransomville, N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Mar. 10, 1971, Ser. No. 123,015

Int. Cl. C07c *141/00*

U.S. Cl. 260—457 **10 Claims**

1. A compound of the formula



wherein Ar is benzene, Hal is independently selected from the group consisting of fluorine, chlorine, bromine and iodine, *n* is an integer selected from the group consisting of 1, 2 and 3 and *m*+*n* is 6.

3,869,492

DI-SUBSTITUTED BETA-PHENETHYLCARBAMIC ACID ESTERS

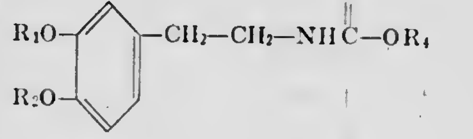
John Hans Biel, Lake Bluff, Ill., and Irwin L. Klundt, Brookfield, Wis., assignors to Aldrich Chemical Company, Milwaukee, Wis.

Division of Ser. No. 96,586, Dec. 9, 1970, Pat. No. 3,801,624. This application Aug. 2, 1973, Ser. No. 385,009

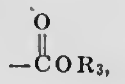
Int. Cl. C07c *125/06*

U.S. Cl. 260—463 **4 Claims**

1. A compound of the formula

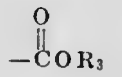


wherein R_1 is hydrogen or



$$-\overset{\overset{O}{\|}}{C}OR_3,$$

R_3 being loweralkyl, loweralkenyl or loweralkynyl; R_2 is



$$-\overset{\overset{O}{\|}}{C}OR_3$$

and R_4 is loweralkyl, loweralkenyl, loweralkynyl, lowerhaloalkyl or cyclopropylmethyl, with the limitation that each R_3 cannot be ethyl when R_4 is ethyl.

3,869,493

NOVEL ODORANTS

Giuliano Bozzato, Kusnacht, and Mario Pesaro, Zurich, both of Switzerland, assignors to Givaudon Corporation, Clifton, N.J.

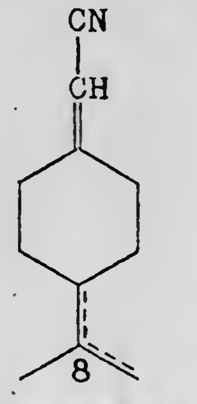
Filed Feb. 5, 1973, Ser. No. 329,789

Claims priority, application Switzerland, Feb. 12, 1972, 2097/72; Dec. 13, 1972, 18107/72

Int. Cl. C07c *121/48*

U.S. Cl. 260—464 **5 Claims**

1. Substituted-acetonitriles of the general formula



(I)

wherein the broken lines denote a double-bond emanating from the C_8-atom.

3,869,494

PRODUCTION OF TETRACHLOROPHTHALONITRILES

Robert D. Battershell, Plainsville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Aug. 7, 1972, Ser. No. 278,347

Int. Cl. C07c *121/56*

U.S. Cl. 260—465 G **24 Claims**

1. A process for the production of a tetrachlorophthalonitrile which comprises:

a. substantially completely reacting, in the liquid phase, a tetrachloroxylylenediamine and a chlorinating agent therefor to N,N,N′,N′-octachloroxylylenediamine;
b. dehycrochlorinating the resultant N,N,N′,N′-octachloroxylylenediamine; and
c. recovering tetrachlorophthalonitrile.

3,869,495

N-BENZYL-(2,2-DICYANOVINYL) ANILINES

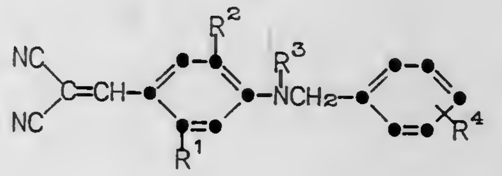
Max A. Weaver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1972, Ser. No. 237,529

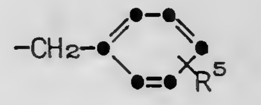
Int. Cl. C07c *121/78*

U.S. Cl. 260—465 D **4 Claims**

1. A compound having the formula



wherein
R^1 and R^2 are each selected from hydrogen and lower alkyl;
R^3 is cyclohexyl, benzyl, cyanoethyl, chloroethyl, or lower alkyl; [phenylethyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, halophenyl, a group having the formula



in which R^5 is hydrogen or a substituent which R^4 can represent, or, when R^4 is lower alkoxycarbonyl, R^3 also can be lower alkyl or lower alkyl substituted with cyano, halogen, cyclohexyl or lower alkanoyloxy;]
R^4 is hydrogen, lower alkyl, lower alkoxy, halogen, or lower alkoxycarbonyl.

3,869,496

2,7-BIS-BASIC ESTERS AND ETHERS OF 9-BENZYLIDENEFLUORENCE

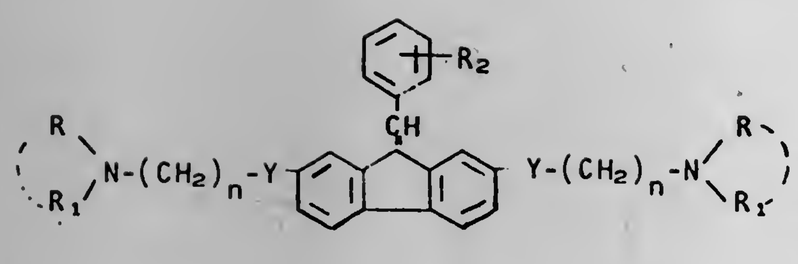
Edwin R. Andrews; George P. Claxton; Edward McC. Roberts, all of Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,138

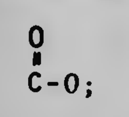
Int. Cl. C07c *69/76, 121/78*

U.S. Cl. 260—465 E **9 Claims**

1. A 2,7-bis-basic derivative of 9-(substituted) benzylidenfluorene having the general formula:



wherein *n* is an integer of from 2 to 6; Y is selected from the group consisting of oxygen and the radical



$$\overset{O}{\overset{\|}{C}}\text{-O;}$$

R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, morpholino or piperidino radical; R_2 is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy and cyano; and the pharmaceutically acceptable acid addition salts thereof.

3,869,497
3,5-DITERT.BUTYL-4-(N-BENZOYLCARBAMYLOXY)-BENZYLIDENEMALONONITRILE

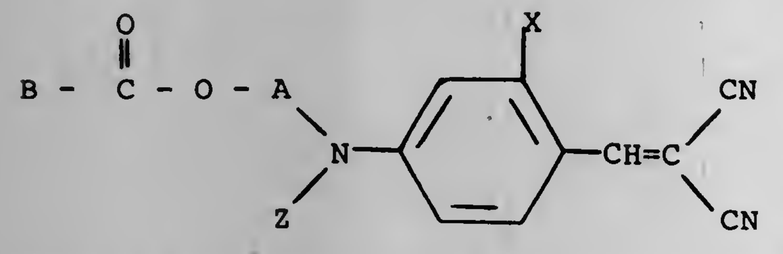
Roger P. Cahoy, Overland Park, and John Sanjean, Leawood, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Division of Ser. No. 236,341, March 20, 1972, Pat. No. 3,825,663, which is a continuation-in-part of Ser. No. 70,529, Sept. 8, 1970, Pat. No. 3,694,483. This application Aug. 31, 1973, Ser. No. 393,535
Int. Cl. C07c *121/70*
U.S. Cl. 260—465 D **1 Claim**

1. 3,5-ditert.butyl-4-(N-benzoylcarbamyloxy)-benzylidenemalononitrile.

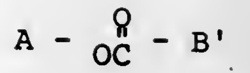
3,869,498
WATER-INSOLUBLE STYRYL DYESTUFFS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation-in-part of Ser. No. 436,666, March 2, 1965, abandoned. This application Jan. 3, 1968, Ser. No. 695,346
Claims priority, application Switzerland, Mar. 9, 1964, 2993/64; Feb. 11, 1965, 1886/65
Int. Cl. C07c *121/60, 121/70*
U.S. Cl. 260—465 D **12 Claims**

1. A dyestuff of the formula



wherein X is methyl, methoxy or hydrogen; A is lower alkylene of 2 to 4 carbon atoms; Z is lower alkyl,



$$A - \overset{O}{\overset{\|}{OC}} - B'$$

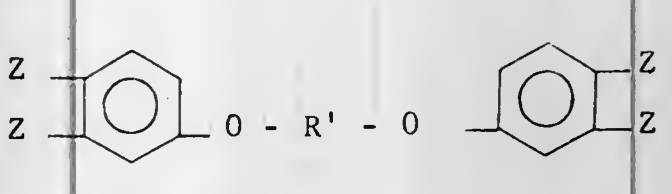
wherein A is as defined above, B′ is benzyl, styryl, phenethyl, phenoxymethyl, phenyl, phenyl substituted by a member selected from the group consisting of chlorine, alkyl of 1 to 4 carbon atoms, lower alkoxy, hydroxy, carbo-lower-alkoxy; B is benzyl, phenethyl, styryl, phenoxymethyl, phenyl or phenyl substituted by a member selected from the group consisting of chlorine, alkyl of 1 to 4 carbon atoms, lower alkoxy, hydroxy, carbo-lower-alkoxy; and with the provision that when Z is lower alkyl, B is benzyl, phenethyl, phenoxymethyl or phenyl substituted by lower alkoxy and when Z is A — O — CO — B′, B is a member selected from the group as defined above.

3,869,499
BIS(DICYANOPHENYL). ETHERS OF DIHYDRIC PHENOLS

Darrell R. Heath, and Joseph G. Wirth, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 108,151, Jan. 20, 1971, Pat. No. 3,787,475. This application Jan. 12, 1973, Ser. No. 323,083
Int. Cl. C07c *121/74*
U.S. Cl. 260—465 F **8 Claims**

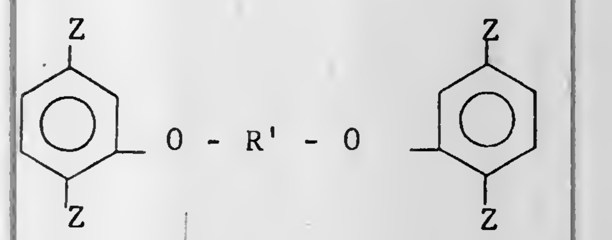
1. Compounds of the general formulas

(a)



,

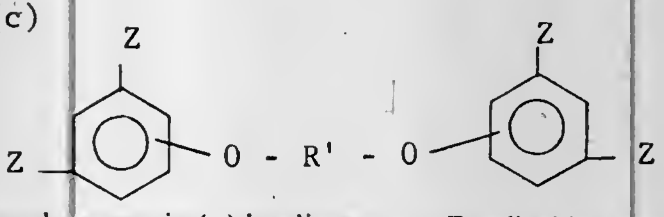
(b)



,

and

(c)



where each oxygen in (c) is adjacent to a Z radical in a commonly shared benzene nucleus and where R′ is a divalent aromatic radical, Z is the -CN radical.

3,869,500
PROCESS FOR THE PRODUCTION OF UNSATURATED ALIPHATIC NITRILES

Naoya Kominami, Tokyo; Hitoshi Nakajima, Ageo; Seiji Miyata; Takeo Kimura, both of Tokyo; Masazumi Chono, Saitama, and Tokio Sakurai, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 206,541, Dec. 9, 1971, abandoned, which is a continuation of Ser. No. 807,976, March 17, 1969, abandoned. This application Aug. 21, 1973, Ser. No. 385,003
Claims priority, application Japan, Mar. 23, 1968, 43-18622
Int. Cl. C07c *121/04, 121/02*
U.S. Cl. 260—465.3 **14 Claims**

1. A process for the production of an ethylenically unsaturated aliphatic nitrile, which comprises contacting an olefin selected from the group consisting of ethylene, propylene, normal butylene, isobutylene and vinyl chloride with hydrogen cyanide and a molecular oxygen-containing gas in the gas phase at a temperature of from 100° to 500°C, in the presence of a catalyst obtained by contacting a palladium metal, palladium oxide, palladium hydroxide or palladium salt with a member selected from the group consisting of hydrogen sulfide and sulfur dioxide at a temperature of from −10° to 1,200°C prior to contacting said catalyst with said olefin, said hydrogen cyanide and said molecular oxygen-containing gas.

3,869,501
PROCESS FOR PREPARING 3-PENTENENITRILE

Dhafir Yusuf Waddan, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 27, 1973, Ser. No. 392,008
Claims priority, application Great Britain, Sept. 7, 1972, 41487/72
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.3 **7 Claims**

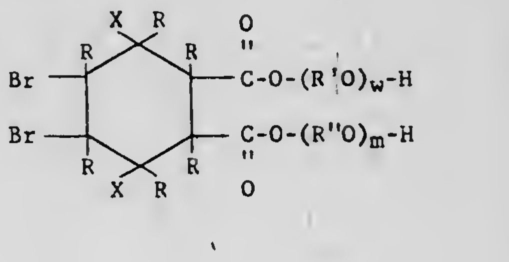
1. A process for the manufacture of 3-pentene nitrile which comprises reacting butadiene with hydrogen cyanide in the molar ratio 2:1 to 1:4 at a temperature within the range −25° to 200°C in the presence, as a sole catalyst, of from 0.0005 to 0.1 moles per mole of butadiene of cuprous chloride, bromide or iodide and a carboxylic acid selected from benzoic acid, oxalic acid and compounds having one or two carboxylic acid groups attached to a saturated or ethylenically unsaturated hydrocarbon residue containing up to three carbon atoms and which may be substituted by halogen.

3,869,502
CYCLOALIPHATIC ESTER POLYOLS

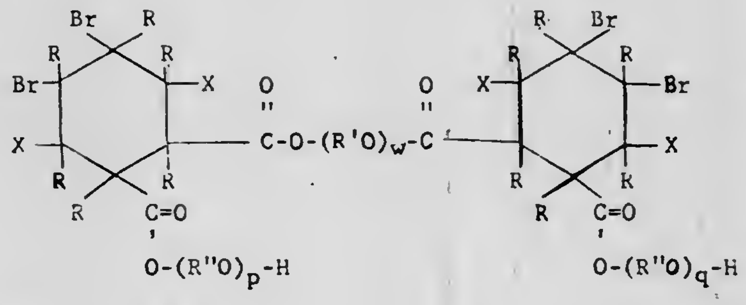
Anthony Joseph Papa, Saint Albans, W. Va., and William Robert Proops, Wilmington, Del., assignors to Union Carbide Corporation, New York, N.Y.
Filed Mar. 3, 1972, Ser. No. 231,751
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 J **13 Claims**

1. A bromine-substituted cycloaliphatic ester polyol which comprises at least one compound having the formula selected from the group consisting of:

(1)



and



(2)

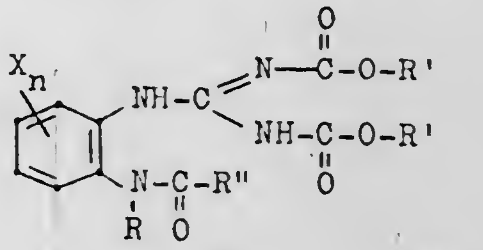
wherein:

- R represents hydrogen or an alkyl group having from 1 to 6 carbon atoms;
- X, taken individually, represents hydrogen or an alkyl radical having from 1 to 6 carbon atoms and, when the two X groups of one or more of the cyclic nuclei are taken together, said two X groups represent a methylene bridge, $—CR_2—$, between the opposing carbon atoms, R being as aforesaid;
- R′ and R″ respectively represent a bivalent alkylene radical having from 2 to 10 carbon atoms;
- *w* represents a number having an average value from about one to about 15; and
- *m* and the sum *p*+*q* respectively represent a number having an average value from about 0.1 to about 10, provided that when said bromine-substituted cycloaliphatic ester polyol is a mixture of compounds having said formulas (1) and (2), the average value of the sum *m*+*p*+*q* is no more than about 10.

3,869,503
SUBSTITUTED AMIDOPHENYLGUANIDINES

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch Gladbach; Ferdinand Grewe, Burscheid; Helmut Kaspers, Leverkusen; Hans Scheinpflug, Leverkusen, and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 22, 1970, Ser. No. 83,159
Claims priority, application Germany, Jan. 8, 1970, 1955749
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **13 Claims**

1. Amidophenylguanidines of the formula:



(I)

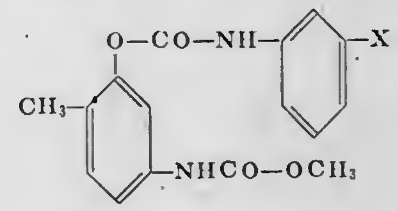
in which:

- each X independently denotes a halogen atom, lower alkyl lower loer alkoxy,
- *n* denotes 0, 1 or 2,
- R denotes a hhydrogen atom or lower alkyl,
- R′ denotes alkyl with 1–12 carbon atoms, and
- R″ denotes a hydrogen atom, alkyl with 1–18 carbon atoms which may be substituted by lower alkoxy, alkoxycarbonyl with 2–5 carbon atoms, phenoxy, or alkoxyphenoxy, cycloalkyl with 5–8 ring carbon atoms, or phenyl which may be substituted by halogen, lower alkyl or lower alkoxy.

3,869,504
HERBICIDAL METHYLPHENYL CARBAMATES

Gerhard Boroschewski, Wilkestrasse 15, Berlin 27, and Friedrich Arndt, Nackarttailfinger Strasse 102, Aich, both of Germany
Filed Apr. 6, 1972, Ser. No. 241,801
Claims priority, application Germany, Apr. 27, 1971, 2121957
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **1 Claim**

1. Compounds having the general formula



wherein X is selected from the group consisting of chlorine and methyl.

3,869,505
DL-2-(4-HYDROXYPHENYL)-GLYCINE-N,O-DIACETATE AND SALTS

Derek Reginald Palmer, Wirral, England, assignor to Beecham Group Limited, Brentford, England

Filed Sept. 20, 1971, Ser. No. 182,190

Claims priority, application Great Britain, Sept. 24, 1970, 45463/70; Sept. 24, 1970, 45460/70; Sept. 24, 1970, 45461/70

Int. Cl. C07c *103/28*

U.S. Cl. 260—479 R **5 Claims**

1. DL-N-Acetyl-2-(4-acetoxyphenyl)-glycine.

3,869,506
1,2,10-TRICARBOXY PHENANTHRENE COMPOUNDS

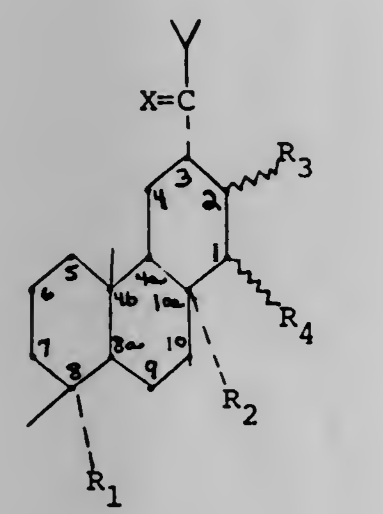
Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 65,321, Aug. 19, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,308

Int. Cl. C07c *61/30, 61/36, 131/02*

U.S. Cl. 260—514.5 **4 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, methyl, methoxycarbonyl, carboxy, hydroxymethyl, formyl or amino and R_2, R_3 and R_4 are each carboxy and X is $=H_2$, phenylhydrazino, =NOH or =O.

3,869,507
PREPARATION OF
5-FLUORO-2-METHYL-1-(P-METHYLSULFINYLBENZYLIDENE)-INDENYL-3-ACETIC ACID

Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1973, Ser. No. 402,943

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **6 Claims**

1. A process of preparing 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indenyl-3-acetic acid which comprises the steps of:

a. reacting 5-fluoro-2-methyl-indane-1,3-dione with anion of a dialkoxyphosphonoacetate or monoalkoxymonoaroxyphosphonoacetate to form 5-fluoro-2-methyl-ind-2-ene-1-one-3-acetic acid ester;

b. reacting said indanone acetate with a p-methylsulfinylbenzyl magnesium halide followed by dehydration or with a p-methylsulfinylbenzylidenephosphorane to form an ester of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indenyl-3-acetate; and

c. hydrolyzing said indenyl-3-acetate to form the desired product.

3,869,508
PROCESS OF PRODUCING ADIPIC ACID

Kermit D. Longley, Park Forest, and Donald Sprowl, South Holland, both of Ill., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Dec. 13, 1968, Ser. No. 792,882

Int. Cl. C07c *51/18, 55/14*

U.S. Cl. 260—531 R **7 Claims**

1. In a process of producing adipic acid by the molecular oxygen oxidation of cyclohexanol or cyclohexanone or mixtures thereof in a C_2 to C_6 saturated carboxylic acid solvent medium and in the presence of a catalyst, the improvement which consists in carrying out said oxidation in a main reaction vessel at a temperature in the range of about 100° to 150°F, and periodically or continuously adding to said reaction mixture in said main reaction vessel a distinctly minor portion of such a reaction mixture which has been heated to a temperature of at least about 25°F higher than that of the main reaction mixture while in contact with molecular oxygen, while maintaining the temperature of the reaction mixture in said main reaction vessed substantially within said range of 100° to 150°F, the additions of said heated distinctly minor portions of reaction mixture to the reaction mixture in the main reaction vessel serving to maintain the oxidation ratio at a high level.

3,869,509
N-ALKYL-N(TRIHALOMETHYLTHIO)-SULFAMIC ACID CHLORIDE

Engelbert Kuhle, Bergisch-Gladbach, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

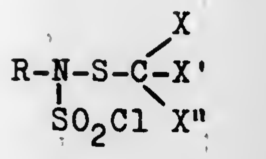
Filed Oct. 9, 1970, Ser. No. 79,669

Claims priority, application Germany, Oct. 23, 1969, 1953356

Int. Cl. C07c *143/70, 143/74*

U.S. Cl. 260—543 R **4 Claims**

1. N-alkyl-N-(trihalomethylthio)-sulfamic acid chloride of the formula:



(I)

in which:

R is alkyl with 1-4 carbon atoms, and

X, X′ and X″ each individually stand for fluorine or chlorine.

3,869,510
PREPARATION OF 3,5-DICHLOROBENZOYL CHLORIDE

Samuel Gelfand, Niagara Falls, and John C. Graham, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 25, 1973, Ser. No. 364,200

Int. Cl. C07c *51/58, 63/10*

U.S. Cl. 260—544 M **8 Claims**

1. A process for the preparation of 3,5-dichlorobenzoyl chloride which comprises decarbonylating, in the liquid phase, 5-chloroisophthaloyl chloride in the presence of a catalytic amount of a compound selected from the group consisting of palladium chloride, palladium/barium sulfate, palladium-/aluminum oxide and mixtures thereof, at a temperature of not less than about 245 degrees centigrade.

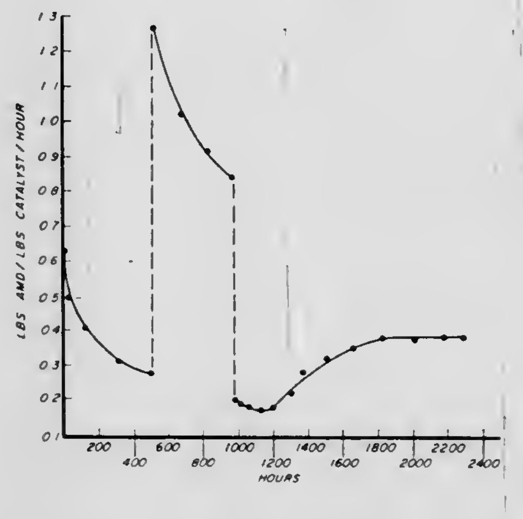
3,869,511
IMPROVED CATALYTIC HYDRATION OF NITRILES

Robert Bird Johnson, Metairie, La.; David Henry Rakowitz, Cos Cob, Conn.; William Austin Barber, and John Allan Fetchin, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 20, 1972, Ser. No. 316,810

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **6 Claims**



1. In a process of catalytic hydration of acrylonitrile with water to produce acrylamide, which process comprises contacting a reactant feed stream comprising the acrylonitrile and water with solid particulate catalyst comprising catalytic elemental copper freshly prepared by reduction of copper sulfate or copper chromium oxide, the improvement wherein chloride ion is present in said reactant feed stream in amount effective to at least inhibit the decay of catalyst activity as the catalytic hydration process proceeds.

3,869,512
DIBENZOBICYCLOALKANE AMINES AND RELATED COMPOUNDS

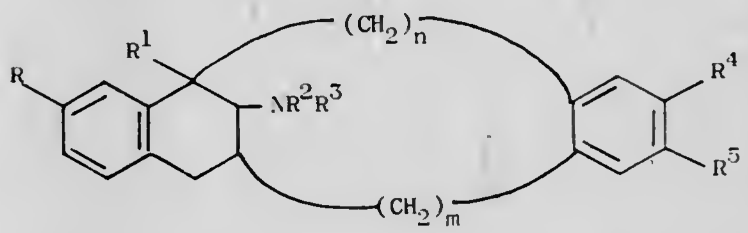
Elisabeth H. Freed; Meier E. Freed, both of Paoli, and John R. Potoski, Spring City, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,814

Int. Cl. C07c *91/42, 93/14, 119/14, 131/00, 49/76*

U.S. Cl. 260—571 **9 Claims**

1. A compound of the formula:



wherein R is hydrogen, hydroxy, lower alkyloxy, phenyl lower alkyloxy, lower alkyl phenyl lower alkyloxy, lower alkyloxy phenyl lower alkyloxy, halo, or trifluoromethyl; R^1 is lower alkyl of from 1 to 3 carbon atoms, lower alkenyl, or lower alkynyl; R^2 is hydrogen or lower alkyl; R^3 is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl; R^4 and R^5 are identical and are hydrogen, hydroxy, lower alkyloxy, phenyl lower alkyloxy, lower alkyl phenyl lower alkyloxy, lower alkyloxy phenyl lower alkyl, or halo; or one of R^4 and R^5 is hydrogen and the other is hydroxy, lower alkyloxy, phenyl lower alkyloxy, lower alkyl phenyl lower alkyloxy, lower alkyloxy phenyl lower alkyloxy, halo, or trifluoromthyl; *m* is the integer 1 or2; and *n* is the integer 1 or 2 with the proviso that when *m* is 1, *n* is 1; and the pharmaceutically non-toxic addition salts thereof.

3,869,513
DINITRO-DIALKLYAMINO-ACETOPHENONES

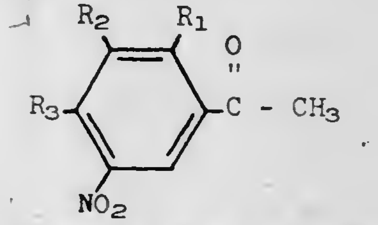
Stanley J. Buckman, Memphis; Joseph G. E. Fenyes, Germantown; Kenneth J. Flangan, Memphis; John D. Pera and Miguel L. Pulido, both of Memphis, all of Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 261,751, June 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,476, Feb. 29, 1972, abandoned. This application July 13, 1972, Ser. No. 271,454

Int. Cl. C07c *97/10*

U.S. Cl. 260—577 **4 Claims**

1. A compound having the formula:



wherein R_1 or R_2 is nitro, R_1 or R_3 is dipropylamino, and one of R_1, R_2 and R_3 is hydrogen.

3,869,514
ASHLESS LUBRICATING OIL DISPERSANT

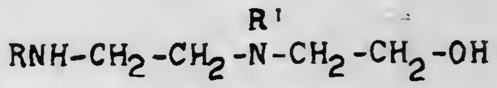
Edward F. Miller, and Walter W. Hellmuth, both of Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 208,978, Dec. 16, 1971, Pat. No. 3,755,433. This application July 9, 1973, Ser. No. 377,661

Int. Cl. C07c *91/02*

U.S. Cl. 260—584 R **4 Claims**

1. A composition represented by the formula:



$$RNH{-}CH_2{-}CH_2{-}\overset{R'}{N}{-}CH_2{-}CH_2{-}OH$$

in which R and R′ represent hydrogen or a polyisobutenyl radical having an average molecular weight ranging from about 600 to 5,000, at least one of R and R′ being said polyisobutenyl radical.

3,869,515
KETONES

Walter Traber, Riehen, and Friedrich Karrer, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

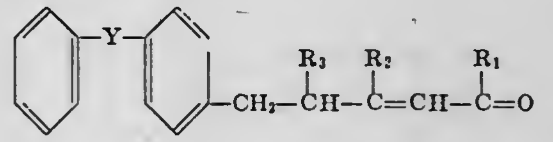
Filed Sept. 13, 1973, Ser. No. 396,958

Claims priority, application Switzerland, Sept. 22, 1972, 13866/72

Int. Cl. C07c *49/76, 49/82*

U.S. Cl. 260—590 **5 Claims**

1. Compounds of the formula



wherein Y represents $—CH_2—$ or —O—, R_1 represents alkyl 1 to 4 carbon atoms, and R_2 and R_3 each represents hydrogen, methyl, or ethyl.

3,869,516
PROCESSES FOR THE PREPARATION OF CYCLIC ALDEHYDES

Wilhelmus J. Wiegers, Middletown, and John B. Hall, Rumson, both of N.J., assignors to International Flavors and Fragrances Inc., New York, N.Y.

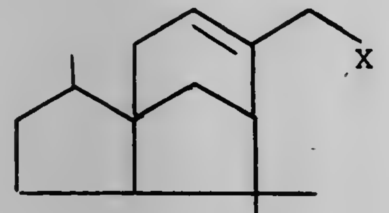
Filed June 7, 1972, Ser. No. 260,537

Int. Cl. C07c *47/44*

U.S. Cl. 260—598 **8 Claims**

1. A process for the production of cyclic carbonyl compounds which comprises the step at reacting alpha-cedrene with a halogen at temperatures of from about 75° to 175°C to

obtain a halo derivative having the structure



and oxidizing the halo derivative with alkali metal salt of 2-nitropropane to obtain cedrenal, wherein X is chloro, bromo, or iodo.

3,869,517
PROCESS FOR PREPARING HYDROXY CITRONELLAL BY SAPONIFICATION OF THE HYDROXY ESTER

Peter S. Gradeff, Andover, and Claude Bertrand, Somerset, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Filed Apr. 28, 1971, Ser. No. 138,359

Int. Cl. C07c *47/18*

U.S. Cl. 260—602 **18 Claims**

1. In the process for the preparation of hydroxy citronellal from citronellal, the improvement which comprises preparing an enol ester or diester or mixture thereof of citronellal by reaction with a lower alkanoic acid anhydride in the presence of an alkali metal lower alkanoic acid salt, hydrating the resulting enol ester or diester or mixture thereof in the presence of aqueous sulfuric acid having a sulfuric acid concentration within the range from about 58 to about 78% at a temperature within the range from about −20° to about 50°C., and then saponifying the hydroxy enol ester or diester to form hydroxy citronella with an aqueous solution of a strong base selected from the group consisting of the hydroxides, oxides and salts, which yield strong bases by hydrolysis in water, of the alkali metals and alkaline earth metals.

3,869,518
ACETALDEHYDE PRODUCTION

Morgan C. Sze, Upper Montclair, and Ruey H. Wang, Parisppany, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 27, 1971, Ser. No. 183,788

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 R **19 Claims**

1. A process for producing acetaldehyde, comprising:

contacting a molten mixture comprising a multivalent metal chloride in both its higher and lower valence state and the corresponding oxychloride in an amount sufficient to provide oxygen requirements for acetaldehyde production to about 5.5 weight percent of the molten mixture, said multivalent metal being selected from the group consisting of copper, chromium, cobalt, manganese and iron with a gaseous feed comprising a hydrocarbon selected from the group consisting of ethane, ethylene and mixtures thereof and further comprising ethyl chloride and vinyl chloride in an amount sufficient to prevent net production thereof, said contacting being effected at a temperature from about 700° to about 1,000°F., in the essential absence of added chlorine and hydrogen chloride to produce a gaseous effluent comprising acetaldehyde.

3,869,519
FLUORINATED ETHER

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 725,164, April 29, 1968, abandoned. This application Mar. 5, 1970, Ser. No. 17,008

Int. Cl. C07c *43/12*

U.S. Cl. 260—614 F **1 Claim**

1. The compound 1,1,1-trifluoro-2-difluoromethoxy propane of the formula $CHF_2OCH(CH_3)CF_3$.

3,869,520
PROCESS FOR DEHYDROHALOGENATION OF TRICHLOROETHANE TO VINYLIDENE CHLORIDE

Ronnie D. Gordon, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 21, 1972, Ser. No. 265,074

Int. Cl. C07c *21/08*

U.S. Cl. 260—654 D **8 Claims**

1. A process for producing vinylidene chloride which comprises reacting trichloroethane with an alkali metal or alkaline earth metal hydroxide or carbonate in an aqueous medium at temperature as low as 0°C in the presence of a reaction aid, said reaction aid being activated carbon, activated charcoal, activated alumina, or porous silica.

3,869,521
AROMATIC HYDROGENATION USING SODIUM BOROHYDRIDE REDUCED TRANSITION METAL SUPPORTED CATALYSTS

Robert F. Benson, Fayetteville, Ark., assignor to Texaco, Inc., New York, N.Y.

Continuation of Ser. No. 158,581, June 30, 1971, abandoned. This application Dec. 29, 1972, Ser. No. 319,574

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 **10 Claims**

1. In a catalytic hydrogenation process of organic compounds selected from the group consisting of benzene, mono-alkylbenzene and mono-alkylnaphthalene to yield, in the case of benzene and mono-alkylbenzene, the corresponding cyclohexane and, in the case of mono-alkylnaphthalene, naphthalene and the corresponding alkane wherein the catalyst comprises a supported transition metal selected from, the group consisting of nickel, platinum, palladium and rhenium the improvement which comprises utilizing as the supported catalyst one prepared by impregnating a catalyst support with a solution of a transition metal salt, at least partially drying said support, contacting said support with a sodium borohydride solution until cessation of the evolution of gas and thereafter recovering the active transition metal supported catalyst.

3,869,522
AROMATICS HYDROGENATION PROCESS

Huno Van der Eijk, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed June 18, 1973, Ser. No. 371,024

Claims priority, application Netherlands, July 17, 1972, 7209847

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 **6 Claims**

1. A process for hydrogenating aromatic hydrocarbons which comprises contacting a low sulfur aromatics-containing petroleum distillate having a final boiling point below 375°C at a temperature of 100–400°C, a pressure of 10–200 bar, a space velocity of 0.5–15 $1.1^{-1}.h^{-1}$ and in the presence of hydrogen at a hydrogen/feed ratio of 50–4,000 $N1.1^{-1}$ with a catalyst having a pore volume of 0.3–1.2 ml/g and a surface area of 100–600 m^2/g and containing 0.5–5% wt Group VIII noble metals supported on a carrier comprising 30–90% wt silica, 10–70% wt zirconia and 0–25% wt alumina.

3,869,523
METHOD OF HYDROALKYLATING INCLUDING REGENERATION OF CATALYST

Robert M. Suggitt, Wappingers Falls, and John M. Crone, Jr., Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 320,215, Jan. 2, 1973,. This application Dec. 17, 1973, Ser. No. 425,403

Int. Cl. C07c *5/12*

U.S. Cl. 260—668 R **9 Claims**

1. The method of hydroalkylating a charge mononuclear aromatic hydrocarbon which comprises

passing said charge mononuclear aromatic hydrocarbon in the presence of a hydroalkylating quantity of hydrogen to a hydroalkylation operation containing hydroalkylation catalyst;

maintaining said hydroalkylation operation at hydroalkylation conditions thereby producing hydroalkylate product and a spent catalyst of decreasing catalytic activity;

decreasing the flow of charge mononuclear aromatic hydrocarbon;

heating said spent catalyst in the presence of hydrogen thereby regenerating said spent catalyst catalyst and formng regenerated catalyst;

cooling said regenerated catalyst to hydroalkylating temperatures; and

increasing the flow of charge mononuclear aromatic hydrocarbon thereby effecting further hydroalkylation.

3,869,524
PROCESS FOR THE PRODUCTION OF HEXAMETHYLBENZENE

Kenneth K. Light, Asbury Park, and James Brian Anglim, Matawan, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed May 1, 1974, Ser. No. 466,067

Int. Cl. C07c *3/50*

U.S. Cl. 260—671 M **6 Claims**

1. A process for preparing hexamethylbenzene comprising the step of intimately admixing methyl chloride and a benzene derivative starting material selected from the group consisting of:

i. Pentamethyl benzene;
ii. Tetramethyl benzene;
iii. Trimethyl benzene;
iv. Xylene;
v. Toluene; and
vi. Benzene

and mixtures thereof in the presence of a solvent comprising a preponderance of orthodichlorobenzene, and a Friedel-Crafts catalyst at a temperature in the range of from 100° C up to 200° C and a benzene derivative starting material concentration in the orthodichlorobenzene of less than about 500 g per liter.

3,869,525
COMPOSITION COMPRISING A MIXTURE OF THERMOPLASTIC POLYMERS FOR INTERNAL CLEANING OF EXTRUDERS

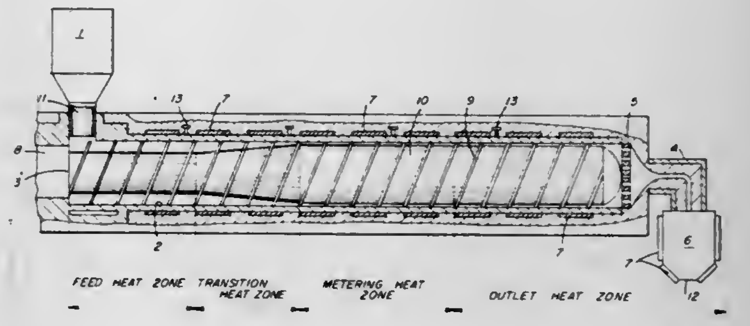
Donald N. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 248,958, May 1, 1972, Pat. No. 3,776,774. This application Aug. 6, 1973, Ser. No. 386,144

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **8 Claims**

1. An extruder cleaning composition comprising a mixture of (1) discrete, crushable particles of a highly crystalline brittle thermoplastic first polymer having a high brittle point and (2) a thermoplastic second polymer which has a melting point below said brittle point and which upon heating above its said melting point forms a fluid-phase carrier for said particles, said highly crystalline polymer having a melting point up to about 350° C.



3,869,526
BIS(PHOSPHATES)

Malcolm Combey, Mellor Stockport, and Raymond Nicolson Birrell, Sale, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

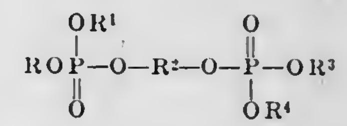
Filed June 11, 1973, Ser. No. 369,040

Claims priority, application Great Britain, June 13, 1972, 27501/72

Int. Cl. C07f *9/08*

U.S. Cl. 260—929 **6 Claims**

1. A compound of the formula



$$RO\underset{\underset{O}{\|}}{\overset{\overset{OR^1}{|}}{P}}-O-R^2-O-\underset{\underset{OR^4}{|}}{\overset{\overset{O}{\|}}{P}}-OR^3$$

wherein

The R, R^1, R^3 and R^4 groupings are the same or different and each may be an alkyl radical containing from one to 15 carbon atoms, phenyl or alkylphenyl radical of six to 15 carbon atoms such that R, R^1, R^3 and R^4 are not all alkyl radicals nor are they all phenyl or alkylphenyl radicals containing six to eight carbon atoms, and

R^2 is a straight, branched or cyclic alkylene containing from two to six carbon atoms or a mono-di- or trioxaalkylene of four to 20 carbon atoms.

3,869,527
SECONDARY PHOSPHATE ESTERS

Bertil Hogberg; Hans Fex; Torsten Perklev; Sten Veige, all of Helsingborg, and Bo Fredholm, Nyhamnslage, all of Sweden, assignors to Aktiebolaget Leo, Halsovagen, Helsingborg, Sweden

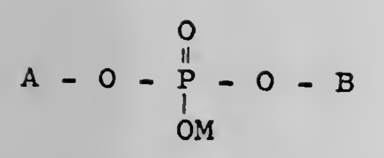
Filed Aug. 14, 1972, Ser. No. 280,538

Claims priority, application Great Britain, Aug. 17, 1971, 38577; Jan. 31, 1972, 4511. The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.

Int. Cl. C07f *9/18;* **A01n** *9/36*

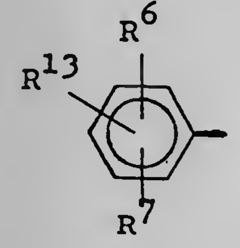
U.S. Cl. 260—946 **18 Claims**

1. A novel secondary phosphoric acid ester compound having the general formula

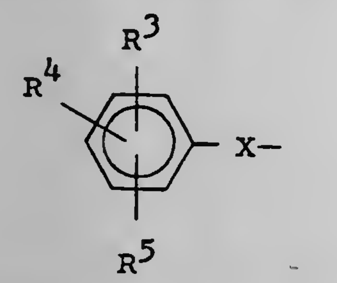


$$\text{A}-\text{O}-\overset{\overset{\text{O}}{\|}}{\underset{\underset{\text{OM}}{|}}{\text{P}}}-\text{O}-\text{B} \qquad (\text{I})$$

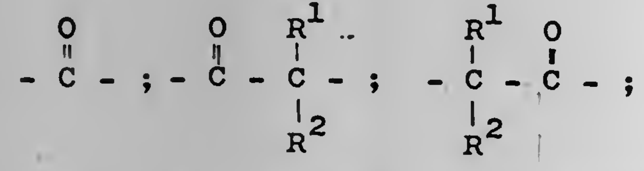
wherein M is selected from the group consisting of hydrogen and a pharmaceutically acceptable inorganic and organic cation; and wherein A and B, independent of each other, are



wherein one and only one of substituents substitutents R^{6}, R^{7}, and R^{13} always represents a group R, located in any of the meta and para positions relative to the phosphoric acid ester group, the group R having the formula



wherein X is selected from the group consisting of



$$-\overset{\overset{\text{O}}{\|}}{\text{C}}- \;;\; -\overset{\overset{\text{O}}{\|}}{\text{C}}-\overset{\overset{R^{1}}{|}}{\underset{\underset{R^{2}}{|}}{\text{C}}}- \;;\; -\overset{\overset{R^{1}}{|}}{\underset{\underset{R^{2}}{|}}{\text{C}}}-\overset{\overset{\text{O}}{\|}}{\text{C}}- \;;$$

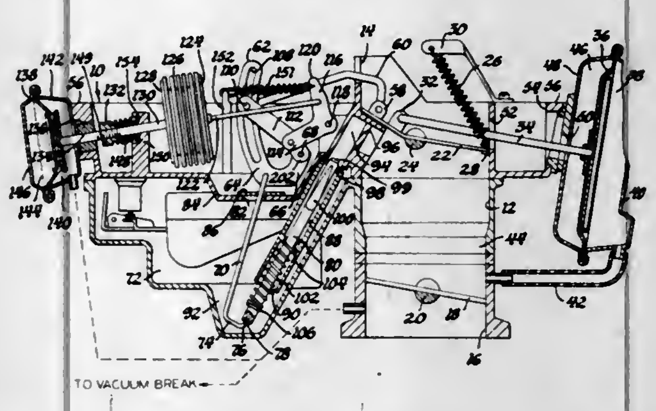
wherein R^{1} and R^{2} are selected from the group consisting of hydrogen; lower alkyl; and lower alkenyl; wherein if R^{1} is hydrogen R^{2} may further be selected from the group consisting of cyclopentyl; cyclohexyl; phenyl; and phenyl substituted in m- or p-position by one substituent selected from the group consisting of lower alkyl, lower alkoxy, —F, —Cl, —Br, and $—CF_3$; wherein R^{3}, R^{4}, R^{5}, R^{6}, R^{7}, and R^{13} above are selected from the group consisting of hydrogen; lower alkyl; lower alkenyl; lower alkoxy; hydroxy; $—O—CO—R^{14}$; —F; —Cl; —Br; and $—CF_3$; and wherein R^{14} is lower alkyl.

3,869,528
COLD TRANSIENT ENRICHMENT

Stanley H. Mick, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,556
Int. Cl. F02m *1/10*
U.S. Cl. 261—39 A **1 Claim**

1. The combination of a vacuum break unit and a cold transient enrichment device for use on an internal combustion engine having an induction passage for air flow to the engine, a throttle disposed in said induction passage for controlling air flow therethrough, metering means for supplying fuel to the engine in proportion to air flow through said induction passage, and temperature responsive means biasing said metering means to increase the proportion of fuel to air upon a decrease in temperature, said conbination comprising a first pressure responsive diaphragm adapted for connection to said metering means, means defining a chamber on one side of said diaphragm, means adapted for subjecting said chamber to the pressure in said induction passage downstream of said throttle whereby said diaphragm may bias said metering means to decrease the proportion of fuel to air in opposition to the bias of said temperature responsive means, means for subjecting said chamber to atmospheric pressure whereby said diaphragm is ineffective to oppose the bias of said temperature responsive means, each of said atmospheric pressure and induction passage pressure means including a valve seat and being disposed whereby said valve seats face one another, a valve member reciprocable between said valve seats, spring means biasing said valve member to engage the valve seat associated with said atmospheric pressure means and thereby obstruct flow therethrough, a second pressure responsive diaphragm connected to said valve member, said induction passage pressure means subjecting one side of said second diaphragm to the pressure in said induction passage downstream of said throttle, means defining a second chamber on the opposite side of said diaphragm, means including a valved orifice subjecting said second chamber to the pressure in said induction passage downstream of said throttle, said valved orifice permitting a rapid decrease in pressure in said second chamber but a slow increase in pressure, whereby upon a decrease in said induction passage pressure said spring means is effective to bias said valve means into engagement with the valve seat associated with said atmospheric pressure means and said first diaphragm is subjected to said induction passage pressure, whereby for a selected period after an increase in induction passage pressure said second diaphragm is effective to overcome the bias of said spring means and pull said valve means into engagement with the valve seat associated with said induction passage pressure means and said first diaphragm is subjected to atmospheric pressure, and whereby after said selected period said spring means is again effective to bias said valve means into engagement with the valve seat associated with said atmospheric pressure means and said first diaphragm is again subjected to said induction passage pressure.



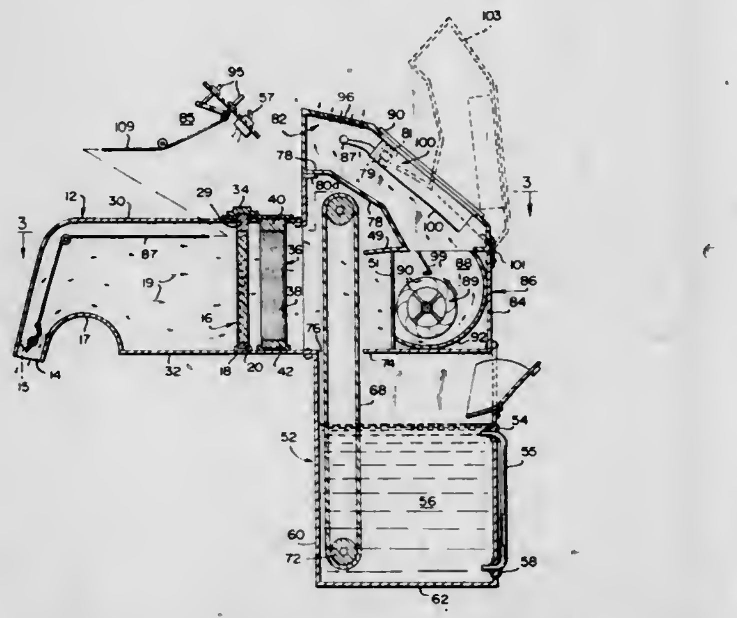
3,869,529
AIR CONDITIONING APPARATUS

Donald T. Follette, 98 Sleight Plass Rd., Poughkeepsie, N.Y. 12603

Filed Aug. 30, 1972, Ser. No. 284,909
Int. Cl. B01f *3/04*
U.S. Cl. 261—130 **7 Claims**

1. Air conditioning apparatus comprising a housing including an air inlet duct, a humidifier chamber, an air discharge duct and enclosing blower means for drawing air through said air inlet duct, said humidifier chamber and said air discharge duct, said air inlet duct having an air inlet port for communication with the ambient air and an outlet opening communicating with said humidifier chamber, an air filter for trapping dirt particles present in the ambient air fixedly positioned in said air inlet duct downstream from said air inlet port, an electric air heater fixedly positioned in said air inlet duct downstream from said air filter, a tank containing liquid disposed within said humidifier chamber, an endless liquid-transport belt rotatably mounted on a pair of vertically spaced rollers for rotating said belt with the flat face thereof parallel to said inlet duct opening, said endless belt having an upper

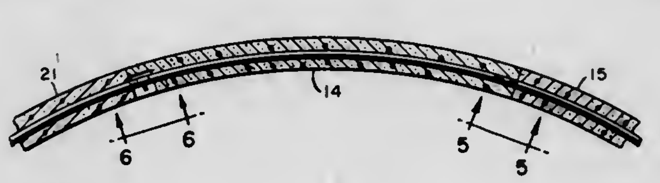
portion thereof facing said inlet duct outlet opening and having a lower portion thereof immersed in said liquid, electric motor means connected to at least one of said rollers whereby said motor means when actuated drives said rollers to rotatably transport said endless belt successively into immersion in said liquid and past said inlet duct outlet opening to impart moisture to the air stream exiting through said inlet duct outlet opening, blower means located downstream of said humidifying chamber for drawing ambient air through said air inlet duct and through said liquid-transport belt, an air discharge duct located downstream of said blower means, air temperature sensing means and humidity sensing means located in said air discharge duct for detecting the temperature and humidity of air passing through said discharge duct, control means operative in response to said air temperature sensing means and humidity sensing means for actuating and de-actuating said electric air heater and said electric motor means driving said rollers to maintain the temperature and humidity of the air stream in said discharge duct respectively at preselected levels, a shutter pivotally mounted in said air inlet port for opening and closing said air inlet port, shutter control means on the front face of said housing and a cable linkage connecting said shutter to said shutter control means whereby actuation of said shutter control means is operative to selectively open and close said air inlet port.



3,869,530
METHOD OF CONSTRUCTING A PRESTRESSED CONCRETE CIRCULAR WALL

Chester I. Williams, 1501 Madison S.E., Grand Rapids, Mich. 49507

Filed Feb. 19, 1974, Ser. No. 443,828
Int. Cl. E04b *1/16*; E04c *5/07*
U.S. Cl. 264—33 **7 Claims**



1. A method of constructing a circular pre-stressed reinforced concrete wall, said method including placement of spaced form sections and pouring concrete between said spaced sections, wherein the improvement comprises:

placing spaced form sections including end panels to form a first sector of a circular wall;

placing a shielding tube around reinforcing rod means having threaded ends, and placing said tube and rod means peripherally in the space between said form sections, with said ends projecting from said end panels;

pouring concrete between said form sections including submerging said tube and rod means, and permitting said concrete to set;

exposing at least part of the ends of said set concrete, and applying bearing plates over said rod means ends, and nut means to said threaded ends;

applying tension to said rod means between said plates, and securing said nut means;

placing form sections to form an adjacent sector of said wall with an end of said set concrete of said first sector defining one end of the space between said form sections, the opposite end of said space being defined by an end panel; placing a shielding tube around reinforcing rod means having threaded ends, and placing said tube and rod means peripherally in the space between said form sections, and coupling one end of said rod means of said adjacent sector to said rod means of said first sector, the opposite end of said adjacent sector rod means projecting from said opposite end panel;

pouring concrete in said space between said form sections submerging said tube, rod means and coupling, and permitting said latter concrete to set to form said adjacent sector;

exposing at least part of the end of said set concrete of said adjacent sector defined by said opposite end panel and applying a bearing plate over the end of said rod means projecting from said opposite end and nut means to said latter threaded end;

applying tension to said latter rod means;

repeating the steps for constructing said adjacent sector to form successive adjacent sectors of said wall;

placing form sections to form a closure sector of said wall, the space between said form sections being defined by the ends of the set concrete of said first sector and the last of said adjacent sectors;

placing a shielding tube around reinforcing rod means having threaded, one of said threaded ends being of opposite hand to the threaded end of said rod means projecting from said first sector, placing said latter tube and rod means in said space between said form sections, coupling said latter rod means to the rod means projecting from said last adjacent sector, and applying a turnbuckle coupling connecting said rod means of said first sector and the rod means of said closure sector, and boxing out a space between said form sections surrounding said turnbuckle coupling, said space providing access from the exterior of said wall;

pouring concrete between said form sections, including submerging said tube and rod means and permitting said concrete to set to form said closure sector; and

tightening said turnbuckle coupling to apply tension to the rod means of said closure sector.

3,869,531
ADHESION OF URETHANE FOAMS TO PVC SKINS

Hartley A. Silverwood, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Feb. 21, 1974, Ser. No. 444,478
Int. Cl. B29d *27/00*
U.S. Cl. 264—46.6 AP **2 Claims**

1. In the manufacture of an automobile trim component comprising a covering of a flexible plasticized polyvinylchloride resin filled with a urethane polyether foam foamed in situ by the prepolymer technique, the improvement for increasing the adhesion to said covering by said foam comprising adding to the reactants for said foam in the range of 0.5 to 2 weight percent of a polyol consisting of a 1000 to 4000 molecular weight polycaprolactone diethylene glycol adipate copolymer, as an adhesion improving additive.

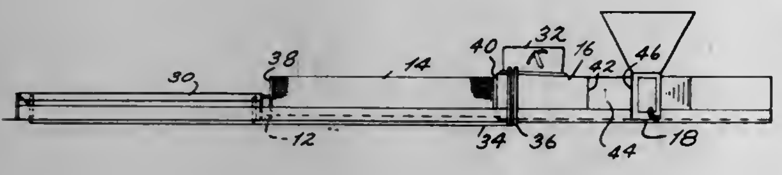
3,869,532
METHOD OF MANUFACTURING FLOATING BOAT DOCK MODULES

Clarence Lee Shirrell, Cape Girardeau, Mo., assignor to Rosecon, Inc., Cape Girardeau, Mo.

Filed Jan. 11, 1974, Ser. No. 432,536

Int. Cl. B28b *1/08;* **B63b** *35/00*

U.S. Cl. 264—71 **12 Claims**



1. A method of producing a floating boat dock module comprising the steps of:
- fastening at least one layer of wire mesh to a low density bouyant forming member so as to form an enclosure therefor;
- placing said forming member with said wire mesh attached thereto, on a movable container member containing an adequate amount of concrete to form a bottom portion of a concrete covering for said member and said mesh;
- feeding said container member carrying said forming member and said mesh, into an aligning portion of a coating apparatus so as to align said forming member and mesh in appropriate relation to a coating portion of said coating apparatus;
- feeding said container member carrying said forming member and mesh, into said coating portion;
- coating a top and side portions of said forming member and mesh with an adequate amount of concrete to form the top and side portions of a concrete covering therefor;
- feeding said container member, forming member and mesh into a sizing portion of said coating apparatus whereby the dimensions of said top, bottom and side portions are established;
- removing said forming member and mesh from said sizing portion and said container member; and
- coating end portions of said forming member and mesh with adequate concrete to form the end portions of a covering therefor and thus complete the enclosure of said forming member and mesh to form said floating boat dock module.

3,869,533
PROCESS FOR THE MANUFACTURE OF MONOAXIALLY STRETCHED FILM STRIPS

Siegfried Janocha; Walter Seifried, and Horst Gebler, all of Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft Wiesbaden, Biebrich, Germany

Filed July 10, 1969, Ser. No. 840,857

Claims priority, application Germany, July 12, 1968, 1779150

Int. Cl. B29d *7/24*

U.S. Cl. 264—146 **6 Claims**

1. A process for the manufacture of monoaxially stretched film strips from a film of a high-polymer thermoplastic synthetic material which comprises extruding a melt of the high-polymer material from a flat die to form a film, longitudinally stretching the film heated to an effective stretching temperature in a narrow gap in the range of a few millimeters to the film thickness, cutting the film longitudinally into strips, and longitudinally stretching the strips heated to an effective stretching temperature in a wide gap in the range of the initial width of the film to several meters.

3,869,534
METHOD FOR MANUFACTURING STRETCHED POLYVINYLIDENE FLUORIDE FILMS

Shinsuke Yoshikawa; Tohru Sasaki; Mitsuru Ota; Shuji Terasaki, and Akira Funakoshi, all of Fukushima, Japan, assignors to Kureka Kagaku Kogyo K.K., Tokyo, Japan

Filed Apr. 6, 1973, Ser. No. 348,819

Claims priority, application Japan, Apr. 6, 1972, 47-34699

Int. Cl. B29d *7/24*

U.S. Cl. 264—210 R **7 Claims**

2. A method for manufacturing a biaxially oriented polyvinylidene fluoride film which comprises forming a non-stretched polyvinylidene fluoride film from melt-extruding a polyvinylidene fluoride polymer having an inherent viscosity in the range of from 0.8 to 1.8 as determined in a dimethylformamide solution at a concentration of 0.4 g/100 cc at a temperature of 30°C, cooling and solidifying the extruded film at a temperature of from 80° to 150°C to form a non-stretched film containing spherulites having a diameter of from 2 to 20 μ, stretching the resulting film in the longitudinal direction at a temperature of from 140° to 165°C to a stretch magnification ranging from the spontaneous stretch magnification of said film to 1.8 times said spontaneous stretch magnification, and subsequently stretching the resulting uniaxially stretched film in the cross direction at a temperature of from 150° to 175°C by 4.0–8.0 times followed by thermally fixing the biaxially stretched film.

3,869,535
EMBOSSING ROLLERS AND METHOD OF EMBOSSING

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 858,136, Sept. 15, 1969, abandoned. This application Aug. 4, 1972, Ser. No. 277,959

Int. Cl. B29c *1/02;* **B28b** *11/08;* **C23b** *5/56*

U.S. Cl. 264—219 **7 Claims**

1. A method which comprises embossing a substrate with an engraved embossing master surface which has been subjected to the following succession of steps:
1. electropolishing said master surface;
2. electroplating the polished master surface with a brightening metal having a high to medium levelling effect and subsequently
3. electroplating with a metal having a relatively lower levelling effect.

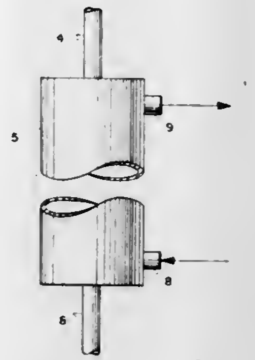
3,869,536
DISPLACEMENT CHROMATOGRAPHIC METHOD FOR SEPARATING URANIUM ISOTOPES

Dean B. James, Franklin Township, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,904

Int. Cl. C01g *43/02*

U.S. Cl. 423—7 **6 Claims**



1. A method for separating U^{235} isotope from U^{238} isotope comprising

- first, feeding a solution containing trivalent titanium to a column system containing cation-exchange resin;
- second, feeding a solution containing hexavalent uranium and recovering a solution containing tetravalent titanium; third, feeding a solution containing trivalent iron and recovering a solution containing hexavalent uranium enriched in U^{235} isotope;
- fourth, recovering a solution containing hexavalent uranium of the same isotopic composition as the feed, and
- provided, however, that the feeding of said solution containing trivalent iron is initiated before the trivalent titanium, sorbed on the resin, is completely replaced by uranium.

3,869,537
METHOD AND DEVICE FOR WASTE HEAT RECOVERY AND SAND REMOVAL IN THE BAYER PROCESS

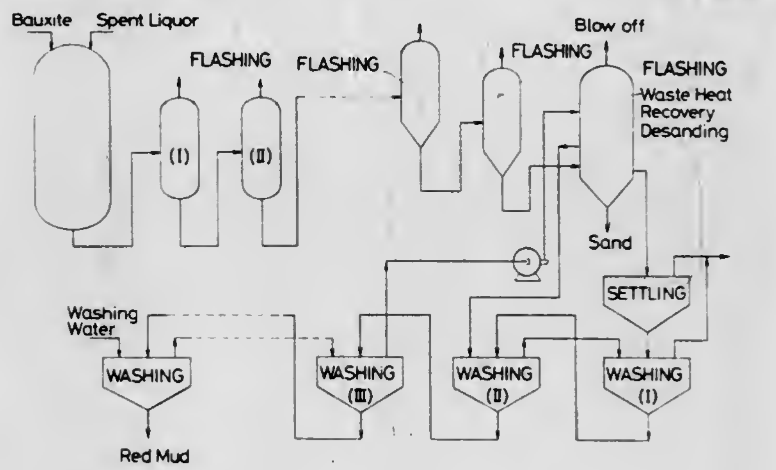
Chosei Sato; Yasutoku Yamada, and Yoshiyuki Takenaka, all of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

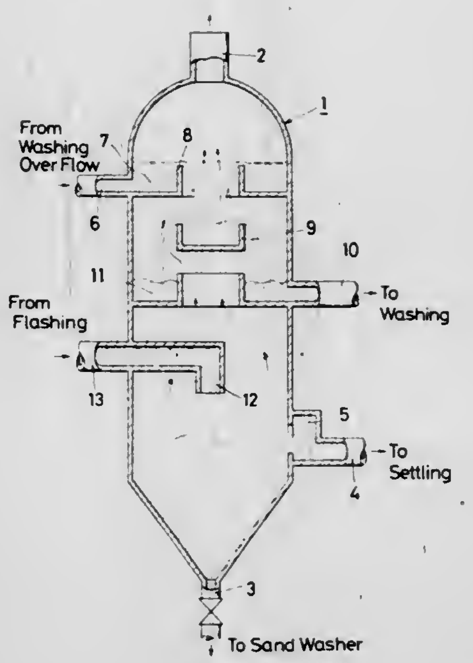
Filed Feb. 23, 1972, Ser. No. 228,624

Claims priority, application Japan, Feb. 4, 1971, 46-8667

Int. Cl. C01f *7/06*

U.S. Cl. 423—121 **3 Claims**





1. In the Bayer process for production of alumina by treating bauxite containing monohydrated alumina with an aqueous solution of caustic soda at high temperature and high pressure to form a slurry containing sand, said slurry being subjected to multistage flashing for lowering both temperature and pressure and generating steam, said slurry passing after said flashing through a series of continuous red mud thickeners in counterflow contact with wash water, and recovering alumina and caustic soda contained in said slurry from the overflow liquid from the red mud thickeners, the improvement which comprises the steps of introducing overflow liquid from the red mud thickener into a vessel, last stage flashing said slurry in said vessel, bringing said overflow liquid into counterflow contact with the steam generated by said last-stage flashing of slurry within said vessel and effecting heat exchange from the steam to the overflow liquid, forwarding heated overflow liquid back to the thickener and using it as wash water for red mud, discharging slurry from the vessel after flashing at a rate permitting settling of sand particles in a lower section of sand vessel, separately removing sand and slurry out of said vessel.

3,869,538
PROCESS FOR PRODUCING SODIUM CARBONATE FROM TRONA

Jared Sanford Sproul, Fanwood, and Eric Rau, Trenton, both of N.J., assignors to Intermountain Research and Development, Green River, Wyo.

Filed Jan. 10, 1973, Ser. No. 322,294

Int. Cl. C01d *7/12*

U.S. Cl. 423—206 **8 Claims**

1. In a process for preparing crude sodium carbonate from crude trona by calcining crushed crude trona, the improvement which comprises the following steps:
- a. feeding crushed crude trona, ranging in particle size distribution from about 100% −⅜ inch mesh with a maximum of 10% −270 mesh, to about 100% −8 mesh with a maximum of 20% −400 mesh, into a fluid-bed calciner wherein a fluidized bed of crushed trona is formed by the action of gases introduced to the bottom of the bed at a controlled rate and from which bed gases are effluent;
- b. heating the crushed trona in the fluidized bed at a temperature in the range of 125°–225°C until a crude sodium carbonate of substantially uniform soluble organic content is obtained;
- c. separating a fine fraction of crushed trona from the fluidized bed by entrainment in the gases effluent from the fluidized bed,
- d. further heating the separated fine fraction of crushed trona in a range of 125°–225°C until a crude sodium carbonate of substantially uniform soluble organic content is obtained; and
- e. recovering the calcined product of steps b) and d).

3,869,539
PREPARATIONS CONTAINING FAT-SOLUBLE VITAMINS IN DRY, PARTICULATE, FREE-FLOWING FORM DISPERSIBLE IN COLD WATER AND METHOD OF PRODUCING SUCH PREPARATIONS

Peder Lund Kring, Virum, and Jorgen Lund, Herlev, both of Denmark, assignors to A/S Ferrosan, Copenhagen, Denmark

Continuation of Ser. No. 73,191, Sept. 17, 1970, abandoned, which is a continuation of Ser. No. 684,501, Nov. 20, 1967, abandoned. This application Feb. 26, 1973, Ser. No. 335,525

Claims priority, application Denmark, Dec. 1, 1966, 6230/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—236 **3 Claims**

1. In a process for producing cold water dispersible preparations containing vitamins A, D or E, which comprises mixing the vitamin with a gelatine product and plasticizer, finely dividing the resultant mixture, solidifying the finely divided product and drying the solidified product, the improvement wherein the gelatine product is prepared by partially decomposing gelatine by treating the gelatine for 0.15–1 hour at 40°–95° C with 0.1–0.3 gram equivalent of sodium hydroxide per 100 grams of gelatine and neutralizing the partially decomposed gelatine to a pH of 4.5–7.0 with hydrochloric acid or sulfuric acid, and the vitamin is mixed with 10–60% by weight of gelatine product, based on the weight of the dispersible preparation.

3,869,540

MONTMORILLONITE CLAY CATALYSTS FOR THE PRODUCTION OF PHOSPHONITRILIC CHLORIDE

Donald Hardy, Sr., Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 364,057

Int. Cl. Colb *25/10*

U.S. Cl. 423—300 **4 Claims**

1. A process for the production of phosphonitrilic chlorides which consists essentially of heating phosphorus pentachloride with ammonium chloride having a particle size greater than 200 mesh in an inert solvent at a temperature greater than 100° C and in the presence of at least 1 gram of acid-treated Montmorillonite clay for each gram-mole of PCl_5 charged to the reaction mixture.

3,869,541

METHOD FOR MANUFACTURING HYDRAZINE

Francis Weiss, Pierre-Benite; Jean-Pierre Schirmann, Brignais, and Henri Mathais, Sainte-Foy-les Lyon, all of France, assignors to Produits Chimiques Ugine Kuhlman, Paris, France

Filed Jan. 3, 1972, Ser. No. 215,173

Claims priority, application France, Jan. 7, 1971, 71.00299

Int. Cl. C01b *21/16*

U.S. Cl. 423—407 **41 Claims**

1. A method for the manufacture of hydrazine hydrate which comprises:

a. reacting

i. a ketone of the formula

$$R_1—CO—R_2 \qquad (I)$$

wherein the radicals R_1 and R_2 each is a straight or branched chain alkyl radical or cycloalkyl radical containing up to about 10 carbon atoms, an unsubstituted phenyl radical or a phenyl radical substituted with one or more radicals which are stable in the reaction medium or R_1 and R_2 together is a straight or branched chain alkylene radical containing from 3 to about 11 carbon atoms with

ii. ammonia (NH_3),

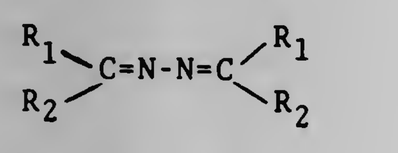
iii. hydrogen peroxide (H_2O_2), and

iv. a nitrile of the formula

$$R_3 — CN \qquad (II)$$

wherein the radical R_3 is an acyclic or cyclic radical containing less than 8 carbon atoms, an unsubstituted phenyl radical or a phenyl radical substituted with one or more radicals which are stable in the reaction medium to produce

v. a ketazine of the formula



(III)

and

vi. a carboxylic amide of the formula:

$$R_3—CO—NH_2 \qquad (IV)$$

b. separating the ketazine (III) from the reaction medium; and

c. reacting the ketazine (III) with water, or both to produce hydrazine hydrate and regenerate the starting ketone (I).

3,869,542

METHOD FOR PRODUCING POTASSIUM AZIDE

William K. Snead, Wheeling, and Robert E. McGreevy, New Martinsville, both of W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 810,980, March 27, 1969, Pat. No. 3,803,296. This application Aug. 5, 1970, Ser. No. 61,275

Int. Cl. C01b *21/08*

U.S. Cl. 423—410 **27 Claims**

1. A method for producing potassium azide comprising:

a. removing water at a first temperature from an aqueous solution containing at least 2 per cent by weight of the total anhydrous salts present therein, each of the following salts: sodium azide and tripotassium orthophosphate to precipitate potassium azide and to form a first mother liquor;

b. separating said precipitated potassium azide from the bulk of said first mother liquor;

c. decreasing the temperature of said separated first mother liquor to a temperature which is lower than said first temperature to precipitate a sodium phosphate and form a second mother liquor; and

d. separating said precipitated sodium phosphate from the bulk of said second mother liquor.

3,869,543

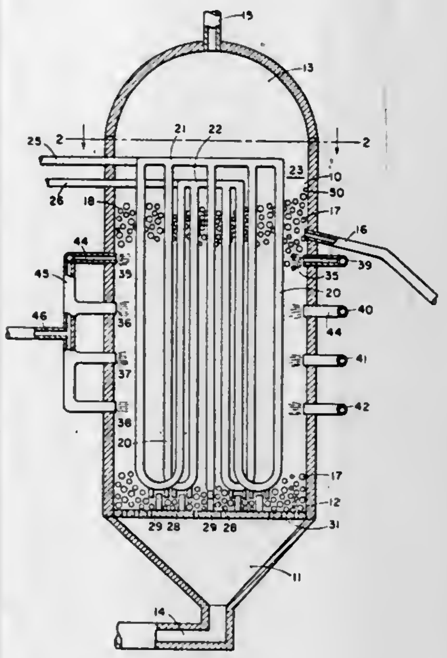
METHOD FOR DECOMPOSING CONCENTRATED AQUEOUS ALUMINUM NITRATE SOLUTIONS

August H. Schutte, Lexington, and James T. Stevens, Bedford, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 18, 1971, Ser. No. 125,758

Int. Cl. C01b *21/42;* **C01f** *7/30;* **B01j** *1/00*

U.S. Cl. 423—390 **10 Claims**



1. A method of decomposing a concentrated aqueous aluminum nitrate solution to form a solid alumina product and nitric acid comprising the steps of

a. providing at least two separate beds of fluidizable particles each of said beds having a plurality of vertically oriented spaced tubing sections extending therethrough;

b. continuously circulating a heat transfer fluid through said tubing sections of each of said beds whereby said bed particles are heated by said heat transfer fluid by indirect heat exchange through the walls of said tubing sections;

c. introducing an aqueous solution of aluminum nitrate beneath the surface of each of said beds in a manner to prevent any appreciable amount of said liquid aluminum nitrate from impinging directly onto the surfaces of said tubing sections;

d. fluidizing said bed particles of one of said beds with steam;

e. using the off-gas effluent from said one bed fluidized with steam as the fluidizing gas for the remaining of said beds;

f. maintaining the temperature of said heat transfer fluid within a temperature range such that said liquid aluminum nitrate solution is substantially instantaneously heated to a temperature between about 150° and 300°C as it contacts the surface of said bed particles;

g. removing the solid product from each of said fluidized beds; and

h. withdrawing the effluent off-gases containing nitric acid from said remaining of said fluidized beds.

3,869,544

STABILIZATION OF ALUMINUM HYDRIDE

Earl Thomas Niles, Midland; Beverly A. H. Seaman, Midland County, and Edwin J. Wilson, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 24, 1968, Ser. No. 740,830

Int. Cl. C016 *6/34;* **C01b** *6/00;* **C01f** *1/00, 3/00, 7/00*

U.S. Cl. 423—645 **10 Claims**

1. A process for increasing the thermostability of a substantially non-solvated aluminum hydride which comprises;

a. contacting at a temperature of from about 25° C. to about 80° C. for a period of at least about 24 hours a substantially non-solvated aluminum hydride with a treating liquid selected from the group consisting of hydrazine, alkylhydrazines, alkylamines, hydrocarbons or alcohols wherein the treating liquid has associated therewith at least about 0.1 weight per cent water,

b. separating the so-treated aluminum hydride product from the treating liquid, and

c. drying said aluminum hydride product.

3,869,545

PREPARATION OF ALUMINUM HYDRIDE

Kazuji Terada, Midland, and Buddy L. York, Akron, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1964, Ser. No. 349,795

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **4 Claims**

1. In a process for preparing aluminum hydride by reacting an alkali metal aluminum hydride with aluminum chloride in an aliphatic ether solution the improvement which comprises: providing as the alkali metal aluminum hydride reactant a mixture of sodium aluminum hydride and lithium aluminum hydride in an aliphatic ether, the molar proportions of said sodium aluminum hydride-lithium aluminum hydride being about 5/1 to about 1/1, adding to said mixture over a period of from about 5 seconds to about 40 minutes while maintaining the reaction temperature below the boiling point of the ether aluminum chloride in an amount at a maximum of about 10 weight percent in excess of that required for stoichiometric reaction with said sodium aluminum hydride thereby to prepare aluminum hydride and co-precipitated inorganic halides and other impurities, dissolving said aluminum hydride in aliphatic ether solvent thereby freeing said aluminum hydride product from said co-precipitated inorganic halides and other impurities, and removing the co-precipitated solids from said aluminum hydride product solution.

3,869,546

ADJUVANT COMPOSITIONS AND MEDICINAL MIXTURES COMPRISING THEM

Lloyd J. Lund, Moraga, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Dec. 22, 1972, Ser. No. 317,752

Int. Cl. A61k *27/00*

U.S. Cl. 424—88 **6 Claims**

1. A biologic solution comprising an antigen which stimulates the production of antibodies and an adjuvant therefore consisting essentially of a colloidally water-soluble neutralized polymers of acrylic acid cross-linked with from 0.75 to 2.000 percent of polyallylsucrose or polyallylpentaerythritol, wherein the polymer is present at a concentration of at least about 0.2 percent and the biologic solution comprises a physiologically acceptable electrolyte at a concentration which is effective to lower substantially the viscosity imparted to the solution by the polymer to a maximum of 2,000 cps.

3,869,547

CALF DIARRHEA VIRUS VACCINE AND PROCESSES

Charles A. Mebus, and Marvin J. Twiehaus, both of Lincoln, Nebr., assignors to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 197,520, Nov. 10, 1971, , which is a continuation-in-part of Ser. No. 90,481, Nov. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 880,956, Nov. 28, 1969, abandoned. This application Nov. 7, 1973, Ser. No. 413,734

Int. Cl. C12k *7/00;* **A61k** *23/00*

U.S. Cl. 424—89 **10 Claims**

1. An attenuated reovirus-like calf-diarrhea vaccine comprising (1) a reovirus-like calf-diarrhea virus which has been attenuated by passaging a virulent reovirus-like calf-diarrhea virus, identified by immunofluorescence, in tissue culture which supports growth of the virus, continuing until a noticeable cytopathological effect is observed, said cytopathological effect being apparent from flagging produced or infection followed by immunofluorescence, from about 37 to 250 times until the attenuated virus, while inducing immunity in neonatal calves, does not produce disease, and (2) a carrier, the titer of said attenuated virus being at least 10^2 TCID/ml.

3,869,548

MEDICAMENT FOR THE TREATMENT OF DISORDERS OF THE EYE

Georges Dabis, Bordeaux, France, assignor to Societe d'Etudes Et D'Exploitation de Marques et Brevets-S.E.M.S., Asnieres, France

Filed Jan. 22, 1968, Ser. No. 699,293

Claims priority, application France, Jan. 26, 1967, 67.92655

Int. Cl. A61k *17/18, 19/00*

U.S. Cl. 424—94 **3 Claims**

1. A method of treating the human eye disorders of diabetic retinopathy and degenerative maculation of the eye, comprising the step of administering by means of injection to the human a composition containing heparin and a detoxified enzyme obtained from venom of a Brazilian viper selected from the group consisting of Bothrops Jararaca and Lachesis Atrox in a dosage of 2000 to 2500 International Units of heparin in accordance with the French Pharmacopoeia and 1 to 2 coagulation units of the enzyme until the disorder is ameliorated, the detoxified enzyme being obtained by desiccating the venom to form a venom powder, dissolving the venom powder in distilled water to form a solution, adding ammonium sulfate crystals to said solution to precipitate an enzymatically active first fraction, recovering said enzymatically active first fraction from the solution by filtration, precipitating from the filtrate by addition of magnesium sulfate thereto to form an enzymatically toxic second fraction, purifying the fractions by dialysis, detoxifying the second fraction by exposing it to the light of a quartz lamp, mixing the fractions

to obtain an enzymatically active product of constant and definitive activity, and mixing said product with heparin.

3,869,549

INJECTABLE OILY PEPTIDE PREPARATIONS AND PROCESSES FOR THEIR MANUFACTURE

Leo Geller, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,519

Claims priority, application Switzerland, Feb. 17, 1972, 2299/72; Dec. 7, 1972, 17829/72

Int. Cl. C07c *103/52*

U.S. Cl. 424—177 **17 Claims**

1. Process for the manufacture of injectable oily ACTH-active peptide preparations which contain an effective dose of an ACTH-active peptide or of its therapeutically usable salts, characterized in that said peptide or peptide salt, as an adsorbate on an aluminum salt of a saturated or unsaturated fatty acid, having 12–22 carbon atoms is suspended in oil, or said peptide or peptide salt is suspended in an oily gel which contains an aluminum salt of a saturated or unsaturated fatty acid having 12–22 carbon atoms as the gel-forming agent.

3,869,550

METHOD FOR THE CONTROL OF FERTILITY

Dan W. Dalgard, Springfield, Va., and Donald E. Coval, Sheridan, Ind., assignors to Environmental Science Corporation, Vienna, Va.

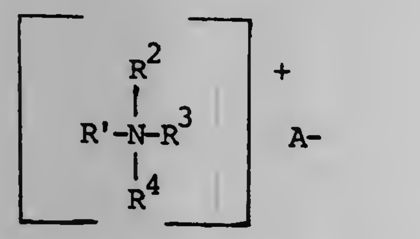
Continuation-in-part of Ser. No. 249,230, May 1, 1972, abandoned. This application Apr. 11, 1973, Ser. No. 349,285

Int. Cl. A61k *27/00*

U.S. Cl. 424—227 **13 Claims**

1. A method for the control of fertility in a female mammal comprising administering to the female mammal at the time of mating or within an effective period thereafter an anti-fertility effective amount of a compound selected from the group consisting of

a. a quaternary ammonium compound of the formula



wherein R' is selected from the group consisting of alkyl having a maximum of 22 carbon atoms, phenyl, benzyl, R^5O— and HOR^6O—, wherein R^5 is alkyl having a maximum of 5 carbon atoms and R^6 is alkylene having a maximum of 5 carbon atoms; R^2, R^3 and R^4 are each independently alkyl having a maximum of 20 carbon atoms; and A is a pharmaceutically acceptable anion; and

b. mixtures of more than one such quaternary ammonium compound.

3,869,551

CERTAIN CARBONATES USEFUL FOR CONTROLLING MOLLUSKS AND AQUATIC ORGANISMS

Jacques Mocotte, St. Didier au Mont d'Or, and Monique Druet, Lyon, both of France, assignors to Progil, Paris, France

Continuation of Ser. No. 53,992, July 10, 1970, abandoned. This application Jan. 3, 1973, Ser. No. 320,742

Claims priority, application France, July 25, 1969, 69.25380

Int. Cl. A01n *9/24*

U.S. Cl. 424—301 **24 Claims**

1. A method of controlling mollusks and aquatic organisms selected from the group consisting of crustacea, hydra, bryozoa and ascidia which comprises:

applying to said mollusks and aquatic organisms in water, an effective amount to kill said mollusks and aquatic organisms of methyl-(2-methyl-4,6-dinitrophenyl) carbonate.

3,869,552

CHRYSANTHEMIC ACID ESTERS AND THEIR USE AS INSECTICIDES

John Mervyn Osbond, Hatfield, and James Charles Wickens, Saint Albans, both of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

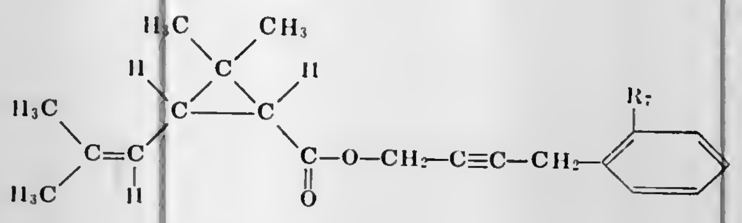
Division of Ser. No. 880,964, Nov. 28, 1969, Pat. No. 3,663,591. This application Feb. 11, 1972, Ser. No. 225,597

Claims priority, application Great Britain, Dec. 9, 1968, 58351/68; Dec. 9, 1968, 58352/68; Dec. 9, 1968, 58353/68; Dec. 9, 1968, 58354/68

Int. Cl. A01n *9/24*

U.S. Cl. 424—306 **3 Claims**

1. An insecticidal composition comprising as an active ingredient thereof an insecticidally effective amount of a chrysanthemic acid ester of the formula:



wherein R_7 is hydrogen or lower alkyl; and a carrier.

3,869,553

SUBSTITUTED BENZOIC ACID HYPOLIPEMIC AGENTS

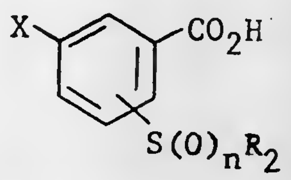
Gerald Fagan Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 304,528, Nov. 7, 1972, , which is a division of Ser. No. 155,209, June 21, 1971,. This application May 3, 1974, Ser. No. 466,775

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **8 Claims**

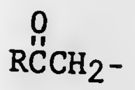
1. A method for reducing blood lipid levels which comprises administering to a hyperlipemic mammal a hypolipemic amount of a compound selected from the group consisting of



and the phramaceutically acceptable salts thereof wherein

X is selected from the group consisting of fluorine, chlorine, bromine, methyl, methoxy and trifluoromethyl;

R_2 is selected from the group consisting of methyl, 2-hydroxyethyl, allyl, methallyl, crotyl and acylmethyl of the formula



$$R\overset{O}{\overset{\parallel}{C}}CH_2-$$

wherein R is selected from the group consisting of alkyl containing from 1 to 4 carbon atoms and phenyl and substituted phenyl wherein said substituent is selected from the group consisting of fluorine, chlorine, methyl, trifluoromethyl and methoxy and

n is an integer from 0 to 2.

3,869,554

PROCESS FOR ALTERING THE FLAVORING PROPERTIES OF FOODSTUFFS

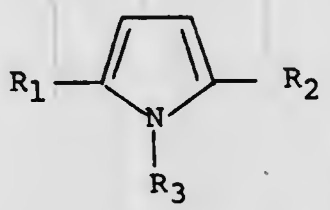
Alan O. Pittet, Atlantic Highlands; John V. Pascale, Jackson, and Denis E. Hruza, Bricktown, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,484

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **5 Claims**

1. A process for altering the flavoring properties of a foodstuff which comprises adding thereto a small but effective amount of at least one N-substituted pyrrole having the formula



wherein R_1 and R_2 are the same or different and represent hydrogen or methyl and R_3 is a cycloalkyl group containing three to 12 carbon atoms.

3,869,555

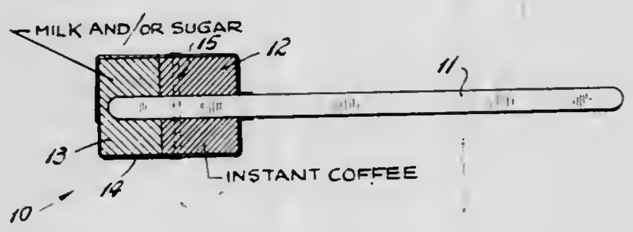
INSTANT BEVERAGE ARTICLE

Angelo Alexander Heonis, 460 Catherine St., Bridgeport, Conn. 06604

Filed Mar. 6, 1973, Ser. No. 338,512

Int. Cl. A23l *1/00*

U.S. Cl. 426—134 **8 Claims**



1. An instant beverage article suitable for the preparation of a liquid beverage upon addition to a liquid, comprising a stick having bonded adjacent one end thereof a quickly dissolvable solid base mass comprising a water-soluble particulate base material selected from the group consisting of coffee, tea, cocoa, eggnog and chocolate and a minor amount by weight of a water-soluble, digestible binder material and having bonded to said stick adjacent said base mass at least one solid flavoring mass comprising a water-soluble flavoring material selected from the group consisting of sweetening agents and milk and mixtures thereof and a water-soluble, digestible binder material, said flavoring mass being manually removable from said stick by taking said mass between the fingers and removing it as a solid mass by the application of slight pressure while said base mass is retained on said stick, if desired, to provide an article suitable for the preparation of base beverage free of the flavoring material, and said stick functioning as a stirrer to assist the dissolving of said base mass in said liquid.

3,869,556

PROCESS FOR PREPARING QUICK-COOKING GARBANZO AND RED KIDNEY BEANS

Louis B. Rockland, Moraga; Eufrocina M. Zaragosa, and Dulcie M. Hahn, both of Albany, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,324

Int. Cl. A23l *1/20*

U.S. Cl. 426—352 **6 Claims**

1. A process for treating garbanzo beans to make them quick-cooking while retaining the integrity of the beans and the seed coats thereof, which consists of

soaking raw garbanzo beans for about 24 hours at ambient temperature and atmospheric pressure in an aqueous hydrating medium consisting solely of water, 2% sodium chloride, 0.375% sodium bicarbonate, and 0.125% sodium carbonate.

3,869,557

METHOD FOR PRESERVING FRUIT PULPS HAVING A HIGH CONTENTS OF IRON SALTS AND PULPS THUS PRESERVED

Bruno Vrespa, via Pisacane 16, Milan, Italy

Filed Mar. 14, 1974, Ser. No. 451,151

Int. Cl. A23b *7/00*

U.S. Cl. 426—393 **9 Claims**

1. A method for preserving fruit pulps having a high iron salt content, comprising the steps of pressing a fruit pulp in a mold to form a cake, packaging the cake in a container made of a gas-impervious material, deep-freezing the container at a temperature in the range from about −40°C. to about −50°C. and finally sealing said container, all operations, from pulp pressing to sealing of the container, being performed in an atmosphere substantially free from oxygen so that the iron salts are not oxidized.

3,869,558

PROCESS FOR MAKING A FREE FLOWING FLOUR

Richard John Hampton, Pierrefonds; John T. Shantz, Valois, Quebec; Thomas Gallo, Toronto, Ontario, and Peter Unger, St. Lambert, Quebec, all of Canada, assignors to The Ogilvie Flour Mills Company, Limited, Montreal, Quebec, Canada

Filed Oct. 26, 1970, Ser. No. 83,803

Int. Cl. A21d *6/00*

U.S. Cl. 426—443 **7 Claims**

1. Process for making a free-flowing dry cereal flour with a non-gelatinized or non-hydrolyzed starch fraction, a denatured protein fraction and substantially no active α-amylase and lipid-degrading enzymes, said flour being characterized by a moisture content of between about 4 and about 10 per cent by weight and an ability to yield a cooked aqueous slurry with a Hagberg falling number of at least 270 seconds which comprises indirectly heating a natural cereal flour with a conventional native moisture content of about 8 to about 15 per cent by weight within an enclosed vessel to a temperature of about 120° to about 160°C., holding the temperature within this range for about 5 to about 60 minutes, whereupon the moisture vaporizes to provide an atmosphere of water vapor around the flour while agitating said flour so as to substantially preclude the formation of agglomerates, and removing said flour from said vessel thereby reducing its conventional native moisture content to the desired level of between about 4 and about 10 percent.

3,869,559
PROCESS FOR SEPARATION AND CLEANING OF EDIBLE VEGETABLE PRODUCTS

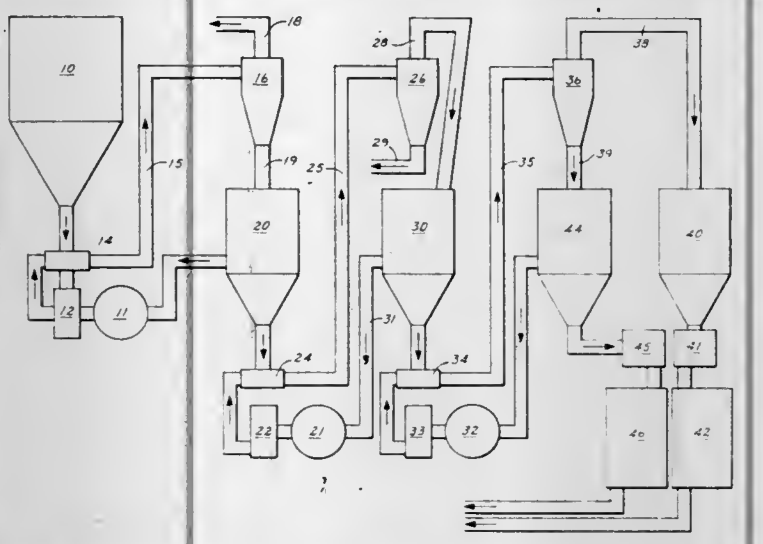
Thomas P. Clark, 6127 Flower St., Arvada, Colo. 80002

Filed Apr. 13, 1970, Ser. No. 27,907

Int. Cl. A23l *1/00*

U.S. Cl. 426—481 **4 Claims**

1. A process for the continuous separation of edible vegetable products from both heavier and lighter foreign substances, comprising the steps of continuously dynamically mixing and suspending vegetable products to be cleaned and separated with a first separation solution having a specific gravity such that the vegetable product and heavier substances tend to sink and lighter substances tend to float in said solution, separating said suspended vegetable product and heavier substances from said lighter substances in a hydrocyclone separator, separating said vegetable product and heavier substance from said separation solution, dynamically mixing and suspending said vegetable product and heavier substances with a second separation solution having a specific gravity such that the vegetable product tends to float and the heavier than vegetable product substances tend to sink, separating said suspended vegetable product from said heavier substances in a hydrocyclone separator, and separating said vegetable product from said second separation solution.



3,869,560
INDUCTION FURNACE FOR MELT REDUCTION

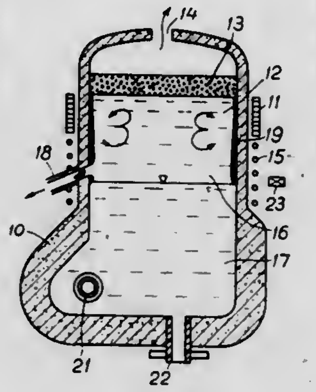
Bertil Henrik Hanas, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 6, 1973, Ser. No. 394,774

Claims priority, application Sweden, Sept. 7, 1972, 11527/72

Int. Cl. H05b *5/16*

U.S. Cl. 13—29 **5 Claims**



1. An induction furnace for the melt reduction of metal oxides and comprising a vessel for containing a melt of reduced metal with slag floating thereon and reducing material floating on the slag and to which metal oxides are fed for reduction, and having a first means for inductively heating said reduced metal, means for cooling said vessel adjacent to the level where said slag floats on said reduced metal, and a second means for inductively heating said slag adjacent to the level where said material floats on said slag.

3,869,561
CABLE SEPARATING JOINT

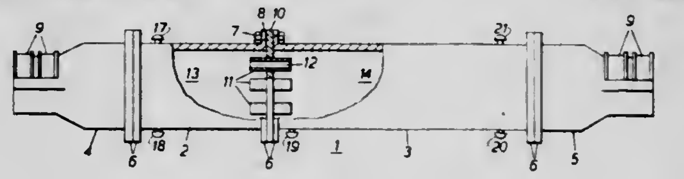
Gunnar Wettre, Asker, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

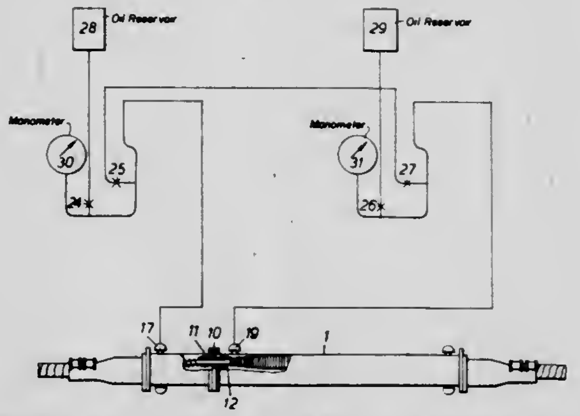
Filed Aug. 27, 1973, Ser. No. 392,158

Claims priority, application Norway, Oct. 2, 1972, 3511/72

Int. Cl. H02g *15/24*

U.S. Cl. 174—11 R **12 Claims**





1. A separating joint for an oil filled electrical cable comprising a plurality of insulated conductors, first and second adjacent cable enclosures around said conductors, said enclosures having adjacent facing end flanges, and a common separating flange secured to and between said facing end flanges of said enclosures, said common separating flange providing two hydraulic chambers for oil on respective opposite sides thereof separated only by said common separating flange, said separating flange having a plurality of openings passing said insulated conductors between said two hydraulic chambers, said insulated conductors fitting sufficiently closely in said openings to allow only a small flow of oil from one side of the separating flange to the other upon occurrence of a pressure difference between the two sides.

3,869,562
DUAL UNDERGROUND CABLE SYSTEM FOR TRANSMITTING ELECTRICAL POWER

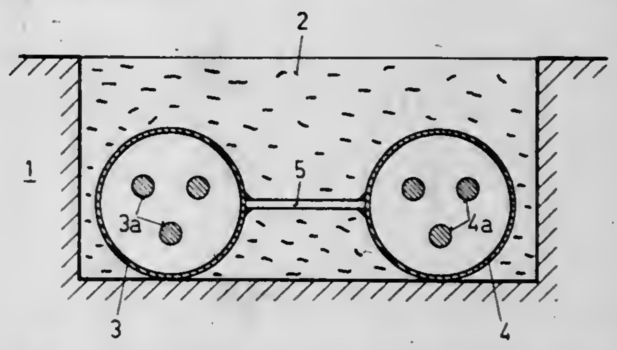
Adolf Eidinger, Nussbaumen, and Carl-Dieter Floessel, Fislisbach, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Feb. 5, 1974, Ser. No. 439,745

Claims priority, application Switzerland, Mar. 26, 1973, 4252/73

Int. Cl. H01b *7/34, 9/06*

U.S. Cl. 174—15 C **5 Claims**



1. A dual system for transmission of electrical power underground and which provides for dissipation of heat from each such system into the surrounding earth comprising two three-phase compressed-gas-insulated transmission lines extending in parallel spaced relation in the earth and which operate electrically in parallel, each said transmission line comprising three conductors encapsulated within at least one metallic tube filled with a compressed insulating gas and from which heat is dissipated into the earth, and metallic heat conductive members interconnecting said parallel spaced conductor encapsulating tubes and which extend longitudinally in a substantially continuous manner throughout the entire length of said dual power transmission lines whereby in case of a failure of one of said transmission lines the normal load carried by the other can be substantially increased due to the additional heat dissipating capacity provided by the encapsulating tube of the failed line.

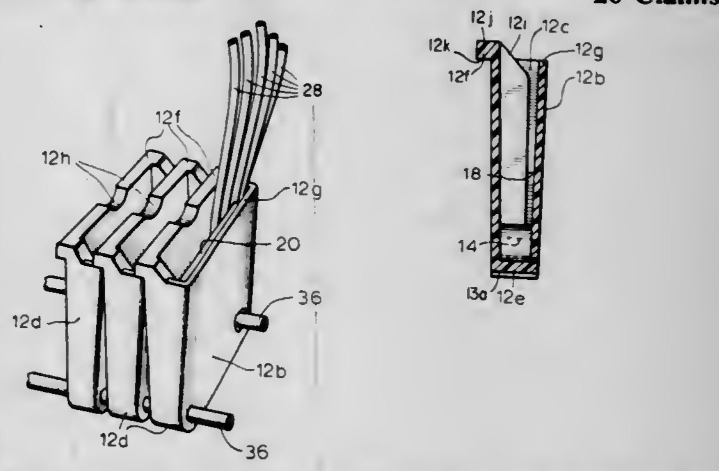
3,869,563
ENCAPSULATION HOUSING FOR ELECTRONIC CIRCUIT BOARDS OR THE LIKE AND METHOD OF ENCAPSULATING

Alfred Ocken, Jr., Franklin Park, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 27, 1973, Ser. No. 401,471

Int. Cl. H05k *5/06;* **B29c** *6/02*

U.S. Cl. 174—52 PE **20 Claims**



1. An improved protective enclosure for encapsulating an electrical control circuit arranged on a circuit board, comprising

a housing structure formed with a base, vertically upstanding side walls and front and back end walls, open at the top, with a pair of guide rails, each rail extending verticaly on the interior of a respective one of said side walls, said guide rails defining a pair of congruent channels in said side walls extending contiguous to one of the end walls for guiding the control circuit board to a position flatly against the one end wall upon inserting the control board into the housing;

said housing further including a ledge extending laterally and outwardly from the top of one end wall, said ledge having a bottom edge, said other end wall having a top edge, the height of the bottom edge of said ledge above said base in relation to the height of the top edge of the other end wall above said base being dimensioned such that said housing is adaptable for stacking in multiple units in a vertical, side-by-side relation whereby said laterally extending ledge of one housing overlies the top edge of the next adjacent housing.

16. An improved method of encapsulating a control device assembled on a heat sink circuit board comprising the steps of: forming a housing having a base, upstanding front and rear end walls and side walls, open at its top, with a pair of guide rails each rail extending vertically downwardly on the interior of a respective one of the side walls;

inserting the circuit board into the housing;

positioning the circuit board within the housing flatly against one of the end walls by guiding the side edges of the circuit board on the guide rails; and

pouring encapsulating material into the housing in an amount sufficient to cover the control device assembled on the circuit board.

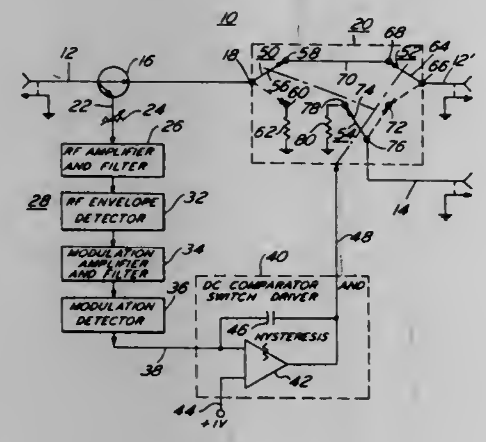
3,869,564
TRUNK SWITCHING SYSTEM

Samuel H. Colodny, Levittown, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Aug. 30, 1973, Ser. No. 392,998

Int. Cl. H04n *7/18*; H04h *1/02*

U.S. Cl. 178—6 **10 Claims**



1. A trunk switching system for concurrently receiving a plurality of television channel signals from more than one remote location and selectively transmitting signals from one of said remote locations comprising switching means having first and second input terminals for receiving a plurality of television channel signals respectively from first and second remote locations and an output terminal, said switching means having a first normal position transmitting signals received at its first terminal to its output terminal and a second position transmitting signals received at its second terminal to its output terminal, and detecting means receiving the signals received by said first input terminal of said switching means from said first remote location and activating said switching means to its second position upon its failure to receive television channel signals from said first remote location.

3,869,565
PICTURE GENERATING UNIT OF SCANNING TYPE

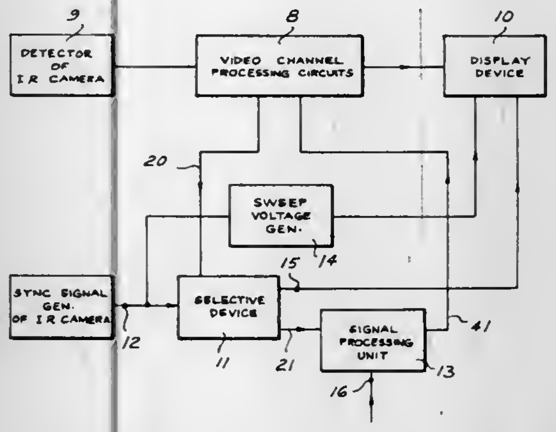
Tore Bertil Reinhold Olsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 17, 1971, Ser. No. 125,126

Claims priority, application Sweden, Mar. 26, 1970, 4273/70. The portion of the term of this patent subsequent to Mar. 4, 1991, has been disclaimed.

Int. Cl. H04n *5/19*

U.S. Cl. 178—6.8 **10 Claims**



1. In combination with a scanning camera which generates scanning signals for controlling the scanning of a viewing field and generates amplitude modulated information signals related to the amplitude of the radiation at points within the viewing field, a video channel which receives the information signals and includes threshold establishing means for establishing a threshold level of signals transmitted therefrom, and a scanning display means for visually displaying the information signals transmitted from the video channel and being synchronized to said scanning camera by said scanning signals, apparatus for automatically controlling said establishing means to establish a threshold level related to the amplitude of the radiation at a particular area of the viewing field of the scanning camera comprising selective means receiving said scanning signals for generating selection signals occurring at particular times after the start of said scanning signals related to said particular area, sampling means responsive to the occurrence of said selection signals for sampling the information signals then being transmitted, means for generating a threshold control signal related to the amplitude of the sampled information signals and means for transmitting the threshold control signal to the threshold establishing means so that a threshold level for the entire viewing field is established which is dependent on the amplitude of the radiation in said particular area.

3,869,566
PULSE-WIDTH-MODULATED CONVERTER FOR TELEVISION SYSTEM

Clyde Smith, North Salem, N.Y., assignor to Columbia Broadcasting System Inc., New York, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,091

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 **9 Claims**

1. In a television system which includes a source of timing signals that are synchronized in time with blanking intervals that occur between active portions of the video signals generated by said television system; an improved pulse-width-modulated converter which converts a source of direct voltage to a regulated supply of direct voltage having a minimum of perturbations occuring during active portions of the video, comprising:

a transformer having primary and secondary windings;

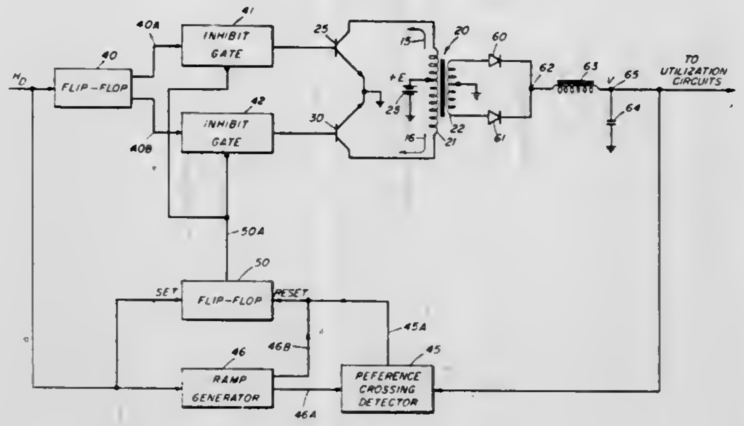
means responsive to said timing signals for generating an alternating voltage;

switching means coupled to said primary winding and responsive to said alternating voltage for alternately applying said unregulated source of direct voltage in opposite relative polarities across said primary winding;

rectifier means coupled to said secondary winding;

filter means for receiving the output of said rectifier means;

pulse generating means responsive to the voltage output level of said filter and said timing signals for generating a series of pulses which are in synchronism with said timing signals and which have widths that vary as a function of said voltage output level;



means for limiting the width of said pulses so that said pulses are constrained to occur during said blanking intervals; and

inhibit means responsive to said pulses for inhibiting the application of said unregulated voltage across said primary winding during said pulses.

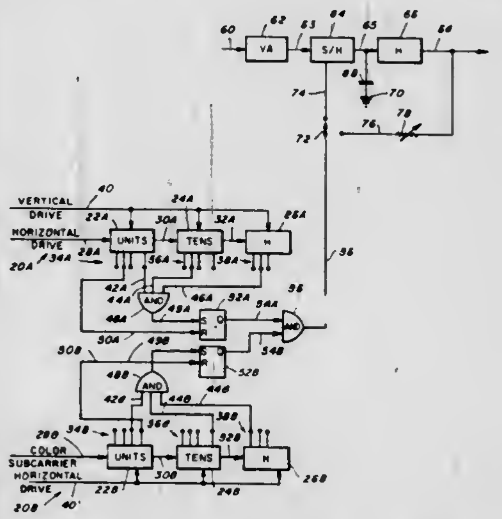
3,869,567
BLEMISH COMPENSATOR

Edward L. Covington, Rt. 3, Box 92, Claremore, Okla. 74017

Filed Aug. 20, 1973, Ser. No. 389,956

Int. Cl. H04n *5/21*

U.S. Cl. 178—7.2 **6 Claims**



1. In a video camera system having a camera tube with at least one blemish in the photosensitive surface, such that when the photosensitive spot being transduced is on the blemish area a distorted video signal is produced, the improvement in apparatus for compensating for said blemish, comprising:

a. first means to generate first recurrent timing pulses in synchronism with the start of each horizontal sweep;
b. second means to generate second recurrent timing pulses in accordance with the rate of horizontal sweep;
c. first counter means responsive to said first pulses;
d. second counter means responsive to said second pulses;
e. means responsive to said first counter means to generate a first control voltage pulses at a selected count and of selected pulse width;
f. means responsive to said second counter means to generate a second control voltage pulse at a selected count and of selected pulse width;
g. video amplifier means including sample and hold means connected to said camera tube; and

AND gate means having as its two inputs said first and second control pulses, the output pulse of said gate means connected to said sample and hold means.

3,869,568
SYNCHRONIZATION SEPARATOR CIRCUIT

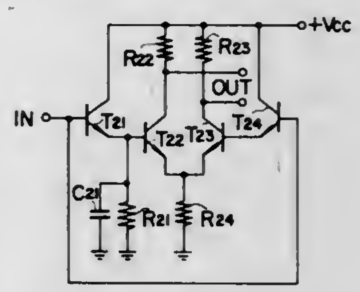
Seiichi Ueda, Tokyo, and Teruo Minagawa, Yokohama, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 12, 1973, Ser. No. 340,073

Claims priority, application Japan, Mar. 10, 1972, 47-23932

Int. Cl. H04n *5/08*

U.S. Cl. 178—7.3 S **5 Claims**



1. A synchronization signal separator circuit for deriving a synchronization signal from a compound video signal comprising a differential amplifier having first and second input terminals, a circuit input terminal receiving said compound video signal, and means for connecting said circuit input terminal to said first and second input terminals of said differential amplifier including D.C. level shift and peak value detector circuit means, wherein said D.C. level shift and peak value detector circuit means comprises a D.C. level shift circuit having its input connected to said circuit input terminal and a peak value detector connected between the output of said D.C. level shift circuit and said first input terminal of said differential amplifier, said circuit input terminal being connected directly to said second input terminal of said differential amplifier, and wherein said D.C. level shift circuit comprises first and second transistors having their emitters connected together through a first resistor to ground, the collector of said first transistor being connected to a power source, the collector of said second transistor being connected to the base thereof, a third transistor having its collector connected to its base and through a second resistor to said power source, the emitter of said third transistor being connected to the collector of said second transistor, and third and fourth resistors connected in series across the collector and emitter of said third transistor, the point of connection between said third and fourth resistors being connected to said peak value detector circuit.

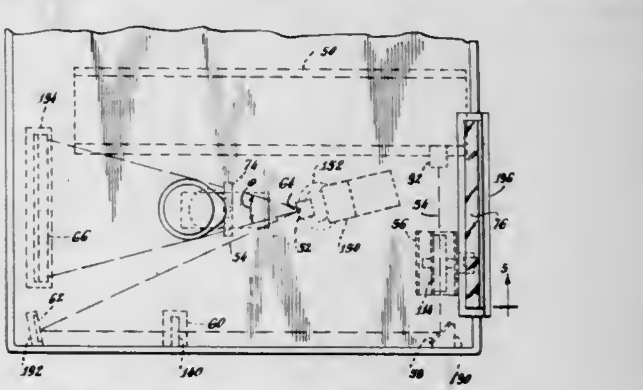
3,869,569
FACSIMILE TRANSCEIVING APPARATUS

Peter John Mason; Gary Lee Hutchinson; Lawrence Phillip Lavery; Vernon Edmund Punt, all of Fairport, and Roy Wilben Rivers, Conesus, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed May 16, 1972, Ser. No. 253,828

Int. Cl. H04n *3/00*

U.S. Cl. 178—7.6 **19 Claims**



1. A facsimile transceiving apparatus comprising:

a stationary scanning station;
means for advancing a document transversely of said scanning station;
means for repetitively deflecting a relatively stable light beam from one end to the other of said scanning station to scan said document;
detection means extending lengthwise of said scanning station and beyond the ends thereof for receiving light diffusely, but not specularly, reflected from said document to provide a video signal representative of said document;
an electrostatographic reproduction station including a photoreceptor surface, means for establishing a uniform electrostatic charge on said surface, means for repetitively deflecting a modulated light beam across said surface for establishing a latent electrostatic image on said surface, means for contacting said surface with pigmented developer particles, and means for transferring a developed image to a record medium; and
a common source of light for selectively supplying said relatively stable light beam and said modulated light beam.

3,869,570

SYSTEM FOR ANALYSING TELEGRAPH CHARACTERS

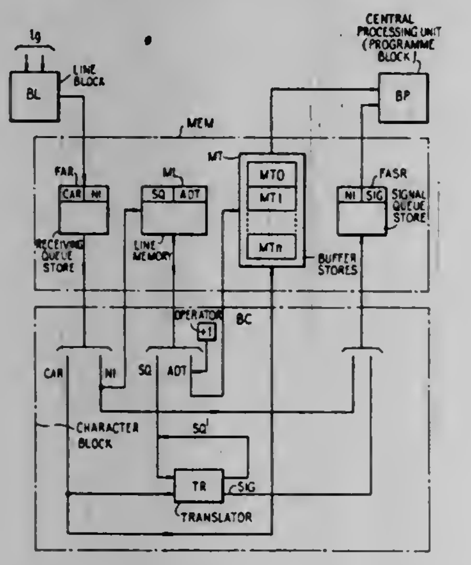
Thang Nguyen-Tat, Jouy-en-Josas; Roger Andre Pain, Vaires; Yann Le Floch, Fontenay-aux-Roses, and Jean-Claude Herluison, Argenteuil, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 11, 1973, Ser. No. 423,871

Claims priority, application France, Dec. 28, 1972, 72.46540

Int. Cl. H04l *3/00*

U.S. Cl. 178—26 R **4 Claims**



1. In a system for analyzing telegraph characters having a translator and an analyzing sequential device wherein each part of a telegraph message other than the intelligence part thereof is associated with a position of said sequential device and wherein said translator operates on the present position of said sequential device and a received telegraph character to produce at least a signal representing a new position for said sequential device, said translator comprising:
a main translator coupled to said sequential device, said main translator responding to said present position of said sequential device to produce said signal; and
an auxiliary translator coupled to said sequential device, to telegraph lines to receive telegraph messages over each of said lines and to the input of said main translator, said auxiliary translator having a number of inputs equal to the number of different telegraph characters of the alphabet employed and a plurality of outputs each of which provides a predetermined binary value having less binary bits than the number of binary bits forming each of said characters, said auxiliary translator responding to a position of said sequential device immediately preceding said present position of said sequential device to provide said predetermined binary values.

3,869,571

DEVICE FOR THE USE OF A FACSIMILE APPARATUS AS A PRINTING MECHANISM

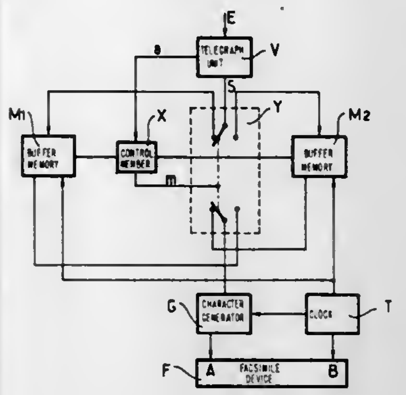
Jean-Henri Delavie, Paris, France, assignor to Compagnie Industrille Des Telecommunications Cit-Alcatel, Paris, France

Filed June 1, 1973, Ser. No. 366,143

Claims priority, application France, June 1, 1972, 72.19743

Int. Cl. G06f *3/14*; H04l *15/34*

U.S. Cl. 178—30 **13 Claims**



1. A device for the use of a facsimile apparatus as a printing mechanism for alphanumeric characters, adapted to write N characters per line, comprising telegraphic means for providing code signals representing alphanumeric characters, a character generator which furnishes order signals to said facsimile apparatus in response to code signals applied in parallel to the input thereof, first and second identical buffer memories having a capacity at least equal to N characters, charge control means connected to said telegraphic means for successively applying the code signals of each group of N characters alternately to said first and second buffer memories, and reading means for successively applying the code signals of N characters stored in the one of said first and second buffer memories which is not receiving code signals from said telegraphic means to the input of said character generator, said charge control means including
loading control means for aligning side by side in each buffer memory the codes of N characters forming one line of characters, said reading means including means for successively applying said codes of N characters from said buffer memories to the input of the character generator in the course of one scanning of the elementary line and means for repeating the reading operation in memory on *p* scanning lines corresponding to *p* lines of the character generator.

3,869,572

CHARGE COUPLED IMAGER

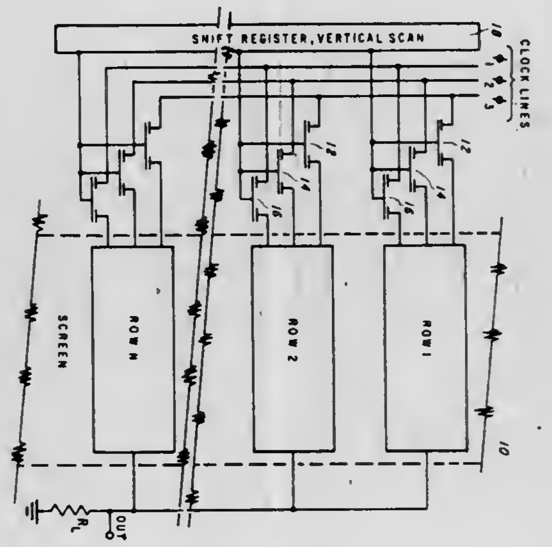
David L. Carter, Upper Montclair, N.J., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 214,365, Dec. 30, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,484

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.1 **5 Claims**

1. An optical imager system comprising:
a semiconductor substrate having a surface of insulating material,
a plurality of rows of optically active, substantially parallel first regions in said substrate respectively defining a charge transfer shift register device corresponding to each row,
each of said charge transfer shift register devices cooperating to form a first metallization level disposed over said insulating suface of said substrate and providing a plurality of substantially parallel spaced apart electrodes, sets of at least two successive electrodes cooperating to define respective bits of each said charge transfer shift register device,
an insulating layer disposed over said first level metallization and filling the spaces between adjacent electrodes, said insulating layer being provided with a plurality of apertures selectively exposing predetermined electrodes, a second level of metallization defining a plurality of substantially parallel conductive strips overlying said insulating layer and extending through said apertures therein to selectively ohmically contact said electrodes, said plurality of conductive strips being arranged in sets of conductive strips corresponding to respective charge transfer shift register devices,
a multiphase clock source, said multiphase clock source being provided with a plurality of clock lines for transmitting different phase pulses, each of which is arranged for respective connection to each of the charge transfer shift register devices comprising the plurality of rows of said first regions in said substrate,
switching means interposed between each of said plurality of clock lines and the respective charge transfer shift register devices and operable to connect said plurality of conductive strips to said plurality of clock lines in a predetermined sequence to thereby couple said charge transfer shift register devices to the respective clock lines,
scanning means operably connected to said switching means for selectively addressing respective charge transfer shift register devices corresponding to respective rows of said optically active first regions of said substrate, and output means for detecting electrical charge resulting from the image detected by respective bits of said charge transfer shift register devices.



3,869,573

MULTIPOINT JUNCTION UNIT PROVIDING EXCLUSIVE INTERCONNECTIONS OF BRANCH PAIRS

Leo Michael Kolensky, Irvington; Randolph John Pilc, Holmdel; Gabriel Gary Schlanger, West Orange, and Allan Howard Willand, Loch Arbour, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 7, 1974, Ser. No. 448,807

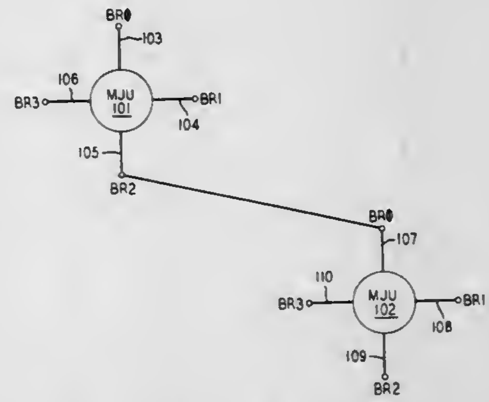
Int. Cl. H04l *11/00*

U.S. Cl. 178—73 **8 Claims**

1. A junction unit for terminating at least four two-way branch lines, the junction unit including a signal path interconnecting an incoming side of each branch line with an outgoing side of each of the other branch lines,

CHARACTERIZED IN THAT

the junction unit includes means individual to each signal path for selectively severing the individual signal path in response to concurrent reception of signals from either one of the branch lines interconnected by the signal path and from a different one of the branch lines.



3,869,574

BELT CONVEYOR APPARATUS

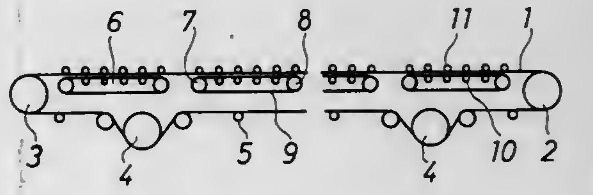
Takeshi Kume, Kobe, Japan, assignor to Ryuicbi Mujamoto, Osaka, Japan

Filed Oct. 17, 1972, Ser. No. 300,417

Claims priority, application Japan, Mar. 6, 1972, 47-22871

Int. Cl. B65g *23/00*

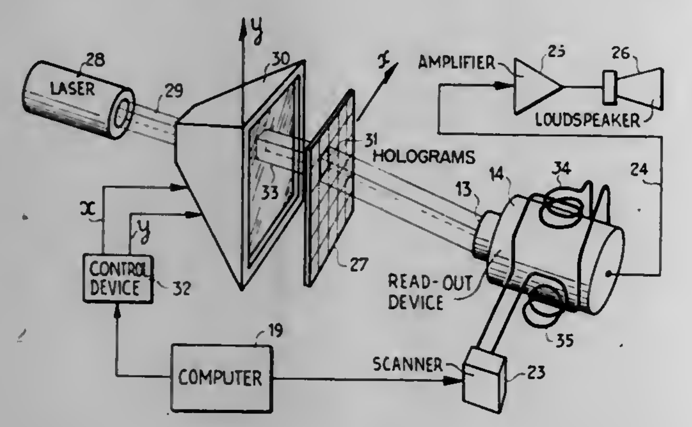
U.S. Cl. 198—203 **7 Claims**



1. A belt conveyor apparatus comprising:
an endless major belt having at each opposite lateral edge portion thereof, on the underside of the upper run thereof, a single substantially flat contact surface, said lateral edge portions being thicker than the middle portion between said lateral edge portions;
non-driven guide rollers mounted for supporting said endless major belt;
a plurality of sub-belt means mounted for contacting said major belt at said opposite lateral edge portion contact surfaces only thereof for imparting rotation to said major belt, each of said sub-belt means comprising, adjacent each of said lateral edge portions of said major belt:
a driving pulley
a following pulley;
a sub-belt having a single outer substantially flat contact surface and mounted over said driving and following pulleys to be driven by said driving pulley, said sub-belt being substantially narrower than said major belt and being mounted to be in strong frictional contact at said flat contact surface thereof with the respective one of said lateral edge portion contact surfaces only of said major belt; and
at least one snap roller means mounted to contact the upper side of said upper run of said major belt at said respective lateral edge portion only thereof, said snap roller means comprising a freely rotatably mounted snap roller for pinching said major belt and said sub-belt together;
the lateral edge surfaces of said major belt being free from contact with said sub-belt means; and
said sub-belt means being spaced from and not in contact with the lower run of said major belt.

3,869,575
SPEECH-SYNTHESIS SYSTEM

Erich Spitz, and Michel Rembault, both of Paris, France, assignors to Thomson-CSF, Paris, France
Continuation of Ser. No. 237,686, March 24, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 437,873
Claims priority, application France, Apr. 2, 1971, 71.11741
Int. Cl. G10l ***1/00;*** **G11c** ***13/04***
U.S. Cl. 179—1 SA **4 Claims**



1. Speech synthesis system for synthetizing acoustic messages made of a succession of elementary acoustic signals under the control of information data including addresses and a command signal for each of said acoustic signals; said system comprising:

holographic storage means including a plurality of elementary fringe patterns arranged side by side on a support;

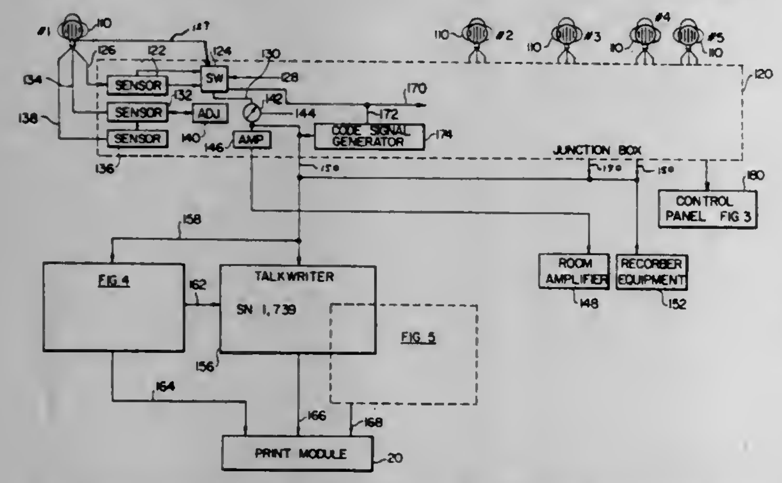
illuminating means controlled by said addresses for directing toward any one of said fringe patterns a beam of monochromatic radiant energy;

image analyser means including an input face positioned for receiving from any one of said fringe patterns an image of said acoustic signals upon illumination thereof by said beam, a scanner device ensuring scanning of said face under the triggering action of said command signal and an electrical output;

and electro-acoustical means, having an electrical input coupled to said electrical output, for delivering said acoustic messages.

3,869,576
MECHANICAL STENOGRAPHIC APPARATUS FOR TRANSCRIBING GROUP PROCEEDINGS

David Thurston Griggs, 5128 S. Rolling Rd., Baltimore, Md. 21227
Continuation-in-part of Ser. No. 1,739, Jan. 9, 1970, Pat. No. 3,646,576, which is a continuation of Ser. No. 252,569, May 12, 1972, abandoned. This application Mar. 19, 1974, Ser. No. 452,695
Int. Cl. H04m ***1/00***
U.S. Cl. 170—1 SE **11 Claims**

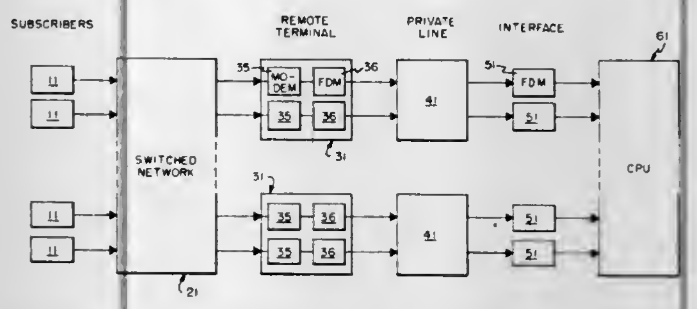


1. A data processing method for identifying separate input sources of voice signals and converting them to correspondingly identified sequences of input signals for alplha-numeric print-out means comprising the steps of:

1. receiving voice signals from a plurality of signal input positions,
2. indicating at the respective input stations the intervals when unsuitable weakness of input signals occurs,
3. passing the voice signals both through an amplifier for aural monitoring and editing and passing them also to a talkwriter system for processing the voice signals into alpha-numberic signals cognizant by a print module, and
4. identifying alpha-numberic outputs of the print module by the respective one of a plurality of signal input positions whence it was received.

3,869,577
METHOD AND APPARATUS FOR CONTROL SIGNALING IN FDM SYSTEM

Robert A. Couturier, Stamford; Steven J. Davis, Ridgefield, and G. Howard Robbins, New Canaan, all of Conn., assignors to General Datacomm Industries, Inc., Norwalk, Conn.
Filed Apr. 24, 1972, Ser. No. 246,589
Int. Cl. H04m ***11/06***
U.S. Cl. 179—2 DP **15 Claims**



1. In a data communication system comprising at least first and second FDM transmitter/receivers in which dial access control signals received at the first FDM transmitter/receiver from a first data communication means are transmitted to the second FDM transmitter/receiver for application to a second data communication means and dial access control signals received at the second FDM transmitter/receiver from the second data communication means are transmitted to the first FDM transmitter/receiver for application to the first data communication means,

first apparatus at the first FDM transmitter/receiver for transmitting to the second FDM transmitter/receiver at a special frequency other than that used for transmitting MARK or SPACE signals or their center frequency dial access control signals received from the first data communication means, said first apparatus further comprising means for transmitting the special frequency signal only when at least one of a RING signal and a DATA SET READY signal is received from the first data communication means and no CARRIER DETECT signal is received from the first data communication means; and

second apparatus at the second FDM transmitter/receiver for forming a CARRIER DETECT signal for application to the second data communication means by producing said CARRIER DETECT signal only when signal energy is received from the first FDM transmitter/receiver that is not the special frequency signal.

3,869,578
COMMUNICATIONS PROCESSOR SYSTEM HAVING A TIME SHARED COMMUNICATIONS CONTROL DEVICE AND MODEM

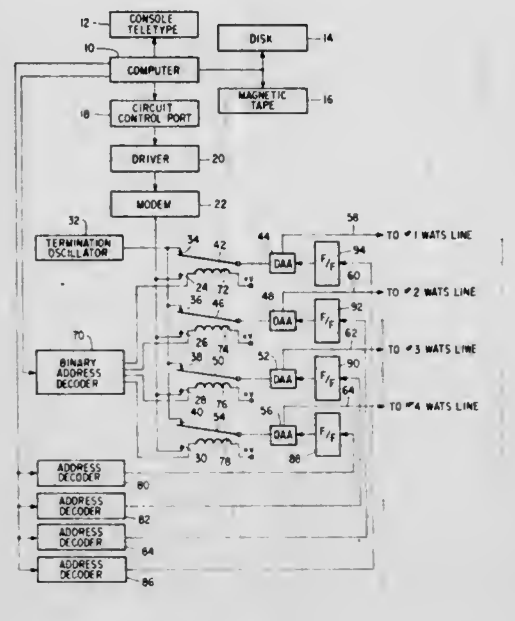
Barry M. Epstein, Dallas, Tex., assignor to Action Communication Systems, Inc., Dallas, Tex.
Filed Mar. 28, 1973, Ser. No. 345,703
Int. Cl. H04h ***11/06***
U.S. Cl. 179—2 DP **9 Claims**

1. In a communications processor system wherein a message switching digital computer controls the transmission of digitally coded data to communication terminals connected to a plurality of communications lines, the combination comprising:

a communications control system connected to the output of the digital computer for generating electrical digital signals,

a modem connected to the output of said control system for converting said digital signals into digital tone signals,

a plurality of dialers each corresponding with one of said communications lines and operable by the digital computer to generate dialing address signals for said terminals connected to said communications lines, and



decoder means operable by address signals transmitted from the computer in conjunction with operation of said dialers for switching the output of said modem to selected ones of the communications lines which have been interconnected with selected terminals by said dialing address signals, wherein ones of said communications lines are sequentially connected to the output of said modem while dialing by said dialers is occurring on the remainder of said communications lines.

3,869,579
APPARATUS FOR MUTUALLY SYNCHRONIZING OSCILLATORS IN SWITCHING CENTERS OF A TELECOMMUNICATION NETWORK

Otto Karl, Forstenrieder allee 78/III, 8000 Munchen 71, Germany
Filed Oct. 3, 1972, Ser. No. 294,513
Claims priority, application Germany, Oct. 6, 1971, 2149911
Int. Cl. H04j ***3/06***
U.S. Cl. 179—15 BS **6 Claims**

1. Apparatus for mutually synchronizing central office clock oscillators in each of a plurality of interconnected switching centers constituting a telecommunication network, the apparatus in each switching center comprising:

adjustable clock oscillator means having an output frequency which is adjustable in value in dependence on the value of a synchronizing signal,

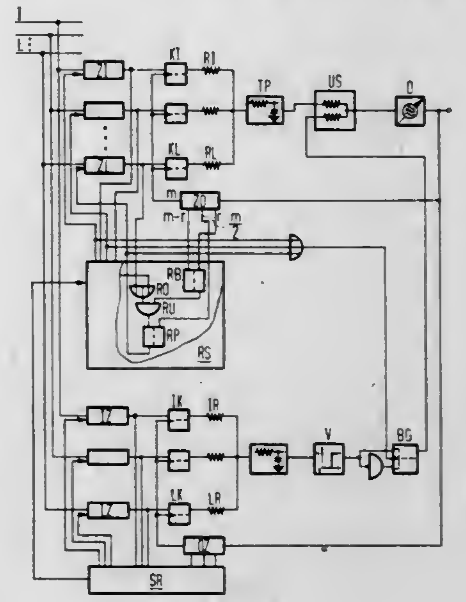
first and second synchronizing circuits for producing synchronizing circuit output signals responsive to phase comparisons between said adjustable clock oscillator and the clock oscillator outputs of others of said switching centers connected to the defined switching center,

each said synchronizing circuit comprising a plurality of line frequency dividers, each of which receives one of said clock oscillator outputs from said other switching centers and produces frequency-divided outputs therefrom, a central office frequency divider for producing a divided-output signal from said adjustable clock oscillator output, a plurality of phase comparators, each of which compares the output from one of said line frequency dividers with the output from said central office divider and produces an output signal of a value corresponding to the phase difference therebetween, adding means for producing an output signal of a value corresponding to the sum of said phase comparator output signals and means for producing the synchronizing circuit output signal from said adding means output signal,

said first synchronizing circuit including means for producing an output signal having a control range corresponding to the phase difference between said adjustable clock oscillator and the clock oscillator in at least one of said other switching centers conditioned by the greatest possible no-load frequency difference between said adjustable clock oscillator and the clock oscillator in said at least one other switching center, the generation of a reference phase occurring upon the crossing of said control range by said first synchronizing circuit output signal,

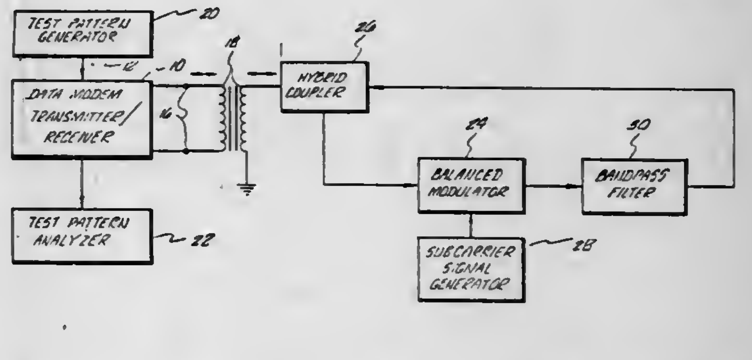
said second synchronizing circuit including means for producing an output signal having an operating range corresponding to the phase difference between said adjustable clock signal and the clock signal from said at least one other switching center and the greatest possible propagation time variation in a line connecting two of said switching centers and

means for combining said first and second synchronizing circuit output signals for producing said synchronizing signal.



3,869,580
APPARATUS FOR TESTING DATA MODEMS WHICH SIMULTANEOUSLY TRANSMIT AND RECEIVE FREQUENCY MULTIPLEXED SIGNALS

Robert Gordon Ragsdale, Hollywood, Calif., assignor to Milgo Electronic Corporation, Miami, Fla.
Continuation of Ser. No. 198,876, Nov. 15, 1971, abandoned. This application June 28, 1973, Ser. No. 374,695
Int. Cl. H04j ***3/12***
U.S. Cl. 179—15 BF **4 Claims**



1. In an apparatus for testing a data modem wherein the modem includes a transmitter portion for receiving digital data on a data input circuit, modulating a carrier signal in response to the data and transmitting the modulated carrier signal within one of two selectable frequency ranges over a telephone line and a receiver portion for simultaneously receiving from a telephone line a modulated carrier signal within the other frequency range not then being utilized by the transmitter, demodulating the received signal to derive digital data and producing a digital output signal on a data output circuit, the testing apparatus being separate from the modem per se and comprising:

means for applying a predetermined data signal on the data input circuit;

frequency translating means independent of the data modem and coupled to the data modem through at least one telephone line for receiving the transmitted signal at either one of the two selected frequency ranges and automatically translating the signal to the other frequency range;

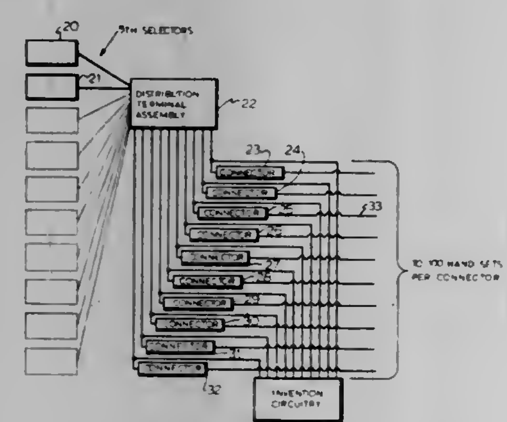
means for applying the translated signal at said other frequency range to the telephone line for transmission to the receiver portion of the modem; and

means coupled to the data output circuit of the data modem for comparing the input and output signals to check the performance of the modem operating over said telephone line.

3,869,581
TELEPHONE ALLOTTER CIRCUIT FOR EQUALIZING CIRCUIT USAGE

Harold L. Paschal, Jr., and Graham T. Brown, both of Richlands, N.C., assignors to Horace R. Mazingo, Richlands; Alex Warlick, Jr. and Carl S. Milsted, both of Jacksonville, all of, N.C., part interest to each

Filed Sept. 7, 1973, Ser. No. 395,360
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 H **2 Claims**

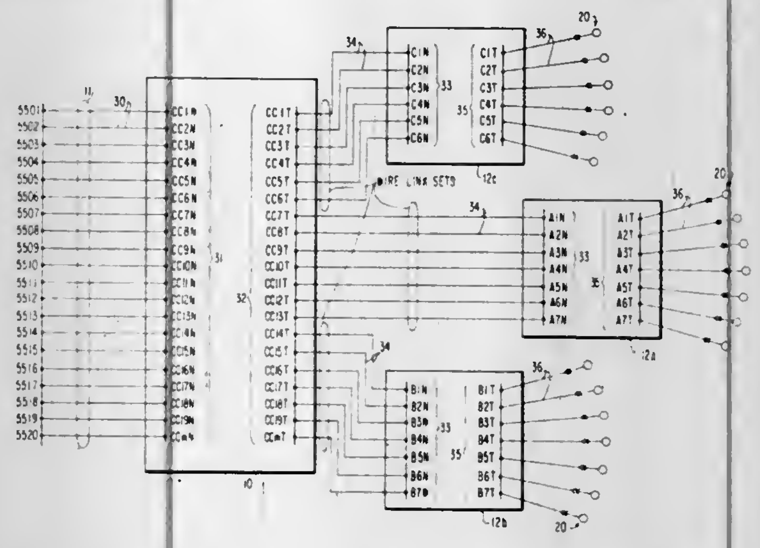

20
5TH SELECTORS
21
DISTRIBUTION TERMINAL ASSEMBLY
22
23
24
33
CONNECTOR
TO 100 HAND SETS PER CONNECTOR
32
INVENTION CIRCUITRY

1. In a telephone switching system having a main switching system to selectively connect telephone handsets, such main system including a plurality of "connectors" each having a control lead, plural groups of handsets connected to each connector, a distribution terminal assembly, and "fifth selectors" connected through said distribution terminal assembly to said connectors in a predetermined first choice wiring array, in combination therewith, an auxiliary control system for equalizing wear on the connectors, said auxiliary system having a switching network, permanent connections from each connector control lead to said network and auxiliary switching means within said network responsive to the seizure of said control leads, said auxiliary switching means being connected within said network to said control leads and having a potential source and means to connect said potential source to respective said control leads whereby as each control lead for each connector in each connector group is seized, used and released in a normal manner, a substitute barring potential is placed thereon and such barring potentials are maintained for all such seized control leads after the same become seized, used and released in the normal manner, and further having means to disconnect said potential source from said control leads and thereby disconnect said barring potentials from all said control leads associated with the connector group but only after all the control leads have been so seized, used and released whereby to insure that no connector in the group is seized, used and released again until all connectors in the group have been so utilized.

3,869,582
INTRABUILDING TELEPHONE SYSTEM

Marion L. Humphrey, Bellwood, and Ernest A. Tugaudis, Mount Prospect, both of Ill., assignors to Allstate Insurance Company, Northbrook, Ill.

Filed June 4, 1973, Ser. No. 366,391
Int. Cl. H04q *1/14*
U.S. Cl. 179—98 **6 Claims**



1. An intrabuilding telephone system for a building structure comprising in combination

a central control panel within the building for connection to the commercial telephone system located external to the building, said central control panel having first and second junction arrays with each junction in said first array being connected to an incoming telephone line of said commercial telephone system,

a plurality of remote distribution panels spaced throughout said building, each remote distribution panel provided with third and fourth junction arrays,

a plurality of telephone connection jacks located at discrete physical locations throughout the building,

a telephone line wiring connection between each telephone connection jack and a preselected junction of said fourth junction array, each of said telephone line wiring connections constituting a permanent electrical installation in said building,

a plurality of wire link sets, there being at least one wire link set between each of said remote distribution panels and said central control panel, each wire link set being constituted by wire connection means connected between a selected group of junctions in said second array and corresponding junctions in said third array in said remote panels, respectively, said wire link sets constituting a permanent electrical wiring installation in said building, a first plurality of patching jumpers, each patching jumper including a telephone wire line and plugs at each end thereof, said plugs being receivable in said receptacles, located within said central panel, each of said patching jumpers and plugs forming a telephone line connection between one junction of said first junction array and one junction of said second junction array,

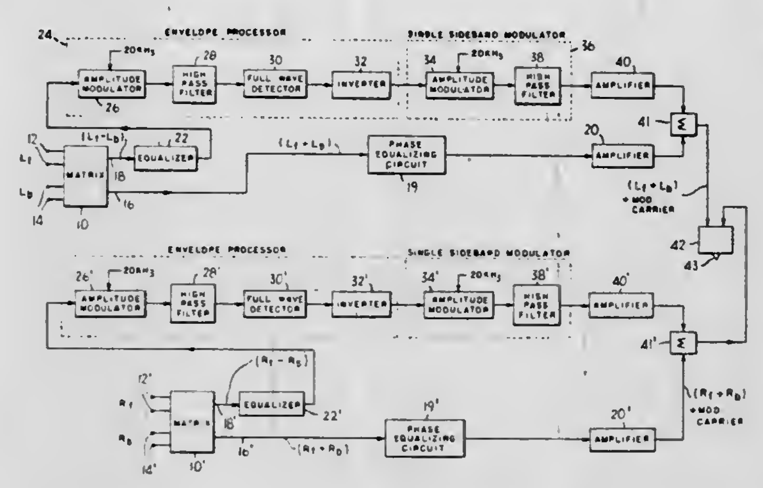
and a plurality of further patching jumpers and plugs located within each of said remote distribution panels, each further patching jumper and plug forming a further telephone line connection between one junction of said third junction array and one junction of said fourth junction array when the plugs at the ends thereof are in the receptacles of said junctions, respectively,

each junctioon in said junction arrays being a receptacle for one of said plugs of said patching jumpers.

3,869,583
QUADRUPHONIC DISC RECORDING SYSTEM UTILIZING SINGLE SIDEBAND MODULATION

Benjamin B. Bauer, Stamford; Daniel W. Gravereaux, Wilton, and Emil L. Torick, Darien, all of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 169,219, Aug. 5, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,294
Int. Cl. G11b *3/74*
U.S. Cl. 179—100.4 ST **2 Claims**



1. Apparatus for recording four channel signals in a single groove cut in a record disc, said apparatus comprising:

matrix circuit means for producing first and second signals representative of the sum and the difference, respectively, of the first and second channel signals and also third and fourth signals representative of the sum and difference, respectively, of the third and fourth channel signals,

first and second envelope processor means to which the second and fourth difference signals produced by said matrixing circuit means are respectively applied,

each of said envelope processor means including amplitude modulator means for modulating a carrier signal in accordance with the amplitude of the applied difference signal,

filter means for transmitting the upper sideband of the amplitude modulated signal, and

detector means for detecting the envelope of the upper sideband with carrier signal to produce a distorted replica of the difference signal,

first and second equalizing circuit means for respectively attenuating the low frequency components of the second and fourth difference signals prior to application to the amplitude modulator means of their respective envelope processor means to compensate for the presence of lower sideband signal information in the output of said filter means,

first and second output single sideband modulator means for modulating a respective carrier signal in accordance with the distorted replica of the difference signal produced by said first and by said second envelope processor means, respectively, to produce single sideband with carrier signals having envelopes corresponding to their respective difference signals, said carrier signals each having a frequency such as to cause the upper sidebands of said modulated signals to be outside the frequency range of said first and third sum signals,

first means for combining the first sum signal with the upper sideband of the single sideband with carrier signal produced by said first output single sideband modulator means,

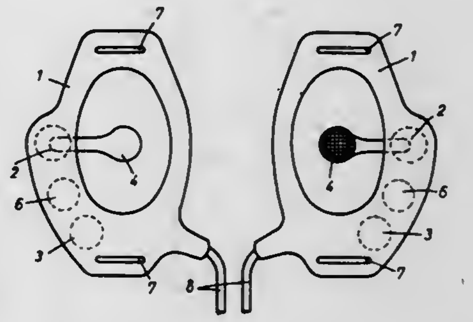
second means for combining the third sum signal with the upper sideband of the single sideband with carrier signal produced by said second output single sideband modulator means, and

means for simultaneously recording the output signal of said first combining means on one wall of a single groove of the record disc and the output signal of said second combining means on the other wall of the groove.

3,869,584
HEADSET

Helmut Wilde, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,799
Claims priority, application Germany, June 22, 1972, 2230637
Int. Cl. H04m *1/05*
U.S. Cl. 179—156 **9 Claims**



1. A headset to be worn at an ear of a user and in contact with a jaw bone of said user comprising:

two annular half shells being bonded together to form a ring-like collar having an opening encircling the external portion of said ear of said user;

a receiver disposed within said collar adjacent said ear of said user;

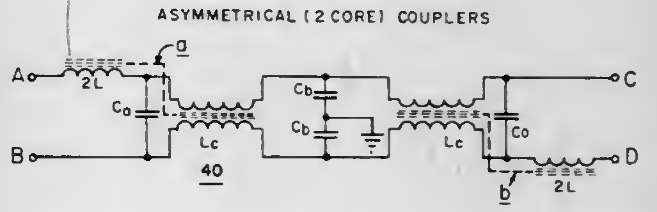
a bone conduction actuated microphone disposed within said collar adjacent said jaw bone of said used, said microphone being actuated by body-borne sound in the vicinity of said jaw bone; and

a horn-type sound conductor disposed within said shells coupled to said receiver and extending into approximately the middle of said opening of said collar to transmit sound radiated by said receiver to the entrance of said ear of said user.

3,869,585
ASYMMETRIC QUADRATURE HYBRID COUPLERS

Richard V. Snyder, West Caldwell, N.J., assignor to Lorch Electronics Corporation, Englewood, N.J.

Filed Dec. 19, 1972, Ser. No. 316,500
Int. Cl. H04m *1/00*
U.S. Cl. 179—173 **11 Claims**



1. An asymmetric quadrature hybrid coupler comprising a first and a second pair of ports, a first pair of coupled inductors each inductor of which is in circuit with an individual port of said first port pair, a second pair of coupled inductors each inductor of which is in circuit with an individual port of said second port pair, a first series inductor in conductive electrical connection with one inductor of said first inductor pair, a second series inductor in conductive electrical connection with one inductor of said second inductor pair, said one inductor of said first inductor pair and said first series inductor being in conductive connection with the second inductor of said second inductor pair between corresponding ports of said port pairs, the second inductor of said first inductor pair and said second series inductor being in conductive connection

with the said one inductor of said second inductor pair between the remaining corresponding ports of said first and second port pairs, said two series inductors and said two pairs of coupled inductors being the sole operative inductances of the coupler, being connected in electrical asymmetric array, and being electrically proportioned to provide effective performance as an asymmetric coupler that is equivalent to that of a corresponding symmetrical coupler.

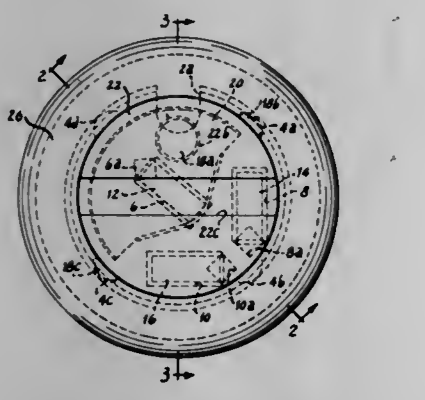
3,869,586
MINIATURE WRIST WATCH SWITCH

Roman J. Patz, Wauwatosa; Frank O. Sell, Milwaukee, and Werner B. Halbeck, Mequon, all of Wis., assignors to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 28, 1974, Ser. No. 455,923

Int. Cl. H01h *19/50*

U.S. Cl. 200—11 G 12 Claims



1. A miniature switch adapted to be mounted within a hole in the case of electric and electronic wrist watches for time-setting purposes comprising:

a generally flat insulating base having a shallow cavity therein and a plurality of holes extending from said shallow cavity through the bottom of said base;

a generally flat insulating contact carrier movably retained in said shallow cavity;

a flat movable contact recessed in the lower surface of said contact carrier for movement by the latter;

a plurality of integral contact-terminals, each having a terminal portion extending down through one of the holes in said base and a resilient stationary contact portion in the bottom of said shallow cavity for engagement by said movable contact;

a generally flat metal knob fixed to said contact carrier for moving the movable contact and having a peripheral portion abutting the peripheral portion of said base about said shallow cavity;

a seal;

and a metal frame secured to said base and clamping said seal against said peripheral portion of said knob and retaining said peripheral portion of said knob between said peripheral portion of said base and said seal while allowing relative knob movement therebetween, and said frame having an external configuration fitting the hole in the case in which it is adapted to be mounted.

3,869,587
GROUNDING AND TESTING DEVICE FOR ELECTRICAL SWITCHGEAR

George Caton, Ilkley, England, assignor to Yorkshire Switchgear and Engineering Co., Limited, Meanwood, Leeds, England

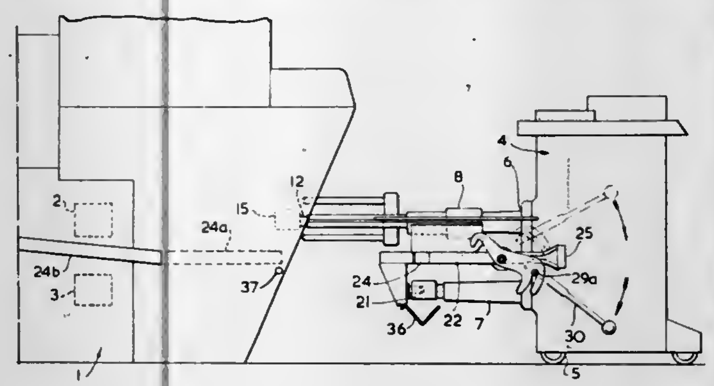
Filed Feb. 25, 1974, Ser. No. 445,606

Claims priority, application Great Britain, Mar. 6, 1973, 10870/73

Int. Cl. H01h *9/22*

U.S. Cl. 200—50 AA 6 Claims

1. A grounding and testing device for use in electrical switchgear having a stationary housing with two sets of primary supply sockets for feeder and busbar circuits respectively and a movable housing with two sets of primary supply plugs for connection to the sockets and connected to the contacts of switching means in the movable housing, the device comprising a carrier, a set of primary supply extension plugs mounted on the carrier for engaging at one end thereof a set of the primary supply sockets and at the other end thereof a first set of the primary supply plugs, a set of primary supply contacts on said carrier for engaging a second set of the primary supply plugs, ground contacts connected to the primary supply contacts, first locking means for locking the carrier in position on the movable housing, and second locking means for locking the carrier in position on the stationary housing.



3,869,588
POSITIVE OR NEGATIVE ACCELERATION OPERATED CONDUCTIVE LIQUID SWITCH FOR VEHICLE SAFETY DEVICES

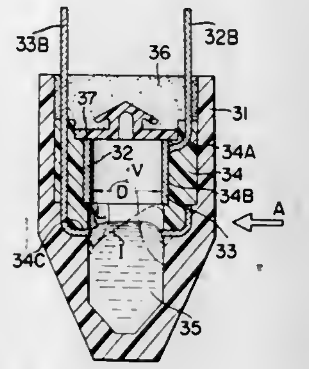
Susumu Ubukata, 549, Nakasuna-cho, and Yasukazu Mizutani, both of Nagoya, Japan, assignors to said Ubukata, by said Mizutani

Filed Feb. 2, 1973, Ser. No. 329,168

Claims priority, application Japan, Feb. 10, 1972, 47-14491; May 11, 1972, 47-47529; May 25, 1972, 47-52858; June 24, 1972, 47-63485; June 19, 1972, 47-72330

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.47 8 Claims



1. A positive or negative acceleration operated conductive liquid switch for a horizontally moving apparatus which comprises: at least one sealed container which is to be mounted on the horizontally moving apparatus and has electrically conductive contact means to selectively open and close at least one electrical circuit to provide respectively first and second operating modes thereof; and electrically conductive fluid contained in the sealed container and adapted to electrically communicate with the electrically conductive contact means, the electrically conductive contact means and the electrically conductive fluid being arranged so that the electrically conductive contact means operates to selectively connect the electrical circuit in the first of said operating modes upon only gravity being applied to the electrically conductive fluid, but, when acceleration in a horizontal direction and the gravity are simultaneously applied to the electrically conductive fluid, the electrically conductive fluid is deformed to cause the electrically conductive contact means to connect the electrical circuit in the second of said operating modes both in the case where a first acceleration in a horizontal direction exceeding a first threshold value which is relatively low is applied in one direction for a first duration period which is relatively long and in the case where a second acceleration in a horizontal direction exceeding a second threshold value which is relatively high is applied in one direction for a second duration period which is relatively short.

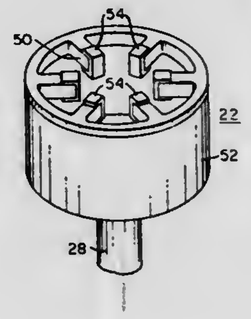
3,869,589
VACUUM INTERRUPTER INCLUDING CONTACTS HAVING IMPROVED WELD BREAK CHARACTERISTICS

Richard L. Hundstad, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 249,992, June 3, 1972. This application Nov. 16, 1973, Ser. No. 416,470

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B 4 Claims



1. A vacuum type circuit interrupter comprising:

a highly evacuated tubular insulating envelope;

a first contact structure disposed within said tubular insulating envelope;

a second contact structure disposed within said tubular insulating envelope being movable between a first position in contact with said first contact structure and a second position spaced from said first contact structure to establish an arcing gap therebetween across which an arc is formed during circuit interruption;

said first contact structure comprising a main body portion having a flat circular cross sectional configuration, a plurality of support means attached to said flat planar main body portion in a spaced apart generally circular configuration each extending radially inward from the circumference of said main body portion, a contact surface formed at the free end of each of said support means being separated from other contact surfaces by a sufficient distance so as to inhibit arc movement therebetween, each of said plurality of support means extending from said flat circular body portion at an acute angle with said flat circular body portion, each of said plurality of support means being separated from every other support means by a circumferential spacing which is dependent on the radial position and decreases as the radial position decreases; and,

said second contact structure being a mirror image of said first contact structure.

3,869,590
DOUBLE-POLE TOOL HANDLE SWITCH

Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 28, 1974, Ser. No. 447,031

Int. Cl. H01h *9/06, 5/10*

U.S. Cl. 200—157 9 Claims

1. A double-pole tool handle switch comprising:

an insulating housing;

a return spring biased switch actuator mounted for sliding movement on said housing;

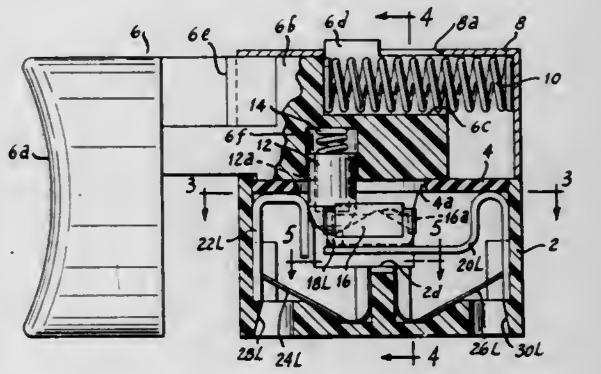
a plunger extending from said switch actuator;

a spring biasing said plunger and said plunger being resiliently depressible against the force of said bias spring;

a movable contact actuator block having a double-incline camming surface comprising opposite inclines meeting at a high point arranged for engagement by said plunger;

double-pole butt contacts comprising a pair of stationary contacts mounted in said housing and a pair of movable contacts carried by said actuator block for engaging the respective stationary contacts, and the contacting portions of said stationary and movable contacts being generally parallel to the axis of said plunger, said stationary contacts having terminals adapted for connection to an external circuit;

and connector means comprising a pair of connector terminals and means mounting them in said housing and adapted to be connected to an external circuit and having biasing portions remaining in contact with the respective movable contacts throughout the movement of said actuator block and applying a counter bias to said actuator block to balance the bias of said plunger spring;



and actuation of said switch actuator causing said plunger to slide up the front incline of said camming surface and, after passing over said high point, to cause snap-action movement of said actuator block while said biased plunger acts on said rear incline and said movable contacts remain in sliding contact with said biasing portions of said connector terminals thereby to cause said movable contacts to close with the respective stationary contacts with minimum bounce;

and further actuation of said switch actuator causes said plunger to move further down the rear incline to allow said counter bias to afford controlled wiping between said movable and stationary contacts;

and release of said switch actuator to return under force of its return spring causing said plunger to slide up the rear incline of said camming surface and at the same time to cause movement of said actuator block against said counter bias to afford controlled wiping between said movable and stationary contacts and, upon reaching said high point at maximum contact pressure, causing said contacts to trip open with snap-action as said biased plunger acts on the front incline of said camming surface thereby to prevent teasing of said contacts.

3,869,591
TRIGGER SWITCH WITH LATCH AND VERNIER SPEED ADJUSTING SHAFT

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler Hammer, Inc., Milwaukee, Wis.

Filed July 31, 1973, Ser. No. 384,258

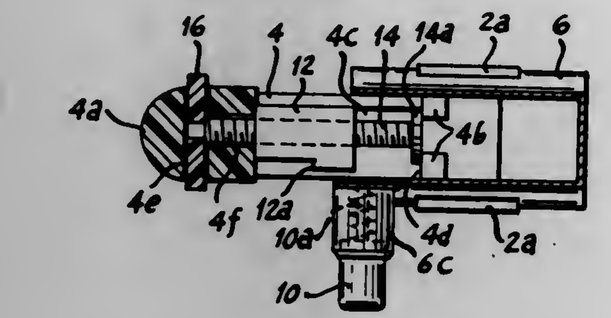
Int. Cl. H01h *9/06, 21/10*

U.S. Cl. 200—321 5 Claims

1. In a trigger switch the combination comprising a housing; a spring-biased trigger slidable mounted for a slidable movement on the housing and having a recessed wall portion a lock pin mounted on the housing; the improvement comprising:

vernier adjusting means and means mounting it in the trigger comprising:

an adjustable block having a catch in removable engagement with the lock pin;



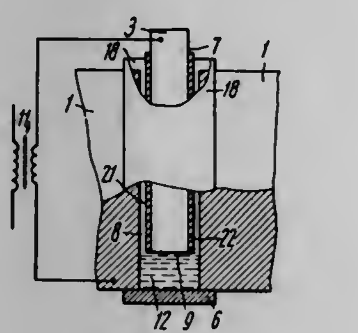
a shaft threaded through said block, carried by said trigger and having a rear end abutting and rotatable on said recessed wall portion to take up the force of the trigger return spring when the lock is engaged in said catch;

and an adjusting wheel on the forward end of said shaft for rotating said shaft to adjust the position of the trigger relative to said block.

3,869,592
METHOD OF ELECTROSLAG WELDING OR HARDFACING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, ulitsa Anri Barbjusa 22/26, kv. 109; Leonid Gustavovich Puzrin, ulitsa Solomenskaya, 16, kv. 58; Avram Shaevich Gorodetsky, ulitsa Krasnoarmeiskaya, 80 kv. 56, all of Kiev; Jury Yakovlevich Ischenko, Pereulok Krasny, 7, Kievskaya Oblast; Igor Stepanovich Pryanishnikov, ulitsa Nikolaeva 23, kv. 49, Moskovskaya Oblast; Vladimir Nikiforovich Zhuchin, ulitsa Pervomaiskaya 48, kv. 43, Moskovskaya Oblast; Valentin Vasilievich Topilin, ulitsa Mira 6, kv. 29, Moskovskaya Oblast; Mikhail Markovich Kljuev, ulitsa Mira 2, kv. 77, Moskovskaya Oblast; Vladimir Sergeevich Laktionov, ulitsa Nikolaeva 23, kv. 5, Moskovskaya Oblast; Jury Grigorievich Grebtsov, ulitsa Gorkogo 5, kv. 5, Moskovskaya Oblast; Igor Vasilievich Perepelitsa, ulitsa Nikolaeva 54, kv. 6, Moskovskaya Oblast; Nina Petrovna Fomicheva, ulitsa Nikolaeva 31, kv. 20, Moskovskaya Oblast; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106, Kiev; Anatoly Antonovich Kirsenko, ulitsa Parkhomenko, 17, Kievskaya Oblast; Dmitry Pavlovich Rozanov, Polyarny proezd, la, kv. 13, and Stanislav Vasilievich Karlov, ulitsa Koreshkova, 6, kv. 5, both of Moskovskaya, all of U.S.S.R.

Filed June 20, 1973, Ser. No. 371,692
Int. Cl. B23k *25/00*
U.S. Cl. 219—73 **6 Claims**

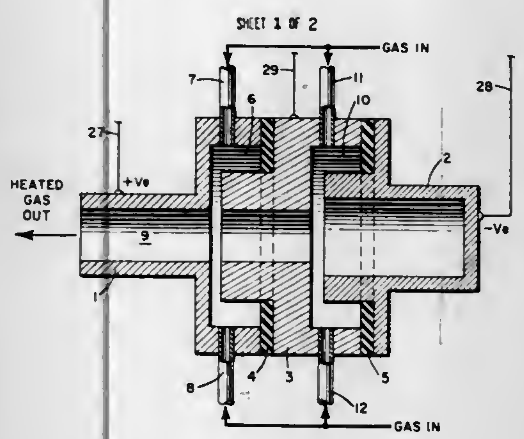


1. A method of electroslag welding or hardfacing of workpieces comprising: mounting a stationary electrode having its length a constant cross-sectional area equal to that of deposited metal at a normal temperature between moulding parts and workpieces being processed so that spaces being equal to the thermal expansion of the electrode when heated to its melting point are formed between said moulding parts, workpieces and electrode, and a free cavity is formed between the bottom end of the electrode and moulding parts encompassing said electrode and the workpieces; connecting said electrode and the workpieces to different terminals of a power source; filling said cavity with molten slag; and passing an electric current between the electrode and workpieces to heat the molten slag and to melt the bottom end of the electrode and the edges of the workpieces.

3,869,593
HEATING DEVICE

George William New, Middlesbrough, and Alan Lawrence Hare, Redcar, both of England, assignors to British Titan Limited, Billingham, Teesside, England

Filed Nov. 21, 1972, Ser. No. 308,503
Claims priority, application Great Britain, Dec. 9, 1971, 57155/71
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **17 Claims**



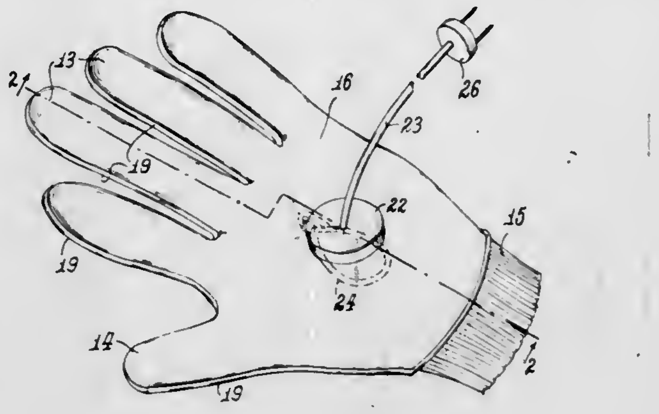
1. A heating device comprising a pair of axially spaced principal electrodes, at least one of which is hollow and has an outlet for a gas; said principal electrodes being connected to a high energy electric current; an intermediate hollow electrode located between said pair of principal electrodes and electrically insulated therefrom; a control circuit comprising a control switch and a current flow sensing device connected between one of said principal electrodes and said intermediate electrode such that said current flow sensing device senses the current flowing between one of said principal electrodes and said intermediate electrode; an operating switch electrically connected to said control switch and operable to render said control switch nonconductive when the current between one of said principal electrodes and said intermediate electrode is sensed to have fallen below a predetermined value; gas inlet means disposed between each of said principal electrodes and said intermediate electrodes for introducing gas into said hollow intermediate and said hollow principal electrodes.

3,869,594
HAND COVERING WITH HEATING MEANS THEREIN

Edgar E. Shively, 2843 Gawain Ave., Indianapolis, Ind. 46208

Filed Jan. 7, 1974, Ser. No. 431,497
Int. Cl. H05b *1/00;* **F24h** *1/00*
U.S. Cl. 219—211 **4 Claims**

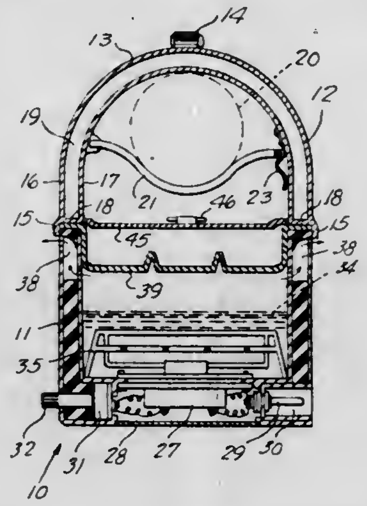
1. A heated covering for the hand comprising a hand glove casing including a main body, thumb and finger portions, a water filled heating chamber integrally connected to said glove casing, a filling opening in said heating chamber, a cap on said filling opening, an electrical heater element within said heating chamber, and an insulated electric cord for connecting said heater element with a source of electric current, said cord extending through said cap and affording a mounting for the heater element whereby the latter may be withdrawn through the filling opening upon removal of the cap.



3,869,595
INSULATED HEATED LUNCH BOX

Walter Collins, 9543 Achates Cir., Sacramento, Calif. 95826, and Howard Blankumsee, 232 Olmstead Dr., Sacramento, Calif. 95838

Filed June 19, 1974, Ser. No. 480,940
Int. Cl. A21b *1/52;* **F27d** *11/02*
U.S. Cl. 219—387 **6 Claims**



1. An insulated heated lunch box comprising a lower compartment unit having spaced dual walls and insulation positioned between said dual walls, an upper compartment unit including spaced dual walls and insulating material between said upper unit spaced dual walls, a peripheral flange on said upper unit engaging over said lower unit, means for detachably securing said upper unit to said lower portion an electric heater in said lower unit for heating water contained in said lower unit, electrical control means for controlling the amount of heat dissipated from said electric heater, rack means in said lower unit immersed in the water therein for supporting a plurality of food containers therein, a food tray, means on said food tray for supporting said food tray on said lower unit above the water level therein, and a cover for said food tray.

3,869,596
COOKWARE HEATER

John R. Howie, Killingworth, Conn., assignor to Safeway Products Inc., Middletown, Conn.

Filed Sept. 28, 1973, Ser. No. 401,681
Int. Cl. F27d *11/02*
U.S. Cl. 219—438 **9 Claims**

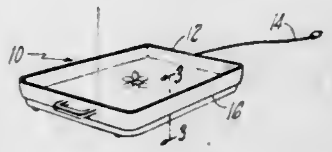
1. A cooking unit including:

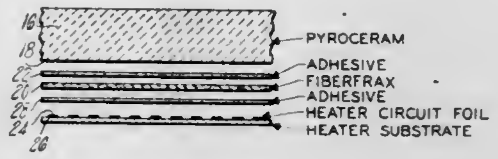
a cooking element formed of material selected from the group consisting of glass, ceramic and metal;

a base portion part of said cooking element having a mat surface and being electrically insulating;

a layer of dielectric material bonded to said mat surface of the base portion;

electro-conductive circuit foil means adhesively bonded to said layer of dielectric material, the coefficient of thermal expansion of said foil means being not less than the coefficient of the thermal expansion of said base portion and not more than ten times the coefficient of thermal expansion of said base portion; and



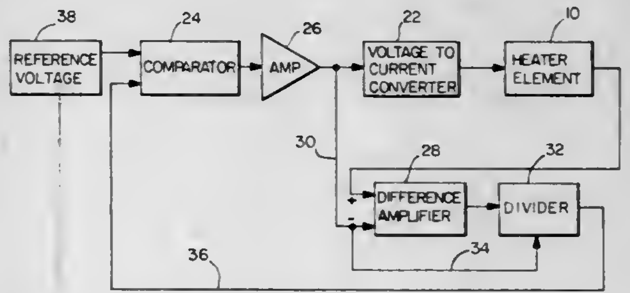


a layer of adhesive material bonding said circuit foil means to said layer of dielectric material, said adhesive remaining flexible after curing.

3,869,597
SELF-REGULATING PROPORTIONALLY CONTROLLED HEATING APPARATUS AND TECHNIQUE

Maxwell G. Strange, Fulton, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 27, 1974, Ser. No. 446,569
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 **5 Claims**



1. A self-regulating controlled heating apparatus, said apparatus comprising:

an a electrical resistance heating element having a temperature coefficient of resistance;

current generator means coupled to said heating element for continuously current driving said heating element, said current generator means being responsive to an error signal to modify the level of the current drive; and

error signal generator means coupled to said heating element, said error signal generator means monitoring the voltage drop across said heating element and deriving an error signal therefrom representative of only that component of the voltage drop attributable to a change in actual temperature of said heating element from a desired reference temperature;

said error signal generator means further being connected in a feedback loop to said current generator means such that said error signal continuously effects a modification of the level of the current drive from said current generator means to return said heating element to said reference temperature.

3,869,598
METHOD FOR READING A DATA RECORD AND A DEVICE FOR PERFORMING THE METHOD

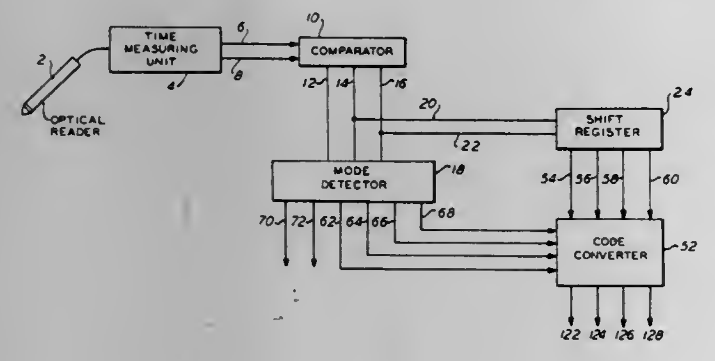
Gosta R. Englund, Stockholm, and Rune L. Myren, Spanga, both of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed Apr. 9, 1973, Ser. No. 349,337

Claims priority, application Sweden, Apr. 12, 1972, 4723/72

Int. Cl. G06k *7/08;* **G01n** *21/30;* **G06k** *7/14;* **G08c** *13/00*

U.S. Cl. 235—61.11 R **3 Claims**



1. Device for reading a data record attached to a salable article of merchandise, said data record having a code recorded thereon consisting of markings comprising a series of bars representing different characters, relative movement between a reading device and said data record causing said code to be read comprising:

- a time measuring unit connected to the outputs of said reading device for emitting signals representing the spacing between said markings;
- a comparator connected to said time measuring unit for comparing the signals generated by said time measuring unit and for emitting signals representative of the distance between adjacent bars in said markings according to a predetermined format;
- said format comprising a first signal designating a first distance between two code bars; a second signal designating a distance twice as long as said first distance and a third signal designating a distance four times as long as said first distance;
- a mode of operation detector connected to said comparator for receiving said first, second and third signals;
- a converter connected to said mode of operation detector; said mode of operation detector generating a signal indicative of whether the characters in the code are independent of each other and thus separated from each other an arbitrary distance or dependent on each other in such a manner that one marking forms the end of a character and the beginning of an adjacent character, said converter being arranged to convert said first, second and third signals to signals representing the different characters in the code.

3,869,599
OPTICAL PEN FOR HAND SCANNING DIGITALLY ENCODED RECORDS

Ronald P. Sansone, Floral Park, N.Y., assignor to Pitney-Bowes, Inc., Stamford, Conn.

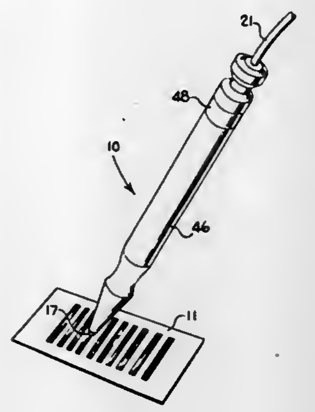
Filed Aug. 27, 1973, Ser. No. 391,618

Int. Cl. G06k *7/14, 19/06;* **G01n** *21/30*

U.S. Cl. 235—61.11 E **18 Claims**

1. Apparatus for reading coded records from which light is selectively reflected, the combination comprising:

- a longitudinal support means;
- light means secured to said support means;
- photosensitive means secured to said support means;
- a removable tip secured to a first end of said support means;
  - a lens received at the distal end of said tip;



- means for conveying light from said light means to said lens whereby a beam of light may be directed to a coded record when said lens is in optical communication therewith; and
- means for collecting light that is reflected from the coded record through said lens and for conveying the light to said photosensitive means.

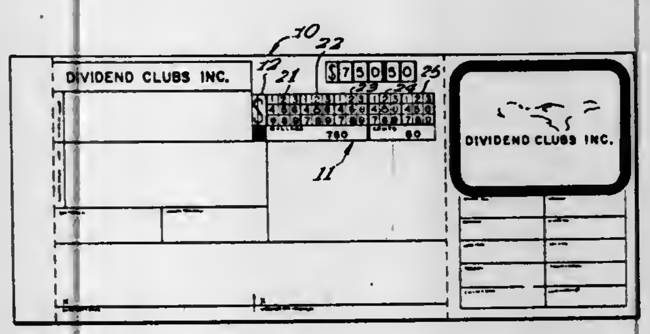
3,869,600
MANUAL CHARACTER MARKING RECOGNITION SYSTEM

Albert M. Hochstadt, 8861 S.W. 85th Ter., South Miami, Fla. 33143

Filed Sept. 10, 1969, Ser. No. 856,678

Int. Cl. G06k *19/00*

U.S. Cl. 235—61.12 N **9 Claims**



1. A business form for use in a character recognition system comprising:

- a manual marking field having a three by three matrix of nine marking spaces for each numeral in a number, said matrixes being arranged side *b* side in a line.

3,869,601
COMPUTING APPARATUS FOR TRACKING MOVING OBJECTS

Eric Metcalf, Ropley, England, assignor to The Solartron Electronic Group Limited, Hampshire, England

Filed June 20, 1973, Ser. No. 371,644

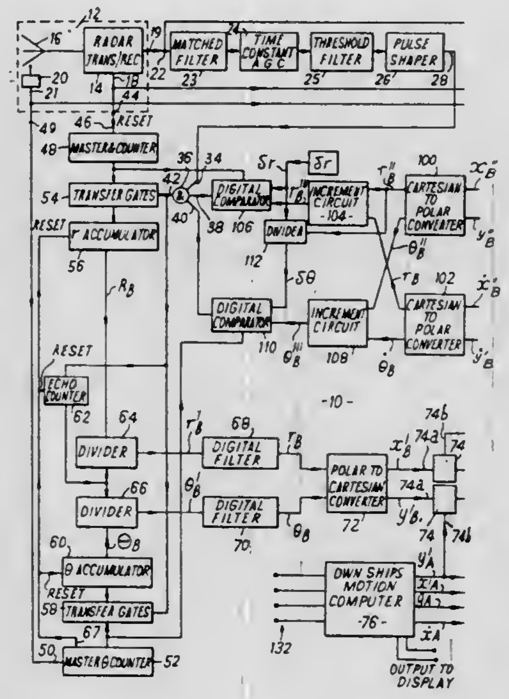
Claims priority, application Great Britain, June 21, 1972, 29007/72

Int. Cl. G06f *15/50*

U.S. Cl. 235—150.2 **28 Claims**

1. Computing apparatus for tracking moving objects, the apparatus comprising:

- input circuit means for receiving temporally-spaced input positional signals each of which is indicative of a position of at least one moving object and may be subject to error;
- means for producing from said input signals a plurality of temporally-spaced pairs of digital positional signals x, y, each of which pairs of signals is representative in cartesian co-ordinate form of a position of said at least one object;
- digital signal storage means connected to receive said pairs of signals and arranged to store a predetermined number of the most recently produced thereof;
- digital filter means arranged to receive the stored signals, said digital filter means including digital multiplier means for multiplying each of said stored signals x by a respective one of a first set of predetermined coefficients and each of said stored signals y by a respective one of a second set of predetermined coefficients, and means for summing the products of x thus formed and for summing the products of y thus formed, so as to produce respective digital signals representative of the time derivatives $d^m x/dt^m$ and $d^m y/dt^m$ ($m = 0, 1, 2, \ldots$) at at least one preselected common point in time on respective hypothetical functions $x = f_1(t)$ and $y = f_2(t)$ which substantially fit the values represented by x and y, both of said hypothetical functions being selected from the group of functions comprising polynomial functions of at least the second order and spline functions;
- and means for producing output signals which are dependent upon said time derivative digital signals.



3,869,602
APPARATUS FOR AUTOMATIC COMPUTATION OF CARDIOTHORACIC RATIO

Nobuhiko Sezaki, and Kohji Ukena, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

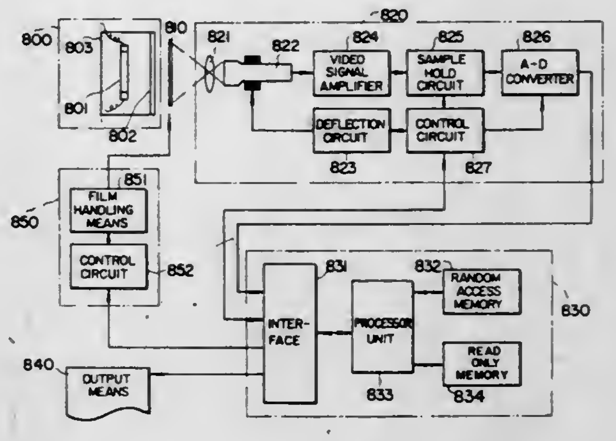
Filed Aug. 29, 1972, Ser. No. 284,558

Claims priority, application Japan, Sept. 3, 1971, 46-68426

Int. Cl. G06f *15/42*

U.S. Cl. 235—151.3 **6 Claims**

1. A system for automatically measuring the cardiothoracic ratios comprising photo-electric conversion means (**820**) for effectively scanning a chest X-ray image (**810**) along a plurality of parallel lines perpendicular to the median line of said chest X-ray image and converting the brightness of said X-ray image into a corresponding electrical signal, data processing means (**830**) for processing data obtained from said photo-electric conversion means, and means (**840**) for recording or displaying the value of the cardiothoracic ratio obtained from said data processing means, said data processing means (**830**) inferring intersections between the boundary lines of the thorax and the heart and said plurality of parallel lines on the basis of data obtained along each of said parallel lines, said data processing means (**830**) correcting erroneous data which may be contained in four series of data corresponding to the boundary lines of the thorax and the heart, whereby the cardiothoracic ratio is determined on the basis of said four series of data.



3,869,603
STORAGE UNIT TEST CONTROL DEVICE

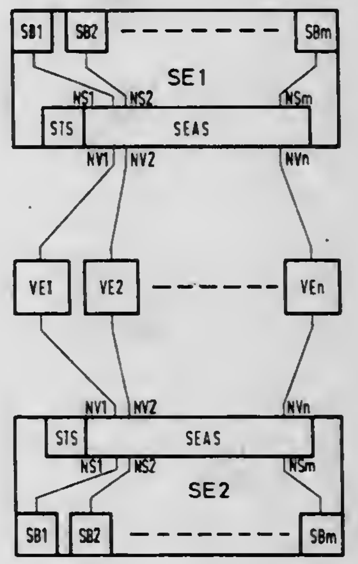
Heinz Auspurg, Gauting; Josef Huber, Munchen; Jurgen Rabold, Munchen, and Gunther Wohlert, Munchen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 23, 1973, Ser. No. 381,613

Claims priority, application Germany, Aug. 28, 1972, 2242279

Int. Cl. G11c *29/00*

U.S. Cl. 235—153 AM **14 Claims**

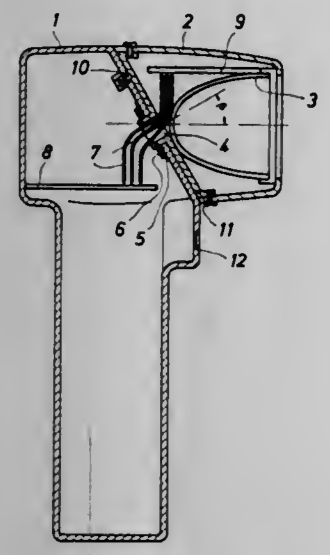


1. A device for detecting faults in a storage unit of a program controlled data switching system comprising at least a processing unit and said storage unit, said device comprising: a storage test control,

- a communication input/output channel connecting said test control and said storage unit for transferring test information and control data between said test control and said storage unit,
- a supplementary information channel connecting said processing unit to said test control for transferring said test information and said control data to said test control,
- said storage test control including a control panel having a manual input portion for input of said control data and said test information, said panel and a two-position switch interposed in said supplementary information channel the first position providing for automatic input of said test information and said test data from said processing unit, the second position providing for manual input of said test information and said control data from said manual input portion of said control panel.

3,869,604
ELECTRONIC FLASH APPARATUS

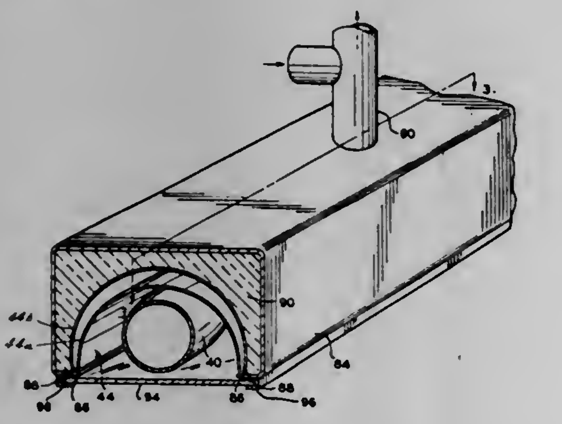
Claus Prochnow, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Nov. 26, 1973, Ser. No. 418,842
Claims priority, application Germany, Dec. 1, 1972, 2258895
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **4 Claims**



1. Electronic flash apparatus of the type having a sensor receiving light reflected from an object being photographed and controlling the duration of a flash in response to the light reaching the sensor along a sensor axis, said apparatus comprising a first housing part containing said sensor, a second housing part containing a flash reflector having an optical axis, and means for rotatably mounting said second housing part on said first housing part for rotation relative thereto about a rotary axis forming an acute angle of less than 45° to said sensor axis, said rotary axis being defined by a hollow tubular bearing membber, said apparatus further comprising an electrical conducting cable passing through said tubular bearing member to connect electric circuit parts within said second housing part to electric circuit parts within said first housing part.

3,869,605
ENVIRONMENTAL GROWTH CONTROL APPARATUS

Noel Davis, Russell, Ohio, assignor to Integrated Development & Manufacturing Company, Chagrin Falls, Ohio
Filed June 24, 1970, Ser. No. 49,218
Int. Cl. F21v *29/00*
U.S. Cl. 240—47 **3 Claims**



1. A lamp assembly particularly suited for supplying high intensity illumination to growing plants in an environmental growth chamber comprising:

at least one high intensity electric discharge lamp;

a chamber forming means enclosing said lamp and including a first wall defining a surface extending substantially the length of said lamp, said surface being shaped and coated to reflect in a first direction light produced by said lamp in a wave length range of from approximately 400 to 700 nm, said surface further having the characteristic that light in a wave length range above approximately 700 nm is absorbed;

said chamber forming means further including a second wall defining with said first wall a closed fluid tight chamber, said closed chamber located directly behind said surface in relation to said lamp;

means for circulating a heat exchange fluid through said chamber;

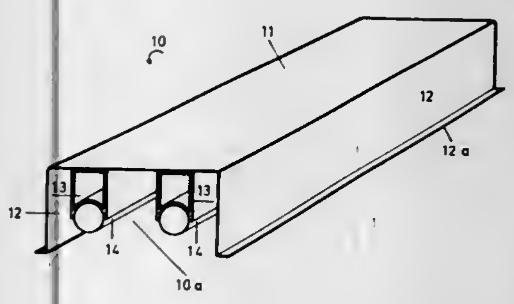
heat insulation means surrounding said chamber on the side opposite said lamp;

a housing enclosing said chamber forming means and said heat insulation means, said housing being open along one side corresponding to the direction in which light is reflected by said surface; and,

a barrier member connected across the open side of said housing and enclosing said lamp, said barrier member being formed from material which is transparent to at least light in the wave lengths reflected by said surface.

3,869,606
LIGHTING FIXTURE

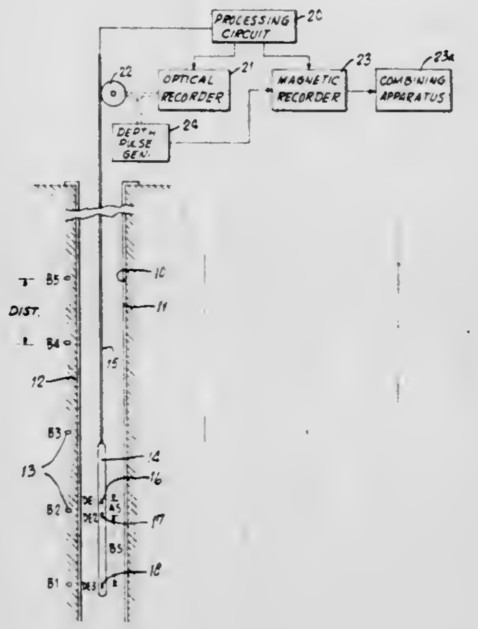
Marc Fordsmand, Charlottenlund, Denmark, assignor to Kicon AG, Ostermundigen, Switzerland
Filed May 9, 1973, Ser. No. 358,477
Claims priority, application Great Britain, May 24, 1972, 24357/72
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R **3 Claims**



1. A lighting fixture comprising an elongated, downwardly opening housing substantially rectangular in plan and having a top wall and a pair of side walls, a pair of tubular contact members mounted within the housing heat conductively associated with the top wall thereof and having concave part-cylindrical contact faces, a pair of fluorescent tubes mounted within the housing below the tubular contact members with the upper part of their cylindrical surface contacting the contact face of said tubular contact member, said fluorescent tubes being associated with electrical accessories including reactor coils, said accessories being mounted in the housing on the lower side of the top wall intermediate said tubular contact members, a pair of sockets resiliently mounted at either end of the housing for mounting the fluorescent tubes therebetween, said sockets comprising spring means for urging the fluorescent tubes upwardly against the contact faces of the tubular contact members, and means for circulating a coolant through said tubular contact members.

3,869,607
RADIOACTIVE MEANS FOR MEASURING DISTANCE INTERVALS BETWEEN ANOMALIES IN AN EARTH FORMATION

Gerard Sandier, Paris, and Jean-Paul Nels, Limours, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.
Filed July 13, 1973, Ser. No. 379,168
Claims priority, application France, July 13, 1972, 72.25508
Int. Cl. G01v *5/00*
U.S. Cl. 250—266 **21 Claims**



1. In Earth formation measurements, a method of measuring the distance intervals between anomalies arranged in a sequence along a borehole traversing the formation, comprising the steps of:

a. providing a first, second and third anomaly detector and maintaining the first and second detectors at a defined relatively small spacing from each other and the third detector at a defined relatively great spacing from the first and the second detectors;

b. moving the detectors along the borehole to traverse said anomalies and to obtain a detection signal peak from each detector at the time it traverses an anomaly;

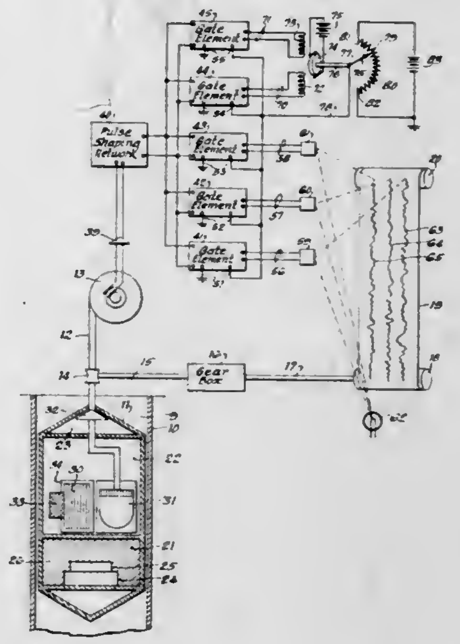
c. generating signals representing the time of occurrence of the detection signal peaks from the first and second detectors for the same anomaly and combining, by means of defined apparatus, the generated signals with a signal representing said small spacing between the first and second detectors to obtain a speed signal representing the speed of the detectors relative to the borehole between the occurrence of the two last recited detection signal peaks;

d. generating a signal representing the time of occurrence of the detection signal peak from the third detector for an anomaly adjacent to the anomaly for which the last recited signal peaks from the first and second detectors are obtained and combining, by means of a defined apparatus, the last recited time signal with at least a subset of the other recited signals, said subset including a signal representing at least one of said small and great spacing between the detectors, to obtain the distance interval between said adjacent anomalies; and

e. repeating steps (c), (d) and (e) for successive pairs of adjacent anomalies to obtain a plurality of distance intervals between anomalies.

3,869,608
NUCLEAR WELL LOGGING

Serge A. Scherbatskoy, 3517 W. Ridge Ave., Fort Worth, Tex.
Continuation-in-part of Ser. No. 119,601, Oct. 5, 1949, Pat. No. 2,648,012. This application July 1, 1953, Ser. No. 365,499
Int. Cl. G01v *5/00*
U.S. Cl. 250—270 **23 Claims**



1. A radioactivity well logging system for determining the oil-water interface in a fluid bearing formation traversed by a borehole, comprising a subsurface unit, means including a cable for lowering said unit into the borehole, a source of fast neutrons in said unit for bombarding with fast neutrons the formations traversed by the borehole as said unit is moved therewithin, fast neutron detector means in said unit for producing impulses corresponding to fast neutrons received from the formations the magnitude of which is related to the energy of the corresponding fast neutrons, a first pair of electrical selective networks for selecting only those impulses which fall within first and second narrow ranges of impulses height corresponding to predetermined related portions of the neutron cross section characteristic of the element carbon, a second pair of electrical selective networks for selecting only those impulses which fall within third and fourth narrow ranges of impulse heights, corresponding to predetermined related portions of the neutron cross section characteristic of the element oxygen, first ratio meter means for developing a first voltage proportional to the ratio of the outputs of said first pair of said selective electrical networks, second ratio meter means for developing a second voltage proportional to the ratio of the outputs of said second pair of said selective electrical networks, and means including third ratio meter means for producing an indication proportional to the ratio of said first and second voltages, whereby the oil-water interface in a fluid bearing formation may be detected.

3,869,609
TAMPER-PROOF SEAL SYSTEM

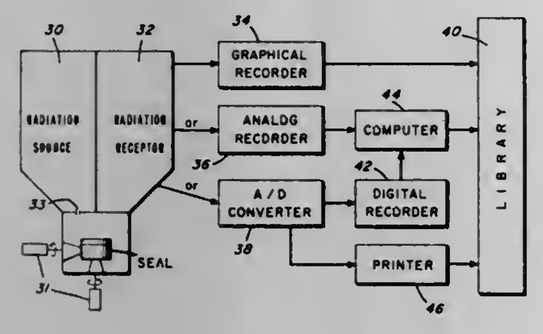
Pierre Simon Jehenson, Varese, Italy, and Gilbert Jean-Pierre Vos, Brussels, Belgium, assignors to European Atomic Energy Community (Euratom)
Filed Aug. 3, 1972, Ser. No. 277,606
Int. Cl. G01n *23/22*
U.S. Cl. 250—272 **2 Claims**

1. A spectrographically identifiable security seal system, comprising:

at least one security seal comprising a base material containing particles of a plurality of different, spectrographically identifiable substances different from said base materials randomly mixed and non-homogenously distributed within said base material,

said seal comprising a two-part capsule including internal retaining means for irreversibly closing said capsule,

and non-destructive spectrographic reading means for detecting damage to said security seal, said reading means including X-ray fluorescence measuring means for determining the spectrum of at least one surface of said seal, and comparing said spectrum to a previously recorded spcctrum of said seal.



3,869,610
METHOD OF DETERMINING THE AMOUNT OF AN ISOTOPIC MIXTURE OF NOBLE GASES PRESENT AS A TAG IN A NUCLEAR REACTOR FUEL ELEMENT

Docile D. Durigon, North Huntington, and Richard C. Deklever, Monroeville, both of Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 8, 1974, Ser. No. 431,820
Int. Cl. G21h *5/02*
U.S. Cl. 250—303 2 Claims

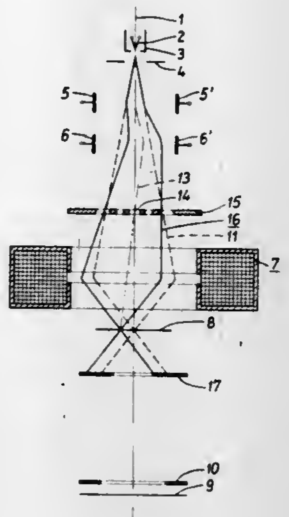
1. A method of determining that a fuel element for a nuclear reactor has present therein an effective amount of a mixture of different isotopes of the noble gases for detection of a fuel element failure comprising incorporating sufficient kypton–85 in the isotopic mixture before injecting the isotopic mixture into the plenum of the fuel element to provide between 1.0 and 5.0 microcuries of krypton–85 per inch of plenum in the fuel element, sealing the fuel element, gamma scanning the outside of the plenum to obtain an indication of the amount of krypton–85 present therein and comparing said indication with a similar gamma scan of an element of the same configuration known to have contained an effective amount of krypton–85.

3,869,611
PARTICLE-BEAM DEVICE OF THE RASTER TYPE

Friedrich Thon, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 28, 1970, Ser. No. 67,922
Claims priority, application Germany, Sept. 19, 1969, 1948270
Int. Cl. H01j *37/26*
U.S. Cl. 250—311 8 Claims

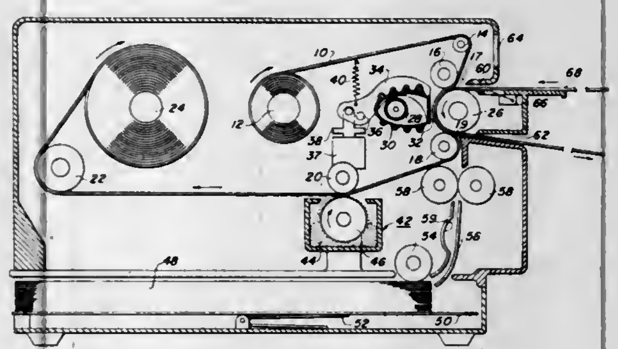
1. A raster type charged particle-beam device having an electro-optical axis and defining a specimen locality on said axis, said device comprising beam generating means for issuing a beam of charged particles along said axis toward said specimen locality, a condensor lens for focussing said beam onto the specimen locality, said lens being disposed ahead of the specimen locality and coaxial with said axis, deflection means for deflecting the beam back and forth in raster fashion to raster scan a specimen placeable at the specimen locality, said deflection means arranged about said axis intermediate said beam generating means and said condensor lens, image receiving means disposed beyond the specimen locality in coaxial relation to said axis for receiving the rays of said beam passing through the specimen, and beam modifying means for modifying the imaging properties of the beam by cancelling a portion of the beam or modifying the phase of the rays thereof, said modifying means being disposed in the path of said beam in a transverse section of the beam and being disposed intermediate said deflection means and the specimen locality.



3,869,612
COPY APPARATUS WITH MEANS TO EFFECT VISIBLE RAY IMAGING AND INFRARED RAY TRANSFIXING

Myron J. Lenhard, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

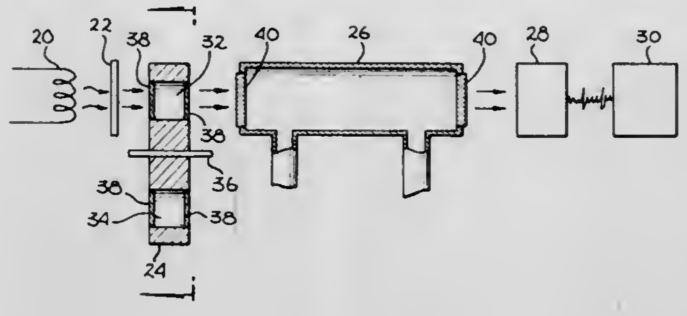
Filed Dec. 28, 1973, Ser. No. 429,250
Int. Cl. G01n *21/34*
U.S. Cl. 250—319 6 Claims



1. A copying apparatus comprising: a tungsten lamp for emanating energy at a high ratio of infrared to visible, a filter capable of allowing a substantial portion of visible rays emanated by said lamp to pass therethrough and for filtering a substantial amount of infrared rays to substantially reduce said energy ratio, means for energizing said lamp a first time when an original member having an image thereon to be copied and a heat sensitive member are at said station to form a heat image on said heat sensitive member, means for locating said filter in an operative position to be in the path of the rays emitted from said lamp when said lamp is energized said first time so that the heat sensitive member and said original member will be exposed to rays of said reduced energy ratio, means for energizing said lamp a second time when the heat sensitive member having a developed image thereon is at said ray path for heating the developed image, and means for withdrawing said filter from its operative position to allow said heat sensitive member to be exposed to visible energy and substantially more infrared energy when said lamp is energized the second time.

3,869,613
INFRARED GAS ANALYZERS

William T. Link, and Edward A. McClatchie, both of Berkeley, Calif., assignors to Akron Scientific Labs, Berkeley, Calif.
Continuation of Ser. No. 222,635, Feb. 1, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,214
Int. Cl. G01n *21/26*
U.S. Cl. 250—343 18 Claims



1. An infrared absorption gas analyzer for measuring the presence of a specific gas in an unknown gas sample comprising:

a source of infrared radiation directed along an optical path;

a rotating filter having at least first and second chambers disposed about an axis and a means for rotating said chambers about said axis so as to alternately dispose each of said chambers within said optical path, each of said chambers having at least partially infrared transparent windows therein, said first chamber containing a substantial amount of a first stable isotope of said specific gas and said second chamber containing a substantial amount of a second stable isotope of said specific gas which is less common than said first stable isotope so that the relative proportions of said first and second isotopes in said first and second chambers are substantially different, said first and second chambers being filled so to remove substantially equal amounts of infrared energy when disposed in said optical path;

means for disposing an unknown gas sample within said optical path and sensing means repetitively responsive to radiation passing through said first chamber and said gas sample to provide a first signal, and radiation passing through said second chamber and said gas sample to provide a second signal, said sensing means including a means for providing an output signal responsive to the difference in said first and second signals divided by one of said first and second signals;

said optical path being in fixed predetermined spatial relationship with respect to said source of infrared radiation, the axis of rotation of said rotating filter, said means for. disposing an unknown gas sample within said optical path and said sensing means.

3,869,614
PHOSPHOR ASSEMBLY FOR ULTRAVIOLET LIGHT ABSORPTION DETECTOR

Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 16, 1973, Ser. No. 342,263
Int. Cl. G01t *1/10*
U.S. Cl. 250—365 7 Claims

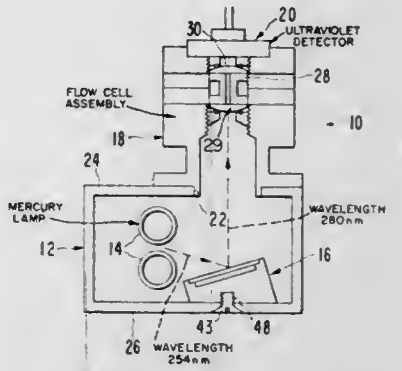
1. In a method of making a sealed phosphor assembly, the steps comprising:

placing loose particulate phosphor in a cavity of a base in an amount sufficient to fill the cavity,

covering the cavity with a material substantially transparent to electromagnetic radiation of at least certain transparent to electromagnetic radiation of at least certain wavelengths,

heating the assembled base, phosphor and covering material to dry the phosphor, and

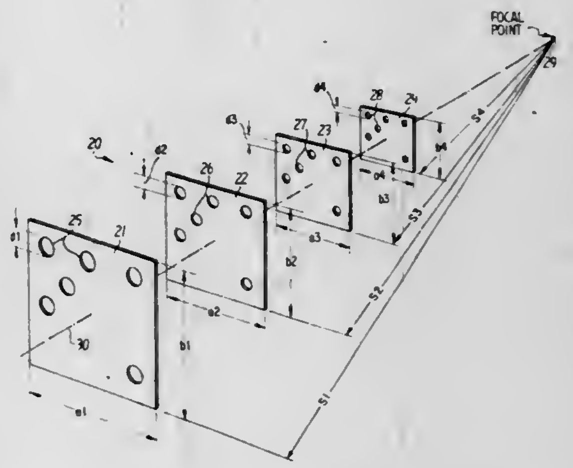
sealing the covering material to the base about the cavity.



3,869,615
MULTIPLATE FOCUSING COLLIMATOR

Richard B. Hoover, Huntsville, Ala., and James H. Underwood, Palos Verdes Peninsula, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,441
Int. Cl. G21f *5/00*
U.S. Cl. 250—508 10 Claims



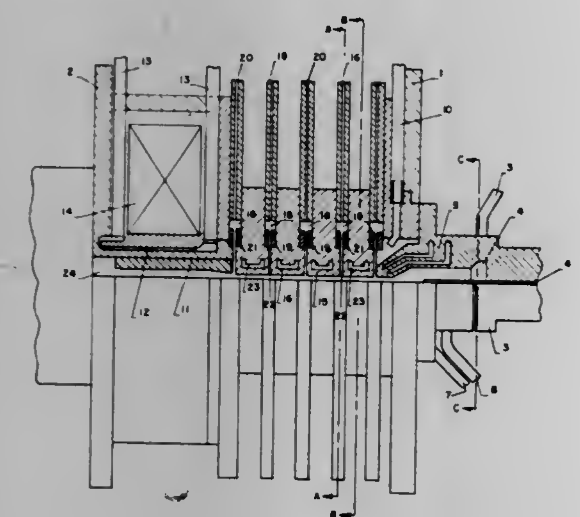
1. In an apparatus for scanning small near sources of penetrating radiation to obtain the energy distribution thereof, wherein a collimator assembly is interposed between a radiation source and a radiation detector, the improvement comprising:

a collimator assembly having a plurality of similar plates aligned in parallel planes, said plates having a common axis through all their respective centers, said axis being normal to said parallel planes; each said plate having a plurality of apertures the same size, the plurality of apertures on each said plate having a similar random distribution; the relative size of said plates and the spacing between said respective plates being arranged to produce radiation channels which converge to a focal point through corresponding ones of the similar random distribution of apertures of the plates, the diameter of the apertures and the length of the sides of said respective plates being directly proportional to the distance from said respective plates to the said focal point, the radiation incident on the radiation detector being maximized when the said focal point and the radiation source coincide.

3,869,616
REACTOR FOR PLASMA-CHEMICAL PROCESSES

Erik Smars, Rimbo; Palne Mogensen, Jarfalla, and Mats J. Kaij, Solna, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Oct. 9, 1973, Ser. No. 404,658
Claims priority, application Sweden, Oct. 6, 1972, 12902/72
Int. Cl. C22d *7/08*; C07c *3/24*; B01k *1/00*
U.S. Cl. 250—547 10 Claims



1. A reactor for plasma-chemical process comprising;
a pair of electrodes for the disposition of an arc therebetween;
means for the injection of a plasma gas tangentially to said arc so that said arc is stabilized along a center line connecting said electrodes;
a plurality of annular segments comprising electrically conducting heat resistant material defining an arc path between said electrodes, thereby forming a tubular envelope surrounding said stabilized arc therebetween; and
a plurality of annular discs of electrically insulating material disposed alternatingly with said annular segments.

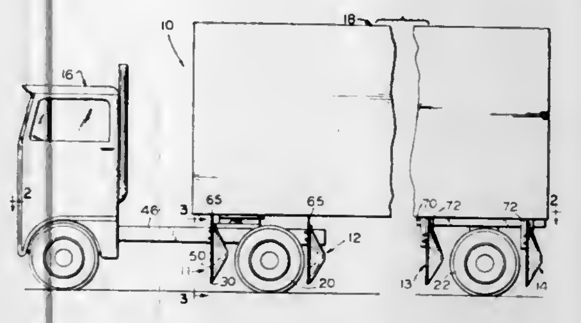
5. A reactor for plasma-chemical processes comprising;
a pair of electrodes for the disposition of an arc therebetween;
a plurality of annular segments of electrically conductive heat resistant material between said pair of electrodes; and
a plurality of annular discs of insulating material disposed alternatingly with said annular segments, so that a stabilized arc may be maintained along said arc path between said electrodes.

3,869,617
SPRAY SUPPRESSING DEVICE FOR A HIGHWAY VEHICLE

Julius Gaussoin, Vancouver, Wash.; Robert B. Nottingham, Lake Oswego, and Robert E. Reichard, Gresham, both of Oreg., assignors to Silver Eagle Manufacturing Co., Inc., Portland, Oreg.

Filed Sept. 4, 1973, Ser. No. 394,147
Int. Cl. B02d *35/00*
U.S. Cl. 290—1 S 9 Claims

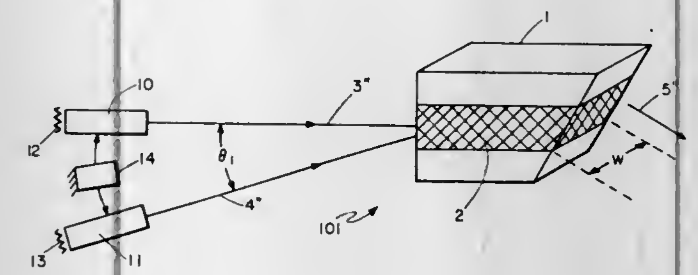
1. In a spray suppressing device for a highway vehicle having a tired wheel comprising air flow directing means mounted on the vehicle in a position adapted to flow air inwardly from the zone outside the wheel past the exposed peripheral portions of the tired wheel to prevent water thrown by the wheel from travelling outwardly relative to the vehicle,
the flow directing means including a sheet-like deflector positioned in front of the tired wheel and extending rearwardly and inwardly relative to the vehicle for directing air inwardly relative to the vehicle and converging the flow of air therepast.



3,869,618
HIGH-POWER TUNABLE FAR-INFRARED AND SUBMILLIMETER SOURCE

Benjamin Lax, Chestnut Hill, and Roshan L. Aggarwal, Burlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 30, 1972, Ser. No. 302,322
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 17 Claims



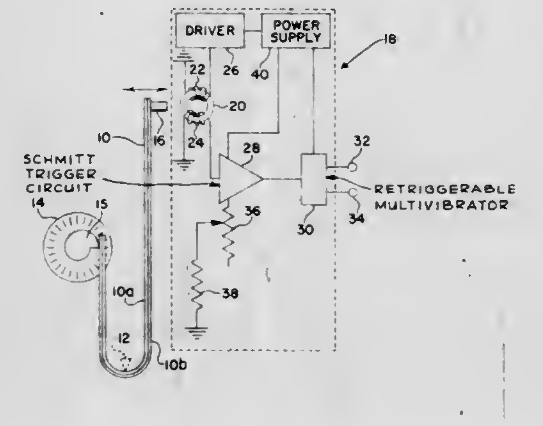
1. A method of generating tunable difference-frequency radiation in the far-infrared and submillimeter regions of the electromagnetic spectrum, that comprises: generating first and second laser beams of high intensity and large size, both of said beams being in the near-infrared region of the electromagnetic spectrum or both of said beams being in the visible region of the electromagnetic spectrum; adjusting the frequency of at least one of the two laser beams so that the difference between the frequencies of the two beams is equal to said difference frequency; directing the two laser beams upon a non-linear crystal in a non-collinear configuration to generate the difference-frequency radiation as an output from the crystal; directing the first beam upon the non-linear crystal so as to excite a substantial volume of the crystal, said crystal having a large non-linear coefficient and small absorption coefficient at the frequencies of the two laser beams as well as at said difference frequency; directing the second beam at an angle to the first beam and to at least a substantial part of the same portion of the crystal excited by the first beam, the beams being mixed in the crystal to provide said difference frequency; and adjusting the angle between the first and second beams to achieve the phase matching necessary for efficient generation of said difference-frequency.

3,869,619
CONTACTLESS ELECTRICAL THERMOSTAT EMPLOYING A BIMETALLIC STRIP

Charles Carl Camillo, Western Springs, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Nov. 16, 1973, Ser. No. 416,490
Int. Cl. H01h *35/00*
U.S. Cl. 307—117 12 Claims

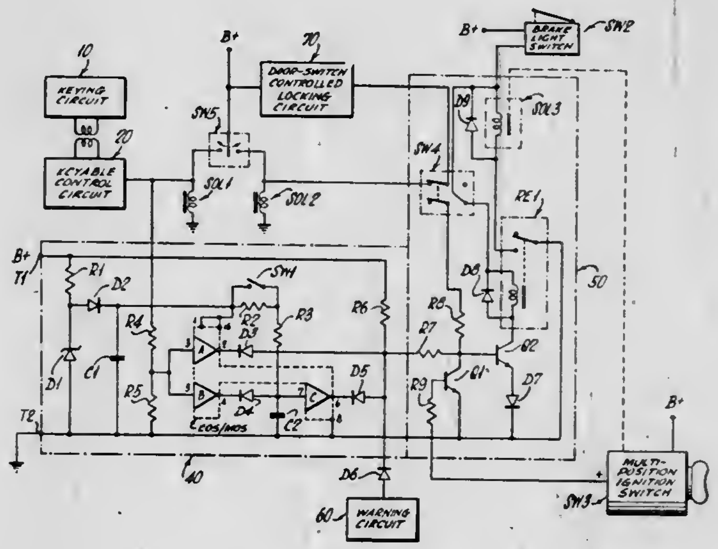
1. An electrical thermostat comprising a saturable magnetic element, a bimetallic strip movable with respect to said magnetic element in response to environmental temperature, a permanent magnet affixed to said bimetallic strip which is movable to a first position in close magnetic coupling with said magnetic element so that said magnetic element will be relatively magnetically saturated when the environmental temperature is at a first value and is movable to a second position wherein said magnetic element will be relatively magnetically unsaturated and the environmental temperature is at a second value, a primary winding and a secondary winding associated with said magnetic element, means for supplying electrical time-varying signals to said primary winding and output means coupled to said secondary winding for receiving time-varying output voltage signals the magnitude of which varies inversely with the degree of magnetic saturation of said magnetic element.



3,869,620
POWER CONTROL CIRCUIT FOR AUTOMOTIVE VEHICLES AND THE LIKE

Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Division of Ser. No. 289,283, Sept. 15, 1972, Pat. No. 3,824,403. This application Sept. 10, 1973, Ser. No. 395,739
Int. Cl. H01h *7/00*
U.S. Cl. 307—141 5 Claims

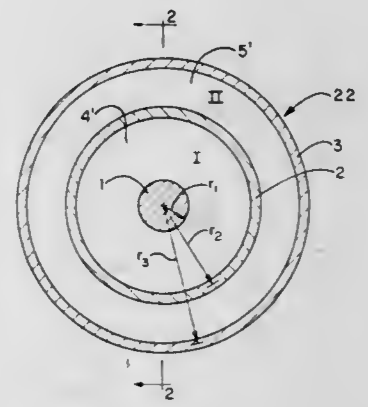

KEYING CIRCUIT
DOOR-SWITCH CONTROLLED LOCKING CIRCUIT
MULTI-POSITION IGNITION SWITCH
WARNING CIRCUIT
B+
SW2
SW3
SW4
SW5
10
20
30
40
60

1. A power control circuit comprising:
1. timing circuit means operative to receive an input signal and to generate an enabling signal for a predetermined period of time from the termination of said input signal; and
2. enabling circuit means operative to receive said enabling signal and an energizing signal, and operative in response to the coincidence of said enabling and energizing signals to generate an output signal.

3,869,621
GRADED CONTAINED BULK TRANSMISSION SYSTEM

Gerald L. Wilson, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 17, 1973, Ser. No. 389,075
Int. Cl. H01b *11/02*
U.S. Cl. 307—147 7 Claims



1. A transmission system adapted to transmit power at extra-high to ultra-high voltages, that comprises: a plurality of concentric, circular, conducting cylinders, the center cylinder of the plurality being adapted to connect to a source of high transmission level voltage, to carry current and thus transmit electric power in the axial direction, and an intermediate cylinder disposed radially outward from the center cylinder and adapted to connect to a source of voltage whose voltage level is less than that connected to the center conductor, a gaseous dielectric medium under pressure occupying the region between the two cylinders, the radius r_1 of the center cylinder and the radius r_2 of said further cylinder being found from the following two expressions:

$$V_{I_{\text{crit optimum}}} = \frac{\delta\left(A + \frac{B}{(\delta r_1)^{1/2}}\right)^2 r_1}{A + \frac{B}{2(\delta r_1)^{1/2}}}$$

$$r_2 = r_1\, e\left(\frac{A + \frac{B}{(\delta r_1)^{1/2}}}{A + \frac{B}{2(\delta r_1)^{1/2}}}\right)$$

where $V_{I_{crit\ optimum}}$ is the optimum allowable voltage that can exist across the region between the two cylinders without breakdown. A and B are constants determined by the dielectric medium in said region and δ is a factor determined by the pressure of the gas in the region between the cylinders.

3,869,622
LOGIC GATE CIRCUIT INCLUDING A SCHOTTKY BARRIER DIODE

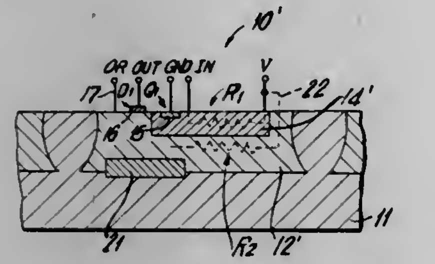
Kyozo Shimizu, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,447

Claims priority, application Japan, Sept. 10, 1971, 46-69703

Int. Cl. H01l ***19/00***

U.S. Cl. 307—213 **3 Claims**



1. A logic circuit having first and second logic circuits both formed in a single P-type semiconductor substrate; each of said first and second logic circuits comprising an NPN transistor, a plurality of Schottky barrier diodes each connected to said transistor collector terminal, a first impedance element, an input terminal connected to said transistor base, and a plurality of output terminals, an N-type collector region of said NPN transistor being formed in the upper surface of said substrate, an elongated P-type base region of said NPN transistor being formed in said collector region, an N-type emitter region of said NPN transistor being formed at one end of said elongated base region therein, each of said plurality of said Schottky barrier diodes including a metal electrode attached to the surface of said collector region near said one end of said base region, said impedance element being defined by the part of said elongated base region lying between said emitter region and the other end of said elongated base region, said input terminal including an ohmic contact attached to said one end of said elongated base region, a plurality of said output terminals being connected to said respective metal electrodes, and a voltage source connected between said other end of said elongated base region and said emitter region, one of a plurality of said output terminals of said first logic circuit being connected to said input terminal of said second logic circuit.

3,869,623
ELECTRONIC SEQUENCE SWITCH WITH HOLDING CIRCUIT

Willy Minner, Schwaigern, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

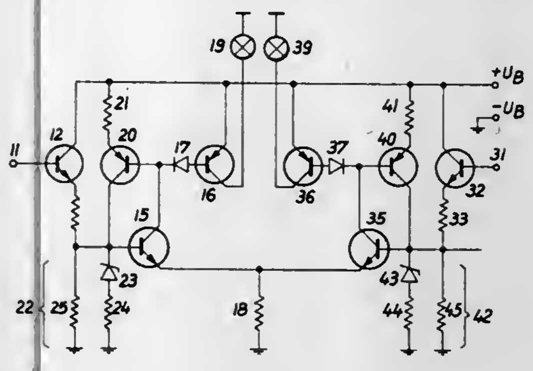
Filed Apr. 20, 1973, Ser. No. 353,113

Claims priority, application Germany, Apr. 29, 1972, 2221331

Int. Cl. H03k ***17/00***

U.S. Cl. 307—241 **4 Claims**

1. In a sequence switch circuit composed of a plurality of sequence switch members each including a signal input, a switching unit switchable between a switched-on state and a switched-off state, and a holding circuit connected to said unit, said input, unit and holding circuit of each said member being connected for causing a signal at said input of one said member to switch said switching unit of said one member to its switched-on state and to initiate flow of a holding current in said holding circuit of said one member to hold said associated unit in its switched-on state, and for causing such holding current to continue to flow until a signal is applied to said input of another one of said members to cause: said switching unit of said one member to be switched to its switched-off state; said switching unit of said other member to be switched to its switched-on state; and a holding current to flow in said holding circuit of said other member, the improvement comprising: a non-linear current/voltage element connected to said holding circuit in such a manner that holding current flows through said element and maintains said element at an operating point such that it is driven with small differential resistance and that it represents a relatively low electrical resistance for a disturbance pulse.



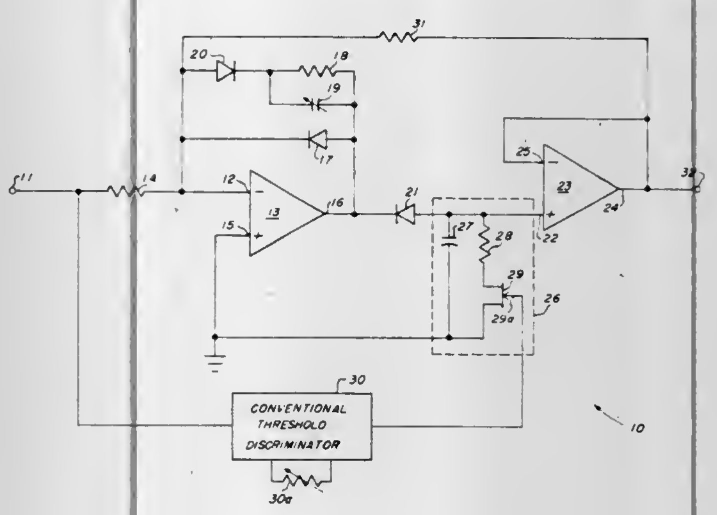
3,869,624
PEAK HOLDING CIRCUIT FOR EXTREMELY NARROW PULSES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert W. O'Neill, Houston, Tex.

Filed May 21, 1973, Ser. No. 362,146

Int. Cl. H03k ***5/04***

U.S. Cl. 307—267 **8 Claims**



1. A circuit for lengthening the time duration of an electrical pulse comprising:

a. first input amplifying means;
b. an integrating feedback loop connected between the output and one input of said amplifying means for frequency control;
c. coupling means connecting the output of said first amplifying means with one input of a second amplifying means; d. compensating means included in said integrating feedback loop for compensating for nonlinear characteristics in said coupling means;
e. pulse width control means having an input supplied with said electrical pulse and an output applied to said second amplifying means for regulating the width of pulses output from said second amplifying means; and
f. threshold discriminating means included in said pulse width control means for determining the presence of an electrical pulse having predetermined electrical characteristics at the input to said first amplifying means whereby only pulses having such predetermined characteristics have their widths regulated by said control means.

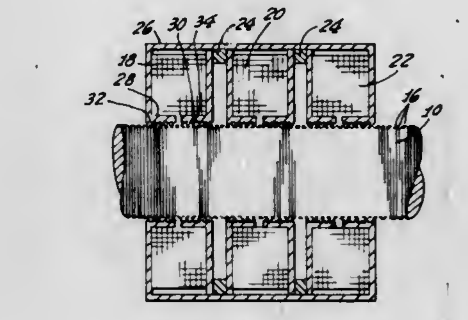
3,869,625
PLURAL AXIS LINEAR POSITION

Bruce A. Sawyer, 39 Inverness Rd., Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 178,637, Sept. 8, 1971, abandoned. This application May 21, 1973, Ser. No. 362,119

Int. Cl. H02k ***41/02***

U.S. Cl. 310—12 **18 Claims**



1. A positioning system for providing a controlled relative movement between two members along at least a first longitudinal axis and a second cylindrical axis angularly displaced relative to the first longitudinal axis, including

- a first member forming a cylindrical platen having at least a first plurality of first and second portions alternately disposed relative to one another and extending in a first direction having a major component in the longitudinal direction and displaced relative to one another in a second direction having a major component in the angular direction,
- a second member disposed adjacent to the first member along the surface of the first plurality of first and second portions of the cylindrical platen for movement relative to the first member in the second direction,
- first means cooperative with the first portions in the first plurality for producing a force between the second member and the first portions on the first member to provide a displacement of the second member relative to the first member in the second direction, and
- a second plurality of first and second portions included in the first member and intersecting the first plurality of first and second portions and alternately disposed relative to one another and extending in the second direction and disposed in spaced relationship to one another in the first direction, and
- second means included in the second member for producing a force between the second member and the first portions in the second plurality to provide a displacement of the second member relative to the first member in the first direction.

3,869,626
DYNAMO ELECTRIC MACHINES

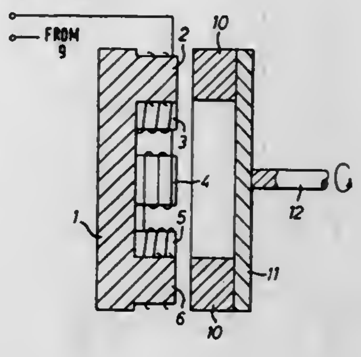
Michael Charles Puttock, Sunbury, and Bryan Crosby Linfoot, Amersham, both of England, assignors to EMI Limited, Hayes, Middlesex, England

Filed Sept. 27, 1971, Ser. No. 184,120

Int. Cl. H02k ***21/12***

U.S. Cl. 310—152 **6 Claims**

1. A dynamo electric machine comprising a rotor member including an annulus of magnetically hard ferrite material with a plurality of magnetic domains arranged in a ring on one face thereof, adjacent domains being magnetised in different senses; and a stator member spaced from said rotor member and formed of magnetically soft material, said stator including a plurality of substantially cylindrical magnetically soft ferrite poles protruding therefrom arranged in a circle concentric with said annulus and having substantially circular faces directed towards said domains for establishing magnetic flux linkage therewith, each of said poles being encompassed by a plurality of closed loop windings of electrically conductive material.



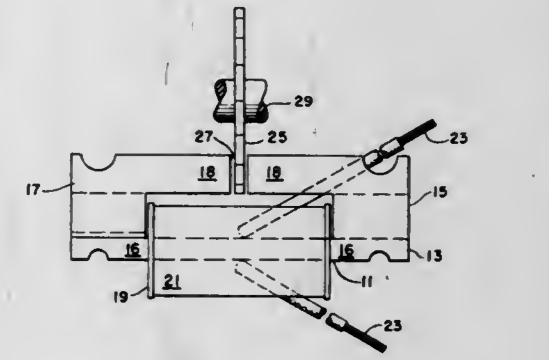
3,869,627
SYNCHRONOUS MOTOR

Michael J. Ingenito, New York, N.Y., and Paul J. Corser, Charlotte, N.C., assignors to General Time Corporation, Thomaston, Conn.

Continuation-in-part of Ser. No. 227,072, Feb. 17, 1972, Pat. No. 3,803,433. This application June 27, 1973, Ser. No. 374,022

Int. Cl. H02k ***21/08***

U.S. Cl. 310—162 **11 Claims**



1. A synchronous motor comprising:

- a disc shaped motor having an annular ring of permanently magnetized poles extending through the thickness and about the periphery thereof, each of said poles having a pole of opposite polarity positioned contiguously on each side thereof;
- a stator including a core and an energizing winding, said core having at least one pole pair which defines an axial air gap through which passes the permanently magnetized annular portion of said rotor, said energizing winding being coupled to said stator core for providing an energizing flux field in said core, said flux field passing between said stator poles through said rotor substantially perpendicular to the plane of said rotor, the magnetic field generated by said rotor poles passing through said stator substantially perpendicular to the surface of said stator pole pair; and
- supplemental flux conducting means carried by said stator, said supplemental flux conducting means including a protrusion extending therefrom in a plane parallel to the plane of said rotor and located adjacent said rotor periphery for enhancing flux flow between rotor and stator during operation.

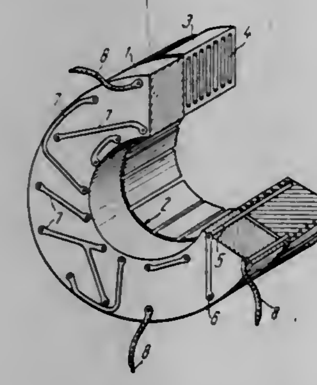
3,869,628
ELECTRIC MACHINE STATOR

Andrei Vladimirovich Koritsky, Lefortovsky val, 7/6, kv. 1; Viktor Alexandrovich Ignatov, Novorossiiskaya ulitsa, 12, kv. 19; Leonid Moiseevich Polyak, ulitsa Podbelskogo, 28, korpus 2, kv. 8, all of Moscow; Semen Abramovich Shapiro, Pervomaiskaya ulitsa 6, kv. 19, Istra Moskovskoi oblasti; Grigory Aronovich Bokman, ulitsa Dybenko, 32, korpus 3, kv. 267, Moscow; Vladimir Alexandrovich Mordvinov, ulitsa Vlasova, 7, korpus 2, kv. 43, Moscow; Mikhail Ivanovich Zhizhin, B-Demidovsky pereulok, 4, kv. 2, Moscow; Alexandr Davydovich Slonimsky, ulitsa 9 Gvardeiskoi divizii, 60 kv. 23; Kimik Tigranovich Sevinian, Pervomaiskaya ulitsa, 12, kv. 6, both of Istra Moskovskoi oblasti; Semen Izrailovich Adaskin, Petrozavodskaya ulitsa, 30, kv. 89, and Vladimir Vladimirovich German, Stavropolskaya ulitsa, 32, kv. 12, both of Moscow, all of U.S.S.R.

Filed Dec. 6, 1973, Ser. No. 422,205

Int. Cl. H02k *1/12*

U.S. Cl. 310—179 **8 Claims**



1. An electric machine stator comprising: a ferromagnetic carrier of a predetermined shape; a plurality of uniform ferromagnetic teeth affixed to one surface of said ferromagnetic carrier, spaced from one another, and lying in a predetermined pattern; a plurality of printed circuit conductors on first and second opposite surfaces of each of said uniform teeth, said conductors being substantially linear and substantially parallel to one another; a plurality of metallic conductive paths embedded in each of said uniform teeth extending from said first to said second opposite surface, with each conductive path electrically uniting one end of one printed circuit conductor on said first surface to one end of one printed circuit conductor on said second surface, said printed circuit conductors and said metallic conductive paths defining a continuous winding extending from one surface of each of said uniform teeth to an opposite surface thereof; first and second metallic terminals in each of said uniform teeth, connected to respective ends of the continuous winding, and extending out of one surface; connector means through which the respective terminals of each of said teeth extend; and printed circuit conductors on the surface of said connector means opposite from said uniform teeth, for connecting the respective terminals of said uniform teeth in a predetermined electrical pattern.

3,869,629
STATOR IN SMALL ELECTRIC MACHINE

Takashi Ogawa; Kiyonori Kida, and Shunichi Sugiyama, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

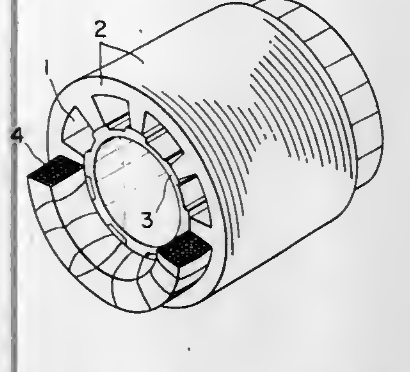
Filed Sept. 26, 1973, Ser. No. 400,812

Claims priority, application Japan, Sept. 27, 1972, 47-96893

Int. Cl. H02k *1/16*

U.S. Cl. 310—216 **3 Claims**

1. A stator in a small electric machine which comprises a substantially cylindrical stator core having a plurality of tooth-like poles which radially extend from the inner surface thereof and which define a plurality of winding accomodating slots therebetween; windings inserted in said winding accomodating slots; and a substantially cylindrical inner sleeve which includes a plurality of protruded portions each of which respectively contact a tooth-like pole of said stator core and bridging portions which join the protruded portions, the protruding portions and the bridging portions forming recessed portions in said inner sleeve, the width of each of said protruded portions being greater than the width of its corresponding tooth-like pole.



3,869,630
DISCHARGE LUMINESCENCE ELEMENT ARRAY HAVING A GAS FLOW PATH

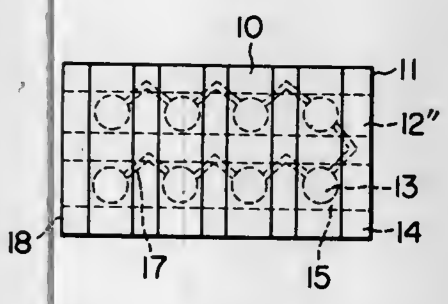
Kenji Maio, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1973, Ser. No. 339,916

Claims priority, application Japan, Mar. 13, 1972, 47-25638

Int. Cl. H01j *1/78, 11/02*

U.S. Cl. 313—188 **12 Claims**



1. In a discharge luminescence element array comprising a pair of parallel insulator plates, electrodes provided on the outer faces of said pair of insulator plates, and a separator interposed between said pair of insulator plates, said separator having a plurality of apertures formed therein defining the same plurality of discharge spaces with said pair of insulator plates, the improvement comprising a groove-like gas flow path provided at the interface between one of said pair of insulator plates and said separator for evacuating gas from and providing a discharge gas to said discharge spaces, said separator being sealed at its entire main faces to said pair of insulator plates.

3,869,631
DIODE-CONTAINING INCANDESCENT LAMP HAVING IMPROVED EFFICIENCY

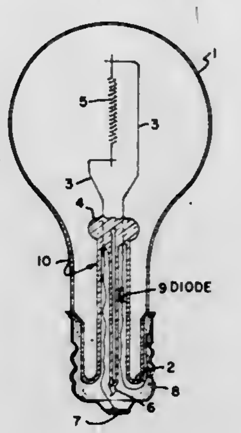
Warren A. Anderson, Danvers; Edmund M. Passmore, Wilmington, both of Mass., and Wilfrid G. Matheson, San Diego, Calif., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Continuation-in-part of Ser. No. 335,922, Feb. 26, 1973, abandoned. This application May 31, 1974, Ser. No. 474,991

Int. Cl. H01k *1/62*

U.S. Cl. 313—217 **1 Claim**

1. An incandescent lamp comprising: a gas filled glass envelope sealed at its lower end to the flare of a stem press glass mount; a screw base having a center contact attached to the lower end of said envelope; two lead-in wires extending through the stem press of said mount, one of said lead-in wires being electrically connected to said center contact and the other being electrically connected to the rim of said screw base; a diode electrically connected between one of said lead-in wires and said base; and a coiled tungsten wire filament disposed within said envelope and connected between said two lead-in wires, the relationship between the diode and the filament being such that the filament temperature during normal lamp operation is at least 2,600° Kelvin.



3,869,632
GLOW CATHODE

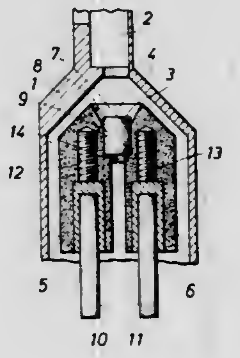
Friedhelm Schulz, Liedolsheim, Germany, assignor to Gesellschaft Fur Kernforschung m.b.H., Karlsruhe, Germany

Filed Aug. 24, 1973, Ser. No. 391,056

Claims priority, application Germany, Sept. 1, 1972, 2242986

Int. Cl. H01j *1/14, 19/06*

U.S. Cl. 313—346 **12 Claims**



1. Glow cathode comprising:

a. an electron emitter of button shape, made of a metal or metal carbide having a high melting point;

b. an electrically conductive mounting made of a highly refractory, substantially infusible material having a high electron work function, said electron emitter being held by said mounting; and

c. lead wire means in contact with said mounting and out of contact with said electron emitter for passing an electric current through said electron emitter for heating the same.

3,869,633
ELECTRON TUBE SOCKET

Christ J. Dumas, Forest View, and Stephen S. Simovits, Jr., Downers Grove, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,584

Int. Cl. H01j *17/00, 21/00*

U.S. Cl. 313—325 **10 Claims**

1. A tube socket assembly for dissipating transient surges of high voltage occurring at the terminal pins of an electron tube comprising

enclosure means to form an electrically insulated internal chamber,

terminal receiving means for electrical coupling to the terminal pins of an electron tube carried by said enclosure means,

spark gap defining means within said enclosure means electrically coupled to said terminal receiving means comprising a first electrode having the terminal pin voltage imposed thereon and an adjacent grounded electrode separated by a dielectric material, said first electrode and said grounded electrode having adjacent portions abraded to remove non-meniscus discontinuities formed during fabrication of said electrodes to precisely control arc-over initiation voltage and to prevent corona formation at points of lower impedance,

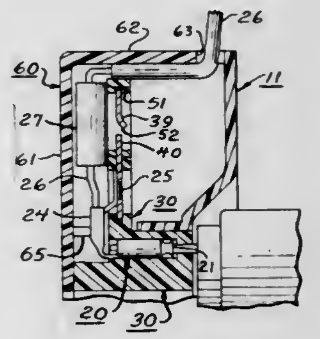
a high-voltage chamber segregated from the remaining portion of said dielectric body portion by means of a barrier wall and having a controlled uniformly spaced spark gap for stabilizing a high-voltage lead during surges of electrical energy,

said spark gaps are positioned within openings defined by said dielectric body portion such that the arc energy is uniformly stressed in the area of the spark gap,

said dielectric material separating said electrodes provides a variable impedance therebetween,

said electrodes separated by a dielectric material include first means across which an arc is initiated and second means for dissipating the arc energy, and

electrical leads electrically coupled to said terminal receiving means and said gap defining means.



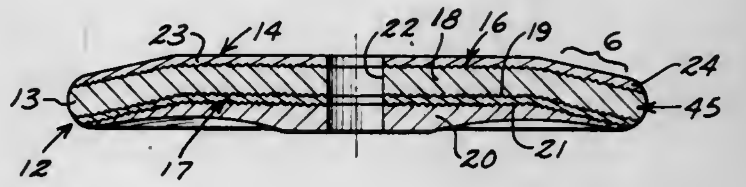
3,869,634
ROTATING X-RAY TARGET WITH TOOTHED INTERFACE

Ronald D. Konieczynski, Royalton, Ohio, and Allan H. Springmeyer, Newtown, Conn., assignors to General Electric Company, Milwaukee, Wis.

Filed May 11, 1973, Ser. No. 359,459

Int. Cl. H01j *35/10*

U.S. Cl. 313—330 **10 Claims**



1. An x-ray tube rotary target comprising, in combination,

a refractory metal target face; and

a refractory material body joined to the target face by powdered metallurgy technique along an interface to form a unitary structure;

the interface including a multiplicity of mating hills and valleys in a predetermined pattern in the body and the target face.

3,869,635
ROTARY ANODE FOR AN X-RAY TUBE

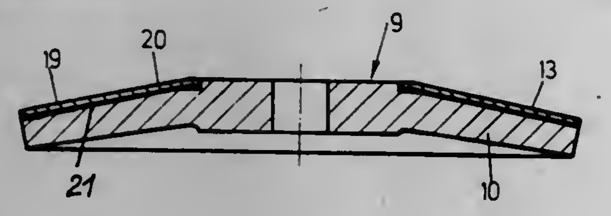
Rudolf Friedel, Erlangen, Germany, and Karl Sedlatschek, Reutte, Austria, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 12, 1973, Ser. No. 369,393

Claims priority, application Germany, June 28, 1972, 2231686

Int. Cl. H01j *35/08*

U.S. Cl. 313—330 **3 Claims**



1. A rotary anode for an X-ray tube having a surface struck by electrons and producing X-rays, said surface consisting of 95 percent molybdenum and 5 percent hafnium.

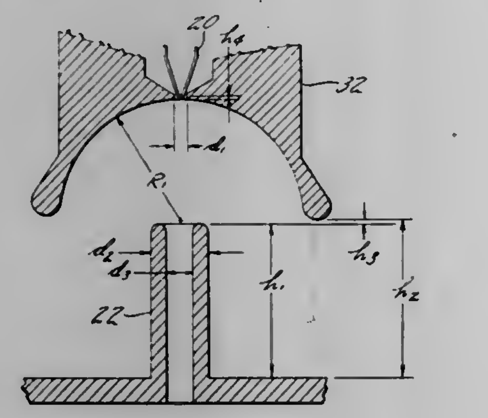
3,869,636
FILAMENT FOR ELECTRON GUNS

Glen S. Lawrence, Windsorville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 250,910, May 8, 1972, abandoned. This application May 31, 1973, Ser. No. 365,799

Int. Cl. H01j *1/15, 19/08*

U.S. Cl. 313—341 **8 Claims**



1. An improved long-life filament for a high power electron beam machine comprising

a continuous thin ribbon of tungsten rhenium alloy containing about 3% rhenium by weight and formed to have a flat emitting face with the portion of said ribbon on opposite sides of said emitting face being bent to form first and second leg portions extending from and continuous with said emitting face.

3,869,637
ALPHA-NUMERIC DISPLAY DEVICE UTILIZING LIGHT EMITTING DIODES

Setsuo Usui, Chigasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

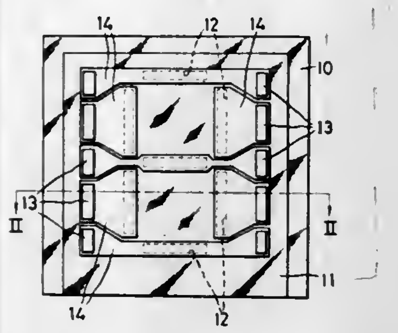
Filed Apr. 24, 1973, Ser. No. 354,068

Claims priority, application Japan, Apr. 28, 1972, 47-42885; Apr. 28, 1972, 47-42886

Int. Cl. H01j *1/54*

U.S. Cl. 313—500 **8 Claims**

1. An alpha-numeric character display device comprising, a planar transparent plate, a first opaque planar layer attached to said transparent plate and formed with windows arranged to form a plurality of display units with each unit having a number of windows arranged to selectively indicate a number of desired numbers or characters, a plurality of light emitting diodes mounted on said first opaque layer outside of said display units and mounted so as not to overlie said windows and at least one diode associated with each of said windows, a plurality of light transmitting planar layers formed over said first opaque layer and each covering one of said windows and extending to the diode associated with each of said windows such that light emitted by said diodes will pass parallel to said planar transparent plate, a second opaque layer covering said light transmitting planar layers such that light emitted from said diodes will be emitted from said windows, and electrical energizing means connected to said diodes to selectively energize them to produce a desired indication.



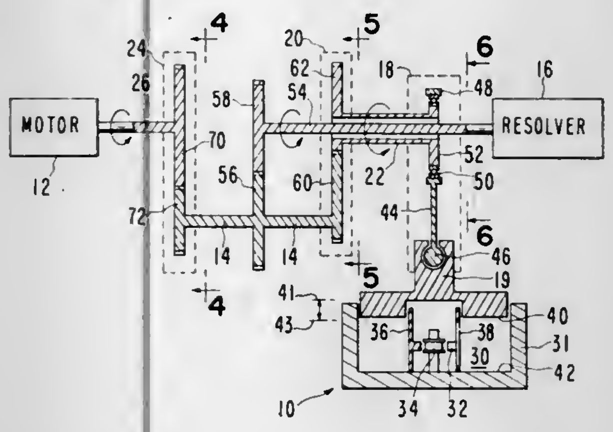
3,869,638
TRIANGULAR DITHER-TUNED MICROWAVE TUBE

William Allen Gerard, Andover, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 2, 1973, Ser. No. 412,526

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.61 **12 Claims**



1. In combination with a tunable frequency microwave tube apparatus having microwave circuit means, tuning means movable within the region of said circuit means for tuning said microwave circuit means, and thus the operating frequency of the tube; an input shaft; means for cyclically moving said tuning means between two extremes of travel in response to rotation of said input shaft dither the operating frequency; the improvement comprising first gear train means driving said input shaft from a drive shaft and producing with respect to rotation of said drive shaft a cyclical rotation rate of said input shaft such that maximum rotation rate occurs at said two extremes of travel of said tuning means and such that the operating frequency of said tube has a triangular dither characteristic with respect to time.

3,869,639
EMERGENCY LIGHTING SYSTEM USING DIM TO BRIGHT FLASHING OPERATION

Rollie R. Herzog, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.

Filed Aug. 24, 1973, Ser. No. 391,076

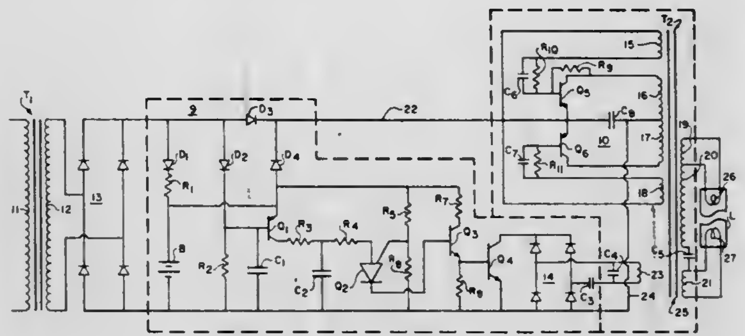
Int. Cl. H05b *37/00*

U.S. Cl. 315—86 **7 Claims**

1. A circuit for operating at least one gaseous discharge lamp during both normal and emergency conditions comprising:

input means for connecting the circuit to a first source of power providing operating voltage during normal conditions when the first power source is operative;

a first oscillator connected to said input means for applying voltage to the lamp at a predetermined frequency thereby to yield a single light level;



means for automatically connecting a second source of power to said first oscillator when the first power source is inoperative for providing operating voltage for said first oscillator during emergency conditions; and

means for cyclically varying the frequency of said first oscillator in a predetermined range during emergency conditions such that the light level of the lamp varies cyclically.

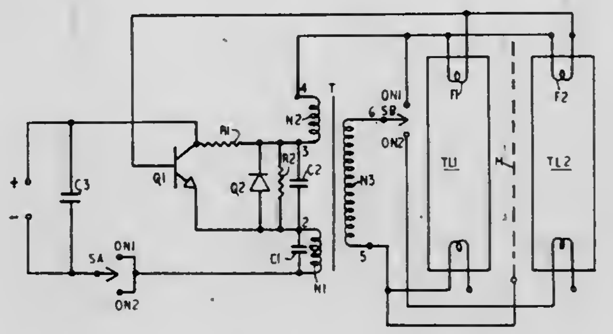
3,869,640
POWER SUPPLY ARRANGEMENT FOR FLUORESCENT TUBES, THERMIONIC DEVICES AND THE LIKE

Taras Avenir Kolomyjec, 15 Camelot Ct., Carlingford, N. S. W., Australia

Filed July 9, 1973, Ser. No. 377,835

Int. Cl. H03k *3/28;* **H05b** *41/29*

U.S. Cl. 315—97 **10 Claims**



1. A fluorescent lamp arrangment comprising a blocking oscillator transistor inverter having a primary winding, a feedback winding, and a secondary winding, there being a substantial step up ratio between primary and secondary windings, two fluorescent tubes, means connecting a filament of at least one tube in series with the feedback winding whereby the filament is preheated by the collector current of the transistor, a conductive connection between the preheated filament of the said one tube and one filament of the second tube, a connection between one end of the secondary winding and the other filament of said one tube, and a switch connected to the other end of the secondary winding, said switch in one position connecting the said other end to the said preheated filament of said one tube and in another position connecting the said other end of the secondary winding to the other filament of said second tube, whereby

1. when one tube only is to be energized the secondary winding is connected across the said preheated filament and the other filament of that tube, and
2. when both tubes are to be energized the ends of the secondary winding are connected one to the non-preheated filament of the said one tube, and the other end of the winding to the other filament of the second tube, there being a series path for the lighting current through both tubes.

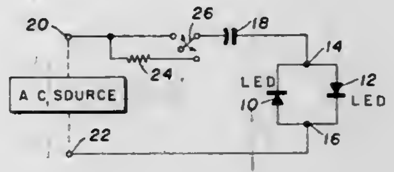
3,869,641
AC RESPONSIVE LED PILOT LIGHT CIRCUITRY

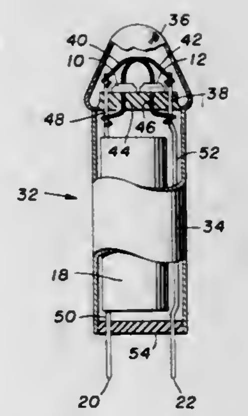
Jack Goldberg, Marshalltown, Iowa, assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 265,079, June 21, 1972, abandoned. This application Oct. 24, 1973, Ser. No. 409,116

Int. Cl. H03k *3/42*

U.S. Cl. 315—135 **4 Claims**





1. An LED pilot light operable from a source of AC line voltage, comprising a pair of light-emitting diodes, said diodes being connected in parallel with opposite polarity, each of said diodes generating light when properly forward biased, an enclosure having a light transmissive portion, means for supporting both of said diodes in said enclosure such that light emitted by said diodes radiates from said enclosure through said light transmissive portion in a single direction, and a capacitor having one side interconnected with said pair of diodes at one junction common to said diodes, a first circuit input terminal interconnected with the other side of said capacitor, a second circuit input terminal interconnected with the other junction common to said diodes, the capacitor voltage following AC line voltage applied to said input terminals and limiting the voltage drop across said diodes as said diodes alternately conduct on respective half cycles of said AC line voltage.

3,869,642
CONTROL CIRCUIT FOR ELECTRONIC FLASH APPARATUS

Mehmet Sabanci, Braunschweig, Germany, assignor to Rollei-Werke Frahke & Heidecke, Braunschweig, Germany

Filed Mar. 27, 1974, Ser. No. 455,134

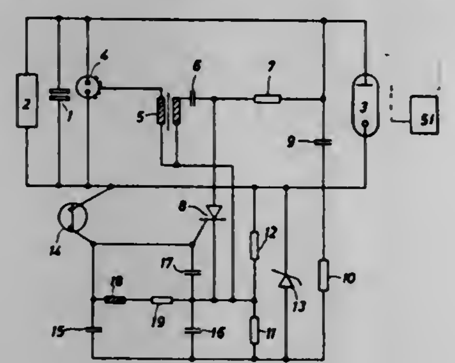
Claims priority, application Germany, Apr. 4, 1973, 2316724

Int. Cl. H05b *37/02*

U.S. Cl. 315—151 **5 Claims**

1. Electronic flash apparatus for photographic illumination comprising flash producing means, flash terminating means including a thyristor effective, upon actuation, to terminate a flash produced by said producing means, said thyristor having a control grid, flash measuring means for measuring an integrated amount of light reflected from an object being photographed, and control circuit means responsive to said measuring means for actuating said thyristor to teminate said flash when the integrated amount of light measured by said measuring means reaches a threshold value, said control circuit means including a capacitor (17) connected to said control

grid, and an inductance (**18**) and a resistor (**19**) connected in series with each other and in parallel with said capacitor (**17**), said capacitor, inductance, and resistance being so dimensioned that the time constant resulting from the dimensions of said capacitor and resistor is substantially equal to the time constant resulting from the dimensions of said inductance and resistor.



3,869,643
APPARATUS FOR EMITTING ATOMIC FLOURESCENCE SPECTRAL LINES USED FOR ATOMIC ABSORPTION ANALYSIS

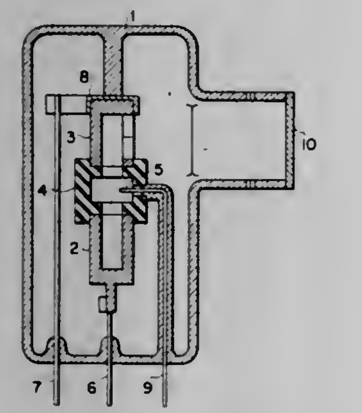
Hiroshi Okagaki, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1974, Ser. No. 430,943

Claims priority, application Japan, Jan. 12, 1973, 48-6440

Int. Cl. H01j *61/04*

U.S. Cl. 315—167 **16 Claims**



1. An apparatus for emitting atomic fluorescence spectral lines used for atomic absorption analysis comprising an envelope, first means for emitting spectral lines of atoms in a first position within said envelope, second means for generating vapor of atoms at ground state in a second position within said envelope, said second position lying on the optical axis providing the path for said spectral lines of atoms, and third means for directing atomic fluorescence spectral lines obtained by irradiation of said atomic vapor with said spectral lines of atoms in a direction different from the direction of said optical axis thereby deriving a said fluorescence spectral lines from said envelope.

3,869,644
PULSES OF THE SAME OR AN OPPOSITE POLARITY TO ELECTRODES OF A PLASMA DISPLAY PANEL

Akira Yano; Norio Sato, and Tunekiyo Iwakawa, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

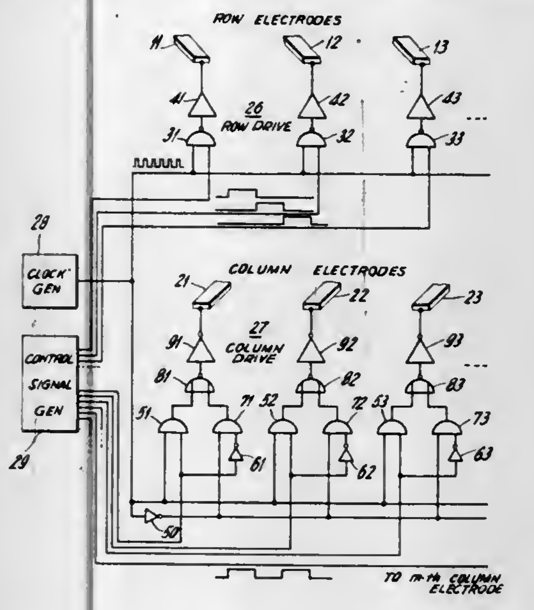
Filed Aug. 16, 1973, Ser. No. 388,787

Claims priority, application Japan, Aug. 22, 1972, 47-84285

Int. Cl. H05b *37/00, 39/00, 41/00*

U.S. Cl. 315—169 TV **3 Claims**

1. A circuit for driving an external electrode discharge display panel having a plurality of gas discharge cells, a first and a second group of electrodes disposed on opposite sides of said cells, and means for cyclically supplying a first pulse train of a predetermined duration to the electrodes of said first group, wherein the improvement comprises means for supplying a second pulse train to each electrode of said second group, said second pulse train supplying means comprising means for supplying pulses of a polarity opposite to the pulses of said first pulse train and substantially coincident with said first pulse train when the display discharge cell associated with the first and second group electrodes respectively receiving said first and second pulse trains is to glow, and means for otherwise supplying pulses of the same polarity as the pulses of said first pulse train wherein said first and second pulse train supplying means supply a direct-current voltage component to the cells while said first pulse train is not supplied to the electrodes of said first pulse train is not supplied to the electrodes of said first electrode group disposed on one side of said cells.



3,869,645
SPARK IGNITION SYSTEMS

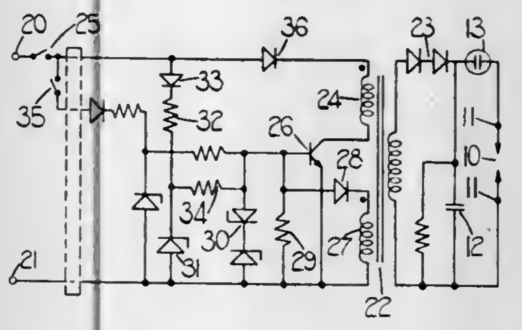
Keith Douglas Collins, Watford, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 26, 1973, Ser. No. 344,553

Claims priority, application Great Britain, Mar. 25, 1972, 14117/72

Int. Cl. F02c *7/26*

U.S. Cl. 315—209 T **4 Claims**



1. A spark ignition system for continuous combustion gas turbine engines comprising a capacitor, a spark gap connected in series with the capacitor and a pair of output terminals, said output terminals in use, being connected to a spark discharge device associated with the engine, the spark gap acting when the voltage across the capacitor attains a predetermined value, to provide a conductive path so that the capacitor is discharged through said device, means for charging the capacitor, said means comprising a power supply including a transformer having primary and secondary windings, rectifier means connected in series with said secondary winding and the capacitor, means for applying a pulsed electric supply to the primary winding of the transformer, and further means for adjusting the peak current flowing in the primary winding of the transformer whereby the rate of change of the capacitor and the spark discharge rate can be adjusted.

3,869,646
ELECTROLUMINESCENT DEVICES

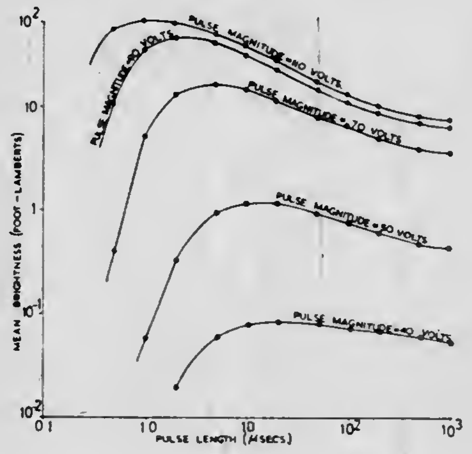
John Kirton, Malvern; Adrian Leonard Mears, Cheltenham; Richard William Sarginson, Malvern, and Norman John Werring, Dartford, all of England, assignors to the Secretary of State for Defense in Her Britannic Majisty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 22, 1973, Ser. No. 362,705

Claims priority, application Great Britain, Nov. 28, 1972, 54853/72

Int. Cl. H01j *1/62;* **H05b** *33/10*

U.S. Cl. 315—246 **9 Claims**



1. An electroluminescent device suitable for use with the application of unidirectional electric fields comprising a piece of electroluminescent phosphor material of the kind having a localized region of high resistivity produced by forming, and means for applying across at least a part of said region a series of unidirectional voltage pulses, said pulses having pulse heights whose average for the series is significantly greater than the forming voltage for the piece and pulse lengths whose average for the series is a value operative to provide emission of light having a brightness corresponding to the upper part of the peak of the pulse response characteristic for the piece at said average pulse height.

3,869,647
DISPOSABLE SHOE COVERING

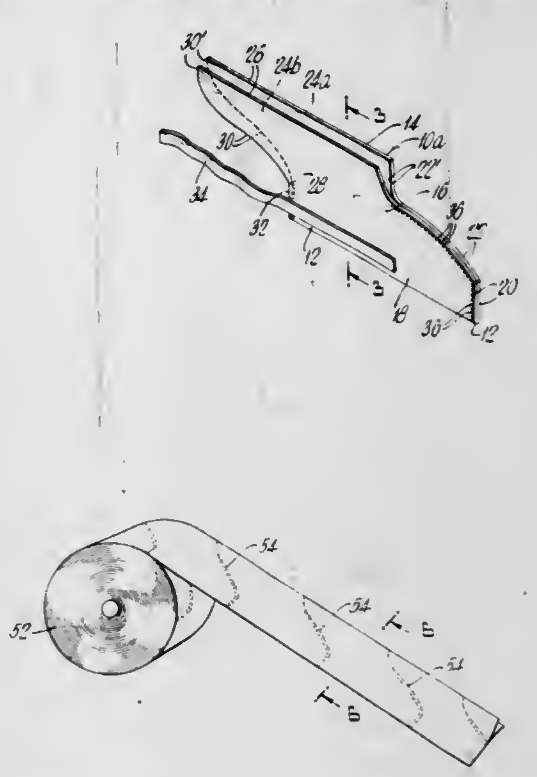
Richard D. Cooper, St. Hilaire, Quebec, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 7, 1972, Ser. No. 313,019

Int. Cl. H05f *1/00, 3/00*

U.S. Cl. 317—2 B **9 Claims**

1. A foot covering of a length of flexible material, said foot covering comprising a pair of opposed similar panels joined together along a bottom edge thereof and forming therebetween a sole portion for said foot covering, said panels being further joined together about a front margin along a side adjacent said bottom margin to form therebetween at least a partially enclosed area adapted to at least partially enclose a foot or shoe of a user, and integral extensions of said opposed panels extending rearwardly thereof and forming a pair of tieing members, each of said opposed panels, in a lay-flat condition, including a front margin having a first portion extending upwardly from the base of said panel and second portion tapering inwardly and upwardly from said first portion to the top of said panel, each said panel including a rear margin having a substantially similar contour to the contour of the margin of said front portion of said panel, whereby said rear margin has a first portion extending upwardly from the base of said panel and a second upwardly and rearwardly extending portion forming the lower margin of said tieing member, the portions of the front and rear margins extending upwardly from the base having a height corresponding approximately to the width of the sole portion formed by said side panels when said foot covering is mounted on a foot or shoe.



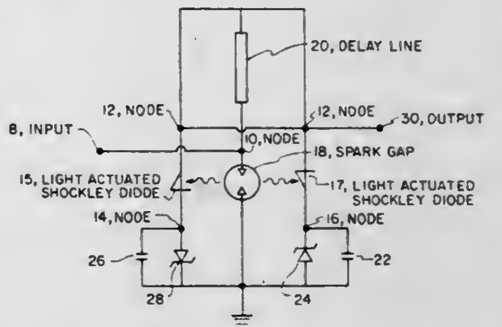
3,869,648
SUPPRESSOR OF FAST HIGH POWER ELECTRICAL TRANSIENTS

Bernard Zendle, Adelphi, and Marcella C. Petree, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1973, Ser. No. 408,246

Int. Cl. H02h *3/20*

U.S. Cl. 317—16 **7 Claims**



1. A circuit for suppressing transient signals between an input and an output comprising:

a spark gap connected between said input and a ground potential;

means for delaying said transients signals connected between said input and said output;

light activated semiconductor means connected to said output and physically positioned to accept light produced by said spark gap for conducting said transient signals which produce a forward bias across said light activated semiconductor means to said ground potential whenever said transient signals have sufficient magnitude to activate said spark gap;

means connected between said light activated semiconductor means and said ground potential for producing a predetermined reverse bias level on said light activated semiconductor means to cause said light activated semiconductor means to insulate said transient signals from said ground potential until the magnitude of said transient signals falls below said predetermined reverse bias level.

3,869,649

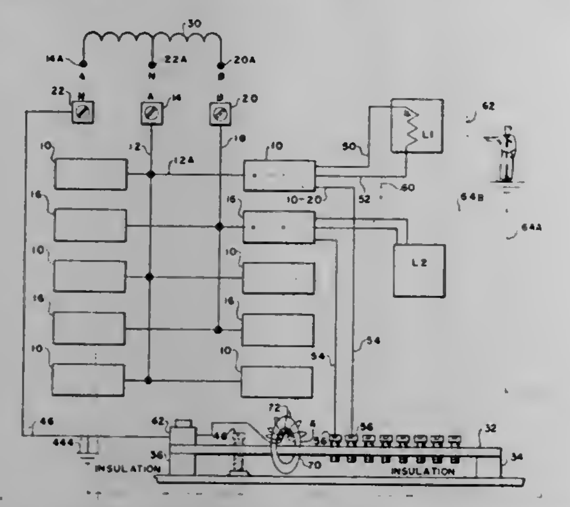
ELECTRICAL PROTECTIVE PANEL ASSEMBLY WITH SENSITIVE GROUND FAULT PROTECTING MEANS

Charles F. Hobson, Jr., Southington, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,825

Int. Cl. H02h *3/32, 7/22*

U.S. Cl. 317—18 D **4 Claims**



1. An electrical protective circuit for supplying power to an electrical load and including means responsive to the occurrence of unintended ground connection between at least one load supplying conductor and ground comprising:

- a. a support;
- b. an electrical circuit protective device supported on said support and having a first terminal for connection to one side of an electrical power source and a second terminal for connection to an outgoing conductor for supplying power to a remote power consuming load, said device including means for interrupting current to such outgoing conductor;
- c. return conductor electrical connecting means supported on said support for connection to a return conductor from such power consuming load;
- d. terminal connecting means supported on said support for connection to the side of such power source opposite from such one side, and conductor means connecting said terminal connecting means to said return conductor connecting means;
- e. voltage inducing means for inducing a voltage in said conductor means;
- f. ground connecting means connecting said conductor means to ground at a point closer to said terminal connecting means than the point at which said voltage inducing means induces a voltage in said conductor means;
- g. current detecting means associated with said ground connecting means for detecting current therein, and for developing a signal in response thereto;
- h. means connected between said current detecting and said circuit interrupting device for causing automatic opening of said circuit interrupting device upon the generation of a predetermined signal by said current detecting means.

3,869,650

DISCONNECTOR

Francis V. Cunningham, Western Springs, and John S. Wicks, Glen Ellyn, both of Ill., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill.

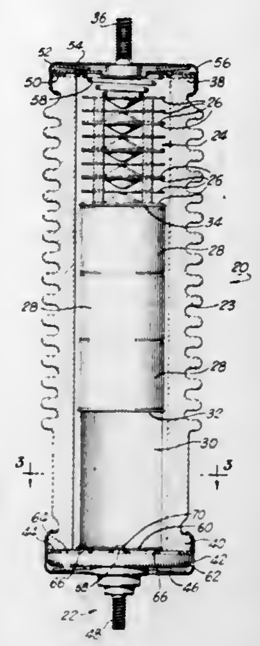
Filed May 30, 1973, Ser. No. 365,164

Int. Cl. H02h *3/22*

U.S. Cl. 317—61 **43 Claims**

1. A disconnector for a surge arrester of the type having a first elongated insulating arrester housing and arrester components disposed in the interior of said first housing, said disconnector comprising

- an electrical terminal,
- means for supporting said terminal,
- means for separating said terminal from said supporting means upon the occurrence of a fault condition and means for directly or positively venting the interior of said first housing to the interior of said disconnector prior to the operation of said separating means and to the atmosphere subsequent to the operation of said separating means.



3,869,651

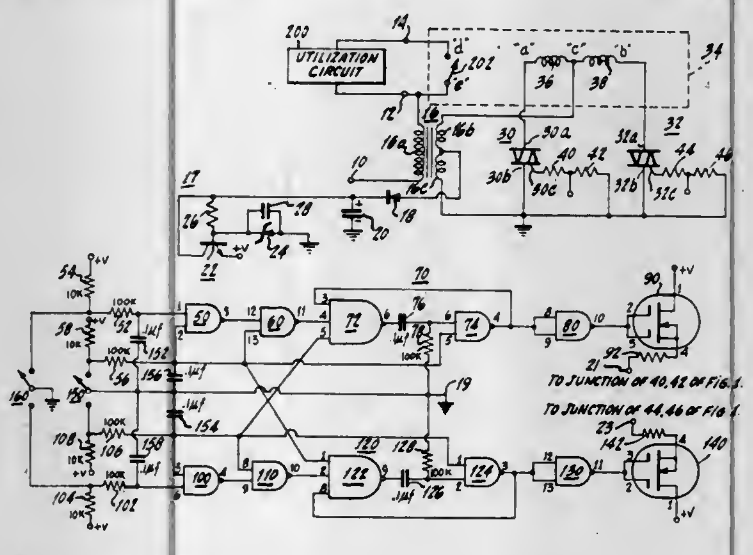
SOLID STATE, CONTROLLABLE ELECTRIC SWITCH

Donald Charles Long, Yardley; Albert Charles Hartsough, Willingboro, and Robert Fincher Sanford, Titusville, all of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Dec. 10, 1973, Ser. No. 423,229

Int. Cl. H01h *47/32*

U.S. Cl. 317—155.5 **7 Claims**



1. A controllable electrical switch comprising;

first and second terminals; and

actuating means for making electrical connection between said terminals when closing said switch and for breaking said electrical connection when opening said switch;

said actuating means including:

- a. a bistable electromechanical relay having an input electrode coupled to said first terminal and an output electrode coupled to said second terminal and conditionable to one of a low and high impedance state between its input and output electrodes as a function of current flow therein;
- b. a pair of semiconductor control devices, each having an input circuit and each having an output circuit respectively coupled to said electromechanical relay such that a conductivity condition in one of said devices produces a current flow in said relay as to place it in its low impedance state and such that a conductivity condition in the other of said devices produces a current flow in said relay as to place it in its high impedance state; and
- c. solid state control means for signal pulsing the input circuits of said semiconductor control devices to change the conductivities thereof, with said changes in conductivity conditions serving to change the current flow through the output circuits of said control devices to change the impedance state of said bistable relay in actuating said electrical switch from a make to a break condition and vice versa;

said solid state control means including a pair of pulse triggering circuits, one of which is controllable to first voltage condition for enabling the development of said signal pulses to change the conductivity of said one semiconductor device and controllable to a second voltage condition for inhibiting the development of said signal pulses therefor, and the other of which is controllable to said first voltage condition for enabling the development of said signal pulses to change the conductivity of said other semiconductor device and controllable to said second voltage condition for inhibiting the development of said signal pulses for said other device, and with only one of said pulse triggering circuits being controllable to said first voltage condition at any given instant of time.

3,869,652

METAL OXIDE DIELECTRIC LAYERS FOR CAPACITORS

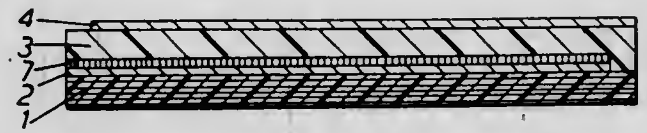
Jean Paul Maillot, Saint-Berthevin-les-Lavai, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 341,184

Claims priority, application France, Mar. 15, 1972, 72.08961

Int. Cl. H01g *9/05, 3/17*

U.S. Cl. 317—230 **7 Claims**



1. A wound capacitor comprising an insulating support layer, a first metallized electrode layer on said support layer, a manganese dioxide layer on said first electrode layer, a metal oxide dielectric layer on said manganese dioxide layer, and a second metallized electrode layer on said metal oxide dielectric layer, said metal oxide dielectric layer being an oxide of a metal other than that of the metal of said second electrode layer.

3,869,653

ON-OFF CONTROL DEVICE FOR DC ELECTRIC MOTOR

Isao Masuzawa, Kuki; Kazutoshi Onishi, and Tsuneo Awano, both of Yokohama, all of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,346

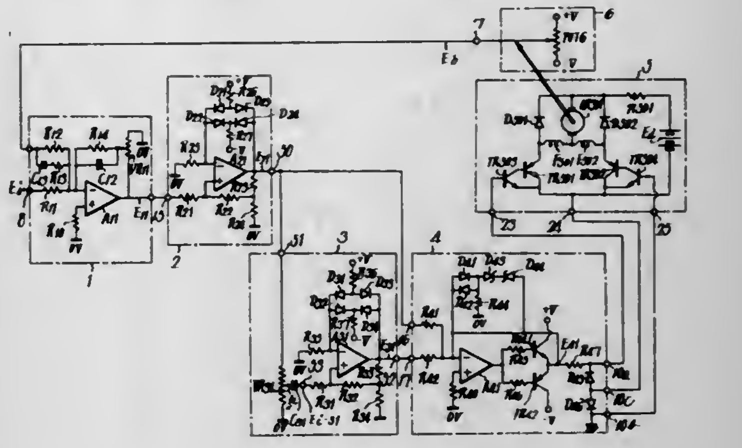
Claims priority, application Japan, July 10, 1972, 47-68930

Int. Cl. H02p *3/00*

U.S. Cl. 318—364 **7 Claims**

1. An ON-OFF control device for a DC electric motor comprising:

- a switching means for controlling a DC electric motor;
- a first means connected to said switching means and producing on- and off-signals to control said switching means with said on- and off-signals so as to drive said DC electric motor in either direction;
- a second means connected to said first means for receiving its output signals and producing on- and off-signals having a polarity which is opposite to that produced by said first means, said on- and off-signals from said second means supplied to said switching means, said second means producing on- and off-signals when said first means is changed from its on-state to off-state, said on- and off-signals from said second means having time durations related to the time interval during which said first means is in the on-state, and said second means controls said switching means so as to apply a braking signal to said DC electric motor,



- said second means including a differentiation circuit consisting of a capacitor, and a circuit having on- and off-characteristics,
- a circuit connected to said capacitor and in which the charging current path of said capacitor differs from its discharge current path,
- said circuit including complementary type transistors and diodes.

3,869,654

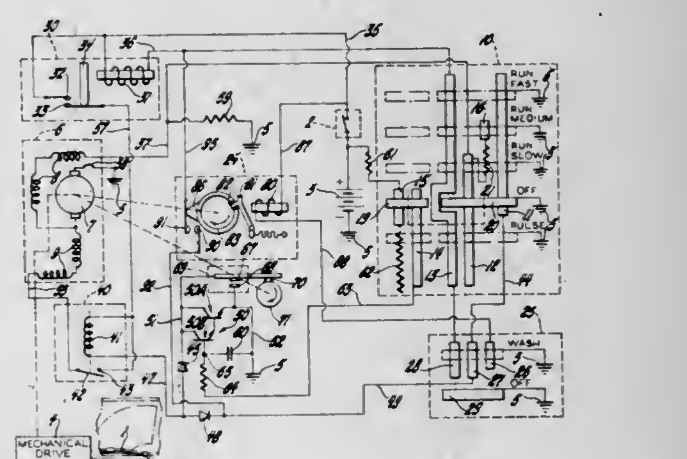
WINDSHIELD WIPER CONTROL CIRCUIT

Leo E. Bischoff, Centerville, and Chris F. Keller, Jr., Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1974, Ser. No. 466,614

Int. Cl. A47l *1/04;* **B60s** *1/08;* **H02p** *1/04*

U.S. Cl. 318—443 **4 Claims**



1. A windshield wiper control circuit comprising in combination with a windshield wiper and an electric drive motor having an armature and at least a shunt field winding for driving the windshield wiper over a normal wipe pattern between inner and outer wipe positions; an electrical relay having an operating coil and normally open contacts; and energizing circuit for said relay operating coil including first, second and third circuit branches all connected to the same terminal end thereof; an energizing circuit for said motor shunt field winding; an energizing circuit for said motor armature including said normally open contacts of said relay in series; an electrical selector switch having a plurality of stationary contacts and two gang-operated movable contacts operable to at least Off, Run and Pulse positions, one of said movable contacts and one of said stationary contacts being connected

in series in said first circuit branch of said relay operating coil energizing circuit and arranged to be in electrical circuit closed condition when said movable contacts are in said Off and Run positions and in the electrical circuit open condition when said movable contacts are in said Pulse position; a first electrical switching device having normally open current carrying elements electrically operable to the electrical circuit closed condition connected in series in said second circuit branch of said relay operating coil energizing circuit; a pulse control timing circuit activated while said movable contacts of said selector switch are operated to the Pulse position electrically coupled to said first electrical switching device for periodically operating said normally open current carrying elements thereof to the electrical circuit closed condition at spaced intervals whereby said second circuit branch of said relay operating coil is periodically completed at spaced intervals, said pulse control timing circuit determining the repetition rate of said spaced intervals; a second electrical switching device having normally closed current carrying elements which are operated to the electrical circuit open condition when said windshield wiper is in said inner wipe position connected in series in said third circuit branch of said relay operating coil energizing circuit for closing said third circuit branch when said windshield wiper is moved away from said inner wipe position and for interrupting said third circuit branch when said windshield wiper is in said inner wipe position; and a power switching device having current carrying elements which operate to the electrical circuit closed condition in response to the operation of said movable contacts of said selector switch to either said Run position or said Pulse position connected in series in said motor shunt field winding energizing circuit, said motor armature energizing circuit and said relay operating coil energizing circuit whereby said drive motor is continuously energized while said movable contacts of said selector switch are in said Run position and said motor is periodically energized at spaced intervals while said movable contacts of said selector switch are in said Pulse position.

3,869,655

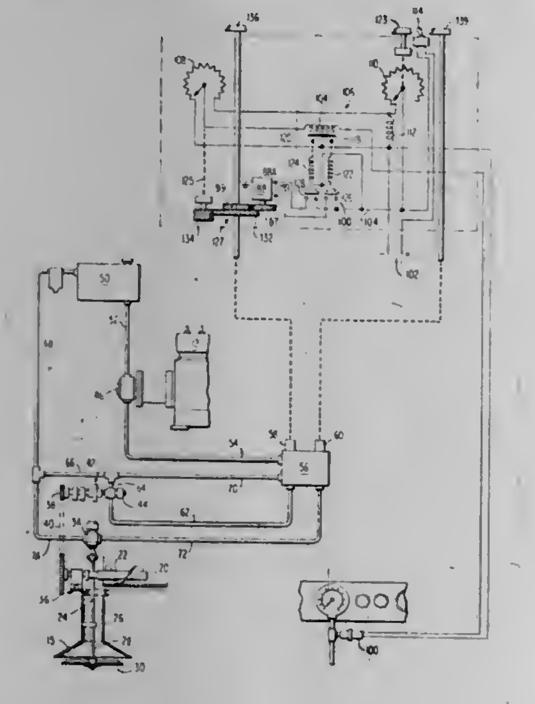
MOTOR CONTROLLED MATERIAL SPREADING VEHICLES

Eugene A. Sousek, Appleton, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Sept. 27, 1972, Ser. No. 292,821

Int. Cl. G05b *7/00*

U.S. Cl. 318—591 **17 Claims**



1. In a material spreading vehicle having an operator's drive station; prime mover means; container means for carrying a supply of material for being spread onto a roadway; an auxiliary driven spreader mechanism carried by said vehicle remotely of said operator's station for spreading said material at a selected rate; said auxiliary driven mechanism including auxiliary motor means; said auxiliary motor means including adjustable means for regulating the output of said auxiliary motor means; and control means for shiftng said adjustable means to vary the rate of material spreading; said control means comprising:

- control motor means;
- coupling means for drivingly connecting said control motor means to said adjustable means;
- means for automatically operating said control motor means in relation to the speed of said vehicle;
- manually operable override means disposed at said operator's station and operably connected to said coupling means for selectively disengaging said control motor means from driving connection with said adjustable means to afford manual shifting of said adjustable means by override independently of said control motor means; and
- follow-up means operably connectable to said control motor means for controlling said control motor means in response to the orientation of said adjustable means;
  - said coupling means including means for operably coupling said follow-up means and said adjustable means during automatic operation of said adjustable means by said control motor means and for maintaining such operable coupling during manual disengagement of said control motor means from said adjustable means by said override means to automatically return said adjustable means to an original pre-set posture subsequent to manual adjustment of said adjustable means by said operator.

3,869,656

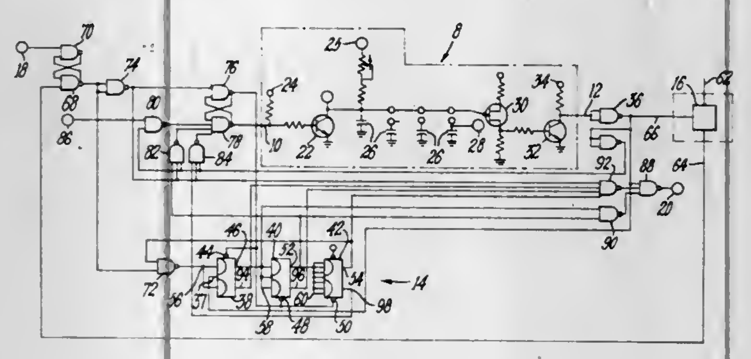
CIRCUIT FOR MODIFYING A TRAIN OF PULSES

Daniel W. Kennedy, Boston, and Walter R. Woodward, Carlisle, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 8, 1972, Ser. No. 278,742

Int. Cl. G05b *19/40*

U.S. Cl. 318—696 **1 Claim**



1. Apparatus for generating a pulse train used for driving a stepping motor, said motor being subject to possible torque reversal under certain conditions of acceleration and deceleration comprising:

- A. a pulse generator for supplying a train of pulses suitable for driving a stepping motor;
- B. a control circuit connected to the pulse generator for adjusting the pulse repetition rate of said pulse generator according to a predetermined sequence;
- C. first blanking means responsive to the control circuit for deleting the third pulse occurring after acceleration begins from the pulse train, said pulse occurring at or immediately before the point of possible torque reversal during acceleration;
- D. second blanking means responsive to the control circuit for deleting the third pulse occurring after deceleration begins from the pulse train, said pulse occurring at or immediately before the point of possible torque reversal during deceleration; and

- E. means for allowing the pulse generator to add the number of pulses deleted to the end of the pulse train.

3,869,657

QUICK CHARGING APPARATUS

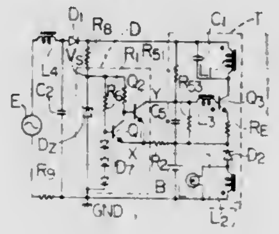
Magozo Shoji, Kadoma, and Motoharu Kitamura, Osaka, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed June 22, 1972, Ser. No. 265,301

Claims priority, application Japan, June 30, 1971, 46-57685[U]

Int. Cl. H02j *7/04*

U.S. Cl. 320—39 **11 Claims**



1. A controlled quick charging apparatus comprising a charging current source section for charging a battery to be charged, a detecting section for detecting the charging voltage of the battery to be charged, a current source section for operating said charging current source section and detecting section, and a controlling section for controlling the operation of the charging current source section in response to an output signal of the detecting section, said detecting section comprising a constant voltage device, a series circuit of a regulating resistance and a diode means and connected in parallel with said constant voltage device, a first transistor in which a constant voltage at an intermediate position between said regulating resistance and diode means of the series circuit is applied to the base, and a second transistor connected in the form of a common emitter with the first transistor, and said battery to be charged being inserted so as to be connected on its positive electrode side with the common emitter side of said first and second transistors and on its negative electrode side with the negative electrode side of the constant voltage device and with the negative electrode side of said diode means for reverse biasing said first and second transistors by the battery voltage, said first and second transistors being responsive to a predetermined battery voltage for producing said output signal to which said controlling section is responsive.

3,869,658

DIRECT CURENT SUPPLY WITH RIBBLE SUPPRESSION

Martin Hanke, and Hans Stiefken, both of Constance, Germany, assignors to Telefunken Compter GmbH, Kanstanz, Germany

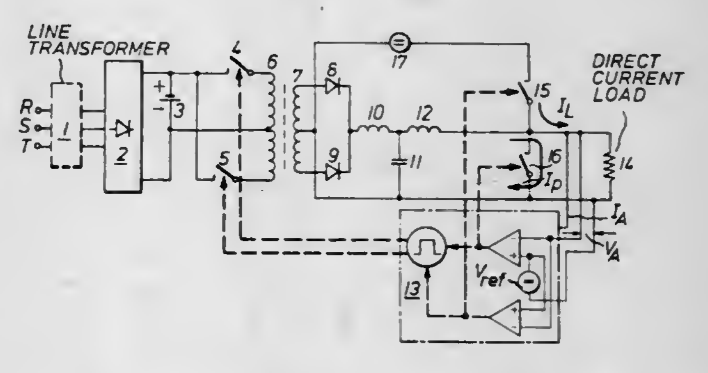
Filed Sept. 18, 1973, Ser. No. 398,406

Claims priority, application Germany, Sept. 22, 1972, 2246505

Int. Cl. H02m *1/14*

U.S. Cl. 321—2 **6 Claims**

1. In a circuit arrangement for supplying an interruption-free current for a direct current load, the arrangement including a first rectifier, connected to receive an alternating supply voltage, for rectifying the supply voltage; an energy store coupled to the output of the first rectifier for storing the rectified voltage; inverting means with phase cut control for chopping up the rectified voltage into an alternating voltage; a transformer with a primary winding coupled to the inverting means for receiving the chopped voltage and a first secondary winding with both the primary and secondary windings having center taps; a second rectifier coupled to the first secondary winding of the transformer for rectifying the chopped voltage; a smoothing filter coupled to the output of the second rectifier and having its output connected to the direct current load; and control means for monitoring the current and voltage values at the direct current load and for controlling the inverting means in dependence upon these values; the improvement comprising: first electrical switching means coupled to the output of said control means and connected for providing an extra current to said direct current load in response to control signals received from said control means when the voltage across said direct current load falls below a rated value; and second electrical switching means coupled to the output of said control means and connected for diverting a portion of the current through said direct current load in response to control signals received from said control means when the voltage across said direct current load increases above a rated value.



3,869,659

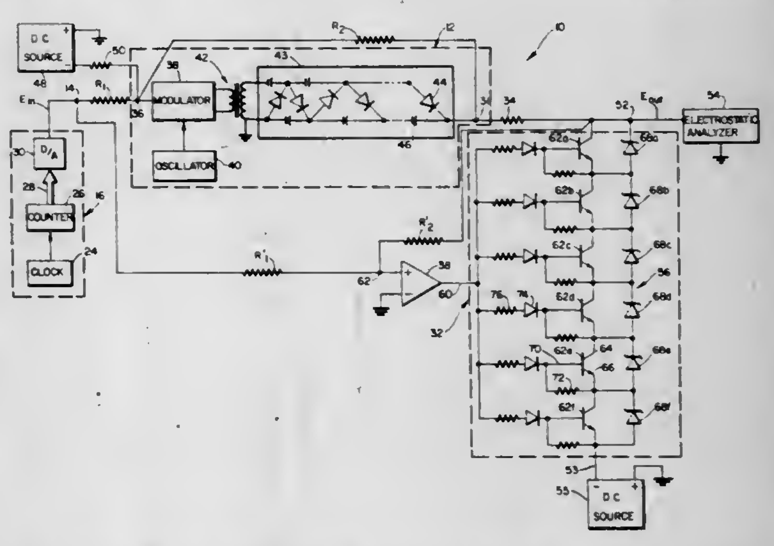
CONTROLLABLE HIGH VOLTAGE SOURCE KAVING FAST SETTLING TIME

Henry Doong, Beltsville, and Mario H. Acuna, Bowie, both of Md., assignors to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 19, 1974, Ser. No. 452,761

Int. Cl. H02m *5/20*

U.S. Cl. 321—15 **16 Claims**



1. A controllable high voltage source having a relatively fast response to a low voltage input signal source with a predetermined gain comprising:

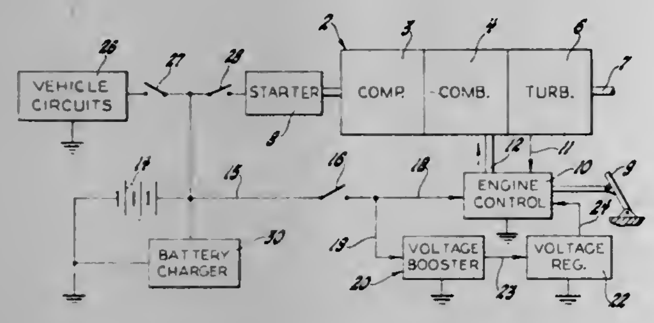
- a pair of input terminals for said input signal source;
- a pair of output terminals for high voltage output;
- a relatively long response time controllable high voltage source coupled between said input and output terminals, said long response time source having said predetermined gain;
- means for d.c. biasing said long response time controllable voltage source to have an output voltage in excess of the input signal times said gain; and
- fast response time shunt regulator means coupled across said output terminals responsive to said input signal at said input terminals for reducing the output voltage

across said output terminals to said gain times said input signal.

3,869,660
VOLTAGE BOOSTER

James L. Davis, Kokomo, and Leslie Joseph Pechous, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1973, Ser. No. 410,017
Int. Cl. G05f *1/64*
U.S. Cl. 323—17 **4 Claims**

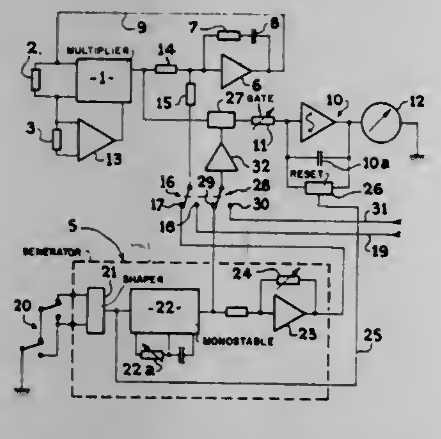


1. A voltage booster comprising, in combination, an inductive reactance, a junction point, a rectifier, and a storage capacitor connected in series across an input line; an output line connected across the capacitor; intermittently operable switching means connecting the junction point to the input so as to short circuit the reactance across the input when closed; a multivibrator controlling operation of the switching means, the multivibrator including a timing capacitor charged from the said junction point when the switch means is open and discharged when the switch means is closed; a mixing circuit including a point with a potential responsive to input and output potentials of the booster; and connecting means effective to limit potential swings of the timing capacitor relative to the potential at the said point.

3,869,661
STIMULATING DEVICE HAVING A CONTROLLED POWER

Albert Rene Castaigne, Toulouse, France, assignor to Centre D'Etudes Pour L'Industrie Pharmaceutique, Toulouse, France

Filed June 21, 1973, Ser. No. 372,292
Claims priority, application France, June 26, 1972, 72.23013
Int. Cl. G05f *1/50*
U.S. Cl. 323—20 **3 Claims**

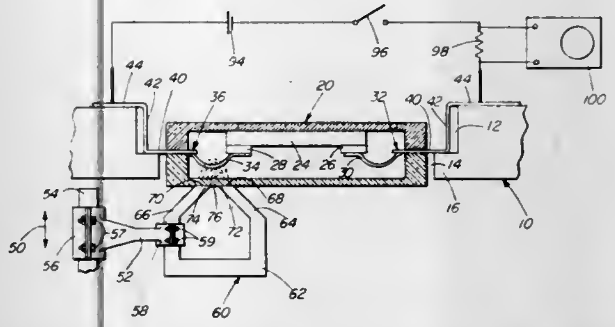


1. A device for applying to a variable load, in particular to living beings, electric signals of defined power, comprising an analogue multiplier having input voltage terminals adapted to be connected to the load to multiply the voltage difference across said terminals to produce an output signal, a reference pulse generator producing a reference signal, a comparator for receiving and comparing said signals and for producing an error signal in response to any difference in said output and reference signals, means for applying said error signal to said load, an integrator of the output signal of the multiplier, and means for reading the energy output signal of the integrator, said generator comprising a switch having a pushbutton, a shaping circuit, a monostable circuit, and an amplifier, an output of the shaping circuit being connected to an input of the monostable circuit and the monostable circuit having an output connected to the input of the amplifier.

3,869,662
APPARATUS FOR CONTROLLABLY STRESSING INTERNAL CONDUCTORS OF A CLOSED DEVICE

Aaron C. Der Marderosian, Marlboro; Paul E. Nelson, Maynard, and Donald F. Stinnett, Framingham, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 233,532, March 10, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,685
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 R **5 Claims**



1. Apparatus for controllably stressing internal conductors of a closed device, the apparatus comprising:

support means for positioning an internal conductor of the device in a preferred location;

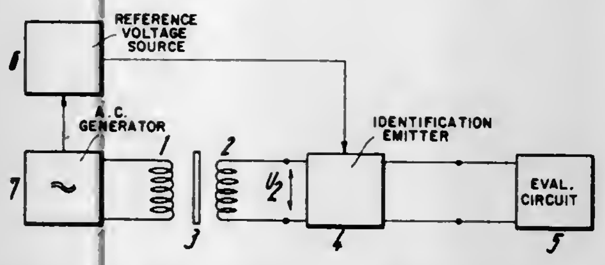
magnetic means supported adjacent an exterior surface of the device for establishing adjacent the conductor an arcuate magnetic field having a localized region of maximum intensity adjacent the exterior surface and for pulling the conductor toward the region of maximum intensity; and

electrical means operatively connected to the internal conductor for passing an electrical current through the conductor in cooperation with the action of the magnetic field, the electrical means including monitoring means for determining if the conductor is at least partially separated from a connecting portion of the device by the action of the magnetic field.

3,869,663
METHOD AND APPARATUS FOR CHECKING METALLIC OBJECTS BY MONITORING ITS EFFECT ON ONE CYCLE OF AN ALTERNATING FIELD

Klaus Tschierse, Berlin, Germany, assignor to Berliner Maschinenban-Actien-Gesellschaft, Berlin, Germany

Filed June 12, 1972, Ser. No. 261,630
Claims priority, application Germany, June 11, 1971, 2130057
Int. Cl. G01r *33/12*
U.S. Cl. 324—41 **14 Claims**

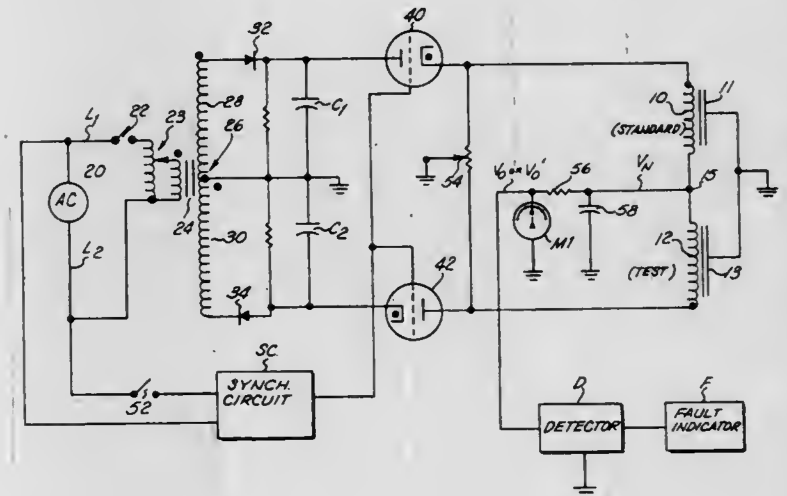


1. A system for checking metallic objects, such as coins or the like comprising means for generating a periodically alternating field through which the object is moved, detector means for measuring the change in the field at a measuring point caused by the presence of the object and providing an output signal having an alternating waveform, and evaluation circuit means connected to said detector means for comparing the positive or negative amplitude of the alternating signal within one period of the signal spread over its peak value, with a defined range of tolerance formed by two different reference voltages such that a "good-indication" of the object occurs, only if the amplitude lies between the two reference voltages, and resetting means for resetting said evaluation circuit means for each period of the signal evaluated.

3,869,664
IMPROVED SURGE TESTER FOR ELECTRICAL WINDINGS

Michael B. Safer, Shaker Heights, and Andrew J. Menegos, Copley, both of Ohic, assignors to Avtron Manufacturing, Inc., Cleveland, Ohio

Filed June 8, 1973, Ser. No. 368,306
Int. Cl. G01r *31/02, 31/06*
U.S. Cl. 324—51 **10 Claims**



1. A surge tester for testing an electrical winding and comprising:

means for simultaneously applying first and second surge voltage pulses to a test winding and a standard winding in synchronism with half cycles of one polarity of an AC voltage source, said voltage applying means including means for deriving said voltage pulses from a said AC voltage source;

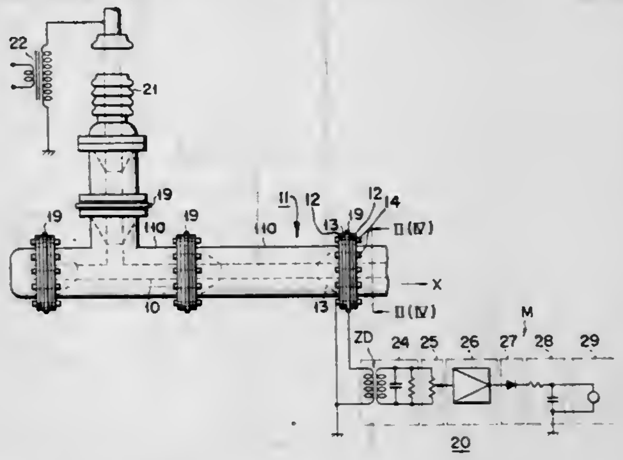
fault detector means for providing a turn on signal in dependence upon the magnitude of any difference in the voltages developed across said windings in response to application of said surge voltage pulses;

fault indicator circuit means including electronic control means for receiving a said turn on signal and exhibiting the characteristic of being gated to a conductive condition only upon receipt of said turn on signal during a time period that the potential applied to a first electrode thereof is more positive than that applied to a second electrode thereof, circuit means for connecting said first and second electrodes across a said AC voltage source in such a manner that said electronic control means is responsive to a said turn on signal only during half cycles of the opposite polarity of said AC voltage source.

3,869,665
DEVICE FOR DETECTING CORONA DISCHARGE IN AN ENCLOSED ELECTRIC DEVICE

Hiroshi Kenmochi, Fujisawa; Shinichi Menju, Atsugi, and Kunio Takahashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Co., Ltd., Kawasaki-shi and Tokyo Electric Power Co., Ltd., Tokyo, both of, Japan

Filed Nov. 8, 1973, Ser. No. 413,973
Claims priority, application Japan, Nov. 10, 1972, 47-112641
Int. Cl. G01r *31/02, 31/12*
U.S. Cl. 324—72 **3 Claims**



1. In an enclosed electric device in which a conductor to be charged with a voltage is supported within an enclosing metal case by a plurality of insulation supports spaced apart from each other along said conductor, said enclosing metal case being filled with an insulating gas,

a corona discharge detecting device comprising:

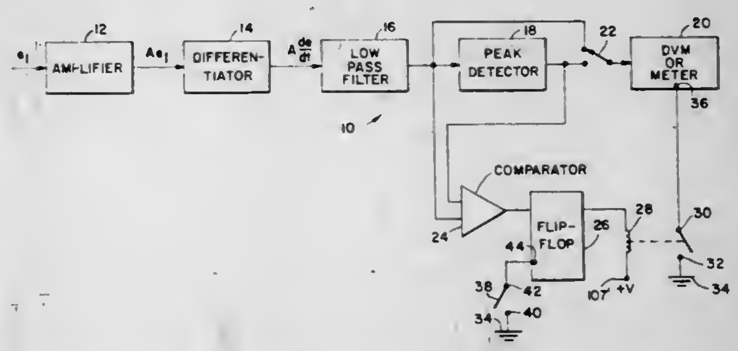
a plurality of electrodes each coupled to a respective insulation support for providing a first static capacitance (C1) relative to said conductor and a second static capacitance (C2) relative to said enclosing metal case; and

a corona discharge detector adapted to be connected in parallel with said second static capacitance (C2) and to detect, with said first static capacitance (C1) serving as a coupling capacitor, a corona discharge occurring from said conductor and insulation supports.

3,869,666
MAXIMUM SLOPE DETECTORS

Julian Saltz, 16 Benford Dr., Princeton Junction, 08550, and Joseph C. Wasilewski, 29 Melville Rd., Cranbury, both of N.J. 08512

Filed Dec. 26, 1973, Ser. No. 428,042
Int. Cl. G01r *19/12*
U.S. Cl. 324—76 R **11 Claims**



11. A slope detecting instrument for determining the maximum slope of an electrical signal provided by a signal source comprising:

a. means coupled to said signal source for amplifying said electrical signal, said amplifying means having a relatively low frequency response;
b. means coupled to said amplifying means for differentiating said amplified signal;
c. means coupled to said differentiating means for filtering said differentiated signal, said filtering means having a

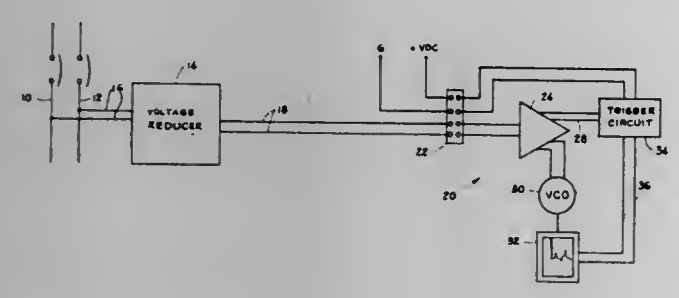
relatively low cut-off frequency for eliminating noise appearing on and introduced into said electrical signal;
d. means coupled to said filtering means for peak detecting said filtered signal;
e. means coupled to said filtering means and said peak detecting means for comparing said peak detected signal and said filtered signal;
f. means coupled to said peak detecting means for displaying said peak detected signal or said filtered signal;
g. means coupled to said comparing means for causing said displaying means to hold its last display when said peak detected signal starts to decrease.

3,869,667

VOLTAGE MONITORING SYSTEM

Carl L. Canicatti, Savannah, Ga., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 6, 1973, Ser. No. 348,787
Int. Cl. G01r *13/04, 27/28*
U.S. Cl. 324—113 **6 Claims**



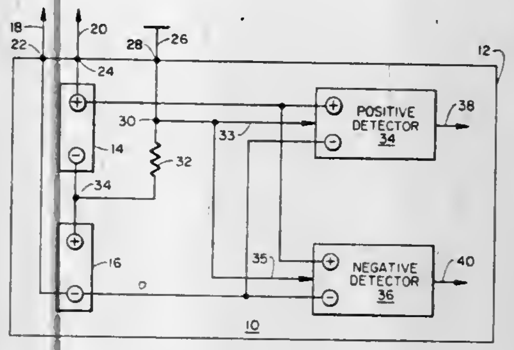
1. A system for monitoring the voltage at a remote location for determining when said voltage exceeds an upper level or drops below a lower level comprising:
A. voltage reducing means coupled to said voltage to be monitored for reducing said voltage to a predetermined level,
B. a voltage analyzer located at a station remote from said voltages being monitored,
C. transmission lines coupled to said voltage reducing means for transmitting said reduced voltage to said voltage analyzer,
D. said voltage analyzer including:
E. an amplifier means for amplifying said reduced voltage producing an amplified voltage,
F. a full wave rectifier coupled to said amplifier means for rectifying said amplified voltage producing a rectified signal,
G. an over-voltage sensing unijunction transistor coupled to said full wave rectifier for being activated when said voltage rises above an upper predetermined voltage level, to produce an over-voltage signal,
H. adjustable resistor means interposed between said over-voltage sensing unijunction transistor and said full wave rectifier for controlling the upper voltage level that said over-voltage sensing unijunction transistor is activated,
I. an under-voltage sensing unijunction transistor coupled to said full wave rectifier for being activated when said voltage drops below a predetermined lower level to produce an under-voltage signal,
J. adjustable resistor means interposed between said under-voltage sensing unijunction transistor and said full wave rectifier for controlling the lower voltage level that said under-voltage sensing unijunction transistor is activated, and
K. recorder means coupled to an output of said amplifier means whereby said recorder records said amplified voltage so that it can be subsequently analyzed,
L. means coupled to the outputs of said over-voltage and under-voltage unijunction transistors for activating said recorder means responsive to receiving an over-voltage or under-voltage signal.

3,869,668

UNDERWATER ELECTRICAL POWER LEAKAGE CURRENT DETECTOR

John R. Thompson, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1973, Ser. No. 410,010
Int. Cl. G01r *19/16, 31/02*
U.S. Cl. 324—133 **6 Claims**



1. An underwater diver protection device for detecting electrical-power leakage currents as small as two-tenths of a microampere from an underwater power source and tool comprising:
a water-tight, oil-filled, pressure-compensated case;
means for detecting positive voltages, located inside said case, having a sensor input and an output;
means for detecting negative voltages, located inside said case, having a sensor input and an output;
means for sensing electrical leakage currents as small as two-tenths of a microampere in an underwater environment, said means extending out through said case and forming a water-tight seal at all points of penetration of said case, said means also having an output terminal located inside said case, said output terminal being connected to the sensor input of said means for detecting positive voltages and to the sensor input of said means for detecting negative voltages;
means connected between said output terminal of said means for sensing electrical currents and the power source for creating a voltage that is a function of the current sensed by said means for sensing electrical currents, thereby providing a voltage input to said means for detecting positive voltages and said means for detecting negative voltages whereby said means for detecting positive voltages and said means for detecting negative voltages output a trip signal when said leakage currents are sensed.

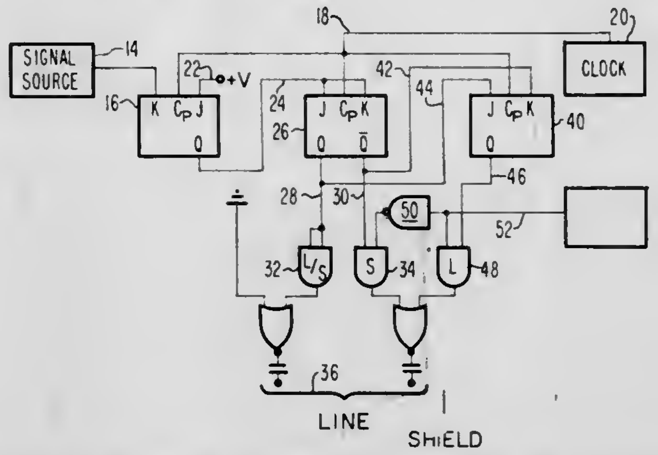
3,869,669

SYSTEM FOR HIGH FREQUENCY DIGITAL DATA TRANSMISSION

Cornelius Eldert, Ypsilanti, and Virgilio J. Quiogue, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,292
Int. Cl. H04l *27/10*
U.S. Cl. 325—30 **11 Claims**

1. A high frequency digital data transmission system comprising:
encoding means for converting a bit pattern into an improved two-frequency differential signal wherein each bit state is represented by at least one full cycle of said differential signal said differential signal cycle comprised of the sum of a bit signal and the reciprocal of said bit signal delayed by a predetermined portion of the cycle time said encoding means comprising:
a clock for generating clock pulses;
a first flip flop responsive to the bit pattern and said clock; a second flip flop responsive to said first flip flop for producing a bit signal;
a third flip flop responsive to said second flip flop for producing a delayed bit signal;



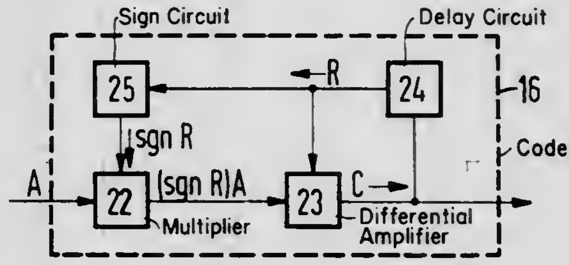
interface means to apply the combination of said bit signal and the reciprocal of said delayed bit signal to said transmission means thereby forming said improved differential signal;
a transmission means for transmitting said differential signal; and
receiver means responsive to said transmission means for converting said differential signal into a signal representing said bit pattern.

3,869,670

ARRANGEMENT FOR CARRYING SIGNALS

Sigmar Grutzmann; Heinz Sailer, both of Munich, and Gero Schollmeier, Gauting, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 14, 1973, Ser. No. 359,893
Claims priority, application Germany, May 16, 1972, 2223842
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 A **5 Claims**



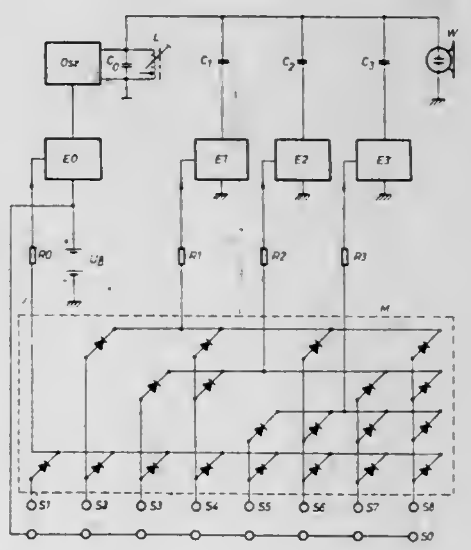
1. A circuit arrangement for transmitting amplitude-modulated signals capable of assuming a plurality of amplitude levels, said circuit arrangement including coding means and signal shaping means for forming, from said amplitude modulated signals, a composite signal comprising a plurality of partial response pulses, said composite signal being periodically sampled at a receiver at the end of each system clock period, said circuit arrangement comprising;
converter means including multiplier means for multiplying said amplitude modulated signal with a sign signal, said sign signal being capable of assuming one of two values, for providing a product signal which has an amplitude equal to that of the amplitude modulated signal and a polarity corresponding to the value of the sign signal,
difference means for receiving said product signal and producing therefrom a differential signal, the amplitude of which corresponds to the difference between the values of first and second signals,
delay means for receiving said differential signal and delaying same by a period corresponding to at least two periods of the system clock,
means for deriving said sign signal from said delayed differential signal and for coupling said sign signal to said multiplier means,
means for routing said multiplication signal and said delayed differential signal to said difference means as said first and second signals and
means for coupling said differential signal to said signal shaping means for producing said composite signal for transmission.

3,869,671

METHOD OF AND CIRCUIT ARRANGEMENT FOR OPERATING A CONTROL-SIGNAL TRANSMITTER FOR REMOTE-CONTROL EQUIPMENT

Wolfgang Schroder, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,378
Claims priority, application Germany, Apr. 10, 1972, 2217124
Int. Cl. H04b *11/00, 1/04*
U.S. Cl. 325—118 **17 Claims**



1. A control signal transmitter for remote control equipment, comprising:
control signal generating means for providing a control signal;
at least one control element associated with said control signal generating means for controlling the frequency of the control signal when connected thereto;
power source;
electronic switch means, having a control input, for connecting the power source to the control signal generating means in response to a signal received at the control input;
further electronic switch means, having a control input, for operatively connecting the control element to the control signal generating means in response to a signal received at the control input of the further electronic switch means;
touch control switch means for connecting the power source to the control inputs of the electronic switch means and the further electronic switch means for providing a signal thereto so that the control signal generating means is activated and the control element is connected to the signal generating means to provide a predetermined control signal frequency;
means for rectifying the control signal; and
a capacitor connected to the rectifying means to be charged by the rectified control signal, said capacitor forming an additional voltage source for providing control and operating voltage for the electronic switch means.

3,869,672

METHOD AND ARRANGEMENTS FOR THE DIGITAL CONTROL OF OPERATING FUNCTIONS, RADIO AND TELEVISION RECEIVERS

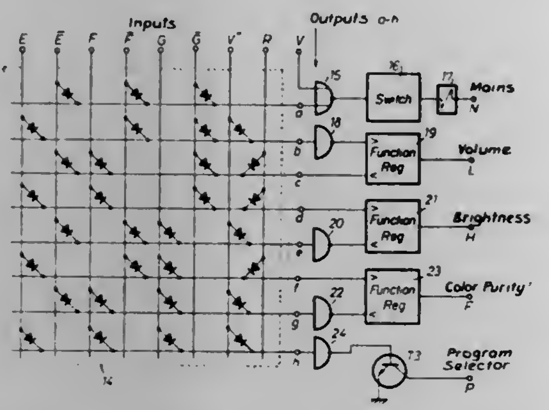
Wolfgang Schroder, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,880

Claims priority, application Germany, May 13, 1972, 2223487

Int. Cl. H04q *3/00*

U.S. Cl. 325—392 **14 Claims**



1. A command signal receiver for use in a remote control system of the type that controls a number of operating functions in a remote apparatus by transmitting a command signal having a frequency selected from a number of predetermined frequencies, each of said predetermined frequencies corresponding to one of said operating functions to be controlled, said receiver comprising:

- command signal receiving means for receiving said command signal and providing an output signal in response thereto;
- tuning means associated with said receiving means for tuning said receiving means successively and periodically to said predetermined frequencies, whereby the amplitude of the said output signal changes significantly when said receiver is tuned to the frequency of the command signal; amplitude filter means for receiving the output signal from the command signal receiving means and in response to said changed amplitude provides an amplitude signal at a filter output;
- a number of output means each associated with an operating function for providing an output to said operating function; and
- switch means connected to said filter output and associated with said tuning means and responsive thereto for successively connecting said filter output to each of said output means so that the filter output is connected to the output means associated with the operating function corresponding to the frequency to which the receiving means is tuned, whereby the amplitude signal is provided as periodic amplitude signal pulses for the digital control of the operating function corresponding to the selected frequency of the command signal.

3,869,673

METHOD AND APPARATUS FOR MEASURING MULTIPATH DISTORTION

Ernest Frederick Close, Fort Wayne, Ind., assignor to Magnavox Company, Fort Wayne, Ind.

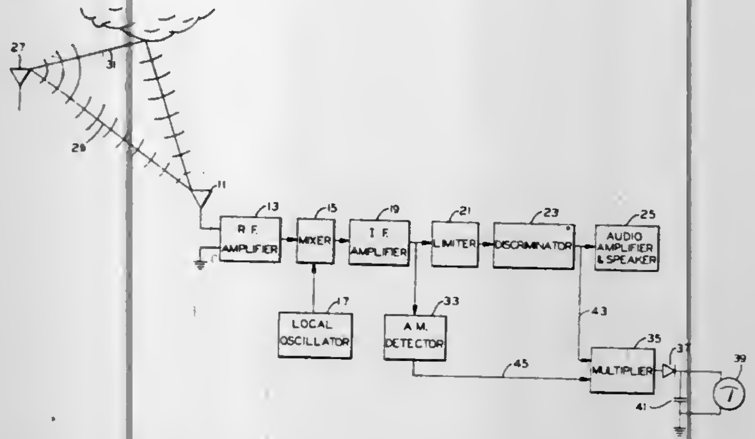
Filed May 21, 1973, Ser. No. 361,902

Int. Cl. H04b *1/16*

U.S. Cl. 325—393 **12 Claims**

1. In an FM receiver having a sequentially coupled radio frequency amplifier, mixer, intermediate frequency amplifier, limiter, frequency modulation detector and audio output stages; a circuit for providing a quantitative measure of the distortion present in a received signal due to propagation of that signal along paths of dissimilar lengths comprising:

- an amplitude modulation detector having an input coupled to the receiver prior to the limiter and having an output;
- multiple input amplifier means for providing an output signal the magnitude of which varies directly as a function of the magnitude of each input signal;
- means coupling the output of the amplitude modulation detector to at least one of the amplifier means multiple inputs;



- means coupling the output of the frequency modulation detector to at least another of the amplifier means multiple inputs;
- indicator means coupled to the output of said amplifier means output to indicate the quantitative measure of said distortion present in a received signal; and
- wherein the amplifier means comprises a multiplier circuit for forming the instantaneous product of the signals presented to the multiple inputs.

3,869,674

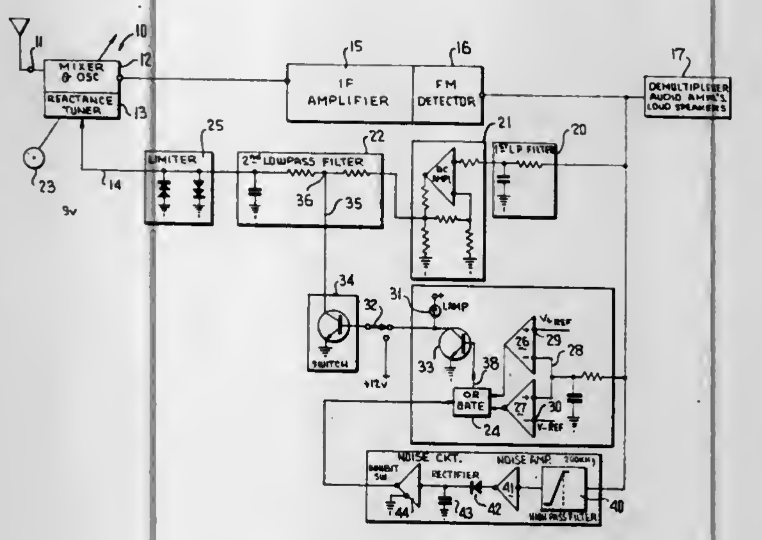
A.F.C. DISABLING CIRCUITRY

Erno Borbely, Newton Square, Pa., assignor to Dynaco Inc., Philadelphia, Pa.

Filed Dec. 26, 1972, Ser. No. 318,345

Int. Cl. H04b *1/14, 1/26*

U.S. Cl. 325—422 **11 Claims**



6. In a frequency modulation receiver, a frequency detector and a reactance tuner responsive to a signal from said detector, said signal approaching zero level when said tuner is tuned to the center frequency of a broadcast channel, feedback circuit means connected to said detector for automatically tuning said reactance tuner toward said center frequency only while said signal represents predetermined frequency deviation limits from said center frequency, means responsive to said signal only when said signal is above a predetermined level for disabling said feedback circuit, and means responsive to interchannel noise for disabling said feedback circuit.

3,869,675

HEATING ARRANGEMENT WITH FOCUSED ELECTRON BEAMS UNDER VACUUM

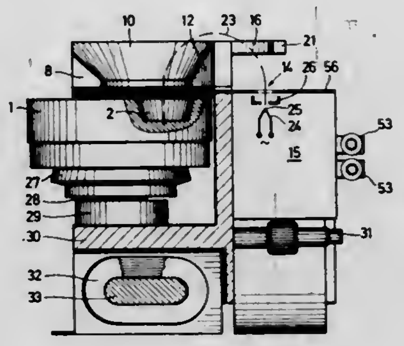
Ulrich F. M. Patz, Breslauer Str. 23, 875 Aschaffenburg; Peter Sommerkamp, Amselstr. 20-50, 6451 Hanau, and Julius Josephy, Beethovenstr. 18, 6451 Grosskrotzenburg, all of Germany

Filed Feb. 7, 1973, Ser. No. 330,177

Claims priority, application Germany, Feb. 2, 1972, 2206995

Int. Cl. H01j *29/68*

U.S. Cl. 328—228 **10 Claims**



1. A heating arrangement comprising, in combination, a source of focused electron beam means under vacuum having a heating cathode and focusing means; electro-magnetic deflection means for deflecting and guiding said beam means along arc-shaped trajectories through an opening and a predetermined angle and onto a predetermined target surface; at least two pole piece systems in said electro-magnetic deflection means for establishing different magnetic fields, one of said pole piece systems having a predetermined shape with inclined surfaces forming a substantially V-shaped channel, whereby the field intensity of said one pole piece system decreases from the inner edge of said beam means to the outer edge of said beam means in the plane of said trajectories; and an auxiliary pole piece system having an axis directed perpendicular to the plane of said trajectories and arranged behind said cathode when viewed from said target surface, said auxiliary pole piece system having a predetermined shape with exit surfaces which are inclined in the direction toward said opening, whereby the field intensity of said auxiliary pole piece system decreases from the outer edge of said beam means to the inner edge of said beam means in the plane of said trajectories.

3,869,676

DIODE-QUAD BRIDGE CIRCUIT MEANS

Dean R. Harrison, Sunnyvale, and John Dimeff, San Jose, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 209,618, Dec. 20, 1971, abandoned. This application Apr. 22, 1974, Ser. No. 462,844

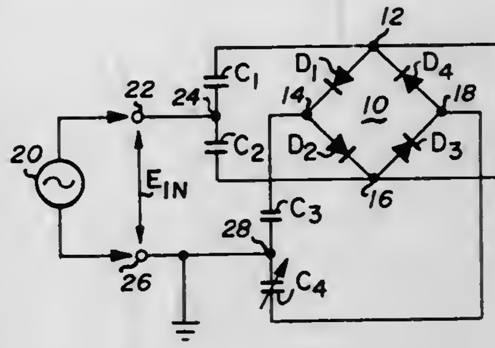
Int. Cl. H03d *1/54*

U.S. Cl. 329—204 **11 Claims**

1. A transducer circuit, comprising:

first and second input terminals;

- a diode bridge including first, second, third and fourth bridge terminals consecutively coupled together by four diodes polarized in circulating relationship;
- a signal source for developing a signal of balanced alternating polarity across said first and second input terminals; a first capacitor coupling said first input terminal to said first bridge terminal, and a second capacitor coupling said first input terminal to said third bridge terminal; and
- a first impedance means coupling said second bridge terminal to said second input terminal, and a second impedance means coupling said forth bridge terminal to said second input terminal, the impedance of at least one of said first and second impedance means being variable, and the impedances of each of said first and second capacitors being small with respect to the impedances of each of said first and second impedance means at the frequency of said signal source, whereby an output signal developed across said first and third bridge terminals is proportional to the difference between the impedances of said first impedance means and said second impedance means divided by the sum of the impedances of said first impedance means and said second impedance means.



3,869,677

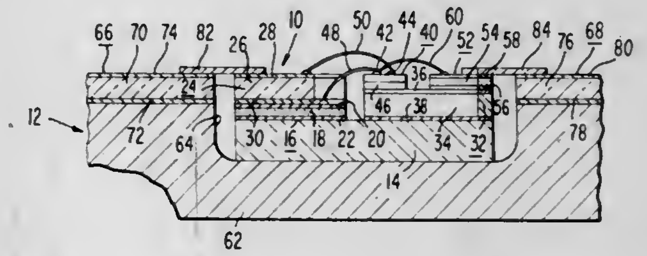
MICROWAVE TRANSISTOR CARRIER FOR COMMON BASE CLASS A OPERATION

Erwin Franz Belohoubek, and Adolph Presser, both of Kendall Park, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,576

Int. Cl. H03f *3/04*

U.S. Cl. 330—31 **8 Claims**



1. A transistor carrier adapted to be mounted in a microwave stripline circuit operable at a given frequency comprising:

- an electrically conductive substrate,
- an input means,
- an output means
- a capacitor mounted on said substrate and having one side electrically connected to said substrate,
- a transistor mounted on said substrate, said transistor including base, emitter and collector electrodes, the collector electrode being electrically connected to the output means, the emitter electrode being electrically connected to the input means and the base electrode being electrically connected to the other side of the said capacitor by a base lead having an inductance, said base lead and said capacitor being series resonant at said given frequency.

3,869,678

MULTIPLE TRANSISTOR MICROWAVE AMPLIFIER

Donald Edwin Mahoney, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,936

Int. Cl. H03f *3/60*

U.S. Cl. 330—53 **5 Claims**

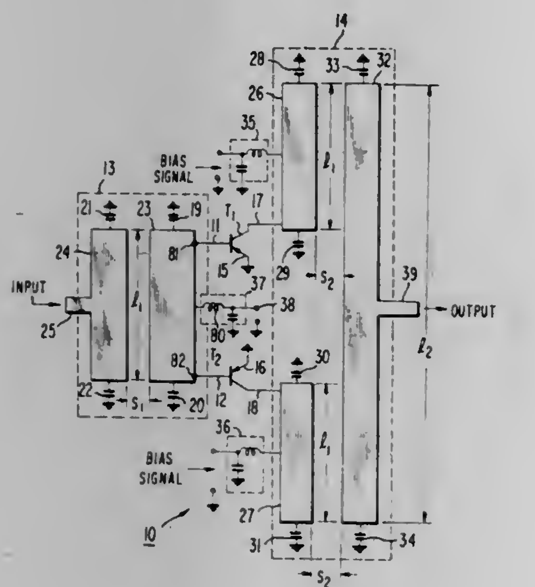
1. An amplifier comprising:

- first, second, third, fourth and fifth resonant lengths of transmission lines each having center conductors with opposite ends capacitively coupled to a reference potential;

input circuit means having an input terminal and first and second output terminals and said first and second transmission line center conductors being respectively capacitively coupled to each other for dividing an input signal coupled to said input terminal between said output terminals with substantially equal magnitude and equal relative phase;

output circuit means having first and second input terminals and an output terminal and said third and fourth transmission line center capacitively coupled to said fifth transmission line center conductor for summing input signals coupled to said first and second input terminals of said output circuit;

a first semiconductor device having first, second and third terminals, an input impedance and an output impedance, said first terminal of said first device being coupled to said first output terminal of said input circuit, said second terminal of said first device being coupled to said first input terminal of said output circuit and said third terminal of said first device being coupled to said reference potential, said first and second transmission line center conductors being mutually arranged to match said first semiconductor input impedance and said third and fifth transmission line center conductors being mutually arranged to match said first semiconductor output impedance;



a second semiconductor device having first, second and third terminals, an input impedance and an output impedance, said first terminal of said second device being coupled to said second output terminal of said input circuit, said second terminal of said second device being coupled to said second input terminal of said output circuit and said third terminal of said second device being coupled to said reference potential, said first and second transmission line center conductors being mutually arranged to match said second semiconductor input impedance and said fourth and fifth transmission line center conductor being mutually arranged to match said second semiconductor output impedance;

means for coupling an input microwave signal to said input circuit input terminal;

means for coupling a predetermined D.C. bias to said first and second semiconductor devices; and

means responsive to said input microwave signal and said D.C. bias for coupling an output microwave signal from said output circuit output terminal.

3,869,679

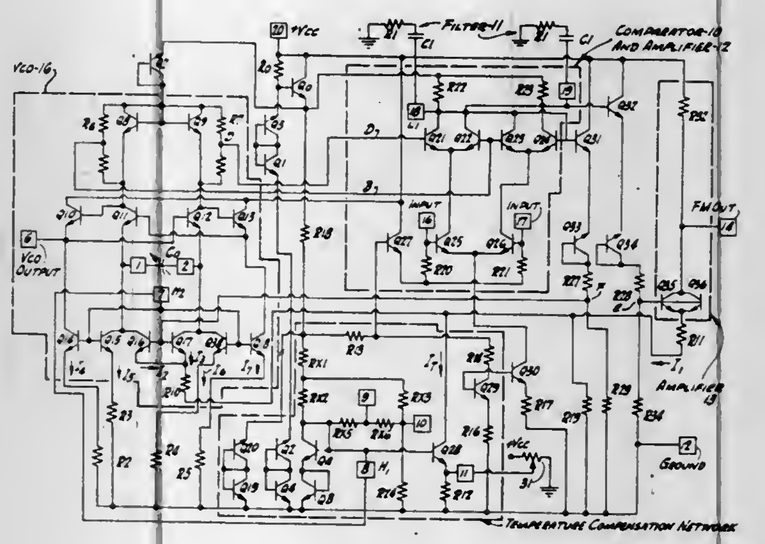
PHASE LOCKED LOOP WITH LIMITED TRACKING RANGE

Alan B. Grebene, Saratoga, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 381,041, July 20, 1973, abandoned, which is a division of Ser. No. 283,555, Aug. 24, 1972, abandoned, which is a continuation of Ser. No. 105,538, Jan. 11, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 437,148

Int. Cl. H03b *3/04;* H03k *3/282*

U.S. Cl. 331—8 **2 Claims**


+Vcc
FILTER-11
COMPARATOR-10 AND AMPLIFIER-12
VCO-16
VCO OUTPUT
INPUT
INPUT
FM OUT
GROUND
TEMPERATURE COMPENSATION NETWORK

1. In a phase locked loop, a phase comparator for receiving an input signal and providing an output, filtering means coupled to the output of the phase comparator and providing a filtered output serving as a frequency control signal, and a voltage controlled oscillator coupled between the output of said filter means and the phase comparator said voltage controlled oscillator having a free running frequency of oscillation, said voltage controlled oscillator being responsive to the magnitude of said frequency control signal for producing an output signal having a frequency related to such magnitude of said frequency control signal, said voltage controlled oscillator including an input terminal and an output terminal, a multivibrator coupled between said input terminal and said output terminal for respectively receiving said frequency control currents, and producing said output signal, said multivibrator including first and second transistors, load means coupled to said first and second transistors, cross coupling means coupling said transistors to provide regenerative feedback between said transistors, said cross coupling means including a timing capacitor, means for charging the timing capacitor including a constant current source for supplying a constant current, I_5, to said timing capacitor to substantially determine said free running frequency of oscillation, f_o, and a variable current source for supplying a variable current, I_2, to said timing capacitor, the sum of said current, $I_2 + I_5$, determining said frequency of said output signal, said summed currents being alternately switched by said first and second transistors, means for controlling said variable current from said variable current source in accordance with said frequency control signal whereby the frequency deviation, Δf, of said output signal of said multivibrator is substantially independent of the free running frequency of oscillation of the multivibrator and means coupled to said variable current source for limiting, I_2, to a maximum value, $I_{2(MAX)}$, the maximum frequency deviation of said output signal being determined by

$$(\Delta f/f_{o\ MAX} = [I_{2(MAX)}/I_{2(MAX)} + I_5].$$

3,869,680

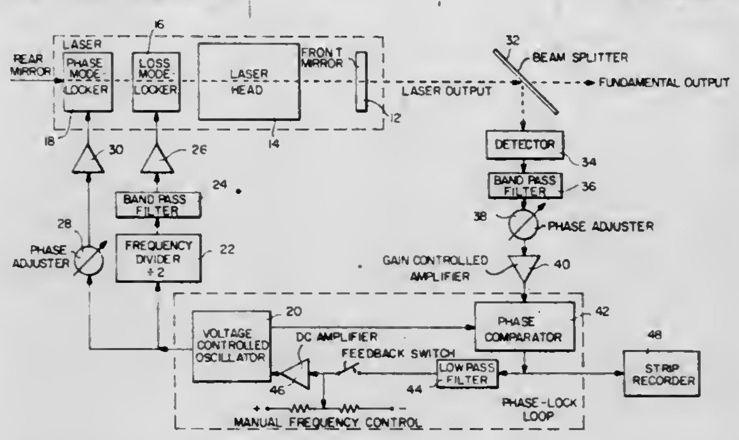
DUALLY MODE-LOCKED ND:YAG LASER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John Osmundson, 100 E. Middlefield Rd., Apt. 1K, Mountain View, Calif. 94040; H. Edward Rowe, General Delivery, Laurel, Md. 20810, and Dominick Santarpia, 13111 Taney Dr., Beltsville, Md. 20705

Filed Aug. 31, 1973, Ser. No. 393,528

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 M **9 Claims**



1. A method of mode-locking a pulsed laser system of the type including a laser cavity defined by a pair of at least partially reflecting mirrors with an active gain lasing medium disposed in the cavity, said method comprising the steps of:

inserting a loss-modulator mode-locking element and a phase modulator mode-locking element into the laser cavity in optical series with one another to effect simultaneous loss mode-locking and phase mode-locking;

generating modulation drive signals to each mode-locking element such that each mode-locking element produces an output pulse train of substantially the same repetition rate; and timing the mode-locked pulses so produced such that the pulses leaving the phase modulator mode-locking element and propagating toward the loss modulator mode-locking element arrive at the loss modulator mode-locking element when transition through the loss mode-locker is at a maximum.

3,869,681

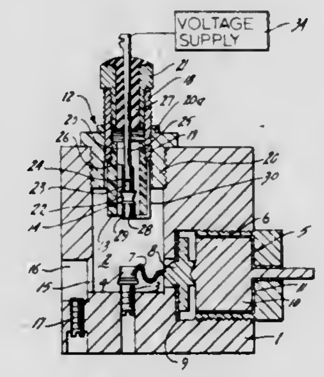
MICROWAVE CAVITY OSCILLATOR HAVING A FREQUENCY TUNING ELEMENT

Carl F. Klein; Lawrence B. Korta, and James R. Bailey, all of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 285,048

Int. Cl. H03b *7/12*

U.S. Cl. 331—96 **14 Claims**



1. A microwave cavity oscillator tuning element for tuning of the cavity frequency of a cavity oscillator comprising a dielectric tuning means movably mounted within a cavity opening of said cavity oscillator and having an inner end, said dielectric tuning means constituting a first means to tune the cavity frequency, a voltage variable capacitor means mounted for movement with said dielectric tuning means and having an input terminal means and a coupling conductor means extending from the inner end of the dielectric tuning means, said variable capacitor means constituting a second means to further tune the cavity frequency.

3,869,682

SURFACE ACOUSTIC WAVE CODE GENERATOR

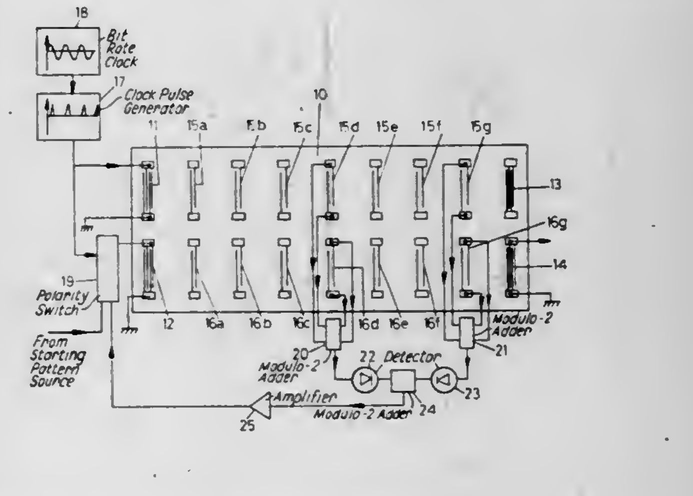
John Stuart Heeks, Harlow, and John Josiah Crisp, Little Hadham, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,506

Claims priority, application Great Britain, May 3, 1973, 21070/73

Int. Cl. H03c *3/28;* H03k *13/00*

U.S. Cl. 332—11 R **17 Claims**



1. A binary code generator comprising:

a first surface acoustic wave tapped delay line;

first means for generating clock signals having a repetition rate equal to the binary code bit rate;

second means coupled to said first means and said first delay line for inserting phase modulated RF signals into the input of said first delay line, said second means being under control of said clock signals;

third means coupled to said first delay line to derive first and second output signals from first and second tapping points of said first delay line;

fourth means to derive for said first and second tapping points first and second phase reference signals by which the RF phase of said first and second output signals of said first and second tapping points can be checked;

fifth means coupled to said first and second tapping points and said fourth means to compare said first and second output signals with respect to said first and second phase reference signals resulting in third and fourth output signals;

sixth means coupled to said fifth means to perform a modulo-2 addition of said third and fourth output signals resulting in a fifth output signal; and

seventh means coupled to said sixth means to apply said fifth output signal as a feedback signal to said second means to modify said phase modulation of said phase modulated RF signals.

3,869,683

VARIABLE BROADBAND DELAY LINE

Martin M. Sokoloski, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

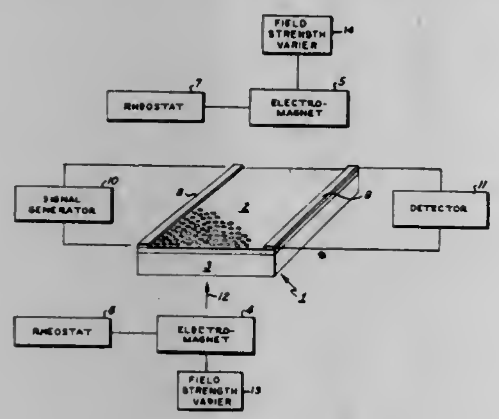
Filed Jan. 25, 1974, Ser. No. 436,583

Int. Cl. H03h *9/00, 9/30;* H04b *11/00*

U.S. Cl. 333—30 R **9 Claims**

1. A magnetic bubble wave shaping apparatus for shaping an input signal in accordance with a desired wave shaping characteristic comprising a film of uniaxial magnetic material saturated with a two dimensional hexagonal array of magnetic bubbles, said film extending in a plane perpendicular to the

easy axis of said magnetic material and having at least two opposite ends which are spaced apart by a distance much greater than the nearest neighbor separation of the bubbles in said material, means for producing a magnetic field which is oriented transversely to said plane of said film, means for varying the strength of said field as a function of the distance between said two ends in accordance with said desired wave shaping characteristic, a launcher electrode deposited on said film at one of said two ends and a detector probe deposited on said film at the other of said two ends, whereby the shape of an electrical signal applied to said launcher electrode is modified in accordance with said wave shaping characteristic.



3,869,684
BISTABLE LATCHING RELAY

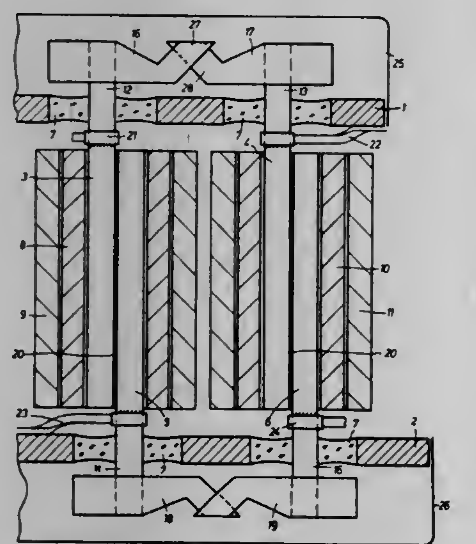
Wolfgang Grobe, Ludwigshafen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 453,147

Claims priority, application Germany, Apr. 6, 1973, 2317460

Int. Cl. H01h *1/66*

U.S. Cl. 335—152 **10 Claims**



1. A bistable latching relay comprising:
a base plate;
at least two reversible remanent-magnetic cores extending through said baseplate and sealed therein by means of glass-to-metal seals;
a soft-magnetic reed contact fixedly attached at one end of each core, each reed contact in proximate relation with the corresponding reed contact of the other core of said pair of cores;
an electrical terminal connection member attached to each of said cores;
an electromagnetic coil proximate each core for inducing magnetism of one sense when electric current passes through said coil in one direction and for inducing magnetism of an opposite sense when electric current passes through said coil in a direction opposite to said first current direction, said bistable latching relay becomes operative when electric current passing through each of said electromagnetic coils induces magnetism of opposite sense within each of said remanent-magnetic cores, said magnetism being transmitted to said soft-magnetic reed contacts causing said contacts to come in contact with each other and magnetically coupled together, and when an electric current passes through said coils to induce magnetism of the same sense within said coils, said magnetism is transmitted to said reed contacts thereby causing said contacts to open under the magnetic repulsion existing therebetween said contacts.

3,869,685
SEALED CONTACT CAPABLE OF BEING MAGNETICALLY ACTUATED

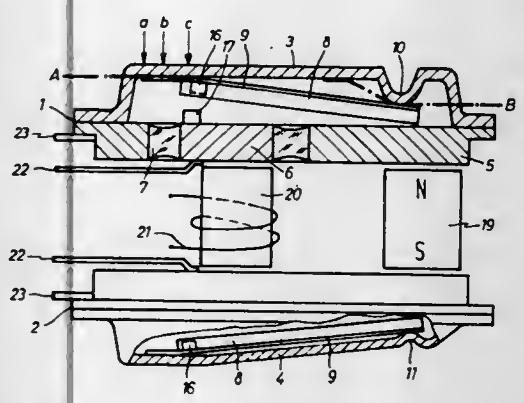
Helmut Buttel, Leonberg-Eltingen; Ingo Rudiger Isert, Bietigheim; Alfred Leicht, Stuttgart-N, and Albert Schach, Magstadt, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,020

Claims priority, application Germany, Feb. 9, 1973, 2306522

Int. Cl. H01h *1/12*

U.S. Cl. 335—196 **3 Claims**



1. A sealed contact of the type capable of being magnetically actuated and having a flat base plate including an inner and outer part joined by a glass seal, a cover of predetermined shape sealed to the base plate, an armature holding spring fixedly attached to the cover wherein the improvement comprises an armature fixedly attached to the armature holding spring said armature having a wedge-shaped cross sectional recess along a part of its length on the surface of said armature adjoining the outer part of said base plate, said recess having a deepest edge toward the pivot point formed between said armature and said base plate, and gradually decreasing in depth toward the opposite end of said armature, whereby a voltage breakdown path is provided between said armature and said base plate.

3,869,686
SUPER-CONDUCTIVE COILS INCORPORATING INSULATION BETWEEN ADJACENT WINDING LAYERS HAVING A CONTRACTION RATE MATCHING THAT OF THE SUPER-CONDUCTIVE MATERIAL

Hans Benz, Zurich, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

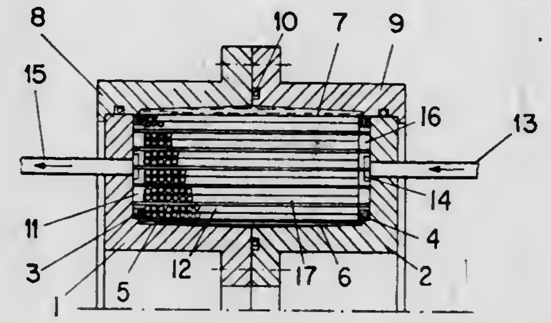
Filed Oct. 31, 1973, Ser. No. 411,219

Claims priority, application Switzerland, Nov. 6, 1972, 16029/72

Int. Cl. H01f *7/22*

U.S. Cl. 335—216 **7 Claims**

1. A magnetic field-producing coil comprising a plurality of layers wound from a conductor made of super-conductive material, said coil being impregnated with a hardened synthetic and preferably epoxy resin, and containing a system of cooling ducts, there being disposed between adjacent winding layers a reinforcing fiber layer such as will form in conjunction with the impregnating resin a system free from eddy currents and having a high degree of mechanical stability and which has a contraction rate at the operating temperature of the coil that matches the contraction rate of the super-conductive material.



3,869,687
BISTABLE CROSSPOINT MATRIX

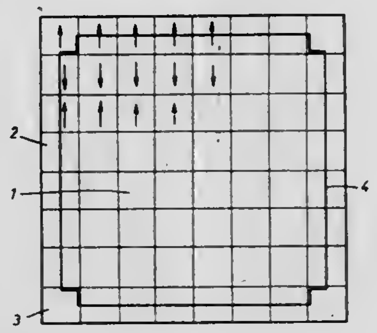
Walter Hoffmann, Munklingen; Hans-Dieter Pfeil, Mainz, and Wolfgang Mecklenberg, Asperg, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,643

Claims priority, application Germany, Dec. 7, 1972, 2260002

Int. Cl. H01h *3/12*

U.S. Cl. 335—236 **4 Claims**



1. In a crosspoint matrix of the type having a plurality of electromagnetic relays arranged in rows and columns, each relay including an electromagnetic coil and a permanent magnet, wherein the improvement comprises:
a cover sheet in magnetic proximity to said plurality of relays for selectively shunting the magnetic fields of the permanent magnets by partially covering some of the magnets and completely covering the rest of the magnets within said matrix thereby eliminating variations in magnetic forces upon the contacts within said relays.

3,869,688
CUSTOMER ADJUSTMENT SWITCH ASSEMBLY

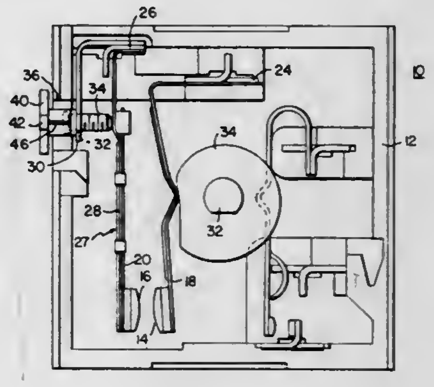
George C. Aldous, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1974, Ser. No. 436,282

Int. Cl. H01h *61/00*

U.S. Cl. 337—82 **9 Claims**

1. In an electric cooking apparatus comprising a surface heating unit supported on a counter member and including panel for supporting switch means associated with said unit, a thermal cycling switch enclosed in a housing mounted on the back face of said panel having a pair of opposed relatively movable contact carrying arms and a rotatable control shaft mounted with one end adjacent said arms and including means for controlling the closed position of said contacts, the opposite end of said shaft extending forwardly through said panel to be manually accessible for rotating said shaft between an "off" position and any various "on" positions to vary the energization time of said heating unit over a predetermined range in accordance with the closed position of said contacts for maintaining a relative cooking temperature identified by indicia associated with said position and wherein the improvement comprises:
switch calibration means for correlating, within limits, the relative temperature of said unit maintained at one of said positions of said shaft to the indicia relating to said position, said calibration means comprising means for adjusting the initial position of one contact with respect to the other, said adjusting means being incrementally movable and including a portion extending from adjacent one of said contact carrying arms to exteriorly of said switch housing, and forwardly through said panel for manual access for moving said adjusting means from the same side of said panel as the manual movement of said shaft, and abutment means for limiting the movement of said adjusting means.



3,869,689
TIME-DELAY FUSE ELEMENT

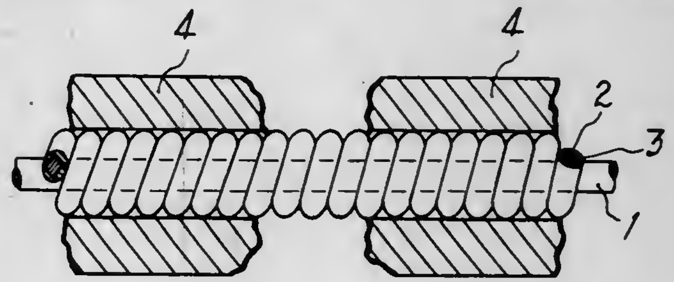
Mikizo Kasamatu, 22-7, Korikitano-cho, Neyagawa-Shi, Osaka, Japan

Filed Dec. 19, 1973, Ser. No. 426,135

Claims priority, application Japan, Dec. 26, 1972, 48-931

Int. Cl. H01h *85/12*

U.S. Cl. 337—164 **8 Claims**



1. A time-delay fuse element comprising at least two fusible electroconductive resistance wires, one of the resistance wires being coated with a meltable electrically insulating material, at least the coated resistance wire being helically wound around the other resistance wire to form a core wire constituted by the two resistance wires, and a fusible electroconductive resistance member covering the core wire and having a lower electric resistance than the core wire.

3,869,690
DOUBLE ACTING SNAP SWITCH

Colin D. Hickling, Woodstock, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

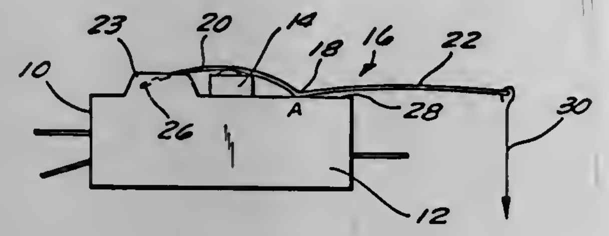
Filed Mar. 8, 1973, Ser. No. 339,367

Int. Cl. H01f *27/28*

U.S. Cl. 337—390 **5 Claims**

1. A double acting switch comprising a support having a surface, a pair of contacts mounted on said support and relatively movable with respect to each other between engaged and disengaged positions, actuating means movable relative to said support and operably connected to one of said contacts to move same between said engaged and disengaged positions, a resilient lever one end of which is pivotally mounted to said

support for movement between first, second and third positions, said lever being divided into first and second sections by a bend in said lever, said first section being defined by said one end and said bend, said first section engaging said actuating means to move same in accordance with the movement of said lever, said lever moving said actuating means such that said contact is in one of said contact positions when said lever is in the first position, in the other of said contact positions when the lever is in said second position and moved back to said one of said contact positions when said lever is in the third position, said bend abutting said support surface when said lever is in said second position such that as said lever moves from said second to said third position said first section is deformed by said surface.



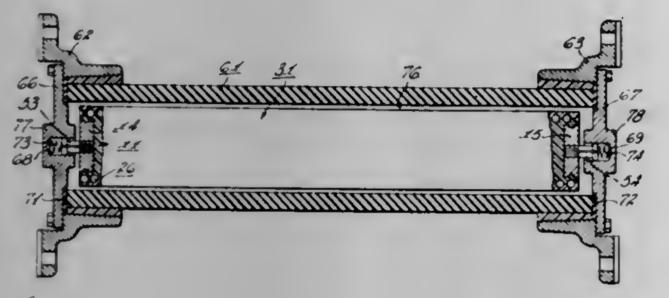
3,869,691
RESISTOR FOR POWER DISTRIBUTION CIRCUITS

Norman W. Stunkard, Lake Oswego, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 6, 1974, Ser. No. 467,553

Int. Cl. H01c *1/00*

U.S. Cl. 338—231 **7 Claims**



1. An electrical resistor;

a cylindrical core of an epoxy material, said core having a spiral groove formed in its cylindrical surface and extending from end-to-end thereof;

a metallic end plug intimately secured in each end face of said epoxy core;

a resistor wire wound on said core in the spiral groove therein;

means to electrically connect the ends of said resistor wire to an adjacent metallic end plug;

a covering of epoxy material encapsulating said wire wound epoxy core, said covering having intimate bonding contact with the epoxy material of said core to form a unitary encapsulated resistor unit; and,

electrical contact means extending outwardly from each of said metallic end plates to provide connections to electrical contacts.

3,869,692
HEATER FOR VACUUM TUBE CATHODE IN WHICH THE WIRE OF THE HEATER LEGS HAS BEEN ETCHED TO REDUCE ITS DIAMETER

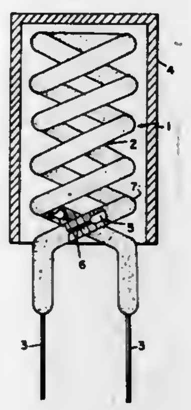
Robert C. Larson, Exeter, N.H., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 7, 1973, Ser. No. 358,016

Int. Cl. H01c *3/00;* **H01j** *1/22;* **H05b** *3/10*

U.S. Cl. 338—296 **1 Claim**

1. An insulatively coated wire-wound reverse helix heater comprising a single length of refractory metal wire, said heater having a coiled body portion and two legs, the legs longitudinally protruding substantially parallel to each other from one end of the body, the diameter of the wire in the legs being less than the diameter of the wire in the body by means of having been etched in a suitable etching liquid.



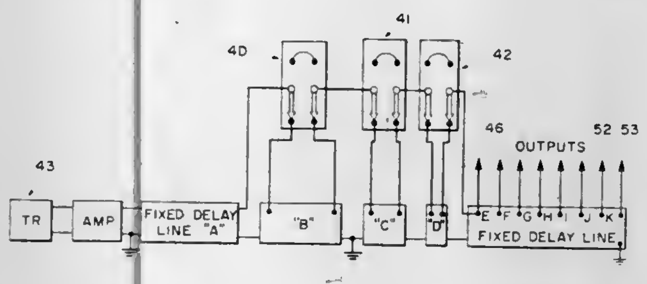
3,869,693
SCANNING ARRANGEMENT FOR SONAR BEAMS

Charles H. Jones, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1967, Ser. No. 686,379

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **8 Claims**



1. In an underwater sound detecting system of the type wherein *m* vertically spaced, directional beams are scanned to detect wave fronts arriving at a receiving site at different arrival angles, the combination of

a multiplicity of equally spaced transducers, said transducers being arranged in a vertical line at said receiving site; a similar multiplicity of delay lines, one end of each delay line being connected to a corresponding transducer whereby the signals produced by said transducers are sent down different delay lines,

said delay lines being of progressively shorter length with the delay line having the longest length being connected to the transducer at the top of said vertical line; means for extracting said signals at various points along said delay lines so as to impart to said transducers a beam pattern which includes *m* equally spaced, vertical beams with said signals corresponding to the acoustic signals picked up by said m-beams; and

means for switching portions of each delay line into and out of its delay lines thereby to shift said directional beams by incremental amounts.

3,869,694
ULTRASONIC CONTROL APPARATUS FOR AN OCULOMETER

John Merchant, Needham, Mass., and Donald J. Rotier, St. Paul, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 26, 1973, Ser. No. 409,868

Int. Cl. G01s *3/80*

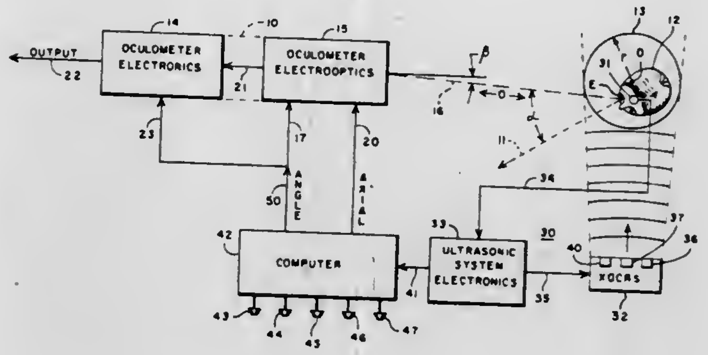
U.S. Cl. 340—16 R **6 Claims**

1. Apparatus for continuously giving an output representative of the direction of regard of an observer who is free to move and turn within an observation volume, including:

means carried in part by the observer for giving a first output representative of the coordinates of the observer's eye in a predetermined coordinate system;

optical means, including adjusting means for the focus thereof and for the angular direction of the optical axis thereof about a known center, for giving a second output in accordance with deviation of the observer's direction of regard from the direction of said optical axis; and

means energized with said first output, and settable in accordance with the coordinates in said system of said known center, for adjusting one of said adjusting means in accordance with said first output.



3,869,695
WORN BRAKE LINING ALARM CIRCUIT

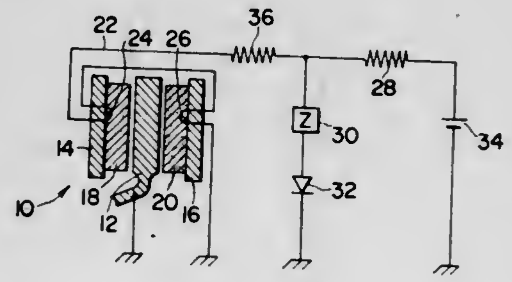
Yasuo Kita, Itami, Japan, assignor to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed July 20, 1973, Ser. No. 381,196

Claims priority, application Japan, July 24, 1972, 47-87572[U]

Int. Cl. B60t *17/22*

U.S. Cl. 340—52 A **4 Claims**



1. In combination with a worn brake-lining detector circuit of the type which is electrically interrupted when the lining wears down to a predetermined working limit, an improved alarm circuit for indicating the interruption comprising:

a. a D.C. power source,

b. voltage divider means connected to said power source,

c. a normally non-conducting two-terminal negative resistance diode coupled to said voltage divider means,

d. means connecting said detector circuit in shunt with said diode; whereby when said shunt-connected detector circuit is normally uninterrupted, the divided voltage applied to said diode by said voltage divider means is less than the threshold switching voltage, but greater than the holding voltage, of said diode; and

e. said D.C. power source having a terminal potential greater than or equal to the threshold switching voltage of said diode so that, when said detector circuit is interrupted even only momentarily, said terminal voltage is applied to said diode to render said diode conducting as an indication of the interruption, said diode remaining continuously conducting even if said detector circuit is subsequently closed.

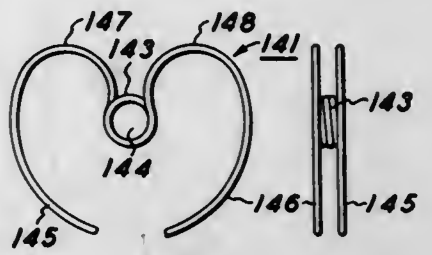
3,869,696
FUSER APPARATUS

Charles H. Snowden, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 250,671, May 5, 1972,. This application Sept. 20, 1973, Ser. No. 399,020

Int. Cl. F21v *21/00*

U.S. Cl. 240—52 R **4 Claims**



1. In apparatus wherein an elongated lamp is supported at each end by a support member within a lamp housing, an improved lamp support member comprising:

a convoluted central portion defining an aperture for receiving a lamp terminal and axially spaced oppositely curved arcuate outer portions connected to the axial ends of said central portion for supporting said lamp within said lamp housing.

3,869,697
PATTERN IDENTIFYING SYSTEMS

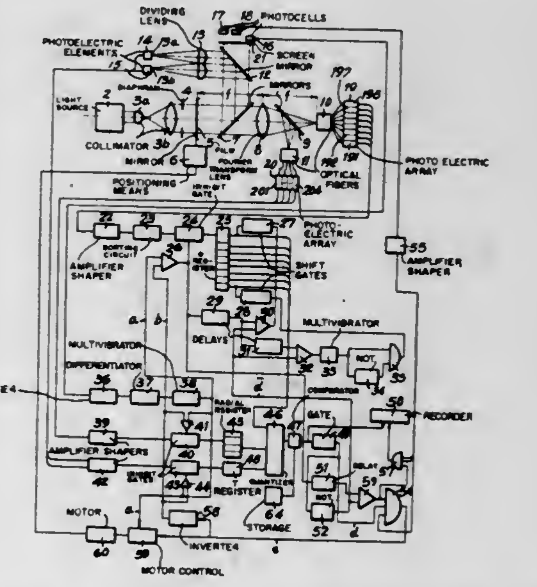
Harumi Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1973, Ser. No. 322,553

Claims priority, application Japan, Jan. 13, 1972, 47-5983

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 P **2 Claims**



1. In a system for identifying two-dimensional patterns, positioning means for positioning a pattern which is to be identified at a reading location, optical means for forming a Fourier transformation image of a pattern at said reading location, said optical means having an optical axis extending through said reading location and having elements distributed along said optical axis before and behind said reading location, photosensitive means positioned with respect to said optical axis for receiving said Fourier transformation image and for detecting angular and radial components thereof, electrical converting means electrically connected with said photosensitive means for receiving an input therefrom formed by said components and for converting said components respectively into corresponding binary representations which form an output of said electrical converting means, and correlating means electrically connected to said electrical converting means for receiving said binary output therefrom and for

electronically correlating said output with reference binary representations to achieve therefrom a signal which identifies the pattern at said reading location, a differentiating means being optically connected with said optical means for differentiating between two parts of the pattern at said reading location prior to its formation into a Fourier transformation image, and electrical transmitting means electrically connected between said differentiating means and said correlating means for comparing the two parts and transmitting to the differentiating means an additional signal according to the difference between the light passing through two parts of the pattern at said reading location for providing at said correlating means an increased capacity for discriminating between different patterns.

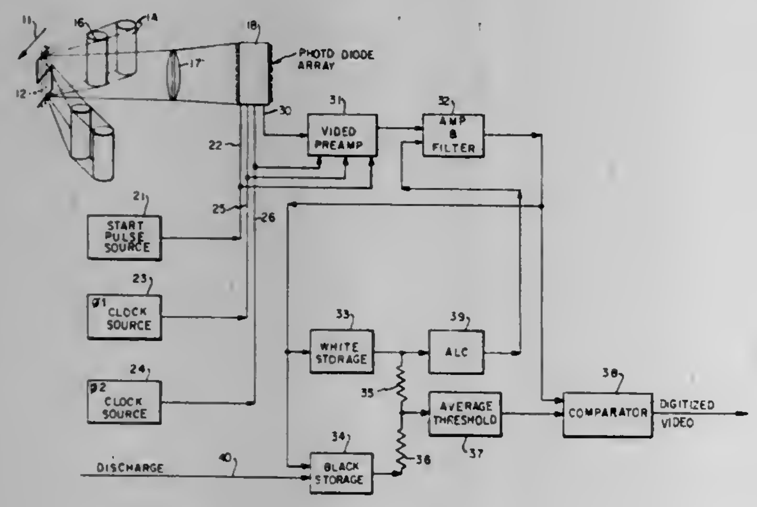
3,869,698
OPTICAL CHARACTER RECOGNITION VIDEO AMPLIFIER AND DIGITIZER

Edward Trost, Philadelphia, and Clifford E. Martin, Lansdale, both of Pa., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,128

Int. Cl. G06k *9/00*

U.S. Cl. 340—146.3 AG **6 Claims**



1. In optical character recognition apparatus including an array of photoconductive diodes for optically scanning the characters to be recognized, a source of start signals for starting the scanning of the diode array, and a source of clock signals for sequencing the scanning of the diode array; a video amplifier and digitizer comprising:

- an amplifier connected to said diode array for receiving and amplifying the video signal from said diode array;
- first and second storage means connected to said amplifier for storing the positive and negative peak values, respectively, of said video signal, one of said peak values corresponding to the light background of the characters to be recognized and the other peak value corresponding to the dark portions of the characters to be recognized;
- means connected to said first and second storage means for deriving a threshold level between said positive peak value and said negative value;
- comparison means responsive to said amplified video signal and said threshold level for producing a digitized output signal having a first level when said amplified video signal is more positive than said threshold level and a second level when said amplified video signal is more negative than said threshold level; and
- negative feedback means connected between the storage means storing said one peak value corresponding to the light background and said amplifier for stabilizing said one peak value of the amplified video signal, despite variations in the reflectivity of the light background of the characters to be recognized.

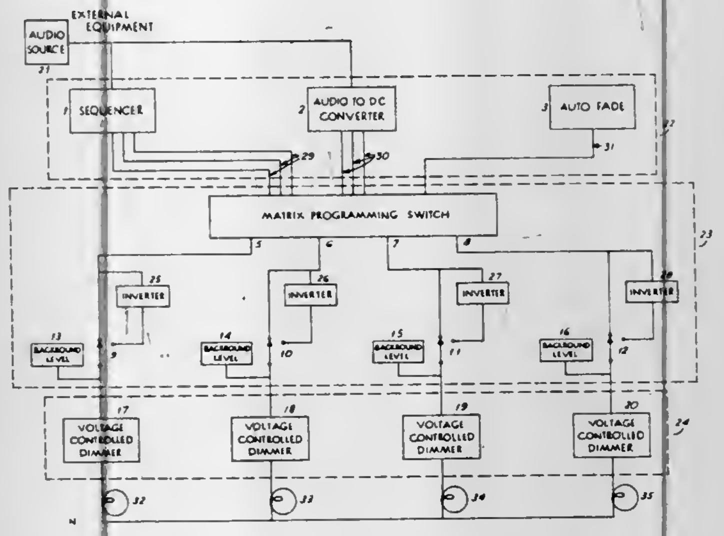
3,869,699
AUDIO RESPONSIVE APPARATUS FOR CREATING LIGHTING EFFECTS

John Jacob Haller, Boonton, N.J., and Lawrence Silverman, Ivorytown, Conn.

Filed May 16, 1973, Ser. No. 360,639

Int. Cl. G08b *5/36*

U.S. Cl. 340—148 **9 Claims**



1. An apparatus for creating lighting effects comprising:

a. means for generating a first plurality of low power electrical signals, includlng at least:
  i. means for supplying audio signals; and first means responsive to said audio signals and having at least three output terminals, for generating first, second, and third low power electrical d-c signals at each of said terminals, respectively, in a predetermined sequence, and at a predetermined rate, said rate being controlled by the amplitude of said audio signals; and
  ii. means for generating at least one low power electrical signal having a triangular waveform;
b. means for electrically coupling said low power electrical signals to said next-mentioned programable switching means;
c. programable switching means comprising in combination:
  i. a plurality of input terminals corresponding on a one to one basis with said plurality of low power electrical signals electrically coupled from said generating means;
  ii. a plurality of output terminals corresponding on a one to one basis with the below-mentioned plurality of lamp intensity control means; and
  iii. means for electrically intercoupling said input terminals and said output terminals in a predetermined order;
d. a second plurality of lamp intensity control means, each having input terminal means, responsive solely to said low power electrical signals intercoupled to said output terminals; and
e. means for electrically coupling said output terminals to said input terminal means of said plurality of lamp intensity control means.

3,869,700
STORED VALUE SYSTEM

Kenneth Allen Cook, Pine Island, and Townsend Henry Porter, Jr., Rochester, both of Minn., assignors to International Business Machines Coporation, Armonk, N.Y.

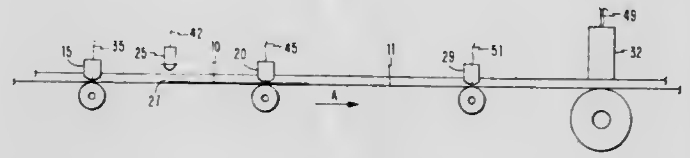
Filed Dec. 26, 1972, Ser. No. 317,982

Int. Cl. G06k *7/08*

U.S. Cl. 340—149 A **6 Claims**

1. A stored value system comprising

- a stored value card with a magnetizable layer on which digital signals are encoded on first and second portions and whereon said digital signals store a value balance, said first portion having a security word encoded thereon and said second portion having a data word, including security data with a predetermined correspondence to said security word and said value balance, encoded thereon;
- a device for processing said stored value card and including a document path along which said card is transported;
- sensing means positioned adjacent said document path for sensing data encoded on said magnetizable layer;



- compare means for comparing said security word encoded in said first portion with said security data encoded in said second portion to test for the presence of said predetermined correspondence;
- encoding means positioned adjacent said document path subsequent to said sensing means for reencoding digital signals on said magnetizable layer when said test indicates the presence of said predetermined correspondence between said security words; and
- control means for limiting operation of said encoding means to the period during which said magnetizable layer second portion progresses past said encoding means.

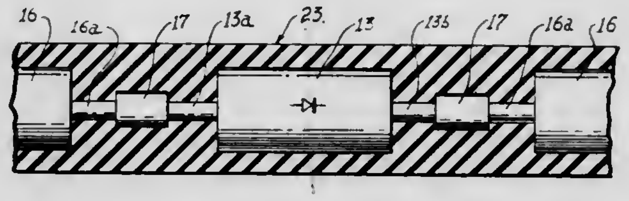
3,869,701
A PLURALITY OF ELECTRONIC ELEMENTS CONNECTED TOGETHER BY INTERCONNECTING WIRES AND CONNECTING JOINTS

Douglas G. Waltz, c/o Varo Semiconductor Inc., 1000 North Shiloh Rd., Richardson, Tex. 75040

Filed Mar. 2, 1972, Ser. No. 231,311

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—72 **2 Claims**



1. An electronic component assembly comprising: a plurality of axially aligned electronic elements of substantially the same cross-sectional area and similar electrical character, each having an elongated cylindrical body with lead wires extending from the respective ends thereof; interconnecting wires interjacent said lead wires, each of said interconnecting wires having a cross-sectional size and shape closely corresponding to that of said electronic elements; connecting joint means joining each of said lead wires to the adjacent end of a said interconnecting wire whereby to form said electronic elements into a serially connected chain; and a homogeneous elongated covering of electrical insulating material formed over said electronic elements, interconnecting wires and connecting joint means in intimate contact with substantially the entire outer surfaces thereof, said covering having a substantially uniform cross-sectional size throughout its length.

3,869,702
STUD MOUNT FOR LIGHT EMISSIVE SEMICONDUCTOR DEVICES

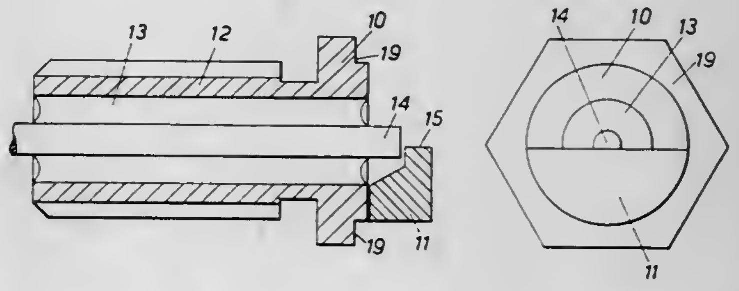
Geoffrey Howard Backhouse, Bishop Stortford, and Norman Derek Leggett, Hoddesdon, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,968

Claims priority, application Great Britain, Jan. 30, 1973, 4683/73

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—74 **4 Claims**



1. A light emissive semiconductor device mount comprising:

- a steel stud having a hole therein;
- a hollow stem protruding from the opposite face of said stud;
- a wire passing through said hollow stem and said hole providing the other connection for said semiconductor device;
- means for electrically insulating said wire in said hollow stem; and
- a substantially semi-cylindrical copper block secured to one face of said stud and having a recess therein spacing it away from the end of said wire, wherein said semiconductor device is secured to said copper block and lies on the common axis of said stud and said hollow stem, said block providing one terminal connection for said semiconductor device.

3,869,703
SEMICONDUCTOR DEVICE HAVING AN IMPROVED SUPPLY LEAD SUPPORT

Colin Michael Rowe, and Francis Rayner, both of Stockport, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 308,032, Nov. 20, 1972, abandoned, which is a continuation of Ser. No. 123,544, March 12, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,266

Claims priority, application Great Britain, Mar. 16, 1970, 12507/70

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—79 **14 Claims**

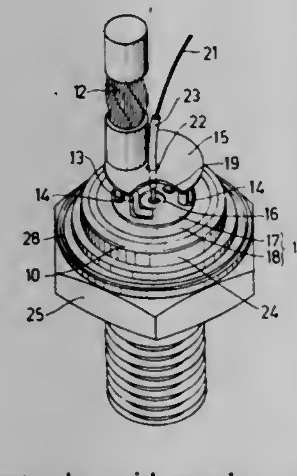
1. A semiconductor device comprising:

a. a semiconductor body comprising first and second major surfaces oppositely disposed to each other;
b. a first electrode disposed at said first major surface and a second electrode disposed at said second major surface

of said body, said semiconductor body containing a main current path between said first and second electrodes;

c. an interconnection member fixedly secured to said first electrode, said interconnection member comprising a metal strip extending alternately between two levels to form therebetween an open-sided structure having at each of the two levels plural discrete contact portions mutually spaced around the area at each respective level, said interconnection member being fixedly secured at said contact portions at one of said levels to said first electrode to form a mechanically stable structure and an electrical contact;

d. main current-carrying supply conductor fixedly secured at said interconnection member contact portions at the other of said levels to provide a main current connection to said first electrode, said supply conductor being supported above said first electrode by said interconnection member;



e. an electrically and thermally conductive header member to which said semiconductor body is fixedly secured at said second electrode to provide a heat sink for said semiconductor body and to provide a main current connection to said second electrode; and

f. a thin metallized element disposed at said first surface of said semiconductor body, said first electrode comprising a flat metal plate that has first and second oppositely disposed major surfaces and that is fixedly secured at said first surface of said first electrode to said metallized element, said contact portions at said one level of said interconnection member being mounted on and fixedly secured to said second surface of said first electrode.

3,869,704

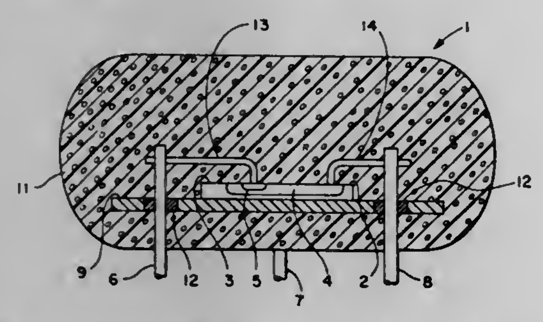
SEMICONDUCTOR DEVICE WITH DISPERSED GLASS GETTER LAYER

William L. Hunter, and Keith Gordon Spanjer, both of Scottsdale, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 398,909

Int. Cl. H01l ***11/00;*** **H01l** ***15/00***

U.S. Cl. 357—54 **2 Claims**



1. A semiconductor device having a body of semiconductor material having at least one region of P conductivity and a second conductivity of N conductivity type defining a P-N junction therebetween, having electrically conductive terminals extending therefrom, and having a closure member, the closure member surrounding the body of semiconductor material and being comprised of plastic having a phosphorous-doped finely divided glass filler.

3,869,705

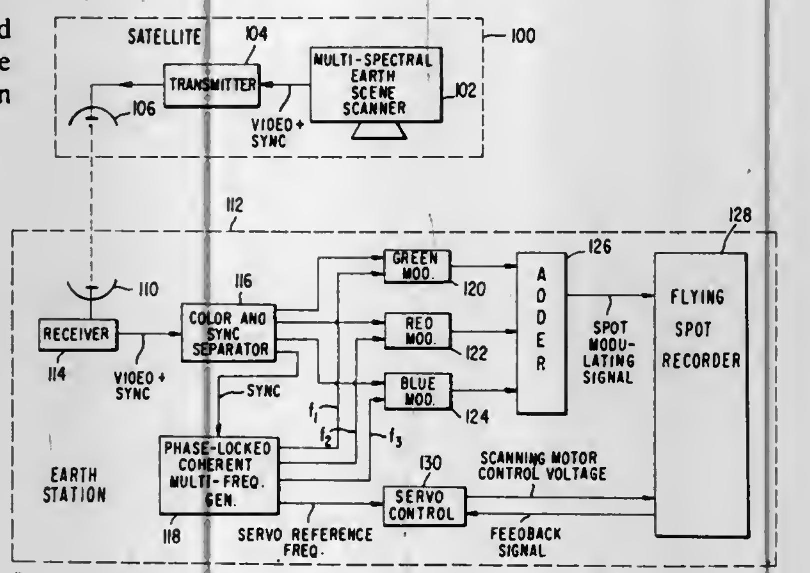
ELECTRONIC TECHNIQUE FOR MAKING MULTICHANNEL, SPATIAL-CARRIER-ENCODED RECORDINGS

Dennis Joseph Woywood, Cherry Hill, N.J., and Stephen Leonard Corsover, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,356

Int. Cl. H04n ***9/00***

U.S. Cl. 358—5 **9 Claims**



1. A multichannel recording system comprising a flying spot recorder, means for generating a number of separate coherent signals having predetermined relative frequencies with respect to each other including a coherent reference signal and a plurality of coherent carrier signals each of which is phase locked with said reference signal, means coupled to said recorder and having said reference signal applied thereto for line-scanning the flying spot of said recorder at a rate proportional to the frequency of and phase locked with said reference signal, said carrier signals each having a frequency which is higher than said line-scan rate and being characterized in that the respective quotients yielded by the division of the frequency of each respective carrier signal by said line-scan rate are different, modulation means for individually amplitude modulating each respective carrier signal with a separate applied channel information signal, and means for applying said amplitude-modulated carrier signals to said recorder for simultaneously intensity modulating said flying spot with all of said amplitude-modulated carrier signals.

3,869,706

SYSTEM FOR CONVERTING TELEVISION SIGNALS INTO ANGLE MODULATED CARRIER WAVEFORMS OF REDUCED BANDWIDTH AND VICE-VERSA

Jean Paul Peltier, Paris, France, assignor to Thomson - CSF, Paris, France

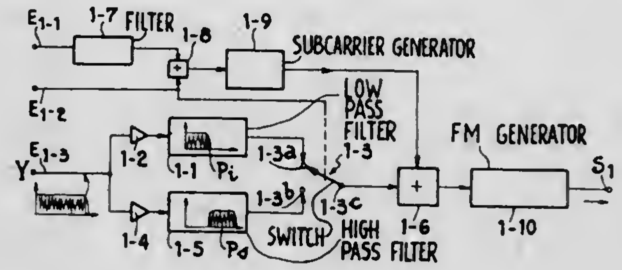
Filed June 7, 1973, Ser. No. 368,048

Claims priority, application France, June 13, 1972, 72.21163

Int. Cl. H04n ***5/40, 5/44***

U.S. Cl. 358—12 **18 Claims**

1. A method for converting television signals into multiplexed signals constituted by an angle modulated carrier waveform of reduced bandwidth, said method comprising the steps of: splitting said television signals into first and second distinct frequency bands respectively alloted to the transmission of first and second television signal components carrying together the video-frequency information pertaining to said television signals, partitioning each of said first and second television signal components into slices in accordance with a sequence of time intervals substantially equal to the line scanning duration of said television signals, selecting without delay half of said slices for forming a time multiplexed sequence of slices wherein a slice of said first television signal component corresponding to a predetermined line in one field is immediately followed by a slice of said second television signal component corresponding to the next line in said field, and angle modulating a carrier waveform with said time multiplexed sequence of slices; said method, for simultaneously processing the audio frequency information associated with the television image, further comprising the step of continuously modulating said carrier waveform with a further modulated subcarrier waveform carrying said audio-frequency information and the line synchronization signals of said video-frequency information.



8. A method as claimed in claim 7, wherein the separation from one another of said first and second television signal components is performed by filtering the demodulated carrier waveform in each of said angle demodulating channels.

3,869,707

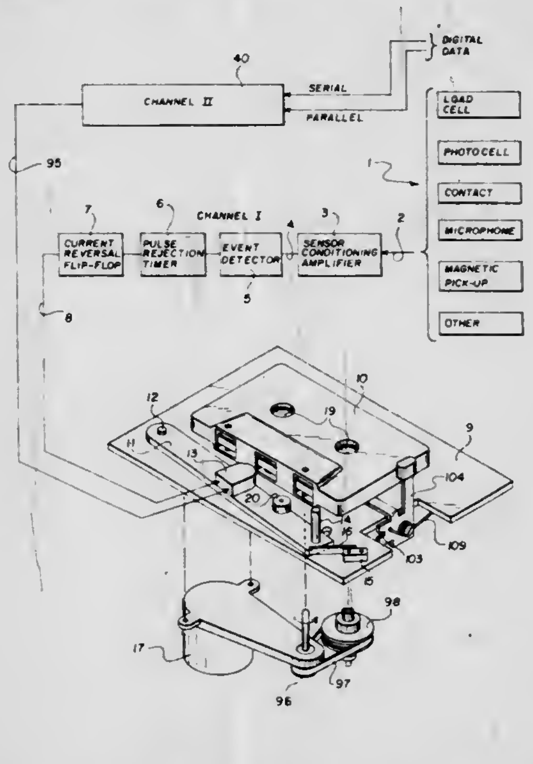
EVENT LOGGING SYSTEM USING A MAGNETIC RECORDER

Frederick B. Cupp, Fairport, N.Y., assignor to Edmac Associates Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 246,270, April 21, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 396,013

Int. Cl. G11b ***5/00***

U.S. Cl. 360—5 **7 Claims**



1. In an event logging system for recording digital data representative of events and including means for receiving a cassette including a continuously movable magnetic tape having recording track, the combination comprising:

a. actuable first channel means including a head and an analog circuit adapted to convert analog information into a format suitable for magnetic recording by said head, said channel means being effective when actuated for recording events on the track of said tape; said first channel means including:

i. an event detector for producing electrical signals representative of events respectively;

ii. a pulse rejector timer circuit coupled to said event detector for passing only one of said event signals for one detected event; and

iii. a current reversal flip-flop coupled to said head and said timer circuit and responsive to the one processed event signal by said timer circuit to change the flip-flop state and record the one event;

b. switch means effective when moved to an operative position for actuating said channel means to cause said system to record data.

3,869,708

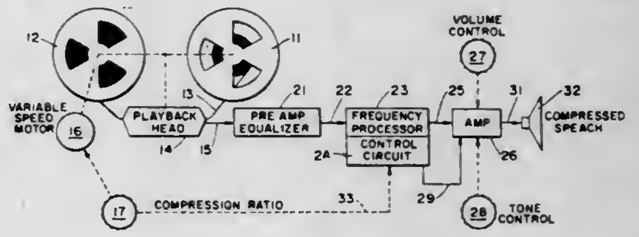
SPEECH COMPRESSOR WITH GAP FILLING

Murray M. Schiffman, Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.; Sanford D. Greenberg, Washington, D.C.; DT Liquidating Partnership, New York, N.Y. and Murray M. Shiffman, Westport, Conn.

Continuation-in-part of Ser. No. 331,550, Feb. 12, 1973, Pat. No. 3,828,361, which is a continuation-in-part of Ser. No. 171,571, Aug. 13, 1971, Pat. No. 3,786,195. This application Jan. 14, 1974, Ser. No. 430,911

Int. Cl. G11b ***5/00, 15/18, 19/28***

U.S. Cl. 360—8 **6 Claims**



1. A sound reproducer for playing a sound record at playback speed different than its recorded speed comprising means for transporting said sound record at a selected playback speed relative to a transducer to obtain an electric signal having frequency components altered by the ratio of said playback speed to said recorded speed;

means for frequency converting said electric signal with a repetitive varying time delay function having time delay variation adjusted in response to selection of said playback speed to be a function of $C-1/C+1$ where C is said ratio of said playback speed to recorded speed;

means responsive to adjusting said delay variation for varying the repetitive interval of variation for said delay function approximately in direct relation to $C+1/C-1$ for all values of C; and

utilization means for the portions of said electric signal which have been frequency converted by said varying time delay function operable to produce a substantially continuous output signal.

3,869,709

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING ROTARY HEADS WITH STILL MODE OF OPERATION

Jin Yamagishi, Tokyo, and Hiroaki Momiyama, Fujimi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 28, 1973, Ser. No. 401,822

Claims priority, application Japan, Sept. 29, 1972, 47-114004

Int. Cl. H04n ***5/78;*** **G11b** ***21/02, 15/18***

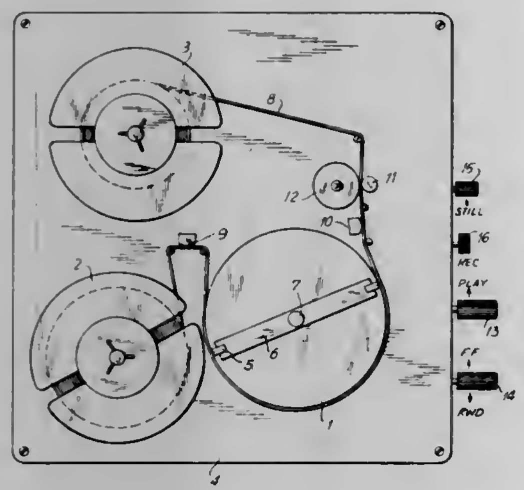
U.S. Cl. 360—10 **20 Claims**

1. In a magnetic recording and/or reproducing device having a rotary magnetic recording/reproducing head and a tape guide drum about which is wrapped a run of movable magnetic tape, the rotary magnetic head scanning the run of magnetic tape in skewed relation thereto to record information on the magnetic tape or reproduce information from the mag-

netic tape; apparatus for controlling the rotary head, comprising:

driving means for rotating the rotary magnetic head;

mode changing means for selectively changing the mode of operation of the magnetic recording and/or reproducing device between a normal reproducing mode wherein the magnetic tape moves and the rotary magnetic head moves relative to the tape and a still reproducing mode wherein plural reproductions of the information recorded on a limited portion of the magnetic tape are made;



tape run control means responsive to said mode changing means for stopping the movement of said magnetic tape when the mode of operation of the magnetic recording and/or reproducing device is changed from a normal reproducing mode to a still reproducing mode; and

drive control means coupled to said driving means for controlling the rotating speed of the rotary magnetic head for each of said modes of operation of the magnetic recording and/or reproducing device such that a first rotating speed at which said rotary magnetic head is driven during a normal reproducing mode of operation is changed to a second rotating speed during a still reproducing mode of operation.

3,869,710

MAGNETIC TAPE DUPLICATING DEVICE

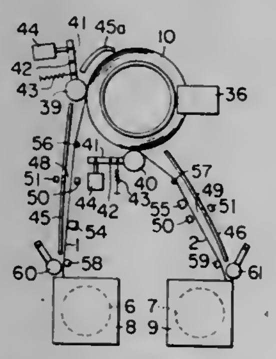
Sinichi Harazono, Katano, and Toshinori Morikawa, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 7, 1973, Ser. No. 386,340

Claims priority, application Japan, Aug. 16, 1972, 47-81921

Int. Cl. G11b *5/86*, *15/66*; B65h *75/28*

U.S. Cl. 360—17 **8 Claims**



1. A magnetic tape duplicating device comprising:

a master reel on which a master tape is wound;

a slave reel on which a slave tape is wound;

leader tapes affixed to the respective leading ends of said master and slave tapes;

an inner take-up reel on which both said leader tapes are wound;

an outer take-up reel on which both said master and slave tapes following the leader tapes are wound, said outer take-up reel being disposed around said inner reel substantially concentric therewith with a space defined therebetween for permitting both said leader tapes to be wound on said inner reel;

opening means provided to said outer reel through which both said leader tapes pass from the outside of said outer reel to said inner reel;

first means for independently rotatably driving said inner and outer reels;

second means for joining and rotatably driving said inner and outer reels together;

a transferring magnetic field generator for applying a transferring magnetic field to both tapes wound up on said outer reel with their respective magnetic surfaces contacted with each other; and

a rewind means for winding back the tapes wound up on the respective outer and inner reels onto the respective master and slave reels.

3,869,711

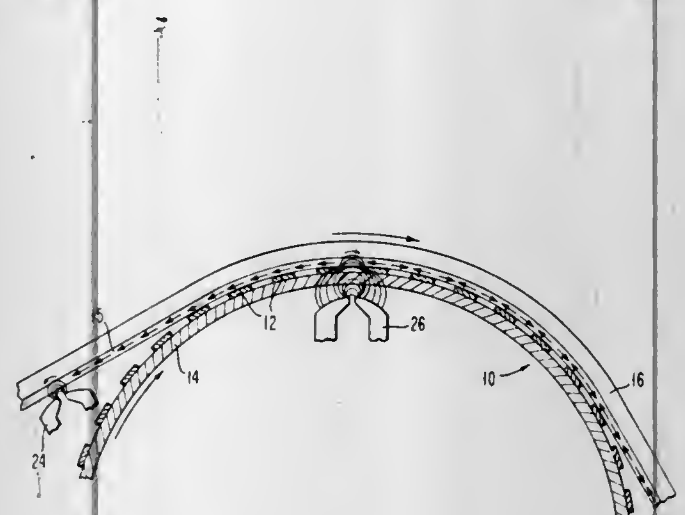
MAGNETIC PATTERN RECORDING

William R. Bernard, and Walter S. Buslik, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 399,902, Sept. 24, 1973, abandoned. This application Jan. 25, 1974, Ser. No. 436,765

Int. Cl. G11b *5/86*

U.S. Cl. 360—17 **7 Claims**



1. Apparatus for producing a recorded signal on a magnetic medium comprising:

a master element having a permanently formed physical pattern of magnetic and nonmagnetic areas of lands and voids respectively on one surface thereof, said pattern not being magnetizable or erasable by electromagnetic means, said lands being formed of soft magnetic material having high permeability and low coercivity and disposed over a nonmagnetic base;

means for moving said medium in unison with said master element with substantially no relative motion between said medium and said element, while said element and said medium are maintained in close transducing relation;

a magnetic head positioned adjacent to a surface of said master element opposite to said one surface, so that said element is between said medium and said magnetic head, for providing a constant DC field to effectively record on said medium pattern of signals corresponding to said physical pattern.

3,869,712

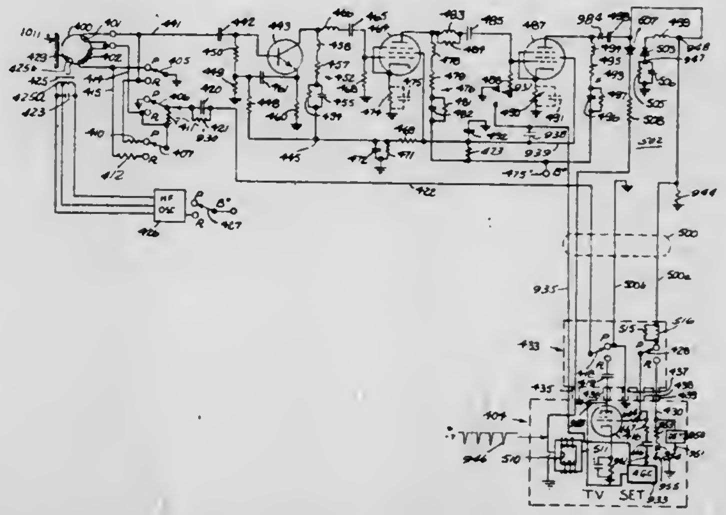
VIDEO PLAYBACK SYSTEM WITH FLUTTER TOLERANT CLAMPING

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 200,793, Nov. 22, 1971, abandoned, division of Ser. No. 848,992, Aug. 11, 1969, abandoned, and Ser. No. 62,601, Aug. 10, 1970, Pat. No. 3,683,107, said Ser. No. 848,992, which is a division of Ser. No. 401,832, Oct. 6, 1964, Pat. No. 3,495,046, said Ser. No. 62,601, which is a continuation of Ser. No. 528,934, Feb. 21, 1966, abandoned, is a continuation-in-part of Ser. No. 393,282, Aug. 31, 1964, Pat. No. 3,506,780, continuation-in-part of Ser. No. 401,832, and Ser. No. 407,402, and Ser. No. 493,271. This application June 18, 1973, Ser. No. 370,640

Int. Cl. H04n *5/78*

U.S. Cl. 360—33 **3 Claims**



1. In a transducer system including a broadcast television receiver having a horizontal deflection circuit for generating an output horizontal sweep frequency signal, a horizontal control circuit for controlling the frequency of said horizontal deflection circuit, a picture signal circuit for transmitting a video picture signal, and a video display unit having a horizontal sweep connected with said horizontal deflection circuit and having a video intensity control connected with said video signal circuit for display of a picture transmitted thereto,

a record medium having a recorded signal comprising video picture signals occurring during successive line scan intervals and periodic horizontal synchronizing signals occurring at the beginning of the respective line scan intervals,

a playback system for scanning said record medium and electrically reproducing said recorded signal with a degree of flutter substantially exceeding that of a broadcast television signal as received by said receiver,

circuit means connected with said playback system, and with said horizontal control circuit and with said picture signal circuit, for transmitting the reproduced horizontal synchronizing signals to said horizontal control circuit such that the horizontal sweep of the display unit responds to and follows the flutter in the reproduced horizontal synchronizing signals, and for transmitting the reproduced video picture signal to the intensity control of the display unit.

wherein the improvement comprises

said circuit means including an output circuit point and a coupling capacitor for coupling the output of the playback system with the picture signal circuit via said output circuit point and a shunt clamping circuit connected with said output circuit point for controlling the direct current potential at said output circuit point at the beginning of each line scan interval,

the clamping circuit including a first branch connected between said horizontal deflection circuit and said output circuit point for supplying a clamping pulse of predetermined duration from said horizontal deflection circuit to said output circuit point at the beginning of each line scan interval, and a second branch connected with said output circuit point and comprising a diode and potential establishing means in series for establishing a reference potential at said output circuit point in response to each of said clamping pulses, and

said first branch having series resistance therein of substantial value to control the degree of clamping action.

3,869,713

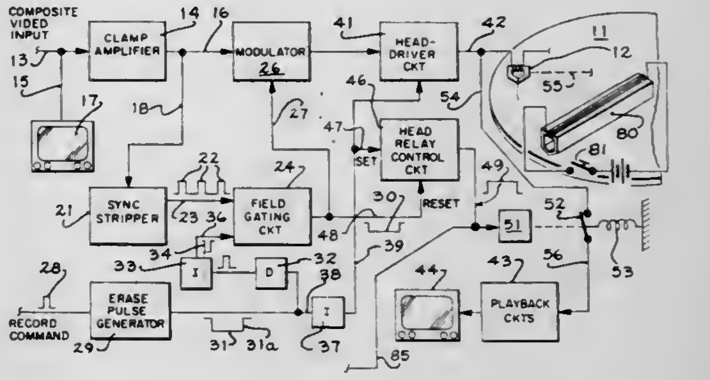
SINGLE FIELD VIDEO RECORDING SYSTEM AND METHOD

Robert C. Owens, Jr., Palos Verdes Peninsula, Calif., assignor to VAS Ltd., Torrance, Calif.

Filed Nov. 29, 1972, Ser. No. 310,668

Int. Cl. H04n *5/78*

U.S. Cl. 360—35 **10 Claims**



1. In a single field video recording system of a type employing a magnetic transducer element and a rotating record disc disposed in recording relation thereto for recording signals from a source of composite video signals of a type containing synchronizing timing signals occurring at regular intervals to define a field of video signals therebetween, means forming an erase pulse coupled to said transducer for a predetermined period of time in excess of the period of one revolution of said disc and serving to erase said disc throughout a closed circular path thereof, means deriving a control signal from a portion of said erase pulse, gating control means disposed to sense said timing signals and said control signal and serving to gate composite video signals from said source to said transducer element for recording upon said disc in said path in response to sensing of the first and said timing signals occurring after termination of said erase pulse and serving to inhibit said gating in response to sensing a second of said timing signals.

3,869,714

METHOD AND APPARATUS FOR CONTROLLING THE RISETIME OF A DIGITAL MAGNETIC RECORDING WAVEFORM

Richard C. Schneider, Longmont, and Lawrence Viele, Jr., Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

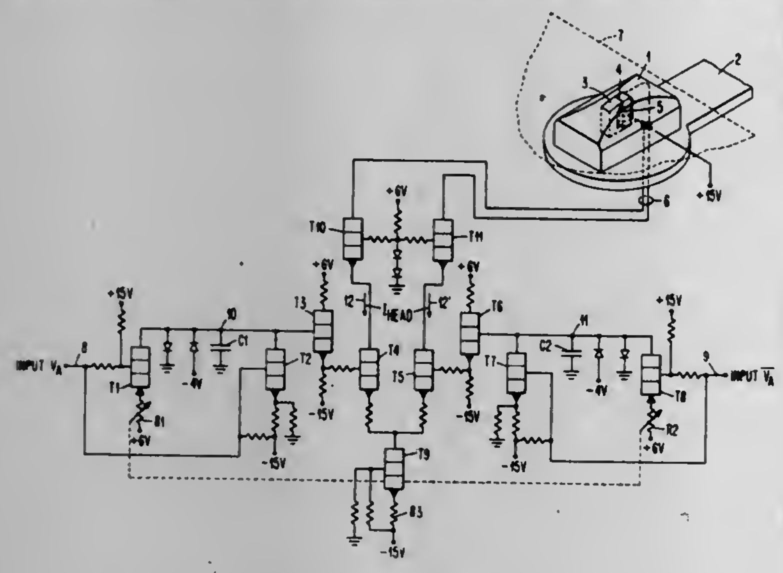
Filed Mar. 11, 1974, Ser. No. 449,864

Int. Cl. G11b *5/09*

U.S. Cl. 360—45 **13 Claims**

1. In a magnetic recording system wherein digital signals represented as binary electric recording current are applied to a magnetic transducer which produces a corresponding magnetic field for recording saturated binary magnetization patterns on a magnetic medium, said recording current including: a first half-cycle having a first polarity, a shallow leading edge

and a relatively steep trailing edge; and
a second half-cycle immediately following the first half-cycle, having a polarity opposite the first polarity, a shallow leading edge and a relatively steep trailing edge.



3,869,715
DIGITAL STORAGE HAVING A PLURALITY OF INFORMATION SEQUENCES IN A SINGLE TRACK

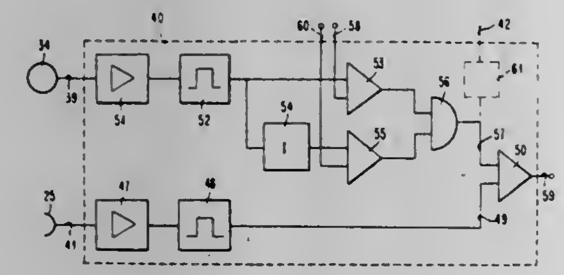
Klaus Schlickeiser, Webkrenzstrab 212, Boll near Hechingen, Germany

Division of Ser. No. 162,083, Pat. No. 3,772,664. This application Oct. 18, 1973, Ser. No. 407,596

Claims priority, application Germany, July 14, 1970, 2034836

Int. Cl. G11b *5/09*

U.S. Cl. 360—48 **8 Claims**



1. In a digital storage arrangement having elongated signal carrier means having a first and second track and having a first and second information sequence, each of said information sequences having a plurality of characters, each of said characters having a plurality of bits, stored on said first track bit serially and in character-interlaced form, and wherein each of said characters occupies a determined character length along said first track, said elongated signal carrier means further having a second track having a plurality of markings for indicating the beginning and end of each of said characters of said first information sequence, a read-out system for selectively reading out said first or said second information sequence, comprising, in combination, read-out means positioned in operative proximity of said first track for sensing said recorded first and second information sequences and furnishing corresponding information signals; externally operable selection means for furnishing a first selection signal indicating desired read-out of said first information sequence or a second selection signal indicating desired read-out of said second information sequence; sensing means positioned in operative proximity to said second track for sensing said markings on said second track and furnishing first marking signals, each present throughout the read-out of a character of said first information sequence, in response thereto; and control circuit means having a first input connected to said read-out means, a second input connected to said sensing means, a control input connected to said selection means, and a data transmission output, for transmitting signals from said read-out means to said data transmission terminal only in the simultaneous presence of said first marking signals and said first selection signal or in the absence of said first marking signal and the presence of said second selection signal.

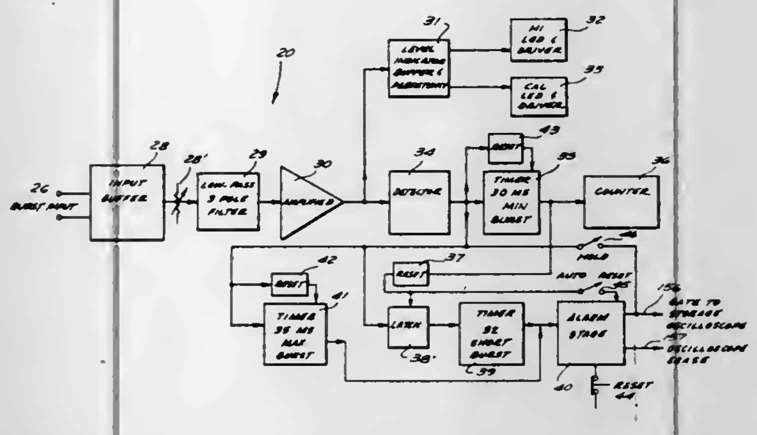
3,869,716
APPARATUS FOR QUALIFYING RECORDED TONE BURSTS

William M. Blethen, East Brunswick, N.J., assignor to Retention Communication Systems, Inc., New York, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,946

Int. Cl. G11b *5/02;* **H03b** *3/04;* **H03k** *5/20*

U.S. Cl. 360—55 **1 Claim**



1. Apparatus for qualifying recorded tone bursts for a predetermined desirable amplitude, frequency specification, and duration on tape recordings comprising:

connection means for connecting the apparatus to a tape player containing a tape with the recorded tone bursts thereon so that the bursts from the tape are received in sequence by the apparatus;

a buffer stage means in the apparatus to receive each tone burst and provide high input impedance to the tone burst and having control means thereon to adjust the output thereof;

a low-pass filter means connected to said buffer stage means and tuned to accept the upper frequency specification of the tone burst;

an amplifier means connected to the filter means to make up for the low-pass filter means losses and to tailor the low frequency limit of the tone burst specification;

a detector means connected to the amplifier means and sensitive to the burst signal frequency created by the low-pass filter means and the amplifier means to supply an output voltage;

first and second timer means connected to said detector means and providing an output responsive to the presence of said output voltage for their time out periods;

the first timer means being set to time out at the predetermined minimum acceptable burst duration and the second timer means set to time out at the predetermined maximum acceptable burst duration;

the first timer means having adjustment means for varying the time out period;

a counter means connected to the first timing means whereby when the voltage supplied by the detector means is of sufficient duration for the first timer means to time out and provide said output it will trigger the counter means by one count thereby indicating the burst is of minimum amplitude, within a proper frequency range and of minimum duration;

reset means connected to the first timer means for resetting said first timer means when a burst duration or amplitude is not sufficient for the timer to time out;

reset means connected to the second timer means for resetting said second timer means when a burst duration or amplitude is not sufficient for the timer to time out;

a latch circuit means interconnected with the detector means for latching on responsive to said output voltage; latch reset means for resetting said latch means responsive to the timing out of either said first or second timer means;

a third timer means interconnected with the latch circuit means and set to time out at a predetermined time less than the predetermined minimum acceptable burst duration and providing an output responsive to said latch means being latched on for said predetermined time less than the predetermined minimum acceptable burst duration; and

the alarm stage means for producing a signal responsive to said output of either said second or third timer means.

3,869,717
MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR MULTI-CHANNEL ENDLESS TAPE

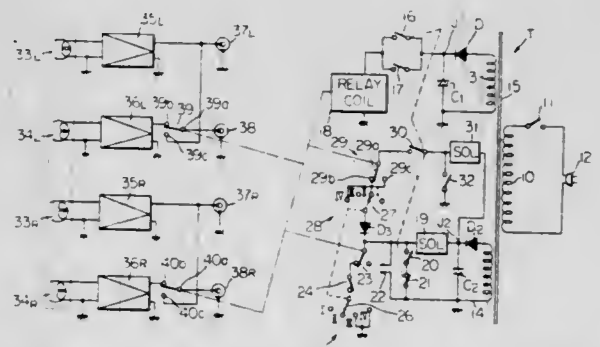
Toshio Kawada; Tadashi Torama, and Tamio Kobayashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 260,401, abandoned. This application Feb. 6, 1974, Ser. No. 439,852

Claims priority, application Japan, June 18, 1971, 46-44346; June 18, 1971, 46-44347; June 18, 1971, 46-44348; June 18, 1971, 46-44349; June 18, 1971, 46-44350

Int. Cl. G11b *15/04, 23/04, 21/02*

U.S. Cl. 360—60 **4 Claims**



1. Magnetic recording and reproducing apparatus for 2-channel 4-channel endless tape in the form of a cartridge which comprises;

first actuating means (**18**) for exchanging 2-channel 4-channel output,

a cassette detection switch **17** selectively operated in accordance with an outer shape of the cassette to be used for controlling operation of said first actuating means,

a plurality of integrated recording switches (**16, 30, 21**) connected in parallel with said switch for controlling said actuating means and for controlling recording operation, a pair of 2-channel 4-channel switching means (**39, 40**) provided on the output of head output amplifiers and responsive to said switching means so as to supply either 2-channel or 4-channel output,

sensing switch means (**22**) provided in the vicinity of a head mechanism for detecting passage of conductive piece attached at the ends of the tracks of the tape,

second actuating means **19** coupled to said head mechanism for moving said head mechanism responsive to said sensing means,

a pair of rotary switch means (**25, 28**) coupled to said second actuating means for performing predetermined modes of operation of the apparatus in cooperation with the condition of sensing switch so as to automatically eject cartridge at the end of either 2-channel or 4-channel tracks, and

third actuating means (**31**) connected to the input of said second actuating means for ejecting the cartridge when actuated, whereby either 4-channel or 2-channel cartridge is automatically ejected at the end of the second program or at the end of the fourth program operation by the detection of the conductive piece thereby preventing double recording.

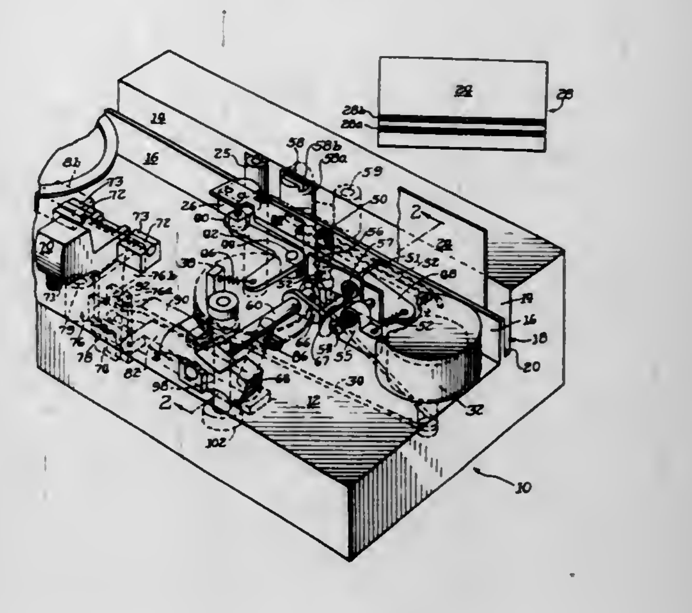
3,869,718
INTERLOCK MEANS RESPONSIVE TO TRACK SELECTION

Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,513

Int. Cl. G11b *15/04, 19/04*

U.S. Cl. 360—60 **11 Claims**



1. An apparatus for handling generally planar cards carrying an elongated magnetic media having plural parallel recording tracks comprising: magnetic transducer head means;

drive means for moving a card across said head means;

circuit means coupled to said head means for providing recording and playback of audio information from the magnetic media on the card;

first manually operable means connected to said circuit means for selecting either the recording or playback function;

second manually operable means for moving said head means with respect to the card between first and second positions for transducing first and second sound tracks on the card; and

means mechanically coupling said first manually operable means to said second manually operable means to prevent actuation of said first manually operable means to select the recording function in response to said second manually operable means being disposed in said first position.

3,869,719
AUTOMATIC SEQUENCE CONTROL FOR REPRODUCING APPARATUS

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.

Filed Mar. 23, 1973, Ser. No. 344,180

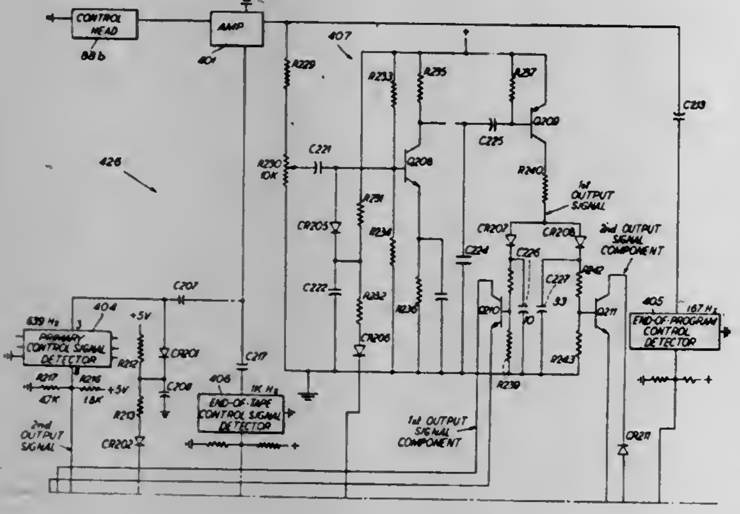
Int. Cl. G11b *15/48, 15/02*

U.S. Cl. 360—72 **32 Claims**

1. In reproducing apparatus for a magnetic tape having discrete program-identifying control signals at intervals therealong, tape drive means for moving said tape past a transducing head, automatic sequence control means comprising:

a detector connected to said transducing head including means for detecting a control signal when the tape is moved past it;

tape drive control means including stop means for deenergizing said tape drive means to stop said tape in response to detection of a control signal, and means responsive to energization of said tape drive means to initiate tape movement for disabling said stop means for sufficient time period to enable the tape to move, beyond said head,



a residual control signal at which movement of the tape was initiated.

3,869,720

DICTATOR-TRANSCRIBER INDEXING SYSTEM

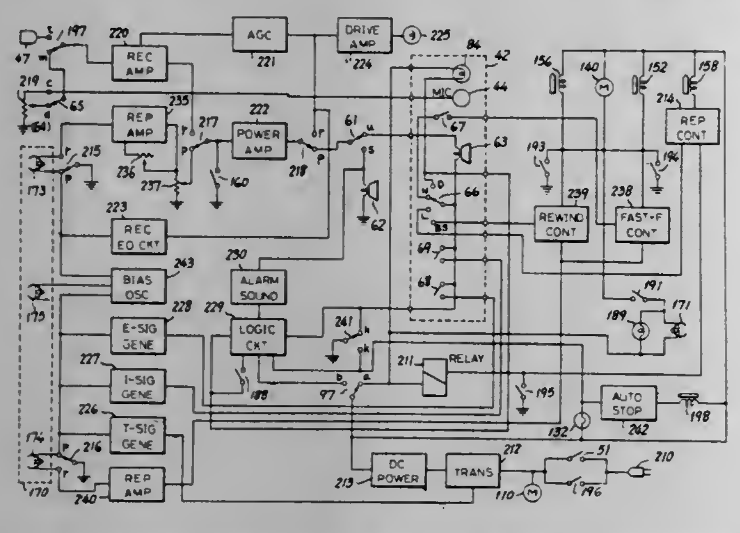
Tsunehisa Ohira, Sagamihara, and Tohru Takahashi, Tokyo, both of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Kanagawa-Ken, Japan

Filed July 25, 1973, Ser. No. 382,384

Claims priority, application Japan, July 25, 1972, 47-74321

Int. Cl. G11b *15/18, 9/02, 5/48*

U.S. Cl. 360—72 **6 Claims**



1. A dictator-transcriber indexing system comprising a dictator and a transcriber, said dictator comprising:

first means for moving a recording medium in a first direction at a predetermined speed;

a recording and/or reproducing head;

first means for recording dictation message signals through said recording and/or reproducing head on a first track of the recording medium moving at said predetermined speed;

means for producing a first control signal which is continuously generated during the period in which said first recording means is in its recording mode of operation;

means for producing a second control signals at the instants of starting and/or completion of the recording of separate messages in said recording mode of said first recording means;

means for producing a third control signal for indicating instruction marks;

second means for recording said first, second and third control signals through said recording and/or reproducing head on a second track of the recording medium moving at said predetermined speed;

said transcriber comprising:

a reproducing head;

said first means for moving said recording medium in said first direction at said predetermined speed;

first reproducing means for reproducing said dictation message signals through said reproducing head from the recording medium moving at said predetermined speed in said first direction;

second means for moving said recording medium in a second direction opposite to said first direction at a higher speed than said predetermined speed;

said reproducing means for reproducing said recorded control signals through said reproducing head from said recording medium moving at said higher speed in said second direction, including means for contacting said reproducing head with the recording medium with a pressure lighter than the pressure with which said reproducing head contacts said recording medium during the operation of said first reproducing means;

means for individually separating said first, second and third control signals from the output signal of said second reproducing means;

an indication medium;

means for moving said indication medium in relation to the travel of said recording medium;

means responsive to the separated second control signal for imprinting a first mark on a first track of the moving indication medium;

means responsive to the separated third control signal for imprinting a second mark on a second track of the moving indication medium.

3,869,721

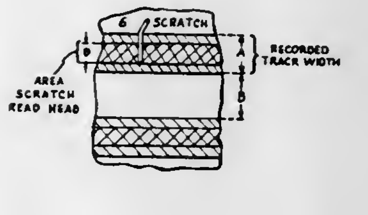
RECOVERY OF NORMALLY ILLEGIBLE, MAGNETICALLY RECORDED INFORMATION

Peter Bela Korda, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 659,366. This application Oct. 5, 1973, Ser. No. 403,899

Int. Cl. G11b *5/43*

U.S. Cl. 360—77 **7 Claims**



1. In a system for reading a relatively wide record track on a record medium with a relatively narrow read head located at the approximate center of the track by creating relative movement between the record medium and head, in the track direction, in combination:

error detection means responsive to the information read by the read head for detecting an error; and

means responsive to an error detected by the error detection means for creating relative movement between the read head and track in a direction transverse to the track, and in an amount such that the head is still over the same track, but relatively closer to an edge portion thereof than the head was in its original position, and for again creating relative movement between at least the portion of the record medium containing the error and the head, in the track direction.

3,869,722

AUTO CASSETTE CHANGER

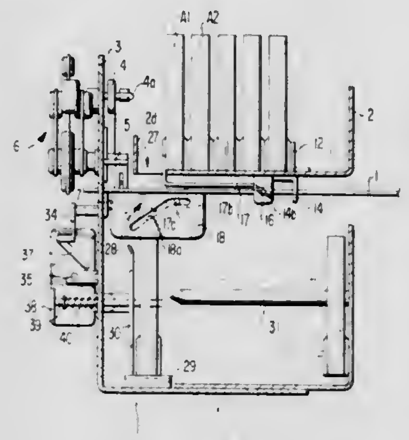
Tadahisa Iwasaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Ohta-Ku, Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 300,951

Claims priority, application Japan, Oct. 26, 1971, 46-84954; Oct. 26, 1971, 46-99413; Oct. 26, 1971, 46-99414

Int. Cl. G11b *23/12*

U.S. Cl. 360—92 **3 Claims**



1. An automatic cassette changer device comprising a chassis, a tape drive mechanism secured to said chassis, cassette table means movably mounted on said chassis for holding a plurality of tape cassettes, pusher means for shifting said cassettes toward said tape drive mechanism for engagement of a first cassette with said tape drive mechanism, shift means for moving said table means away from said tape drive mechanism, aperture means formed in said table means and said chassis permitting the downward passage of the first cassette upon shifting of said table means away from said tape drive mechanism, platform means disposed beneath said aperture means for receiving a dropped cassette thereon and means for selectively holding and releasing the remaining cassettes during and subsequent to the dropping operation of a cassette.

3,869,723

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING DUAL CAPSTANS FOR USE WITH CASSETTES

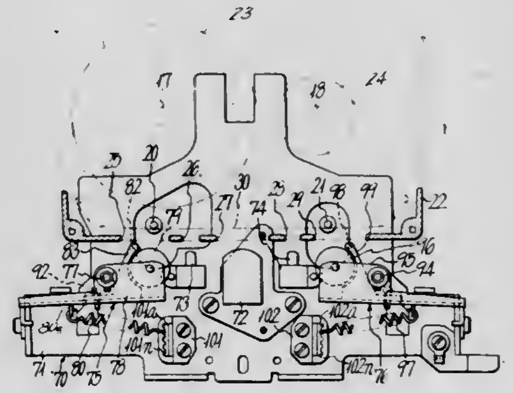
Kenji Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 2, 1972, Ser. No. 259,024

Claims priority, application Japan, June 7, 1971, 46-47868

Int. Cl. G11b *15/29, 5/54, 23/04*

U.S. Cl. 360—96 **17 Claims**



1. An apparatus for magnetically recording and reproducing signals on a magnetic tape, comprising simultaneously operative, spaced apart first and second drive means for transporting the tape at least in the direction from said first drive means to said second drive means in a path having a portion extending between said first and second drive means, each of said drive means including a rotated drive shaft and a pinch roller carried by a movable mounting means for movement against the respective drive shaft with the tape therebetween, at least one magnetic recording head means and at least one magnetic reproducing head means engageable with the tape at spaced locations along said portion of the tape path for respectively recording and reproducing signals on the tape during the transport thereof by said first and second drive means, and at least one magnetic erasing head means carried by said mounting means for the pinch roller of said first drive means and being disposed adjacent said pinch roller of the first drive means at the side of the latter away from said second drive means for engaging the tape simultaneously with said movement of the adjacent pinch roller against said respective drive shaft.

3,869,724

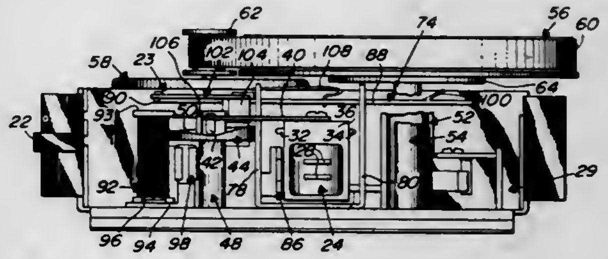
MAGNETIC TAPE HEAD INDEXING ASSEMBLY FOR A CARTRIDGE TAPE PLAYER

Edwin S. Bara, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 23, 1974, Ser. No. 436,001

Int. Cl. G11b *21/08, 5/56*

U.S. Cl. 360—106 **11 Claims**



1. A magnetic tape head indexing assembly for use in a cartridge tape player including a magnetic tape head mounted for movement with respect to the various recording tracks on a magnetic tape in a cartridge received in the player, a rotatably mounted capstan for driving the tape through said cartridge and a flywheel mounted on said capstan for rotation therewith, said flywheel imparting rotatable movement to said capstan, said tape head indexing assembly including in combination: a rotatable cam including a plurality of cam surfaces, each of which corresponds to one of the recording tracks on said tape, said cam being coactable with said tape head for moving the latter to different positions with respect to said tape tracks in accordance with the rotation of said cam, a lever arm mounted adjacent said tape head for pivotal and longitudinal movement, one end of said lever arm being positioned adjacent said rotatable cam for engagement therewith, the opposite end of said lever arm being positioned adjacent said flywheel for engagement therewith, and actuator means opperable to pivot said lever arm from a first, normal position to a second, actuated position whereby said opposite end thereof engages said rotating flywheel, the force provided by said flywheel driving said lever arm longitudinally from a first position to a second position so that said one end engages said cam to rotate the latter for repositioning said tape head.

3,869,725

COMBINATION END OF TAPE SENSOR AND TAPE GUIDE DEVICE

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola, Inc., Chicago, Ill.

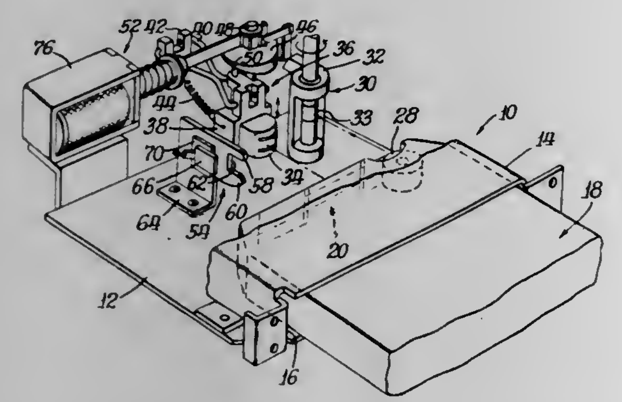
Filed Sept. 17, 1973, Ser. No. 398,117

Int. Cl. G11b *15/60, 21/08*

U.S. Cl. 360—130 **3 Claims**

1. In a cartridge tape player including a tape deck portion forming a cartridge receiving cavity wherein a tape cartridge is received for playback including a multi-track tape mounted therein for movement through the cartridge, said tape having a predetermined current conducting area indicating the end of said tape tracks, a magnetic tape head mounted in communication with said cartridge receiving cavity for engagement with the tape provided in a cartridge received in the cavity,

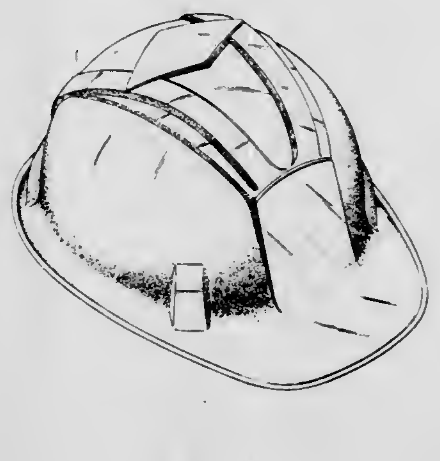
tape head indexing means for positioning said tape head with respect to the various tracks on said tape and circuit means for operating said tape head indexing means, a combination end of tape sensor and tape guide mounted on said tape player in communication with said cartridge receiving cavity adjacent said tape head for contacting engagement with the tape provided in a cartridge received in said cavity, including in combination: a first electrode mounted in said tape player and having a major surface portion in a first plane, said major surface portion including a pair of parallel arms extending outward toward said tape cartridge, said arms spaced from each other predeterminedly and connected by a supporting portion to permit said tape to pass therebetween for engaging the tape in said cartridge between said arms to guide said tape past said tape head in alignment therewith, said supporting portion between said arms comprising the area of electrical contact between said first electrode and said current conducting tape area, a second electrode mechanically mounted to said first electrode and having an end portion and a major surface portion located within a plane all points of which are in a spaced relation to the first plane, said end portion being generally aligned with said supporting portion of said first electrode so that both said end portion and said supporting portion will be in contacting relation with the surface of said tape when said cartridge is fully inserted into said player and said tape is being driven therethrough, and insulating means provided between said first and second electrodes for electrically insulating the respective electrodes from one another as well as maintaining the electrodes in said spaced relation, said first and second electrodes being connected to said circuit means for actuation thereof upon simultaneously contacting said predetermined current conducting tape area for repositioning said tape head with respect to said tape.



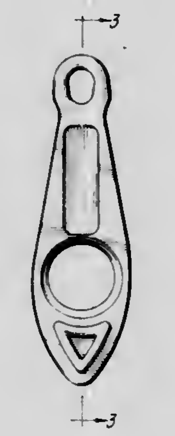
DESIGNS

MARCH 4, 1975

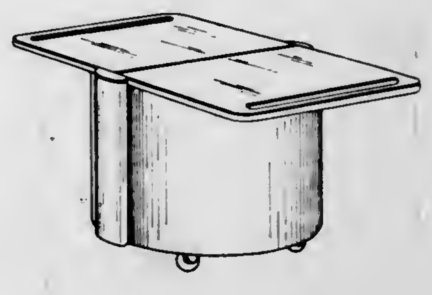
234,411
SAFETY HAT OR SIMILAR ARTICLE
Horace E. Zuppert, Shaker Heights, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed July 23, 1973, Ser. No. 381,899
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231



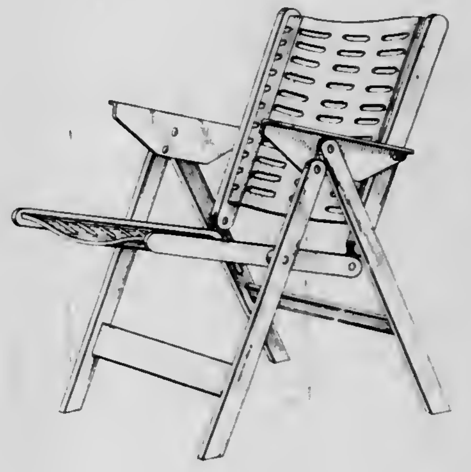
234,412
PENDANT PULL FOR A SLIDE FASTENER
Allan O. Swan, Meadville, Pa., assignor to Textron Inc., Providence, R.I.
Filed Jan. 29, 1973, Ser. No. 327,531
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—415



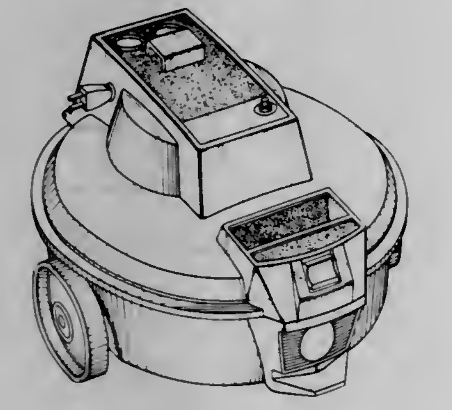
234,413
COMBINED PORTABLE BAR, TABLE AND MAGAZINE RACK
Carlo Hauner, Mompiano, Italy, assignor to Fanini Fain S.p.A., Aprutina, Italy
Filed Mar. 16, 1973, Ser. No. 341,917
Claims priority, application Italy Sept. 23, 1972
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—4



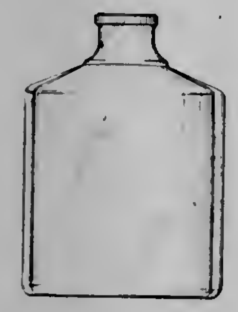
234,414
FOLDING CHAIR
Yvon Becquet, La Rochelle, France, assignor to Societe SO-GE-MA-P, La Rochelle, France
Filed June 15, 1973, Ser. No. 370,406
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



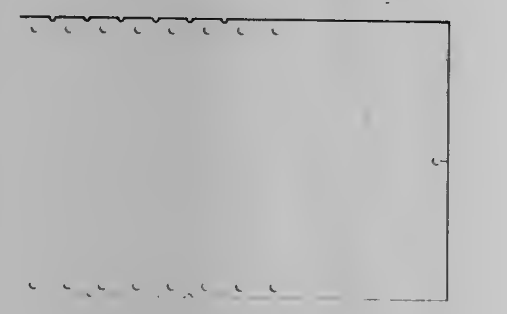
234,415
CANISTER VACUUM CLEANER
Stephen K. Lauderback, Elmhurst, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 5, 1973, Ser. No. 376,771
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



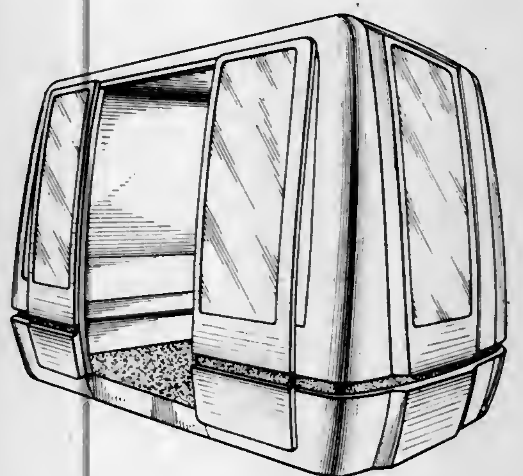
234,416
BOTTLE
Albert Skolnik, Merrick, N.Y., assignor to Revlon, Inc.
Filed Mar. 28, 1973, Ser. No. 345,552
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—54

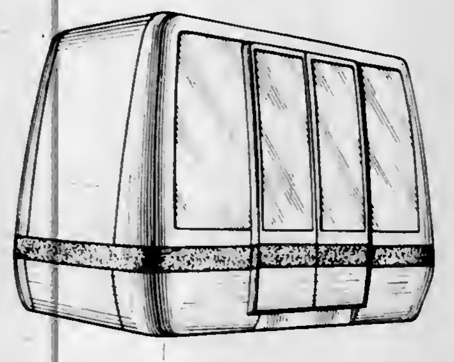


234,417
COOKING POUCH
Lester E. Bair, Brownsville, Tex., assignor to Fairshare Marketing & Manufacturing Co., Inc., Brownsville, Tex.
Filed July 3, 1972, Ser. No. 268,523
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249

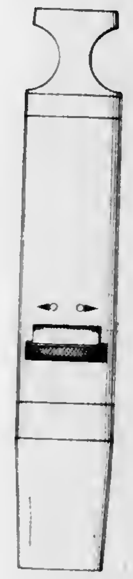


234,418
PASSENGER VEHICLE BODY
Thomas Forsey, Jr., Akron, and David D. Tompkins, Columbus, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 25, 1972, Ser. No. 257,062
(Filed under Rule 47(a) and 35 U.S.C. 116)
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—40

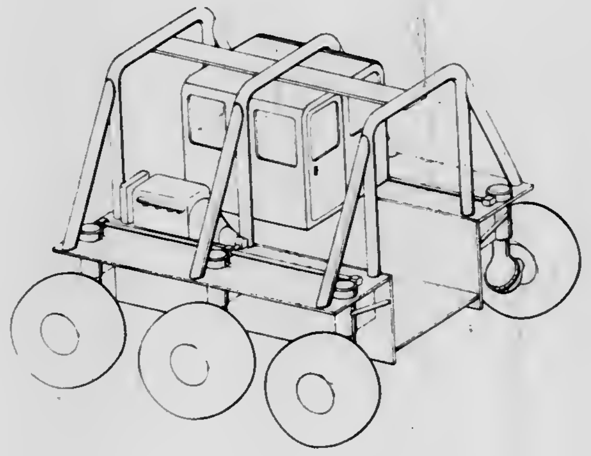




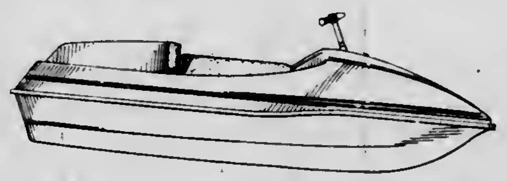
234,419
HYGROMETER
Ueli Hofstetter, Herrliberg, Switzerland, assignor to SINA AG fur Instrumentierung und Automatik, Zurich, Switzerland
Filed Jan. 2, 1973, Ser. No. 320,079
Claims priority, application Switzerland July 4, 1972
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56



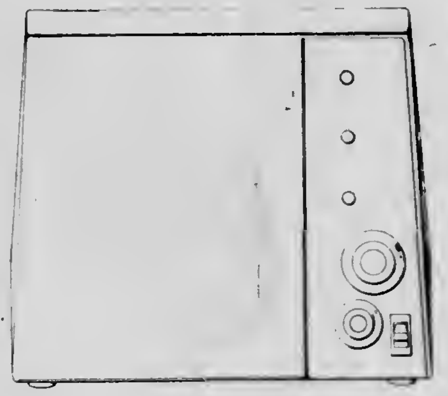
234,420
MOTORIZED TREE PROCESSING EQUIPMENT VEHICLE
Carlyle W. Schock, 3110 Mount Vernon Ave., Apt. 212, Alexandria, Va. 22301
Filed Apr. 27, 1973, Ser. No. 355,270
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



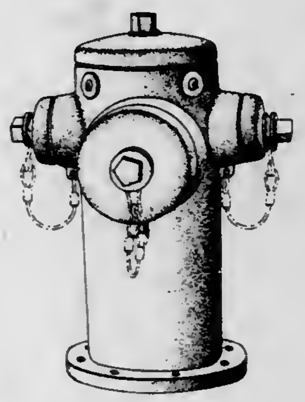
234,421
WATERCRAFT
Anselme Lapointe, Sherbrooke, Quebec, Canada, and Thomas Scott, Rawleigh, England, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed July 16, 1973, Ser. No. 379,228
Claims priority, application Canada Feb. 16, 1973
Term of patent 3½ years
Int. Cl. D12—*06*
U.S. Cl. D12—69



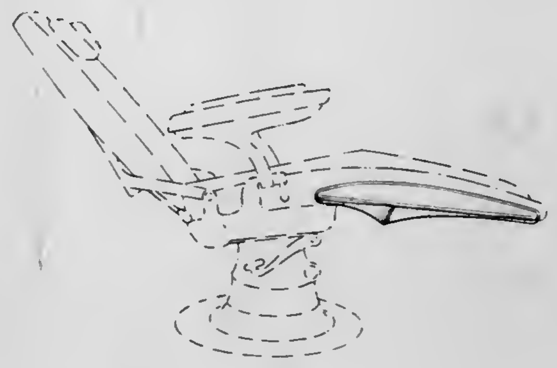
234,422
TYPING PACER
John Sullivan, San Jose, Calif., and Donald J. Powers, Medford, Oreg., assignors to Owen F. Johnson, Mountain View, Calif.
Filed May 11, 1972, Ser. No. 252,538
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—91

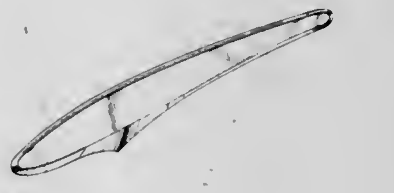


234,423
FIRE HYDRANT
James W. Dashner, Elmira, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Apr. 12, 1973, Ser. No. 350,556
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—12

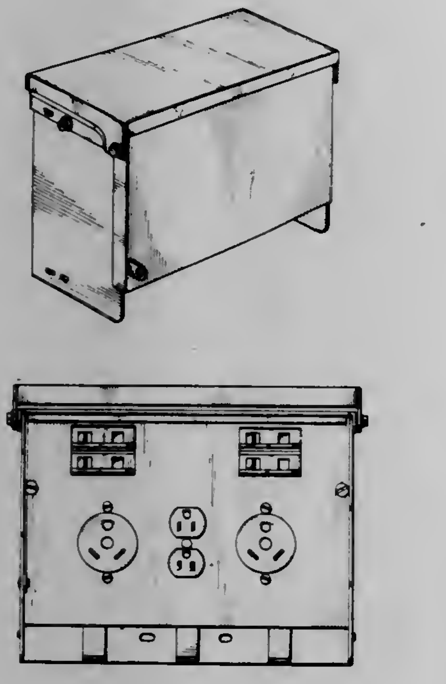


234,424
DECORATIVE SIDE PANEL FOR DENTAL CHAIR
Keith O. Rasmussen, 1550 Davidson Ave., San Francisco, Calif. 94124
Continuation-in-part of design application Ser. No. 25,479, Oct. 14, 1970. This application July 31, 1973, Ser. No. 276,386
Term of patent 14 years
Int. Cl. D24—*99;* D6—*01*
U.S. Cl. D24—1 B

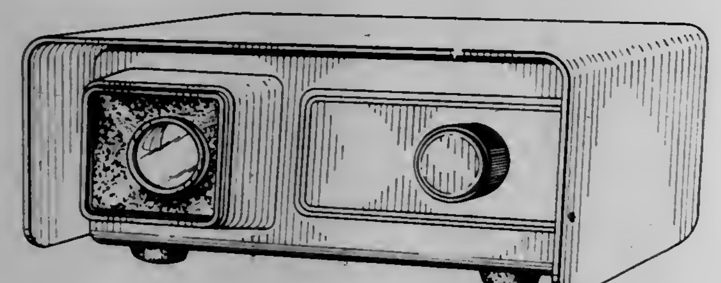




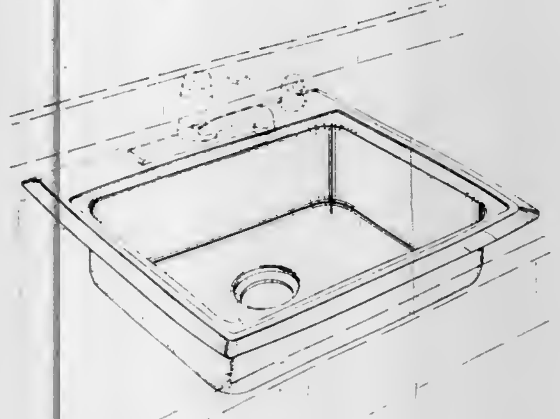
234,425
POWER OUTLET BOX
Merle A. Plummer, North Hollywood, Calif., assignor to Myers Electric Products, Inc., Montebello, Calif.
Filed Aug. 4, 1972, Ser. No. 286,108
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



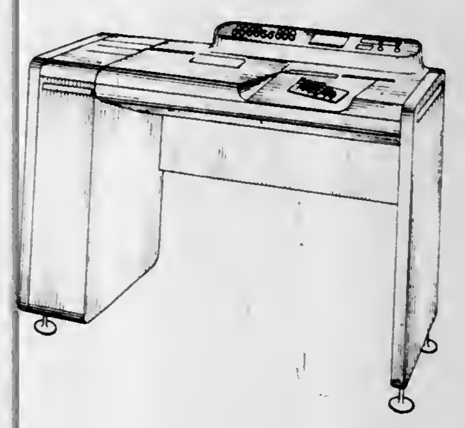
234,426
PHOTOELECTRIC EYE UNIT
James M. Gerdom, Overland Park, Kans., assignor to Honan Sales Company, Inc., Kansas City, Mo.
Filed Sept. 18, 1972, Ser. No. 289,977
Term of patent 7 years
Int. Cl. D13—*99*
U.S. Cl. D26—1 F



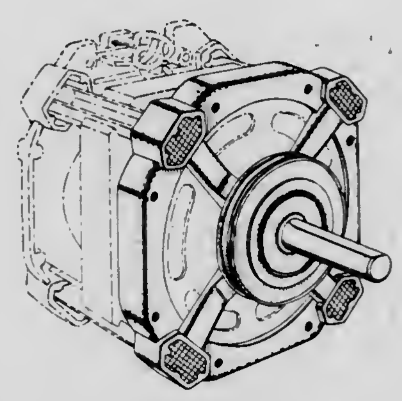
234,427
SINGLE BOWL SINK
Henry M. Stairs, Jr., Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 385,137
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



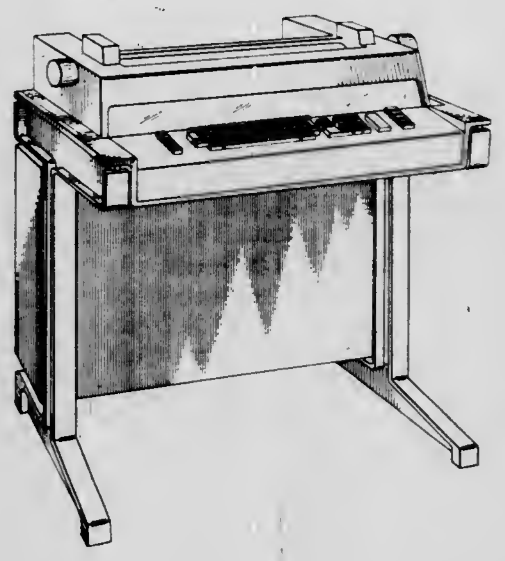
234,428
DOCUMENT ENCODER
John Eric Knox, Eisental, Affental, Andre Micault, Sinzheim, and Gerhard Hubner, Baden-Baden, Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 10, 1972, Ser. No. 298,881
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



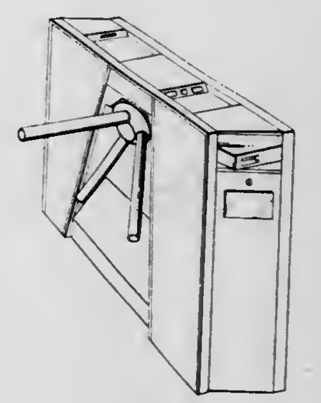
234,429
END FRAME FOR A DYNAMOELECTRIC MACHINE
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company
Filed Apr. 21, 1972, Ser. No. 246,509
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5 A



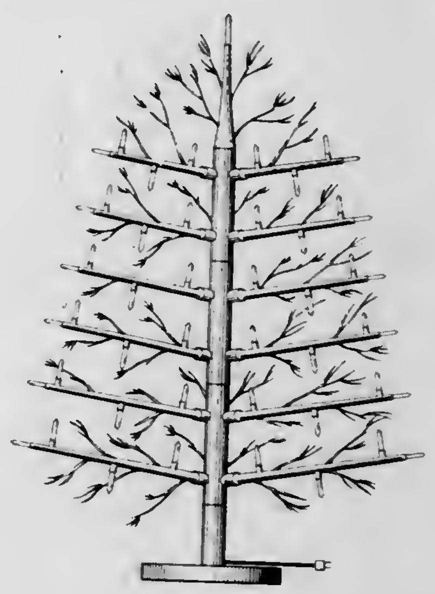
234,430
ACCOUNTING MACHINE OR SIMILAR ARTICLE
John F. Armour, Dayton, Ohio, Laurence F. Plaskan, West Bend, Wis., and Pierre L. Crease, Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Mar. 30, 1973, Ser. No. 346,432
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



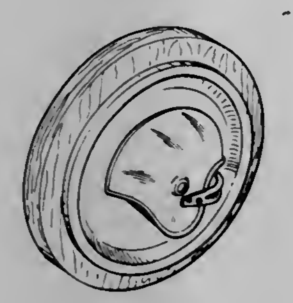
234,431
PASSENGER TURNSTILE
Charles R. McGehee, Culver City, and Bruce H. Osterberg, Manhattan Beach, Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.
Filed Mar. 15, 1972, Ser. No. 235,107
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D28—1 B



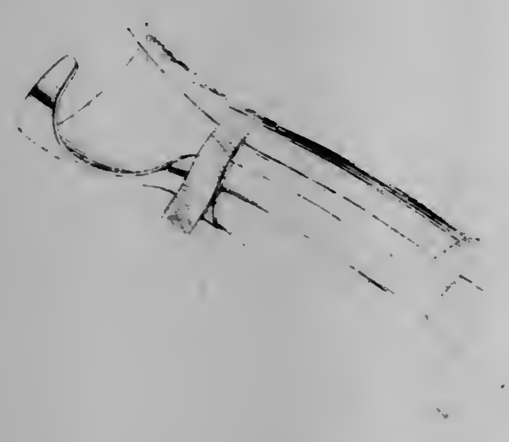
234,432
ARTIFICIAL CHRISTMAS TREE
Theodore D. Boganowski, 3059 S. 48th Ave., Omaha, Nebr. 68106, and Theodore L. Boganowski, 3003 Kansas Drive, Bellevue, Nebr. 68005
Filed Apr. 6, 1973, Ser. No. 348,726
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 A



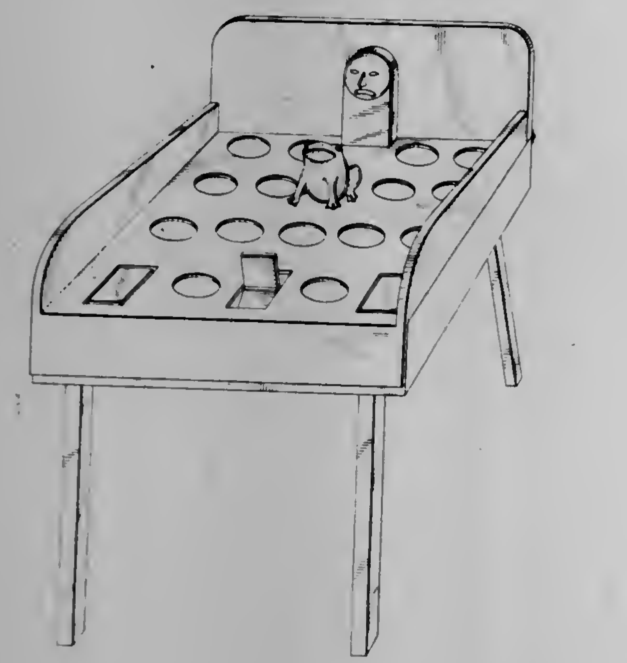
234,433
FOOTBALL WALL PLAQUE
Robert F. Zivica, St. Clair Shores, Mich., assignor to Select Markets, Inc.
Filed May 22, 1972, Ser. No. 255,380
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



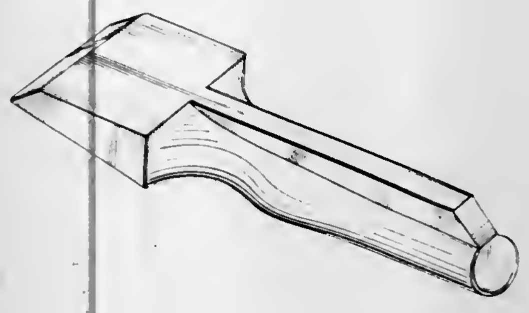
234,434
PUTTING TRAINER
Lee Trevino, El Paso, Tex., assignor to Lee Trevino Enterprises, Inc., El Paso, Tex.
Filed Mar. 15, 1973, Ser. No. 341,715
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



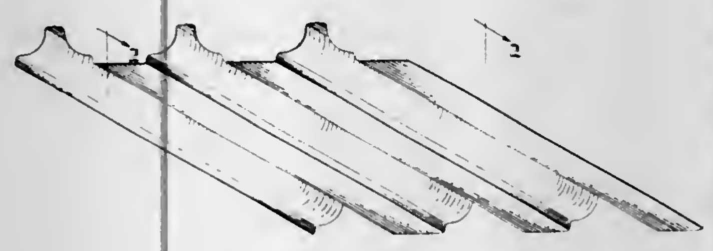
234,435
GAME TABLE
Jose Luis Pineiro, Jr. Lampa No. 1139, Of. 62, Lima, Peru
Filed Dec. 14, 1972, Ser. No. 315,189
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



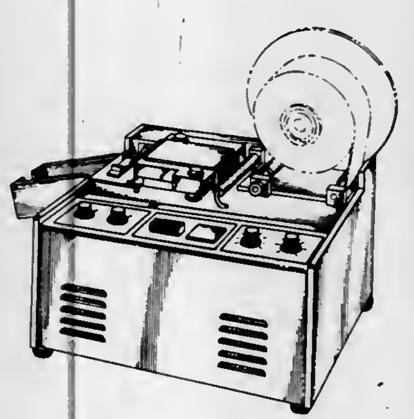
234,436
DIGGING TOOTH
Richard George Holland, P.O. Box 123, Parramatta, Grand Avenue, Camellia Industrial Estates, New South Wales 2150, Australia
Filed Jan. 8, 1973, Ser. No. 322,033
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D39—1 R



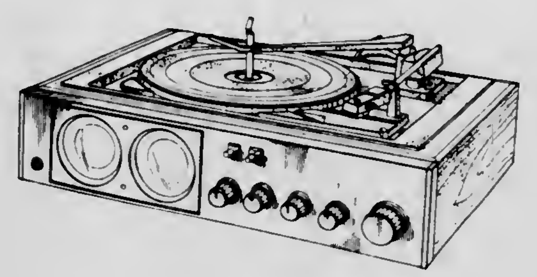
234,437
STRUCTURAL PANEL
Darrell W. Craik, Escondido, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Sept. 21, 1972, Ser. No. 290,844
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2 A



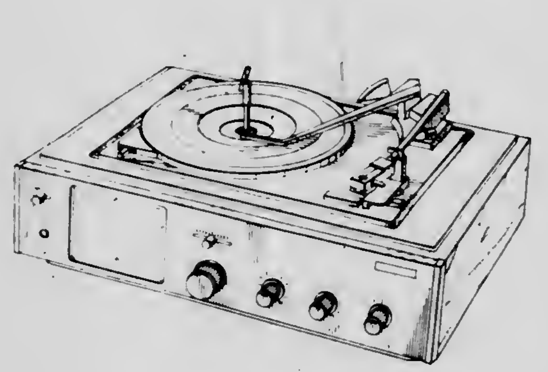
234,438
STRIP CUTTER
Timothy P. Fitzgerald, Playa Del Rey, Calif., assignor to Image Systems, Inc., Culver City, Calif.
Filed June 3, 1971, Ser. No. 149,889
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 A



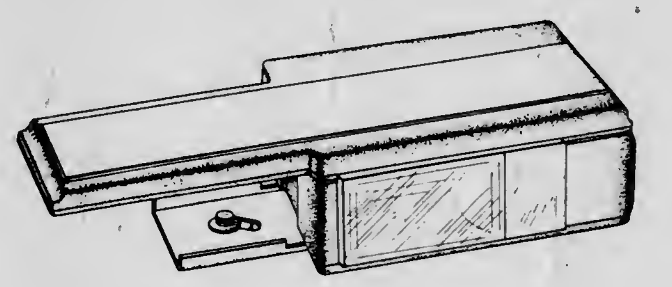
234,439
COMBINED RECORD PLAYER AND AMPLIFIER
Yoshiaki Iida, Katano, and Ken Okabe, Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 20, 1973, Ser. No. 343,053
Claims priority, application Japan Sept. 20, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



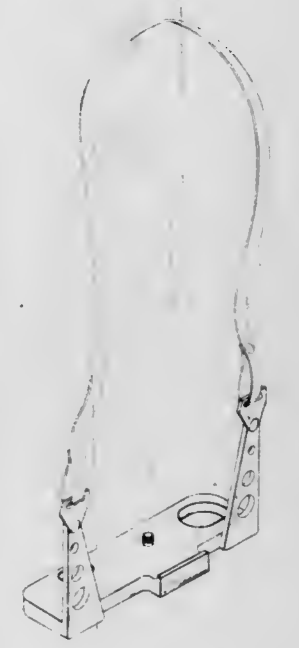
234,440
COMBINED RECORD PLAYER AND AMPLIFIER
Yoshiaki Iida, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 20, 1973, Ser. No. 343,055
Claims priority, application Japan Sept. 20, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



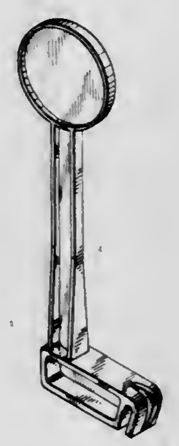
234,441
PHOTOFLASH UNIT
John De Filippis, South Amboy, and Robert L. Taylor, Imlaystown, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 21, 1973, Ser. No. 362,038
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



234,442
CRADLE SUPPORT FOR A CAMERA
Harry E. Mazur, P.O. Box 4508, Palm Springs, Calif. 92262
Filed July 30, 1973, Ser. No. 383,765
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G



234,443
VEHICLE IDENTIFICATION SIGN
Abraham Golub, 4881 22nd St. NW., Lauderhill, Fla. 33313
Filed Oct. 5, 1973, Ser. No. 404,073
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Osakeyhtio: *See—*
  - Tuura, Martti Johannes, 3,869,077.
- A.C.I. Operations Pty. Limited: *See—*
  - Brungs, Michael; and Burniston, John, 3,869,270.
- A.G. fur Oxydenchemie: *See—*
  - Beer, Henri Bernard, 3,869,359.
- A/S Ferrosan: *See—*
  - Kring, Peder Lund; and Lund, Jorgen, 3,869,539.
- A. Stucki Company: *See—*
  - Wagner, John H.; and Wiebe, Donald, 3,868,912.
- Aa. Brovig A.S.: *See—*
  - Brovig, Aanen, 3,868,740.
- AB Bojors: *See—*
  - Haggstrom, Rolf Paul; and Karlsson, Bengt-Ake, 3,869,007.
- Abbo, Toma O. Apparatus for assembling and disassembling a disposable external catheter. 3,868,757, Cl. 29-200.00H.
- Abbott Laboratories: *See—*
  - Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, 3,869,274.
  - Freiberg, Leslie Alan, 3,869,444.
  - Hallas, Robert; Tadanier, John Soloman; and VonEsch, Anne Mary, 3,869,445.
- Abex Corporation: *See—*
  - Adams, Cecil E., 3,869,231.
- Ackermann, Walter Thomas, to Indevco Corporation. Film handling system. 3,869,093, Cl. 242-55.210.
- Ackley, Edward M., to R. W. Hartnett Company. Capsule precision printing apparatus and method. 3,868,900, Cl. 101-40.000.
- Action Communication Systems, Inc.: *See—*
  - Epstein, Barry M., 3,869,578.
- Acuna, Mario H.: *See—*
  - Doong, Henry; and Acuna, Mario H., 3,869,659.
- Adamik, Jaroslav F. Foxing and toe cap press. 3,868,736, Cl. 12-1.00B.
- Adams, Cecil E., to Abex Corporation. Vane type fluid energy translating device. 3,869,231, Cl. 418-267.000.
- Adams Rite Manufacturing Company: *See—*
  - Eads, Charles L., 3,869,159.
- Adaskin, Semen Izrailovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Aerazur Constructions Aeronautiques: *See—*
  - Hatton, Gildas, 3,868,952.
- Aero-Flow Dynamics, Inc. (The Wing Company Division): *See—*
  - Creuz, Walter R., 3,869,243.
- AGA Aktiebolag: *See—*
  - Smars, Erik; Mogensen, Palne; and Kaij, Mats J., 3,869,616.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Mader, Helmut; Otto, Rigobert; Marx, Paul; and Puschel, Walter, 3,869,291.
- Agfa-Gevaert N.V.: *See—*
  - Philippaerts, Herman Adelbert; Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,869,290.
- Aggarwal, Roshan L.: *See—*
  - Lax, Benjamin; and Aggarwal, Roshan L., 3,869,618.
- Aikawa, Hiroshi: *See—*
  - Ito, Naganori; and Aikawa, Hiroshi, 3,869,141.
- Air-Lock Plastics, Inc.: *See—*
  - Confer, Raymond C., 3,869,239.
- Air Logistics Corporation: *See—*
  - Schirtzinger, Joseph F., 3,868,920.
- Airco, Inc.: *See—*
  - Linhardt, Hans D.; Carter, Thomas A.; and Kirk, James A., 3,868,827.
  - Terrell, Ross C., 3,869,519.
- Airfix Industries Limited: *See—*
  - Sutch, Brian Leo Chudleigh, 3,868,893.
  - Sutch, Brian Leo Chudleigh, 3,869,234.
- Akron Scientific Labs: *See—*
  - Link, William T.; and McClatchie, Edward A., 3,869,613.
- Aktiebolaget Bofors: *See—*
  - Olsson, Tore Bertil Reinhold, 3,869,565.
- Aktiebolaget Leo: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,869,527.
- Albrecht, Donald. Traction device. 3,868,951, Cl. 128-75.000.
- Aldous, George C., to Westinghouse Electric Corporation. Customer adjustment switch assembly. 3,869,688, Cl. 337-82.000.
- Aldrich Chemical Company: *See—*
  - Biel, John Hans; and Klundt, Irwin L., 3,869,492.
- Aldrich, Ralph E.; Feinleib, Julius; and Schmutz, Lawrence E., to Itek Corporation. Liquid crystal display containing segmented source of back-lighting. 3,869,195, Cl. 350-160.0LC.
- Alfidi, Ralph J.; and Cross, William B. Vessel implantable appliance and method of implanting it. 3,868,956, Cl. 128-345.000.
- Alinari, Carlo. Casing for liquid-filled depth gauge. 3,868,853, Cl. 73-300.000.
- Alinina, Raisa Alexeevna, administrator: *See—*
  - Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
- Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., to Interlake, Inc. Pollution-free coke quenching system. 3,869,352, Cl. 202-227.000.
- Allied Chemical Corporation: *See—*
  - DeLong, Richard C., 3,869,485.
  - Jones, Harold F.; Ousterling, David L.; and Anderson, Roland W., 3,869,313.
  - Schweitzer, Arthur J., Jr.; and Schupak, Eugene, 3,869,329.
- Allis-Chalmers Corporation: *See—*
  - Erickson, R. Barry, 3,869,087.
  - Stunkard, Norman W., 3,869,691.
- Allison, William D., to Ford Motor Company. Motor vehicle suspension. 3,869,015, Cl. 180-71.000.
- Allison, William D., to Ford Motor Company. Steering device having a chain operated steering gear actuator. 3,869,138, Cl. 280-93.000.
- Allison, William D., to Ford Motor Company. Rear suspension for motor vehicles: 3,869,140, Cl. 280-124.00R.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Hanas, Bertil Henrik, 3,869,560.
- Allstate Insurance Company: *See—*
  - Humphrey, Marion L.; and Tugaudis, Ernest A., 3,869,582.
- Almanna Svenska Elektriska Aktiebolaget: *See—*
  - Nilsson, Jan, 3,868,762.
- Aluminum Company of America: *See—*
  - Couchman, Richard, 3,868,841.
  - Eiland, Ehrlich M., 3,869,305.
  - Schrecker, Howard D.; and Diekhoff, Hans H., 3,868,919.
  - Smith, George L., Jr.; and Diekhoff, Hans H., 3,868,918.
- American Cyanamid Company: *See—*
  - Bennett, Robert Putnam, 3,869,453.
  - Cate, Alan Clifford, 3,868,749.
  - Johnson, Robert Bird; Rakowitz, David Henry; Barber, William Austin; and Fetchin, John Allan, 3,869,511.
  - Lutz, Albert William; and Walworth, Bryant Leonidas, 3,869,457.
  - Olsson, David Lawrence; and Singerman, Sol, 3,869,044.
  - Singh, Balwant, 3,869,363.
- American Electronic Laboratories, Inc.: *See—*
  - Colodny, Samuel H., 3,869,564.
- American Home Products Corporation: *See—*
  - Freed, Elisabeth H.; Freed, Meier E.; and Potoski, John R., 3,869,512.
  - Freed, Meier E.; and Childress, Scott J., 3,869,460.
  - Vezina, Claude; Saucier, Rene; and Sehgal, Surendra N., 3,869,346.
- American Optical Corporation: *See—*
  - La Marre, David A.; Smith, Donald A.; and Stickney, Herbert F., 3,868,726.
  - Shaw, Robert R.; and Snitzer, Elias, 3,869,403.
  - Shaw, Robert R.; and Snitzer, Elias, 3,869,404.
  - Shaw, Robert R.; and Snitzer, Elias, 3,869,405.
- American Plasticraft Company: *See—*
  - Dumas, Christ J.; and Simovits, Stephen S., Jr., 3,869,633.
- American Thermostat Corporation: *See—*
  - Hickling, Colin D., 3,869,690.
- Amering, Charles F., to Eastman Kodak Company. Novel compositions and photographic processes. 3,869,289, Cl. 96-66.300.
- Amort, Jurgen: *See—*
  - Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, 3,869,340.
- AMP Incorporated: *See—*
  - Teagno, Wladimiro, 3,869,185.
- Anchor Hocking Corporation: *See—*
  - Oglesbee, Richard K., 3,869,079.
- Anderson, Andrew W.; and Mullin, John P., to Scandia Packaging Machinery Company. Apparatus for applying a label to a package. 3,869,330, Cl. 156-380.000.
- Anderson, Arnold L., to Michigan Chemical Corporation. Polyacrylate plastic compositions containing bis-aryloxy flame retardants. 3,869,424, Cl. 260-45.90R.
- Anderson, Arnold L., to Michigan Chemical Corporation. Poly(phenylene oxide) plastic compositions containing bis-phenoxy flame retardants. 3,869,425, Cl. 260-45.90R.
- Anderson, Arnold L., to Michigan Chemical Corporation. Polyester plastic compositions containing bis-aryloxy flame retardants. 3,869,426, Cl. 260-45.90R.

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- Anderson, Robert L., to Paul, James R., a part interest. Shovel mounted weed cutter. 3,868,775, Cl. 30-329.000.
- Anderson, Roland W.: *See—*
  - Jones, Harold F.; Ousterling, David L.; and Anderson, Roland W., 3,869,313.
- Anderson, Warren A.; Passmore, Edmund M.; and Matheson, Wilfrid G., to GTE Sylvania Incorporated. Diode-containing incandescent lamp having improved efficiency. 3,869,631, Cl. 313-217.000.
- Andrews, Edwin R.; Claxton, George P.; Roberts, Edward McC.; and Fleming, Robert W., to Richardson-Merrell Inc. 2,7-Bis-basic esters and ethers of 9-benzylidenefluorence. 3,869,496, Cl. 260-465.00E.
- Anglim, James Brian: *See—*
  - Light, Kenneth K.; and Anglim, James Brian, 3,869,524.
- Anthony, Robert Leroy; and Wray, Samuel Francis, to du Pont de Nemours, E. I., and Company. Spinneret fabrication process. 3,868,870, Cl. 76-107.00S.
- Anthony, William Edward. Method of making lap pin. 3,868,842, Cl. 72-367.000.
- Aoki, Shingi: *See—*
  - Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
- Aoyagi, Takaaki: *See—*
  - Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, 3,869,347.
- Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased (by Alinina, Raisa Alexeevna, administrator). Method of cladding of metal products. 3,868,761, Cl. 29-470.100.
- Archibald, John Leheup, to John Wyeth & Brother Limited. N-phenyl derivatives of alkanoylamido piperidines. 3,869,463, Cl. 260-293.610.
- Arens Controls, Inc.: *See—*
  - Neyer, James U., 3,868,865.
- Arfert, Horst F. W., to Reynolds Metals Company. Sealed container and apparatus for and method of sealing same. 3,868,917, Cl. 113-1.00E.
- Argus Chemical Corporation: *See—*
  - Minagawa, Motonobu; and Nomura, Kuniaki, 3,869,423.
- Armaturen-Gesellschaft m.b.H.: *See—*
  - Ragailler, Franz, 3,868,905.
- Armdur, Frank K.: *See—*
  - Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., 3,869,352.
- Armstrong, John Keith: *See—*
  - Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, 3,869,177.
- Arndt, Friedrich; and Boroschewski, Gerhard, to Schering AG. Herbicidal mixtures. 3,869,275, Cl. 71-92.000.
- Arndt, Friedrich: *See—*
  - Boroschewski, Gerhard; and Arndt, Friedrich, 3,869,504.
- Arneson, Howard M., to Arneson Products Inc. Hydromassage device. 3,868,949, Cl. 128-66.000.
- Arneson Products Inc.: *See—*
  - Arneson, Howard M., 3,868,949.
- Art Shelf Product Company: *See—*
  - Stoeber, Alfred; and Smialkowski, Bruno, 3,869,218.
- Arthur D. Little, Inc.: *See—*
  - Schutte, August H.; and Stevens, James T., 3,869,543.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
  - Ono, Hiroshi; and Yoshida, Mitsuo, 3,869,375.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Kawasaki, Harumi, 3,869,697.
- Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, to du Pont de Nemours, E. I., and Company. Apparatus for gradient elution. 3,869,067, Cl. 222-70.000.
- Associated Engineering Limited: *See—*
  - Hunt, Norman; and Noddings, John, 3,868,869.
- Astheimer, Karl, to General Motors Corporation. Rear axle suspensions for motor vehicles. 3,869,016, Cl. 180-73.00R.
- Atlantic Richfield Canada Ltd.: *See—*
  - Schutte, Robert, 3,869,384.
- Atlantic Richfield Company: *See—*
  - James, Dean B., 3,869,536.
- Atlas Pacific Engineering Company: *See—*
  - Loveland, Malcolm W., 3,869,041.
- Auspurg, Heinz; Huber, Josef; Rabold, Jurgen; and Wohlert, Gunther, to Siemens Aktiengesellschaft. Storage unit test control device. 3,869,603, Cl. 235-153.0AM.
- Automatic Braiding Company (Nottingham) Limited: *See—*
  - Lynam, John Edward, 3,868,729.
- Automobiles Peugeot: *See—*
  - Dera, Alain; and Besseau, Daniel, 3,869,163.
  - Rivere, Jean-Pierre, 3,868,936.
- Autotrol Corporation: *See—*
  - Torpey, Wilbur N., 3,869,380.
- AVM Corporation: *See—*
  - Sheppard, William L., 3,868,991.
- Avtron Manufacturing, Inc.: *See—*
  - Safer, Michael B.; and Menegos, Andrew J., 3,869,664.
- Awano, Tsuneo: *See—*
  - Masuzawa, Isao; Onishi, Kazutoshi; and Awano, Tsuneo, 3,869,653.
- Ayers, Buell O.; and Roof, Lewis B., to Phillips Petroleum Company. Multipositional selector valve. 3,868,970, Cl. 137-625.460.
- Ayres, Barry Edward: *See—*
  - Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, 3,869,451.
- Back, Gerhard; and Fasciati, Alfred, to Ciba-Geigy AG. Metal-complex azo dyestuffs containing a 5-substituted-2,3-dihydroxypyridine as coupling component. 3,869,440, Cl. 260-146.00R.
- Backhouse, Geoffrey Howard; and Leggett, Norman Derek, to International Standard Electric Corporation. Stud mount for light emissive semiconductor devices. 3,869,702, Cl. 357-74.000.
- Bailey, Denis M., to Sterling Drug Inc. (2,3-Dihydro-2-benzofuranylmethyl)aminoguanidines. 3,869,478, Cl. 260-346.20R.
- Bailey, James R.: *See—*
  - Klein, Carl F.; Korta, Lawrence B.; and Bailey, James R., 3,869,681.
- Bailly, Roger: *See—*
  - Peltier, Henri; Chatourel, Pierre; and Bailly, Roger, 3,869,055.
- Baker Oil Tools, Inc.: *See—*
  - Crowe, Talmadge L., 3,868,995.
- Baldwin, James French. High temperature alloys. 3,869,284, Cl. 75-134.00F.
- Ball, Eric, to Dunlop Holdings Limited. Reinforced flexible articles. 3,868,974, Cl. 138-129.000.
- Ball, Richard L.: *See—*
  - Lambert, Everette M.; and Ball, Richard L., 3,869,327.
- Ballentine, John D., to PPG Industries, Inc. Heat and light reflecting spandrel. 3,869,198, Cl. 350-259.000.
- Bankovsky, Leonid Leonidovich: *See—*
  - Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
- Bara, Edwin S., to Motorola, Inc. Magnetic tape head indexing assembly for a cartridge tape player. 3,869,724, Cl. 360-106.000.
- Barber, Richard H., to McGill Manufacturing Company, Inc. Resilient multiple element bearing seal. 3,869,181, Cl. 308-187.200.
- Barber, William Austin: *See—*
  - Johnson, Robert Bird; Rakowitz, David Henry; Barber, William Austin; and Fetchin, John Allan, 3,869,511.
- Barinov, Boris Agafonovich, deceased: *See—*
  - Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
- Barkley, Ronald A. Apparatus for temporary storage of articles. 3,869,115, Cl. 271-147.000.
- Bartel Engineering Limited: *See—*
  - Fry, Timothy Selwyn, 3,869,147.
- Barth, Hans Dieter; and Brand, Erich, to Chemiebau, Dr. A. Zieren GmbH & Co., K.G. Removal of impurities during the recovery of crude phthalic anhydride. 3,869,479, Cl. 260-346.400.
- Basi, Jagtar Singh, to International Business Machines Corporation. Method of polishing zinc selenide. 3,869,323, Cl. 156-17.000.
- Basi, Jagtar Singh; and Mendel, Eric, to International Business Machines Corporation. Method of polishing cadmium telluride. 3,869,324, Cl. 156-17.000.
- Battcock, Whalley Vowe, to Coal Industry (Patents) Limited. Method and apparatus for the generation and transfer of heat. 3,868,993, Cl. 165-104.000.
- Battersby, William R., to USM Corporation. Double glazing unit. 3,868,805, Cl. 52-616.000.
- Battershell, Robert D., to Diamond Shamrock Corporation. Production of tetrachlorophthalonitriles. 3,869,494, Cl. 260-465.00G.
- Bauer, Benjamin B.; Gravereaux, Daniel W.; and Torick, Emil L., to Columbia Broadcasting System, Inc. Quadruphonic disc recording system utilizing single sideband modulation. 3,869,583, Cl. 179-100.4ST.
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  - Hoppe, Peter; Leyer, Helmut; and Muller, Johann, 3,869,337.
  - Kuhle, Engelbert; and Klauke, Erich, 3,869,509.
  - Neuner, Otto; and Dorlars, Alfons, 3,869,469.
- Bazille, James H., Jr., to Minnesota Mining and Manufacturing Company. Solderless wire connector. 3,869,190, Cl. 339-98.000.
- BBC Brown Boveri & Company Limited: *See—*
  - Benz, Hans, 3,869,686.
  - Eidinger, Adolf; and Floessel, Carl-Dieter, 3,869,562.
  - Meyer, Gundolf, 3,868,768.
  - Muellerpoths, Reiner, 3,868,963.
- Beardmore, Geoffrey; and Evans, Hugh N., to Smiths Industries Limited. Methods of sputter deposition of materials. 3,869,368, Cl. 204-192.000.
- Beasley, Donald L.: *See—*
  - Townsend, Ray T.; and Beasley, Donald L., 3,868,747.
- Beatrice Foods Co.: *See—*
  - Leahy, Richard M., 3,869,052.

- Bebris, Natalya Karlovna; Kiselev, Andrei Vladimirovich; Nikitin, Jury Stepanovich; and Yashin, Yakov Ivanovich. Process for preparing a wide-pore adsorbent for use in chromatography. 3,869,409, Cl. 252-446.000.
- Becker, Carl E.: *See—*
  - Becker, Peter W.; Price, Albert E.; Mowatt-Larssen, Erling; and Becker, Carl E., 3,868,913.
- Becker, Otto Alfred. Electroplating of the cut edges of sheet metal panels. 3,869,372, Cl. 204-224.00R.
- Becker, Peter W.; Price, Albert E.; Mowatt-Larssen, Erling; and Becker, Carl E., to General American Transportation Corporation. Hopper vehicle. 3,868,913, Cl. 105-240.000.
- Bedline Mfg. Co.: *See—*
  - Spitz, Melvin P.; and Sproule, John W., 3,868,733.
- Beecham Group Limited: *See—*
  - Palmer, Derek Reginald, 3,869,505.
- Beer, Henri Bernard, to A.G. fur Oxydenchemie. Method of making intimately admixed metal oxides. 3,869,359, Cl. 204-96.000.
- Bell, Franklin D. Perspective line generator. 3,868,777, Cl. 33-77.000.
- Bell & Howell Company: *See—*
  - Schmidt, Josef, 3,869,718.
- Bell, Jonathan Durand: *See—*
  - Karasa, Alvydas Petras; and Bell, Jonathan Durand, 3,869,089.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Kolensky, Leo Michael; Pilc, Randolph John; Schlanger, Gabriel Gary; and Willand, Allan Howard, 3,869,573.
  - Scerbo, Louis Joseph, 3,868,859.
- Bellmann, Walter: *See—*
  - Springer, Willi; and Bellmann, Walter, 3,868,753.
- Bellomy, Robert C., to Chevron Research Company. Aluminum coatings based on clay-emulsified asphalts. 3,869,297, Cl. 106-277.000.
- Belohoubek, Erwin Franz; and Presser, Adolph, to RCA Corporation. Microwave transistor carrier for common base class a operation. 3,869,677, Cl. 330-31.000.
- Beloit Corporation: *See—*
  - Diltz, Jack L., 3,869,095.
- Bendix Corporation, The: *See—*
  - Chlebowski, Richard A., 3,869,027.
  - Moseman, Paul W., Jr., 3,868,843.
  - Roberts, James K.; and Pauwels, Edward M., 3,868,890.
- Bennett, Robert Putnam, to American Cyanamid Company. Iron carbonyl complex of aromatic azo compounds complexed with particular phosphine arsine or stibine compounds. 3,869,453, Cl. 260-242.000.
- Benoit, Roland A.; and Guillot, Edmond P., to Interroyal Corporation. Hospital exercise bar. 3,868,734, Cl. 5-317.00B.
- Benson Mfg. Corporation: *See—*
  - Bice, Donald A., 3,868,803.
- Benson, Robert F., to Texaco Inc. Aromatic hydrogenation using sodium borohydride reduced transition metal supported catalysts. 3,869,521, Cl. 260-667.000.
- Bentz, Erwin J. H.: *See—*
  - Getz, Marvin G.; and Bentz, Erwin J. H., 3,868,992.
- Bentz, Gerard: *See—*
  - Galey, Jean G.; and Bentz, Gerard, 3,868,987.
- Benz, Hans, to BBC Brown Boveri & Company Limited. Superconductive coils incorporating insulation between adjacent winding layers having a contraction rate matching that of the superconductive material. 3,869,686, Cl. 335-216.000.
- Berger, Julius; Pruess, David; and Scannell, James Parnell, to Hoffmann-La Roche Inc. Herbicidal composition and methods. 3,869,277, Cl. 71-113.000.
- Berkley & Company, Inc.: *See—*
  - Foote, Danny R., 3,868,785.
- Berlin & Jones Company, Inc.: *See—*
  - Watson, Charles S., 3,868,894.
- Berliner Maschinenban-Actien-Gesellschaft: *See—*
  - Tschierse, Klaus, 3,869,663.
- Bernard, William R.; and Buslik, Walter S., to International Business Machines Corporation. Magnetic pattern recording. 3,869,711, Cl. 360-17.000.
- Berry Metal Company: *See—*
  - Chang, Yi-Chung; Rymarchyk, Nicholas M.; and Greenstine, Robert B., 3,869,369.
- Bertrand, Claude: *See—*
  - Gradeff, Peter S.; and Bertrand, Claude, 3,869,517.
- Besseau, Daniel: *See—*
  - Dera, Alain; and Besseau, Daniel, 3,869,163.
- Bessette, Georges Henri. Expansible pulley with speed and torque responsive means. 3,868,862, Cl. 74-230.17E.
- Bethmann, Karl-Wilhelm: *See—*
  - Vorster, Hans-Jurgen; Kunath, Paul; and Bethmann, Karl-Wilhelm, 3,869,379.
- Beutner, Heinz Paul; and Feick, George, to International Nickel Company, Inc., The. Production of nickel sulfate. 3,869,257, Cl. 423-544.000.
- Bice, Donald A., to Benson Mfg. Corporation. Plastic shutter and mounting clamp therefor. 3,868,803, Cl. 52-473.000.
- Biel, John Hans; and Klundt, Irwin L., to Aldrich Chemical Company. Di-substituted beta-phenethylcarbamic acid esters. 3,869,492, Cl. 260-463.000.
- Bierman, Howard R.; and Mast, John G. Flow controlling or metering device. 3,868,973, Cl. 138-43.000.
- Biffle, Morris S. Rotary drilling head assembly. 3,868,832, Cl. 64-23.500.
- Bigalke, Erhard; Buttgereit, Werner; and Pundt, Dieter, to Volkswagenwerk Aktiengesellschaft. Combustion motor. 3,868,933, Cl. 123-102.000.
- Bingham, Chalice, to Sealectro Corporation. Quick connect/disconnect coax connector. 3,869,187, Cl. 339-91.00P.
- Biorex Laboratories, Limited: *See—*
  - Turner, John Cameron; and Chan, Rosalind Po Kuen, 3,869,458.
- Birrell, Raymond Nicolson: *See—*
  - Combey, Malcolm; and Birrell, Raymond Nicolson, 3,869,526.
- Bischoff, Leo E.; and Keller, Chris F., Jr., to General Motors Corporation. Windshield wiper control circuit. 3,869,654, Cl. 318-443.000.
- Bizerba-Werke Wilhelm Kraut K.G.: *See—*
  - Kuhnle, Ernst; and Schwarz, Josef, 3,869,008.
  - Kuhnle, Ernst, 3,869,009.
- Black and Decker Manufacturing Company, The: *See—*
  - Karasa, Alvydas Petras; and Bell, Jonathan Durand, 3,869,089.
- Blades, Herbert, to du Pont de Nemours, E. I., and Company. High strength polyamide fibers and films. 3,869,429, Cl. 260-78.00S.
- Blades, Herbert, to du Pont de Nemours, E. I., and Company. High modulus, high tenacity poly(p-phenylene terephthalamide) fiber. 3,869,430, Cl. 260-78.00S.
- Blanchard, Lucien: *See—*
  - Reichardt, Wolfgang; Blanchard, Lucien; and Denamps, Jean, 3,868,858.
- Blankenship, Larry Thomas, to Dow Chemical Company, The. Flexible polyurethane foams. 3,869,413, Cl. 260-2.5BE.
- Blankumsee, Howard: *See—*
  - Collins, Walter; and Blankumsee, Howard, 3,869,595.
- Blazey, Richard N.: *See—*
  - Owens, James C.; and Blazey, Richard N., 3,869,197.
- Bledsoe, Woodrow W. Fiber baling apparatus. 3,868,809, Cl. 53-117.000.
- Blethen, William M., to Retention Communication Systems, Inc. Apparatus for qualifying recorded tone bursts. 3,869,716, Cl. 360-55.000.
- Blum, Hans, to Hans und Heinrich Blum OHG. Method and apparatus for comminuting tree stumps. 3,868,980, Cl. 144-2.00N.
- Board of Regents of the University of Nebraska: *See—*
  - Mebus, Charles A.; and Twiehaus, Marvin J., 3,869,547.
- Board of Regents, State of Florida: *See—*
  - Doddington, Harold W., 3,868,957.
- Bobier, Wilfred S., to Oilgear Company, The. Fluid device having means for aligning a cylinder barrel. 3,868,889, Cl. 91-506.000.
- Boeing, William E.: *See—*
  - Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.
- Bogert, Clayton. Safety closure for containers. 3,869,058, Cl. 215-219.000.
- Bogulslawski, Jan Janusz; Geyer, Paul; and Taff, Frederick Nishwitz, to Uniroyal, Inc. Fabric coating by extrusion die-calendering apparatus and method. 3,869,304, Cl. 117-65.200.
- Boiko, Georgy Alexandrovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
- Bokman, Grigory Aronovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Bokovoy, Ronald D.: *See—*
  - Brown, Raymond C.; and Bokovoy, Ronald D., 3,869,174.
- Bondie, Dale J., to Ex-Cell-O Corporation. Tool holding assembly. 3,868,886, Cl. 90-11.00D.
- Booker, Aylwin Reed, to Everlube Corporation of America. Solid lubricant adhesive film. 3,869,393, Cl. 252-12.200.
- Borbely, Erno, to Dynaco Inc. A.f.c. disabling circuitry. 3,869,674, Cl. 325-422.000.
- Borer, Charles: *See—*
  - Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,869,428.
- Boroschewski, Gerhard; and Arndt, Friedrich. Herbicidal methylphenyl carbamates. 3,869,504, Cl. 260-471.00C.
- Boroschewski, Gerhard: *See—*
  - Arndt, Friedrich; and Boroschewski, Gerhard, 3,869,275.
- Borsig GmbH: *See—*
  - Losel, Georg; and Eickenberg, Leonhard, 3,868,927.
- Bos, Fredericus Antonius Jozef, to Polva-Nederland B.V. Machine for binding together a number of bars, tubes or similar elongated objects. 3,868,810, Cl. 53-198.00R.
- Bosch, Paul, to Robert Bosch G.m.b.H. Pumping system. 3,869,223, Cl. 417-212.000.
- Bowles, Andrew D.; and Parsons, Samuel J. Uniform lightweight concrete and plaster. 3,869,295, Cl. 106-90.000.
- Bowman, Jon G.: *See—*
  - Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.
- Boyce, Jack R. Apparatus for working frozen ground. 3,868,825, Cl. 61-36.00A.

Boyle, Daniel J.: *See—*
Jaeschke, Harold R.; and Boyle, Daniel J., 3,869,062.
Bozzato, Giuliano; and Pesaro, Mario, to Givaudon Corporation. Novel odorants. 3,869,493, Cl. 260-464.000.
Bradford, Jack R.: *See—*
Lambert, Ronald D.; and Bradford, Jack R., 3,869,184.
Bradshaw, Arthur; and Meadows, Frank William, to Service (Engineers) Limited. Multi-station printing machine for ceramic ware. 3,868,902, Cl. 101-44.000.
Brand, Erich: *See—*
Barth, Hans Dieter; and Brand, Erich, 3,869,479.
Braun, Eric A., to Ex-Cell-O Corporation. Liquid proof flat end container with reclosable pour spout. 3,869,078, Cl. 229-17.00R.
Brazer, Geoffrey R.: *See—*
Curran, Patrick M.; Brazer, Geoffrey R.; and Erickson, John S., 3,869,282.
Brennan, William M.: *See—*
Nelson, Bud D.; and Brennan, William M., 3,869,103.
Brenner, I. Edward. Manually adjustable tooth brush. 3,868,742, Cl. 15-172.000.
Brent, Albert: *See—*
Marion, Charles P.; Schlinger, Warren G.; Brent, Albert; and Muenger, James R., 3,868,817.
Bresser, Robert E.: *See—*
Kugele, Thomas G.; and Bresser, Robert E., 3,869,487.
Bret W. Anderson & Associates, Inc.: *See—*
Anderson, Bret W.; and Steffen, Joseph A., 3,869,080.
Brett, Horace William Walter; and Fox, Richard, to ICI Australia Limited. Explosive composition containing biopolymeric material, method of preparing and using. 3,869,320, Cl. 149-41.000.
Brewster, Linda C.: *See—*
Hasegawa, Shin; and Brewster, Linda C., 3,869,345.
Breyer, Eberhard, to Siemens Aktiengesellschaft. Apparatus for determining the tensile stress in a continuously moving web of material. 3,868,851, Cl. 73-144.000.
Briar, Thomas J.; and Schaefer, William L., to PPG Industries, Inc. Method and apparatus for chopping fibers. 3,869,268, Cl. 65-2.000.
Bride, John Edwin, to du Pont de Nemours, E. I., and Company. Werner chromium complexes and methods for their preparation. 3,869,488, Cl. 260-438.50C.
Brinkman, Glen E. Rotary gear device to provide pulsating flow. 3,869,224, Cl. 417-383.000.
Briotet, Jean Paul Francois Gilbert: *See—*
Grunert, Wilhelm; and Briotet, Jean Paul Francois Gilbert, 3,868,971.
British Insulated Callender's Cables Limited: *See—*
Hutchison, John Blundell, 3,869,155.
Moore, Alexander Joseph, 3,869,235.
Smee, Graham John; and Miller, Anthony Owen, 3,868,771.
British Steel Corporation: *See—*
Davies, Emrys; and Rippon, John Roy, 3,869,283.
British Titan Limited: *See—*
New, George William; and Hare, Alan Lawrence, 3,869,593.
Brock, James Donald; Mize, Erbie G.; and Rylander, Henry G., to CMI Corporation. Aggregate analysis and delivery system. 3,869,110, Cl. 259-149.000.
Bronovsky, Grigory Abramovich: *See—*
Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Brovig, Aanen, to Aa. Brovig A.S. Vertical, freely-suspended rotary brushes for automobile/vehicle washing machines. 3,868,740, Cl. 15-21.00D.
Brown, Albert E.: *See—*
Newman, Douglas A.; and Brown, Albert E., 3,869,307.
Brown Boveri Selzer Turbomaschinen AG: *See—*
Pesendorfer, Alfred, 3,869,133.
Brown, Graham T.: *See—*
Paschal, Harold L., Jr.; and Brown, Graham T., 3,869,581.
Brown, Raymond C.; and Bokovoy, Ronald D., to Superior Industries, Inc. Wheel structure for different bolt circle diameters. 3,869,174, Cl. 301-9.0DN.
Brown, William Henry. Mud diverting kelly saver sub. 3,869,150, Cl. 285-13.000.
Brumbaugh, Robert J., to Teleflex Incorporated. Inorganic coating compositions and a method. 3,869,293, Cl. 106-14.000.
Brungs, Michael; and Burniston, John, to A.C.I. Operations Pty. Limited. Glass colour changes. 3,869,270, Cl. 65-134.000.
Bruning, Elmer Eugene: *See—*
Wolter, Gilbert R.; Szymczak, Eugene B.; and Bruning, Elmer Eugene, 3,869,265.
Brunschwig, John M.; and Stone, William M., to General Electric Company. Method and apparatus for assembling components for a dynamoelectric machine. 3,868,767, Cl. 29-598.000.
Brunswick Corporation: *See—*
Noe, Gerald H.; and Woodfill, William L., 3,868,833.
Roberts, John A.; and Roberts, Peter R., 3,868,792.
Buccellato, Anthony: *See—*
Cwycyshyn, Walter; and Buccellato, Anthony, 3,869,144.
Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,869,513.
Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., to Buckman Laboratories, Inc. Dinitro-dialklyamino-acetophenones. 3,869,513, Cl. 260-577.000.
Bugaut, Andree: *See—*
Lang, Gerard; and Bugaut, Andree, 3,869,454.
Bulmer, Donald L. Occupant actuated means for propelling, stopping, directing, and curb hopping a wheelchair. 3,869,146, Cl. 280-242.0WC.
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalyst carrier for exhaust gas purifier. 3,869,410, Cl. 252-455.00R.
Burcher, Ernest E.; Jobson, Daniel J.; Katzberg, Stephen J.; and Kelly, William L., IV, to United States of America, National Aeronautics and Space Administration. Spectrometer integrated with a facsimile camera. 3,869,212, Cl. 356-189.000.
Burchette, Joseph F. Test scoring device. 3,868,782, Cl. 35-48.00R.
Burger, Norman P.: *See—*
Schmoegner, John C.; and Burger, Norman P., 3,869,070.
Burke, Roger E., to Union Camp Corporation. Coating composition and novel complexer therefor. 3,869,484, Cl. 260-404.500.
Burniston, John: *See—*
Brungs, Michael; and Burniston, John, 3,869,270.
Burns, Russell W., to Merit Abrasive Products, Inc. Rotary buffing sleeve. 3,868,791, Cl. 51-34.00J.
Burroughs Corporation: *See—*
Eldert, Cornelius; and Quiogue, Virgilio J., 3,869,669.
Burst, Hermann; and Wiener, Rolf, to Dr. -Ing. h.c.F. Porsche K.G. Front end for increasing dynamic wheel pressure of passenger motor vehicles. 3,869,166, Cl. 293-69.00R.
Bush, George F., to Ford Motor Company. Side door intrusion protection. 3,868,796, Cl. 52-618.000.
Buslik, Walter S.: *See—*
Bernard, William R.; and Buslik, Walter S., 3,869,711.
Buttel, Helmut; Isert, Ingo Rudiger; Leicht, Alfred; and Schach, Albert, to International Standard Electric Corporation. Sealed contact capable of being magnetically actuated. 3,869,685, Cl. 335-196.000.
Buttgereit, Werner: *See—*
Bigalke, Erhard; Buttgereit, Werner; and Pundt, Dieter, 3,868,933.
Byrne, Sydnor H., Jr.: *See—*
Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,869,067.
Byrom, Raymond R. Portable storage cart. 3,869,137, Cl. 280-47.190.
C.A.V. Limited: *See—*
Sosnowski, Stanislaw Jan Antoni, 3,869,226.
Cahoy, Roger P.; and Sanjean, John, to Gulf Research & Development Company. 3,5-Ditert.butyl-4-(N-benzoylcarbamyloxy)-benzylidenemalononitrile. 3,869,497, Cl. 260-465.00D.
Cambridge Research and Development Group: *See—*
Schiffman, Murray M., 3,869,708.
Cameo, Inc.: *See—*
Warner, Ronald C.; and Shepherd, Bobby R., 3,869,043.
Cameron, Anson W. Control and handling of garment hangers. 3,868,906, Cl. 104-89.000.
Camille Bauer Messinstrumente AG: *See—*
Ludin, Ludwig, 3,869,082.
Camillo, Charles Carl, to Illinois Tool Works, Inc. Contactless electrical thermostat employing a bimetallic strip. 3,869,619, Cl. 307-117.000.
Camillus Cutlery Company: *See—*
Miori, Nilo M., 3,868,774.
Campbell, Craig C., to Mobil Oil Corporation. Wax emulsions containing proteinaceous emulsifiers. 3,869,414, Cl. 260-6.000.
Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,869,433, Cl. 260-79.100.
Campbell, Robert W.; and Scoggins, Lacey E., to Phillips Petroleum Company. Soluble arylene sulfide polymers. 3,869,434, Cl. 260-79.100.
Camras, Marvin, to IIT Research Institute. Video playback system with flutter tolerant clamping. 3,869,712, Cl. 360-33.000.
Canada-Cities Service Ltd.: *See—*
Schutte, Robert, 3,869,384.
Canicatti, Carl L., to United States of America, National Aeronautics and Space Administration. Voltage monitoring system. 3,869,667, Cl. 324-113.000.
Canon Kabushiki Kaisha: *See—*
Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, 3,868,877.
Watanabe, Asao; Kasahara, Tadayoshi; and Sugahara, Noboru, 3,869,211.
Caporicci, Domenico, to Norstar Ski Corporation Ltd. Ski boot. 3,868,783, Cl. 36-2.5AL.
Cardani, Charles S., to General Motors Corporation. Digital speed control system utilizing a countdown register. 3,869,019, Cl. 180-105.00E.
Cardwell, Paul H.: *See—*
Kane, William S.; and Cardwell, Paul H., 3,869,360.
Carlton, Lewis M.: *See—*
Murphy, Frank W., Jr.; Carlton, Lewis M.; and Teague, Troy L., 3,868,855.
Carroll, Charles A., to International Husky, Inc. Aircraft. 3,869,102, Cl. 244-36.000.
Carter, David L., to Texas Instruments Incorporated. Charge coupled imager. 3,869,572, Cl. 178-7.100.
Carter, Hugh P., Jr.: *See—*
McDaniel, Bobby L., 3,869,123.

Carter, Thomas A.: *See—*
Linhardt, Hans D.; Carter, Thomas A.; and Kirk, James A., 3,868,827.
Cartwright, William J.: *See—*
Selusnik, Jerome A.; Wolfe, Robert W.; Cartwright, William J.; and Tate, Oliver C., 3,869,049.
Carver, Ernest C.: *See—*
Priola, Michael A.; and Carver, Ernest C., 3,869,276.
Cary, Robert A.: *See—*
Henry, Richard J.; and Cary, Robert A., 3,869,037.
Castaigne, Albert Rene, to Centre d'Etudes pour l'Industrie Pharmaceutique. Stimulating device having a controlled power. 3,869,661, Cl. 323-20.000.
Cate, Alan Clifford, to American Cyanamid Co. Method of texturizing thermoplastic yarn. 3,868,749, Cl. 28-72.150.
Caterpillar Tractor Company: *See—*
Field, Jesse L., Jr.; and Medina, Glen J., 3,869,107.
Getz, Marvin G.; and Bentz, Erwin J. H., 3,868,992.
Grawey, Charles E., 3,868,990.
Menne, Joseph D.; and Sigulas, George N., 3,868,885.
Muller, Thomas P., 3,869,018.
Ricca, John S.; and Stedman, Robert N., 3,869,179.
Stedman, Robert N., 3,869,010.
Wallk, Harold J., 3,869,022.
Wanner, John C., 3,869,061.
Caton, George, to Yorkshire Switchgear and Engineering Co., Limited. Grounding and testing device for electrical switchgear. 3,869,587, Cl. 200-50.0AA.
Cavalier Corporation: *See—*
Payne, Harry R., 3,869,064.
CCL Systems Limited: *See—*
Davison, John; and Edwards, Hugh Jeremy Willis, 3,868,850.
Centre d'Etudes pour l'Industrie Pharmaceutique: *See—*
Castaigne, Albert Rene, 3,869,661.
Centre Technique de l'Industrie des Papiers Cartons et Celluloses: *See—*
Jacquelin, Guy; and Sangenis, Solange, 3,869,311.
Ceskoslovenska akademie ved: *See—*
Piskala, Alois, 3,869,446.
Chally, Russell. Garment box. 3,869,076, Cl. 229-32.000.
Champion International Corporation: *See—*
Gaylord, Norman G., 3,869,432.
Chan, Rosalind Po Kuen: *See—*
Turner, John Cameron; and Chan, Rosalind Po Kuen, 3,869,458.
Chana, Howard E., to General Motors Corporation. Transmission controlled emission control system. 3,868,868, Cl. 74-856.000.
Chang, Yi-Chung; Rymarchyk, Nicholas M.; and Greenstine, Robert B., to Berry Metal Company. Vibrating oxygen probe. 3,869,369, Cl. 204-195.00S.
Chapman, Emmett H. Musical instrument construction. 3,868,880, Cl. 84-267.000.
Chasen, Lee Richard: *See—*
Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, 3,868,746.
Chatin, Remy, to Moulinage et Ritorderie de Chavanoz. Process and apparatus for the manufacture of effect yarn. 3,868,812, Cl. 57-12.000.
Chatourel, Pierre: *See—*
Peltier, Henri; Chatourel, Pierre; and Bailly, Roger, 3,869,055.
Chemiebau, Dr. A. Zieren GmbH & Co., K.G.: *See—*
Barth, Hans Dieter; and Brand, Erich, 3,869,479.
Chemische Fabrik Richard Geiss: *See—*
Schubert, Ernst, 3,869,353.
Chen, Bu Shing, to Hyperion Incorporated. Diluter probe assembly. 3,869,068, Cl. 222-148.000.
Cherry, Wesley R.; and Scott, Kenneth A., to Sun Ventures, Inc. Purification of alkyl naphthalenes by distillation and furfural extraction. 3,869,357, Cl. 203-43.000.
Chevron Research Company: *See—*
Bellomy, Robert C., 3,869,297.
Sapp, George G.; and Goodrich, Joseph L., 3,869,421.
Cheylac, Roland Claude Michel: *See—*
Hauth, Jean-Marc; and Cheylac, Roland Claude Michel, 3,869,024.
Chiang, Yunn H.; and Sparks, John W., to Polaroid Corporation. Method for the preparation of 3-(3′-carboxy-4′hydroxy-1-napthyl)-3-(3″-carboxy-4″hydroxy-1″-napthyl) naphthalide. 3,869,473, Cl. 260-343.20R.
Chiari, Natale, to Edera S.p.A. Officina Meccanica Tessile. Spinning frame having two confrontingly mounted ring rows. 3,868,814, Cl. 57-34.500.
Childress, Scott J.: *See—*
Freed, Meier E.; and Childress, Scott J., 3,869,460.
Chlebowski, Richard A., to Bendix Corporation, The. Drum brake assembly. 3,869,027, Cl. 188-340.000.
Chono, Masazumi: *See—*
Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
Chore-Time Equipment, Inc.: *See—*
Hostetler, Eldon, 3,869,006.
Christopher, Charles A., Jr.; and Satter, Abdus, to Texaco Inc. Method for preferentially producing petroleum from reservoirs containing oil and water. 3,868,999, Cl. 166-292.000.
Ciba-Geigy AG: *See—*
Back, Gerhard; and Fasciati, Alfred, 3,869,440.
Ramanathan, Visvanathan, 3,869,498.
Wegmuller, Hans; and Motter, Manfred, 3,869,250.
Ciba-Geigy Corporation: *See—*
Combey, Malcolm; and Birrell, Raymond Nicolson, 3,869,526.
Geller, Leo, 3,869,549.
Priola, Michael A.; and Carver, Ernest C., 3,869,276.
Traber, Walter; and Karrer, Friedrich, 3,869,515.
Wehrli, Hansuli; and Jeger, Oskar, 3,869,452.
Cicala Establishment: *See—*
Meroni, Giuliandrea, 3,869,161.
Cicci, George B.; and Tufts, Guy O., to International Harvester Company. Method and apparatus for harvesting crops using a tractor-pulled crop harvester. 3,868,811, Cl. 56-1.000.
Ciciulla, Joseph. Safety latch mechanism for vehicle doors. 3,869,158, Cl. 292-35.000.
Cincinnati Milacron Chemicals, Inc.: *See—*
Kugele, Thomas G.; and Bresser, Robert E., 3,869,487.
Citizen Watch Co., Ltd.: *See—*
Shimizu, Hiroshi, 3,868,845.
Clark, Burton P.: *See—*
Rose, Richard S.; and Clark, Burton P., 3,868,884.
Clark, Thomas A.: *See—*
Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.
Clark, Thomas P. Process for separation and cleaning of edible vegetable products. 3,869,559, Cl. 426-481.000.
Claxton, George P.: *See—*
Andrews, Edwin R.; Claxton, George P.; Roberts, Edward McC.; and Fleming, Robert W., 3,869,496.
Close, Ernest Frederick, to Magnavox Company. Method and apparatus for measuring multipath distortion. 3,869,673, Cl. 325-393.000.
CMI Corporation: *See—*
Brock, James Donald; Mize, Erbie G.; and Rylander, Henry G., 3,869,110.
Coal Industry (Patents) Limited: *See—*
Battcock, Whalley Vowe, 3,868,993.
Coates, Clarence A., Jr.: *See—*
Weaver, Max A.; and Coates, Clarence A., Jr., 3,869,442.
Coats & Clark, Inc.: *See—*
Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, 3,868,746.
Code Key International Corporation: *See—*
Zimmerman, Earl L.; and Homeier, Ronald F., 3,868,838.
Cohen, Guy: *See—*
Lhonore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,869,253.
Coleman, Bestor P.; and McConnell, Kennedy, to Interlake, Inc. Structure levelling assembly. 3,869,031, Cl. 193-35.00R.
Coll-Palagos, Miguel, to Stauffer Chemical Company. Embossing rollers and method of embossing. 3,869,535, Cl. 264-219.000.
Collins, Jerome Howard, to Procter & Gamble Company, The. Liquid detergent compositions. 3,869,399, Cl. 252-118.000.
Collins, Keith Douglas, to Lucas Aerospace Limited. Spark ignition systems. 3,869,645, Cl. 315-209.00T.
Collins, Walter; and Blankumsee, Howard. Insulated heated lunch box. 3,869,595, Cl. 219-387.000.
Collins, William O. Visual approach and landing system for aircraft. 3,868,778, Cl. 33-227.000.
Colodny, Samuel H., to American Electronic Laboratories, Inc. Trunk switching system. 3,869,564, Cl. 178-6.000.
Colt Industries Operating Corp. (formerly Fairbanks Morse, Inc.): *See—*
Zechlin, Richard; and Henderson, Robert M., 3,868,937.
Columbia Broadcasting System, Inc.: *See—*
Bauer, Benjamin B.; Gravereaux, Daniel W.; and Torick, Emil L., 3,869,583.
Smith, Clyde, 3,869,566.
Colussi, Valentino: *See—*
Tarter, James H.; Read, Ronald G.; Colussi, Valentino; and McCain, David L., 3,868,964.
Combey, Malcolm; and Birrell, Raymond Nicolson, to Ciba-Geigy Corporation. Bis(phosphates). 3,869,526, Cl. 260-929.000.
Combustion Engineering, Inc.: *See—*
Richards, George W., 3,869,264.
Commercial Resins Company: *See—*
Hart, Robert J.; and Hart, Milburn L., 3,868,895.
Commissariat a l'Energie Atomigue: *See—*
David, Jacques; and Gay, Guy, 3,869,241.
Compagnie Francaise Thomson Houston-Hotchkiss Brandt: *See—*
Dosdat, Jean; Lanthiez, Jacques; and Levaire, Claude, 3,868,769.
Compagnie Generale d'Electricite: *See—*
Hermet, Pierre; and Laesser, Rodolphe, 3,869,207.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Delavie, Jean-Henri, 3,869,571.
Compteurs Schlumberger: *See—*
Janssen, Sylvain, 3,868,852.
Confer, Raymond C., to Air-Lock Plastics, Inc. Apparatus for blow molding and transfer molding thermoplastic material. 3,869,239, Cl. 425-302.00B.
Connell, Lehman J.: *See—*
Durkee, Lyle H.; and Connell, Lehman J., 3,868,864.
Construction Machinery Company: *See—*
Iehl, William R., 3,869,148.
Continental Can Company, Inc.: *See—*
Hellmer, Ernest W.; and Kinsley, John P., 3,869,237.
Selusnik, Jerome A.; Wolfe, Robert W.; Cartwright, William J.; and Tate, Oliver C., 3,869,049.

- Continental Oil Company: *See—*
  - Gordon, Ronnie D., 3,869,520.
  - Tarter, James H.; Read, Ronald G.; Colussi, Valentino; and McCain, David L., 3,868,964.
  - Vennett, Richard M., 3,869,388.
- Cook, Kenneth Allen; and Porter, Townsend Henry, Jr., to International Business Machines Corporation. Stored value system. 3,869,700, Cl. 340-149.00A.
- Cooper, Richard D., to Johnson & Johnson. Disposable shoe covering. 3,869,647, Cl. 317-2.00B.
- Corcoran, John J.; and Kalinowski, Paul W., to Norton Company. Internally safety reinforced cup grinding wheel. 3,868,793, Cl. 51-209.00R.
- Corcoran, John J.: *See—*
  - Feustel, James R.; Hoyt, Kenneth L.; Valukonis, Jonas; and Corcoran, John J., 3,869,017.
- Correte, Richard H.: *See—*
  - Yankee, Herbert L.; and Correte, Richard H., 3,868,871.
- Corser, Paul J.: *See—*
  - Ingenito, Michael J.; and Corser, Paul J., 3,869,627.
- Corsover, Stephen Leonard: *See—*
  - Woywood, Dennis Joseph; and Corsover, Stephen Leonard, 3,869,705.
- Couchman, Richard, to Aluminum Company of America. Process and means for making thick end tube and pipe. 3,868,841, Cl. 72-260.000.
- Coult, John H. Friction driven rotary cleaning apparatus. 3,868,741, Cl. 15-79.000.
- Coulter Electronics, Inc.: *See—*
  - Longman, Millard Dumas, Jr., 3,869,084.
- Couturier, Robert A.; Davis, Steven J.; and Robbins, G. Howard, to General Datacomm Industries, Inc. Method and apparatus for control signaling in fdm system. 3,869,577, Cl. 179-2.0DP.
- Coval, Donald E.: *See—*
  - Dalgard, Dan W.; and Coval, Donald E., 3,869,550.
- Cove, Anthony Raymond; and Tween, Jack. Machines for washing bottles and like containers and removing labels therefrom. 3,868,960, Cl. 134-73.000.
- Covington, Edward L. Blemish compensator. 3,869,567, Cl. 178-7.200.
- Creuz, Walter R., to Aero-Flow Dynamics, Inc. (The Wing Company Division). Air/fuel ratio control means for dual fuel burners. 3,869,243, Cl. 431-90.000.
- Crisp, John Josiah: *See—*
  - Heeks, John Stuart; and Crisp, John Josiah, 3,869,682.
- Crompton & Knowles Corporation: *See—*
  - Wueger, Karl W., 3,868,976.
- Crone, John M., Jr.: *See—*
  - Suggitt, Robert M.; and Crone, John M., Jr., 3,869,523.
- Cros, Jean-Louis: *See—*
  - Tiquet, Jacques; and Cros, Jean-Louis, 3,869,489.
- Cross, William B.: *See—*
  - Alfidi, Ralph J.; and Cross, William B., 3,868,956.
- Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, to Abbott Laboratories. Method and composition for inducing fruit abscission. 3,869,274, Cl. 71-92.000.
- Crowe, Talmadge L., to Baker Oil Tools, Inc. Sub-surface safety valve. 3,868,995, Cl. 166-224.00A.
- Cseke, Stephen. Manually operated washing device. 3,869,216, Cl. 401-43.000.
- Cudworth, Allen L.: *See—*
  - Stahl, Joseph E.; and Cudworth, Allen L., 3,868,975.
- Cummings, Richard D., to Itek Corporation. Solar energy absorber. 3,869,199, Cl. 350-293.000.
- Cunningham, Francis V.; and Wicks, John S., to Joslyn Mfg. and Supply Co. Disconnector. 3,869,650, Cl. 317-61.000.
- Cuomo, Jerome J.; and Hovel, Harold J., to International Business Machines Corporation. Automatic P-N junction formation during growth of a heterojunction. 3,869,322, Cl. 148-188.000.
- Cupp, Frederick B., to Edmac Associates Inc. Event logging system using a magnetic recorder. 3,869,707, Cl. 360-5.000.
- Curran, Patrick M.; Brazer, Geoffrey R.; and Erickson, John S. Method of cleaning nickel alloy by filtering. 3,869,282, Cl. 75-82.000.
- Cutler-Hammer, Inc.: *See—*
  - Piber, Earl T., 3,869,591.
- Cutter-Hammer, Inc.: *See—*
  - Hults, Harold W., 3,869,590.
  - Patz, Roman J.; Sell, Frank O.; and Halbeck, Werner B., 3,869,586.
- Cutter Laboratories, Inc.: *See—*
  - Lund, Lloyd J., 3,869,546.
- Cwycyshyn, Walter; and Buccellato, Anthony, to General Motors Corporation. Latching mechanism for securing a vehicle to a transporter. 3,869,144, Cl. 280-179.00R.
- Dabis, Georges, to Societe d'Etudes et d'Exploitation de Marques et Brevets-S.E.M.S. Medicament for the treatment of disorders of the eye. 3,869,548, Cl. 424-94.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Roll, Walter, 3,868,953.
  - Schacher, Hans-Dieter; Fischer, Reinhold; and Kunst, Matthias, 3,869,373.
  - Springer, Willi; and Bellmann, Walter, 3,868,753.
- Dalgard, Dan W.; and Coval, Donald E., to Environmental Science Corporation. Method for the control of fertility. 3,869,550, Cl. 424-227.000.
- Daniels, David A.; and DeGeorge, Nicholas F., to W. R. Grace & Co. Lubricant composition and method. 3,869,394, Cl. 252-46.700.
- Daniels, Raymond Robert James, to Guy Raymond Engineering Company Limited. Furniture legs. 3,869,105, Cl. 248-188.800.
- Danylewich, David S., to Lawrence Peska Associates, Inc. Eyeglass frames. 3,869,200, Cl. 351-85.000.
- Dattilo, Donald J., to Motorola, Inc. Combination end of tape sensor and tape guide device. 3,869,725, Cl. 360-130.000.
- Davenport, James D.: *See—*
  - Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,869,456.
- David J. Instance Limited: *See—*
  - Instance, David John, 3,869,328.
- David, Jacques; and Gay, Guy, to Commissariat a l'Energie Atomique. Device for rapid closure and pressurization of a compression chamber. 3,869,241, Cl. 425-405.00H.
- Davies, Emrys; and Rippon, John Roy, to British Steel Corporation. Alloying steels. 3,869,283, Cl. 75-129.000.
- Davis, Herbert T.; and Reid, James B., to Motorola, Inc. Welded interconnection printed circuit board and method of making same. 3,868,770, Cl. 29-626.000.
- Davis, James L.; and Pechous, Leslie Joseph, to General Motors Corporation. Voltage booster. 3,869,660, Cl. 323-17.000.
- Davis, Noel, to Integrated Development & Manufacturing Company. Environmental growth control apparatus. 3,869,605, Cl. 240-47.000.
- Davis, Stanley R., to Signetics Corporation. Method for fabricating precision layer silicon-over-oxide semiconductor structure. 3,869,321, Cl. 148-175.000.
- Davis, Steven J.: *See—*
  - Couturier, Robert A.; Davis, Steven J.; and Robbins, G. Howard, 3,869,577.
- Davison, John; and Edwards, Hugh Jeremy Willis, to CCL Systems Limited. Multi-strand stressing jack. 3,868,850, Cl. 73-143.000.
- Dawes, James Wilkinson; Seligman, Kurt Lothar; and Smith, Stanley George, to du Pont de Nemours, E. I., and Company. Blend of polymers. 3,869,422, Cl. 260-42.470.
- Day, Leon E.; and Millican, Amond B. Device for preventing pressure or vacuum build-up in pneumatic brake systems. 3,869,178, Cl. 303-67.000.
- Days-Ease Home Products Corporation: *See—*
  - Levey, John S.; Miller, Sandra R.; and Levey, Robert F., 3,869,069.
- Decker, Gernot; Herold, Hans; and Rohr, Horst, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Holographic recording material for infrared radiation. 3,869,301, Cl. 117-36.100.
- DeGeorge, Nicholas F.: *See—*
  - Daniels, David A.; and DeGeorge, Nicholas F., 3,869,394.
- De Jong, Johannes: *See—*
  - Van de Kraats, Eduard J.; and De Jong, Johannes, 3,869,396.
- Deklever, Richard C.: *See—*
  - Durigon, Docile D.; and Deklever, Richard C., 3,869,610.
- Delavie, Jean-Henri, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Device for the use of a facsimile apparatus as a printing mechanism. 3,869,571, Cl. 178-30.000.
- DeLong, Richard C., to Allied Chemical Corporation. Preparation of acid chlorides with phosgene in the presence of a catalyst. 3,869,485, Cl. 260-408.000.
- Delves-Broughton, James, to International Standard Electric Corporation. Electrotinning wire. 3,869,371, Cl. 204-206.000.
- Denamps, Jean: *See—*
  - Reichardt, Wolfgang; Blanchard, Lucien; and Denamps, Jean, 3,868,858.
- DePlomb, Eugene P.: *See—*
  - Russell, John L., Jr.; and DePlomb, Eugene P., 3,868,823.
- Dera, Alain; and Besseau, Daniel, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Hydraulic shock-absorbing bumpers. 3,869,163, Cl. 293-63.000.
- Der Marderosian, Aaron C.; Nelson, Paul E.; and Stinnett, Donald F., to Raytheon Company. Apparatus for controllably stressing internal conductors of a closed device. 3,869,662, Cl. 324-34.00R.
- Derner, William J., to FMC Corporation. Multiple seal carrier. 3,869,131, Cl. 277-21.000.
- Deussner, Herbert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Cooling pipe for use in satellite coolers of rotary kilns. 3,869,247, Cl. 432-80.000.
- DeVincent, Patsy; and Steck, James R., to General Motors Corporation. Tube mounting assembly. 3,869,152, Cl. 285-137.00R.
- De Vincent, Patsy; and Wiechart, John F., to General Motors Corporation. Double tube mounting assembly. 3,869,153, Cl. 285-137.00R.
- De Witt, Robert; Jepson, Bernhart E.; and Schwind, Roger A., to United States of America, Atomic Energy Commission. Closed loop reflux system. 3,869,255, Cl. 23-263.000.
- Dey, Ervin J., to Standard Pressed Steel Co. Barrel nut assembly. 3,868,806, Cl. 52-758.00F.
- Dhingra, Ashok Kumar, to du Pont de Nemours, E. I., and Company. Preparation of flexible sheets of polycrystalline alumina-containing fibers. 3,869,339, Cl. 161-170.000.
- Diamond Shamrock Corporation: *See—*
  - Battershell, Robert D., 3,869,494.
- Diederich, Herbert, to KSB Kernkraftwerkspumen GmbH. Controlled leakage face type shaft seal. 3,869,135, Cl. 277-80.000.
- Diekhoff, Hans H.: *See—*
  - Schrecker, Howard D.; and Diekhoff, Hans H., 3,868,919.
  - Smith, George L., Jr.; and Diekhoff, Hans H., 3,868,918.

- Diltz, Jack L., to Beloit Corporation. Three drum winder. 3,869,095, Cl. 242-56.00R.
- Dimeff, John: *See—*
  - Harrison, Dean R.; and Dimeff, John, 3,869,676.
- Dixon, Ronald O. Trailer tongue spare-landing wheel structure. 3,869,149, Cl. 280-475.000.
- Do-It Corporation: *See—*
  - McMaster, Samuel B., 3,869,333.
- Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, to Coats & Clark, Inc. Cast hinge and method of forming. 3,868,746, Cl. 16-128.000.
- Dr. -Ing. h.c.F. Porsche K.G.: *See—*
  - Burst, Hermann; and Wiener, Rolf, 3,869,166.
- Doddington, Harold W., to Board of Regents, State of Florida. Vascular clamp. 3,868,957, Cl. 128-346.000.
- Dolgner, Darrel D., to United States of America, Army. Lanyard operated mechanical initiator. 3,869,315, Cl. 136-90.000.
- Doll, Robert M.; Jessup, Joseph L.; and Stone, Lawrence J., to Massey-Ferguson Inc. Vehicle cab enclosure with ventilation means. 3,868,896, Cl. 98-2.110.
- Donath, Gerhard: *See—*
  - Heitmann, Hans-Gunther; and Donath, Gerhard, 3,869,390.
- Doong, Henry; and Acuna, Mario H., to United States of America, National Aeronautics and Space Administration. Controllable high voltage source having fast settling time. 3,869,659, Cl. 321-15.000.
- Dorlars, Alfons: *See—*
  - Neuner, Otto; and Dorlars, Alfons, 3,869,469.
- Dosdat, Jean; Lanthiez, Jacques; and Levaire, Claude, to Compagnie Francaise Thomson Houston-Hotchkiss Brandt. Method of making superconductors. 3,868,769, Cl. 29-599.000.
- Dot, Kengo: *See—*
  - Shindo, Hideyasu; Kumagai, Toshio; and Dot, Kengo, 3,869,477.
- Dow Badische Company: *See—*
  - Greene, Gerald R., 3,869,213.
- Dow Chemical Company, The: *See—*
  - Blankenship, Larry Thomas, 3,869,413.
  - Mixan, Craig E., 3,869,466.
  - Niles, Earl Thomas; Seaman, Beverly A. H.; and Wilson, Edwin J., 3,869,544.
  - Noveroske, Robert L., 3,869,273.
  - Periard, John Neil, 3,869,299.
  - Terada, Kazuji; and York, Buddy L., 3,869,545.
- Drake, Crandell & Batchelder: *See—*
  - Lambert, Everette M.; and Ball, Richard L., 3,869,327.
- Druet, Monique: *See—*
  - Mocotte, Jacques; and Druet, Monique, 3,869,551.
- DT Liquidating Partnership: *See—*
  - Schiffman, Murray M., 3,869,708.
- Dudek, Thomas J., to General Tire & Rubber Company, The. High load bushing. 3,869,113, Cl. 267-57.10R.
- Dumas, Christ J.; and Simovits, Stephen S., Jr., to American Plasticraft Company. Electron tube socket. 3,869,633, Cl. 313-325.000.
- Dunlop Holdings Limited: *See—*
  - Ball, Eric, 3,868,974.
- du Pont de Nemours, E. I., and Company: *See—*
  - Anthony, Robert Leroy; and Wray, Samuel Francis, 3,868,870.
  - Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,869,067.
  - Blades, Herbert, 3,869,429.
  - Blades, Herbert, 3,869,430.
  - Bride, John Edwin, 3,869,488.
  - Dawes, James Wilkinson; Seligman, Kurt Lothar; and Smith, Stanley George, 3,869,422.
  - Dhingra, Ashok Kumar, 3,869,339.
  - Ellis, George S.; Kimble, Thomas E.; and Sawers, James R., 3,868,750.
  - Ernst, Richard Edward, 3,869,401.
  - Hoh, George Lok-Kwong, 3,869,416.
  - Langlois, Darwin James, 3,869,280.
  - Meschke, Robert Walter; and Watson, William Harrison, 3,869,427.
  - Morgan, Paul Winthrop; and Pletcher, Terry Carl, 3,869,419.
  - Strand, Albert Thomas, 3,869,400.
- Durigon, Docile D.; and Deklever, Richard C., to United States of America, Atomic Energy Commission. Method of determining the amount of an isotopic mixture of noble gases present as a tag in a nuclear reactor fuel element. 3,869,610, Cl. 250-303.000.
- Durkee, Lyle H.; and Connell, Lehman J., to General Motors Corporation. Steering column mounting pad. 3,868,864, Cl. 74-492.000.
- Durrett, James M.: *See—*
  - Pollock, Andre W.; and Durrett, James M., 3,869,378.
- Dutry, Jean Ernest; and Feyens, Alfred Hubert. Internal combustion engine. 3,868,931, Cl. 123-51.00R.
- Duyf, Jelle J.: *See—*
  - Morrison, Ian Y.; Spark, Loudon C.; and Duyf, Jelle J., 3,869,188.
- Dykmans, Maximilian J. Swivel assembly for gunite systems. 3,869,088, Cl. 239-177.000.
- Dynaco Inc.: *See—*
  - Borbely, Erno, 3,869,674.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, 3,869,340.
- E. F. Houghton and Company: *See—*
  - Munjat, Francis S.; and Kim, Samuel Ho, 3,869,342.
  - Munjat, Francis S.; and Kim, Samuel Ho, 3,869,343.
- E. R. Squibb & Sons, Inc.: *See—*
  - Krapcho, John, 3,869,447.
- E. R. Stock Proprietary Limited: *See—*
  - Stock, Ernest Rex, 3,868,831.
- Eads, Charles L., to Adams Rite Manufacturing Company. Push-pull lock actuator. 3,869,159, Cl. 292-92.000.
- Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. 2-Lower alkylsulfinyl-1H-1,4-benzodiazepines. 3,869,448, Cl. 260-239.0BD.
- Eastman Kodak Company: *See—*
  - Amering, Charles F., 3,869,289.
  - Goodhue, Charles T.; and Risley, Hugh A., 3,869,349.
  - Miller, Donald N., 3,869,525.
  - Owens, James C.; and Blazey, Richard N., 3,869,197.
  - Weaver, Max A.; and Coates, Clarence A., Jr., 3,869,442.
  - Weaver, Max A., 3,869,495.
- Eaton Corporation: *See—*
  - Eyerdam, Homer F.; and Leimbach, Richard C., 3,869,072.
  - Keene, Derek K.; and Roll, Louis C., 3,869,047.
  - Oliver, James L., 3,869,025.
  - Radamaker, George L., 3,869,142.
  - Swedberg, Nils Einar, 3,869,228.
  - Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, 3,869,177.
- Ebara Manufacturing Co., Ltd.: *See—*
  - Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
- Ebert, Larry K.: *See—*
  - Peters, Charles W.; and Ebert, Larry K., 3,869,036.
- Echlin Manufacturing Company, The: *See—*
  - Keller, Robert A., 3,868,822.
- Edera S.p.A. Officina Meccanica Tessile: *See—*
  - Chiari, Natale, 3,868,814.
- Edmac Associates Inc.: *See—*
  - Cupp, Frederick B., 3,869,707.
- Edwards, Hugh Jeremy Willis: *See—*
  - Davison, John; and Edwards, Hugh Jeremy Willis, 3,868,850.
- Egli, Bruno; and Manser, Niklaus, to Labtronic, AG. Cuvette arrangement. 3,869,214, Cl. 356-246.000.
- Eickenberg, Leonhard: *See—*
  - Losel, Georg; and Eickenberg, Leonhard, 3,868,927.
- Eidinger, Adolf; and Floessel, Carl-Dieter, to BBC Brown Boveri & Company Limited. Dual underground cable system for transmitting electrical power. 3,869,562, Cl. 174-15.00C.
- Eiland, Ehrlich M., to Aluminum Company of America. Method for producing an opaque coating. 3,869,305, Cl. 117-66.000.
- Einhorn, Ruediger: *See—*
  - Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, 3,868,746.
- Eisenlohr, Karl-Heinz; Markwort, Helmut; and Scholz, Berthold, to Metallgesellschaft Aktiengesellschaft. Production of extrapure aromatics. 3,869,377, Cl. 208-66.000.
- Ekroos, Arne Olavi; Merikoski, Matti Kaarlo; and Levander, Bernhard Erik Oswald, to Oy Nobia AB. Tube made of metal strip by means of spiral seaming and a device intended for a spiral seaming tube machine for the production of such a tube. 3,868,840, Cl. 72-49.000.
- Eldert, Cornelius; and Quiogue, Virgilio J., to Burroughs Corporation. System for high frequency digital data transmission. 3,869,669, Cl. 325-30.000.
- Eli Lilly and Company: *See—*
  - Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,869,456.
- Ellis, George S.; Kimble, Thomas E.; and Sawers, James R., to du Pont de Nemours, E. I., and Company. Method of joining diamond to metal. 3,868,750, Cl. 29-95.00R.
- Ellis, Gerard, to Surgical Equipment Supplies Limited. Stoppers. 3,869,059, Cl. 215-320.000.
- Emeis, Reimer: *See—*
  - Reuschel, Konrad; Keller, Wolfgang; Kersting, Arno; and Emeis, Reimer, 3,868,924.
- Emerson Electric Company: *See—*
  - Province, William F., 3,868,773.
  - Wightman, Lawrance W.; and Gebhart, Howard C., 3,868,758.
- EMI Limited: *See—*
  - Puttock, Michael Charles; and Linfoot, Bryan Crosby, 3,869,626.
- Energy Conversion Limited: *See—*
  - Gillespie, Peter James, 3,869,314.
- Engelhart, John M., to Quality Pool Supply Co. Removably mounted swimming pool accessory anchoring device. 3,868,732, Cl. 4-172.000.
- English, Donald Hugh. Well coupling and method of attaching the coupling of a well casing. 3,869,000, Cl. 166-315.000.
- Englund, Gosta R.; and Myren, Rune L., to Svenska Dataregister AB. Method for reading a data record and a device for performing the method. 3,869,598, Cl. 235-61.11R.
- Enkegaard, Torben; and Kartman, Helge Carl Christian, to F. L. Smidth & Co. Tube mill. 3,869,091, Cl. 241-183.000.
- Environmental Pollution Research Corporation: *See—*
  - Montalbano, Anthony P., 3,868,903.
- Environmental Science Corporation: *See—*
  - Dalgard, Dan W.; and Coval, Donald E., 3,869,550.
- Epstein, Barry M., to Action Communication Systems, Inc. Communications processor system having a time shared communications control device and modem. 3,869,578, Cl. 179-2.0DP.

- Erickson, John S.: *See—*
  - Curran, Patrick M.; Brazer, Geoffrey R.; and Erickson, John S., 3,869,282.
- Erickson, R. Barry, to Allis-Chalmers Corporation. Water spray cooling system. 3,869,087, Cl. 239-128.000.
- Ernst, Richard Edward, to du Pont de Nemours, E. I., and Company. Stabilized acidic hydrogen peroxide solutions. 3,869,401, Cl. 252-186.000.
- Eschweiler Bergwerks-Verein Aktiengesellschaft: *See—*
  - Goossens, Walter; and Hermann, Wolfgang, 3,869,350.
- Etapharm chem. pharm. Laboratorium G.m.b.H.: *See—*
  - Wolfe, Werner, 3,869,482.
- Ethyl Corporation: *See—*
  - Lanier, Carroll W.; and Kao, James T. F., 3,869,294.
- Eue, Ludwig: *See—*
  - Jager, Gerhard; Metzger, Carl; Eue, Ludwig; and Schmidt, Robert, 3,869,490.
- European Atomic Energy Community (Euratom): *See—*
  - Jehenson, Pierre Simon; and Vos, Gilbert Jean-Pierre, 3,869,609.
- Evans, Hugh N.: *See—*
  - Beardmore, Geoffrey; and Evans, Hugh N., 3,869,368.
- Evans, James P. End wrench with ratcheting capabilities. 3,868,873, Cl. 81-119.000.
- Evans, James P. Quick adjustable wrench. 3,868,875, Cl. 81-158.000.
- Everlube Corporation of America: *See—*
  - Booker, Aylwin Reed, 3,869,393.
- Ex-Cell-O Corporation: *See—*
  - Bondie, Dale J., 3,868,886.
  - Braun, Eric A., 3,869,078.
- Exner, Wolfgang: *See—*
  - Mayerhoffer, Herbert; Schneider, Wilhelm; Nuring, Hardo; and Exner, Wolfgang, 3,869,262.
- Eyerdam, Homer F.; and Leimbach, Richard C., to Eaton Corporation. Combination charging and dispensing valve for aerosol containers. 3,869,072, Cl. 222-402.160.
- F. L. Smidth & Co.: *See—*
  - Enkegaard, Torben; and Kartman, Helge Carl Christian, 3,869,091.
- Falksveden, Lars-Gunnar Albinsson, to Statens Bakteriologiska Laboratorium. Method for fractionating plasma proteins using peg and ion-exchangers. 3,869,436, Cl. 260-112.00B.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*
  - Jager, Gerhard; Metzger, Carl; Eue, Ludwig; and Schmidt, Robert, 3,869,490.
  - Schundehutte, Karl-Heinz, 3,869,439.
  - Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.
- Fasciati, Alfred: *See—*
  - Back, Gerhard; and Fasciati, Alfred, 3,869,440.
- Federspiel, Joseph A.; and Pawlowski, Edward W., to FMC Corporation. Starting interlock system. 3,869,014, Cl. 180-53.00R.
- Feick, George: *See—*
  - Beutner, Heinz Paul; and Feick, George, 3,869,257.
- Feinleib, Julius: *See—*
  - Aldrich, Ralph E.; Feinleib, Julius; and Schmutz, Lawrence E., 3,869,195.
- Fenyes, Joseph G. E.: *See—*
  - Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,869,513.
- Ferranti, Limited: *See—*
  - Jackson, Sydney; and Titterington, Joseph Bell, 3,869,260.
- Ferraro, Frank A., to Warner-Lambert Company. Razor blade dispenser. 3,869,066, Cl. 221-102.000.
- Fetchin, John Allan: *See—*
  - Johnson, Robert Bird; Rakowitz, David Henry; Barber, William Austin; and Fetchin, John Allan, 3,869,511.
- Feustel, James R.; Hoyt, Kenneth L.; Valukonis, Jonas; and Corcoran, John J., to Ford Motor Company. Engine mounting and energy absorbing frame for a motor vehicle. 3,869,017, Cl. 180-82.00R.
- Fex, Hans: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,869,527.
- Feyens, Alfred Hubert: *See—*
  - Dutry, Jean Ernest; and Feyens, Alfred Hubert, 3,868,931.
- Fichtner, Rudi; and Lauckhardt, Gerhard, to USM Corporation. Method and apparatus for combined lasting of the toe, ball and shank areas of shoes. 3,868,737, Cl. 12-12.000.
- Field, Jesse L., Jr.; and Medina, Glen J., to Caterpillar Tractor Company. Hydraulically actuated detent mechanism. 3,869,107, Cl. 251-94.000.
- Finley, John W.; Hautala, Earl; and Walker, Charles E., to United States of America, Agriculture. Process for isolating oil-seed proteins using liquid fluorocarbons. 3,869,438, Cl. 260-123.500.
- Finnimore, Bryan: *See—*
  - O'Brien, John Leslie; Finnimore, Bryan; and Hogg, Dallas John Arthur, 3,869,156.
- Firestone Tire & Rubber Company, The: *See—*
  - Georges, Louis W., 3,868,985.
  - Spiewak, John Walter, 3,869,431.
- Fischer, Reinhold: *See—*
  - Schacher, Hans-Dieter; Fischer, Reinhold; and Kunst, Matthias, 3,869,373.
- Fisher, Conan F., Jr.: *See—*
  - Konopka, Edward J.; and Fisher, Conan F., Jr., 3,868,945.
- Flagg, Frank D.: *See—*
  - Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, 3,868,746.
- Flamand, Maurice R., to Rockwell International Corporation. Spring mounted removable scissors for looms. 3,868,977, Cl. 139-302.000.
- Flangan, Kenneth J.: *See—*
  - Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,869,513.
- Flavell, Evan R. Proportioned resistance exercise servo system. 3,869,121, Cl. 272-79.00R.
- Fleming, Robert W.: *See—*
  - Andrews, Edwin R.; Claxton, George P.; Roberts, Edward McC.; and Fleming, Robert W., 3,869,496.
- Flippen, George Burdine, Jr., to International Business Machines Corporation. Recording tape drive apparatus. 3,869,100, Cl. 242-201.000.
- Floessel, Carl-Dieter: *See—*
  - Eidinger, Adolf; and Floessel, Carl-Dieter, 3,869,562.
- Floyd, Wallace C.; and Holcomb, Gregory W. Inspecting and stacking machine for containers. 3,869,042, Cl. 198-267.000.
- FMC Corporation: *See—*
  - Derner, William J., 3,869,131.
  - Federspiel, Joseph A.; and Pawlowski, Edward W., 3,869,014.
  - Hardy, Donald, Sr., 3,869,540.
- Focke, Heinz Hermann. Apparatus for alternately transferring groups of cigarettes to a rotary magazine via intermediate reciprocating chambers. 3,869,035, Cl. 198-24.000.
- Foerster, George S., to N L Industries, Inc. Removal of nickel from molten magnesium metal. 3,869,281, Cl. 75-67.000.
- Follette, Donald T. Air conditioning apparatus. 3,869,529, Cl. 261-130.000.
- Fomicheva, Nina Petrovna: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
- Fonne, Gunnar Johan; and Jahnsen, Thor Helge, to Norsk Hydro A.S. Antiskid agent for bags. 3,869,309, Cl. 117-138.800.
- Foote, Danny R., to Berkley & Company, Inc. Flyline for fishing. 3,868,785, Cl. 43-44.980.
- Ford Motor Company: *See—*
  - Allison, William D., 3,869,015.
  - Allison, William D., 3,869,138.
  - Allison, William D., 3,869,140.
  - Bush, George F., 3,868,796.
  - Feustel, James R.; Hoyt, Kenneth L.; Valukonis, Jonas; and Corcoran, John J., 3,869,017.
  - Gage, Raymond T., 3,869,139.
  - Gramlich, Donald L.; Jedele, Ormond J.; and Pearson, Robert M., 3,868,766.
  - Grimes, Delmar C.; and Stocker, Raymond, 3,869,279.
  - Haller, William P; and Holka, Thomas C., 3,869,173.
  - Kushida, Toshimoto; and Logothetis, Eleftherios M., 3,868,846.
  - La Roche, Louis A., 3,868,836.
  - Muller, George H., 3,869,167.
  - Olsen, Ralph A., 3,868,986.
  - Peel, Richard E.; and Saethre, Arild O., 3,869,[illegible]97.
  - Rahnke, Christian J.; and Vallance, James K., 3,869,222.
- Fordsmand, Marc, to Kicon AG. Lighting fixture. 3,869,606, Cl. 240-51.11R.
- Formo, Alvin C.: *See—*
  - Noyes, Billy P.; and Willard, Howard L., 3,868,807.
- Fox, Harry; and Hardy, Alex, to Harco Products Inc. Cantilever deck structure. 3,868,797, Cl. 52-73.000.
- Fox, Richard: *See—*
  - Brett, Horace William Walter; and Fox, Richard, 3,869,320.
- Franco, Joseph: *See—*
  - Kessler, John; and Franco, Joseph, 3,869,176.
- Frank, Mack, Jr. Shower bath caddy. 3,869,183, Cl. 312-248.000.
- Frank W. Murphy Manufacturer, Inc.: *See—*
  - Murphy, Frank W., Jr.; Carlton, Lewis M.; and Teague, Troy L., 3,868,855.
- Fredholm, Bo: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,869,527.
- Freed, Elisabeth H.; Freed, Meier E.; and Potoski, John R., to American Home Products Corporation. Dibenzobicycloalkane amines and related compounds. 3,869,512, Cl. 260-571.000.
- Freed, Meier E.; and Childress, Scott J., to American Home Products Corporation. l-adamantyl carbonyl-3,3-diphenylpiperazines. 3,869,460, Cl. 260-268.0PC.
- Freed, Meier E.: *See—*
  - Freed, Elisabeth H.; Freed, Meier E.; and Potoski, John R., 3,869,512.
- Freiberg, Leslie Alan, to Abbott Laboratories. Esters of erythromycin oxime. 3,869,444, Cl. 260-210.00E.
- Fricke, Roy A. Spark plug cleaner. 3,868,790, Cl. 51-9.000.
- Friedel, Rudolf; and Sedlatschek, Karl, to Siemens Aktiengesellschaft. Rotary anode for an x-ray tube. 3,869,635, Cl. 313-330.000.

- Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, to Robert Bosch G.m.b.H. Fuel injection system especially for cold starting and warming up externally ignited internal combustion engines. 3,868,939, Cl. 123-179.00L.
- Frische, Dale George, to Indian Head Inc. Curing oven. 3,869,249, Cl. 432-121.000.
- Frohberger, Paul-Ernst: *See—*
  - Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.
- Fry, Timothy Selwyn, to Bartel Engineering Limited. Articulated vehicle coupling. 3,869,147, Cl. 280-438.00R.
- Fryer, Rodney Ian: *See—*
  - Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,869,448.
- Fuhrmann, Manfred E. Fluid control mechanism for appliances. 3,868,968, Cl. 137-624.180.
- Fuji Denki Seizo Kabushiki Kaisha: *See—*
  - Kunio, Shibayama, 3,869,029.
  - Ogawa, Takashi; Kida, Kiyonori; and Sugiyama, Shunichi, 3,869,629.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, 3,869,285.
  - Matsukawa, Hirohara; and Saeki, Keiso, 3,869,406.
  - Mukaiyama, Teruaki; Higo, Moriaki; and Katsuyama, Harumi, 3,869,480.
  - Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, 3,869,287.
  - Shimamura, Isao; and Iwano, Haruhiko, 3,869,383.
- Fujiwara, Kunio: *See—*
  - Shiraishi, Satoshi; Fujiwara, Kunio; Kumagai, Yasuhiko; and Kurosaki, Shiro, 3,869,194.
- Fukui, Tutomu; and Suzuqui, Tsutomu, to Pioneer Electronic Corporation. Automatic musical performance method and apparatus for a keyed instrument. 3,868,882, Cl. 84-462.000.
- Fukushima, Osamu; Kogame, Kunio; and Sato, Masami, to Kuraray Co., Ltd. Flexible sheet materials. 3,869,310, Cl. 117-138.80A.
- Fun and Frolic Incorporated: *See—*
  - Konopka, Edward J.; and Fisher, Conan F., Jr., 3,868,945.
- Funaishi, Kohtaro: *See—*
  - Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, 3,869,347.
- Funakoshi, Akira: *See—*
  - Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, 3,869,534.
- Funke, Siegfried: *See—*
  - Thies, Peter Willibrord; Kucaba, Walter; and Funke, Siegfried, 3,869,476.
- G. D. Searle & Co.: *See—*
  - Sollman, Paul B., 3,869,481.
- GAF Corporation: *See—*
  - Mackey, E. Scudder; and Neschleba, Albert J., 3,869,402.
  - Peterson, William R.; and Johnson, Walter N., 3,869,418.
  - Tellier, J. C. Tristan, 3,869,397.
- Gage, Raymond T., to Ford Motor Company. Steering gear mounting. 3,869,139, Cl. 280-96.000.
- Galey, Jean G.; and Bentz, Gerard, to L'Air Liquid, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of electric refining of metals by slag, known as the E. S. R. method, using liquefied gas to isolate the slag and electrode from the ambient air. 3,868,987, Cl. 164-52.000.
- Gallo, Charles F., to Xerox Corporation. Illumination source for xerographic exposure. 3,869,205, Cl. 355-67.000.
- Gallo, Eugene, to United States of America, Navy. Aircraft barricade net erection system. 3,869,104, Cl. 244-110.00C.
- Gallo, Mario. Method of fine adjusting balances and balance for performing this method. 3,869,004, Cl. 177-25.000.
- Gallo, Thomas: *See—*
  - Hampton, Richard John; Shantz, John T.; Gallo, Thomas; and Unger, Peter, 3,869,558.
- Gambello, Vincent J.: *See—*
  - Payne, Calvin L., Jr.; and Gambello, Vincent J., 3,869,122.
- Garcia Corporation: *See—*
  - Sabol, Joseph J., 3,868,784.
- Gasner, William Lavier, to McCulloch Corporation. Stamped sheet metal chain saw sprocket. 3,868,863, Cl. 74-243.0CS.
- Gates, John I., to Oliver, Clifford C., a part interest. Window with extruded synthetic frame and method and apparatus for manufacture thereof. 3,868,789, Cl. 49-501.000.
- Gaussoin, Julius; Nottingham, Robert B.; and Reichard, Robert E., to Silver Eagle Manufacturing Co., Inc. Spray suppressing device for a highway vehicle. 3,869,617, Cl. 290-1.00S.
- Gay, Guy: *See—*
  - David, Jacques; and Gay, Guy, 3,869,241.
- Gaylor, Josephine. Exhaust gas filter. 3,869,267, Cl. 55-492.000.
- Gaylord, Norman G., to Champion International Corporation. Styrene-maleic anhydride complex and process for making same. 3,869,432, Cl. 260-78.50R.
- Gebhart, Howard C.: *See—*
  - Wightman, Lawrance W.; and Gebhart, Howard C., 3,868,758.
- Gebler, Horst: *See—*
  - Janocha, Siegfried; Seifried, Walter; and Gebler, Horst, 3,869,533.
- Geerligs, Wouter Louis Prinsen: *See—*
  - Graveland, Antonie; Geerligs, Wouter Louis Prinsen; and Soleman, Mohamad Ali Arafien, 3,869,381.
- Gelfand, Samuel; and Graham, John C., to Hooker Chemical & Plastics Corporation. Preparation of 3,5-dichlorobenzoyl chloride. 3,869,510, Cl. 260-544.00M.
- Geller, Leo, to Ciba-Geigy Corporation. Injectable oily peptide preparations and processes for their manufacture. 3,869,549, Cl. 424-177.000.
- Gelman, Alexandr Shmulievich: *See—*
  - Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
- General American Transportation Corporation: *See—*
  - Becker, Peter W.; Price, Albert E.; Mowatt-Larssen, Erling; and Becker, Carl E., 3,868,913.
- General Datacomm Industries, Inc.: *See—*
  - Couturier, Robert A.; Davis, Steven J.; and Robbins, G. Howard, 3,869,577.
- General Electric Company: *See—*
  - Brunschwig, John M.; and Stone, William M., 3,868,767.
  - Heath, Darrell R.; and Wirth, Joseph G., 3,869,499.
  - Herzog, Rollie R., 3,869,639.
  - Hobson, Charles F., Jr., 3,869,649.
  - Konieczynski, Ronald D.; and Springmeyer, Allan H., 3,869,634.
  - Olashaw, William F., 3,868,874.
  - Rose, Richard S.; and Clark, Burton P., 3,868,884.
- General Motors Corporation: *See—*
  - Astheimer, Karl, 3,869,016.
  - Bischoff, Leo E.; and Keller, Chris F., Jr., 3,869,654.
  - Cardani, Charles S., 3,869,019.
  - Chana, Howard E., 3,868,868.
  - Cwycyshyn, Walter; and Buccellato, Anthony, 3,869,144.
  - Davis, James L.; and Pechous, Leslie Joseph, 3,869,660.
  - DeVincent, Patsy; and Steck, James R., 3,869,152.
  - De Vincent, Patsy; and Wiechart, John F., 3,869,153.
  - Durkee, Lyle H.; and Connell, Lehman J., 3,868,864.
  - Hammond, Dean C., Jr.; and Matta, Galal N., 3,869,246.
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,759.
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,764.
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,765.
  - Klomp, Edward D.; Wolgemuth, James H.; and Wiknich, Harold V., 3,868,930.
  - Kramer, William L., 3,869,391.
  - Lambiris, Theodore, 3,868,923.
  - Lentz, Carl A., 3,868,866.
  - Liebman, Bernard; and Rucinski, David W., 3,868,935.
  - Lindsey, David M., 3,869,259.
  - Mann, Leonard J.; and Kemper, John A., 3,868,829.
  - Matter, Robert C., 3,869,316.
  - Merrell, Richard L., 3,869,143.
  - Mick, Stanley H., 3,868,934.
  - Mick, Stanley H., 3,869,528.
  - Podolan, Edward G., 3,868,788.
  - Rehfeld, Frederick L. J., 3,868,888.
  - Rice, Daniel L., 3,869,040.
  - Scott, William B., 3,869,258.
  - Sprecher, Raymond G., 3,869,098.
  - Tolnar, Emil J., Jr.; and Winyard, Arthur H., 3,869,191.
- General Time Corporation: *See—*
  - Ingenito, Michael J.; and Corser, Paul J., 3,869,627.
- General Tire & Rubber Company, The: *See—*
  - Dudek, Thomas J., 3,869,113.
- Geo. A. Hormel & Co.: *See—*
  - Leining, Lyndon R., 3,868,979.
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- Gerard, William Allen, to Varian Associates. Triangular dither-tuned microwave tube. 3,869,638, Cl. 315-39.610.
- Gerhart, James P. Automatic core loader. 3,869,046, Cl. 214-1.00R.
- German, Vladimir Vladimirovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Gesellschaft fur Kernforschung mbH: *See—*
  - Schulz, Friedhelm, 3,869,632.
- Gesellschaft fur Kernforshung mbH: *See—*
  - Goldacker, Hubert; Hausberger, Helmut; and Schmieder, Helmut, 3,869,374.
- Getz, Marvin G.; and Bentz, Erwin J. H., to Caterpillar Tractor Company. Gross flow cooling system. 3,868,992, Cl. 165-51.000.
- Gewerkschaft Eisenhutte Westfalia: *See—*
  - Temme, Helmut; and Kohler, Oscar, 3,869,039.
- Geyer, Paul: *See—*
  - Bogulslawski, Jan Janusz; Geyer, Paul; and Taff, Frederick Nishwitz, 3,869,304.
- Gilbank, Roland E., to PPG Industries, Inc. Loading rigid sheet materials. 3,869,053, Cl. 214-41.000.
- Gillespie, Peter James, to Energy Conversion Limited. Vented electrochemical cells. 3,869,314, Cl. 136-86.00A.
- Gillette Company, The: *See—*
  - Gray, Michael J., 3,868,772.

- Gindler, E. Melvin, to Pierce Chemical Company. Determination of amylase. 3,869,348, Cl. 195-99.000.
- Giovanni, Sesto S.: *See—*
  - Vargiu, Silvio; Giovanni, Sesto S.; Mazzolcni, Giorgio; and Pezzoli, Silvestro, 3,869,387.
- Girling Limited: *See—*
  - Williams, Frank Vernon, 3,869,026.
- Givaudon Corporation: *See—*
  - Bozzato, Giuliano; and Pesaro, Mario, 3,869,493.
- GKN Transmissions Limited: *See—*
  - Pagdin, Brian Colin; and Webb, Oswald, 3,869,013.
- Glaxo Laboratories Limited: *See—*
  - Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, 3,869,451.
- Glifberg, Nils Bertil, to Svenska Sockerfabriks Aktiebolaget. Ball bearing. 3,869,182, Cl. 308-187.200.
- Godowsky, Leopold S. Method of developing color film. 3,869,288, Cl. 96-22.000.
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- Goldberg, Jack, to Monsanto Company. AC Responsive led pilot light circuitry. 3,869,641, Cl. 315-135.000.
- Goldfarb, Irving: *See—*
  - Lippe, Joan M.; Goldfarb, Irving; and Jablon, Harry, 3,868,786.
- Goodhue, Charles T.; and Risley, Hugh A., to Eastman Kodak Company. Method for the enzymatic hydrolysis of cholesterol esters. 3,869,349, Cl. 195-103.50R.
- Goodrich, Joseph L.: *See—*
  - Sapp, George G.; and Goodrich, Joseph L., 3,869,421.
- Goossens, Walter; and Hermann, Wolfgang, to Eschweiler Bergwerks-Verein Aktiengesellschaft. Process for a thermal pretreatment of coking bituminous coal. 3,869,350, Cl. 201-32.000.
- Gordon, Ronnie D., to Continental Oil Company. Process for dehydrohalogenation of trichloroethane to vinylidene chloride. 3,869,520, Cl. 260-654.00D.
- Gorodetsky, Avram Shaevich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
- Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, to Japan Atomic Energy Research Institute. Plywood comprising ionizing radiation cured cross-linked diallyl phthalate acrylonitrile polymer and method of making. 3,869,341, Cl. 161-270.000.
- Goyheneix, Esteban Jose. Container for receptacles. 3,869,060, Cl. 220-19.000.
- Grabowski, James P.: *See—*
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,759.
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,764.
  - Hartleroad, Ronald J.; and Grabowski, James P., 3,868,765.
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- Graham, Donald E., to Valve Systems International, Inc. Welded valve body construction. 3,869,108, Cl. 251-366.000.
- Graham, John C.: *See—*
  - Gelfand, Samuel; and Graham, John C., 3,869,510.
- Graham, Roy R., to PPG Industries, Inc. Forming size for glass fibers and resulting product. 3,869,308, Cl. 117-126.0GB.
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- Grant, Whitney I.: *See—*
  - Kocher, Erich J.; and Grant, Whitney I., 3,869,227.
- Graveland, Antonie; Geerligs, Wouter Louis Prinsen; and Soleman, Mohamad Ali Arafien, to Ingenieursbureau Dwars, Heederik en Verhey B.V. Process and apparatus for chemical conditioning of water. 3,869,381, Cl. 210-20.000.
- Gravereaux, Daniel W.: *See—*
  - Bauer, Benjamin B.; Gravereaux, Daniel W.; and Torick, Emil L., 3,869,583.
- Grawey, Charles E., to Caterpillar Tractor Company. Core mold and method for making same. 3,868,990, Cl. 164-369.000.
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- Great Lake Carbon Corporation: *See—*
  - Shea, Frederick L.; Whittaker, Mack P.; and Grindstaff, Lloyd I., 3,869,302.
- Grebene, Alan B., to Signetics Corporation. Phase locked loop with limited tracking range. 3,869,679, Cl. 331-8.000.
- Grebtsov, Jury Grigorievich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
- Green, Paul F., to Sperry Rand Corporation. Controlled current vector generator for cathode ray tube displays. 3,869,085, Cl. 235-198.000.
- Greenberg, Sanford D.: *See—*
  - Schiffman, Murray M., 3,869,708.
- Greene, Gerald R., to Dow Badische Company. Device for presenting fibrous material for spectrophotometric analysis. 3,869,213, Cl. 356-244.000.
- Greenspan, Harold Jack. Abrasive member. 3,869,263, Cl. 51-209.00R.
- Greenstine, Robert B.: *See—*
  - Chang, Yi-Chung; Rymarchyk, Nicholas M.; and Greenstine, Robert B., 3,869,369.
- Gregov, Stephen. Safety bumper for furniture. 3,869,106, Cl. 248-345.100.
- Grewe, Ferdinand: *See—*
  - Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.
- Griggs, David Thurston. Mechanical stenographic apparatus for transcribing group proceedings. 3,869,576, Cl. 170-1.0SE.
- Grimes, Delmar C.; and Stocker, Raymond, to Ford Motor Company. Accelerator Pedal Assembly. 3,869,279, Cl. 74-513.000.
- Grindstaff, Lloyd I.: *See—*
  - Shea, Frederick L.; Whittaker, Mack P.; and Grindstaff, Lloyd I., 3,869,302.
- Grobe, Wolfgang, to International Standard Electric Corporation. Bistable latching relay. 3,869,684, Cl. 335-152.000.
- Gruett, Monte D.: *See—*
  - Lesher, George Y.; and Gruett, Monte D., 3,869,464.
- Grunert, Wilhelm; and Briotet, Jean Paul Francois Gilbert, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Fuel metering device especially for the combustion chamber of an aerojet engine. 3,868,971, Cl. 137-625.480.
- Gruppo Lepetit S.p.A.: *See—*
  - Tarzia, Giorgio, 3,869,468.
- Grutzmann, Sigmar; Sailer, Heinz; and schollmeier, Gero, to Siemens Aktiengesellschaft. Arrangement for carrying signals. 3,869,670, Cl. 325-38.00A.
- GTE Sylvania Incorporated: *See—*
  - Anderson, Warren A.; Passmore, Edmund M.; and Matheson, Wilfrid G., 3,869,631.
  - Larson, Robert C., 3,869,692.
- Guillot, Edmond P.: *See—*
  - Benoit, Roland A.; and Guillot, Edmond P., 3,868,734.
- Gulf Oil Canada Limited: *See—*
  - Schutte, Robert, 3,869,384.
- Gulf Oil Corporation: *See—*
  - Russell, John L., Jr.; and DePlomb, Eugene P., 3,868,823.
- Gulf Research & Development Company: *See—*
  - Cahoy, Roger P.; and Sanjean, John, 3,869,497.
- Gunkel, Walter A. System and apparatus for inspecting elongated welds. 3,868,847, Cl. 73-67.80S.
- Guthrie, Robert William; and Kierstead, Richard Wightman, to Hoffmann-La Roche Inc. Amino citric acid derivatives. 3,869,407, Cl. 260-326.450.
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- Guy Raymond Engineering Company Limited: *See—*
  - Daniels, Raymond Robert James, 3,869,105.
- Habayeb, Khaled M., to Wabash Alloys Inc. Method and apparatus for melting metals, especially scrap metals. 3,869,112, Cl. 266-33.00S.
- Haberkorn, Otto, to Walther Buromaschinen GmbH. Value input mechanism for calculating machines. 3,869,081, Cl. 235-60.0TK.
- Hackler, Ronald E.: *See—*
  - Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,869,456.
- Hafner, Erich. Pallets. 3,868,915, Cl. 108-51.000.
- Haggstrom, Rolf Paul; and Karlsson, Bengt-Ake, to AB Bojors. Weighing table particularly for a roller conveyor. 3,869,007, Cl. 177-211.000.
- Hagman, Gustav Rune, to Monark-Crescent AB. Vaporizing burner device. 3,869,245, Cl. 431-326.000.
- Hahn, Dulcie M.: *See—*
  - Rockland, Louis B.; Zaragosa, Eufrocina M.; and Hahn, Dulcie M., 3,869,556.
- Halbeck, Werner B.: *See—*
  - Patz, Roman J.; Sell, Frank O.; and Halbeck, Werner B., 3,869,586.
- Hall, John B.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Novel fragrance materials. 3,869,411, Cl. 252-522.000.

- Hall, John B.: *See—*
  - Wiegers, Wilhelmus J.; and Hall, John B., 3,869,516.
- Hallas, Robert; Tadanier, John Soloman; and VonEsch, Anne Mary, to Abbott Laboratories. 4"-O-sulfonyl erythromycin-9-O-oxime derivatives. 3,869,445, Cl. 260-210.00E.
- Haller, John Jacob; and Silverman, Lawrence. Audio responsive apparatus for creating lighting effects. 3,869,699, Cl. 340-148.000.
- Haller, William P; and Holka, Thomas C., to Ford Motor Company. Linear retractor. 3,869,173, Cl. 297-388.000.
- Halling, Horace P.: *See—*
  - Taylor, Dudley D.; Sadoff, Bernard J., Jr.; and Halling, Horace P., 3,869,132.
- Hamano, Mamoru: *See—*
  - Yamada, Shigeru; Hamano, Mamoru; and Nakayama, Kaname, 3,869,003.
- Hammond, Dean C., Jr.; and Matta, Galal N., to General Motors Corporation. Variable configuration combustion apparatus. 3,869,246, Cl. 431-351.000.
- Hampton, Richard John; Shantz, John T.; Gallo, Thomas; and Unger, Peter, to Ogilvie Flour Mills Company, Limited, The. Process for making a free flowing flour. 3,869,558, Cl. 426-443.000.
- Hanas, Bertil Henrik, to Allmanna Svenska Elektriska Aktiebolaget. Induction furnace for melt reduction. 3,869,560, Cl. 13-29.000.
- Hanke, Martin; and Stiefken, Hans, to Telefunken Compter GmbH. Direct curent supply with ribble suppression. 3,869,658, Cl. 321-2.000.
- Hanley, John F., Jr.: *See—*
  - Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., 3,869,352.
- Hannes, Karl: *See—*
  - Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; Chasen, Lee Richard; and Hannes, Karl, 3,868,746.
- Hans und Heinrich Blum OHG: *See—*
  - Blum, Hans, 3,868,980.
- Hansson, Bror Olov Nikolaus; and Hertsius, Johan Olov Bror. Method of continuous casting molten copper in a seamless-pipe-shaped mould. 3,868,988, Cl. 164-69.000.
- Harazono, Sinichi; and Morikawa, Toshinori, to Matsushita Electric Industrial Co., Ltd. Magnetic tape duplicating device. 3,869,710, Cl. 360-17.000.
- Harco Products Inc.: *See—*
  - Fox, Harry; and Hardy, Alex, 3,868,797.
- Harding, Donald D., to Shropshire, Kenneth W. Adapter for mixing fluids. 3,868,967, Cl. 137-604.000.
- Hardy, Alex: *See—*
  - Fox, Harry; and Hardy, Alex, 3,868,797.
- Hardy, Donald, Sr., to FMC Corporation. Montmorillonite clay catalysts for the production of phosphonitrilic chloride. 3,869,540, Cl. 423-300.000.
- Hare, Alan Lawrence: *See—*
  - New, George William; and Hare, Alan Lawrence, 3,869,593.
- Hargrave, Robert W. Pool vacuum apparatus. 3,868,739, Cl. 15-1.700.
- Harrison, Dean R.; and Dimeff, John, to United States of America, National Aeronautics and Space Administration. Diode-quad bridge circuit means. 3,869,676, Cl. 329-204.000.
- Hart, John James: *See—*
  - Wilson, Robert Neil; and Hart, John James, 3,869,219.
- Hart, Milburn L.: *See—*
  - Hart, Robert J.; and Hart, Milburn L., 3,868,895.
- Hart, Robert J.; and Hart, Milburn L., to Commercial Resins Company. Device for loading a plastic sleeve onto a mandrel. 3,868,895, Cl. 93-84.0TW.
- Hartleroad, Ronald J.; and Grabowski, James P., to General Motors Corporation. Magnetic pre-alignment of semiconductor device chips for bonding. 3,868,759, Cl. 29-464.000.
- Hartleroad, Ronald J.; and Grabowski, James P., to General Motors Corporation. Multiple magnetic alignment of semiconductor devices for bonding. 3,868,764, Cl. 29-589.000.
- Hartleroad, Ronald J.; and Grabowski, James P., to General Motors Corporation. Laminated template for semiconductor device bonding. 3,868,765, Cl. 29-589.000.
- Hartsough, Albert Charles: *See—*
  - Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, 3,869,651.
- Hasegawa, Shin; and Brewster, Linda C., to United States of America, Agriculture. Limonoate dehydrogenase and preparation thereof. 3,869,345, Cl. 195-62.000.
- Hashimoto, Shoji: *See—*
  - Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
- Hatton, Gildas, to Aerazur Constructions Aeronautiques. Inflatable shaped structures. 3,868,952, Cl. 128-78.000.
- Haug, Hans. Dose distribution means. 3,869,252, Cl. 23-259.000.
- Hausberger, Helmut: *See—*
  - Goldacker, Hubert; Hausberger, Helmut; and Schmieder, Helmut, 3,869,374.
- Hautala, Earl: *See—*
  - Finley, John W.; Hautala, Earl; and Walker, Charles E., 3,869,438.
- Hauth, Jean-Marc; and Cheylac, Roland Claude Michel, to Pont-A-Mousson S.A. Self releasing brake device. 3,869,024, Cl. 188-72.500.
- Hayward, Walter W. Burial vault. 3,868,799, Cl. 52-131.000.
- Heaney, Donald T. Adjustable track assembly. 3,869,086, Cl. 238-10.00R.
- Heath, Darrell R ; and Wirth, Joseph G., to General Electric Company. Bis(dicyanophenyl). ethers of dihydric phenols. 3,869,499, Cl. 260-465.00F.
- Heath, James E.: *See—*
  - Herce, John A.; and Heath, James E., 3,869,408.
- Heath, Oran M. Fingered harmonicas. 3,868,881, Cl. 84-377.000.
- Heberlein Hispano SA: *See—*
  - Vignon, Louis, 3,868,813.
- Heeks, John Stuart; and Crisp, John Josiah, to International Standard Electric Corporation. Surface acoustic wave code generator. 3,869,682, Cl. 332-11.00R.
- Heim, Peter: *See—*
  - Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,869,428.
- Heitmann, Hans-Gunther; and Donath, Gerhard, to Kraftwerk Union Aktiengesellschaft. Electromagnetic filter. 3,869,390, Cl. 210-222.000.
- Hellman, Per Ingvar; Sondell, Jan Ivar; and Jershed, Bo Christian, to Stora Kopparbergs Bergslags Aktiebolag. Mould for manufacturing plastic articles, and method of manufacturing the mould. 3,869,318, Cl. 148-12.300.
- Hellmer, Ernest W.; and Kinsley, John P., to Continental Can Company, Inc. Mold assembly. 3,869,237, Cl. 425-292.000.
- Hellmuth, Walter W.: *See—*
  - Miller, Edward F.; and Hellmuth, Walter W., 3,869,514.
- Henderson, Robert M.: *See—*
  - Zechlin, Richard; and Henderson, Robert M., 3,868,937.
- Henry, Richard J.; and Cary, Robert A., to Teledyne Mid-America Corporation. Ferrous alloy and abrasive resistant articles made therefrom. 3,869,037, Cl. 198-37.000.
- Heonis, Angelo Alexander. Instant beverage article. 3,869,555, Cl. 426-134.000.
- Herbert Kannegiesser Kommanditgesellschaft: *See—*
  - Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, 3,869,073.
- Herbert S. Fall: *See—*
  - Lambert, Ronald D.; and Bradford, Jack R., 3,869,184.
- Herce, John A.; and Heath, James E., to Shell Oil Company. Method and apparatus for continuously separating emulsions. 3,869,408, Cl. 252-361.000.
- Herluison, Jean-Claude: *See—*
  - Nguyen-Tat, Thang; Pain, Roger Andre; Le Floch, Yann; and Herluison, Jean-Claude, 3,869,570.
- Hermann, Wolfgang: *See—*
  - Goossens, Walter; and Hermann, Wolfgang, 3,869,350.
- Hermet, Pierre; and Laesser, Rodolphe, to Compagnie Generale d'Electricite. Laser telemeter. 3,869,207, Cl. 356-4.000.
- Herold, Hans: *See—*
  - Decker, Gernot; Herold, Hans; and Rohr, Horst, 3,869,301.
- Hertsius, Johan Olov Bror: *See—*
  - Hansson, Bror Olov Nikolaus; and Hertsius, Johan Olov Bror, 3,868,988.
- Herzog, Rollie R., to General Electric Company. Emergency lighting system using dim to bright flashing operation. 3,869,639, Cl. 315-86.000.
- Hesener, Walter: *See—*
  - Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter, 3,869,094.
- Hickling, Colin D., to American Thermostat Corporation. Double acting snap switch. 3,869,690, Cl. 337-390.000.
- Higo, Moriaki: *See—*
  - Mukaiyama, Teruaki; Higo, Moriaki; and Katsuyama, Harumi, 3,869,480.
- Himstedt, Kurt, to Schmalbach-Lubeca-Werke Aktiengesellschaft. Easy opening closure for containers. 3,869,063, Cl. 220-270.000.
- Hirai, Yoshio; and Yamamoto, Yoshimi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for burning materials of cement and the like. 3,869,248, Cl. 432-106.000.
- Hirashima, Takashi: *See—*
  - Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, 3,868,877.
- Hirose, Takeshi: *See—*
  - Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, 3,869,287.
- Hitachi, Ltd.: *See—*
  - Ishihara, Joo; Kagohara, Hiromi; Nagai, Masaichi; and Ohuchi, Yasushi, 3,869,319.
  - Maio, Kenji, 3,869,630.
  - Okagaki, Hiroshi, 3,869,643.
  - Takakura, Yoshio; Otake, Yukio; and Imai, Yukiyoshi, 3,868,879.
  - Ueda, Seiichi; and Minagawa, Teruo, 3,869,568.
- Hiwano, Kunio: *See—*
  - Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
- Hobby, James L., deceased (Hobby, Thelma T., surviving spouse). Grove heater apparatus. 3,868,944, Cl. 126-59.500.
- Hobby, Thelma T., surviving spouse: *See—*
  - Hobby, James L., deceased, 3,868,944.
- Hobson, Charles F., Jr., to General Electric Company. Electrical protective panel assembly with sensitive ground fault protecting means. 3,869,649, Cl. 317-18.00D.
- Hochstadt, Albert M. Manual character marking recognition system. 3,869,600, Cl. 235-61.12N.
- Hoechst Aktiengesellschaft: *See—*
  - Waldmann, Karl, 3,869,465.

Hoerner Waldorf Corporation: *See—*
  Jaeschke, Harold R.; and Boyle, Daniel J., 3,869,062.
Hoffmann-La Roche Inc.: *See—*
  Berger, Julius; Pruess, David; and Scannell, James Parnell, 3,869,277.
  Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,869,448.
  Guthrie, Robert William; and Kierstead, Richard Wightman, 3,869,407.
  Guthrie, Robert William; Kierstead, Richard Wightman; and LeMahieu, Ronald Andrew, 3,869,467.
  Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,869,461.
  Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,869,462.
  Osbond, John Mervyn; and Wickens, James Charles, 3,869,552.
  Sommer, Paul; and Tschirky, Hansjorg, 3,869,225.
Hoffmann, Walter; Pfeil, Hans-Dieter; and Mecklenberg, Wolfgang, to International Standard Electric Corporation. Bistable crosspoint matrix. 3,869,687, Cl. 335-236.000.
Hogan, Brian David; and Poole, Dennis Frederick, to Rabone Chesterman Limited. Housings. 3,869,096, Cl. 242-84.800.
Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, to Aktiebolaget Leo. Secondary phosphate esters. 3,869,527, Cl. 260-946.000.
Hogg, Dallas John Arthur: *See—*
  O'Brien, John Leslie; Finnimore, Bryan; and Hogg, Dallas John Arthur, 3,869,156.
Hoh, George Lok-Kwong, to du Pont de Nemours, E. I., and Company. Reinforced wax compositions having universal adhesion. 3,869,416, Cl. 260-27.00R.
Holcomb, Gregory W.: *See—*
  Floyd, Wallace C.; and Holcomb, Gregory W., 3,869,042.
Holka, Thomas C.: *See—*
  Haller, William P; and Holka, Thomas C., 3,869,173.
Holland, Douglas W. Air cushioned vehicle. 3,869,020, Cl. 180-120.000.
Holland, Gerald Fagan, to Pfizer Inc. Substituted benzoic acid hypolipemic agents. 3,869,553, Cl. 424-317.000.
Holopainen, Vesa: *See—*
  Soininen, Mauri; Koponen, Martti; and Holopainen, Vesa, 3,868,780.
Holsinger, William P., to United States of America, Health, Education and Welfare. Concentric electrode construction for an electrocardiogram transmitter. 3,868,947, Cl. 128-2.06E.
Holthuis, Johannes Jacobus, to Nederlandese Industrie voor Baggerwerktuigen Nivoba N.V. Cylindrical rotor for use in a rasping machine. 3,868,751, Cl. 29-105.00R.
Homeier, Ronald F.: *See—*
  Zimmerman, Earl L.; and Homeier, Ronald F., 3,868,838.
Honeywell, Inc.: *See—*
  Merchant, John; and Rotier, Donald J., 3,869,694.
  Schmit, Francis M., 3,869,193.
Honjo, Satoru: *See—*
  Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, 3,869,285.
Hooker Chemical & Plastics Corporation: *See—*
  Gelfand, Samuel; and Graham, John C., 3,869,510.
Hooker Chemicals & Plastics Corporation: *See—*
  Mark, Victor; and Mark, Carol A., 3,869,491.
Hoos, Pieter F., to Valve Systems International, Inc. Differential harmonic drive. 3,868,867, Cl. 74-773.000.
Hoover Company, The: *See—*
  Todd-Reeve, Leslie, 3,868,835.
Hoover, Richard B.; and Underwood, James H., to United States of America, National Aeronautics and Space Administration. Multiplate focusing collimator. 3,869,615, Cl. 250-508.000.
Hopkins, David Alan, to Valeron Corporation, The. Cutting tool. 3,868,752, Cl. 29-105.00A.
Hopkins, Gary L.: *See—*
  Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, 3,869,177.
Hoppe, Peter; Leyer, Helmut; and Muller, Johann, to Bayer Aktiengesellschaft. Composite non-woven mats and foam plastic articles reinforced therewith. 3,869,337, Cl. 161-159.000.
Horst, Daniel R.; and Ingermann, Donald E., to Western Sales and Supply Co. Self-propelled automatic bowling lane maintenance machine. 3,868,738, Cl. 15-4.000.
Hostetler, Eldon, to Chore-Time Equipment, Inc. Weight controlled feeder system. 3,869,006, Cl. 177-60.000.
Hottenroth, Fred W.; and Hottenroth, Fred W., III. Portable forced draft solid fuel burning cooker. 3,868,943, Cl. 126-25.00R.
Hottenroth, Fred W., III: *See—*
  Hottenroth, Fred W.; and Hottenroth, Fred W., III, 3,868,943.
Houdaille Industries, Inc.: *See—*
  Schultz, John C., 3,868,910.
  Schultz, John C., 3,868,911.
Houry, Shlomo: *See—*
  Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,869,475.
Hovel, Harold J.: *See—*
  Cuomo, Jerome J.; and Hovel, Harold J., 3,869,322.
Howie, John R., to Safeway Products Inc. Cookware heater. 3,869,596, Cl. 219-438.000.
Howmedica, Inc.: *See—*
  Kaufer, Herbert; Matthews, Larry S.; Sonstegard, David A.; and Murray, Ian P., 3,868,730.
Hoyt, Kenneth L.: *See—*
  Feustel, James R.; Hoyt, Kenneth L.; Valukonis, Jonas; and Corcoran, John J., 3,869,017.
Hruza, Denis E.: *See—*
  Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,869,554.
Huber, Josef: *See—*
  Auspurg, Heinz; Huber, Josef; Rabold, Jurgen; and Wohlert, Gunther, 3,869,603.
Hughes, John Thomas; and MacWilliam, Joseph Anthony, to Micropore Insulation Limited. Insulating materials. 3,869,334, Cl. 161-87.000.
Hughes, Nigel, to Imperial Chemical Industries Limited. 3-Secondary aminomethylene-4-lower-alkyl-5-azo-6-hydroxypyrid-2-one dyestuffs. 3,869,441, Cl. 260-156.000.
Hults, Harold W., to Cutter-Hammer, Inc. Double-pole tool handle switch. 3,869,590, Cl. 200-157.000.
Humphrey, Marion L.; and Tugaudis, Ernest A., to Allstate Insurance Company. Intrabuilding telephone system. 3,869,582, Cl. 179-98.000.
Hundstad, Richard L., to Westinghouse Electric Corporation. Vacuum interrupter including contacts having improved weld break characteristics. 3,869,589, Cl. 200-144.00B.
Hunt, Norman; and Noddings, John, to Associated Engineering Limited. Automatic transmission control systems. 3,868,869, Cl. 74-866.000.
Hunt, Robert F., to International Paper Company. Flexible ceramic member having a pre-loaded tensile force applying means. 3,869,344, Cl. 162-274.000.
Hunter, William L.; and Spanjer, Keith Gordon, to Motorola, Inc. Semiconductor device with dispersed glass getter layer. 3,869,704, Cl. 357-54.000.
Hunyar, Csaba K., to United Artists Music and Records Group, Inc. Ductility tester. 3,868,849, Cl. 73-100.000.
Hurley, James S. Medical electrode. 3,868,946, Cl. 128-2.10E.
Hutchinson, Gary Lee: *See—*
  Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, 3,869,569.
Hutchison, John Blundell, to British Insulated Callender's Cables Limited. Cable glands. 3,869,155, Cl. 285-158.000.
Hyperion Incorporated: *See—*
  Chen, Bu Shing, 3,869,068.
ICI Australia Limited: *See—*
  Brett, Horace William Walter; and Fox, Richard, 3,869,320.
Iehl, William R., to Construction Machinery Company. Hauling hitch. 3,869,148, Cl. 280-457.000.
Igata, Toyonori, to Pioneer Electronic Corporation. Spindle adapter apparatus. 3,869,130, Cl. 274-10.00S.
Ignatov, Viktor Alexandrovich: *See—*
  Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
IIT Research Institute: *See—*
  Camras, Marvin, 3,869,712.
Ikegami, Shigeru: *See—*
  Saji, Yasuo; and Ikegami, Shigeru, 3,868,816.
Illinois Tool Works, Inc.: *See—*
  Camillo, Charles Carl, 3,869,619.
Imai, Yukiyoshi: *See—*
  Takakura, Yoshio; Otake, Yukio; and Imai, Yukiyoshi, 3,868,879.
Imler, Vaughn R.: *See—*
  Shaffer, Paul D.; Imler, Vaughn R.; and Morrissey, Jack D., 3,869,271.
Imperial Chemical Industries Limited: *See—*
  Hughes, Nigel, 3,869,441.
  Moss, Keith Graham; and Pumphrey, Nicholas William James, 3,869,312.
  Waddan, Dhafir Yusuf, 3,869,501.
Imperial Oil Limited: *See—*
  Schutte, Robert, 3,869,384.
Improved Machinery Inc., 02: *See—*
  Schonewald, Roger L., 3,869,236.
Inaga, Katsu, to Sony Corporation. Tape recording and/or reproducing apparatus and tape cassette for use therewith. 3,869,099, Cl. 242-199.000.
Indevco Corporation: *See—*
  Ackermann, Walter Thomas, 3,869,093.
Indian Head Inc.: *See—*
  Frische, Dale George, 3,869,249.
Ingenieursbureau Dwars, Heederik en Verhey B.V.: *See—*
  Graveland, Antonie; Geerligs, Wouter Louis Prinsen; and Soleman, Mohamad Ali Arafien, 3,869,381.
Ingenito, Michael J.; and Corser, Paul J., to General Time Corporation. Synchronous motor. 3,869,627, Cl. 310-162.000.
Ingermann, Donald E.: *See—*
  Horst, Daniel R.; and Ingermann, Donald E., 3,868,738.
Inno-vet Instruments, Inc.: *See—*
  Rarick, Raymond E., 3,868,958.
Instance, David John, to David J. Instance Limited. Reeling self-adhesive labels. 3,869,328, Cl. 156-285.000.

Instituto Farmacologico Serono S.p.A.: *See—*
  Marchetti, Enzo, 3,869,455.
Instrumentation Laboratory, Inc.: *See—*
  Nolan, Gaillard R., 3,869,215.
Integrated Development & Manufacturing Company: *See—*
  Davis, Noel, 3,869,605.
Intercole Automation, Inc.: *See—*
  Matsuoka, James T., 3,869,111.
Interlake, Inc.: *See—*
  Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., 3,869,352.
  Coleman, Bestor P.; and McConnell, Kennedy, 3,869,031.
Intermountain Research and Development: *See—*
  Sproul, Jared Sanford; and Rau, Eric, 3,869,538.
International Business Machines Corporation: *See—*
  Basi, Jagtar Singh, 3,869,323.
  Basi, Jagtar Singh; and Mendel, Eric, 3,869,324.
  Bernard, William R.; and Buslik, Walter S., 3,869,711.
  Cook, Kenneth Allen; and Porter, Townsend Henry, Jr., 3,869,700.
  Cuomo, Jerome J.; and Hovel, Harold J., 3,869,322.
  Flippen, George Burdine, Jr., 3,869,100.
  Kroeker, Elmer Leroy Bob, 3,869,116.
  Schneider, Richard C.; and Viele, Lawrence, Jr., 3,869,714.
International Flavors & Fragrances Inc.: *See—*
  Hall, John B.; and Shuster, Edward J., 3,869,411.
  Light, Kenneth K.; and Anglim, James Brian, 3,869,524.
  Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,869,554.
  Wiegers, Wilhelmus J.; and Hall, John B., 3,869,516.
International Harvester Company: *See—*
  Cicci, George B.; and Tufts, Guy O., 3,868,811.
International Husky, Inc.: *See—*
  Carroll, Charles A., 3,869,102.
International Nickel Company, Inc., The: *See—*
  Beutner, Heinz Paul; and Feick, George, 3,869,257.
International Paper Company: *See—*
  Hunt, Robert F., 3,869,344.
International Standard Electric Corporation: *See—*
  Backhouse, Geoffrey Howard; and Leggett, Norman Derek, 3,869,702.
  Buttel, Helmut; Isert, Ingo Rudiger; Leicht, Alfred; and Schach, Albert, 3,869,685.
  Delves-Broughton, James, 3,869,371.
  Grobe, Wolfgang, 3,869,684.
  Heeks, John Stuart; and Crisp, John Josiah, 3,869,682.
  Hoffmann, Walter; Pfeil, Hans-Dieter; and Mecklenberg, Wolfgang, 3,869,687.
  Maillot, Jean Paul, 3,869,652.
  Nguyen-Tat, Thang; Pain, Roger Andre; Le Floch, Yann, and Herluison, Jean-Claude, 3,869,570.
  Schroder, Wolfgang, 3,869,671.
  Schroder, Wolfgang, 3,869,672.
  Wettre, Gunnar, 3,869,561.
  Wilde, Helmut, 3,869,584.
International Tapetronics Corporation: *See—*
  Jenkins, John P., 3,869,719.
Interroyal Corporation: *See—*
  Benoit, Roland A., and Guillot, Edmond P., 3,868,734.
Interspace Corporation: *See—*
  Valiela, Jose, 3,868,901.
Iowa State University Research Foundation Inc.: *See—*
  Peterson, David A., 3,868,800.
Ischenko, Jury Yakovlevich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Isert, Ingo Rudiger: *See—*
  Buttel, Helmut; Isert, Ingo Rudiger; Leicht, Alfred; and Schach, Albert, 3,869,685.
Ishihara, Joo; Kagohara, Hiromi; Nagai, Masaichi; and Ohuchi, Yasushi, to Hitachi, Ltd. Wear resistant deposited steel. 3,869,319, Cl. 148-31.500.
Ishii, Hideto: *See—*
  Kishimoto, Kyuji; Tojima, Toshiaki; and Ishii, Hideto, 3,868,928.
Ishii, Teruhiko: *See—*
  Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.
Ishikawa, Yoshikazu, to Nissan Motor Company Limited. Lubricating oil supply system for rotary engine. 3,868,929, Cl. 123-8.090.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
  Hirai, Yoshio; and Yamamoto, Yoshimi, 3,869,248.
Ishimi, Bun-Ichi. Variable transmission utilizing oscillating links and one-way clutches. 3,868,860, Cl. 74-63.000.
Itek Corporation: *See—*
  Aldrich, Ralph E.; Feinleib, Julius; and Schmutz, Lawrence E., 3,869,195.
  Cummings, Richard D., 3,869,199.
Ito, Naganori; and Aikawa, Hiroshi, to Nissan Motor Company Limited. Vehicle suspension system. 3,869,141, Cl. 280-124.00F.
Itoh, Takane, to Nissan Motor Company Limited. Automotive gas turbine engine. 3,868,818, Cl. 60-39.150.
Ivanov, Borislav S.; and Ivanova, Raina V. Multiplex typewriter for technical drawings. 3,869,033, Cl. 197-10.000.
Ivanova, Raina V.: *See—*
  Ivanov, Borislav S.; and Ivanova, Raina V., 3,869,033.
Iwakawa, Tunekiyo: *See—*
  Yano, Akira; Sato, Norio; and Iwakawa, Tunekiyo, 3,869,644.
Iwano, Haruhiko: *See—*
  Shimamura, Isao; and Iwano, Haruhiko, 3,869,383.
Iwasaki, Tadahisa, to Pioneer Electronic Corporation. Auto cassette changer. 3,869,722, Cl. 360-92.000.
Izdebski, Wladyslaw, to Schlage Lock Company. Removal of heavy metal ions from plating wastes. 3,869,386, Cl. 210-53.000.
J. P. Stevens Co., Inc.: *See—*
  Stahl, Joseph E.; and Cudworth, Allen L., 3,868,975.
J. Vast Associates, Inc.: *See—*
  Tejeda, Alvaro R., 3,869,364.
  Tejeda, Alvaro R., 3,869,382.
Jablon, Harry: *See—*
  Lippe, Joan M.; Goldfarb, Irving; and Jablon, Harry, 3,868,786.
Jackson, Richard S. Ski release binding. 3,869,136, Cl. 280-11.35D.
Jackson, Sydney; and Titterington, Joseph Bell, to Ferranti, Limited. Manufacture of supports for use with semiconductor devices. 3,869,260, Cl. 29-195.000.
Jacquelin, Guy; and Sangenis, Solange, to Centre Technique de l'Industrie des Papiers Cartons et Celluloses. Application of precipitates of methylene-ureas and products obtained. 3,869,311, Cl. 117-155.00L.
Jacquinot, Bernard: *See—*
  Lhonore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,869,253.
Jaeschke, Harold R.; and Boyle, Daniel J., to Hoerner Waldorf Corporation. Vial and syringe carton for emergency drugs. 3,869,062, Cl. 206-229.000.
Jager, Gerhard; Metzger, Carl; Eue, Ludwig; and Schmidt, Robert, to Farbenfabriken Bayer Aktiengesellschaft. Esters. 3,869,490, Cl. 260-455.00A.
Jaggle, Gunther: *See—*
  Friese, Karl-Hermann, Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
Jahnsen, Thor Helge: *See—*
  Fonne, Gunnar Johan; and Jahnsen, Thor Helge, 3,869,309.
James, Dean B., to Atlantic Richfield Company. Displacement chromatographic method for separating uranium isotopes. 3,869,536, Cl. 423-7.000.
James, Henry; and Johnson, Carl B., to Pontiac Furniture Industries, Inc. Locking mechanism for reclining chairs. 3,869,170, Cl. 297-270.000.
James, Henry; and Johnson, Carl B., to Pontiac Furniture Industries, Inc. Chair reclining mechanism. 3,869,172, Cl. 297-316.000.
James, Henry: *See—*
  Johnson, Carl B.; and James, Henry, 3,869,169.
James Mackie & Sons Limited: *See—*
  Mackie, John K. P.; and McMeekin, Samuel, 3,869,240.
Jamison, John P. Wheeled cart. 3,868,745, Cl. 16-41.000.
Janocha, Siegfried; Seifried, Walter, and Gebler, Horst, to Kalle Aktiengesellschaft Wiesbaden. Process for the manufacture of monoaxially stretched film strips. 3,869,533, Cl. 264-146.000.
Janssen, Sylvain, to Compteurs Schlumberger. Volume gas meter. 3,868,852, Cl. 73-233.000.
Japan Atomic Energy Research Institute: *See—*
  Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
  Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji, Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
Jedele, Ormond J.: *See—*
  Gramlich, Donald L.; Jedele, Ormond J.; and Pearson, Robert M., 3,868,766.
Jeger, Oskar: *See—*
  Wehrli, Hansuli; and Jeger, Oskar, 3,869,452.
Jehenson, Pierre Simon; and Vos, Gilbert Jean-Pierre, to European Atomic Energy Community (Euratom). Tamper-proof seal system. 3,869,609, Cl. 250-272.000.
Jenkins, John C., to TRW Inc. Method for making an electrically-conductive connection specifically for underground lines. 3,869,361, Cl. 204-148.000.
Jenkins, John P., to International Tapetronics Corporation. Automatic sequence control for reproducing apparatus. 3,869,719, Cl. 360-72.000.
Jensen, Howard, to Ramby, Inc. Stair climbing tracked vehicle. 3,869,011, Cl. 180-9.240.
Jepson, Bernhart E.: *See—*
  De Witt, Robert; Jepson, Bernhart E.; and Schwind, Roger A., 3,869,255.
Jershed, Bo Christian: *See—*
  Hellman, Per Ingvar; Sondell, Jan Ivar; and Jershed, Bo Christian, 3,869,318.
Jessup, Joseph L.: *See—*
  Doll, Robert M.; Jessup, Joseph L.; and Stone, Lawrence J., 3,868,896.
Jobson, Daniel J.: *See—*
  Burcher, Ernest E.; Jobson, Daniel J.; Katzberg, Stephen J.; and Kelly, William L., IV, 3,869,212.

John Wyeth & Brother Limited: *See—*
Archibald, John Leheup, 3,869,463.
Johnson, Carl B.; and James, Henry, to Pontiac Furniture Industries, Inc. Retractable footrest mechanism. 3,869,169, Cl. 297-84.000.
Johnson, Carl B.: *See—*
James, Henry; and Johnson, Carl B., 3,869,170.
James, Henry; and Johnson, Carl B., 3,869,172.
Johnson & Johnson: *See—*
Cooper, Richard D., 3,869,647.
Krzewinski, Henrietta K., 3,868,728.
Johnson, Robert Bird; Rakowitz, David Henry; Barber, William Austin; and Fetchin, John Allan, to American Cyanamid Company. Improved catalytic hydration of nitriles. 3,869,511, Cl. 260-561.00N.
Johnson Service Company: *See—*
Klein, Carl F.; Korta, Lawrence B.; and Bailey, James R., 3,869,681.
Johnson, Walter N.: *See—*
Peterson, William R.; and Johnson, Walter N., 3,869,418.
Jolette, Gerald P. Fan wheel assembly. 3,869,157, Cl. 287-52.040.
Jones, Charles H., to United States of America, Navy. Scanning arrangement for sonar beams. 3,869,693, Cl. 340-6.00R.
Jones, Harold F.; Ousterling, David L.; and Anderson, Roland W., to Allied Chemical Corporation. Apparatus for automatic chemical processing of workpieces, especially semi-conductors. 3,869,313, Cl. 134-73.000.
Jones, Howard, to Merck & Co., Inc. Preparation of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indenyl-3-acetic acid. 3,869,507, Cl. 260-515.00A.
Jones, Howard: *See—*
Shen, Tsung-Ying; and Jones, Howard, 3,869,506.
Jorgensen, Blanche I. Dual container. 3,868,984, Cl. 150-2.300.
Josephy, Julius: *See—*
Patz, Ulrich F. M.; Sommerkamp, Peter; and Josephy, Julius, 3,869,675.
Joslyn Mfg. and Supply Co.: *See—*
Cunningham, Francis V.; and Wicks, John S., 3,869,650.
Junger, Hans: *See—*
Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, 3,869,340.
Kabushiki Kaisha Suwa Seikosha: *See—*
Kubota, Kanemitsu, 3,869,196.
Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.): *See—*
Masuzawa, Isao; Onishi, Kazutoshi; and Awano, Tsuneo, 3,869,653.
Kagohara, Hiromi: *See—*
Ishihara, Joo; Kagohara, Hiromi; Nagai, Masaichi; and Ohuchi, Yasushi, 3,869,319.
Kaij, Mats J.: *See—*
Smars, Erik; Mogensen, Palne; and Kaij, Mats J., 3,869,616.
Kakizaki, Tadao, to Nissan Motor Company, Limited. Wiper assembly for a motor driven vehicles. 3,868,743, Cl. 15-250.230.
Kali-Chemie Aktiengesellschaft: *See—*
Milkowski, Wolfgang; Zeugner, Horst; Von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, 3,869,459.
Thies, Peter Willibrord; Kucaba, Walter; and Funke, Siegfried, 3,869,476.
Kalinowski, Paul W.: *See—*
Corcoran, John J.; and Kalinowski, Paul W., 3,868,793.
Kalle Aktiengesellschaft Wiesbaden: *See—*
Janocha, Siegfried; Seifried, Walter; and Gebler, Horst, 3,869,533.
Kane, William S.; and Cardwell, Paul H. Reduction method for separating metal values from ocean floor nodule ore. 3,869,360, Cl. 204-105.00R.
Kaneko, Yasuhisa: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,869,410.
Kao, James T. F.: *See—*
Lanier, Carroll W.; and Kao, James T. F., 3,869,294.
Karasa, Alvydas Petras; and Bell, Jonathan Durand, to Black and Decker Manufacturing Company, The. Trigger assembly for manually operable spray apparatus. 3,869,089, Cl. 239-338.000.
Karl, Otto. Apparatus for mutually synchronizing oscillators in switching centers of a telecommunication network. 3,869,579, Cl. 179-15.0BS.
Karlov, Stanislav Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Karlsson, Bengt-Ake: *See—*
Haggstrom, Rolf Paul; and Karlsson, Bengt-Ake, 3,869,007.
Karnes, George Thomas: *See—*
Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,996.
Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,998.
Karrer, Friedrich: *See—*
Traber, Walter; and Karrer, Friedrich, 3,869,515.
Kartman, Helge Carl Christian: *See—*
Enkegaard, Torben; and Kartman, Helge Carl Christian, 3,869,091.
Kasahara, Tadayoshi: *See—*
Watanabe, Asao; Kasahara, Tadayoshi; and Sugahara, Noboru, 3,869,211.
Kasamatu, Mikizo. Time-delay fuse element. 3,869,689, Cl. 337-164.000.
Kaspers, Helmut: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.
Kast, Philip J.: *See—*
Thomson, Ronald E.; and Kast, Philip J., 3,869,023.
Kathawala, Faizulla G., to Sandoz-Wander, Inc. S-triazolo (4,3-d) (1,4) benzodiazepin-6(7h)-ones. 3,869,450, Cl. 260-239.30T.
Kato, Yoshio. Body treating apparatus. 3,868,950, Cl. 128-66.000.
Katsuma, Kunio, to USUI Kokusai Sangyo Kabushiki Kaisha. Corrosion-resistant composite coating to be formed on steel materials and method of forming the same. 3,869,261, Cl. 29-196.300.
Katsuyama, Harumi: *See—*
Mukaiyama, Teruaki; Higo, Moriaki; and Katsuyama, Harumi, 3,869,480.
Katzberg, Stephen J.: *See—*
Burcher, Ernest E.; Jobson, Daniel J.; Katzberg, Stephen J.; and Kelly, William L., IV, 3,869,212.
Kaufer, Herbert; Matthews, Larry S.; Sonstegard, David A.; and Murray, Ian P., to Howmedica, Inc. Knee or elbow prosthesis. 3,868,730, Cl. 3-1.000.
Kavesh, Sheldon, to Union Carbide Corporation. Tubing for cryogenic use. 3,869,338, Cl. 161-165.000.
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, to Matsushita Electric Industrial Company Limited. Magnetic recording and reproducing apparatus for multi-channel endless tape. 3,869,717, Cl. 360-60.000.
Kawakami, Waichiro: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
Kawamura, Keita: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
Kawanishi, Masazumi: *See—*
Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, 3,869,474.
Kawano, Hatsuo. Method of manufacturing a finned-tube heat exchanger. 3,868,754, Cl. 29-157.30A.
Kawasaki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Pattern identifying systems. 3,869,697, Cl. 340-146.30P.
Keene, Derek K.; and Roll, Louis C., to Eaton Corporation. Load extending mechanism for material handling vehicle. 3,869,047, Cl. 214-1.0BB.
Keller, Chris F., Jr.: *See—*
Bischoff, Leo E.; and Keller, Chris F., Jr., 3,869,654.
Keller, Robert A., to Echlin Manufacturing Company, The. Internal combustion engine with pressure responsive supercharger bypass. 3,868,822, Cl. 60-600.000.
Keller, Wolfgang: *See—*
Reuschel, Konrad; Keller, Wolfgang; Kersting, Arno; and Emeis, Reimer, 3,868,924.
Kelly, George Bernard, Jr.; and Lowery, Robert Howard, to Union Carbide Corporation. Aqueous starch-pigment paper coating compositions containing glyoxal-urea insolubilizer. 3,869,296, Cl. 106-214.000.
Kelly, William F. Tendon gripping and release assembly. 3,868,748, Cl. 24-115.00M.
Kelly, William L., IV: *See—*
Burcher, Ernest E.; Jobson, Daniel J.; Katzberg, Stephen J.; and Kelly, William L., IV, 3,869,212.
Kempelmann, Reinhold: *See—*
Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, 3,869,073.
Kemper, John A.: *See—*
Mann, Leonard J.; and Kemper, John A., 3,868,829.
Kenmochi, Hiroshi; Menju, Shinichi; and Takahashi, Kunio, to Tokyo Shibaura Co., Ltd.; and Tokyo Electric Power Co., Ltd. Device for detecting corona discharge in an enclosed electric device. 3,869,665, Cl. 324-72.000.
Kennedy, Daniel W.; and Woodward, Walter R., to USM Corporation. Circuit for modifying a train of pulses. 3,869,656, Cl. 318-696.000.
Kenney, Donald Sykes: *See—*
Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, 3,869,274.
Kersting, Arno: *See—*
Reuschel, Konrad; Keller, Wolfgang; Kersting, Arno; and Emeis, Reimer, 3,868,924.
Kessler, John; and Franco, Joseph. Apparatus for preventing railway wheel lock. 3,869,176, Cl. 303-3.000.
Kicon AG: *See—*
Fordsmand, Marc, 3,869,606.
Kida, Kiyonori: *See—*
Ogawa, Takashi; Kida, Kiyonori; and Sugiyama, Shunichi, 3,869,629.
Kierstead, Richard Wightman: *See—*
Guthrie, Robert William; and Kierstead, Richard Wightman, 3,869,407.
Guthrie, Robert William; Kierstead, Richard Wightman; and LeMahieu, Ronald Andrew, 3,869,467.

Kim, Samuel Ho: *See—*
Munjat, Francis S.; and Kim, Samuel Ho, 3,869,342.
Munjat, Francis S.; and Kim, Samuel Ho, 3,869,343.
Kimble, Thomas E.: *See—*
Ellis, George S.; Kimble, Thomas E.; and Sawers, James R., 3,868,750.
Kimura, Takeo: *See—*
Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
Kinsley, John P.: *See—*
Hellmer, Ernest W.; and Kinsley, John P., 3,869,237.
Kirchweger, Karl. Inlet port for internal combustion engines, in particular for diesel engines. 3,868,940, Cl. 123-188.00M.
Kirk, James A.: *See—*
Linhardt, Hans D.; Carter, Thomas A.; and Kirk, James A., 3,868,827.
Kirsenko, Anatoly Antonovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Kirton, John; Mears, Adrian Leonard; Sarginson, Richard William; and Werring, Norman John, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defense in Her Britannic Majisty's Government of the. Electroluminescent devices. 3,869,646, Cl. 315-246.000.
Kiselev, Andrei Vladimirovich: *See—*
Behris, Natalya Karlovna; Kiselev, Andrei Vladimirovich; Nikitin, Jury Stepanovich; and Yashin, Yakov Ivanovich, 3,869,409.
Kishimoto, Kyuji; Tojima, Toshiaki; and Ishii, Hideto, to Nissan Motor Company, Limited. Ignition system for rotary internal combustion engine. 3,868,928, Cl. 123-8.090.
Kishimoto, Shinzo: *See—*
Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, 3,869,285.
Kissner, Herbert G. Spare tire carrier, rear bumper and trailer hitch assembly for trucks. 3,869,075, Cl. 224-42.060.
Kita, Yasuo, to Sumitomo Electric Industries Ltd. Worn brake lining alarm circuit. 3,869,695, Cl. 340-52.00A.
Kitamura, Motoharu: *See—*
Shoji, Magozo; and Kitamura, Motoharu, 3,869,657.
Klauke, Erich: *See—*
Kuhle, Engelbert, and Klauke, Erich, 3,869,509.
Klein, Burton. Dynamic arterial blood pressure simulator. 3,868,844, Cl. 73-4.00R.
Klein, Carl F.; Korta, Lawrence B.; and Bailey, James R., to Johnson Service Company. Microwave cavity oscillator having a frequency tuning element. 3,869,681, Cl. 331-96.000.
Kljuev, Mikhail Markovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Deussner, Herbert, 3,869,247.
Vorster, Hans-Jurgen; Kunath, Paul; and Bethmann, Karl-Wilhelm, 3,869,379.
Klomp, Edward D.; Wolgemuth, James H.; and Wiknich, Harold V., to General Motors Corporation. Rotary engine with auxiliary combustion chamber. 3,868,930, Cl. 123-8.130.
Klundt, Irwin L.: *See—*
Biel, John Hans; and Klundt, Irwin L., 3,869,492.
Knapp, Heinrich, to Robert Bosch G.m.b.H. Exhaust gas purifying apparatus. 3,868,819, Cl. 60-276.000.
Knapp, Heinrich: *See—*
Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
Knapp, Isaac D., to PPG Industries, Inc. Method and apparatus for press shaping heat-softened sheets. 3,869,269, Cl. 65-106.000.
Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, to Herbert Kannegiesser Kommanditgesellschaft. A process for folding shirts or similar articles of clothing for packing. 3,869,073, Cl. 223-37.000.
Knecht Filterwerke Gesellschaft mit beschrankter Haftung: *See—*
Wolf, Max, 3,869,392.
Knoche, Georg: *See—*
Schnabele, Werner; Knoche, Georg; and Zeyher, Fritz, 3,869,101.
Knopf, Karl Horst. Rechargeable aerosol-type dispensing device for whipped cream. 3,868,978, Cl. 141-19.000.
Kobayashi, Tamio: *See—*
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,869,717.
Kocher, Erich J.; and Grant, Whitney I., to Vilter Manufacturing Corporation. Variable capacity rotary screw compressor having variable high pressure suction fluid inlets. 3,869,227, Cl. 418-15.000.
Kochetkov, Valentin Mikhailovich: *See—*
Malygin, Petr Vasilievich; Kochetkov, Valentin Mikhailovich; and Tolkachev, Alexei Efimovich, 3,868,966.
Koehring Company: *See—*
Kurelek, John; and Locker, Victor E., 3,868,982.
Sousek, Eugene A., 3,869,655.
Koenig, Carl F., III, to Warner & Swasey Company, The. Spindle clamp. 3,869,002, Cl. 173-166.000.
Kogame, Kunio: *See—*
Fukushima, Osamu; Kogame, Kunio; and Sato, Masami, 3,869,310.
Koh, Hyung Chan. Hair supporting element for a weftless or regular wig. 3,868,959, Cl. 132-53.000.
Kohler, Oscar: *See—*
Temme, Helmut; and Kohler, Oscar, 3,869,039.
Kohori, Kiyotaka. Golf-shot practicing apparatus. 3,869,127, Cl. 273-195.00B.
Kolensky, Leo Michael; Pile, Randolph John; Schlanger, Gabriel Gary; and Willand, Allan Howard, to Bell Telephone Laboratories, Incorporated. Multipoint junction unit providing exclusive interconnections of branch pairs. 3,869,573, Cl. 178-73.000.
Kolomyjec, Taras Avenir. Power supply arrangement for fluorescent tubes, thermionic devices and the like. 3,869,640, Cl. 315-97.000.
Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of unsaturated aliphatic nitriles. 3,869,500, Cl. 260-465.300.
Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Plate-making master and method for producing a printing plate which does not require dampening water. 3,869,285, Cl. 96-1.00R.
Konieczynski, Ronald D.; and Springmeyer, Allan H., to General Electric Company. Rotating x-ray target with toothed interface. 3,869,634, Cl. 313-330.000.
Kono, Yoshimi: *See—*
Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
Konon, Jury Alexeevich: *See—*
Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich, Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Konopka, Edward J.; and Fisher, Conan F., Jr., to Fun and Frolic Incorporated. Solar heater for swimming pools. 3,868,945, Cl. 126-271.000.
Koponen, Martti: *See—*
Soininen, Mauri; Koponen, Martti; and Holopainen, Vesa, 3,868,780.
Korda, Peter Bela, to RCA Corporation. Recovery of normally illegible, magnetically recorded information. 3,869,721, Cl. 360-77.000.
Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich. Electric machine stator. 3,869,628, Cl. 310-179.000.
Korkut, Mehmet D. Method of orthogonally connecting long structural members of circular and rectangular cross-section. 3,868,760, Cl. 29-470.000.
Korta, Lawrence B.: *See—*
Klein, Carl F.; Korta, Lawrence B.; and Bailey, James R., 3,869,681.
Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Phosphorus organosilane adhesives. 3,869,340, Cl. 161-182.000.
Kowa Yakuhin Kogyo Kabushiki Kaisha: *See—*
Shindo, Hideyasu; Kumagai, Toshio; and Dot, Kengo, 3,869,477.
Kraftwerk Union Aktiengesellschaft: *See—*
Heitmann, Hans-Gunther; and Donath, Gerhard, 3,869,390.
Losel, Georg; and Eickenberg, Leonhard, 3,868,927.
Kramer, William L., to General Motors Corporation. Magnetic drain plug assembly. 3,869,391, Cl. 210-222.000.
Kranz, Vladimir, to Steinhof Marketing Corporation Ltd., represented by the General Partners, Steinhof Associated GmbH. Device for protecting coverings of inflatable tennis halls. 3,869,118, Cl. 272-3.000.
Krapcho, John, to E. R. Squibb & Sons, Inc. 2,3,4,5-Tetrahydro-4-phenyl-1H-1,4-benzodiazepine-1-carboximidamide and related compounds. 3,869,447, Cl. 260-239.0BD.
Krauss, Rudolf: *See—*
Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
Krikau, Frederick G.: *See—*
Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., 3,869,352.
Kring, Peder Lund; and Lund, Jorgen, to A/S Ferrosan. Preparations containing fat-soluble vitamins in dry, particulate, free-flowing form dispersible in cold water and method of producing such preparations. 3,869,539, Cl. 424-236.000.
Kroecker, Elmer Leroy Bob, to International Business Machines Corporation. Decreasing load deflection mechanism. 3,869,116, Cl. 271-160.000.

Krzewinski, Henrietta K., to Johnson & Johnson. Surgical gown. 3,868,728, Cl. 2-114.000.

KSB Kernkraftwerkspumen GmbH: *See—*
Diederich, Herbert, 3,869,135.

Kubota, Kanemitsu, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display device. 3,869,196, Cl. 350-160.0LC.

Kucaba, Walter: *See—*
Thies, Peter Willibrord; Kucaba, Walter; and Funke, Siegfried, 3,869,476.

Kugele, Thomas G.; and Bresser, Robert E., to Cincinnati Milacron Chemicals, Inc. Alkyltin polysulfide thioesters. 3,869,487, Cl. 260-429.700.

Kugler, Tibor, to Lonza, Ltd. Apparatus for carrying out high temperature reactions. 3,869,254, Cl. 23-262.000.

Kuhle, Engelbert; and Klauke, Erich, to Bayer Aktiengesellschaft. N-alkyl-N(trihalomethylthio)-sulfamic acid chloride. 3,869,509, Cl. 260-543.00R.

Kuhle, Engelbert: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.

Kuhn, Ralph F., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; and Kuhn, Ralph F., Jr., 3,869,151.

Kuhnle, Ernst; and Schwarz, Josef, to Bizerba-Werke Wilhelm Kraut K.G. Balance scale. 3,869,008, Cl. 177-217.000.

Kuhnle, Ernst, to Bizerba-Werke Wilhelm Kraut K.G. Scale. 3,869,009, Cl. 177-217.000.

Kumagai, Toshio: *See—*
Shindo, Hideyasu; Kumagai, Toshio; and Dot, Kengo, 3,869,477.

Kumagai, Yasuhiko: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; Kumagai, Yasuhiko; and Kurosaki, Shiro, 3,869,194.

Kume, Takeshi, to Ryuichi Mujamoto. Belt conveyor apparatus. 3,869,574, Cl. 198-203.000.

Kunath, Paul: *See—*
Vorster, Hans-Jurgen; Kunath, Paul; and Bethmann, Karl-Wilhelm, 3,869,379.

Kunio, Shibayama, to Fuji Denki Seizo Kabushiki Kaisha. Sliding shoe in vehicular pantagraph collector. 3,869,029, Cl. 191-49.000.

Kunst, Matthias: *See—*
Schacher, Hans-Dieter; Fischer, Reinhold; and Kunst, Matthias, 3,869,373.

Kuraray Co., Ltd.: *See—*
Fukushima, Osamu; Kogame, Kunio; and Sato, Masami, 3,869,310.

Kureka Kagaku Kogyo K.K.: *See—*
Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, 3,869,534.

Kurelek, John; and Locker, Victor E., to Koehring Company. Method of harvesting and accumulating trees. 3,868,982, Cl. 144-309.0AC.

Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Sealing device for use in rotary piston engine. 3,869,229, Cl. 418-142.000.

Kurosaki, Shiro: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; Kumagai, Yasuhiko; and Kurosaki, Shiro, 3,869,194.

Kurz, German: *See—*
Von Linde, Robert; Von Linde, Joachim; and Kurz, German, 3,869,244.

Kushida, Toshimoto; and Logothetis, Eleftherios M., to Ford Motor Company. Circuit for converting a temperature dependent input signal to a temperature independent output signal. 3,868,846, Cl. 73-27.00R.

Labtronic, AG: *See—*
Egli, Bruno; and Manser, Niklaus, 3,869,214.

Laesser, Rodolphe: *See—*
Hermet, Pierre; and Laesser, Rodolphe, 3,869,207.

L'Air Liquid, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Galey, Jean G.; and Bentz, Gerard, 3,868,987.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude: *See—*
Roussel, Jacques; and Perrin, Georges, 3,869,090.

Laktionov, Vladimir Sergeevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.

La Marre, David A.; Smith, Donald A.; and Stickney, Herbert F., to American Optical Corporation. Welding helmet. 3,868,726, Cl. 2-8.000.

Lambert, Everette M.; and Ball, Richard L., to Drake, Crandell & Batchelder. Water tight seaming of flexible thermoplastic sheet material. 3,869,327, Cl. 156-256.000.

Lambert, Ronald D.; and Bradford, Jack R., to Herbert S. Fall. Two-way travel front panel. 3,869,184, Cl. 312-330.000.

Lambiris, Theodore, to General Motors Corporation. Gearshift indicator arrangement. 3,868,923, Cl. 116-124.00R.

Landers, Don B., to Oil States Rubber Company. Clustered and protected pressure lines for setting sleeve packers. 3,868,826, Cl. 61-46.500.

Lang, Gerard; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Novel diazamerocyanines and their use for dyeing keratinous fibers. 3,869,454, Cl. 260-244.00R.

Langlois, Darwin James, to du Pont de Nemours, E. I., and Company. Process for gold precipitation. 3,869,280, Cl. 75-.50A.

Lanier, Carroll W.; and Kao, James T. F., to Ethyl Corporation. Phosphonitrile polymer. 3,869,294, Cl. 106-15.0FP.

Lanthiez, Jacques: *See—*
Dosdat, Jean; Lanthiez, Jacques; and Levaire, Claude, 3,868,769.

La Roche, Louis A., to Ford Motor Company. Deck lid latch and lock assembly. 3,868,836, Cl. 70-240.000.

Larson, Robert C., to GTE Sylvania Incorporated. Heater for vacuum tube cathode in which the wire of the heater legs has been etched to reduce its diameter. 3,869,692, Cl. 338-296.000.

Lasky, Mervyn C. Removable dental bridge and method for making same. 3,868,776, Cl. 32-5.000.

Lauckhardt, Gerhard: *See—*
Fichtner, Rudi; and Lauckhardt, Gerhard, 3,868,737.

Lavery, Lawrence Phillip: *See—*
Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, 3,869,569.

Lawrence, Glen S., to United Aircraft Corporation. Filament for electron guns. 3,869,636, Cl. 313-341.000.

Lawrence Peska Associates, Inc.: *See—*
Danylewich, David S., 3,869,200.

Lawson, Joseph M. Pump control means. 3,868,820, Cl. 60-382.000.

Lax, Benjamin; and Aggarwal, Roshan L., to Massachusetts Institute of Technology. High-power tunable far-infrared and submillimeter source. 3,869,618, Cl. 307-88.300.

Lea-Ronal, Inc.: *See—*
Nobel, Fred I.; and Ostrow, Barnet D., 3,869,358.

Leahy, Richard M., to Beatrice Foods Co. Truck for loading oven compartments. 3,869,052, Cl. 214-38.00B.

Lear, Joseph D., to Posting Equipment Corporation. Posting trays. 3,869,045, Cl. 211-11.000.

Le Floch, Yann: *See—*
Nguyen-Tat, Thang; Pain, Roger Andre; Le Floch, Yann; and Herluison, Jean-Claude, 3,869,570.

Leggett, Norman Derek: *See—*
Backhouse, Geoffrey Howard; and Leggett, Norman Derek, 3,869,702.

Lehmann, Ernest H., to Xerox Corporation. Color electrophotographic printing machine. 3,869,203, Cl. 355-4.000.

Leicht, Alfred: *See—*
Buttel, Helmut; Isert, Ingo Rudiger; Leicht, Alfred; and Schach, Albert, 3,869,685.

Leimbach, Richard C.: *See—*
Eyerdam, Homer F.; and Leimbach, Richard C., 3,869,072.

Leining, Lyndon R., to Geo. A. Hormel & Co. Dispensing apparatus. 3,868,979, Cl. 141-159.000.

LeMahieu, Ronald Andrew: *See—*
Guthrie, Robert William; Kierstead, Richard Wightman; and LeMahieu, Ronald Andrew, 3,869,467.

Lenhard, Myron J., to Xerox Corporation. Copy apparatus with means to effect visible ray imaging and infrared ray transfixing. 3,869,612, Cl. 250-319.000.

Lentz, Carl A., to General Motors Corporation. Transmission control system. 3,868,866, Cl. 74-752.00C.

Lesher, George Y., to Sterling Drug Inc. N,N'-Heptamethylenebis(4-trifluoromethoxybenzamide)-β-cyclodextrin inclusion complex. 3,869,443, Cl. 260-209.00R.

Lesher, George Y.; and Gruett, Monte D., to Sterling Drug Inc. Preparation of 1-alkyl-1,4-dihydro-7-substituted-4-oxo-1,8-naphthyridine-3-carboxylic acids via the 3-hydroxymethyl analogs. 3,869,464, Cl. 260-295.50B.

Levaire, Claude: *See—*
Dosdat, Jean; Lanthiez, Jacques; and Levaire, Claude, 3,868,769.

Levander, Bernhard Erik Oswald: *See—*
Ekroos, Arne Olavi; Merikoski, Matti Kaarlo; and Levander, Bernhard Erik Oswald, 3,868,840.

Levey, John S.; Miller, Sandra R.; and Levey, Robert F., to Days-Ease Home Products Corporation. Suspended dissoluble disinfectant container. 3,869,069, Cl. 222-180.000.

Levey, Robert F.: *See—*
Levey, John S.; Miller, Sandra R.; and Levey, Robert F., 3,869,069.

Levine, Alfred A.: *See—*
Richter, Sidney B.; and Levine, Alfred A., 3,869,471.

Lewis, Almor. Cooking apparatus. 3,868,942, Cl. 126-25.00R.

Leybold-Heraeus Verwaltung GmbH: *See—*
Ruus, Waldemar; and Stephan, Herbert, 3,869,232.

Leyer, Helmut: *See—*
Hoppe, Peter; Leyer, Helmut; and Muller, Johann, 3,869,337.

Lhonore, Pierre; Cohen, Guy; and Jacquinot, Bernard, to Societe Chimique de la Grande paroisse, Azote et produits Chimiques. Apparatus for producing nitroparaffins. 3,869,253, Cl. 23-260.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Minner, Willy, 3,869,623.

Liebman, Bernard; and Rucinski, David W., to General Motors Corporation. Automatic choke. 3,868,935, Cl. 123-119.00F.

Light, Kenneth K.; and Anglim, James Brian, to International Flavors & Fragrances Inc. Process for the production of hexamethylbenzene. 3,869,524, Cl. 260-671.00M.

Lindsay, David Gordon; and Shall, Sydney, to National Research Development Corporation. Mono-, di, and N_{A1}, N^{B1}, N^{B29}-tri-acylated insulin. 3,869,437, Cl. 260-112.700.

Lindsey, David M., to General Motors Corporation. Composite sliding member. 3,869,259, Cl. 29-182.800.

Linfoot, Bryan Crosby: *See—*
Puttock, Michael Charles; and Linfoot, Bryan Crosby, 3,869,626.

Linhardt, Hans D.; Carter, Thomas A.; and Kirk, James A., to Airco, Inc. Air cycle food freezing system and method. 3,868,827, Cl. 62-63.000.

Link, William T.; and McClatchie, Edward A., to Akron Scientific Labs. Infrared gas analyzers. 3,869,613, Cl. 250-343.000.

Lippe, Joan M.; Goldfarb, Irving; and Jablon, Harry. Belt or collar with runner track. 3,868,786, Cl. 46-51.000.

LKG-produkter AB: *See—*
Sunden, Bengt Fritiof, 3,869,365.

Locke, Frank K.: *See—*
Piper, Robert J.; and Locke, Frank K., 3,869,038.

Locker, Victor E.: *See—*
Kurelek, John; and Locker, Victor E., 3,868,982.

Loev, Bernard: *See—*
Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,869,475.

Loew, Theodore, to Standard Products Co., The. Auto trim. 3,869,332, Cl. 161-31.000.

Logothetis, Eleftherios M.: *See—*
Kushida, Toshimoto; and Logothetis, Eleftherios M., 3,868,846.

Logvinenko, Dmitry Danilovich: *See—*
Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich, 3,869,251.

Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, to Princeton Electro Dynamics, Inc. Solid state, controllable electric switch. 3,869,651, Cl. 317-155.500.

Long, Kenneth E.; and Taylor, David W., to Nico Magnetics Inc. Method of making a thin, flexible magnetic memory layer. 3,869,356, Cl. 204-38.00R.

Longley, Kermit D.; and Sprowl, Donald, to Witco Chemical Corporation. Process of producing adipic acid. 3,869,508, Cl. 260-531.00R.

Longman, Millard Dumas, Jr., to Coulter Electronics, Inc. Method for designing an integrating circuit with a finite memory and the resultant apparatus. 3,869,084, Cl. 235-183.000.

Lonza, Ltd.: *See—*
Kugler, Tibor, 3,869,254.

Lorch Electronics Corporation: *See—*
Snyder, Richard V., 3,869,585.

Lorenz, Gerhard, to Sartorius-Membranfilter GmbH. Particle-size spectrometers. 3,869,208, Cl. 356-102.000.

Losel, Georg; and Eickenberg, Leonhard, to Kraftwerk Union Aktiengesellschaft; and Borsig GmbH. Combustion chamber. 3,868,927, Cl. 122-240.00R.

Loshbough, Richard C.: *See—*
Williams, Roger B., Jr.; Loshbough, Richard C.; and Pryor, Edward G., 3,869,005.

Louis, Meelis Nicolaus: *See—*
Van den Boogaart, Krijn; and Louis, Meelis Nicolaus, 3,869,486.

Loveland, Malcolm W., to Atlas Pacific Engineering Company. Machine for seed celling previously cored apples. 3,869,041, Cl. 198-259.000.

Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Godtfredsen, Wagn Ole, 3,869,449.

Lowery, Robert Howard: *See—*
Kelly, George Bernard, Jr.; and Lowery, Robert Howard, 3,869,296.

Lucas Aerospace Limited: *See—*
Collins, Keith Douglas, 3,869,645.

Ludin, Ludwig, to Camille Bauer Messinstrumente AG. Data storage and retrieval system. 3,869,082, Cl. 235-61.11H.

Lummus Company, The: *See—*
Sze, Morgan C.; and Wang, Ruey H., 3,869,518.

Lund, Jorgen: *See—*
Kring, Peder Lund; and Lund, Jorgen, 3,869,539.

Lund, Lloyd J., to Cutter Laboratories, Inc. Adjuvant compositions and medicinal mixtures comprising them. 3,869,546, Cl. 424-88.000.

Lutz, Albert William; and Walworth, Bryant Leonidas, to American Cyanamid Company. 2,3,5-Substituted-6-trifluoromethyl-1,3-diazin-4-ones. 3,869,457, Cl. 260-260.000.

Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, to Shell Oil Company. Buffer-regulated treating fluid positioning process. 3,868,996, Cl. 166-250.000.

Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, to Shell Oil Company. Self-acidifying treating fluid positioning process. 3,868,998, Cl. 166-278.000.

Lynam, John Edward, to Automatic Braiding Company (Nottingham) Limited. Composite elastic bands and garments incorporating such bands. 3,868,729, Cl. 2-237.000.

Lynch, Don Murl: *See—*
Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, 3,869,274.

Lysle, Gordon. Photoplastic film microfiche including a protective cover. 3,869,201, Cl. 353-120.000.

Machanian, William V.: *See—*
Wheelwright, Robert W.; and Machanian, William V., 3,869,032.

Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, to Ebara Manufacturing Co., Ltd.; and Japan Atomic Energy Research Institute. Process for removing noxious gas pollutants from effluent gases by irradiation. 3,869,362, Cl. 204-157.10R.

Mackey, E. Scudder; and Neschleba, Albert J., to GAF Corporation. Method for making antihalation layer. 3,869,402, Cl. 252-300.000.

Mackie, John K. P.; and McMeekin, Samuel, to James Mackie & Sons Limited. Plastic films. 3,869,240, Cl. 425-374.000.

MacRitchie, Norman: *See—*
Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.

MacWilliam, Joseph Anthony: *See—*
Hughes, John Thomas; and MacWilliam, Joseph Anthony, 3,869,334.

Maddox, Edward L.; and Pease, Robert A., to Teledyne, Inc. Audio dosimeter. 3,868,857, Cl. 73-558.000.

Mader, Helmut; Otto, Rigobert; Marx, Paul; and Puschel, Walter, to Agfa-Gevaert Aktiengesellschaft. Silver halide light-sensitive color photographic material containing color coupler masking compound and development inhibitor releasing compound. 3,869,291, Cl. 96-100.000.

Madison-Kipp Corporation: *See—*
Thomson, Ronald E.; and Kast, Philip J., 3,869,023.

Magnavox Company: *See—*
Close, Ernest Frederick, 3,869,673.

Magne, Frank C.: *See—*
Mod, Robert R.; Magne, Frank C.; Skau, Evald L.; and Sumrell, Gene, 3,869,483.

Mahoney, Donald Edwin, to RCA Corporation. Multiple transistor microwave amplifier. 3,869,678, Cl. 330-53.000.

Maier, Alfred E.; and Rexroad, James O., to Westinghouse Electric Corporation. Circuit breaker with pre-loaded terminal connectors. 3,869,192, Cl. 339-147.000.

Maillot, Jean Paul, to International Standard Electric Corporation. Metal oxide dielectric layers for capacitors. 3,869,652, Cl. 317-230.000.

Maio, Kenji, to Hitachi, Ltd. Discharge luminescence element array having a gas flow path. 3,869,630, Cl. 313-188.000.

Malmon, Arthur G. Methods and apparatus for determining the number of objects in an assemblage. 3,869,083, Cl. 235-92.0PC.

Malygin, Petr Vasilievich; Kochetkov, Valentin Mikhailovich; and Tolkachev, Alexei Efimovich. Electropneumatic valve. 3,868,966, Cl. 137-596.160.

Manabe, Yukihiro: *See—*
Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.

Mann, Leonard J.; and Kemper, John A., to General Motors Corporation. Insulation divider for refrigerator cabinet. 3,868,829, Cl. 62-285.000.

Manser, Niklaus: *See—*
Egli, Bruno; and Manser, Niklaus, 3,869,214.

Marathon Oil Company: *See—*
Pogers, Richard J., 3,868,997.

Marchetti, Enzo, to Instituto Farmacologico Serono S.p.A. Pyrrolidides and morpholides of 4,5-diphenyl-oxazole-2-alkanoic acids. 3,869,455, Cl. 260-247.50E.

Marion, Charles P.; Schlinger, Warren G.; Brent, Albert; and Muenger, James R., to Texaco Inc. Gas turbine process utilizing purified fuel gas. 3,868,817, Cl. 60-39.020.

Mark, Carol A.: *See—*
Mark, Victor; and Mark, Carol A., 3,869,491.

Mark, Victor; and Mark, Carol A., to Hooker Chemicals & Plastics Corporation. Halosulfonyl sulfooxonium compounds. 3,869,491, Cl. 260-457.000.

Markwort, Helmut: *See—*
Eisenlohr, Karl-Heinz; Markwort, Helmut; and Scholz, Berthold, 3,869,377.

Martin, Clifford E.: *See—*
Trost, Edward; and Martin, Clifford E., 3,869,698.

Maruoka, Yasuro: *See—*
Sawada, Yuji; Takemoto, Katsumi; and Maruoka, Yasuro, 3,869,028.

Marx, Joachim. Producing protective coatings on metal. 3,869,317, Cl. 148-6.15R.

Marx, Paul: *See—*
Mader, Helmut; Otto, Rigobert; Marx, Paul; and Puschel, Walter, 3,869,291.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,869,306, Cl. 117-72.000.

Masaki, Noriyasu, to Soryu Sewing Machine Mfg. Co., Ltd., The. Sewing machine clutch. 3,869,030, Cl. 192-67.00R.

Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, to Xerox Corporation. Facsimile transceiving apparatus. 3,869,569, Cl. 178-7.600.

Massachusetts Institute of Technology: *See—*
Lax, Benjamin; and Aggarwal, Roshan L., 3,869,618.
Wilson, Gerald L., 3,869,621.

Massey-Ferguson Inc.: *See—*
Doll, Robert M.; Jessup, Joseph L.; and Stone, Lawrence J., 3,868,896.
Mueller, Otto, Jr., 3,869,001.

Mast, John G.: *See—*
Bierman, Howard R.; and Mast, John G., 3,868,973.

Masuzawa, Isao; Onishi, Kazutoshi; and Awano, Tsuneo, to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.). On-off control device for DC electric motor. 3,869,653, Cl. 318-364.000.
Mathais, Henri. *See*—
Weiss, Francis. Schirmann, Jean-Pierre; and Mathais, Henri. 3,869,541.
Matheson, Donald L. Power gate and lift means. 3,869,168, Cl. 296-56.000.
Matheson, Wilfrid G., *See*—
Anderson, Warren A., Passmore, Edmund M.; and Matheson, Wilfrid G., 3,869,631.
Mathias, Joseph S., to Sperry Rand Corporation. Method for making a magnetic wire of iron and nickel on a copper base. 3,869,355, Cl. 204-32.00R.
Mathis, Thomas C.; and Morgan, Albert W., to Monsanto Company. Smoke-retardant halogen-containing polymer systems. 3,869,420, Cl. 260-30.60R.
Matsukawa, Hirohara; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Process for preparing microscopic capsules. 3,869,406, Cl. 252-316.000.
Matsuoka, James T., to Intercole Automation, Inc. Apparatus for mixing rubber, elastomer, plastic and the like. 3,869,111, Cl. 259-192.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Harazono, Sinichi; and Morikawa, Toshinori, 3,869,710.
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,869,717.
Sezaki, Nobuhiko; and Ukena, Kohji, 3,869,602.
Matsushita Electric Works, Ltd.: *See*—
Shoji, Magozo, and Kitamura, Motoharu, 3,869,657.
Matta, Galal N.: *See*—
Hammond, Dean C., Jr.; and Matta, Galal N., 3,869,246.
Matter, Robert C., to General Motors Corporation. Alloy for through-the-partition intercell connectors formed by an extrusion-fusion technique. 3,869,316, Cl. 136-134.000.
Matthews, Larry S.: *See*—
Kaufer, Herbert; Matthews, Larry S.; Sonstegard, David A.; and Murray, Ian P., 3,868,730.
Matthews, Parker J.: *See*—
Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.
Matzke, William A. Textured film finished panels and method therefor. 3,869,326, Cl. 156-209.000.
Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See*—
Decker, Gernot; Herold, Hans; and Rohr, Horst, 3,869,301.
Mayerhoffer, Herbert; Schneider, Wilhelm; Nuring, Hardo; and Exner, Wolfgang, to Oesterreichische Hiag-Werke Aktiengesellschaft. Fuel and additive for the production thereof. 3,869,262, Cl. 44-56.000.
Mazingo, Horace R.: *See*—
Paschal, Harold L., Jr.; and Brown, Graham T., 3,869,581.
Mazzoleni, Giorgio: *See*—
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Pezzoli, Silvestro, 3,869,387.
McBurnett, James R.: *See*—
Ratliff, Frank W.; and McBurnett, James R., 3,868,821.
McCain, David L.: *See*—
Tarter, James H., Read, Ronald G.; Colussi, Valentino; and McCain, David L., 3,868,964.
McClatchie, Edward A.: *See*—
Link, William T.; and McClatchie, Edward A., 3,869,613.
McConnell, Kennedy: *See*—
Coleman, Bestor P.; and McConnell, Kennedy, 3,869,031.
McCord Corporation: *See*—
Silverwood, Hartley A., 3,869,531.
McCulloch Corporation: *See*—
Gasner, William Lavier, 3,868,863.
McCurdy, Bob C. Underground electrical connector. 3,869,189, Cl. 339-96.000.
McCurdy, Wells: *See*—
Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., 3,868,921.
McDaniel, Bobby L., to Carter, Hugh P., Jr.; and Thompson, Woodford R., Jr., part interest to each. Shooting gallery with target ball supported on a column of air. 3,869,123, Cl. 273-105.200.
McDonnell Douglas Corporation: *See*—
Tucker, James M., 3,868,883.
McGill Manufacturing Company, Inc.: *See*—
Barber, Richard H., 3,869,181.
McGreevy, Robert E.: *See*—
Snead, William K.; and McGreevy, Robert E., 3,869,542.
McGuirk, Francis A., Jr., to Wagner Electric Corporation. Power control circuit for automotive vehicles and the like. 3,869,620, Cl. 307-141.000.
McMaster, Samuel B., to Do-It Corporation. A web of double-faced pressure-sensitive stickers. 3,869,333, Cl. 161-39.000.
McMeekin, Samuel: *See*—
Mackie, John K. P.; and McMeekin, Samuel, 3,869,240.
MDT Chemical Corp.: *See*—
Schmoegner, John C.; and Burger, Norman P. (said John C. Schmoegner, a part interest assors. to), 3,869,070.
Meadows, Frank William: *See*—
Bradshaw, Arthur; and Meadows, Frank William, 3,868,902.
Mears, Adrian Leonard: *See*—
Kirton, John; Mears, Adrian Leonard; Sarginson, Richard William; and Werring, Norman John, 3,869,646.
Mebus, Charles A.; and Twiehaus, Marvin J., to Board of Regents of the University of Nebraska. Calf diarrhea virus vaccine and processes. 3,869,547, Cl. 424-89.000.
Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, to Yissum Research Development Company; and SmithKline Corporation. 2,6-Methano-benzoxacin compounds. 3,869,475, Cl. 260-345.200.
Mecklenberg, Wolfgang: *See*—
Hoffmann, Walter; Pfeil, Hans-Dieter; and Mecklenberg, Wolfgang, 3,869,687.
Medina, Glen J.: *See*—
Field, Jesse L., Jr.; and Medina, Glen J., 3,869,107.
Medkeff, Arthur T.: *See*—
Nye, Norman H.; and Medkeff, Arthur T., 3,868,899.
Medovar, Boris Izrailevich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Mendel, Eric: *See*—
Basi, Jagtar Singh; and Mendel, Eric, 3,869,324.
Menegos, Andrew J.: *See*—
Safer, Michael B.; and Menegos, Andrew J., 3,869,664.
Menju, Shinichi: *See*—
Kenmochi, Hiroshi; Menju, Shinichi; and Takahashi, Kunio, 3,869,665.
Menne, Joseph D.; and Sigulas, George N., to Caterpillar Tractor Company. Cutter head and method of forming same. 3,868,885, Cl. 90-11.00A.
Merchant, John; and Rotier, Donald J., to Honeywell, Inc. Ultrasonic control apparatus for an oculometer. 3,869,694, Cl. 340-16.00R.
Merck & Co., Inc.: *See*—
Jones, Howard, 3,869,507.
Shen, Tsung-Ying; and Jones, Howard, 3,869,506.
Merikoski, Matti Kaarlo: *See*—
Ekroos, Arne Olavi; Merikoski, Matti Kaarlo; and Levander, Bernhard Erik Oswald, 3,868,840.
Merit Abrasive Products, Inc.: *See*—
Burns, Russell W., 3,868,791.
Meroni, Giuliandrea, to Cicala Establishment. Push-button operated switch, more particularly for doors and the like. 3,869,161, Cl. 292-166.000.
Merrell, Richard L., to General Motors Corporation. Inflator for occupant restraint cushion. 3,869,143, Cl. 280-150.0AB.
Merritt Division of Murphy Pacific Marine Salvage: *See*—
Thurman, Robert K., 3,868,824.
Meschke, Robert Walter; and Watson, William Harrison, to du Pont de Nemours, E. I., and Company. Treatment of linear polyester with organic monoepoxide. 3,869,427, Cl. 260-47.0EP.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Schnabele, Werner; Knoche, Georg; and Zeyher, Fritz, 3,869,101.
Metallgesellschaft Aktiengesellschaft: *See*—
Eisenlohr, Karl-Heinz; Markwort, Helmut; and Scholz, Berthold, 3,869,377.
Scheiber, Werner, 3,869,300.
Metcalf, Eric, to Solartron Electronic Group Limited, The. Computing apparatus for tracking moving objects. 3,869,601, Cl. 235-150.200.
Metzger, Carl: *See*—
Jager, Gerhard; Metzger, Carl; Eue, Ludwig; and Schmidt, Robert, 3,869,490.
Meyer, Gundolf, to BBC Brown Boveri & Company Limited. Method of producing a composite superconductor. 3,868,768, Cl. 29-599.000.
Michel, Friedbert: *See*—
Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
Michel, Jean-Claude, to Societe Industrielle de Transports Automobiles (Societe Anonyme). Refuse collecting apparatus. 3,869,050, Cl. 214-16.00R.
Michigan Chemical Corporation: *See*—
Anderson, Arnold L., 3,869,424.
Anderson, Arnold L., 3,869,425.
Anderson, Arnold L., 3,869,426.
Mick, Stanley H., to General Motors Corporation. Exhaust gas recirculation. 3,868,934, Cl. 123-119.00A.
Mick, Stanley H., to General Motors Corporation. Cold transient enrichment. 3,869,528, Cl. 261-39.00A.
Micropore Insulation Limited: *See*—
Hughes, John Thomas; and MacWilliam, Joseph Anthony, 3,869,334.
Milgo Electronic Corporation: *See*—
Ragsdale, Robert Gordon, 3,869,580.
Milkowski, Wolfgang; Zeugner, Horst; Von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, to Kali-Chemie Aktiengesellschaft. N_1-(benzoyl)alkyl-N_2(phenoxy-2-hydroxypropyl and N_1-(benzoyl)alkyl-N_2-(phenylthio-2-hydroxylpropyl)piperazines. 3,869,459, Cl. 260-268.00R.
Miller, Anthony Owen: *See*—
Smee, Graham John; and Miller, Anthony Owen, 3,868,771.
Miller, Christian F., to V.C.A. Corporation. Safety closure device. 3,869,057, Cl. 215-216.000.

Miller, Donald N., to Eastman Kodak Company. Composition comprising a mixture of thermoplastic polymers for internal cleaning of extruders. 3,869,525, Cl. 260-873.000.
Miller, Edward F.; and Hellmuth, Walter W., to Texaco Inc. Ashless lubricating oil dispersant. 3,869,514, Cl. 260-584.00R.
Miller, Michael Clendenin, to Volkswagenwerk Aktiengesellschaft. Vehicle with reinforced impact-absorbing end portion. 3,869,165, Cl. 293-63.000.
Miller, Sandra R.: *See*—
Levey, John S.; Miller, Sandra R.; and Levey, Robert F., 3,869,069.
Millican, Amond B.: *See*—
Day, Leon E.; and Millican, Amond B., 3,869,178.
Milsted, Carl S.: *See*—
Paschal, Harold L., Jr.; and Brown, Graham T., 3,869,581.
Minagawa, Motonobu; and Nomura, Kuniaki, to Argus Chemical Corporation. Ortho-substituted hydroxyphenyl alkylene-carboxy-alkylene-1,3,5-triazines and antioxidant and synthetic resin compositions. 3,869,423, Cl. 260-45.8NT.
Minagawa, Teruo: *See*—
Ueda, Seiichi; and Minagawa, Teruo, 3,869,568.
Minami, Giichi: *See*—
Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.
Minner, Willy, to Licentia Patent-Verwaltungs-G.m.b.H. Electronic sequence switch with holding circuit. 3,869,623, Cl. 307-241.000.
Minnesota Mining and Manufacturing Company: *See*—
Bazille, James H., Jr., 3,869,190.
Miori, Nilo M., to Camillus Cutlery Company. Folding blade knife with blade lock. 3,868,774, Cl. 30-161.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Sawada, Yuji; Takemoto, Katsumi; and Maruoka, Yasuro, 3,869,028.
Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, to Tanabe Seiyaku Co., Ltd. 3,4-Dihydroxybenzylalcohol amino derivatives. 3,869,474, Cl. 260-343.700.
Mixan, Craig E., to Dow Chemical Company, The. 4-Cyano-3,5-isothiazolediylbis(thiomethylene)dithiocyanate. 3,869,466, Cl. 260-302.00S.
Miyano, Shizuo: *See*—
Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, 3,869,285.
Miyano, Tetsuji: *See*—
Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, 3,869,347.
Miyata, Seiji: *See*—
Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
Mize, Erbie G.: *See*—
Brock, James Donald, Mize, Erbie G.; and Rylander, Henry G., 3,869,110.
Mizutani, Yasukazu: *See*—
Ubukata, Susumu; and Mizutani, Yasukazu, 3,869,588.
Mobil Oil Corporation: *See*—
Campbell, Craig C., 3,869,414.
Mocotte, Jacques; and Druet, Monique, to Progil. Certain carbonates useful for controlling mollusks and aquatic organisms. 3,869,551, Cl. 424-301.000.
Mod, Robert R.; Magne, Frank C.; Skau, Evald L.; and Sumrell, Gene, to United States of America, Agriculture. Quaternary ammonium salts of n-substituted palmitamides. 3,869,483, Cl. 260-404.500.
Mogensen, Palne: *See*—
Smars, Erik; Mogensen, Palne; and Kaij, Mats J., 3,869,616.
Mohawk Data Sciences Corporation: *See*—
Trost, Edward; and Martin, Clifford E., 3,869,698.
Momiyama, Hiroaki: *See*—
Yamagishi, Jin; and Momiyama, Hiroaki, 3,869,709.
Monark-Crescent AB: *See*—
Hagman, Gustav Rune, 3,869,245.
Monsanto Company: *See*—
Goldberg, Jack, 3,869,641.
Mathis, Thomas C.; and Morgan, Albert W., 3,869,420.
Trivette, Chester D., Jr., 3,869,435.
Montalbano, Anthony P., to Environmental Pollution Research Corporation. Portable compacting apparatus. 3,868,903, Cl. 100-45.000.
Montalvo, Joseph G., Jr., to United States of America, Health, Education and Welfare. Ammonium ion specific electrode and method therewith. 3,869,354, Cl. 204-1.00T.
Moore, Alexander Joseph, to British Insulated Callender's Cables Limited. Apparatus for extruding a covering on to a cable core. 3,869,235, Cl. 425-113.000.
Mordvinov, Vladimir Alexandrovich: *See*—
Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
Moreau, Claude, to Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne. Machine for continuous treatment by means of liquids, more particularly for pasteurisation of substances in sachets. 3,868,897, Cl. 99-483.000.
Moreau, Rene V., to Societe Anonyme: Poclain. Bucket having a mobile back. 3,869,054, Cl. 214-146.00R.
Morgan, Albert W.: *See*—
Mathis, Thomas C.; and Morgan, Albert W., 3,869,420.
Morgan, Paul Winthrop; and Pletcher, Terry Carl, to du Pont de Nemours, E. I., and Company. Anisotropic dopes of polyamides from fumaric and/or mesaconic acid. 3,869,419, Cl. 260-30.80R.
Moriai, Takayoshi: *See*—
Suzuki, Morio; Tachibana, Masayoshi; and Moriai, Takayoshi, 3,869,298.
Morikawa, Toshinori: *See*—
Harazono, Sinichi; and Morikawa, Toshinori, 3,869,710.
Morrison, Ian Y.; Spark, Loudon C.; and Duyf, Jelle J. Meter mounting box. 3,869,188, Cl. 339-95.00R.
Morrissey, Jack D.: *See*—
Shaffer, Paul D.; Imler, Vaughn R.; and Morrissey, Jack D., 3,869,271.
Moseman, Paul W., Jr., to Bendix Corporation, The. Method of analyzing angular motion of a pointer of an altimeter. 3,868,843, Cl. 73-1.00R.
Mosimann, Hans; Heim, Peter; and Borer, Charles, to Schweizerische Isola-Werke. Enamel composition for the manufacture of solderable enameled wires. 3,869,428, Cl. 260-77.5AQ.
Moss, Keith Graham; and Pumphrey, Nicholas William James, to Imperial Chemical Industries Limited. Electrodes and electrochemical processes. 3,869,312, Cl. 117-215.000.
Motoren-und Turbinen-Union Munchen GmbH: *See*—
Wildner, Walter, 3,869,221.
Motorola, Inc.: *See*—
Bara, Edwin S., 3,869,724.
Dattilo, Donald J., 3,869,725.
Davis, Herbert T.; and Reid, James B., 3,868,770.
Hunter, William L.; and Spanjer, Keith Gordon, 3,869,704.
Ocken, Alfred, Jr., 3,869,563.
Motter, Manfred: *See*—
Wegmuller, Hans; and Motter, Manfred, 3,869,250.
Moulinage et Ritorderie de Chavanoz: *See*—
Chatin, Remy, 3,868,812.
Mowatt-Larssen, Erling: *See*—
Becker, Peter W.; Price, Albert E.; Mowatt-Larssen, Erling; and Becker, Carl E., 3,868,913.
Mueller, Otto, Jr., to Massey-Ferguson Inc. Fulcrum bushing on the resilient bar draft sensing. 3,869,001, Cl. 172-7.000.
Muellerpoths, Reiner, to BBC Brown Boveri & Company Limited. Apparatus for monitoring the filling factor of containers for compressed gas. 3,868,963, Cl. 137-340.000.
Muenger, James R.: *See*—
Marion, Charles P.; Schlinger, Warren G.; Brent, Albert; and Muenger, James R., 3,868,817.
Mukaiyama, Teruaki; Higo, Moriaki; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Process for preparing spiro compounds. 3,869,480, Cl. 260-347.800.
Muller, George H., to Ford Motor Company. Resilient bumper assembly. 3,869,167, Cl. 293-71.00R.
Muller, Johann: *See*—
Hoppe, Peter; Leyer, Helmut; and Muller, Johann, 3,869,337.
Muller, Thomas P., to Caterpillar Tractor Company. Engine enclosure for hydraulic excavators. 3,869,018, Cl. 180-89.00R.
Mullier, Christian: *See*—
Sander, Pierre; and Mullier, Christian, 3,869,336.
Mullin, John P.: *See*—
Anderson, Andrew W.; and Mullin, John P., 3,869,330.
Munjat, Francis S.; and Kim, Samuel Ho, to E. F. Houghton and Company. Cationic thermosetting resin composition for improving wet strength of paper. 3,869,342, Cl. 162-164.000.
Munjat, Francis S.; and Kim, Samuel Ho, to E. F. Houghton and Company. Cationic thermosetting resin for improving wet strength of paper. 3,869,343, Cl. 162-164.000.
Munk, Miner N., to Varian Associates. Phosphor assembly for ultraviolet light absorption detector. 3,869,614, Cl. 250-365.000.
Murphy, Frank W., Jr.; Carlton, Lewis M.; and Teague, Troy L., to Frank W. Murphy Manufacturer, Inc. Tachometer instrument. 3,868,855, Cl. 73-530.000.
Murray, Ian P.: *See*—
Kaufer, Herbert; Matthews, Larry S.; Sonstegard, David A.; and Murray, Ian P., 3,868,730.
Myren, Rune L.: *See*—
Englund, Gosta R.; and Myren, Rune L., 3,869,598.
N L Industries, Inc.: *See*—
Foerster, George S., 3,869,281.
Nadeau, Georges. Apparatus for delimbing felled trees. 3,868,981, Cl. 144-2.00Z.
Nagai, Masaichi: *See*—
Ishihara, Joo; Kagohara, Hiromi; Nagai, Masaichi; and Ohuchi, Yasushi, 3,869,319.
Nagao, Taku: *See*—
Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, 3,869,474.
Nakajima, Hiromichi: *See*—
Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, 3,869,474.
Nakajima, Hitoshi: *See*—
Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
Nakao, Masaru: *See*—
Yamamoto, Hisao; and Nakao, Masaru, 3,869,472.
Nakata, Katsuhide. Ball joint. 3,869,217, Cl. 403-140.000.
Nakayama, Kaname: *See*—
Yamada, Shigeru; Hamano, Mamoru; and Nakayama, Kaname, 3,869,003.

National Equipment Corporation: *See—*
Roderick, Ronald R., 3,868,941.
National Forge Company: *See—*
Witkin, Donald E., 3,869,233.
National Research Development Corporation: *See—*
Lindsay, David Gordon; and Shall, Sydney, 3,869,437.
National Steel Corporation: *See—*
Smith, Edwin J.; and Reif, Robert B., 3,868,925.
Nederlandese Industrie voor Baggerwerktuigen Nivoba N.V.: *See—*
Holthuis, Johannes Jacobus, 3,868,751.
Nels, Jean-Paul: *See—*
Sandier, Gerard; and Nels, Jean-Paul, 3,869,607.
Nelson, Bud D.; and Brennan, William M., to United States of America, Navy. Retraction system for double pod air cushion landing gear system. 3,869,103, Cl. 244-100.00R.
Nelson, Paul E.: *See—*
Der Marderosian, Aaron C.; Nelson, Paul E.; and Stinnett, Donald F., 3,869,662.
Neschleba, Albert J.: *See—*
Mackey, E. Scudder; and Neschleba, Albert J., 3,869,402.
Nestler, Heinz: *See—*
Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, 3,869,340.
Neuner, Otto; and Dorlars, Alfons, to Bayer Aktiengesellschaft. 7-Triazolyl-3-aryl coumarin compounds. 3,869,469, Cl. 260-308.00A.
New, George William; and Hare, Alan Lawrence, to British Titan Limited. Heating device. 3,869,593, Cl. 219-121.00P.
Newall, Christopher Earle: *See—*
Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, 3,869,451.
Newcomb, Dean R., to Xerox Corporation. Hand tool. 3,868,983, Cl. 145-50.00R.
Newman, Douglas A.; and Brown, Albert E., to Sharkey, Melvin. Receptive copy sheets and process. 3,869,307, Cl. 117-122.0PA.
Neyer, James U., to Arens Controls, Inc. Push pull control for lawn mowers and the like. 3,868,865, Cl. 74-501.00R.
Nguyen-Tat, Thang; Pain, Roger Andre; Le Floch, Yann; and Herluison, Jean-Claude, to International Standard Electric Corporation. System for analysing telegraph characters. 3,869,570, Cl. 178-26.00R.
Nico Magnetics Inc.: *See—*
Long, Kenneth E.; and Taylor, David W., 3,869,356.
Niimi, Itaru: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,869,410.
Nikitin, Jury Stepanovich: *See—*
Bebris, Natalya Karlovna; Kiselev, Andrei Vladimirovich; Nikitin, Jury Stepanovich; and Yashin, Yakov Ivanovich, 3,869,409.
Niles, Earl Thomas; Seaman, Beverly A. H.; and Wilson, Edwin J., to Dow Chemical Company, The. Stabilization of aluminum hydride. 3,869,544, Cl. 423-645.000.
Nilsson, Jan, to Almanna Svenska Elektriska Aktiebolaget. Method of joining wire or rods of compound material with aluminum core and copper casing. 3,868,762, Cl. 29-470.100.
Nippon Electric Company, Limited: *See—*
Sato, Akio; and Sato, Shigehiko, 3,869,367.
Shimizu, Kyozo, 3,869,622.
Yano, Akira; Sato, Norio; and Iwakawa, Tunekiyo, 3,869,644.
Yoshimura, Shoichiro, 3,869,117.
Nishimura, Mitsuo: *See—*
Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.
Nissan Motor Company Limited: *See—*
Ishikawa, Yoshikazu, 3,868,929.
Ito, Naganori; and Aikawa, Hiroshi, 3,869,141.
Itoh, Takane, 3,868,818.
Kakizaki, Tadao, 3,868,743.
Kishimoto, Kyuji; Tojima, Toshiaki; and Ishii, Hideto, 3,868,928.
Nissen Corporation: *See—*
Nissen, George P., 3,869,120.
Nissen, George P., to Nissen Corporation. Protective end covers for the resilient suspension members of trampoline beds and the like. 3,869,120, Cl. 272-65.000.
NL Industries, Inc.: *See—*
Yankee, Herbert L.; and Correte, Richard H., 3,868,871.
Nobel, Fred I.; and Ostrow, Barnet D., to Lea-Ronal, Inc. Electrolytes for the electrolytic deposition of zinc. 3,869,358, Cl. 204-55.00Y.
Noda, Fumiyoshi: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,869,410.
Noddings, John: *See—*
Hunt, Norman; and Noddings, John, 3,868,869.
Noe, Gerald H.; and Woodfill, William L., to Brunswick Corporation. Shaft coupling apparatus particularly for marine inboard-outboard propulsion systems. 3,868,833, Cl. 64-27.0NM.
Noiles, Douglas G.; and Spasiano, Anthony D., to United States Surgical Corporation. Drop former for intravenous set. 3,868,965, Cl. 137-559.000.
Nolan, Gaillard R., to Instrumentation Laboratory, Inc. Sample cell assembly having a heat conductive chamber surrounded by an electrothermal heating layer. 3,869,215, Cl. 356-246.000.
Nolte, Karl-Heinz: *See—*
Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, 3,869,073.
Nomura, Kuniaki: *See—*
Minagawa, Motonobu; and Nomura, Kuniaki, 3,869,423.

Nordstrom, Erik Gustav Wendel. Apparatus for manufacturing perforated tubes. 3,868,876, Cl. 82-20.000.
Norsk Hydro A.S.: *See—*
Fonne, Gunnar Johan; and Jahnsen, Thor Helge, 3,869,309.
Norstar Ski Corporation Ltd.: *See—*
Caporicci, Domenico, 3,868,783.
Norton Company: *See—*
Corcoran, John J.; and Kalinowski, Paul W., 3,868,793.
Nottingham, Robert B.: *See—*
Gaussoin, Julius; Nottingham, Robert B.; and Reichard, Robert E., 3,869,617.
Noveroske, Robert L., to Dow Chemical Company, The. Compositions and method for altering plant growth with an alkylenebisdithiocarbamatic complex. 3,869,273, Cl. 71-77.000.
Noyes, Billy P.; and Willard, Howard L., to Formo, Alvin C. Bagging process. 3,868,807, Cl. 53-29.000.
Nupuf, Joseph S. Ophthalmometer device. 3,869,206, Cl. 356-2.000.
Nuring, Hardo: *See—*
Mayerhoffer, Herbert; Schneider, Wilhelm; Nuring, Hardo; and Exner, Wolfgang, 3,869,262.
Nye, Norman H.; and Medkeff, Arthur T. Balloon printing apparatus. 3,868,899, Cl. 101-35.000.
O'Brien, John Leslie; Finnimore, Bryan; and Hogg, Dallas John Arthur. Joints. 3,869,156, Cl. 285-374.000.
Oce-van der Grinten, N.V.: *See—*
Peters, Martinus T. J., 3,869,292.
Ocken, Alfred, Jr., to Motorola, Inc. Encapsulation housing for electronic circuit boards or the like and method of encapsulating. 3,869,563, Cl. 174-52.0PE.
O'Connor, Edward W.: *See—*
United States of America, National Aeronautics and Space Administration; Trusch, Raymond B.; and O'Connor, Edward W., 3,868,830.
Odier, Marc. Game with arcuate pieces. 3,869,125, Cl. 273-137.00D.
Oesterreichische Hiag-Werke Aktiengesellschaft: *See—*
Mayerhoffer, Herbert; Schneider, Wilhelm; Nuring, Hardo; and Exner, Wolfgang, 3,869,262.
Ogawa, Takashi; Kida, Kiyonori; and Sugiyama, Shunichi, to Fuji Denki Seizo Kabushiki Kaisha. Stator in small electric machine. 3,869,629, Cl. 310-216.000.
Ogilvie Flour Mills Company, Limited, The: *See—*
Hampton, Richard John; Shantz, John T.; Gallo, Thomas; and Unger, Peter, 3,869,558.
Oglesbee, Richard K., to Anchor Hocking Corporation. Carton lock. 3,869,079, Cl. 229-40.000.
Ohashi, Reiji. Driving mat for practicing golf shots. 3,869,128, Cl. 273-195.00A.
Ohira, Tsunehisa; and Takahashi, Tohru, to Victor Company of Japan Ltd. Dictator-transcriber indexing system. 3,869,720, Cl. 360-72.000.
Ohlson, Kurt Lennart. Shelf construction. 3,868,916, Cl. 108-103.000.
Ohuchi, Yasushi: *See—*
Ishihara, Joo; Kagohara, Hiromi; Nagai, Masaichi; and Ohuchi, Yasushi, 3,869,319.
Oil States Rubber Company: *See—*
Landers, Don B., 3,868,826.
Oilgear Company, The: *See—*
Bobier, Wilfred S., 3,868,889.
Okagaki, Hiroshi, to Hitachi, Ltd. Apparatus for emitting atomic flourescence spectral lines used for atomic absorption analysis. 3,869,643, Cl. 315-167.000.
Olashaw, William F., to General Electric Company. Insulative torque coupling assembly for electrical device terminals. 3,868,874, Cl. 81-121.00R.
Olde, Jarl Rune. Automatic water dispenser. 3,868,926, Cl. 119-75.000.
Oliver, Clifford C.: *See—*
Gates, John I., 3,868,789.
Oliver, James L., to Eaton Corporation. Self-adjusting brake mechanism. 3,869,025, Cl. 188-79.5GE.
Olsen, Ralph A., to Ford Motor Company. Pattern alignment means for use with lost foam molding process. 3,868,986, Cl. 164-7.000.
Olsson, David Lawrence; and Singerman, Sol, to American Cyanamid Company. Reel-label for small diameter sutures. 3,869,044, Cl. 206-63.300.
Olsson, Tore Bertil Reinhold, to Aktiebolaget Bofors. Picture generating unit of scanning type. 3,869,565, Cl. 178-6.800.
O'Neill, Robert W.: *See—*
United States of America, National Aeronautics and Space Administration; and O'Neill, Robert W., 3,869,624.
Onishi, Kazutoshi: *See—*
Masuzawa, Isao; Onishi, Kazutoshi; and Awano, Tsuneo, 3,869,653.
Ono, Hiroshi; and Yoshida, Mitsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Gasket structure. 3,869,375, Cl. 204-301.000.
Orlov, Vladimir Alexandrovich; Zaitseva, Vera Dmitrievna; Sinitsyn, Viktor Alexeevich; and Rostovtseva, Ekaterina Efimovna. Method of surface modification of polymer materials. 3,869,303, Cl. 117-47.00A.
Osbond, John Mervyn; and Wickens, James Charles, to Hoffmann-La Roche Inc. Chrysanthemic acid esters and their use as insecticides. 3,869,552, Cl. 424-306.000.
Osmundson, John: *See—*
United States of America, National Aeronautics and Space Administration; Osmundson, John; Rowe, H. Edward; and Santarpia, Dominick, 3,869,680.

Ostrow, Barnet D.: *See—*
Nobel, Fred I.; and Ostrow, Barnet D., 3,869,358.
Ota, Mitsuru: *See—*
Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, 3,869,534.
Otake, Yukio: *See—*
Takakura, Yoshio; Otake, Yukio; and Imai, Yukiyoshi, 3,868,879.
Otto, Rigobert: *See—*
Mader, Helmut; Otto, Rigobert; Marx, Paul; and Puschel, Walter, 3,869,291.
Ousterling, David L.: *See—*
Jones, Harold F.; Ousterling, David L.; and Anderson, Roland W., 3,869,313.
Ovitron Research Corporation: *See—*
Schwartz, Ralph E., 3,868,828.
Owens-Corning Fiberglas Corporation: *See—*
Marzocchi, Alfred, 3,869,306.
Owens-Illinois, Inc.: *See—*
Zitkus, Wayne J., 3,868,794.
Owens, James C.; and Blazey, Richard N., to Eastman Kodak Company. Light-deflecting system for effecting bragg diffraction over a wide bandwidth. 3,869,197, Cl. 350-161.000.
Owens, Robert C., Jr., to VAS Ltd. Single field video recording system and method. 3,869,713, Cl. 360-35.000.
Oxley, Louise V. Playground amusement device. 3,869,119, Cl. 272-38.000.
Oy Nobia AB: *See—*
Ekroos, Arne Olavi; Merikoski, Matti Kaarlo; and Levander, Bernhard Erik Oswald, 3,868,840.
Pagdin, Brian Colin; and Webb, Oswald, to GKN Transmissions Limited. Four-wheel-drive vehicles. 3,869,013, Cl. 180-44.00R.
Pain, Roger Andre: *See—*
Nguyen-Tat, Thang; Pain, Roger Andre; Le Floch, Yann; and Herluison, Jean-Claude, 3,869,570.
Palmer, Derek Reginald, to Beecham Group Limited. DL-2-(4-hydroxyphenyl)-glycine-N,O-diacetate and salts. 3,869,505, Cl. 260-479.00R.
Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Cycloaliphatic ester polyols. 3,869,502, Cl. 260-468.00J.
Paris, Carmen J.: *See—*
Stahl, Oliver B.; and Paris, Carmen J., 3,868,731.
Parish, Frank T., to Pressure Chemical Corporation. Machines and methods for the manufacture of containers and the product therefrom. 3,868,891, Cl. 93-8.00W.
Parke, Davis & Company: *See—*
Graetz, Ernest F. J., 3,868,948.
Parsons, Samuel J.: *See—*
Bowles, Andrew D.; and Parsons, Samuel J., 3,869,295.
Pascale, John V.: *See—*
Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,869,554.
Paschal, Harold L., Jr.; and Brown, Graham T., to Mazingo, Horace R.; Warlick, Alex, Jr.; and Milsted, Carl S., part interest to each. Telephone allotter circuit for equalizing circuit usage. 3,869,581, Cl. 179-18.00H.
Paschall, James W. Welding hood. 3,868,727, Cl. 2-8.000.
Passmore, Edmund M.: *See—*
Anderson, Warren A.; Passmore, Edmund M.; and Matheson, Wilfrid G., 3,869,631.
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich. Method of electroslag welding or hardfacing. 3,869,592, Cl. 219-73.000.
Patton, Richard S.: *See—*
Allen, John E.; Hanley, John F., Jr.; Armdur, Frank K.; Krikau, Frederick G.; and Patton, Richard S., 3,869,352.
Patz, Roman J.; Sell, Frank O.; and Halbeck, Werner B., to Cutter-Hammer, Inc. Miniature wrist watch switch. 3,869,586, Cl. 200-11.00G.
Patz, Ulrich F. M.; Sommerkamp, Peter; and Josephy, Julius. Heating arrangement with focused electron beams under vacuum. 3,869,675, Cl. 328-228.000.
Paul, James R.: *See—*
Anderson, Robert L., 3,868,775.
Pauwels, Edward M.: *See—*
Roberts, James K.; and Pauwels, Edward M., 3,868,890.
Pawlowski, Edward W.: *See—*
Federspiel, Joseph A.; and Pawlowski, Edward W., 3,869,014.
Payne, Calvin L., Jr.; and Gambello, Vincent J., to Tudor Games, Incorporated. Football game. 3,869,122, Cl. 273-94.00R.
Payne, Harry R., to Cavalier Corporation. Mechanical sold out for rotary slant shelf. 3,869,064, Cl. 221-19.000.
Peak, Ben H. Cutting device. 3,868,878, Cl. 83-356.300.
Pearson, Robert M.: *See—*
Gramlich, Donald L.; Jedele, Ormond J.; and Pearson, Robert M., 3,868,766.
Pease, Robert A.: *See—*
Maddox, Edward L.; and Pease, Robert A., 3,868,857.
Pechous, Leslie Joseph: *See—*
Davis, James L.; and Pechous, Leslie Joseph, 3,869,660.

Peel, Richard E.; and Saethre, Arild O., to Ford Motor Company. Webbing slot for seat belt retractor housing. 3,869,097, Cl. 242-107.000.
Pelabon, Andre E. Gas turbine railway car. 3,868,908, Cl. 105-1.00R.
Pelabon, Andre E. Railway train control line adaptor plug. 3,868,909, Cl. 105-1.00R.
Peltier, Henri; Chatourel, Pierre; and Bailly, Roger, to Regiè Nationale des Usines Renault. Transfer apparatus. 3,869,055, Cl. 214-151.000.
Peltier, Jean Paul, to Thomson - CSF. System for converting television signals into angle modulated carrier waveforms of reduced bandwidth and vice-versa. 3,869,706, Cl. 358-12.000.
Pennsylvania Engineering Corporation: *See—*
Sczerba, Stanley T., 3,869,051.
Penwalt Corporation: *See—*
Van den Boogaart, Krijn; and Louis, Meelis Nicolaus, 3,869,486.
Pera, John D.: *See—*
Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,869,513.
Perepelitsa, Igor Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Periard, John Neil, to Dow Chemical Company, The. Method of preparing a calcium carbonate-magnesium hydroxide pigment. 3,869,299, Cl. 106-306.000.
Perklev, Torsten: *See—*
Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,869,527.
Perrin, Georges: *See—*
Roussel, Jacques; and Perrin, Georges, 3,869,090.
Personal Products Company: *See—*
Steiger, Fred Harold; and Siragusa, Judith Ann, 3,868,955.
Pervukhin, Leonid Borisovich: *See—*
Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Pesaro, Mário: *See—*
Bozzato, Giuliano; and Pesaro, Mario, 3,869,493.
Pesendorfer, Alfred, to Brown Boveri Selzer Turbomaschinen AG. Flexible sealing device. 3,869,133, Cl. 277-27.000.
Peters, Charles W.; and Ebert, Larry K., to Trus Joist Corporation. I beam nesting and stacking method and apparatus. 3,869,036, Cl. 198-35.000.
Peters, Martinus T. J., to Oce-van der Grinten, N.V. Light-sensitive compositions and light-sensitive materials such as printing plates. 3,869,292, Cl. 96-115.00R.
Peterson, David A., to Iowa State University Research Foundation Inc. Panel jack connector. 3,868,800, Cl. 52-285.000.
Peterson, William R.; and Johnson, Walter N., to GAF Corporation. Carboxylated graft copolymer and emulsion containing same. 3,869,418, Cl. 260-29.70T.
Petree, Marcella C.: *See—*
Zendle, Bernard; and Petree, Marcella C., 3,869,648.
Petrek, John Paul, to United States of America, Atomic Energy Commission. Liquid metal operated heat exchanger. 3,868,994, Cl. 165-142.000.
Pezzoli, Silvestro: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Pezzoli, Silvestro, 3,869,387.
Pfeil, Hans-Dieter: *See—*
Hoffmann, Walter; Pfeil, Hans-Dieter; and Mecklenberg, Wolfgang, 3,869,687.
Pfizer Inc.: *See—*
Holland, Gerald Fagan, 3,869,553.
Philippaerts, Herman Adelbert; Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, to Agfa-Gevaert N.V. Photographic silver halide elements of the Lippmann-type. 3,869,290, Cl. 96-76.00R.
Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, to Glaxo Laboratories Limited. Anaesthetic steroids of the pregnane and 19-norpregnane series. 3,869,451, Cl. 260-239.500.
Phillips Petroleum Company: *See—*
Ayers, Buell O.; and Roof, Lewis B., 3,868,970.
Campbell, Robert W., 3,869,433.
Campbell, Robert W.; and Scoggins, Lacey E., 3,869,434.
Ramsay, Ray D., 3,869,417.
Zuech, Ernest A., 3,869,470.
Piber, Earl T., to Cutler-Hammer, Inc. Trigger switch with latch and vernier speed adjusting shaft. 3,869,591, Cl. 200-321.000.
Pierce Chemical Company: *See—*
Gindler, E. Melvin, 3,869,348.
Pilc, Randolph John: *See—*
Kolensky, Leo Michael; Pilc, Randolph John; Schlanger, Gabriel Gary; and Willand, Allan Howard, 3,869,573.
Pioneer Electronic Corporation: *See—*
Fukui, Tutomu; and Suzuqui, Tsutomu, 3,868,882.
Igata, Toyonori, 3,869,130.
Iwasaki, Tadahisa, 3,869,722.

Piper, Robert J.; and Locke, Frank K., to Stearns Manufacturing Co. Inc. Article conveying apparatus. 3,869,038, Cl. 198-165.000.
Piskala, Alois, to Ceskoslovenska akademie ved. Process of preparing 6-azapyrimidine ribonucleosides. 3,869,446, Cl. 260-211.50R.
Pitney-Bowes, Inc.: *See—*
  Sansone, Ronald P., 3,869,599.
Pitney, Lennord L.: *See—*
  Travor, Bruce W.; and Pitney, Lennord L., 3,868,854.
Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., to International Flavors & Fragrances Inc. Process for altering the flavoring properties of foodstuffs. 3,869,554, Cl. 426-65.000.
Pittman, Allen G.: *See—*
  Stanley, William L.; and Pittman, Allen G., 3,869,385.
Pittroff, Hans, to SKF Industrial Trading and Development Company. Packing seals. 3,869,134, Cl. 277-56.000.
Pletcher, Terry Carl: *See—*
  Morgan, Paul Winthrop; and Pletcher, Terry Carl, 3,869,419.
Podolan, Edward G., to General Motors Corporation. Vehicle window stabilizing mechanism. 3,868,788, Cl. 49-374.000.
Pogers, Richard J., to Marathon Oil Company. Process for preparing and using aqueous polyacrylamide solutions for the secondary recovery of oil. 3,868,997, Cl. 166-275.000.
Polaroid Corporation: *See—*
  Chiang, Yunn H.; and Sparks, John W., 3,869,473.
Pollet, Robert Joseph: *See—*
  Philippaerts, Herman Adelbert; Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,869,290.
Pollock, Andre W.; and Durrett, James M., to Sun Oil Company of Pennsylvania. Combination cracking process. 3,869,378, Cl. 208-78.000.
Polva-Nederland B.V.: *See—*
  Bos, Fredericus Antonius Jozef, 3,868,810.
Polyak, Leonid Moiseevich: *See—*
  Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
Pont-A-Mousson S.A.: *See—*
  Hauth, Jean-Marc; and Cheylac, Roland Claude Michel, 3,869,024.
Pontiac Furniture Industries, Inc.: *See—*
  James, Henry; and Johnson, Carl B., 3,869,170.
  James, Henry; and Johnson, Carl B., 3,869,172.
  Johnson, Carl B., and James, Henry, 3,869,169.
Poole, Dennis Frederick: *See—*
  Hogan, Brian David; and Poole, Dennis Frederick, 3,869,096.
Poretskin, Vitaly Moiseevich: *See—*
  Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Porter, Townsend Henry, Jr.: *See—*
  Cook, Kenneth Allen; and Porter, Townsend Henry, Jr., 3,869,700.
Posting Equipment Corporation: *See—*
  Lear, Joseph D., 3,869,045.
Potoski, John R.: *See—*
  Freed, Elisabeth H.; Freed, Meier E.; and Potoski, John R., 3,869,512.
PPG Industries, Inc.: *See—*
  Ballentine, John D., 3,869,198.
  Briar, Thomas J.; and Schaefer, William L., 3,869,268.
  Gilbank, Roland E., 3,869,053.
  Graham, Roy R., 3,869,308.
  Knapp, Isaac D., 3,869,269.
  Shaffer, Paul D.; Imler, Vaughn R.; and Morrissey, Jack D., 3,869,271.
  Snead, William K.; and McGreevy, Robert E., 3,869,542.
Presser, Adolph: *See—*
  Belohoubek, Erwin Franz; and Presser, Adolph, 3,869,677.
Pressure Chemical Corporation: *See—*
  Parish, Frank T., 3,868,891.
Pressure Science, Inc.: *See—*
  Taylor, Dudley D.; Sadoff, Bernard J., Jr.; and Halling, Horace P., 3,869,132.
Preston, Henry Richard. Applicaton of container closures. 3,868,808, Cl. 53-97.000.
Price, Albert E.: *See—*
  Becker, Peter W.; Price, Albert E.; Mowatt-Larssen, Erling; and Becker, Carl E., 3,868,913.
Princeton Electro Dynamics, Inc.: *See—*
  Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, 3,869,651.
Priola, Michael A.; and Carver, Ernest C., to Ciba-Geigy Corporation. Novel industrial weed control compositions. 3,869,276, Cl. 71-93.000.
Prochnow, Claus, to Rollei-Werke Franke & Heidecke. Electronic flash apparatus. 3,869,604, Cl. 240-1.300.
Procter & Gamble Company, The: *See—*
  Collins, Jerome Howard, 3,869,399.
Produits Chimiques Ugine Kuhlman: *See—*
  Weiss, Francis; Schirmann, Jean-Pierre; and Mathais, Henri, 3,869,541.
Progil: *See—*
  Mocotte, Jacques; and Druet, Monique, 3,869,551.
Proops, William Robert: *See—*
  Papa, Anthony Joseph; and Proops, William Robert, 3,869,502.
Properzi, Giulio. Apparatus for continuous casting with a number of casting positions. 3,868,989, Cl. 164-278.000.
Province, William F., to Emerson Electric Company. Bead removal tool. 3,868,773, Cl. 30-130.000.
Pruess, David: *See—*
  Berger, Julius; Pruess, David; and Scannell, James Parnell, 3,869,277.
Pryanishnikov, Igor Stepanovich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Pryor, Edward G.: *See—*
  Williams, Roger B., Jr.; Loshbough, Richard C.; and Pryor, Edward G., 3,869,005.
Przybylinski, Philip G. High side sill railroad car. 3,868,914, Cl. 105-248.000.
Pulido, Miguel L.: *See—*
  Buckman, Stanley J.; Fenyes, Joseph G. E.; Flangan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,869,513.
Pullman Incorporated: *See—*
  Schuller, James J., 3,869,162.
Pumphrey, Nicholas William James: *See—*
  Moss, Keith Graham; and Pumphrey, Nicholas William James, 3,869,312.
Pundt, Dieter: *See—*
  Bigalke, Erhard; Buttgereit, Werner; and Pundt, Dieter, 3,868,933.
Punt, Vernon Edmund: *See—*
  Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, 3,869,569.
Puschel, Walter: *See—*
  Mader, Helmut; Otto, Rigobert; Marx, Paul; and Puschel, Walter, 3,869,291.
Puttock, Michael Charles; and Linfoot, Bryan Crosby, to EMI Limited. Dynamo electric machines. 3,869,626, Cl. 310-152.000.
Puzrin, Leonid Gustavovich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Quality Pool Supply Co.: *See—*
  Engelhart, John M., 3,868,732.
Quimby, Charles A. Wheelock for vehicle wheels. 3,868,837, Cl. 70-259.000.
Quiogue, Virgilio J.: *See—*
  Eldert, Cornelius; and Quiogue, Virgilio J., 3,869,669.
R. W. Hartnett Company: *See—*
  Ackley, Edward M., 3,868,900.
Rabold, Jurgen: *See—*
  Auspurg, Heinz; Huber, Josef; Rabold, Jurgen; and Wohlert, Gunther, 3,869,603.
Rabone Chesterman Limited: *See—*
  Hogan, Brian David; and Poole, Dennis Frederick, 3,869,096.
Racca, Terenzio. Cannelon and stuffed spaghetti molding apparatus. 3,869,238, Cl. 425-294.000.
Radamaker, George L., to Eaton Corporation. Vehicle spring assembly and method of clamping same. 3,869,142, Cl. 280-124.00R.
Ragailler, Franz, to Armaturen-Gesellschaft m.b.H. Springmine. 3,868,905, Cl. 102-8.000.
Ragsdale, Robert Gordon, to Milgo Electronic Corporation. Apparatus for testing data modems which simultaneously transmit and receive frequency multiplexed signals. 3,869,580, Cl. 179-15.0BF.
Rahnke, Christian J.; and Vallance, James K., to Ford Motor Company. Seal means for a gas turbine engine. 3,869,222, Cl. 415-134.000.
Rakowitz, David Henry: *See—*
  Johnson, Robert Bird; Rakowitz, David Henry; Barber, William Austin; and Fetchin, John Allan, 3,869,511.
Ramanathan, Visvanathan, to Ciba-Geigy AG. Water-insoluble styryl dyestuffs. 3,869,498, Cl. 260-465.00D.
Ramby, Inc.: *See—*
  Jensen, Howard, 3,869,011.
Ramsay, Ray D., to Phillips Petroleum Company. Modification of asphalt with ethylene-vinyl acetate copolymers to improve properties. 3,869,417, Cl. 260-28.5AS.
Rannenberg, George C., to United Aircraft Corporation. Self-cleaning coalescer. 3,869,266, Cl. 55-309.000.
Rarick, Raymond E., to Inno-vet Instruments, Inc. Calf extraction mechanism. 3,868,958, Cl. 128-352.000.

Ratliff, Frank W.; and McBurnett, James R., to Tyrone Hydraulics, Inc. Automatic pump control system. 3,868,821, Cl. 60-421.000.
Rau, Eric: *See—*
  Sproul, Jared Sanford; and Rau, Eric, 3,869,538.
Rayner, Francis: *See—*
  Rowe, Colin Michael; and Rayner, Francis, 3,869,703.
Raytheon Company: *See—*
  Der Marderosian, Aaron C.; Nelson, Paul E.; and Stinnett, Donald F., 3,869,662.
RCA Corporation: *See—*
  Belohoubek, Erwin Franz; and Presser, Adolph, 3,869,677.
  Korda, Peter Bela, 3,869,721.
  Mahoney, Donald Edwin, 3,869,678.
  Woywood, Dennis Joseph; and Corsover, Stephen Leonard, 3,869,705.
Read, Ronald G.: *See—*
  Tarter, James H.; Read, Ronald G.; Colussi, Valentino; and McCain, David L., 3,868,964.
Rees, J. Samuel. Apparatus for continuously sharpening a rotary blade. 3,868,795, Cl. 51-248.000.
Regie Nationale des Usines Renault: *See—*
  Dera, Alain; and Besseau, Daniel, 3,869,163.
  Peltier, Henri; Chatourel, Pierre; and Bailly, Roger, 3,869,055.
  Rivere, Jean-Pierre, 3,868,936.
Rehfeld, Frederick L. J., to General Motors Corporation. Vehicle steering gear assembly. 3,868,888, Cl. 91-375.00A.
Reichard, Robert E.: *See—*
  Gaussoin, Julius; Nottingham, Robert B.; and Reichard, Robert E., 3,869,617.
Reichardt, Wolfgang; Blanchard, Lucien; and Denamps, Jean, to Robert Bosch G.m.b.H. Starter for internal combustion engines. 3,868,858, Cl. 74-7.00R.
Reid, James B.: *See—*
  Davis, Herbert T.; and Reid, James B., 3,868,770.
Reif, Robert B.: *See—*
  Smith, Edwin J.; and Reif, Robert B., 3,868,925.
Reliance Electric Company: *See—*
  Williams, Roger B., Jr.; Loshbough, Richard C.; and Pryor, Edward G., 3,869,005.
Rembault, Michel: *See—*
  Spitz, Erich; and Rembault, Michel, 3,869,575.
Retention Communication Systems, Inc.: *See—*
  Blethen, William M., 3,869,716.
Reuschel, Konrad; Keller, Wolfgang; Kersting, Arno; and Emeis, Reimer, to Siemens Aktiengesellschaft. Apparatus for indiffusing dopants into semiconductor material. 3,868,924, Cl. 118-49.000.
Rexroad, James O.: *See—*
  Maier, Alfred E.; and Rexroad, James O., 3,869,192.
Reynolds Metals Company: *See—*
  Arfert, Horst F. W., 3,868,917.
Rhodia, Inc.: *See—*
  Gradeff, Peter S.; and Bertrand, Claude, 3,869,517.
Ricca, John S.; and Stedman, Robert N., to Caterpillar Tractor Company. Bracket and bolt-retaining means for tractor roller assemblies. 3,869,179, Cl. 308-34.000.
Rice, Daniel L., to General Motors Corporation. Conveyor for cylindrical parts. 3,869,040, Cl. 198-219.000.
Richards, George W., to Combustion Engineering, Inc. Vapor recovery method and system. 3,869,264, Cl. 55-88.000.
Richardson-Merrell Inc.: *See—*
  Andrews, Edwin R.; Claxton, George P.; Roberts, Edward McC.; and Fleming, Robert W., 3,869,496.
Richter, Sidney B.; and Levine, Alfred A., to Velsicol Chemical Corporation. Alpha-thiocyanoacetamides. 3,869,471, Cl. 260-326.11R.
Ricoh Co., Ltd.: *See—*
  Tabata, Yasuhiro; and Ukai, Takeshi, 3,869,202.
Rippon, John Roy: *See—*
  Davies, Emrys; and Rippon, John Roy, 3,869,283.
Risley, Hugh A.: *See—*
  Goodhue, Charles T.; and Risley, Hugh A., 3,869,349.
Rivere, Jean-Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Fuel injection systems. 3,868,936, Cl. 123-139.0AW.
Rivers, Roy Wilben: *See—*
  Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, 3,869,569.
Roach, Raymond F. Shotgun-rifle holder. 3,869,074, Cl. 224-1.00R.
Robbins, G. Howard: *See—*
  Couturier, Robert A.; Davis, Steven J.; and Robbins, G. Howard, 3,869,577.
Robert Bosch G.m.b.H.: *See—*
  Bosch, Paul, 3,869,223.
  Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
  Knapp, Heinrich, 3,868,819.
  Reichardt, Wolfgang; Blanchard, Lucien; and Denamps, Jean, 3,868,858.
  Zirps, Wilhelm, 3,868,972.
Roberts, Edward McC.: *See—*
  Andrews, Edwin R.; Claxton, George P.; Roberts, Edward McC.; and Fleming, Robert W., 3,869,496.
Roberts, Hess M. Container with integral pump. 3,869,071, Cl. 222-385.000.
Roberts, James K.; and Pauwels, Edward M., to Bendix Corporation, The. Seal for hydraulic pressure modulator. 3,868,890, Cl. 92-86.000.
Roberts, John A.; and Roberts, Peter R., to Brunswick Corporation. Passage structure. 3,868,792, Cl. 51-204.000.
Roberts, Peter R.: *See—*
  Roberts, John A.; and Roberts, Peter R., 3,868,792.
Rockland, Louis B.; Zaragosa, Eufrocina M.; and Hahn, Dulcie M., to United States of America, Agriculture. Process for preparing quick-cooking garbanzo and red kidney beans. 3,869,556, Cl. 426-352.000.
Rockwell International Corporation: *See—*
  Flamand, Maurice R., 3,868,977.
Roderick, Ronald R., to National Equipment Corporation. Heat-holding apparatus. 3,868,941, Cl. 126-19.00R.
Rohr, Horst: *See—*
  Decker, Gernot; Herold, Hans; and Rohr, Horst, 3,869,301.
Rohr Industries Inc.: *See—*
  Schubach, Theodor C., 3,868,802.
  Schubach, Theodor C., 3,869,012.
  Tantlinger, Keith W., 3,868,804.
Rokitansky, Karl, to Vogelsbusch Gesellschaft m.b.H. Process and apparatus for filtering suspensions. 3,869,389, Cl. 210-77.000.
Roll, Louis C.: *See—*
  Keene, Derek K.; and Roll, Louis C., 3,869,047.
Roll, Walter, to Daimler-Benz Aktiengesellschaft. Valve seat ring for the fastening in cylinder heads of internal combustion engines. 3,868,953, Cl. 123-188.00S.
Rollei-Werke Frahke & Heidecke: *See—*
  Sabanci, Mehmet, 3,869,642.
Rollei-Werke Franke & Heidecke: *See—*
  Prochnow, Claus, 3,869,604.
Roof, Lewis B.: *See—*
  Ayers, Buell O.; and Roof, Lewis B., 3,868,970.
Rosan Enterprises: *See—*
  Schneider, Herbert, 3,869,114.
Rose, Richard S.; and Clark, Burton P., to General Electric Company. Article handling system. 3,868,884, Cl. 89-11.000.
Rosecon, Inc.: *See—*
  Shirrell, Clarence Lee, 3,869,532.
Ross, Mary C. Top-fitted bed sheet. 3,868,735, Cl. 5-334.00C.
Rostovtseva, Ekaterina Efimovna: *See—*
  Orlov, Vladimir Alexandrovich; Zaitseva, Vera Dmitrievna; Sinitsyn, Viktor Alexeevich; and Rostovtseva, Ekaterina Efimovna, 3,869,303.
Rotier, Donald J.: *See—*
  Merchant, John; and Rotier, Donald J., 3,869,694.
Roussel, Jacques; and Perrin, Georges, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude. Comminuting apparatus and method. 3,869,090, Cl. 241-5.000.
Rowe, Colin Michael; and Rayner, Francis, to U.S. Philips Corporation. Semiconductor device having an improved supply lead support. 3,869,703, Cl. 357-79.000.
Rowe, H. Edward: *See—*
  United States of America, National Aeronautics and Space Administration; Osmundson, John; Rowe, H. Edward; and Santarpia, Dominick, 3,869,680.
Rozanov, Dmitry Pavlovich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
Rucinski, David W.: *See—*
  Liebman, Bernard; and Rucinski, David W., 3,868,935.
Russell, John L., Jr.; and DePlomb, Eugene P., to Gulf Oil Corporation. Concentrator, method, and system for utilizing radiant energy. 3,868,823, Cl. 60-641.000.
Russo, Dominic, to Russo Ornamental Iron Products, Inc. Railing construction. 3,869,109, Cl. 256-59.000.
Russo Ornamental Iron Products, Inc.: *See—*
  Russo, Dominic, 3,869,109.
Ruus, Waldemar; and Stephan, Herbert, to Leybold-Heraeus Verwaltung GmbH. Apparatus for preparing pellets by means of beams of charged particles. 3,869,232, Cl. 425-6.000.
Rylander, Henry G.: *See—*
  Brock, James Donald; Mize, Erbie G.; and Rylander, Henry G., 3,869,110.
Rymarchyk, Nicholas M.: *See—*
  Chang, Yi-Chung; Rymarchyk, Nicholas M.; and Greenstine, Robert B., 3,869,369.
Ryuichi Mujamoto: *See—*
  Kume, Takeshi, 3,869,574.
S & S Product Engineering Service, Inc.: *See—*
  Spisak, Edward G., 3,869,175.
Sabanci, Mehmet, to Rollei-Werke Frahke & Heidecke. Control circuit for electronic flash apparatus. 3,869,642, Cl. 315-151.000.
Sabol, Joseph J., to Garcia Corporation. Fishing lure. 3,868,784, Cl. 43-42.230.
Sadoff, Bernard J., Jr.: *See—*
  Taylor, Dudley D.; Sadoff, Bernard J., Jr.; and Halling, Horace P., 3,869,132.

Saeki, Keiso: *See—*

Sawers, James R.: *See—*

Schneider, Richard C.; and Viele, Lawrence, Jr., to International Busi-

Seligman, Kurt Lothar: *See—*

- Saeki, Keiso: *See—*
  - Matsukawa, Hirohara; and Saeki, Keiso, 3,869,406.
- Saethre, Arild O.: *See—*
  - Peel, Richard E.; and Saethre, Arild O., 3,869,097.
- Safer, Michael B.; and Menegos, Andrew J., to Avtron Manufacturing, Inc. Improved surge tester for electrical windings. 3,869,664, Cl. 324-51.000.
- Safeway Products Inc.: *See—*
  - Howie, John R., 3,869,596.
- Sailer, Heinz: *See—*
  - Grutzmann, Sigmar; Sailer, Heinz; and schollmeier, Gero, 3,869,670.
- Saji, Yasuo; and Ikegami, Shigeru, to Toho Beslon Co., Ltd. Composite acrylic fibers and spun yarns. 3,868,816, Cl. 57-140.0BY.
- Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Color photographic materials. 3,869,287, Cl. 96-22.000.
- Sakurai, Tokio: *See—*
  - Kominami, Naoya; Nakajima, Hitoshi; Miyata, Seiji; Kimura, Takeo; Chono, Masazumi; and Sakurai, Tokio, 3,869,500.
- Salem Corporation: *See—*
  - Wilt, Charles R., Jr.; and Schauermann, Floyd L., 3,868,779.
- Saltz, Julian; and Wasilewski, Joseph C. Maximum slope detectors. 3,869,666, Cl. 324-76.00R.
- Sanchez, Rodolfo Leuze. Bell-shaped pipe coupling having connections for household service and the like. 3,869,154, Cl. 285-156.000.
- Sander, Pierre; and Mullier, Christian, to Trentesaux-Toulemonde S.A. Transfer sheets for transfer printing. 3,869,336, Cl. 161-146.000.
- Sandier, Gerard; and Nels, Jean-Paul, to Schlumberger Technology Corporation. Radioactive means for measuring distance intervals between anomalies in an earth formation. 3,869,607, Cl. 250-266.000.
- Sandoz-Wander, Inc.: *See—*
  - Kathawala, Faizulla G., 3,869,450.
- Sanford, Arthur Carol. Rolling truss joint connector plates. 3,868,898, Cl. 100-35.000.
- Sanford, Robert Fincher: *See—*
  - Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, 3,869,651.
- Sangenis, Solange: *See—*
  - Jacquelin, Guy; and Sangenis, Solange, 3,869,311.
- Sanjean, John: *See—*
  - Cahoy, Roger P.; and Sanjean, John, 3,869,497.
- Sansone, Ronald P., to Pitney-Bowes, Inc. Optical pen for hand scanning digitally encoded records. 3,869,599, Cl. 235-61.11E.
- Santarpia, Dominick: *See—*
  - United States of America, National Aeronautics and Space Administration; Osmundson, John; Rowe, H. Edward; and Santarpia, Dominick, 3,869,680.
- Sanwa Kizai Kabushiki Kaisha: *See—*
  - Yamada, Shigeru; Hamano, Mamoru; and Nakayama, Kaname, 3,869,003.
- Sapp, George G.; and Goodrich, Joseph L., to Chevron Research Company. Resilient oil-extended polyurethane surfaces. 3,869,421, Cl. 260-33.6AQ.
- Sarginson, Richard William: *See—*
  - Kirton, John; Mears, Adrian Leonard; Sarginson, Richard William; and Werring, Norman John, 3,869,646.
- Sartorius-Membranfilter GmbH: *See—*
  - Lorenz, Gerhard, 3,869,208.
- Sasaki, Tohru: *See—*
  - Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, 3,869,534.
- Saso, Vittorio. Device for withdrawing labels from a store in labelling machines. 3,869,331, Cl. 156-571.000.
- Sato, Akio; and Sato, Shigehiko, to Nippon Electric Company, Limited. Process for manufacturing a conductive film for a thin film integrated circuit device. 3,869,367, Cl. 204-192.000.
- Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, to Showa Denko Kabushiki Kaisha. Method and device for waste heat recovery and sand removal in the bayer process. 3,869,537, Cl. 423-121.000.
- Sato, Masami: *See—*
  - Fukushima, Osamu; Kogame, Kunio; and Sato, Masami, 3,869,310.
- Sato, Masanori: *See—*
  - Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, 3,869,474.
- Sato, Mitsuharu, to Toshiba Kikai Kabushiki Kaisha. Automatic tool exchanging apparatus. 3,868,763, Cl. 29-568.000.
- Sato, Norio: *See—*
  - Yano, Akira; Sato, Norio; and Iwakawa, Tunekiyo, 3,869,644.
- Sato, Shigehiko: *See—*
  - Sato, Akio; and Sato, Shigehiko, 3,869,367.
- Satter, Abdus: *See—*
  - Christopher, Charles A., Jr.; and Satter, Abdus, 3,868,999.
- Saucier, Rene: *See—*
  - Vezina, Claude; Saucier, Rene; and Sehgal, Surendra N., 3,869,346.
- Sawada, Yuji; Takemoto, Katsumi; and Maruoka, Yasuro, to Mitsubishi Jukogyo Kabushiki Kaisha. Dolly using a warm-kept battery as its driving power source. 3,869,028, Cl. 191-1.00R.
- Sawahara, Masao: *See—*
  - Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, 3,869,287.
- Sawers, James R.: *See—*
  - Ellis, George S.; Kimble, Thomas E.; and Sawers, James R., 3,868,750.
- Sawyer, Bruce A. Plural axis linear position. 3,869,625, Cl. 310-12.000.
- Sayles, Donald A. Method and apparatus for continuously sensing the condition of a gas stream. 3,869,370, Cl. 204-195.00S.
- Scandia Packaging Machinery Company: *See—*
  - Anderson, Andrew W.; and Mullin, John P., 3,869,330.
- Scannell, James Parnell: *See—*
  - Berger, Julius; Pruess, David; and Scannell, James Parnell, 3,869,277.
- Scerbo, Louis Joseph, to Bell Telephone Laboratories, Incorporated. Positive drive vibratory mechanism. 3,868,859, Cl. 74-61.000.
- Schach, Albert: *See—*
  - Buttel, Helmut; Isert, Ingo Rudiger; Leicht, Alfred; and Schach, Albert, 3,869,685.
- Schacher, Hans-Dieter; Fischer, Reinhold; and Kunst, Matthias, to Daimler-Benz Aktiengesellschaft. Contact device for electrochemically deburring workpieces. 3,869,373, Cl. 204-224.00M.
- Schaefer, William L.: *See—*
  - Briar, Thomas J.; and Schaefer, William L., 3,869,268.
- Schauermann, Floyd L.: *See—*
  - Wilt, Charles R., Jr.; and Schauermann, Floyd L., 3,868,779.
- Scheiber, Werner, to Metallgesellschaft Aktiengesellschaft. Method of internally coating ducts with synthetic resin. 3,869,300, Cl. 117-17.000.
- Scheinpflug, Hans: *See—*
  - Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,869,503.
- Scherbatskoy, Serge A. Nuclear well logging. 3,869,608, Cl. 250-270.000.
- Schering AG: *See—*
  - Arndt, Friedrich; and Boroschewski, Gerhard, 3,869,275.
- Scheuerman, Ronald F.: *See—*
  - Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,996.
  - Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,998.
- Schiffman, Murray M., to Cambridge Research and Development Group; Greenberg, Sanford D.; DT Liquidating Partnership; and Shiffman, Murray M. Speech compressor with gap filling. 3,869,708, Cl. 360-8.000.
- Schippers Freres: *See—*
  - Schippers, Jacob Kees, 3,868,907.
- Schippers, Jacob Kees, to Schippers Freres. Hooking device for a ski-lift tow bar and ski-lift including said bars. 3,868,907, Cl. 104-173.000.
- Schirmann, Jean-Pierre: *See—*
  - Weiss, Francis; Schirmann, Jean-Pierre; and Mathais, Henri, 3,869,541.
- Schirtzinger, Joseph F., to Air Logistics Corporation. Semi-submerged cargo transport system. 3,868,920, Cl. 114-16.00R.
- Schladitz, Hermann J. Process for vaporizing fuel oil. 3,869,242, Cl. 431-11.000.
- Schlage Lock Company: *See—*
  - Izdebski, Wladyslaw, 3,869,386.
- Schlanger, Gabriel Gary: *See—*
  - Kolensky, Leo Michael; Pile, Randolph John; Schlanger, Gabriel Gary; and Willand, Allan Howard, 3,869,573.
- Schlickeiser, Klaus. Digital storage having a plurality of information sequences in a single track. 3,869,715, Cl. 360-48.000.
- Schlinger, Warren G.: *See—*
  - Marion, Charles P.; Schlinger, Warren G.; Brent, Albert; and Muenger, James R., 3,868,817.
- Schlumberger Technology Corporation: *See—*
  - Sandier, Gerard; and Nels, Jean-Paul, 3,869,607.
- Schmadeke, Wolfgang; and Wilmers, Gottlieb. Internal seal for the piston of a rotary engine. 3,869,230, Cl. 418-142.000.
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  - Himstedt, Kurt, 3,869,063.
- Schmidt, Josef, to Bell & Howell Company. Interlock means responsive to track selection. 3,869,718, Cl. 360-60.000.
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  - Jager, Gerhard; Metzger, Carl; Eue, Ludwig; and Schmidt, Robert, 3,869,490.
- Schmieder, Helmut: *See—*
  - Goldacker, Hubert; Hausberger, Helmut; and Schmieder, Helmut, 3,869,374.
- Schmit, Francis M., to Honeywell, Inc. Optical memory with improved signal-to-noise ratio. 3,869,193, Cl. 350-6.000.
- Schmoegner, John C.; and Burger, Norman P., to MDT Chemical Corp., by said John C. Schmoegner, a part interest. Aerosol dispensing container for separately stored fluids. 3,869,070, Cl. 222-193.000.
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  - Aldrich, Ralph E.; Feinleib, Julius; and Schmutz, Lawrence E., 3,869,195.
- Schnabele, Werner; Knoche, Georg; and Zeyher, Fritz, to Messerschmitt-Bolkow-Blohm GmbH. Infantry missile for combat against ground targets. 3,869,101, Cl. 244-3.100.
- Schneider, Herbert, to Rosan Enterprises. Rope having tension-cushioning shock absorber. 3,869,114, Cl. 267-69.000.

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- Schneider, Wilhelm: *See—*
  - Mayerhoffer, Herbert; Schneider, Wilhelm; Nuring, Hardo; and Exner, Wolfgang, 3,869,262.
- Scholin, Harold W., to Scholin Industries, Inc. Stepping motor. 3,868,861, Cl. 74-129.000.
- Scholin Industries, Inc.: *See—*
  - Scholin, Harold W., 3,868,861.
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  - Grutzmann, Sigmar; Sailer, Heinz; and schollmeier, Gero, 3,869,670.
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- Schubach, Theodor C., to Rohr Industries, Inc. Unitary fuel tank-bolster for bus with removable power unit. 3,869,012, Cl. 180-11.000.
- Schubert, Ernst, to Chemische Fabrik Richard Geiss. Process for regenerating contaminated perchloroethylene. 3,869,353, Cl. 203-38.000.
- Schuller, James J., to Pullman Incorporated. Lock arrangement for box car doors. 3,869,162, Cl. 292-283.000.
- Schultz, John C., to Houdaille Industries, Inc. Railway car suspension motion control system. 3,868,910, Cl. 105-164.000.
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- Schulz, William E., to United States of America, Navy. Automatic latch/unlatch mechanism. 3,868,922, Cl. 114-235.00A.
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- Schupak, Eugene: *See—*
  - Schweitzer, Arthur J., Jr.; and Schupak, Eugene, 3,869,329.
- Schutte, August H.; and Stevens, James T., to Arthur D. Little, Inc. Method for decomposing concentrated aqueous aluminum nitrate solutions. 3,869,543, Cl. 423-390.000.
- Schutte, Robert, to Canada-Cities Service Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Ltd.; and Gulf Oil Canada Limited. Tailings disposal system for tar sands plant. 3,869,384, Cl. 210-44.000.
- Schwartz, Ralph E., to Ovitron Research Corporation. Method and means for preserving comestibles. 3,868,828, Cl. 62-196.000.
- Schwartzman, Everett H. Evaporation system as for the conversion of salt water. 3,869,351, Cl. 202-172.000.
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  - Kuhnle, Ernst; and Schwarz, Josef, 3,869,008.
- Schweitzer, Arthur J., Jr.; and Schupak, Eugene, to Allied Chemical Corporation. Method of sealing nylon film using boiling water or steam. 3,869,329, Cl. 156-308.000.
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  - Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,869,428.
- Schwenk, Kurt, to Volkswagenwerk Aktiengesellschaft. Vehicle with impact-absorbing end portion. 3,869,164, Cl. 293-63.000.
- Schwenk, Willi. Multiway valve. 3,868,969, Cl. 137-625.500.
- Schwind, Roger A.: *See—*
  - De Witt, Robert; Jepson, Bernhart E.; and Schwind, Roger A., 3,869,255.
- Scoggins, Lacey E.: *See—*
  - Campbell, Robert W.; and Scoggins, Lacey E., 3,869,434.
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  - Cherry, Wesley R.; and Scott, Kenneth A., 3,869,357.
- Scott, William B., to General Motors Corporation. Fluid unit rotor and method of manufacture. 3,869,258, Cl. 29-156.8FC.
- Sczerba, Stanley T., to Pennsylvania Engineering Corporation. Furnace charging apparatus. 3,869,051, Cl. 214-18.0SC.
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  - Bingham, Chalice, 3,869,187.
- Seaman, Beverly A. H.: *See—*
  - Niles, Earl Thomas; Seaman, Beverly A. H.; and Wilson, Edwin J., 3,869,544.
- Sedlatschek, Karl: *See—*
  - Friedel, Rudolf; and Sedlatschek, Karl, 3,869,635.
- Sehgal, Surendra N.: *See—*
  - Vezina, Claude; Saucier, Rene; and Sehgal, Surendra N., 3,869,346.
- Seifried, Walter: *See—*
  - Janocha, Siegfried; Seifried, Walter; and Gebler, Horst, 3,869,533.
- Seligman, Kurt Lothar: *See—*
  - Dawes, James Wilkinson; Seligman, Kurt Lothar; and Smith, Stanley George, 3,869,422.
- Sell, Frank O.: *See—*
  - Patz, Roman J.; Sell, Frank O.; and Halbeck, Werner B., 3,869,586.
- Selusnik, Jerome A.; Wolfe, Robert W.; Cartwright, William J.; and Tate, Oliver C., to Continental Can Company, Inc. Can depalletizer. 3,869,049, Cl. 214-8.50A.
- Senour, Donald A. Solid state digital strain indicators. 3,868,848, Cl. 73-88.50R.
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  - Bradshaw, Arthur; and Meadows, Frank William, 3,868,902.
- Sevinian, Kimik Tigranovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Seymour, David Jackson; MacRitchie, Norman; Matthews, Parker J.; and Clark, Thomas A., to Bowman, Jon G.; Boeing, William E.; and McCurdy, Wells, part interest to each. Normally vented liquid-storage tank for ships, with closure device for automatically preventing leaking if the ship should sink. 3,868,921, Cl. 114-74.00R.
- Sezaki, Nobuhiko; and Ukena, Kohji, to Matsushita Electric Industrial Co., Ltd. Apparatus for automatic computation of cardiothoracic ratio. 3,869,602, Cl. 235-151.300.
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  - Lindsay, David Gordon; and Shall, Sydney, 3,869,437.
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  - Hampton, Richard John; Shantz, John T.; Gallo, Thomas; and Unger, Peter, 3,869,558.
- Shapiro, Semen Abramovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Sharkey, Melvin: *See—*
  - Newman, Douglas A.; and Brown, Albert E., 3,869,307.
- Shaw, Robert R.; and Snitzer, Elias, to American Optical Corporation. Neodymium doped acetate glass exhibiting fluorescence at 1.06 micrometers. 3,869,403, Cl. 252-301.30R.
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- Shea, Frederick L.; Whittaker, Mack P.; and Grindstaff, Lloyd I., to Great Lake Carbon Corporation. Method for manufacture of graphite flour. 3,869,302, Cl. 117-46.0CC.
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  - Herce, John A.; and Heath, James E., 3,869,408.
  - Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,996.
  - Lybarger, James H.; Scheuerman, Ronald F.; and Karnes, George Thomas, 3,868,998.
  - Van de Kraats, Eduard J.; and De Jong, Johannes, 3,869,396.
  - Van der Eijk, Huno, 3,869,522.
- Shelyakov, Oleg Parfirovich: *See—*
  - Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich, 3,869,251.
- Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. 1,2,10-Tricarboxy phenanthrene compounds. 3,869,506, Cl. 260-514.500.
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  - Warner, Ronald C.; and Shepherd, Bobby R., 3,869,043.
- Sheppard, William L., to AVM Corporation. Valve assembly. 3,868,991, Cl. 165-38.000
- Shiba, Haruo: *See—*
  - Tanaka, Kimio; and Shiba, Haruo, 3,869,092.
- Shiffman, Murray M.: *See—*
  - Schiffman, Murray M., 3,869,708.
- Shimamura, Isao; and Iwano, Haruhiko, to Fuji Photo Film Co., Ltd. Process for treating waste photographic processing solutions. 3,869,383, Cl. 210-32.000.
- Shimizu, Hiroshi, to Citizen Watch Co., Ltd. Apparatus for measuring a difference in time intervals of a timepiece. 3,868,845, Cl. 73-6.000.
- Shimizu, Kyozo, to Nippon Electric Company, Limited. Logic gate circuit including a Schottky barrier diode. 3,869,622, Cl. 307-213.000.
- Shimoyama, Takaitsu: *See—*
  - Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
- Shindo, Hideyasu; Kumagai, Toshio; and Dot, Kengo, to Kowa Yakuhin Kogyo Kabushiki Kaisha. Tocopheryl-p-chlorophenoxyisobutyric acid ester. 3,869,477, Cl. 260-345.500.

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  - Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.
- Shiraishi, Satoshi; Fujiwara, Kunio; Kumagai, Yasuhiko; and Kurosaki, Shiro, to Sumitomo Electric Industries Ltd. Fiber for optical communication. 3,869,194, Cl. 350-96.0WG.
- Shirrell, Clarence Lee, to Rosecon, Inc. Method of manufacturing floating boat dock modules. 3,869,532, Cl. 264-71.000.
- Shishkov, Nikolai Ivanovich: *See—*
  - Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich, 3,869,251.
- Shively, Edgar E. Hand covering with heating means therein. 3,869,594, Cl. 219-211.000.
- Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, to Canon Kabushiki Kaisha. Film cutting device. 3,868,877, Cl. 83-210.000.
- Shoji, Magozo; and Kitamura, Motoharu, to Matsushita Electric Works, Ltd. Quick charging apparatus. 3,869,657, Cl. 320-39.000.
- Showa Denko Kabushiki Kaisha: *See—*
  - Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, 3,869,537.
- Shropshire, Kenneth W.: *See—*
  - Harding, Donald D., 3,868,967.
- Shuster, Edward J.: *See—*
  - Hall, John B.; and Shuster, Edward J., 3,869,411.
- Siefert, August C. Impact resistant inorganic composites. 3,869,335, Cl. 161-143.000.
- Siegman, Anthony E.: *See—*
  - United States of America, National Aeronautics and Space Administration; and Siegman, Anthony E., 3,869,210.
- Siemens Aktiengesellschaft: *See—*
  - Auspurg, Heinz; Huber, Josef; Rabold, Jurgen; and Wohlert, Gunther, 3,869,603.
  - Breyer, Eberhard, 3,868,851.
  - Friedel, Rudolf; and Sedlatschek, Karl, 3,869,635.
  - Grutzmann, Sigmar; Sailer, Heinz; and schollmeier, Gero, 3,869,670.
  - Reuschel, Konrad; Keller, Wolfgang; Kersting, Arno; and Emeis, Reimer, 3,868,924.
  - Thon, Friedrich, 3,869,611.
- Signetics Corporation: *See—*
  - Davis, Stanley R., 3,869,321.
  - Grebene, Alan B., 3,869,679.
- Sigrist, Willy. Apparatus for determining the amount of the dispersed phase in a suspension. 3,869,209, Cl. 356-103.000.
- Sigulas, George N.: *See—*
  - Menne, Joseph D.; and Sigulas, George N., 3,868,885.
- Silver Eagle Manufacturing Co., Inc.: *See—*
  - Gaussoin, Julius; Nottingham, Robert B.; and Reichard, Robert E., 3,869,617.
- Silverman, Lawrence: *See—*
  - Haller, John Jacob; and Silverman, Lawrence, 3,869,699.
- Silverwood, Hartley A., to McCord Corporation. Adhesion of urethane foams to pvc skins. 3,869,531, Cl. 264-46.6AP.
- Simovits, Stephen S., Jr.: *See—*
  - Dumas, Christ J.; and Simovits, Stephen S., Jr., 3,869,633.
- Singerman, Sol: *See—*
  - Olsson, David Lawrence; and Singerman, Sol, 3,869,044.
- Singh, Balwant, to American Cyanamid Company. Generation of photofluorescent materials by short wavelength ultraviolet irradiation of non-fluorescent bis-diarylchloromethyl-1,3,4-oxadiazoles. 3,869,363, Cl. 204-158.00R.
- Sinitsyn, Viktor Alexeevich: *See—*
  - Orlov, Vladimir Alexandrovich; Zaitseva, Vera Dmitrievna; Sinitsyn, Viktor Alexeevich; and Rostovtseva, Ekaterina Efimovna, 3,869,303.
- Siragusa, Judith Ann: *See—*
  - Steiger, Fred Harold; and Siragusa, Judith Ann, 3,868,955.
- Skau, Evald L.: *See—*
  - Mod, Robert R.; Magne, Frank C.; Skau, Evald L.; and Sumrell, Gene, 3,869,483.
- SKF Industrial Trading and Development Company: *See—*
  - Pittroff, Hans, 3,869,134.
- Skrypnik, Alexandr Vasilievich: *See—*
  - Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich, 3,869,251.
- Slonimsky, Alexandr Davydovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Smars, Erik; Mogensen, Palne; and Kaij, Mats J., to AGA Aktiebolag. Reactor for plasma-chemical processes. 3,869,616, Cl. 250-547.000.
- Smee, Graham John; and Miller, Anthony Owen, to British Insulated Callender's Cables Limited. Jointing metal cable sheaths. 3,868,771, Cl. 29-628.000.
- Smialkowski, Bruno: *See—*
  - Stoeber, Alfred; and Smialkowski, Bruno, 3,869,218.
- Smith, Clyde, to Columbia Broadcasting System, Inc. Pulse-width-modulated converter for television system. 3,869,566, Cl. 178-7.200.
- Smith, Donald A.: *See—*
  - La Marre, David A.; Smith, Donald A.; and Stickney, Herbert F., 3,868,726.
- Smith, Edwin J.; and Reif, Robert B., to National Steel Corporation. Electrostatic coating of metal powder on metal strip. 3,868,925, Cl. 118-621.000.
- Smith, George L., Jr.; and Diekhoff, Hans H., to Aluminum Company of America. Lock-down for a pull tab on a container wall. 3,868,918, Cl. 113-121.00C.
- Smith, Stanley George: *See—*
  - Dawes, James Wilkinson; Seligman, Kurt Lothar; and Smith, Stanley George, 3,869,422.
- SmithKline Corporation: *See—*
  - Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,869,475.
- Smiths Industries Limited: *See—*
  - Beardmore, Geoffrey; and Evans, Hugh N., 3,869,368.
- Snead, William K.; and McGreevy, Robert E., to PPG Industries, Inc. Method for producing potassium azide. 3,869,542, Cl. 423-410.000.
- Snitzer, Elias: *See—*
  - Shaw, Robert R.; and Snitzer, Elias, 3,869,403.
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- Snyder, Richard V., to Lorch Electronics Corporation. Asymmetric quadrature hybrid couplers. 3,869,585, Cl. 179-173.000.
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  - Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Pezzoli, Silvestro, 3,869,387.
- Societe Anonyme dite: L'Oreal: *See—*
  - Lang, Gerard; and Bugaut, Andree, 3,869,454.
- Societe Anonyme: Poclain: *See—*
  - Moreau, Rene V., 3,869,054.
- Societe Chimique de la Grande paroisse, Azote et produits Chimiques: *See—*
  - Lhonore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,869,253.
- Societe Chimique des Charbonnages: *See—*
  - Tiquet, Jacques; and Cros, Jean-Louis, 3,869,489.
- Societe d'Etudes et d'Exploitation de Marques et Brevets-S.E.M.S.: *See—*
  - Dabis, Georges, 3,869,548.
- Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne: *See—*
  - Moreau, Claude, 3,868,897.
- Societe Industrielle de Transports Automobiles (Societe Anonyme): *See—*
  - Michel, Jean-Claude, 3,869,050.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
  - Grunert, Wilhelm; and Briotet, Jean Paul Francois Gilbert, 3,868,971.
- Societe Nationale Industrielle Aerospatiale: *See—*
  - Sentourens, Michel Maurice Gerard, 3,868,839.
- Societe Nouvelle de Roulements: *See—*
  - Sonnerat, Claude, 3,869,180.
- Soininen, Mauri; Koponen, Martti; and Holopainen, Vesa, to Valmet Oy. Group of drying cylinders in a multiple cylinder dryer for a material web, in particular for paper. 3,868,780, Cl. 34-116.000.
- Sokoloski, Martin M., to United States of America, Army. Variable broadband delay line. 3,869,683, Cl. 333-30.00R.
- Solartron Electronic Group Limited, The: *See—*
  - Metcalf, Eric, 3,869,601.
- Soleman, Mohamad Ali Arafien: *See—*
  - Graveland, Antonie; Geerligs, Wouter Louis Prinsen; and Soleman, Mohamad Ali Arafien, 3,869,381.
- Sollman, Paul B., to G. D. Searle & Co. 17Alpha-alkanoyloxy-6alpha-methyl-3beta-trialkyl-siloxypregn-4-en-20-ones. 3,869,481, Cl. 260-397.400.
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- Sommerkamp, Peter: *See—*
  - Patz, Ulrich F. M.; Sommerkamp, Peter; and Josephy, Julius, 3,869,675.
- Sondell, Jan Ivar: *See—*
  - Hellman, Per Ingvar; Sondell, Jan Ivar; and Jershed, Bo Christian, 3,869,318.
- Sonnerat, Claude, to Societe Nouvelle de Roulements. Railway journal box bearing race mounting. 3,869,180, Cl. 308-180.000.
- Sonoco Products Company: *See—*
  - Witzig, Werner, 3,869,325.
- Sonstegard, David A.: *See—*
  - Kaufer, Herbert; Matthews, Larry S.; Sonstegard, David A.; and Murray, Ian P., 3,868,730.
- Sony Corporation: *See—*
  - Inaga, Katsu, 3,869,099.
  - Usui, Setsuo, 3,869,637.
  - Yamagishi, Jin; and Momiyama, Hiroaki, 3,869,709.
  - Yamaoka, Nobutatu; and Takahashi, Yasunori, 3,869,398.
  - Yoshida, Kenji, 3,869,723.
- Sorenson, Alvin A. Calibrated slot cutter. 3,868,887, Cl. 90-12.00B.
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  - Masaki, Noriyasu, 3,869,030.

- Sosnowski, Stanislaw Jan Antoni, to C.A.V. Limited. Fuel pumping apparatus. 3,869,226, Cl. 417-462.000.
- Sousek, Eugene A., to Koehring Company. Motor controlled material spreading vehicles. 3,869,655, Cl. 318-591.000.
- Spanjer, Keith Gordon: *See—*
  - Hunter, William L.; and Spanjer, Keith Gordon, 3,869,704.
- Spark, Loudon C.: *See—*
  - Morrison, Ian Y.; Spark, Loudon C.; and Duyf, Jelle J., 3,869,188.
- Sparks, John W.: *See—*
  - Chiang, Yunn H.; and Sparks, John W., 3,869,473.
- Spasiano, Anthony D.: *See—*
  - Noiles, Douglas G.; and Spasiano, Anthony D., 3,868,965.
- Sperry Rand Corporation: *See—*
  - Green, Paul F., 3,869,085.
  - Mathias, Joseph S., 3,869,355.
- Spica, Joseph P. Modules for through- and under-drawing flooring. 3,868,798, Cl. 52-100.000.
- Spiewak, John Walter, to Firestone Tire & Rubber Company, The. Polyamides and their production. 3,869,431, Cl. 260-78.00L.
- Spisak, Edward G., to S & S Product Engineering Service, Inc. Hub cap for vehicle wheels. 3,869,175, Cl. 301-37.00R.
- Spitz, Erich; and Remhault, Michel, to Thomson-CSF. Speech-synthesis system. 3,869,575, Cl. 179-1.0SA.
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- Sprecher, Raymond G., to General Motors Corporation. Vehicle occupant restraint belt retractor. 3,869,098, Cl. 242-107.400.
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- Springmeyer, Allan H.: *See—*
  - Konieczynski, Ronald D.; and Springmeyer, Allan H., 3,869,634.
- Sproul, Jared Sanford; and Rau, Eric, to Intermountain Research and Development. Process for producing sodium carbonate from trona. 3,869,538, Cl. 423-206.000.
- Sproule, John W.: *See—*
  - Spitz, Melvin P.; and Sproule, John W., 3,868,733.
- Sprowl, Donald: *See—*
  - Longley, Kermit D.; and Sprowl, Donald, 3,869,508.
- Stahl, Joseph E.; and Cudworth, Allen L., to J. P. Stevens Co., Inc. Fly shuttle loom and parts thereof. 3,868,975, Cl. 139-1.00R.
- Stahl, Oliver B.; and Paris, Carmen J. Closed cycle waste treatment system and method. 3,868,731, Cl. 4-10.000.
- Stahlecker, Fritz, to Stahlecker, Wilhelm. Drive and brake mechanism for an open-end spinning assembly. 3,868,815, Cl. 57-88.000.
- Stahlecker, Wilhelm: *See—*
  - Stahlecker, Fritz, 3,868,815.
- Standard Oil Company: *See—*
  - Windgasen, Richard J., 3,869,272.
- Standard Pressed Steel Co.: *See—*
  - Dey, Ervin J., 3,868,806.
- Standard Products Co., The: *See—*
  - Loew, Theodore, 3,869,332.
- Stanley, William L.; and Pittman, Allen G., to United States of America, Agriculture. Process for containing oil spills. 3,869,385, Cl. 210-53.000.
- Statens Bakteriologiska Laboratorium: *See—*
  - Falksveden, Lars-Gunnar Albinsson, 3,869,436.
- Stauffer Chemical Company: *See—*
  - Coll-Palagos, Miguel, 3,869,535.
- Stearns Manufacturing Co. Inc.: *See—*
  - Piper, Robert J.; and Locke, Frank K., 3,869,038.
- Steck, James R.: *See—*
  - DeVincent, Patsy; and Steck, James R., 3,869,152.
- Stedman, Robert N., to Caterpillar Tractor Co. Crawler tractor. 3,869,010, Cl. 180-9.500.
- Stedman, Robert N.: *See—*
  - Ricca, John S.; and Stedman, Robert N., 3,869,179.
- Steffen, Joseph A.: *See—*
  - Anderson, Bret W.; and Steffen, Joseph A., 3,869,080.
- Steiger, Fred Harold; and Siragusa, Judith Ann, to Personal Products Company. Aldehyde polysaccharide dressings. 3,868,955, Cl. 128-296.000.
- Stein, Richard W.: *See—*
  - Stein, Robert W.; and Stein, Richard W., 3,869,124.
- Stein, Robert George: *See—*
  - Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, 3,869,274.
- Stein, Robert W.; and Stein, Richard W., to said Robert Stein, by said Richard Stein. Mathematical board game apparatus. 3,869,124, Cl. 273-131.0AC.
- Steiner, Josef: *See—*
  - Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
- Steinhof Marketing Corporation Ltd., represented by the General Partners, Steinhof Associated GmbH: *See—*
  - Kranz, Vladimir, 3,869,118.
- Stephan, Herbert: *See—*
  - Ruus, Waldemar; and Stephan, Herbert, 3,869,232.
- Sterling Drug Inc.: *See—*
  - Bailey, Denis M., 3,869,478.
  - Lesher, George Y., 3,869,443.
  - Lesher, George Y.; and Gruett, Monte D., 3,869,464.
- Sternis, Pierre. Extensible support element for protection canvas. 3,868,961, Cl. 135-4.00R.
- Stevens, James T.: *See—*
  - Schutte, August H.; and Stevens, James T., 3,869,543.
- Stickney, Herbert F.: *See—*
  - La Marre, David A.; Smith, Donald A.; and Stickney, Herbert F., 3,868,726.
- Stiefken, Hans: *See—*
  - Hanke, Martin; and Stiefken, Hans, 3,869,658.
- Stinnett, Donald F.: *See—*
  - Der Marderosian, Aaron C.; Nelson, Paul E.; and Stinnett, Donald F., 3,869,662.
- Stock, Ernest Rex, to E. R. Stock Proprietary Limited. Couplings. 3,868,831, Cl. 64-16.000.
- Stocker, Raymond: *See—*
  - Grimes, Delmar C.; and Stocker, Raymond, 3,869,279.
- Stoeber, Alfred; and Smialkowski, Bruno, to Art Shelf Product Company. Support structure. 3,869,218, Cl. 403-241.000.
- Stone, Lawrence J.: *See—*
  - Doll, Robert M.; Jessup, Joseph L.; and Stone, Lawrence J., 3,868,896.
- Stone, William M.: *See—*
  - Brunschwig, John M.; and Stone, William M., 3,868,767.
- Stora Kopparbergs Bergslags Aktiebolag: *See—*
  - Hellman, Per Ingvar; Sondell, Jan Ivar; and Jershed, Bo Christian, 3,869,318.
- Strand, Albert Thomas, to du Pont de Nemours, E. I., and Company. Process for producing an aqueous reaction product slurry of a diamine and a diacid. 3,869,400, Cl. 252-182.000.
- Strange, Maxwell G., to United States of America, National Aeronautics and Space Administration. Self-regulating proportionally-controlled heating apparatus and technique. 3,869,597, Cl. 219-505.000.
- Stuhmer, Werner: *See—*
  - Milkowski, Wolfgang; Zeugner, Horst; Von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, 3,869,459.
- Stumpp, Gerhard: *See—*
  - Friese, Karl-Hermann; Michel, Friedbert; Krauss, Rudolf; Jaggle, Gunther; Stumpp, Gerhard; Steiner, Josef; and Knapp, Heinrich, 3,868,939.
- Stunkard, Norman W., to Allis-Chalmers Corporation. Resistor for power distribution circuits. 3,869,691, Cl. 338-231.000.
- Sugahara, Noboru: *See—*
  - Watanabe, Asao; Kasahara, Tadayoshi; and Sugahara, Noboru, 3,869,211.
- Suggitt, Robert M.; and Crone, John M., Jr., to Texaco Inc. Method of hydroalkylating including regeneration of catalyst. 3,869,523, Cl. 260-668.00R.
- Sugiyama, Shunichi: *See—*
  - Ogawa, Takashi; Kida, Kiyonori; and Sugiyama, Shunichi, 3,869,629.
- Sumitomo Chemical Company, Ltd.: *See—*
  - Yamamoto, Hisao; and Nakao, Masaru, 3,869,472.
- Sumitomo Electric Industries Ltd.: *See—*
  - Kita, Yasuo, 3,869,695.
  - Shiraishi, Satoshi; Fujiwara, Kunio; Kumagai, Yasuhiko; and Kurosaki, Shiro, 3,869,194.
- Sumrell, Gene: *See—*
  - Mod, Robert R.; Magne, Frank C.; Skau, Evald L.; and Sumrell, Gene, 3,869,483.
- Sun Oil Company of Pennsylvania: *See—*
  - Pollock, Andre W.; and Durrett, James M., 3,869,378.
- Sun Ventures, Inc.: *See—*
  - Cherry, Wesley R.; and Scott, Kenneth A., 3,869,357.
- Sunaga, Hiromi: *See—*
  - Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
- Sunbeam Corporation: *See—*
  - Wolter, Gilbert R.; Szymczak, Eugene B.; and Bruning, Elmer Eugene, 3,869,265.
- Sunden, Bengt Fritiof, to LKG-produkter AB. Method in counter flow isotachophoresis. 3,869,365, Cl. 204-180.00R.
- Superior Industries, Inc.: *See—*
  - Brown, Raymond C.; and Bokovoy, Ronald D., 3,869,174.
- Surgical Equipment Supplies Limited: *See—*
  - Ellis, Gerard, 3,869,059.
- Sutch, Brian Leo Chudleigh, to Airfix Industries Limited. Apparatus for producing composite containers. 3,868,893, Cl. 93-50.000.
- Sutch, Brian Leo Chudleigh, to Airfix Industries Limited. Apparatus for molding and means for transferring a preform foil to the mold. 3,869,234, Cl. 425-112.000.
- Sutherland, Robert L.; and Sutherland, Wayne M. Rope climbing apparatus. 3,869,021, Cl. 182-3.000.
- Sutherland, Wayne M.: *See—*
  - Sutherland, Robert L.; and Sutherland, Wayne M., 3,869,021.
- Suzuki, Morio; Tachibana, Masayoshi; and Moriai, Takayoshi, to Teikoku Kako Co., Ltd. Iron oxide pigments and process for the production thereof. 3,869,298, Cl. 106-304.000.
- Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giiichi; Manabe, Yukihiro; and Nishimura, Mitsuo, to Shinto Paint Co., Ltd. Method for electrocoating. 3,869,366, Cl. 204-181.000.
- Suzuqui, Tsutomu: *See—*
  - Fukui, Tutomu; and Suzuqui, Tsutomu, 3,868,882.
- Svenska Dataregister AB: *See—*
  - Englund, Gosta R.; and Myren, Rune L., 3,869,598.

Svenska Sockerfabriks Aktiebolaget: *See—*
Glifberg, Nils Bertil, 3,869,182.
Swedberg, Nils Einar, to Eaton Corporation. Axial pressure balancing means for a hydraulic device. 3,869,228, Cl. 418-132.000.
Sze, Morgan C.; and Wang, Ruey H., to Lummus Company, The. Acetaldehyde production. 3,869,518, Cl. 260-604.00R.
Szymczak, Eugene B.: *See—*
Wolter, Gilbert R.; Szymczak, Eugene B.; and Bruning, Elmer Eugene, 3,869,265.
Tabata, Yasuhiro; and Ukai, Takeshi, to Ricoh Co., Ltd. Electrophotographic copying machine. 3,869,202, Cl. 355-3.00R.
Tachibana, Masayoshi: *See—*
Suzuki, Morio; Tachibana, Masayoshi; and Moriai, Takayoshi, 3,869,298.
Tadanier, John Soloman: *See—*
Hallas, Robert; Tadanier, John Soloman; and VonEsch, Anne Mary, 3,869,445.
Taff, Frederick Nishwitz: *See—*
Bogulslawski, Jan Janusz; Geyer, Paul; and Taff, Frederick Nishwitz, 3,869,304.
Taiyo Yuden Kabushiki Kaish: *See—*
Yamaoka, Nobutatu; and Takahashi, Yasunori, 3,869,398.
Takada, Takezo, to Takata Kojyo Co. Ltd. Self-applying vehicle safety belt. 3,869,145, Cl. 280-150.0AB.
Takahashi, Katsushi. Apparatus for handling baking pans. 3,869,048, Cl. 214-8.50A.
Takahashi, Kunio: *See—*
Kenmochi, Hiroshi; Menju, Shinichi; and Takahashi, Kunio, 3,869,665.
Takahashi, Tohru: *See—*
Ohira, Tsunehisa; and Takahashi, Tohru, 3,869,720.
Takahashi, Yasunori: *See—*
Yamaoka, Nobutatu; and Takahashi, Yasunori, 3,869,398.
Takakura, Yoshio; Otake, Yukio; and Imai, Yukiyoshi, to Hitachi, Ltd. Oscillating flying shear. 3,868,879, Cl. 83-316.000.
Takatu Kojyo Co. Ltd.: *See—*
Takada, Takezo, 3,869,145.
Takemoto, Katsumi: *See—*
Sawada, Yuji; Takemoto, Katsumi; and Maruoka, Yasuro, 3,869,028.
Takenaka, Yoshiyuki: *See—*
Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, 3,869,537.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, 3,869,347.
Tanabe Seiyaku Co., Ltd.: *See—*
Miura, Yuji; Nagao, Taku; Sato, Masanori; Nakajima, Hiromichi; and Kawanishi, Masazumi, 3,869,474.
Tanaka, Kano: *See—*
Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, 3,868,877.
Tanaka, Kimio; and Shiba, Haruo, to TDK Electronics Co., Ltd. Endless tape cartridge. 3,869,092, Cl. 242-55.19A.
Tantlinger, Keith W., to Rohr Industries Inc. Snap-on mullion cover with scored breakaway flange portions. 3,868,804, Cl. 52-98.000.
Tarter, James H.; Read, Ronald G.; Colussi, Valentino; and McCain, David L., to Continental Oil Company. Conveyer for slurry hose transportation system. 3,868,964, Cl. 137-344.000.
Tarzia, Giorgio, to Gruppo Lepetit S.p.A. 2-Substituted oxazole-4,5-dicarboxamides. 3,869,468, Cl. 260-307.00R.
Tate, Oliver C.: *See—*
Selusnik, Jerome A.; Wolfe, Robert W.; Cartwright, William J.; and Tate, Oliver C., 3,869,049.
Tateishi, Arthur Katsumi. Speed changer for phonograph record player. 3,869,129, Cl. 274-9.00B.
Tayler, Colin Andrew Miller, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Rotary machines. 3,869,220, Cl. 415-56.000.
Taylor, David W.: *See—*
Long, Kenneth E.; and Taylor, David W., 3,869,356.
Taylor, Dudley D.; Sadoff, Bernard J., Jr.; and Halling, Horace P., to Pressure Science, Inc. Fire resistant sealing ring combination. 3,869,132, Cl. 277-26.000.
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., to Eli Lilly and Company. Synthesis of 5-pyrimidinecarbinols. 3,869,456, Cl. 260-251.000.
TDK Electronics Co., Ltd.: *See—*
Tanaka, Kimio; and Shiba, Haruo, 3,869,092.
Teagno, Wladimiro, to AMP Incorporated. Electrical connector assembly. 3,869,185, Cl. 339-65.000.
Teague, Troy L.: *See—*
Murphy, Frank W., Jr.; Carlton, Lewis M.; and Teague, Troy L., 3,868,855.
Teikoku Kako Co., Ltd.: *See—*
Suzuki, Morio; Tachibana, Masayoshi; and Moriai, Takayoshi, 3,869,298.
Tejeda, Alvaro R., to J. Vast Associates, Inc. System for inhibiting attack on a ferrous anode electrode in an electrodialytic cell. 3,869,364, Cl. 204-301.000.
Tejeda, Alvaro R. System for demineralizing water by electrodialysis. 3,869,376, Cl. 204-301.000.
Tejeda, Alvaro R., to J. Vast Associates, Inc. Method and apparatus for determining exhaustion of a mass of ion exchange material and a device using the same. 3,869,382, Cl. 210-30.000.

Teledyne, Inc.: *See—*
Maddox, Edward L.; and Pease, Robert A., 3,868,857.
Teledyne Mid-America Corporation: *See—*
Henry, Richard J.; and Cary, Robert A., 3,869,037.
Teleflex Incorporated: *See—*
Brumbaugh, Robert J., 3,869,293.
Telefunken Compter GmbH: *See—*
Hanke, Martin; and Stiefken, Hans, 3,869,658.
Tellier, J. C. Tristan, to GAF Corporation. Electrostatic toner composition. 3,869,397, Cl. 252-62.100.
Temec Limited: *See—*
Williams, John; 3,869,415.
Temme, Helmut; and Kohler, Oscar, to Gewerkschaft Eisenhutte Westfalia. Scraper assemblies for scraper chain conveyors. 3,869,039, Cl. 198-175.000.
Terada, Kazuji; and York, Buddy L., to Dow Chemical Company, The. Preparation of aluminum hydride. 3,869,545, Cl. 423-645.000.
Terasaki, Shuji: *See—*
Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, 3,869,534.
Terrell, Ross C., to Airco, Inc. Fluorinated ether. 3,869,519, Cl. 260-614.00F.
Texaco Inc.: *See—*
Benson, Robert F., 3,869,521.
Christopher, Charles A., Jr.; and Satter, Abdus, 3,868,999.
Marion, Charles P.; Schlinger, Warren G.; Brent, Albert; and Muenger, James R., 3,868,817.
Miller, Edward F.; and Hellmuth, Walter W., 3,869,514.
Suggitt, Robert M.; and Crone, John M., Jr., 3,869,523.
Waldbillig, James O., 3,869,395.
Texas Instruments Incorporated: *See—*
Carter, David L., 3,869,572.
Thettu, Raghulinga R., to Xerox Corporation. Cleaning apparatus for heated pressure roll fuser. 3,868,744, Cl. 15-256.520.
Thies, Peter Willibrord; Kucaba, Walter; and Funke, Siegfried, to Kali-Chemie Aktiengesellschaft. Therapeutically active isovaleric acid esters. 3,869,476, Cl. 260-345.200.
Thompson, John R., to United States of America, Navy. Underwater electrical power leakage current detector. 3,869,668, Cl. 324-133.000.
Thompson, Woodford R., Jr.: *See—*
McDaniel, Bobby L., 3,869,123.
Thompson, Woodrow F. Golf club face. 3,869,126, Cl. 273-175.000.
Thomson - CSF: *See—*
Peltier, Jean Paul, 3,869,706.
Spitz, Erich; and Rembault, Michel, 3,869,575.
Thomson, Ronald E.; and Kast, Philip J., to Madison-Kipp Corporation. Mechanical lubricating device and method. 3,869,023, Cl. 184-15.00A.
Thon, Friedrich, to Siemens Aktiengesellschaft. Particle-beam device of the raster type. 3,869,611, Cl. 250-311.000.
Thorel, Jean. Polygnomonic map of the world comprising two hemispheres. 3,868,781, Cl. 35-42.000.
Thornton, Henry M., Jr. Wardrobe apparel case. 3,869,034, Cl. 190-13.00R.
Thurman, Robert K., to Merritt Division of Murphy Pacific Marine Salvage. Modular oil containment boom. 3,868,824, Cl. 61-1.00F.
Tichenor, George Humphrey. Portable knitting device for use at home or in like places. 3,868,834, Cl. 66-1.00A.
Tiquet, Jacques; and Cros, Jean-Louis, to Societe Chimique des Charbonnages. Process of manufacturing tert.-butyl p-tert. butylperbenzoate. 3,869,489, Cl. 260-453.00R.
Titterington, Joseph Bell: *See—*
Jackson, Sydney; and Titterington, Joseph Bell, 3,869,260.
Toda, Takao: *See—*
Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, 3,868,877.
Todd-Reeve, Leslie, to Hoover Company, The. Combination washer-dryer drive arrangement. 3,868,835, Cl. 68-20.000.
Toho Beslon Co., Ltd.: *See—*
Saji, Yasuo; and Ikegami, Shigeru, 3,868,816.
Tojima, Toshiaki: *See—*
Kishimoto, Kyuji; Tojima, Toshiaki; and Ishii, Hideto, 3,868,928.
Tokarev, Petr Pavlovich: *See—*
Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Tokyo Electric Power Co., Ltd.: *See—*
Kenmochi, Hiroshi; Menju, Shinichi; and Takahashi, Kunio, 3,869,665.
Tokyo Shibaura Co., Ltd.: *See—*
Kenmochi, Hiroshi; Menju, Shinichi; and Takahashi, Kunio, 3,869,665.
Tolkachev, Alexei Efimovich: *See—*
Malygin, Petr Vasilievich; Kochetkov, Valentin Mikhailovich; and Tolkachev, Alexei Efimovich, 3,868,966.
Tolnar, Emil J., Jr.; and Winyard, Arthur H., to General Motors Corporation. Connector means having shorting clip. 3,869,191, Cl. 339-111.000.
Tongurian, Grigore. Machine for reconditioning and setting diaphragm type and lever type clutches. 3,868,755, Cl. 29-200.00J.
Topilin, Valentin Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.

Torama, Tadashi: *See—*
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,869,717.
Torick, Emil L.: *See—*
Bauer, Benjamin B.; Gravereaux, Daniel W.; and Torick, Emil L., 3,869,583.
Torpey, Wilbur N., to Autotrol Corporation. Treatment of wastewater. 3,869,380, Cl. 210-17.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Sato, Mitsuharu, 3,868,763.
Toth, Jozsef. Reciprocating engine. 3,868,932, Cl. 123-54.00B.
Townsend Engineering Company: *See—*
Townsend, Ray T.; and Beasley, Donald L., 3,868,747.
Townsend, Ray T.; and Beasley, Donald L., to Townsend Engineering Company. Apparatus for encasing a product. 3,868,747, Cl. 17-34.000.
Toyo Kogyo Co., Ltd.: *See—*
Kurio, Noriyuki, 3,869,229.
Toyonishi, Shigekazu: *See—*
Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,869,410.
Traber, Walter; and Karrer, Friedrich, to Ciba-Geigy Corporation. Ketones. 3,869,515, Cl. 260-590.000.
Trass, Alan Neville. Transistor ignition system. 3,868,938, Cl. 123-148.00E.
Travor, Bruce W.; and Pitney, Lennord L., to United States of America, Army. Sampling mechanism. 3,868,854, Cl. 73-421.500.
Trentesaux-Toulemonde S.A.: *See—*
Sander, Pierre; and Mullier, Christian, 3,869,336.
Trivette, Chester D., Jr., to Monsanto Company. Method for cross-linking rubber. 3,869,435, Cl. 260-79.50C.
Trost, Edward; and Martin, Clifford E., to Mohawk Data Sciences Corporation. Optical character recognition video amplifier and digitizer. 3,869,698, Cl. 340-146.3AG.
Trueb, Viktor: *See—*
Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter, 3,869,094.
Trus Joist Corporation: *See—*
Peters, Charles W.; and Ebert, Larry K., 3,869,036.
Trusch, Raymond B.: *See—*
United States of America, National Aeronautics and Space Administration; Trusch, Raymond B.; and O'Connor, Edward W., 3,868,830.
TRW Inc.: *See—*
Jenkins, John C., 3,869,361.
Vetter, Ottomar H., 3,869,186.
Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich. Apparatus for intermixing materials in a reaction vessel containing ferromagnetic particles. 3,869,251, Cl. 23-252.00R.
Tschierse, Klaus, to Berliner Maschinenban-Actien-Gesellschaft. Method and apparatus for checking metallic objects by monitoring its effect on one cycle of an alternating field. 3,869,663, Cl. 324-41.000.
Tschirky, Hansjorg: *See—*
Sommer, Paul; and Tschirky, Hansjorg, 3,869,225.
Tsemakhovich, Boris Davydovich: *See—*
Apalikov, Jury Ignatievich; Bankovsky, Leonid Leonidovich; Gelman, Alexandr Shmulievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; Tsemakhovich, Boris Davydovich; Bronovsky, Grigory Abramovich; Poretskin, Vitaly Moiseevich; Tokarev, Petr Pavlovich; and Barinov, Boris Agafonovich, deceased, 3,868,761.
Tucker, James M., to McDonnell Douglas Corporation. Guidance system. 3,868,883, Cl. 89-1.800.
Tudor Games, Incorporated: *See—*
Payne, Calvin L., Jr.; and Gambello, Vincent J., 3,869,122.
Tufts, Guy O.: *See—*
Cicci, George B.; and Tufts, Guy O., 3,868,811.
Tugaudis, Ernest A.: *See—*
Humphrey, Marion L.; and Tugaudis, Ernest A., 3,869,582.
Turner, John Cameron; and Chan, Rosalind Po Kuen, to Biorex Laboratories, Limited. 3′-O-Acetyl-18′-glycyrrhetyl-N-carboethoxy piperazinoamides. 3,869,458, Cl. 260-268.0PC.
Tuura, Martti Johannes, to A. Ahlstrom Osakeyhtio. Carton blank with turn down closures. 3,869,077, Cl. 229-16.00D.
Tween, Jack: *See—*
Cove, Anthony Raymond; and Tween, Jack, 3,868,960.
Twiehaus, Marvin J.: *See—*
Mebus, Charles A.; and Twiehaus, Marvin J., 3,869,547.
Tyrone Hydraulics, Inc.: *See—*
Ratliff, Frank W.; and McBurnett, James R., 3,868,821.

Ubukata, Susumu; and Mizutani, Yasukazu, to said Ubukata, by said Mizutani. Positive or negative acceleration operated conductive liquid switch for vehicle safety devices. 3,869,588, Cl. 200-61.470.
Ubukata, Susumu: *See—*
Ubukata, Susumu; and Mizutani, Yasukazu (assors. to said Ubukata, by said Mizutani), 3,869,588.
Ueda, Kazuo, to Ueda Works Co., Ltd. Hemadynamometer microphone. 3,868,954, Cl. 128-2.05S.
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Ueda Works Co., Ltd.: *See—*
Ueda, Kazuo, 3,868,954.
Ukai, Takeshi: *See—*
Tabata, Yasuhiro; and Ukai, Takeshi, 3,869,202.
Ukena, Kohji: *See—*
Sezaki, Nobuhiko; and Ukena, Kohji, 3,869,602.
Ulrich, George W.: *See—*
United States of America, National Aeronautics and Space Administration; and Ulrich, George W., 3,869,160.
Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for the production of new pepstatins having anti-pepsin activity. 3,869,347, Cl. 195-80.00R.
Underwood, James H.: *See—*
Hoover, Richard B.; and Underwood, James H., 3,869,615.
Unger, Peter: *See—*
Hampton, Richard John; Shantz, John T.; Gallo, Thomas; and Unger, Peter, 3,869,558.
Union Camp Corporation: *See—*
Burke, Roger E., 3,869,484.
Union Carbide Corporation: *See—*
Kavesh, Sheldon, 3,869,338.
Kelly, George Bernard, Jr.; and Lowery, Robert Howard, 3,869,296.
Papa, Anthony Joseph; and Proops, William Robert, 3,869,502.
Uniroyal, Inc.: *See—*
Bogulslawski, Jan Janusz; Geyer, Paul; and Taff, Frederick Nishwitz, 3,869,304.
United Aircraft Corporation: *See—*
Lawrence, Glen S., 3,869,636.
Rannenberg, George C., 3,869,266.
United Artists Music and Records Group, Inc.: *See—*
Hunyar, Csaba K., 3,868,849.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Tayler, Colin Andrew Miller, 3,869,220.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defense in Her Britannic Majisty's Government of the: *See—*
Kirton, John; Mears, Adrian Leonard; Sarginson, Richard William; and Werring, Norman John, 3,869,646.
United States of America
Agriculture: *See—*
Finley, John W.; Hautala, Earl; and Walker, Charles E., 3,869,438.
Hasegawa, Shin; and Brewster, Linda C., 3,869,345.
Mod, Robert R.; Magne, Frank C.; Skau, Evald L.; and Sumrell, Gene, 3,869,483.
Rockland, Louis B.; Zaragosa, Eufrocina M.; and Hahn, Dulcie M., 3,869,556.
Stanley, William L.; and Pittman, Allen G., 3,869,385.
Army: *See—*
Dolgner, Darrel D., 3,869,315.
Sokoloski, Martin M., 3,869,683.
Travor, Bruce W.; and Pitney, Lennord L., 3,868,854.
Atomic Energy Commission: *See—*
De Witt, Robert; Jepson, Bernhart E.; and Schwind, Roger A., 3,869,255.
Durigon, Docile D.; and Deklever, Richard C., 3,869,610.
Petrek, John Paul, 3,868,994.
Ziegler, Donald L., 3,869,256.
Health, Education and Welfare: *See—*
Holsinger, William P., 3,868,947.
Montalvo, Joseph G., Jr., 3,869,354.
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Burcher, Ernest E.; Jobson, Daniel J.; Katzberg, Stephen J.; and Kelly, William L., IV, 3,869,212.
Canicatti, Carl L., 3,869,667.
Doong, Henry; and Acuna, Mario H., 3,869,659.

  - Harrison, Dean R.; and Dimeff, John, 3,869,676.
  - Hoover, Richard B.; and Underwood, James H., 3,869,615.
  - Strange, Maxwell G., 3,869,597.
- Navy: *See*—
  - Gallo, Eugene, 3,869,104.
  - Jones, Charles H., 3,869,693.
  - Nelson, Bud D.; and Brennan, William M., 3,869,103.
  - Schulz, William E., 3,868,922.
  - Thompson, John R., 3,869,668.
  - Zendle, Bernard; and Petree, Marcella C., 3,869,648.
- U.S. Philips Corporation: *See*—
  - Rowe, Colin Michael; and Rayner, Francis, 3,869,703.
- United States Surgical Corporation: *See*—
  - Noiles, Douglas G.; and Spasiano, Anthony D., 3,868,965.
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- Uskokovic, Milan Radoje: *See*—
  - Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,869,461.
  - Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,869,462.
- USM Corporation: *See*—
  - Battersby, William R., 3,868,805.
  - Fichtner, Rudi; and Lauckhardt, Gerhard, 3,868,737.
  - Kennedy, Daniel W.; and Woodward, Walter R., 3,869,656.
- USUI Kokusai Sangyo Kabushiki Kaisha: *See*—
  - Katsuma, Kunio, 3,869,261.
- Usui, Setsuo, to Sony Corporation. Alpha-numeric display device utilizing light emitting diodes. 3,869,637, Cl. 313-500.000.
- V.C.A. Corporation: *See*—
  - Miller, Christian F., 3,869,057.
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  - Hopkins, David Alan, 3,868,752.
- Valiela, Jose, to Interspace Corporation. Apparatus for mechanical contact in printing on ceramic tableware. 3,868,901, Cl. 101-41.000.
- Vallance, James K.: *See*—
  - Rahnke, Christian J.; and Vallance, James K., 3,869,222.
- Valmet Oy: *See*—
  - Soininen, Mauri; Koponen, Martti; and Holopainen, Vesa, 3,868,780.
- Valukonis, Jonas: *See*—
  - Feustel, James R.; Hoyt, Kenneth L.; Valukonis, Jonas; and Corcoran, John J., 3,869,017.
- Valve Systems International, Inc.: *See*—
  - Graham, Donald E., 3,869,108.
  - Hoos, Pieter F., 3,868,867.
- Valyi, Emery I. Multilayered hollow plastic container. 3,869,056, Cl. 215-1.00C.
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- Vandenberghe, Antoon Leon: *See*—
  - Philippaerts, Herman Adelbert; Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,869,290.
- Van den Boogaart, Krijn; and Louis, Meelis Nicolaus, to Penwalt Corporation. Improved manganese ethylene bisdithiocarbamate composition. 3,869,486, Cl. 260-429.00K.
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- Varian Associates: *See*—
  - Gerard, William Allen, 3,869,638.
  - Munk, Miner N., 3,869,614.
- VAS Ltd.: *See*—
  - Owens, Robert C., Jr., 3,869,713.
- Veige, Sten: *See*—
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,869,527.
- Velsicol Chemical Corporation: *See*—
  - Richter, Sidney B.; and Levine, Alfred A., 3,869,471.
- Vennett, Richard M., to Continental Oil Company. Oil water separation. 3,869,388, Cl. 210-70.000.
- Verich, Vadim Pavlovich: *See*—
  - Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Verich, Vadim Pavlovich; Skrypnik, Alexandr Vasilievich; and Shishkov, Nikolai Ivanovich, 3,869,251.
- Vetter, Ottomar H., to TRW Inc. Electrical connector with automatic thread locking mechanism. 3,869,186, Cl. 339-89.00R.
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- Victor Company of Japan Ltd.: *See*—
  - Ohira, Tsunehisa; and Takahashi, Tohru, 3,869,720.
- Viele, Lawrence, Jr.: *See*—
  - Schneider, Richard C.; and Viele, Lawrence, Jr., 3,869,714.
- Vignon, Louis, to Heberlein Hispano SA. Device for winding-off yarn ends. 3,868,813, Cl. 57-34.00R.
- Vilter Manufacturing Corporation: *See*—
  - Kocher, Erich J.; and Grant, Whitney I., 3,869,227.
- Vogelsbusch Gesellschaft m.b.H.: *See*—
  - Rokitansky, Karl, 3,869,389.
- Volkswagenwerk Aktiengesellschaft: *See*—
  - Bigalke, Erhard; Buttgereit, Werner; and Pundt, Dieter, 3,868,933.
  - Miller, Michael Clendenin, 3,869,165.
  - Schwenk, Kurt, 3,869,164.
- Von Eickstedt, Klaus-Wolf: *See*—
  - Milkowski, Wolfgang; Zeugner, Horst; Von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, 3,869,459.
- VonEsch, Anne Mary: *See*—
  - Hallas, Robert; Tadanier, John Soloman; and VonEsch, Anne Mary, 3,869,445.
- Von Linde, Joachim: *See*—
  - Von Linde, Robert; Von Linde, Joachim; and Kurz, German, 3,869,244.
- Von Linde, Robert; Von Linde, Joachim; and Kurz, German, to said Robert von Linde, by said Joachim von Linde and German Kurz. Burner unit. 3,869,244, Cl. 431-116.000.
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  - Jehenson, Pierre Simon; and Vos, Gilbert Jean-Pierre, 3,869,609.
- Vrespa, Bruno. Method for preserving fruit pulps having a high contents of iron salts and pulps thus preserved. 3,869,557. Cl. 426-393.000.
- W. R. Grace & Co.: *See*—
  - Daniels, David A.; and DeGeorge, Nicholas F., 3,869,394.
- Waag, Ake. Surface-active compositions having controlled foaming properties and process for controlling foam therewith. 3,869,412, Cl. 252-527.000.
- Wabash Alloys Inc.: *See*—
  - Habayeb, Khaled M., 3,869,112.
- Waddan, Dhafir Yusuf, to Imperial Chemical Industries Limited. Process for preparing 3-pentenenitrile. 3,869,501, Cl. 260-465.300.
- Wagner Electric Corporation: *See*—
  - McGuirk, Francis A., Jr., 3,869,620.
- Wagner, John H.; and Wiebe, Donald, to A. Stucki Company. Hydraulically snubbed truck. 3,868,912, Cl. 105-197.0DH.
- Waldbillig, James O., to Texaco Inc. 2-Amino-5-hydrocarbyldithio-1,3,4-thiadiazole and compositions thereof. 3,869,395, Cl. 252-47.000.
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- Walker, Charles E.: *See*—
  - Finley, John W.; Hautala, Earl; and Walker, Charles E., 3,869,438.
- Wallk, Harold J., to Caterpillar Tractor Co. Telescoping step ladder. 3,869,022, Cl. 182-96.000.
- Walser, Armin: *See*—
  - Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,869,448.
- Walther Buromaschinen GmbH: *See*—
  - Haberkorn, Otto, 3,869,081.
- Waltz, Douglas G. A plurality of electronic elements connected together by interconnecting wires and connecting joints. 3,869,701, Cl. 357-72.000.
- Walworth, Bryant Leonidas: *See*—
  - Lutz, Albert William; and Walworth, Bryant Leonidas, 3,869,457.
- Wang, Herman. Opener and holder for bags. 3,869,065, Cl. 221-40.000.
- Wang, Ruey H.: *See*—
  - Sze, Morgan C.; and Wang, Ruey H., 3,869,518.
- Wanner, John C., to Caterpillar Tractor Co. Guard assembly for track drive motors. 3,869,061, Cl. 220-334.000.
- Warlick, Alex, Jr.: *See*—
  - Paschal, Harold L., Jr.; and Brown, Graham T., 3,869,581.
- Warner-Lambert Company: *See*—
  - Ferraro, Frank A., 3,869,066.
- Warner, Ronald C.; and Shepherd, Bobby R., to Cameo, Inc. Display package for lipstick. 3,869,043, Cl. 206-45.310.
- Warner & Swasey Company, The: *See*—
  - Koenig, Carl F., III, 3,869,002.
- Wasilewski, Joseph C.: *See*—
  - Saltz, Julian; and Wasilewski, Joseph C., 3,869,666.
- Watanabe, Asao; Kasahara, Tadayoshi; and Sugahara, Noboru, to Canon Kabushiki Kaisha. Instrument for measuring thickness of thin film. 3,869,211, Cl. 356-161.000.
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- Watson, Charles S., to Berlin & Jones Company, Inc. Method for making two compartment envelopes. 3,868,894, Cl. 93-61.00A.
- Watson, William Harrison: *See*—
  - Meschke, Robert Walter; and Watson, William Harrison, 3,869,427.
- Weaver, Max A.; and Coates, Clarence A., Jr., to Eastman Kodak Company. Phenyl-azo-n-acylamidoethylaniline compounds. 3,869,442, Cl. 260-207.100.
- Weaver, Max A., to Eastman Kodak Company. N-benzyl-(2,2-dicyanovinyl) anilines. 3,869,495, Cl. 260-465.00D.
- Webb, Oswald: *See*—
  - Pagdin, Brian Colin; and Webb, Oswald, 3,869,013.
- Wegmuller, Hans; and Motter, Manfred, to Ciba-Geigy AG. Process for the production of differential effects on polymeric or copolymeric acrylonitrile fibers. 3,869,250, Cl. 8-15.000.
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- Weiner, Gershen. Building panel. 3,868,801, Cl. 52-309.000.
- Weingarten & Wong Enterprises, Inc.: *See*—
  - Wong, Edward, Jr., 3,868,787.
- Weiss, Francis; Schirmann, Jean-Pierre; and Mathais, Henri, to Produits Chimiques Ugine Kuhlman. Method for manufacturing hydrazine. 3,869,541, Cl. 423-407.000.
- Weissenfels, Franz: *See*—
  - Kotzsch, Hans-Joachim; Amort, Jurgen; Junger, Hans; Nestler, Heinz; and Weissenfels, Franz, 3,869,340.
- Wells, John B., to Xerox Corporation. Photoelectrophoretic imaging with copper-free chlorophyll in the carrier liquid. 3,869,286, Cl. 96-1.0PE.
- Werring, Norman John: *See*—
  - Kirton, John; Mears, Adrian Leonard; Sarginson, Richard William; and Werring, Norman John, 3,869,646.
- Western Sales and Supply Co.: *See*—
  - Horst, Daniel R.; and Ingermann, Donald E., 3,868,738.
- Westinghouse Electric Corporation: *See*—
  - Aldous, George C., 3,869,688.
  - Hundstad, Richard L., 3,869,589.
  - Maier, Alfred E.; and Rexroad, James O., 3,869,192.
- Wettre, Gunnar, to International Standard Electric Corporation. Cable separating joint. 3,869,561, Cl. 174-11.00R.
- Wheelwright, Robert W.; and Machanian, William V., to Wurlitzer Company, The. Solid state monetary accumulator, credit storage, and selector logic circuit. 3,869,032, Cl. 194-1.00N.
- Whittaker, Mack P.: *See*—
  - Shea, Frederick L.; Whittaker, Mack P.; and Grindstaff, Lloyd I., 3,869,302.
- Wickens, James Charles: *See*—
  - Osbond, John Mervyn; and Wickens, James Charles, 3,869,552.
- Wicks, John S.: *See*—
  - Cunningham, Francis V.; and Wicks, John S., 3,869,650.
- Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Substituted amidophenylguanidines. 3,869,503, Cl. 260-471.00C.
- Wiebe, Donald: *See*—
  - Wagner, John H.; and Wiebe, Donald, 3,868,912.
- Wiechart, John F.: *See*—
  - De Vincent, Patsy; and Wiechart, John F., 3,869,153.
- Wiegers, Wilhelmus J.; and Hall, John B., to International Flavors and Fragrances Inc. Processes for the preparation of cyclic aldehydes. 3,869,516, Cl. 260-598.000.
- Wiener, Rolf: *See*—
  - Burst, Hermann; and Wiener, Rolf, 3,869,166.
- Wightman, Lawrance W.; and Gebhart, Howard C., to Emerson Electric Company. Method for cell plate assembly. 3,868,758, Cl. 29-430.000.
- Wiknich, Harold V.: *See*—
  - Klomp, Edward D.; Wolgemuth, James H.; and Wiknich, Harold V., 3,868,930.
- Wilby, William Peter Lanham. Scanning optical system. 3,869,204, Cl. 355-66.000.
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- Willand, Allan Howard: *See*—
  - Kolensky, Leo Michael; Pile, Randolph John; Schlanger, Gabriel Gary; and Willand, Allan Howard, 3,869,573.
- Willard, Howard L.: *See*—
  - Noyes, Billy P.; and Willard, Howard L., 3,868,807.
- Willems, Jozef Frans: *See*—
  - Philippaerts, Herman Adelbert; Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,869,290.
- Williams, Chester I. Method of constructing a prestressed concrete circular wall. 3,869,530, Cl. 264-33.000.
- Williams, Frank Vernon, to Girling Limited. Shoe drum brakes. 3,869,026, Cl. 188-79.5GT.
- Williams, John, to Temec Limited. Resinous polymer containing waterproofing plaster compositions. 3,869,415, Cl. 260-17.00R.
- Williams, Roger B., Jr.; Loshbough, Richard C.; and Pryor, Edward G., to Reliance Electric Company. Value computing scale. 3,869,005, Cl. 177-25.000.
- Wilmers, Gottlieb: *See*—
  - Schmadeke, Wolfgang; and Wilmers, Gottlieb, 3,869,230.
- Wilson, Edwin J.: *See*—
  - Niles, Earl Thomas; Seaman, Beverly A. H.; and Wilson, Edwin J., 3,869,544.
- Wilson, Gerald L., to Massachusetts Institute of Technology. Graded contained bulk transmission system. 3,869,621, Cl. 307-147.000.
- Wilson, Riley. Invalid transporter. 3,869,171, Cl. 297-313.000.
- Wilson, Robert Neil; and Hart, John James. Drill screw. 3,869,219, Cl. 403-282.000.
- Wilt, Charles R., Jr.; and Schauermann, Floyd L., to Salem Corporation. Incineration control. 3,868,779, Cl. 34-54.000.
- Windgasen, Richard J., to Standard Oil Company. Manganese micronutrient. 3,869,272, Cl. 71-1.000.
- Windmoller & Holscher: *See*—
  - Winnemoller, Aloys, 3,868,892.
- Wing, George S. Internally reactive structural joinder system. 3,868,872, Cl. 81-52.40R.
- Winnemoller, Aloys, to Windmoller & Holscher. Apparatus for manufacturing bags with an inner bag which has a Z-fold. 3,868,892, Cl. 93-8.00W.
- Winyard, Arthur H.: *See*—
  - Tolnar, Emil J., Jr.; and Winyard, Arthur H., 3,869,191.
- Wirth, Joseph G.: *See*—
  - Heath, Darrell R.; and Wirth, Joseph G., 3,869,499.
- Witco Chemical Corporation: *See*—
  - Longley, Kermit D.; and Sprowl, Donald, 3,869,508.
- Witkin, Donald E., to National Forge Company. Apparatus for rapid isostatic pressing. 3,869,233, Cl. 425-78.000.
- Witzig, Werner, to Sonoco Products Company. Method of making a convolute tube. 3,869,325, Cl. 156-192.000.
- Wohlert, Gunther: *See*—
  - Auspurg, Heinz; Huber, Josef; Rabold, Jurgen; and Wohlert, Gunther, 3,869,603.
- Wolf, John P., III: *See*—
  - Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,869,067.
- Wolf, Max, to Knecht Filterwerke Gesellschaft mit beschrankter Haftung. Filter cartridge. 3,869,392, Cl. 210-493.000.
- Wolfe, Robert W.: *See*—
  - Selusnik, Jerome A.; Wolfe, Robert W.; Cartwright, William J.; and Tate, Oliver C., 3,869,049.
- Wolfe, Werner, to Etapharm chem. pharm. Laboratorium G.m.b.H. Method of producing highly purified phosphatides. 3,869,482, Cl. 260-403.000.
- Wolgemuth, James H.: *See*—
  - Klomp, Edward D.; Wolgemuth, James H.; and Wiknich, Harold V., 3,868,930.
- Wolter, Gilbert R.; Szymczak, Eugene B.; and Bruning, Elmer Eugene, to Sunbeam Corporation. Canister type vacuum cleaner. 3,869,265, Cl. 55-274.000.
- Wong, Edward, Jr., to Weingarten & Wong Enterprises, Inc. Apparatus for supporting hydroponically grown plants. 3,868,787, Cl. 47-1.200.
- Woodfill, William L.: *See*—
  - Noe, Gerald H.; and Woodfill, William L., 3,868,833.
- Woodward, Walter R.: *See*—
  - Kennedy, Daniel W.; and Woodward, Walter R., 3,869,656.
- Woywood, Dennis Joseph; and Corsover, Stephen Leonard, to RCA Corporation. Electronic technique for making multichannel, spatial-carrier-encoded recordings. 3,869,705, Cl. 358-5.000.
- Wray, Samuel Francis: *See*—
  - Anthony, Robert Leroy; and Wray, Samuel Francis, 3,868,870.
- Wueger, Karl W., to Crompton & Knowles Corporation. Pneumatic weft inserting mechanism. 3,868,976, Cl. 139-126.000.
- Wulf, Kurt J. Bed and platen printer. 3,868,904, Cl. 101-316.000.
- Wurlitzer Company, The: *See*—
  - Wheelwright, Robert W.; and Machanian, William V., 3,869,032.
- Xerox Corporation: *See*—
  - Gallo, Charles F., 3,869,205.
  - Lehmann, Ernest H., 3,869,203.
  - Lenhard, Myron J., 3,869,612.
  - Mason, Peter John; Hutchinson, Gary Lee; Lavery, Lawrence Phillip; Punt, Vernon Edmund; and Rivers, Roy Wilben, 3,869,569.
  - Newcomb, Dean R., 3,868,983.
  - Snowden, Charles H., 3,869,696.
  - Thettu, Raghulinga R., 3,868,744.
  - Wells, John B., 3,869,286.
- Yamada, Shigeru; Hamano, Mamoru; and Nakayama, Kaname, to Sanwa Kizai Kabushiki Kaisha. Pile drivers. 3,869,003, Cl. 175-171.000.
- Yamada, Yasutoku: *See*—
  - Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, 3,869,537.
- Yamagishi, Jin; and Momiyama, Hiroaki, to Sony Corporation. Magnetic recording and/or reproducing apparatus having rotary heads with still mode of operation. 3,869,709, Cl. 360-10.000.
- Yamamoto, Hisao; and Nakao, Masaru, to Sumitomo Chemical Company, Ltd. 3-Indolyl aliphatic acid derivatives. 3,869,472, Cl. 260-326.12A.
- Yamamoto, Nobuo: *See*—
  - Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, 3,869,287.
- Yamamoto, Yoshimi: *See*—
  - Hirai, Yoshio; and Yamamoto, Yoshimi, 3,869,248.
- Yamaoka, Nobutatu; and Takahashi, Yasunori, to Taiyo Yuden Kabushiki Kaish; and Sony Corporation. Dielectric porcelain composition. 3,869,398, Cl. 252-63.500.
- Yankee, Herbert L.; and Correte, Richard H., to NL Industries, Inc. Thread rolling dies and method of manufacturing same. 3,868,871, Cl. 76-107.00R.
- Yano, Akira; Sato, Norio; and Iwakawa, Tunekiyo, to Nippon Electric Company, Limited. Pulses of the same or an opposite polarity to electrodes of a plasma display panel. 3,869,644, Cl. 315-169.0TV.
- Yashin, Yakov Ivanovich: *See*—
  - Bebris, Natalya Karlovna; Kiselev, Andrei Vladimirovich; Nikitin, Jury Stepanovich; and Yashin, Yakov Ivanovich, 3,869,409.
- Yasukawa, Junichi: *See*—
  - Suzuki, Tameyuki; Yasukawa, Junichi; Ishii, Teruhiko; Minami, Giiichi; Manabe, Yukihiro; and Nishimura, Mitsuo, 3,869,366.

- Yazawa, Kenichiro: *See—*
  - Kondo, Asaji; Kishimoto, Shinzo; Yazawa, Kenichiro; Miyano, Shizuo; and Honjo, Satoru, 3,869,285.
- Yissum Research Development Company: *See—*
  - Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,869,475.
- Yokoyama, Kenji: *See—*
  - Gotoda, Masao; Yokoyama, Kenji; Kono, Yoshimi; Toyonishi, Shigekazu; Hiwano, Kunio; and Shimoyama, Takaitsu, 3,869,341.
- Yoneyama, Masakazu: *See—*
  - Sakai, Tadao; Yamamoto, Nobuo; Yoneyama, Masakazu; Sawahara, Masao; and Hirose, Takeshi, 3,869,287.
- York, Buddy L.: *See—*
  - Terada, Kazuji; and York, Buddy L., 3,869,545.
- Yorkshire Switchgear and Engineering Co., Limited: *See—*
  - Caton, George, 3,869,587.
- Yoshida, Kenji, to Sony Corporation. Magnetic recording and reproducing apparatus having dual capstans for use with cassettes. 3,869,723, Cl. 360-96.000.
- Yoshida, Mitsuo: *See—*
  - Ono, Hiroshi; and Yoshida, Mitsuo, 3,869,375.
- Yoshikawa, Shinsuke; Sasaki, Tohru; Ota, Mitsuru; Terasaki, Shuji; and Funakoshi, Akira, to Kureka Kagaku Kogyo K.K. Method for manufacturing stretched polyvinylidene fluoride films. 3,869,534, Cl. 264-210.00R.
- Yoshimura, Shoichiro, to Nippon Electric Company, Limited. Flat-article separating apparatus for an automatic mail handling system and the like. 3,869,117, Cl. 271-270.000.
- Yotumoto, Keiichi: *See—*
  - Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Yotumoto, Keiichi; and Sunaga, Hiromi, 3,869,362.
- Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
  - Umezawa, Hamao; Miyano, Tetsuji; Funaishi, Kohtaro; Takeuchi, Tomio; and Aoyagi, Takaaki, 3,869,347.
- Zaitseva, Vera Dmitrievna: *See—*
  - Orlov, Vladimir Alexandrovich; Zaitseva, Vera Dmitrievna; Sinitsyn, Viktor Alexeevich; and Rostovtseva, Ekaterina Efimovna, 3,869,303.
- Zaragosa, Eufrocina M.: *See—*
  - Rockland, Louis B.; Zaragosa, Eufrocina M.; and Hahn, Dulcie M., 3,869,556.
- Zechlin, Richard; and Henderson, Robert M., to Colt Industries Operating Corp. (formerly Fairbanks Morse, Inc.). Ignition system with improved triggering circuit. 3,868,937, Cl. 123-148.00R.
- Zendle, Bernard; and Petree, Marcella C., to United States of America, Navy. Suppressor of fast high power electrical transients. 3,869,648, Cl. 317-16.000.
- Zeugner, Horst: *See—*
  - Milkowski, Wolfgang; Zeugner, Horst; Von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, 3,869,459.
- Zeyher, Fritz: *See—*
  - Schnabele, Werner; Knoche, Georg; and Zeyher, Fritz, 3,869,101.
- Zhizhin, Mikhail Ivanovich: *See—*
  - Koritsky, Andrei Vladimirovich; Ignatov, Viktor Alexandrovich; Polyak, Leonid Moiseevich; Shapiro, Semen Abramovich; Bokman, Grigory Aronovich; Mordvinov, Vladimir Alexandrovich; Zhizhin, Mikhail Ivanovich; Slonimsky, Alexandr Davydovich; Sevinian, Kimik Tigranovich; Adaskin, Semen Izrailovich; and German, Vladimir Vladimirovich, 3,869,628.
- Zhuchin, Vladimir Nikiforovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Puzrin, Leonid Gustavovich; Gorodetsky, Avram Shaevich; Ischenko, Jury Yakovlevich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; Laktionov, Vladimir Sergeevich; Grebtsov, Jury Grigorievich; Perepelitsa, Igor Vasilievich; Fomicheva, Nina Petrovna; Boiko, Georgy Alexandrovich; Kirsenko, Anatoly Antonovich; Rozanov, Dmitry Pavlovich; and Karlov, Stanislav Vasilievich, 3,869,592.
- Ziegler, Donald L., to United States of America, Atomic Energy Commission. Continuous fluid bed reactor for fissionable material. 3,869,256, Cl. 23-284.000.
- Zimmerman, Earl L.; and Homeier, Ronald F., to Code Key International Corporation. Cylindrical lock combination changer. 3,868,838, Cl. 70-383.000.
- Zirps, Wilhelm, to Robert Bosch G.m.b.H. Hydraulic pressure compensator. 3,868,972, Cl. 138-30.000.
- Zitkus, Wayne J., to Owens-Illinois, Inc. Method of finishing laser rods and fixtures therefor. 3,868,794, Cl. 51-216.00A.
- Zuckerwar, Allan J.: *See—*
  - United States of America, National Aeronautics and Space Administration; and Zuckerwar, Allan J., 3,868,856.
- Zuech, Ernest A., to Phillips Petroleum Company. Dehydrogenation of pyrrolidines. 3,869,470, Cl. 260-313.100.
- Zumbach, Bruno, to Zumbach Electronic-Automatic. Method for producing identical flat carriers having representations thereon. 3,868,756, Cl. 29-407.000.
- Zumbach Electronic-Automatic: *See—*
  - Zumbach, Bruno, 3,868,756.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF MARCH, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Bradley, Donald R., G. D. Null, and K. B. Takvorian. Process for texturing a feed yarn. T932,007, 3–4–75, Cl. 57—157.
- Davis, Latham S., and R. A. Satterfield. Apparatus for determining fiber directionality in moving with structures. T932,008, 3–4–75, Cl. 250—571.
- Frederick, Leland L.: *See—*
  - McCullough, John F., and Frederick. T932,002.
- Feasey, Ronald G., and J. L. Freeman, to Imperial Chemical Industries, Ltd. Aromatic polycarbonates. T932,004, 3–4–74, Cl. 260—47.
- Freeman, John L.: *See—*
  - Feasey, Ronald G., and Freeman. T932,004.
- Heinemeyer, Ben W.: *See—*
  - Waples, George E., Jr., Smithers, and Heinemeyer. T932,001.
- Imperial Chemical Industries, Ltd.: *See—*
  - Feasey, Ronald G., and Freeman. T932,004.
- International Business Machines Corp.: *See—*
  - Kruskal, Vincent J. T932,005.
- Kruskal, Vincent J., to International Business Machines Corp. Detection of possibly erroneous segments following failures in primary storage. T932,005, 3–4–75, Cl. 235—153.
- McCullough, John F., and L. L. Frederick. Purification of wet-process phosphoric acid with methanol and ammonia. T932,002, 3–4–75, Cl. 423—321.
- Null, George D.: *See—*
  - Bradley, Donald R., Null, and Takvorian. T932,007.
- Satterfield, Richard A.: *See—*
  - Davis, Latham S., and Satterfield. T932,008.
- Smithers, Michael B.: *See—*
  - Waples, George E., Jr., Smithers, and Heinemeyer. T932,001.
- Stingle, Hans A. Solubilized mono and disazo dyes. T932,006, 3–4–75, Cl. 260—163.
- Strawser, Thomas J. Yarn break detector. T932,003, 3–4–75, Cl. 340—259.
- Takvorian, Kenneth B.: *See—*
  - Bradley, Donald R., Null, and Takvorian. T932,007.
- Waples, George E., Jr., M. B. Smithers, and B. W. Heinemeyer. Ethylene/ethylenically unsaturated carboxylic acid/unsaturated ester low molecular weight interpolymers useful as adhesives. T932,001, 3–4–75, Cl. 260—80.8.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Anna Welding Corp.: *See—*
  - Berghof, Ernest H. Re. 28,357.
- Atlanta/La Salle Capital Corp.: *See—*
  - Sommeria, Marcel R. Re. 28,358.
- Automated Packaging Systems, Inc.: *See—*
  - Lerner, Bernard. Re. 28,350.
- Bell Telephone Laboratories, Inc.: *See—*
  - Hart, Harry P., and Kakalec. Re. 28,359.
- Berghof, Ernest H., to Anna Welding Corp. Method and apparatus for underwater arc welding. Re. 28,357, 3–4–75, Cl. 219—72.
- Bradley, John J.: *See—*
  - Nystrand, Ernst D., Bradley, and Spencer. Re. 28,353.
- Buchholz, Harold J.: *See—*
  - Popoff, Ivan C., Buchholz, and Miller. Re. 28,356.
- Dico Co., Inc.: *See—*
  - Larson, Robert W. Re. 28,352.
- Dresser Industries, Inc.: *See—*
  - Dyer, Norman D. Re. 28,351.
- Dyer, Norman D., to Dresser Industries, Inc. Pipe handling apparatus. Re. 28,351, 3–4–75, Cl. 173—164.
- Evans, Paul F., H. D. Lees, and M. S. Maltz, to Xerox Corp. Electrophoretic color display device. Re. 28,360, 3–4–75, Cl. 358—56.
- Hart, Harry P., and R. J. Kakalec, to Bell Telephone Laboratories, Inc. Closed loop ferroresonant regulator. Re. 28,359, 3–4–75, Cl. 323—56.
- Kakalec, Robert J.: *See—*
  - Hart, Harry P., and Kakalec. Re. 28,359.
- Kamatics Corp.: *See—*
  - Orkin, Stanley S. Re. 28,354.
- Larson, Robert W., to Dico Co., Inc. Heel boom log grappling apparatus. Re. 28,352, 3–4–75, Cl. 214—147.
- Lees, Harold D.: *See—*
  - Evans, Paul F., Lees, and Maltz. Re. 28,360.
- Lerner, Bernard, to Automated Packaging Systems, Inc. Bag handling apparatus and method. Re. 28,350, 3–4–75, Cl. 53—29.
- Lucas, Joseph (Industries) Ltd.: *See—*
  - Sommeria, Marcel R. Re. 28,358.
- Maltz, Martin S.: *See—*
  - Evans, Paul F., Lees, and Maltz. Re. 28,360.
- Miller, Harold J.: *See—*
  - Popoff, Ivan C., Buchholz, and Miller. Re. 28,356.
- Nystrand, Ernst D., J. J. Bradley, and H. J. Spencer, to Paper Converting Machine Co., Inc. Web-winding apparatus and method. Re. 28,353, 3–4–75, Cl. 242—56.
- Orkin, Stanley S., to Kamatics Corp. Bearing construction. Re. 28,354, 3–4–75, Cl. 308—238.
- Paper Converting Machine Co., Inc.: *See—*
  - Nystrand, Ernst D., Bradley, and Spencer. Re. 28,353.
- Pennwalt Corp.: *See—*
  - Popoff, Ivan C., Buchholz, and Miller. Re. 28,356.
- Petri, Nello J. Means for securing an insert to a base piece. Re. 28,355, 3–4–75, Cl. 403—328.
- Popoff, Ivan C., B. Buchholz, and H. J. Miller, to Pennwalt Corp. Antibacterial and antifungal treatment with sulfones. Re. 28,356, 3–4–75, Cl. 424—270.
- Sommeria, Marcel R., to Atlanta/La Salle Capital Corp., and Joseph Lucas (Industries) Ltd. Linear and rotary magnetic motors. Re. 28,358, 3–4–75, Cl. 310—14.
- Spencer, Harvey J.: *See—*
  - Nystrand, Ernst D., Bradley, and Spencer. Re. 28,353.
- Xerox Corp.: *See—*
  - Evans, Paul F., Lees, and Maltz. Re. 28,360.

LIST OF DESIGN PATENTEES

- American Standard Inc.: *See—*
  - Stairs, Henry M., Jr. 234,427.
- Armour, John F., L. F. Plaskan, and P. L. Crease, to NCR Corp. Accounting machine or similar article. 234,430, 3–4–75, Cl. D26—5.
- Bair, Lester E., to Fairshare Marketing & Mfg. Co., Inc. Cooking pouch. 234,417, 3–4–75, Cl. D9—249.
- Becquet, Yvon, to Societe SO-GE-MA-P. Folding chair. 234,414, 3–4–75, Cl. D6—73.
- Boganowski, Theodore D., and T. L. Artificial Christmas tree. 234,432, 3–4–75, Cl. D29—1.
- Boganowski, Theodore L.: *See—*
  - Boganowski, Theodore D., and T. L. 234,432.
- Bombardier Ltd.: *See—*
  - Lapointe, Anselme, and Scott. 234,421.
- Craik, Darrell W., to Teledyne Inc. Structural panel. 234,437, 3–4–75, Cl. D54—2.
- Crease, Pierre L.: *See—*
  - Armour, John F., Plaskan, and Crease. 234,430.
- Dashner, James W., to International Telephone and Telegraph Corp. Fire hydrant. 234,423, 3–4–75, Cl. D23—12.
- De Filippis, John, and R. L. Taylor, to International Telephone Corp. Photoflash unit. 234,441, 3–4–75, Cl. D61—1.
- Fairshare Marketing & Mfg. Co., Inc.: *See—*
  - Bair, Lester E. 234,417.
- Fanini Fain S.p.A.: *See—*
  - Hauner, Carlo. 234,413.
- Fitzgerald, Timothy P., to Image Systems, Inc. Strip cutter. 234,438, 3–4–75, Cl. D55—1.
- Forsey, Thomas, Jr., and D. D. Tompkins, to The Goodyear Tire & Rubber Co. Passenger vehicle body. 234,418, 3–4–75, Cl. D12—40.
- General Electric Co.: *See—*
  - Hershberger, Doran D. 234,429.

Gerdom, James M., to Honan Sales Co., Inc. Photoelectric eye unit. 234,426, 3–4–75, Cl. D26—1.

Golub, Abraham. Vehicle identification sign. 234,443, 3–4–75, Cl. D96—12.

Goodyear Tire & Rubber Co., The: *See—*
Forsey, Thomas, Jr., and Tompkins. 234,418.

Hauner, Carlo, to Fanini Fain S.p.A. Combined portable bar, table and magazine rack. 234,413, 3–4–75, Cl. D6—4.

Hershberger, Doran D., to General Electric Co. End frame for a dynamoelectric machine. 234,429, 3–4–75, Cl. D26—5.

Hofstetter, Ueli, to SINA AG fur Instrumentierung und- Automatik. Hygrometer. 234,419, 3–4–75, Cl. D10—56.

Holland, Richard G. Digging tooth. 234,436, 3–4–75, Cl. D39—1.

Honan Sales Co., Inc.: *See—*
Gerdom, James M. 234,426.

Hubner, Gerhard: *See—*
Knox, John E., Micault, and Hubner. 234,428.

Iida, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Combined record player and amplifier. 234,440, 3–4–75, Cl. D56—4.

Iida, Yoshiaki, and K. Okabe, to Matsushita Electric Industrial Co., Ltd. Combined record player and amplifier. 234,439, 3–4–75, Cl. D56—4.

Image Systems, Inc.: *See—*
Fitzgerald, Timothy P. 234,438.

International Standard Electric Corp.: *See—*
Knox, John E., Micault, and Hubner. 234,428.

International Telephone and Telegraph Corp.: *See—*
Dashner, James W. 234,423.
De Filippis, John, and Taylor. 234,441.

Johnson, Owen F.: *See—*
Sullivan, John, and Powers. 234,422.

Knox, John E., A. Micault, and G. Hubner, to International Standard Electric Corp. Document encoder. 234,428, 3–4–75, Cl. D26—5.

Lapointe, Anselme, and T. Scott, to Bombardier Ltd. Watercraft. 234,421, 3–4–75, Cl. D12—69.

Lauderback, Stephen K., to Sunbeam Corp. Canister vacuum cleaner. 234,415, 3–4–75, Cl. D7—166.

Matsushita Electric Industrial Co., Ltd.: *See—*
Iida, Yoshiaki. 234,440.
Iida, Yoshiaki, and Okabe. 234,439.

Mazur, Harry E. Cradle support for a camera. 234,442, 3–4–74. Cl. D61—1.

McGehee, Charles R., and B. H. Osterberg, to Western Data Products, Inc. Passenger turnstile. 234,431, 3–4–75, Cl. D28—1.

Micault, Andre: *See—*
Knox, John E., Micault, and Hubner. 234,428.

Myers Electric Products, Inc.: *See—*
Plummer, Merle A. 234,425.

NCR Corp.: *See—*
Armour, John F., Plaskan, and Crease. 234,430.

Okabe, Ken: *See—*
Iida, Yoshiaki, and Okabe. 234,439.

Osterberg, Bruce H.: *See—*
MeGehee, Charles R., and Osterberg. 234,431.

Pineiro, Jose L. Game table. 234,435, 3–4–75, Cl. D34—5.

Plaskan, Laurance F.: *See—*
Armour, John F., Plaskan, and Crease. 234,430.

Plummer, Merle A., to Myers Electric Products, Inc. Power outlet box. 234,425, 3–4–74, Cl. D26—1.

Powers, Donald J.: *See—*
Sullivan, John, and Powers. 234,422.

Rasmussen, Keith O. Decorative side panel for dental chair. 234,424, 3–4–75, Cl. D24—1.

Revlon, Inc.: *See—*
Skolinik, Albert. 234,416.

SINA AG fur Instrumentierung und- Automatik: *See—*
Hofstetter, Ueli. 234,419.

Schock, Carlyle W. Motorized tree processing equipment vehicle. 234,420, 3–4–75, Cl. D12—57.

Scott, Thomas: *See—*
Lapointe, Anselme, and Scott. 234,421.

Select Markets, Inc.: *See—*
Zivica, Robert F. 234,433.

Skolnik, Albert, to Revlon, Inc. Bottle. 234,416, 3–4–74, Cl. D9—54.

Societe SO-GE-MA-P: *See—*
Becquet, Yvon. 234,414.

Stairs, Henry M., Jr., to American Standard Inc. Single bowl sink. 234,427, 3–4–75, Cl. D23—58.

Sullivan, John, D. J. Powers, to Owen F. Johnson. Typing pacer. 234,422, 3–4–75, Cl. D19—91.

Sunbeam Corp.: *See—*
Lauderback, Stephen K. 234,415.

Swan, Allan O., to Textron Inc. Pendant pull for a slide fastener. 234,412, 3–4–75, Cl. D2—415.

Taylor, Robert L.: *See—*
De Filippis, John, and Taylor. 234,441.

Teledyne Inc.: *See—*
Craik, Darrell W. 234,437.

Textron Inc.: *See—*
Swan, Allan O. 234,412.

Tompkins, David D.: *See—*
Forsey, Thomas, Jr., and Tompkins. 234,418.

Trevino, Lee, to Lee Trevino Enterprises, Inc. Putting trainer. 234,434, 3–4–75, Cl. D34—5.

Trevino, Lee, Enterprises, Inc.: *See—*
Trevino, Lee. 234,434.

Western Data Products, Inc.: *See—*
MeGehee, Charles R., and Osterberg. 234,431.

White Consolidated Industries, Inc.: *See—*
Zuppert, Horace E. 234,411.

Zivica, Robert F., to Select Markets, Inc. Football wall plaque. 234,433, 3–4–75, Cl. D29—23.

Zuppert, Horace E., to White Consolidated Industries, Inc. Safety hat or similar article. 234,411, 3–4–75, Cl. D2—231.

CLASSIFICATION OF PATENTS

ISSUED MARCH 4, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
8	3,868,726
	3,868,727
114	3,868,728
237	3,868,729
CLASS 3	
1	3,868,730
CLASS 4	
10	3,868,731
172	3,868,732
CLASS 5	
13	3,868,733
317B	3,868,734
334C	3,868,735
CLASS 8	
15	3,869,250
CLASS 12	
1B	3,868,736
12	3,868,737
CLASS 13	
29	3,869,560
CLASS 15	
1.7	3,868,739
4	3,868,738
21D	3,868,740
79	3,868,741
172	3,868,742
250.23	3,868,743
256.52	3,868,744
CLASS 16	
41	3,868,745
128	3,868,746
CLASS 17	
34	3,868,747
CLASS 23	
252R	3,869,251
259	3,869,252
260	3,869,253
262	3,869,254
263	3,869,255
284	3,869,256
CLASS 24	
115M	3,868,748
CLASS 28	
72.15	3,868,749
CLASS 29	
95R	3,868,750
105A	3,868,752
105R	3,868,751
156.4R	3,868,753
156.8FC	3,869,258
157.3A	3,868,754
182.8	3,869,259
195	3,869,260
196.3	3,869,261
200H	3,868,757
200J	3,868,755
407	3,868,756
430	3,868,758
464	3,868,759
470	3,868,760
470.1	3,868,761
	3,868,762
568	3,868,763
589	3,868,764
	3,868,765
596	3,868,766
598	3,868,767
599	3,868,768
	3,868,769
626	3,868,770
628	3,868,771
CLASS 30	
34R	3,868,772
130	3,868,773
161	3,868,774
329	3,868,775
CLASS 32	
5	3,868,776
CLASS 33	
77	3,868,777
227	3,868,778
CLASS 34	
54	3,868,779
116	3,868,780
CLASS 35	
42	3,868,781
48R	3,868,782
CLASS 36	
2.5AL	3,868,783
CLASS 43	
42.23	3,868,784
44.98	3,868,785
CLASS 44	
56	3,869,262
CLASS 46	
51	3,868,786
CLASS 47	
1.2	3,868,787
CLASS 49	
374	3,868,788
501	3,868,789
CLASS 51	
9	3,868,790
34J	3,868,791
204	3,868,792
209R	3,868,793
	3,869,263
216A	3,868,794
248	3,868,795
CLASS 52	
73	3,868,797
98	3,868,804
100	3,868,798
131	3,868,799
285	3,868,800
309	3,868,801
471	3,868,802
473	3,868,803
616	3,868,805
618	3,868,796
758F	3,868,806
CLASS 53	
29	Re.28,350
	3,868,807
97	3,868,808
117	3,868,809
198R	3,868,810
CLASS 55	
88	3,869,264
274	3,869,265
309	3,869,266
492	3,869,267
CLASS 56	
1	3,868,811
CLASS 57	
12	3,868,812
34R	3,868,813
34.5	3,868,814
88	3,868,815
140BY	3,868,816
CLASS 60	
39.02	3,868,817
39.15	3,868,818
276	3,868,819
382	3,868,820
421	3,868,821
600	3,868,822
641	3,868,823
CLASS 61	
1F	3,868,824
36A	3,868,825
46.5	3,868,826
CLASS 62	
63	3,868,827
196	3,868,828
285	3,868,829
290	3,868,830
CLASS 64	
16	3,868,831
23.5	3,868,832
27NM	3,868,833
CLASS 65	
2	3,869,268
106	3,869,269
134	3,869,270
273	3,869,271
CLASS 66	
1A	3,868,834
CLASS 68	
20	3,868,835
CLASS 70	
240	3,868,836
259	3,868,837
383	3,868,838
CLASS 71	
1	3,869,272
77	3,869,273
92	3,869,274
	3,869,275
93	3,869,276
113	3,869,277
121	3,869,278
CLASS 72	
21	3,868,839
49	3,868,840
260	3,868,841
367	3,868,842
CLASS 73	
1R	3,868,843
4R	3,868,844
6	3,868,845
27R	3,868,846
67.8S	3,868,847
88.5R	3,868,848
100	3,868,849
143	3,868,850
144	3,868,851
233	3,868,852
300	3,868,853
421.5	3,868,854
530	3,868,855
557	3,868,856
558	3,868,857
CLASS 74	
7R	3,868,858
61	3,868,859
63	3,868,860
129	3,868,861
230.17E	3,868,862
243CS	3,868,863
492	3,868,864
501R	3,868,865
513	3,869,279
752C	3,868,866
773	3,868,867
856	3,868,868
866	3,868,869
CLASS 75	
.5A	3,869,280
67	3,869,281
82	3,869,282
129	3,869,283
134F	3,869,284
CLASS 76	
107R	3,868,871
107S	3,868,870
CLASS 81	
52.4R	3,868,872
119	3,868,873
121R	3,868,874
158	3,868,875
CLASS 82	
20	3,868,876
CLASS 83	
210	3,868,877
316	3,868,879
356.3	3,868,878
CLASS 84	
267	3,868,880
377	3,868,881
462	3,868,882
CLASS 89	
1.8	3,868,883
11	3,868,884
CLASS 90	
11A	3,868,885
11D	3,868,886
12B	3,868,887
CLASS 91	
375A	3,868,888
506	3,868,889
CLASS 92	
86	3,868,890
CLASS 93	
8W	3,868,891
	3,868,892
50	3,868,893
61A	3,868,894
84TW	3,868,895
CLASS 96	
1PE	3,869,286
1R	3,869,285
22	3,869,287
	3,869,288
66.3	3,869,289
76R	3,869,290
100	3,869,291
115R	3,869,292
CLASS 98	
2.11	3,868,896
CLASS 99	
483	3,868,897
CLASS 100	
35	3,868,898
45	3,868,903
CLASS 101	
35	3,868,899
40	3,868,900
41	3,868,901
44	3,868,902
316	3,868,904
CLASS 102	
8	3,868,905
CLASS 104	
89	3,868,906
173	3,868,907
CLASS 105	
1R	3,868,908
	3,868,909
164	3,868,910
	3,868,911
197DH	3,868,912
240	3,868,913
248	3,868,914
CLASS 106	
14	3,869,293
15FP	3,869,294
90	3,869,295
214	3,869,296
277	3,869,297
304	3,869,298
306	3,869,299
CLASS 108	
51	3,868,915
103	3,868,916
CLASS 113	
1E	3,868,917
121C	3,868,918
	3,868,919
CLASS 114	
16R	3,868,920
74R	3,868,921
235A	3,868,922
CLASS 116	
124R	3,868,923
CLASS 117	
17	3,869,300
36.1	3,869,301
46CC	3,869,302
47A	3,869,303
65.2	3,869,304
66	3,869,305
72	3,869,306
122PA	3,869,307
126GB	3,869,308
138.8A	3,869,310
138.8	3,869,309
155L	3,869,311
215	3,869,312
CLASS 118	
49	3,868,924
621	3,868,925
CLASS 119	
75	3,868,926
CLASS 122	
240R	3,868,927
CLASS 123	
8.09	3,868,928
	3,868,929
8.13	3,868,930
51R	3,868,931
54B	3,868,932
102	3,868,933
119A	3,868,934
119F	3,868,935
139AW	3,868,936
148E	3,868,938
148R	3,868,937
179L	3,868,939
188M	3,868,940
188S	3,868,953
CLASS 126	
19R	3,868,941
25R	3,868,942
	3,868,943
59.5	3,868,944
271	3,868,945
CLASS 128	
2.05S	3,868,954
2.06E	3,868,947
2.06G	3,868,948
2.1E	3,868,946
66	3,868,949
	3,868,950
75	3,868,951
78	3,868,952
296	3,868,955
345	3,868,956
346	3,868,957
352	3,868,958
CLASS 132	
53	3,868,959
CLASS 134	
73	3,868,960
	3,869,313
CLASS 135	
4R	3,868,961
CLASS 136	
86A	3,869,314
90	3,869,315
134	3,869,316
CLASS 137	
218	3,868,962
340	3,868,963
344	3,868,964
559	3,868,965
596.16	3,868,966
604	3,868,967
624.18	3,868,968
625.46	3,868,970
625.48	3,868,971
625.5	3,868,969
CLASS 138	
30	3,868,972
43	3,868,973
129	3,868,974
CLASS 139	
1R	3,868,975
126	3,868,976
302	3,868,977
CLASS 141	
19	3,868,978
159	3,868,979
CLASS 144	
2N	3,868,980
2Z	3,868,981
309AC	3,868,982
CLASS 145	
50R	3,868,983
CLASS 148	
6.15R	3,869,317
12.3	3,869,318
31.5	3,869,319
37	3,869,037
175	3,869,321
188	3,869,322
CLASS 149	
41	3,869,320
CLASS 150	
2.3	3,868,984
CLASS 152	
330R	3,868,985
CLASS 156	
17	3,869,323
	3,869,324
192	3,869,325
209	3,869,326
256	3,869,327
285	3,869,328
308	3,869,329
380	3,869,330
571	3,869,331
CLASS 161	
31	3,869,332
39	3,869,333
87	3,869,334
143	3,869,335
146	3,869,336
159	3,869,337
165	3,869,338
170	3,869,339
182	3,869,340
270	3,869,341
CLASS 162	
164	3,869,342
	3,869,343
274	3,869,344
CLASS 164	
7	3,868,986
52	3,868,987
69	3,868,988
278	3,868,989
369	3,868,990
CLASS 165	
38	3,868,991
51	3,868,992
104	3,868,993
142	3,868,994
CLASS 166	
224A	3,868,995
250	3,868,996
275	3,868,997
278	3,868,998
292	3,868,999
315	3,869,000
CLASS 172	
7	3,869,001
CLASS 173	
164	Re.28,351
166	3,869,002
CLASS 174	
11R	3,869,561
15C	3,869,562
52PE	3,869,563
CLASS 175	
171	3,869,003
CLASS 177	
25	3,869,004
	3,869,005
60	3,869,006
211	3,869,007
217	3,869,008
	3,869,009
CLASS 178	
6	3,869,564
6.8	3,869,565
7.1	3,869,572
7.2	3,869,566
	3,869,567
7.3S	3,869,568
7.6	3,869,569
26R	3,869,570
30	3,869,571
73	3,869,573
CLASS 179	
1SA	3,869,575
1SE	3,869,576
2DP	3,869,577
	3,869,578
15BF	3,869,580
15BS	3,869,080
	3,869,579
18H	3,869,581

98 3,869,582
100.4S1 3,869,583
156 3,869,584
173 3,869,585

CLASS 180
9.24 3,869,011
9.5 3,869,010
11 3,869,012
44R 3,869,013
53R 3,869,014
71 3,869,015
73R 3,869,016
82R 3,869,017
89R 3,869,018
105E 3,869,019
120 3,869,020

CLASS 182
3 3,869,021
96 3,869,022

CLASS 184
15A 3,869,023

CLASS 188
72.5 3,869,024
79.5GE 3,869,025
79.5GT 3,869,026
340 3,869,027

CLASS 190
13R 3,869,034

CLASS 191
1R 3,869,028
49 3,869,029

CLASS 192
67R 3,869,030

CLASS 193
35R 3,869,031

CLASS 194
1N 3,869,032

CLASS 195
62 3,869,345
80R 3,869,346
3,869,347
99 3,869,348
103.5R 3,869,349

CLASS 197
10 3,869,033

CLASS 198
24 3,869,035
35 3,869,036
165 3,869,038
175 3,869,039
203 3,869,574
219 3,869,040
259 3,869,041
267 3,869,042

CLASS 200
11G 3,869,586
50AA 3,869,587
61.47 3,869,588
144B 3,869,589
157 3,869,590
321 3,869,591

CLASS 201
32 3,869,350

CLASS 202
172 3,869,351
227 3,869,352

CLASS 203
38 3,869,353
43 3,869,357

CLASS 204
1T 3,869,354
32R 3,869,355
38R 3,869,356
55Y 3,869,358
96 3,869,359
105M 3,869,360
148 3,869,361
157.1R 3,869,362
158R 3,869,363
180R 3,869,365
181 3,869,366
192 3,869,367
3,869,368
195S 3,869,369
3,869,370
206 3,869,371
224M 3,869,373
224R 3,869,372
273 3,869,374
301 3,869,364
3,869,375
3,869,376

CLASS 206
45.31 3,869,043
63.3 3,869,044
229 3,869,062

CLASS 208
66 3,869,377
78 3,869,378

CLASS 209
222 3,869,379

CLASS 210
17 3,869,380
20 3,869,381
30 3,869,382
32 3,869,383
44 3,869,384
53 3,869,385
3,869,386
54 3,869,387
70 3,869,388
77 3,869,389
222 3,869,390
3,869,391
493 3,869,392

CLASS 211
11 3,869,045

CLASS 214
1BB 3,869,047
1R 3,869,046
8.5A 3,869,048
3,869,049
16R 3,869,050
18SC 3,869,051
38B 3,869,052
41 3,869,053
146R 3,869,054
147AS Re.28,352
151 3,869,055

CLASS 215
1C 3,869,056
216 3,869,057
219 3,869,058
320 3,869,059

CLASS 219
72 Re.28,357
73 3,869,592
121P 3,869,593
211 3,869,594
387 3,869,595
438 3,869,596
505 3,869,597

CLASS 220
19 3,869,060
270 3,869,063
334 3,869,061

CLASS 221
19 3,869,064
40 3,869,065
102 3,869,066

CLASS 222
70 3,869,067
148 3,869,068
180 3,869,069
193 3,869,070
385 3,869,071
402.16 3,869,072

CLASS 223
37 3,869,073

CLASS 224
1R 3,869,074
42.06 3,869,075

CLASS 229
16D 3,869,077
17R 3,869,078
32 3,869,076
40 3,869,079

CLASS 235
60TK 3,869,081
61.11E 3,869,599
61.11H 3,869,082
61.11R 3,869,598
61.12N 3,869,600
92PC 3,869,083
150.2 3,869,601
151.3 3,869,602
153AM 3,869,603
183 3,869,084
198 3,869,085

CLASS 238
10R 3,869,086

CLASS 239
128 3,869,087
177 3,869,088
338 3,869,089

CLASS 240
1.3 3,869,604
47 3,869,605
51.11R 3,869,606
52R 3,869,696

CLASS 241
5 3,869,090
183 3,869,091

CLASS 242
55.19A 3,869,092
55.21 3,869,093
55.53 3,869,094
56A Re.28,353
56R 3,869,095

84.8 3,869,096
107 3,869,097
107.4 3,869,098
199 3,869,099
201 3,869,100

CLASS 244
3.1 3,869,101
36 3,869,102
100R 3,869,103
110C 3,869,104

CLASS 248
188.8 3,869,105
345.1 3,869,106

CLASS 250
266 3,869,607
270 3,869,608
272 3,869,609
303 3,869,610
311 3,869,611
319 3,869,612
343 3,869,613
365 3,869,614
508 3,869,615
547 3,869,616

CLASS 251
94 3,869,107
366 3,869,108

CLASS 252
12.2 3,869,393
46.7 3,869,394
47 3,869,395
56R 3,869,396
62.1 3,869,397
63.5 3,869,398
118 3,869,399
182 3,869,400
186 3,869,401
300 3,869,402
301.3R 3,869,403
301.6P 3,869,404
301.6S 3,869,405
316 3,869,406
361 3,869,408
446 3,869,409
455R 3,869,410
522 3,869,411
527 3,869,412

CLASS 256
59 3,869,109

CLASS 259
149 3,869,110
192 3,869,111

CLASS 260
2.5BE 3,869,413
6 3,869,414
17R 3,869,415
27R 3,869,416
28.5AS 3,869,417
29.6F 3,869,465
29.7T 3,869,418
30.6R 3,869,420
30.8R 3,869,419
33.6AQ 3,869,421
42.47 3,869,422
45.8NT 3,869,423
45.9R 3,869,424
3,869,425
3,869,426
47EP 3,869,427
77.5AQ 3,869,428
78L 3,869,431
78S 3,869,429
3,869,430
78.5R 3,869,432
79.1 3,869,433
3,869,434
79.5C 3,869,435
112B 3,869,436
112.7 3,869,437
123.5 3,869,438
146D 3,869,439
146R 3,869,440
156 3,869,441
207.1 3,869,442
209R 3,869,443
210E 3,869,444
3,869,445
211.5R 3,869,446
239BD 3,869,447
3,869,448
239.1 3,869,449
239.3T 3,869,450
239.5 3,869,451
239.55R 3,869,452
242 3,869,453
244R 3,869,454
247.5E 3,869,455
251 3,869,456
260 3,869,457
268PC 3,869,458
3,869,460
268R 3,869,459
284 3,869,461
288R 3,869,462

293.61 3,869,463
295.5B 3,869,464
302S 3,869,466
307D 3,869,467
307R 3,869,468
308A 3,869,469
313.1 3,869,470
326.11R 3,869,471
326.12A 3,869,472
326.45 3,869,407
343.2R 3,869,473
343.7 3,869,474
345.2 3,869,475
3,869,476
345.5 3,869,477
346.2R 3,869,478
346.4 3,869,479
347.8 3,869,480
397.4 3,869,481
403 3,869,482
404.5 3,869,483
3,869,484
408 3,869,485
429K 3,869,486
429.7 3,869,487
428.5C 3,869,488
453R 3,869,489
455A 3,869,490
457 3,869,491
463 3,869,492
464 3,869,493
465D 3,869,495
3,869,497
3,869,498
465E 3,869,496
465F 3,869,499
465G 3,869,494
465.3 3,869,500
3,869,501
468J 3,869,502
471C 3,869,503
3,869,504
479R 3,869,505
514.5 3,869,506
515A 3,869,507
531R 3,869,508
543R 3,869,509
544M 3,869,510
561N 3,869,511
571 3,869,512
577 3,869,513
584R 3,869,514
590 3,869,515
598 3,869,516
602 3,869,517
604R 3,869,518
614F 3,869,519
654D 3,869,520
667 3,869,521
3,869,522
668R 3,869,523
671M 3,869,524
873 3,869,525
929 3,869,526
946 3,869,527

CLASS 261
39A 3,869,528
130 3,869,529

CLASS 264
33 3,869,530
46.6 3,869,531
71 3,869,532
146 3,869,533
210R 3,869,534
219 3,869,535

CLASS 266
33S 3,869,112

CLASS 267
57.1R 3,869,113
69 3,869,114

CLASS 271
147 3,869,115
160 3,869,116
270 3,869,117

CLASS 272
3 3,869,118
38 3,869,119
65 3,869,120
79R 3,869,121

CLASS 273
94R 3,869,122
105.2 3,869,123
131AC 3,869,124
137D 3,869,125
175 3,869,126
195A 3,869,128
195B 3,869,127

CLASS 274
9B 3,869,129
10S 3,869,130

CLASS 277
21 3,869,131
26 3,869,132

27 3,869,133
56 3,869,134
80 3,869,135

CLASS 280
11.35D 3,869,136
47.19 3,869,137
93 3,869,138
96 3,869,139
124F 3,869,141
124R 3,869,140
3,869,142
150AB 3,869,143
3,869,145
179R 3,869,144
242WC 3,869,146
438R 3,869,147
457 3,869,148
475 3,869,149

CLASS 285
13 3,869,150
114 3,869,151
137R 3,869,152
3,869,153
156 3,869,154
158 3,869,155
374 3,869,156

CLASS 292
35 3,869,158
92 3,869,159
108 3,869,160
166 3,869,161
283 3,869,162

CLASS 293
63 3,869,163
3,869,164
3,869,165
69R 3,869,166
71R 3,869,167

CLASS 296
1S 3,869,617
56 3,869,168

CLASS 297
84 3,869,169
270 3,869,170
313 3,869,171
316 3,869,172
388 3,869,173

CLASS 301
9DN 3,869,174
37R 3,869,175

CLASS 303
3 3,869,176
21F 3,869,177
67 3,869,178

CLASS 307
88.3 3,869,618
117 3,869,619
141 3,869,620
147 3,869,621
213 3,869,622
241 3,869,623
267 3,869,624

CLASS 308
34 3,869,179
180 3,869,180
187.2 3,869,181
3,869,182
238 Re.28,354

CLASS 310
12 3,869,625
14 Re.28,358
152 3,869,626
162 3,869,627
179 3,869,628
216 3,869,629

CLASS 312
248 3,869,183
330 3,869,184

CLASS 313
188 3,869,630
217 3,869,631
325 3,869,633
330 3,869,634
3,869,635
341 3,869,636
346 3,869,632
500 3,869,637

CLASS 315
39.61 3,869,638
86 3,869,639
97 3,869,640
135 3,869,641
151 3,869,642
167 3,869,643
169TV 3,869,644
209T 3,869,645
246 3,869,646

CLASS 317
2B 3,869,647
16 3,869,648
18D 3,869,649

61 3,869,650
155.5 3,869,651
230 3,869,652

CLASS 318
364 3,869,653
443 3,869,654
591 3,869,655
696 3,869,656

CLASS 320
39 3,869,657

CLASS 321
2 3,869,658
15 3,869,659

CLASS 323
17 3,869,660
20 3,869,661
56 Re.28,359

CLASS 324
34R 3,869,662
41 3,869,663
51 3,869,664
72 3,869,665
76R 3,869,666
113 3,869,667
133 3,869,668

CLASS 325
30 3,869,669
38A 3,869,670
118 3,869,671
392 3,869,672
393 3,869,673
422 3,869,674

CLASS 328
228 3,869,675

CLASS 329
204 3,869,676

CLASS 330
31 3,869,677
53 3,869,678

CLASS 331
8 3,869,679
94.5M 3,869,680
96 3,869,681

CLASS 332
11R 3,869,682

CLASS 333
30R 3,869,683

CLASS 335
152 3,869,684
196 3,869,685
216 3,869,686
236 3,869,687

CLASS 337
82 3,869,688
164 3,869,689
390 3,869,690

CLASS 338
231 3,869,691
296 3,869,692

CLASS 339
65 3,869,185
89R 3,869,186
91P 3,869,187
95R 3,869,188
96 3,869,189
98 3,869,190
111 3,869,191
147 3,869,192

CLASS 340
6R 3,869,693
16R 3,869,694
52A 3,869,695
146.3AG 3,869,698
146.3P 3,869,697
148 3,869,699
149A 3,869,700

CLASS 350
6 3,869,193
96WG 3,869,194
160LC 3,869,195
3,869,196
161 3,869,197
259 3,869,198
293 3,869,199

CLASS 351
85 3,869,200

CLASS 353
120 3,869,201

CLASS 355
3R 3,869,202
4 3,869,203
66 3,869,204
67 3,869,205

CLASS 356
2 3,869,206
4 3,869,207
102 3,869,208
103 3,869,209
106LR 3,869,210

---

161 3,869,211
189 3,869,212
244 3,869,213
246 3,869,214
3,869,215

CLASS 357
54 3,869,704
72 3,869,701
74 3,869,702
79 3,869,703

CLASS 358
5 3,869,705
12 3,869,706
56 Re.28,360

CLASS 360
5 3,869,707
8 3,869,708

10 3,869,709
17 3,869,710
3,869,711
33 3,869,712
35 3,869,713
45 3,869,714
48 3,869,715
55 3,869,716
60 3,869,717
3,869,718
72 3,869,719
3,869,720
77 3,869,721
92 3,869,722
96 3,869,723
106 3,869,724
130 3,869,725

CLASS 401
43 3,869,216

CLASS 403
140 3,869,217
225 3,869,157
241 3,869,218
282 3,869,219
328 Re.28,355

CLASS 415
56 3,869,220
130 3,869,221
134 3,869,222

CLASS 417
212 3,869,223
383 3,869,224
430 3,869,225
462 3,869,226

CLASS 418
15 3,869,227
132 3,869,228

142 3,869,229
3,869,230
267 3,869,231

CLASS 423
7 3,869,536
121 3,869,537
206 3,869,538
300 3,869,540
390 3,869,543
407 3,869,541
410 3,869,542
544 3,869,257
645 3,869,544
3,869,545

CLASS 424
88 3,869,546
89 3,869,547
94 3,869,548

177 3,869,549
227 3,869,550
236 3,869,539
270 Re.28,356
301 3,869,551
306 3,869,552
317 3,869,553

CLASS 425
6 3,869,232
78 3,869,233
112 3,869,234
143 3,869,235
144 3,869,236
292 3,869,237
294 3,869,238
302B 3,869,239
374 3,869,240
405H 3,869,241

CLASS 426
65 3,869,554
134 3,869,555
352 3,869,556
393 3,869,557
443 3,869,558
481 3,869,559

CLASS 431
11 3,869,242
90 3,869,243
116 3,869,244
326 3,869,245
351 3,869,246

CLASS 432
80 3,869,247
106 3,869,248
121 3,869,249

CLASSIFICATION OF DESIGNS

D2- 231 234,411
415 234,412
D6- 4 234,413
73 234,414
D7- 166 234,415
D9- 54 234,416

249 234,417
D10- 56 234,419
D12- 40 234,418
57 234,420
69 234,421
D19- 91 234,422

D23— 12 234,423
58 234,427
D24— 1B 234,424
D26— 234,425
F 234,426
5A 234,429

C 234,428
234,430
D28— 1B 234,431
D29— A 234,432
23 234,433

D34— 5CB 234,434
J 234,435
D39— 1R 234,436
D54— 2A 234,437
D55— 1 234,438

D56- 4R 234,439
234,440
D61- 1F 234,441
G 234,442
D96- 12R 234,443

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 687]

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37 T932,001
209- 166 T932,003

242- 68.3 T932,004

310- 178 T932,005

317- 15 T932,007

340- 172.5 T932,008

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 3,869,615
2 3,869,295
3 3,868,918
4 3,868,770
3,868,828
3,868,904
3,869,085
3,869,158
3,869,704
5 3,869,521
6 Re.28,355
3,868,733
3,868,739
3,868,742
3,868,776
3,868,787
3,868,789
3,868,791
3,868,797
3,868,802
3,868,804
3,868,806
3,868,823
3,868,827
3,868,834
3,868,849
3,868,863
3,868,872
3,868,880
3,868,920
3,868,921
3,868,922
3,868,943
3,868,949
3,868,951
3,868,958
3,868,973
3,869,012
3,869,041
3,869,042
3,869,069
3,869,070
3,869,086
3,869,088
3,869,108
3,869,119
3,869,151
3,869,159
3,869,174
3,869,203
3,869,210
3,869,263
3,869,273
3,869,321
3,869,345
3,869,351
3,869,385
3,869,386
3,869,393
3,869,421
3,869,438
3,869,546
3,869,556
3,869,595
3,869,613
3,869,614
3,869,625
3,869,631
3,869,668
3,869,676
3,869,679
3,869,680
3,869,711
3,869,713
3,869,721
8 3,868,727
3,868,738
3,868,799
3,868,837
3,868,878
3,868,941
3,868,997
3,869,136
3,869,256
3,869,257
3,869,327
3,869,559
3,869,714
9 Re.28,354
3,868,726
3,868,734
3,868,830
3,868,874
3,868,946
3,868,965
3,868,994
3,869,066
3,869,093
3,869,266
3,869,282
3,869,288
3,869,363
3,869,474
3,869,553
3,869,555
3,869,577
3,869,583
3,869,636
3,869,708
10 3,868,750
3,869,067
3,869,339
3,869,400
3,869,416
3,869,429
3,869,430
3,869,488
12 Re.28,357
3,868,731
3,868,898
3,868,944
3,868,957
3,869,068
3,869,084
3,869,278
3,869,284
3,869,580
3,869,600
13 3,868,795
3,869,102
3,869,110
3,869,123
3,869,484
3,869,667
17 : Re.28,358
3,868,735
3,868,767
3,868,790
3,868,811
3,868,861
3,868,865
3,868,885
3,868,906
3,868,984
3,868,990
3,868,992
3,869,010
3,869,018
3,869,022
3,869,031
3,869,049
3,869,057
3,869,061
3,869,076
3,869,106
3,869,107
3,869,162
3,869,169
3,869,170
3,869,172
3,869,179
3,869,237
3,869,249
3,869,265
3,869,274
3,869,333
3,869,348
3,869,352
3,869,444
3,869,445
3,869,471
3,869,481
3,869,492
3,869,508
3,869,563
3,869,582
3,869,619
3,869,639
3,869,650
3,869,712
3,869,718
3,869,719
3,869,724
3,869,725
18 : 3,868,759
3,868,764
3,868,765
3,868,838
3,868,866
3,868,890
3,868,914
3,868,967
3,869,006
3,869,027
3,869,112
3,869,131
3,869,181
3,869,184
3,869,272
3,869,316
3,869,391
3,869,456
3,869,594
3,869,660
3,869,673
19 3,868,747
3,868,785
3,868,800
3,868,843
3,869,120
3,869,148
3,869,422
3,869,641
20 : 3,869,168
3,869,171
3,869,497
22 : 3,868,748
3,868,760
3,868,996
3,868,998
3,869,294
3,869,354
3,869,483
3,869,511
24 3,868,891
3,868,988
3,869,083
3,869,089
3,869,132
3,869,296
3,869,297
3,869,315
3,869,576
3,869,597
3,869,648
3,869,659
3,869,683
25 3,868,741
3,868,772
3,868,792
3,868,793
3,868,805
3,868,844
3,868,848
3,868,857
3,868,975
3,868,976
3,869,004
3,869,052
3,869,195
3,869,199
3,869,215
3,869,403
3,869,404
3,869,405
3,869,473
3,869,543
3,869,618
3,869,621
3,869,638
3,869,656
3,869,662
3,869,694
26 : 3,868,730
3,868,732
3,868,752
3,868,766
3,868,788
3,868,796
3,868,798
3,868,846
3,868,864
3,868,868
3,868,886
3,868,888
3,868,889
3,868,896
3,868,923
3,868,930
3,868,934
3,868,942
3,868,945
3,868,964
3,868,986
3,868,991
3,869,001
3,869,015
3,869,017
3,869,019
3,869,025
3,869,038
3,869,040
3,869,043
3,869,078
3,869,097
3,869,098
3,869,138
3,869,139
3,869,140
3,869,142
3,869,144
3,869,157
3,869,167
3,869,173
3,869,175
3,869,177

3,869,222
3,869,246
3,869,258
3,869,259
3,869,279
3,869,299
3,869,424
3,869,425
3,869,426
3,869,466
3,869,528
3,869,530
3,869,544
3,869,545
3,869,669
27 : 3,868,979
3,869,186
3,869,189
3,869,190
3,869,193
3,869,228
3,869,700
28 : 3,868,820
3,868,821
3,869,126
29 : 3,868,758
3,868,883
3,869,071
3,869,160
3,869,267
3,869,420
3,869,532
30 : 3,868,775
31 : 3,869,224
3,869,547
33 : 3,868,948
3,869,531
3,869,692
34 : Re.28,359
3,868,728
3,868,777
3,868,786
3,868,859
3,868,894
3,868,899
3,868,900
3,868,955
3,869,000
3,869,058
3,869,218
3,869,236
3,869,243
3,869,277
3,869,281
869,313
3,869,329
3,869,330
3,869,338
3,869,355
3,869,394
3,869,407
3,869,411
3,869,432
3,869,447
3,869,448
3,869,450
3,869,453
3,869,457
3,869,461
3,869,467
3,869,506
3,869,516
3,869,517
3,869,518
3,869,524
3,869,538
3,869,554
3,869,572
3,869,573
3,869,585
3,869,620
3,869,666
3,869,677
3,869,678
3,869,699
3,869,716
35 : 3,869,149
36 : 3,868,744
3,868,746
3,868,774
3,868,817
3,868,822
3,868,824
3,868,884
3,868,901
3,868,903
3,868,910
3,868,911
3,868,935
3,868,968
3,868,983
3,869,011
3,869,020
3,869,032
3,869,044
3,869,045
3,869,056
3,869,122
3,869,176
3,869,197
3,869,201
3,869,205
3,869,239
3,869,276
3,869,280
3,869,286
3,869,289
3,869,304
3,869,307
3,869,322
3,869,323
3,869,324
3,869,332
3,869,349
3,869,358
3,869,364
3,869,376
3,869,380
3,869,382
3,869,395
3,869,397
3,869,402
3,869,443
3,869,464
3,869,478
3,869,485
3,869,491
3,869,499
3,869,507
3,869,510
3,869,514
3,869,525
3,869,529
3,869,535
3,869,566
3,869,569
3,869,599
3,869,612
3,869,627
3,869,690
3,869,696
3,869,707
37 : 3,868,745
3,868,842
3,869,072
3,869,308
3,869,427
3,869,581
39 Re.28,350
3,868,749
3,868,794
3,868,829
3,868,856
3,868,871
3,868,913
3,868,925
3,868,956
3,868,985
3,869,002
3,869,005
3,869,079
3,869,080
3,869,087
3,869,109
3,869,111
3,869,113
3,869,124
3,869,143
3,869,152
3,869,153
3,869,191
3,869,206
3,869,231
3,869,255
3,869,269
3,869,335
3,869,356
3,869,361
3,869,399
3,869,431
3,869,435
3,869,487
3,869,494
3,869,496
3,869,523
3,869,605
3,869,634
3,869,654
3,869,664
3,869,688
40 : 3,868,757
3,868,773
3,868,782
3,868,855
3,868,873
3,868,875
3,868,895
3,868,970
3,869,137
3,869,264
3,869,388
3,869,417
3,869,433
3,869,434
3,869,470
3,869,567
3,869,608
41 : 3,869,036
3,869,074
3,869,121
3,869,691
42 : Re.28,356
3,868,779
3,868,784
3,868,801
3,868,841
3,868,854
3,868,867
3,868,912
3,868,919
3,869,034
3,869,037
3,869,046
3,869,047
3,869,051
3,869,104
3,869,192
3,869,198
3,869,233
3,869,268
3,869,271
3,869,293
3,869,305
3,869,342
3,869,343
3,869,357
3,869,369
3,869,370
3,869,378
3,869,414
3,869,419
3,869,460
3,869,475
3,869,512
3,869,519
3,869,536
3,869,540
3,869,564
3,869,589
3,869,610
3,869,651
3,869,674
3,869,693
3,869,698
43 : 3,869,705
44 : 3,868,736
3,868,977
3,869,306
45 : 3,869,213
3,869,325
47 : 3,868,809
3,869,064
3,869,178
3,869,187
3,869,302
3,869,344
3,869,401
3,869,418
3,869,442
3,869,495
3,869,513
48 : Re.28,351
Re.28,360
3,868,826
3,868,832
3,868,847
3,868,881
3,868,887
3,868,995
3,868,999
3,869,100
3,869,116
3,869,183
3,869,408
3,869,413
3,869,520
3,869,578
3,869,624
3,869,701
49 : 3,868,825
51 : 3,868,778
3,868,870
3,868,917
3,868,947
3,869,212
3,869,360
3,869,550
53 : 3,868,807
3,869,103
3,869,146
3,869,617
54 : 3,869,502
3,869,542
55 : Re.28,353
3,868,803
3,868,833
3,868,937
3,869,014
3,869,023
3,869,062
3,869,095
3,869,227
3,869,326
3,869,586
3,869,590
3,869,591
3,869,633
3,869,655
3,869,681
56 : 3,869,021

DESIGN PATENTS

6 : 234,422
234,424
234,425
234,431
234,437
234,438
234,442
12 234,443
17 : 234,415
234,429
20 : 234,426
26 : 234,433
31 : 234,432
34 : 234,427
234,441
36 : 234,416
234,423
39 : 234,411
234,418
234,430
42 : 234,412
48 : 234,417
234,434
51 : 234,420

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

6 : T932,008
8 : T932,004
10 : T932,006
36 : T932,007
42 : T932,001
T932,002
T932,005
48 : T932,003

U. S. GOVERNMENT PRINTING OFFICE : O - 1975

Vol. 932 Number 2

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PATENTS

March 11, 1975

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

March 11, 1975 Volume 932 Number 2

CONTENTS

Page

Patent and Trademark Notices

- Board of Appeals Decisions Rendered in the Month of January 1975 . . . 340
- Express Mail 340
- Title 37—Patents, Trademarks and Copyrights 340
- Patent and Trademark Cases 340
- Patent Suits 347

Patent Notices

- Certificates of Correction for the Week of March 11, 1975 349
- Availability of Patents Official Gazette Jan. 28, 1975, Vol. 930/No. 4 . . 349
- Dedications 349
- Disclaimers 349

Condition of Patent Applications 350

Reissue Patents Granted (28,361) 351

Plant Patents Granted (3,688) 352

Patents Granted

- General and Mechanical (3,869,726) 353
- Chemical (3,870,464) 591
- Electrical (3,870,814) 682

Design Patents Granted (234,444) 753

Index of Patentees . . . . PI 1

Indices of Reissues, Plants and Designs . . . . PI 39

Classification of

- Patents (Including Reissues) . . . . PI 41
- Designs and Plants . . . . PI 43

Geographical Index of Residence of Inventors

- Patents (Including Reissues) . . . . PI 44
- Designs and Plants . . . . PI 45

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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of January 1975

Examiner affirmed	162
Examiner affirmed in part	32
Examiner reversed	81
Total	275

Express Mail

The Patent and Trademark Office has made an arrangement with the U.S. Postal Service for the delivery of "Express Mail." This arrangement provides for the delivery of "Express Mail" to a Patent and Trademark Office employee in the Department of Commerce Building in Washington, D.C., thus guaranteeing delivery to us in the same manner as "Express Mail" is delivered to any other addressee in the city of Washington. "Express Mail" requires the recipient to indicate both the time and date of delivery. The date which our employee in the Department of Commerce Building receives the mail will be the Official Office Receipt Date.

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Washington, D.C. 20231.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

Feb. 11, 1975.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent and Trademark Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Listing of Certain Prior Applications

On June 26, 1974, notice of proposed rule making regarding an amendment of §§ 1.65 and 1.67 of Title 37, Code of Federal Regulations, dealing with the listing of certain prior applications in the application oath or declaration was published in the Federal Register (39 FR 24375). Interested persons were given until September 30, 1974, by Notice published in the Federal Register on August 7, 1974 (39 FR 28439), to submit written comments and suggestions. Full and careful consideration was given to all written comments received. The proposed rule language has been slightly revised.

In consideration of the comments received, and pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (85 Stat. 364; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations, is hereby amended as follows:

1. In § 1.65, paragraph (a), is revised to read as follows:

§ 1.65 *Statement of applicant.*

(a)(1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or by his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country. (2) This statement (i) must be subscribed to by the applicant, and (ii) must either (*a*) be sworn to (or affirmed) as provided in § 1.66, or (*b*) include the personal declaration of the applicant as prescribed in § 1.68. See § 1.153 for design cases and § 1.162 for plant cases.

* * * * *

2. In § 1.67, paragraph (a) is revised to read as follows:

§ 1.67 *Supplemental oath or declaration for matter not originally claimed.*

(a) When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention: that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should accompany and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.

* * * * *

Effective date. These amendments shall become effective on May 1, 1975, and shall apply to applications filed after that date.

C. MARSHALL DANN,
Commissioner of Patents.

Approved:
DAVID B. CHANG,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 75–3736; Filed 2–10–75; 8:45 am]

Published in 40 F.R. 6339, Feb. 11, 1975

Patent and Trademark Cases

[37 CFR Parts 1, 2, 4]

Rules and Procedures

Notice is hereby given that, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by revising or amending §§ 1.12, 1.136, 1.197, 1.244, 1.256, 1.304, 2.18, 2.37, 2.75, 2.80, 2.85, 2.101, 2.102, 2.103, 2.105, 2.111, 2.112, 2.120, 2.123, 2.127, 2.129, 2.141, 2.144, 2.145, 2.162, 2.172, 2.183, 2.185, 2.187 and 4.2.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before May 1, 1975. No oral hearing will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, 2021 Jefferson Davis Highway, Arlington, Virginia.

Assignment records open to public inspection. The proposed revision of § 1.12 is intended to make clear the existing practice that assignment records relating to trademark applications and registrations are open to the public. The present wording, which is based on the amendment of § 1.12 on August 23, 1965 (819 O.G. 443), does not clearly distinguish between the procedure to be applied to patent records and to trademark records. In view of a number of inquiries as to the manner in which the amendment was to be applied, a notice was published in the OFFICIAL GAZETTE of January 18, 1966 (822 O.G. 769) stating that assignments relating to applications for registration of trademarks will be open to public inspection as heretofore. Since assignment records relating to trademark applications and registrations have always been open to the public, which practice continues at the present time, it is believed desirable to make the practice clear.

In the third sentence of the section, language is added to indicate that the requirement for written authority applies only to patent applications.

Time less than six months. It is proposed to revise paragraph (b) of section 1.136 to read "sufficient cause" rather than "good and sufficient cause." This revision is merely for consistency of language with other sections in this part and does not represent any change in practice.

Reconsideration of decision. It is proposed to revise paragraph (b) of § 1.197, paragraph (b) of section 1.256, paragraph (c) of §§ 2.129 and 2.144, to provide that the Board of Appeals, the Board of Patent Interferences, and the Trademark Trial and Appeal Board may, for sufficient cause, extend the time for filing a request for rehearing or reconsideration, or modification of a decision rendered by these Boards. Proposed revised paragraph (b) of § 1.256 and paragraph (c) of § 2.129 provide similar opportunity for extension of time for filing a reply to such a request in inter partes cases. The purpose of these revisions is to eliminate the necessity for waiver of a rule by the Commissioner in order for a party to obtain an extension of time.

In these sections, as well as in the related §§ 1.244(c), 2.127(b), 1.304 and 2.145(d), it is proposed to use the term "request" rather than "petition" in connection with rehearing or reconsideration, in order to avoid redundancy and in order to clearly distinguish such action from a petition to the Commissioner.

Time for appeal or civil action. Proposed revised § 1.304 and proposed revised paragraph (d) of § 2.145 clarify the portion of each which relates to the time for filing appeal or commencing civil action in cases where a request for rehearing or reconsideration, or modification of a decision, is filed. Present §§ 1.304 and 2.145(d) provide for an extension of time for appeal or civil action if a request for rehearing is filed within thirty days after a decision, but their language is subject to the interpretation that they deny any extension if the request for rehearing is filed more than thirty days after the date of a decision. It has been the practice of the Patent and Trademark Office, however, in those cases where the thirty days to file a request for rehearing has been enlarged by waiver of rule by the Commissioner under § 1.183 or § 2.148, to consider the waiver as also applying to the thirty day period specified in §§ 1.304 and 2.145(d). *Dresser Industries, Inc.* v. *Safety-Kleen Corporation,* 183 USPQ 180 (Comr. Pats. 1974).

In order to clarify the meaning of § 1.304 and paragraph (d) of § 2.145, it is proposed to revise these sections to eliminate all reference to a definite time for filing a request for rehearing, and to include instead reference to the provisions for filing request for rehearing which are made in §§ 1.197(b), 1.256(b), 2.129(c) and 2.144. Such sections are proposed to be revised to provide for extension of the basic time specified therein.

Proposed revised § 1.304 and paragraph (d) of § 2.145 also provide that the time for appeal or commencing civil action (whether it be the original sixty days, or the thirty days extension after decision on a request for rehearing) may be extended by the Commissioner upon a showing of sufficient cause.

Proposed revised § 1.304 is arranged in three subsections identified as (a), (b) and (c), and paragraph (d) of § 2.145 is arranged in three subsections identified as (1), (2) and (3). The purpose of separate subsections is to provide a means for easier reading and understanding of these sections in view of the fact that three different points are included in the sections. The proposed rearrangement does not affect practice.

Elimination of reasons of appeal in trademark cases. It is proposed to revise paragraphs, (a), (b) and (d) of § 2.145 to eliminate reference to the need to file the reasons of appeal in the Patent and Trademark Office when appealing a decision of the Trademark Trial and Appeal Board to the U.S. Court of Customs and Patent Appeals, consistent with the modification of section 21 of the trademark act made by Pub. L. 93–600, enacted January 2, 1975.

Recognition for representation, powers of attorney, and correspondence with attorney. It is proposed to revise §§ 2.18 and 4.2 to clarify the existing practice of the Patent and Trademark Office in relation to firms of attorneys and powers of attorney, and the handling of correspondence with attorneys and other recognized persons, in trademark cases.

Under present practice firms of attorneys are not recognized for practice before the Office in trademark cases. The persons identified in § 2.12 who may represent others before the Office are persons to whom individual responsibility may attach for actions taken and who must conform under § 2.13 to the Code of Professional Responsibility of the American Bar Association. Section 2.12(a) pertains to attorneys at law and does not provide for representation by a firm of attorneys as distinguished from individual attorneys. Further, reference to representation by a firm of attorneys was eliminated from § 2.15 by amendment effective July 2, 1971 (see 890 O.G. TM 60, September 14, 1971). If a firm name is given in the signature location on a paper filed by an attorney, nevertheless under § 2.15 an individual attorney must actually sign the paper.

It is not necessary under existing practice for an attorney at-law filing a paper in connection with a trademark case to have a power of attorney from the party whom he represents. Normally, a letter of transmittal on an attorney's letterhead for a paper not required to be signed by the attorney, such as an application, or an attorney's signature on a paper during prosecution, or a personal appearance, is sufficient for an attorney to be recognized as a party's representative. If deemed necessary, further proof may be required under § 2.17 (a) of an attorney's authority to act for a party or an attorney's qualifications under § 2.12(a).

Although not needed, a written power of attorney is accepted if it is filed. Such power may be revoked, and if revoked, the Office will not thereafter recognize such attorney in that case unless he is again specifically appointed. Any written power of attorney which is filed should designate individuals and not firms of attorneys; a power of attorney which designates a firm rather than individuals is not considered to be a power but merely a direction that correspondence be addressed to that firm. (See 890 O.G. TM 60, September 14, 1971.)

It is proposed to eliminate from § 4.2 (power of attorney form) the requirement to identify bar membership, since further proof may be required under section 2.17(a) if there appears to be any reason to question either an attorney's authority to represent a party or an attorney's qualifications under § 2.12(a). It is further proposed to eliminate from § 4.2 present Note (8) which calls for the names of law firm members and their bar membership if a firm name is used, and to add a new Note (8) which indicates that individuals should be appointed and that naming a firm will serve only as a designation of address for correspondence.

Proposed revised § 2.18 is intended to clarify the practice relative to the address to which correspondence is sent by the Office when an attorney at law or other recognized person is acting on behalf of a party. When an attorney or other recognized person is representing a party, correspondence is sent to such attorney or other recognized person at the address specified when such person's representation is established. The Office will not undertake to correspond with more than one person at more than one address. Therefore if another attorney or recognized person files a paper, the paper will be accepted but correspondence will continue to be sent to the address of the attorney or representative as already established in the file until the Office receives written instruction by the attorney or other representative, or by the party being represented, to send correspondence to another address. A subsequently filed power of attorney or authorization of agent is regarded by the Office as a change of address for correspondence even though there is no revocation of the previous power or authorization, but in other situations a specific request is necessary, and language such as "Send correspond-

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ence to (giving address, or name and address)", is the most

Present practice limits the filing of an unverified opposition

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ence to (giving address, or name and address)", is the most desirable means for changing the correspondence address. Other types of statements will be accepted by the Office if their intention is sufficiently clear to be reasonably interpreted as a request to change the address to which correspondence is to be sent. Neither the appointment of an associate attorney nor the filing of a paper by a different recognized representative has any effect on correspondence unless an instruction to change the correspondence address is included.

The Office does not send notice or acknowledgment of changes of address. Only a written revocation of a written power of attorney is acknowledged by the Office.

Designation of domestic representative by person not domiciled in the United States. In § 2.37 and paragraph (a)(4) of § 2.185, it is proposed to change the terms "appointment" and "resident agent" to "designation" and "domestic representative," respectively, to conform to the language of section 1(d) of the Trademark Act of 1946. This will not change present practice.

Effective filing date for the Supplemental Register. In § 2.75 it is proposed to add the word "effective" before "filing date" in order to make clear the existing practice that, when the filing date of an amendment to convert an application for registration on the Principal Register to an application for registration on the Supplemental Register becomes the filing date of the latter application, such date is considered to be the effective filing date of that application. This change in wording is in agreement with the language "effective filing date" used in § 2.83.

Publication of marks placed in interference. The proposed revision of § 2.80 restores a reference to publication of the mark in case of interference which was omitted inadvertently when § 2.80 was amended as of March 1, 1972 (896 O.G. TM 2). Although interference is not now declared except upon petition to the Commissioner (amendment of § 2.91 as of March 1, 1974 (896 O.G. TM 2)), the practice of publishing the mark when interference is declared was continued.

Fee for petition to revive a multiple class application. It is proposed to revise paragraph (e) of § 2.85 to delete reference to a petition to revive and thereby to make clear that only one fee is required for a petition to revive an abandoned application in which there is more than one class. Section 31 of the trademark act specifies a fee which shall be paid "on filing each petition for the revival of an abandoned application" without qualification as to the number of classes in the application, and therefore only one fee for each petition is considered to be necessary. For the same reason, in connection with multiple class registrations, under existing practice a single fee is sufficient for issuance of a new certificate of registration following change of ownership of a mark (§ 2.171) or correction of a registrant's mistake (§ 2.175), for certificate of correction of registrant's mistake (§ 2.175), or for amendment or disclaimer after registration (§ 2.173).

Fee required for each class being opposed, and insufficient fees for classes in application being opposed. Proposed revised §§ 2.101, 2.102 and 2.103 make clear the existing requirement that when there is more than one class in an application (such as in a combined application), the required fee must be paid for each class when filing an opposition against such application.

These proposed revised sections also provide that when the fees which accompany an opposition are insufficient to cover all classes in the application being opposed, which may occur with a combined application, opposer should specify the classes in which opposition to registration of the mark is sought, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to process the opposition promptly in the particular classes which opposer desires. This is in accord with present practice. See notice in the Official Gazette of August 11, 1964 (805 O.G. TM 39).

Joining persons in an opposition. Proposed revised § 2.101 provides that two or more persons may be joined in an opposition, but that the required fee for each class in which each person seeks opposition must be paid for each person so joined. By this revision, existing practice is incorporated into this section. See notice in the Official Gazette of August 11, 1964 (805 O.G. TM 39).

Unverified opposition during extension of time. It is proposed to further revise §§ 2.102 and 2.103 to permit an unverified opposition to be filed by an attorney or agent during an extension of time for opposition as well as within the original thirty days for opposition after publication of the mark. Present practice limits the filing of an unverified opposition to thirty days after publication. Nevertheless it has been found that some oppositions filed during extensions of time are unverified, and that when the defect is discovered, either there is insufficient time in the extended period to file a verified opposition or the period has expired. It seems desirable to eliminate a situation that has in some cases proven to be a difficulty for opposers. Since the main effort and cost of preparing and filing an opposition is expended even though the opposition is unverified, it is believed that in most instances opposers will file verified oppositions in extended opposition periods. Further, any unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing. For both reasons it is believed that the proposed change in practice will not result in any undue delay in registration.

Proposed revised § 2.102 provides that an opposition filed within an extension of time to oppose must be accompanied by the required fee for each class, and states that the opposition should be verified or include a declaration in accordance with § 2.20. However, in case verification or declaration cannot be secured within the extension of time, proposed revised § 2.103 provides that an unverified opposition may be filed within an extension of time to oppose. Such unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing.

Extension of time to oppose. It is proposed to further revise § 2.102 to make clear existing practice as to who may request an extension of time to oppose and who may file opposition during an extension of time. Request to extend the time for filing opposition must be made by a person who is eligible to oppose, that is, a person who believes that he would be damaged by the registration of the mark on the Principal Register. An attorney at law or other person recognized to represent a party may file a request for extension of time on behalf of a potential opposer. *La Maur, Inc.* v. *Andis Clipper Co.,* 181 USPQ 783 (Comr. Pats. 1974). The potential opposer must be identified in the request for extension because an extension of time is a personal privilege which is normally granted only to the person who has requested it. A problem has been, however, that complete information is sometimes not available at the time request for extension of time must be filed, so that there is a misidentification of the potential opposer, or, where there are parties in privity, for example related companies, one of the interested parties is named whereas later the other will be found to be the proper party to oppose. For this reason, it is considered desirable to permit opposition to be filed during an extension of time by a person whose name varies or is different from the name of the person to whom the extension was granted, provided the difference in names constitutes mere misidentification as a result of mistake and is not a difference in entity, or provided the persons designated are in privity, such as in the case of related companies under section 5 of the trademark act. This practice is in accord with the decision in *F. Jacobson & Sons, Inc.* v. *Excelled Sheepskin Co.,* 140 USPQ 281 (Comr. Pats. 1963). An analogous situation is found in *Universal Oil Products Co.* v. *Rexall Drug and Chemical Co.,* 174 USPQ 458 (CCPA 1972), where a parent company was permitted to oppose although the mark on which opposition was based was owned by the parent's subsidiary company.

When there is uncertainty between persons in privity as to which will ultimately be the proper opposer, it is desirable that the persons and their relationships be identified as clearly as possible in the request for extension of time.

First thirty-day extension of time to oppose. It is proposed to revise § 2.102 consistently with Pub. L. 93–600, effective January 2, 1975, which provides for a first thirty-day extension of the time for filing an opposition upon request without showing good cause.

Transmittal of opposition. It is proposed to revise § 2.105 to eliminate reference to transmittal of an opposition by the Examiner of Trademarks to the Trademark Trial and Appeal Board, in view of the fact that all activity connected with the processing of oppositions has been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board.

It is further proposed to revise § 2.105 by changing the word "notice" throughout the section to the word "notification" and also by changing the word "Institution" in the heading of the section to the word "Notification". The purpose of these changes is to make clear the present practice of

regarding the paper which is prepared in accordance with this section to be merely a notification to the parties of the existence of a proceeding which commenced at the time the opposition was filed.

Fee required for each class for cancellation, and insufficient fees for classes in registration. Proposed revised §§ 2.111 and 2.112 make clear the existing requirement that when there is more than one class in a registration, the required fee must be paid for each class when filing a petition to cancel the registration. A petition to cancel which is accompanied by fees insufficient to cover each class in the registration should specify the classes for which cancellation is sought, so that the Office will not be required to select classes or make further inquiry in that respect, and cancellation may be accomplished promptly in the classes desired. This is in accord with present practice.

Order compelling discovery in inter partes cases. Because of the increasing burden upon the Trademark Trial and Appeal Board as a result of the frequency and complexity of the motions being filed to compel discovery under rules adopted July 1, 1972 (898 O.G. TM 170, May 16, 1972), it is considered desirable that before seeking an order from the Board compelling discovery, the parties themselves be required to attempt to resolve the issues by mutual agreement. It is proposed to accomplish this by revising paragraph (c) of § 2.120 to require that a motion for an order compelling discovery be supported by an affidavit or a declaration in accordance with § 2.20 stating that the moving party or its attorney has conferred with the opposing party or its attorney in good faith in an effort to resolve by agreement the issues raised by the motion and that the parties have been unable to reach agreement with respect thereto, or specifying the parts of the issues, if any, which have been resolved. See *Angelica Corporation* v. *Collins & Aikman Corporation,* 183 USPQ 378 (TT&A Bd. 1974), and *Cool-Ray, Inc.* v. *Eye Care, Inc.,* 183 USPQ 618 (TT&A Bd. 1974).

Requirements for depositions. It is proposed to revise paragraph (g) of § 2.123 by adding a subsection numbered (3) thereto in order to restore to this section a designation of the existing requirements as to the form of depositions which was omitted inadvertently when paragraph (g) of this section was amended as of July 1, 1972 (898 O.G. TM 170, May 16, 1972).

Comments on inter partes procedures in general. In addition to the changes in inter partes procedures which are proposed herein, the Patent and Trademark Office is currently making an overall review of the efficiency and effectiveness of all of the amended inter partes rules of procedure in trademark cases which became effective as of July 1, 1972 (898 O.G. TM 170, May 16, 1972). The Patent and Trademark Office would welcome comments on any present inter partes procedures separate from comments on the specific revisions proposed herein.

Requests for reconsideration of decisions on motions. Motion procedures before the Trademark Trial and Appeal Board under §§ 2.127 and 2.129 follow the Federal Rules of Civil Procedure, which results in a multiplicity of types of motions being available. Some of these could be finally dispositive of a case and appeal could be taken from them. It therefore seems desirable to distinguish in trademark cases between the procedures as to decisions on motions which are finally dispositive of a case and decisions on motions which are not finally dispositive. To accomplish this it is proposed to revise paragraph (b) of § 2.217 to limit the section to motions which are not finally dispositive of a case. Any request for rehearing of such motions must be filed within thirty days, as is the existing practice. It is proposed to revise paragraph (c) of § 2.219 to include a reference to decisions on motions which are finally dispositive of a case and thus to make it clear that a request for rehearing of any final decision (including those on motions) may be filed within thirty days and that such time may be extended for sufficient cause.

Fee required for each class on appeal, and insufficient fees for classes in application on appeal. Proposed revised § 2.141 makes clear the existing requirement that when there is more than one class in an application (such as in a combined application), the prescribed fee must be paid for each class when appealing to the Trademark Trial and Appeal Board.

The proposed revised section also provides that when the fees which accompany an appeal are insufficient to cover all classes in the application being appealed, which may occur with a combined application, applicant should specify the classes in which appeal is taken, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to set up the appeal promptly in the particular classes which applicant desires. This is in accord with present practice.

Requirements for affidavit or declaration under section 8 of the Act of 1946. Proposed revised § 2.162 provides that an affidavit or declaration in accordance with § 2.20 containing either a statement of use or recitation of facts as to excusable nonuse must be filed before the expiration of the specified sixth year. However, if the evidence supporting the statement of use is not submitted or is found to be deficient, such supporting evidence may be filed thereafter, and may be considered even though filed after the expiration of the sixth year, and if the recitation of facts as to nonuse are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the expiration of the sixth year. The statement of use or the recitation of facts as to excusable nonuse in the affidavit or declaration meets the statutory requirement of making a showing within the sixth year, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company,* 177 USPQ 274 (Comr. Pats. 1973).

The phrase "specifying the nature of such use" is omitted from paragraph (c) of proposed revised § 2.162 because its meaning is unclear and it does not identify any requirement which is necessary for an affidavit or declaration under section 8 of the act.

The proposed revised section also makes it clear that where there is more than one class in a registration, a statement of use or a statement as to nonuse, and appropriate evidence in support thereof, is necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration. An affidavit or declaration under section 8 which is accompanied by fees insufficient to cover each class in the registration should specify the classes to which the affidavit or declaration pertains, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to determine promptly the question of acceptance or refusal in relation to relevant classes.

Surrender for cancellation. Proposed revised § 2.172 makes clear the existing practice of regarding a request to delete one entire class, or more than one entire class but less than the total number of classes, from a registration in which there is more than one class, as a surrender of a registration as to the specified class or classes, and not as an amendment of a registration. Each class is treated in effect as a separate registration. On the other hand, deletion of less than all of the goods or services in a class constitutes amendment of a registration as to that class. No fee is required for surrender, whereas a fee is required for each class which is amended.

Requirements of application for renewal. It is proposed to revise paragraph (c) of § 2.183 to provide that when facts are recited in an application for renewal to show excusable nonuse and such facts are found to be deficient, additional evidence or explanation may be considered by the Examiner even though filed after the expiration of the initial six month period for applying has expired, or after the three month delay period in the case of a delayed application for renewal. The recitation in the application of facts to show excusable nonuse meets the statutory requirement of making a showing within the required time, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company,* 177 USPQ 274 (Comr. Pats. 1973).

Section 2.183 as proposed to be revised also makes clear the existing practice that when there is more than one class in a registration, a declaration or verified statement of use and a specimen or facsimile, or a recitation of facts as to nonuse, are necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration when renewing the registration. An application for renewal which is accompanied by fees insufficient to cover each class should specify the classes with regard to which renewal is desired.

Signature of translator for English translation. The proposed revision of paragraph (a)(2) of § 2.185 is intended to make it clear that the signature necessary for an English translation of a foreign document is the signature of the translator of the document, and that the signature only is needed, not a verification or a declaration in accordance with section 2.20.

Certificate of registration may issue to assignee. Proposed revised § 2.187 sets forth more specifically the procedure for giving notice to the Patent and Trademark Office in time to permit issuance of a certificate of registration in a name other than the name of the original applicant. If an assignment document or a certificate of change of name is of record in the Assignment Division of the Patent and Trademark Office before the notice of publication of a mark is mailed, there is sufficient time for the necessary information to reach the application file before the application is prepared for issuance of the certificate of registration. Also, if at any time prior to the preparation of the application for issue, a paper is filed in an application stating that a document has been filed for recordation, the application can be flagged and held until the necessary information reaches the file from the Assignment Division.

If a certificate of registration is to be issued to an assignee, there must be in the application file an address for such assignee; if there is not, the inquiry necessary to obtain the address may delay the issuance of the certificate of registration.

Change in name of Patent Office. All of the sections proposed to be modified herein have been revised to reflect the change in the name of the Patent Office to the Patent and Trademark Office, and the change in title of the Commissioner of Patents to Commissioner of Patents and Trademarks, in accordance with Pub. L. 93–596, effective January 2, 1975.

The text of the proposed revised sections or paragraphs of sections is as follows:

§ 1.12 *Assignment records open to public inspection.*

The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon payment of the fee therefor. Assignment records, digests and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such patent assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or his assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee or licensee of such patent application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules. An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number of the application, an extra charge will be made for the time consumed in making a search for such assignment.

§ 1.136 *Time less than six months.*

* * * * *

(b) The time for reply, when a time less than six months has been set, will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. Only one extension may be granted by the primary examiner in his discretion; any further extension must be approved by the Commissioner. In no case can any extension carry the date on which response to an action is due beyond six months from the date of the action.

§ 1.197 *Action following decision.*

* * * * *

(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended upon a showing of sufficient cause.

* * * * *

§ 1.244 *Motions; miscellaneous provisions.*

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(c) Any request for rehearing or reconsideration, or modification of the decision, must be filed within twenty days after the date of the decision, and any reply thereto shall be filed within twenty days from the date of service of the request.

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§ 1.256 *Final hearing.*

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(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Interferences so states. Any reply thereto shall be filed within fifteen days from the filing of the request. The times specified herein may be extended upon a showing of sufficient cause. (See § 1.304.)

§ 1.304 *Time for appeal or civil action.*

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (§ 1.302) or for commencing a civil action (§ 1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under §§ 1.256(b) or 1.197(b), the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty and thirty day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(b) The times specified herein are calendar days. If the last day of the time specified for appeal or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under 35 U.S.C. 141 that he elects to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

§ 2.18 *Correspondence held with attorney or agent.*

Correspondence will be sent to the applicant or a party to a proceeding at his address unless papers are transmitted by an attorney at law, or a written power of attorney or authorization of agent is filed, or the applicant or party designates in writing another address to which correspondence is to be sent, in which event correspondence will be sent to the attorney at law transmitting the papers, or to the attorney designated in the power of attorney or the agent designated in the authorization of agent, or to the address designated by the applicant or party for correspondence. Correspondence will continue to be sent to such address until the applicant or party, or the attorney or other recognized person representing the applicant or party, indicates in writing that correspondence is to be sent to another address. Double correspondence will not be undertaken by the Patent and Trademark Office, and if more than one attorney at law or other recognized person appears or signs a paper, the Office reply thereto will be sent to the address already established in the file until another correspondence address is specified by the applicant or party or by the attorney or other recognized person representing the applicant or party.

§ 2.37 *Authorization for representation; U.S. representative.*

The authorization of a qualified person to represent applicant (§ 2.17(b)) and the designation of a domestic representative (§ 2.24) may be included as a paragraph or paragraphs in the application.

§ 2.75 *Amendment to change application to different register.*

An application for registration on the Principal Register may be changed to an application for registration on the Supplemental Register and vice versa by amending the application to comply with the rules relating to the requirements for registration on the appropriate register, as the case may be. The original filing date may be considered for the purpose of proceedings in the Patent and Trademark Office provided the application as originally filed was sufficient for registration on the register to which amended. Otherwise, the filing date of the amendment will be considered the effective filing date of the application so amended.

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in interference or concurrent use proceedings, if otherwise registrable.

§ 2.85 *Classification schedules.*

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on filing an affidavit under section 8(a) or 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Examiner.

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§ 2.101 *Time for filing opposition.*

Any person who believes that he would be damaged by the registration of a mark upon the Principal Register may, upon payment of the required fee for each class in the application, oppose the same by filing an opposition, which is verified or which includes a declaration in accordance with § 2.20, in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered. An opposition accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought. Two or more persons may be joined in an opposition to the registration of a mark, but separate fees for each class in the application for each person so joined must be paid.

§ 2.102 *Extension of time.*

(a) A request to extend the time for filing opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person recognized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with reasonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.

(b) A request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Any other request for extension of time for filing an opposition should be accompanied by a showing of good cause, and in the event circumstances do not permit submission of such showing with the request, it should be furnished as promptly as possible and, in any event, within ten days after submission of such request.

(c) An opposition filed within an extended time must be accompanied by the required fee for each class, and should be verified or include a declaration in accordance with § 2.20, and if it is accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought.

§ 2.103 *Opposition filed by attorney or agent.*

An opposition which is unverified or not accompanied by a declaration in accordance with § 2.20 may, upon payment of the required fee for each class, be filed by a duly authorized attorney or agent. Such opposition and the required fee for each class must be filed in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered or within an extension of the time for filing an opposition (§ 2.102) but the opposition will be null and void unless confirmed by the opposer either by verification or declaration in proper form filed within thirty days after such filing, or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days. An opposition accompanied by fees insufficient to cover each class should specify the particular classes in which opposition is sought.

§ 2.105 *Notification of opposition proceedings.*

A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the application involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorneys or agents, if they have attorneys or agents of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.

§ 2.111 *Time for filing petition for cancellation.*

(a) Any person who believes that he is or will be damaged by a registration may, upon payment of the required fee for each class in the registration, apply to the Commissioner to cancel said registration. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the act of 1881 or the act of 1905 which have not been published under section 12(c) of the act (§ 2.153), and in cases involving the grounds specified in section 14 (c), (d), and (e) of the act. In all other cases such petition must be made within five years from the date of registration of the mark under the act of 1946 or from the date of publication under section 12(c) of the act.

(b) A petition to cancel accompanied by insufficient fees to cover each class in the registration should specify the particular classes for which cancellation is sought.

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee for each class in each registration against which each application to cancel is filed must accompany the petition. A petition to cancel accompanied by insufficient fees to cover all classes should specify the particular classes for which cancellation is sought.

§ 2.120 *Discovery procedure.*

* * * * *

(c) *Failure to make discovery: Sanctions.* (1) If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by an affidavit or a declaration in accordance with § 2.20, stating that the moving party or its attorney has conferred with the opposing party or its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If part of the issues raised by the motion have been resolved by agreement, the affidavit or declaration shall specify the issues so resolved and also specify the issues remaining unresolved.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

§ 2.123 *Trial testimony in inter partes cases.*

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(g) Form of deposition:

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(3) Each deposition must contain an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence.

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§ 2.127 *Motions.*

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(b) Any request for rehearing or reconsideration, or modification of a decision on a motion which is not finally dispositive of the case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed with fifteen days after service of the request.

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§ 2.129 *Oral argument, and reconsideration.*

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(c) Any request for rehearing or reconsideration, or modification of a decision, including a decision on a motion which is finally dispositive of a case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request. The times specified herein may be extended upon a showing of sufficient cause.

§ 2.141 *Ex parte appeals from the Examiner of Trademarks.*

Every applicant for the registration of a mark may, upon final refusal by the Examiner of Trademarks, appeal to the Trademark Trial and Appeal Board upon payment of the prescribed fee for each class in the application. An appeal accompanied by insufficient fees to cover each class in the application should specify the particular classes in which appeal is taken. A second refusal on the same grounds may be considered as final by the applicant for purpose of appeal.

§ 2.144 *Reconsideration of decision on ex parte appeal.*

Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the decision. Such time may be extended upon a showing of sufficient cause.

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section); (2) In the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the notice of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice of appeal.* (1) When an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof in writing to the Commissioner, which notice shall be filed in the Patent and Trademark Office within the time specified in paragraph (d) of this section. The notice shall specify the party or parties taking the appeal and shall designate the decision or part thereof appealed from.

(2) In inter partes proceedings, the notice must be served as provided in § 2,119.

* * * * *

(d) *Time for appeal or civil action.* (1) The time for filing the notice of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under § 2.129(c) or § 2.144, the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty- and thirty-day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(2) The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

§ 2.162 *Requirements for affidavit or declaration during sixth year.*

The affidavit or declaration required by § 2.161 must:

(a) Be executed by the registrant after expiration of the five-year period following the date of registration or of publication under section 12(c) of the act;

(b) Be filed in the Patent and Trademark Office before the expiration of the sixth year following the date of registration or of publication under section 12(c) of the act;

(c) Identify the certificate of registration by the registration number and date of registration;

(d) Be accompanied by the required fee for each class in the registration. If accompanied by insufficient fees to cover each class, the particular classes to which the affidavit or declaration pertains should be specified;

(e) State that the registered mark is in use. The statement must be supported by evidence which shows that the mark is still in use, and normally such evidence consists of a specimen, a facsimile specimen, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and may be considered even though filed after the sixth year has expired;

(f) If the registered mark is not still in use, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the sixth year has expired; and

(g) Contain the statement of use or statement as to nonuse and appropriate evidence in support thereof, as required in paragraphs (e) and (f) of this section, for each class in the registration.

§ 2.172 *Surrender for cancellation.*

Upon application by the registrant, the Commissioner may permit any registration to be surrendered for cancellation. Application for such action must be signed by the registrant and must be accompanied by the original certificate of registration, if not lost or destroyed. When there is more than one class in a registration, a request to delete one entire class or more than one entire class but less than the total number of classes constitutes surrender of a registration or registrations as to the specified class or classes, and not amendment of a registration. Deletion of less than all of the goods or services in a single class constitutes amendment of registration as to that class.

§ 2.183 *Requirements of application for renewal.*

(a) The application for renewal must include a statement which is verified or which includes a declaration in accordance with § 2.20 by the registrant setting forth the goods or services recited in each class in the registration on or in connection with which the mark is still in use in commerce, specifying the nature of such commerce. This statement must be executed not more than six months before the expiration of the registration and be accompanied by:

(1) A specimen or facsimile for each class showing current use of the mark;

(2) The required fee for each class including an additional fee for each class in the case of a delayed application for renewal. If the application for renewal is accompanied by insufficient fees to cover each class, particular classes for which renewal is sought should be specified.

(b) The declaration or verified statement, specimen or facsimile and the fee for each class in the registration must be filed within the period prescribed for applying for renewal. If defective or insufficient, they cannot be completed after the period for applying for renewal has passed; if completed after the initial six month period has expired but before the expiration of the three month delay period, the application can be considered only as a delayed application for renewal.

(c) If the mark is not in use in commerce at the time of filing of the declaration or verified statement, facts must be recited to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. There must be a recitation of facts as to nonuse for each class or it must be clear that the facts recited apply to each class. If the facts recited require amplification or explanation, further evidence may be submitted and may be considered even though filed after the period for applying for renewal has passed.

§ 2.185 *Requirements for assignments.*

(a) Assignments under section 10 of the act of registered marks, or marks for which an application for registration has been filed, will be recorded in the Patent and Trademark Office. Other instruments which may relate to such marks may be recorded in the discretion of the Commissioner. No assignment will be recorded, except as may be ordered by the Commissioner, unless it has been executed and unless:

* * * * *

(2) It is in the English language or, if not in the English language, accompanied by a translation signed by the translator.

* * * * *

(4) A designation of a domestic representative is made in case the assignee is not domiciled in the United States. The designation must be separate from the assignment and there must be a separate designation for each registration or application assigned in one instrument.

* * * * *

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant, or in a new name of applicant, provided an appropriate document is of record in the Assignment Division of the Patent and Trademark Office no later than the time notice of publication is mailed, or a statement that such document has been filed for recordation is in the application file by the time the application is being prepared for issuance of the certificate of registration. The address of the assignee must be made of record in the application file.

§ 4.2 *Power of attorney accompanying application.*

Applicant hereby appoints ______________________________
(8) ______________________________ to prosecute this application
(Address)
cation to register, to transact all business in the Patent and Trademark Office in connection therewith, and to receive the certificate of registration.

NOTE: (8) Individual attorneys at law should be appointed. If the name of a law firm is given, it will be regarded merely as a designation of address for correspondence.

Dated: Jan. 28, 1975.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

DAVID B. CHANG,
Assistant Secretary for Science and Technology.

[FR Doc. 74–3737; Filed 2–10–75; 8:45 am]

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,777,926, M. E. Bourns, VARIABLE RESISTOR, **filed** May 17, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–1258, *Bourns, Inc. and Marlan E. Bourns* v. *Vishay Intertechnology, Inc.* **Same, filed** June 3, 1974, D.C., E.D. Pa. (Philadelphia) Doc. 74–1365, *Bourns, Inc. and Marlan E. Bourns* v. *Reon Resistor.* **Same, filed** June 5, 1974, D.C. Mass. (Boston), Doc. 74–2025–S, *Bourns, Inc. et al.* v. *Carter Manufacturing Corp.* **Same, filed** June 3, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–1530–AAH, *Marlan E. Bourns* v. *Bowmar/Tic Inc.* Plaintiff's notice of voluntary dismissal of action entered July 11, 1974.

2,919,990, Podlesak, Kraft and Miller, METHOD OF CONTINUOUSLY PRODUCING PACKAGED UNITS, **filed** Jan. 4, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–4, *Kraftco Corporation* v. *Milwaukee Cheese Company, Sheboygan Sausage Company and Robert H. Zwicky.* **Same, filed** May 14, 1974. D.C., E.D. Wis. (Milwaukee), Doc. 74–187, *Kraftco Corporation* v. *Lake to Lake, Inc.* **Same, filed** June 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1624, *Kraftco Corporation* v. *Falbo Cheese Company.* **Same, filed** Sept. 3, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–371, *Kraftco Corporation* v. *Hayssen Manufacturing Company.* **Same, filed** Sept. 13, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–442, *Bemis Company, Inc.* v. *Kraftco Corporation.*

3,123,116, A. W. Hughes, EMULSIFIER; **3,221,788,** same; **3,318,353,** same, **filed** Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c314, *Alvin W. Hughes and A. W. Hughes Company, Inc.* v. *Hobam, Incorporated.* It is ordered that this cause be and the same is hereby dismissed with prejudice, subject to reinstatement within 30 days if settlement is not consummated, Nov. 15, 1973.

3,174,608, K. Knickerbocker, COIN CONTROLLED NEWSPAPER VENDING MACHINE, AND COIN CONTROLLED MEHCANISM ADAPTABLE THERETO, **filed** Sept. 16, 1974, D.C., M.D. Fla. (Tampa), Doc. 74–537–C T.K., *Kaspar Wire Works, Inc.* v. *Leco Engineering and Machine, Inc.*

3,196,330, J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME; **3,275,909,** F. W. Gutzwiller, SEMICONDUCTOR SWITCH; **3,476,993,** Aldrich and Holonyak, FIVE LAYER AND JUNCTION BRIDGING TERMINAL SWITCHING DEVICE; **Re. 27,120,** J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME, **filed** Sept. 10, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3–74–879–C, *General Electric Company* v. *Hutson Industries, Inc.*

3,221,788. (See 3,123,116.)

3,224,201, J. L. Brunton, SHORING APPARATUS, **filed** Sept. 30, 1974, D.C. Ariz. (Phoenix), Doc. C–74–644 Phx, *Speed Shore Corporation* v. *Woudenberg Enterprises, Inc., doing business as Starlite Barricade & Sign, et al.* **Same, filed** Sept. 30, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–2824, *Speed Shore Corporation* v. *John Denda, etc.*

3,245,280, G. M. Mooney, INTEGRAL GEAR; **3,248,782,** same, METHOD OF MAKING A ONE PIECE INTEGRAL/COMPOSITE GEAR, **filed** July 31, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74 323, *George M. Mooney* v. *Brunswick Corporation.*

3,248,782. (See 3,245,280.)

3,275,909. (See 3,196,330.)

3,301,746, Sanford and Sisson, PROCESS FOR FORMING ABSORBENT PAPER BY IMPRINTING A FABRIC KNUCKLE PATTERN THEREON PRIOR TO DRYING AND PAPER THEREOF, **filed** Oct. 2, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–447, *Procter & Gamble Company* v. *American Can Company.*

3,318,353. (See 3,123,116.)

3,379,889, Barnett and Barnett, BEAN-DRIVEN GYROSCOPE DEVICE, **filed** Sept. 18, 1974, D.C., S.D. Ind. (Indianapolis), Doc. IP74–500–C, *Eugene R. Barnett and Willard L. Barnett* v. *United States of America, U.S. Department of Defense, U.S. Department of Air Force, U.S. Department of Navy and U.S. National Aeronautics and Space Administration.*

3,400,958, Haimes and Perryman, INTERLOCKING CLOSURE, **filed** Sept. 6, 1974, D.C., S.D. Fla. (Miami), Doc. 74–1128–C–Pf, *Plastimold, Inc.* v. *American Panel Corporation.*

3,432,058, H. A. Burgess, SAFETY CAP FOR MEDICINE BOTTLE OR THE LIKE, **filed** Oct. 2, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–2101 RHS, *Glen H. Morris* v. *Diamond Intern'l Inc. and Lermer Packaging Inc.*

3,444,865, G. F. De Vita TRANSFORMATION WIG; **3,812,-867**, Wanderman and Wanderman, CAPLESS WIG, **filed** Aug. 27, 1974, D.C., S.D.N.Y., Doc. 74–C–3722, *Carousel Fashions, Inc.* v. *D.S. of America, Inc.* **Same, filed** Aug. 27, 1974, D.C., S.D.N.Y., Doc. 74–C–3723, *Carousel Fashions, Inc* v. *Lord & Taylor*. **Same, filed** Aug. 27, 1974, D.C., S.D.N.Y., Doc. 74–C–3724, *Carousel Fashions, Inc.* v. *Gimbel Brothers of New York.*

3,476,993. (See 3,196,330.)

3,518,880, H. G. Tank, FLOORING SYSTEM, **filed** Sept. 19, 1974, D.C., W.D. Tenn. (Memphis), Doc. C–74–506, *Connor Forest Industries* v. *Robbins Flooring Co.*

3,528,428, B. Berkovits; DEMAND PACER, **filed** Sept. 30, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–439, *American Optical Corporation* v. *General Electric Company.*

3,537,142, E. J. Villavicencio, APPARATUS AND METHOD FOR PROCESSING FIBROUS STALKS, **filed** Sept. 11, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–1938–ACW, *Rivenco Corp.* v. *W. R. Grace & Co.*

3,578,939, R. E. Green, BACKING GAS ATTACHMENT SAVING DEVICE FOR HELIARC WELDING, **filed** Apr. 5, 1974, D.C. Conn. (Hartford), Doc. H–74–111, *Randolph E. Green* v. *The Pratt & Whitney Aircraft Division of United Aircraft Corporation.*

3,614,287, P. A. Klann, MULTIPLEXING ARRANGEMENT FOR ELECTRONIC ORGANS, **filed** May 13, 1974, D.C. Oreg. (Portland), Doc. C–74–368, *Klann, Inc.* v. *Rodgers Organ Company*. **Same, filed** May 13, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–1296–WMB, *Klann, Inc.* v. *Allan Organ Company and Rockwell International Corp.* Filed stipulation disqualifying the firm of Ambrose & Silber from participating on behalf of Klann, Inc. Complaint and counterclaim are dismissed without prejudice, entered Sept. 6, 1974.

3,636,903, Anderson and Munn, RECTANGULAR-DUCT FORMING MACHINE; **3,757,830**, same, RECTANGULAR AIR DUCT; **Re. 28,088**, same, METHOD OF FORMING A RECTANGULAR HEAT DUCT, **filed** Sept. 12, 1974, D.C., N.D. Ala. (Birmingham), Doc. 74–H–922–S, *Manufacturers Systems, Inc.* v. *Posey Supply Co., Inc., Posey Electrical & Supply Co., Donald S. Posey and James H. Posey.*

3,645,463, F. R. Helm, WEB-SPLICING APPARATUS, **filed** Oct. 1, 1974, D.C.N.J. (Newark), Doc. C–74–1511, *Champion-Edison, Inc.* v. *Compensating Tension Controls, Inc.*

3,676,966, D. Ragland, DOOR-FRAME ASSEMBLY, **filed** Sept. 4, 1974, D.C., S.D. Tex. (Houston), Doc. CA 74–H–1199, *Ragland Mfg. & Construction Co.* v. *Flexible Walls, Inc.*

3,738,836, R. L. Dalton, PROCESS OF MAKING IDENTIFICATION CARDS, **filed** June 28, 1973, D.C., M.D. Fla. (Jacksonville), Doc. 73–511–C–J–T, *Percy Rosenbloom, Jr.* v. *Central Florida Merchandise Mart, Inc.* Case dismissed with prejudice, Sept. 11, 1974.

3,757,830. (See 3,636,903.)

3,783,449, R. C. Davis, BULLET-PROOF PROTECTIVE ARMOR AND METHOD OF MAKING SAME, **filed** Sept. 10, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–1919 LHB, *Second Chance Body Armor, Ino.* v. *Gerald D. Cochran, doing business as Narco-Data.*

3,812,867. (See 3,444,865.)

Re. 27,120. (See 3,196,330.)

Re. 28,088. (See 3,636,903.)

Certificates of Correction for the Week of Mar. 11, 1975

3,422,615
3,466,729
3,624,782
3,658,043
3,670,026
3,693,276
3,698,536
3,699,126
3,733,309
3,738,790
3,741,683
3,749,878
3,753,785
3,754,482
3,775,114
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Availability of Patents Official Gazette
January 28, 1975, Volume 930/No. 4

Additional copies of the January 28, 1975, Patents OFFICIAL GAZETTE containing Patent Applications published under the Trial Voluntary Protest Program are available for public distribution.

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WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

Feb. 18, 1975.

Dedications

2,932,590.—*Robert E. Barrett, Earl R. Olson* and *Paul Schall, Jr.,* Columbus, Ohio. INDIUM OXIDE COATINGS. Patent dated Apr. 12, 1960. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

2,987,554.—*Arthur Levy,* Worthington, Ohio, and *Earl A. Weilmuenster,* Kenmore, N.Y. PROCESS FOR PREPARING A LIQUID REACTION PRODUCT OF AN ALKYL HALIDE AND A PENTABORANE. Patent dated June 6, 1961. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,196,989.—*Robert M. Conklin,* Muskegon, Mich. SPEED CONTROL DEVICE. Patent dated July 27, 1965. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,231,396.—*Herbert K. De Long* and *Charles W. Glesner,* Midland, and *James A. Brown,* Essexville, Mich. STANNATE IMMERSION COATING FOR MAGNESIUM, MAGNESIUM-DISSIMILAR METAL COUPLES, AND OTHER METALS. Patent dated Jan. 25, 1966. Dedication filed Aug. 9, 1974, by the assignee, *The Dow Chemical Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

2,836,725.—*Robert G. Vyverberg,* Pittsford, N.Y. CORONA CHARGING DEVICE. Patent dated May 27, 1958. Disclaimer filed Oct. 3, 1974, by the assignee, *Xerox Corporation.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,321,811.—*Karl Thomas,* Bergsdorf, Germany. METAL CLAMPING BAND. Patent dated May 30, 1967. Disclaimer filed Feb. 6, 1975, by the assignee, *Jurid Werke G.m.b.H.*

Hereby enters this disclaimer to all claims of said patent.

3,674,971.—*William A. Emerson* and *John A. Redmond,* Ellicott City, Md. INDUCTION HEATING COIL CONSTRUCTED TO MINIMIZE VIBRATION AND NOISE. Patent dated July 4, 1972. Disclaimer filed Oct. 26, 1973, by the assignee, *United States Steel Corporation.*

Hereby enters this disclaimer to claims 1 to 6 of said patent.

3,679,381.—*Hyman Chessin,* Birmingham, Mich. NOVEL COMPOSITE. Patent dated July 25, 1972. Disclaimer filed July 26, 1974, by the assignee, *M & T Chemicals, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 8, 9, 10 and 11 of said patent.

3,706,560.—*Clark F. Grain,* Framingham, Mass. IMAGE RECORDING MATERIAL CONTAINING TITANIUM DIOXIDE AND ZINC OXIDE IN MINOR AMOUNT AND THE USE THEREOF. Patent dated Dec. 19, 1972. Disclaimer filed Feb. 6, 1974, by the assignee, *Itek Corporation.*

Hereby enters this disclaimer to claims 1, 7, and 14 of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 15, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-11-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-6-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-13-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-1-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-22-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-22-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-27-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-13-74

Expiration of patents: The patents within the range of numbers indicated below expire during March 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,825,064 to 2,828,486, inclusive
Plant Patents	Numbers 1,686 to 1,693, inclusive

REISSUES

MARCH 11, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,361
POLYMER PIGMENTATION

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Original No. 3,632,369, dated Jan. 4, 1972, Ser. No. 884,353, Dec. 11, 1969, which is a continuation-in-part of applications Ser. No. 525,854, Feb. 8, 1966, Ser. No. 576,208, Aug. 31, 1966, both now abandoned, and Ser. No. 594,998, Nov. 17, 1966, now Patent No. 3,484,262. Application for reissue June 20, 1973, Ser. No. 371,780

Int. Cl. B05c *5/00;* **B44d** *1/02*

U.S. Cl. 117—16 **13 Claims**

1. Pigmented polymer particles, said polymer particles having a pigment abrasively adhered to the surfaces thereof by mixing the polymer particles and dry powdered pigment in a rotary blade mixer having a tip speed exceeding about 200 inches per second, said polymer particles having a screen mesh size of about 20 to 200 U.S. Standard sieve and being selected from the group consisting of polyethylene, polypropylene, polymerized lower alkyl ester of acrylic acid in which the lower alkyl ester group has one to four carbon atoms, and polymerized lower alkyl ester of methacrylic acid in which the lower alkyl ester group has one to four carbon atoms.

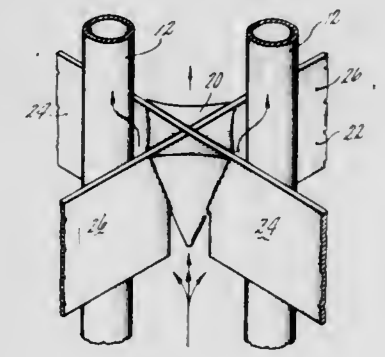
28,362
FLOW DEFLECTOR FOR NUCLEAR FUEL ELEMENT ASSEMBLIES

John Norman Calvin, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Original No. 3,663,367, dated May 16, 1972, Ser. No. 889,548, Dec. 31, 1969. Application for reissue Dec. 26, 1972, Ser. No. 317,977

Int. Cl. G21c *3/30*

U.S. Cl. 176—78 **4 Claims**



10. A nuclear reactor fuel assembly comprising a plurality longitudinally extending parallel fuel elements arranged in spaced rows forming longitudinal coolant flow channels therebetween; a grid formed from a plurality of cross-laced interengaging straps, each of said straps being located between said spaced rows of fuel elements; and a plurality of deflector cones located in said flow channels between said fuel elements, said cones being attached to said grid at the intersections of said straps, said cones each being generally pyramidal in shape having an apex and a generally square base and four deflecting sidewall surfaces, each of said sidewall surfaces being oriented so as to face the adjacent fuel element and each sidewall surface being concave with the center of curvature of said concavity generally corresponding to the center of said adjacent fuel element whereby an intermittent annular space is formed between each fuel element and the adjacent deflector cones, the apex of said cones being located upstream and said base being located downstream with respect to the direction of said coolant flow.

28,363
TOOTHPASTE

Henning Asche, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original No. 3,691,272, dated Sept. 12, 1972, Ser. No. 74,528, Sept. 22, 1970, which is a continuation-in-part of abandoned application Ser. No. 6,032, Jan. 23, 1970, which is a continuation of abandoned application Ser. No. 608,736, Jan. 12, 1967. Application for reissue Sept. 10, 1973, Ser. No. 395,518

Int. Cl. A61k *7/16*

U.S. Cl. 424—57 **7 Claims**

1. An aqueous toothpaste composition consisting essentially of:

12–17% of a salt selected from the group consisting of sodium chloride and marine salt;
0.5–2.5% of a gelling agent selected from the group consisting of hydroxyethyl cellulose, hydroxymethyl cellulose and mixtures thereof;
1.4–2.5% of colloidally dispersed silica;
5–20% of glycerol;
0.1–1% of a condensation product of ethylene oxide and polyoxypropylene glycol having a molecular weight of about 8700 and consisting of 20 weight-percent hydrophobic polyoxypropylene glycol moiety of about 1500–1800 molecular weight and about 80 weight-percent polyoxyethylene moiety;
15–35% of a polishing agent selected from the group consisting of dicalcium phosphate dihydrate, calcium orthophosphate and sodium metaphosphate, and mixtures thereof; a sweetener selected from the group consisting of
  0.03–0.3% of the sodium salt of saccharine,
  0.3–1.5% of sodium cyclamate and
  0.4–1.5% of mixtures thereof;
0.1–1.5% of toothpaste flavoring;

and an amount of water such that the total amount of ingredients in said toothpaste composition is 100 percent, all percentages being by weight and based on the total weight of said toothpaste, said sodium chloride being in solution, said gelling agent and said silica being present in an amount such that a homogenous and pasty consistency is obtained, the total amount of said gelling agent and said silica combined being about 3.5 percent by weight of the toothpaste, said condensation product being present in an amount such that one part of said toothpaste diluted in 20 parts of water has a surface tension of about 45 to 60 dynes/cm.

PLANT PATENTS

GRANTED MARCH 11, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,688
CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.
Filed Jan. 18, 1974, Ser. No. 434,450
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—88 1 Claim

1. The new and distinct hydrib plant variety of the Cactaceae family as described and illustrated and which is principally distinguished by a growth habit that combines the following characteristics:

(1) A faster growth rate than its maternal parent,
(2) A more upright and compact appearance than its parents,
(3) Broader cladophylls than its maternal parent,
(4) Substantially less flower bud abscission than its maternal parent,
(5) Greater resistance to nutrient deficiencies and fungus-type diseases than its parents, and
(6) A generally larger flower than its maternal parent and which has
  (a) a bloom life from about 5 to about 8 days,
  (b) perianth tube laminating tepals with marginal blade areas that in color are dominated by yellowish pink, pink, red and/or purplish red hues, and
  (c) perianth tube forming tepals with blades that are more recurved than those of the maternal parent and have marginal blade areas which in color are dominated by purplish red, red and/or pink hues.

3,689
BROMELIACEAE PLANT—*CRYPTANTHUS BIVITTATUS MINOR* (cv) PINK STARLIGHT

Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.
Filed Jan. 28, 1974, Ser. No. 437,317
Int. Cl. A01h *5/12*

U.S. Cl. Plt.—88 1 Claim

1. The new and distinct plant variety of the Bromeliaceae family as illustrated and described and which is principally distinguished by a growth habit that combines the following characteristics:

1. Elongated leaves which have prominent albino marginal areas that in color are dominated by red, pink and/or yellowish pink hues when subjected to prolonged light exposure and which have an intervening prominent chlorophyllous center area that generally extends along and laterally of the leaf axis and has striations which in varying degrees exhibit albino characteristics, and
2. An influorescence which has fewer and lighter colored flowers with fewer ovules than specimens of the *Cryptanthus bivittatus minor* variety.

3,690
CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.
Filed Jan. 25, 1974, Ser. No. 436,441
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—88 1 Claim

1. The new and distinct hybrid plant variety of the Cactaceae family as desribed and illustrated and which is principally distinguished by a growth habit that combines the following characteristics:

1. a faster growth rate than specimens of the "Christmas Cheer" variety,
2. substantially greater resistance to flower bud abscission than specimens of the "Christmas Cheer" variety,
3. broader, longer and thicker cladophylls than specimens of the "Christmas Cheer" variety,
4. a more upright and compact appearance than specimens of the "Christmas Cheer" variety,
5. greater resistance to nutrient deficiencies and fungus-type diseases than specimens of the "Christmas Cheer" variety, and
6. a flower which has a bloom life from about 6 to about 8 days and perianth tube laminating and forming tepals with marginal blade areas that in color are dominated by purplish pink, reddish purple and/or purplish red hues.

PATENTS

GRANTED MARCH 11, 1975

ERRATA

For CLASS	See PATENT NO.
128-188	3,869,771
070-432	3,869,901
072-304	3,869,917
313-038	3,870,002
166-055	3,870,098
337-347	3,870,229
346-074	3,870,257
285-035	3,870,332
339-048	3,870,385
117-036	3,870,435
096-029	3,870,479
264-42	3,870,588
264-46	3,870,741
178-007	3,870,814
260-023	3,870,841
357-049	3,871,007
357-079	3,871,008

PATENTS

GRANTED MARCH 11, 1975

GENERAL AND MECHANICAL

3,869,726

GLOVE LINER AND GLOVE COMPRISING SUCH LINER

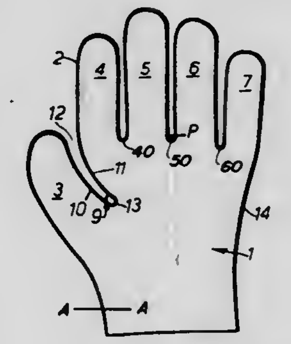
Alfred Wharton Bell, Ash near Aldershot, England, assignor to Siebe Gorman & Company Limited, Chessington, Surrey, England

Filed July 19, 1973, Ser. No. 380,761

Claims priority, application Great Britain, July 19, 1972, 33850/72

Int. Cl. A41d *19/00*

U.S. Cl. 2—164 **8 Claims**



1. A liner for a glove which comprises two generally hand-shaped pieces of an absorbent knitted fabric united together around a portion of their margins, a heat-weldable coating on one side of each of said pieces which is bonded to said fabric, a heat-welded joint uniting the coated sides of sjaid pieces around said portion of their margins, an indentation between the thumb stall and the first finger stall of each of said pieces in the form of an open-ended slot, the center line of which curves in towards the center of the liner and extends below the first finger stall, the sides of the slot being substantially uniformly spaced from each other along the length of the slot until they terminate in a rounded end portion.

3,869,727

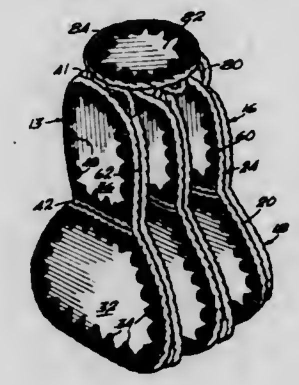
FOLDABLE HAT

John R. Hartman, 310 S.W. 30th Ct., and Dorsey Summerlin, 3850 N.W. 13th St., both of Miami, Fla. 33135

Filed July 2, 1973, Ser. No. 375,915

Int. Cl. A42b *1/20*

U.S. Cl. 2—175 **3 Claims**



1. A collapsible hat composed of a plurality of interconnected sections, each section including a crown wall defining portion and a brim portion, hinge means interconnecting adjacent sections whereby the sections are adapted to be collapsed into stacked relation defining a compact, collapsible hat, said hat including a crown portion connected to the upper end zone of each of the crown walls defining portions and being spaced therefrom, and an open-work collapsible, plurality of strings interconnecting the sections and the crown portion, and each of the portions of said section being interconnected by hinge means, whereby, when the hat is an opened condition, the brim portions extend outwardly from the main plane of the associated crown wall portion of the section defining a decorative hat brim and the hat is adapted to be collapsed into a folded, stacked relation, said crown wall portions being generally rectangular in shape and said brim portions being generally trapezoidal in shape.

3,869,728

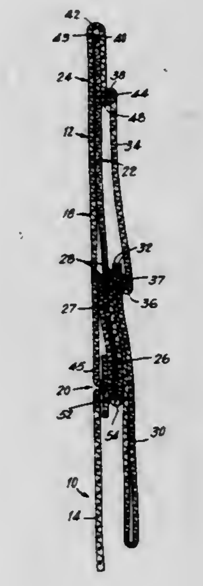
WAISTBAND CONSTRUCTION

Benjamin F. Spencer, Manhattan, N.Y., assignor to Spencer Industries, Inc., New York, N.Y.

Filed June 17, 1974, Ser. No. 480,091

Int. Cl. A41f *9/02*

U.S. Cl. 2—221 **12 Claims**



1. In a garment having an upper section intended to encircle the waist of a wearer, the garment including body fabric formed to provide the outer exposed body encasing portion of the garment, a waistband construction for the garment, the waistband construction including the upper portion of said formed body portion, a band extensible elastically lengthwise of the waistband, the band being relatively unstretchable in its width, said body fabric being folded over at its upper extremity and downwardly within the garment for a short distance to form a pocket, the upper edge of said band being fitted into said pocket, a plurality of bias cut fabric pieces, extensible means for securing the bias pieces together and to said band closely adjacent to the bottom edge of said band, one of said bias cut pieces extending upwardly from its securement position to conceal the band and the bias cut pieces securing means, said one bias cut piece having its top edge secured to the folded over fabric, the bias cut pieces securing means being secured to said band above its bottom edge, a second one of said bias cut pieces extending from the position of securement adjacent the bottom edge of said band and being separately extensibly secured to said body fabric to hold the band in position to permit the band to transmit its elastic effect to said waistband.

3,869,729
BONE JOINT PROSTHESIS

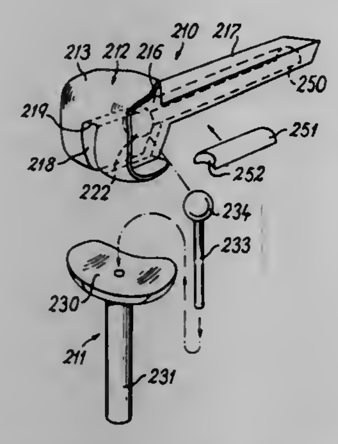
Christopher George Attenborough, Winchelsea, England, assignor to National Research Development Corporation, London, England

Filed Dec. 29, 1972, Ser. No. 319,480

Claims priority, application Great Britain, Jan. 5, 1972, 484/72; Apr. 17, 1972, 17610/72

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **10 Claims**



7. An endoprosthetic bone joint device comprising:

a first component having a first bearing surface and a slot in such surface, which slot terminates in an enlarged cavity located remotely within said first component from said first surface;

a second component having a second bearing surface in mutual articulatory engagement with said first surface, and a bore extending into said second component from its bearing surface; and

a linkage member including a shaft terminated at one end in an enlarged head, said head being captively movably housed in said cavity, part of said shaft adjacent said head being movably located in said slot, and the end of said shaft remote from said head being separably longitudinally slidably engaged in said bore.

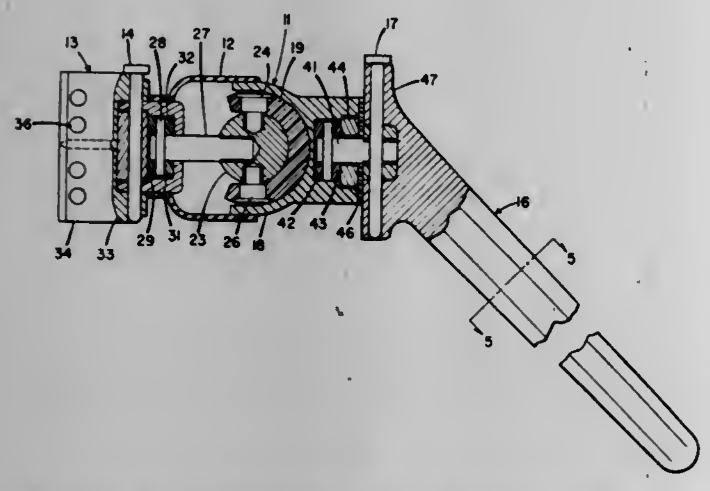
3,869,730
SURGICALLY IMPLANTABLE JOINT PROSTHESIS

Barry A. Skobel, 10 Lynwood Rd., Edison, N.J. 08817

Filed July 25, 1973, Ser. No. 382,300

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **10 Claims**



1. A surgically implantable joint prosthesis comprising

a gimbal housing,

a gimbal ring pinned at first axially opposite points to said housing,

an inner body pinned to said ring at opposite sides thereof on an axis perpendicular to said first axially opposite points,

first bone securing means rotatably attached to said housing, and

second bone securing means rotatably attached to said inner body.

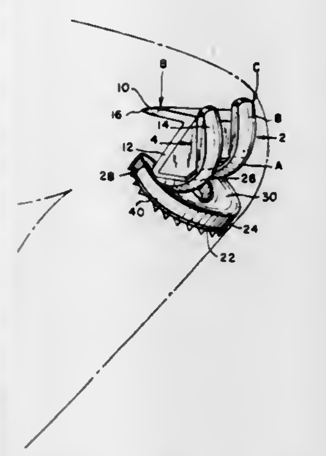
3,869,731
ARTICULATED TWO-PART PROSTHESIS REPLACING THE KNEE JOINT

Theodore R. Waugh; Richard C. Smith, both of Irvine; Sanford H. Anzel, Orange, and Caesar F. Orofino, Orange, all of Calif., assignors to The Regents of the University of California

Filed Feb. 14, 1973, Ser. No. 332,509

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **3 Claims**



1. A two-part prosthetic device for arthoplasty of the knee joint, comprising a component for replacing at least a part of the distal end of the femur and a component for replacing at least a part of the proximal end of the tibia, the femoral component comprising a unitary integrally formed device constructed and adapted to be connected to the distal end of the femur and serve in lieu of the condyle surfaces thereof, said femoral component having an upper part having an upwardly directed bone fixation element for upward implantation in the femur shaft and a lower part providing two substantially parallel transversely spaced support members which serve in lieu of the natural condyles, each of said support members having a downwardly facing bearing surface the anterior to posterior shape of which is a continuously changing curve of constantly decreasing radii and the transverse cross sectional shape of which is a curve forming part of a circle and of shallow depth, the tibial component being disc shaped and having upper and lower surfaces and a side wall and being constructed and adapted to lie with its lower surface on and connected to the prepared plateau surface of the proximal tibia, the tibial component having an opening extending from the posterior part of its side wall to its center whereby the component is C-shaped, the tibial component having a groove in its upper surface which is C-shaped in plan, following the C-shape of the component, to receive the support members of the femoral component, the groove being of uniform cross sectional shape and shallow depth throughout its length and its bottom shaped in each transverse cross section as a curve forming part of a circle.

3,869,732
SELF-CLEANING RESTROOM

Glenwood L. Garvey, Los Angeles, and Richard J. Begley, Thousand Oaks, both of Calif., assignors to Self-Cleaning Environments, Los Angeles, Calif.

Filed Mar. 6, 1974, Ser. No. 448,498

Int. Cl. A47k *17/00*

U.S. Cl. 4—1 **5 Claims**

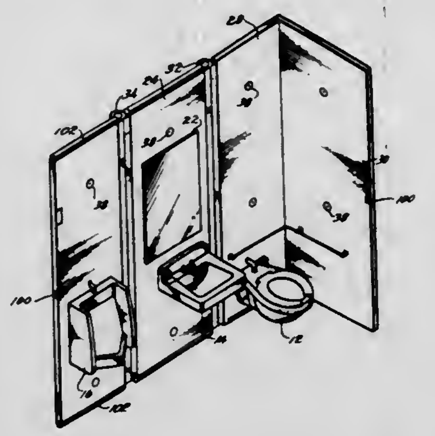
1. An improvement in a self-cleaning restroom of the type which has a toilet and a lavatory changed in position from an in-use position into a nesting relationship for automatic cleaning and means to clean these fixtures in their nesting relationship with a fluid solution, the improvement comprising:

a. lavatory support means carrying the lavatory;

b. means for rotating the lavatory support means into a position where the lavatory and the toilet are in the nesting relationship;

c. means for mounting the toilet in a stationary position;

d. stationary and non-rotatable plumbing means to the toilet;



e. plumbing means to the lavatory including plumbing lines and means for rotating a portion of the plumbing lines with the lavatory and with respect to a stationary portion of the plumbing lines; and

f. the cleaning means includes cleaning lines and means for rotating a portion of such lines with the lavatory and with respect to a stationary portion of the cleaning lines.

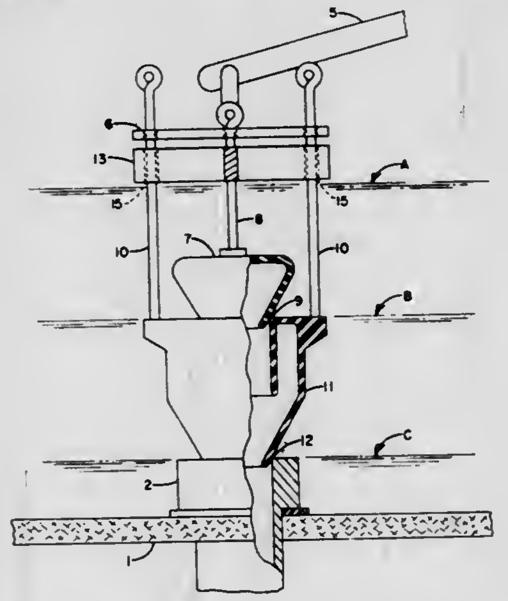
3,869,733
MULTI LEVEL HOLDING TANK DISCHARGE SYSTEM

Chester A. White, 813 Ram Trl. S.E., Albuquerque, N. Mex. 87123

Filed June 4, 1973, Ser. No. 366,267

Int. Cl. E03d *1/34, 5/02*

U.S. Cl. 4—67 A **2 Claims**



1. A discharge system for a fluid holding tank such as is used on a water closet flushed toilet having a maximum fluid level control such as a float operated valve, a discharge fitting with a float valve seat and an associated vertical overflow pipe a short distance from the center of the discharge valve seat, a flow through ball check valve seating on the discharge fitting valve seat, the flow through ball check valve having a valve seat at the top of the flow through opening designed to accomodate another ball check valve; a conventional ball check valve seated on the valve seat at the top of the flow through ball check valve; the conventional ball check valve having a valve stem extending vertically upward on its axis and passing through a vertical guide hole in a valve stem guide attached as by clamping to the overflow pipe, the guide hole being concentric with the vertical axis of the discharge valve seat, thus controlling the upward and downward movement of that valve to cause it to seat properly when returning to the discharge valve seat; means for selectively raising the top ball check valve from the discharge seat on the top of the flow through ball check valve thus limiting the discharge to the level of the discharge valve seat on the top of the flow through ball check valve; and means for raising the flow through ball check valve and the ball check valve seated on the discharge valve seat on the top thereof, and permitting discharge of the entire contents of the holding tank; wherein the improvement comprises:

means for controlling the upward and downward movement of the flow through ball check valve, so as to cause it to seat properly when returning to its seat, comprising:

the valve stem guide having, spaced symetrically about the axis of the discharge valve seat, a pair of vertical guide holes for valve stems of the flow through ball check valve; the flow through ball check valve having two valve stems located symetrically about its vertical axis and extending vertically upward through the guide holes provided therefor in the valve stem guide.

3,869,734
SHOWER CABINETS

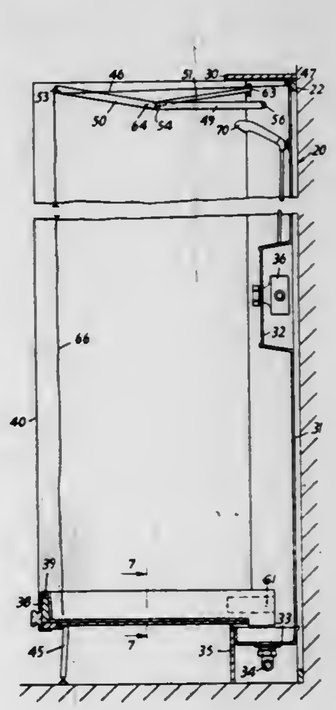
Harry Collett Bolt, and John Anthony Bolt, both of Woodbrook Penn Rd. Knotty Green, Beaconsfield, Buckinghamshire, England

Continuation of Ser. No. 222,164, Jan. 31, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,915

Claims priority, application Great Britain, Feb. 9, 1971, 4226/71

Int. Cl. A47r *3/23*

U.S. Cl. 4—146 **6 Claims**



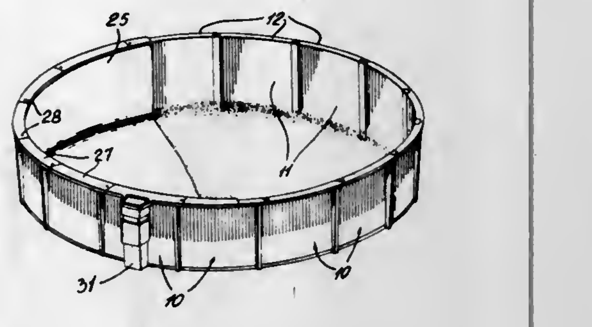
1. A shower cabinet which is collapsible so that when not in use it occupies a space smaller than the front-to-back depth required to accomodate a person taking a shower but can readily be opened to provide a space to accomodate such a person, said cabinet including a back structure of smaller depth than said space, a tray pivotally attached to the back structure and movable from a collapsed vertical position adjacent the back structure to a forwardly extended approximately horizontal position near floor level, two side walls pivotally attached to the back structure on vertical axes and movable from collapsed positions adjacent the back structure to forwardly extended positions approximately at right angles to the back structure, an overhead transverse horizontal support member, foldable linkage means including a first linkage mounted on the cabinet and a second linkage hinged thereto and carrying said member, said linkage means being arranged

to convey said member from the back of the cabinet to the front of the cabinet by extending the linkage means from a position adjacent the back structure where the linkages are folded on each other into a forwardly extended approximately horizontal overhead position which is approximately in the same transverse vertical plane as the front edge of the extended tray whereby the forward and retracted positions of said horizontal support member are in a common horizontal plane, means to prevent escape of water between the two side walls when extended and the tray, a front closure member having its top edge carried by said support member and movable thereby from a retracted position adjacent the back structure to a position at the front of the cabinet in the extended position in which the front closure member is supported in both forward and retracted positions in approximately fully extended condition vertically, and connecting means operatively connecting the foldable linkage means with the tray whereby movement of the tray to its extended and retracted positions automatically moves the linkage means to bring the front closure member to its extended and retracted positions respectively.

3,869,735
SHOWER DOOR SADDLE
Nicholas J. D'Amato, 2840 Braidwood, Richmond, Va. 23225
Filed Mar. 15, 1974, Ser. No. 451,385
Int. Cl. A47k *3/22*
U.S. Cl. 4—146 **8 Claims**

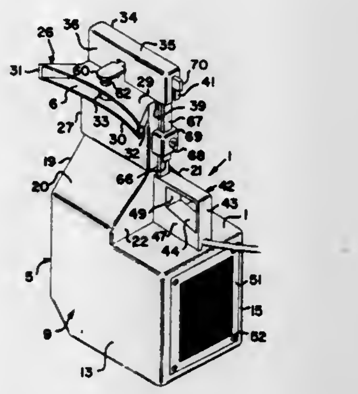
1. A shower door saddle for providing a raised dam at the foot of a door opening of a shower stall and for retaining a tile covering comprising an elongated tubular member of a predetermined length sufficient to close the foot of a door opening in a shower stall, said tubular member having a flat base, a pair of parallel side walls perpendicular to said base and a top wall parallel to said base, said side walls being spaced apart and integrally joining said base and top wall, and a pair of integral longitudinal nailing strips extending perpendicular to and laterally outwardly of said side walls adjacent said base, said side walls and top wall having alternating, parallel longitudinal ribs and grooves formed in the exterior surfaces thereof to provide mechanically interlocking means for retaining tile setting adhesive applied to the exterior surfaces of the top wall and side walls.

3,869,736
COLLAPSIBLE SWIMMING POOL
Marcel Valois, and Kenneth Valois, both of Laval sur Le Lac, Quebec, Canada, assignors to Valmar Swimming Pools Ltd., Ville De Laval (Chomedey), Quebec, Canada
Continuation of Ser. No. 133,629, April 13, 1971, abandoned. This application Feb. 8, 1974, Ser. No. 440,864
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **9 Claims**



1. A collapsible swimming pool comprising:
a plurality of arcuately curved smooth surfaced wall panels of fiberglass reinforced plastics sheet-like material arranged in edge to edge relation to define a cylindrical wall;
one edge portion of each panel being further curved to define an inwardly facing groove extending along said edge portion and the adjacent panel having a correspondingly further curved edge portion seated in said groove;
means filling the groove in said adjacent panel to define a substantially smooth inner surface coextensive with the inner surfaces of said panels;
a reinforcing rib structure extending along the joint between adjacent panels at the outer surface of said wall;
removable securing means holding said edge portions, groove filling means and reinforcing ribs in the described relationship; and
a water-impermeable liner for said pool secured to the top edge of said wall and extending thereover.

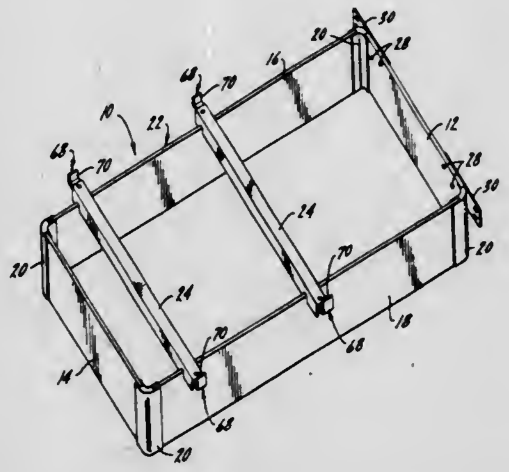
3,869,737
TOILET STOOL AIR DEODORIZER STRUCTURE
Robert L. Stevenson, 7320 W. 87th St., Overland Park, Kans. 66212
Filed Oct. 23, 1973, Ser. No. 408,439
Int. Cl. E03d *9/04*
U.S. Cl. 4—213 **5 Claims**



1. A deodorizer device for a toilet having a toilet bowl with an enlarged rim at the upper end thereof and a toilet seat hingedly mounted on said bowl and having limited movement toward said bowl and a predetermined minimum space between said seat and rim comprising:
a. a housing having an air outlet and a fan means and a filter unit therein arranged for support from a floor along side a toilet, said housing having a reduced upstanding duct portion and permitting air flow through the duct portion, fan means and filter unit to said air outlet;

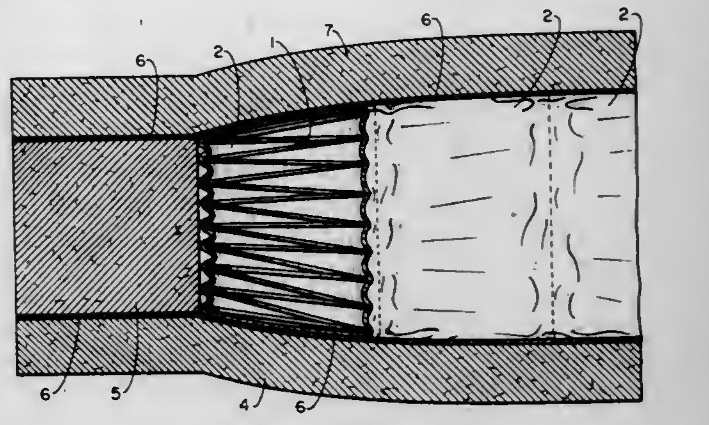
b. an inlet member having a wide generally flat portion extending between a toilet bowl rim and seat and having an inlet opening facing said bowl, said inlet member having a depending tubular duct telescopingly and adjustably engaged with said upstanding duct portion for adjusting the height of said flat portion to accommodate the height of said toilet with said upstanding duct portion;
c. resilient means engaging said toilet seat and operative to swing same upwardly to a selected spacing from the bowl rim when in unloaded condition and permit the seat to be depressed to its minimum spacing when weight is applied thereto;
d. switch means in the housing and having electrically conductive components with one being movable and operative to make and break an electric circuit to said fan means;
e. actuating means on the inlet member and having a movable arm extending under the toilet seat for operation thereby in response to up and down movement of said seat;
f. means including a link connecting the actuating means to the movable switch component to move same and make the electric circuit to the fan means when the seat is depressed, and to break said circuit when the seat is raised, said link including means for adjusting its length to accommodate the height adjustment of the inlet member.

3,869,738
BED BASE FOR SUPPORTING A BOX SPRING
James Rogers Lawrence, Carthage, Mo., assignor to Steadley Company, Incorporated, Carthage, Mo.
Filed Jan. 11, 1974, Ser. No. 432,659
Int. Cl. A47c *19/00*
U.S. Cl. 5—200 R **12 Claims**



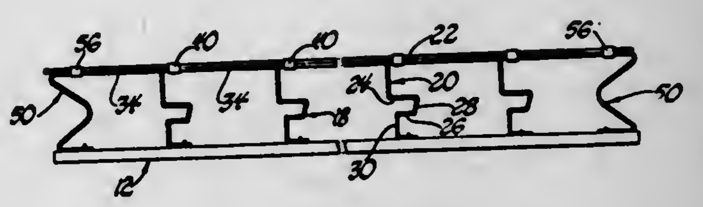
1. A bed base for supporting a box spring for a mattress and elevating said box spring a predetermined distance above a floor, comprising
panels of equal width resting on their edges and connected at their ends to form a rectangular frame,
a pair of notches in a pair of opposed panels at the upper edges in each one of said opposed panels, said pair of notches in one panel being in registration with the pair of notches in the other panel, and
a pair of spaced cross-supports resting crosswise between the pair of notched panels, each of said cross-supports having a generally flat support surface which is generally parallel to the floor and on which the box spring rests, and a downwardly pointing brace,
each of said cross-supports being at right angles to the notched panels and aligned with opposed notches in opposed notched panels so that the respective braces of each one of said cross-supports nest in the opposed notches and the support surfaces of said cross-supports are essentially flush with the unnotched portion of the notched edges of said panels.

3,869,739
CUSHION OR MATTRESS CONSTRUCTION
Donald L. Klein, Los Angeles, Calif., assignor to Marspring Corporation, Los Angeles, Calif.
Filed Nov. 16, 1973, Ser. No. 416,534
Int. Cl. A47c *27/04, 27/20*
U.S. Cl. 5—353 **2 Claims**



1. A cushion or mattress comprising:
an encasing structure defining an enclosed cavity and having top and bottom walls formed of latex or urethane foam material;
a plurality of coil springs and a corresponding plurality of synthetic fabric casings for said coil springs completely filling said cavity in side-by-side relationship with said coil springs extending between said top and bottom walls and completely enclosed by said casings, in which said synthetic fabric includes olefin, nylon and polyester; and
a thin adhesive layer bonding said casings to the interior surface of each of said top and bottom walls.

3,869,740
SPRING ASSEMBLY
Zygmunt M. Surletta, Detroit, Mich., assignor to Lear Siegler Inc., Detroit, Mich.
Filed Sept. 30, 1970, Ser. No. 76,722
Int. Cl. A47c *23/04*
U.S. Cl. 5—354 **2 Claims**

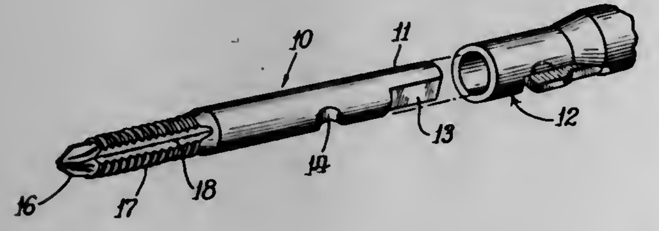


1. A spring assembly comprising: frame means; a plurality of spring members supported on said frame means to define a supporting area, each of said spring members being defined by an integral wire having a straight section and a fishmouth section at each end thereof, at least some of said fishmouth sections being disposed about the periphery of said supporting area; a first pad assembly including first and second border wire sections extending along first and second opposite extremities of the periphery of said supporting area and attached to at least some of said fishmouth sections to define the only border wire means along said first and second opposite extremities; a second pad assembly including third and fourth border wire sections extending along third and fourth opposite extremities of the periphery of said supporting area between the border wire sections of said first pad assembly and attached to at least some of said fishmouth sections to define the only border wire means along said third and fourth opposite extremities; a first plurality of spaced wire cross strands extending between and attached to said first and second border wire sections; a second plurality of spaced wire cross strands extending between and attached to said third and fourth border wire sections; a first plurality of spaced pliable cords

extending across said first plurality of spaced wire cross strands and attached thereto; a second plurality of spaced pliable cords extending across said second plurality of space wire cross strands and attached thereto; and a corner spring disposed at each corner of said frame means, each corner spring being arcuate as viewed in plan and including a first portion connected to said frame means and an arcuate second portion.

3,869,741
COMBINATION THREADING AND SCREW DRIVER TOOL

Noel Logan, 406 Waverly Rd., Barrington, Ill. 60010
Filed June 8, 1973, Ser. No. 368,230
Int. Cl. B25f *1/00*
U.S. Cl. 7—17 **1 Claim**

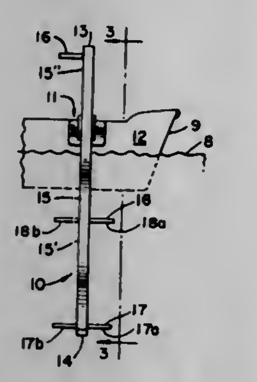


1. In a screwdriver bit having a distal end and a proximal end with the distal end having a screw engaging configuration, the improvement comprising:

said bit having a portion between said distal end and said proximal end with external threads and forming a tap, said threads having a root at least as large in diameter as the largest diametrical measurement of said configuration.

3,869,742
LADDER AND MOUNTING FOR SMALL BOATS

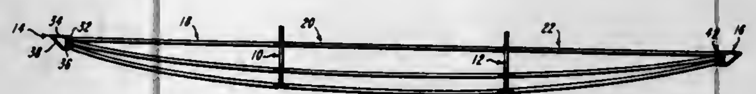
William F. Gale, Box 11a, River Rd., Wapwallopen, Pa. 18660, and James Douglas Thompson, Berwick, Pa., assignors to Gale by said Thompson
Filed Feb. 28, 1974, Ser. No. 446,768
Int. Cl. E06c *1/36*
U.S. Cl. 9—1 R **6 Claims**



1. An improved ladder and mounting for small boats comprising in combination a single shaft ladder having top and bottom ends and bracket engaging means secured to the shaft intermediate said top and bottom ends and dividing said ladder into top and bottom end portions, and a bracket adapted to be secured near the top edge of the transom of a boat for supporting said ladder angularly inclined with respect to the transom with the bottom end portion of the ladder extending in a downwardly diverging direction with respect to the transom and with said top end portion extending above and over the top edge of the transom, said ladder having sets of laterally extending opposite rungs spaced along the bottom portion of the ladder, and a single rung laterally extending from one side of said ladder providing a handle near the top end of the ladder.

3,869,743
KAYAK

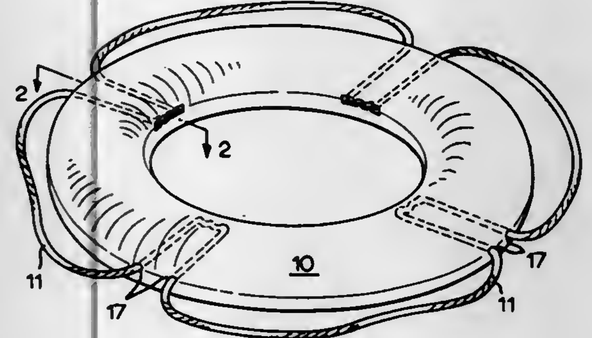
Michael A. Brown, 513 Windsor Dr., West Carrollton, Ohio 45418, and Steven F. Shade, 5412 Dunmore, Centerville, Ohio 45459
Filed July 14, 1972, Ser. No. 272,057
Int. Cl. B63b *7/00*
U.S. Cl. 9—2 C **7 Claims**



1. A watercraft providing a hull relatively broad intermediate its ends and tapering therefrom toward appreciably more narrow nose portions at its opposite ends, including intermediately disposing transverse rib means, nose members separate from and spaced longitudinally from said transverse rib means, and a framework of individual connector elements extending between and interconnecting said rib means and said nose members, characterized by said rib means including at least one rib device having plug-like protuberances defining an arrangement of attachment locations for said connector elements which conforms, approximately, to the transverse outline of the hull at a mid section thereof, said connector elements which connect to said rib means being tubular to provide for their slip fit to said protuberances, each of said nose members being hollow and presenting in a rear face thereof a plurality of closely grouped openings, and an end of each said connector element which connects to a nose member having in connection therewith an adapter portion of barb-like configuration the form of which facilitates its penetration of one of said openings while resisting withdrawal therefrom, said adapter portions of barb-like configuration being relatively loosely received in said openings to provide for free pivotal movement thereof with respect to the related one of said nose members and tight fitting cover means in containing relation to the assembly comprising said rib means, said nose members and said connectors in an assembled relation thereof.

3,869,744
DEVICE WITH ATTACHED GRAB LINE

Donald Stuart MacMillan, and Leonard Churchward, both of Burlington, Ontario, Canada, assignors to Polyurcon Limited, Burlington, Ontario, Canada
Filed Sept. 24, 1973, Ser. No. 400,466
Int. Cl. B63c *9/08*
U.S. Cl. 9—340 **8 Claims**



1. A device with an attached grab line comprising: a body having formed therein at least one line-retaining recess opening to a surface of the body;

the recess having side walls and a bottom wall provided by the body;

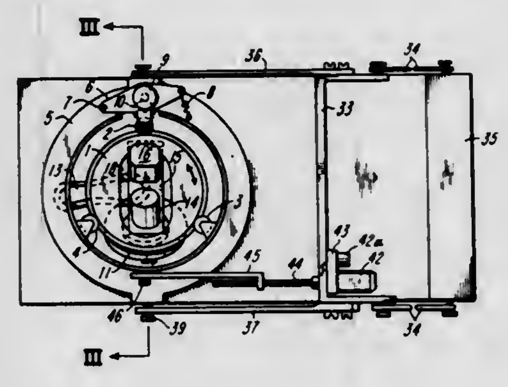
at least two passages passing through the body and opening into the recess;

the grab line passing through one of the passages from outside the body to the interior of the recess and through the other passage from the interior of the recess to the exterior of the body;

the line frictionally engaging two opposite side recess walls between which it extends from one passage to the other; at least one of the said opposite side walls frictionally engaged by the line being ridged transversely of the direction in which the line extends in engagement therewith to increase the friction between the line and the engaged sidewalls and thereby prevent longitudinal movement of the part of the line in the recess.

3,869,745
METHOD AND APPARATUS FOR MANUFACTURING SHOES

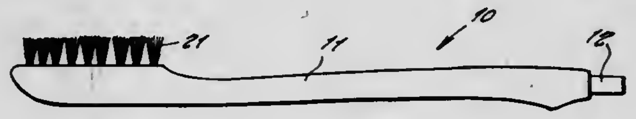
Dieter Braun, Stuttgart, Germany, assignor to Fortuna-Werke Maschinenfabrik Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany
Filed Apr. 9, 1974, Ser. No. 459,333
Claims priority, application Germany, Apr. 11, 1973, 2318206
Int. Cl. A43d *21/00*
U.S. Cl. 12—145 **21 Claims**



1. The method of folding the upper of a shoe over the sole which comprises; supporting the shoe with the sole exposed, supporting a cup shaped tool on a central axis of rotation which is inclined to said sole with the open side of the tool facing the sole and with a region of the rim of the tool engaging the sole near the periphery thereof, rotating the tool on its central axis to wipe the edge of the upper toward the center of the shoe sole, moving the tool and the shoe relatively to cause the region of the tool engaging the sole to follow a closed path about the sole to wipe the edge of the shoe upper over the entire periphery of the shoe sole, said closed path being formed by rotating said tool bodily about an axis perpendicular to the sole in about the center thereof at each end of the sole, and moving the tool bodily in a straight line along each side of the sole, a line drawn from the point of intersection of said axis with the plane of the sole to said region of the rim of the tool which engages the sole being substantially tangential to said path in each relative position of said tool and shoe.

3,869,746
HYDRAULIC TOOTHBRUSH

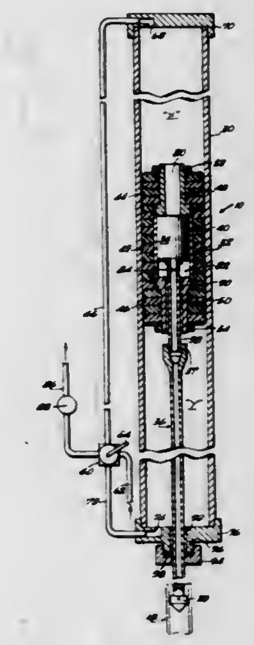
Law Man-king 339-341 Lackhart Rd.. 20/F. Wanchai. Hong Kong
Filed Oct. 9, 1973, Ser. No. 404,654
Int. Cl. A46b *13/06*
U.S. Cl. 15—29 **8 Claims**



1. A power toothbrush comprising a head and a handle, means forming a water flow channel in said head, a plurality of brush units, each brush unit including a platform and bristle tufts, said bristle tufts being secured to said platform and projecting from said head, means rotatably mounting each brush unit to said head, impeller means, means fixing the impeller means to the brush unit for unitary rotation therewith, the impeller means being positioned in said water flow channel, the head further including means in communication with the channel for connection to a supply of water under pressure and means for discharging water from the channel whereby water flow through the channel will impinge upon each impeller means causing the brush units to rotate, thereby providing movement of the tooth cleansing bristles.

3,869,747
MOTOR PISTON TUBE CLEANER

Harold L. Richter, 7950 Hawthorne Ave., Miami Beach, Fla. 33141
Filed June 25, 1973, Ser. No. 372,968
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.1 R **10 Claims**



1. A device for driving a tool carrying drill shaft for drilling elongated holes or for drilling, cleaning or brushing the interiors of tubes of the nature contained in heat exchangers, coolers, condensers, etc., comprising:

A. an elongated barrel defining a column having a first end and a second end and including,
   1. first and second end caps, said barrel having a port adjacent each of the opposite ends, said second end cap having an opening;
B. a piston for reciprocating movement in said barrel between the end caps including,
   1. motor means fixed within said piston, and means to supply drive fluid to the motor means and to provide exit means for the drive fluid including port means extending in fluid communication through said piston and means exteriorly of the barrel to provide fluid communication means between the ports adjacent the opposite ends;
C. a drill shaft rotatably attached to a rotor shaft extending outwardly from said motor, said drill shaft extending through the opening of said second end cap for the detachable reception of a tool on its extended end, outwardly of said second end cap;
D. a fluid power means;
E. conduit means;
F. four-way valve means connected in said conduit means for selectively directing said fluid power means through said ports adjacent each of the opposite ends into corresponding end portions of said barrel to cause reciprocating movement of said motor carrying piston within said

barrel and to simultaneously energize said motor to cause rotary movement of said tool carrying drill shaft.

3,869,748
BRUSH WITH ROTATABLE BRUSH PLATE

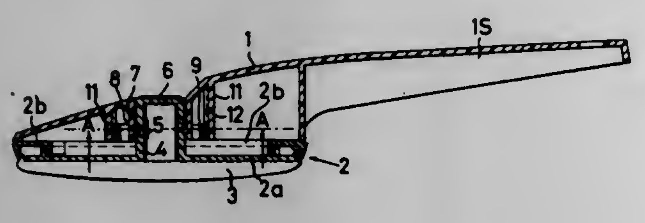
Kurt Krusche, Nansenring 22, D-6000 Frankfurt/Main, Germany

Filed Dec. 26, 1973, Ser. No. 427,528

Claims priority, application Germany, Dec. 28, 1972, 2263741

Int. Cl. A46b *9/02, 9/10*

U.S. Cl. 15—172 **10 Claims**



1. A brush comprising a brush plate rotatably arranged on a brush back and in which these two brush parts are connected with each other by members which project from the brush plate and the brush back and interengage in the interior of the brush so as to allow relative rotation of the said members through 360°, the said members having co-operating detent formations which maintain the said members in their interengaged relation while allowing the relative rotation, a ring surrounding one of the said members at a spacing being provided on the side of the brush plate remote from its brushing surface, diametrically oppositely disposed axial ribs being arranged on the outer wall of the ring, which engage in axial grooves which are formed in a sleeve which extends from the inner side of the brush back and which surrounds the ring, said ribs and grooves acting as detent means.

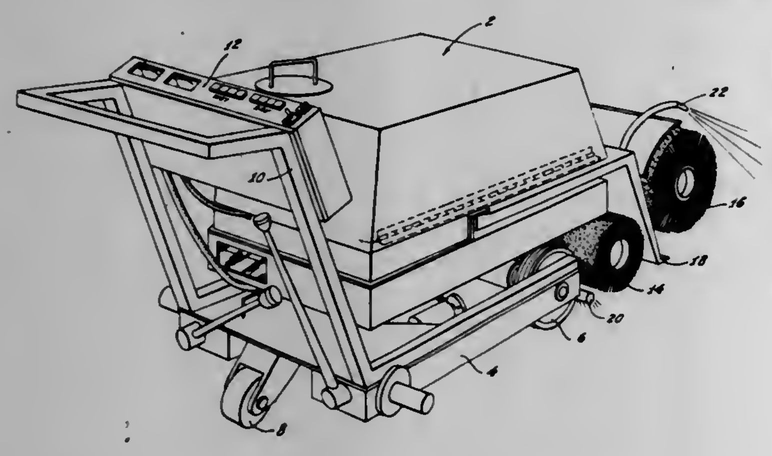
3,869,749
CLEANING APPARATUS

Arnold B. London, Beverly Hills, and Jiri Nessel, Palo Alto, both of Calif., assignors to Arnold B. London, Beverly Hills, Calif., by said Jiri Nessel

Filed June 12, 1972, Ser. No. 262,110

Int. Cl. A47l *5/38*

U.S. Cl. 15—302 **32 Claims**



1. An escalator cleaning apparatus comprising
a carriage;
means to fixedly position said carriage between a pair of escalator sidewalls;
wheels mounted on the underside of said carriage;
a reciprocable first frame positioned on said carriage for reciprocation in a transverse direction;
first brush means carried by said reciprocable first frame;
a reciprocable second frame positioned with respect to said carriage for reciprocation in a longitudinal direction;
second brush means carried by said second frame; and
said second frame extending forwardly of said first frame, whereby said first brush means is reciprocated in a transverse direction to an escalator step surface and said second brush means is reciprocated in a longitudinal direction to an escalator step surface.

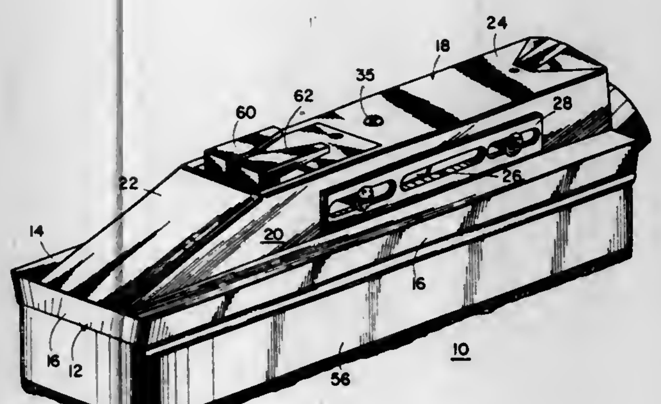
3,869,750
WALL BRUSH

Seymour Dudley Wallick, Clifton, and Joseph Jacob Sandler, Wayne, both of N.J., assignors to Wis-King, Inc., Fairfield, N.J.

Filed Aug. 21, 1973, Ser. No. 390,314

Int. Cl. A47l *7/00, 9/06*

U.S. Cl. 15—322 **8 Claims**



1. A brush comprising
a housing including a planar surface provided with depending side walls;
a cover plate secured to one of said depending side walls to establish a chamber within said housing, said cover plate having suction openings therethrough;
an access opening to said chamber through which a vacuum may be applied thereto;
valve means positioned in said chamber and operable from a location outside of said chamber for selectively dispensing fluid conveyed to said valve means;
supply conduit means secured at one end thereof to said valve means and passing at an opposite end thereof out of said chamber, whereby a source of fluid may be attached thereto;
dispensing conduit means secured at one end thereof to said valve means, said dispensing conduit means passing out of said chamber and including a dispensing portion having exit openings therein through which fluid may be dispensed; (and)
a brush sub-assembly removably secured with respect to said cover plate, said brush sub-assembly including passageways therethrough which communicate with said suction openings in said cover plate;
whereby fluid dispensed through said exit openings may be withdrawn through said passageways;
wherein said cover plate is hinged to said housing at one end thereof; and
wherein said dispensing conduit means includes an intermediate portion generally transverse to said dispensing portion, and the opposite end of said cover plate includes positioning means for establishing a pivoting fulcrum position for said intermediate portion of said dispensing conduit means.

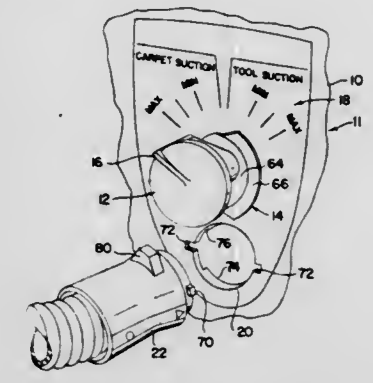
3,869,751
INTERLOCKED CONVERSION FOR A CONVERTIBLE CLEANER

Wilton E. Boyd, and David B. Rennecker, both of Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Nov. 16, 1973, Ser. No. 416,345

Int. Cl. A47l *9/00*

U.S. Cl. 15—334 **10 Claims**



1. An interlock means for a convertible cleaner including;
a. a conversion valve for providing a carpet suction mode and a tool suction mode,
b. a manually actuatable means for actuating said conversion valve,
c. a hose coupling connectable to said convertible cleaner, and
d. blocking means movable with said manually actuatable means for blocking disconnection of said hose coupling.

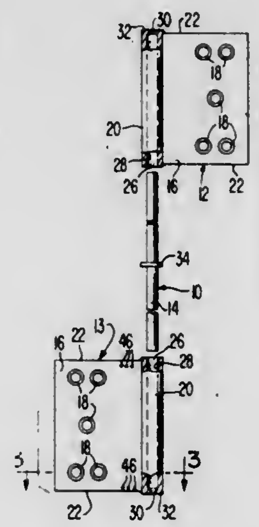
3,869,752
HINGE ASSEMBLY

William F. Klay, Palo Alto, Calif., assignor to Dale M. Waltz, Los Altos Hills, Calif., a part interest

Filed Nov. 6, 1972, Ser. No. 30[illegible]

Int. Cl. E05d *9/00*

U.S. Cl. 16—128 **10 Claims**



1. A hinge assembly comprising: a pair of substantially identical hinge units, each unit including a plate having a number of screw-receiving holes therethrough and a generally cylindrical, imperforate, pin-receiving knuckle integral with and extending along the entire length of one side margin of the plate, each plate having a pair of opposed end marginal edges extending transversely of the corresponding knuckle, the ends of each knuckle projecting outwardly from adjacent end marginal edges of the corresponding plate; and a hinge pin loosely receivable in said knuckles for pivotally interconnecting the hinge units with the knuckles in aligned, end-to-end relationship, each knuckle having an open, first end permitting the hinge pin to be inserted into and extend through a major portion of the knuckle, the opposite end of each knuckle having projection means for blocking the movement of the hinge pin out of the knuckle past said opposite end, the hinge units adapted to be mounted in operative positions with the knuckles in aligned, end-to-end relationship to each other and with said first ends of the knuckles in proximity to each other, whereby the plates of said hinge units can be spaced from and coplanar with each other as they project in the same direction from the hinge pin so as to avoid engagement of the plates with each other and the need to mortise the structures to which the hinge units are to be attached.

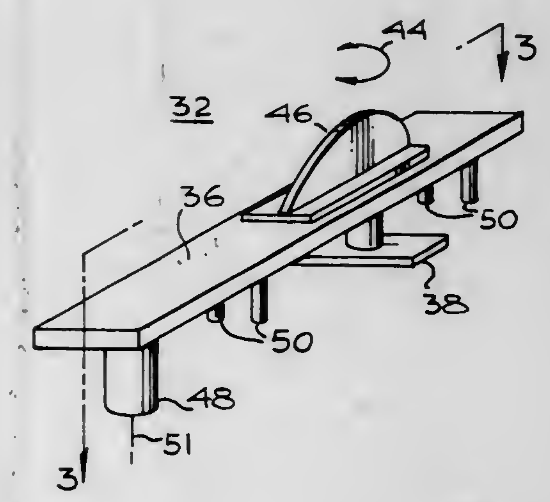
3,869,753
REMOVABLE HINGE ARRANGEMENT

John G. Boback, P.O. Box 1227, Hawthorne, Calif. 90250

Filed May 21, 1973, Ser. No. 362,017

Int. Cl. E05d *1/06*

U.S. Cl. 16—171 **9 Claims**

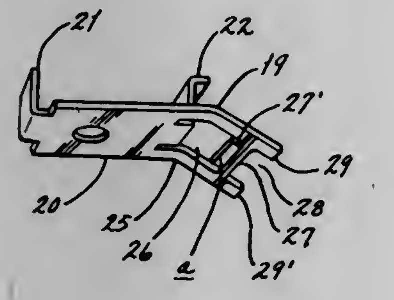


1. A removable hinge arrangement for structures having front, back, side, top and bottom walls defining a storage cavity, the front wall having edge portions defining an aperture therethrough providing communication to the cavity, the walls having a rigid outer skin with a plurality of tab accepting apertures therethrough, in a predetermined array, and door means hingedly coupled adjacent the front wall for closing the aperture, and comprising, in combination:
- a top hinge means removably coupled to the structure adjacent the intersection of the top wall and front wall thereof and comprising:
- a top plate member adjacent the outer surface of the rigid skin;
- a top hinge pin coupled to said top plate member and spaced a first preselected distance from the first wall, said top hinge pin extendable vertically downwardly into the door and alignable therein on a first axis; and
- a top tab member coupled to said top plate member and removably extendable into first of the plurality of tab accepting apertures in the skin, and said tab member having an insertion position allowing insertion and removal of said tab member into and from the aperture in the skin, and having a clamping position providing a frictional engagement with the skin and having a predetermined frictional force clamping the skin between said top tab member and said top plate member;
- a bottom hinge means coupled to the structure in regions adjacent the intersection of the front wall and the bottom wall thereof and having a bottom hinge pin extendable vertically upwardly into the door, and said bottom hinge pin spaced said first preselected distance from the front wall and alignable coaxially along said first axis with said top hinge pin,

whereby the door is pivotally movable on and supported by said top and bottom hinge pins.

3,869,754
BRACKET FOR A SPRING SASH COUNTERBALANCE

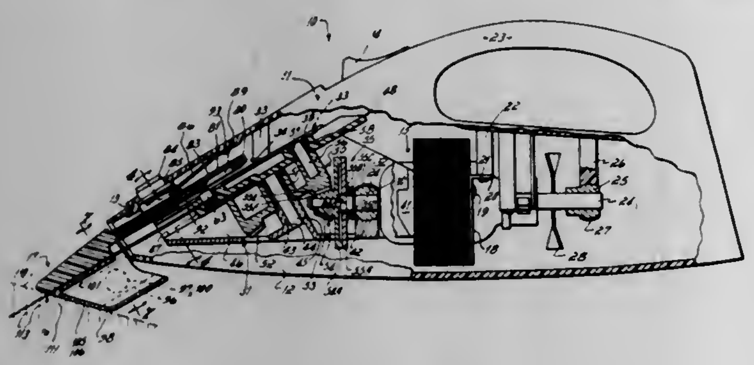
Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78767
Division of Ser. No. 283,400, Aug. 24, 1972, Pat. No. 3,820,193. This application Sept. 10, 1973, Ser. No. 395,903
Int. Cl. E05d *13/10*
U.S. Cl. 16—197 **2 Claims**



1. A support member comprising a unitary body of elongate character having first and second end portions, said body having a flat mounting portion adjacent said first end portion for disposition against a mounting surface and extending from said first end portion to a point spaced from said second end portion, said body between said flat mounting portion and said second end portion being planarwise angulated with respect to said mounting portion, said body further having an opening extending transversely thereof adjacent said mounting portion remote from said first end portion, there being an endwise opening recess proximate the said opening and forming the second end portion of said body, the said opening, the said recess, and the said second end portion being contained within said angulated portion of said body, a tongue provided at the extremity of said first end portion, and a hook member provided between said mounting portion and said opening, the major planes of said tongue and said hook members being normal to the planes of said mounting portion.

3,869,755
METHOD AND APPARATUS FOR TENDERIZING MEAT

Daniel B. Stauft, 5494 Galbraith Rd., Cincinnati, Ohio 45236
Continuation-in-part of Ser. No. 303,861, Nov. 6, 1972, abandoned. This application May 23, 1974, Ser. No. 472,697
Int. Cl. A22b *5/08*
U.S. Cl. 17—25 **45 Claims**



1. Portable apparatus for tenderizing meat comprising,

a housing having a handle,

said housing further having a foot,

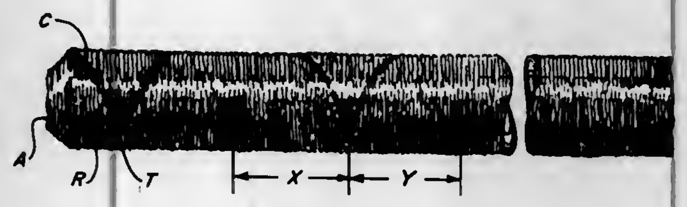
said foot having a bottom surface engageable with a surface of the meat to be tenderized,

a motor within said housing,

a knife blade slidably mounted in said housing, said blade having a cutting end projectable from said bottom surface of said foot, said blade being angulated relative to said bottom surface of said foot so that said cutting end of said blade penetrates said surface of the meat at an angle of between approximately 15° to 60° to a vertical plane normal to said surface of the meat as said bottom surface of said foot is moved over said surface of the meat, and means connecting said motor to said knife blade for reciprocation of said knife blade.

3,869,756
SHIRRED CASING STICK WITH REVERSE HELICAL FOLD PATTERN

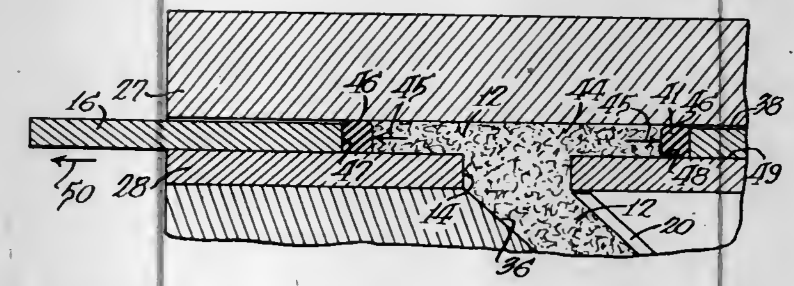
Valdis M. Tums, Palos Park, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 159,858, July 16, 1971, Pat. No. 3,779,284. This application May 25, 1973, Ser. No. 364,137
Int. Cl. A22c *13/00*
U.S. Cl. 17—49 **3 Claims**



1. In a method for producing shirred cohesive sticks of sausage casing which comprises the step of shirring inflated casing on a mandrel against a holdback to pleat and compress the casing; the improvement which comprises rotating said casing axially about said mandrel in a clockwise direction; reversing the rotation of said casing about said mandrel to counter clockwise rotation; and continuing repetitive cycles of clockwise and counter clockwise rotation of said casing during shirring thereof to provide a shirred, coherent stick of desired length.

3,869,757
MOLDING APPARATUS WITH VALVED AIR RELEASE

Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed Jan. 24, 1974, Ser. No. 436,192
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **8 Claims**

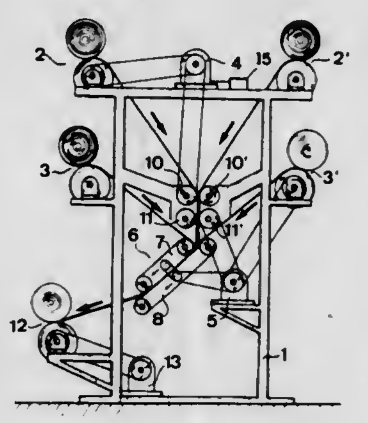


1. Mold apparatus for molding a pressurized plastic material, comprising: means defining a mold opening for receiving an opening-filling charge of said pressurized material; means defining an escape passage for venting gases from the mold opening during filling of said opening with said material; and a pressure responsive elastic solid valve member at the mold opening having a first surface portion defining a part of said mold opening and a substantially unconfined second portion defining a part of said escape passage, pressure of said pressurized plastic material in the mold opening on said first surface portion thereby projecting a pressure distorted portion of said second portion of the solid elastic member across and blocking said escape passage upon substantially complete filling of said mold opening with said material.

3,869,758
APPARATUS FOR MANUFACTURING COMPOSITE ROVINGS

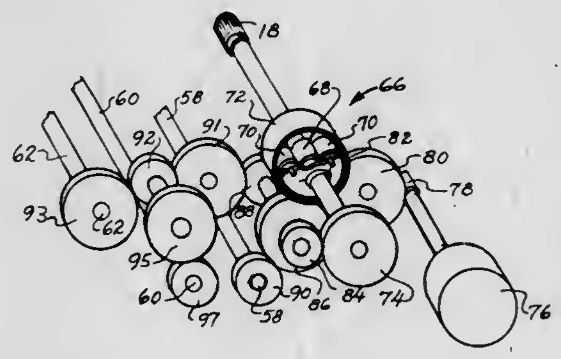
Gabriel T. Lautier, Mas de Bonnet, (81) Labastide-Rouairoux, France
Filed Sept. 14, 1972, Ser. No. 289,075
Claims priority, application France, Sept. 14, 1971, 71.33039
Int. Cl. D01g *15/58*
U.S. Cl. 19—153 **2 Claims**

1. An apparatus for making composite rovings having a plurality of fibres differing from each other in nature, colour and size, comprising: at least one friction-sleeve means including a pair of sleeves bearing against each other, said sleeves each having semi-rigid runs and being rotatable in opposite directions; first drive means imparting a continuous rotary motion to said sleeves and second drive means imparting a lateral reciprocating motion to said sleeves whereby said sleeves are imparted with a dual rotary and lateral reciprocating motion; first feed means actuated by driving means in synchronism with the rotary motion of said sleeves for continuously feeding at least a first roving to said friction-sleeve means; second feed means for intermittently feeding at least a second roving to said friction-sleeve means through at least two pairs of pressure rolls arranged at the inlet of said friction-sleeve means; the pressure rolls of a first pair being pressed together and driven intermittently by further driving means; the pressure rolls of the other pair, located downstream of said first pair, being pressed together and being driven in synchronism with the rotary motion of the sleeves of said friction-sleeve means; and means for winding composite rovings delivered at the outlet of said friction-sleeve means.



3,869,759
DRIVE MEANS FOR TEXTILE SLIVER DRAFTING ASSEMBLY

Richard J. Savageau, Seneca, and Gordon C. Anderson, Clemson, both of S.C., assignors to Saco-Lowell Corporation, Greenville, S.C.
Filed Oct. 24, 1973, Ser. No. 409,217
Int. Cl. D01h *5/32*
U.S. Cl. 19—293 **8 Claims**



1. In combination with a two-delivery textile drawing machine having first and second sliver drafting assemblies each including a driven front bottom roll and a plurality of additional bottom rolls mounted rearwardly of the parallel to said front roll for independent adjustment toward and away from each other and said front roll to vary the spacing therebetween, first and second drive means respectively associated with said first and second drafting assemblies and each interconnecting said front roll and said rearward rolls of the associated one of said assemblies for driving said rearward rolls of said assembly at desired speeds in any adjustive position of said rolls, each said drive means comprising:

a plurality of axially-fixed countershafts corresponding in number to an underlying said rearward rolls of the associated one of said drafting assemblies and extending in spaced and generally parallel relationship to associated ones of said rearward rolls;

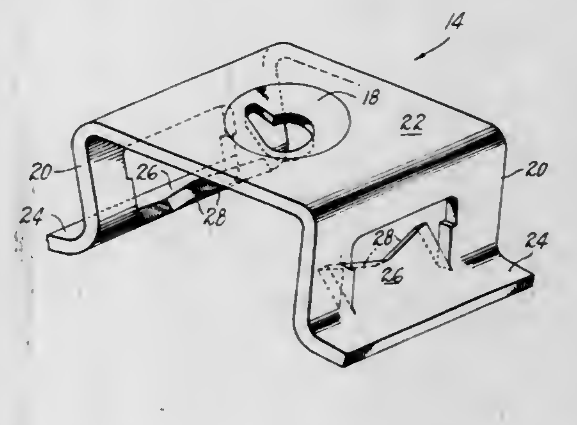
gearing means disposed adjacent one side of said one assembly and drivingly interconnecting said front roll thereof and said countershafts, said gearing means including a plurality of sets of change gears all rotatable about fixed axes, one of said sets being adapted to control the speed of all said rearward rolls of said assembly, another of said sets being adapted to control the speed of only one of said rearward rolls of said assembly, and still another of said sets being adapted to control the speed of only another one of said rearward rolls of said assembly;

flexible timing belt drive means disposed adjacent the other side of said drafting assembly and drivably interconnecting respective ones of said countershafts and said rearward rolls, said timing belt means including a plurality of timing belts corresponding in number to said rearward rolls of said assembly and each interconnecting one of said rearward rolls and an associated one of said countershafts;

and a plurality of tension compensating assemblies corresponding in number to and each operatively associated with one of said timing belts, each of said tension compensating assemblies including a swing arm pivotally mounted adjacent one end thereof, an idler pulley mounted adjacent the other end of said arm for pivotal movement therewith, and spring means adjacent said one end of said arm biasing said arm in a direction urging said idler pulley into tensioning engagement with the associated one of said timing belts.

3,869,760
RETAINING CLIP FORMED FROM SHEET MATERIAL

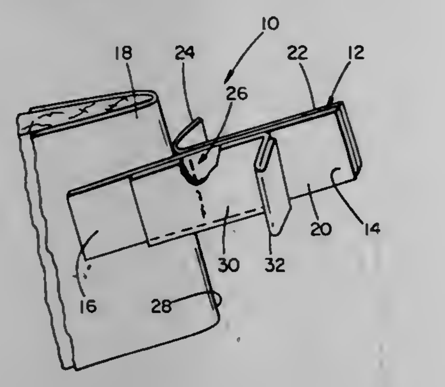
Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation of Flemington, New Jersey, Boston, Mass.
Filed Sept. 20, 1973, Ser. No. 399,463
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 **3 Claims**



1. A one-piece push-on type fastener formed from sheet material for securing a workpiece in assembled relation to a protuberant work support and comprising a substantially U-shaped clip received over the work support, the clip including at least one pair of resilient legs extending from an integral leg-spanning portion, the free ends of said legs being spring biased toward each other and spreadable apart by engagement with opposed portions of the protuberant work support, said legs respectively having an intermediate portion formed with a tang struck inwardly therefrom to project toward the leg-spanning portion for cooperative gripping engagement with said opposed portions of the work support, the gripping edge of at least one of said tangs being of transversely recessed V-notch shape, and said work-spanning portion being formed with means for securing the workpiece thereto, the arrangement being such that relative withdrawal of the assembled clip and/or the workpiece from the work support urges the tangs toward a straighter toggle relationship and hence tighter gripping of the support.

3,869,761
DISPOSABLE DIAPER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,692
Int. Cl. A44b *21/00;* **B32b** *3/10*
U.S. Cl. 24—73 VA **9 Claims**



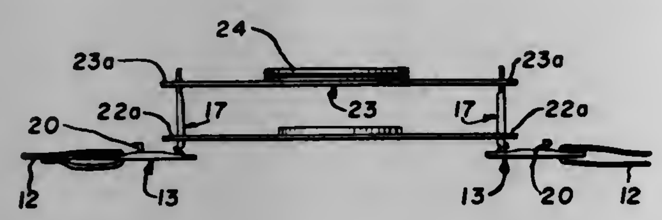
1. A tape unit for a diaper comprising,

a primary tape strip having a first surface coated with an adhesive and a second surface, said first and second surfaces being on opposite sides of said primary tape strip, said first surface having a first portion secured to a first diaper portion and a second portion securable to a second diaper portion for securing the diaper on an infant, said primary tape strip having a region of reduced strength intermediate the first and second tape portions; and

a reinforcing strip removably secured to said primary strip second surface and at least partially covering said region of reduced strength, said reinforcing strip thereby preventing disengagement of the first and second strip portions until removed from the region of reduced strength, a release sheet removably secured to said second portion on said primary strip first surface whereby separation of said release sheet and said primary strip second portion permits said second portion to be attached to said second diaper portion.

3,869,762
FASTENING APPARATUS FOR OSTOMY APPLIANCES

Donald Dean Barrett, Palos Hills; Kenneth R. Whalen, Worth; Charles Nichols, Arlington Heights; Robert G. Knapp, Wheaton; Jay A. Wickum, Westmont, and Daniel A. Maust, Winfield, all of Ill., assignors to Marsan Manufacturing Company, Inc., Wausau, Wis.
Division of Ser. No. 307,936, Nov. 20, 1972, Pat. No. 3,789,846, which is a continuation of Ser. No. 105,286, Jan. 11, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,925
Int. Cl. A61f *5/44;* **A44b** *21/00*
U.S. Cl. 24—81 AG **5 Claims**



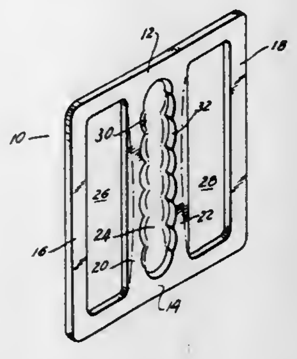
1. Apparatus for releasably securing, in substantially superimposed relation, a pair of objects each having at least two laterally opposed openings spaced apart the same distance on each object, said apparatus comprising:

means mounting said two objects in superimposed relation; at least two fastening means, each for releasably securing said two objects through and about one of said openings in each object when the objects are in superimposed relation, each of said fastening means including means cooperative with the corresponding means of the other for retaining one of said objects in a secured position during release, removal and replacement of the other object; and,

belt means interconnecting said fastening means.

3,869,763
BUCKLE-STRAP CONSTRUCTION

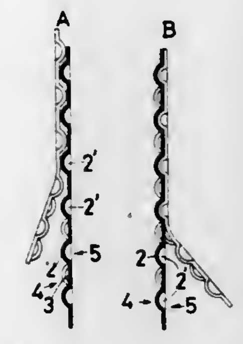
Herman W. Senk, Brookville, and Bernard S. Resnik, Melville, both of N.Y., assignors to Lehigh Industries, Inc., Farmingdale, N.Y.
Continuation-in-part of Ser. No. 333,014, Feb. 16, 1973, abandoned. This application July 5, 1973, Ser. No. 376,351
Int. Cl. A44b *11/04;* **A44c** *5/18*
U.S. Cl. 24—198 **6 Claims**



1. A buckle and strap assembly comprising a buckle formed of essentially non-resilient deformable material and having a pair of elongated side pieces, a pair of cross pieces joining said side pieces intermediate their ends and having inner edges defining a strap slot therebetween, and a strap inserted through said strap slot, said cross pieces being bent inwardly toward one another thereby to engage and firmly secure said strap, at least one of said cross pieces having a non-engaging outer edge defining a continuous and substantially linear surface throughout its major portion and including adjacent each end thereof a notch in a substantially collapsed condition.

3,869,764
PRESS-ON AND SPLIT-OFF TYPE FASTENER AND MANUFACTURING DEVICE THEREFOR

Hideo Umezu, Tokyo, Japan, assignor to International Fastener Establishment, Vaduz, Liechtenstein
Continuation of Ser. No. 230,254, Feb. 29, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,769
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **11 Claims**



1. A press-on, separable fastener comprising:

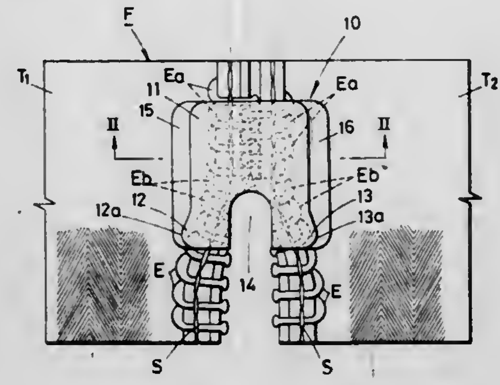
first and second facing portions, each of said portions having a support member, and a set of adjoining longitudinal parallel strips on said support member, each of said strips providing a series of spaced apart ridges protruding from said support member, each of said strips containing a series of spaces, each of said spaces being two successive ones of said ridges,

within each of said portions, adjoining ones of said strips being longitudinally staggered relative to each other such that said ridges and spaces of adjoining strips are alternately juxtaposed,

the edges of said ridges of said first portion frictionally engaging the edges of said ridges of said second portion when said portions are engaged.

3,869,765
BRIDGE TOP STOP FOR SLIDE FASTENERS

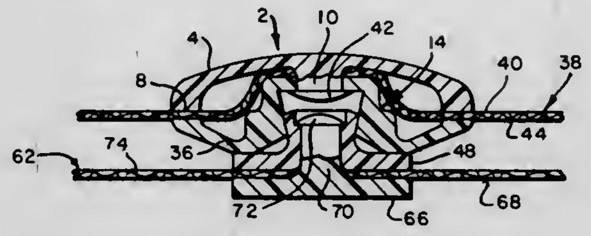
Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed , Ser. No. 476,730
Claims priority, application Japan, June 25, 1973, 48-72114
Int. Cl. A44b *19/36*
U.S. Cl. 24—205.11 F **3 Claims**



1. In a slide fastener comprising a pair of stringer tapes, a row of interlocking fastener elements secured to and along one longitudinal edge of each of said stringer tapes and a slider movable along said longitudinal edge to couple and uncouple the rows of fastener elements, the improvement which comprises a bridge top stop positioned at an upper end of the fastener and adapted to prevent the slider from running off said upper end, said bridge top stop embracingly overlying a first length of fastener elements that remain coupled at said upper end and a second length of fastener elements that continue from said first length but are uncoupled, and said bridge top stop being bonded integrally with said first and second lengths of fastener elements to the stringer tapes.

3,869,766
PLASTIC SNAP FASTENER

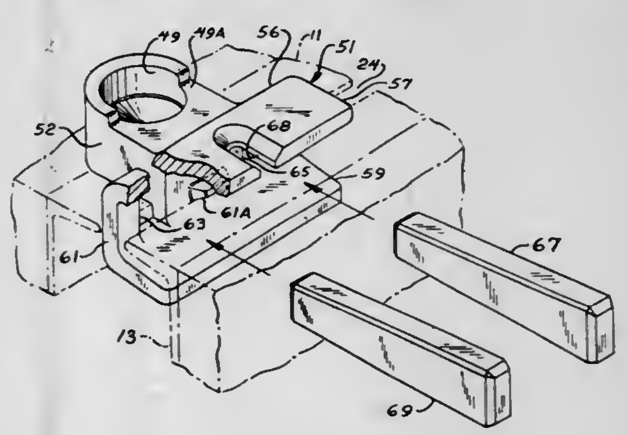
Alain Raymond, Seyssinet Pariset, France, assignor to A. Raymond, Lorrach, Baden, Germany
Filed Dec. 21, 1972, Ser. No. 317,457
Claims priority, application Germany, Dec. 22, 1971, 2163686
Int. Cl. A44b *17/00*
U.S. Cl. 24—216 **10 Claims**



1. A socket component for a separable snap fastener comprising a body of firm but yielding tenacious and resiliently distensible polymeric material in the form of a solid of revolution and including a central portion defining a stud receiving cavity, said cavity having a peripheral wall circumscribing the central axis of said socket and the roof of said cavity being disposed adjacent the upper end of said central portion of said socket, and an integral, cup-shaped peripheral flange joined to said central portion adjacent the lower end thereof and relatively proximate the entrance to said cavity and extending radially outwardly and upwardly at an acute angle relative to the central axis of the socket from its junction with said central portion and terminating in an upper planar surface which engages a support element to which the socket is attached at points substantially radially spaced from said central portion to stabilize said socket relative to the support element, said upper planar surface being located in a plane lying substantially transverse the central axis of said socket and intersecting said axis at an imaginary point disposed substantially upwardly of the entrance to said cavity, the material thickness of said flange adjacent its junction with said central portion being substantially less than the material thickness of said central portion for substantially the full depth of said cavity, said flange defining, adjacent said junction, a resilient hinging web about which said central portion of said socket distends and resiles responsive to the insertion of a cooperating snap fastener stud component into said cavity.

3,869,767
METHOD OF REFORMING AND STRAIGHTENING MEMBERS

Wayne E. Hunnicutt, Big Bend, and Peter G. Rossbach, Waukesha, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.
Division of Ser. No. 135,274, April 19, 1971, Pat. No. 3,754,427. This application Apr. 23, 1973, Ser. No. 353,563
Int. Cl. A44b *21/00*
U.S. Cl. 24—243 CC **2 Claims**



1. A clamp assembly comprising in combination a body section defining a socket therein for receiving a ball bearing; a C-shaped section comprising spaced flanges separated by a bight portion, there being apertures in said bight portion for receiving wedges therein; and,

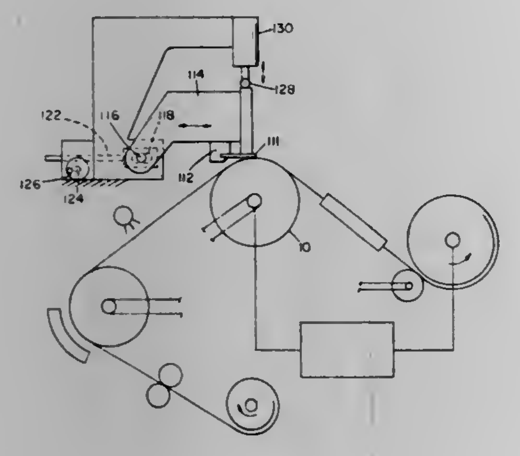
said clamp assembly being mountable, in a slotted surface wherein said surface is undercut to form extending lips, by inserting one of said flanges in said slot and beneath said lip, and inserting said wedges in said apertures to wedge against said surface and said other flange.

3,869,768
METHODS OF COMPRESSIVELY TREATING FLEXIBLE SHEET MATERIALS

Richard Rhodes Walton, Ten W. Hill Pl., Boston, and George Ernest Munchbach, Roslindale, both of Mass., assignors to said Walton by said Munchbach
Continuation-in-part of Ser. No. 115,606, Feb. 16, 1971, Pat. No. 3,810,280. This application Feb. 7, 1973, Ser. No. 330,176
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 **2 Claims**

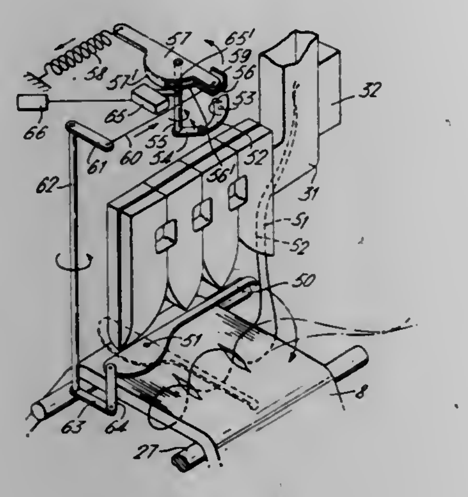
1. In a process of establishing a continuous longitudinal compressive treatment of a running length of flexible material comprising pressing the material with a confining surface against a moving drive surface and beyond said confining surface and on the same side of the material engaging the material with a retarding surface, the improvement comprising initially positioning the confining surface in material-driving position while maintaining the retarding surface in an ineffective position, subsequently relatively moving a pressing means generally along the drive surface with respect to said confining and retarding surfaces to position the retarding

surface closer to the drive surface to progressively increase the retarding effect, while doing the latter, continuing the pressing of the confining surface so that there occurs at all times travel of the material without slippage relative to the drive surface up to a point O beneath the confining surface, close to but spaced in advance of the beginning point M of said retarding surface, at which point O slippage of the material relative to said drive surface commences, and then while continuing to press the confining surface, bodily shifting the latter rearwardly against the direction of travel of the material, and retarding the material in the region vacated by said shifted confining surface.



3,869,769
METHOD AND APPARATUS FOR LACING A SKEIN OF YARN

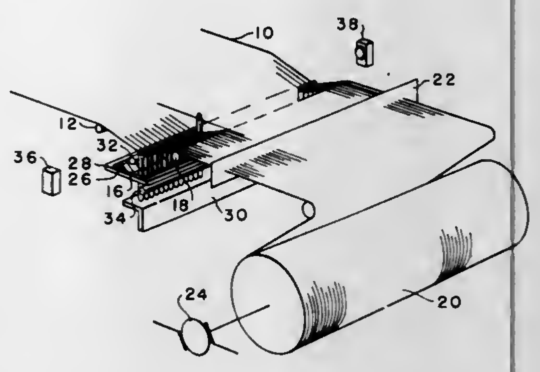
Naoichiro Tanno, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Nakagyo-ku, Kyoto, Japan
Filed May 23, 1974, Ser. No. 473,090
Int. Cl. B65h *54/62*
U.S. Cl. 28—21 **19 Claims**



1. A method of lacing a skein of yarn, comprising: dividing the width of said skein into a plurality of section is at least one circumferential portion of said skein; forming a pair of air passages which extend serpentine with respect to each said section from one side of said skein transversely to the opposite side thereof, crossing each other between each adjacent two of said sections without interfering with each other; producing a pressure difference between the opposite sides of said passages; and supplying a length of lacing string to said passages so that said string is passed through said passages thereby lacing said skein.

3,869,770
TIGHT WARP DETECTOR

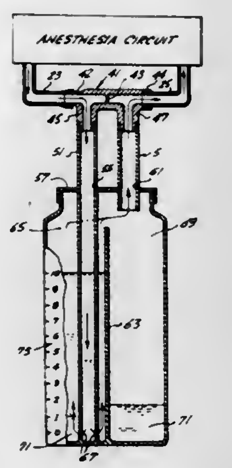
Robert W. McCullough, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Aug. 10, 1973, Ser. No. 387,492
Int. Cl. D02h *13/08*
U.S. Cl. 28—51 **1 Claim**



1. A stop motion for a warp yarn take-up machine and warp beam, the rotation of which advances a plurality of yarn ends comprising: a light source, a photocell spaced from said light source, a plurality of drop wires located between said light source and said photocell operably associated with said yarn end, limiting means located under said drop wires to limit the downward movement thereof, the weight of said drop wires being greater than the desired tension in said yarn causing the drop wires to contact said limiting means, drive means driving said warp beam and control means operably associated with said photocell and said drive means to cut off said drive means when the tension of any of the yarn ends exceeds the desired valve and raises its associated drop wire between said light source and said photocell.

3,869,771
DEVICE FOR REGULATING POSITIVE END EXPIRATORY PRESSURE

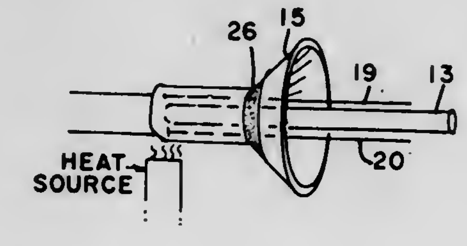
Charles W. Bollinger, 10531 Nottingham Rd., Edmonds, Wash. 98020
Filed Oct. 17, 1973, Ser. No. 407,140
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 **8 Claims**



1. A device for regulating positive end expiratory pressure comprising:
- an enclosed container divided into two chambers by a wall, said wall allowing a liquid housed in said container to be moved between said two chambers when said container is tilted in a predetermined manner from a normal upright position;
- a liquid housed in said chambers of said container;
- a first tube extending into one of said chambers, said first tube being attached to the bottom of said one of said chambers and including apertures located adjacent the end attached to the bottom of one of said chambers, said apertures communicating between the interior of said first tube and the interior of said one of said chambers; and,
- a second tube extending into said container so as to have one end terminate above said liquid in said chambers.

3,869,772
METHOD OF INCORPORATING AMALGAM-FORMING MATERIAL IN A FLUORESCENT LAMP

Frank M. Latassa, Magnolia; Howard W. Milke, Danvers, and Tadius T. Sadoski, Salem, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed Apr. 25, 1974, Ser. No. 463,952
Int. Cl. H01j *9/18, 17/26*
U.S. Cl. 29—25.13 **9 Claims**

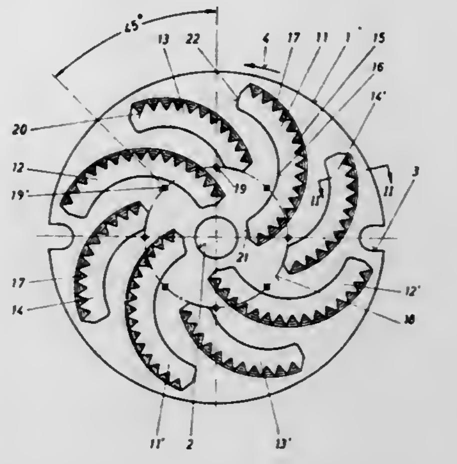


1. In the manufacture of a low-pressure mercury vapor discharge lamp having an electrode mount structure including a vitreous stem sealed to and extending inwardly from one end of the lamp envelope, the method of incorporating an amalgam-forming material as an integral part of the lamp and at a location therein such that said material will regulate the mercury vapor pressure when the lamp is operated, said method comprising:
- heating a vitreous tube from which said stem is to be made to the softening point thereof,
- flaring said heated stem tube at one end,
- applying said amalgam-forming material onto the exterior surface of the flared portion of said heated stem tube,
- inserting an exhaust tube and lead wires into said stem tube, heating the non-flared end of said stem tube to the melting point thereof,
- pressing the non-flared end of said heated stem tube to fuse said exhaust tube and lead wires therein,
- completing fabrication of the electrode mount structure which includes said stem tube, exhaust tube and lead wires, and
- attaching said mount structure to the lamp by sealing the periphery of the flared portion of said stem tube to an end of said lamp envelope, and then completing the fabrication of the lamp.

3,869,773
ABRASION DISK FOR SOAP DISPENSERS

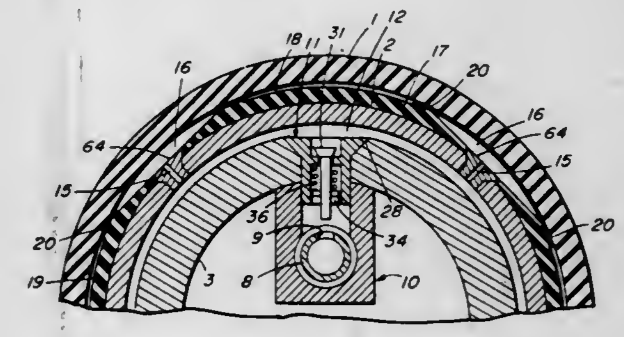
Albert Gneiding, Friedrichshafen, Germany, assignor to Belras AG, Rorschach, Switzerland
Filed May 31, 1973, Ser. No. 365,482
Claims priority, application Germany, June 13, 1972, 2228633
Int. Cl. B23d *71/00*
U.S. Cl. 29—78 **11 Claims**

1. A rotatable rasp disk for use in connection with a soap dispenser which operates with bars of soap comprising: a disk having projecting teeth thereon, the teeth provided along longitudinal edges of a plurality of arcuately curved recesses through the disk, the recesses comprising slots, said slots being curved in a radial direction and formed as segments of a circle having their centers circumferentially ahead of the slots in the direction of rotation of the disk, the slots having opposed end portions curving away from an intermediate portion in the direction of rotation, the teeth provided by the material of the disk projecting upwardly therefrom at an angle to the plane of the disk in the direction of rotation.



3,869,774
FLUID BEARING TABLE ROLL

James O. Gallant, Rehoboth; Robert E. Staples, Lakeville, and George P. Knapp, Waban, all of Mass., assignors to Mount Hope Machine Company, Incorporated, Taunton, Mass.
Filed Jan. 28, 1974, Ser. No. 436,884
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **15 Claims**

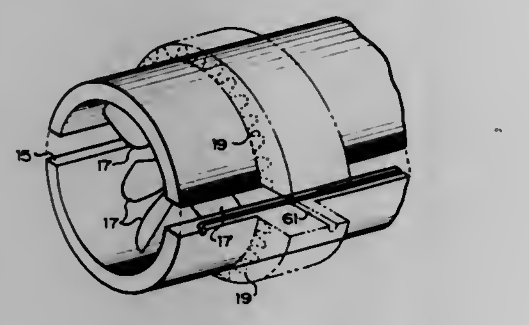


1. A roll for supporting a travelling element, comprising in combination:
- a stationary axle having a rectilinear longitudinal axis;
- an annular shell of circular cross-section received about said axle;
- a series of fluid bearing elements received in axially-spaced relation along said axle and rotatably mounting said shell thereon;
- means mounting said bearing elements on said axle for adjustment transversely to said longitudinal axis thereof to permit alignment of rotational axes of said shell about each of said bearing elements;
- peripheral portions of said bearing elements being formed of elastomeric material and being formed with orfices communicating with the interior of said shell for delivering lubricating fluid thereto, said peripheral portions surrounding said orifices and having substantially the same radius as the interior surface of said shell, the remainder of the peripheries of said bearing elements being reduced to a smaller radius;
- and supply means for delivering a flow of lubricating fluid under pressure through said bearing elements to said orifices, said supply means comprising conduit means communicating with said orifices and at least one valve means interposed in said conduit means;
- said valve means including a valve member, means biasing said valve member to a closed position against a normal pressure of the supply of fluid, and a channel by-passing a normal rate of flow of fluid to said orifices around said valve member when the latter is in a closed position, said

valve means being constructed and arranged to open under a pressure of the fluid greater than said normal pressure to increase the rate of flow of the fluid to said orifices above said normal rate.

3,869,775
LIQUID PROPULSION APPARATUS AND METHOD OF FABRICATION

Albert C. Smith, Box 782, Los Altos, Calif. 94022
Division of Ser. No. 184,462, Sept. 28, 1971, Pat. No. 3,785,327. This application July 12, 1973, Ser. No. 378,641
Int. Cl. B21k *3/00*
U.S. Cl. 29—156.8 R **3 Claims**



1. The method of forming a rotatable impeller-output shaft for operative coupling to a movable element within an expandable combustion chamber of an internal combustion engine, the method comprising the steps, performed in selected sequence, of:

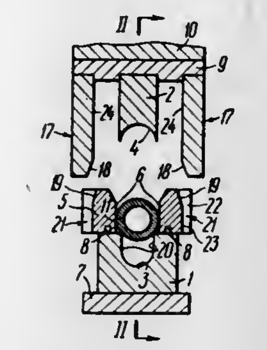
forming at least a pair of partial substantially cylindrical sections having mating faces oriented longitudinally along a portion of the length of the shaft, each partial cylindrical section having walls which define a generally cylindrical internal bore through said shaft;
forming at least one operative coupling element on the outside surface of the wall of at least one of said shaft sections;
forming a plurality of radially-intruding liquid impeller vanes on the internal walls of at least one of said shaft sections;
forming bearing surfaces at least on the outside walls of said shaft near the ends thereof;
forming a recessed groove in the mating face of at least one of said shaft sections to communicate with the outside wall of said shaft at least at one of the bearing surfaces thereon and with an outside surface on said operative coupling element; and
attaching said shaft sections together including sealing said recessed groove from the internal and outside surfaces of said walls to form in addition to said internal bore a fluid conduit which communicates at least with a bearing surface near an end of said shaft and with an outside surface of said operative coupling element.

3,869,776
METHOD OF FABRICATING CURVED FITTINGS AND DEVICE FOR EFFECTING SAME

Evgeny Nikolaevich Moshnin, ulitsa Akademika Pavlova, 50, kv. 5; Nikolai Ivanovich Romashko, Moscow, Leninsky Raion, selo Molokovo, Moskovskaya oblast; Vyacheslav Pavlovich Nikolaev, Podolsk ulitsa Kirova 51-a, kv. 46, Moskovskaya oblast, and Viktor Alexeevich Odnodushny, Stremyanny pereulok, 2/12, kv. 8, Moscow, all of U.S.S.R.
Filed Aug. 16, 1973, Ser. No. 388,913
Int. Cl. B21d *7/06*
U.S. Cl. 29—157 A **13 Claims**

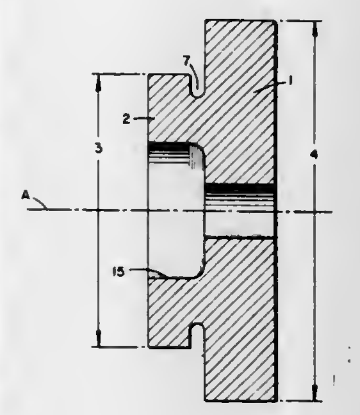
1. A method of fabricating a curved fitting from a tubular blank having a round cross-section through the intermediary of a first pair of dies having substantially flat working surfaces and a second pair of dies having arcuate recesses extending in longitudinal and transverse sections thereof, comprising the steps of:

a. imparting double-sided compression to said tubular blank by said first pair of dies so as to deform the round shape of the cross-section of said tubular blank into a shape having an oval cross-section;
b. positioning said deformed tubular blank in close contact between the dies forming said second pair of dies, said dies being disposed on either side of the major axis of said oval cross-section of said blank until completion of the sequence of fabricating said curved fitting; and
c. simultaneously bowing and compressing said deformed tubular blank by closing the dies forming said second pair, and moving said dies along the major axis of the oval cross-section of said deformed blank so as to shape said blank into said curved fitting.



3,869,777
COMPONENT PARTS OF WELDED ROTORS

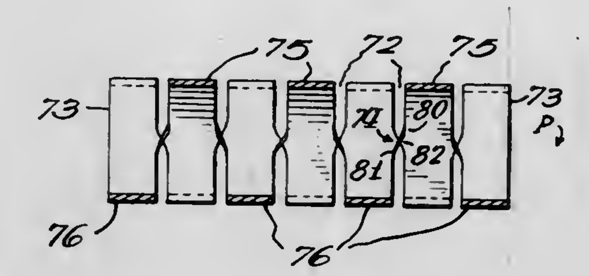
Andre Coulon, Belfort, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Paris, France
Filed Aug. 28, 1972, Ser. No. 284,111
Claims priority, application France, Aug. 27, 1971, 71.31275
Int. Cl. B22f *5/00*
U.S. Cl. 29—183 **8 Claims**



1. A component part of a welded rotor for turbines, or the like, comprising a ring or disc having a central axis and an axial extension of annular shape extending coaxially from one face thereof, which extension has an outside diameter smaller than that of said disc or ring and the outer annular surface of which is to be welded against the outer annular surface of a corresponding extension of an adjacent disc or ring, said extension having at the portion thereof connected to said disc or ring an annular groove disposed in the radially external portion of the extension and an annular fillet on the extension within the central opening thereof.

3,869,778
ARTICLE OF MANUFACTURE WITH TWISTED WEB

Raymond W. Yancey, 880 Oak Spring Ln., Libertyville, Ill. 60048
Continuation-in-part of Ser. No. 211,858, Dec. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 767,303, Oct. 14, 1968, abandoned. This application June 29, 1973, Ser. No. 375,037
Int. Cl. B32b *15/02*; **B22b** *15/04*
U.S. Cl. 29—191 **41 Claims**



1. An article of manufacture comprising: a ductile member having a plurality of transversely spaced generally longitudinally extending rectilinear, ribbons, adjacent ribbons being parallel with one another and cooperating to define a pair of ribbons and said member including a plurality of such pairs, said ribbons being continuous in length and having opposite longitudinally extending edges, the edges on adjacent ribbons being spaced from one another by a finite distance at spaced locations along their respective lengths to define a row of longitudinally spaced and longitudinally aligned openings between adjacent ribbons of each pair, the openings which define slots in plane section in each row being separated by a web portion that extends transversely and perpendicularly between ribbons of a pair of ribbons, each ribbon including alternating, longitudinally spaced crests and troughs, the crests extending upwardly from a reference plane and the troughs extending downwardly from the reference plane, the transitional portion of each ribbon between the crests and troughs being undeformed and extending at an angle with respect to the reference plane, the crests on each ribbon being aligned with a trough on the adjacent ribbon of its pair of ribbons whereby the aligned transitional portions of adjacent ribbons of each pair of ribbons are disposed at angles that are positioned oppositely with respect to said reference plane, each of said webs being continuous and having a finite length which extends from a first end portion merging with a transitional portion of one ribbon of its pair of ribbons to a second end portion merging with the aligned transitional portion of the adjacent ribbon of its pair of ribbons, the dimensions of said webs being selected such that the intermediate portion of each web between its end portions is twisted throughout its length.

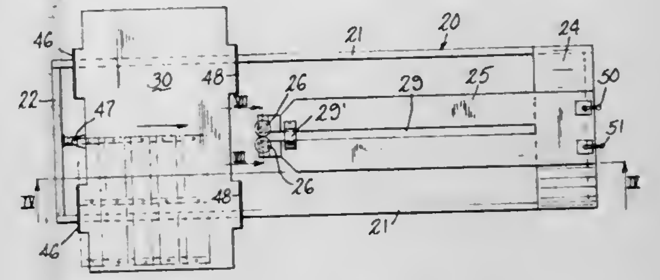
3,869,779
DUPLEX ALUMINIZED COATINGS

Michael A. Gedwill, North Olmsted, and Salvatore J. Grisaffe, Rocky River, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Division of Ser. No. 298,156, Oct. 16, 1972,. This application Jan. 24, 1974, Ser. No. 436,315
Int. Cl. B32b *15/00*
U.S. Cl. 29—194 **9 Claims**

1. A coated article of manufacture comprising
a superalloy substrate selected from the group consisting of nickel-base superalloys and cobalt-base superalloys, dispersion-strengthened alloys, composites, and directional eutectics,
a ductile, oxidation resistant metallic alloy layer covering said substrate, and
an aluminide coating covering said metallic alloy layer.

3,869,780
UNNAILER

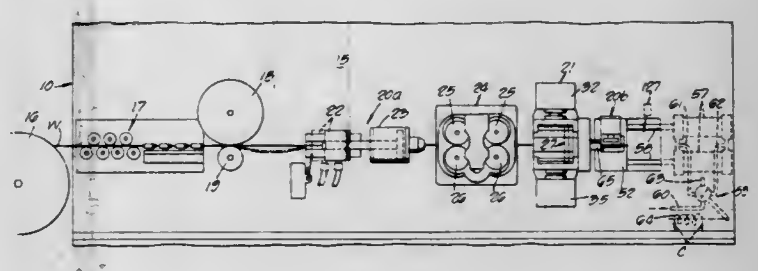
Oscar H. Ginnow, and Roger H. Ginnow, both of Hopbrook Rd., Bethany, Conn. 06801
Filed Nov. 1, 1973, Ser. No. 411,697
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **7 Claims**



1. A machine for disassembling nailed wooden pallets comprising a base frame, nail cutting means, an elongated support for said cutting means mounted at one end on said base frame, a support for a pallet, means for causing relative movement of said supports to bring a pallet on the pallet support into nail cutting engagement with the cutting means and to effect cutting of the nails by continued relative movement of said supports.

3,869,781
APPARATUS FOR ATTACHING TERMINALS TO ELECTRIC CONDUCTORS

Edward F. Eubanks, Pasadena, and Lloyd A. Talley, Valinda, both of Calif., assignors to Eubanks Engineering Co., Monrovia, Calif., by said Talley
Filed Feb. 25, 1974, Ser. No. 445,532
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT **17 Claims**

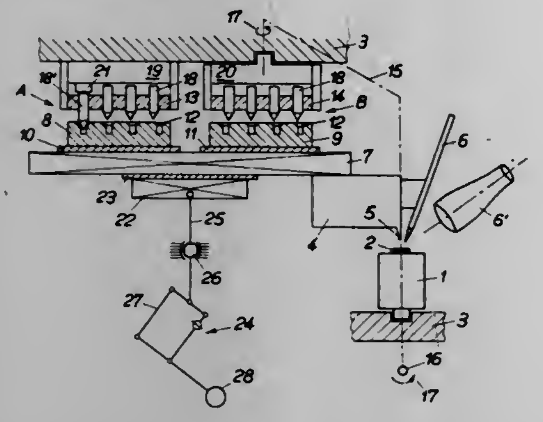


1. Apparatus for attaching terminals to the ends of electric conductors, comprising:
a. means for axially delivering predetermined lengths of electric conductors endwise into a conductor supply zone;
b. a terminal attaching zone spaced from said conductor supply zone, including cooperable terminal attaching die means;
c. means for feeding a supply of terminals to said die means, each of said terminals having a portion adapted to receive an end of said conductor;
d. means for successively picking up and transporting the conductor lengths laterally from the conductor supply zone to a position in said terminal attaching zone, in which said end of the conductor is disposed for reception by said terminal portion; and
e. means including said die means for crimping said terminal portion on the received conductor end.

3,869,782

MACHINE FOR WIRING A SEMICONDUCTOR COMPONENT

Karl Nicklaus, Steinhausen, Switzerland, assignor to Esec Sales S. A., Zug, Switzerland
Filed Nov. 2, 1973, Ser. No. 412,252
Claims priority, application Switzerland, Nov. 10, 1972, 16404/72
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **9 Claims**



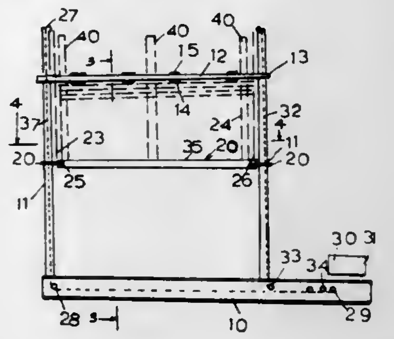
1. Machine for wiring a semiconductor component including an integrated circuit and a connecting element, comprising a machine frame, a working head for supplying and soldering wires to the integrated circuit and the connecting element for effecting wire connections between corresponding connecting points on the integrated circuit and the connecting element, a first cross carriage movable horizontally in two mutually perpendicular directions, said working head mounted on said cross carriage for movement therewith, a first positioning unit coordinated with the connecting points on the integrated circuit, a second positioning unit coordinated with the connecting points on the connecting element, each of said first and second positioning units comprising a horizontally arranged program plate, means for individually and releaseably securing said program plates to said first cross carriage, each of said program plates having a number of laterally spaced vertically extending countersunk holes, with the sides of said countersunk portion of said holes having a frusto-conical configuration converging inwardly into said program plate, each of said first and second positioning units including a support means mounted on said machine frame and aligned opposite and in facing relationship with the surface containing said countersunk holes in said program plate of the same said positioning unit, each of said support means includes a plurality of vertically displaceable pins with each of said pins arranged to correspond to a different one of said countersunk holes and having a conically shaped point, the spacing of each said countersunk hole in said program plate from a reference hole, in two mutually perpendicular directions, being equal to the sum of the spacing of the connecting point to which the hole corresponds from a reference connecting point plus the spacing of said pin corresponding to the hole from said pin corresponding to the reference hole, and each of said support means includes a drive mechanism for the introduction of said pins into said countersunk holes so that the introduction can be effected alternately between said first and second positioning units and in succession with respect to said pins in one said support means.

3,869,783

MACHINE FOR STRIPPING PLANKS FROM FRAMES

Kenneth M. Spencer, Union City, Pa., assignor to Recycle Pallets Inc., Union City, Pa.
Filed May 4, 1973, Ser. No. 357,222
Int. Cl. B23p *19/04*
U.S. Cl. 29—244 **6 Claims**

1. A machine for stripping the planks from frame members of pallets comprising
a base beam,
two spaced columns fixed to said base beam and extending upwardly therefrom,
a top beam fixed to said columns in spaced relation to said base beam,
said top beam being made of two laterally spaced structural members adapted to allow the frame members of said pallets to pass therebetween,
and means on said spaced structural members to engage said planks of said pallets,
a pull bar supported in parallel relation to said base and slidably engaging said columns,

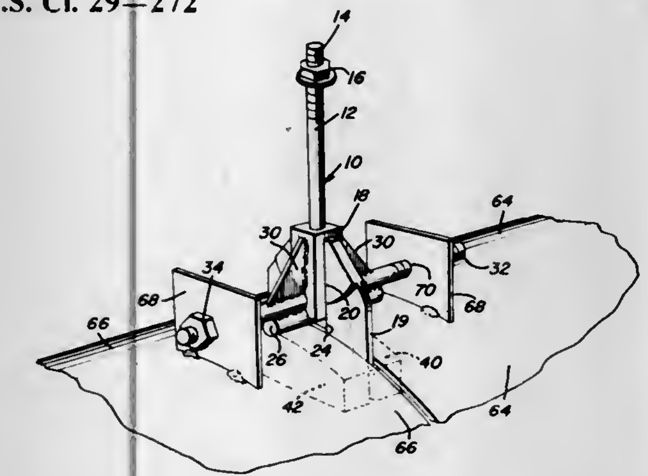


two cables,
one said cable extending downwardly through each of said columns and the other cable being attached to said pull bar,
a roller fixed to the upper end of each said column,
each said cable passing over said rollers,
said cables each having a first end and a second end,
said first ends of said cables each being fixed to said pull bar,
said second ends of said cables each being connected to a tension means.

3,869,784

TOOL FOR ALIGNING ARTICLES

Richard R. Simpson, 2817 Oak Cove, West Memphis, Ark. 72301
Filed Oct. 3, 1973, Ser. No. 402,986
Int. Cl. B25b *5/14*
U.S. Cl. 29—272 **8 Claims**

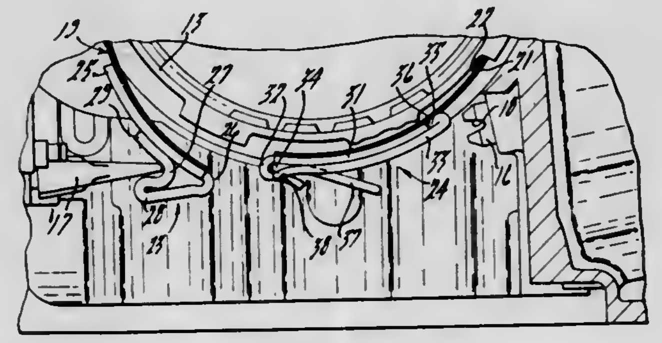


1. A tool for aligning articles, said tool including a body blade having first and opposite end marginal portions, a pair of abutment blocks supported from said first end marginal portion, projecting outwardly from opposite sides of said blade and including abutment surfaces extending generally parallel to said first end marginal portion and facing toward said opposite end marginal portion, said opposite end marginal portion including an elongated shank anchored thereto at one end and projecting edgewise outwardly from said opposite end marginal portion, a carriage sleeve telescoped over said shank and including a slotted end in which said blade is slidingly received, a guide slot formed in said blade and extending along a line extending between said first and opposite end marginal portions, the slotted end of said sleeve including abutment means projecting outwardly from opposite sides thereof on opposite sides of said guide slot, the other end of said shank and said sleeve including abutment means for operative connection with thrust developing means to lengthwise advance said shank relative to said sleeve in the direction in which said shank end remote from the slotted end of the sleeve faces, said abutment means including endwise outwardly projecting shank extensions displaced toward the end of the sleeve remote from the slotted end thereof, the remote ends of said extensions being threaded and having threaded thrust members threadingly engaged therewith.

3,869,785

METHOD OF CONVERTING ONE TYPE OF BRAKE BAND TO ANOTHER TYPE

Thomas J. Victory, 25167 Harcourt, Farmington, Mich. 48024
Continuation of Ser. No. 358,106, May 7, 1973, abandoned, which is a division of Ser. No. 269,534, July 7, 1972, Pat. No. 3,747,713. This application Mar. 6, 1974, Ser. No. 448,710
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **8 Claims**

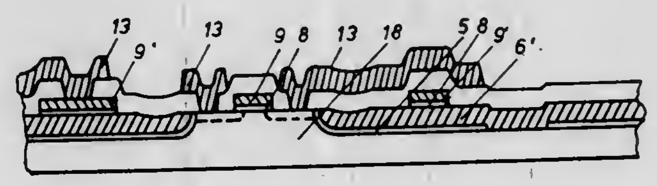


1. In a method for converting a brake band of the type having end connections with double folds to a brake band capable of longitudinal insertion between a drum and housing, the steps of severing the outer fold of one end connection from the juncture between folds, removing that end connection except for the outer fold, reforming the outer fold so that it may enter the gap between the drum and housing, providing a bracket which has a nose receivable by said outer fold and means engageable by a force-applying member carried by the housing, then assembling the bracket within the housing, and securing the bracket in place.

3,869,786

SEMICONDUCTOR COMPONENT AND ITS METHOD OF MANUFACTURING

Fritz Gunter Adam, Freiburg, and Albrecht Renz, Hugstetten, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Oct. 10, 1973, Ser. No. 405,222
Claims priority, application Germany, Oct. 21, 1972, 2251823
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **13 Claims**

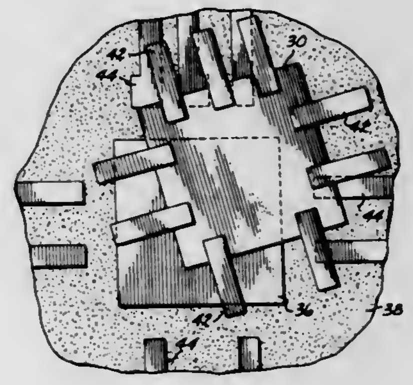


1. A method of manufacturing a semiconductor component wherein an electrically conductive field plane layer is manufactured concentrically, in a self-aligning manner on an insulating intermediate layer of a semiconductor body comprising:
producing a first layer of silicon oxide over a portion of a polished end-type silicon wafer;
depositing an oxidation masking layer over said silicon oxide layer, said masking layer extending beyond said silicon oxide layer;
thermally oxidizing the exposed surface area of said silicon wafer;
etching away the thermally oxidized area leaving a mesa-shaped projection beneath said silicon oxide layer;
depositing an insulating layer having a window therein on the exposed surface area of said silicon wafer;
depositing a doped polycrystalline silicon layer over the exposed surface area of said component, said polycrystalline layer having a thickness substantially equal to the height of said mesa-shaped projection;
producing a second layer of silicon oxide on the surface of said polycrystalline layer;
producing a window in said second layer concentrically over said mesa-shaped projection, said window having a smaller diameter than said projection;
etching through the window in said second layer to the surface of said oxidation masking layer;
removing said oxidation masking layer;
etching away said second layer, said first layer and that portion of said doped polycrystalline silicon layer lying above said projection and extending outwardly from the space previously occupied by said oxidation masking layer;
depositing a gate oxide layer over the entire surface area of said component;
applying a second coating of polycrystalline silicon over said gate oxide layer;
forming an oxide film over said second coating;
oxide etching said second coating and said gate oxide layer leaving said gate oxide layer and a gate electrode concentrically over said projection and defining a desired conductor pattern over said polycrystalline layer;
diffusing source and drain regions into the surface of said projection;
depositing an oxide coating over the surface area of said component;
etching contact windows over said source and drain regions and said defined conductor pattern; and
applying conductors to said source and drain regions and said conductor pattern.

3,869,787

METHOD FOR PRECISELY ALIGNING CIRCUIT DEVICES COARSELY POSITIONED ON A SUBSTRATE

Charles Wayne Umbaugh, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 2, 1973, Ser. No. 320,233
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **11 Claims**



1. In the fabrication of microminiature electronic apparatus, a method for precisely aligning semiconductor integrated circuit chips on a substrate, comprising the steps of:
depositing on an area of the substrate a layer of fluid material, the area having planar dimensions essentially equal to those of the entire back surface of a chip, the fluid

material capable of wetting the back surface of the chip but not capable of wetting the body of the chip;

placing the back surface of the chip coarsely positioned on the deposited layer of fluid material, thereby allowing surface tension of the fluid material to precisely align the chip on the substrate.

3,869,788
METHOD OF MAKING A DISK OR CUP ROTOR

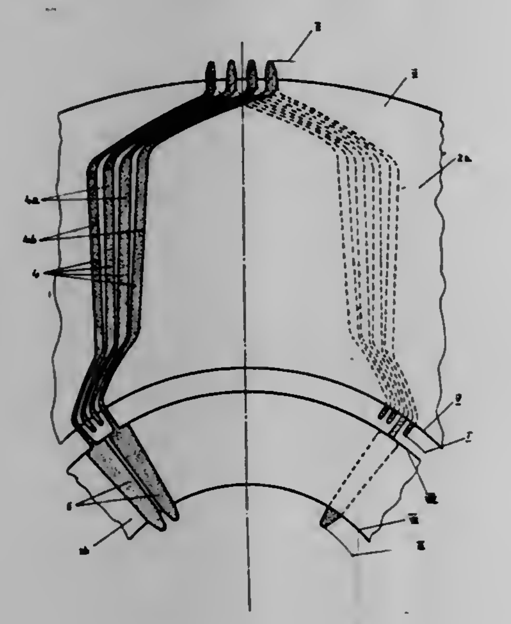
Dumitru Florian Lazaroiu; Sigmund Sleiher, and Gheroghe Mihai Mihaiescu, all of Bucharest, Romania, assignors to Institutul De Cercetare Si proiectare Pentru Industria Electrotechnica, Bucharest, Romania

Filed Mar. 26, 1973, Ser. No. 345,216

Claims priority, application Romania, Apr. 28, 1972, 70740

Int. Cl. H01r *43/00*

U.S. Cl. 29—597 **5 Claims**



1. A method of making a rotor comprising the steps of:

stamping from a metal foil a conductor blank having a plurality of conductors arrayed in groups of at least two said conductors terminating at an inner and outer edge, and said blank terminating with an addition beyond each of said inner and outer edges, said conductors having a commutator bar formed as an extension thereof;

laminating a pair of said blanks back to back on a pair of concentric insulating bodies defining a gap juxtaposed with said conductors and adjacent said commutator bars and with said additions extending beyond associated edge of said bodies;

punching out at least every second conductor at said gap to leave only one of the conductors of each group connected to its respective commutator bar;

cutting off said inner and outer edge additions; and

connecting together said conductors at said gap, at said outer edge, and at said inner edge, thereby forming a primary winding element.

3,869,789
METHOD OF MANUFACTURING VARIABLE RESISTANCE DEVICE

Charles W. Yungblut, and Robert D. Hill, Jr., both of Irvine, Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Filed May 31, 1974, Ser. No. 475,087

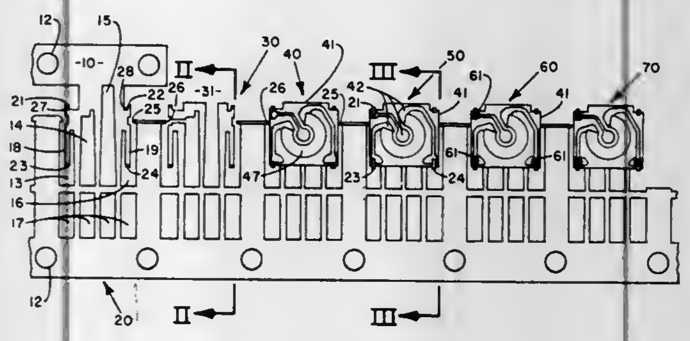
Int. Cl. H01c *17/00*

U.S. Cl. 29—610 **6 Claims**

1. A process for producing a variable resistance device by intermittently advancing a strip of electrically conductive material through a plurality of work stations comprising the steps of:

bending portions of the conductive material to form a plurality of guides;

placing a substrate having a resistance track and a conductive track formed on a first surface thereof, onto said conductive material, said guides maintaining the substrate accurately positioned relative to said material;



bending preselected ones of said guides into overlapping relation with the first surface of the substrate; and

permanently affixing said preselected ones of said guides into said overlapping relation with the surface of said substrate, said preselected ones of said guides forming termination tabs for terminal pins of the resistance device.

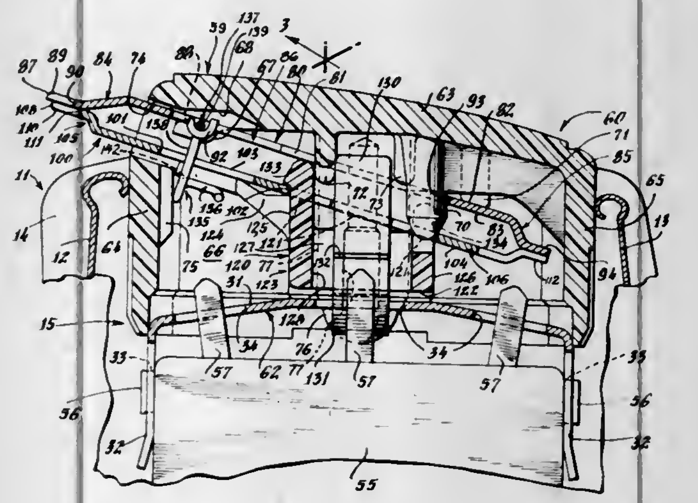
3,869,790
HAIR TRIMMER

Richard Ihasz, Milford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed July 30, 1973, Ser. No. 383,673

Int. Cl. B26b *19/06*

U.S. Cl. 30—90 **5 Claims**



1. A hair trimmer adapted for connection to a motor operated electric shaver, the trimmer comprising:

a. a housing;

b. means for connecting the housing to the shaver;

c. a stationary cutter removably secured within and the housing and having cutter teeth arranged externally of the housing, means on the housing for securing the stationary cutter to the housing, a movable cutter within the housing adapted for movement relative to the stationary cutter and having cutter teeth on a portion extending externally of the housing and which teeth cooperate with the cutter teeth of the stationary cutter for cutting hair;

d. cutter supporting means adapted to be driven by the shaver motor and for supporting the movable cutter for movement therewith; and

e. holding means for detachably connecting the movable cutter to the cutter supporting means and slidably contacting the driven supporting means to urge the movable cutter into sliding engagement with the stationary cutter thereby interlocking the stationary and movable cutter but permitting relative movement therebetween.

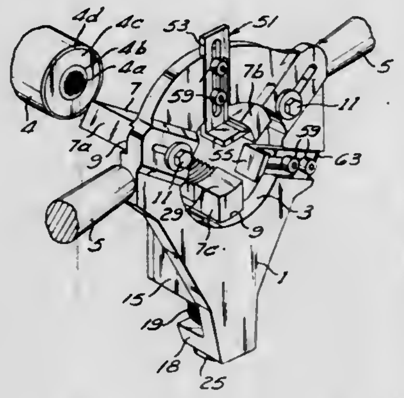
3,869,791
TOOL FOR REMOVING COVERING MATERIAL FROM A CABLE

Raymond G. Horrocks, Parkview, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed June 14, 1973, Ser. No. 370,000

Int. Cl. H02g *1/12*

U.S. Cl. 30—90.1 **6 Claims**



1. A tool of the class described comprising a ring shaped body having front and rear sides and an opening therethrough to receive a cable, jaws projecting from one side of said ring and extending radially relative to said opening to engage the outer surface of a cable therein, means securing certain of said jaws in predetermined fixed positions relative to said opening, means securing another of said jaws in adjusted position relative to said opening, and a blade projecting from and adjustably attached to one side of said ring and projecting into engagement with covering material on a cable in said opening.

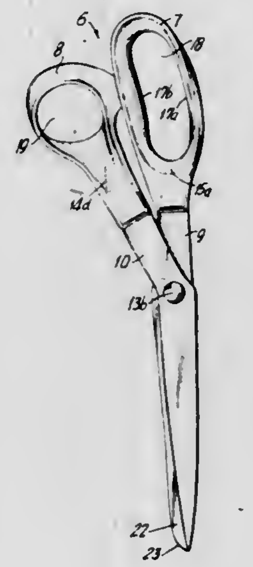
3,869,792
FINGER GRIP-CONTOURED MOLDED SCISSORS

Italo Marco Levi Laurenti, c/o Lindar Manufacturing Corp., 432 Park Ave., South, New York, N.Y. 10022

Filed Jan. 28, 1974, Ser. No. 436,856

Int. Cl. B26b *13/06, 13/12*

U.S. Cl. 30—254 **3 Claims**



1. A scissors device comprising in combination: substantially flat-faced first and second blade elements and pivot means for pivotably mounting together the first and second blade elements operatively, each blade element having each of upper and lower faces extending in respective flat planes in both longitudinal and transverse directions, ranging from a blade elements operatively, each blade element having each of upper and lower faces extending in respective flat planes in handle-mountable terminal shank portions of the first and second blade elements extending angularly laterally relative to its respective blade portion's longitudinal axis and relative to the remaining shank portion of the other of the first and second blade elements, each of the blade portions of the first and second blade elements including a cutting edge and an opposite backing edge, and a blade-tip back edge of said remaining one of the first and second blade elements defining a broad blade side face between the blade back edge and the cutting edge, and the blade back edge further defining a round terminal edge extending to the cutting edge thereof; a substantially circular thumb-ring-defining handle mounted on said one angularly laterally-extending terminal shank portion of said one's blade element, the thumb-ring-defining handle being mounted at a point spaced-away from said remaining other shank portion and including handle structure defining a passage extending angularly from a lower forwardly direction to a top upper rearwardly direction through its lower and upper surfaces relative to said one's shank portion which extend in said flat plane from forwardly to rearwardly into the handle forwardly of the passage, and the thumb-ring-defining handle including substantially thin walls extending substantially lineally in the direction of the passage and defining a flange extending laterally from an outer ring side surface in a direction such that the flange is abuttable of a side of the ring-handle of the remaining one's of the first and second blade elements, the thumb-ring-defining handle lower mouth-forming portion adjacent the mounted terminal shank portion thereof being rounded and angularly inclined and defining a slot narrowing toward the blade element shank portions thereof providing an elongated converging seat for a digital end of a person's thumb inserted from a rearward upper direction of the thumb-ring-defining handle; and the remaining one's of the first and second blade elements having mounted on its handle-mountable terminal shank portion an elongated fingers-mounting ring structure mounted of the remaining blade element and being mounted at a point spaced-away from said one angularly extending terminal shank portion and defining a through-channel between its upper and lower surfaces with the through-channel having a cross-section of substantially elliptical shape with one longitudinally-extending side wall relative to the elliptical fingers-mounting ring being substantially concave on an inner ring side away from the thumb-ring-defining handle with an opposite longitudinally-extending side walls relative to the elliptical fingers-mounting being substantially convex on an inner ring side adjacent the thumb-ring-defining handle, upper and lower forming portions of the through-channel defining fingers-mounting ring structure adjacent the mounted terminal shank portion thereof being rounded and inclined angularly toward the mounted terminal shank portions thereof such that each of upper and lower mouth-forming portions define a seat receivable of a forward side edge of an index finger.

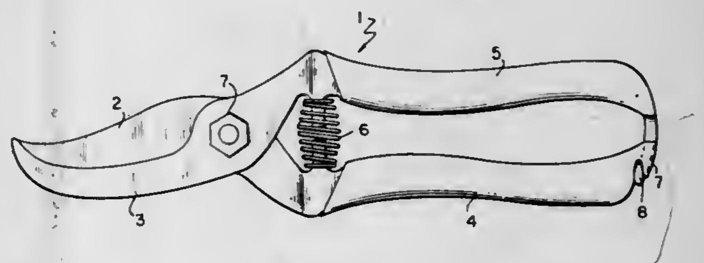
3,869,793
LATCH FOR HAND TOOL

William C. Ferguson, Denville, N.J., assignor to J. Wiss & Sons Co., Newark, N.J.

Filed Feb. 19, 1974, Ser. No. 443,733

Int. Cl. B26b *13/16*

U.S. Cl. 30—262 **8 Claims**

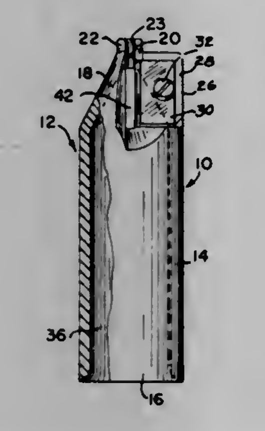


1. In a hand tool having a pair of working elements, an elongated handle attached at one end to each working element, pivot means for pivotally connecting one handle and working element to the other and spring means urging the

handles apart, the improvement which consists of a latch means comprising:

- a flexible plastic or rubber arm centrally disposed on the other end of one handle and having a normal position extending away from said handle at an acute angle thereto and toward said other handle, said arm having an elastic memory such that said arm urges itself back to said normal position when bent to another position;
- an elongated tab having upper and lower convex surfaces, the free end of said arm being connected to the upper surface of the tab substantially at the middle of the tab; and
- a hook means on the other end of said other handle, said hook means comprising a pair of opposed walls having convex tops and forming therebetween a passageway accommodating said arm when said latch is latched, each wall having a notch tapering inwardly from the edge of the wall remote from the one handle to the edge of the wall adjacent the one handle for accommodating at least a portion of said tab, said notch being substantially complementary to said portion of said tab and permitting free passage of said tab in and out of said notch, the lower surface of said tab when said arm is in the normal position being spaced from the convex tops of said walls.

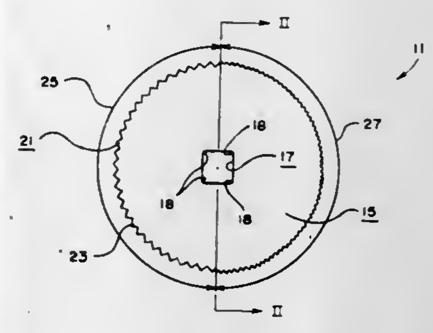
3,869,794
CANDLE SHAPING APPARATUS
Joseph Leigh Smith, 630 Lenox, Glen Ellyn, Ill. 60137
Filed Oct. 25, 1973, Ser. No. 409,696
Int. Cl. B26b *3/00*
U.S. Cl. 30—278 **3 Claims**



1. A candle shaping apparatus for reforming the end of a burned candle or the like in a neat and pleasing and generally symmetrical shape without shearing the candle wick, including hollow guide sleeve means open at one end thereof to receive a candle for reforming, said guide sleeve means having a central axis extending along the length thereof, guide cap means positioned over the opposite end of said guide sleeve means, said guide cap means having a top opening formed in one end thereof aligned with said central axis of said guide sleeve means and a guide chimney surrounding a portion of said opening and extending a short distance along said central axis relative to said opening, said guide cap means having cutting means mounted thereon, said cutting means having a cutting edge for engaging said candle and being disposed relative to said central axis of said guide sleeve means such that said cutting edge will continuously engage an edge of said burned end of said deformed candle as said candle is moved upwardly within and angularly relative to said guide sleeve means to thereby cut away the deformed portions of said candle and reform the end thereof, said cutting edge of said cutting means being spaced a selected distance from a facing edge of a side surface of said guide cap means to form an elongated guide channel opening in said side surface of said guide cap means between the base and said top opening thereof said guide chimney being open on its side facing said guide channel and mating with said guide channel to allow the wick of said candle to be moved upwardly within said guide channel opening toward said top opening to assist in positioning the wick and thereby the candle within said guide sleeve means and said guide cap means relative to said cutting means such that the burned end of said candle may be moved into intimate contact with said cutting edge of said cutting blade to assure a generally symmetrical and uniform cutting of the burned end of said candle while preventing accidental shearing of the wick by said cutting edge.

2. The candle shaping apparatus of claim 1 wherein said cutting means is mounted on a cutting means platform formed in said guide cap means, said cutting means platform being disposed at a selected angle relative to said central axis of said guide sleeve means, said cutting means being positioned parallel and adjacent to a surface of said platform and having a cutting edge projecting slightly inwardly toward said central axis of said guide sleeve means to engage a burned edge of said candle when said candle is positioned within said guide sleeve means, the angle at which said cutting means platform is inclined and said cutting means is thereby positioned corresponding to the general cross-sectional configuration of said guide cap means.

3,869,795
CUTTING BLADE FOR USE WITH AN OSCILLATING CAST CUTTER
Harry T. Treace, Forest Hill, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.
Filed June 20, 1973, Ser. No. 371,672
Int. Cl. B27b *9/00, 33/08*
U.S. Cl. 30—388 **3 Claims**



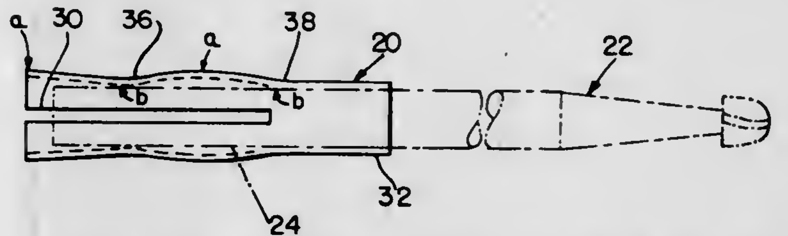
1. A cutting blade for use with an oscillating cast cutter having a drive arbor including a square-shaped portion, said cutting blade comprising:

- a. a circular body portion having a square-shaped aperture for selectively positioning said body portion on the square-shaped portion of the drive arbor in one of four positions, said square-shaped aperture including radii portions in each corner thereof to reduce the stress concentration at the corners; and
- b. a cutting portion located on the periphery of said body portion, said cutting portion including a first segment of coarse cutting teeth around substantially 180° of said body portion and a second segment of fine cutting teeth around substantially the other 180° of said body portion, said cutting portion including radii portions at the base of each cutting tooth to prevent the clogging thereof.

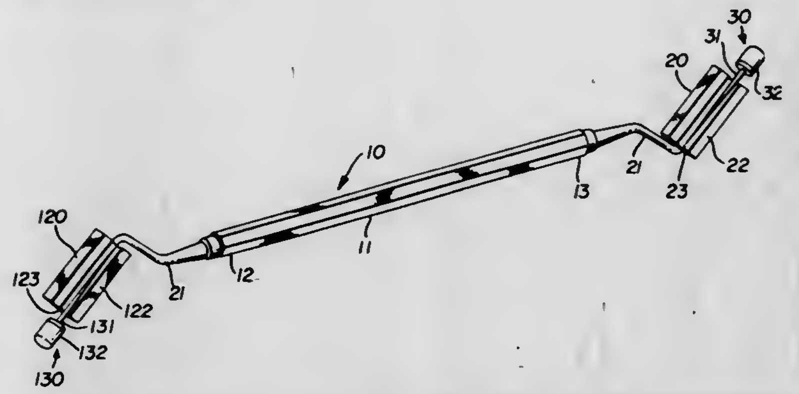
3,869,796
SLOTTED CHUCK FOR TOOL HOLDER
Fred T. Thorburn, Kirkland, Wash., assignor to Shofu Dental Corporation, Menlo Park, Calif.
Filed Dec. 11, 1972, Ser. No. 313,868
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 **7 Claims**

1. A slotted chuck for a tool holder of the type having a hollow cylindrical spindle driven by a rotary motor for use with a tool having a cylindrical shaft comprising;

holding means having a resilient slotted end connected to a continuous cylindrical end and insertable within said spindle for holding the shaft of said tool within said spindle, said slotted end including an outer frictional surface permanently bent radially outwardly into engagement with inner surface of the spindle, an inner frictional surface deflectable radially into engagement with the outer surface of the toolshaft, said outer frictional surface lying longitudinally more closely to said continuous cylindrical end than said inner frictional surface whereby a greater friction force is effected between the spindle and the chuck than between the chuck and the tool shaft and wherein said frictional surfaces are deflected by the toolshaft upon insertion into the resilient slotted end within the spindle to tightly press said outer surface and said inner surface against said respective spindle and toolshaft surfaces.



3,869,797
INSTRUMENT EXCHANGER
Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301
Filed Feb. 9, 1972, Ser. No. 224,840
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **6 Claims**

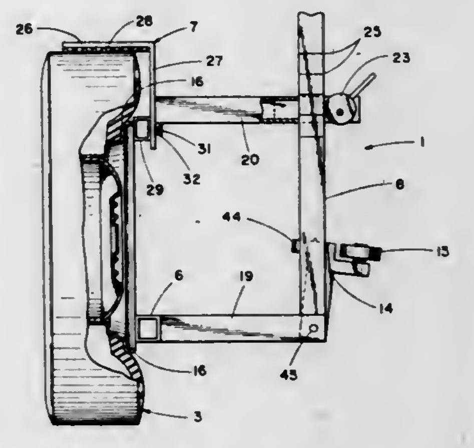


1. An instrument exchanger for handling small instruments, comprising:

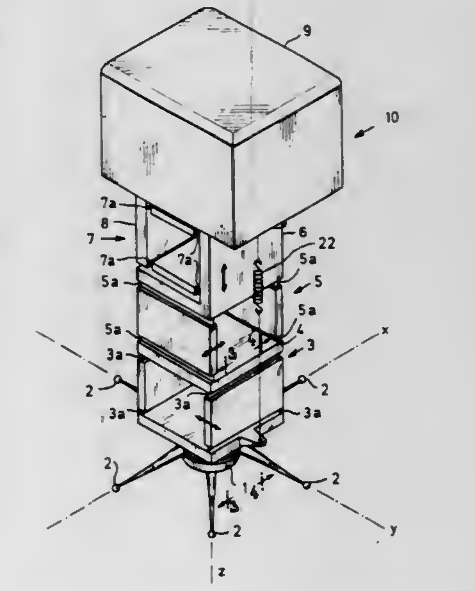
- A. an elongate handle;
- B. a pair of instrument-carrying members
  - 1. disposed on opposed ends of said handle and
  - 2. each having an exposed magnetized instrument-receiving surface thereon and;
- C. each of said instrument-receiving surfaces having locating means thereon including at least one guide groove adapted to receive at least the operative portion of said instruments.

3,869,798
QUICK-CHECK ALIGNER
Edward D. Wilkerson, P.O. Box 755 S. Court, Normandy Beach, N.J. 08739
Filed Dec. 19, 1973, Ser. No. 425,990
Int. Cl. G01c *15/00;* **G01b** *5/255*
U.S. Cl. 33—264 **6 Claims**

1. In an optical-transit aligner unit for a wheel-tire assembly, the improved assembly mount comprising an elongated aligner post adapted for generally vertical disposition by support upon an assembly to be checked for alignment, an upper extension arm adjustably coupled to a general midportion of the aligner post, a mounting hanger carried by an end of the upper extension arm remote from the aligner post, said mounting hanger being the sole mounting hanger of the aligner unit, the mounting hanger including a friction element for frictionally engaging the uppermost portion of a tire tread and a second element for contacting a first mounting reference point on the wheel rim in the assembly, a lower extension arm fixed to and projecting perpendicularly from the lower extremity of the aligner post, and a contact arm carried by an end of the lower extension arm remote from the aligner post with the contact arm and the lower extension being disposed generally perpendicular to one another and in the same plane so that the projecting extremities of the contact arm nest against second and third contact reference points on the wheel rim on the assembly.



3,869,799
UNIVERSAL MULTI-COORDINATE SENSOR
Harald Neuer, Wasseralfingen; Franz Szenger, Konigsbronn; Klaus Herzog, Heidenheim, and Joachim Neumann, Oberkochen, all of Germany, assignors to Carl Zeiss-Stiftung, Wuerttemberg, Germany
Filed Aug. 27, 1973, Ser. No. 391,819
Claims priority, application Germany, Aug. 29, 1972, 2242355
Int. Cl. G01b *7/28*
U.S. Cl. 33—174 L **13 Claims**

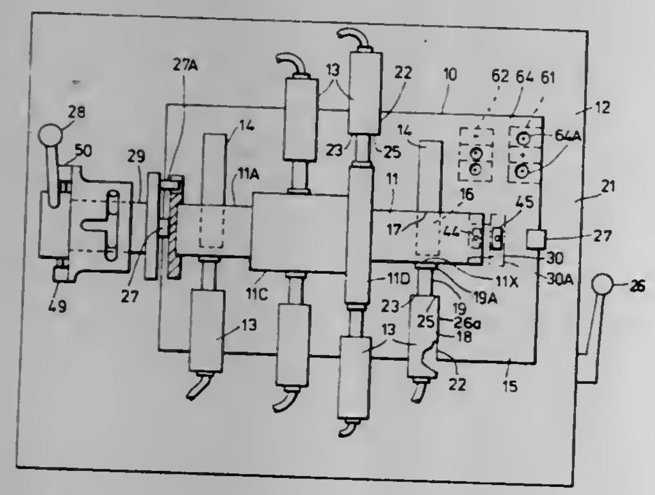


1. Multi-coordinate sensor means, comprising a mountable frame, a first torsionally rigid spring parallelogram suspension having a single degree of freedom and having one side fixedly mounted to said frame whereby the opposite side is movable with respect to said one side in essentially only the direction of said single degree of freedom, a second torsionally rigid spring parallelogram suspension having a single degree of freedom and having one side fixedly mounted to said opposite side of said first parallelogram suspension, said second degree of freedom being in a direction generally transverse to that of said first degree of freedom, whereby the opposite side of said second parallelogram suspension is movable with respect to said one side of said first parallelogram suspension in essentially only the directions of said first and second degrees of freedom, work-contacting probe-supporting means torsionally rigidly carried by said opposite side of said second parallelogram suspension, and first and second torsionally rigid force-transfer mechanisms connected to said frame and respectively

and independently to the first and to the second of said opposite sides and including separate electrical force-developing transducers producing force only in said first and second directions, respectively, and a work-contacting probe element carried by said probe-supporting means.

3,869,800
MEASURING APPARATUS AND SYSTEM

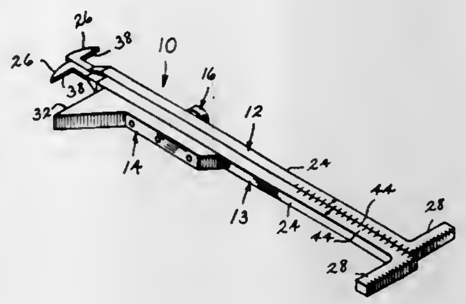
Christopher Leslie Bartlett, and Peter Charles Willis, both of Bristol, England, assignors to Rolls-Royce (1971) Limited, London, England
Filed Dec. 27, 1972, Ser. No. 318,983
Claims priority, application Great Britain, Dec. 31, 1971, 60956/71
Int. Cl. G01b *7/02, 7/12;* **B01b** *7/31*
U.S. Cl. 33—174 L **1 Claim**



1. Apparatus for determining a dimension of a given surface of a component comprising a fixture for supporting the component, a probe body connected to the fixture, a sensing element supported on said probe body for movement relative thereto, the sensing element being engageable with said given surface when the component is present in the fixture, electrical means responsive to the position of the sensing element relative to said probe body for producing a first output signal, means for zeroing the output signal for a given position of said sensing element and for making the first output signal positive and negative when the element is moved to the respective sides of the given position, a master representing said component and having a given surface corresponding to said given surface of the component and being supportable on the fixture in place of the component, a computer having a data store, means contained in said store representing a dimension being the predetermined actual dimension of the master at said given surface thereof, means contained in said store representing a predetermined range of acceptable dimensions of the component at said given surface thereof, means for reading the first output signal of the electrical means into said store and thereby produce in the store means representing respectively a second output signal produced when the sensing element is engaged with said given surface of the master and a third output signal produced when the sensing element is engaged with said given surface of the component, and program means provided in the computer to produce the algebraic sum of said actual dimension of the master and said second and third output signals, said sum representing a dimension being the actual dimension of the component at said given surface thereof, said programme means including means for determining if said component dimension lies within said acceptable range.

3,869,801
GAUGE FOR MEASURING THE DEGREE OF ALIGNMENT AT THE INNER SURFACES OF TWO TUBULAR MEMBERS POSITIONED END TO END

Goodwin A. Lycan, Lot 53, Mobile Villiage, Stevensville, Mich. 49127
Filed June 17, 1974, Ser. No. 480,125
Int. Cl. G01b *3/20*
U.S. Cl. 33—174 R **7 Claims**



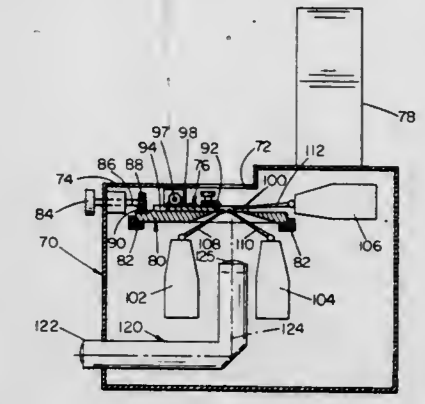
1. In a gauge for measuring the degree of alignment of two tubular members positioned end to end in a spaced relationship, each tubular member including a side wall having inner and outer surfaces, said alignment being measured at the inner surfaces of said tubular member side walls, said gauge including parallel first and second bar members having mutually contacting side faces which extend longitudinally of the bar members, said first bar member being shiftable lengthwise relative to said second bar member over the contacting side faces thereof, said bar members having corresponding juxtaposed end parts, each end part being defined by a contact, the contact of said first bar member and the contact of said second bar member projecting oppositely of one another in the same plane, each contact including an edge face disposed at substantially a right angle to said side faces of the bar members, the improvement comprising a shoulder part carried by said first bar member spaced from the end part thereof, means for shifting said shoulder part along said first bar member toward and away from the contact edge face of the first bar member whereby, when said contacts are inserted between said two tubular members at the ends thereof, said first and second bar members can be slid over one another until the end face of one contact engages the side wall inner surface of one tubular member and the edge face of the other contact engages the side wall inner surface of the other tubular member with said shoulder part shifted into contact with the side wall outer surface of one of the tubular members, said degree of alignment being determined by the location of one edge face relative to the other edge face.

3,869,802
GAUGING APPARATUS

Hans G. Pirner, Hubbardston, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Sept. 14, 1973, Ser. No. 397,263
Int. Cl. G01b *7/30*
U.S. Cl. 33—174 L **13 Claims**

1. Apparatus for measuring the angular offset of one portion of an article relative to another portion of said article comprising:
- a base member,
- means for supporting said article for placing the apex of the angular offset thereof in a particular position,
- two displacement-sensitive transducers mounted on said base so as to sense the positions of two points lying on said another portion;
- a third displacement-sensitive transducer mounted on said base as to sense the position of a point lying on said one portion;
- a first comparator means for computing the difference between the outputs of the first two said transducers;

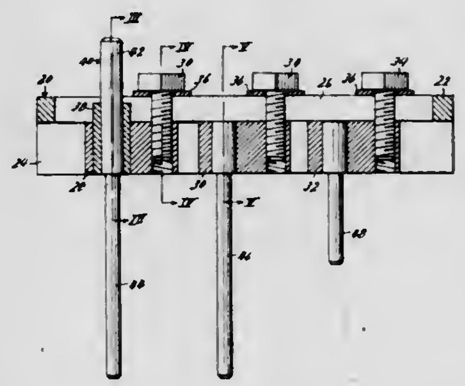
- a second comparator means for computing the difference between the outputs of said third transducer and the first said comparator means; and



- a calibrator means for compensating for the arithmetic influence of the relative displacement of the transducers in accordance with the trigonometric relation of said sensed points.

3,869,803
DRILL GUIDE FOR ENLARGING ENGINE VALVE STEM GUIDES

Merle E. Vaughan, Kansas City, Kans., assignor to Peterson Machine Tool, Inc., Merriam, Kans.
Filed Dec. 17, 1973, Ser. No. 425,304
Int. Cl. G01b *3/30*
U.S. Cl. 33—181 AT **8 Claims**

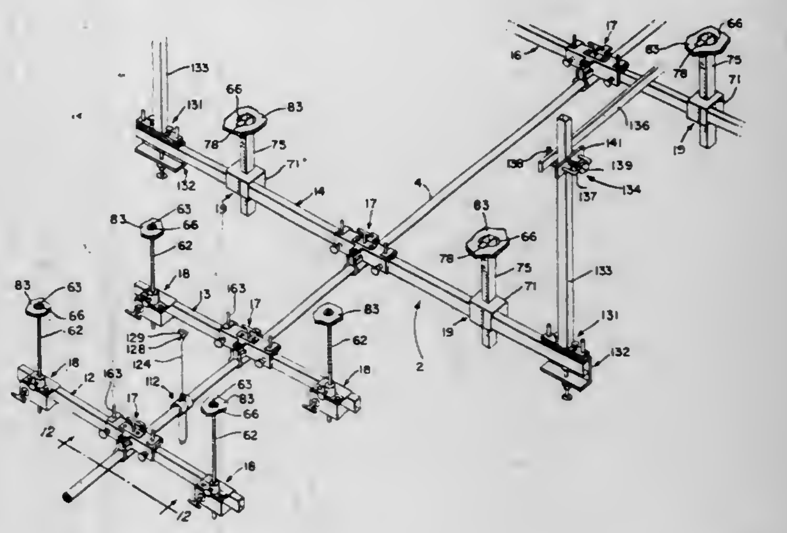


1. A drill guide for guiding a drill bit in enlarging a worn valve stem guide of an internal combustion engine to receive a shim sleeve having an internal diameter equal to the nominal diameter of said valve stem guide and a larger outside diameter, said drill guide comprising:

a. a straight, rigid guide bar adapted to be positioned above a line of stem guides of the head of said engine normally to the axes of said stem guides,
b. a tubular drill bushing carried by said guide bar normally to the longitudinal extent thereof and adapted to guide a drill bit coaxially therein, said bushing having an internal diameter sized to receive a drill bit for drilling a hole in the engine head for receiving said shim sleeve,
c. at least two pilot rods carried adjustably by said guide bar for movement relative to said guide bar in a direction parallel to the longitudinal extent of said guide bar, said pilot rods projecting normally from said guide bar parallel to but spaced apart from said drill bushing, said pilot rods being insertable simultaneously into certain stem guides of said engine head whereby to position said drill bushing relative to another of said stem guides,
d. means operable to affix each of said pilot rods immovably to said guide bar at any desired point of said adjustable movement, and
e. a third pilot rod having a portion having a diameter engageable snugly and removably in said drill bushing, and a portion reduced in diameter to a size insertable snugly into a stem guide of said engine head.

3,869,804
VEHICLE FRAME ALIGNMENT GAGE

George R. Friend, 2489 Foxdale Dr., San Jose, Calif. 95122
Filed June 4, 1973, Ser. No. 366,736
Int. Cl. G01c *15/12;* **G01b** *11/26*
U.S. Cl. 33—288 **12 Claims**



7. A vehicle frame alignment gage comprising:

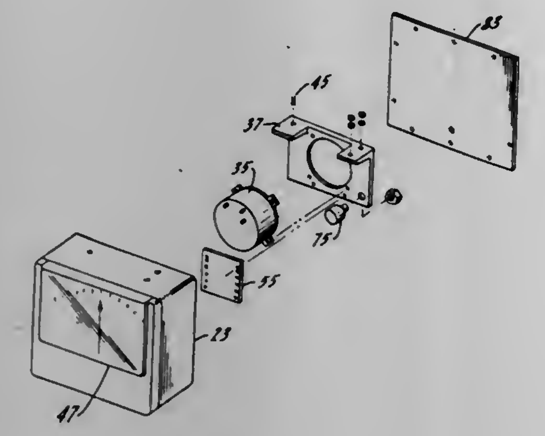
a. an elongated datum member adapted to be suspended below the frame to be aligned;
b. a plurality of datum bars mounted on said datum member for selective adjustment therealong;
c. datum rod assemblies mounted on the ends of said datum bars remote from said datum member and adjustable to control the height between said frame and said datum member;
d. means on the ends of selected ones of said datum bars remote from said datum member constituting a pointer assembly for designating the proper position of a point of reference on said frame whereby during alignment of said frame said pointer assembly designates the proper position of said point of reference in relation to the datum member; and
e. vehicle body alignment means mounted on the end portions of said datum bars remote from said datum member, said vehicle body alignment means including a post adjustably associated with each end of each datum bar, and a bar adjustably mounted on adjacent posts and movable in relation to said vehicle body to form a plane of reference to which measurements may be related.

3,869,805
TRACK LEVEL INDICATOR

Andrew M. Dieringer, Waterford, Wis., assignor to Rexnord Inc., Milwaukee, Wis.
Continuation of Ser. No. 175,464, Aug. 27, 1971, abandoned.
This application Oct. 9, 1973, Ser. No. 404,668
Int. Cl. G01c *9/06, 9/12*
U.S. Cl. 33—338 **2 Claims**

1. A railroad track level indicator for installation in a vehicle of the type which travels on railroad tracks, said indicator being constructed and adapted to show differences in elevation between the rails and including a housing constructed and arranged to be mounted on the vehicle, an electric bridge circuit mounted in the housing, a bracket adjustably mounted in the housing, a pendulum mounted on the bracket, a variable contact mounted on the pendulum and movable along one of the resistances in the bridge circuit upon movement of the pendulum and the housing relative to each other as the vehicle moves along the tracks to indicate an out of level condition, an ammeter connected in the bridge circuit having a scale calibrated in inches of elevation and a pointer movable across the scale in response to differences of potential in the bridge

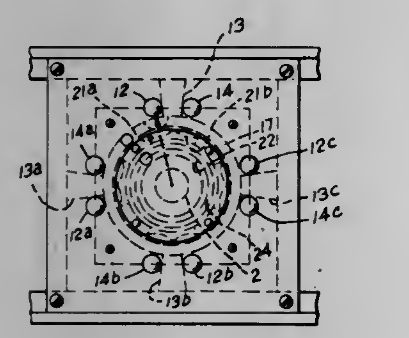
circuit, the adjustable mounting for the bracket and relative to the housing including a pivotal connection for one end of the bracket on one side of the housing so that the bracket may be pivoted about an axis which is generally paralled to the rails; and a spring-biased, manually operable adjustment on the other side of the housing between the bracket and the housing with operable means extending through the housing so that the bracket may be adjusted to and firmly held at a position wherein said pointer will point to the zero position on the scale while the vehicle is on a section of level track, and means for connecting the bridge circuit to a source of power.



3,869,806

LEVELLING INSTRUMENT

David H. Humphrey, Gen. P.O. Box 2226, San Juan, P.R.
Continuation-in-part of Ser. No. 252,339, May 10, 1972, Pat. No. 3,793,735. This application Jan. 2, 1973, Ser. No. 320,207
Int. Cl. G01c *9/00*
U.S. Cl. 33—348 **15 Claims**



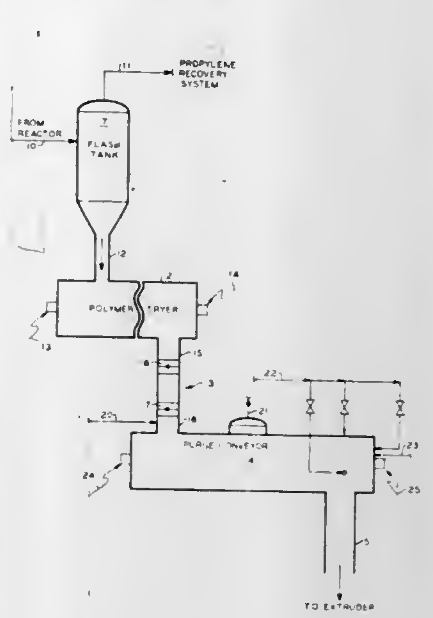
1. A levelling instrument having means for readily determining a level or plumb position which comprises, in combination:

a. a body member having a reference surface;
b. a source of light positioned within the body member;
c. a reflecting surface rotatable about the light source, said reflecting surface adapted to reflect light in a vertical direction irrespective of the position of the reference surface;
d. at least two indicators on the body member responsive to light reflected from the reflective surface when the reference surface is not in a level or plumb position; each indicator indicating a tilt of the reference surface to the left or right respectively; and,
e. means on the body member for focusing and directing the light reflected in a vertical position by the reflecting surface to activate one of said at least two indicators only when the reference surface is not in a level or plumb position, whereby a level position is readily discernible by the lack of activation of any of said indicators.

3,869,807

METHOD FOR CREATING INERT GAS BARRIER FOR PRODUCT FEED CONDUIT

Robert J. Perry, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed July 30, 1973, Ser. No. 383,721
Int. Cl. F26b *3/00*
U.S. Cl. 34—33 **5 Claims**

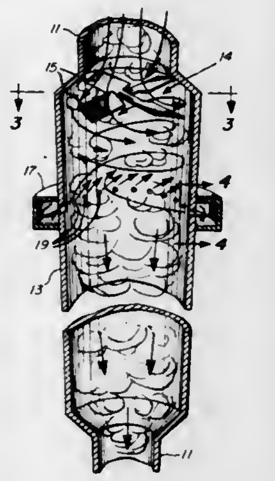


1. In a system for the transfer of a mass of particulate solids to a receptacle through a vapor lock system consisting essentially of a transfer conduit and at least two butterfly or startype valves which are opened sequentially a method for minimizing the introduction of vapors into the vapor lock system comprising introducing purge gas into the transfer conduit at a point below the lower most valve and above the lower end of the transfer conduit.

3,869,808

APPARATUS FOR MIXING AIR AND STEAM FOR DELIVERY TO A DRYER

Willard C. Sawyer, Oxford, Maine, assignor to Gorham International Inc., Gorham, Maine
Filed July 5, 1974, Ser. No. 485,965
Int. Cl. F26b *11/02*
U.S. Cl. 34—124 **3 Claims**

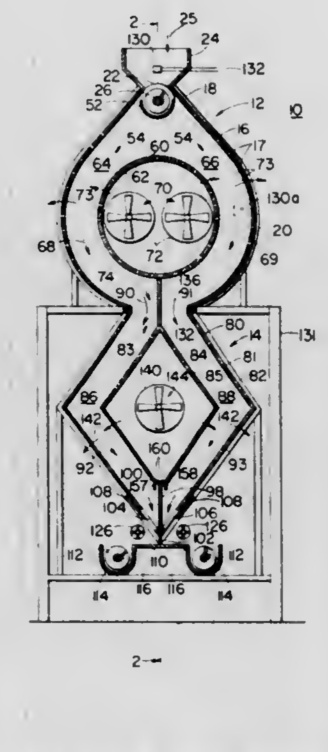


1. Apparatus for mixing air and steam for delivery to a dryer, said apparatus including a steam supply conduit in communication with the interior of a cylinder of said dryer, a cylindrical chamber of substantial length in said conduit, means in the inlet end of said chamber to cause the entering steam to spin in one direction, and means to deliver air under pressure into said chamber as an annular series of streams directed towards said inlet and to spin in the opposite direction relative to the steam, the cross sectional area of the chamber being enough greater than that of the steam conduit to prevent said steam spinning means from being a restriction.

3,869,809

CONTINUOUS FLOW GRAIN DRYING APPARATUS

Robert E. Keirn, R.R. No. 2, North Manchester, Ind. 46962
Continuation-in-part of Ser. No. 230,857, March 1, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 397,068
Int. Cl. F26b *19/00*
U.S. Cl. 34—174 **3 Claims**

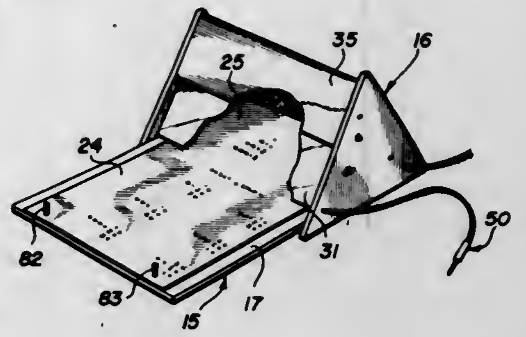


1. Continuous flow grain drying apparatus comprising: an upper, foraminous drying enclosure having a top end and an open bottom end, means for introducing grain to be dried to said upper enclosure adjacent said top end for downward gravity flow therethrough, first, enclosed, foraminous duct means in said upper enclosure for defining therewith a first pair of passages therein thereby dividing said downward flow into two separate, parallel streams, means communicating with said first duct means for causing an outward flow of heated air simultaneously through said first passages, a lower foraminous cooling enclosure having an open top end connected to said bottom end of said upper enclosure and having a bottom end, second, enclosed foraminous duct means in said lower enclosure for defining therewith a second pair of passages therein, divider means connecting said first and second duct means and extending through said open ends of said enclosures for coupling respective ones of said first and second passages whereby said two streams respectively continue separate, downward, parallel flow through said second passages, means communicating with said second duct means for causing an outward flow of cooling air simultaneously through said second passages, said cooling air flow being discharged to the atmosphere, said heating and cooling air flows being in parallel, first and second discharge openings in the side wall of said second duct means for respectively separately discharging said streams from said second passages, an imperforate divider plate extending downwardly from said second duct means between said discharge openings for separately discharging said streams from said second passages whereby said two streams are maintained separate without co-mingling throughout their downward flow through said apparatus, a pair of skirt elements depending from said second duct means wall in spaced parallel relationship with said divider plate, said last-named openings respectively communicating with the spaces between said skirt elements and divider plate, said skirt elements being shorter than said divider plate whereby said second streams are respectively subjected to a final flow of cooling air as they are discharged.

3,869,810

TEACHING MACHINE

Hugh C. Ronalds, 220 Locust St. 26A, Philadelphia, Pa. 19106
Filed Oct. 29, 1973, Ser. No. 410,636
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 C **18 Claims**



1. A teaching machine adapted to use interchangeable cards of electrical insulating material, wherein each card includes a question section and a correct answer section, said question section including a plurality of questions with multiple-choice answers, one of which for each question is correct and at least one of which for each question is incorrect, each card including a hole therethrough adjacent each of the answers and start and reset holes therethrough in the question section, said machine comprising a base for supporting a card and onto which a card may be oriented, terminals on the base registering with the holes, a housing on the base receiving the answer section thereby leaving exposed the question section, said housing including a semi-opaque window, light means in said housing functioning when energized to permit visual reading of the answer section through the window, a hand-held probe for entering the holes in the card to contact the terminals, and electrical circuit means connected to said terminals, probe, and light means responsive to energize the light means when contact by the probe is first made with the terminals of said start hole or the correct answer hole of each question and to prevent energization of the light means in the event contact by the probe is first made with a terminal of an incorrect answer hole until contact by the probe is next made with the terminal of the reset hole.

3,869,811

EDUCATIONAL DEVICE FOR LEARNING THE OSCILLOSCOPE

Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 30, 1973, Ser. No. 346,509
Int. Cl. G09b *23/18*
U.S. Cl. 35—19 A **7 Claims**

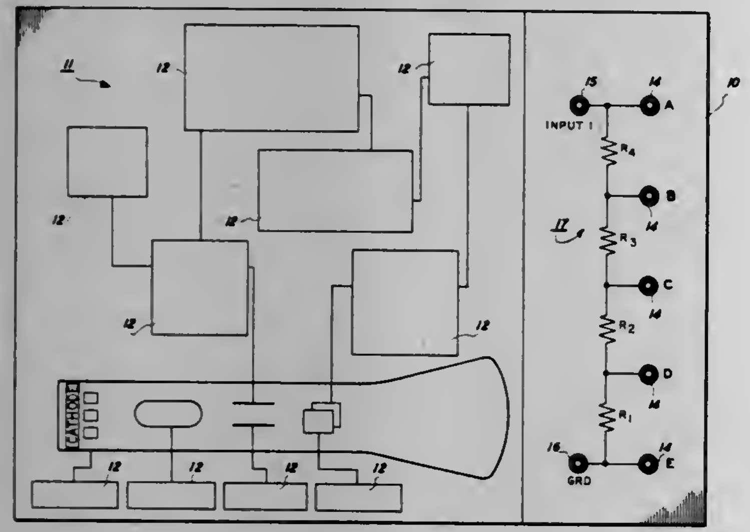
1. An educational kit for teaching the basic principles about the functioning of an oscilloscope utilizing an oscilloscope and structure comprising in combination:

a. a simulator board having a surface of magnetically attractive material and having (i) on a first area of said board graphic indicia on the surface thereof defining a sectional view of a cathode ray tube and indicia defining a plurality of areas surrounding said cathode ray tube, said areas being used by the user of said kit to graphically depict the mechanisms which control the operation of a cathode ray tube and circuits found within an oscilloscope effecting said control mechanisms whereby the user of said kit can obtain an understanding of the theory behind the functioning of an oscilloscope; (ii) on a second area of said board graphic indicia defining a voltage divided circuit including a plurality of resistors in series, a ground terminal and an input terminal; a plurality of terminal posts affixed to the upper portion of said board within said circuit, said posts positioned at the ground terminal, the input terminal and by each of the resistors such that each resistor lies between two terminal posts; and a plurality of resistors secured to the bottom portion of the board in the same circuit arrangement that is graphically depicted on the top portion of said board and means to provide a voltage to said input and ground terminals; whereby the user of said kit can learn to use an oscilloscope after obtaining an understanding of the theory of oscilloscopes by securing said voltage means to said circuit and measuring voltage drops with an oscilloscope across said resistors:

b. a plurality of magnetically attractive manipulative pieces each bearing individually on their surfaces graphic indicia defining items found within an oscilloscope, said pieces comprising (i) a plurality of pieces each containing indicia defining control mechanisms found within an oscilloscope and each adapted for positioning within said plurality of areas; and (ii) a plurality of pieces each containing indicia defining various circuit diagrams for said control mechanisms, each adapted for positioning within said plurality of areas, said manipulative pieces adapted for manipulation within the confines of the first area of said board in sequence within said plurality of areas whereby mechanisms controlling a cathode ray tube and circuits found within an oscilloscope can be graphically depicted, said magnetically attractive board or alternatively each of said magnetically attractive pieces being magnetic to provide a mutual attraction between said board and said pieces;

c. a display board for said manipulative pieces including a sheet of magnetically attractive material, said display board having graphic indicia on a surface thereof in spaced relationship, said graphic indicia corresponding to the indicia present on each of said manipulative pieces, said manipulative pieces adapted for storage on and removal from said display board; and

d. audiovisual instructional means for presenting information relevant to the basic principles about the functioning of an oscilloscope including information defining (i) the first and second areas of said board, (ii) the indicia on said pieces, (iii) the indicia on said board, (iv) the relationship of the indicia on the first area of said board to the indicia on said pieces and use of the second area of said board with an oscilloscope whereby the basic principles about an oscilloscope can be learned by the user by using said board in response to said instructional means.



3,869,812

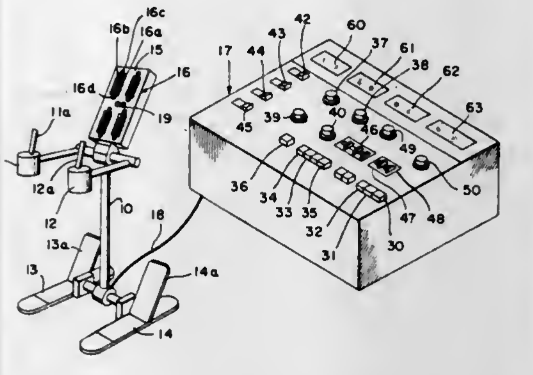
COORDINATION TESTING SYSTEM

Hagop Arakelian, Broomall, and Jeffrey L. Wright, Philadelphia, both of Pa., assignors to J. W. Microelectronics Corporation, Philadelphia, Pa.

Filed Sept. 20, 1973, Ser. No. 399,094

Int. Cl. G09b *19/00*

U.S. Cl. 35—22 R **8 Claims**



1. A system for testing eye-limb coordination comprising:

means for electronically activating selected visual displays, said electronic activating means comprising an electronic read-only memory, and means for activating said memory to put out control signals for sequentially activating different ones of said selected displays, and said read-only memory comprising a counter activated by said memory activating means to produce sequentially increasing number signals and means for transforming said number signals into different signals for activating said selected displays;

limb operable means for selectively actuating visual displays bearing predetermined spatial relation to said electronically activated displays; and

means for indicating the attainment of said predetermined relation.

3,869,813

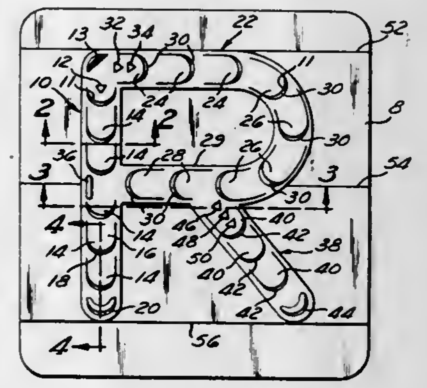
TEACHING DEVICE FOR FORMING INTELLIGENCE CHARACTERS

Raymond E. Hancy, 6515 E. Vancey Dr., Brook Park, Ohio 44142

Filed Oct. 10, 1973, Ser. No. 404,860

Int. Cl. G09b *11/04*

U.S. Cl. 35—37 **12 Claims**



1. A device for teaching the formation of intelligence characters comprising:

a. a planar card including a visible representation of a character formed of at least one stroke element, and

b. a plurality of individual inclined plane finger slides having a major portion of the surface thereof projecting above the plane of said card and lying along a predetermined stroke in forming said character and configured to encourage movement of the finger in a desired direction along said stroke element.

3,869,814

EXCAVATOR WITH DRAGLINE EQUIPMENT

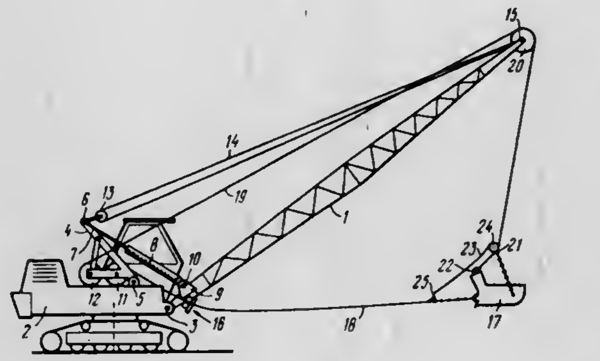
Alexandr Vladimirovich Rannev, ulitsa Veernaya, 3, korpus 4, kv. 68; Arvid Karlovich Reish, ulitsa Barrikadnaya, 19, kv. 55, both of Moscow; Viktor Alexandrovich Svirsky, ulitsa Shevlyakova, 45, kv. 11, Ljubertsky, Moskovskoi oblasti, and Boris Danilovich Khodykin, ulitsa Saikina, 1/2, kv. 128, Moscow, all of U.S.S.R.

Filed July 10, 1973, Ser. No. 377,915

Claims priority, application U.S.S.R., July 11, 1972, 1803101

Int. Cl. E02f *3/48*

U.S. Cl. 37—116 **1 Claim**



1. A dragline excavator comprising a boom pivotally mounted to a turntable of said excavator; hydraulic cylinders serving the purpose of luffing said boom in a vertical plane, said cylinders being pivotally attached to said boom closely adjacent to the pivotal mounting of said boom to said turntable; a frame pivotally mounted on the turntable of the excavator for pivotal movement of the same in a vertical plane, the piston rods of said cylinders being connected to said frame at an upper part thereof; said excavator including a dragline bucket and rope drums disposed on said frame to operate said bucket.

3,869,815

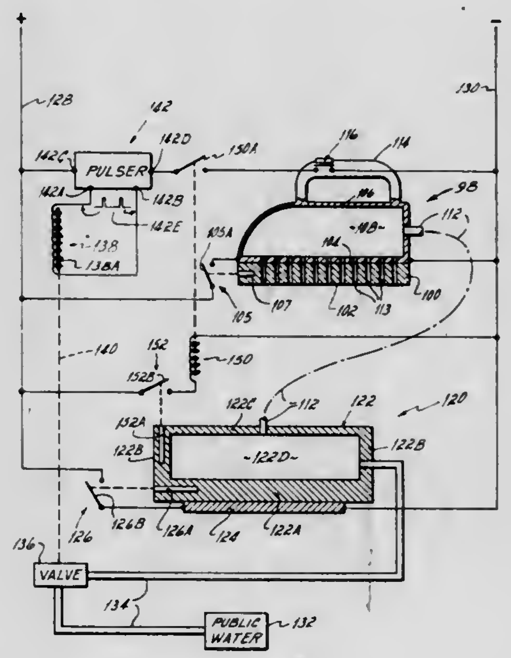
GARMENT FINISHING APPARATUS

Norman J. Bullock, Prospect, Ky., assignor to W. M. Cissell Manufacturing Company, Louisville, Ky.

Continuation-in-part of Ser. No. 267,518, June 29, 1972, Pat. No. 3,085,561. This application Jan. 4, 1974, Ser. No. 430,630

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.6 **5 Claims**



1. A steam generator connectable to a supply of variable pressure water for providing in response to actuation of a switch steam at a specified rate irrespective of water pressure variations, comprising:

a heat sink having a high temperature surface defining a cavity therein communicating with the atmosphere for containing in contact therewith water which boils at a specified temperature,

a heater in heat transfer relationship to said heat sink for heating said heat sink surface to said high temperature, said high temperature being substantially above said specified boiling temperature,

a thermostatic regulator for maintaining said heat sink surface at approximately said high temperture,

a valve having an outlet connected to said heat sink and having an inlet connectable to said variable pressure water supply, said valve constructed to provide, when open, an output water flow at a constant rate per unit time independent of water supply pressure fluctuations, and

valve control means responsive to continued actuation of said switch for intermittently opening said valve to cause said valve to deliver to said heat sink, on an intermittent basis, a specified quantity of water directly correlated to the time duration said switch is continuously actuated, said intermittent opening of said valve being at a relatively low duty cycle to avoid flooding of said heat sink by prolonged and continuous actuation of said switch.

3,869,816

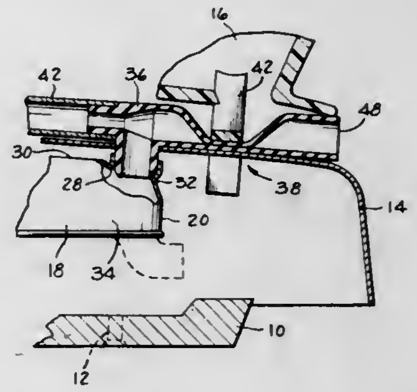
STEAM IRON

Llewellyn D. Busby, Upland, Calif., assignor to General Electric Company

Filed Jan. 30, 1974, Ser. No. 437,851

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **7 Claims**



1. In a steam iron having steam control means, a fill opening to an interior elongated water tank and a steam generating soleplate with ports therein, the improvement in means to clean said tank comprising,

- a substantially large opening in said tank in addition to the fill opening,
  - said large opening being disposed in at least one wall of said tank with at least part of said opening being a smooth flow continuation of an adjacent wall of said tank, and said opening being located at the lowest point of said tank in a selected position of the iron, and
- valve means to control said large opening,
- whereby said tank may be drained through said opening on operation of said valve means when the iron is in said selected position.

3,869,817

HANDWORK FRAME

Rush A. Bowman, 3723 Oakley, Memphis, Tenn. 38111

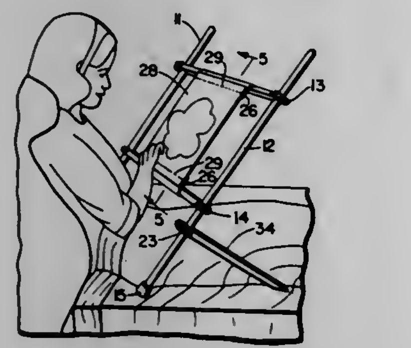
Filed Feb. 1, 1974, Ser. No. 438,717

Int. Cl. D06c *3/08*

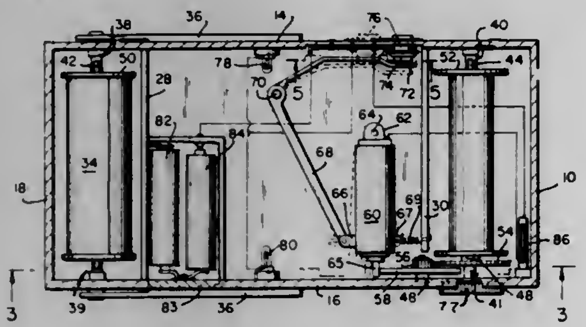
U.S. Cl. 38—102.4 **8 Claims**

1. A handwork frame comprising a pair of side members, a pair of parallel cross members slidably mounted at opposite ends on said side members for relative displacement while

maintaining parallelism, flexible worksheet mounting means on said cross members adapted for attachment thereto of the opposite edges of a worksheet of fabric or the like, said worksheet being tensioned to flat condition by relative opposite displacement of said cross members on said side members, means for fixing the ends of said cross members in adjusted position on said side members, said side members having cylindrical sections and said cross members being provided with bores closely slidably frictionally surrounding said cylindrical sections and said fixing means comprising clamp means on the outer ends of said cross members for tightening or loosening the friction fit of said members at said bores, and support means for angularly positioning said frame comprising members at each side having cylindrical bores loosely slidably frictionally surrounding said cylindrical sections of the side members.

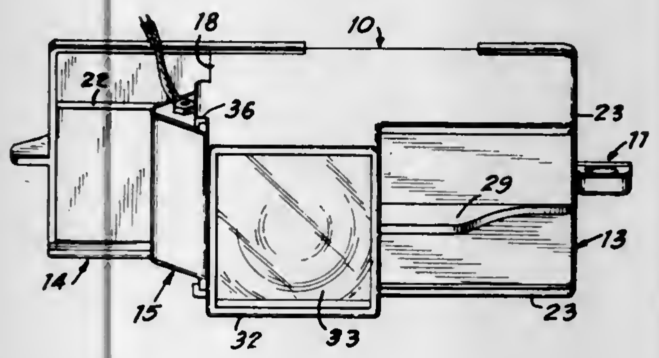


3,869,818
PORTABLE ELECTRICALLY ILLUMINATED BOOK
Richard B. Marcellus, 160 9th Ave., Apt. 3R, New York, N.Y. 10011
Filed Dec. 26, 1972, Ser. No. 318,004
Int. Cl. G09f *11/28*
U.S. Cl. 40—31 **4 Claims**



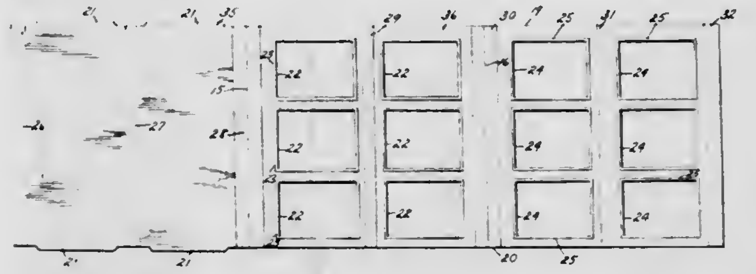
1. A portable electrically illuminated book comprising a housing having opposed front and rear walls opposed side walls, and upper and lower walls, said front wall being formed with a rectangular opening, a translucent shelf spaced parallel to said front wall in said housing and aligned with said opening for supporting a movable paper strip thereon, a detachable spool rotatably mounted in said housing adjacent said lower wall, said spool having a paper strip with reading matter wound thereon, an outer end of said paper strip extending from said spool between said front wall and said shelf, a detachable take-up spool rotatably mounted in said housing adjacent said upper wall, said outer end of the paper strip being secured to said take-up spool, a rotatable take-up spool shaft in one of said side walls detachably secured to said take-up spool, motive means for rotating said take-up spool in said housing, illuminating means in said housing mounted behind said translucent shelf for illuminating reading matter on said paper strip and a power source in said housing for said motive means and said illuminating means, said motive means comprising an electromotor having one end rotatably mounted about a first pivot axis perpendicular to said rear wall, a drive shaft extending from the other end of said motor and parallel to said rear wall, a driven rubber wheel rotatably mounted on said one side wall and adapted for frictional engagement with said drive shaft, a pinion axially secured to said rubber wheel, a gear wheel secured to said take-up spool shaft and engaging said pinion, a two-armed lever having two ends and pivoted therebetween about a second pivot axis perpendicular to said rear wall, said lever having one of said ends pivotally connected to said electromotor for pivoting said electromotor about said first pivot axis, a sliding switch mounted in one of said side walls for electrically actuating said motive means and said illuminating means, said switch having a projection provided with a knob engaging the other end of said lever, said switch being movable from one position to a second position causing said lever to pivot about said second pivot axis and also causing said electromotor to pivot about said first pivot axis and thereby causing said drive shaft to be disengaged from said rubber wheel.

3,869,819
PICTURE VIEWER
John H. Weggeland, 202 E. Bougenvillea, Lehigh Acres, Fla. 33936
Filed July 14, 1972, Ser. No. 272,041
Int. Cl. G09f *11/30*
U.S. Cl. 40—64 A **7 Claims**



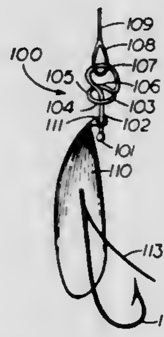
1. A picture viewer comprising:
a housing having a forward end and a rearward end, the forward end having a hollow picture-viewing portion with means to illuminate the interior thereof, the rearward end of said housing having a space to accommodate a stack of pictures of uniform width, the pictures having forwardly and rearwardly directed edges,
a shuttle having a forward portion guided longitudinally in said housing between a retracted position with said forward portion in register with the stack of pictures disposed thereon, and a projected position with said forward portion substantially in register with the hollow picture-viewing portion of the housing, and
said shuttle being provided with a rib to engage the rearwardly directed edge of the lowermost picture of the stack and with a forward edge that is spaced from said rib a distance substantially equal to the width of a picture,
said shuttle, upon projection thereof, simultaneously moving the lowermost picture of the stack to picture-viewing position by means of said rib, and moving the picture that is in viewing position to a position forward of the viewing position to form a pile of pictures that are in the same order as were said pictures when in the stack,
the mentioned rearward end of the housing being provided with spaced guide walls, a weight member being guided by said walls to have a disposition upon the stack to flatten the same so the lowermost picture of the stack is biased to a flat position on the shuttle and the rearward edge of said picture is retained in operative engagement with the rib on the shuttle during projection of the shuttle, and
the weight member being provided with a pocket to store a quantity of extra pictures to increase and decrease the weight of said member according to the number of pictures stored in said pocket.

3,869,820
PHOTOGRAPHIC ALBUM PAGE AND METHOD OF MAKING SAME
Sheldon Holson, 111 Danbury Rd., Norwalk, Conn. 06897
Filed Dec. 10, 1973, Ser. No. 422,992
Int. Cl. G09f *1/10*
U.S. Cl. 40—159 **1 Claim**



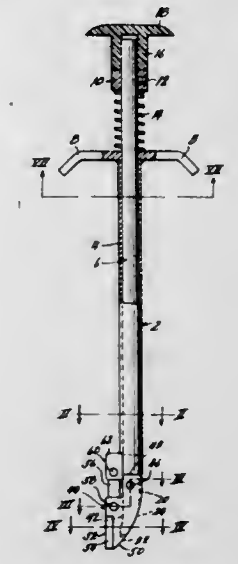
1. A photographic album page comprising: a unitary blank of paper having a principal longitudinal axis, including a first lamina imperforate throughout its extent and having a pair of opposed longitudinal edges, a free transversely-extending end edge and an oppositely disposed fold edge, said first lamina having a plurality of laterally extending tabs projecting outwardly of said longitudinal edges; a second lamina hingedly interconnected to and foldably overlying said first lamina and having longitudinal edges coaxially disposed with the longitudinal edges of said first lamina, said second lamina having substantially uniformly sized apertures extending through the plane thereof in elongated areas perpendicular to said longitudinal edges, said second lamina being interconnected to a surface of said first lamina in elongated areas to define a first set of printretaining pockets underlying said apertures, and accessible from openings thereto adjacent said laterally extending projections; and a third lamina similar to said second lamina hingedly interconnected to said second lamina and interconnected to an opposite surface of said first lamina to define a second set of pockets substantially congruent to said first set of pockets, and accessible from openings disposed adjacent an opposite surface of said tabs.

3,869,821
CONNECTOR COMBINED WITH FISHING FLOAT, LEADER, SINKER, OR LURE APPARATUS
Welbourne D. McGahee, Melbourne, Fla., assignor to Loop A Line, Inc., Melbourne, Fla.
Filed Nov. 26, 1973, Ser. No. 419,175
Int. Cl. A01k *85/00, 91/04*
U.S. Cl. 43—42.49 **10 Claims**



1. A fishing apparatus comprising a shaft means, a substantially circular vertical eye member as an integral extension of one end of said shaft means, a substantially circular horizontal eye member connected to said vertical eye member and encircling said shaft means, and fishing implement means adjacent to and connected to the other end of said shaft means including a fishing lure having a downplane plate, said downplane plate have an enlarged aperture, and wherein said shaft means passes through said downplane plate aperture and had a head on said other end of said shaft means whereby said shaft means is slidably connected to said downplane plate, said enlarged aperture providing sufficient space to permit the passage of a fishing line loop.

3,869,822
FISHHOOK EXTRACTOR
Lloyd E. Tieman, 601 E. 14th St., Carthage, Mo. 64836
Filed July 5, 1973, Ser. No. 376,815
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **6 Claims**

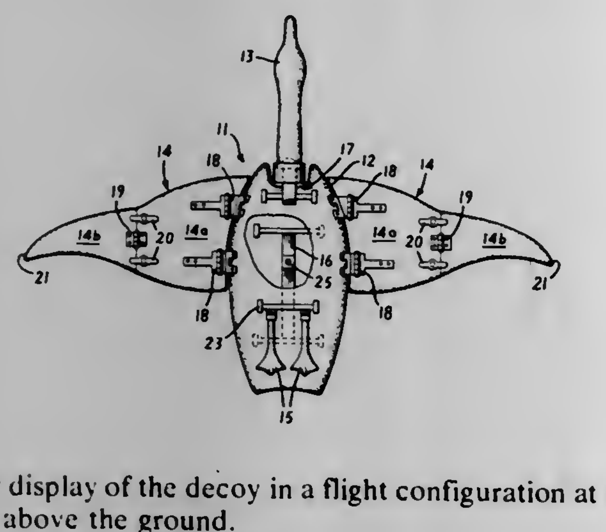


1. A fishhook extractor comprising:
a. a slender, elongated shank,
b. an anvil mounted on one end of said shank, said anvil being elongated in a direction parallel to said shank and having opposite longitudinal edges designated respectively its forward and rearward edges, and being adapted to be engaged interiorly in the bight portion of a fishhook with its forward edge toward the point of said fishhook, said anvil being provided along its rearward edge with a groove adapted to engage the bight portion of the fishhook, said groove extending around the free end of said anvil and opening through the forward edge thereof,
c. a pair of generally planar stripper plates mounted on said extractor and disposed in generally parallel relation at respectively opposite transverse sides of said anvil, whereby to be disposed at opposite sides of the plane of a fishhook engaged by said anvil, said plates being movably associated with said anvil and having operative edges operable by said movement to advance forwardly of said anvil to strip the flesh of a fish from the point of said fishhook, the operative edges of said stripper plates being disposed forwardly of said anvil at all times, and being provided with inturned lips, the lips of the two plates being spaced apart by a distance generally equal to the transverse width of said groove, and,
d. manually operable actuating means mounted on the extractor at the opposite end of said shank operable to produce said relative movement of said anvil and stripper plates.

3,869,823
BIRD DECOY
Donald Powers, and Delmar Washechek, both of P.O. Box 2, Kimball, S. Dak. 57355
Filed Aug. 16, 1972, Ser. No. 281,118
Int. Cl. A01m *31/06*
U.S. Cl. 43—3 **3 Claims**

1. A bird decoy comprising a body, a head rotatably connected to the body, two wings connected to the body by hinges, at least one of the wings is further hinged at a point between its respective point of connection with the body and its respective tip, two feet rotatably connected to the body, whereby the head, wings and feet can be positioned so that the decoy resembles a bird in flight and the head, wings and feet can also be folded against the body for storage and transporta-

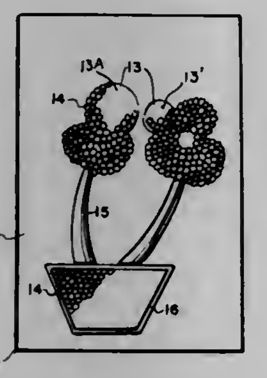
tion, a stand, and means located on a support frame within the body which are adapted to receive the end of the stand to allow for display of the decoy in a flight configuration at some distance above the ground.



3,869,824

ASSEMBLY TOY AND CRAFT

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 223,148, Feb. 3, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,410
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **10 Claims**



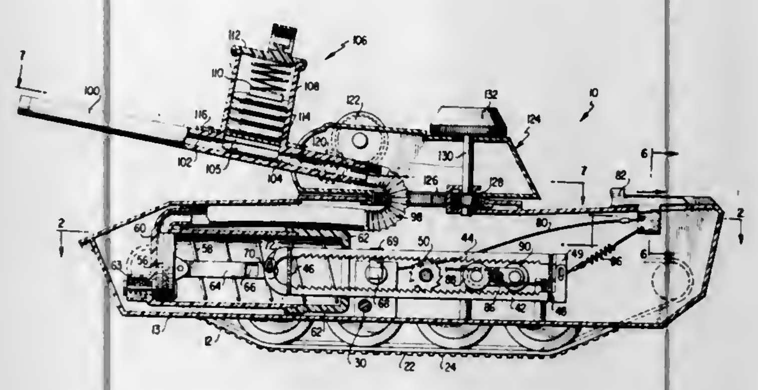
1. A constructional toy comprising:
a base,
a plurality of small decorative components of different colors adapted to be selectively applied to different areas of said base wherein components of each color respectively cover different areas of said base so as to decorate and differently color said different areas,
means for securing said components in a plurality of nesting arrays on said base, and
a fence-like structure protruding outwardly from the surface of said base and shaped to define a plurality of defined areas of said base surface which defined areas are confined by respective portions of said fence-like structure wherein decorative components of each color are assembled by color within each of said defined areas to compose a three-dimensional surface decoration on said base.

3,869,825

TOY TANK

Harold V. Heberlein, P.O. Box 269, Riverton, Wyo. 82501
Filed May 30, 1974, Ser. No. 474,384
Int. Cl. A63h *17/04*
U.S. Cl. 46—219 **10 Claims**

1. A toy tank which is movable in forward and reverse directions comprising in combination:
a moveable chassis having a first means for respectively converting forward and reverse motion of said chassis into forward and reverse rotary motion;
second means mechanically coupled to said first means for converting the forward and reverse rotary motion of said first means into linear motion, said second means being moveable between first and second positions;
cocking means responsive to linear motion of said second means for detaining said second means in the second position in response to forward or reverse motion of said chassis;

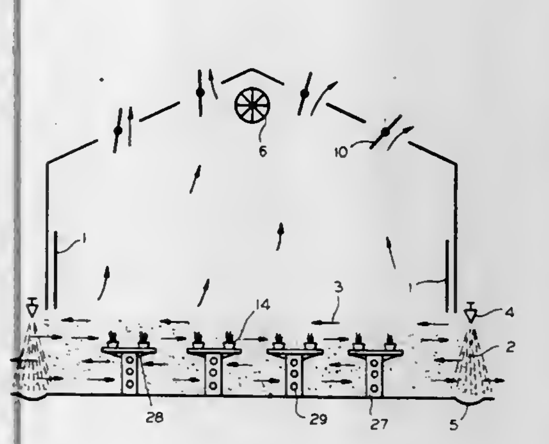


projectile firing means capable of selectively ejecting projectiles upon command of an operator, said projectile firing means being mechanically coupled to said second means; and
a trigger mechanism mechanically coupled to said cocking means for selectively releasing said cocking means from detaining said second means in said second position upon pulling by an operator.

3,869,826

CULTIVATION OF PLANTS IN GREENHOUSES

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhein, Germany
Continuation of Ser. No. 178,124, Sept. 7, 1971, abandoned. This application June 18, 1973, Ser. No. 371,140
Claims priority, application Germany, Sept. 10, 1970, 2044821
Int. Cl. A01g *9/02, 9/14*
U.S. Cl. 47—17 **10 Claims**

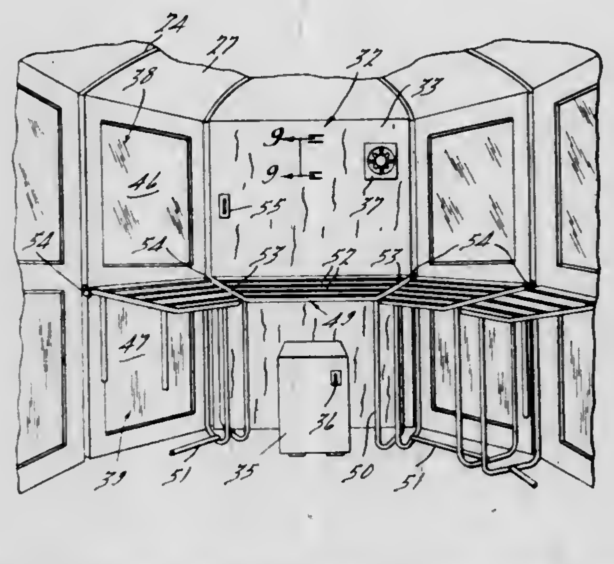


6. A greenhouse for cultivating physiologically and morphologically valuable plants, said greenhouse having openings in the lower portions of at least two side walls of said greenhouse to maintain circulation of air through the greenhouse by natural movement of atmospheric air into openings in one wall and out of openings in another wall, thereby providing in the greenhouse movement of air which is closely similar to the atmospheric air in direction, strength and natural rhythm, and said plants being planted in pot-forming members with soil therein, and said pot-forming members being supported by a plurality of trays, and said trays in turn being supported by racks in said greenhouse, each rack having a plurality of parallel, spaced, horizontal arms with said trays resting on and extending between contiguous arms, whereby the air circulating through said greenhouse may circulate through said racks as well above said racks.

3,869,827

CONVERTIBLE PORTABLE FOLDING GREENHOUSE

John D. Anderson, Holland, and Gerald L. Vander Stel, Grand Rapids, both of Mich., assignors to Avis Products, Inc., Madison Heights, Mich.
Filed June 8, 1973, Ser. No. 368,175
Int. Cl. A01g *9/00;* **E06b** *1/04*
U.S. Cl. 47—17 **1 Claim**



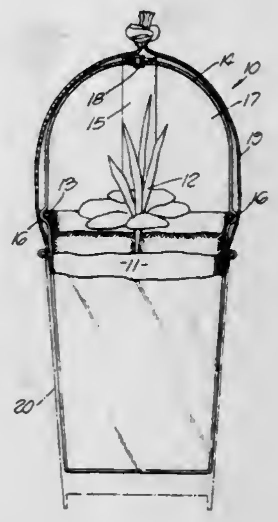
1. In a portable folding greenhouse, a plurality of rectangular flat panels each having side, upper, lower and horizontal central portions, means hingedly connecting the side portions of adjacent panels together so they may be either folded into a collapsed position or unfolded into an erect circular arrangement, each panel having removable upper and lower sections, with each section having a plastic insert with light transmitting but air-impervious properties, means anchoring the lower edges of said panels to the ground, one of said panels being a door panel, a solid panel opposite said door panel, a heater and vent fan mounted on said solid panel, a low temperature-responsive control for said vent fan, radially arranged tubes removably connected to a central hub and having outer ends engaging a cable which runs through the upper portions of said panels, a cover on said tubes forming a roof, the cover continuously extending outwardly from said hub to said panels and being fabricated between the hub and panels entirely of a plastic material having light transmitting but air-impervious properties, a plurality of adjacent benches within said greenhouse, said benches having legs collapsibly connected to tops and inwardly angled edges so that the benches will interfit with each other, and brackets securing said benches to the side portions of said panels.

3,869,828

PLANTER PACKAGE

Mitsuo M. Matsumoto, P.O. Box 17852, Honolulu, Hawaii 96817
Filed July 16, 1973, Ser. No. 379,449
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.11 **3 Claims**

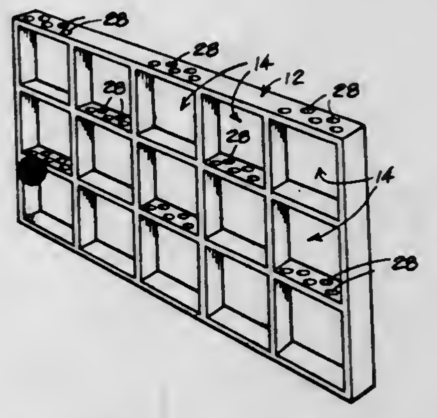
1. A plant display package, comprising:
a first open-topped container;
a quantity of moist paper received within said first container, said plant being disposed therein;
removable means grippingly attached to said first container extending over the open top of said container including, a pair of U-shaped members intersecting one another over said first container and the open ends of which are grippingly received onto the open top of said first container; and
flexible transparent sheetlike means constructed of plastic permeable to atmospheric gases wrapped about said first container and over said attached means, said sheetlike means being sealed sufficiently to retain moisture therewithin; and
a second open-topped container received onto parts of said first container with said attached means extending outwardly thereof.



3,869,829

TEACHING AID STRUCTURE

Thomas E. Chiosso, 53 Oakwood St., San Francisco, Calif. 9410
Filed Sept. 26, 1973, Ser. No. 400,731
Int. Cl. A01g *9/00*
U.S. Cl. 47—39 **2 Claims**



1. A structure for use as a teaching aid or the like comprising;
a frame of rectangular configuration and comprising a plurality of vertical frame members and a plurality of horizontal frame members, defining a plurality of openings, into at least one of which a plant may be positioned for support by said frame;
a panel member associated with and covering another opening and supported relative to the frame;
a portion of a horizontal frame member having apertures therethrough, and through which water may travel from above into said one opening, the panel member when so covering said another opening being positioned elevationally above said portion of the frame member, so that access is allowed to said apertures from thereabove only upon removal of said panel member.

3,869,830

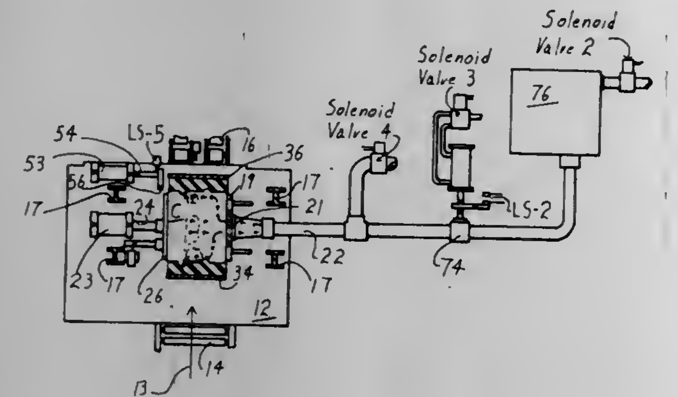
APPARATUS FOR CLEANING THE CAVITIES OF CASTING AND THE LIKE

Jesse L. Baker, Radford, Va., assignor to The Mead Corporation, Dayton, Ohio
Filed Sept. 28, 1973, Ser. No. 401,890
Int. Cl. B24c *3/04, 3/32*
U.S. Cl. 51—8 R **5 Claims**

1. In apparatus for cleaning internal cavities in castings and the like wherein there is at least one opening into a side of the

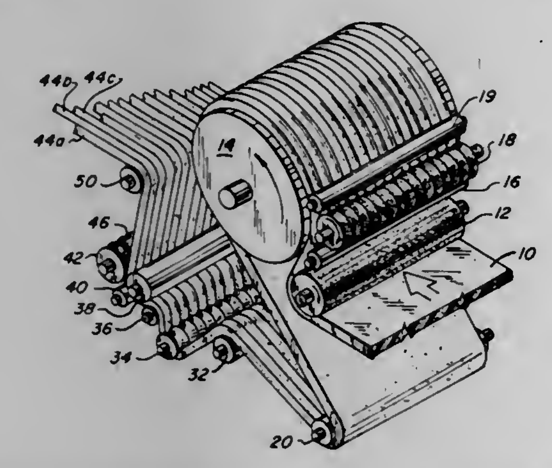
casting communicating with at least one opening in the bottom of the casting,

a. a table on which the casting is placed, said table having an opening therethrough in communication with the bottom opening in the casting when in place on the table,
b. a stationary abutment against which the side of the casting having said opening therein is adapted to engage, there being an opening through the abutment in communication with the side opening in the casting when in place on the table,
c. a power driven clamp member opposite the abutment adapted to press the side of the casting having the opening therein against the abutment,



d. a movable casting positioning member disposed to be engaged by an end of the casting when it is moved onto the table, thus accurately to position the casting on the table relative to the direction of its movement thereonto,
e. a power driven hold down member adapted to lower onto and engage the top of the casting while in place on the table, and
f. means to force an airborne stream of abrasive material through the openings in the abutment thence into said side opening in the casting, into the casting cavities and out through the bottom casting and table opening, thus to clean said cavities.

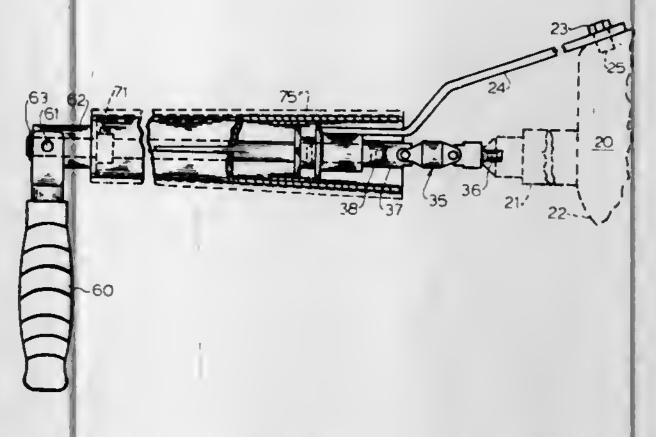
3,869,831
FLEXIBLE FOAM MATERIAL SHAPER
John F. Gibb, Englewood, Calif., assignor to Backer Rod Mfg. & Supply Co., Denver, Colo.
Filed Sept. 4, 1973, Ser. No. 393,827
Int. Cl. B24b *9/02;* **B29h** *7/18*
U.S. Cl. 51—75 **14 Claims**



1. Apparatus for shaping at least one surface of soft, flexible foamed sheet material, comprising:

a. at least one cylindrical drive roll means having a peripheral surface for passing an elongated sheet around and in contact with a substantial portion thereof,
b. cylindrical roll means juxtaposed with said drive roll means for compressing said sheet material against said drive roll means at about its first contact with said drive roll means,
c. a pair of closely spaced pinch roll means juxtaposed with said drive roll means adjacent to and downstream from said cylindrical roll means arranged for pressing said sheet material into contact with said drive roll means passing therebetween, and
d. high speed rotary cutter means juxtaposed with said drive roll means mounted between said pair of pinch roll means and rotating in the direction of travel of said sheet material arranged to shape said at least one side of said sheet material while it is in contact with said drum roll means, said rotary cutter means being shaped to provide corresponding cut in one surface of said sheet material.

3,869,832
DRILL-OPERATED ABRADING TOOL
William M. Atwater, Pittsboro, N.C., assignor to Harriss-Conners Chevrolet, Inc., Chapel Hill, N.C.
Filed May 28, 1974, Ser. No. 474,131
Int. Cl. B24b *23/02*
U.S. Cl. 51—170 PT **1 Claim**

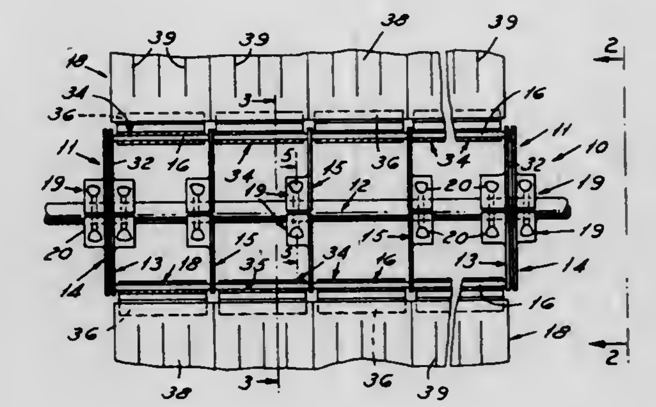


1. A portable abrading tool adapted to be removably secured to a hand electric drill of the type having a front housing, a chuck supported on the face of said housing, and a threaded aperture thereon for receiving a threaded fastener, said tool comprising, in combination:

a. a hollow elongated cylinder member having at least one slit in the wall thereof and extending for a major portion of the length thereof, having bearing surfaces within said cylinder member intermediate the length thereof and at oppositely disposed positions substantially radially removed from said slit, said bearing surfaces being adapted to receive a camming pressure for expanding said cylinder member, said cylinder member being open at one driven end and being closed at the opposite end by a wall having a central aperture;
b. a drive shaft centrally positioned within said cylinder member and extending from a driven end proximate said cylinder member open end to and through said cylinder member closed end and providing externally of said cylinder member closed end a handle mounting extension portion;
c. a bearing mounted on said drive shaft handle portion and having pivotally connected thereto an auxiliary handle and locking means secured to said drive shaft for retaining said handle bearing on said shaft;
d. a locking sleeve secured to said drive shaft internally of said cylinder member and proximate said end wall;
e. camming means secured to said drive shaft and disposed between said bearing surfaces, said camming means when rotated with respect to said bearing surfaces being operable in a first rotative position to contact said bearing surfaces and expand said cylinder member to tighten any abrading sleeve positioned thereon and in a second rotative position being movable out of contact with said bearing surfaces to allow said cylinder member to contract and said abrading sleeve to be removed;

f. a support bearing mounted internally of said cylinder member outwardly from said camming means and proximate said shaft driven end;
g. a bracket comprising a bent arm member having one end secured to said support bearing and the opposite end secured to a said drill housing by threaded fastener means mating with a said threaded fastening aperture on said housing;
h. a universal coupling means having at one end, a socket connection secured to said drive shaft driven end and at the opposite end to a spindle secured to a said drill chuck; and
i. an abrading sleeve having an appropriate length and internal diameter fitted on said cylinder member and adapted to be tightened thereon by rotation of said camming means against said bearing surfaces to said first rotative position and to be loosened for replacement by rotation of said camming means to said second rotative position.

3,869,833
ROTARY FINISHING WHEEL
James A. Belanger, 17505 Rexwood, Livonia, Mich. 48152
Filed Mar. 21, 1974, Ser. No. 453,316
Int. Cl. B24b *47/02*
U.S. Cl. 51—334 **7 Claims**

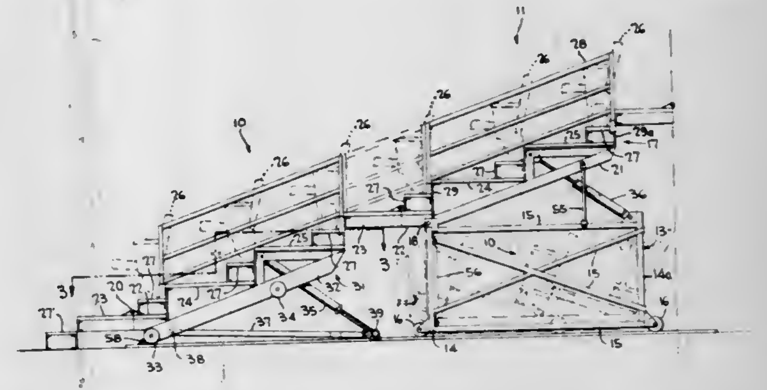


1. A rotary wheel structure to mount radially outer finishing units, comprising a series of axially spaced split opposite end and intermediate plate units each including two generally similar, semi-circular plates in substantial radial register and having means to releasably clamp the same coaxially in a partially surrounding relation to a drive shaft, there being two of said split end units adjacent each of the ends of said shaft, the axially inner end and intermediate plates of said plate units, as thus clamped, each having means spaced radially outwardly of the axis of said shaft for pivotally mounting said finishing units in circumferentially spaced relation to one another about said shaft axis.

3,869,834
COATED ABRASIVE ARTICLES HAVING A SURFACE DEPOSIT OF FLUOROCARBON PARTICLES
George Cruise Mullin, Reading; Robert Earle Wetherby, West Boxford, and Victor Oscar Chevalier, Tewksbury, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio
Continuation-in-part of Ser. No. 672,992, Oct. 5, 1967, abandoned. This application Sept. 16, 1968, Ser. No. 762,315
Int. Cl. B24d *3/34*
U.S. Cl. 51—295 **8 Claims**

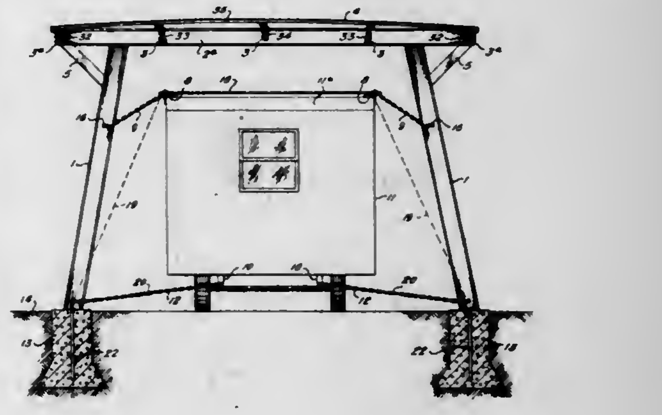
1. A coated abrasive device having a surface deposit comprising an accumulation of fluorocarbon particles covering at least that portion of the surface not covered by the abrasive particles and the ratio of the fluorocarbon to abrasive particles on the surface is ⅛ to ½ by weight.

3,869,835
DRAWER-TYPE GRANDSTAND ARRANGEMENT
Charles Mackintosh, 3838 Oakwood Ave., Los Angeles, Calif. 90004
Filed Feb. 15, 1974, Ser. No. 443,259
Int. Cl. E04h *3/12*
U.S. Cl. 52—9 **6 Claims**



1. A grandstand arrangement, comprising at least two seating sections disposed one behind the other with at least the forward section mounted on rollers for horizontal movement, the rearward section being supported on a structural framework having an open forward end, said rearward section further including a seating platform mounted at an inclination to the horizontal on said framework at the upper portion thereof, seats carried by said seating platform, said forward section including a seating platform and seats carried thereby, means for raising and lowering said forward section seating platform about the forward end thereof between a horizontal position and an angle having the same inclination as said rearward section seating platform, the height and width of said forward section in the horizontal position of its seating platform being less than the corresponding height and width of said structural framework, whereby said forward section is capable of being telescoped within said framework through its open end when said forward section seating platform is lowered into its horizontal position and is moved rearwardly thereinto.

3,869,836
MOBILE HOME PROTECTOR
Cloy L. Allen, Rt. 1, Box 1, Wingate, Tex. 79566
Filed Apr. 15, 1974, Ser. No. 460,880
Int. Cl. E04n *9/14*
U.S. Cl. 52—23 **11 Claims**



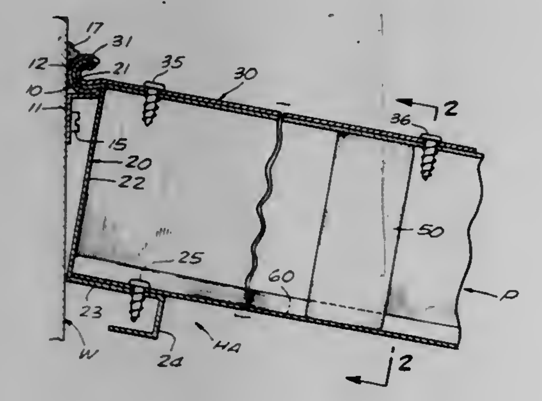
1. A mobile home protector including uprights, trusses connected to oppositely disposed uprights near the upper ends of the uprights, purlins supported by the trusses, plates for connecting the purlins to the trusses and supporting the purlins the desired elevation above the trusses, roofing material supported by the purlins and connected to the purlins so as to give the roof a pitch determined by the elevation of the purlins above the trusses, a bell shaped, reinforced concrete pier for each upright, means for connecting each upright to its associated pier, each pier being adapted for placement in the ground with the top of the pier at ground level, and means for bracing

a mobile home roof said bracing means comprising chains, one chain connected to each upright below the level of the mobile home roof to be braced, adapters set on the side edge of the mobile home roof to be braced opposite each upright, and connecting elements wherein the free end of each chain not connected to the upright is locked in the adapter opposite said upright.

3,869,837
AWNING STRUCTURE, AND METHOD OF ASSEMBLY

R. S. Dunn, 200 S. Occidental, Apt. 201, Los Angeles, Calif. 90057

Filed July 23, 1973, Ser. No. 381,804
Int. Cl. E04b *1/344, 7/16*
U.S. Cl. 52—75 **6 Claims**



1. An awning structure attached to the wall of a pre-existing building comprising, in combination:

a mounting strip extending horizontally along the wall of the building, said mounting strip having a curved recess opening outwardly from the building;

means attaching said mounting strip to the building wall, and providing a water-proof seal between the mounting strip and the wall;

a plurality of generally trough-shaped pans arranged in a side-by-side relationship having the upper edges of their inner end approximately aligned with said recess of said mounting strip, and inclining outwardly and somewhat downwardly so that their outer ends may be supported by other means, the adjacent ones of said pans being joined together by means of overlapping and interlocking edges which provide an essentially water-proof joint between them;

and a hat assembly for securing the inner ends of said pans to said mounting strip, while concurrently permitting the upper ends of said pans to pivot relative to said mounting strip in response to wind pressure and the like without breaking said seal, said hat assembly including:

a. an elongated hanger having an arcuately curved flange received within said recess of said mounting strip, a flat portion extending downwardly from said flange to close the inner ends of said pan, and a lower flange bent outwardly from said main section of said hanger and secured to the bottom edges of the pans; and

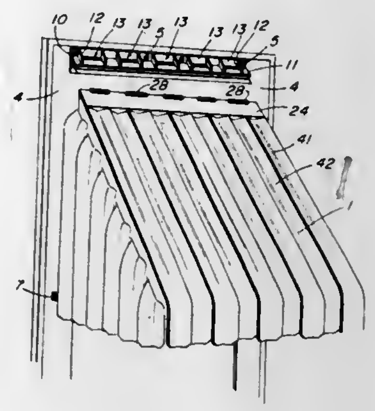
b. an elongated flashing having an arcuately curved flange received within said flange of said hanger, said flashing having a flat portion extending over the upper edges of said pans whereby said hanger and said flashing together comprise a U-shaped box which encloses the upper ends of said pans and is capable of pivoting as a unit relative to said mounting strip;

said hanger flange and said flashing flange forming a water-tight joint with said mounting strip.

3,869,838
WINDOW AWNING

George E. Tedesh, Pegan Ln., Dover, Mass. 02030

Filed July 2, 1973, Ser. No. 375,544
Int. Cl. E04b *1/34*
U.S. Cl. 52—76 **10 Claims**



1. An awning construction comprising:

a. a hanger comprising an elongated back plate adapted to be secured in a horizontal position on the upper portion of a window frame; said hanger having a substantially planar support member projecting outwardly and downwardly therefrom and forming an acute angle therewith; said support member being provided with a plurality of elongated slots extending through said support member along a position adjacent to and parallel with said back plate;

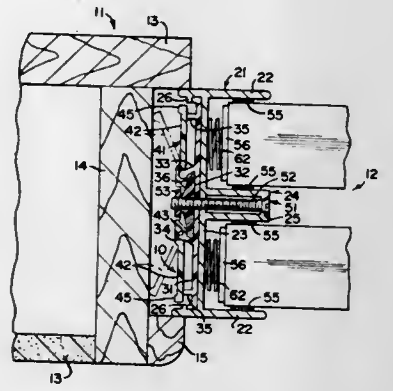
b. a suspension assembly having an elongated substantially planar suspension member provided with a plurality of elongated detents, corresponding in size and spacing with said slots, projecting from the upper surface of said suspension member, each of said detents being received in a corresponding slot, with the upper surface of said suspension member being substantially coplanar with the lower surface of said support member, and

c. an awning roof portion secured along its upper end to said suspension assembly and projecting therefrom.

3,869,839
ADJUSTABLE WINDOW SEAT GUIDE

Waldo O. Johnson, Wooster, and Rodney P. Walters, Akron, both of Ohio, assignors to Louisiana-Pacific Corporation, Portland, Oreg.

Filed Oct. 26, 1973, Ser. No. 410,236
Int. Cl. E05d *13/02;* **E06b** *1/04*
U.S. Cl. 52—204 **4 Claims**



1. An adjustable window seat guide for side jamb liners including window positioning means and comprising:

a hinge section formed on a laterally outer portion of the side jamb liner and including converging laterally outwardly extending ribs,

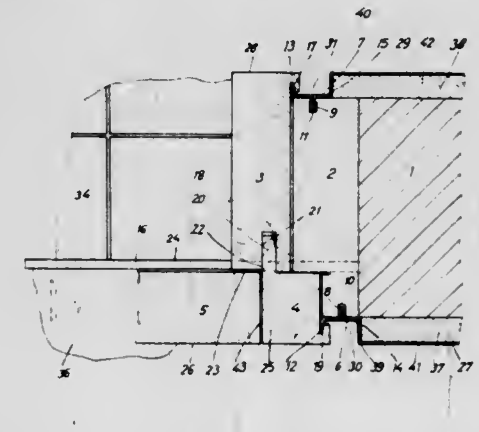
a resilient member in juxtaposition to said hinge section and positioned between said ribs, a pair of arm members individually pivotally mounted on said ribs of said hinge section and having corresponding end sections adjacent to and overlying said resilient member, and

an adjustable fastener having a securing member, said adjustable fastener engaging said side jamb liner with said securing member bearing against said arm ends so that adjustment of said fastener causes pivotal movement of said arm members.

3,869,840
DOOR JAMB LINER

Helmut Hoffmann, Rudernstr. 4, and Walter Hoffmann, Bergstr. 18, both of Burgstall, Germany

Filed July 27, 1973, Ser. No. 383,119
Claims priority, application Germany, July 31, 1972, 2237625
Int. Cl. E06b *1/08, 1/32*
U.S. Cl. 52—211 **11 Claims**

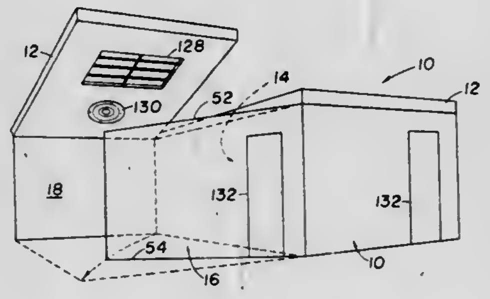


1. A jamb-liner comprising a mounting frame secured to the edge of a plaster covered wall which is encased by a masking frame comprising pre-manufactured parts which are directly joined together through a tongue-and-groove system; there being moulded mounting strips at the vertical front faces of the mounting frame over which the parts of the masking frame are fitted from both sides, which parts are designed as continuous moulded strips which extend beyond the top of the mounting frame and down to floor level and which have a web which rests against the mounting frame and two legs one of which rests against the plaster with its edge flush with the wall surface while the other leg engages with a groove in the adjacent part of the masking frame.

3,869,841
BUILDING CONSTRUCTION AND METHOD

Carl D. Wahlquist, Woodland Hills, Calif., assignor to Building Components Research, Inc., Salt Lake City, Utah

Division of Ser. No. 386,900, Aug. 9, 1973,. This application Aug. 21, 1974, Ser. No. 499,393
Int. Cl. E04b *1/344*
U.S. Cl. 52—745 **3 Claims**



1. A method of assembling interior rooms within a space, the steps of:

mounting a wall panel in a generally vertical orientation so as to fold into a compact configuration;

unfolding the wall panel to form an enclosure;

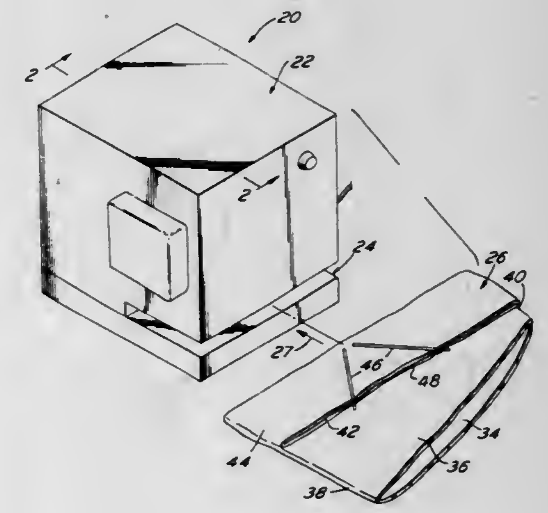
lowering a ceiling unit until the ceiling unit rests upon the unfolded wall panel; and

downwardly displacing the wall panel under the weight of the ceiling unit until a seal is formed simultaneously at the top and bottom of the wall panel.

3,869,842
BAG SEALING APPARATUS AND METHOD OF USE

Henry Verbeke, Tannersbrook Rd., Chester, N.J. 07930

Filed Aug. 6, 1973, Ser. No. 385,922
Int. Cl. B31b *1/86*
U.S. Cl. 53—14 **16 Claims**



14. A method for sealing a plastic bag having an article disposed therein while forming a handle for said bag, said bag having a front and a rear wall and a flap folded against said rear wall comprising the steps of disposing the flap and the abutting rear wall under a heating means having a pair of angled elongated heating elements, automatically moving said heating means into contact with the mouth of said bag, and heating said heating means to form a pair of angled heat seals in the flap to seal the article therein by forming a pocket between the seals, which serves as a handle for the bag and thereafter automatically moving the heating means out of contact with the bag.

3,869,843
LIGHTWEIGHT PLASTIC CONTAINER CASE-PACKING METHOD AND APPARATUS

John W. Darrah, III, South Windsor, Conn., and Dick W. Williams, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 13, 1974, Ser. No. 450,557
Int. Cl. B65b *21/06, 35/54*
U.S. Cl. 53—26 **12 Claims**

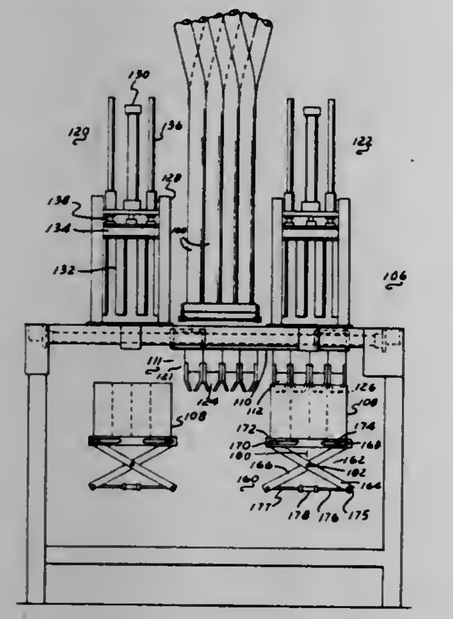
1. In a process for case-packing lightweight plastic containers which comprises:

A. receiving said containers in a plurality of rows of pockets in a packing frame adjacent the case; and then

B. simultaneously ejecting the containers from the rows into cells in the case;

the combination therewith of the steps of:

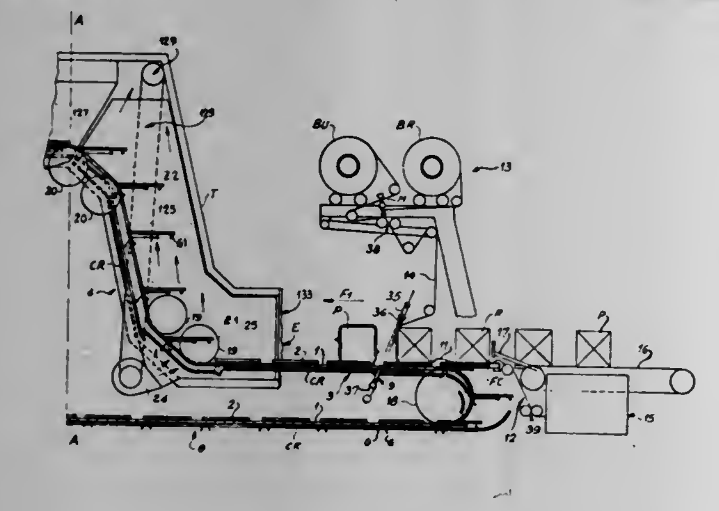
C. accumulating the containers in end to end relationship in tubes above said packing frame; and



D. cyclically releasing single layers of said containers from the tubes to the pockets.

3,869,844
METHODS OF AND DEVICES FOR CONTINUOUSLY PACKAGING ARTICLES IN THERMOSHRINKABLE PLASTICS FILM

Pierre Paul Edouard, Essonne, France, assignor to Lara S.A.
Filed Aug. 31, 1973, Ser. No. 393,481
Claims priority, application France, Sept. 4, 1972, 72.31291; Sept. 25, 1972, 72.33890
Int. Cl. B65b *53/06, 11/50*
U.S. Cl. 53—30 **20 Claims**



1. A method for continuously packaging collections of articles in a wrapping of thermoshrinkable plastics film, utilizing a conveyor moving continuously and carrying the unwrapped collections of articles uninterruptedly one after another and delivering them, wrapped and closed and ready to be handled, comprising the steps of:

depositing collections of articles in spaced succession upon a lower film of heat sealable material at a feed station;

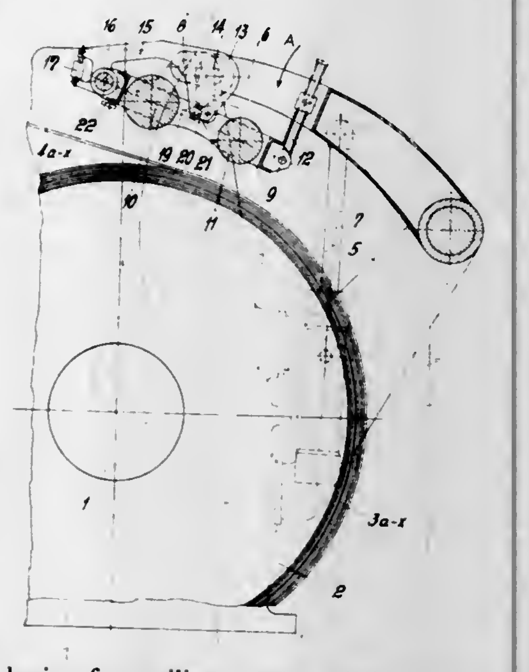
covering of the collections with an upper film of said material;

heat sealing the upper film to the lower film between each adjacent pair of collections and cutting each heat sealed joint in half to provide a series of loosely wrapped collections of articles;

transporting said series of loosely wrapped collections of articles sequentially through a preheating zone, then through a thermoshrinkage zone along an upwardly directed path, then through a thermoshrinkage finishing zone and, finally, through a cooling zone along a downwardly directed path to a discharge station where the collections, wrapped tightly and closed, may be immediately handled.

3,869,845
UPCOILER FOR COILING A PLURALITY OF STRIPS

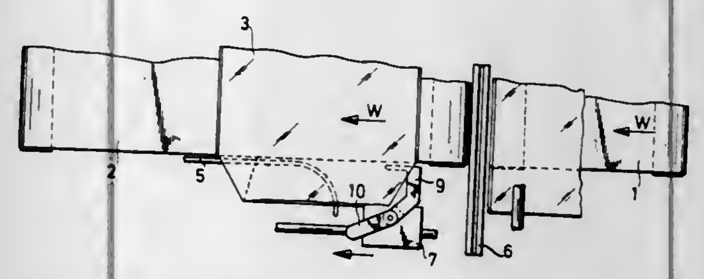
Alexander Rodach, Pforzheim, and Hans Weber, Engels Brand, both of Germany, assignros to Frau Irma Ungerer, Pforzheim, West Germany
Filed Mar. 11, 1975, Ser. No. 343,789
Claims priority, application Germany, Nov. 18, 1972, 2256730
Int. Cl. B65b *61/00*
U.S. Cl. 53—137 **6 Claims**



1. A winding device for coiling a strap comprising a rotatable drum for receiving said strap, a first pressure roller engageable with said strap to force the final convolution of coiled strap against the coil on the drum, a dispenser of adhesive tape engageable with said strap and disposed behind said first pressure roller to dispense adhesive tape onto the coiled strap, a second pressure roller engageable with said strap and disposed behind said dispenser for applying pressure to the coiled strap, a primary pivoted lever disposed in relative position to said drum and movable to positions toward and away from said drum, an actuating cylinder for moving said primary pivoted lever, a secondary pivoted lever connected pivotally to the free end of said primary pivoted lever and adapted to carry said first pressure roller and said second pressure roller.

3,869,846
FOLDING DEVICE FOR PACKAGING MACHINES

Karl-Ernst Timmerbeil, Ennepetal, Germany, assignor to Firma Packautomatic GmbH & Co. K.G., Ennepetal, Germany
Filed Aug. 1, 1973, Ser. No. 384,756
Claims priority, application Germany, Aug. 2, 1972, 2237948
Int. Cl. B65b *9/12, 7/04*
U.S. Cl. 53—182 **2 Claims**



1. In a packaging machine for wrapping articles in a foil, the combination which comprises:

transport means for feeding said articles along a path;

means for feeding a lower foil along the underside of said article and an upper foil along the upper side of said article with said foils laterally overhanging ends of the article;

means for sealing said foils together, thereby forming a sleeve with the overhanging portions of the foil including a vertical front portion, a horizontal upper portion and a vertical rear portion;

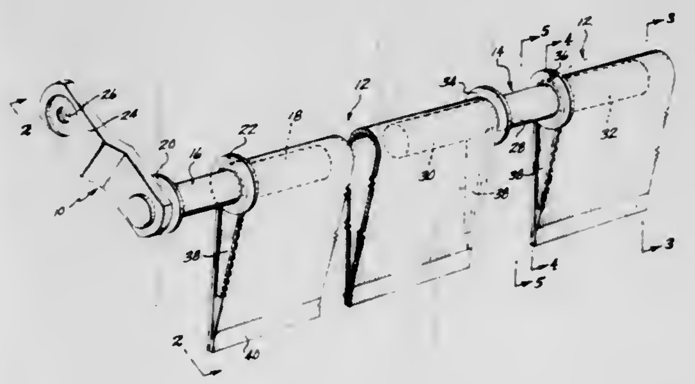
a fixed first folding finger disposed along said path and engageable with the vertical front portion of a sleeve wrapped around an article displaced along said path for folding said vertical front portion inwardly against the latter article;

a shaft disposed alongside said path and rotatable about an axis perpendicular to the direction of feed of said articles; a supporting finger mounted on said shaft and swingable thereby into a position underlying said horizontal upper portion of said sleeve for supporting said horizontal upper portion against sagging; and

a second folding finger mounted on said shaft below said support finger and angularly offset therefrom which swings by said shaft into engagement with said rear vertical portion to fold the same inwardly against the article into a space maintained by the support of said horizontal upper portion by said support.

3,869,847
BAT CONSTRUCTION FOR A HARVESTER REEL

Donald L. May, Garfield, Wash., assignor to J. E. Love Company, Garfield, Wash.
Filed Jan. 22, 1974, Ser. No. 435,530
Int. Cl. A01d *57/02*
U.S. Cl. 56—220 **4 Claims**

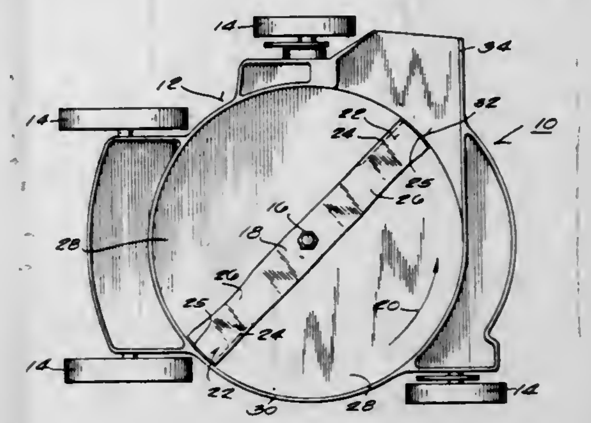


1. A harvester reel bat comprising:

a plurality of tubular bat blade sections, a plurality of journal sections disposed between and interconnecting said bat blade sections, and crank sections disposed at each end of said bat, said crank and journal sections having journal portions thereon, and each said crank section having a crank arm portion situated endwise outwardly of its journal portion with said journal portion having end thrust members engaged therearound and an inner end pin portion projecting into the adjacent outer bat blade section, and each said journal section having a central journal portion with end thrust members engaged therearound, and end pin portions projecting into the opposite ends of the adjacent tubular bat blade sections to interconnect said adjacent bat blade sections, there being a relatively thin support brace plate located within each outermost end of each bat section depending endwise downwardly from the projecting end pin portion into the hollow bat blade section, said support brace plate being permanently mounted along its edges to the projecting end pin portion and the interior sides of the hollow bat blade section to prevent said brace plate from moving relative to said bat blade section when said harvester reel bat is torqued.

3,869,848
ROTARY MOWER HAVING QUIET CUTTER BLADE

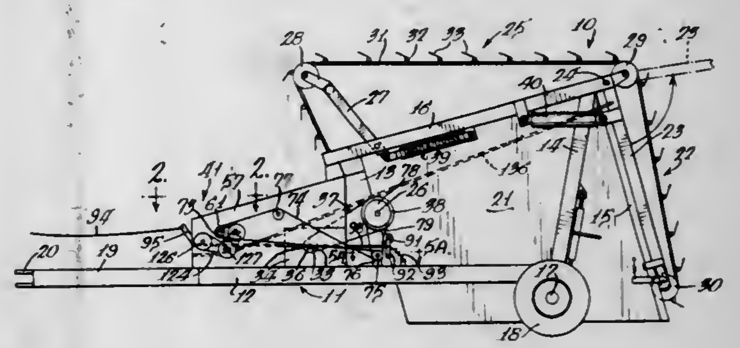
Robert T. Larsen, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed July 18, 1973, Ser. No. 380,294
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **7 Claims**



1. A rotary mower comprising a blade housing including a top deck, a plurality of ground-engaging wheels mounted on said blade housing for supporting said blade housing for travel in spaced relation above the ground, a generally vertically extending, annular wall depending from said top deck, a generally flat and elongated cutter blade supported by said housing for rotary movement through a horizontal plane within said housing, diametrically opposed tip portions on said cutter blade each having an outer radial extremity which terminates in closely spaced relationship to said annular wall, each of said tip portions including a leading cutting edge extending radially inwardly from said outer extremity, a trailing edge extending radially inwardly from said outer extremity rearwardly of said leading cutting edge, and an upstanding vane extending forwardly from said trailing edge and having a radially outermost portion spaced radially inwardly a predetermined distance from said outer extremity so as to provide a generally flat section therebetween.

3,869,849
GROUND ENGAGING HAY BALE ROLLING APPARATUS

James K. Ulrich, Vinton, Iowa, assignor to Starline, Inc., Harvard, Ill.
Filed Aug. 2, 1973, Ser. No. 384,954
Int. Cl. A01d *39/00*
U.S. Cl. 56—343 **12 Claims**



3. Apparatus for rolling a swath of hay into a twine wrapped bale in contact with the ground comprising, in combination:

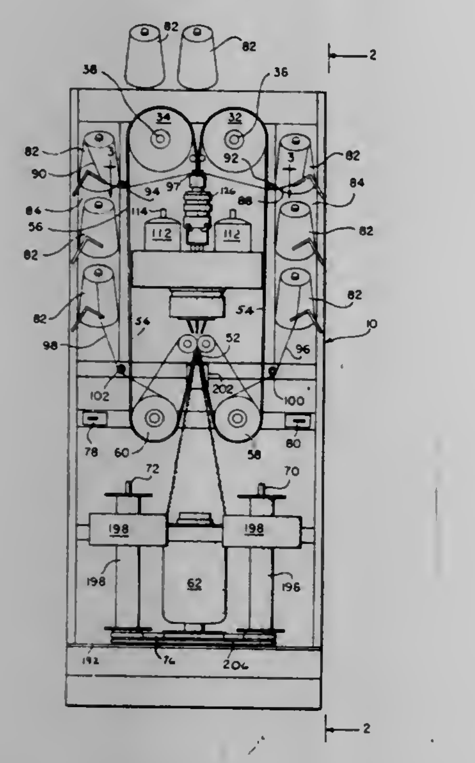
a wheeled frame defining a baling chamber;

driven means mounted on said frame in association with said baling chamber for contacting hay in a swath and compressing and rolling the hay forwardly on itself to form a spiral bale as the apparatus moves forwardly along the swath, said driven means being operable independently of the movement of the apparatus;

a twine supply, supported in the frame;
twine feeding roller means journalled at the front of the frame;
means for driving said roller means to feed a strand of twine from said supply and to lay said strand along the line of the swath immediately forward of the forming bale as the apparatus moves forwardly, whereby said strand may be wound in the convolutions of the bale;
means for controlling the operation of said roller driving means to initiate the feeding of said strand of twine during the bale forming operation;
means operable to cut the twine and to substantially simultaneously terminate the feeding of twine;
and means for releasing a bale from the chamber.

3,869,850
CHENILLE PRODUCTION MACHINES

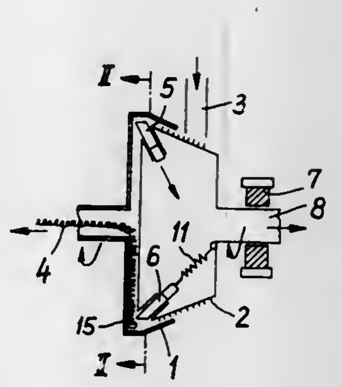
Alexander Gross, 2590 W. Maple Ave., Feasterville, Pa. 19047
Filed Jan. 18, 1973, Ser. No. 324,566
Int. Cl. D02g *3/42*
U.S. Cl. 57—24 **5 Claims**



1. In a chenillle production machine of the type including a frame, the combination of
A. a flyer mounted on the frame and having rotary motion with respect to the frame,
  1. said flyer including a floor,
  2. said flyer being concentrically positioned about a hollow spindle;
B. an endless steel band rotating about the frame and passing through the hollow interior of the flyer spindle,
  1. said band rotating about an upper pulley and a lower pulley,
    a. the lower pulley being provided with a peripheral groove and wherein an outside warp thread loops about the periphery of the lower pulley and is positioned within the groove to synchronize the speed of feeding the outside warp thread with the speed of feeding the inside warp thread,
C. filler yarn studs carried by the flyer,
  1. said filler yarn studs being rotated in a horizontal plane relative to the frame,
  2. the filler yarn studs having no motion relative to the flyer itself,
  3. the filler yarn studs projecting upwardly from the flyer floor,
  4. the filler yarn studs each being provided with an axial bore,
  5. the flyer floor being provided with openings in vertical alignment below each said axial bore;
D. inside and outside warp thread cones positioned on the frame and having no motion relative to the frame,
  1. the inside warp thread cones feeding inside warp threads to the steel band and downwardly through the hollow interior of the flyer spindle,
  2. the outside warp thread cones feeding outside warp threads to the steel band below the flyer;
E. a filler yarn spool removably carried upon a filler yarn stud and feeding filler yarn to the steel band,
  1. said filler yarn passing downwardly through the axial bore and aligned flyer floor opening,
  2. said filler yarn being wrapped about the steel band below the flyer by the rotation of the flyer;
F. a cutter blade mounted on the frame below the flyer,
  1. said cutter blade reciprocating near a portion of the steel band to sever wrapped filler yarns to form chenille yarn; and
G. a finished yarn bobbin mounted for rotary action relative to the frame,
  1. said finished yarn bobbin receiving and winding the chenille yarn.

3,869,851
CLEANING OF OPEN-END SPINNING TURBINES

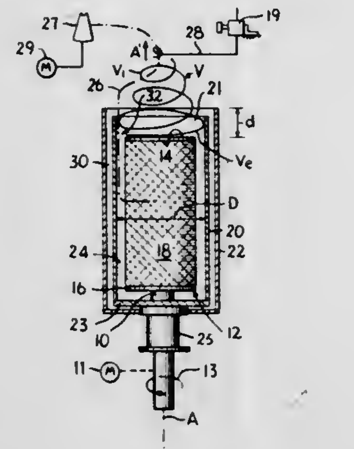
Peter Muller, Bremen-Lesum, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Feb. 14, 1974, Ser. No. 442,320
Claims priority, application Germany, Feb. 14, 1973, 2307121
Int. Cl. D01h *11/00, 7/00*
U.S. Cl. 57—58.89 **4 Claims**



2. In a yarn forming machine composed of an open-end spinning turbine presenting a fiber collection trough, a breakup roller mounted for rotation in, and coaxially with, the turbine, and means for extracting air from the region enclosed by the roller, the improvement comprising: guide means carried by said roller in a region adjacent, and enclosed by, the periphery thereof and defining at least one travel path extending substantially tangentially to the portion of said roller periphery adjacent thereto; and means defining at least one air extraction channel extending between the region outside and the region enclosed by said roller, said channel means being mounted in said guide means for movement, under the influence of mass inertia, along such path in the direction toward the region outside said roller when said roller decelerates, for temporarily bringing one end of said extraction channel into the vicinity of said fiber collection trough.

3,869,852
METHOD OF AND APPARATUS FOR TWISTING YARN

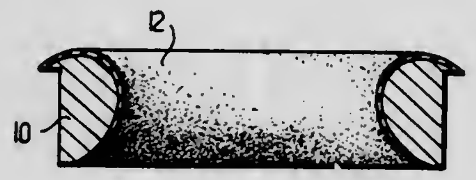
Edmund Hamel, Romanshorn, Switzerland, assignor to Die Evolution S.A., Rorschach, St. Gallen, Switzerland
Filed Feb. 22, 1974, Ser. No. 444,714
Claims priority, application Germany, Feb. 28, 1973, 2310002; Nov. 5, 1973, 2355193
Int. Cl. D01h *7/00*
U.S. Cl. 57—59 **18 Claims**



5. An apparatus for twisting a yarn comprising:
a spindle having a longitudinal axis and adapted to receive a yarn bobbin;
a tube concentric with said axis and fixed on said spindle, said tube defining an axially extending space with said bobbin and having an axially open end projecting beyond said bobbin;
means for rotating said spindle, said bobbin, and said tube about said axis and thereby generating a vortex of air at said open end of said tube and having a velocity decreasing axially away from said package;
an eye axially spaced from said bobbin at said open end; and means for pulling a yarn off said bobbin and through said eye and guiding said yarn through said vortex to form a balloon thereof in said space and in said vortex.

3,869,853
FRICTION BUSH

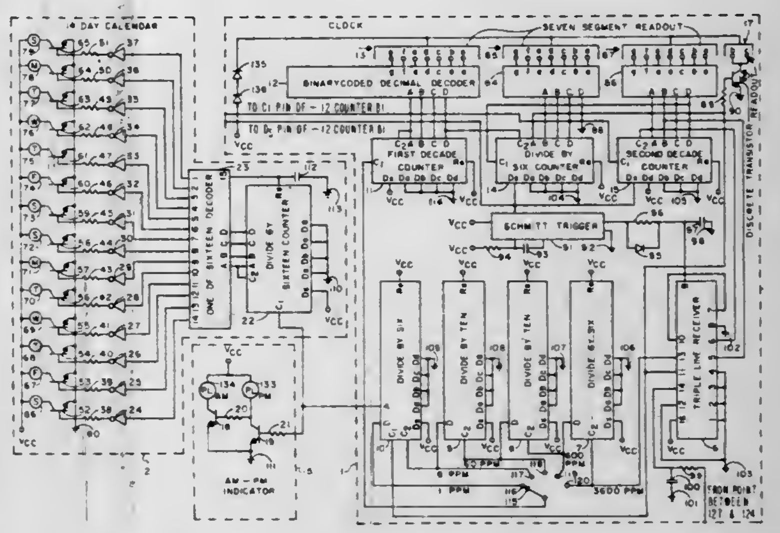
Werner Doschko, Nussloch am Leimbach; Wolfgang Fohlisch, Nussloch, and Alfred Wensch, Bad-Mingolsheim, all of Germany, assignors to Imperial Chemical Industries Limited, London, England
Filed Mar. 2, 1973, Ser. No. 337,336
Claims priority, application Great Britain, Mar. 7, 1972, 10498/72
Int. Cl. D02g *1/04*
U.S. Cl. 57—77.4 **9 Claims**



1. A friction bush for imparting twist to a moving yarn comprising a rotatable rigid metal portion shaped to provide an area for contact with the yarn said metal portion being coated over at least that part of its surface which contacts the yarn with a layer of frictional material no more than 2 millimetres thick, said friction material having a shore hardness at room temperature greater than 30.

3,869,854
SOLID STATE ELECTRONIC CONTROL

James A. Church, 3570 Cortez, Dallas, Tex. 75220
Filed May 10, 1973, Ser. No. 359,188
Int. Cl. G04c *13/06, 23/12;* **E03b** *7/07*
U.S. Cl. 58—33 **36 Claims**


14 DAY CALENDAR
CLOCK
SEVEN SEGMENT READOUT
BINARYCODED DECIMAL DECODER
TO C1 PIN OF ÷ 12 COUNTER B1
TO D1 PIN OF ÷ 12 COUNTER B1
SCHMITT TRIGGER
AM — PM INDICATOR
3600 PPM
FROM POINT BETWEEN 127 & 124

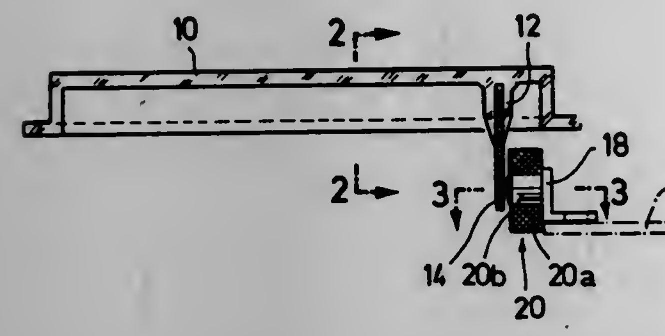
1. A solid state electronic control for timing and cycling including integrated circuits for timing and frequency division, discrete transistors, solid state diodes, light emitting diode numeric indicators, resistors and capacitors, and an internal power supply including an alternating current source wherein the integrated circuits drive the discrete transistors to control the light emitting diode numeric indicators for time indication, the solid state diode rectify alternating current from the alternating current source to direct current, the resistors limit current, and the capacitors effect filtering and transient suppression to automatically, sequentially time and cycle the actuation of electrically operated remote control valves for distribution of water for the purpose of irrigation, spraying, and humidification of plant materials, said solid state electronic control comprising six sections including a digital readout clock circuit, a calendar circuit, an hours memory circuit, a station output board, the internal power supply, and an external power output circuit in which the digital readout clock circuit is connected to the calendar circuit, the hours memory circuit, and the internal power supply, the station output board is connected to the calendar circuit, the hours memory circuit, and the digital readout clock circuit, and the external power output circuit is connected to the station output board and adapted for connection to remote control valves so that the digital readout clock circuit indicates the hours of a time period and then repeats, the calendar circuit changes indication each 24 hours, indicating days of the week, the hours memory circuit tracks the digital readout, the internal power supply is common to all sections of the control except power output to remote control valves, startup of the station output board is dependent on coincidence of signals obtained from the digital readout clock circuit, the calendar circuit, and the hours memory circuit, and the external power output circuit supplies power to operate remote control valves.

3,869,855
ACOUSTICAL SOUND PRODUCER FOR CLOCKS, ESPECIALLY FOR WRISTWATCHES

Walter E. Sodler, Buchenbronn, Germany, assignor to Timex Corporation, Waterbury, Conn.
Filed June 17, 1974, Ser. No. 479,943
Claims priority, application Germany, July 5, 1973, 2334236
Int. Cl. G04b *23/12;* **G04c** *21/34;* **G10k** *9/00*
U.S. Cl. 58—57.5 **3 Claims**

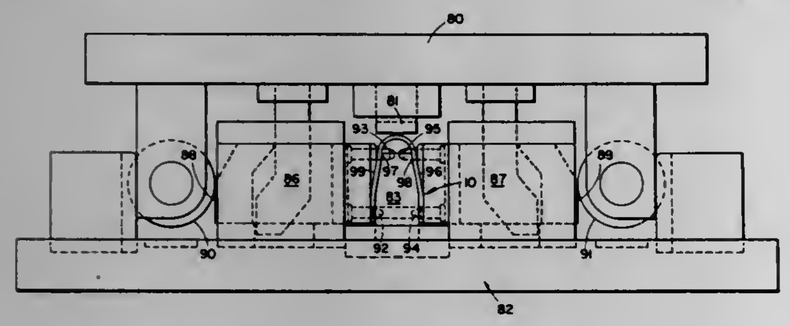
1. An acoustical sound producer for clocks, especially for wristwatches, comprising a watch crystal, an electromagnet

system adapted to be excited by an oscillator, and a pin attached to the watch crystal, said pin being at least partially of ferromagnetic or magnetic material and extending into the alternating magnetic system for direct excitation.



3,869,856
METHOD OF MAKING A CHAIN LINK

Claude L. Wildman, Thomson, Ill., and George A. Hellmer, Maquoketa, Iowa, assignors to Richard A. Kummerer and Alfred D. Besten, both of Fulton, Ill., part interest to each
Filed Apr. 4, 1974, Ser. No. 457,802
Int. Cl. B21l *11/06*
U.S. Cl. 59—8 **9 Claims**

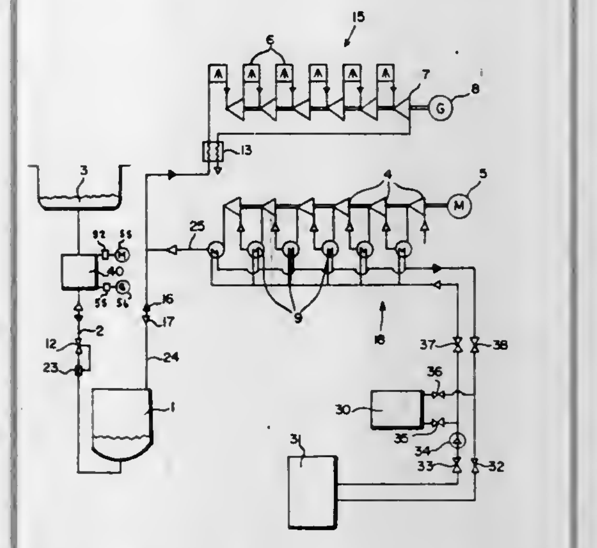


1. A method of making a pintle chain link from a U-shaped metal strap in which the closed end is looped; providing an abutment at said closed end for forming an arcuate-shaped end at said closed end; gripping said sides of said U-shaped strap, and while gripping the sides compressing the loop end against the abutment to form the arcuate-shaped end and forcing excess material of the loop end into the sides adjacent the closed end.

3,869,857
THERMAL POWER PLANT

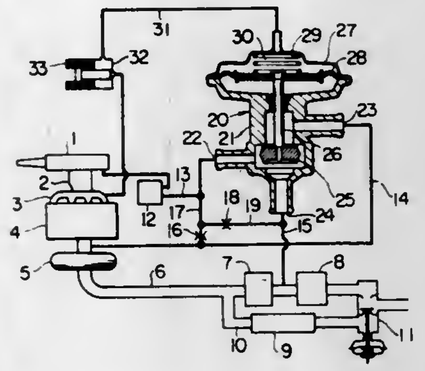
Peter Heinrich Erwin Margen, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Feb. 1, 1973, Ser. No. 328,688
Int. Cl. F02b *21/00*
U.S. Cl. 60—39.18 R **10 Claims**

1. A thermal power plant comprising a gas turbine, an electric generator driven by said gas turbine, a compressor arranged to generate compressed air, a compressed air magazine arranged to receive compressed air from said compressor and to deliver the compressed air to said gas turbine, a water reservoir having its lower end located at a considerably higher level than the upper end of said compressed air magazine, and a water conduit extending between said water reservoir and said compressed air magazine in direct contact with the water in said reservoir and providing a passage through which the water is led from said water reservoir to said compressed air magazine while said magazine is being discharged and is led to the opposite direction while said magazine is being charged, wherein the improvement comprises that said compressed air magazine comprises an enclosed below-ground level rock chamber arranged for the storage of compressed air at a pressure at least twice as high as the static pressure corresponding to the difference in level between the rock chamber and the water reservoir, said water conduit forming a closed passage extending downwardly from its upper end connected to said reservoir below the water level therein to its lower end connected to the lower end of said compressed air magazine, means for pressurizing the water in said water conduit to a pressure at least twice that of the static pressure head acting on said compressed air magazine through the water in said conduit due to the difference in level between the water level in said reservoir and the bottom of said compressed air magazine, said means comprises a pump located in said water conduit intermediate the ends thereof below said water reservoir and above said compressed air magazine for pressurizing the water in said conduit communicating with said compressed air magazine.



3,869,858
EXHAUST GAS PURIFYING SYSTEM FOR MOTOR VEHICLES

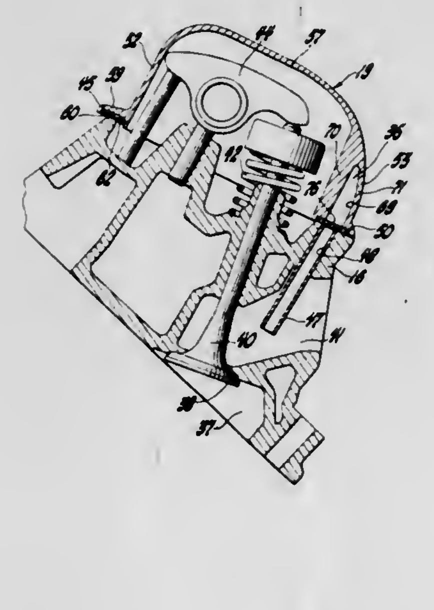
Kenji Goto; Ryozo Mitsui, and Norikatsu Ishikawa, all of Shizuoka-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed July 23, 1973, Ser. No. 381,446
Claims priority, application Japan, Aug. 23, 1972, 47-83620
Int. Cl. F02b *75/10;* **F01n** *3/14, 3/16*
U.S. Cl. 60—290 **5 Claims**



1. An exhaust gas purifying system for motor vehicle engines comprising an exhaust conduit, a reducing-catalyst converter and an oxidizing-catalyst converter installed in said exhaust conduit, an air pump for supplying secondary air, a flow control valve receiving secondary air flow from said air pump, said flow control valve having a first and a second discharge outlet, a first conduit between said first discharge outlet and a point of said exhaust conduit upstream of said reducing-catalyst converter, a second conduit means between said second discharge outlet and a point of said exhaust conduit between said reducing-catalyst converter and said oxidizing-catalyst converter, control means for controlling said flow control valve depending on the operating condition of said engine to control the amount of secondary air passing through said first and second conduit means, a first by-pass conduit means by-passing said control valve and providing communication between said air pump and a point of said exhaust conduit upstream of said reducing-catalyst converter, and a second by-pass conduit means by-passing said control valve and providing communication between said air pump at a point of said exhaust conduit between said reducing-catalyst converter and said oxidizing-catalyst converter.

3,869,859
ENGINE AND VALVE COVER THEREFOR HAVING INTEGRAL AIR GALLERY

William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 17, 1974, Ser. No. 434,230
Int. Cl. F02b *75/10*
U.S. Cl. 60—305 **7 Claims**



1. An internal combustion engine of the type having a system for supplying secondary air to the exhaust ports for reaction with combustibles in the exhaust gases, said engine comprising

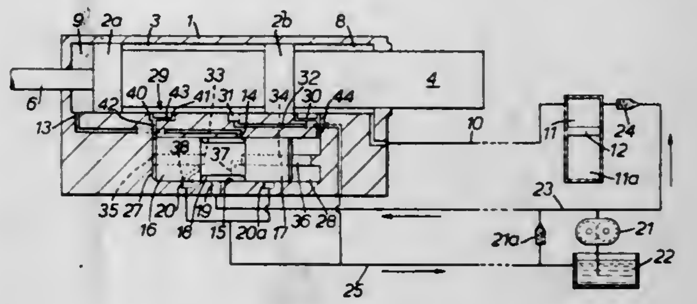
a cylinder block having a plurality of cylinders longitudinally aligned in a bank,

a cylinder head closing the outer ends of said cylinders and defining therewith combustion chambers at the ends thereof, exhaust ports in said cylinder head and connecting with said combustion chambers and exhaust valve means carried in said cylinder head and operable to control communication of said combustion chambers with said exhaust ports, said cylinder head having a peripheral valve cover mounting surface and a plurality of secondary air passages in said head extending between said exhaust ports and said valve cover mounting surface for directing secondary air to said ports, and

a cylinder head cover secured on said cover mounting surface to enclose portions of said valve means, said cover having a side wall one edge of which sealingly engages said mounting surface, said side wall having a longitudinal recess formed therein open along said edge, said recess forming a gallery registering with said cylinder head secondary air passages and closed by the sealing engagement of said side wall with said mounting surface, and means in said cover for connecting said recess with a source of secondary air.

3,869,860
FLUID FLOW CONTROL VALVES

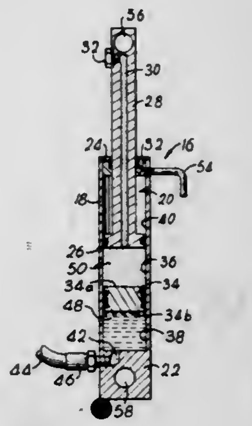
Peter Duckworth, Coventry, England, assignor to Keelavite Hydraulics Limited, Warwickshire, England
Filed Jan. 2, 1974, Ser. No. 430,086
Claims priority, application Great Britain, Dec. 29, 1972, 60064/72
Int. Cl. F15b *1/02;* **F16k** *11/07*
U.S. Cl. 60—371 **7 Claims**



1. In a fluid flow control valve having a piston having a land arranged to move past port means in the cylinder wall, the improvement which comprises said port means having a dimension in the axial direction which is greater than its dimension in the circumferential direction.

3,869,861
COMBINATION HYDRAULIC CYLINDER AND ACCUMULATOR

Cecil L. Case, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.
Filed Oct. 15, 1973, Ser. No. 406,228
Int. Cl. F15b *1/02*
U.S. Cl. 60—413 **7 Claims**



1. A combination accumulator and pressure-actuated power unit comprising:

a hollow cylinder having a working chamber therewithin and adapted for connection to one of two relatively shiftable structures;

a first piston within said chamber and dividing the latter into a pair of subchanbers on opposite sides of said piston;

a compressible fluid in one of said subchambers filling the same;

means for introducing a noncompressible fluid into the other of said subchambers; and

a second imperforate piston reciprocable within said chamber and adapted for connection to the other of said relatively shiftable structures,

said first piston being free-floating within said chamber whereby to permit cushioning of said structures against said compressible fluid when a fixed volume of said noncompressible fluid is maintained, yet to permit powered relative shifting of the structures when the volume of said noncompressible fluid is varied,

said second piston being reciprocable within said one subchamber against said compressible fluid.

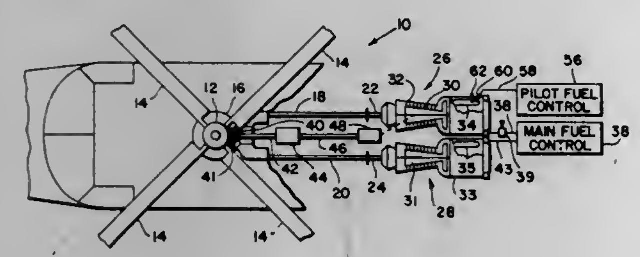
3,869,862
FUEL CONSERVATION SYSTEM FOR MULTJ-ENGINE POWERED VEHICLE

Thomas A. Dickey, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Dec. 1, 1972, Ser. No. 311,226

Int. Cl. F02c *7/02*

U.S. Cl. 60—39.15 **10 Claims**



1. A fuel conservation system for a vehicle having a wide range of power requirements and normally powered simultaneously in the same direction by at least first and second gas turbine engines, each having a compressor rotor rotatable to pressurize air, a combustor receiving air from said compressor rotor and means for supplying metered fuel to said combustor, thereby enabling combustion and production of a motive gas stream, said engines being operable over relatively wide power ranges, said system comprising:

means for selectively terminating metered flow of fuel to the combustor of said first engine;

means connected to and deriving power from the second gas turbine engine for driving the compressor rotor of the first engine at an idle R.P.M. substantially below its normal operating R.P.M.;

means for sustaining pilot combustion in a portion of the combustor of said first engine;

whereby fuel consumption is significantly reduced during low vehicle power requirements and said first engine is in a state of readiness for rapid establishment of full power.

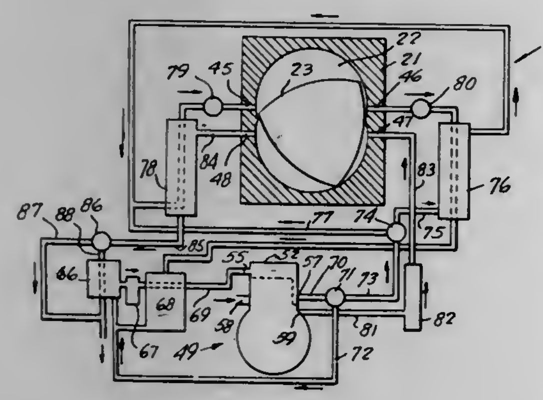
3,869,863
ROTARY STEAM VAPOR AND EXTERNAL COMBUSTION ENGINE

Mark A. Juge, 8591 Willing Way, Fair Oaks, Calif. 95628

Continuation-in-part of Ser. No. 343,964, March 22, 1973. This application July 26, 1973, Ser. No. 382,773

Int. Cl. F01k *25/06*

U.S. Cl. 60—39.19 **1 Claim**



1. In a rotary steam vapor and hot gas powered engine system, a housing having a substantially triangular rotor mounted therein, a shaft extending through said housing, said rotor and shaft being geared directly to each other whereby a variety of ratios are permitted between the shaft and rotor, means for feeding steam vapor to one side of said rotor to drive said rotor, means for simultaneously feeding products of combustion to another side of said rotor to drive said rotor, a steam generator for producing steam that is fed to said rotor, means including a combustion chamber for producing hot gases for feeding to another side of said rotor, means for conducting the hot gases from said last named means to said steam generator, said engine system utilizing two different fluids simultaneously within the housing, said combustion chamber being chargeable at a pressure that is much lower than the operating pressure in the engine, and a valve means located in said combustion products feeding means, which is openable at the time of ignition in said combustion chamber to permit selective explosion of a charge.

3,869,864
COMBUSTION CHAMBERS FOR GAS TURBINE ENGINES

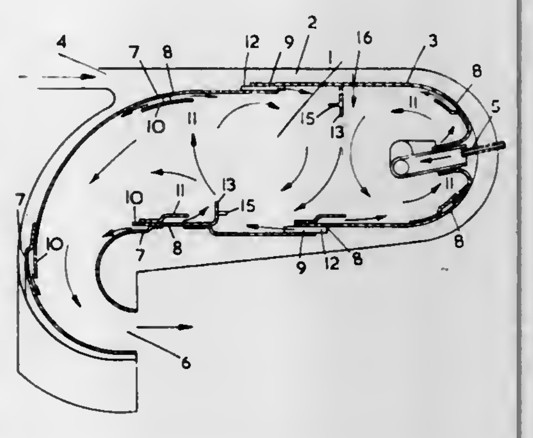
George Edward Bunn, Clitheroe, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed June 11, 1973, Ser. No. 368,576

Claims priority, application Great Britain, Sept. 6, 1972, 27154/72

Int. Cl. F02c *7/18*

U.S. Cl. 60—39.65 **4 Claims**



1. A combustion chamber for a gas turbine engine, comprising a flame tube, an air supply passage separated from said flame tube by a wall thereof, means defining a plurality of apertures in said wall providing communication between said air supply passage and the interior of said flame tube, each of said apertures being adapted to cause a flow of air along said wall within said flame tube, baffles projecting from said wall within said flame tube for deflecting air passed, in use, along said wall from at least some of said apertures, and projections spaced from said wall and extending from said baffles in a direction transverse to the direction of extent of said baffles whereby circulation of gas, in use, is established and maintained in the desired flow pattern.

3,869,865
DEVICES FOR PREVAPORISING LIQUID FUEL

Armand Jean-Baptiste Lacroix, Itteville; Herve Alain Quillevere, Issy-les-Moulineaux; Bernard Andre Cantaloube, Chennevieres, and Jacques Emile Jules Caruel, Dammarie les Lys, all of France, assignors to Societe National D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed June 22, 1973, Ser. No. 372,514

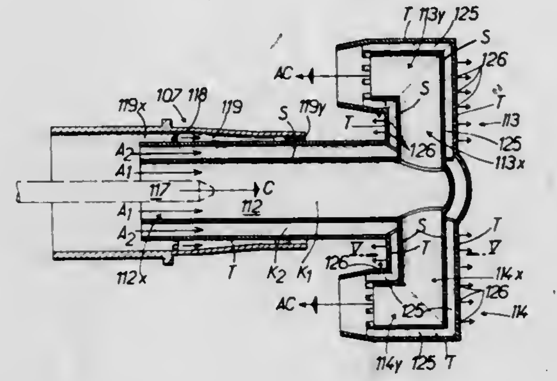
Claims priority, application France, June 23, 1972, 72.22811

Int. Cl. F02c *7/18, 7/22*

U.S. Cl. 60—39.66 **6 Claims**

1. A device for prevaporising liquid fuel, designed for fitting to a combustion system comprising a combustion chamber, a source of liquid fuel and a source of gaseous comburrent agent, said device being of the kind which comprises, projecting into the combustion chamber, a hollow structure incorporating a body and at least one arm attached to said body and having at least one portion extending transversely of the general direction of said body, the latter comprising an entry portion which communicates with said sources of liquid fuel and gaseous comburrent agent, and said arm having an exit portion which opens into the combustion chamber and through which, in operation, there is discharged a mixture of

gaseous comburrent agent and at least partially vaporised fuel, in which said hollow structure comprises, in a zone which incorporates the transverse portion of said arm, a double-walled system comprising an internal wall and an external wall



which together delimit two separate passages, namely a central passage communicating both with the source of gaseous comburrent agent and with the liquid fuel source, and a peripheral passage communicating solely with the source of gaseous comburrent agent.

3,869,866
INTERNAL COMBUSTION ENGINE TURBOCHARGER DRIVES AND CONTROLS

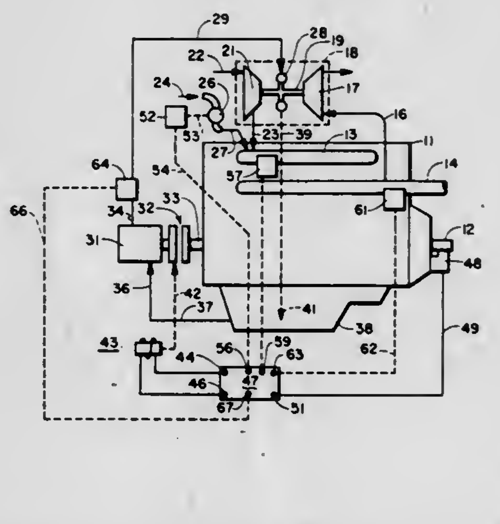
Seamus G. Timoney, Dublin, Ireland, assignor to Tectonics Research Ireland Limited, Dublin, Ireland

Filed Mar. 27, 1973, Ser. No. 345,269

Claims priority, application Great Britain, Mar. 30, 1972, 14927/72

Int. Cl. F02b *37/04*

U.S. Cl. 60—607 **4 Claims**



1. Apparatus for controlling the supply of energy to an exhaust gas turbocharger for a turbocharged engine in which the turbocharger includes a compressor fixedly connected to an exhaust gas turbine driven by exhaust gases from the engine, and in which the engine has a rotary output shaft, said apparatus comprising an auxiliary hydraulic turbine fixedly connected to said exhaust gas turbine and compressor and having an inlet for pressurized fluid to drive the auxiliary turbine, a fixed displacement hydraulic pump having an outlet connected to said inlet to deliver pressurized fluid to the auxiliary turbine, said pump also having an inlet adapted for connection to a liquid reservoir from which said pump receives liquid for high pressure liquid delivery through the pump outlet to drive the auxiliary turbine, and a clutch member having connecting and disconnecting positions for selectively connecting and disconnecting the pump to and from such rotary output shaft of the engine.

3,869,867
CASING ELEMENT FOR EXCAVATION CASING

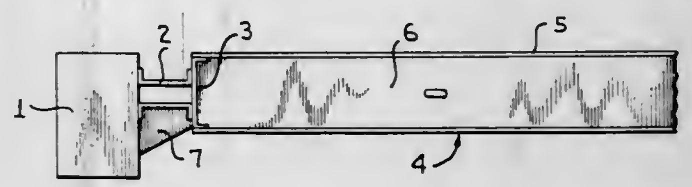
Josef Krings, D5138 Oberbruch, Germany

Filed Aug. 10, 1972, Ser. No. 279,302

Claims priority, application Germany, Sept. 29, 1972, 7136851

Int. Cl. E21d *5/06*

U.S. Cl. 61—41 A **1 Claim**



1. A new article of manufacture comprising a casing element for excavation casing including a frame formed of shaped structural members of a class including channel members, and filling comprising a plurality of spacers extending between and rigidly secured to said frame structural members, said spacers being in the form of shaped elements, and a pair of metal sheets mounted on both sides of said frame and having disposed therebetween said spacers, the casing element being improved by the securement of said sheets to said frame and said spacers solely by a plurality of spot welds which render the casing element free of distortions due to thermal stresses, at least one edge of said frame having a post member secured thereto in spaced relation by means of connecting members, the connection between said frame and said post member being reinforced against movement of said casing element from a generally planar state, said connection between said post and said frame including further structural members extending generally coextensive with said post and rigidly secured to both said post and said frame, said structural members being spaced transversely of said posts and generally within the thickness of said frame, and there being reinforcing elements spaced along the length of said post and lying in transverse planes, said reinforcing elements being rigidly secured to said post, at least one of said further structural members and said frame.

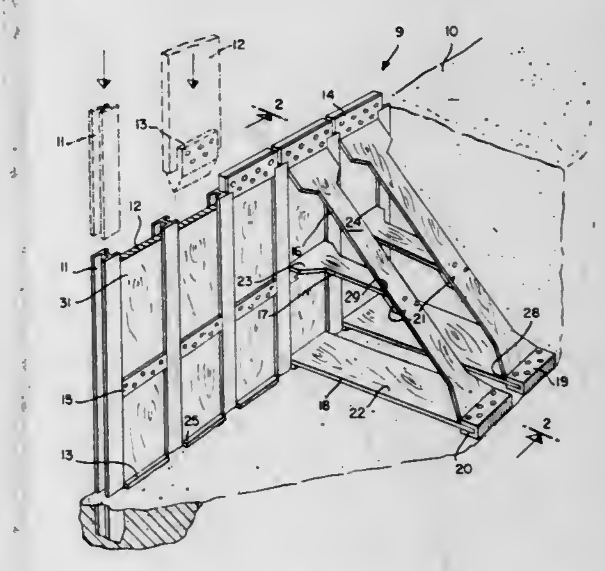
3,869,868
RETAINING WALL SUPPORT DEVICE

Eugene Irsai, 163 Greenway South, Forest Hills, N.Y. 11375

Filed Dec. 27, 1973, Ser. No. 428,815

Int. Cl. E02b *3/14;* **E02d** *11/00*

U.S. Cl. 61—49 **4 Claims**



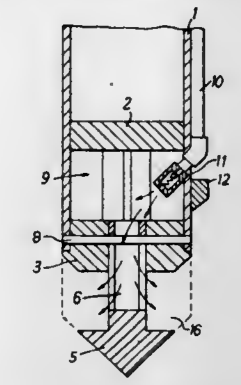
1. A retaining wall device comprising in combination: a series of stake guide elements each of elongated shape axially longitudinally upright having a lower end thereof extending a predetermined depth below earth level into which the stake guide element is sunk, the upright elements of the series being parallel to one-another and consecutively spaced apart in the

series each a predetermined spacing distance from adjacent stake guide elements of the series; a plurality of separate baffle elements each of longitudinally axially elongated shape having its longitudinal axis upright and defining opposite lateral edges extending uprightly each of predetermined shape flushly meshable with one of two opposite upright side edges of an adjacent one of the upright elements with which the baffle elements are interspersed, and including locking structure means such that the meshed lateral edges are fixedly locked to respective meshed upright elements' side edges secure against forward and backward movements from alignment between serially arranged stake guide elements on either side of respective baffle elements, and locked securely against axial movement longitudinally; earth-weight anchoring-support means comprising for each consecutive pair of adjacent stake guide element and baffle element a substantially horizontal means defining a broad upper face having a substantially wide predetermined width and a substantially long predetermined length anchored at one end thereof attached to said baffle element at a lower end portion of the baffle element at a back-side face of the baffle element such that the horizontal means extends substantially horizontally rearwardly, and an inclined bracing element axially longitudinally elongated secured fixedly to a rearward end portion of the horizontal means at one end of the bracing element and the remaining end of the bracing element being secured fixedly to an upper end portion of said baffle element, said predetermined width and said predetermined length being sufficiently large for fill-material placed thereon to anchor the baffle element against a base of the baffle element pivoting outwardly; and fill-material being filled on top of the upper face at a fill-material predetermined height sufficient for the mass thereof to anchor the bracing element against said pivoting outwardly as a result of movement by torque forces against forward faces of the stake guide elements and baffle elements, each stake guide element defining on each of opposite lateral upright faces an upright groove, and in which the groove opposite lateral edges of each baffle are shaped to have a cross-section such that the baffle element is axially slidable downwardly between spaced-apart stake guide elements within opposing grooves of the adjacent stake guide elements before being anchored fixedly by said fill-material, said horizontal means being fixedly anchored to a lower end portion of the baffle element with the inclined bracing element secured at an upper end of the baffle element fixedly to a rearward face of an upper portion of the baffle element to which the attached horizontal means is fixedly secured, each baffle element having a substantially flat forward face and an opposite substantially flat rearward face; and lock means for fixedly mounting the earth-weight anchoring-support means to its respective baffle element, there being a separate earth-weight anchoring-support means for each of the respective baffle elements, and each baffle element having a downwardly-directed wedge-shaped bottom terminal end.

3,869,869
PILING SYSTEM

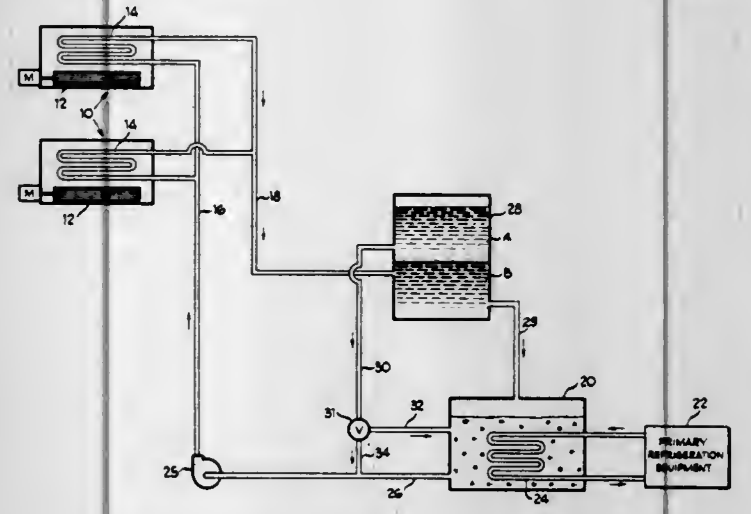
Paul Chuan Pao Chen, 3 Barbecue Garden, 17 Milestone, Castle Peak Rd., New Territories, Hong Kong
Filed Nov. 26, 1973, Ser. No. 419,199
Int. Cl. E02d *5/36*
U.S. Cl. 61—53.64 7 Claims

1. Apparatus for casting a subterranean concrete pile, said apparatus comprising a tube for sinking into a ground formation in which the pile is to be cast, an immovable sealing member extending internally across the tube at a position adjacent one end thereof and adapted to receive hammer blows of a pile driver, a releasable end plug for closing said one end of the tube to form a chamber for receiving cement-sand grout and conduit means positioned externally of the tube for passing the grout under pressure from ground surface into the chamber.



3,869,870
REFRIGERATION SYSTEM UTILIZING ICE SLURRIES

Richard Kuehner, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 2, 1973, Ser. No. 375,991
Int. Cl. F25b *23/00*
U.S. Cl. 62—114 9 Claims

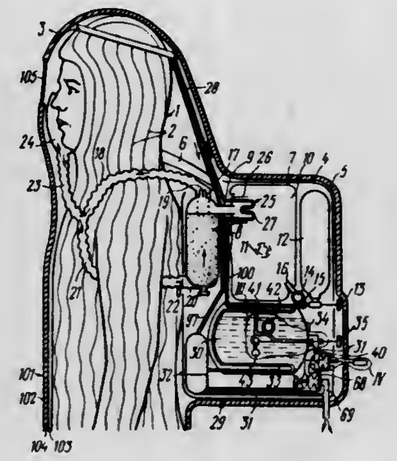


1. A system comprising a first substance capable of existing in both liquid and solid phases and having a freezing point below about 60°F.; a second substance capable of existing in both liquid and solid phases and having a freezing point substantially below the freezing point of said first substance and being immiscible with said first substance when both are in the liquid phase; means for chilling said first substance to a temperature below its freezing point to effect a change of state from liquid to solid; means for mixing the resulting solid first substance with said second substance in liquid phase; means for circulating the resulting mixture to a refrigeration load to abstract heat therefrom by the change of state from solid to liquid of said first substance; and means for separating said first and second substances.

3,869,871
GAS AND HEAT PROTECTIVE GARMENT

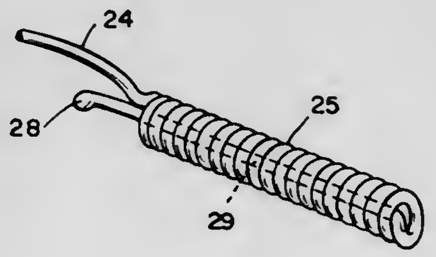
Alexei Petrovich Rybalko, ulitsa Krasnooktyabrskaya, 77, kv. 62; Viktor Vladimirovich Karpekin, ulitsa Artema, 163a, kv. 24; Nikolai Sidorovich Didenko, ulitsa Artema, 163, kv. 12, and Ivan Ivanovich Volokhov, ulitsa Artema, 159, kv. 129, all of Donetsk, U.S.S.R.
Filed Apr. 24, 1974, Ser. No. 463,845
Claims priority, application U.S.S.R., May 3, 1973, 1913869
Int. Cl. F25d *17/00*
U.S. Cl. 62—178 7 Claims

1. A gas and heat protective garment comprising: a heat insulating cover; a suit provided with pipes for circulation of a cooling medium; a knapsack accommodating a respiration protecting system and a refrigerating unit, said suit and said knapsack being enclosed with said heat insulating cover; said refrigerating unit comprising: a reservoir with a liquid refrigerant contained therein and a heat exchanger, said reservoir and heat exchanger serving the purpose of abstracting heat from said cooling medium circulating in said pipes of said suit, a pneumatic pump actuated by refrigerant vapour, a pipeline connecting said pneumatic pump with a gas cushion in said refrigerant reservoir, a pressure regulator incorporated in said pipeline, a vapour pipe forming a part of said pipeline, a portion of said vapour pipe being arranged to extend above the level of the liquid refrigerant contained in said reservoir, said extending portion of the vapour pipe being movably mounted in the refrigerant reservoir and adapted to remain in a vertical position when said refrigerant reservoir changes its attitude, this constructional arrangement permitting only refrigerant vapour to pass to said pneumatic pump.



3,869,872
EXPANSION VALVE SENSOR BULB

Robert C. Webber, P.O. Box 217, Indianapolis, Ind. 46206
Filed Nov. 9, 1973, Ser. No. 414,313
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 5 Claims

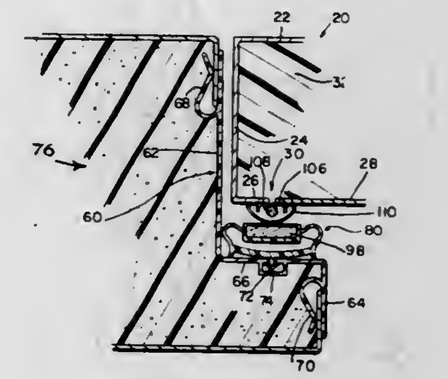


1. In combination with an expansion valve having an actuator chamber, the invention which comprises a ductile capillary tube having its proximal end in communication with said chamber, the said tube having its distal region formed to define a long spiral coil closed at its extremity, and the distal region of said tube being threaded back through the entire length of said coil to project beyond the proximal end of said coil.

3,869,873
DOOR STRUCTURE FOR LARGE FREEZER

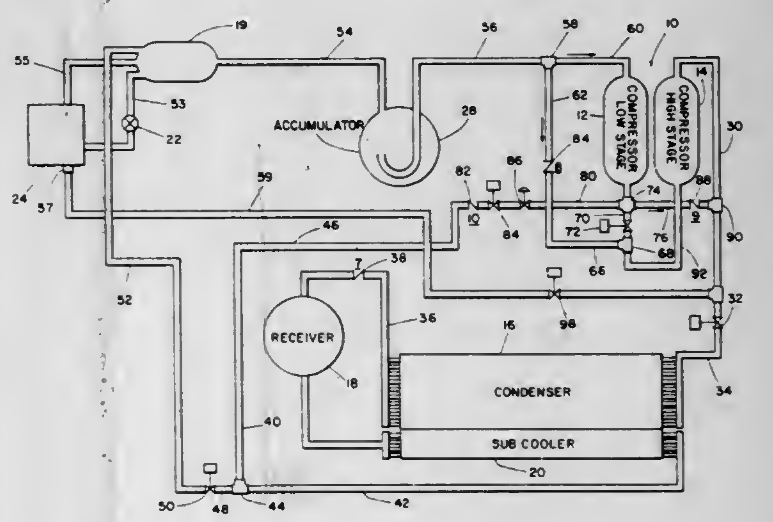
John M. Thomas, Indianapolis, Ind., assignor to Elliott-Williams Company, Inc., Indianapolis, Ind.
Filed May 20, 1974, Ser. No. 471,199
Int. Cl. F25d *21/06*
U.S. Cl. 62—275 10 Claims

2. In a refrigeration system, means providing a rectangular access opening comprising frame means bounding at least the sides of said opening and door means for closing said opening, said frame means including, for each side of said opening, an outer skin providing a longitudinally and inwardly extending first flange, an inner skin providing a longitudinally and outwardly extending second flange parallel to said first flange, said second flange being offset from said first flange toward the opposite side of said opening, a jamb trim plate disposed between and engaging said flanges, said trim plate including a longitudinally extending outer portion parallel to and engaging said first flange, a longitudinally extending inner portion parallel to and engaging said second flange, and an intermediate portion perpendicular to and connecting said outer and inner portions, said intermediate portion providing a longitudinally extending and outwardly facing gasket mounting surface, a gasket mounted against and extending longitudinally along said surface, and said door means including heater strip means extending longitudinally along the edge portions thereof to bear against said gasket when said door means is closed.



3,869,874
REFRIGERATION APPARATUS WITH DEFROSTING SYSTEM

John L. Ditzler, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 2, 1974, Ser. No. 430,296
Int. Cl. F25b *47/00*
U.S. Cl. 62—278 1 Claim

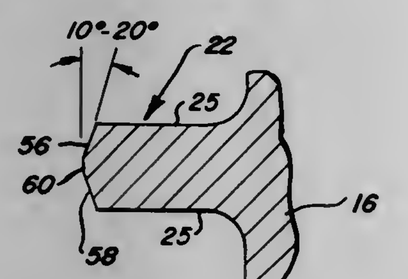


1. A refrigeration system comprising: a compressor, a condenser, an expansion device and an evaporator all connected in closed-circuit, refrigerant flow relationship, said compressor having a low stage and a high stage; means for conducting refrigerant from said low stage to said high stage in series flow during refrigeration operation; a hot gas defrost line connecting said compressor to said evaporator; a hot gas line connecting said high stage to said condenser; a suction gas line connecting said evaporator and said low stage; an interstage gas line connecting said low stage and said high stage; a valve in said interstage gas line; a branch line connecting said evaporator and said high stage, whereby upon closing of said valve, suction gas will flow through said low stage and said high stage in parallel; and means for cooling gas flowing through said interstage gas line.

3,869,875
ICE CHIP OR FLAKE PRODUCING MACHINE

Jerry M. Verlinden, and Gary D. Swinford, both of Denver, Colo., assignors to Mile High Equipment Company, Denver, Colo.

Filed Mar. 29, 1973, Ser. No. 346,100
Int. Cl. F25c *1/14*
U.S. Cl. 62—354 **8 Claims**

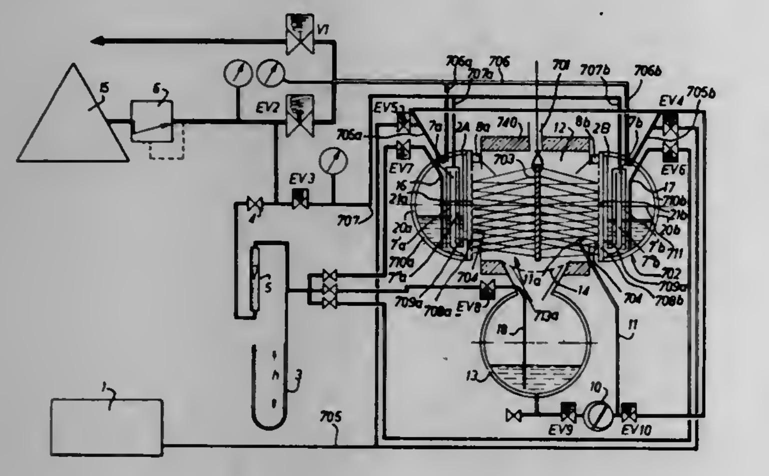


1. In an ice chip producing machine which includes an elongated cylindrical freezing chamber having one end thereof at a higher elevation than the other end, means for supplying water to the inside of said freezing chamber, means for cooling the wall of said freezing chamber to freeze ice on the inside surface thereof, and an ice conveying auger journalled for rotation generally about the central longitudinal axis of the freezing chamber, the auger including a spiral wiper blade which protrudes outwardly of the auger by means of a pair of sides disposed transverse to said axis and which is disposed in closely spaced relation to the inside wall of said chamber to shear off ice frozen thereon and carry said sheared off ice upwardly through the chamber for delivery out of the top thereof, the improvement comprising: said spiral wiper blade of the ice conveying auger being shaped, in cross section, to have a generally double bevelled configuration, with a leading edge portion extending at an angle of approximately 10°-20° to the inside wall of said freezing chamber and a relieved trailing edge portion oblique to the two sides of the wiper blade and the inside wall of said freezing chamber.

3,869,876
APPARATUS FOR TEMPERING GLASS

Maurice Gardent, Meylan; Wadislaw Michalak, Sassenage, and Roger Prost, Saint Egreve, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

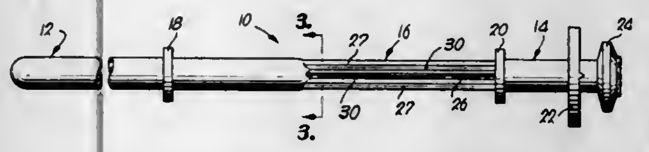
Filed June 12, 1973, Ser. No. 369,212
Claims priority, application France, June 15, 1972, 72.21543
Int. Cl. F25d *17/02*
U.S. Cl. 62—376 **12 Claims**



1. A device for tempering objects by the projection of a refrigerant liquid onto a said object when the latter is heated to its softening temperature, comprising means defining a heat-insulated tempering chamber that provides a passageway for said objects, a projection system for refrigerant liquid comprising a projection bench directed toward the interior of said chamber, means for supplying said liquid to said projection bench from a main storage tank, a heat-insulated recovery receptacle for the residual refrigerant liquid disposed at a lower part of said tempering chamber, means for recycling said residual liquid from said recovery receptacle to said projection bench, said means for supplying said liquid further comprising at least one auxiliary storage tank adjacent said projection bench, means for feeding said refrigerant liquid from said main storage tank to said auxiliary tank, a siphon between said auxiliary storage tank and said projection bench, and pressurizing and de-pressurizing means for said auxiliary storage tank whereby when said auxiliary storage tank is pressurized, said refrigerant liquid flows through said siphon from said auxiliary storage tank to said projection bench.

3,869,877
DRIVE SHAFT

George R. Brahler, 944 Kentucky, Lawrence, Kans. 66044 Continuation-in-part of Ser. No. 149,590, June 3, 1971, Pat. No. 3,740,853, which is a continuation-in-part of Ser. No. 17,432, March 9, 1970, abandoned. This application Apr. 18, 1973, Ser. No. 352,185
Int. Cl. F16d *1/02*
U.S. Cl. 64—2 R **7 Claims**



1. A unitary, flexible, rotatable drive shaft for transmitting power around a corner, said shaft comprising:
- a base stretch operably coupled with a power source;
- a head stretch capable of being angularly offset relative to said base stretch; and
- a central stretch interconnecting said base stretch and said head stretch and integrally molded therewith of like material to define an area of bend therebetween,
- said central stretch having a plurality of grooves disposed longitudinally therealong and spaced about the perimeter thereof to present a plurality of integral, elongated strand-like elements each extending along said central stretch in longitudinal parallelism with one another and with the longitudinal axis of said central stretch and being substantially coextensive in length therewith prior to bending of the central stretch to present said area of bend,
- said elements presenting a longitudinally twisted, cable-like configuration in the area of said bend when said central stretch is bent and rotative power is applied to said shaft.

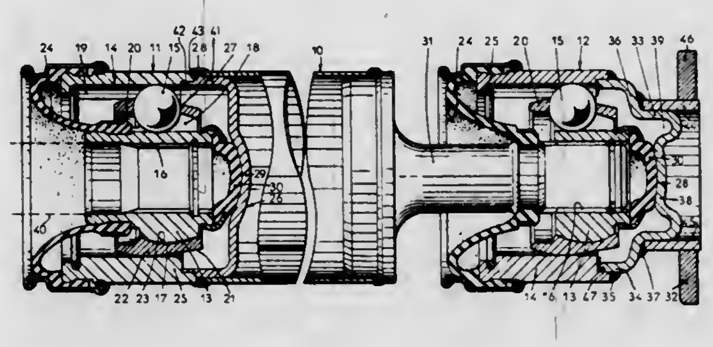
3,869,878
UNIVERSAL JOINTS

John Hazlewood Davies, Barton-under-Needwood near Burton-on-Trent; Bertram Joseph Palmer, Barton-under-Needwood nr. Burton-on-Trent; Leslie George Fisher, Birmingham, all of England, assignors to GKN Transmissions Limited, Birmingham, England

Filed Mar. 30, 1973, Ser. No. 346,268
Claims priority, application Great Britain, Mar. 30, 1972, 14972/72
Int. Cl. F16d *3/02*
U.S. Cl. 64—8 **11 Claims**

1. A universal joint comprising an outer member having a side wall defining an axial bore and an end wall closing one end of said bore, an inner member disposed in said bore, and torque-transmitting means operatively connecting together the two members internally of said bore such that the members are movable angularly relative to one another whilst permitting a continuous torque-transmission between the members, the outer member comprising a main component

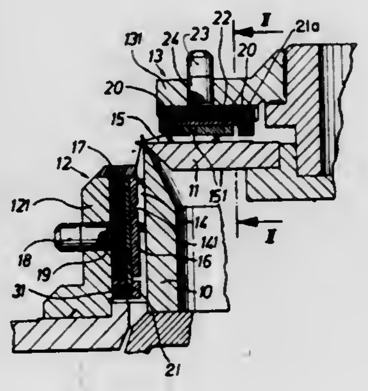
constituting the side wall of said member and an initially separate component constituting the end wall of said member and secured to the main component, said initially separate component presenting an outwardly projecting spigot formation coaxial with the bore of the member and for engagement in an end portion of a tubular drive shaft, wherein the main component has an internal rebate formed at one end thereof and the initially separate component has an axially projecting peripheral flange which fits inside the rebate and forms with the main component an external corner which receives a welding fillet securing the two components together.



3,869,879
ADJUSTING MEANS FOR ADJUSTABLE PARTS IN KNITTING MACHINES

Heinz Brunner, Ebingen, Germany, assignor to Mayer & Cie Maschinenfabrik, Wuerth, Germany

Filed Aug. 1, 1972, Ser. No. 276,960
Claims priority, application Germany, Aug. 4, 1971, 2138963; Oct. 28, 1971, 2153748
Int. Cl. D04b *9/06*
U.S. Cl. 66—19 **4 Claims**

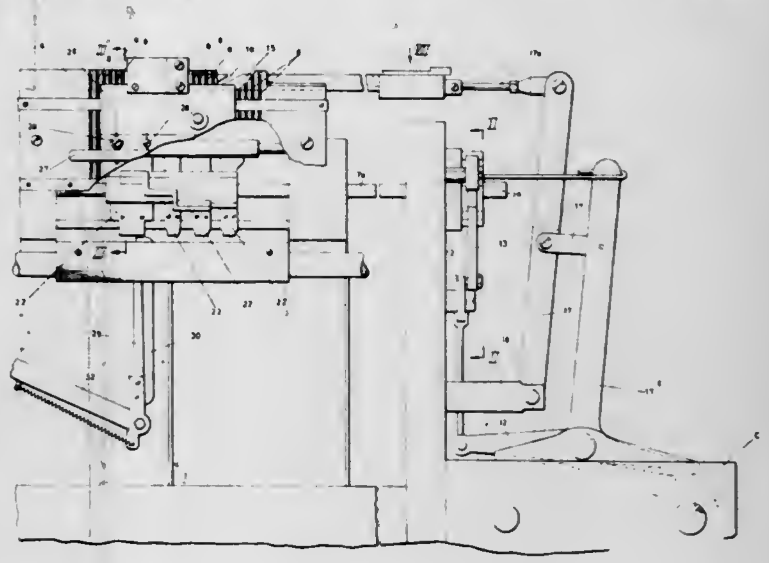


1. In a knitting machine, a first member being adjustably mounted in a predetermined direction in a second member, said first member having a guiding portion and said second member having a guide groove both of which extend in said predetermined direction, said guiding portion and guide groove having confronting mating splined surfaces which extend in said predetermined direction so that when the guiding portion is disposed in said guide groove the guiding portion is adapted to be adjustably moved therein through an arbitrary distance in said predetermined direction without appreciable displacement in a direction transverse to said predetermined direction; and cam means operatively connected to said guiding portion.

3,869,880
Patent Not Issued For This Number

3,869,881
METHOD AND MACHINE FOR MAKING TOE PIECES FOR SOCKS AND STOCKINGS

Luis Sentis Anfruns, No. 2 and 4 Panama St., Barcelona, Spain Continuation of Ser. No. 166,768, July 28, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,416
Int. Cl. D04b *7/04*
U.S. Cl. 66—64 **3 Claims**

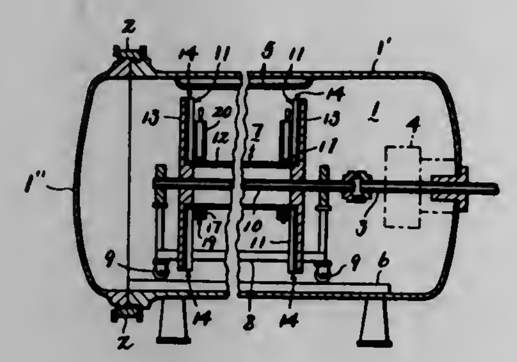


1. A method of making from yarn or the like a knit toe piece having individual, closed ended, tubular toe sheaths connected to a toe piece body, comprising:
- A. flat knitting a first course in a Lamb-type knitting machine using a first group of needles, said first course substantially corresponding in width to the desired width of a first toe sheath; and leaving a free end of yarn at the beginning of said first course;
- B. tubular knitting succeeding courses continuously from said first course towards an upper, open end of said first toe sheath;
- C. casting off the loops of the last-knit course of said first toe sheath at its open end and laterally shifting said first sheath with respect to said group of needles a predetermined distance without cutting the yarn forming the sheath;
- D. sequentially flat knitting over desired widths the first course of the next successive toe sheaths and tubular knitting the remaining courses of said successive toe sheaths using at least some of the needles selected from said first group of needles;
- E. casting off the last knit row of loops of each successive toe sheath except the last sheath upon the completion of each sheath, and laterally displacing in the same direction said successive toe sheaths except the last sheath a predetermined distance with respect to said first group of needles, leaving a length of yarn between successive toe sheaths to thereby place all sheaths in laterally spaced, aligned proximity to each other, separated by a predetermined distance, and with a length of yarn extending between successive toe sheaths;
- F. continuing to knit from said last sheath in tubular fashion the body of the toe piece towards an open end thereof, connecting together the open ends of all said toe sheaths in the process;

G. removing the knit toe piece from the knitting machine;
H. placing a suitable mold in each toe sheath for shaping said sheaths;
I. cutting the yarn lengths connecting the toe sheaths and drawing the closed toe ends into puckers while said molds are within said toe sheaths using the appropriate free ends of the cut yarn lengths and the said free end of yarn at the beginning of said first sheath; and
J. locking the free and cut yarn lengths in place in the knit fabric of the toe piece.

3,869,882
APPARATUS FOR TREATING FABRICS WITH STEAM

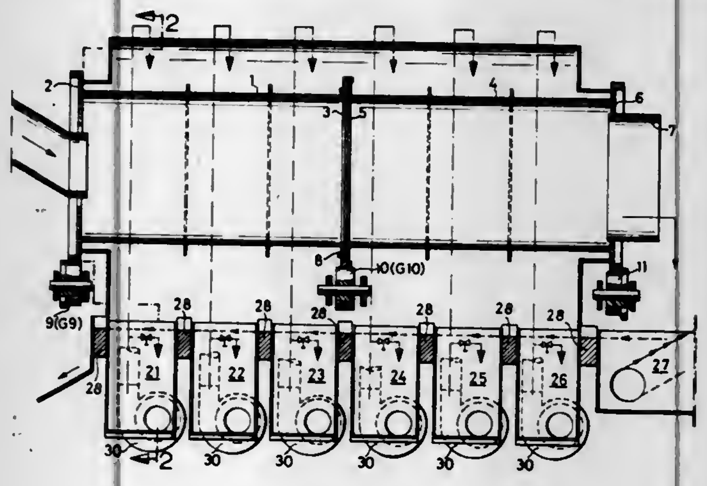
Tadashi Miyamoto, and Masaaki Iwahashi, both of Wakayama, Japan, assignors to Wakayama Iron Works Ltd., Wakayama-shi, Japan
Filed Nov. 7, 1973, Ser. No. 413,526
Claims priority, application Germany, July 26, 1973, 2337874
Int. Cl. D06c *1/00*
U.S. Cl. 68—5 C **5 Claims**



1. Apparatus for use in treating dyed fabric with steam to fix the dye thereof comprising a horizontally positioned steam autoclave, a closure plate mounted at one end of said autoclave and openable to provide access thereinto, a rotatable drive shaft positioned in one end of said autoclave and drivable by drive means positioned exteriorly of said autoclave, steam generating means positioned within said autoclave to pressurize same with steam, a support table positioned within said autoclave, said support table having means to permit its ready insertion into or withdrawl from said autoclave, a winding reel mounted on said support table, said winding reel including a support shaft mounted on said support table and operably connected in detachable relationship to one end with one end of said drive shaft, a plurality of grooved support arms extending radially outwardly from each end of said support shaft, the support arms of one end being complementary with the support arms of the other end, with the groove of each of the support arms facing inwardly from one end toward the inwardly facing groove of its complementary arm, a plurality of fabric supporting bar means horizontally mounted with their opposite ends removably fitted in the grooves of each pair of complementary support arms and spanning the distance therebetween, a pair of bar support cams rotatably mounted on and coaxially with said support shaft, said bar support cams having alternate ridges and recesses formed around the peripheral surface thereof to support opposite ends of said bar means and means for rotating said cams to a predetermined position to receive the opposite ends of said bar means in the respective ridges or recesses.

3,869,883
CONTINUOUS WASHING MACHINE

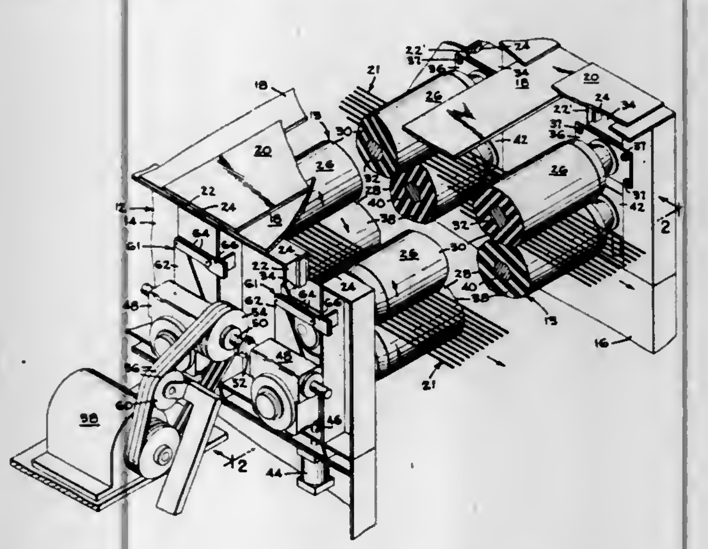
Erhard F. Rotter, Dusseldorf, Germany, assignor to Hans F. Arendt, Bleichensell, Germany
Filed June 6, 1973, Ser. No. 367,539
Claims priority, application Germany, June 7, 1972, 2227567
Int. Cl. D06f *21/04, 37/04*
U.S. Cl. 68—58 **8 Claims**



1. A washing machine comprising a row of serially arranged tanks, a tubular, articulated, rotatable, washing drum located above the tanks, the washing drum comprising at least two flexibly connected component drums, a first component drum having pins extending therefrom and through a flange of a second component drum, means for adjustably and rotatably supporting the washing drum above the tanks, and means for circulating a washing liquid from at least one of the tanks to the washing drum independent from any motion of the washing drum.

3,869,884
TORQUE ARM ASSEMBLY FOR NIP ROLLERS

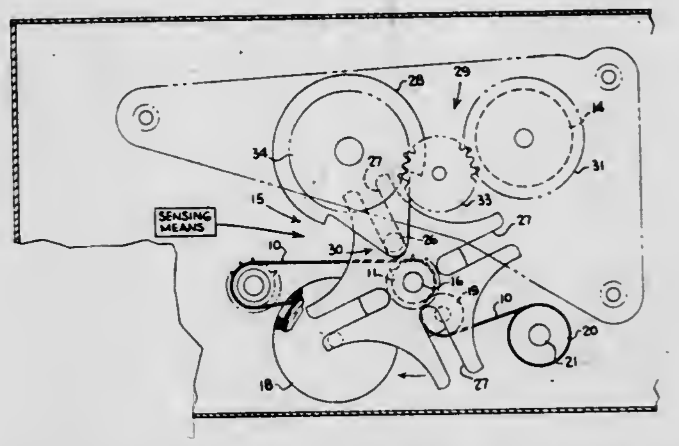
Vernon E. Deadman, 36 Allerford Rd., London, S.E., F3 DE, England
Filed Mar. 21, 1973, Ser. No. 343,326
Int. Cl. D06f *45/00*
U.S. Cl. 68—258 **6 Claims**



1. A nip-roller assembly for compressing articles passing through a laundry machine, comprising spaced upstanding side-frame members between which laundry articles are to be conducted along a longitudinal path of continuous movement, a plurality of longitudinally spaced pairs of nip rollers supported by and between said frame members and along said path, each pair comprising a lower driving roller and an upper driven roller, means providing fixed bearing support in said frame members for the respective ends of the driven rollers, means providing vertically floating and upwardly pressure-loaded bearing support guided with respect to said side-frame members and independent for the respective ends of the driving rollers, a separate housed reduction-gear mechanism having output connection to each driving roller at one side frame, each gear mechnism and its housing thus floating with the end of the driving roller which it serves, the input-shaft alignments of adjacent reduction-gear mechanisms being generally horizontally aligned, universal-coupling means interconnecting the inputs to said adjacent gear mechanisms, torque-reacting link means for each gear housing and pivotally interconnecting a point on the adjacent side-frame member to a point on the applicable gear housing, said point of connection to the applicable gear housing being offset in elevation from the associated drive-roller axis, and said point of connection to the side-frame member being essentially horizontally offset from the gear housing connection point, whereby said reduction-gear mechanisms may be driven in unison with uniform output speeds while independently elevated to maintain constant loading pressure on passing laundry articles of varying thickness.

3,869,885
LOCKING SYSTEM

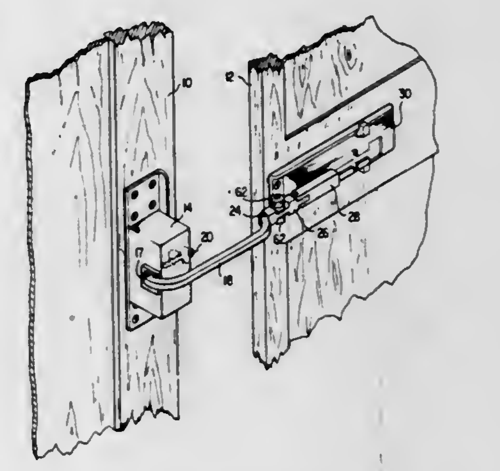
Frederick W. Uthenwoldt, Glenbrook, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Oct. 1, 1973, Ser. No. 402,097
Int. Cl. Eo5b *37/16;* **G05g** *5/00*
U.S. Cl. 70—315 **4 Claims**



1. A combination locking system of the type having a tape containing a plurality of predetermined reference combinations serially disposed thereon, said tape being advanced to a new reference combination position for each unlocking operation performed upon said system, a new combination being entered into said locking system for each unlocking operation, which newly entered combination being required to complement a new predetermined reference combination which has been advanced upon said tape in order to unlock a lock of said locking system, the combination locking system comprising:
- sensing means for sensing the reference combination appearing on the tape adjacent said sensing means and comparing said reference combination with said entered combination;
- tape driving means associated with said sensing means for positively advancing the tape past said sensing means thereby moving successive reference combinations past said sensing means, said positive tape driving means comprising at least one sprocket wheel, an actuating mechanism operatively connected to said sprocket wheel for positively turning said sprocket wheel, said tape being in contact with said sprocket wheel and aperatured to conform to said sprocket wheel, said tape being advanced by said sprocket wheel when said actuating mechanism turns said sprocket wheel;
- positioning means operatively connected to said driving means for incrementally positioning a new reference combination adjacent said sensing means with each actuation of said positioning means; and
- means operatively connected to said positioning means for actuating said positioning means in response to the complementing of the reference combination with the entered combination.

3,869,886
SAFETY LOCK

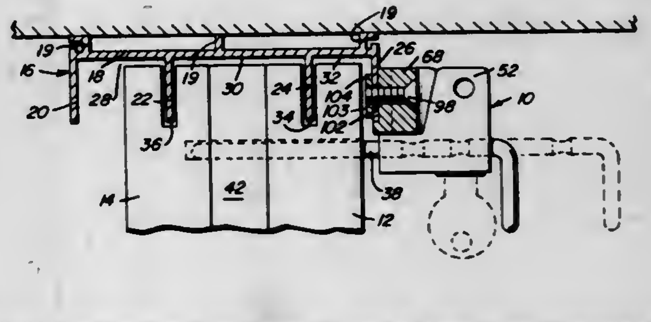
Jose A. Diaz, 3901 Kennedy Blvd., Union City, N.J. 07087
Filed Oct. 29, 1973, Ser. No. 410,635
Int. Cl. E05b *65/00*
U.S. Cl. 70—93 **2 Claims**



1. A safety lock apparatus comprising:
A. a restraihing arm having first and second ends;
B. a sliding bolt pivotally attached in hinged manner to the first end of the restraining arm and comprising laterally extending projections;
C. means adapted for attachment to a door for releasably retaining the laterally extending projections while permitting lateral movement of the sliding bolt relative to the door;
D. a lock plunger pivotally attached in hinged manner to the second end of the restraining arm; and
E. lock means adapted for attachment to a door frame for releasably retaining the lock plunger.

3,869,887
SURFACE MOUNTED LOCK UNIT FOR SLIDING DOORS

Harry Zeit, 20255 N.W. Sixth Ave., Miami, Fla. 33169
Filed May 30, 1973, Ser. No. 365,144
Int. Cl. E05b *65/08*
U.S. Cl. 70—100 **15 Claims**



1. In combination with a track and at least one closure panel slidably mounted therein, said track including at least two parallel spaced fins for guiding sliding movement of said panel, a lock device adapted to be mounted on one of said fins, said lock device comprising:
a. a block having at least one planar face;
b. means for mounting said block on one of said fins with said planar face adjacent one side of said mounting fin;
c. a guide bore in said block substantially perpendicular to said planar face; and
d. a lock pin slidable in said bore into engagement with said panel;
e. said means for mounting said block including at least one mounting bore in said block communicating with and perpendicular to said planar face, connecting means extending through said mounting bore and said fin, and

plate means adjacent the side of said fin remote from said block in engagement with said connecting means, said plate means including two flat, spaced apart parallel faces, the distance between said faces being less than the distance between said mounting fin and said sliding panel, and said connecting means terminating within said plate means.

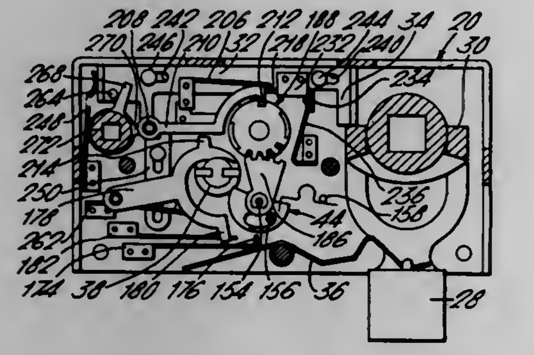
3,869,888
LOCK

Kenzo Yoshizawa, 48-3 Kitamachi Minami, Chudoji, Shimogyo-ku, Kyoto, Japan

Filed Jan. 11, 1974, Ser. No. 432,693

Int. Cl. E05b *21/00*

U.S. Cl. 70—355 **6 Claims**



1. A lock comprising a single key having first and second engagement elements, a rotary shaft having longitudinal grooves adapted to receive both engagement elements of said key, a first mating engagement member associated with said first engagement element arranged around said rotary shaft so that it is engaged by said first engagement element upon the first rotation of said single key together with said rotary shaft through a given angle, a second mating engagement member associated with said second engagement element arranged around said rotary shaft so that it is engaged by said second engagement element upon the rotation of said key together with said rotary shaft through a fixed angle subsequent to said first rotation of said key, engagement prevention-cancelling means operatively connected to said two mating engagement members in such a manner that before said first engagement element engages its mating engagement member, said second engagement element is rendered unable to engage its mating engagement member, and that after said first engagement element engages its mating engagement member, said second engagement element is rendered able to engage its mating engagement member, and unlocking operative means operatively connected to the mating engagement member associated with said second engagement element in such a manner that it is actuated upon engagement of said second engagement element with its mating engagement member.

3,869,889
TUMBLER MECHANISM FOR CYLINDER LOCK

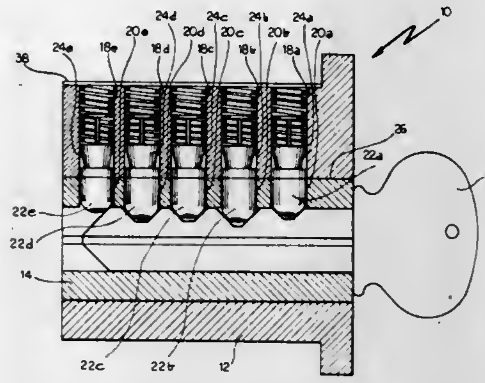
Herman Prahl, 43-38th Fifty-Eighth Ln., Woodside, N.Y. 11377

Filed June 18, 1973, Ser. No. 370,657

Int. Cl. E05b *63/00*

U.S. Cl. 70—419 **11 Claims**

1. A tumbler mechanism for a cylinder lock comprising:
- a first tumbler element extending into a key slot for movement upon the insertion of a key into said key slot;
- a second tumbler element for axially aligning with said first tumbler element and moveable thereby upon the insertion of said key in said key slot;
- a bore axially passing through said second tumbler element;
- a pin element passing through said bore for engaging said first tumbler element and moveable thereby upon the insertion of a key in said key slot, said pin element having an enlarged head portion at its end opposite its end engaging said first tumbler element and having a stem portion extending therefrom which engages said first tumbler element, said stem portion having a smaller cross-sectional area than the cross-sectional area of said first tumbler element at their respective engaging surfaces; and



- means for resiliently biasing said pin element for moving said pin element relative to said second tumbler element and tending to push said first tumbler element into said key slot.

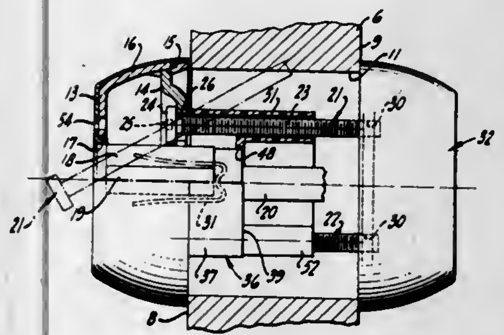
3,869,890
SCREW GUIDE

Ralph E. Neary, San Francisco, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 24, 1973, Ser. No. 326,370

Int. Cl. E05b *9/08*

U.S. Cl. 70—451 **2 Claims**



1. In a door lock device mounted on a panel having a recess therethrough, a cover unit overlying said recess on one side of said panel and having a lock mechanism thereon provided with a rotatable driver bar extending into said recess, and a pair of parallel holding screws engaging said cover unit and extending through said recess into engagement with a cover member overlying said recess on the other side of said panel, the improvement comprising:
- a member in said recess having a transverse wall in said recess spaced inwardly from said cover unit;
- resilient means releasably securing said member to said cover unit;
- said transverse wall having an opening therethrough, through which said driver bar loosely extends and a pair of tubular guides projecting inwardly therefrom and through which said holding screws slidably extend; and
- an arcuate flange extending inwardly from said transverse wall and at least partially surrounding said driver bar.

3,869,891
SPEED OPTIMIZING SYSTEM FOR A ROLLING MILL

John D. Higham, Menlo Park, Calif., assignor to Measurex Corporation, Cupertino, Calif.

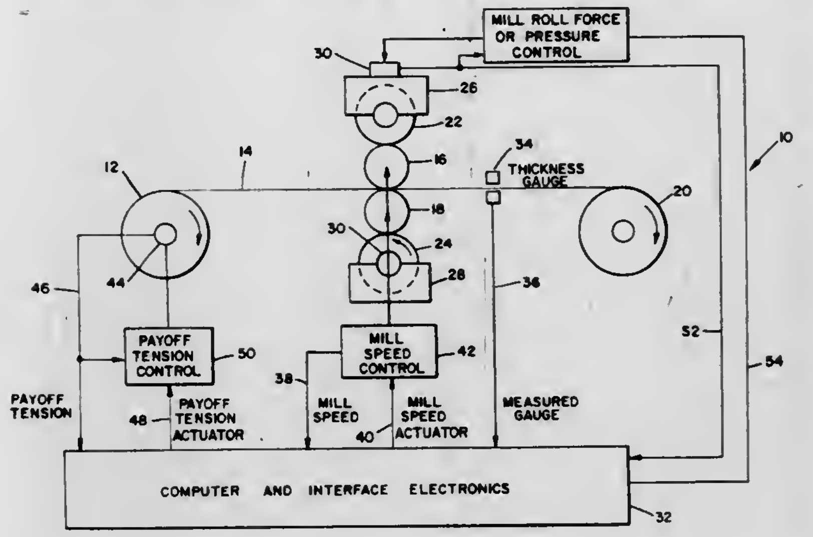
Filed Apr. 8, 1974, Ser. No. 458,840

Int. Cl. B21b *37/12, 37/06*

U.S. Cl. 72—8 **16 Claims**

14. An apparatus for a rolling mill having a mill variable control means and a mill speed control means for optimizing

the speed of strip material through the mill, said apparatus comprising:
- a. gauge feedback control means for generating a signal supplied to the mill variable control means so as to maintain the measured gauge at a constant target value;



- b. means for generating a speed change signal as a function of an output of said variable control means; and
- c. means for combining said speed change signal with a speed setpoint to produce a new speed setpoint for said mill speed control means.

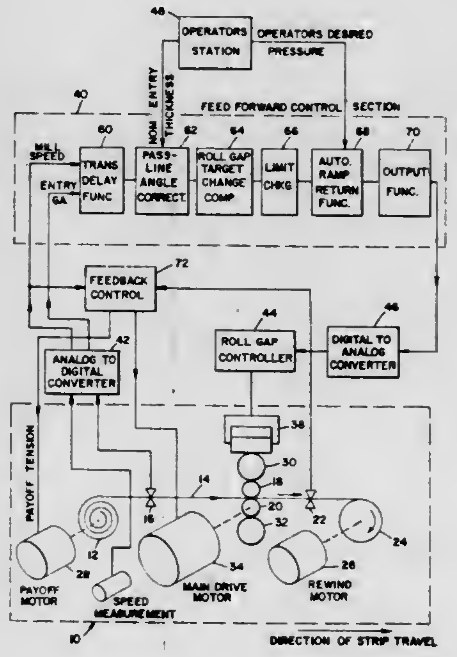
3,869,892
FEED FORWARD GAUGE CONTROL SYSTEM FOR A ROLLING MILL

John D. Higham, Menlo Park, and Colin J. McNaught, San Jose, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Apr. 8, 1974, Ser. No. 458,842

Int. Cl. B21b *37/02, 37/14*

U.S. Cl. 72—9 **12 Claims**



1. A method for controlling the gauge without changing the shape of strip material issuing from a rolling mill that includes a payoff reel, a pair of pressure rolls to produce a desired roll force, pressure control means for varying the pressure of said rolls on the strip material and the gap between them, a takeup reel, an input gauge between said payoff reel and said rolls, tension control means for the strip material, an output gauge and feedback means connected to said output gauge, said method comprising the steps of:
- generating a signal at the input gauge for determining a variation in the gauge of material from the payoff reel from a nominal thickness;
- producing a primary control function causing said pressure control means to operate in response to the variation in gauge detected by said input gauge when the actual gauge variation reaches said pressure rolls, said primary control function operating on said pressure rolls to change their force on the strip at a relatively rapid rate to substantially eliminate the thickness variation;
- superimposing a secondary function on said pressure control means immediately after the activation of said primary function, said secondary function causing the changed force of the pressure rolls on the strip material by said primary control function to commence returning at a relatively slow steady rate toward the original preset level and thereby causing a relatively small variation in target gauge of the material passing from said rolls;
- generating an error signal proportional to said small variation at the exit gauge; and
- utilizing said error signal to activate a mill control means for eliminating said small variation in gauge.

3,869,893
COINING PRESS

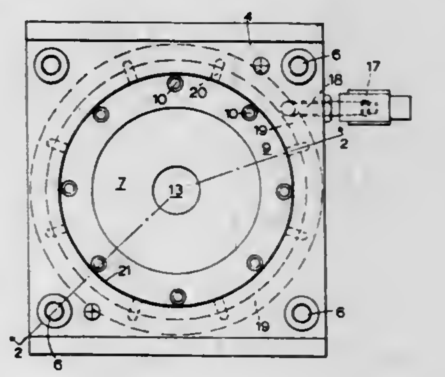
John Edward Plaister, Bromsgrove, and Leonard Edward Cole, Birmingham, both of England, assignors to Taylor & Challen Limited, Birmingham, England

Filed July 19, 1973, Ser. No. 380,867

Claims priority, application Great Britain, July 21, 1972, 34155/72; Nov. 4, 1972, 50911/72

Int. Cl. B21b *45/04*

U.S. Cl. 72—39 **6 Claims**



1. A collar plate assembly for a coining press comprising an outer support assembly and a die support member enclosed within said support assembly so as to be movable relative to the latter along an axis which is substantially vertical in use, said support assembly comprising a support plate at its upper end with an aperture through it, a collar plate which is received in said aperture in the support plate, means which spring urges the collar plate upwards, and inlet connection means for a pressurized air supply which communicates with the peripheral region of the collar plate so that in use the air from the pressurized supply escapes upwards around the whole periphery of the collar plate so as to resist the ingress of powder into the collar plate assembly.

3,869,894
METHOD OF TREATING IRON AND STEEL WORKPIECES PRIOR TO COLD WORKING

Norbert Meyer, Bruchkobel; Han Yong Oei, Frankfurt am Main; Werner Rausch, Oberursel, and Horst Schneider, Frankfurt am Main, all of Germany, assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Nov. 5, 1973, Ser. No. 413,102

Claims priority, application Germany, Nov. 7, 1972, 2254378

Int. Cl. B21j *3/00;* **B05c** *3/04;* **C23f** *7/10*

U.S. Cl. 72—42 **5 Claims**

1. In a method for the treatment of shaped iron and steel workpieces prior to cold working, making use of aqueous suspensions which contain phosphoric acid, suspended substances with laminar lattice structures and surfactants, the

improvement comprising preheating said workpiece to a temperature between 50° and 150°C, effecting a motion of said workpieces relative to each other sufficient to cause intercontact while simultaneously contacting said workpieces with said suspension having active content in an amount of between 5 and 50 g/m² of workpiece surface area and comprising 5–50% of a laminar lattice compound, 0.5–14% H_3PO_4 and 0.05–1 % surfactant, and continuing said motion until a predominant part of the water is said suspension has been evaporated.

3,869,895

ARRANGEMENT FOR FORMING SOLIDS OF ROTATION BY A CROSS WEDGE ROLLING PROCESS WITH THREE ROLLS

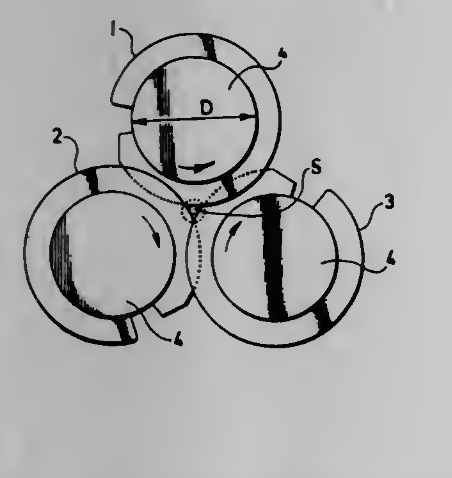
Jiri Holub, Prague, Czechoslovakia, assignor to Vyzkumny ustav tvarecich streju a technologie tvareni, Brno, Czechoslovakia

Filed Apr. 11, 1974, Ser. No. 460,168

Claims priority, application Czechoslovakia, Apr. 13, 1973, 2635-73

Int. Cl. B21h *8/02*

U.S. Cl. 72—107 **1 Claim**



1. An arrangement for forming of solids of rotation by cross wedge rolling comprising three working cylinders rotating in the same direction and symmetrically arranged with respect to the axis of the rolled object, each of said working cylinders supporting an exchangeable wedge shaped forming tool, said forming tools having forming ledges converging in the direction of their rotating movement, said forming ledges having a thickness corresponding to the dimensions of the diameters of objects to be rolled, a triangular cavity in each forming tool of sufficient depth and width between said forming ledges of each tool, to enable the rolling of objects of small diameter, a free passage in the external part of the wedge shaped tool through the triangular cavity of the adjacent wedge shaped tool so that always one wedge shaped tool may enter the cavity of its adjacent wedge shaped tool, whereby one dimension of the diameter of said working cylinders of a selected size determined by the range of diameters of objects to be rolled within this range rolls objects from the smallest to the largest diameter of this range at approximately equal lengths both for the smallest and for the largest diameters of the objects to be rolled.

3,869,896

ROLLING PROCESS

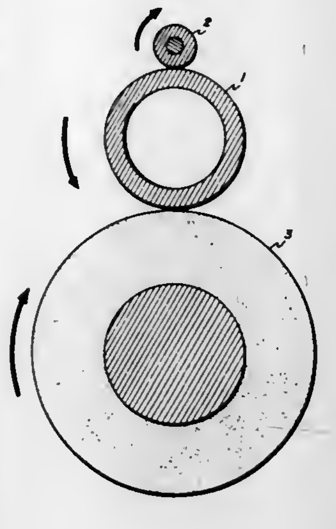
George P. Carr, Rochester, and James A. Mason, Jr., Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 266,175, June 26, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,375

Int. Cl. B21h *1/18*

U.S. Cl. 72—108 **19 Claims**

1. A rolling process for fabricating patterns in cylindrical rolls comprising providing a substantially smooth surfaced cylindrical work roll, impressing a pattern into said cylindrical work roll with an impression device while said cylindrical work roll is rotated about its axis and supported by a soft,



resilient, abrasion resistant, freely rotatably substantially cylindrical backing roll.

3,869,897

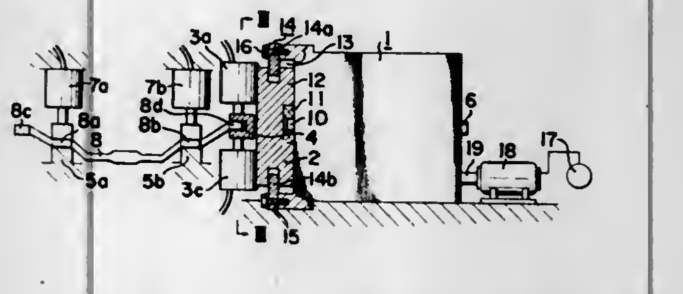
APPARATUS FOR CORRECTING DEFORMATION OF A SLENDER METALLIC PRODUCTS

Hiroshi Iida, Kariya, Japan, assignor to Manno Kogyo Kabushiki Kaisha, Anjo-shi, Aichi-ken, Japan

Filed Dec. 18, 1973, Ser. No. 425,850

Int. Cl. B21d *3/00*

U.S. Cl. 72—125 **8 Claims**



1. Apparatus for correcting deformation of a slender metallic rod in which linear, angular, and torsional distortion exist, said apparatus comprising fixed supports to support said slender rod at at least two standard points thereof, fixing means for forcibly fixing said rod at a position where at least one of said distortions is substantially nil, a swing motion creating means to impart a swing motion to said fixing means, said swing motion comprising a swing motion in one direction growing gradually larger, and thereafter a swing motion in the opposite direction growing gradually larger, and a swinging board which is coupled to said swing motion creating means and swings upwardly and downwardly and from left to right.

3,869,898

ROLL CHANGING DEVICE FOR A MILL OR A SIMILAR MACHINE

Andre Quehen, Pontoise, France, assignor to SECIM, Courbevoie, France

Filed Jan. 11, 1974, Ser. No. 432,781

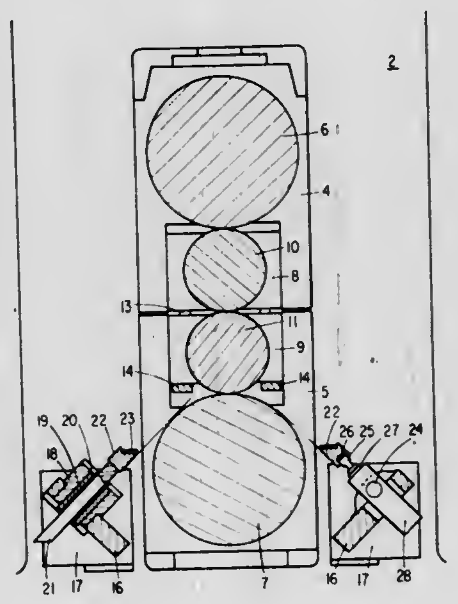
Claims priority, application France, Feb. 22, 1973, 73.06229

Int. Cl. B21b *31/08*

U.S. Cl. 72—239 **1 Claim**

1. A roll changing device for a rolling mill,
a housing having a window for receiving at least two rolls mounted in chocks, said rolls and chocks constituting an assembly unit to be removed from said housing,
said assembly unit including means for transferring said two rolls and their chocks out of said stand and also including means for maintaining fixed distances between the axes of rotation of said rolls and said transferring means,

means arranged externally of said window for guiding said assembly unit into and out of said window,
rail means movable parallel to the axes of rotation of said rolls, so constructed and arranged that their planes of displacements are set at an angle with respect to a plane passing through the axes of rotation of rolls such that the rail means are passable above the lowermost roll of said mill and in which said rail means have support means for supporting and guiding said transferring means while said assembly unit is within said window,
means for guiding said rail means parallel to themselves between an inoperative position where the rail means are



retracted and an operative position where the rail means assume a predetermined supporting and guiding relationship with said transferring means, the construction being such that the rail means are brought into contact with said transferring means of said assembly unit at an intermediate position between their inoperative and operative positions, and
means for displacing said rail means between said inoperative and operative positions,
said displacing means capable of carrying said roll assembly unit when said rail means are brought into a supporting relationship with said transferring means.

3,869,899

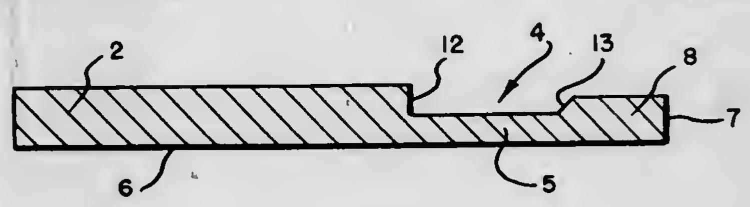
METHOD OF FORMING A STRIP HAVING SUBSTANTIALLY DIFFERING THICKNESSES

Robert S. Bray, and Claude D. Tapley, both of Cheshire, Conn., assignors to Anaconda American Brass Co., Waterbury, Conn.

Filed Sept. 24, 1973, Ser. No. 400,228

Int. Cl. B21b *1/08*

U.S. Cl. 72—366 **3 Claims**



1. A method of continuous roll forming an elongated strip having a generally-rectangular cross-sectional area to form a strip with a cross-sectional area including a formed thicker portion and a wide formed thinner portion comprising
a. rolling the generally-rectangular strip to initially form an intermediate configuration having a thicker portion which is less thick than the generally-rectangular strip and a thinner portion which thinner portion has no thickness as great as the thicker portion and having a longitudinal depression positioned in the thinner portion and spaced from the outer edge of the strip to thereby form an edge material portion having a thickness greater than the remainder of the thinner portion;
b. further rolling both thicker and thinner portions of the strip to reduce the thickness of the thicker portion and to reduce the thickness of the intermediate thinner portion while at the same time reducing the edge material portion to a thickness desired for the formed thinner portion thereby forming a strip having a formed thicker portion and formed thinner portion.

3,869,900

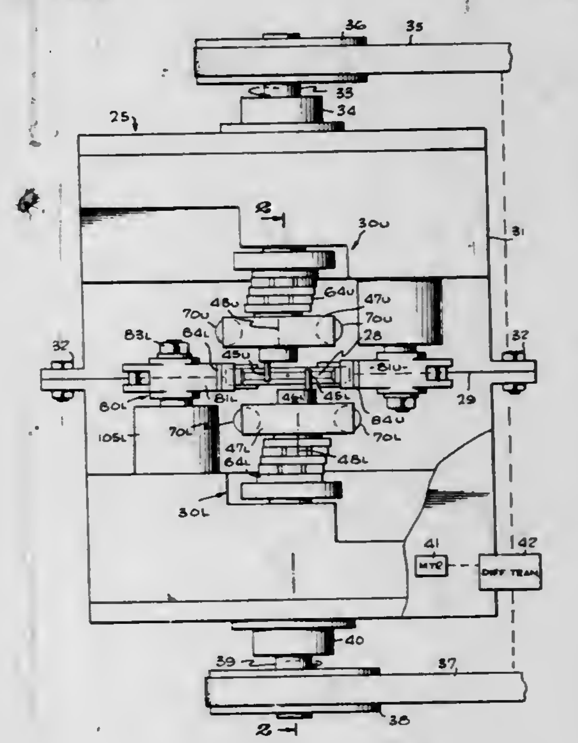
APPARATUS FOR BENDING WIRE INTO A SINUOUS SHAPE

Harry H. Norman, Los Angeles, Calif., assignor to Stephen Baliski, Gardena, Calif.; a part interest

Filed Mar. 6, 1974, Ser. No. 448,475

Int. Cl. B21d *41/02*

U.S. Cl. 72—384 **14 Claims**



1. Apparatus for bending wire into a zig-zag shape, comprising:
first and second identical oscillator/overbend assemblies situated facing each other on opposite sides of the plane of said zig-zag, each oscillator/overbend assembly comprising;
an oscillator assembly including a bending pin extending normally through the plane of said zig-zag, and a holder supporting said bending pin, said holder being mounted for rotation about an oscillator axis parallel to but offset from said pin,
an overbend assembly including an overbend arm and a backup tool mounted to move between a withdrawn position spaced from the wire being bent and an engaged position in which said arm and backup tool cooperate to overbend said wire about the bending pin,
oscillator cam drive means operative during each bending cycle for rotating said pin and holder about said oscillator axis first in one direction and then in the opposite direction, and thereafter for causing said pin to dwell for the completion of the bending cycle in a dwell position in which a line between said pin the oscillator axis is approximately perpendicular to the longitudinal axis of the zig-zag,
overbend cam drive means operative during each bending cycle for driving the overbend assembly into the engaged position when said pin is in said dwell position to overbend said wire about the dwelling pin, and thereafter to withdraw said overbend assembly, and

wherein said oscillator/overbend assemblies are synchronized so that while the bending pin of one assembly is in the dwell position the bending pin of the other assembly is being rotated, whereby alternate convolutes of said zig-zag are formed alternately by said first and second oscillator/overbend assemblies.

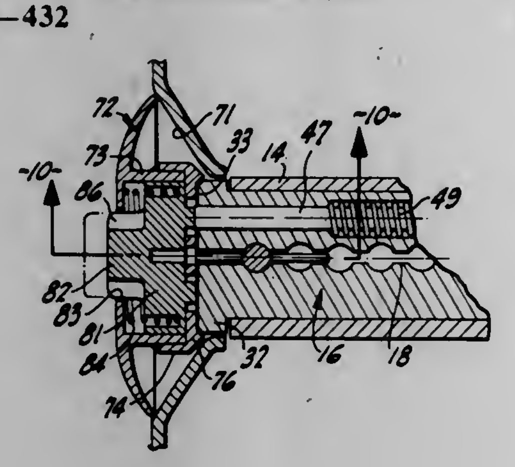
3,869,901
LOCK INDICATOR SHIELD

Ralph E. Neary, San Francisco, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Division of Ser. No. 351,512, April 11, 1973, Pat. No. 3,224,319. This application Mar. 22, 1974, Ser. No. 453,994

Int. Cl. E05b *41/00*

U.S. Cl. 70—432 **9 Claims**



1. A lock indicator comprising a lock body, a lock plug rotatable in said body about an axis and having an inner end face and an outer end face, means defining a bore in said plug extending between said end faces, a rod slidable in said bore between a first position with the outer end of said rod close to said outer end face and a second position with said outer end of said rod projecting from said outer end face, means for moving said rod between said positions, an indicator button, means for supporting said indicator button adjacent to but independently of said outer end of said rod and for axial sliding movement on and relative to said supporting means, and means for resiliently urging said indicator button axially toward a predetermined position relative to said rod.

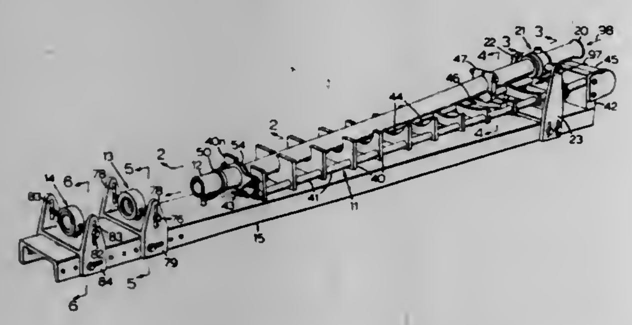
3,869,902
SMOOTH TAPE FORMATION OF TUBES

Rama Iyengar, Dorval; Bretislav Paul Zuber, Montreal, and Jean Raymond Boucher, Chateauguay Center, Quebec, all of Canada; assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Division of Ser. No. 52,434, July 6, 1970, Pat. No. 3,738,141. This application Mar. 29, 1973, Ser. No. 346,031

Int. Cl. B21d *39/02*

U.S. Cl. 72—52 **10 Claims**



1. A method of forming a tube from a continuous tape of form retaining material, comprising the steps of:

1. continuously feeding the tape longitudinally in a straight, planar path and simultaneously applying deflecting pressure laterally to the longitudinal edge portions of the tape to deflect the tape from a flat configuration to a transversely circular configuration to form a tube; and
2. stressing the tube longitudinally in substantially inverse proportion to the longitudinal stress imparted to the tape in forming the tube.

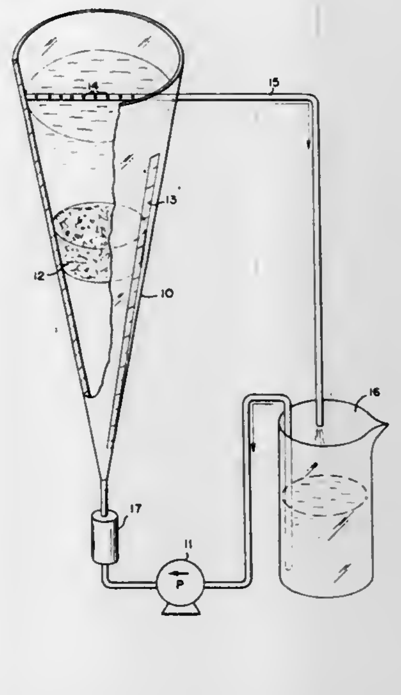
3,869,903
SETTLING RATE TESTER

William A. Beach, Milltown, and Richard M. Schlauch, Yardville, both of N.J., assignors to The Permutit Company, Inc., Paramus, N.J.

Filed July 19, 1972, Ser. No. 273,139

Int. Cl. G01n *15/04*

U.S. Cl. 73—61.4 **7 Claims**



1. Apparatus for measuring the settling rate of particulate matter in a fluid comprising:

a. an inverted cone;
b. means for passing a stream of the fluid up through the cone at a known flow rate, at least one inlet pipe tangentially connected to the cone, and means for passing a mixture of fluid and particulate matter through the inlet pipe into the cone, whereby the particulate matter accumulates at the level within the cone where the upward velocity of the fluid is equal to the settling rate of the particulate matter; and
c. means for indicating the settling rate of particles that accumulate at different levels in the cone.

3,869,904
ULTRASONIC CAMERAS

Dennis Gabor, London, England, assignor to Columbia Broadcasting System, Inc., New York, N.Y.

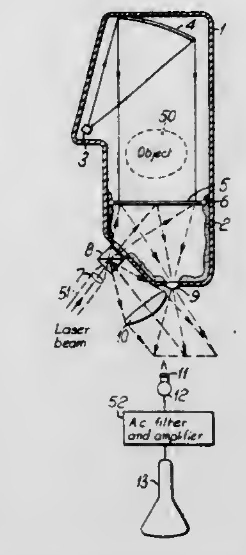
Filed May 10, 1966, Ser. No. 548,939

Claims priority, application Great Britain, May 12, 1965, 20025/65; July 7, 1965, 28771/65

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 H **18 Claims**

1. Apparatus for recording ultrasonic vibrations comprising a fluid medium, an ultrasonic generator coupled to the fluid medium for transmitting ultrasonic vibrations therethrough, a screen having a specularly reflective surface immersed in the medium and matched to the wave impedance thereof for responding to the transmitted vibrations, means for directing coherent light onto the reflective surface of the screen, means for superimposing on the resulting frequency modulated light beam reflected from the surface of the screen an angularly displaced coherent reference light beam having at least a fraction of the waves therein in phase quadrature with the waves of the reflected beam to convert the frequency modulated reflected light into a recordable amplitude modulated light beam and recording means, the recording means comprising a photoelectric device responsive to the resultant amplitude modulated light beam and tuned scanning means responsive to the signal produced by the photoelectric device for producing an output signal representative of the pattern of the vibrations across the screen.



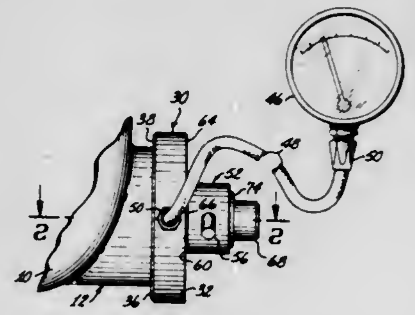
3,869,905
APPARATUS AND METHOD FOR TESTING ENGINE OIL PRESSURE

Marshall T. Allen, 4414 W. Hatcher Rd., Glendale, Ariz. 85302

Continuation-in-part of Ser. No. 299,874, Oct. 24, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,477

Int. Cl. G01m *15/00*

U.S. Cl. 73—119 R **6 Claims**



1. A method for testing oil pressure in an engine to determine if low pressure is being caused by a faulty oil pump assembly or by a faulty engine lubricating system, said method comprising the steps of:

a. removing the spin-on oil filter from the oil filter mounting pad of the engine to expose the oil inlet passage, the oil outlet passage and the oil chamber thereof;
b. sealing the oil chamber of said mounting pad to contain the oil supplied thereto from the oil pump assembly;
c. blocking the oil outlet passage of said mounting pad to prevent oil from being supplied therefrom to the engine lubricating system; and
d. sensing the pressure of the oil contained within the oil chamber of said mounting pad with the engine running to determine if the oil pump assembly is operating at its rated capacity.

3,869,906
ELEMENT APPLICABLE AS OR IN A TRANSDUCER (LOAD CELL)

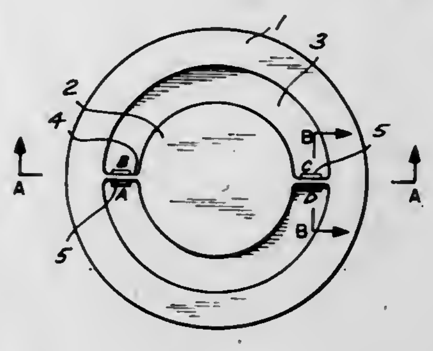
John Erik Andersson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 26, 1972, Ser. No. 318,413

Int. Cl. G01l *5/12*

U.S. Cl. 73—141 A **10 Claims**

1. A transducer element comprising a tubular outer member, an inner member coaxially disposed within said outer member, a membrane integral with one end of each of said inner and outer members for maintaining said members in annularly spaced relationship, at least two shear strained beams integrally extending between said members, each of said beams being a thin plate integral with and perpendicular to said membrane, and strain gauges mounted on said beams.



3,869,907
TRACK SURVEYING APPARATUS

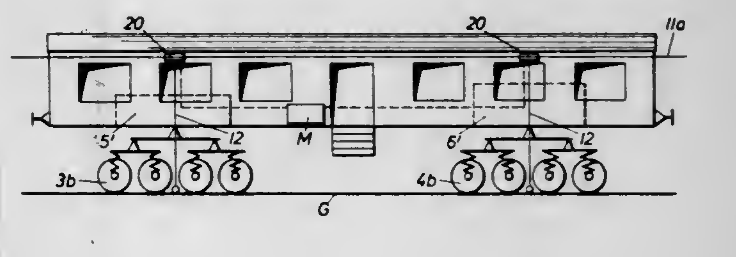
Franz Plasser, deceased, late of Johannesgasse 3, Vienna, Austria (A-1010, by said Erna Plasser, heir); Josef Theurer, Johannesgasse 3, Vienna, Austria (A-1010), and Egon Schubert, Lainzerstra 24b/8, Vienna, Austria

Continuation-in-part of Ser. No. 210,627, Dec. 21, 1971, which is a division of Ser. No. 813,854, April 7, 1969, Pat. No. 3,643,503. This application Feb. 19, 1974, Ser. No. 443,690

Claims priority, application Austria, Apr. 9, 1968, 3507/68

Int. Cl. B61k *9/08;* **E01b** *29/00*

U.S. Cl. 73—146 **9 Claims**



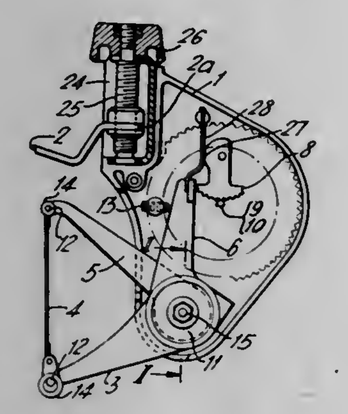
1. An apparatus mounted on a vehicle arranged for mobility on a track in the direction of track elongation for determining the physical condition of successive sections of the track over which the vehicle moves, comprising

1. two track engaging devices spaced from each other in the direction of track elongation;
2. means for applying a mechanical force of different magnitude to each of the track engaging devices to change the position of the track engaged by the devices, the position change being a function of the applied force;
3. a reference associated with the track for determining the position changes in relation thereto; and
4. a measuring system associated with the track engaging devices for continuously and simultaneously measuring any position changes resulting from the applied mechanical forces, the measuring system producing measuring signals corresponding to each of the measured position changes and including
    a. a differentiating unit for producing a signal corresponding to the difference between any two simultaneously produced measuring signals.

3,869,908

DEVICE FOR INDICATING THE STATIC DEFORMATION OF VEHICLE TIRES

Heinrich Driendl, 6175 Kematen/Tirol, Rauthweg, Austria
Filed Dec. 10, 1973, Ser. No. 423,490
Claims priority, application Austria, Dec. 13, 1972, 10624/72
Int. Cl. B60c *23/00*
U.S. Cl. 73—146.2 **8 Claims**

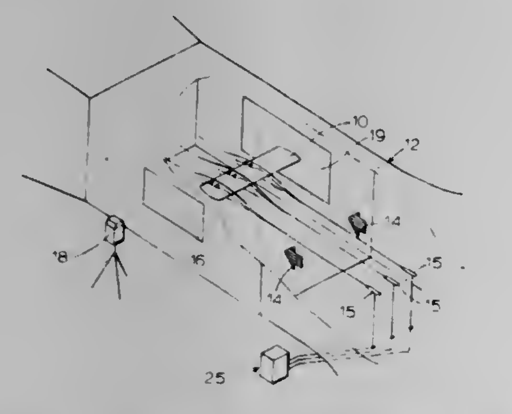


1. Device for indicating the static deformation of vehicle tires as a function of the internal pressure and load of the tire comprising a housing carrying a fixed support arm and a pivotable sensor arm, a flexible, non-stretching measuring strip connected at one end to the sensor arm and adapted to be placed against the tire side wall in the flexing area for measuring the tire deformation to indicate a variation of the deformation to be readable by means of a needle on a scale, wherein the needle is adapted to be actuated by the movable sensor arm and a control arm coupled to the sensor arm by means of a slipper clutch and movable into its zero position before measuring the improvement consisting in that the other end of the measuring band (4) is arranged on a positioning arm (5) in a manner known per se, said measuring strip extending over the flexing area only in the region of the greatest deformation, said positioning arm (5) being pivotably mounted, preferably on the shaft (15) of said sensor arm (3) in the region between the shaft (15) of said sensor arm (3) and the fixed support arm (2), and that the fixed support arm (2) is mounted for adjustment and locking on the housing (1) independently of the measuring strip in its longitudinal direction.

3,869,909

GAS FLOW VISUALIZATION SYSTEM AND CONTROL APPARATUS

Richard W. Hale; Patrick Tan; Richard C. Stowell, all of Ithaca, and Donald E. Ordway, Freeville, all of N.Y., assignors to Sage Action Inc., Ithaca, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,201
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **8 Claims**



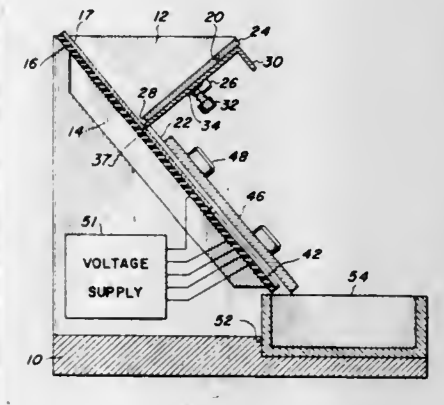
1. A system for supplying and monitoring the gas flow visulization performance of gas bubbles entrained in intricate and/or unsteady airstreams relative to a test specimen such as in wind tunnel studies or the like, said system comprising in combination;

- an array of gas bubble generating heads disposed upstream of the test specimen;
- supply means for supply of bubble forming solution and supply of compressed air and supply of bubble forming gas for each of said heads;
- a supplies control and bubble performance monitoring console, said console including:
- a controls support panel;
- a manually operable on-off valve for each of said supply means, said on-off valves being mounted on said panel for control of supplies from said supply means;
- a plurality of outlet devices carried by said panel and separate conduits detachably connected to said outlet devices and to said bubble generating heads;
- separate manifold conduit devices each coupled at its inlet to the outlet of a corresponding one of said on-off valves and leading to a corresponding one of said outlet devices carried by said panel;
- and an outlet flow rate metering valve for each of said outlet devices, each said metering valve being mounted on said panel for manual regulation incidental to monitoring of the performance of the system.

3,869,910

DIAGNOSTIC TEST DEVICE FOR DEVELOPER MATERIALS

Joseph Louis Scaletta, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 18, 1973, Ser. No. 371,331
Int. Cl. G01n *33/32*
U.S. Cl. 73—150 R **15 Claims**

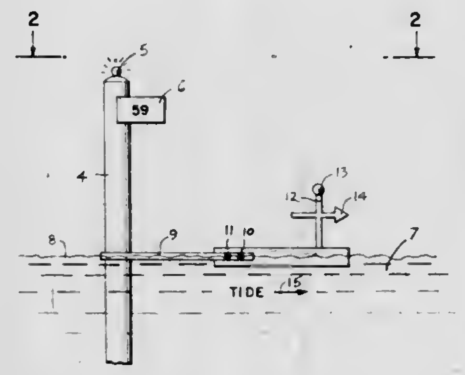


1. An apparatus for testing developer quality comprising: a support structure; a generally flat testboard carried by said support structure at an angle to horizontal; said testboard comprising a conductive surface and at least two conductive pads each electrically insulated from the other and from said conductive surface, an electrode plate carried by said support means spaced from said testboard and located opposite at least a portion of said conductive surface and said conductive pads; means for simultaneously applying different electrical field potentials between said electrode plate and each of said conductive pads and said conductive surface whereby developer may flow through the space between said electrode plate and said testboard to develop said conductive surface and said conductive pads in accordance with said field potentials.

3,869,911

WATER CURRENT OR TIDE DIRECTION-OF-FLOW INDICATOR

Howard M. Levy, P.O. Box 1150, Coconut Grove, Miami, Fla. 33133
Filed Feb. 1, 1974, Ser. No. 438,652
Int. Cl. G01w *1/00*
U.S. Cl. 73—170 A **8 Claims**

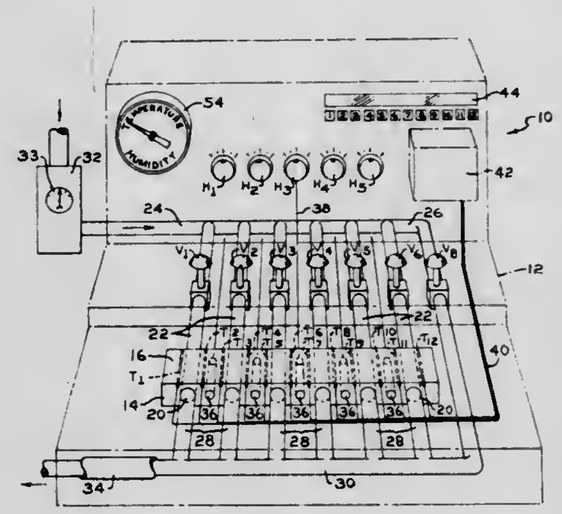


1. A water current-flow direction indicator device comprising in combination: an anchoring means for anchoring a float against being swept away by a moving water current; a float means including a buoyant structure including an attaching element secured to the anchoring means, the attaching element being located on the buoyant structure in a position such that the buoyant structure always assumes a predetermined given-position relative to the direction of flow of the water current; a visually discernable indicator means for indicating the direction in which the buoyant structure is positioned as a result of the effect of water current on the buoyant structure.

3,869,912

METHOD AND APPARATUS FOR DETERMINING TRANSFORMATION TEMPERATURES

James Horvath, Amherst, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Mar. 8, 1974, Ser. No. 449,525
Int. Cl. G01h *25/02*
U.S. Cl. 73—150 R **11 Claims**



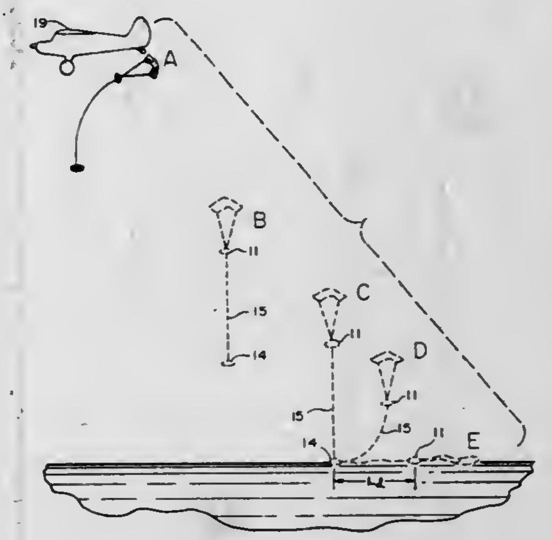
1. An apparatus for determining the temperature at which a physical transformation occurs in a material comprising:

- an elongated thermally conductive test block including an essentially planar test surface thereon adapted to transfer heat to a coating of said material in thermal contact therewith,
- a plurality of essentially equally spaced passages through the test block disposed along the length thereof for passage of a coolant fluid therethrough to thereby remove heat from the test surface,
- means for circulating a coolant fluid through each of said plurality of passages,
- means to continuously remove heat from the coolant fluid,
  - means for independently controlling the amount of heat removed by the coolant fluid circulating in each passage,
  - a plurality of heating means in the test block positioned along the length thereof between the said plurality of coolant fluid passages, thereby to provide alternately disposed heating and cooling means along the length of the test block,
- means to independently control the amount of heat applied to the test block by each of said heating means,
- a plurality of means to measure the temperature of the test surface at numerous points along the length thereof.

3,869,913

METHOD AND APPARATUS FOR DETERMINING SURFACE WIND VELOCITY

Shale J. Niskin, 2941 Lucaya St., Miami, Fla. 33133
Continuation-in-part of Ser. No. 258,543, June 1, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,822
Int. Cl. G01p *13/00*
U.S. Cl. 73—189 **5 Claims**



1. The method of determining the horizontal wind velocity above an area comprising the steps of dropping two markers of predetermined and different fall rates substantially simultaneously from above said area, said markers commencing to fall at different rates at a predetermined height above said area, noting the horizontal distance between said markers at touchdown, said distance being directly related to the horizontal velocity of the wind whereby the velocity of the wind is readily ascertained.

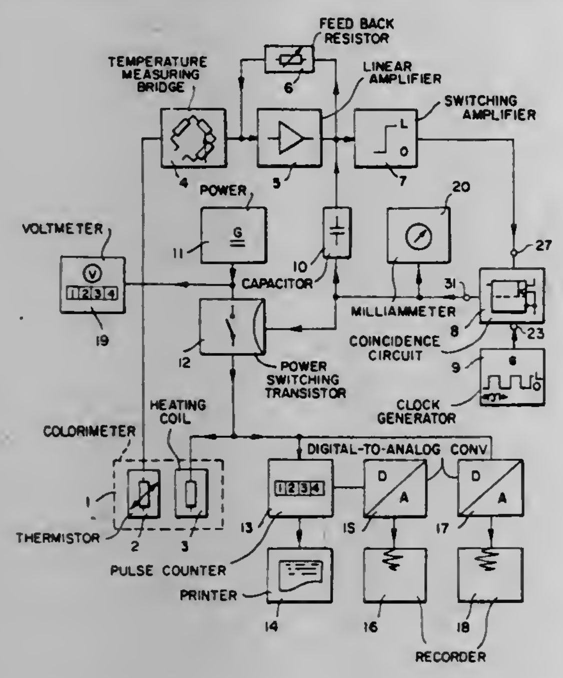
3,869,914

ISOTHERMAL CALORIMETRY METHOD AND APPARATUS THEREFOR

Waldemar Koehler; Oswald Riedel; Hertbert Scherer, all of Ludwigshafen, and Georg Schlereth, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany
Filed Nov. 24, 1972, Ser. No. 308,997
Claims priority, application Germany, Nov. 25, 1971, 2158377
Int. Cl. G01k *17/00;* **G01h** *25/48*
U.S. Cl. 73—190 R **4 Claims**

1. An isothermal calorimetry method for examining physical and/or chemical reactions of both endothermal and exothermal types, in which the temperature of the reactants is maintained at a constant value by the application of energy to an isothermal calorimetry zone, which comprises: applying said energy in the form of pulses of constant energy content; generating temperature control signals in accordance with the temperature of said reactants in said calorimetry zone; controlling the number of said pulses of constant energy transmitted per unit time, by means of said control signals while insuring that said constant energy pulses are separated in time so

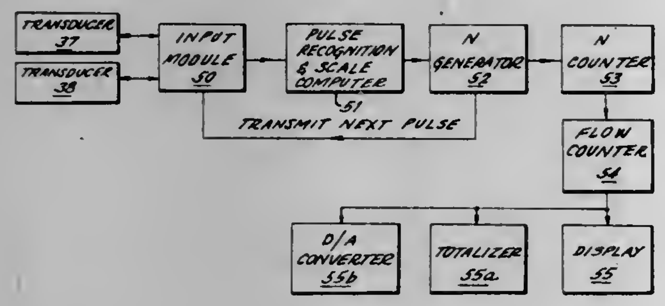
that the intervals between any two transmitted pulses are integral multiples of the duration of one pulse regardless of the phase of any said control signal in relation to said pulses; and summating continuously the numbers of said pulses per unit time to measure the energy balance.



3,869,915

DIGITAL FLOWMETER

Joseph Baumoel, 107 Columbia Dr., Jericho, N.Y. 11753
Filed Jan. 23, 1973, Ser. No. 326,089
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 A **13 Claims**

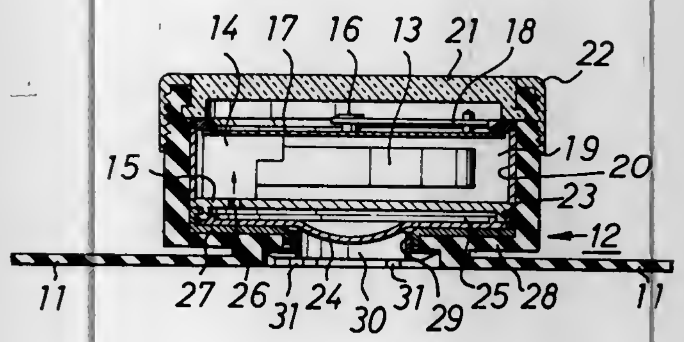


12. Ultrasonic detection apparatus for detecting a condition of a fluid in an enclosed elongated hollow conduit; said apparatus comprising first and second transducer means secured to the exterior surface of said conduit and being axially spaced from one another along the axis of said conduit; each of said first and second transducer means being adapted to transmit to the other, and receive from the other, ultrasonic energy pulses which pass through the fluid within said conduit; and circuit means connected to said first and second transducer means for measuring the difference in time taken for ultrasonic energy pulses to reach said first transducer means from said second transducer means and to reach said second transducer means from said first transducer means, and for producing an output related to said difference in time; and clock generator means for producing a train of output pulses having a given clock frequency and counter means connected to said clock generator means; said circuit means being connected to said counter means and controlling said counter means to count up pulses from said clock generator means during the time taken for said ultrasonic energy pulses to travel from said first transducer means to said second transducer means, said last-mentioned time defining an up cycle, and to count down pulses from said clock generator means during the time taken for said ultrasonic energy pulses to travel from said second transducer means to said first transducer means, said last-mentioned time defining a down cycle; and control circuit means for controlling the sequence of said up and down cycles, whereby a given number of up cycles are initiated, followed by a corresponding number of down cycles; said given number of up and down cycles defining a read cycle for producing said output which will be related to the residual count in said counter at the end of said read cycle.

3,869,916

DEPTH GAUGE FOR DIVER

Yukio Ojima, 34-7 Naka-Machi, Tokyo, Japan
Filed July 30, 1973, Ser. No. 384,004
Claims priority, application Japan, Feb. 7, 1973, 48-15698
Int. Cl. G01f *23/14*
U.S. Cl. 73—300 **1 Claim**

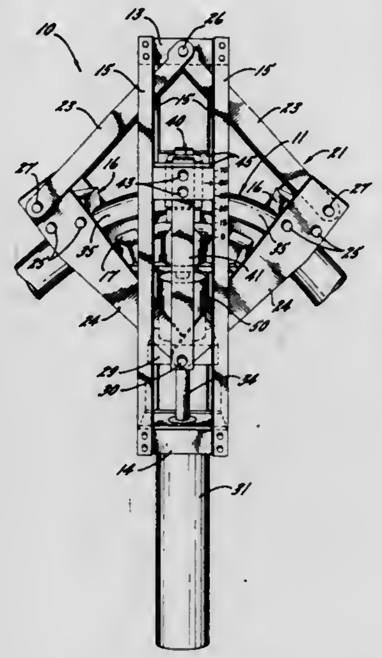


1. A depth gauge for use by a diver comprising:
a hollow rubber case open at one end and having a rubber strap integrally molded to opposite sides of the rubber case adjacent the base of said case;
said strap being resilient and stretchable and adapted to snugly fit upon a diver's wrist;
said base having a cavity with an opening communicating with the interior of the case;
a flexible diaphragm overlying and sealing the cavity opening;
a support plate positioned above said diaphragm and cooperating with said case and said diagraphm to define a first oil filled chamber;
a block member positioned upon said base plate and having a passageway;
a Bourdon tube having an inlet opening communicating with one end of the passageway in said block member;
said support plate having an opening communicating with the opposite end of said passageway to admit oil into or withdraw oil from said tube as said diaphragm alters its contour and hence alters the volume of said first chamber due to changes in the ambient pressure surrounding the case;
pivotally mounted pointer means and means coupled between said pointer means and said tube for pivoting said pointer means as the free end of said tube moves responsive to oil entering or leaving said tube;
a transparent pressure glass covering the open end of said case and means for securing and water-tightly sealing said glass to said case;
said pointer means being positioned beneath said glass and including a graduated dial face cooperating with a pointer;
the exterior of said base engaging the wrist of the diver and having substantially radially aligned grooves extending between said cavity and the perimeter of said case to provide conduits to facilitate communication of the fluid medium external to said case with said diaphragm;
said diaphragm being displaced inwardly from the exterior surface of said base to prevent the diaphragm from engaging the diver's wrist.

3,869,917

CONDUIT BENDER

Ellsworth W. Lapp, Rockford, Ill., assignor to Kinroth & Son Mfg. Co., Rockford, Ill.
Filed Sept. 4, 1973, Ser. No. 393,955
Int. Cl. B21d *7/04*
U.S. Cl. 72—304 **10 Claims**



2. In a device for bending conduit, the combination of, a support, a forming die on said support and having a generally arcuate groove opening out of one side thereof, a pair of drawing shoes on said support and facing said groove, means mounting said drawing shoes on said support for arcuate movement about the center of curvature of said groove and in opposite directions from starting positions in which said shoes are spaced apart angularly by a predetermined distance and terminal positions in which the shoes are spaced apart angularly by a greater distance, a holding die on said support and having a generally arcuate groove opening out of one side thereof and facing the groove in said forming die, the groove in said holding die being substantially shorter in arcuate length than the groove in said forming die and being located between said drawing shoes, means for producing relative movement between said dies to close the dies upon a piece of conduit inserted therebetween, the grooves in said dies being sized to deform and tightly clamp the intervening portion of the conduit as an incident to closing of said dies, and mechanism for moving said drawing shoes from said starting positions to said terminal positions while said intervening portion is clamped between said dies whereby said drawing shoes sweep across the end portions of the conduit and draw such end portions around into the groove in said forming die.

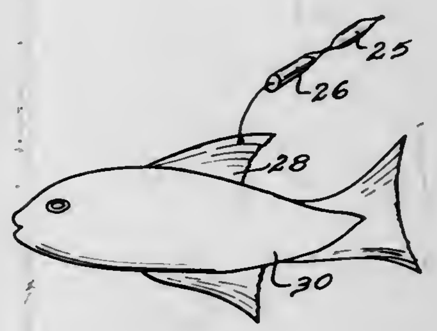
3,869,918

TEMPERATURE MEASUREMENT DEVICE

Billie G. Oltman, Worth; Keith F. Eckerman, Joliet; Gerald P. Romberg, Lisle, and William Prepejchal, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Aug. 1, 1973, Ser. No. 384,680
Int. Cl. G01k *11/20*
U.S. Cl. 73—339 R **4 Claims**

1. A method of measuring average ambient temperatures of an area including the steps of:

a. irradiating a thermoluminescent dosimeter with a known amount of radiation,
b. exposing the irradiated thermoluminescent dosimeter to the ambient temperature of the desired area for a given length of time,
c. heating said exposed dosimeter to release energy stored therein as luminescence and measuring said luminescence, and

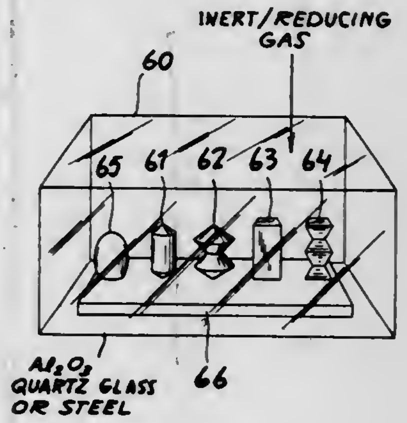


d. determining the average temperature of the environment during said given length of time according to said known amount of radiation applied to the dosimeter and said measured luminescence.

3,869,919

METHOD OF DETERMINING THE TEMPERATURE OF A HIGH-TEMPERATURE INSTALLATION AND A TEMPERATURE-INDICATING BODY

Karl-Heinz Presser, Julich, and Claus-Benedict von der Decken, Kohlscheid, both of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany
Filed Dec. 23, 1971, Ser. No. 211,601
Claims priority, application Germany, Dec. 24, 1970, 2063754
Int. Cl. G01k *11/08*
U.S. Cl. 73—358 **4 Claims**

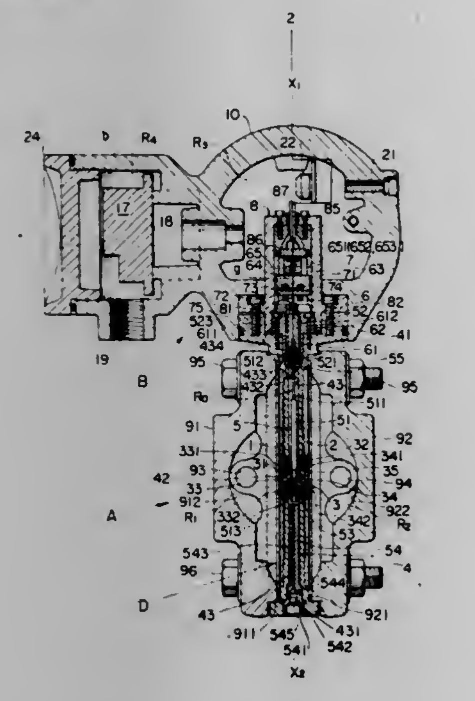


1. In a system for measuring the temperature of a high-temperature chamber, the improvement which comprises a capsule composed of a refractory material, and a plurality of elongated metallic bodies of a volume of about $1 mm^3$ in said capsule, each of said bodies having a characteristic shape-changing temperature different from that of others of said bodies and in which the shape alters under the action of surface tension, each of said bodies having a surface area to volume ratio between 5 and $50 mm^{-1}$ and greater than that of a sphere of corresponding mass, each said body having an axis and being mirror-symmetrical with respect to a median plane through said axis and with respect to a median plane perpendicular to said axis, said bodies being received in said capsule in a nonoxidizing atmosphere.

3,869,920
SYMMETRICALLY ARRANGED, DEFLECTION TYPE DIFFERENTIAL PRESSURE TRANSMITTERS FOR CONTROLLING INDUSTRIAL SYSTEMS AND PROCESSES

Rin-Ichi Miyauchi; Bunjiro Saito, and Kyoichi Ikeda, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Apr. 13, 1973, Ser. No. 350,930
Int. Cl. G01l *9/10, 7/08*
U.S. Cl. 73—398 R **15 Claims**



1. A differential pressure transmitter for controlling fluid flow rate and other parameters which can be related to a pressure differential in industrial systems and processes, comprising:

housing means;

pressure responsive means including two diaphragm members mounted in generally parallel, spaced relation in said housing means and being symmetrical when in their rest position about an axis of symmetry extending perpendicularly to the diaphragm axis; connecting means for linking said diaphragm members together at their centers; and a spring rod mechanism comprising a rod element for transmitting movement of said connecting means out through the pressure responsive means to permit sensing thereof, said rod element being secured at a first portion to said connecting means; support means pivotally mounting at least one end of said rod element with respect to said housing means; said rod element having at least one second portion thereof constructed and arranged to provide for bending thereof about the longitudinal axis of said rod element as said connecting means moves with said diaphragm members; an extension member secured to said one end of said rod element to effect angular movement in response to bending movement of said second rod element portion so as to transmit such movement beyond said pressure responsive means;

a high pressure receiving chamber located in said housing means to communicate with one of said diaphragm members;

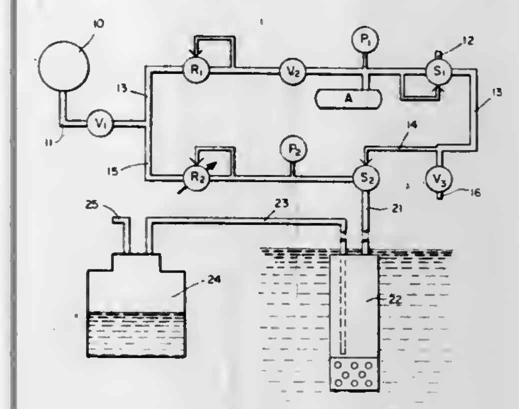
a low pressure receiving chamber located in said housing means to communicate with the opposite diaphragm member;

means for detecting displacement and converting displacement into an output response mounted above said pressure responsive means and including means responsive to the angular movement of the outer end of said extension member whereby a pressure differential created between said high and low pressure receiving chamber produces a resulting force which causes both diaphragm members to deform, transversely displacing said connecting means and axially bending said second rod element portion to angularly displace said rod extension member, the movement of the rod extention member being detected and converted to an output response by said detecting and converting means.

3,869,921
LIQUID SAMPLING

Malcolm F. Irwin, West Chester, Pa., assignor to Pro-Tech Inc., Malvern, Pa.

Filed Nov. 2, 1973, Ser. No. 412,275
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 B **7 Claims**



1. In liquid sampling apparatus operable from a source of propellant fluid under pressure, to collect samples of liquid from a body thereof, the improvement comprising a first conduit having means therein operable at relatively low pressure for controlling the interval of time between successive samples and the duration of time for collecting each sample and a second conduit having means therein normally closing off the body of liquid from the pressurized fluid and adapted to open to admit such fluid under relatively high pressure to propel a sample therefrom, the respective conduits being connected in parallel to the source of pressurized fluid; the first or timing means comprising in the first conduit a sampling interval flow-regulating valve and, in sequence downstream therefrom, an accumulator tank, a first pressure-responsive switching valve, and a sample duration flow-regulating valve, to the atmosphere; the first switching valve being interconnected to sense the pressure of fluid accumulated immediately upstream therefrom, being normally closed below a given accumulated pressure, and adapted to open at a given higher accumulated pressure; the second or sample propulsion means comprising a second pressure-responsive switching valve in the second conduit, being normally closed to the body of liquid to be sampled and interconnected to sense the accumulated low pressure while the first pressure-responsive switching valve is open, and being adapted to open at a given pressure therein and to reclose at a given lower pressure therein.

3,869,922
APPARATUS FOR MEASURING PAPER STOCK CONSISTENCY

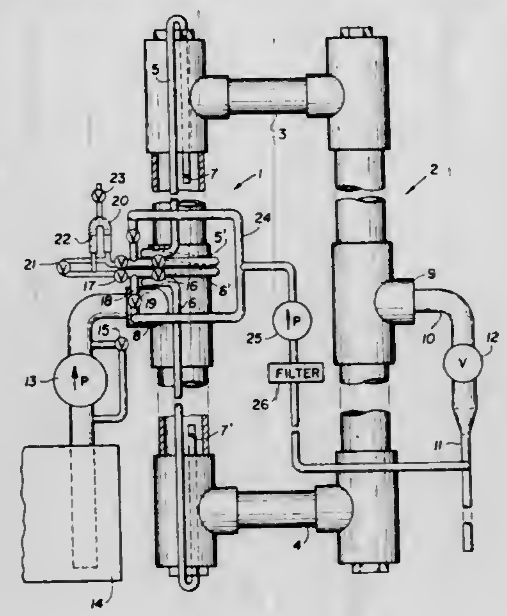
Jack Fajans, Teaneck, and John E. Nankivell, Florham Park, both of N.J., assignors to Gravicon Corporation, Teaneck, N.J.

Filed Oct. 29, 1973, Ser. No. 410,755
Int. Cl. G01n *9/26*
U.S. Cl. 73—438 **4 Claims**

1. In an apparatus for measuring the specific gravity of a suspension of a solid in a continuous liquid phase as a measure of the concentration of said solid in said suspension, the apparatus including a container having an inlet and two outlets communicating with the ambient atmosphere; two restricted nozzles vertically spaced in said container from said inlet in opposite vertical directions in the normal operating condition of the apparatus, said outlets being spaced from respective ones of said nozzles in a direction away from said inlet; a source of said suspension; first pump means for driving said suspension from said source into said container through said inlet and out of said container through said outlets; pressure holding means for holding the pressure of said suspension between said nozzles at least ten pounds per square inch higher than the pressure of said atmosphere when said suspension is driven into said container by said pump means; two conduits respectively communicating with said nozzles and having respective portions spaced from said nozzles; and differential pressure indicating means for indicating the difference of liquid pressure in said portions of said conduits, the improvement which comprises:

a. second pump means communicating with said source and with each of said conduits for withdrawing a stream of said suspension from said source and for feeding respective parts of said stream to said conduits under a pressure sufficient to cause flow of said parts in said conduits and outward of said nozzles into said container; and

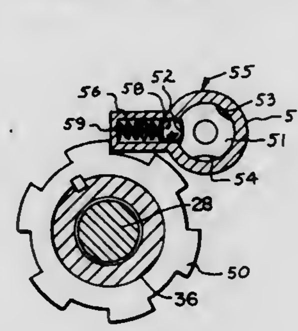
b. filter means arranged in series with said second pump means between said source and said conduits for removing said solid from said stream before said parts are fed to said conduits.



3,869,923
DEBRIS COLLECTING APPARATUS

Charles W. Doering, Clarksville, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Division of Ser. No. 268,064, June 30, 1972, Pat. No. 3,849,043. This application Aug. 27, 1973, Ser. No. 391,600
Int. Cl. F16d *41/16*
U.S. Cl. 74—13 **10 Claims**

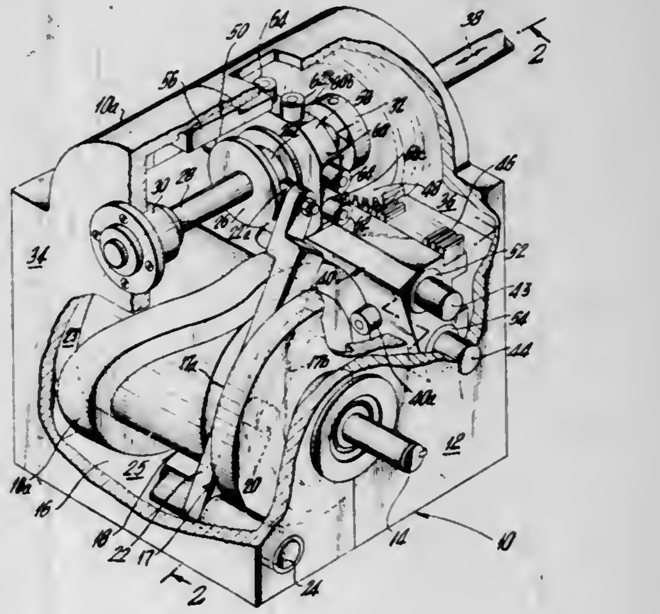


1. In a wheeled vehicle wherein a revolving element or the like is rotated about an axle by the wheels, drive means for rotating the revolving element in either direction and for rotating the wheels of the vehicle without rotating the revolving element comprising at least one ratchet wheel connected to the revolving element, the revolving element being rotated when said ratchet wheel is rotated, a pawl spindle mounted on at least one of the wheels of the vehicle for planetary movement about said ratchet wheel, said spindle having three cam surfaces disposed about the periphery of said spindle, a pawl element pivotally surrounding said cam surfaces of said spindle, means carried by said pawl element and frictionally bearing against one of said cam surfaces of said spindle to hold said pawl element in position, said pawl element in its first cam position engaging said ratchet wheel to rotate the revolving element in one direction as the wheels rotate forward as the vehicle is advanced and to not rotate the revolving element in the opposite direction when the wheels are rotated in reverse, said pawl elements in its second cam position engaging said ratchet wheel to rotate the revolving element in the opposite direction when the wheels are rotated in reverse and to not rotate the revolving element in the one direction when the wheels are rotated forward as the vehicle is advanced, and said pawl element in its third cam position being in disengagement from said ratchet wheel so that the wheels of the vehicle rotate either forwardly or backwardly without rotation of the revolving element.

3,869,924
DEVICE FOR TRANSMITTING ACCURATE TRANSLATIONAL AND ROTARY MOVEMENTS

Earl F. Beezer, Hillsdale, N.J., assignor to Stelron Cam Company, Saddle Brook, N.J.

Filed Feb. 11, 1974, Ser. No. 441,489
Int. Cl. F16h *27/04*
U.S. Cl. 74—24 **12 Claims**



1. A motion transmitting device, comprising a rotary input shaft having rotary control cam means thereon, a rotary and axially movable output shaft having a pinion gear thereon, means supporting said input shaft for rotary movement and said output shaft for rotary and axial movement, a lever engaged with said cam means and said output shaft and being movable by said cam means to shift said output shaft axially, rotary drive means connected to said cam means and including a drive gear moved by said cam means engageable with said pinion gear to rotate said output shaft when it is in a predetermined axial position, said pinion gear being disengageable from said drive gear to permit axial movement without rotation, and holder means to hold said output shaft against rotation at positions of said output shaft when said pinion gear is out of engagement with said drive gear and to permit easy interengagement of said gears including at least one key elongated in the axial direction of said shaft and fixed in said housing and a control plate affixed to said shaft for rotation therewith having a plurality of circumferentially spaced pairs of transversely spaced guide rollers adapted to bear along respective sides of said key to hold the said output shaft in a fixed angular position during its linear movement.

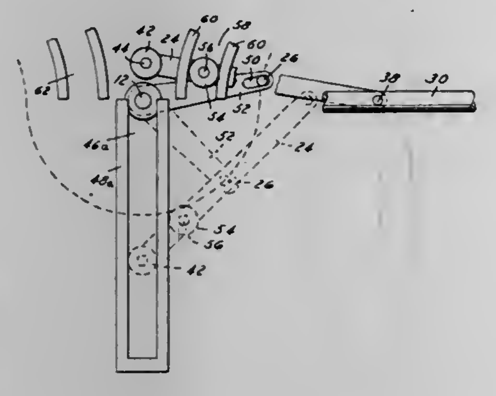
3,869,925
HARMONIC TRAMMEL DRIVE

John Henry Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed July 16, 1973, Ser. No. 379,375

Int. Cl. F16h *21/16*

U.S. Cl. 74—25 **10 Claims**



1. In a trammel reciprocating drive of the type utilizing a drive shaft, an output member mounted for reciprocating lineal movement, a drive arm driven by said shaft, a link connecting said arm and said output member, and a primary stabilizer guide for one end portion of said link during an intermediate portion of the movement thereof in the course of a motion of 180° of said arm from one end dwell motion of said output member to another end dwell, that improvement which comprises:

a. secondary guide means on each side of said primary stabilizer guide,

b. means on said link to interengage said secondary guide means selectively near the respective ends of the reciprocal movement of said output member, and

c. means providing a slide connection between said arm and said link,

wherein a controlled dwell of said lineal output member at the end of a stroke thereof is materially increased during rotation of said drive shaft.

3,869,926
DEVICE FOR BENDING SERPENTINE STRUTS

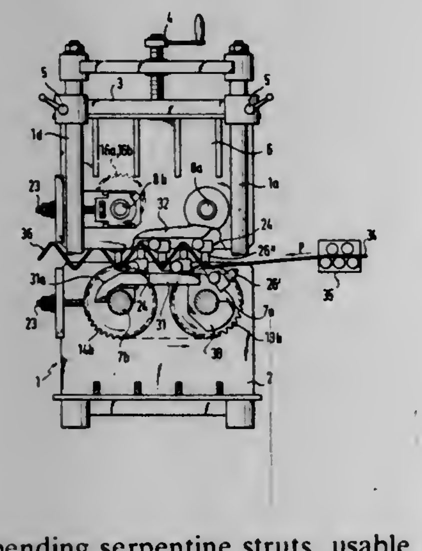
Klaus Keller, Blumenstrasse 17, 8192 Geretsried, Germany

Filed Sept. 18, 1973, Ser. No. 398,414

Claims priority, application Germany, Sept. 21, 1972, 2246392

Int. Cl. F16h *21/16*

U.S. Cl. 74—25 **10 Claims**



1. A device for bending serpentine struts, usable in lattice beams, from strand material, comprising:

two sets of bending tools between which the strand material passes for bending, said strand material defining a bending plane in which it travels in one direction through a bending zone;

two chain pairs, each chain pair having two rotatable link chains each comprising a number of link members, the number of bending tools of a said set being only a fraction of the number of link members in a said chain, the chains of each chain pair being located in parallel side-by-side relation, each chain pair transversely and movably supporting the bending tools of a corresponding set for movement through said bending zone, said chains of each chain pair being rotatable in planes parallel to said bending plane, the chains of each pair being spaced on opposite sides of said bending plane and having opposed side surfaces which face each other, said bending tools of each set being supported between said spaced side surfaces of the corresponding pair of chains, said chains of each pair including inwardly extended opposed joint pins each having an end carried by the corresponding chain, a said bending tool being eccentrically pivoted on said extended joint pins.

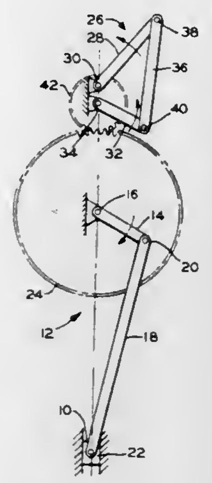
3,869,927
GEARED DRAG LINK-SLIDER-CRANK PRESS

John G. Lose, Lansdowne, and John F. Roth, Boothwyn, both of Pa., assignors to Gulf & Western Industrial Products Company, Salem, Ohio

Filed Sept. 6, 1973, Ser. No. 394,914

Int. Cl. F16h *21/27*

U.S. Cl. 74—44 **14 Claims**



1. A press comprising, frame means, a slide member supported in said frame means for reciprocating movement along a path between top dead-center and bottom dead-center positions, a toothed slide crank gear having an axis of rotation, a link member having opposite ends pivotally interconnected one with said slide member and the other with said slide crank gear at a pivot axis parallel to and spaced from said gear axis, whereby rotation of said slide crank gear about said gear axis imparts reciprocating movement to said slide member, second toothed gear means drivingly engaging said slide crank gear, said slide crank gear and second gear means having a ratio of rotation other than 1:1, and means for rotating said second gear means at a varying rotational speed, whereby said slide crank gear is rotated at a varying rotational speed.

3,869,928
UNIDIRECTIONAL ROTATION ACTUATOR

Akemi Ishii, Kawasaki, and Syotaro Suda, Yokohoma, both of Japan, assignors to Tokico Ltd., Kawasaki-ku, Kawasaki City, Japan

Filed Sept. 4, 1973, Ser. No. 393,833

Claims priority, application Japan, Sept. 5, 1972, 47-89005; Sept. 26, 1972, 47-96842; Sept. 27, 1972, 47-96791

Int. Cl. F16h *27/02*

U.S. Cl. 74—88 **3 Claims**

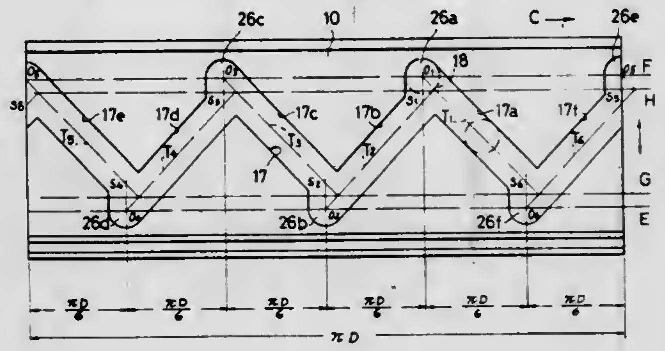
1. A unidirectional rotation actuator comprising:

a cylinder of hollow cylindrical shape;

a piston fitted within the cylinder so as to be rotatable about and slidable along the axis of the cylinder relative thereto;

means for driving the piston in reciprocating sliding motion relative to the cylinder in the axial direction thereof; said piston having an outer cylindrical surface facing the inner cylindrical surface of the cylinder, one of said surfaces having a cam groove therein of a zigzag shape including in continuous alternate combination, substantially straight groove parts of the same inclination in respectively different directions joined end-to-end at bends in the zigzag shape; and

a cam follower member fixed to and projecting from the other of said surfaces into engagement in the cam groove,



said cam groove having guide groove portions respectively provided at said bends, each of said guide groove portions being so shaped that, in concurrence with sliding in one direction of the piston relative to the cylinder, the cam follower member is permitted to advance further along the centerline of one straight groove part of the cam groove beyond the intersection of said centerline and the centerline of the succeeding adjacent straight groove part and, then, in concurrence with sliding of the piston in the direction opposite to said one direction, is permitted to undergo displacement in said sliding direction thereby to abut relatively against one wall surface of said adjacent straight groove part, and

said piston being intermittently rotated in each sliding motion in one direction and the reverse direction.

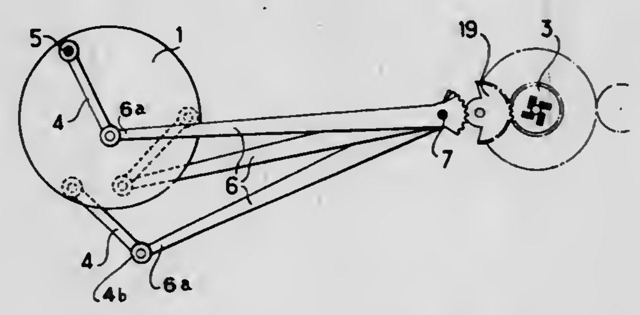
3,869,929
KINEMATIC TRANSMISSION DEVICES

Arduino Tosi, Route de Mions Toussieu, 69780, St. Pierre de Chandieu, France

Filed Dec. 10, 1973, Ser. No. 423,190

Int. Cl. F16h *27/00*

U.S. Cl. 74—112 **5 Claims**



1. A circular movement transmitting device comprising in combination:

a crank provided with a predetermined number of crankpins angularly distributed in an adjustable manner,

a crank-arms articulated by their head on each of the crankpins of the crank,

levers, one of the ends of which is rotatably connected to the base of the crank-arms, said levers each comprising between their ends a transverse boring which permits to said levers to oscillate around a same axle,

means controlled by said levers, said means being adapted to actuate unidirectional driving members wedged on a receiving shaft,

intermediate means adapted to amplify the amplitude of the oscillation of the ends of the levers which are opposite the ends articulated to the corresponding crank-arms,

motor means driving the crank,

a gear-train adapted to increase the rotary speed of the receiving shaft.

3,869,930
STEP-BY-STEP DEVICE FOR A RATCHET-WHEEL

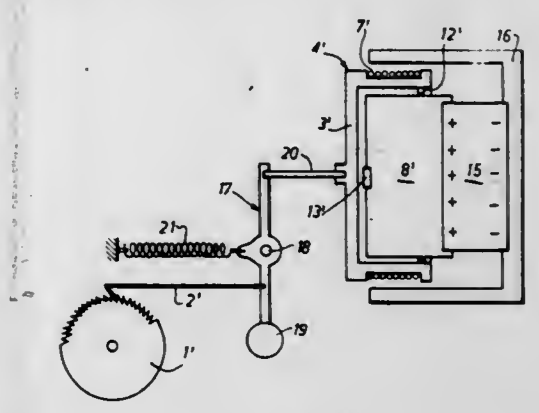
Edmond Forest, Saint-Nicolas-D'Aliermont, France, assignor to Societe Anonyme: Reveils Bayard, Saint-Nicolas D'Aliermont, France

Filed July 27, 1973, Ser. No. 383,064

Claims priority, application France, Dec. 20, 1972, 72.45349

Int. Cl. F16h *27/02*

U.S. Cl. 74—128 **10 Claims**



1. A step-by-step drive device for a ratchet-wheel acting through a pawl, said drive device comprising a movable cylindrical cup-shaped member having a closed end mechanically connected to the pawl, a coil connected to a source of electric pulses wound on said movable cup-shaped member, a cylindrical armature of a fixed ferrite core received in said cup-shaped member, said ferrite core forming an annular magnetic field surrounding said coil, a combined guide member and sealing ring for the cup-shaped member formed as a [toroidal] ring of low-friction[,] low-density material fixed to the cup-shaped member and defining a clearance of several microns between the cylindrical armature and the [cup-shaped] combined guide member and sealing ring, said combined guide member and sealing ring together with said cup-shaped member and said ferrite core defining a pneumatic dampening means for said cup-shaped member, a damping member interposed between the closed end of the cup-shaped member[,] and the circular front surface of the cylindrical armature, and resilient means for returning the cup-shaped member to its rest position.

3,869,931
TRACK ROLLER WITH REPLACEABLE AND REVERSIBLE FLANGES

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

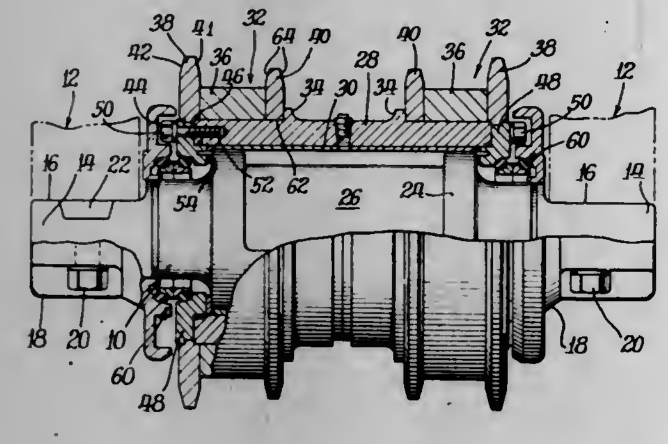
Filed Dec. 12, 1973, Ser. No. 424,095

Int. Cl. F16h *55/36;* **B62d** *55/00;* **F16c** *13/00*

U.S. Cl. 74—230.3 **5 Claims**

1. In a track roller assembly including a hub adapted to be journalled on a shaft and a pair of rims, one at each end of the hub and each including a radially outwardly facing annular tread and at least one radially outwardly extending annular flange adjacent the tread, the improvement wherein each of said hub, said treads and said flanges are separate parts and

wherein each flange is a symmetrical disc-like element whereby, after use and attendant wear, a flange may be removed to be reversed and/or replaced without discarding the associated tread and/or the hub.



3,869,932

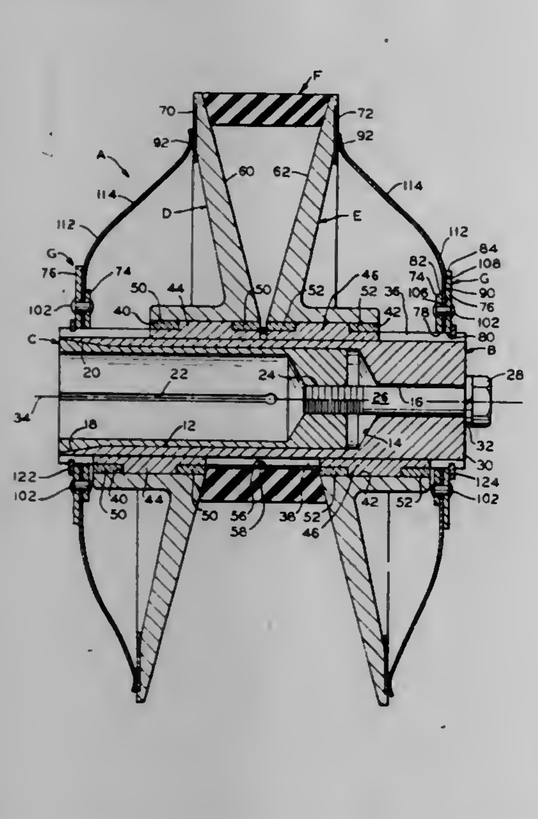
SPRING BIASED DOUBLE ACTING EXPANSIBLE PULLEY WITH INCREASED SPRING FATIGUE LIFE

Peter C. Fletcher, Chagrin Falls, Ohio, assignor to Speed Selector, Inc., Chagrin Falls, Ohio

Filed May 23, 1973, Ser. No. 362,904

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 R **8 Claims**



1. In a variable pitch pulley having a pair of pulley halves relatively axially movable and resilient means for biasing said halves toward each other including a mounting member having an outermost edge and a surface facing axially toward one of said pully halves; and a plurality of radially extending leaf springs having an inner most mounting portion mounted against surface and an outer most portion bearing against one of said pulley halves and an intermediate flexing portion, the improvement which comprises: said axially facing surface extending radially outwardly beyond said outermost edge and said flexing portion diverging from said surface from a place radially inwardly of said outermost portion in a smooth tangent curve whereby the radially outermost place of engagement of said flexing portion with said surface moves radially outwardly as flexure occurs.

3,869,933

STRUCTURES OF REINFORCED ELASTOMERIC MATERIAL

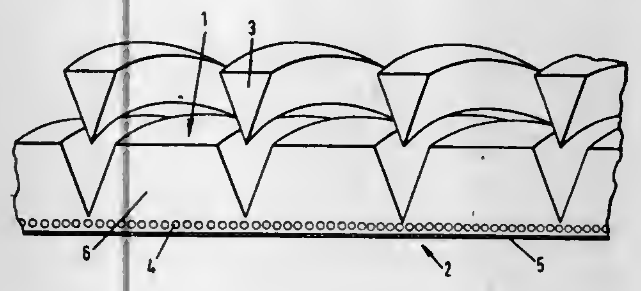
Marvin L. Dorf, Bleary-Lurgan, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 2, 1973, Ser. No. 412,072

Claims priority, application Great Britain, Nov. 14, 1972, 52640/72

Int. Cl. F16g *5/00*

U.S. Cl. 74—234 **10 Claims**



1. An endless V-belt structure having top and bottom surfaces and side driving faces extending therebetween, said belt comprising a body portion of elastomeric material and having a tension member therein midway between the top and bottom surfaces of said belt and at least one fabric reinforcing layer symmetrically positioned on each side of said tension member between said tension member and the top and bottom surfaces of said belt, said reinforcing layers having high compressive and tensile moduli in the transverse direction of the belt whereby the V-belt is of a symmetrical construction about said tension member.

3,869,934

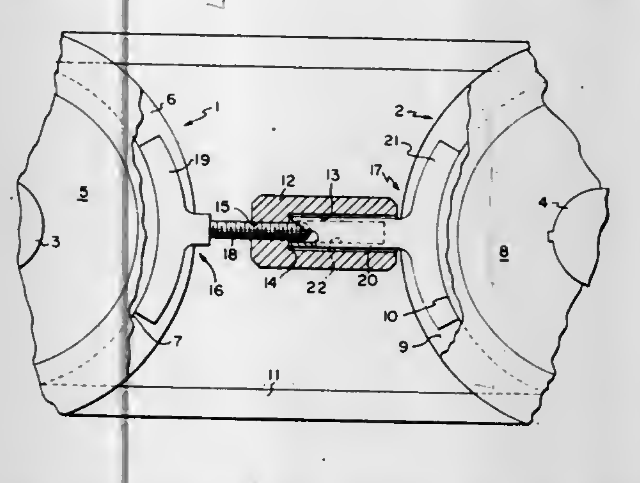
BELT TENSIONING TOOL

Philip F. Pierce, 4459 S. Kirk Rd., Vassar, Mich. 48768

Continuation-in-part of Ser. No. 169,320, Aug. 5, 1971. This application Sept. 12, 1973, Ser. No. 396,552

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.12 **10 Claims**



1. A tool for tensioning a belt trained about a pair of spaced apart pulleys at least one of which is movable toward and away from the other, said tool comprising a body adapted to be interposed between said pulleys and defining a chamber open at one end of said body and a threaded opening at its other end communicating with said chamber; a first member having one end thereof, rotatably and slidably accommodated in said chamber, bearing against said body, the other end of said first member extending outwardly from said one end of said body; a second member having a threaded shank at one end thereof accommodated in said opening and extending from said other end of said body into said chamber in sliding telescoping, relative rotating relation with said one end of said first member; and bearing means at other ends of said members for engagement with said pulleys, whereby rotation in one direction of said body, relative to said members effects elongation of said tool.

3,869,935

MECHANICAL DEVICE FOR CONVERTING A CONTINUOUS ROTARY MOTION INTO AN ALTERNATING ROTARY MOTION

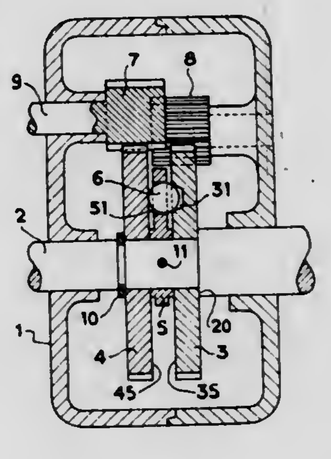
Raymond Mathieu, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 19, 1973, Ser. No. 380,676

Claims priority, application France, July 21, 1972, 72.26419

Int. Cl. F16h *19/00, 27/00, 29/12*

U.S. Cl. 74—322 **6 Claims**



1. A mechanical device for converting a continuous rotary motion into an alternating rotary motion in reverse directions, comprising: a first and a second wheel parallel to each other and independently rotatable about a common axis said wheels having respective opposite faces located at a first predetermined distance from one another and being provided with respective recesses on said opposite faces; driving means for transmitting the rotation of one of said wheels to the other one in the reverse direction; a first shaft coupled to said driving means; a second shaft parallel to said common axis; a component located between said wheels and coupled to said second shaft for rotating about said common axis; and a coupling element carried by said component movable in relation thereto and at a second predetermined distance from said common axis for alternately engaging with the respective recesses of one or the other of said wheels; whereby, when one of said shafts is given a continuous rotary motion, the other one provides an alternating rotary motion in reverse directions according to which one of the wheels is coupled to said component by means of said coupling element.

3,869,936

MECHANISM FOR CONVERTING A MOVEMENT OF TRANSLATION INTO A ROTATIONAL MOVEMENT, AND VICE VERSA

Jacques Taillardat, Saint Alban En Leysse, France, assignor to La Technique Integrale, Chambery, France

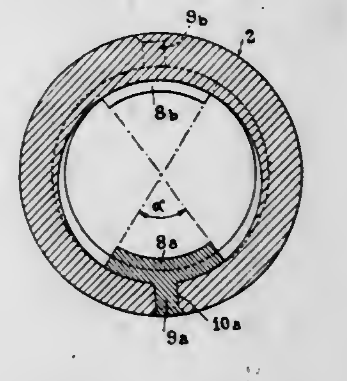
Filed Oct. 23, 1973, Ser. No. 408,361

Claims priority, application France, Oct. 20, 1972, 72.37323

Int. Cl. F16h *55/04*

U.S. Cl. 74—459 **7 Claims**

1. In a re-circulating ball, screw-and-nut device including screw and nut members which each have defined in its mating surface a helical groove, said members when in cooperating relationship defining between them a helical passage of generally circular cross section formed by said grooves with a train of balls situated and movable in said passage, whereby rotary movement of one of said members relative to the other causes axial movement of the other, the improvement in combination therewith wherein said nut member comprises a cylinder whose wall has opposite first and second ends, and extending within said wall is a ball re-circulation passage the ends of which open into the helical groove of said nut member respectively at a first ball-extraction point axially inward of said first end and at a second ball re-introduction point axially inward of said second end, the device further comprising at least one coupling member extending from said nut member into said passage, said coupling member having a cross section closely corresponding to that of said passage and being situated axially outward of one of said first and second points, and means extending from said nut member into said passage and adjacent one of said points for deflecting said balls from said helical passage into said re-circulation passage.



3,869,937

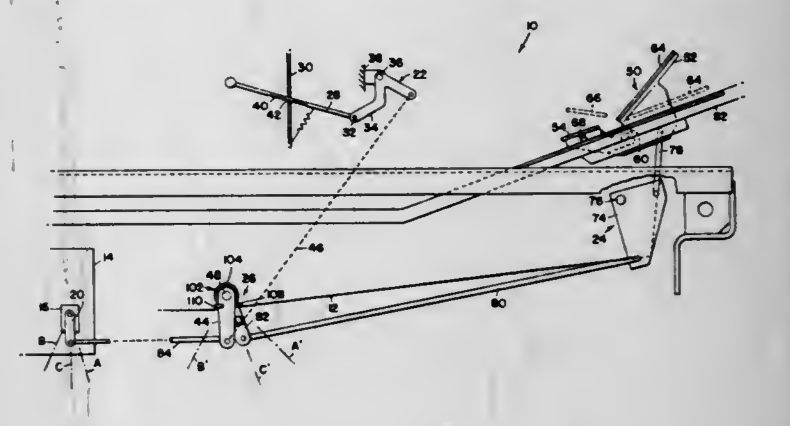
INTERLOCKED HAND-AND FOOT-OPERABLE ENGINE SPEED CONTROL

Barry Louis Ahrens, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 7, 1974, Ser. No. 448,909

Int. Cl. G05g *11/00*

U.S. Cl. 74—482 **5 Claims**



1. An output linkage for transferring a first input to a controlled device for selecting a desired operating condition of the device, for transferring a second input to the controlled device for overriding the condition set by the first input and for automatically returning the device to said desired operating condition once a force initiating and second input is removed, comprising: first, second and third arms mounted for swinging movement about a first axis, the arms being grouped together with the third arm being located between the first and second arms; first input means connected to said first arm for selectively swinging the latter about said axis to and for fixing the latter in selected positions; second input means connected to said second arm and link means connecting the second arm to said controlled device; said second input means connected for floating movement with said second arm when the latter is swung to adjust the controlled device in response to the first arm being swung to a selected position by said input means and for selectively swinging said second arm independently of said first arm to adjust the device so as to override the setting thereof determined by said first input means; said first and second arms having respective stop portions disposed for abutting said third arm; spring means resiliently interconnecting said first, second and third arms and biasing said first and second arms in a first direction about said axis and biasing said third arm in an opposite second direction about said axis to thereby yieldably hold said first and second arms in abutting engagement with said third arm.

3,869,938
CAM SHAFT FOR RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINES

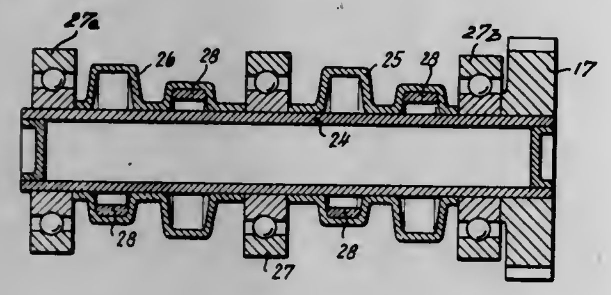
Heinz Schlotterbeck, and Walter Staake, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed June 27, 1973, Ser. No. 373,981

Claims priority, application Germany, July 1, 1973, 2232438

Int. Cl. F16h *53/00*

U.S. Cl. 74—567 **8 Claims**



1. A cam shaft, especially for internal combustion engines comprising:

a cylindrical steel pipe having axial regions thereof expanded radially to form eccentric cam portions, and a cylindrical reinforcing element coaxially disposed inside said steel pipe and having the radially outer surface thereof in supporting engagement with the cylindrical inner surface of said steel pipe on opposite axial sides of the respective said eccentric cam portions, and counterbalancing weights disposed inside said cam portions in those regions thereof disposed nearest the axis of said cam shaft.

3,869,939
HYDROMECHANICAL TRANSMISSION

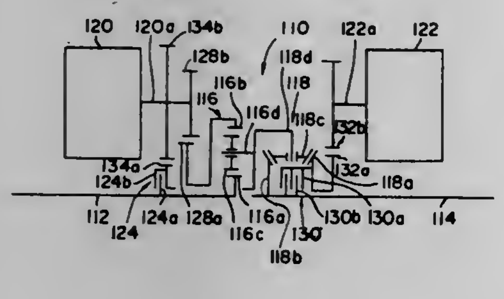
Takayuki Miyao, and Hiroaki Maeda, both of Toyota, Japan, assignors to Aisin Seiki Co. Ltd., Kariya-shi, Aichi-ken, Japan

Filed Apr. 27, 1973, Ser. No. 354,956

Claims priority, application Japan, Apr. 28, 1972, 47-42863

Int. Cl. F16h *47/04, 37/08*

U.S. Cl. 74—687 **3 Claims**



1. A hydromechanical transmission comprising:

an input rotary shaft;

an output rotary shaft;

a pair of variable volume hydrostatic pump-motors being interconnected with each other through means of a closed hydrostatic circuit;

a first differential gear set having a first gear element connected with said input rotary shaft, a second gear element, and a third gear element connected with said first and second gear elements thereof;

a second differential gear set having a first gear element connected with said output rotary shaft, a second gear element, and a third gear element connected with said first and second gear elements thereof and to said third gear element of said first differential gear set;

a first gear connected with said second gear element of said first differential gear set for rotation therewith;

a second gear mounted on the rotary shaft of one of said hydrostatic pump motors and connected with said first gear for rotation therewith;

a third gear mounted on said rotary shaft of said one of said hydrostatic pump motors;

a fourth gear rotatable with said third gear;

first clutch means between said fourth gear and said input rotary shaft for coupling said first gear element and said second gear element of said first differential gear set for simultaneous rotation;

a fifth gear mounted on the rotary shaft of the other of said hydrostatic pump motors;

a sixth gear connected between said fifth gear and said second gear element of said second differential gear set for rotation therewith; and

second clutch means between said second gear element of said second differential gear set and said output rotary shaft for coupling said first gear element and said second gear element of said second differential gear set for simultaneous rotation.

2. A hydromechanical transmission comprising:

an input rotary shaft;

an output rotary shaft;

a pair of variable volume hydrostatic pump-motors being interconnected with each other through means of a closed hydrostatic circuit;

a first differential gear set having a first gear element connected with said input rotary shaft, a second gear element connected with one of said hydrostatic pump-motors, and a third gear element connected with said first and second gear elements thereof;

a second differential gear set having a first gear element connected with said output rotary shaft, a second gear element connected with the other of said hydrostatic pump-motors, and a third gear element connected with said first and second gear elements thereof;

an intermediate rotary shaft supporting said third gear element of said first differential gear set on one end and said third gear element of said second differential gear set on the other end thereof;

a first gear on said intermediate rotary shaft;

a second gear connected with said first gear for rotation therewith;

first clutch means between said second gear and said input rotary shaft for coupling said first gear element and said third gear element of said first differential gear set; and

second clutch means between said second gear and said output rotary shaft for coupling said first gear element and said third gear element of said second differential gear set.

3. A hydromechanical transmission comprising:

an input rotary shaft;

an output rotary shaft;

a pair of variable volume hydrostatic pump-motors being interconnected with each other through means of a closed hydraulic circuit;

a first differential gear set having a first gear element connected with said input rotary shaft, a second gear element connected with one of said hydrostatic pump-motors, and a third gear element connected with said first and second gear elements thereof;

a second differential gear set having a first gear element connected with said output rotary shaft, a second gear element connected with said one of said hydrostatic pump-motors, and a third gear element connected with said first and second gear elements thereof and to said input rotary shaft;

a first gear on said input rotary shaft;

first clutch means for coupling said first gear to the other of said hydrostatic pump-motors;

a second gear on said output rotary shaft;

second clutch means for coupling said second gear to said other of said hydrostatic pump-motors;

third clutch means between said second gear element of said first differential gear set and said one of said hydrostatic pump-motors; and

fourth clutch means between said second gear element of said second differential gear and said one of said hydrostatic pump-motors.

3,869,940
VEHICLE WITH DIFFERENTIAL ASSEMBLY

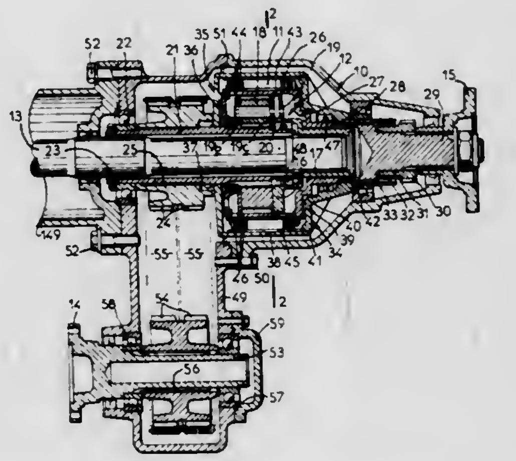
Oswald Webb, Whitley, and Brian Colin Pagdin, Sutton Coldfield, both of England, assignors to GKN Transmission Limited, Birmingham, England

Filed Jan. 8, 1973, Ser. No. 321,572

Claims priority, application Great Britain, Jan. 7, 1972, 721/72

Int. Cl. F16h *1/44*

U.S. Cl. 74—711 **13 Claims**



1. A vehicle including a prime mover, axles or axle parts drivable by the prime mover, a three-member differential gearing of epicyclic type including planet elements mounted in a planet carrier, a control coupling connected between two-members of the gearing to control relative rotation between said members, the coupling including first and second elements relatively rotatable in a viscous fluid having a viscosity of between 1,000 and 100,000 centistokes at 20℃ with a zero shear rate about a common axis, the elements being annular and spaced from said axis to provide a space thereabout and said differential gearing being located in said space, driving connections between the first and second elements respectively and two members of the differential gearing, and further driving connections between the vehicle prime mover and one member of the gearing and between the other members of the gearing respectively and either the parts of a single driven axle or two driven axles.

3,869,941
TORQUE WRENCH

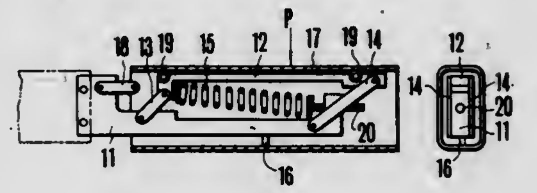
Hiroshi Tsuji, Tokyo, Japan, assignor to Tonichi Manufacturing Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,369

Claims priority, application Japan, Aug. 29, 1973, 48-97029

Int. Cl. B25b

U.S. Cl. 81—52.5 **3 Claims**



1. Preset type torque wrench having a toggle mechanism therein, wherein the improvement comprises a head rod secured to the torque applying head of said wrench, a slide rod arranged in parallel to said head rod, two pairs of toggle links arranged in spaced relationship from each other lengthwise of said head rod and said slide rod adjacent to the opposite ends of said slide rod and each pivotally connected to said head rod and said slide rod, and a spring interposed between said head rod and said slide rod and connected thereto.

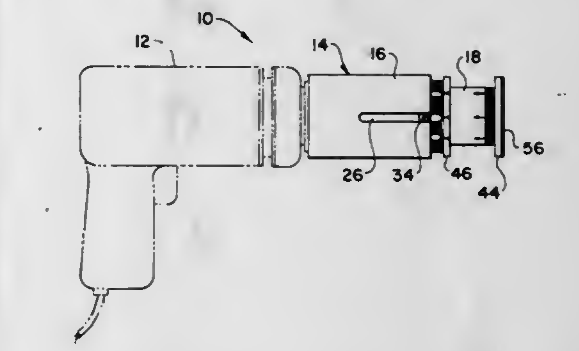
3,869,942
DRIVING TOOL

Charles J. DeCaro, Brighton Township, Beaver County, Pa., assignor to Textron Inc., Providence, R.I.

Filed Feb. 4, 1974, Ser. No. 439,033

Int. Cl. B25b *13/00, 21/00*

U.S. Cl. 81—54 **13 Claims**



1. An adapter for a fastener driving tool in which a clutch mechanism is operable therebetween comprising:

A. a housing adapted for securement to the driving tool;

B. a main body having an opening therethrough slidably positioned within the housing and adapted for engagement with a workpiece and for extensible movement from the housing;

C. a wrenching mechanism positioned within the main body opening including a forward fastener engaging end and a rearward clutch engaging end and an annular groove thereabout intermediate said ends; and

D. a detent assembly operative between the main body and the groove in the socket member so that as the main body is urged from an extended position into the housing, the detent engages the groove to move the socket member into engagement with the clutch mechanism and continued movement of the main body into the housing causes the detent to override the groove and move relative to the wrenching mechanism.

3,869,943
SELF-EJECTING CHUCK KEY

James R. Buck, Ross Twp., Mich., assignor to Buck Tool Company, Kalamazoo, Mich.

Filed July 19, 1973, Ser. No. 380,669

Int. Cl. B25b *13/02*

U.S. Cl. 81—90 A **1 Claim**

1. A self-ejecting chuck key adapted for introduction into a mating opening within the operating mechanism of a chuck, said key comprising:

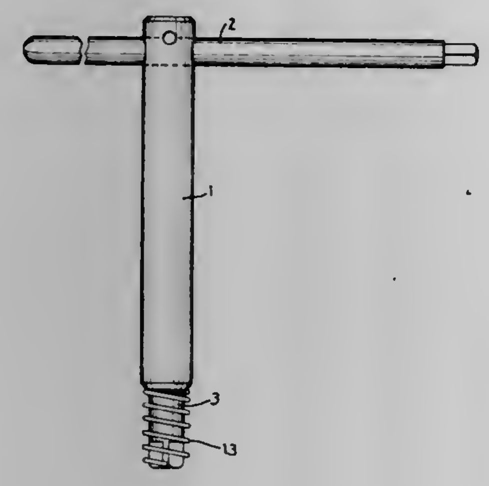
a substantially cylindrical shank portion adapted to have a transversely extending handle fixedly or removably connected to one end thereof;

a cylindrical nose portion projecting outwardly from and fixedly connected to the other end of said shank portion, said nose portion having a diameter which is substantially smaller than the diameter of said shank portion;

said nose portion having a plurality of flats formed thereon adjacent the free end thereof, said flats resulting in said nose portion having a noncircular part adjacent the free end thereof which is adapted to be inserted into the mating opening within the operating mechanism of a chuck;

a tapering and generally conical connecting portion fixedly connecting said shank portion and said nose portion, said connecting portion tapering outwardly in a diverging manner as it extends in a direction from said nose portion toward said shank portion, said connecting portion having an annular groove formed therein and encircling same, said annular groove being spaced intermediate the ends of said connecting portion and resulting in the formation of an annular tapered projection positioned between said groove and said cylindrical nose portion, said annular projection having a diameter greater than the diameter of said cylindrical nose portion; and

a standard coil spring having coils of uniform diameter encircling said nose portion over substantially the entire length thereof, one end of said coil spring being disposed at a point at least closely adjacent the free end of said nose portion, and the other end of said spring having an end coil thereof disposed within said groove for fixedly anchoring said other end of said spring.



3,869,944
OPEN CLAMP WITH MEANS FOR CLOSING THE BAND ENDS

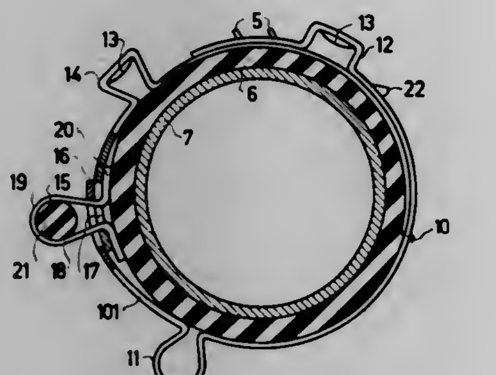
Hans Detiker, 21, Oberdorfstrasse, Horgen, Switzerland

Filed Apr. 10, 1973, Ser. No. 349,696

Claims priority, application Switzerland, Apr. 11, 1972, 5273/72; Aug. 9, 1972, 11743/72

Int. Cl. B65d *63/02*

U.S. Cl. 81—9.3 **29 Claims**



1. A clamp for clamping a hose onto a nipple by means of an open band adapted to be closed, said band being provided with perforation apertures in the upper band end and with barbs in the lower band end which engage in the perforation apertures when the band is placed about the hose, further perforation apertures being also provided in the lower band end, and a slot being provided in the upper band end within the area of the further perforation apertures, characterized in that the boundary wall of said slot is provided with an upset portion within the area of its surface pointing away from the upper end of the band.

3,869,945
SOCKET WRENCH HEAD FOR SPARK PLUGS

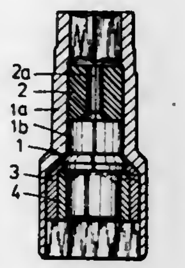
Hermann Jochen Zerver, Reinshagener Str. 2, 5630 Remscheid, Germany

Filed Aug. 21, 1973, Ser. No. 389,652

Claims priority, application Germany, Aug. 22, 1972, 72309796

Int. Cl. B25b *13/06, 13/48*

U.S. Cl. 81—125 **7 Claims**



1. A socket wrench head for spark plugs with terminals, which comprises in combination: a socket wrench head body having a hollow shank, and also having a first end portion for engagement with means for actuating said wrench head body and also having a second end portion axially opposite said first end portion for receiving the spark plug to be handled, said shank being located between said first and second end portions, a guiding sleeve arranged within said shank and having a bore extending in the axial direction of said shank for receiving and embracing only the terminal of a spark plug to be handled by said wrench, and a permanent magnet arranged within said second end portion for holding a spark plug introduced into said second end portion.

3,869,946
REPRODUCTION LATHE

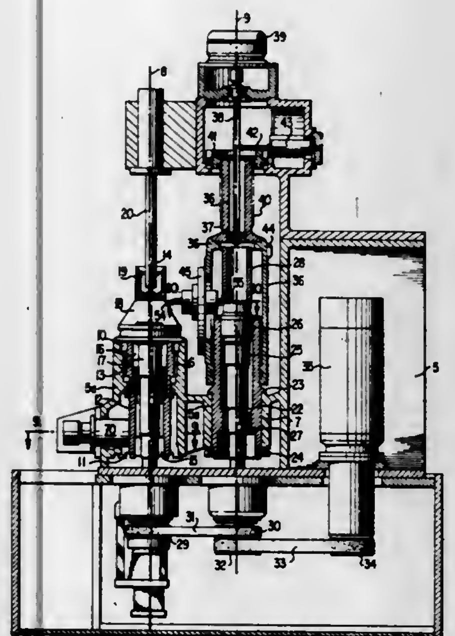
Jean-Pierre Vignaud, and Bernard Leguy, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 10, 1974, Ser. No. 432,234

Claims priority, application France, Mar. 15, 1973, 73.09335

Int. Cl. B23b *3/28*

U.S. Cl. 82—14 R **21 Claims**



1. Reproduction lathe for the machining of articles by tool means having associated therewith sensing means for engaging a reproduction template comprising:

a framework upon which are rotatably mounted two parallel spindles for respectively carrying said article to be machined and said reproduction template;

a machining sheath carriage disposed about said template spindle, which is translatably movable along and rotatably movable about its longitudinal axis;

at least one support means detachably mounted upon said sheath so as to extend perpendicular to the axes of said spindles; and

tool means disposed exteriorly of said sheath and sensing means disposed interiorly of said sheath, said tool and sensing means being secured to said support means at opposite ends thereof,

whereby said tool means is simultaneously moved in accordance with the translatable movement of said sheath and the relative oscillating movement resulting from the action of said reproduction template upon said sensing means with which said sensing means is engaged.

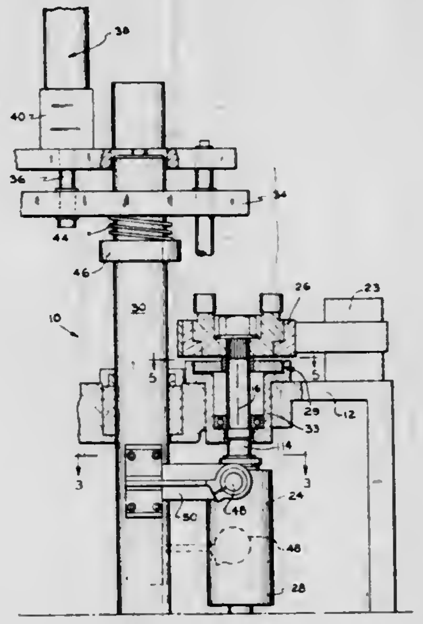
3,869,947
PISTON TURNING MACHINE

John Vandenkieboom, St. Clair Shores, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.

Filed Aug. 20, 1973, Ser. No. 389,483

Int. Cl. B23b *3/28*

U.S. Cl. 82—19 **2 Claims**



1. Apparatus for machining piston skirts to a predetermined cross-sectional shape comprising:

a. an elongated rotable shaft having an axis,

b. means for supporting a piston having a skirt to be machined on one end of said shaft so that the axis of said skirt is substantially coincident with said shaft axis,

c. cam means intermediate the ends of said shaft corresponding in cross-sectional shape to said predetermined cross-sectional shape, said cam means having a diameter not substantially greater than the diameter of the piston, said cam means having an external surface and an axis substantially coincident with said shaft axis,

d. a support bar having a longitudinal axis spaced from said shaft axis, said support bar being mounted for movement substantially parellel to said shaft axis,

e. a turning tool secured to said bar and extending toward said shaft axis for engagement with the skirt of a piston on said support means, and

f. cam follower means secured to said bar and engaged with said cam means, said cam follower means engaging said cam means at a point which is a certain distance from a line extending between said support bar axis and said shaft axis, and said turning tool engaging said piston at a point which is a distance from said line less than said certain distance, and bearing means supporting said shaft at a position spaced from said cam means, said bearing means being movable transversely of said shaft for deflecting said cam means.

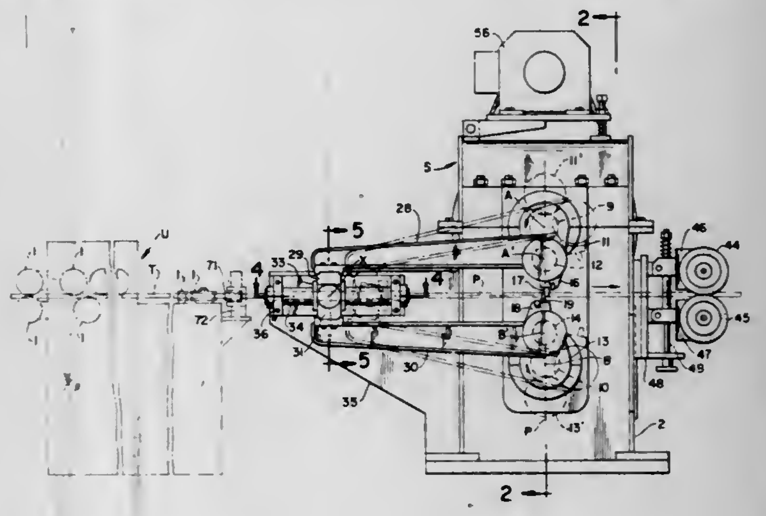
3,869,948
SHEAR APPARATUS

Robert J. Rau, Pittsburgh, Pa., assignor to Aetna-Standard Engineering Company, Ellwood City, Pa.

Filed Mar. 7, 1974, Ser. No. 448,888

Int. Cl. B26d *1/40, 1/56, 5/40*

U.S. Cl. 83—286 **20 Claims**



18. Flying shear apparatus for cutting an elongated workpiece as it moves in a predetermined path of travel, comprising two crankshafts rotatably mounted about axes on opposite sides of said path of travel, each of said crankshafts having a crank pin offset from the axis of rotation of said crankshaft, the off-set distances being substantially equal for both crankshafts, a blade holder carrying a cutting blade rotatably mounted on the crank pin of each of said crankshafts, means actuated by movement of a predetermined length of said workpiece for rotating said crankshafts in opposite angular directions as said cutting blades approach in cutting relation to cut said workpiece and separate, a tubular guide member rigidly mounted about the path of travel of said workpiece so said workpiece passes through said guide member and is guided by it, a movable supporting member slidably mounted on said tubular guide member to support it for movement in a path parallel to said workpiece, and a pair of link members each of which is rigidly connected at one of its ends to one of said blade holders and at its other end is pivotally connected to said movable supporting member.

3,869,949
SHEAR APPARATUS WITH IMPROVED BLADE HOLDING MEANS

David E. Dolle, Youngstown, Ohio, assignor to Aetna-Standard Engineering Company, Ellwood City, Pa.

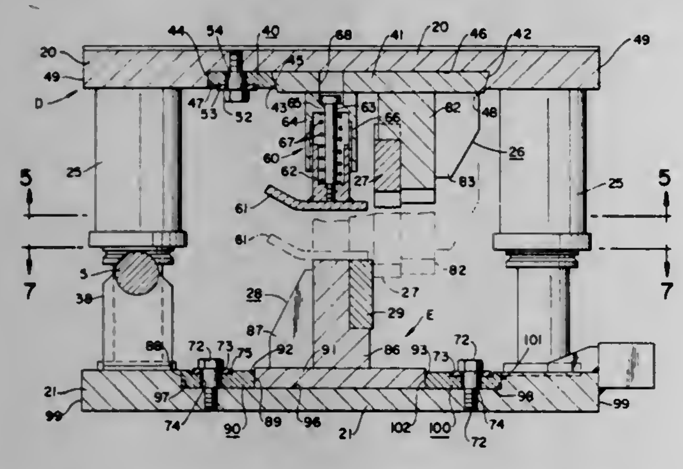
Filed Feb. 27, 1974, Ser. No. 446,166

Int. Cl. B23d *25/04;* **B26d** *1/56*

U.S. Cl. 83—320 **14 Claims**

1. In a machine of the character described, an upper platen having an upper supporting member mounted thereon, a lower platen having a lower supporting member mounted therein in vertical alignment with said upper supporting member, means for causing relative vertical movement of said platens toward and away from each other, a removable elongated top blade holder and top blade rigidly mounted on said upper supporting member, spaced shoulders in the upper portion of said lower supporting member having parallel side faces, a mounting member and a pair of elongated wedges mounted in the space between said shoulders for sliding movement lengthwise toward one side of the machine, a removable elongated lower blade holder and lower blade rigidly mounted on said mounting member, said wedges being mounted on opposite sides of said mounting member and having outer side surfaces slidably engaging said side faces of said shoulders and flat tapered inner side faces slidably engaging the side faces of said mounting member, said tapered side faces having the

same amount of taper and being adapted to position said lower blade parallel to said top blade when the two wedges are forced against said mounting member and against the side faces of said shoulders, releasable hold-down means for clamping each wedge in its adjusted position, and releasable means for preventing sliding movement of said mounting member out of its adjusted position, said lower blade holder and lower blade being removable with said mounting member by sliding them lengthwise out of the side of the machine after said wedges are loosened.



3,869,950

APPARATUS FOR TRANSVERSE CUTTING OR PERFORATING A CONTINUOUSLY ADVANCING WEB

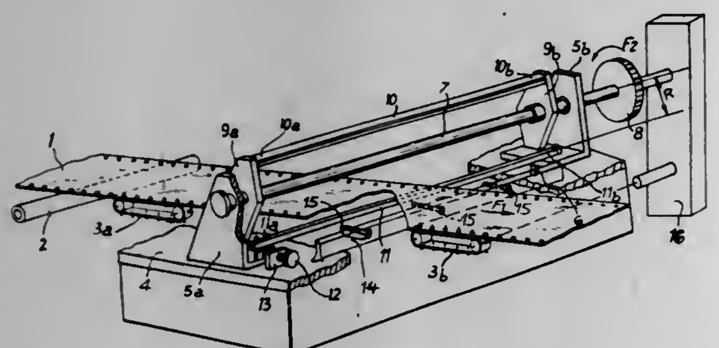
Arthur Bienvenu Dalla Serra, Aulnay sur Bois, France, assignor to Societe Herve & Fils, Papeteries du Sentier (Societe Anonyme), Paris, France

Filed Mar. 7, 1973, Ser. No. 338,659

Claims priority, application France, Mar. 7, 1972, 72.07826; Feb. 19, 1973, 73.05792

Int. Cl. B26f *1/00;* **B41g** *1/00*

U.S. Cl. 83—341 **8 Claims**



1. An apparatus for performing periodic, sequential penetrations in a continuously advancing material web, comprising:

- a. a supporting frame including first drive means for the material web;
- b. a transversely extending assembly pivotally mounted on said supporting frame and including:
  1. laterally associated bracket members;
  2. a straight shaft extending between and associated with the bracket members, said shaft being positioned parallel to the plane of the material web and further having an axis of rotation and provided with second drive means;
  3. a straight-edged rotatable cutter blade having a cutting edge and mounted on and rotatable about said shaft in parallelism to said axis of rotation so that, when rotated, the cutting edge generates a rectangular cylinder of revolution; and
  4. a flexible straight-edged counterblade having a cutting edge including terminal end points and being held in its operative position solely by attachment of said end points to said bracket members and at an angle with respect to said axis of rotation and in such a position that at least said two end points of the cutting edge of the counterblade always lie on the surface of said cylinder of revolution, that portion of said counterblade between said end points being free of support; whereby during operation of the apparatus, the cutting edge of the counterblade cooperates with the cutting edge of the rotatable blade to perform the periodic, sequential penetrations of the material web and the flexibility of the counterblade alone permits the passage of the rotating blade beyond the counterblade.

3,869,951

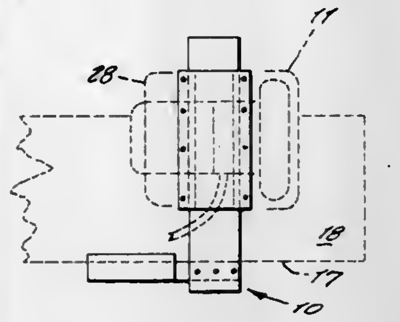
PORTABLE POWER SAW GUIDE

William J. Litwin, 323 Church St., Newington, Conn. 06111

Filed Oct. 16, 1973, Ser. No. 406,968

Int. Cl. B27b *9/04*

U.S. Cl. 83—745 **1 Claim**



1. A guide device intended for use as an accessory for a portable power circular saw to guide the saw squarely across a piece of lumber being cut in a cross cut manner, the guide device comprising, in combination:

- a square unit and a saw mounting plate unit reciprocally slidable longitudinally therealong;
- said square unit comprising:
  - an elongated rectangularly shaped leg having a flat vertical interior surface, a flat vertical exterior surface, flat horizontally extending top and bottom edges, a front vertical end, and a back vertical end;
  - a flat rectangularly shaped elongated guide member generally of a board shape and having a flat horizontally extending top surface, a flat horizontally extending bottom surface, opposed flat parallely extending side edges, and opposed front and back edges;
  - fastening means affixing said back end edge of said guide member to said back end portion of said top edge of said leg with said guide member overlapping said leg and said guide member extending outwardly of the interior surface of said leg at a ninety degree engle thereto;
  - a flat elongated rectangularly shaped lip forming member having a flat horizontal top surface, a flat horizontal bottom surface, transversely opposed longitudinally extending parallel side edges, and longitudinally spaced apart transversely extending front and back edges;
  - fastening means affixing said lip forming member to said top edge of said leg extending longitudinally therealong with said lip forming bottom surface in juxtaposition with said leg top edge, the lip forming member extending outwardly over the interior surface of said leg member to overlap the same and form a horizontal lip therewith which extends at a ninety degree angle to the interior surface of the leg member;
- said plate unit comprising:
  - a flat rectangularly shaped plate member having a flat smooth horizontal top surface, a flat horizontal bottom surface, opposed parallel side edges, and opposed parallel front and back edges;

  - a pair of centrally spaced longitudinally spaced apart apertures extending through said plate member;
  - a pair of mounting bolts, each bolt associated with one of said plate member apertures and adapted to pass therethrough for detachably securing said plate member to a base portion of the portable power circular saw with the side edges of the plate member extending parallel to the plane defined by the circular blade of the circular saw;
  - a pair of transversely spaced apart longitudinally extending gib members each of an elongated rectangular shape with each extending along an opposite side edge of said plate member between opposite end edges thereof and in juxtaposition with the flat bottom surface thereof;
  - the spacing between interior confronting side edges of said gib members being slightly greater than the width of said guide member of said square unit;
  - the thickness of each of said gib members being identical to each other and being slightly greater than the thickness of said guide member of said square unit;
  - a pair of flat elongated rectangularly shaped holding members each extending along a bottom surface of one of the gib members longitudinally of the plate member and overlapping the interior side edges of the gib members such that a pair of grooves having a generally U-shaped cross-sectional configuration are defined between the gib members, holding members, and bottom surface of the plate member;
  - means disposed at spaced intervals along the side edges of the plate member and affixing the gib member and said holding member thereto;
- said plate unit being reciprocally slidable along said guide member of said square unit which is movably received in said plate unit grooves so that when said square unit guide member is positioned against an upper surface of the piece of lumber to be cut with said square unit leg positioned alongside said piece of lumber with said lip member resting on said upper side of said lumber and said leg interior surface engaging the adjacentmost edge of said piece of lumber then the saw secured to the edge unit is guided thereby in a manner normal to the longitudinal axis of the wood to provide an accurate cross-cut of the wood.

3,869,952

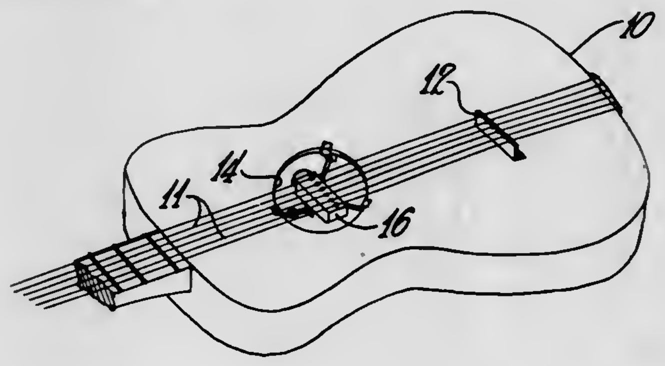
PICKUP MOUNT FOR STRINGED MUSICAL INSTRUMENTS

Horace N. Rowe, Rt. 5, Box 158, Swanton, Ohio 43558

Filed Mar. 20, 1974, Ser. No. 452,738

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.16 **15 Claims**



1. In combination with a stringed musical instrument having a hollow instrument chamber and an opening in the chamber wall underlying the strings;

- means for support of a pickup for the musical output of the instrument under said strings within the space transverse to the perimeter of said opening,
- said support means comprising a platform having legs extending therefrom establishing engagement with the chamber wall edge at regions spaced about the perimeter of said opening for support of said platform below said strings.

3,869,953

TUNING PIN FOR PIANO

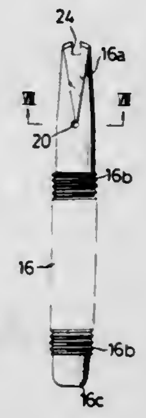
Horoshi Tatebe, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Continuation of Ser. No. 278,010, Aug. 4, 1972,. This application Dec. 17, 1973, Ser. No. 425,222

Claims priority, application Japan, Aug. 5, 1971, 46-70185

Int. Cl. G10c *3/10*

U.S. Cl. 84—201 **4 Claims**



1. A plurality of tuning pins for a piano,

- a. each of said pins essentially consisting of an elongated body having a longitudinal axis and two longitudinally spaced end faces transverse to said axis,
- b. said body being formed with a bore diametrically therethrough adjacent one of said faces and remote from the other face,
- c. a first portion of said body being axially defined by said bore and said one end face,
- d. a second portion of said body being axially defined by said bore and said other end face,
- e. said one end face carrying an elongated index mark extending across said one end face transversely of said axis and indicative of the angular position of said bore relative to said axis,
- f. the spatial relationship of said bore and of said index mark being the same in each of said pins,
- g. said second portion carrying threads about said axis.

3,869,954

STRINGED INSTRUMENT

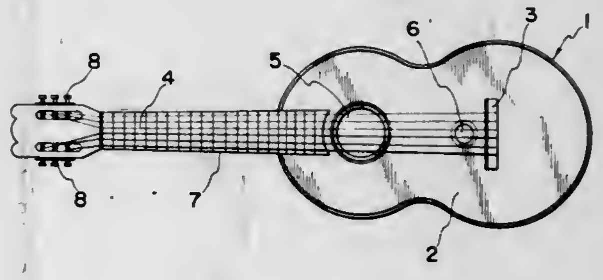
Testuo Ito, 5-5-22, Shimo-Hoya, Tokyo, Japan

Filed July 31, 1974, Ser. No. 493,605

Claims priority, application Japan, Oct. 16, 1973, 48-119951

Int. Cl. G10d *3/00*

U.S. Cl. 84—291 **5 Claims**



1. In a stringed instrument comprising a resonance body having a sound board provided with a sound hole and a bridge for fastening a string; and a neck secured to said resonance body at the lower end thereof and provided with a peg for straining and loosening said string at the upper end thereof; the improvement characterized in that two sound holes of substantially circular shapes are provided on said sound board

at positions under said string; and that the diameter of the first sound hole is two times as long as that of the second hole.

3,869,955
RECORDER

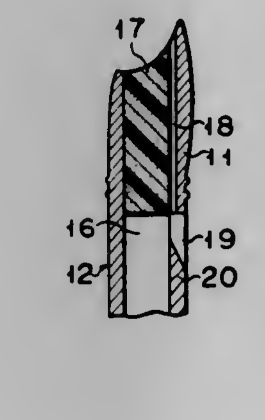
Mitsuo Yamaguchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Oct. 19, 1973, Ser. No. 407,916

Claims priority, application Japan, Oct. 30, 1972, 47-124328

Int. Cl. G10d *7/00*

U.S. Cl. 84—380 **4 Claims**



1. A recorder having within a mouthpiece a block for forming a wind channel, said block being made of a plastic material having a plurality of intercommunicating cells.

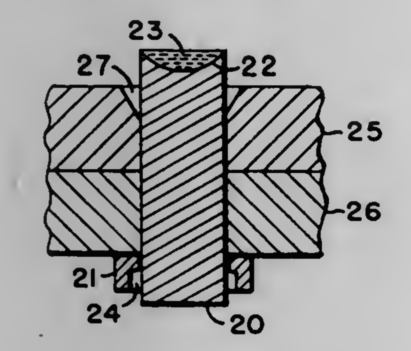
3,869,956
PIN ASSEMBLY RIVET

Robert A. Breer, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.

Filed Apr. 2, 1973, Ser. No. 347,178

Int. Cl. F16b *19/06*

U.S. Cl. 85—37 **1 Claim**



1. In combination with a workpiece of metallic material, said workpiece having a cylindrical hole therethrough and a countersink in one surface thereof, a fastener comprising:
- a cylindrical pin of titanium alloy extending through said hole, said alloy being harder than the metallic material of said workpiece, a cavity being formed in one end of said pin on the axis thereof,
- a hydraulic fluid medium in said cavity, said pin being upsettable by axial forces so applied that the fluid forces the cavity end of said pin radially to expand and descend into said countersink, and
- a collar formed with a radial relief and frictionally engaging the end of said pin opposite to said cavity end so that said axial forces extrude a marginal portion of said opposite end of said pin into said radial relief.

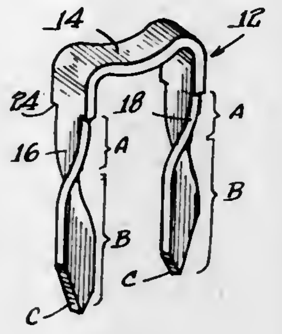
3,869,957
SELF-CLINCHING STAPLE

Gerald Dean Barth, Dundee, and John Bert Alexander, Wheeling, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,393

Int. Cl. F16b *15/00*

U.S. Cl. 85—49 **6 Claims**



1. A one-piece self-clinching staple of metallic flat wire stock including a transverse bight section, and an elongate leg section forming an integral continuation of said bight section at each extremity thereof, each of said leg sections extending downwardly from said bight section and lying in a plane substantially normal with respect thereto, said leg sections including entering and trailing portions each including wider surfaces and narrow, longitudinally extending edge surfaces, said trailing portions being in the vicinity of said bight section and comprising a portion extending substantially in a straight line with the wider surfaces thereof in faced parallel relation, the portion of each leg section extending axially beyond said trailing portions being twisted about its longitudinal axis in such a direction as to provide an entering portion with the wider surfaces thereof lying in a common longitudinal plane substantially normal to the longitudinal planes defined by the wider surfaces of said trailing portions and to the transverse bight section, the free end of the entering portion including a relatively sharp point to facilitate initial penetration of a worksheet, said point being formed by a pair of said longitudinally extending side edge surfaces terminating at an apex, one of each pair of edge surfaces extending for a greater axial distance from the apex at an angle to the plane of the trailing portion than the other of said pair of side edge surfaces to provide a cam surface for effecting automatic clinching movement of said leg sections when driven through a work sheet.

3,869,958
SCREW GROMMET

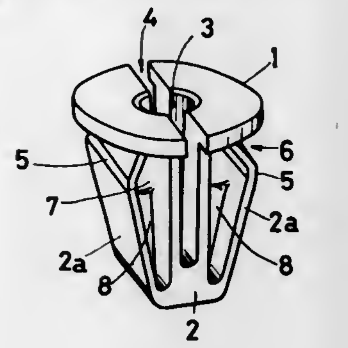
Hiroo Murayama, Tokyo, Japan, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 13, 1972, Ser. No. 288,625

Claims priority, application Japan, Sept. 13, 1971, 46-82566

Int. Cl. F16b *13/08*

U.S. Cl. 85—80 **2 Claims**



1. A one piece plastic anchor device for application to a non-circular apertured workpanel to accommodate a threaded shank of a screw member, said anchor member including a head section providing a surface for clampingly engaging one side of the workpanel and a tapered shank section extending longitudinally from said head section, said head and shank sections being bifurcated by a common slot which extends through said head into said shank to a point adjacent the free end of said shank defining a pair of shank sections where said shank sections are integrally joined, each of said shank sections including an inner wall extending from the head to the free end and having a central screw receiving axially extending groove which extends through each section of said head and an outer wall spaced from the inner wall also extending from the head to the free end and which is tapered outwardly from the free end to an intermediate point spaced from said head to define an impositive shoulder for initial engagement with the opposite surface of said workpanel, said outer walls over a limited axial extent thereof between said head and a transverse plane axially spaced below said shoulder being flexible toward one another so that insertion of the fastener into any one of a plurality of different sized apertured workpanels will flex said outer wall inwardly to form a positive shoulder for retention and integrally connected rigid reinforcing means extending radially from each inner walls to the adjacent outer walls and further extending axially from said free end to said transverse plane axially spaced from said shoulder to reinforce said outer wall and adapted to reinforce said positive shoulder by strut action when a screw is introduced into said groove and expands the shank sections.

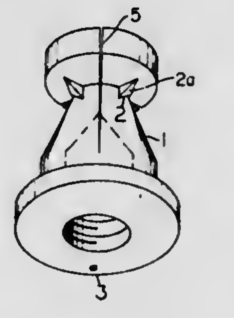
3,869,959
FASTENER DEVICE

George A. Moen, 827 W. 26th Ave., Anchorage, Alaska 99503

Filed Apr. 26, 1973, Ser. No. 354,595

Int. Cl. F16b *13/04*

U.S. Cl. 85—83 **3 Claims**



1. An expansible self-locking fastener member adapted for mounting in a hole of given diameter contained in a support, comprising a unitary resilient fastener member (1) including
- a. a cylindrical body portion (*1a*) the outer diameter of which corresponds with the hole diameter;
- b. said body portion containing at one end:
  - 1. a threaded bore (4); and
  - 2. an external flange portion (*1b*);
- c. a cylindrical collar portion (*1c*) spaced from the other end of said body portion, said collar portion having external diameter which equals that of the body portion;
- d. a tapered neck portion (*1d*) of progressively reduced outer diameter connecting said collar and body portions, said neck portion containing a chamber (*4a*) in communication at one end with the adjacent end of said threaded bore, said chamber being convergent in the direction of said collar portion;
- e. said collar and neck portions containing at least one longitudinally extending slit to permit the radial outward expansion thereof; and
- f. rib means arranged on the exterior surface of at least one of said body and neck portions for preventing rotation of said fastener means relative to said support, said rib means including a plurality of first ribs arranged in circumferentially spaced relation on said neck portion at the juncture thereof with said collar portion, said first rib means also being connected with said collar portion, whereby upon introduction of the collar and neck portions of the fastener member into the hole in said support and the introduction of a threaded locking member into the threaded bore of said bylindrical portion and at least partially within said neck portion, said collar portion is expanded radially outwardly into tight frictional engagement with the adjacent wall surface of said hole.

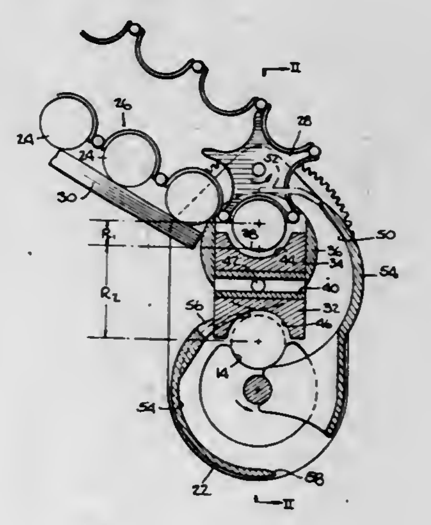
3,869,960
ACCELERATOR

Burton Parker Clark, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Feb. 8, 1973, Ser. No. 330,601

Int. Cl. F41d *9/06*

U.S. Cl. 89—33 CA **4 Claims**



1. An accelerator for a train of articles comprising:
- a first article conveyor for conveying articles at a first velocity;
- a second article conveyor for carrying articles at a second velocity;
- an intermediate shuttle having two article receiving cups mutually spaced 180° apart, each for receiving, in alternation, an article from said first conveyor at said first velocity and for delivering such article to said second conveyor at said second velocity;
- said shuttle being journalled for rectilinear movement in a guide which is journalled for rotation about a fixed intermediate axis; and
- control means coupled to said shuttle and to said guide for causing said guide to rotate about said intermediate axis and said shuttle to move rectilinearly in said guide;
- said guide being a hub having a transverse slot;
- said shuttle being disposed in and reciprocating along said slot; and
- said control means includes:
  - a rectilinear cross slot in said shuttle, and
  - a stationary cam rod extending into said cross slot.

3,869,961
ACTION SPRING ASSEMBLY FOR FORWARDLY URGING THE ACTION BAR OF SHOTGUNS

Takeji Kawamura, 1388-1 Akahane, Ishinazaka-cho, Hitachi-shi, Ibaragi-ken, Japan

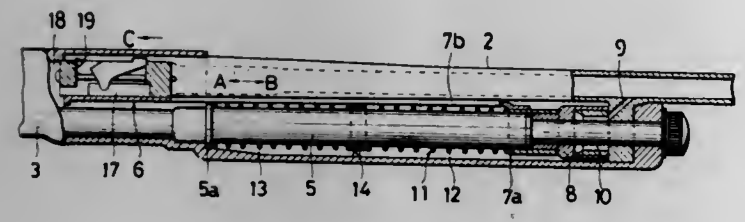
Filed Mar. 19, 1973, Ser. No. 342,599

Int. Cl. F41d *5/04*

U.S. Cl. 89—191 A **3 Claims**

1. In a spring assembly returning an action bar to its original position which has been moved in one direction by a piston, the improvement comprising a pair of coil springs arranged in a row and a shock absorbing member interposed between said coil springs to buffer the force applied to one spring and to transmit the buffered force to the other spring, said shock

absorbing member having first and second rings arranged coaxially with the coil springs and contacted with each other,

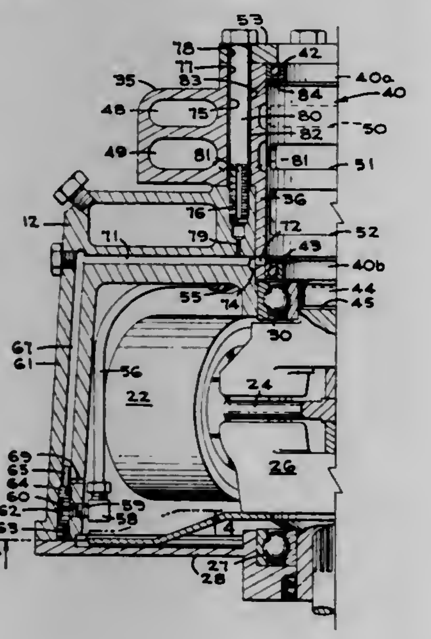


the first ring being able to be resiliently expanded in a radial direction when being pressed by the second ring.

3,869,962

AIR MOTOR

George E. Austin, Mercer Island, and Jagdish C. Kalyan, Seattle, both of Wash., assignors to Compressed Air Products Inc., Des Moines, Wash.
Filed Oct. 16, 1972, Ser. No. 298,124
Int. Cl. F01b *31/10*
U.S. Cl. 91—46 **4 Claims**

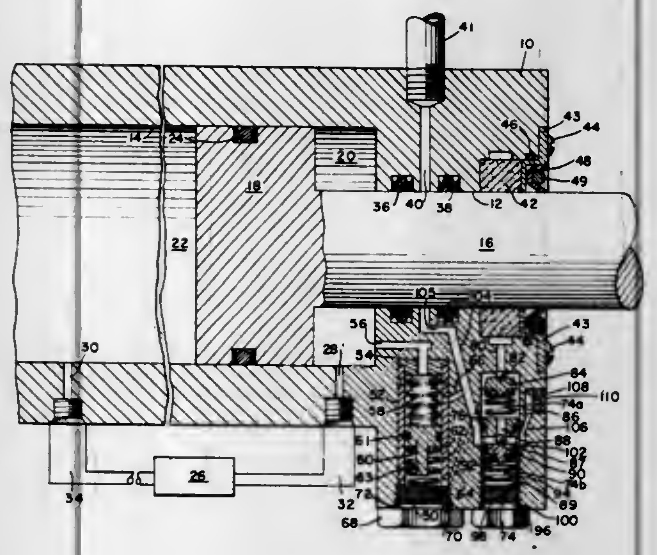


1. An air motor comprising a housing, a crankshaft in said housing, a plurality of power cylinders for effecting turning of said crankshaft, at least one bearing in said housing, means defining air passages for delivering pressurized air to said cylinders, and lubricating means responsive to the pressure of air in one of said air delivery passages for directing oil through said system to said bearing, said lubricating means comprising lubrication passages formed in said housing leading to said bearing, means defining a lubricating oil reservoir in the lower portion near the lower end thereof having a connecting passage communicating said reservoir with the lower section of said lubrication passages, a conduit communicating said one air delivery passage with said lubrication passage section and including a venturi nozzle in said lower lubrication passage section, the discharge end of said nozzle being slightly above the level of said connecting passage, whereby pressurized air discharged from said nozzle will draw oil through said connecting passage and entrain it for delivery to said bearing.

3,869,963

HYDRAULIC ACTUATOR HAVING A SELF-ASPIRATING ACTUATOR ROD SEAL

Arnold Schindel, Fairlawn, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Nov. 9, 1973, Ser. No. 407,351
Int. Cl. F01b *31/00*
U.S. Cl. 92—86 **5 Claims**



1. A hydraulic actuator assembly comprising:
a. a housing defining an operating chamber;
b. an actuator rod consisting of a piston portion disposed in said operating chamber and a stem portion connected to said piston portion and disposed in a bore formed in said housing;
c. means to introduce fluid into said operating chamber in a manner to reciprocate said rod relative to said housing;
d. absorbent material means located at the interface between said stem portion and the wall of said housing defining said bore for absorbing fluid leaking from said operating chamber;
e. a storage chamber in said housing;
f. means responsive to fluid pressure conditions in said operataing chamber for directing fluid from said absorbent means to said storage chamber when said rod moves in one direction, and for directing said fluid from said storage chamber externally of said housing when said rod moves in a direction opposite to said one direction;
g. sealing means for said fluid supported by said housing and extending between said operating chamber and said absorbent material means, comprising a pair of spaced sealing members and a passage extending between said sealing members, said passage being exposed at one end to the fluid leaking past said sealing member closest to said operating chamber and being connected at its other end to an outlet for directing said latter fluid externally of said housing.

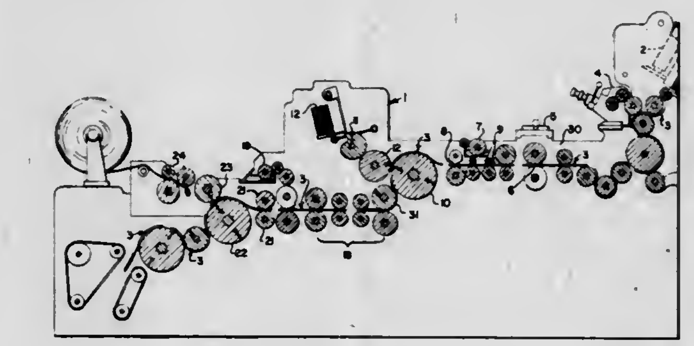
4. A hydraulic actuator assembly comprising:
a. a housing defining an operating chamber;
b. an actuator rod consisting of a piston portion disposed in said operating chamber and a stem portion connected to said piston portion and disposed in a bore formed in said housing;
c. means to introduce fluid into said operating chamber in a manner to reciprocate said rod relative to said housing;
d. absorbent material means supported by said housing for absorbing fluid leaking from said operating chamber;
e. means for drawing fluid from said absorbent means and for discharging said fluid externally of said housing in response to fluid pressure conditions in said operating chamber when the said rod is moved comprising:
1. a storage chamber;
2. means dividing said storage chamber into first and second chambers;

3. a first channel connecting said absorbent means to the first chamber of said storage chamber;
4. a second channel connecting the second chamber of said storage chamber externally of said housing;
5. a first spring loaded ball check valve closing off the point of entry of said first channel to said first chamber;
6. a third channel through said means dividing said storage chamber into first and second chambers;
7. a spring biased piston in said second chamber;
8. a second ball check valve closing off said third channel at its entry into said second chamber under the force of said piston;
9. means in said housing in response to fluid pressure conditions in said operating chamber for creating a vacuum when said rod is moved in one direction and a pressure in response to pressure conditions in said operating chamber when said rod is moved in the other direction;
10. a fourth channel coupling said vacuum means to said first chamber whereby said means creating a vacuum will open said first ball check valve drawing fluid from said absorbent means into said first chamber while at the same time closing off said second check valve and pressure in said fourth channel into said first chamber will cause the fluid therein to open said second check valve causing said fluid to flow into said second chamber and out said second channel externally of said housing.

3,869,964

METHOD AND APPARATUS FOR PRODUCING ARTICLES HAVING A POCKET CONTAINING A REMOVABLE INSERT

Richard Kranz, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.
Filed Aug. 20, 1973, Ser. No. 389,447
Int. Cl. B31b *1/82, 39/74*
U.S. Cl. 93—61 A **11 Claims**

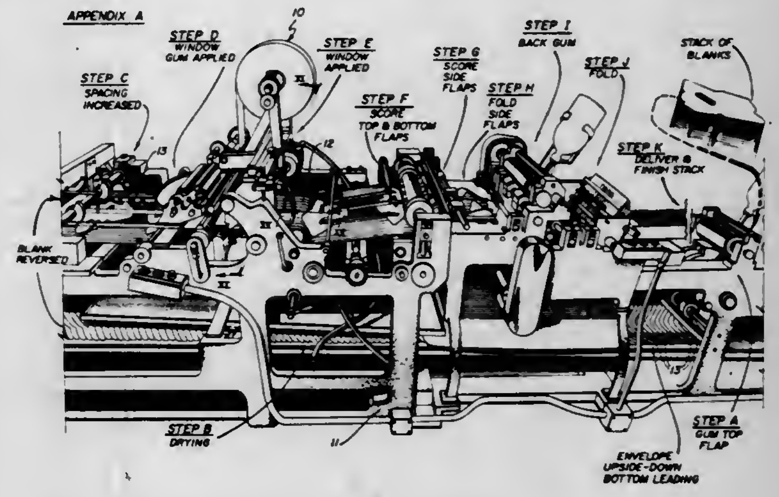


1. A method of producing articles having a surface supporting sheet means forming a pocket containing a removable insert comprising:
a. propelling said articles along a path with said surface exposed;
b. applying said removable insert from a remote location into overlying, contacting, impermanent relation with said surface, said removable insert being of smaller size than said surface whereby said surface is partially covered by said removable insert and exposed over an area located beyond a substantial peripheral portion of said removable insert; and
c. applying said sheet means from a remote location into at least partially overlapping relation with said removable insert and into adhesive contact with said area forming a pocket at least partially containing said insert and having an opening sufficient to withdraw said removable insert therefrom,
d. the application of said removable insert and sheet means being performed while continuously propelling said articles along said path.

3,869,965

ENVELOPE MACHINE

George F. Howatt, Holden, Mass., assignor to New England Envelope Manufacturing Co., Worcester, Mass.
Continuation of Ser. No. 335,725, Feb. 26, 1973, abandoned. This application July 12, 1974, Ser. No. 487,906
Int. Cl. B31b *1/82*
U.S. Cl. 93—61 A **6 Claims**

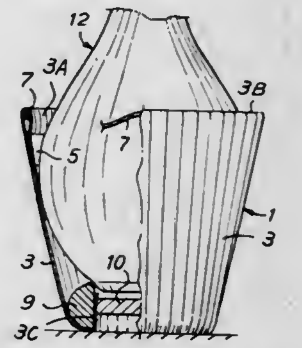


1. An envelope machine, comprising:
a. a frame,
b. a conveyor for carrying envelope blanks longitudinally of the frame,
c. a primary shaft rotatably mounted in and extending transversely of the frame above the conveyor and driven in synchronization therewith,
d. a secondary shaft rotatably mounted on the primary shaft with its axis parallel to and spaced from that of the primary shaft,
e. a gum applicator fastened to the secondary shaft and taking part not only in its rotation with the primary shaft, but also in its rotation about its own axis,
f. means producing the said rotation of the secondary shaft to move the applicator from an operative position wherein rotation of the primary shaft causes the applicator to engage an envelope blank on the conveyor to an inoperative position wherein the applicator does not strike the conveyor, the said means consisting of an actuator, a flexible transmission means arranged in a line operated on one end by the actuator, and an abutment on the secondary shaft engaged by the other end of the line.

3,869,966

METHOD FOR FORMING A SHAPED COVER FOR A FLASK

Carlo Brandigi, Tosi Reggello, and Giuliano Fantechi, S. Ellero, Reggello, both of Florence, Italy (I-50060)
Filed Nov. 22, 1972, Ser. No. 308,722
Claims priority, application Italy, Nov. 30, 1971, 9769/71
Int. Cl. B65b *21/24*
U.S. Cl. 93—54 R **3 Claims**



1. A process for forming a cover for a flask comprising the steps of first covering an inverted flask laterally with a skirt by arranging a plurality of parallel, evenly distributed, lengths of strip-like material in an open-ended annular configuration around the inverted flask; then placing an annular core within the skirt adjacent one end thereof; thereafter deforming the

corresponding end portions of the lengths of strip-like material, adjacent said one end, relative to the annular core, so that such corresponding end portions lie adjacent the interior of the annular core; and finally anchoring the corresponding end portions by inserting plug means into the annular core so that the corresponding end portions of the lengths of strip-like material are clamped between the inner surface of the annular core and the plug means, with the core providing a base of the cover.

3,869,967

AIR VENT HEAD, ESPECIALLY FOR SHIP'S TANKS

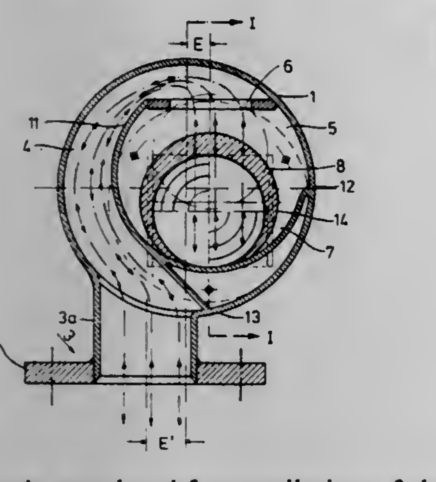
Josef Lenz, Haus No. 40, 2831 Russen, Germany

Filed Nov. 15, 1973, Ser. No. 416,044

Claims priority, application Germany, Nov. 16, 1972, 2256144

Int. Cl. F23l *17/02*

U.S. Cl. 98—61 **10 Claims**



1. A cylindrical air vent head for ventilation of ship's tanks including,
   - means defining a first chamber having a circumferential wall,
   - a connecting piece attached to said circumferential wall for a vent pipe,
   - means defining a second chamber connected to the outside of the cylindrical head and connected to the first chamber by a communicating orifice in a common wall of both chambers,
   - said second chamber being arranged eccentrically within the first chamber,
   - and means responsive to water entering said second chamber for closing said communicating orifice.

3,869,968

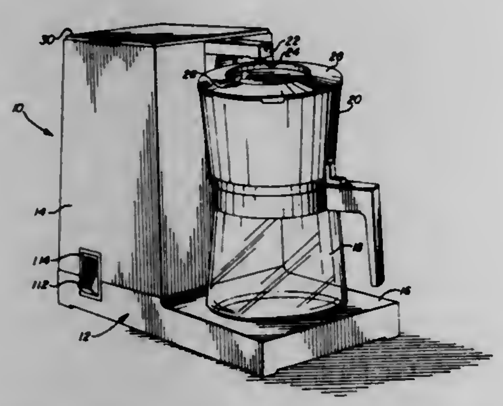
COFFEE MAKER

Russell E. Ihlenfeld, Allentown, Wis., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed Sept. 24, 1973, Ser. No. 400,197

Int. Cl. A47j *31/56*

U.S. Cl. 99—280 **8 Claims**



4. In a coffee maker; a water boiler housing having an electrical boiler heater; a thermostatic switch coupled to said boiler heater for electrically energizing and de-energizing it; said thermostatic switch disposed to sense the temperature of said boiler for controlling said heater; a coffee pot heater; and thermally conductive means disposed and adapted to transfer heat from said coffee pot heater to said boiler to thereby hold said thermostatic switch at a temperature to maintain said boiler heater de-energized after water flow through said boiler has been reduced and depleted and after said thermostatic switch has initially responded to an increase in boiler temperature which has thereby de-energized said boiler heater.

3,869,969

TOASTING APPARATUS

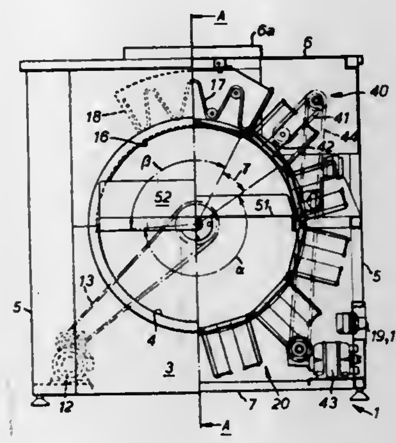
Douglas Cecil William Thomas Sharp, Midgham, England, assignor to Watermill Engineering Limited, Woolhampton, England

Filed June 25, 1973, Ser. No. 373,002

Claims priority, application Great Britain, July 3, 1972, 30946/72

Int. Cl. A47j *37/04*

U.S. Cl. 99—327 **26 Claims**



1. A toasting apparatus, comprising
   - a. a disc member mounted for rotation about a fixed axis;
   - b. a plurality of frames circumferentially mounted on said disc member for rotation therewith, each of said frames being adapted to hold an item of food to be toasted, said frames being fixedly secured to the periphery of the disc member to form a drum-like structure therewith, said frames containing radially inwardly facing openings to permit items of food to be loaded from within the drum-like structure;
   - c. drive means for rotating said disc member about said fixed axis;
   - d. means defining a heating zone through which said frames successively pass during rotation of said disc member for toasting items of food loaded in said frames; and
   - e. means defining an unloading station through which said frames successively pass following the passage thereof through said heating zone, thereby permitting removal of the items of food after toasting.

3,869,970

ELECTRIC TOASTERS

John Scott Eagle, Stamford, England, assignor to British Domestic Appliances Limited, Peterborough, England

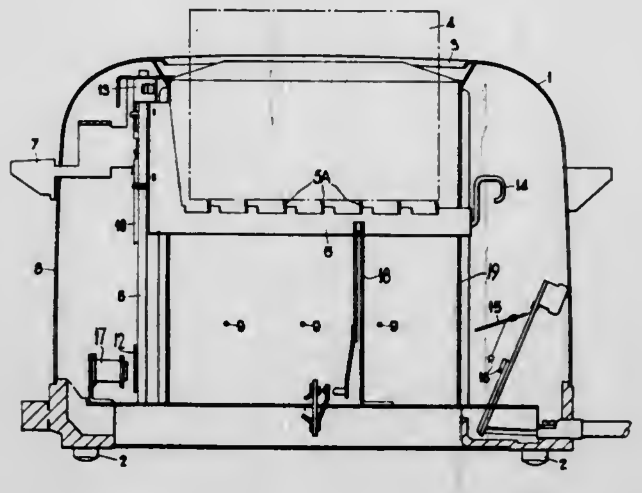
Filed Nov. 29, 1972, Ser. No. 310,410

Claims priority, application Great Britain, Nov. 30, 1971, 55509/71

Int. Cl. A47j *37/08*

U.S. Cl. 99—329 R **11 Claims**

1. An electric toaster comprising;
   - a. electric heating means;
   - b. means for supporting a slice of bread for movement from an original position out of proximity with the electric heating means to a toasting position adjacent the electric heating means, said supporting means having portions which engage the bread and spaces between said portions;
   - c. stop means having portions positioned to engage the bread and bring it to rest in the toasting position, which portions are spaced apart to permit said portions of the support means to pass between them for further movement after the bread has been brought to rest and is supported in the toasting position by the stop means;
   - d. switch contacts operable by said further movement of the portions of the support means beyond the position at which the bread is brought to rest and effective to complete an energizing circuit for the electric heating means; and
   - e. means adapted to return the support means automatically towards the original position in which the bread is out of proximity with the electric heating means when the bread has been toasted to a predetermined degree, and thereby cause the switch contacts to disconnect the energizing circuit for the electric heating means before the portions of the support means engage the bread to move it away from the stop means.



3,869,971

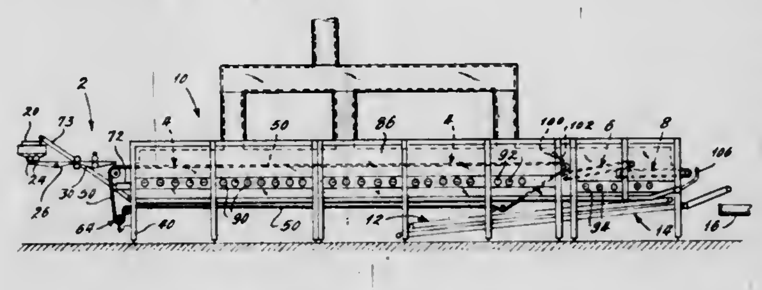
APPARATUS FOR PREPARING FOLDED FOOD CHIPS

Robert R. Driscoll, Buena Park, Calif., assignor to Pet Incorporated, St. Louis, Mo.

Filed May 10, 1972, Ser. No. 252,007

Int. Cl. A47j *37/12*

U.S. Cl. 99—353 **17 Claims**



1. An apparatus for preparing folded food chips from dough, said apparatus comprising: means for forming the dough into disk-shaped segments, an endless shaping conveyor having a conveying pass which is narrower than the disk-shaped segments and on which the disk-shaped segments are deposited and supported with the conveying pass generally bisecting the segments, whereby the sides of the disk-shaped segments drape downwardly and the segments assume a folded configuration; means disposed beneath the conveying pass of the shaping conveyor for preventing the sides of the folded segments from curling under the conveying pass; and means for heating the folded segments when they are on the shaping conveyor to remove moisture therefrom.

3,869,972

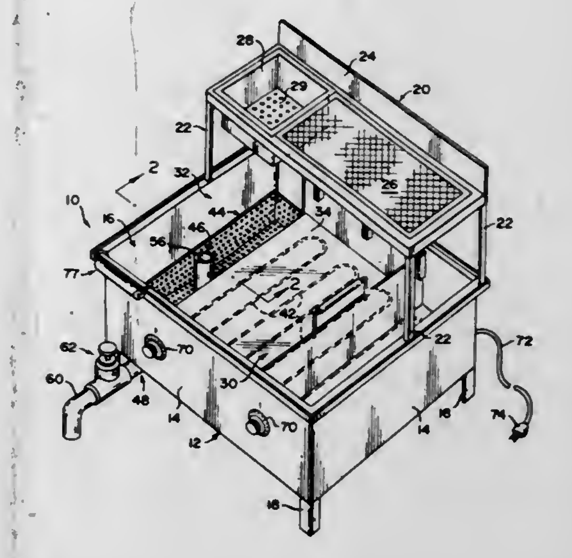
FRYER

Bert Chase, Tampa, Fla., assignor to Virginia Chase; Dorothy Miller and Ruby Paxton, all of Tampa, Fla., part interest to each

Filed Nov. 5, 1973, Ser. No. 412,980

Int. Cl. A47j *37/12*

U.S. Cl. 99—410 **9 Claims**



1. A cooking apparatus primarily designed for cooking food products in shortening material, said apparatus comprising: a housing, cooking tank means mounted on said housing and configured to contain shortening therein, said tank means comprising a plurality of heating zones, including at least a first and second zone disposed in communicating relation with one another, both said first and second zones mounted within said tank means in substantially adjacent relation to one another and each comprising base means, said base means of said first and second zone disposed in substantially stepped relation to one another, wherein said base means of said second zone is disposed lower than said base means of said first zone, heating means disposed in substantially contiguous relation to said base means of said first zone and out of direct fluid contact with the interior of said tank means, said heating means further disposed in substantially spaced relation to said second zone, whereby the temperature in said first zone is maintained at a substantially higher temperature than in said second zone; shortening removal means mounted on said base of said second zone in fluid communication with said fluid tank means, flow regulating means removably attachable to said shortening removal means and configured to regulate the flow of shortening from said tank, seal means removably attached in sealing engagement with said shortening removal means, said flow regulating means comprising a stand pipe including an elongated conduit having oppositely disposed open ends, one of said ends removably engaging said shortening removal means and the opposite end oriented in spaced relation thereto adjacent the surface of the shortening in said tank means, said seal means disposed in non-sealing engagement with said removal means when said stand pipe is connected thereto, whereby the removal of shortening adjacent said base of said second zone is prevented.

3,869,973

GRILL FOR MAKING SEALED TOASTED SANDWICHES

Myron A. Quitman, 1459 Hewlett Ave., Hewlett, N.Y. 11557

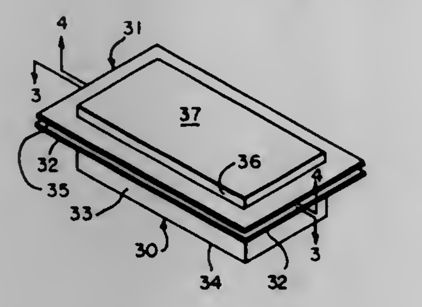
Filed Feb. 7, 1973, Ser. No. 330,444

Int. Cl. A47j *37/01, 43/20*

U.S. Cl. 99—426 **3 Claims**

1. In a grill for making sealed toasted sandwiches, a lower mold plate, an upper cooperating mold plate, both of the mold plates having flat marginal rims, a mount supporting the lower mold plate, a mount supporting the upper mold plate, a sleeve snugly engaging the edge of the lower mold plate, a lower housing section supporting the sleeve and the lower plate's

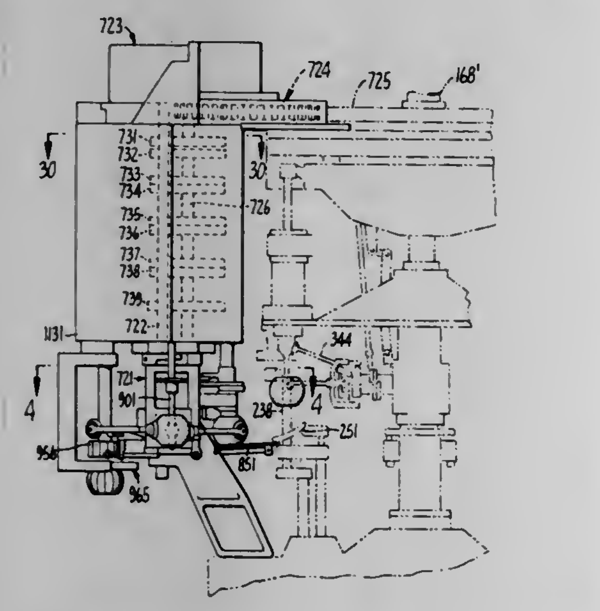
mount, an upper housing section supporting the upper plate's mount, the housing sections telescoping in snug relationship and completely enclosing the mold plates, their mounts and the sleeve, the upper plate, followed by its mount and snugly engaged with the sleeve, simultaneously telescoping within the sleeve to a final position in which the flat marginal rims of the plates are at a uniform distance apart and in which the plates apply pressure to the ingredients within the sleeve and between them, and means for accurately regulating this uniform distance, in which there are networks, each attached to either the upper or the lower housing, to provide means of attachment to the housing for the lower mold plate's mount, the upper mold plate's mount and the sleeve.



3,869,974
MACHINE FOR SEED CELLING APPLES

Robert G. Ellis, Richmond, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed Apr. 26, 1972, Ser. No. 247,838
Int. Cl. A23n *3/12*
U.S. Cl. 99—547 **10 Claims**



1. In a continuous apple peeling, coring and seed celling machine wherein the apple is impaled on the upper end of a cylindrical core tube which tube has cut a cylindrical core hole in the apple; means for withdrawing the core tube from the apple; means for engaging the core hole in the apple to guide the apple by the core hole as the core tube is withdrawn from the apple; means for moving the engaging means to a first station; an indexing turret rotatably movable over a path including said first station, a seed celling station and a discharge station; at least one pair of copperatively disposed jaws mounted on the turret for movement therewith; means for moving the jaws to engage and resiliently grasp an apple at the first station without regard to the size and shape of the apple and without disturbing the predetermined position of the engaging means; means for moving the engaging means out of the core hole when the jaws are in engagement with the apple; and means connected with the turret to rotate the turret and thus said jaws and an apple grasped thereby to said seed celling station.

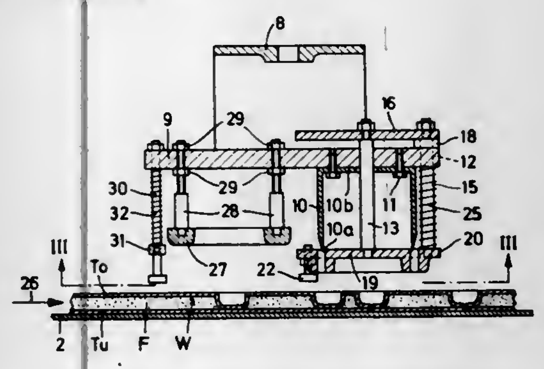
3,869,975
PASTRY CUTTER

Ruedi Seewer, Burgdorf, Switzerland, assignor to Seewer AG, Maschinenfabrik, Burgdorf, Switzerland

Filed Apr. 9, 1973, Ser. No. 349,283

Claims priority, application Germany, Apr. 20, 1972, 7215054

Int. Cl. A21c *11/10*
U.S. Cl. 99—450.2 **5 Claims**

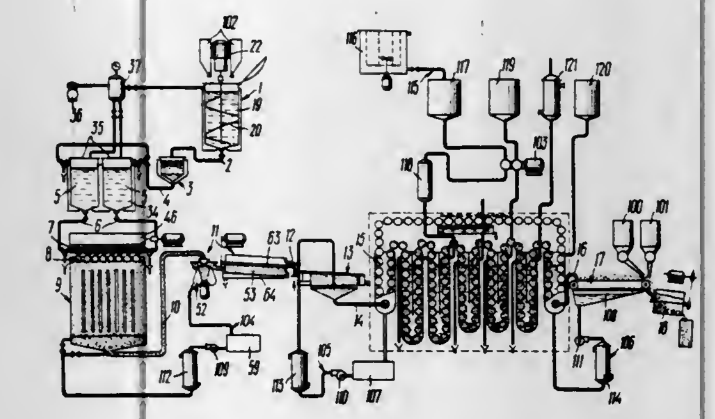


1. A pastry cutter comprising conveying means for advancing layers of dough along a predetermined path of travel, a pressing tool for pressing the layers of dough against one another in zones of the material which are to be cut through, a cutting tool, means for synchronizing said cutting tool with said pressing tool to cut the layers of dough at the pressed regions, said synchronizing means comprising a carrier plate at the underside of which are secured the pressing tool and the cutting tool in a position above said conveying means, means mounting the carrier plate for movement up and down, said pressing and cutting tools being axially spaced from one another at said carrier plate in the direction of travel of the conveyor means.

3,869,976
INSTALLATION FOR THE PRODUCTION OF GRANULATED PRODUCTS

Alexandr Nikolaevich Nesmeyanov, Leninskie Gory, MGU, korpus K, kv. 105; Sergei Vasilievich Rogozhin, ulitsa Vavilove, 55/5, kv. 20; Vladimir Ivanovich Misjurev, Nagatinskaya naberezhnaya, 28, kv. 198, all of Moscow; Alexei Gennadievich Borisoglebsky, ulitsa Sverdlova, 36/1, Kaliningrad Moskovskoi oblasti; Jury Feodosievich Yaroshenko, Novo-Basmannaya ulitsa, 17a, kv. 103, Moscow; Rodriges Sesar Gonsales, 9 Parkovaya ulitsa, 57, Korpus 3, kv. 18, Moscow; Petr Vasilievich Kovalev, Varshavskoe shosse, 98, kv. 45, Moscow, and Valery Alexandrovich Myakin, Krymsky val, 8, kv. 26, Moscow, all of U.S.S.R.

Filed June 20, 1973, Ser. No. 371,698
Int. Cl. A23p *1/00*
U.S. Cl. 99—484 **10 Claims**

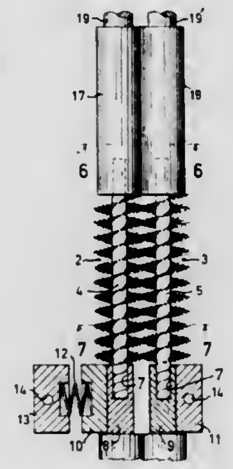


1. An installation for the production of granulated products from food substances comprising in combination:
a means for preparing a food substance in liquid form;
means for controlling the feed of the food substance in liquid form connected in series with said means for preparing the food substance in liquid form;
a means for forming granules of the food substance in liquid form in a forming liquid connected in series with said means for controlling the feed of the food substance in liquid form;
a means for separating said granules from said forming liquid;
a means for sorting said granules according to size connected in series with said means for separating said granules from said forming liquid;
means for continuously treating said granules with water solutions connected in series with said means for sorting the granules according to size; and
a means for mixing said granules with taste and aroma substances connected in series with said means for continuously treating the granules with water solutions.

3,869,977
HULLER FOR BERRIES

Salvador A. Minera, 1500 Judah St., San Francisco, Calif. 94122

Filed June 20, 1973, Ser. No. 371,829
Int. Cl. A23n *15/02*
U.S. Cl. 99—640 **9 Claims**

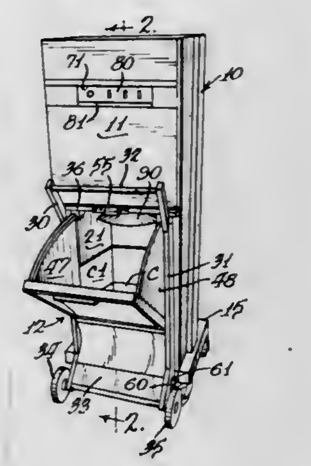


9. A huller for a strawberry having a central axis and a calyx with a stem enlargement on said axis at one end of said strawberry, which calyx includes a row of sepals integral with said stem-enlargement extending radially from said axis over said one end, comprising:
a. a pair of rotary brushes of substantially the same diameter supported for rotation about central axes in spaced side-by-side relation having flexible, relatively stiff, resilient bristles extending radially outwardly from and around its axis of rotation with the outer end portions of the bristles of said pair in lapping relation at the adjacent sides of said pair for flexing under the influence of the sepals of a strawberry being drawn between said brushes during rotation of the latter in opposite directions;
b. said brushes being elongated axially, and means connected with said brushes for rotating them simultaneously in opposite directions about their axes whereby said bristles will move from one of their sides toward each other and then in the same direction at their adjacent sides in lapping relation away from said one of their sides;
c. the maximum diameter of each of said brushes being small relative to the thickness of the berry to be hulled in a direction across the calyx, whereby such calyx on a strawberry engaging said brushes at said one of the sides of said pair will be quickly drawn between the lapping portions of the bristles for drawing said calyx from such strawberry and for drawing said stem-enlargement from said strawberry together with said calyx during said rotation of said brushes.

3,869,978
WASTE COMPACTOR

Richard W. Steinberg; Samuel B. McClocklin, and Clarence L. Kostelecky, all of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

Filed May 9, 1973, Ser. No. 359,198
Int. Cl. B30b *15/30, 15/06*
U.S. Cl. 100—53 **7 Claims**

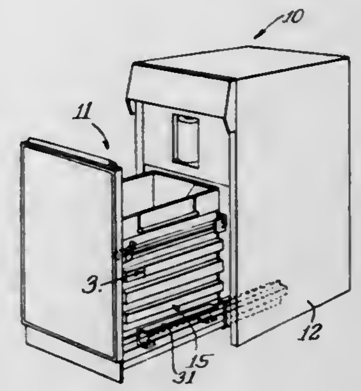


1. A compactor including a separable wheeled cart, a casing with a front wall having an opening to receive said cart, means to removably lock said cart to said casing, said cart having a front wall which closes off said opening when the cart is in locked position, means on said cart to hold a container for receiving material to be compacted, said cart front wall being defined at least in part by a loading chute mounted for pivotal movement relative to the remainder of the cart, and compacting means within the casing including a smooth surfaced downwardly concave disc and means including a fluid motor for lowering said disc against material in the container to exert forces acting downwardly and inwardly on all of said material immediately beneath said disc.

3,869,979
REFUSE COMPACTOR RECEPTACLE

Charles E. Sulcek, Danville, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 28, 1973, Ser. No. 419,763
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **18 Claims**



1. A refuse compactor receptacle structure adapted to support a refuse holding bag in a refuse receiving arrangement, have deposited refuse compacted therein, and be manually rearranged to permit facilitated removal of the bagged, compacted refuse therefrom, said receptacle structure comprising:
first wall means defining an enclosure having an open side;
second wall means defining a closure for said open side and individually projecting portions including a bottom wall and partial side walls nested with said first wall means for partially enclosing the bag;

freely separable pivot means pivotally connecting said second wall means to said first wall means for pivoting of the second wall means outwardly from the nested arrangement;

limiting means for selectively limiting the pivoting of said second wall means outwardly to an access position wherein the bagged refuse is freed from said first wall means and is readily accessible for separation from said second wall means; and

retaining means arranged to maintain the pivotal connection of the second wall means to said first wall means in the nested arrangement and access position while permitting separation of said second wall means from said first wall means as an incident of release of said limiting means and further pivoting of the second wall means to a separation position beyond said access position and raising of the second wall means from said separation position upwardly relative to said first wall means.

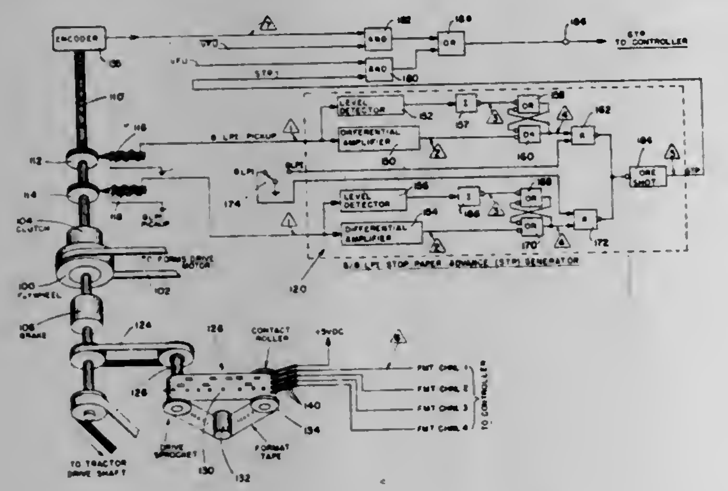
3,869,980
HIGH SPEED DATA PROCESSOR LINE PRINTER

Marvin C. Schroeder, Jr., Mission Viejo, Calif., assignor to Cordura Corporation, Century City, Calif.

Filed Aug. 10, 1973, Ser. No. 387,364

Int. Cl. B41j *1/08*

U.S. Cl. 101—93.21 **3 Claims**



1. In a high speed line printer system which includes a frame; a print drum rotatably mounted on said frame and having a plurality of different bar code symbols engraved on the peripheral surface thereof in a plurality of different longitudinal rows angularly spaced around the periphery from one another, and with each row containing identical bar code symbols; a paper drive mechanism mounted on said frame for moving forms on a line-to-line basis past said print drum to be imprinted by said bar code symbols; impact hammer means mounted on said frame; control circuitry coupled to said impact hammer means for causing said impact hammer means to drive said forms against the bar code symbols on said print drum at controlled times; electrical signal generating means coupled to said paper advance mechanism for producing electric pulses representative of each line advance of said paper drive mechanism with respect to a first predetermined line per inch reference standard; a format control system mechanically coupled to said paper drive mechanism and to said generating means for generating electrical control signals indicative of advances of said forms by said paper drive mechanism through predetermined numbers of lines; the combination of an encoder mechanically coupled to said paper advance mechanism for generating an electric signal representative of each line of advance of said paper drive mechanism with respect to a second predetermined line per inch reference standard; logic circuitry electrically connected to said format control system and to said encoder for generating electric output signals selectively representative of the electrical control signals from said format control system and of said electric signal from said encoder; and control means coupled to said paper drive system and responsive to the output signals from said logic circuitry to stop the paper drive system at predetermined positions of the forms under the control of the format control system during one operating mode and under the control of the encoder during a second operating mode.

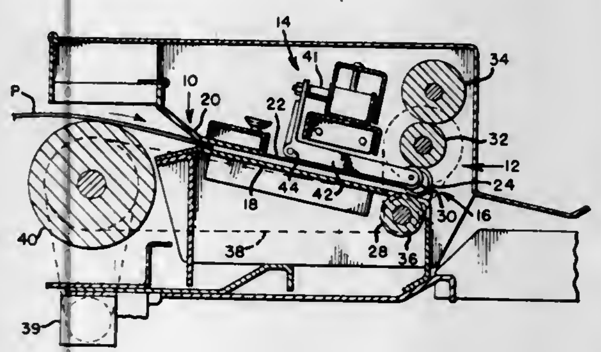
3,869,981
HIGH SPEED MARKING DEVICE

Ernest D. Davis, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.

Filed Jan. 18, 1973, Ser. No. 324,655

Int. Cl. B41b *25/00*

U.S. Cl. 101—91 **3 Claims**



1. A high speed printing device for placing indicia on rapidly moving, flat, flexible, lightweight sheets comprising:

means for guiding a rapidly moving sheet along a predetermined path,

a plurality of spaced printing means in said path movable into contact with the sheets for placing indicia marks on successive sheets without impeding the progress of the sheets as the sheets move along said path, said printing means including a plurality of printing rollers having indicia on their outer surfaces, an inking roller, and a transfer roller for transferring a marking medium to said printing rollers from said inking roller and for rotationally propelling the printing rollers when in engagement therewith to a peripheral speed approximately equal to the linear speed of the paper, and

control means for selectively energizing said printing means for contacting the sheets and placing the indicia on said sheets in various coded patterns, said control means including delay means for varying the moment of initial energization of the printing means to place the marks at a predetermined position on the sheet, dwell means for varying the length of time the printing means is in contact with the sheets to determine the length of the indicia marks on the sheets, and actuating means for selectively moving one or more of said printing rollers into engagement with said sheets and out of engagement with said transfer roller into a non-driven, freely rotatably printing position so as not to skew the sheets.

3,869,982
WEIGHING AND PRINTING APPARATUS

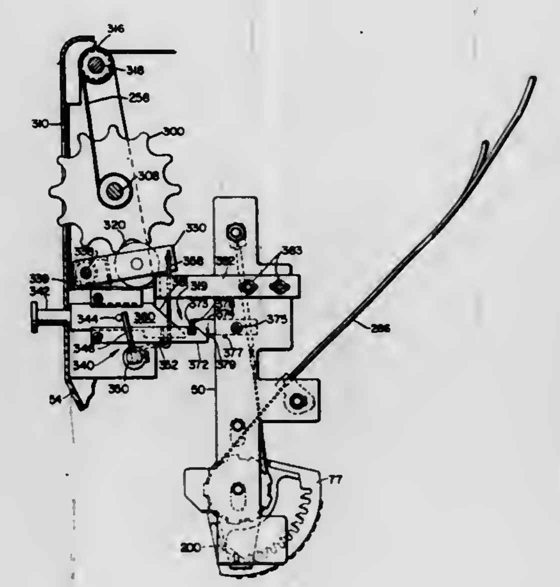
Austin L. Davis, Brandon, and Harley R. Davidson, Rutland, both of Vt., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Nov. 27, 1972, Ser. No. 309,879

Int. Cl. B41j *1/60, 3/44;* **G01g** *23/18*

U.S. Cl. 101—96 **13 Claims**

1. In a printer, a plurality of rotatably mounted printing type carriers, a casing structure receiving said carriers and having an access opening, a cover for selectively closing said opening and being mounted for displacement between closed and opened positions, a plurality of selectively displaceable selector elements carried by said cover for selecting the printing positions of said carriers, motion transmitting means connecting each selector element to one of said carriers for imparting selective displacement of the former to the latter, reset means operatively connected to said selector elements and being selectively operable to reset said selector elements to preselected positions, and means locking said cover in its closed position until said reset means is selectively operated to reset said selector elements to said pre-selected positions.



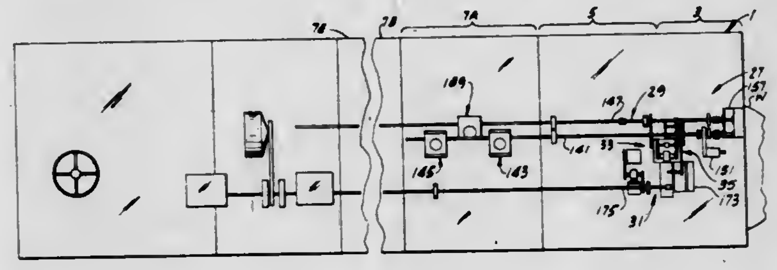
3,869,983
VARIABLE REPEAT-LENGTH WEB PRINTING PRESS

John R. Garber, P.O. Box 254, Ashland, Ohio 44805, and John L. Garber, 720 Coulter, Kirkwood, Mo. 63122

Filed Aug. 27, 1973, Ser. No. 392,017

Int. Cl. B41f *7/04, 13/02, 13/54*

U.S. Cl. 101—137 **49 Claims**



1. A web printing press having means for controlling movement of web stock along a path and at least one printing station for printing an image on said web stock as it moves along said path, said printing station comprising a plurality of rolls for printing said image on said web stock including an ink image carrying roll and an impression roll paired with said image roll, said web stock passing between said image and impression rolls for having an image imprinted thereon, means for moving said impression roll toward and away from said image roll between a printing position in which the impression roll is in printing contact with the web stock between the image roll and the impression roll and a retracted position, and means for applying ink to said image roll, a drive for said press including a first means for driving said image roll and said inking means and a second means for driving said web control means, and coupling means engageable and disengageable for coupling and uncoupling said second drive means relative to said first drive means, said coupling means including means for bringing said second drive means up to the speed of and into phase with said first drive means and to positively lock said first drive means and said second drive means together when these drive means are in phase with one another, whereby said second drive means may be uncoupled from said first drive means and said impression roll moved out of printing contact with said web stock so that said inking means and said image roll may be operated independently of feeding web stock through the printing station.

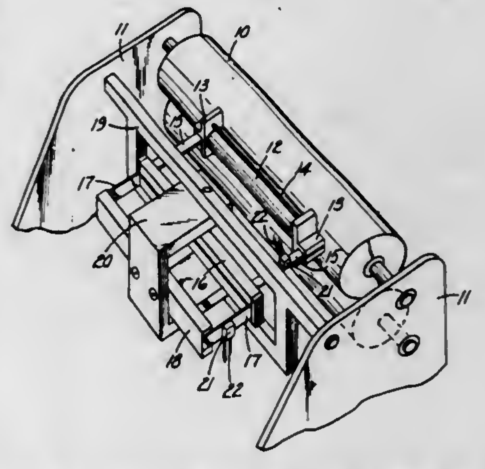
3,869,984
FLUID FILM THICKNESS SENSOR AND CONTROL SYSTEM FOR UTILIZING SAME

Thomas Daniel Toth, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 6, 1973, Ser. No. 386,000

Int. Cl. G01n *33/26*

U.S. Cl. 101—349 **21 Claims**



1. A process for determining the thickness of a fluid film which comprises generating signals representative of two shear responsive forces acting upon said fluid film, one of said shear responsive forces being directly proportional to the thickness of said fluid film and the other of said shear responsive forces being inversely proportional to the thickness of said fluid film, and combining said signals to obtain a resultant signal which is representative of the thickness of said fluid film and independent of other variables which affect said two shear responsive forces.

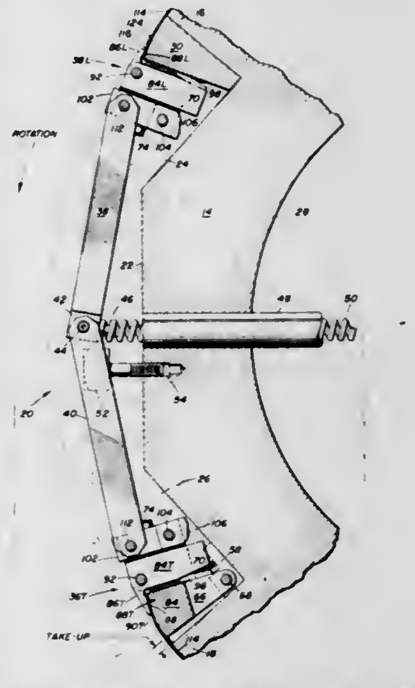
3,869,985
CLAMPING AND TENSIONING A SHEET ON A CYLINDER

Floyd Steinmetz, Timonium, and William F. Thoms, Baltimore, both of Md., assignors to The Rotographic Machinery Company, Cockeysville, Md.

Continuation of Ser. No. 9,343, Feb. 6, 1970, abandoned. This application Dec. 18, 1973, Ser. No. 425,910

Int. Cl. B41f *27/06, 7/22*

U.S. Cl. 101—415.1 **16 Claims**



1. In a rotating cylinder impression machine, a device for clamping and tensioning the ends of a die sheet on a cylinder, comprising in combination with a cylinder having a leading edge relative to its rotational direction and defining the position to be occupied by the first end of said die sheet and a trailing edge defining the position to be occupied by the opposite end of said die sheet, said cylinder having a leading edge cutout portion, a trailing edge cutout portion, and a flat cutout

portion positioned between said leading and trailing edge cutout portions, all the said cutout portions extending substantially axially across the cylinder, the clamping and tensioning device bridging said flat cutout portion and lying below the periphery of the cylinder between the positions occupied by the ends of the die sheet and within the space defined by the cutout portions and further being secured to the cylinder, the clamping and tensioning device further comprising:

- a stationary clamping bar disposed within the leading edge cutout portion of the cylinder and secured thereto, the bar having a radially facing clamping surface fitting flushly with the perimetric surface of the cylinder;
- at least one pivotally movable clamp bar disposed within the trailing edge cutout portion of the cylinder and pivotally attached thereto, the bar having a radially facing clamping surface;
- first clamping means opposing the clamping surface of the clamping bar and including spring means held between the clamping bar and said first clamping means and biasing said clamping means toward the clamping surface of the clamping bar for tensionably holding the first end of the die sheet therebetween;
- second clamping means opposing the clamping surface of the movable clamp bar and including spring means held between the movalbe clamp bar and said second clamping means and biasing said clamping means toward the clamping surface of the clamping bar for tensionably holding the second end of the die sheet therebetween;
- first link means pivotally connected to the first clamping means and extending transversely of the cylinder toward the second clamping means;
- second link means pivotally connected to the second clamping means and extending transversely of the cylinder toward the first clamping means and connecting pivotally with the first link means medially of the flat cutout portion of the cylinder;
- hinge means hingeably connecting the first and second link means at their respective inner ends for articulating the said link means relative to each other to allow the pivotally joined inner ends of the link means to be movable outwardly from the cylinder in a radial direction; and,
- coil spring means housed within the cylinder and extending radially from therewithin to abut and act against the first and second link means at substantially the hinged juncture thereof, the coil spring means biasing the hinged ends of the said link means outwardly from the cylinder in a radial direction, thereby to bias the first and second clamping means toward each other in substantially a circumferential direction to tension the die sheet on the cylinder.

3,869,986
INK JET POSTAGE PRINTING APPARATUS

David W. Hubbard, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

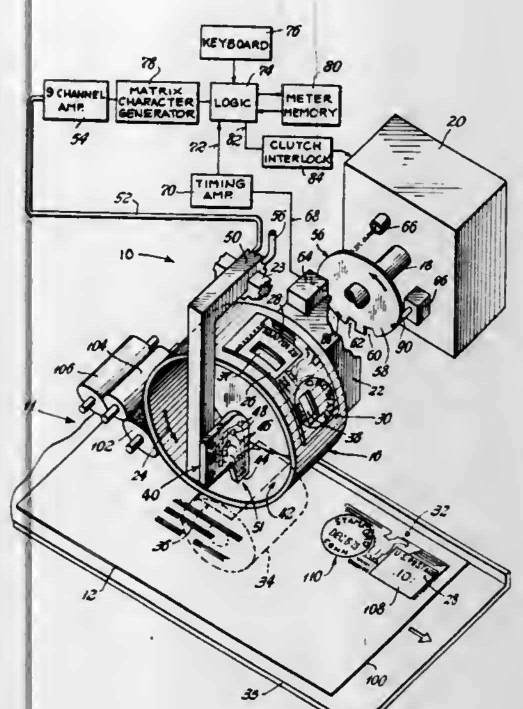
Filed Jan. 16, 1974, Ser. No. 433,805

Int. Cl. B41l *47/50*

U.S. Cl. 101—91 **8 Claims**

7. In a postage meter:

- a printing station;
- means for supporting at said station a document such as an envelope, label or the like that is to have postage indicia printed thereon;
- an ink jet printing device adapted to project a predetermined sequence of ink droplets onto said document for printing the postage amount portion of said postage indicia;
- security means mounted in said meter for movement through the region between said document and said ink jet printing device;
- said security means including a masking member movably mounted in said meter and when in a first operative position being adapted to permit said ink droplets to reach said document and when in a second operative position being adapted to block passage of any of said ink droplets to said document.



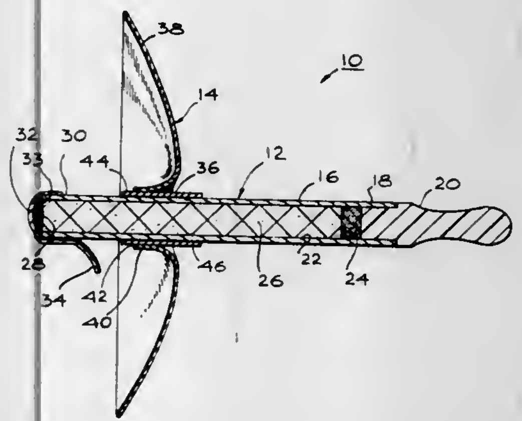
3,869,987
PYROTECHNIC DEVICE

Aldo S. Berchielli, Westerly, R.I., assignor to Yardney International Corp., Los Angeles, Calif.

Filed Nov. 28, 1973, Ser. No. 419,642

Int. Cl. C06d *1/10*

U.S. Cl. 102—37.4 **9 Claims**



1. An improved pyrotechnic device comprising, in combination:

- a. a pyrotechnic torch comprising
  - 1. an elongated open-ended hollow tube,
  - 2. A handle disposed adjacent one end of said tube and in sealing engagement therewith,
  - 3. Ignition means disposed in sealing engagement with the opposite end of said tube and in communication with the interior of said tube, and
  - 4. An ignitable pyrotechnic substance disposed within said tube and in communication with said ignition means; and
- b. A reflector assembly comprising
  - 1. A support disposed adjacent said tube and in sliding engagement therewith for travel along the length of said tube, and
  - 2. A readily bendable, focusable light reflector secured to said support for travel therewith along the length of said tube.

3,869,988
CONSOLIDATING BALLAST

Olaf Unbehaun, Neunkirchen; Uwe Hampel, Ludwigshafen; Norbert Scholz, Mannheim; Horst Gassmann, Viernheim; Walter Schneider, Ludwigshafen; Heinz Hesser, Hochdorf-Assenheim; Walter Herrmann, Mannheim, and Bertold Bechert, Nurnberg, all of Germany, assignors to BASF Aktiengesellschaft Ludwigshafen/Rhein and Heinrich Cronan, Building Contractors, Land Saarlund, both of Germany

Filed May 24, 1974, Ser. No. 472,454

Claims priority, application Germany, May 26, 1973, 2327063

Int. Cl. E01h *11/00*

U.S. Cl. 104—11 **7 Claims**

1. A process for consolidating ballast in railroad track, wherein the ballast is tamped and rammed by mechanical means and, during the tamping and ramming operations, a binder for the ballast is sprayed into said ballast in liquid form in the zones of operation of said mechanical means.

3,869,989
CONVEYOR

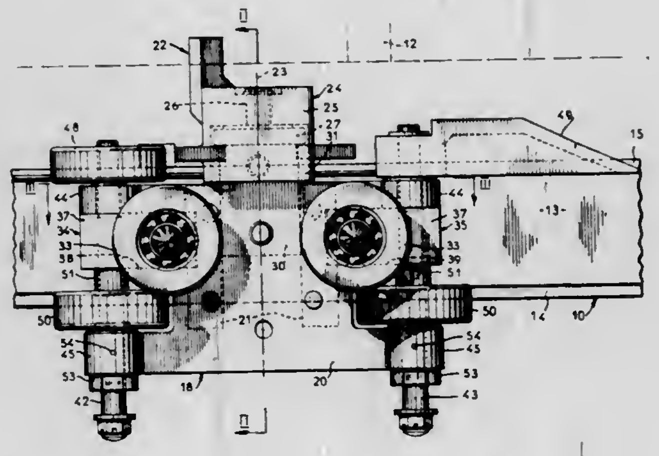
William Frank Pickstone, Halesowen, England, assignor to Redman Fisher Engineering Limited, Tipton, Stafford, England

Filed Dec. 28, 1973, Ser. No. 429,639

Claims priority, application Great Britain, Mar. 30, 1973, 15537/73

Int. Cl. B61b *3/00*

U.S. Cl. 104—94 **4 Claims**



1. In a conveyor comprising a track having two channel section portions which extend side-by-side with their open mouths presented towards each other and a trolley having a body and a plurality of load bearing wheels which run inside the channel section portions of the track and support the body from the track, the improvement wherein:

- the trolley comprises carrier means,
- the load bearing wheels are mounted on the carrier means for rotation relative thereto about respective axes,
- the body has a contact surface which faces outwardly from the body in a direction along the track and transverse to the axis of one of said load bearing wheels,
- the carrier means engages with said contact surface of the body,
- and releasable retaining means is provided for holding the carrier means in engagement with said surface of the body,
- whereby, when the retaining means is released, the carrier means can be withdrawn from the body in a direction parallel to the length of the track.

3,869,990
SWITCH ARRANGEMENT FOR A MAGNETIC SUSPENSION RAILROAD

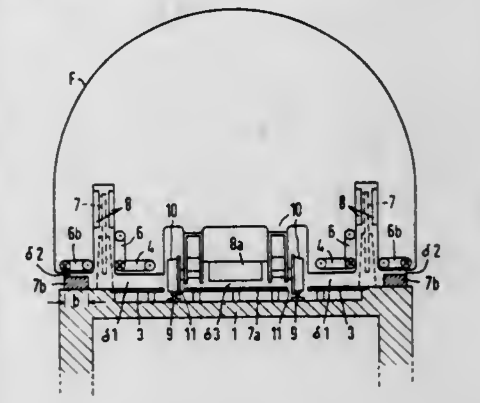
Anton Bertling, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,862

Claims priority, application Germany, Sept. 29, 1972, 2247858

Int. Cl. E01b *25/26*

U.S. Cl. 104—130 **4 Claims**



1. In a magnetic suspension railroad wherein there is installed in the railroad vehicle at least one winding carrier of a linear motor and primary conductor means for magnetic support and lateral guidance of the vehicle which primary roadbed, means cooperate with secondary conductor means associated with the raodbed, with lateral guidance provided by secondary conductor plates installed vertically on each side of the roadbed, an improved switching arrangement for such a railroad comprising:

- a. horizontal secondary conductor means replacing said vertical secondary conductor means in the area of the switch, only on the outsides of the track of the roadbed to result in the air gap between said secondary conductor means and primary conductor means in the vehicle lying in planes essentially parallel to the plane of the roadbed; and
- b. additional primary conductor loops arranged in the vehicle to react with said secondary conductor loops whereby by selecting one or the other of the primary control loops in the vehicle, the direction of travel may be selected.

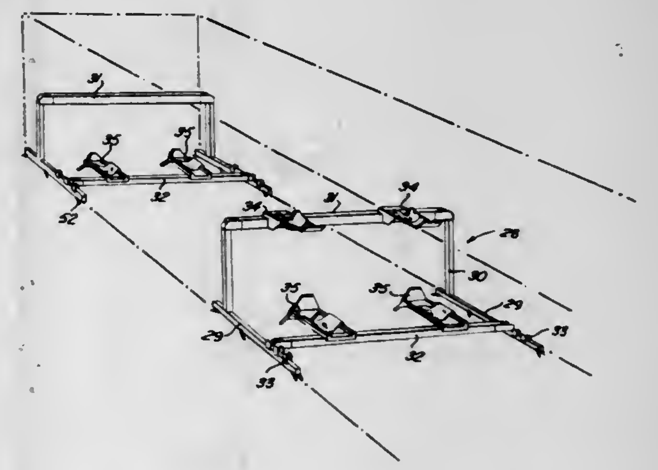
3,869,991
STOWAGE OF VEHICLES

Christopher Thomas Robinson, c/o Containerised Automobiles Limited, 140 Park Ln., London WIY 4HT, England

Filed June 20, 1973, Ser. No. 371,705

Int. Cl. B65j *1/22*

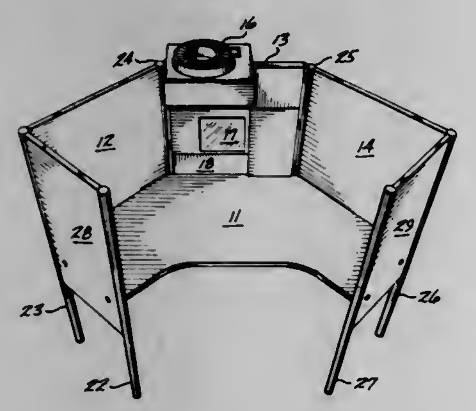
U.S. Cl. 105—368 R **3 Claims**



1. A frame for supporting a vehicle at an angle inclined to the horizontal, the frame comprising a pair of spaced foot members, a holding leg extending perpendicularly from each

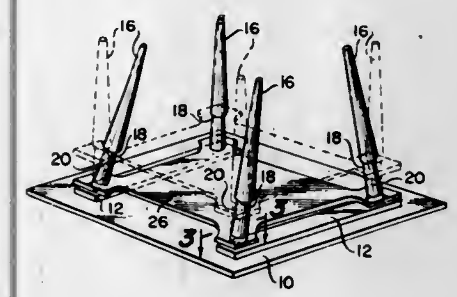
foot member, a beam adapted to be releasably attached at each of its ends to the free end of a holding leg, at least two vehicle wheel cradles attached to the said beam at spaced locations thereon, each cradle extending from said beam, and flexible belt means attached to each of said cradles on which a vehicle wheel can be held with its axis parallel to the longitudinal axis of said beam, each of said wheel cradles being adapted to cooperate with a jack whereby a vehicle wheel can be supported on said jack and does not come into contact with its wheel cradle until lifting of said jack commences.

3,869,992
CLUSTERABLE LEARNING MODULE
Edward J. Kramer, Rt. 1, Box 846, Clinton, Wash. 98236
Filed Sept. 11, 1972, Ser. No. 287,842
Int. Cl. A47b *57/00*
U.S. Cl. 108—60 **8 Claims**



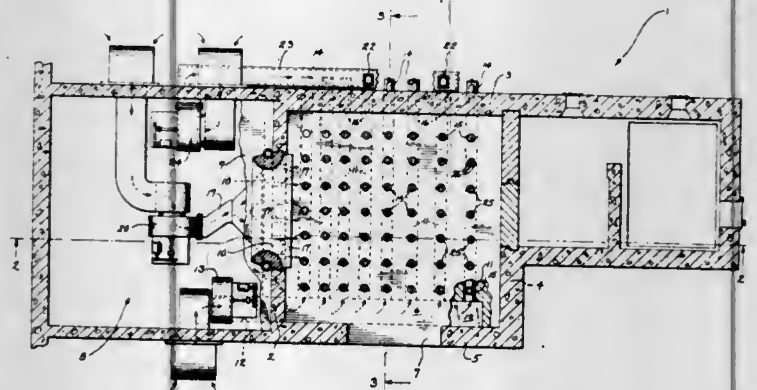
1. An educational module, comprising:
a generally horizontal writing panel of generally arcuate configuration in plan having a concavely configured edge presented adjacent a seated user, a convexly configured edge opposite from the user, and end edges joining said convexly and concavely configured edges and converging toward each other in the direction of the seated user, said convexly configured opposite edge comprising an intermediate edge portion directly opposite said seated user, and respective connecting edge portions between respective adjacent end edges and said intermediate edge portion, thereby defining six corners;
upright support leg members positioned at each of said six corners;
five upright panels successively connected to and extending between the successive leg members, two of said upright panels being rigidly secured to the leg members and extending adjacent said end edges, said rigidly secured upright panels and their associated leg menbers forming first and second panel combinations respectively the remaining panels extending adjacent said connecting edge portions and said intermediate edge portion and being removably secured to and extending between associated support leg members;
first bracket means secured to at least each of the two leg members adjacent said intermediate edge portion and also secured to said writing panel; and,
second bracket means secured to each of said first and second panel combinations, and also secured to said writing panel, said first and second bracket means cooperating to maintain said leg members in an upright position and said writing panel in a generally horizontal position, and in relation to each other such that portions of said leg members and said upright panels extend substantially above said horizontal writing panel at least to approximate head level of the user sitting at said concave edge, and further cooperate to maintain said leg members and said writing panel in position when one or more of said removably secured panels are removed from the module.

3,869,993
SELF LOCKING SHELF TABLE
Walter W. Edlund, 1201 Spear St., South Burlington, Vt. 05401
Filed Apr. 18, 1973, Ser. No. 352,352
Int. Cl. A47b *57/00*
U.S. Cl. 108—101 **5 Claims**



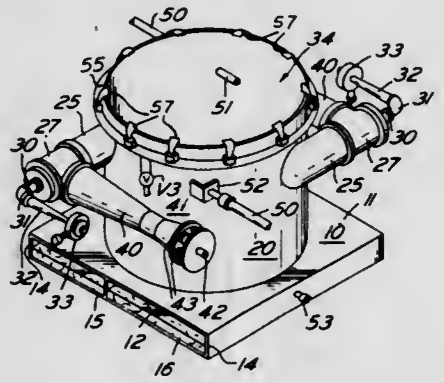
1. In a knockdown table the combination of a table top and shelf, a plurality of cleat members secured to the bottom surface of said table top, said cleat members having recesses formed therein and closed by said top, said cleat members having threaded nut members positioned in said recesses, a plurality of leg members, each leg member having a reduced portion adjacent one end thereof, said end of each leg having a threaded member projecting outwardly therefrom, said shelf being of a size and shape complimentary to that of said table top, said shelf having an opening therein complimentary to each threaded nut member, the distance from the center of one opening in said shelf to the center of another opening in said shelf being less than the distance between the centers of the corresponding threaded nut members in said cleat members, each leg member having said end thereof project through an opening in said shelf with the threaded member thereof engaging a threaded nut member, said threaded member of each leg initially having a loose fit with said threaded nut member to facilitate the positioning of said shelf within the reduced portion of said leg member, said threaded member of each leg member upon being threaded into said nut member drawing the end of the leg member into engagement with said cleat member contemporaneous with anchoring said shelf on the reduced portion of said leg member.

3,869,994
AIR SUPPLY FOR PIT TYPE REFUSE INCINERATOR
Max Von Berlichingen, P.O. Box 901, Green Bay, Wis. 54301
Filed Dec. 10, 1973, Ser. No. 424,349
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **7 Claims**



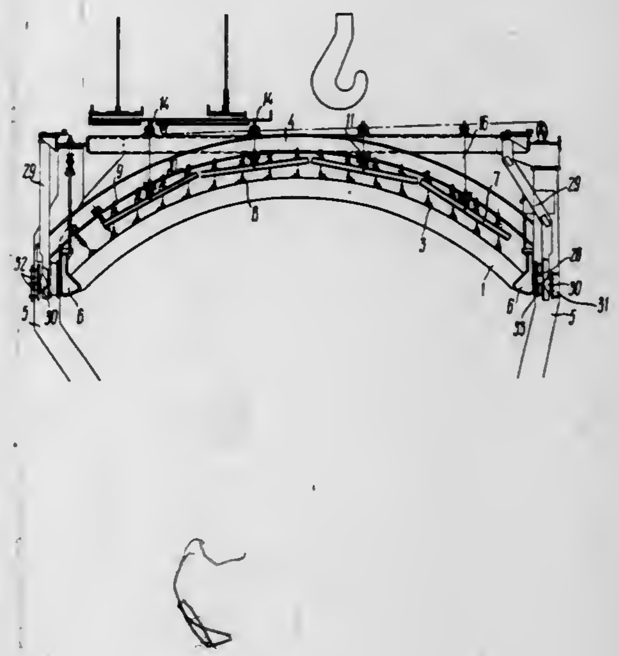
1. In an incinerator of the class described having a floor and surrounding walls defining a substantially rectangular combustion chamber with a clean-out opening in one side wall extending to the floor of the chamber and a charging opening in a wall at right angles to said first wall and disposed near the top of the chamber, a plurality of horizontal air ducts extending in parallel beneath the floor of the combustion chamber, an air supply header connected to one end of each duct near said first wall of the combustion chamber, a plurality of vertically disposed ducts connected individually to the opposite end of each of said first named ducts and extending upwardly along and on the outside of the corresponding wall opposite said first wall of the combustion chamber with the upper end of each duct closed, a plurality of underfire jet ports in the floor of the combustion chamber connected to each said horizontal duct to receive air therefrom, an overfire port leading through the last named wall of said combustion chamber from each of said vertical ducts, whereby said horizontal ducts constitute manifolds supplying primary air through the floor to the combustion chamber and said vertical ducts supply secondary air through the wall to the combustion chamber, a blower room adjacent said combustion chamber and separated therefrom by said second named wall, a blower in said blower room connected to deliver air to said air supply header, and a charging platform closing the top of said blower room and communicating with said charging opening.

3,869,995
INCINERATOR
John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.
Filed Jan. 10, 1974, Ser. No. 432,215
Int. Cl. F23g *5/12*
U.S. Cl. 110—18 C **9 Claims**



1. A smokeless incinerator which comprises:
a base,
shell means comprising a cylindrical shell of metal having a side wall and with its cylindrical axis vertical,
said shell being open at the top to the atmosphere and for the deposit into the shell of solid waste materials for combustion,
said shell being mounted on and extending upwardly from said base,
means for supplying air under pressure into said shell means in a direction tangential to the side wall of said shell,
means for supplying combustible gas for tangential delivery into said shell,
a liquid ring contiguous to the top of said shell, and
a plurality of delivery pipes extending from said ring for delivery of liquid upwardly above the upper margin of said shell for admixture with the rising stream of gases from said shell.

3,869,996
METHOD AND APPARATUS FOR EXTENDING LIFE PERIOD OF FURNACE ROOFS
Viktor Mikhailovich Panferov, prospekt Mira, 112, kv. 157; Lev Petrovich Grunin, Znamenskaya ulitsa, 62, kv. 2; Lev Mikhailovich Ilin, Leninsky prospekt, 103, korpus 169, kv. 12; Mikhail Moiseevich Privalov, B.Dekabrskaya ulitsa, 1, kv. 49, all of Moscow; Andrei Dmitrievich Filatov, Oktyabrskaya ulitsa, 15, kv. 7, Magnitogorsk; Gennady Elizarovich Ovchinnikov, ulitsa Kalinina, 3, kv. 85, Magnitogorsk; Vadim Grigorievich Antipin, ulltsa Gorkogo, 19, kv. 11, Magnitogorsk; Viktor Andreevich Lednov, ulitsa Kalinina, 23, kv. 26, Magnitogorsk; Valery Fedorovich Tjurin, Ulyanovskaya ulitsa, 46, kv. 5, Moscow; Dmitry Samuilovich Rutman, Belorechinskaya ulitsa, 17, kv. 9, Sverdlovsk; Igor Pavlovich Basias, ulitsa Gagarina, 12, kv. 80, Sverdlovsk, and German Tomasovich Tile, Zavodskaya ulitsa, 32, kv. 37, Sverdlovsk, all of U.S.S.R.
Continuation of Ser. No. 292,823, Sept. 2, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,523
Int. Cl. F23m *5/06*
U.S. Cl. 110—99 R **6 Claims**

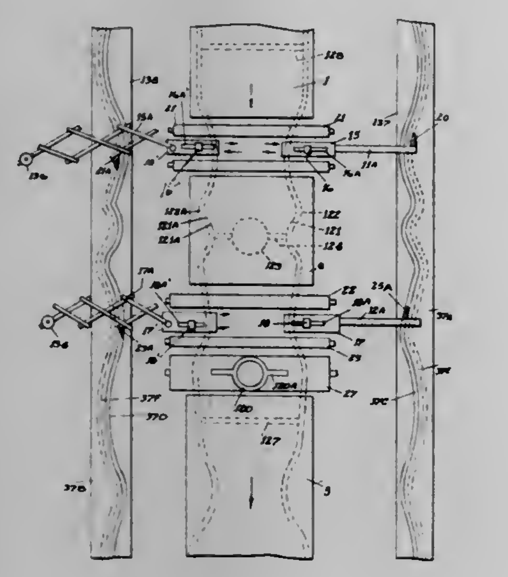


1. A method of extending the life of roofs on furnaces having relatively cold and hot periods in the course of a melting cycle, comprising: positively controlling stresses developing in said roof by simultaneously applying variable distributed vertical loads to the surface of said roof and variable bending moments to the edges of said roof and varying the loads and the moments at least twice in the course of the melting cycle.

3,869,997
WEB CUTTING SEWING MACHINE AND PROCESS
Sidney German, 121 Third St., Chelsea, Mass. 02150
Continuation of Ser. No. 632,880, March 30, 1967, abandoned. This application Feb. 9, 1970, Ser. No. 9,104
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **32 Claims**

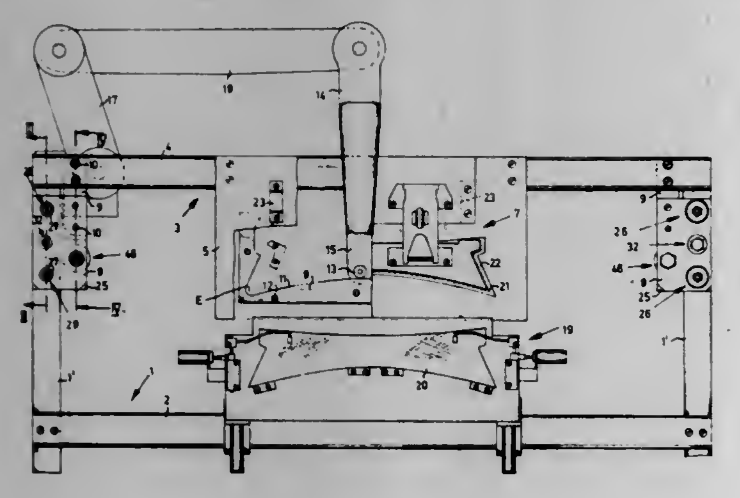
1. A sewing apparatus comprising first and second cutting stations, a sewing station and means for feeding a pair of superimposed flexible webs through said first cutting station and said sewing station to form a central strip having profiled edges sewn together and border strips adjacent said central strip having free edges congruent to said sewn profiled edges,

means transporting said strips from said first cutting station and said sewing station through said second cutting station for cutting the central strip into separate articles, and means for collecting the sewn articles and the unsewn borders.



3,869,998
SEWING DEVICE

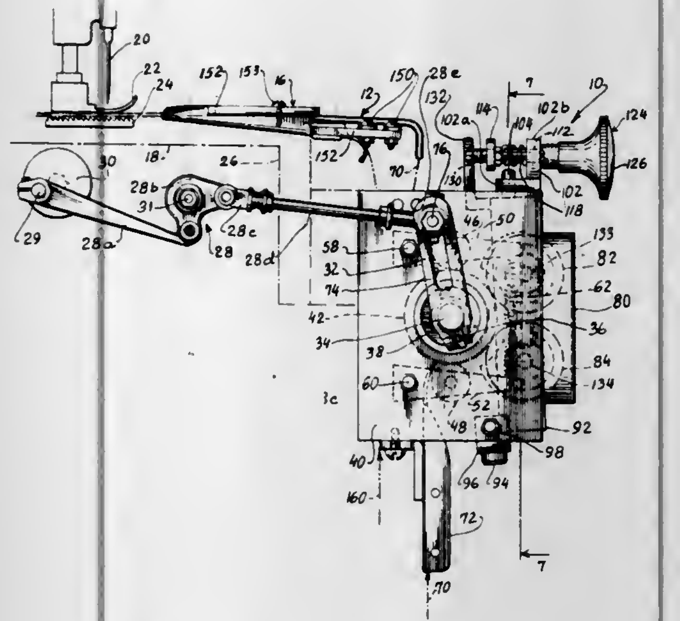
Hans Scholl, Oerlinghausen-Lipperreihe, Germany, assignor to Kochs Adler AG, Bielefeld, Germany
Filed May 10, 1973, Ser. No. 358,840
Claims priority, application Germany, May 10, 1972, 2222846
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **4 Claims**



1. In a sewing device with guided control of a sewing cycle, comprising a support means, a link arm, means swingably attaching said link arm to said support means, a supporting arm, a connecting arm pivoted on said link arm and said supporting arm, a template having internal corners, workpiece clamping means above said template, a driven magnetic roller engaged with the peripheral edge of said template, means attaching said magnetic roller on said supporting arm, a sewing machine carried by said supporting arm and having a vertically reciprocating needle coaxially with the said magnetic roller, and a supporting body carrying said workpiece clamping means and said template, shock absorbing means between said supporting body and said supporting means for limiting said supporting body to slide with respect to said support means when said template receives a relatively high shock by having said magnetic roller slam into an internal corner, said shock-absorbing means comprising an upper thrust washer having a bore, a lower thrust washer provided with a threaded sleeve for receiving said upper thrust washer, a spring for pressing said thrust washers against said supporting body, a bolt secured to said support means for slidably receiving said threaded sleeve, regulating nuts on said bolts for adjusting the tension of said spring and a recess formed in said supporting body for receiving said threaded sleeve.

3,869,999
TAPE SLITTING AND METERING DEVICE

Herbert Richter, P.O. Box 206, Kew Gardens, N.Y. 11415
Filed Oct. 3, 1973, Ser. No. 403,117
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.26 **10 Claims**



1. A tape slitting and tensioning device for slitting tape made of rubber or other slittable material and feeding the slit tape under tension to a sewing machine having a plurality of needles, a work feed mechanism, and a drive mechanism operatively connected to said needles and work feed mechanism, said tape slitting and tensioning device comprising:
a. rotary tape slitting means adapted to slit tape into a plurality of separate strips,
b. said rotary tape slitting means being operatively connected to said sewing machine drive mechanism,
c. whereby the rotary tape slitting means operates in synchronization with the operation of the sewing machine needles and work feed mechanism,
d. tensioning means adapted to apply tension to the strips slit by the rotary tape slitting means, and
e. guide means adapted to guide the individual tensioned strips to the individual needles and work feed mechanism of the sewing machine,
f. said rotary tape slitting means comprising a first roller adapted to support tape,
g. a pair of idler rollers mounted on opposite sides of said first roller to hold the tape thereon in tensioned condition for the slitting operation,
h. a plurality of rotary cutters mounted for engagement with said first roller to slit a tape supported thereon into a plurality of strips,
i. said rotary cutters being mounted on parallel shafts which are parallel to the axis of the first roller, and
j. pressure means exerting equalized pressure upon said cutter shafts to equalize the cutting pressure of said rotary cutters against the first roller.

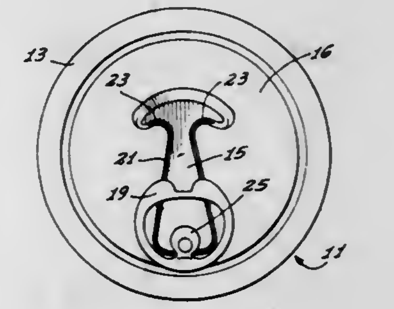
3,870,000
METHOD FOR THE MANUFACTURE AND POCKET'S ASSEMBLING

Jose Castany Ferre, Calle Borrell, No. 122, and Ramon Sanrama Padro, Calle Vilamari, No. 57, both of Barcelona, Spain
Filed Feb. 5, 1973, Ser. No. 329,421
Claims priority, application Spain, Feb. 5, 1972, 177178; Jan. 13, 1973, 410588
Int. Cl. D05b *21/00*
U.S. Cl. 112—262 **12 Claims**

1. A method for forming and assembling pockets on garments by stitching together superimposed cloth pieces by a known sewing machine, comprising clamping desired cloth pieces in a desired superimposed relationship by means of a clamping pattern having a contour edge portion corresponding to the desired shape of the stitch to be made, and moving said pattern and thus clamped cloth pieces with respect to said sewing machine with the presser foot of said sewing machine in guiding contact with respect to said contour edge portion of said pattern, while simultaneously stitching said clamped cloth pieces by means of the needle of said sewing machine, wherein said cloth pieces include a garment piece, a pair of pinched tuck pieces, a pair of pocket lining pieces and a pocket flap; wherein said pattern includes a base plate having therein a longitudinal slot with a width greater than the distance between the stitches of the two edges of the opening of the desired pocket and with a length greater than the width of the desired pocket, said pattern further including a pair of clamping plates, one each of which is pivotally mounted on opposite sides of said slot about an axis parallel to the longitudinal dimension of said slot; wherein said steps of clamping, moving and stitching comprise:
A. positioning said base plate on said garment piece with said slot aligned with that area of said garment piece wherein the opening of said pocket is desired;
B. placing a first of said pinched tuck pieces on said garment piece adjacent one of the longitudinal edges of said slot;
C. placing a first of said pocket lining pieces on said first pinched tuck piece;
D. pivoting a first of said clamping plates toward said base plate to clamp therebetween a portion of said first pinched tuck piece and said first pocket lining piece;
E. urging said first clamping plate against said presser foot and stitching said first pocket lining piece and said first pinched tuck piece to said garment piece, thereby forming a first pocket stitch;
F. placing a second of said pinched tuck pieces on said garment piece adjacent the opposite of said longitudinal edges of said slot;
G. placing said pocket flap on said second pinched tuck piece;
H. placing a second of said pocket lining pieces on said pocket flap;
I. pivoting a second of said clamping plates toward said base plate to clamp therebetween a portion of said second pinched tuck piece, said pocket flap and said second pocket lining piece;
J. urging said second clamping plate against said presser foot and stitching said second pocket lining piece, said pocket flap and said second pinched tuck piece to said garment piece, thereby forming a second pocket stitch; and
K. cutting said garment piece between said first and second pocket stitches to form said pocket opening.

3,870,001
CAN END WITH INSEPARABLE TEAR STRIP

Omar L. Brown, Kettering, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Division of Ser. No. 103,255, Dec. 31, 1970, Pat. No. 3,757,989. This application Jan. 8, 1973, Ser. No. 322,070
Int. Cl. B21d *51/26*
U.S. Cl. 113—121 C **5 Claims**



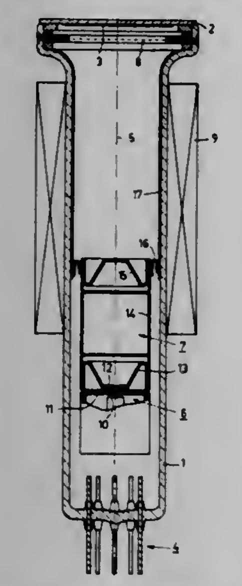
1. A method of forming an easy open can end having an end wall and a removable tear portion in the end wall which is at least partially circumscribed by a score line in the can end, said method comprising:
coining a can end wall to define a planar coined border which at least partially circumscribes a tear portion;
forming a first offset surface in said can end which is inclined vertically to the plane of said coined border and lies outside of said border;
forming a second offset surface in said can end which is inclined vertically to the plane of said coined border and lies inside said coined border within said tear strip.
forming a score line within said coined border,
placing said score line between said first and second offset surfaces and sufficiently close to both of said offset surfaces to provide protection from the second offset surface against cuts from the sharp edge on the tear portion and protection from the first offset surface against cuts from the sharp edge remaining on the can end after severance of the can end along the score line in at least partial removal of the tear strip from the can end, and
said coined border being formed in a plane which is intermediate to the plane of said tear portion and the plane of the balance of said end wall.

3,870,002
TELEVISION CAMERA TUBE WITH THREE ELECTRODE FOCUSING LENS

Johannes H. T. Van Roosmalen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.
Continuation of Ser. No. 176,016, Aug. 30, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,441
Claims priority, application Netherlands, Sept. 4, 1970, 7013099
Int. Cl. H01j *31/38, 29/56, 29/58*
U.S. Cl. 313—389 **1 Claim**

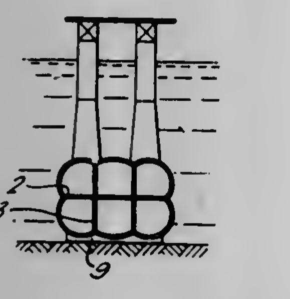
1. A television camera tube having, aligned along an axis, an electron gun having a cathode, a control grid and an anode provided with an aperture for producing an electron beam and a focusing lens for focusing the electron beam, a signal plate,

a photoconductive layer on said signal plate on which a potential distribution is formed by projecting on it an optical image, means to scan said photoconductive layer with said electron beam to produce electrical signals corresponding to said optical image, said focusing lens comprising a first electrode having a truncated conical portion, said anode forming a part of said first electrode, a second electrode, and a third electrode having a truncated conical portion the wide end of which faces the wide end of the first electrode, the second electrode being positioned between the wide ends of the first and third electrodes and having a diameter substantially equal to the largest diameter of the truncated conical portions of the first and third electrodes, said first electrode comprising a substantially



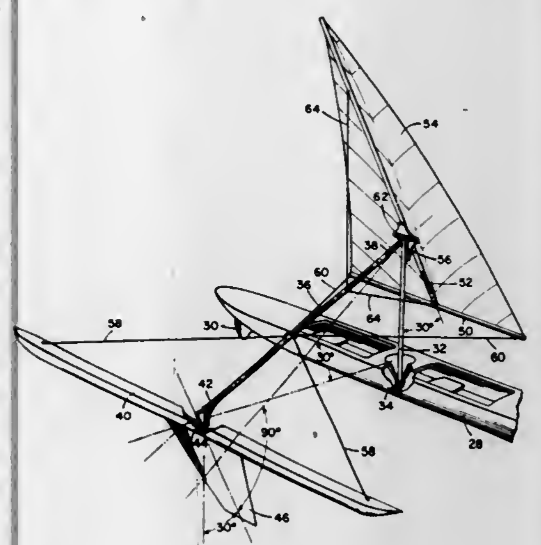
circular cylindrical part having an aperture with an area of minimum cross-section, and a substantially circular cylindrical part on the side of the second electrode, and said third electrode comprising a substantially circular part defining an aperture having an area of minimum cross-section on the side remote from the second electrode for restricting the cross-section of the electron beam, and a substantially circular cylindrical part on the side of the second electrode.

3,870,003
STORAGE-VESSEL
Olav Mo, Gronsundvlien 94, 1370 Asker, Norway
Filed July 10, 1972, Ser. No. 269,961
Claims priority, application Norway, July 9, 1971, 2632/71; Jan. 17, 1972, 84/72
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 T **4 Claims**



1. A semi-submersible vessel for loading, storing and transporting a liquid such as oil or the like, comprising: a main hull intended to lie on the sea bed during loading, unloading and storing of the liquid, said main hull being formed of a single monolithically formed air-tight hull which is divided into cargo compartments, the hull having outer walls formed as portions of cylindrical shells and a slim superstructure including columns rigidly supported by the hull, the columns extending upwardly from the said main hull to above the sea level when the main hull rests on the sea bed, said columns supporting a deck structure, the arrangement of the hull and the columns being such that the center of gravity of the vessel is always below the center of buoyancy of the vessel to provide the vessel with a total weight and a weight stability under all loading conditions to be able to rest on the sea bed without anchors, moorings or the like.

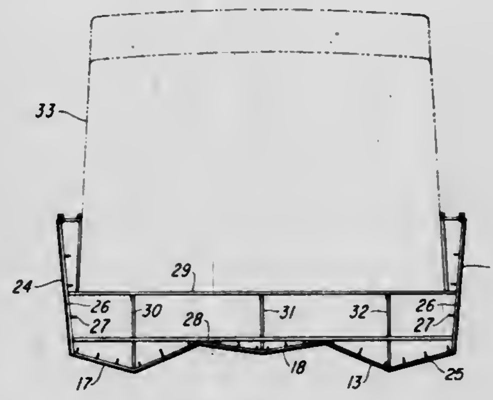
3,870,004
SAILING VESSEL
Donald W. Bailey, RFD 1, Bar Harbor, Maine 04609
Filed Dec. 20, 1973, Ser. No. 426,940
Int. Cl. B63b *39/00*
U.S. Cl. 114—39 **12 Claims**



10. A sailing vessel comprising:
a. support means for supporting the sailing vessel,
b. kingpost means stepped in said support means, said support means being free to pivot about the lower end of said kingpost means;
c. a stabilizer element;
d. a blade element fixed to and depending downwardly from the undersurface of said stabilizer element, said blade element and said stabilizer element having their major dimensions in substantial alignment, said blade element being mounted on said stabilizer element at a fixed acute angle relative to the vertical;
e. a stabilizer arm pivotally attached at its lower far end to said stabilizer element, said pivotal attachment having a vertical axis;
f. a sail frame;
g. said kingpost means, said stabilizer arm and said sail frame being attached together, said stabilizer arm being maintained at a fixed acute angle relative to the horizontal, said stabilizer arm being pivotable about a vertical axis, and said sail frame being pivotable about a vertical axis;
h. a kitesail attached to said sail frame, said kitesail being positioned at said fixed acute angle relative to the vertical, the upper portion of said kitesail being angled on the stabilizer element side of said support means; and
i. control means attached to said stabilizer element and to said sail frame for pivoting said element and said frame about vertical axes whereby the course of the sailing vessel is steered.

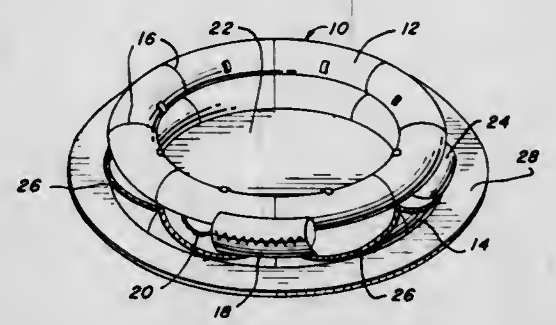
3,870,005
HOUSEBOAT HULL
Richard E. Klingler, 1609 Spring Brook Dr., Eklhart, Ind. 46514, and Jeffrey A. Roberts, 55135 Belair, Osceola, Ind. 46561
Filed Dec. 12, 1973, Ser. No. 423,933
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 R **9 Claims**

1. A planing houseboat hull having a reverse cathedral configuration and comprising
a pair of spaced, substantially similar, generally V-shaped outer bottom surface members extending substantially for the full length of the hull each of which has a generally V-shaped prow portion joined thereto projecting upwardly at an obtuse angle, said outer bottom surface members being of substantially uniform cross sectional area throughout their respective lengths and having a first predetermined included angle;
a generally V-shaped central bottom surface member extending substantially the full length of said hull situated between and joined to said outer bottom surface members and being of substantially uniform cross sectional area throughout its length, said central bottom surface member having a second predetermined included angle which is greater than said first included angle, and having



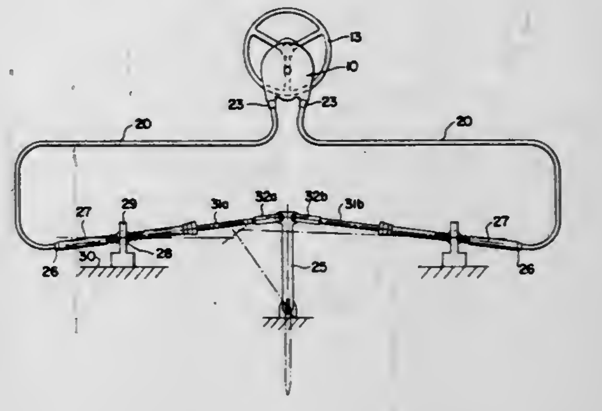
appreciably less draft than said outer bottom surface members;
a generally V-shaped central prow portion joined to said central bottom surface member and said outer prow portions, and projecting upwardly at an obtuse angle not exceeding about 155° relative to the hull waterline but at an angle which is greater than the angle of said upwardly projecting outer prow portions;
whereby said wetted surface below planning speed comprises said outer bottom surface members and said central bottom surface and at planing speeds the hull wetted surface consists essentially of said outer bottom surface members.

3,870,006
STABILIZING DEVICE FOR BUOYANT BODY
Masami Hashimoto, No. 2-6-Chome, Ojijyutaku 3-205, Tokyo, Japan
Filed May 21, 1973, Ser. No. 362,111
Claims priority, application Japan, May 31, 1972, 47-54051
Int. Cl. B63b *43/04*
U.S. Cl. 114—121 **11 Claims**



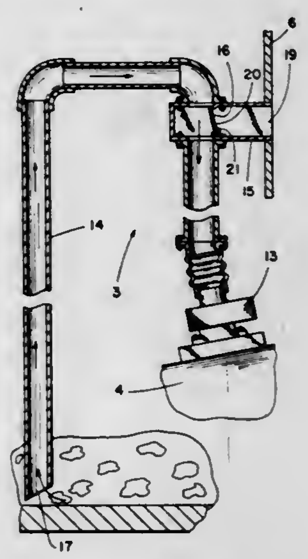
8. A raft comprising a gas-tight inflatable container made of rubberized cloth; a section of airtight flaccid material attached to the bottom portion of said container and constructed so that when said raft is inflated and floats upon the surface of a body of water, said section of material extends beyond substantially all of the periphery of said container and contacts the water, said section effecting a partial vacuum between the bottom of said container and said body of water as said container floats upon the surface of said body of water whereby said container resists overturning in said body of water.

3,870,007
RUDDER CONTROL CABLE SYSTEM
John F. Morse, 1699 Hines Rd., Hudson, Ohio 44236
Filed Oct. 10, 1973, Ser. No. 405,042
Int. Cl. B63h *25/10*
U.S. Cl. 114—160 **6 Claims**



1. In a boat structure having an oscillatable rudder arm which swings arcuately about one end from a medial steering position to extreme turning positions at the ends of its arc, a remote steering control, and a closed loop push-pull cable including a casing and cable core for transmitting motion from said steering control to said rudder arm and having opposing ends of said casing swivel mounted on the boat structure adjacent the rudder arm, the improvement comprising means connecting the two ends of the cable core in a substantially straight line path between said swivel mounts at a selected position on the arc of the arm to two pivots on the free end of said arm, said pivots spaced apart on the arc of said free end a distance which compensates for the change in the cable core path as the arm swings through its arc.

3,870,008
ENGINE VENTILATION OF BOAT BILGES
Edward D. Wilkerson, P.O. Box 755 South Court, Normandy Beach, N.J. 08739
Filed Nov. 21, 1973, Ser. No. 417,944
Int. Cl. B63b *13/00*
U.S. Cl. 114—211 **8 Claims**



1. In a system for ventilating the bilge of a closed boat which is powered by a confined inboard gasoline engine having a down draft carburetor supplied by an air source, the improvement in the carburetor aspirating air source comprising an air passage conduit extending from a low level of the bilge to an air inlet of the carburetor to provide a first carburetor aspirating air source, and a normally closed valve actuatable to an open position in response to a predetermined air pressure differential, said valve being located in a second fluid passage conduit to close normally said second passage when air flow occurs in the first passage with the valve opening to draw air

from open atmosphere through the second passage in response to an obstruction in the first air passage which produces the predetermined air pressure differential, whereby the bilge supplies carburetor aspirating air until an obstruction occurs at which time air is then supplied by open atmosphere.

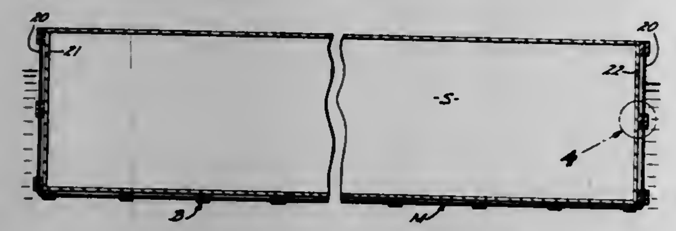
3,870,009
PROTECTIVE COVERING APPARATUS FOR A SUBMERGED STRUCTURE

Orval E. Liddell, Avalon, Calif.

Division of Ser. No. 837,259, June 27, 1969, Pat. No. 3,581,305. This application Feb. 16, 1971, Ser. No. 115,831

Int. Cl. B63c *1/00;* **E03c** *3/00*

U.S. Cl. 114—222 **5 Claims**



1. Protective covering apparatus for a submerged structure, comprising:

a pliable, generally waterproof sheet;
a plurality of battens;
attachment means for securing said battens to spaced portions of said structure to define a plurality of independent modules; and
seal means interposed between said battens, said sheet and said structure whereby circulation of water in the space defined by said modules and the ambient water outside said modules is restricted to thereby maintain the water in said space stagnant to marine borer attack on the submerged portion of said structure.

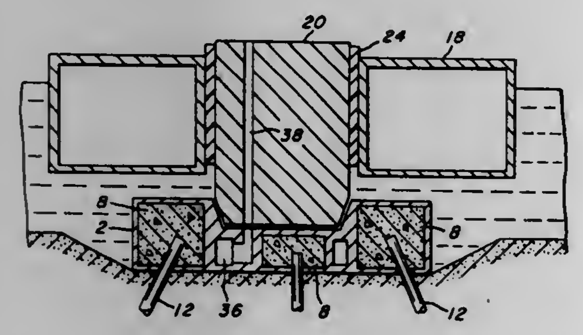
3,870,010
MOORING SYSTEM FOR FLOATING STRUCTURES

Everald V. Wright, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Sept. 4, 1973, Ser. No. 394,200

Int. Cl. B63b *21/00*

U.S. Cl. 114—230 **5 Claims**



1. A mooring system for securing floating structures to the bottom of a body of water subject to waves or tidal action, comprising:

a base unit having a cavity therein and a tapered recess in the top surface thereof;
means for fixing the base unit to the bottom including ballast, sleeves formed in the base unit, and piling driven through the sleeves into the bottom;
a mooring unit with a shaft therein, located so as to provide access to the cavity in the base unit, and a lower surface having a tapered protrusion sized and shaped to fit the tapered recess in the base unit, said mooring unit being movably attached to the floating structure so as to allow relative vertical movement between the mooring unit and the floating structure;
means for securing the mooring unit to the base unit, whereby the floating structure is horizontally restrained, but can move vertically in response to waves or tidal action, which securing means includes tubes disposed within the base unit and the mooring unit, with post-tensioning strands passing through the tubes, and anchorages within the base unit cavity and above the mooring unit, whereby the post-tensioning strands are secured by the anchorages of the base unit and the mooring unit; and means for sealing the second matable portion to the first matable portion so as to allow dry access through the shaft and cavity.

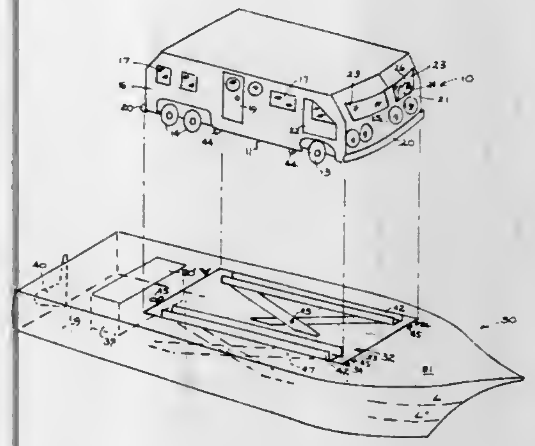
3,870,011
COMBINED MOTOR HOME AND YACHT

Herbert Cooper, 1 Tom's Point Ln., Port Washington, N.Y. 11056

Filed July 27, 1973, Ser. No. 383,376

Int. Cl. B63h *1/00*

U.S. Cl. 115—0.5 A **6 Claims**



1. A vehicle comprising:

a road-traveling module including
  a chassis,
  living quarters on said chassis,
  an access door at said living quarters and having a lower edge,
  a pair of road-engaging front wheels spring-mounted on said chassis,
  a pair of road-engaging rear wheels spring-mounted on said chassis,
  an engine on said chassis for driving one of said pairs of said wheels and thereby propelling said module along the ground, and
  a driver's station on said chassis having a steering wheel operatively connected to said front wheels to pivot same and steer said module on the ground and a marine control element; and
a floatable hull including
  independent drive means including a marine engine operable by said control element and a propeller connected to said marine engine for displacing said hull through the water,
  a deck formed with a single upwardly open well adapted to receive both of said pairs of said wheels and having a well edge formed as a seat snugly engageable all around said module with said chassis with the weight of said module distributed along said well edge,
  jack means in said well having a pair of lift elements each engageable with a respective one of said front wheels and with a respective one of said rear wheels for lifting and lowering said module by said wheels out of and into said well,
  a marine steering element on said hull operable to steer same in the water,
  means operatively connected between said front wheels and said marine steering element for steering said hull in the water from said steering wheel only with said module resting on said seat,
  means operatively connected between said marine control element and marine engine for controlling same only with said module on said seat, and
  means for securing said chassis to said seat in a predetermined stable position with said lift elements out of engagement with said wheels and said lower edge of said door lying substantially on the same level as said deck with said module resting on said seat in said predetermined stable position.

3,870,012
PRESSURE DROP ALARM DEVICE

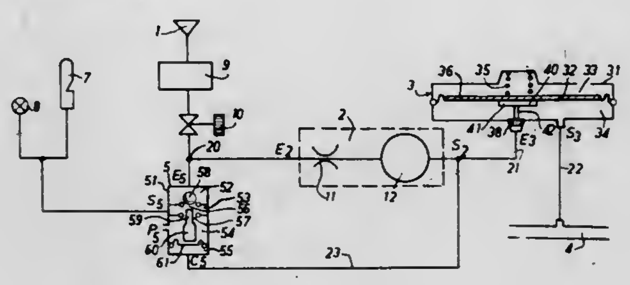
Robert Metivier, 49 rue du Docteur Blanche, Paris, France (75016)

Filed Oct. 15, 1973, Ser. No. 406,469

Claims priority, application France, Oct. 16, 1972, 72.36582

Int. Cl. G01l *19/12*

U.S. Cl. 116—70 **8 Claims**



1. A pressure drop alarm device; particularly but not exclusively for use with automatic respiration apparatus, and associated with and between a feed or supply conduit for fluid under pressure and a source of pressure fluid, the device indicating that, after a certain preselected period, the pressure in the feed conduit has failed to reach a predetermined maximum P, wherein the device functions pneumatically and wherein the source of pressure fluid is connected to a timing device having an outlet connected to the feed conduit via a manometric capsule which is normally closed and which opens when the pressure in the said feed conduit reaches the maximum pressure P in order to evacuate pressure fluid from the timing device, the said outlet of the timing device also being connected to a pneumatic cell with a logical function "YES" normally closed to prevent the feed of fluid from the said source to at least one alarm, and opened to actuate the or each alarm if the pressure in the timing device exceeds a certain preselected threshold P_{r1} caused by manometric capsule remaining closed due to the pressure in the feed conduit failing to reach the said maximum pressure P

3,870,013
APPARATUS FOR DEPOSITING FLOWABLE MATERIAL

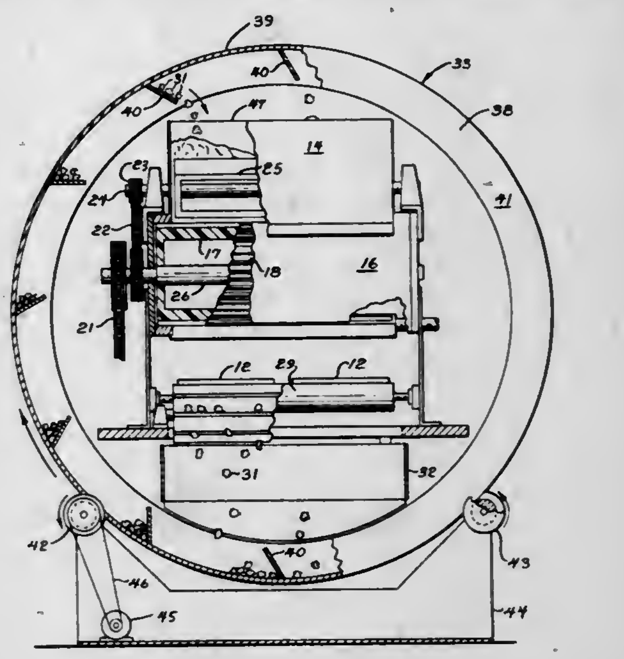
Richard C. Wagner, Darien, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed June 4, 1973, Ser. No. 366,369

Int. Cl. B05c *5/00*

U.S. Cl. 118—24 **3 Claims**

1. Apparatus for depositing a flowable material on a travelling series of articles having spaced adjacent peripheries, comprising: conveyor means for transporting said articles through a depositing station; dispensing means above said conveyor means at said depositing station for depositing said material by gravity fall from the dispensing means onto the articles as said articles are transported through said station with some of said material falling beyond and between said peripheries of said articles; a receiving hopper means above and communicating with said dispensing means for supplying material from said hopper by gravity flow to said dispensing means; a recovery means beneath said station for recovering said portions of material falling beyond and between said peripheries of said articles and including a rotatable recovery collecting member extending beneath the depositing station and above said dispensing means, said recovery collecting member having a solid circular periphery and peripherally adjacent pockets therein facing inwardly toward both said receiving hopper and said depositing station; and means for rotating said recovery collecting member and thereby elevating said material collected in said pockets to a position above said dispensing hopper for returning said recovered material by gravity fall successively from said pockets into said receiving hopper.



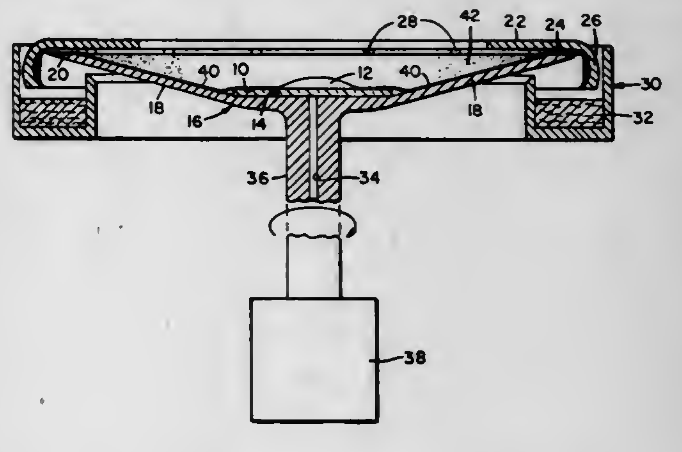
3,870,014
LIQUID AND AEROSOL COLLECTING DEVICE

Robert T. Buck, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed May 24, 1973, Ser. No. 363,393

Int. Cl. B05c *11/08*

U.S. Cl. 118—52 **5 Claims**



1. A liquid and aerosol collecting device comprising

a dish-like member having sloped walls and a horizontally extending lip along the outer peripheral edge of said sloped walls, said dish-like member being adapted to accommodate and support a liquid receiving member having at least one flat surface adapted to receive a liquid thereon,
a circular member having a horizontally extending annular portion disposed closely adjacent said lip so as to define a passage between one surface of said circular member and said lip and a depending portion encompassing said lip,
means for spinning said dish-like member and said liquid receiving member together about an axis substantially perpendicular to said one flat surface so that at least a portion of any liquid disposed on said one flat surface is caused to flow off an edge of said member, at least a

portion of any aerosol of said liquid that is formed being recombined with said portion of said liquid, and

means for collecting said liquid operatively associated with said dish-like member and said circular member.

3,870,015

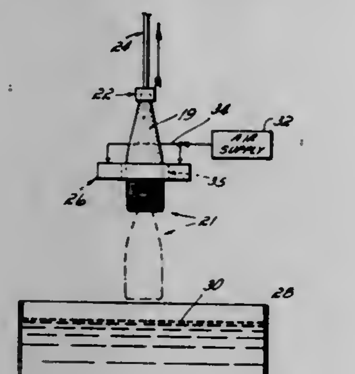
METHOD AND APPARATUS FOR APPLYING PLASTISOL COATING OF UNIFORM THICKNESS TO GLASS CONTAINERS

William L. Brown, Amanda, and Francis J. Shonebarger, Lancaster, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Oct. 23, 1973, Ser. No. 408,617

Int. Cl. B05c *11/06*

U.S. Cl. 118—63 **18 Claims**



8. An apparatus for uniformly coating a plastic material onto a glass container having a finish portion for receiving a closure, said apparatus comprising, in combination:

means for immersing the container in a bath of liquid uncured plastic material;

a source of pressurized gas;

a fixture including an inwardly and downwardly directed annular orifice;

a gas conduit communicating between said source and said orifice to permit gas to flow through said orifice to form a thin conical sheet of gas moving toward an apex; and

moving means for gripping the container at the finish portion thereof and for withdrawing the container from the bath and passing it upwardly through said annular orifice so as to move through the thin conical sheet of gas.

3,870,016

BOX FOR POWDER COATING

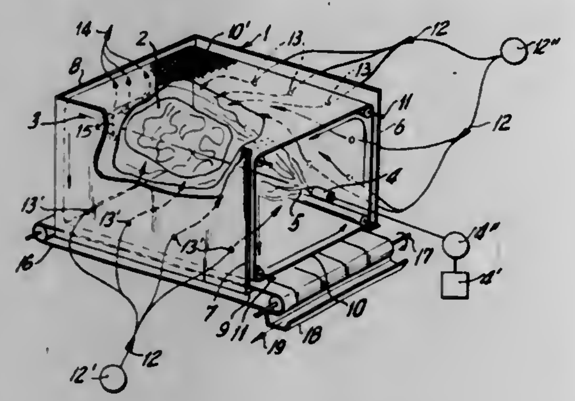
Dr.-Ing. Udo U. Schneider, Kressbronn, Germany, assignor to Firma Otto Durr, Anlagen fur Oberflachentechnik, Stuttgart-Zuffenhausen, Germany

Filed July 3, 1972, Ser. No. 268,766

Claims priority, application Germany, July 2, 1971, 2132946

Int. Cl. B05b *15/00*

U.S. Cl. 118—309 **10 Claims**



1. In a box for powder coating of a workpiece, of the type having a front wall, side walls, a rear wall, a base and a top wall, and nozzle means in the front wall operable to direct an air-powder stream, substantially centrally and horizontally of the box, toward a workpiece in the box, positioned on the axis of the air-powder stream, to provide a powder cloud surrounding the workpiece, the improvement comprising, in combination, air inlet means in said side walls; means connected to said air inlet means and producing air flows directed through said air inlet means substantially tangentially of said powder cloud to impart thereto a supporting rotary motion maintaining said powder cloud about said axis and the workpiece and counteracting the force of gravity on said powder cloud; air outlet means in said rear wall substantially symmetrical with said axis for discharge of the air flows carrying excess powder from said powder cloud; conveyor means receiving powder carried toward the walls of said box and delivering the received powder to said rinsing air flows for return thereby to said powder cloud; and a conveyor device adjacent said base receiving any powder falling onto said base and removing the received powder to prevent powder accumulation onto said base.

3,870,017

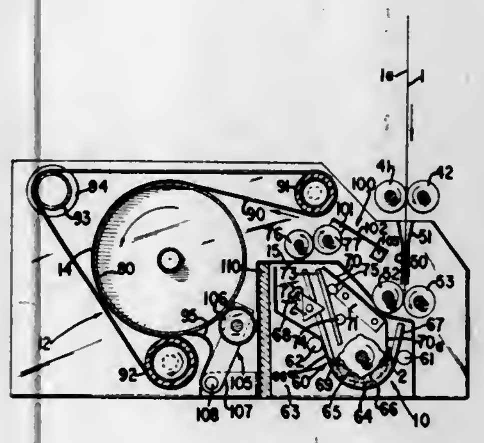
PHOTOPRINT DEVELOPING APPARATUS AND METHOD

Francis L. Kratcoski, Lincolnshire, Ill., and Adrianus H. Willemse, Grubbenvorst, Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed June 26, 1974, Ser. No. 483,319

Int. Cl. G03g *13/08*

U.S. Cl. 118—637 **16 Claims**



1. An apparatus for developing an electrostatic charge pattern on a support sheet by inductive attraction thereto of particles of an electrically conductive developing powder, including a container for holding a mass of said powder and having therein lower and upper means extending partially within and partially outside the space occupied by the powder and spaced apart therewithin to define a path for movement of the sheet through the powder mass, and means for transporting the sheet into and along said path and thence out of said container, the improvement which comprises said upper means being constituted by an electrically conductive organ having a cylindrical peripheral outline that is regularly profiled as viewed in circumferential direction, said organ being rotatable to move its periphery in the direction of the movement of the sheet through said path so that its profiles will displace powder from the sheet exit region of said space toward the sheet entry region thereof.

3,870,018

FISH GROWING TANK

Ernst August Fruchtnicht, Heidesee 28, 2138 Scheebel, Germany

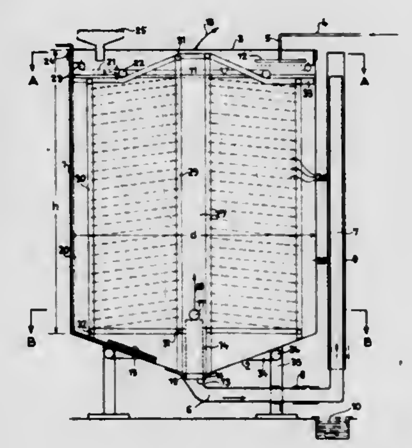
Filed June 1, 1973, Ser. No. 365,968

Claims priority, application Germany, June 5, 1972, 2227206

Int. Cl. A01k *61/00*

U.S. Cl. 119—3 **15 Claims**

1. A fish growing tank comprising means defining a tank with a nominal water level, means for water supply to the tank, means for evacuation of water comprising an adjustable overflow conduit connected to an evacuation hole in the bottom of the tank, and



means defining a latticed dome having a height greater than the span across it located in the bottom of the tank with its top terminating substantially below said nominal water level height.

3,870,019

OYSTER CULTURE BASKET

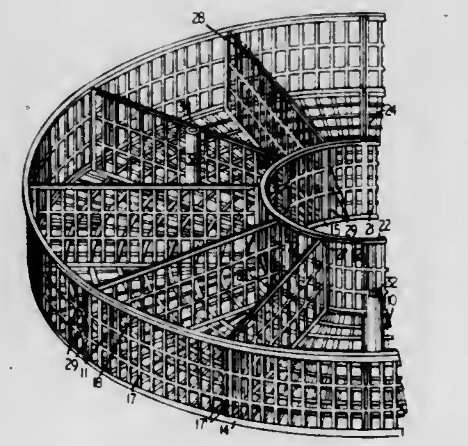
Douglas McNicol, R.R. No. 2, River Denys, Nova Scotia, Canada

Continuation-in-part of Ser. No. 129,547, March 30, 1971, abandoned. This application May 3, 1973, Ser. No. 356,795

Claims priority, application Canada, Feb. 10, 1971, 104977

Int. Cl. A01k *61/00*

U.S. Cl. 119—4 **17 Claims**



1. A basket suitable for the culturing of shellfish, and having a bottom, an upstanding outer wall surrounding said bottom, the bottom having a hole with a diameter of at least several inches which diameter is greater than the height of said outer wall, an inner wall of substantially the same height as the outer wall surrounding said hole, said bottom and said walls being apertured to allow for circulation of water, the basket further including at least three dividers extending between the said inner and outer walls, said dividers extending substantially the full height of the basket and dividing the basket into at least three segments surrounding said hole, each segment occupying less than the full width of the basket.

3,870,020

SYSTEM FOR GROWING SHELLFISH

George R. Hunt, Mahtomedi Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 203,155, Nov. 30, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,933

Int. Cl. A01k *61/00*

U.S. Cl. 119—4 **4 Claims**

1. A method for growing oysters to merchandizable maturity comprising supporting immature oysters on cultch in an aquatic growth medium at a concentration of from two to ten oysters per gallon, maintaining said medium at a temperature of 18°–25°C. and a salinity of 15-35 parts per thousand, supplying to said oysters a foodstock nutritionally-equivalent to *C. nana*, and regulating the rate of supply of said foodstock to avoid a concentration or turbidity greater than that of 5×10^5 cells of C. nana per ml. while providing a daily ration as expressed by the equation

$$C = Ah^2$$

wherein C = no. of cells of *C. nana* per oyster per day, A = a feeding constant between 0.3×10^6 and 1.25×10^6, and h = average height of the oysters in mm.

3,870,021

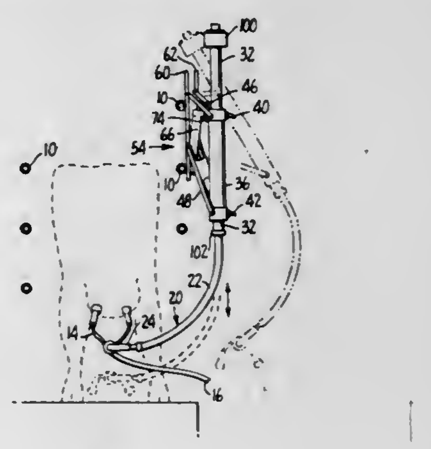
AUTOMATIC CONTROL FOR MILKING MACHINE SUPPORT STRUCTURE

Frits W. Nederbragt, Petaluma, Calif., assignor to Ross-Holm, division of Holm Tractor & Equipment Company, Petaluma, Calif.

Filed Nov. 29, 1973, Ser. No. 420,205

Int. Cl. A01j *7/00*

U.S. Cl. 119—14.13 **18 Claims**



1. An improved automated milking system of the type having milking cluster elements attached to the teats of a cow's udder, wherein the improvement comprises means for sensing a change in the pulling forces on the teats of the cow's udder exerted by the cluster elements and for producing an output signal representative of the change in at least one of the pulling forces and means attached to the milking cluster elements and responsive to the output signal for varying the pulling forces of the cluster elements on the cow's teats until the output signal indicates that the pulling forces on the teats exerted by the cluster elements are within a predetermined range.

3,870,022

POULTRY WATERING DEVICE

Harold W. Hart, Glendale, Calif., assignor to H. W. Hart Mfg. Co., Glendale, Calif.

Filed Mar. 19, 1973, Ser. No. 342,387

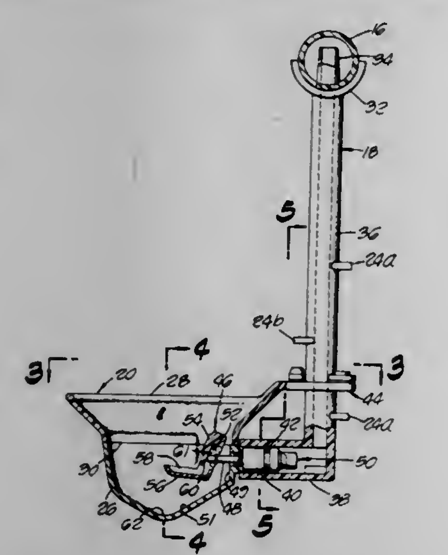
Int. Cl. A01k *39/02*

U.S. Cl. 119—75 **18 Claims**

1. A poultry drinking cup comprising:

a cup body having an input opening means;

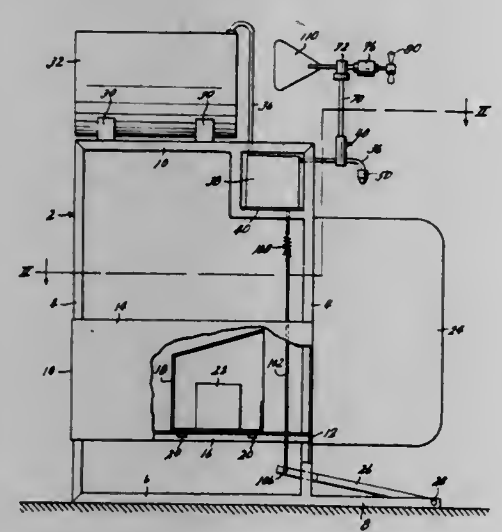
valve means to control the flow of water through said input opening means into the cup body;
a snap-fitting member formed integrally with said cup;
said snap-fitting member including resilient engaging means which define an expandable cavity;
said cavity being shaped and positioned to clamp said water feed line or said support member through resilient expansion of said cavity to at least partially enclose said feed line or said support member with said cavity then undergoing resilient contraction to clamp said water feed line or said support member,
whereby the poultry drinking cup may be readily connected to a water feed line by connecting the input opening means with the water feed line and engaging the snap-fitting member with the water feed line or the support member to resiliently enlarge the cavity in the snap-fitting member with the cavity then undergoing resilient contraction to clamp said water feed line or said support member.



3,870,023

INSECTICIDE APPLICATOR FOR LIVESTOCK

Rolland E. Wilson, Rt. 1, Prescott, Kans. 66767
Filed Sept. 12, 1973, Ser. No. 396,354
Int. Cl. A01k *29/00*
U.S. Cl. 119—159 **5 Claims**

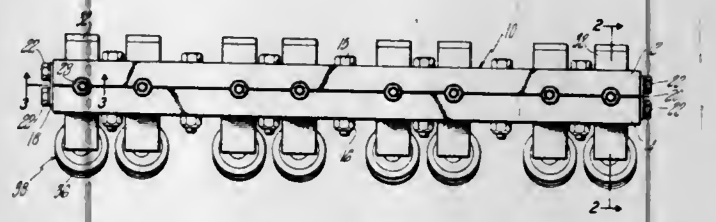


1. An insecticide applicator for livestock comprising:
a. a frame,
b. an insecticide reservoir carried by said frame,
c. a spray nozzle carried by said frame and operable to direct a spray against an animal standing in a use position relative to said frame, said nozzle being interconnected to said reservoir to receive insecticide therefrom, and
d. a control system including actuating means operable by the presence of an animal in said use position to cause operation of said control system to deliver insecticide from said reservoir to said nozzle, said control system comprising a pump operable when actuated to deliver insecticide from said reservoir to said nozzle, an electric motor operable to drive said pump, an operative electrical circuit for said motor, a normally open first switch in said motor circuit, electrically operated switch closing means operable to close said first switch whenever energized, electrically operable switch opening means operable to open said first switch a predetermined time after it is energized, even when said switch closing means is energized, an operating electrical circuit for said switch closing and switch opening means, and a normally open mechanical switch disposed in said last-named circuit, operation of said actuating means being operable to close said mechanical switch as long as said animal occupies said use position.

3,870,024

ROCKER ARM STUD SUPPORT DEVICE

Ralph H. Ridgeway, 17 Pine Dr., North Wilbraham, Mass. 01067
Filed Jan. 21, 1974, Ser. No. 435,287
Int. Cl. F01l *1/18*
U.S. Cl. 123—90.41 **7 Claims**



1. Apparatus for preventing undesired movements of internal combustion engine valve operating members comprising: rocker arm stud extension means, said extension means adjustably engaging each of a plurality of linearly aligned rocker arm studs, engine valve clearance adjustments resulting from movement of said extension means on the studs;
locking means for preventing vibration induced rotational movement of said extension means on the studs;
elongated bar means, said bar means defining a plurality of spaced apertures, said bar means apertures circumscribing each of said stud extension means of a linearly aligned array of rocker arm studs for preventing deflectional motion of the studs, said bar means apertures being sized so as to define a clearance between said stud extension means and the walls of said apertures whereby rotational movement of said extension means is not impeded by said bar means; and
bracket means, said bracket means comprising a pair of opposed brackets adapted to respectively engage opposite ends of and solely support said bar means on an engine.

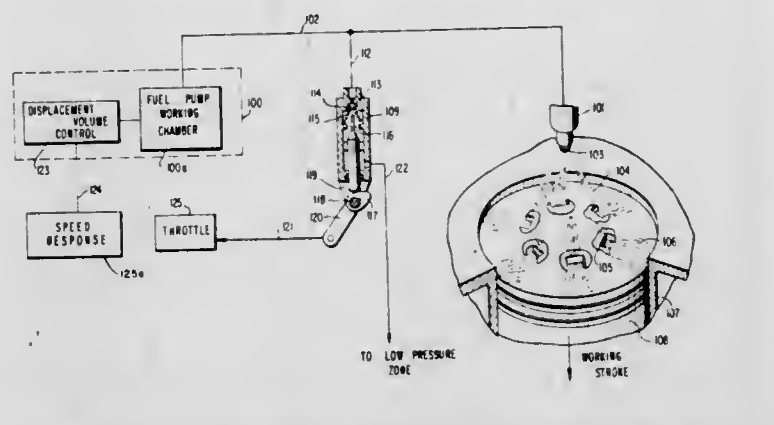
3,870,025

METHOD AND APPARATUS FOR IMPROVING THE FUEL INJECTION CHARACTERISTICS OF INTERNAL COMBUSTION ENGINES

Harold Elden Anderson, Playa del Rey, and Perry Lester Kruckenberg, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
Filed July 5, 1972, Ser. No. 269,231
Int. Cl. F02d *1/04, 1/06;* **F02m** *39/00*
U.S. Cl. 123—139 AF **20 Claims**

1. In a method of effecting combustion in internal combustion engines, which method is characterized by:
generating, within internal combustion engine means, and in energy communicating relation with engine piston means movable in cylinder means of said engine means, a plurality of generally mutually distinct burning loci, with said burning loci defining generally spaced centers of burning;

concurrently, and during a working stroke of said engine piston means,
transmitting combustion supporting gas, heated by compression and combustion, into said burning loci, and
generating and transmitting streams of combustible fuel into said burning loci,
each said burning loci substantially receiving at least one of said fuel streams and at least some of said heated gas; limiting the time duration of the generation of said fuel streams so that at least the majority of fuel in said streams passes into said burning loci during a working stroke of said engine piston means;
providing a plurality of spaced wall means, with each such wall means peripherally confining and defining

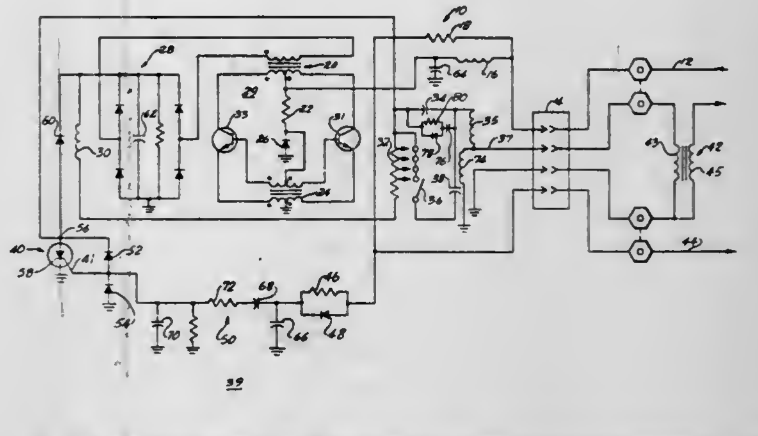


a fuel and heated gas agitation zone individually associated with and communicating with a said burning loci; each said peripherally confined agitation zone and a burning loci associated therewith receiving fuel from at least one fuel stream directed thereinto during said working stroke of said engine piston means;
maintaining the existence and a generally discrete relation of said burning loci during said working stroke of said engine piston means; and
utilizing energy generated through operation of said burning loci to induce said working stroke of said engine piston means;
the improvement comprising:
causing fuel pump piston means to displace an increment of fuel from fuel pump means;
transmitting said displaced increment of fuel through passasge means leading from said fuel pump piston means to fuel injection nozzle means operable to generate said fuel streams, with said fuel injection nozzle means being operable to pass said fuel streams into said agitation zones and burning loci associated therewith;
discharging said fuel streams from said nozzle means into said agitation zones and burning loci associated therewith at a rate different from, and slower than, the rate of displacement of said fuel increment from said fuel pump means into said passage means; and
at a relatively lower engine speed for any given load condition
displacing a relatively larger volume fuel increment per working stroke of said engine piston means from said fuel pump means into said passage means, and
diverting fuel delivered by the fuel pump means into said passage means, between said fuel pump piston means and said injection nozzle means, from said passage means, and
at a relatively higher engine speed for any given load condition
displacing a relatively smaller volume fuel increment per working stroke of said engine piston means from said fuel pump means into said passage means, and
at least reducing the degree of said diversion of fuel from said passage means, and
said steps of displacing and diverting being operable to substantially avoid an undesirable mismatching of the time duration of discharge of said fuel streams into said agitation zones, in relation to a desired increment of movement of said engine piston means.

3,870,026

CAPACITIVE DISCHARGE IGNITION SYSTEM HAVING PROTECTIVE UNIDIRECTIONAL CIRCUIT

Christopher A. Jacobs, 3570-½ Eagle Rock Blvd., Los Angeles, Calif. 90065
Continuation-in-part of Ser. No. 856,626, Oct. 15, 1969, Pat. No. 3,716,037. This application Nov. 29, 1972, Ser. No. 310,256
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 R **3 Claims**

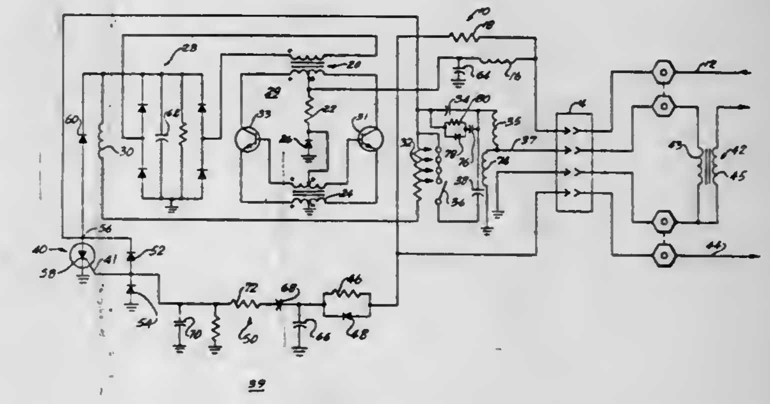


1. An ignition system for internal combustion engines comprising:
a cource of electrical power;
capacitive means for storing electric power coupled to the power supply;
an ignition coil coupled to the capacitive means;
means coupled to the ignition coil for producing and electric spark;
an electronic switch having an anode and a cathode coupled to the capacitive means for controlling the discharge and charge of the capacitive means;
engine controlled switching means coupled to the electronic switch for periodically operating said switch to produce discharge of the capacitive means; and
unidirectional circuit means backbiased to a predetermined threshold voltage connected to the electronic switch for conducting high voltage spike signals away from the anode of said electronic switch and thereby protecting said electronic switch.

3,870,027

CAPACITIVE DISCHARGE IGNITION SYSTEM HAVING VARIABLE VOLTAGE INVERTER

Christopher A. Jacobs, 3570½ Eagle Rock Blvd., Los Angeles, Calif. 90065
Continuation-in-part of Ser. No. 866,626, Oct. 15, 1969, Pat. No. 3,716,037. This application Nov. 29, 1972, Ser. No. 310,273
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 R **2 Claims**



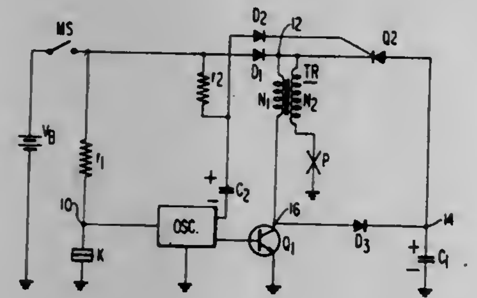
1. An ignition system for internal combustion engines comprising:

a source of electric power;
a variable voltage inverter coupled to the power source, the inverter including a pair of saturable transformers having coupled primary windings, each of said transformers going into saturation during starting of the engine with which the ignition system is used whereby inverter operation is provided with a voltage characteristic such that the voltage supplied by the inverter is maximum at engine cranking speeds in a range of 0 RPM to approximately 250 RPM, is inversely proportional to engine speed in the range of approximately 250 RPM to approximately 750 RPM, and remains approximately constant throughout the range of normal engine running speeds above 750 RPM at at a voltage level less than the voltage levels at said lower engine speeds;
capacitive means for storing electric power coupled to the voltage inverter;
an ignition coil coupled to the capacitive means;
means coupled to the ignition coil for producing an electric spark;
an electronic switch coupled to the capacitive means for controlling the discharge and charge of said capacitive means; and
engine controlled switching means coupled to the electronic switch for periodically operating said electronic switch to produce discharge of the capacitive means.

3,870,028
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoshio Ishida, Osaka, Japan, assignor to Diamond Electric Mfg. Co., Ltd., Osaka, Japan

Filed Apr. 18, 1973, Ser. No. 352,362
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **5 Claims**



1. An ignition system for internal combustion engines comprising an ignition transformer means having a primary and a secondary winding, and said primary winding being grounded at one end thereof through a transistor and connected at the other end thereof to a DC source through a diode, said the other end of said primary winding being further grounded through a thyristor and a capacitor connected in series, and said secondary winding being connected at one end thereof to an ignition plug, an oscillator means for generating at least one pulse having a predetermined pulse width every predetermined ignition timing of the engine in synchronism with the rotation of the engine, means for coupling the output pulse of said oscillator means to the base of said transistor, means for coupling the output pulse of said oscillator means to the gate of said thyristor, said thyristor, said transistor and said primary winding of said transformer means providing a discharge circuit for said capacitor when both said transistor and said thyristor are rendered conductive substantially simultaneously in response to the application of the output pulse from said oscillator means, and means for charging said capacitor by a counter electromotive force produced in said primary winding of said transformer means when said transistor in the conducting state is rendered non-conductive.

3,870,029
ENGINE SUPERCHARGING AIR COOLING METHOD

James E. Crook, Speedway; John F. Cutler, Jr., and Jai K. Khanna, both of Indianapolis, all of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

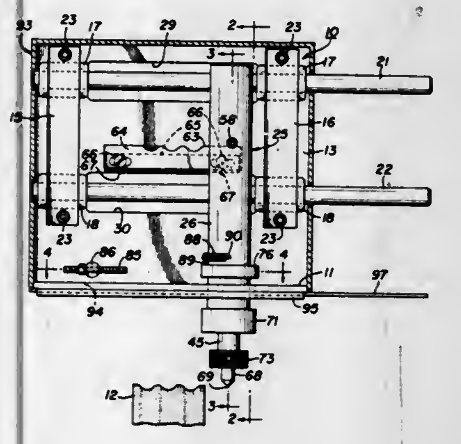
Division of Ser. No. 269,062, July 5, 1972, Pat. No. 3,796,047. This application Jan. 7, 1974, Ser. No. 431,312
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 CD **4 Claims**

1. A method of treating intake air for an internal combustion engine comprising
first compressing ambient air to a first pressure ratio which results in a first high temperature of the compressed air, cooling said compressed air by passing it through an air to air intercooler to a second temperature significantly lower than said first temperature while retaining approximately the first pressure ratio,
expanding said compressed air to a final pressure ratio considerably lower than said first pressure ratio to bring its temperature to a third temperature significantly lower than said second temperature, utilizing the energy of said expansion to the said final pressure ratio to draw ambient air through said intercooler, without heating the ambient air prior to its passage through the intercooler, transmitting said expanded air to the engine intake.

3,870,030
GRINDING WHEEL DRESSER

Phillip A. Sollami, 438 Sherman St., Downers Grove, Ill. 60515

Filed Nov. 5, 1973, Ser. No. 412,709
Int. Cl. B24b *53/08*
U.S. Cl. 125—11 TP **8 Claims**

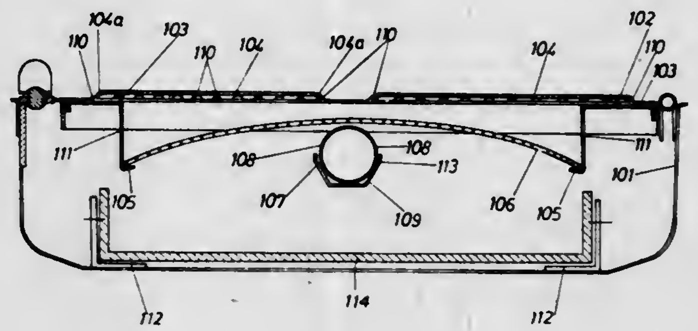


1. Apparatus for use in dressing the peripheral working surface of a grinding wheel to a predetermined contour, comprising
a base member adapted to be mounted in fixed relationship to the axis of rotation of a grinding wheel to be dressed, a tool holder carriage,
means mounting said carriage for reciprocable movement along a rectilinear path parallel to said axis of rotation of said grinding wheel,
motor means for driving said carriage back and forth along said path,
a dressing bit holding member carried by said carriage for guided movement in a direction perpendicular to said path,
an advance screw being carried by said carriage and held against rotation relative thereto,
a template mounted to said base member,
a template follower connected to said advance screw, and means carried by said bit holder carriage and intermittently operated in response to the reciprocation of said holder relative to said base member for intermittently rotating said bit holding member relative to said advance screw to intermittently advance said bit holding member and to rotate said dressing bit.

3,870,031
GAS HEATED GRILL DEVICE

Aloys Kruper, Menden, Germany, assignor to Firma Gebr. Cramer, Menden, Fingerhutsmuhle, Germany

Filed Mar. 16, 1973, Ser. No. 342,138
Claims priority, application Germany, Mar. 24, 1972, 7211234
Int. Cl. F24c *3/04*
U.S. Cl. 126—39 J **4 Claims**

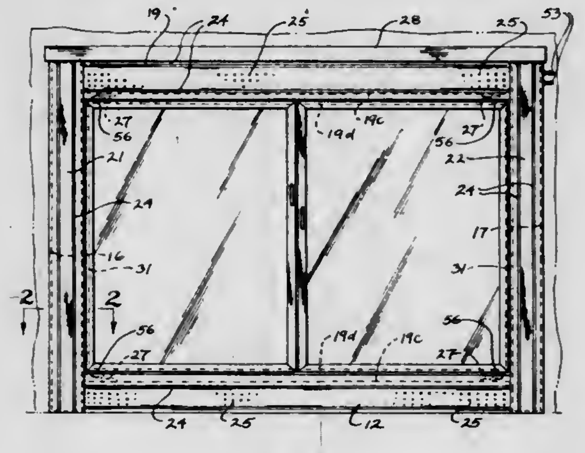


1. An improved gas heated grill device comprising in combination:
a housing having at least one cooking plate adapted for cooking in utensils, said cooking plate including a plurality of spaced-apart openings around its cooking area formed in a sloped edge of the plate;
a grill pan located below said cooking plate;
a gas burner located in said housing between said cooking plate and said grill pan, a metal screen disposed between said burner and said at least one cooking plate, said burner being provided with nozzles disposed for the direct heating with flames of said screen to produce infrared rays, said screen being constructed and arranged for radiating infrared heat simultaneously in two principal directions, downwardly toward said grill pan and upwardly toward said cooking plate, and a pair of spaced apart lateral brackets depending from the cooking area and having angular arms for supporting the edge of said screen, said brackets including bores for enhancing the air circulation upwardly toward the opening of the cooking plate.

3,870,032
FIREPLACE FRONT OR SCREEN

John E. Lydle, and Charles F. Yakubik, both of Akron, Ohio, assignors to The Thermo-Rite Mfg. Co., Akron, Ohio

Filed Nov. 3, 1972, Ser. No. 303,459
Int. Cl. F24c *15/36*
U.S. Cl. 126—202 **10 Claims**

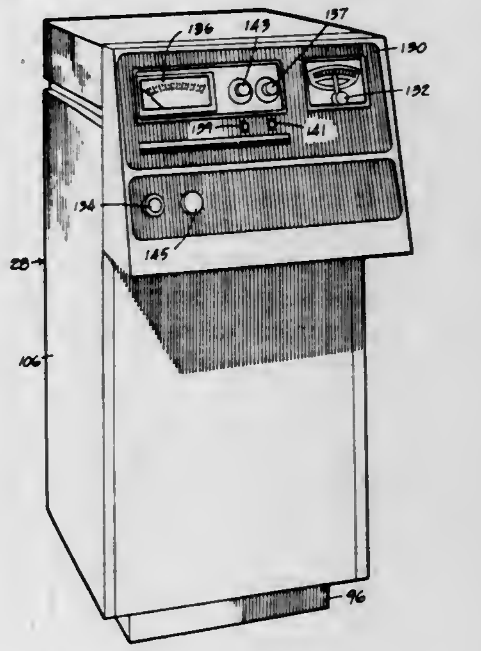


1. A frame for a fireplace screen, adapted to fit over a rectangular opening of a fireplace to be in front of a fuel burning space thereof, comprising; a rigid rectangular supportive frame having front and rear face portions, and including self-supportingly rigid top, bottom, and opposite-side supportive strips, fixedly connected and defining a frame opening therethrough; separate top, bottom and side decorative facing strips of thin material, complementally fitting over said front face portions of the supportive strips of said frame; and interengaging means on said supportive frame and said facing strips for complementally securing the same together, at least one of said supportive strips and its complementary facing strip defining a hollow draft air containment chamber with its facing strip including draft openings communicating with said chamber and being arranged in keeping with the decor of said decorative facing strip.

3,870,033
ULTRA PURE WATER PROCESS AND APPARATUS

Terry Lee Faylor, Santa Clara, and Roger W. Martin, San Jose, both of Calif., assignors to Aqua Media, Sunnyvale, Calif.

Filed Nov. 30, 1973, Ser. No. 420,703
Int. Cl. F24h *1/20*
U.S. Cl. 126—360 R **5 Claims**



1. A heat exchanger system for producing hot, deionized water and comprising,
inlet supply means for supplying water deionized to an electrical resistivity at the supply temperature equivalent to a resistivity in the range of 16–18 megohms for water at 25° C.,
heat exchanger means for heating said deionized water to a temperature in the range of 160°–190° F. while retaining said electrical resistivity at the heated temperature equivalent to 15–18 megohms at 25° C., and
outlet means for conducting the hot (160–190° F.) deionized (15–18 megohms equivalent) water from the heat exchanger means to a point of use.

3,870,034
PERSONAL GALVANIC SKIN RESPONSE MONITORING INSTRUMENT

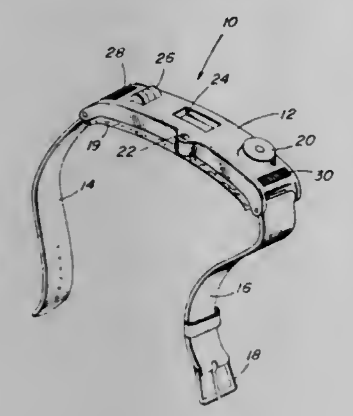
J. Michael James, Cambridge, Mass., assignor to Cyborg Corporation, Boston, Mass.

Filed Mar. 26, 1973, Ser. No. 345,463
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z **6 Claims**

1. A device for indicating changes in electrical resistance in the skin of a human subject, comprising
a. a casing of a size and shape adapted to be worn on a wrist of said subject and having an inner and an outer face,
b. wrist band means connected to said casing for detachably engaging the inner face of said casing to said wrist,
c. a pair of exposed electrodes mounted in fixed spaced relation to the outer face of said casing and adapted to be

touched by two different fingers of said subject, said electrodes being substantially flush with the outer face of said casing and of a size and shape to be covered by an average fingertip

d. a source of electrical power mounted to said casing and connected to said electrodes for establishing a potential difference between said electrodes,



e. first means responsive to the current flowing between the electrodes for deriving a signal related to the skin resistance of said subject,

f. a variable frequency oscillator mounted to said casing,

g. second means responsive to the derived signal for controlling the frequency of said oscillator whereby the frequency of said oscillator will vary with changes in the skin resistance of said subject, and,

h. third means coupled to said oscillator for indicating changes in oscillator frequency.

3,870,035

METHOD AND APPARATUS FOR SELF-ADMINISTERING PRE-HOSPITAL PHASE TREATMENT OF CORONARY PRONE INDIVIDUALS IN THE EARLY MINUTES OR HOURS AFTER THE ONSET OF HEART ATTACK SYMPTOMS

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Continuation of Ser. No. 55,647, July 17, 1970, abandoned. This application Oct. 12, 1972, Ser. No. 296,841

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 T **13 Claims**

7. A method for effecting pre-hospital phase self-administered treatment of a coronary prone individual at a time during the early minutes or hours after the onset of heart attack symptoms and for enabling qualified personnel to participate by telephone in such treatment, which individual has been previously provided with ready access to (1) at least one injector suitable for self-administration under the disconcerting circumstances present during the aforesaid time containing a liquid dosage of a medicament injectable into the tissue of the individual effecting the self-administration of the injector, which medicament (a) when so injected is generally effective to reduce the incidence of adverse cardiac conditions, such as ectopic beats, when the existing heart beat condition is within a predetermined portion of the total range of heart beat conditions which may exist during an attack, and (b) may be inadvisable or unwise to inject when such heart beat conditions are outside the predetermined portion of the total range in which the medicament is effective as aforesaid, and (2) a diagnosing device having sensing means operable to be simply and conveniently disposed in operative relation to an individual for sensing a phenomena indicative of the individual's heart beat condition and battery operated signal producing means operable, when said sensing means is disposed in said operative relation to produce signals indicative of the sensed heart beat conditions of the individual, including a signal corresponding with each successive heart beat of the individual capable of being transmitted by telephone, said method comprising the steps of:

1. obtaining access to the aforesaid accessible device and injector by said individual;
2. manually establishing by said individual an operative relation between said individual and the sensing means;
3. sensing through the operation of the sensing means while in said operative relation a phenomena indicative of the existing heart beat conditions of the individual;
4. producing through the operation of said battery operated signal producing means signals indicative of the existing heart beat conditions of said individual including a signal corresponding with each successive heart beat of said individual capable of being transmitted by telephone;
5. utilizing at least some of the signals produced as aforesaid as a basis for determining that the injector obtained by said individual contains medicament which is effective as aforesaid;
6. visually identifying by said individual the injector containing the effective medicament, and
7. self-administering by said individual the identified injector containing the effective medicament and injecting said effective medicament into the tissue of said individual so that said injected medicament will reduce the the incidence of adverse cardiac conditions, such as ectopic beats, in said individual prior to the arrival of said individual at a hospital.

3,870,036

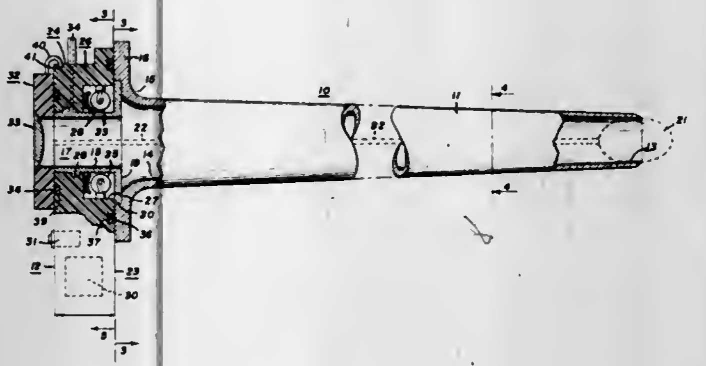
IMPROVED SPECULUM BARREL MEMBER

John M. Fiore, Troy, N.Y., assignor to Bio-Analytical Laboratories, Inc., Troy, N.Y.

Continuation of Ser. No. 249,110, May 1, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,027

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **10 Claims**



1. A single use disposable barrel member for use with a proctoscopic device having a light source therein comprising in combination

a. a cylindrical cross-section tapered barrel,

b. said tapered barrel having a smaller diameter opening at its distal end than at its proximal end,

c. a sleeve means in the proximal end of said barrel and extending out of said proximal end,

d. said sleeve means having a flange section at one end thereof defining a radially inwardly projecting annular window wall between the proximal end of said barrel and said sleeve means,

e. said annular window wall being positioned in said proximal end of said barrel so that the light source of said proctoscopic device is positioned behind said annular window wall to pass light through said annular window wall and directly into the bore of said barrel,

f. an obturator assembly in said barrel comprising a tip portion fitting smoothly in said distal end and a stem means attached to said tip portion and extending through said sleeve means,

g. said sleeve means being of sufficient size to pass said obturator therethrough and out of said barrel member.

3,870,037

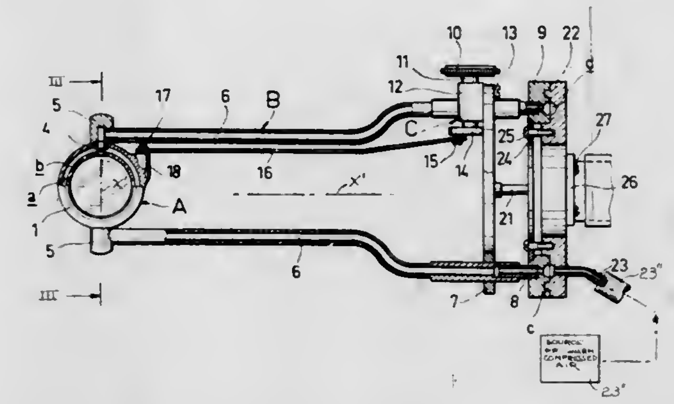
APPARATUS FOR OBSERVATIONS, PHOTOGRAPHS AND INTERVENTIONS IN THE POST-RHINAL-PHARYNGEAL REGIONS

Emil E. Cadariu, and Alexandru A. Macovei, both of Bucharest, Romania, assignors to Spitalul Coltea, Bucharest, Romania

Filed July 30, 1973, Ser. No. 383,494

Int. Cl. A61b *1/24*

U.S. Cl. 128—10 **6 Claims**



1. An endoscope system comprising:
a stationary support;
a tubular housing defining an optic axis and having a narrow end distal from said support and a broad end adjacent said support;
a mirror assembly pivotal about a mirror axis transverse to said optic axis and including a planar mirror having a reflective face, a frame surrounding said mirror and formed with an annular chamber and a plurality of orifices extending from said chamber and opening toward said face of said mirror, and at least one hollow pivot gudgeon journaled in said narrow end of said housing on said mirror axis and having a hollow interior communicating with said chamber, said housing including a pair of hollow arms each having one end carrying a respective gudgeon, and each having another end attached to said means for rotation of said housing and said assembly about said optic axis, said means for feeding air being connected to said other ends of said arms;
means for feeding air through said gudgeon into said chamber and thence through said orifices over said face of said mirror for demisting same;
means on said support for rotation of said housing and said mirror assembly about said optic axis;
means on said broad end of said housing including a link extending to said mirror assembly for pivoting said assembly about said mirror axis; and
means on said support including a mounting plate adapted to carry an observation apparatus for displacing said plate along said optic axis.

3,870,038

ONE-PIECE SEAMLESS HOLLOW RESUSCITATION PLAQUE

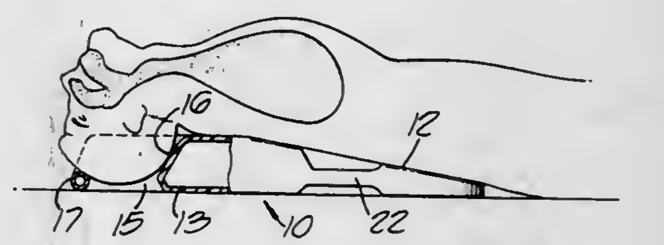
Dennis Arblaster, 34081 La Serena, Dana Point, Calif. 92629

Filed Mar. 15, 1974, Ser. No. 451,460

Int. Cl. A61h *31/00*

U.S. Cl. 128—28 **9 Claims**

1. A one-piece resuscitation plaque for use in treating a patient suffering from suffocation, shock, cardiac conditions and the like, said plaque comprising a rigid seamless hollow buoyant shell of high-strength, rotationally molded thermoplastic material having a substantially uniform wall thickness, said plaque being elongated and tapering to a substantially thinner thickness at the forward end thereof, said plaque being relatively thick at the rear end and sized to underlie and firmly support the head and back of a spine patient, the rear end of said plaque having a head-supporting recess with a continuous head-supporting perimeter shaped to support the patient's head firmly while tilted rearwardly and downwardly and with the chest supported rigidly elevated whereby the bronchial passages of a supine patient lie open in a generally straight path to provide free unobstructed access through the mouth and into the lungs of the patient.



3,870,039

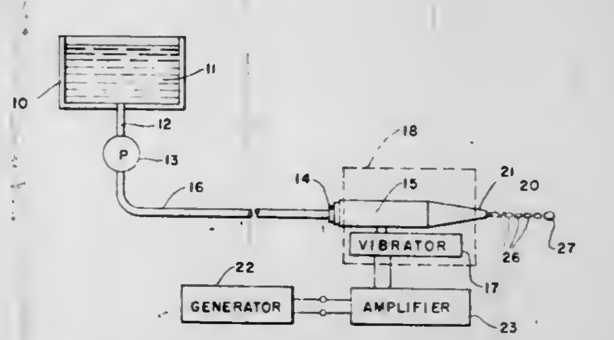
FRACTIONATED LIQUID JET

Michel Antoine Cesar Moret, and Pierre Jean Jousson, both of Geneva, Switzerland, assignors to Les Produits Associes, LPA SA, Geneve, Switzerland

Filed Jan. 18, 1973, Ser. No. 324,667

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **25 Claims**



1. An apparatus for body care comprising means for storing a liquid, nozzle means for projecting the liquid at an ejection velocity within a predetermined range to a selected area, said nozzle means including a nozzle having an opening having a diameter in the range of about 0.2 to about 1.1 mm, means for supplying the liquid under pressure from said storing means to said nozzle means, and means for fractionating the liquid at a frequency in the range of about 200 to about 5,000 cps into a plurality of unitary, discrete liquid droplets for successively impacting said selected area with said plurality of unitary, discrete liquid droplets, wherein said droplets are further characterized in that each of said droplets successively percusses said selected area at an impact rate substantially equal to the number of droplets produced by said fractionating means per unit of time, said droplets having a diameter when formed which is larger than the diameter of the opening in the nozzle.

3,870,040

BUBBLE MAT FOR BATH TUBS

Ruth Kulisch geb. Klages, Schwalbenstr. 7, 2902 Rastede, Germany

Filed Aug. 7, 1973, Ser. No. 386,479

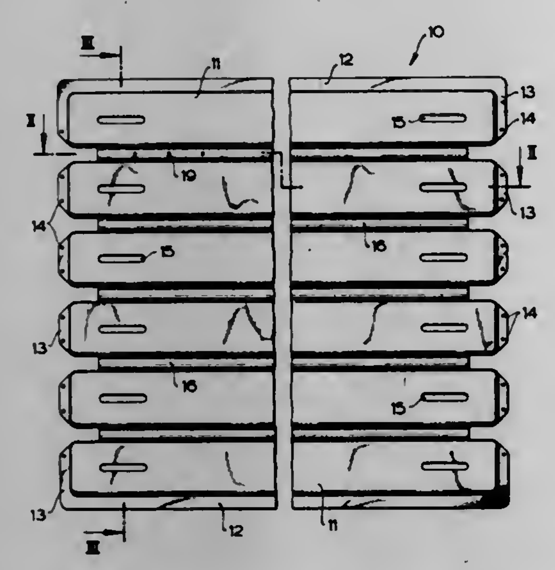
Claims priority, application Germany, Nov. 25, 1972, 2257935

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **16 Claims**

8. A bubble mat for use in a bathtub and the like and adapted for connection to an air pump comprising:
a plurality of longitudinal spaced-apart bars defining a planar support surface for the mat;
a plurality of hollow pipe sections, each secured between each of said bars and having a plurality of bubble openings disposed along their length, said pipe sections being

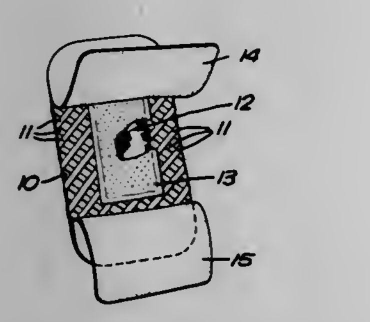
recessed below the planar support surface of said bars; and a single articulated joint having a flexible hinge por-



tion, for joining said bars to the adjacent bars of a further mat.

3,870,041
SURGICAL DRESSINGS

Graham Leighton Davies, London, England, assignor to BTR Industries Limited, London, England
Filed Aug. 16, 1973, Ser. No. 388,779
Int. Cl. A61f *13/02*
U.S. Cl. 128—156 **14 Claims**



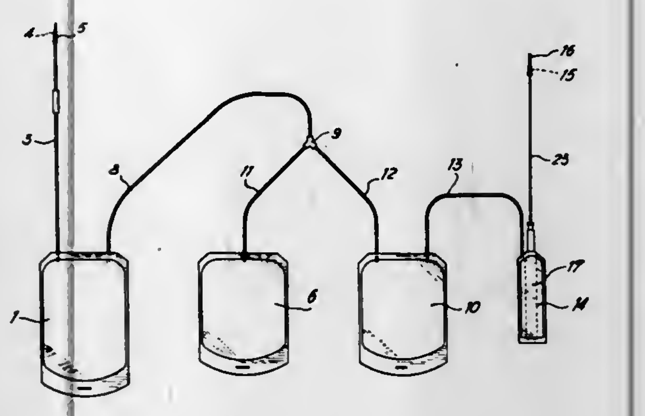
1. An improved surgical or wound dressing of the kind comprising a backing strip one side of which has an adhesive facing, a resilient absorbent pad on said one side of the backing strip, and a means for contacting and conforming to the wound surface comprising a covering layer overlying the absorbent pad of a readily stretchable film of elastomeric material which has a thickness not greater than 0.010 inch and a means for permitting wound scab and exudate from a wound to which the dressing is applied to be readily passed there through comprising deformable spaced perforations in said elastomeric covering material layer.

3,870,042
APPARATUS FOR SEPARATING AND INJECTING BLOOD COMPONENT

Leon Fernand Viguier, Saint-Pierre de Mesage, France, assignor to Laboratories Medicoplast, Paris (Seine), France
Filed Oct. 6, 1972, Ser. No. 295,687
Claims priority, application France, Oct. 13, 1971, 71.36734.
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 D **5 Claims**

1. In an apparatus for sampling and fractionating blood components including a plurality of sampling and fractionating pockets interconnected by tubing, a means for sequentially isolating, storing and intravenously injecting into a patient a blood component present in small amounts in the blood and liable to contain agglomerated elements,

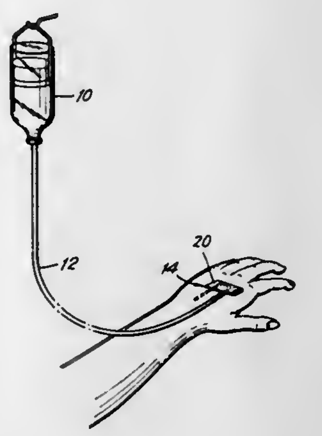
said means comprising:
a distinct storage pocket for said component,
the inlet of said storage pocket being connected by sectionable tubing to said plurality of sampling and fractionating pockets,
the outlet of said storage pocket being sealed and having means for being equipped with injection means;



a filter means for preventing the injection of the agglomerated elements incorporated inside said storage pocket between said inlet and said outlet; said storage pocket being of dimensions substantially corresponding to the quantity of the component separated.

3,870,043
U-SHAPED INTRAVENOUS NEEDLE STRUCTURE

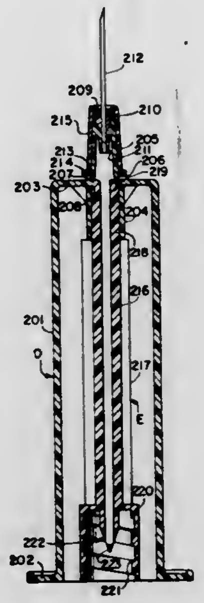
Allan R. Dunn, 1160 Kane Concourse, Bay Harbor Islands, Miami Beach, Fla. 33154
Filed Mar. 28, 1974, Ser. No. 455,546
Int. Cl. A61m *05/14, 05/32*
U.S. Cl. 128—214 R **8 Claims**



1. A U-shaped intravenous needle structure comprising:
a rigid, hollow, needle designed and adapted for performing a venipuncture in a patient's extremity;
a hollow, curved, rigid tube member having an opening at each end of the curve, one end of the curve being in fluid connection with and firmly secured to the needle; and
connecting means dèsigned and adapted to be connected to a source of intravenous fluid, the connection means being in fluid flow connection with and firmly secured to the second end of the curve;
the center lines of the needle and the connecting means being in substantially the same plane and at an angle to each other of from about 150° to about 180°.

3,870,044
HYPODERMIC SYRINGE BODY STRUCTURE

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Division of Ser. No. 171,624, Aug. 13, 1971, Pat. No. 3,768,474. This application June 19, 1973, Ser. No. 372,053
Int. Cl. A61m *5/24*
U.S. Cl. 128—220 **10 Claims**

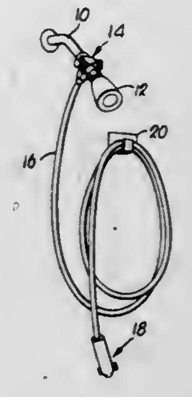


1. A hypodermic syringe body structure for association with a liquid medicament container of the type including a pierceable stopper having a connector thereon, said body structure comprising a molded plastic barrel member having an open end, a base opposite said open end having an aperture therethrough and an integral guide sleeve surrounding the aperture in the base and extending axially inwardly of said base a distance that is relatively short in relation to the axial extent of said barrel member, a one-piece molded plastic inner tubular member having a hollow interior and at least a portion thereof fitting within said guide sleeve and an end portion having a connector for coupling engagement with a stopper of such a medicament container, said end portion terminating at least approximately in the plane of the open end of said barrel and comprising an enlarged, internally threaded, integrally formed plastic portion of said inner tubular member, a hollow, plastic, stopper piercing spike coaxially disposed within said enlarged internally threaded portion integrally formed of the plastic of the tubular member and in fluid communication with the hollow interior of the inner tubular member, one of said barrel member and inner tubular member having an integral tubular extension projecting outwardly of the aperture in said base, said tubular extension being in fluid communication with the hollow interior of the inner tubular member, said tubular extension having a frangible portion outwards of said base of said barrel member, means operatively connected with said tubular extension outwards of said frangible portion for receiving an end portion of a cannula, said barrel member and inner tubular member having mutual facing bonding surfaces, and means effectively bonding said barrel member and tubular member together.

3,870,045
MULTIPURPOSE HYGIENIC KIT

Curtis M. Vaughan, 1925 Jackson, Joplin, Mo. 64801
Continuation-in-part of Ser. No. 160,771, July 8, 1971, abandoned. This application June 28, 1973, Ser. No. 374,694
Int. Cl. A61m *3/00*
U.S. Cl. 128—229 **3 Claims**

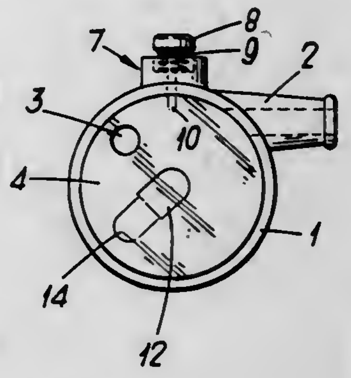
1. A medicated douche comprising:
an elongated, tubular, perforated probe adapted for insertion into a body cavity,
said probe having an inlet orifice at one end thereof and one or more outlet apertures at the opposite end thereof;
a hollow receptacle ahead of said probe adjacent said inlet and having a compartment for receiving a medicinal suppository,
said compartment having an entry spaced from said inlet and an exit adjacent the inlet whereby a fluid forced through the compartment and into the probe may carry medication therewith from said suppository; and



structure for introducing the suppository into said compartment, said structure including an insertion tube coupled at one end thereof with said entry and adapted to freely receive the suppository, and a plunger received and shiftable within said tube toward said one end thereof for extruding the suppository into said compartment through said entry.

3,870,046
INSUFFLATOR

Roderick Douglas Elliott, Burnham, England, assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Apr. 22, 1974, Ser. No. 462,805
Claims priority, application Great Britain, May 8, 1973, 21991/73
Int. Cl. A61m *13/00*
U.S. Cl. 128—266 **14 Claims**

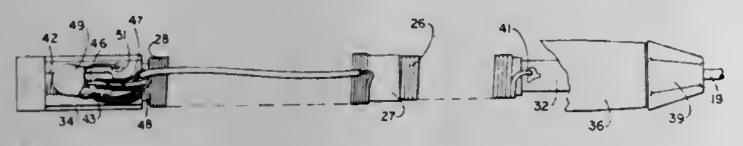


1. An inhalation device comprising a housing having a first chamber portion and a medicament chamber portion therewithin and having a single mouthpiece formed with passage means communicating respectively with said chamber portions; said housing being provided with an air exhaust port communicating with said first chamber portion and an air inlet port communicating with said medicament chamber portion; a rotor mounted within said housing; a drive portion on said rotor driven by said air flow through said first chamber portion; means for dispersing a medicament within said medicament chamber portion and air flow means for causing air flow through said first chamber portion and said exhaust port by exhalation through said mouthpiece to effect rotor movement and for causing air flow through said inlet port and said medicament chamber portion to effect entrainment of said medicament by inhalation through said mouthpiece.

3,870,047

ELECTROSURGICAL DEVICE

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corporation, Milford, Del.
Filed Nov. 12, 1973, Ser. No. 414,646
Int. Cl. A61b *17/36;* **A61n** *3/02*
U.S. Cl. 128—303.14 **6 Claims**

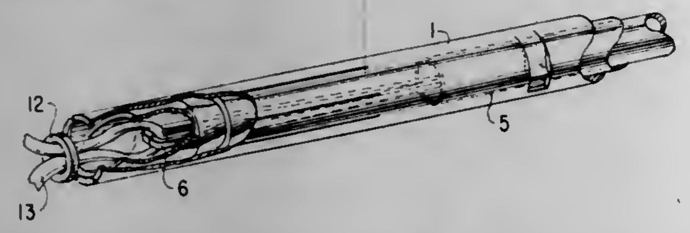


6. In an electrosurgical device, the combination of a coaxial cable having a central lead and an outer conductor and means for generating a radio-frequency current of an electrosurgical frequency in the central lead of the coaxial cable, with a handpiece which comprises a first coil, a second coil inductively coupled to the first coil, an electrode, means for connecting one end of the first coil to the electrode, means for connecting one end of the second coil to the central lead, and a condenser, the other end of the second coil being coupled to the outer conductor through the condenser, the second coil powering the first coil and the electrode, the outer conductor preventing radio-frequency leakage between the generating means and the handpiece.

3,870,048

DEVICE FOR STERILIZING THE HUMAN FEMALE OR MALE BY LIGATION

In Bae Yoon, 9508 Falls Bridge Ln., Potomac, Md. 20854
Filed July 30, 1973, Ser. No. 383,475
Int. Cl. A61b *17/12*
U.S. Cl. 128—326 **18 Claims**



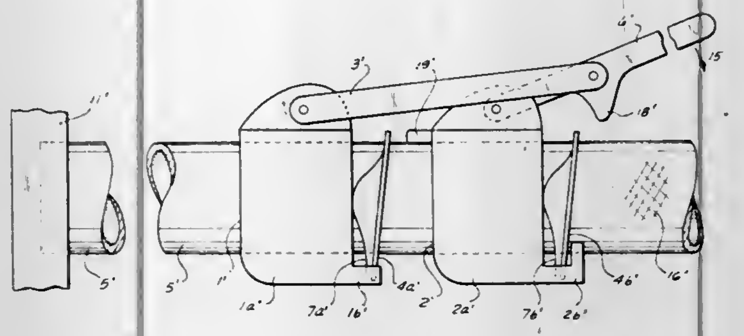
1. A ring applicator device used for applying an elastic occluding ring to an anatomical tubular structure which comprises an inner cylinder and an outer cylinder, said inner cylinder being slidably disposed within said outer cylinder, and forceps means slidably disposed within said inner cylinder, said forceps means including means for grasping and releasing said anatomical tubular structure, the proximal end portion of said inner cylinder having means thereon to selectively retain on its outer end surface at least two elastic occluding rings and said outer cyinder having an expandable end portion which cooperats with the proximal end portion of the inner cylinder to define a means for sequentially ejecting the elastic occluding rings from the inner cylinder after axially displacing the outer and inner cylinders relative to each other to position said expandable end portion behind a ring.

3,870,049

OBSTETRIC DEVICE FOR ANIMALS

Werner Weiland, Bendorf-Sayn, Germany, assignor to Rheintechnik Weiland & Kaspar OHG, Bendorf, Germany
Division of Ser. No. 375,848, July 2, 1973,. This application June 27, 1974, Ser. No. 483,669
Claims priority, application Germany, July 4, 1972, 2232713
Int. Cl. A61d *1/08;* **A61b** *17/42*
U.S. Cl. 128—353 **11 Claims**

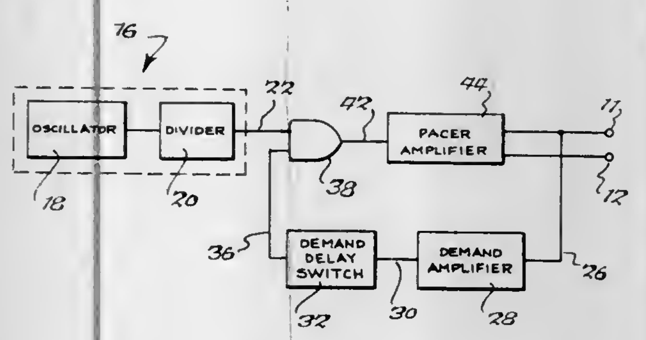
1. An obstetric device for use with animals, particularly cattle and the like, comprising an elongated member having a knurled other circumferential surface and further having an end adapted to abut an animal giving birth; a means for selectively grasping and releasing said elongated member including at least two members individually shiftably mounted on said elongated member and each adapted to be connected with an animal being born; contro means for effecting individual movement of said shiftable members in a direction away from said end so that a tension may be continuously exerted on the animal being born when said shiftable members are connected with the latter to thereby aid the birth process; holding means for preventing movement of said shiftable members in a direction towards said end; and releasing means mounted on at least one of said shiftable members for substantially simultaneously releasing both said shiftable members for movement in a direction towards said end in response to operation of said releasing means so that in case of emergency the tension exerted on the animal being born may be quickly released.



3,870,050

DEMAND PACER

Wilson Greatbatch, 5220 Donnington Rd., Clarence, N.Y. 14031
Filed Nov. 7, 1973, Ser. No. 413,451
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 PG **10 Claims**



7. A cardiac pacer comprising:

a. electrode means adapted to be operatively connected to a patient's heart;

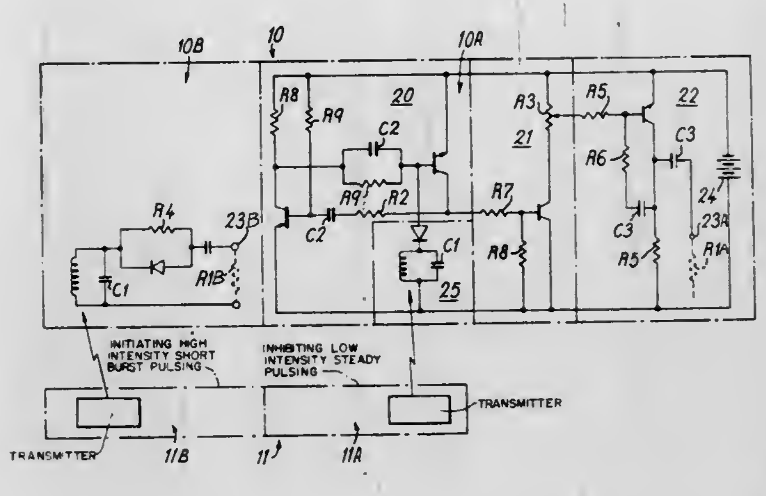
b. a source of electrical pulses having a constant frequency; and

c. control means connected to said electrode means and to said source for connecting said source to said electrode means in the absence of a natural heart signal and for temporarily disconnecting said source from said electrode means in response to the occurrence of a natural heart signal and thereafter reconnecting said source to said electrode means, said control means maintaining the periodicity of said source such that the pulse interval of stimulating pulses provided by said pacer is fixed to the constant frequency of said source.

3,870,051

URINARY CONTROL

Glles Skey Brindley, London, England, assignor to National Research Development Corporation, London, England
Filed Apr. 26, 1973, Ser. No. 354,910
Claims priority, application Great Britain, Apr. 27, 1972, 19583/72
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **12 Claims**

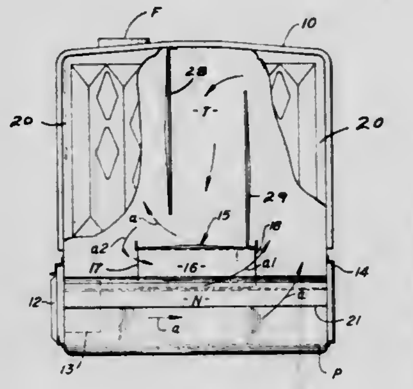


1. A method of urinary control which comprises applying an electrical signal of continuous pulse train form to the sacral ventral roots, said sacral ventral roots communicating with the sphincter muscle and bladder muscle, thereby causing the step of contracting said sphincter muscle while said bladder muscle is relaxed.

3,870,052

OIL-FIRED RADIANT SPACE HEATER

Malcolm W. Patrick, Danville, and Joseph W. Adams, Westlake, both of Ohio, assignors to Bettcher Manufacturing Corporation, Cleveland, Ohio
Filed Apr. 5, 1973, Ser. No. 348,310
Int. Cl. F24c *1/10*
U.S. Cl. 126—91 R **11 Claims**



7. A radiant space heater having radiant convoluted widely-spaced side walls, relatively staggered baffle means for guiding a main tortuous stream of hot gases between said side walls, said baffle means standing normal to said side walls with edges adjacent but detached therefrom and permitting hot gases to flow in thin short-cut streams around said edges and into heat-scrubbing contact with the convolutions of the side walls, said short-cut stream augmenting the flow of gases in said main stream.

3,870,053

ENHANCEMENT OF FLAVOR AND AROMA BY MICROWAVE TREATMENT

Norman D. Heitkamp, Jeffersonville, Ind.; Steven L. Merker, and George E. Stungis, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed June 6, 1972, Ser. No. 260,160
Int. Cl. A24b *03/12, 15/04*
U.S. Cl. 131—121 **3 Claims**

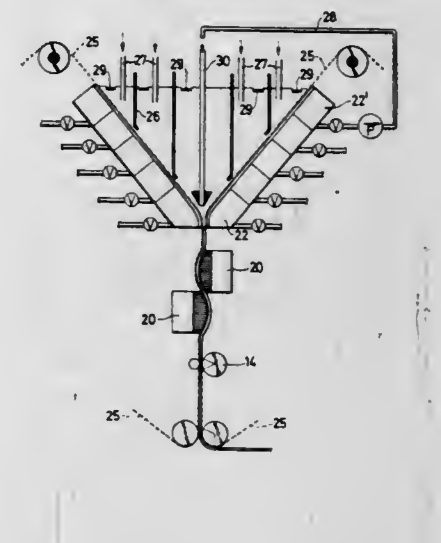
1. A process for enhancing the flavor and aroma characteristics of botanical materials comprising:

a. treating said botanical materials with a combination of water and an inert nontoxic, volatile, organic solvent in which the flavor and aroma generating materials are soluble to obtain a moisture level of from 5 to 755; and
b. subjecting the botanical material to microwave energy at a frequency of at least 915 mc and a power level of from 0.05 to 0.25 kilowatt per pound of contained water for a period of time and at a distance such that said solvent is substantially volatilized and the flavor and aroma of said botanical material are improved without substantially expanding said material.

3,870,054

METHOD OF MAKING A LAMINATED TOBACCO FOIL

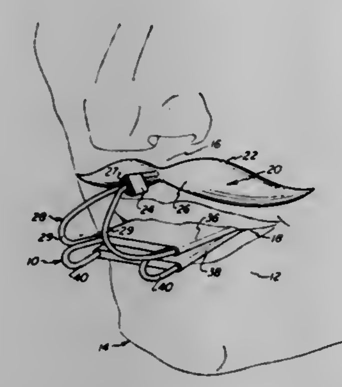
Hanns F. Arledter, Graz, and Josef Marek, Vienna, both of Austria, assignors to Austria Tabakwerke Aktiengesellschaft vorm., Osterreichische Tabakregie, Vienna Porzellangasse, Austria
Filed May 18, 1973, Ser. No. 361,594
Claims priority, application Austria, May 19, 1972, 4367/72
Int. Cl. A24b *3/14, 13/00*
U.S. Cl. 131—140 C **22 Claims**



1. A method of making reconstituted tobacco foil comprising at least two separate films containing principally tobacco particles which comprises:

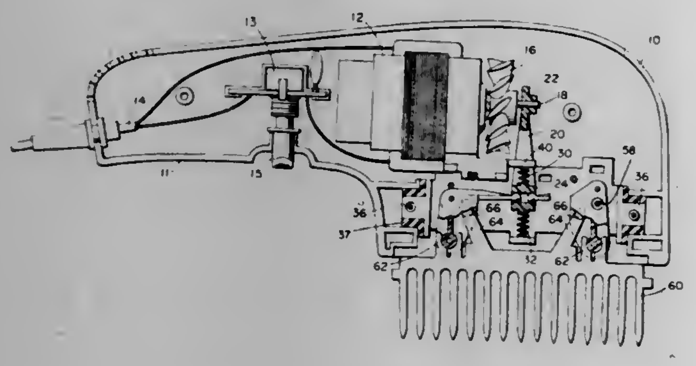
providing an aqueous suspension of tobacco particles by swelling comminuted tobacco particles or fibers, subsequently grinding same and finally diluting same with water to form an aqueous suspension containing about 0.2 to 0.4 percent insoluble solids,
forming two separate wet sheets of tobacco particles by precipitating tobacco particles from said aqueous suspension onto foraminous webs,
combining together the resulting two wet sheets in proximate face to face relationship,
dehydrating the combined sheets by pressing, and
thermally drying the combined pressed sheets.

3,870,055
MUSTACHE STYLING DEVICE
Charles E. Barbarow, 156 Barclay St., Paterson, N.J. 07503
Filed May 21, 1974, Ser. No. 472,000
Int. Cl. A45d *2/50*
U.S. Cl. 132—10 **10 Claims**



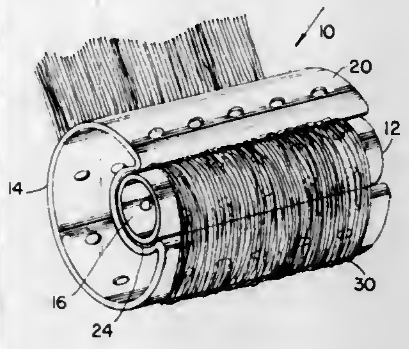
1. A device for providing an outline pattern for styling a person's mustache, said device comprising:
  a template for providing a prescribed mustache outline pattern, said template having an obverse surface and a reverse surface;
  clamping means receivable within the mouth; and
  means for attaching the template to the clamping means, said attaching means locating the template such that the reverse surface will be juxtaposed with the person's upper lip when the clamping means are held within the mouth of the person;
  said clamping means including placement means responsive to clamping pressure of the mouth on the clamping means to urge the template toward the upper lip.

3,870,056
HAIR DETANGLING DEVICE
Walter Stemme, Staufenstrasse 23, Sulzbach/Ts, Germany
Filed Nov. 7, 1973, Ser. No. 413,499
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **4 Claims**



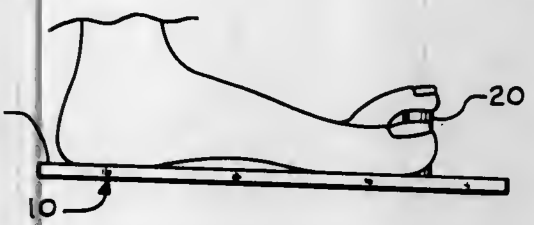
1. In a hair detangling device comprising a housing having a pair of elongated hair engaging members mounted generally parallel side by side for reciprocating movement in the direction of their length, the improvement which comprises a first bell crank pivotally mounted with respect to the housing having a first end removably connected to one said member, a second bell crank pivotally mounted with respect to the housing spaced from the first said bell crank and having a first end connected to the other said member, a driving member engaging the second ends of both bell cranks, means for reciprocating said driving member to rock said bell cranks simultaneously about their pivots so that their first ends move successively toward and away from the zone between them to reciprocate said combs oppositely with respect to each other and a spring mounted between said housing and said driving member resiliently opposing reciprocatory movement of said driving member in both directions.

3,870,057
HAIR ROLLER
Carmine Pezzino, 251 Westminster Rd., Brooklyn, N.Y. 11226
Filed Nov. 23, 1973, Ser. No. 418,425
Int. Cl. A45d *2/02*
U.S. Cl. 132—39 **1 Claim**



1. An improved roller combination for rendering hair both straightened and curled simultaneously which comprises two rollers of different diameter with one roller provided as an inside roller and the other roller provided as an outside roller, said outside roller being of major diameter and said inside roller being of minor diameter with respect thereto, said outside roller being further provided with receiving means for removably receiving said inside roller so that hair may be alternately rolled around said inside and outside rollers, respectively, said inside and outside rollers further comprising vented annular bodies, said receiving means further comprising an elongated, longitudinal, partially circular channel provided in said outside roller into which said inside roller is removably forceably fittable, the diameter of said partially circular channel being slightly smaller than the diameter of said annual body comprising said inside roller.

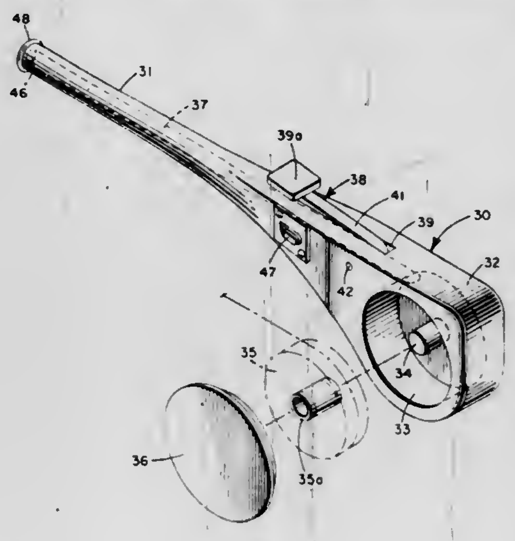
3,870,058
TOE ELEVATING APPARATUS
Henry H. Merriman, 751 W. Washington, Jackson, Mich. 49203
Filed Nov. 9, 1973, Ser. No. 414,504
Int. Cl. A45d *29/00*
U.S. Cl. 132—73 **6 Claims**



1. Toe elevating apparatus particularly suitable for use during the cutting and manicuring of toenails comprising, in combination, a foot support having a surface upon which the foot may be supported, and a toe elevating pedestal mounted upon said foot support extending from said surface, said pedestal being of a width sufficient to support only a single toe at a time.

3,870,059
DENTAL FLOSS DISPENSER
William E. Bennington, 5 Fillmore Dr., Sarasota, Fla. 33578
Continuation-in-part of Ser. No. 215,532, Jan. 5, 1972, and Ser. No. 54,254, July 13, 1970,. This application Mar. 22, 1974, Ser. No. 453,972
Int. Cl. A61c *5/00*
U.S. Cl. 132—92 A **1 Claim**

1. A dental floss dispenser adapted to dispense a desired amount of dental floss comprising in combination, a finger section communicating with a spool section, a freely turnable spool of dental floss in said spool section and retaining cap means for retaining said spool in said spool section, a bore hole extending through said finger section and extending directly into said spool section through which said floss is threaded, longitudinal slit means in the top of said dispenser communicating with said bore hole, manually operable brake means disposed within said slit means adapted to frictionally engage said floss during use, said brake means comprising an elongated member, one end which is pivotally connected within said slit means, whereby said brake means are manually pivotable within said slit means, a head member at the opposite end of said brake means, said head member comprising an upper flat head portion integral with a downward projection adapted to be depressed within said slit means to frictionally engage an underportion thereof with said floss in said bore hole, whereby when said brake means are manually released a desired amount of floss can be freely pulled from the end of said finger section.

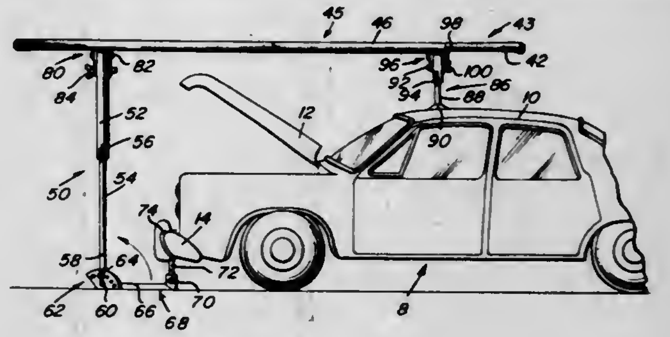


3,870,060
METHOD OF REMOVING MONOVALENT INORGANIC ACIDS FROM AN AQUEOUS SOLUTION CONTAINING METAL SALTS OF THE ACIDS
Jan-Olov Liljenzin, Kallered; Hans Reinhardt, and Helge Jan Arnold Rydberg, both of V. Frolunda, all of Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden
Filed Feb. 26, 1974, Ser. No. 336,007
Int. Cl. C23g *1/36*
U.S. Cl. 134—3 **13 Claims**

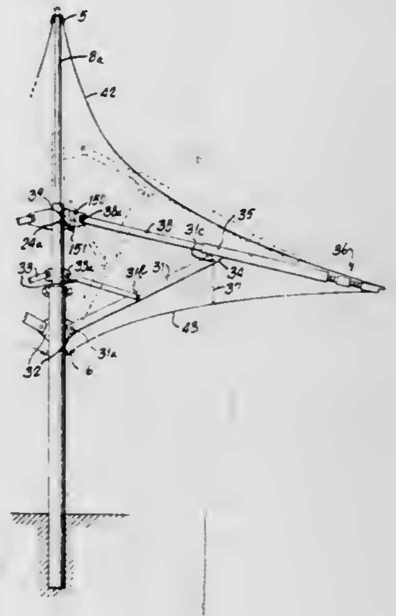
1. A method of removing monovalent inorganic acids from an aqueous solution containing metal salts of said monovalent inorganic acids said monovalent acids being nitric, hydrochloric, or hydrofluoric acid, said method comprising of adding to said aqueous solution sulphuric acid at least equivalent in amount to the metal ion content of the solution, extracting said monovalent inorganic acids by bringing the solution into contact with an organic liquid phase, said organic liquid phase including compounds forming adducts with said monovalent acids, and separating said organic liquid phase from said aqueous solution.

3,870,061
AUTOMOBILE MOUNTED SHELTER
James I. Lowery, 208 Judy St., Houston, Miss. 38851
Filed Apr. 3, 1973, Ser. No. 347,484
Int. Cl. E04f *10/00*
U.S. Cl. 135—5 A **10 Claims**

1. In combination, an automobile having a rigid roof-equipped body and a front bumper, attachable and detachable shelter means designed and adapted to shield and protect a user, a working mechanic for example, from sunny, rainy and inclement weather conditions, said means comprising a substantially horizontal roof spanning frame structure, flexible weather-proof cover means spread over, protectively covering and operatively attached to oriented portions of said frame structure, a forward vertically disposed main supporting post having an upper end retentively connected to a forward marginal portion of said frame structure, floor surface contacting means connected to the lower end of said post and embodying a rearwardly directed surface contacting bracket means provided at its rear end portion with an upwardly projecting portion operatively connected at its upper end portion to a predetermined portion of said bumper, an auxiliary vertically disposed supporting post carried by a rearward portion of said frame structure and having a lower end retentively perched atop a suitable surface portion of said roof, said bracket means being of an effective horizontal length that it functions to locate and space said main supporting post forwardly of the bumper in a manner that the mechanic at work is afforded ample space and room to work on the front engine-equipped end of the automobile for whatever purposes required.



3,870,062
ILLUMINATED PAVILION UMBRELLA
Richard Larry Medlin, 8802 N. Myrtle Pl., Tucson, Ariz. 85704
Filed Apr. 22, 1974, Ser. No. 463,066
Int. Cl. A45b *19/04, 19/06*
U.S. Cl. 135—20 M **9 Claims**

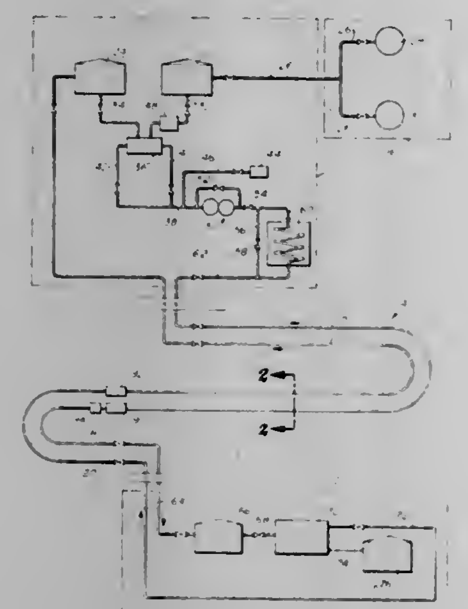


1. A roofing umbrella apparatus comprising:
an upper membrane having an inner edge and an outer edge;
a lower membrane having an inner edge and an outer edge;
  a mast means for supporting said upper and lower membranes and including:
  a lower base member having an elongated chamber therein;
  an upper member riding within said chamber in said lower base member and extendable upward therefrom;
  means on said lower base member for holding the inner edge of said lower membrane;

means on said upper member for holding the inner edge of said upper membrane;
a plurality of means for holding the outer edges of said upper and lower membranes adjacent to one another and each having an elongated chamber therein;
a plurality of lower supporting arms, each pivotably connected at its opposite ends to said lower base member and to a respective one of said outer edge holding means;
a plurality of upper supporting arms, each pivotably connected at its inner end to said upper member and having its outer end riding within the elongated chamber in a respective one of said outer edge holding means;
a plurality of brace members, each pivotably connected at its opposite ends to said upper member and to a respective one of said lower supporting arms; and
means for extending said upper member from within said lower base member whereby said upper and lower supporting arms pivot inwardly toward said mast means to furl the upper and lower membranes.

3,870,063
MEANS OF TRANSPORTING CRUDE OIL THROUGH A PIPELINE

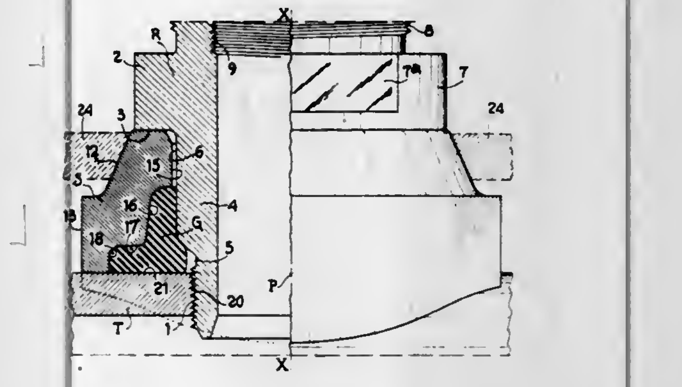
John T. Hayward, 122 Bayside Dr., Clearwater, Fla. 33515
Filed June 11, 1971, Ser. No. 152,196
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **4 Claims**



1. A method of transporting crude oil through a pipeline from a transmission station, such as a crude oil producing area, to a receiving station, such as a refinery, wherein an adverse pipeline environment normally prevents economic pumping because of a high viscosity of the crude oil, which comprises:
pumping a light petroleum distillate from the receiving station to the transmission station through a first pipeline traversing the adverse environment;
intimately mixing the light petroleum distillate with crude oil at the transmission station in an amount sufficient to produce a blended petroleum having a viscosity suitably low for preserving pumpability of the blended petroleum at conditions of the adverse environment; and
pumping the blended petroleum from the transmission station to the receiving station through a second pipeline in a direction countercurrent to the light petroleum distillate.

3,870,064
METHOD FOR MAKING A BRANCH CONNECTION UNDER PRESSURE TO A PIPE AND A SCREWTHREADED BRANCH CONNECTION FOR CARRYING OUT SAID METHOD

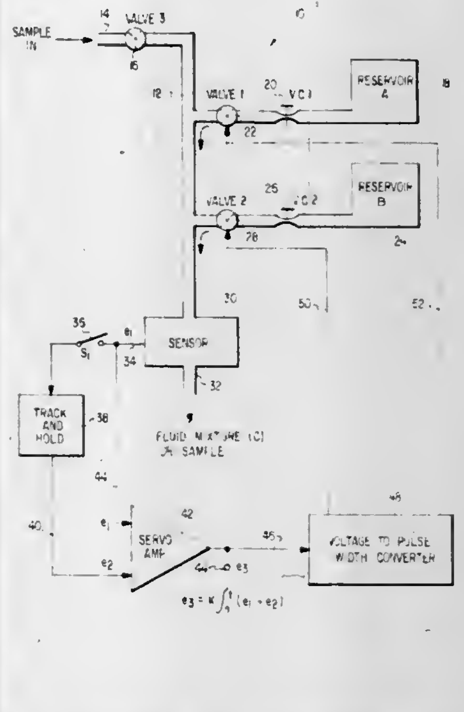
Pierre Vigneron, Nancy, France, assignor to Pont-A-Mousson S. A., Pont-A-Mousson, France
Filed Mar. 2, 1973, Ser. No. 337,501
Claims priority, application France, Mar. 31, 1972, 72.11645
Int. Cl. B23b *41/08;* **F16e** *41/04*
U.S. Cl. 137—15 **8 Claims**



1. A method for making a branch connection of a connector to a pipe under pressure, the connector having a body, a screwthreaded portion and means defining a member projecting radially from the body, comprising applying a sealing device to the pipe in a region of the pipe in which the branch connection is to be made, taking means defining a fluidtight enclosure having a portion defining an aperture, applying the periphery of the aperture against the sealing device, drilling and tapping a hole in the pipe and thereafter screwing the screwthreaded portion of the connector in the tapped hole from inside the enclosure until said projecting member bears against the sealing device.

3,870,065
MEASURING SYSTEM

H. Gordon Minns, Jr., Rt. 11, P.O. Box 91B, Morgantown, W. Va. 26505
Filed Aug. 6, 1973, Ser. No. 385,642
Int. Cl. G05d *11/13*
U.S. Cl. 137—93 **17 Claims**

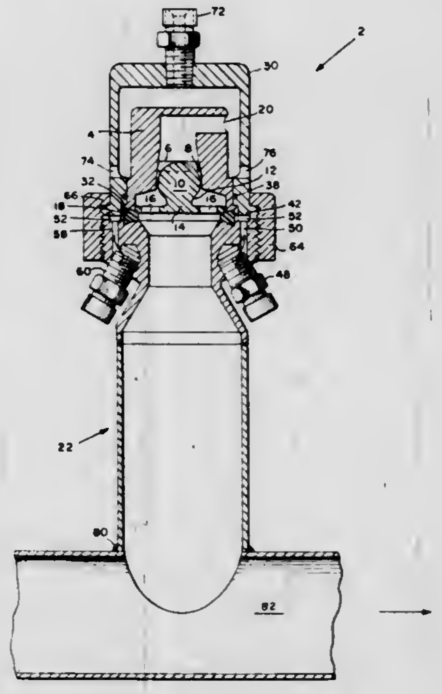


1. A system for mixing fluids comprising a sensor for producing an electrical output indicative of a component concentration in a fluid, means coupled to said sensor for supplying a sample fluid to it having a concentration of said component

whereby said sensor produces a first electrical output, electrical storage means coupled to said sensor for storing said first output, a pair of fluid reservoirs coupled to said sensor, at least one of said reservoirs being adapted to contain a fluid having a known concentration of said component, proportioning means coupling said reservoirs to said sensor, said sensor producing a second electrical output indicative of the concentration of said component from said reservoirs, and a servo amplifier coupling said sensor and said storage means to said proportioning means for controlling said proportioning means in accordance with said first and second electrical outputs to produce a fluid mixture from said reservoirs having the same concentration of said component as the sample fluid.

3,870,066
ASEPTIC VACUUM BREAKER

Walter R. Jurasek, Gustine, Calif., assignor to Avoset Food Corporation, Oakland, Calif.
Filed Nov. 21, 1973, Ser. No. 417,980
Int. Cl. F16r *45/02*
U.S. Cl. 137—199 **6 Claims**

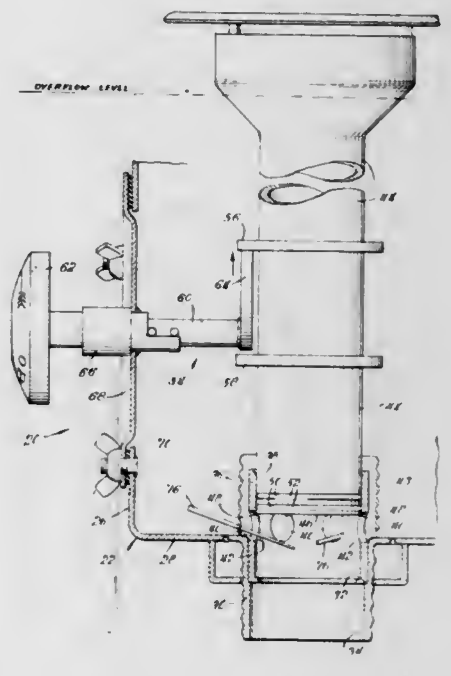


6. An aseptic vacuum breaker comprising:
a hollow valve body having an internal valve seat,
a valve plug urged away from said seat by gravity,
means to limit the movement of said valve plug away from said seat to a predetermined distance,
said valve body having a lower opening below the valve seat and an upper opening above the valve seat,
an adapter conduit removably joined to the lower end of the valve body and communicating with the interior of the valve body,
a cover overlying the valve body, removably joined to the lower end of the valve body, and spaced from the upper opening of the valve body,
means to blanket the joint between the adapter conduit and the cover with an aseptic fluid, and
means including a conduit communicating with the interior of the cover to supply aseptic air to the interior of the cover.

3,870,067
DISH WASHING MACHINE DRAIN UNIT

Casimer Janiszewski, Chicago, Ill., assignor to G. S. Blakeslee Co., Chicago, Ill.
Filed Nov. 19, 1973, Ser. No. 417,184
Int. Cl. E03c *1/232;* **F16k** *25/00, 31/524*
U.S. Cl. 137—242 **4 Claims**

1. A drain unit comprising a housing having side walls and a bottom wall, a drain opening provided in said bottom wall, a vertical sleeve member secured at its lower end in said drain opening and presenting an interior cylindrical surface, said sleeve member having at least one drain port in the side thereof with said drain port presenting a sharp lower inner edge, a vertical tubular stand pipe extending downwardly into said sleeve member and having a bottom end, seal means carried by said stand pipe adjacent said bottom end thereof and having sealing engagement with said interior cylindrical surface of said sleeve member, said stand pipe being vertically movable between a first position wherein said bottom end



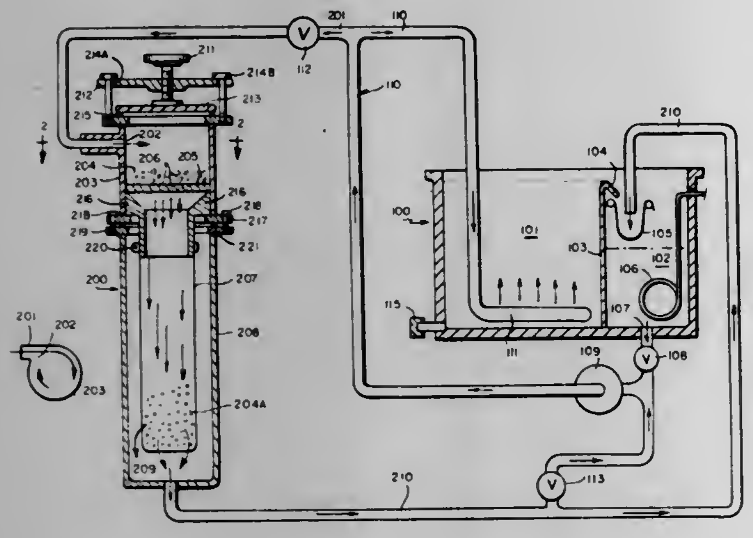
thereof and said seal means are disposed below said drain port for closing the latter and a second position wherein said bottom end thereof and said seal means are substantially disposed above said drain port for opening the latter, and said bottom end of said stand pipe presenting a sharp outer circumferential edge which upon movement of said stand pipe from said second position to said first position cooperates with said drain port edge in breaking up solid foreign materials extending through said drain port whereby to prevent such solid foreign materials from affecting said seal means.

3,870,068
APPARATUS FOR DRY REPLENISHMENT OF ELECTROLESS PLATING SOLUTIONS

Oleh Borys Dutkewych, Medfield, Mass., and Lebert Arthur Hofmann, Westminster, Calif., assignors to Shipley Company, Inc., Newton, Mass.
Continuation-in-part of Ser. No. 188,243, Oct. 12, 1971, Pat. No. 3,770,464. This application Dec. 7, 1972, Ser. No. 313,178
Int. Cl. C23c *3/02*
U.S. Cl. 137—268 **15 Claims**

1. An apparatus for replenishing a metal plating solution with replenishers in essentially dry form to thereby avoid volume growth of the plating solution and to avoid the introduction of essentially dry replenisher directly into a tank holding said plating solution, said apparatus comprising a first chamber positioned above a second chamber, said first chamber having inlet means for entry of plating solution and means for supporting said essentially dry replenisher in said chamber, said second chamber having outlet means for exit of plating solution and a porous container placed therein such that the plating solution must pass through said porous container before exiting from said second chamber, said supporting means being adapted to permit particles of replenisher which have

been wetted by said plating solution to pass through said first chamber and to rain down into said porous container in said second chamber, and said first and second chambers being in pressure seal relationship.



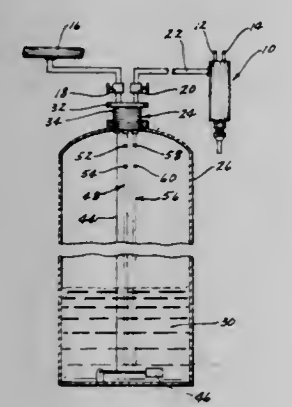
3,870,069
METHOD AND MEANS OF APPLYING ADDITIVES TO INDUSTRIAL GAS

Berwyne E. Etter, 10355 Paradise Blvd., Treasure Island, Fla. 33740

Continuation of Ser. No. 295,133, Oct. 5, 1972, abandoned. This application Jan. 16, 1974, Ser. No. 433,800

Int. Cl. F04f *1/18*

U.S. Cl. 137—209 **4 Claims**



1. In combination,
- a container having an open upper end,
- an industrial gas additive in said container,
- a fitting closing said open upper end and having a chamber formed therein,
- a torch means,
- a first conduit means in communication with said chamber and extending to said torch means,
- a second conduit means in communication with the upper interior of said container and in communication with a fuel gas supply,
- a first dip tube means having an open upper end in communication with said chamber and extending downwardly into said container, said first dip tube means having a plurality of vertically spaced openings formed therein below its upper end in communication with the upper interior of said container,
- at least a second dip tube means having its upper end in communication with said chamber and extending downwardly into said container, said second dip tube means having a plurality of vertically spaced openings formed therein below its upper end in communication with the upper interior of said container,
- and a normally closed first valve means in said chamber mounted in the upper end of said second dip tube means, said first valve means being opened when the pressure in said second dip tube means sufficiently exceeds the pressure in said chamber.

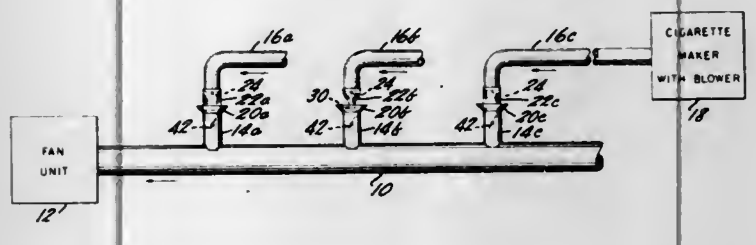
3,870,070
AIR SYSTEM CONTROL

Gerald A. Kraft, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,408

Int. Cl. F16k *15/14*

U.S. Cl. 137—512 **5 Claims**



1. In apparatus for exhausting air and the like from a plurality of operating devices which during operation of the same require continuous removal of air and the like therefrom, which apparatus includes:
- a main exhaust duct, and a fan unit for drawing air through said main exhaust duct;
- a corresponding plurality of elongated transition ducts each connected at one end to said main exhaust duct and extending a distance therefrom;
- an elongated separate branch exhaust duct associated with each device and connected at one end thereof with the associated device and extending therefrom to flow communicative juncture at its other end with the other end of one of said transition ducts, said other end of each transition duct having a radially outwardly flared encircling skirt enclosing a space of predetermined cross-sectional area defining an opening into which the said other end of an associated separate branch exhaust is received in coaxial disposition with said transition duct, there being embodied in each of said devices air blowing means for delivering air flow from each said device to the associated branch exhaust duct, the improvement in which
- the said other end of each separate branch exhaust duct is provided as a flexibly structured sleeve of a material sufficiently flexible to enlarge radially under the influence of air flow delivered from the blowing means of said device through said branch exhaust duct and being dimensioned such that in enlarged condition it occupies only a certain portion of the skirt enclosed cross-sectional area whereby compensating air flow can be drawn by the action of said fan unit into said transition duct around the periphery of said sleeve from the environment external to the associated device and branch exhaust duct, said sleeve further being sufficiently flexible to collapse from its expanded condition in the absence of air flow through said branch exhaust duct to diminish the portion of skirt enclosed cross-sectional area occupied by said sleeve with concomitant increase in the flow of compensating air drawn into said transition duct.

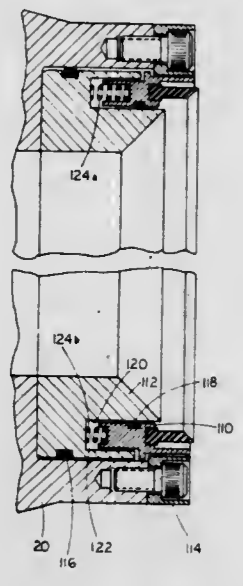
3,870,071
SWING CHECK SEAL ASSEMBLY

Donald E. Graham, San Leandro, and Larry A. Battaglia, Benicia, both of Calif., assignors to Valve Systems International, Inc., Bala Cynwyd, Pa.

Filed Jan. 16, 1974, Ser. No. 433,760

Int. Cl. F16k *15/03*

U.S. Cl. 137—527 **7 Claims**



1. In a swing check valve comprising:
- a housing having a pair of flow passageways therein;
- a valve clapper in said housing;
- means pivotally mounting said clapper in said housing adjacent one of said flow passageways;
- an annular sealing surface on said clapper;
- a seat ring floatingly mounted in said body around said one passageway for limited axial and radial movement therein;
- a complementary surface on said seat ring engagable by the sealing surface of said clapper;
- a resilient seal ring carried on the leading surface of said seat ring;
- means associated with said seat ring for providing yieldable sealing forces between said seal ring and said sealing surface when engaged, said means providing a lesser sealing force at portions of said seat ring adjacent said pivotable mounting and a greater sealing force at portions of the seat ring displaced therefrom; and
- retainer means holding said seat ring on said body.

3,870,072
INSUFFLATION APPARATUS FOR INTRODUCING LIMITED QUANTITIES OF CARBON DIOXIDE INTO THE HUMAN BODY FOR OPERATIVE PURPOSES

Hans-Joachim Lindemann, Kleiner Schaferkamp 43, 2000 Hamburg 6, Germany

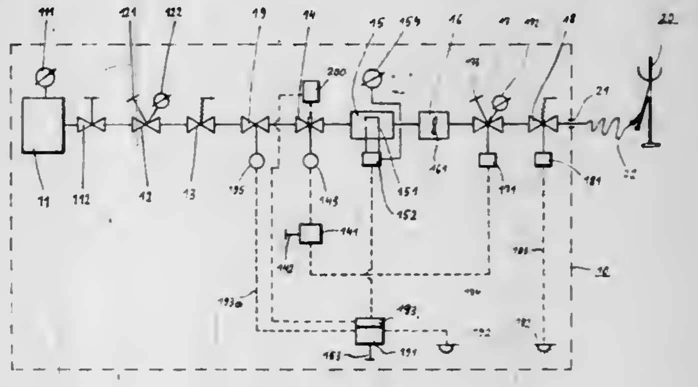
Filed June 29, 1973, Ser. No. 374,967

Claims priority, application Germany, May 10, 1973, 2323682

Int. Cl. A61b *5/10*

U.S. Cl. 137—557 **1 Claim**

1. Insufflation apparatus for introducing limited quantities of carbon dioxide to the human body for surgical purposes comprising, in combination, a housing, a replaceable carbon dioxide container (11), a manometer and a shut-off valve (19) for said container, said shut-off valve (19) being operable between an open and closed position, flow measuring means (15) comprising measured value pickup means (151) consisting of PTC conductor feelers, said measured value pickup means (151) being constructed as a cold conductor, a warning signal generating device (192), a control device (191) including a measured value comparator (152) and a time switch (193) connecting said signal generating device (192) to said flow meter (15), drive motor means, and means connecting said shut-off valve (19) to said flow measuring means (15) and to said drive motor means, said drive motor means being operable to reopen said shut-off valve (19) after closure thereof upon passage of a variable regeneration time under control of said time switch (193).



3,870,073
VALVE ASSEMBLY FOR CONTROLLING FLUID PRESSURE OPERATED APPARATUS PARTICULARLY PRESSES

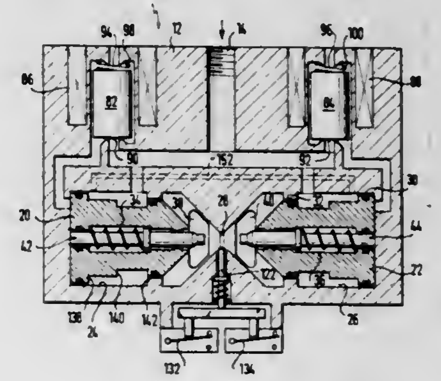
Erich Ruchser, Stetten/Wurtt, and Helmut Ott, Fellbach, both of Germany, assignors to Technomatic A.G., Aesch, Luzern, Switzerland

Filed Nov. 16, 1973, Ser. No. 416,437

Claims priority, application Switzerland, Feb. 14, 1973, 2224/73

Int. Cl. F16k *11/20*

U.S. Cl. 137—596.16 **10 Claims**



1. In a valve assembly for controlling fluid pressure operated apparatus, in particular presses, having a housing, two parallel connected valves comprising two axially aligned valve chambers in said housing, axially aligned valve members in said chambers, and fluid passages in said housing controlled by axial movement of said valve members, and pilot valves controlling the axial movement of said valve members; the improvement comprising an axial bore in each of said valve members, an axially movable control pin in each of said bores for relative movement therewith and electric switch means operable by said control pins upon malfunctioning of said valves.

3,870,074
VALVE FOR CONTROLLING A REVERSIBLE, ROTARY HYDRAULIC MOTOR

Paul Edmund Hanser, Moline, Ill., and William Lee Snyder, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

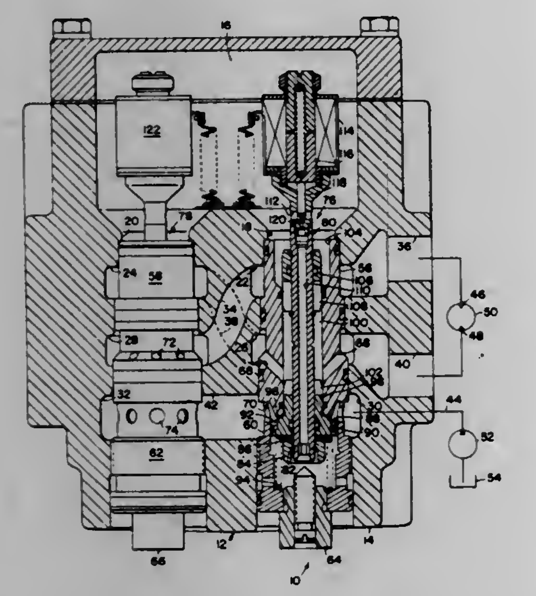
Filed Apr. 26, 1974, Ser. No. 464,309

Int. Cl. F16k *11/00*

U.S. Cl. 137—596.16 **5 Claims**

1. A valve for controlling the flow of fluid to and from first and second work ports of a reversible, rotary hydraulic motor, comprising: a valve body defining similar first and second valve bore means having axially spaced first and second ports

and first locations arranged in that order from respective second locations; the first ports of each bore means being adpated for connection to a source of fluid pressure, the second ports of the first and second bore means respectively being adapted for connection to first and second motor work ports and the first locations of each bore means being adapted for connection to a fluid reservoir; each of said first and second bore means having a valve stem axially shiftably mounted thereon and spaced therefrom to define an annular passage extending at least between the first ports and first locations; first and second valve elements carried by each valve stem in sliding engagement with a respective bore means at respective locations between the first and second ports and between the second ports and first locations thereof; each of said valve stems being shiftable in a respective bore means between a neutral position wherein the first valve element on the valve stem is engaged with a first valve surface means of the respective bore means to block fluid communication between the first and second ports while the second valve element means is spaced from second valve surface means of the respective bore means to permit fluid communication between the second port and first location, and an actuated condition wherein the first valve element is unseated from said first valve surface means and said second valve element is seated with the second valve surface means.



3,870,075
MIXER TAPS

Eric R. Percival, Maidstone, and Robert W. Parker, Headcorne, both of England, assignors to Reed International Limited, London, England

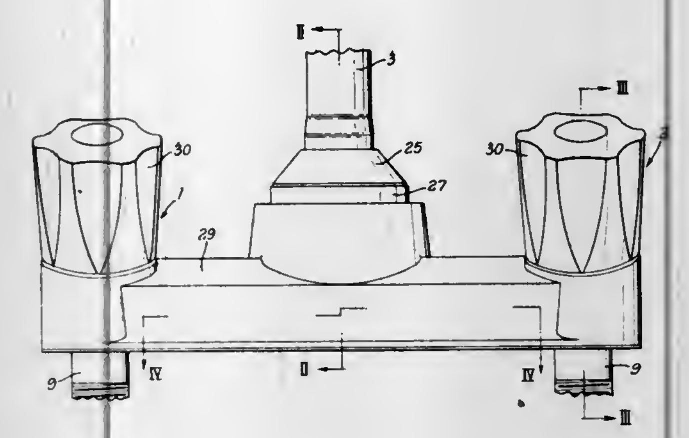
Filed June 1, 1973, Ser. No. 366,221

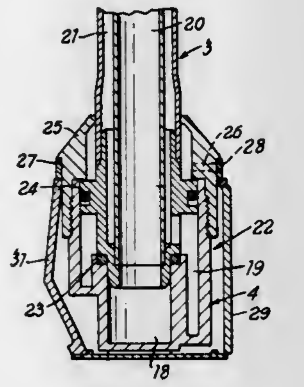
Claims priority, application Great Britain, June 20, 1972, 28787/72

Int. Cl. F16k ***19/00***

U.S. Cl. 137—606 **7 Claims**

1. A mixer tap comprising:
- a. a pair of manually operable valve units each having an inlet and outlet duct;
- b. a central body unit formed as a one piece moulding and provided with;
  - i. two fluid feed ducts each of which is connected to the outlet duct of one of said valve units through a spigot amd socket connection; and
  - ii. a central boss portion defining respective extension ducts to said fluid feed ducts substantially at right angles thereto, one said extension duct extending from an open end centrally into the boss portion and the other extension duct being of trough form partially surrounding said first extension duct and being defined between inner and outer walls of the boss portion, the inner wall of which defines said first extension duct and the outer wall of which is higher than said inner wall, and





- c. an outlet spout having co-axial ducts connected with said extension ducts respectively, the outlet spout sealingly engaging with said inner and outer walls of the boss portion to close the trough constituting said other extension duct.

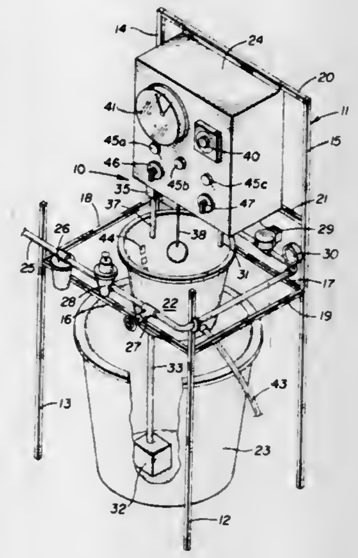
3,870,076
AUTOMATIC LIQUID MEDICAMENT MIXER FOR TREATING ANIMALS

Charles Graznak, Platteville, Colo., assignor to Dacmont, Inc., Platteville, Colo.

Filed Mar. 26, 1973, Ser. No. 345,464

Int. Cl. F16k ***19/00***

U.S. Cl. 137—607 **4 Claims**



1. A liquid mixing apparatus for accurately proportioning additives into drinking water for animals, such as poultry, livestock and the like, said mixing apparatus comprising:
- a. support means;
- b. reservoir means for mixing and holding a water-additive solution mounted on said support means;

- c. water supply means for delivery of a quantity of water to said reservoir means at a predetermined rate;
- d. means for storing and injecting a quantity of additive to said reservoir at a predetermined rate proportionate to the flow rate of the water, said additive storing and injecting means includes a storage means for storing a prepared quantity of liquid additive solution mounted on said support means below said reservoir means so as to collect overflow from said reservoir means, pump means arranged for drawing the additive from the storage means and and adjustable regulator means connected to the output of said pump means whereby the predetermined flow rate of additive solution can be injected directly into the reservoir means, the output of said pump means further including a pressure by-pass means whereby the additive can be returned to the storage means when the pressure in the additive injecting means exceeds a predetermined pressure;
- e. means connected to said reservoir means for distributing the solution to a watering area for said animals whenever a demand for drinking water exists; and
- f. means for automatically controlling the flow of water and additive to said reservoir means for continuously mixing whenever the solution within the reservoir means is withdrawn below a predetermined level by said distributing means, said control means includes means for operating said pump means continuously when desired so that the prepared liquid additive when not injected into the mixing reservoir can be recirculated through the pressure by-pass means to maintain any insoluble particles within said additive in a state of suspension.

3,870,077
LOW-NOISE VALVE

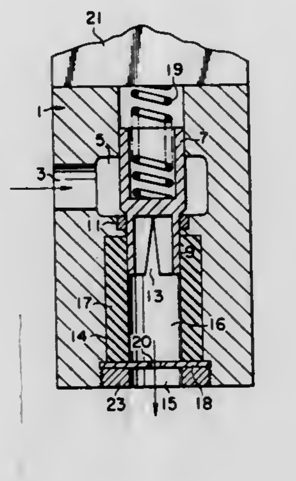
Ichiro Nakamura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,558

Claims priority, application Japan, Feb. 18, 1972, 47-16405

Int. Cl. F16k ***47/00***

U.S. Cl. 137—614.11 **18 Claims**



1. A valve arrangement comprising: a valve body having a fluid passage portion, a valve means disposed in said valve body for controlling the flow of fluid through said valve body, means provided downstream of said valve member extending substantially along the entire inner wall of said fluid passage portion for damping undesireable vibrations, and means disposed within said fluid passage portion downstream of said means for damping undesireable vibrations for supplying a back pressure to the downstream side of said valve member.

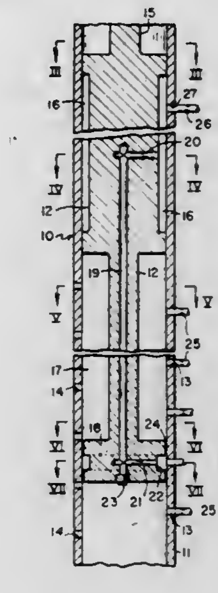
3,870,078
SAMPLING SLIDE VALUE

Jerome Apt, Jr.; William J. Wachter, and Wesley M. Rohrer, Jr., all of Pittsburgh, Pa., assignors to USC Incorporated, Pittsburgh, Pa.

Division of Ser. No. 195,419, Nov. 3, 1971,. This application Oct. 18, 1972, Ser. No. 298,479

Int. Cl. F16k ***11/06***

U.S. Cl. 137—625.48 **5 Claims**



1. A sampling slide valve device comprising:
- A. an elongated valve body having a plurality of equally spaced sampling ports along a first end portion of one side of the valve body and a plurality of equally spaced flush ports on an opposing side of the valve body along the first end portion, a flushing port being positioned between each adjacent sampling port;
- B. a movable slide member freely positioned in the valve body and having an enlarged sampling head with a sampling duct therein communicating with a central duct in the slide member, said sampling duct adapted to alternately communicate individually with each of said sampling and flush ports, respectively, said head being dimensioned to form a slight gap between the head and the valve body and to extend between adjaçent flush ports when the sampling ducts is in communication with a sampling port;
- C. an outlet chamber formed between the slide member and an end portion of the valve body opposite the first end portion, said central duct communicating therewith; and
- D. an outlet orifice communicating with the outlet chamber.

3,870,079
THREE LEVER VALVE WITH RELIEF PORT

Harry P. Finke, 1306 Old Meadow Rd., Pittsburgh, Pa. 15241; Hugh B. Carr, 107 N. Heide Ln., McMurray, Pa. 15317, and Carl D. Wilson, Boggs School Rd., Coraopolis, Pa. 15108

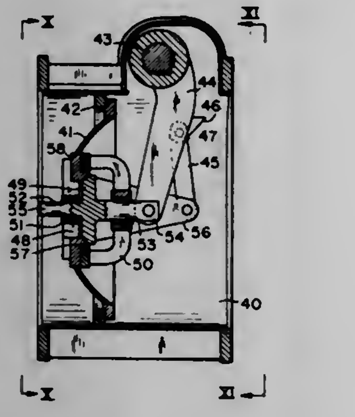
Division of Ser. No. 296,823, Oct. 12, 1972, Pat. No. 3,804,124. This application Oct. 29, 1973, Ser. No. 410,828

Int. Cl. F16k ***1/20***

U.S. Cl. 137—630.14 **1 Claim**

1. A valve comprising:
- a. a valve body having a cylindrical opening therethrough;
- b. a valve seat positioned about the opening;
- c. a valve disc positioned within the opening for mating engagement with the valve seat, said valve disc having a relief port therethrough;
- d. two links and a motor driven central lever pivotably mounted so as to parallel move the valve disc away from the valve seat in a first movement and then rotate the disc through 90° to a fully open position;
- e. a guide yoke mounted to said disc, said yoke having a central passageway spaced from and aligned with the relief port;

- f. a centrally holed spider mounted within said relief port; and
- g. a closure member mounted on a shaft extending on opposite sides thereof, through the yoke's central passageway

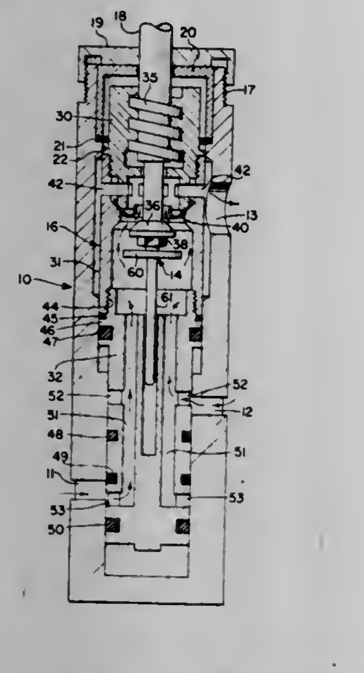


and through the central hole of the spider member and pivotally mounted to said central lever, said closure member adapted to engage a seat positioned about the relief port to close off the relief port and in an open position to engage the yoke to cause the first movement.

3,870,080
VOLUME AND TEMPERATURE REGULATING FAUCET

Hermann H. Landwehr, 9140 Linder, Morton Grove, Ill. 60053

Filed Jan. 14, 1974, Ser. No. 432,818
Int. Cl. F16k ***11/18***
U.S. Cl. 137—636.4 **12 Claims**

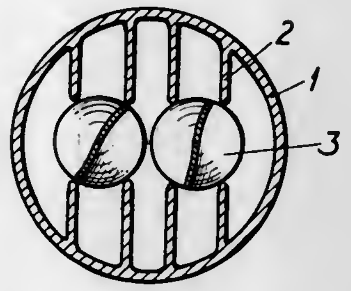


1. A volume regulating and mixing faucet for hot and cold water lines, comprising a faucet housing having an elongated bore substantially circular in transverse section, a hot water inlet, a cold water inlet, an outlet, said inlets and outlet opening into said bore at longitudinally spaced apart positions, a unitary cartridge having an outer surface generally conforming to the inner surface of said bore and mounted in said bore in cooperation with said inlets and outlet, said cartridge including an internal chamber, a stem for operating said faucet, means mounting said stem in said cartridge for rotation of said stem relative to said cartridge and for axial movements of said cartridge in said bore responsive to axial movements of said stem, first means in said cartridge responsive to certain axial movements of said cartridge in said bore for receiving and directing certain varied amounts of water from said inlets to said internal chamber, and second means in said cartridge responsive to certain rotations of said stem relative to said cartridge for receiving and directing certain varied amounts of water from said internal chamber to said outlet.

3,870,081
HEAT EXCHANGE CONDUIT

Byrge Kleppe, and Ole Torgersen, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

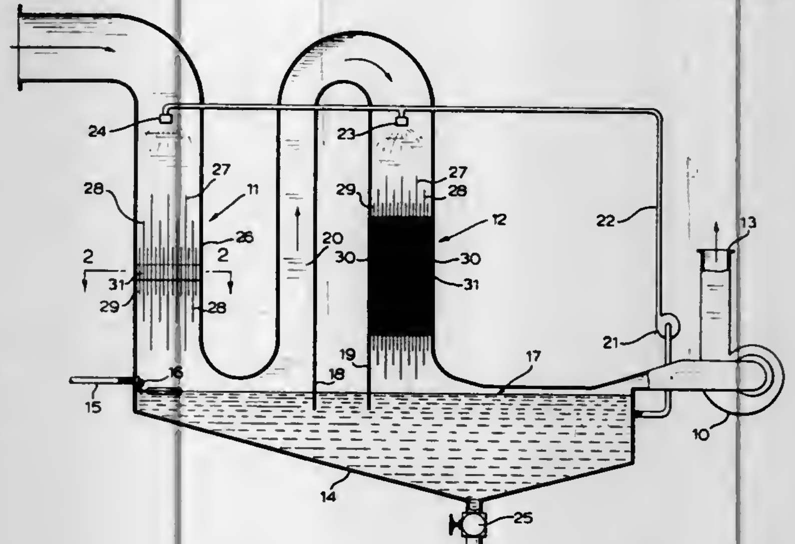
Filed Feb. 9, 1973, Ser. No. 331,248
Claims priority, application Norway, Feb. 10, 1972, 370/72
Int. Cl. F15d ***1/04***
U.S. Cl. 138—38 **3 Claims**



1. A heat-exchange element comprising an elongated tube having inner and outer surfaces, internal, longitudinally extending ribs projecting inwardly from the inner surface of said tube and having inner edges, and at least one additional element disposed within said tube for promoting heat exchange, said additional element being constituted by a twisted strip extending longitudinally through the tube and having a principal axis parallel to the longitudinal axis of the tube, said additional element being so dimensioned and disposed in the tube to have longitudinal edges bearing at least at certain points against the inner edges of at least two internal ribs whereby said ribs and strips cooperate to produce flow disturbance of a fluid flowing in the tube to increase heat transmission between said fluid and the wall of the tube.

3,870,082
VENTURI-TYPE DEVICES

Richard Adolf Holl, Grimsby, Ontario, Canada, assignor to Micron Engineering Inc., St. Catharines, Ontario, Canada
Continuation-in-part of Ser. No. 317,898, Dec. 26, 1972, abandoned. This application June 18, 1973, Ser. No. 370,895
Int. Cl. F15d ***1/02***
U.S. Cl. 138—40 **35 Claims**

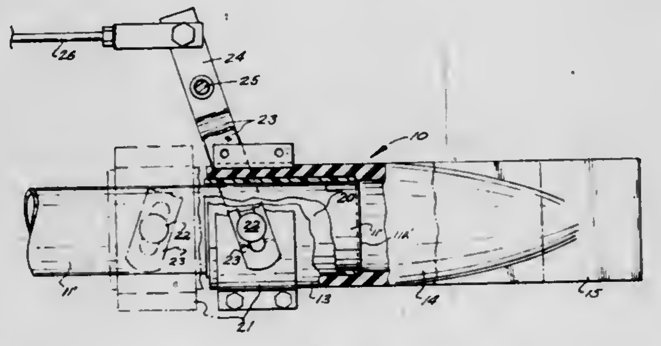


1. A device of venturi type comprising a passage member providing a passage for the flow of fluid therein in a predetermined direction, the passage having in the direction of flow of fluid in the passage and in the stated order an upstream section, a throat section and a downstream section, the flow cross-sectional area of the passage in the upstream section decreasing progressively toward the throat section, and the flow cross-sectional area in the downstream section increasing progressively away from the throat section, wherein at least one of said upstream and downstream sections comprises a plurality of physical barriers disposed in the passage, which barriers are spaced from each other transverse to said direction of flow and decrease the flow cross-sectional area of the part of the passage in which they are located, the said change of flow cross-sectional area being caused by differences in the said direction of flow of the physical lengths of the barriers in the corresponding section.

3,870,083
BACK PRESSURE REGULATOR FOR AUTOMOTIVE ENGINES

Jerry W. Nezat, Rt. 3, Box 1510, Estacada, Oreg. 97023

Filed Oct. 23, 1973, Ser. No. 408,510
Int. Cl. F16l ***55/00***
U.S. Cl. 138—45 **4 Claims**



1. A device for attachment to the discharge end of an exhaust conduit of an internal combustion engine to restrict a passing exhaust flow, said device comprising,

- a molded body of heat resistant elastomeric material having a forward segment of cylindrical shape for the reception of the exhaust conduit, said forward segment longitudinally slotted for a portion of its length, said body having a central segment with elliptical internal wall surfaces and walls of uniform thickness converging in the direction of exhaust flow resulting in the central segment being of lesser internal sectional area than the sectional area of the exhaust conduit, said body having a rearward segment with opposed walls having substantially parallel internal wall surfaces, in the absence of exhaust flow, terminating in an elongate orifice at the rearward end of said body, said orifice being of substantially less section area than the exhaust conduit to thereby constitute a restriction to the exhaust flow, said body and particularly the walls of said rearward section being responsive to various exhaust pressures to exert a desired restrictive effect on the exhaust flow, said body adapted for repositioning forwardly along the exhaust conduit whereby the conduit end will mechanically bias the internal walls of the central segment away from one another to reduce the restrictive effect of the device on an exhaust flow, and
- clamping means circumposed about the molded body and retaining same at a selected position relative to the end of the exhaust conduit.

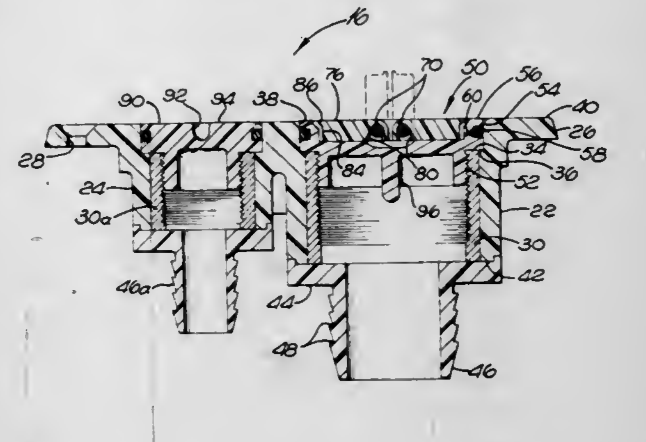
3,870,084
PIPE FITTING CLOSURE

Walter A. Gezari, Killingworth, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,410
Int. Cl. F16l ***55/00***
U.S. Cl. 138—89 **5 Claims**

1. A fitting for mounting on a boat deck, said fitting being adapted to be connected to a waste disposal system in the boat, comprising:

- a body formed with first and second pairs of inlet and outlet ports, said outlet ports being above said inlet ports;
- first and second plugs threaded into said first and second outlet ports, respectively;
- pivotable handle means on the top of said first plug adapted to be raised from a normal horizontal position to a vertical position to facilitate threading and unthreading of said plug in its respective outlet port;

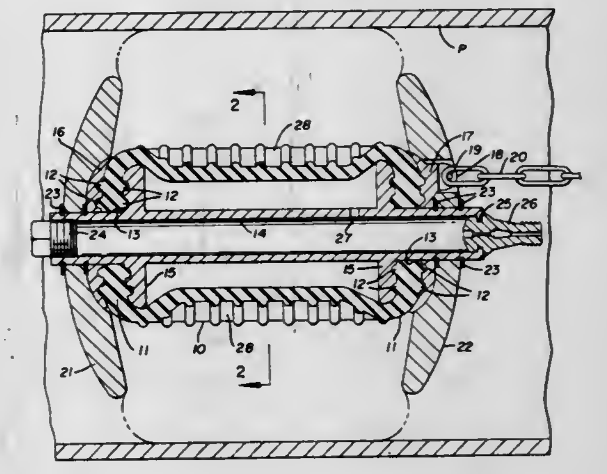


- a slot in the upper surface of said second plug; and
- a lug on the bottom of said first plug engageable in said slot to facilitate threading and unthreading of said second plug in its respective outlet port.

3,870,085
EXPANSIBLE PLUGS FOR SEWER PIPES

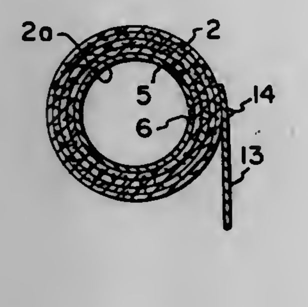
Michael Schneider, 1120 S. Union Ave., Alliance, Ohio 44601

Filed June 20, 1973, Ser. No. 366,134
Int. Cl. F16l ***55/12***
U.S. Cl. 138—93 **4 Claims**



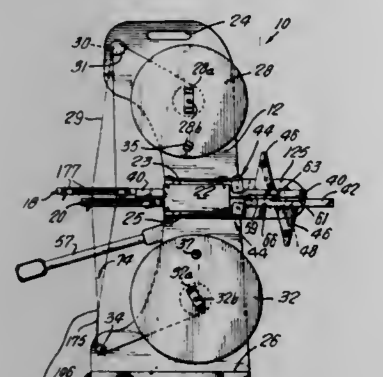
1. An expansible plug consisting of a tubular core having spaced flanges inwardly of its ends, a cylindrical expansible member having thickened inturned ends positioned over said flanges so as to extend therebetween, annular ribs on said thickened inturned ends, apertured discs positioned on said tubular core beyond said flanges, annular grooves in said apertured discs and means for securing said apertured discs to said tubular core and in engagement with said thickened inturned ends of said expansible member with said ribs and grooves in registry, a plug in one end of said tubular core and a valve stem positioned in the other and whereby air introduced into said tubular core through said valve stem may communicate with said expansible member through an opening in said tubular core, secondary apertured discs on said tubular core on the opposite outer sides of said first mentioned apertured discs, the diameter of said secondary apertured discs being substantially larger than the diameter of said first mentioned apertured discs, and a flexible means on one of said first mentioned apertured discs extending through an opening in one of said secondary apertured discs for retrieving said expansible plug from a sewer pipe.

3,870,086
TUBE CONSTRUCTION
Martin H. Stark, 109 N. Wheeler, Saginaw, Mich.
Filed Aug. 24, 1973, Ser. No. 391,304
Int. Cl. F16l *9/16*
U.S. Cl. 138—172 **13 Claims**



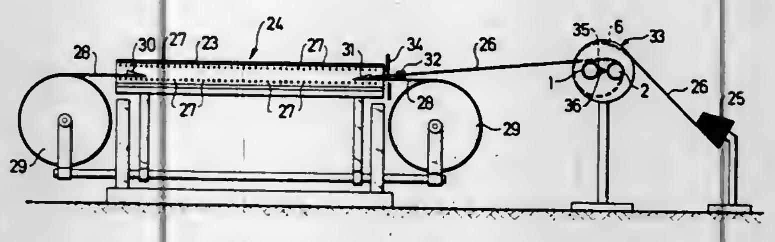
1. A tube construction comprising an elongate, hollow tube; and an elongate reinforcing member fitted within said tube, said reinforcing member comprising a sleeve formed of resilient, springy material having a slot extending the full length thereof, said sleeve prior to being fitted into said tube having an outer diameter greater than the inner diameter of said tube.

3,870,087
HAND LOOM
Charles Frederick Henwood, 7 Roosevelt Ave., Apt. 7, Montreal, Quebec, Canada
Filed Aug. 3, 1973, Ser. No. 385,479
Claims priority, application Great Britain, Aug. 8, 1972, 36967/72
Int. Cl. D03d *29/00*
U.S. Cl. 139—33 **8 Claims**



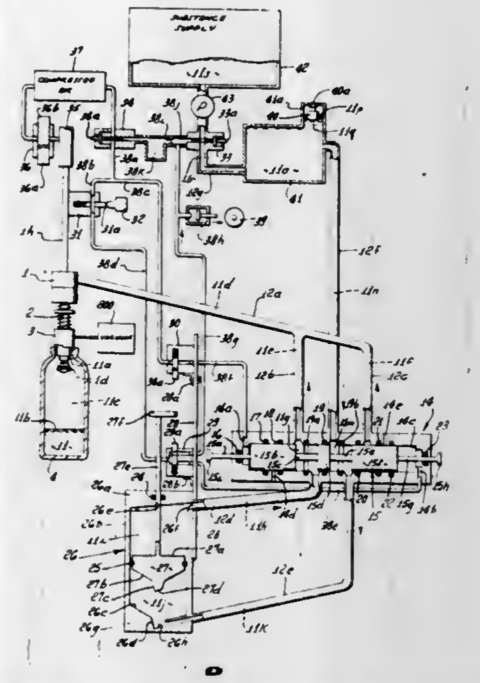
1. A portable compactible hand loom comprising a main frame, first and second heddle frames, having heddles mounted therein, movably mounted on said frame, first and second members, said first member being connected to said first heddle frame and said second member being connected to said second heddle frame; said first and second members having facing sides with facing recesses defined therein and a roller member contained in said facing recesses; retaining means for retaining said members in juxtaposed facing relationship during relative movement thereof, and means for moving said members simultaneously a predetermined distance in opposite directions, whereby a corresponding movement is produced in said heddle frames, to create in use a shed in a warp passing through the heddles for the passage of a weft.

3,870,088
APPARATUS FOR WITHDRAWING AND STORING FILLING YARN IN STATIONARY FILLING SUPPLY WEAVING MACHINES
Walter Scheffel, Industriestr. 53, 8832 Weissenburg, Germany
Filed May 23, 1973, Ser. No. 363,138
Claims priority, application Germany, May 23, 1972, 2224933; Oct. 9, 1972, 2249393
Int. Cl. D03d *47/36*
U.S. Cl. 139—122 R **10 Claims**



1. Apparatus for weaving machines having a warp shed including means to define a path and a system for withdrawing and storing of filling yarn in machines for making web-like fabrics with a filling yarn supply being outside the warp shed, said withdrawing and storing system being located in the path of the filling yarn between the filling yarn supply and the weaving machine and incorporating at least one mechanically-driven drum means for withdrawing the filling yarn from the filling yarn supply, the filling yarn being controlled about said drum to be alternately stored and released under the influence of fluid, means including portions having edges arranged to form chambers collectively around the drum means and a cylinder having a shell defining a perimeter matching the length of the filling yarn to be stored around said drum means, siad shell having surfaces to deposit the stored filling yarn and having openings for the discharge of fluid from the chambers formed by the partitions of the cylinder.

3,870,089
ANTIDRIP VOLUMETRIC RAPID FILLING MACHINE
Herman Laub, III, 244 N. San Marino, San Gabriel, Calif. 91775
Filed June 12, 1972, Ser. No. 261,913
Int. Cl. B65b *3/12, 31/04, 57/08*
U.S. Cl. 141—44 **46 Claims**



1. A system for filling containers with flowable substance from a source thereof, comprising:

a volumetric metering chamber adapted to be connected to receive such substance from the source, and a bi-acting piston adapted for motion between predetermined limits within the chamber, for establishing controlled volumes of such substance;

a submersible nozzle, connected to receive such controlled volumes of substance from the chamber, for discharge of such controlled volumes into such containers; and

means for consistently removing drops of such substance from the nozzle tip after completion of each such discharge, without affecting the body of the substance in such container, comprising:

means defining a vessel;

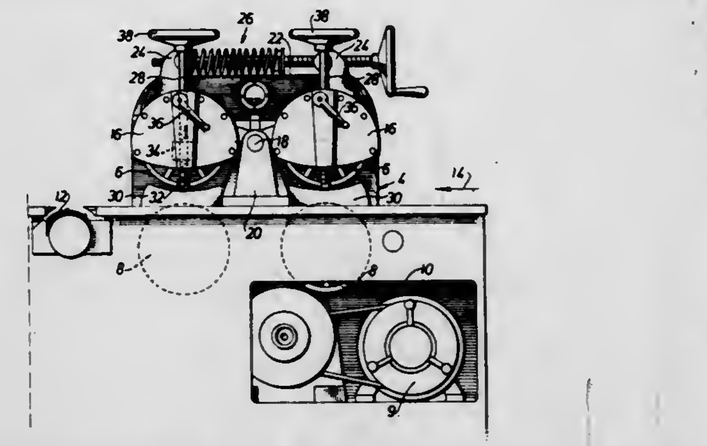
means for establishing within the vessel a negative pressure with respect to ambient atmospheric pressure;

means providing physical communication between the interior of the vessel and the immediate vicinity of the nozzle tip; and

means for interrupting said communication during each such discharge, and after each such discharge while the nozzle tip contacts the body of the substance in such container;

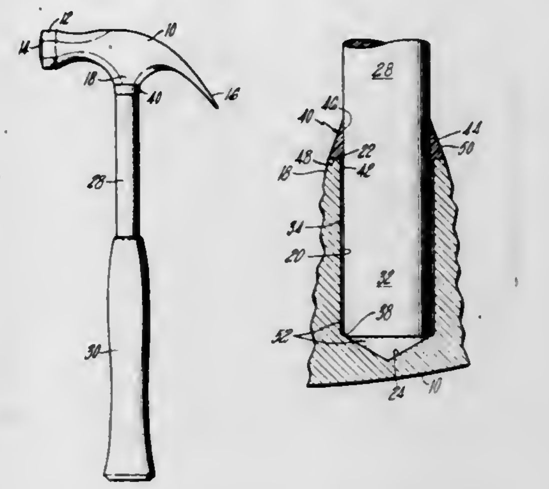
whereby drops of substance are sucked via the physical communication means and away from the immediate vicinity of the nozzle tip after each such discharge, but not until the nozzle tip is moved out of contact with the body of the substance.

3,870,090
ARRANGEMENT IN PLANING MACHINES WITH FEEDING MECHANISM COMPRISING AT LEAST TWO ROLLERS
Morten Birger Hasfjord, Odeshog, Sweden, assignor to Svenska Industrietablerings AB (Svetab) Swedish Industrial Establishing Corporation, Stockholm, Sweden
Filed Mar. 20, 1973, Ser. No. 342,987
Claims priority, application Sweden, Mar. 20, 1972, 3565/72
Int. Cl. B27c *1/12*
U.S. Cl. 144—249 R **8 Claims**



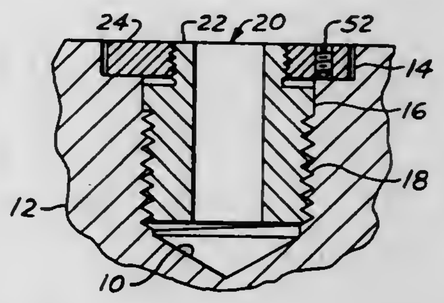
1. An arrangement in a planing machine with a feeding mechanism for wood, comprising a pair of feeding rollers disposed on one side of a feeding path for the wood each roller being supported by a supporting means, both said supporting means being pivotable around a common pivot axis disposed in parallel direction with the rotational axes of the feeding rollers, said feeding rollers having pressure adjustment means associated therewith for setting the pressure of the feeding rollers against wood fed on the feeding path in order to adapt said pressure to the thickness of the wood through swinging movement of said supporting means downwards around the common pivot axis, characterized in that said pressure adjustment means comprises a compression spring device located on the side of the common pivot axis facing away from the feeding path and acting between a first bearing means located at one of said supporting means and a pressure controlling element displaceable in the direction of action of the compression spring device in a second bearing means located at the other supporting means, both of said bearing means being pivotable in the corresponding supporting means around a corresponding axis extending in parallel direction with said common pivot axis, an adjustable counter action device being arranged to hold the rollers against the action of the spring tension force when no wood is present on the feeding path.

3,870,091
HAND TOOL CONNECTION AND TRIM COLLAR THEREFOR
Oscar Burge Burgeson, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Apr. 23, 1974, Ser. No. 463,403
Int. Cl. B25d *1/00*
U.S. Cl. 145—29 R **5 Claims**



1. A hand tool for percussive use comprising a tool head having a closed handle-receiving eye with a generally concave interior end wall, a handle having an end portion positioned within the eye a sufficient distance to engage said end wall, said handle portion being substantially free of direct contact with the tool head except at the end wall to provide an annular space extending fully around the handle portion within the eye, a preformed, annular trim collar sealably interconnecting the handle and the tool head comprised of an exposed trim portion and a concealed skirt portion having substantially the same cross-sectional dimension as the annular space and being disposed within the space, said skirt portion being held in position by a force fit interconnecting and cooperating with the tapered end wall to maintain the handle in a stabilized axial position within the eye; and an impact resistant resin disposed within said annular space for bondably joining said tool head and said handle.

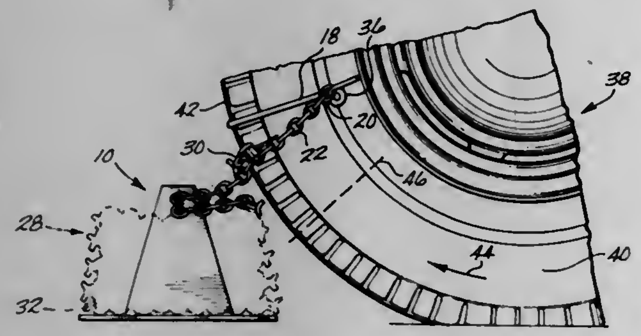
3,870,092
GUIDE BUSHING
Gerald Rusk, Maumee, Ohio, and Robert E. Koch, Ottawa, Mich., assignors to The Freeman Supply Company, Toledo, Ohio
Filed May 29, 1973, Ser. No. 364,971
Int. Cl. F16b *39/00*
U.S. Cl. 151—14 R **10 Claims**



1. A bushing for aligning sections of mold equipment and the like comprising: a generally tubular member having an axially extending opening therethrough with wrench engagement surfaces in tis sidewalls, said tubular member having a first run of external threads on one end and a smaller diameter second run of external threads on the other end, said second run having a greater pitch than said first run, a flange ring threaded on said second run of threads, and means for locking the side of said flange ring facing said first run of threads to external structure.

3,870,093
TIRE CHAIN HOLDER AND DISPENSER

Louis A. Driggers, 7800 78th Ave., S.E., Mercer Island, Wash. 98040
Filed June 28, 1973, Ser. No. 374,346
Int. Cl. B60c *27/00*
U.S. Cl. 152—213 **1 Claim**



1. A method for storing tire chains on a dispensing device, said tire chains having side chains and cross chains interconnecting said side chains, said device including

a relatively horizontally disposed base member for supporting the weight of a tire chain thereon,

a pedestal means mounted on and extending upwardly from said base member, said pedestal means having at least four corner portions between which are defined at least two upright lateral sides and at least two upright longitudinal sides, and

handle means connected to said device for carrying said device,

the method comprising:

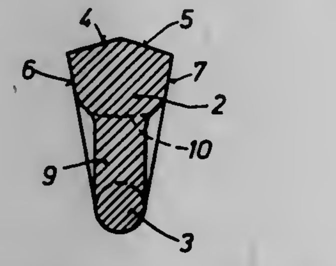
placing a first portion of each of said side chains on said base means along respectively opposite ones of said lateral sides of said pedestal means, said first portion of each of said side chains being mutually adjacent ends of said side chains,

placing a first cross chain on said base means along a first longitudinal side of said pedestal means,

thereafter placing a subsequent portion of each of said side chains between adjacent crosslinks along respectively opposite ones of the lateral sides of said pedestal means to stack said side chains in an accordion manner and serially placing subsequent cross chains along alternate ones of said longitudinal sides of said pedestal means.

3,870,094
CHAIN LINK FOR ANTISKID AND TIRE PROTECTIVE CHAINS

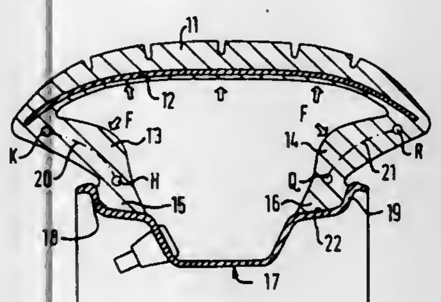
Werner Schurle, Dewangen, and Anton Muller, Unterkochen, both of Germany, assignors to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany
Filed July 23, 1973, Ser. No. 381,367
Claims priority, application Germany, July 25, 1972, 22363491
Int. Cl. B60c *27/04*
U.S. Cl. 152—243 **5 Claims**



1. A one-piece, integral, cast tire chain tread link of substantially rectangular shape with rounded corners, said link having a marginal tire-engaging section along one of the longer sides, and a ground-engaging section along the other of the longer sides, the intermediate section having short sides on the ends and a central web joining the two longer sides, so as to form two chain-engaging openings separated by said central web, said ground-engaging section being substantially wider transversely of the link and having a substantially greater cross-sectional area than said tire-engaging section with two, longitudinal ground-engaging surfaces intersecting at an obtuse angle, said short sides having an elliptical cross section said cast link is formed of cast steel material having a carbon content of 1% to 1.4%, a manganese content of 5% to 18%, a nickel content of approximately 1.8%, to 2.4%, and after production in casting procedure, the link is subjected to a heat treatment of 450℃ to 1,050℃.

3,870,095
PNEUMATIC TIRE FOR VEHICLE WHEELS WITH INWARDLY DIRECTED SIDEWALL CONVEXITY

Giorgio Tangorra, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy
Filed July 23, 1973, Ser. No. 381,482
Claims priority, application Italy, Aug. 4, 1972, 27897/72
Int. Cl. B60c *13/00, 9/18*
U.S. Cl. 152—353 C **13 Claims**



1. In combination, a rigid rim of a vehicle wheel and a pneumatic tire, said rim having annular flanges adapted to receive and lock the beads of a tire in spaced apart relationship, said pneumatic tire comprising

sidewalls having beads adapted to be locked in spaced apart relationship by said rim,

a tread,

an annular substantially rigid reinforcing structure reinforcing the tread and having a width which is greater than the spacing between the beads of the tire when mounted on the rim with the beads locked in position,

said sidewalls being formed of a substantially elastomeric material, flaring from the beads towards the lateral ends of the tread and having an inwardly directed convex crosssection under normal inflation pressures, each sidewall forming a first imperfect hinge adjacent to the bead and forming a second imperfect hinge adjacent to the tread for rotation of the sidewall intermediate the hinges, whereby upon application of vertical loads to the tire, said intermediate portions rotate to reduce their inclination by approaching a horizontal line and the distances of said sidewalls from the median plane of the wheel increase at least in correspondence to said intermediate portion.

3,870,096
LOCKING DEVICE FOR ROLL-UP AWNINGS

Robert E. Horrell, Northridge, Calif., assignor to Carter Mfg., Inc., Sun Valley, Calif.
Filed June 11, 1973, Ser. No. 368,763
Int. Cl. E06b *9/208*
U.S. Cl. 160—305 **10 Claims**

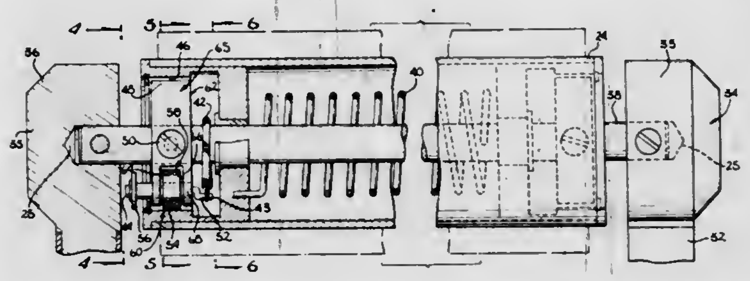
1. A locking apparatus for use in a roller comprising:

a brake drum;

a brake carrying means mounted within said drum for relative rotation within said drum;

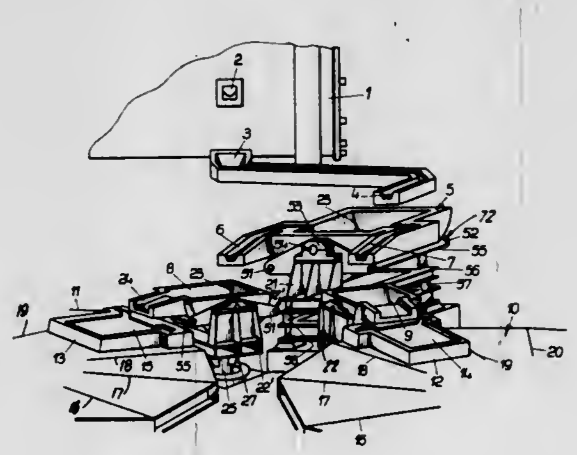
a brake, rotatably mounted to said brake carrying means for contacting said drum, said brake having a first position in which relative rotation in a first direction between said drum and brake carrying means is prevented and where rotation in a second direction is permitted, and a second position in which relative rotation in said second direction between said drum and brake carrying means is prevented and where rotation in said first direction is permitted;

whereby an awning or the like mounted to said locking apparatus may be locked in a plurality of positions while moving in either direction.



3,870,097
METHOD FOR THE ACCURATE WEIGHT CASTING OF METAL PLATES

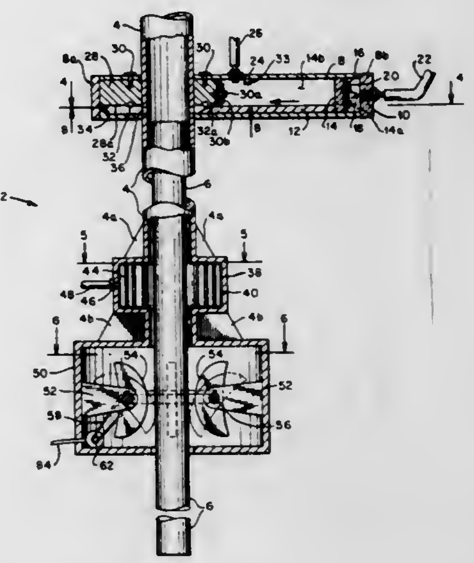
Otto Kreuz, Duisburg, and Stephan Raab, Essen, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Continuation of Ser. No. 62,051, Aug. 7, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,471
Claims priority, application Germany, Mar. 12, 1970, 2011698
Int. Cl. B22d *39/00*
U.S. Cl. 164—4 **4 Claims**



1. A method for the accurate weight casting of metal plates, particularly for supplying melt to an open top mold so that only the accurately determined weight is fed to the mold for each casting operation and, in particular, for casting copper anode plates using weighing means such as force analyzers for pivotally supporting tiltable metallurgical vessels and using a large receiving vessel and at least one small casting mold pouring vessel, comprising pouring the precise quantity of melt required for one anode plate from the smaller vessel after it is filled with a quantity of melt which is 2 to 3 times the quantity of melt required for the single anode plate casting, and thereafter prior to the casting of the next anode plate, filling the smaller vessel with a quantity of melt necessary for one anode plate from the larger vessel from which the pouring is continued until the twice to three times the initial quantity is again attained as determined by weighing the large receiving vessel.

3,870,098
REMOTELY CONTROLLABLE SUBTERRANEAN OIL WELL VALVE

William T. Houston, Oak Dr. off Bald Rock Rd., Star Rte. 93, San Jose, Calif. 95910
Filed Aug. 13, 1973, Ser. No. 388,035
Int. Cl. E21b *29/00*
U.S. Cl. 166—55.1 **6 Claims**



1. A well pipe flow control apparatus adapted for placement below ground comprising in combination:

a. a casing having a longitudinal axis and a transverse inside diameter slightly larger than the well pipe;

b. a chamber extending from said casing transverse to the longitudinal axis of said casing;

c. blade means contained in said chamber and movable in a radial direction responsive to fluid pressure for shearing the well pipe positioned in said casing;

d. external sealing means contained along a portion of said casing and disposed below said blade means, said external sealing means being responsive to and communicating with a pressurized fluid so that the pressurized fluid forces said external sealing means against the well pipe periphery to prevent the seepage of ground fluid therealong; and

e. pipe holding means carried within the bottom portion of said casing so as to be disposed below said external sealing means, said pipe holding means being capable of locking the portion of the well pipe within said casing.

3,870,099
SEAL ASSEMBLY

Walter Wolowodiuk, New Providence, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed May 19, 1972, Ser. No. 254,973
Int. Cl. F28f *9/22, 7/00*
U.S. Cl. 165—82 **3 Claims**

1. A heat exchanger comprising:

a cylindrical side wall;

a primary fluid inlet in said side wall;

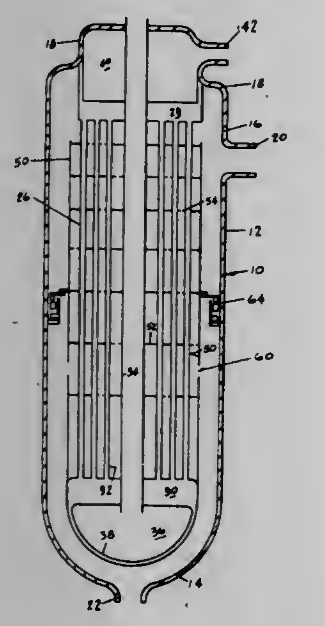
a primary fluid outlet in said side wall below said primary fluid inlet;

an inner core, said inner core comprising:

- an upper tube sheet;
- a plurality of heat exchange tubes extending downward from said upper tube sheet for flowing a secondary fluid;
- a cylindrical shroud encircling said heat exchange tubes, and extending substantially over the entire length of said heat exchange tubes, said shroud being coaxial with and within said side wall;

a seal assembly positioned between said side wall and said shroud below said primary fluid inlet comprising:

- a first annular lip extending inward from said side wall toward said shroud;
- an annular vertical seal wall connected at its bottom with said lip in a fluid tight connection,
- a seal ring encircling said seal wall, said seal ring having a plurality of annular grooves in its inner surface and a plurality of pressure rings held within said grooves and engaging against the outer vertical surface of said seal wall;
- a plurality of first springs between said lip and said seal ring;
- a second annular lip projecting outward from said shroud at a level higher than the level of said first annular lip; a horizontal annular plate extending above said second lip;



- a first annular gasket held between said second lip and said horizontal annular plate;
- a cylindrical seating member extending downward from said annular plate, said cylindrical seating member secured to said annular plate at the outer marginal portion of said annular plate;
- a second annular gasket engaging the bottom of said cylindrical seating member and the top of said seal ring; a plurality of second springs connected with said annular horizontal plate and said second annular lip urging said annular horizontal plate downward so that said first gasket is compressed between said second lip, and said horizontal annular plate and said second gasket is compressed between the bottom of said seating member and the top of said seal ring whereby when said primary fluid flows through said primary fluid inlet the annular space between said shroud and said side wall above said seal assembly will be filled with fluid and primary fluid and will flow downward through said cylindrical shroud to below said seal assembly and then out through said primary fluid outlet and whereby when a surge of pressure urging said primary fluid to flow from said primary fluid outlet into said heat exchanger occurs, said second springs will extend when said pressure reaches a predetermined value to allow said horizontal annular plate and said cylindrical seating member to move upward, so that said first annular gasket and said second annular gasket will no longer be compressed to allow primary fluid to flow upward through said seal assembly into the space above said seal assembly between said shroud and said side wall.

3,870,100

CONVEYOR AXLE FOR A TRAVELING GRATE

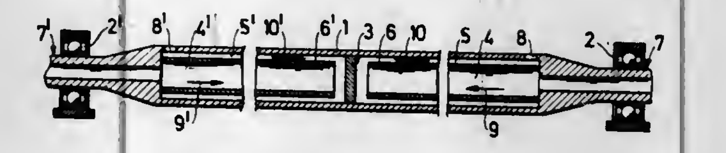
Reinhard Korting, and Alois Kluger, both of Neubeckum, Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Aug. 31, 1973, Ser. No. 393,649

Claims priority, application Germany, Dec. 5, 1972, 7244486

Int. Cl. C21d *9/00*

U.S. Cl. 165—89 **3 Claims**



1. A conveyor axle for a traveling grate, said axle having an outer wall, a first conduit within said wall extending inwardly of said axle from one end thereof and being spaced from said wall to form a first passage surrounding said first conduit; a second conduit within said wall extending inwardly of said axle from its other end and being spaced from said wall to form a second passage surrounding said second conduit, said axle having inlet openings at its ends in communication with the respective conduits for supplying the latter with coolant, said passages being in communication with discharge openings at the ends of said axle for discharging coolant from the respective passages, said first conduit being in communication with said second passage and said second conduit being in communication with said first passage whereby coolant introduced to the first and second conduits passes to the second and first passages, respectively.

3,870,101

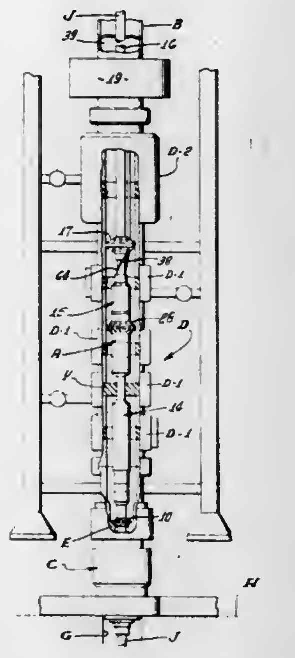
REMOVABLE SUBSEA PRODUCTION TEST VALVE ASSEMBLY

Sydney S. Helmus, Seabrook, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Apr. 25, 1973, Ser. No. 354,334

Int. Cl. E21b *33/00*

U.S. Cl. 166—.5 **43 Claims**



1. In a valve assembly adapted to be lowered on the tubular string into position within a blowout preventer stack at the upper end of a well bore underlying a body of fluid: a housing structure adapted to be subjected to the hydrostatic head of the body of fluid and having a fluid flow passage therethrough; a valve member shiftable in said housing structure between positions opening and closing said passage; pressure responsive means for shifting said valve member to open position means for conducting fluid under pressure to said pressure responsive means to shift said valve member to open position; closing means for shifting said valve member to closed position upon decrease in fluid pressure in said conducting means; and means for subjecting said pressure responsive means to the hydrostatic head of fluid surrounding said housing structure to offset the hydrostatic head of fluid in said conducting means.

3,870,102

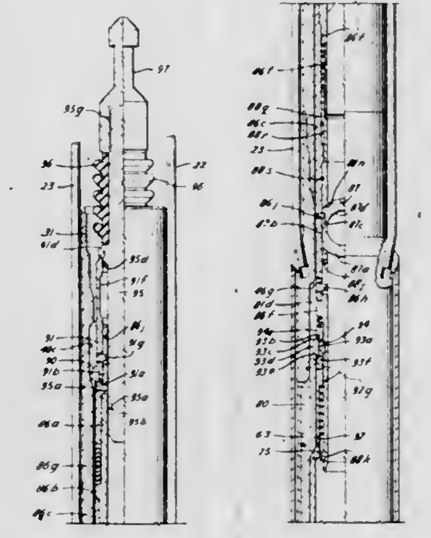
SUBSURFACE WELL APPARATUS AND METHOD

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Division of Ser. No. 131,629, April 6, 1971, Pat. No. 3,767,471. This application June 8, 1973, Ser. No. 368,292

Int. Cl. E21b *43/12*

U.S. Cl. 166—72 **28 Claims**



1. A flow control assembly adapted for movement through a bore of a well tubing to a subsurface location for securing in the bore of the well tubing for controlling flow of fluid through the bore of the well tubing in response to controlled movement of a control member mounted with the well tubing and engaged by the flow control assembly when releasably secured at the subsurface location including:
- a frame means movable through the bore of the tubing to and from the subsurface location;
- flow plug means mounted with said frame means for movement to and from an open position for enabling flow of fluid through the bore of the well tubing and a closed position for blocking flow of fluid through the bore of the well tubing;
- means mounted with said frame means for imparting movement to said plug means by engagement at the subsurface location with a movable control member mounted with the well tubing at the subsurface location to move said flow plug means to and from open and closed positions in response to controlled movement of the control member at the subsurface location; and
- means for releasably securing said frame means with the well tubing at the subsurface location and in engagement with the movable control member wherein said flow plug means controls the flow of fluid through the bore of the tubing.

3,870,103

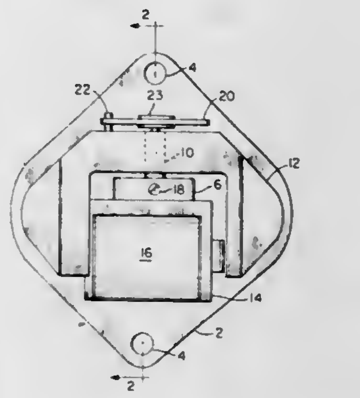
ELECTROMAGNETIC INSTRUMENT TAPPING DEVICE

Donald J. Abel, Franklin Lakes, N.J., assignor to Meto Corporation, Park Ridge, N.J.

Filed Apr. 2, 1974, Ser. No. 457,236

Int. Cl. B25d *13/00*

U.S. Cl. 173—100 **16 Claims**



1. Apparatus for periodically tapping a device of the type subject to static friction for relieving said friction, comprising: a base adapted to be secured to the device;
- an electromagnet, and means associated with the base and supporting the electromagnet;
- an armature, and means supporting the armature for displacement relative to the base;
- the electromagnet and armature supported in positions relative to each other to provide a predetermined magnetic path;
- means periodically energizing the electromagnet to generate a magnetic force which displaces the armature in one direction to tap the base with a first force;
- means biasing the armature to displace said armature in an opposite direction when the electromagnet is deenergized to tap the base with a second force; and
- the first and second forces transmitted through the base to the device to relieve the static friction.

3,870,104

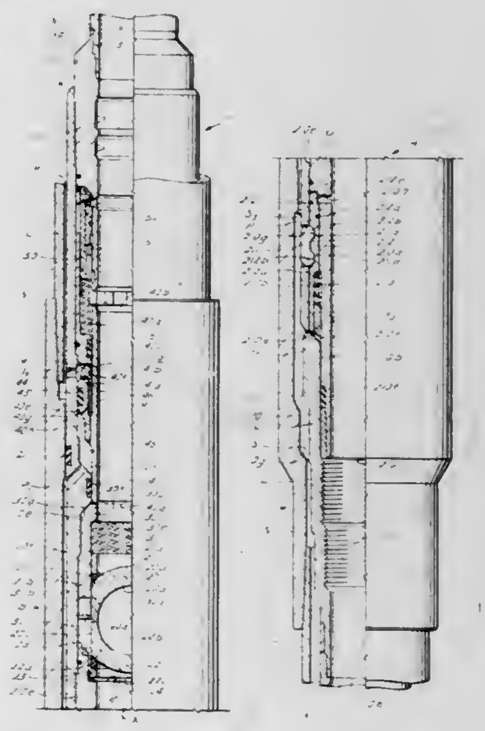
SUBSURFACE SAFETY VALVE WELL TOOL OPERABLE BY DIFFERENTIAL ANNULAR PRESSURE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed May 14, 1973, Ser. No. 359,757

Int. Cl. E21b *43/10, 43/12*

U.S. Cl. 166—224 A **18 Claims**



1. A subsurface safety valve well tool apparatus adapted for connecting in a production tubing to control flow of well fluids

through the bore of the production tubing at a subsurface location in a well, including:

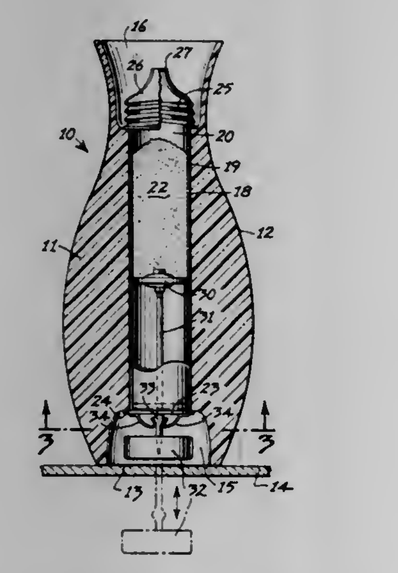
a flow housing having a bore formed therethrough and comprising a first housing portion and a second housing portion, said housing adapted for connection in the production tubing to form a portion thereof with said bore in communication with a flow passage of the production tubing for enabling flow of fluid through said bore;

bore closure means mounted with said housing and disposed in said bore for movement to and from an open position for enabling flow of fluid through said bore and a closed position for blocking flow of fluid through said bore;

means mounted with said flow housing for effecting movement of said bore closure means to and from the open and closed position, said means for effecting movement responsive to a controlled application of fluid pressure communicated to said flow housing independently of the fluid flow controlled by said bore closure means; and

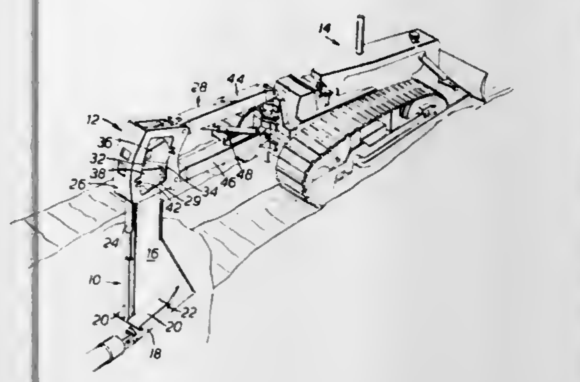
means with said flow housing for releasably securing said first portion of said flow housing with said second portion of said flow housing to enable removal of said bore closure means with one of said portions of said flow housing from the well wherein the well tool apparatus is operated.

3,870,105
DECORATIVE FIRE EXTINGUISHER
James Bartley Gooch, 2005 Rogers St., Clearwater, Fla. 33516
Filed Nov. 23, 1973, Ser. No. 418,478
Int. Cl. A62c *11/00*
U.S. Cl. 169—33 **6 Claims**



1. A decorative fire extinguisher comprising:
- a. an elongated body having a top end and a bottom end and an aesthetically appealing exterior side surface adapted to be held in one hand,
- b. a chamber within said body having an upper open end, for receiving a fire extinguishing material,
- c. an upper recess in said top end,
- d. a discharge spout connected to the upper open end of said chamber,
- e. said discharge spout being received within said upper recess, so that no portion of said discharge spout projects above the top end of said body,
- f. discharge means within said chamber actuable to discharge said extinguishing material through said discharge spout,
- g. said bottom end comprising a flat base portion supporting said body in an upright position upon a horizontal flat surface,
- h. a bottom recess within said bottom end opening through said base portion, and
- i. manual actuator means normally within said bottom recess and operatively connected to said discharge means for actuating said discharge means.

3,870,106
SUPPORTING LINKAGE ARRANGEMENT FOR EARTH WORKING TOOL
William Robert Frederick Gosling, Olive House, Aldborough, Boroughbridge; David John Wakefield, 36 Pinewood Ave., Flanshaw Park, and Terry Long, Leroyne, North Drive, Bramhope, all of England
Filed June 4, 1973, Ser. No. 366,962
Claims priority, application Great Britain, June 2, 1972, 25972/72
Int. Cl. A01b *65/06, 13/08*
U.S. Cl. 172—239 **13 Claims**



1. A linkage arrangement for inter-connecting first and second units, said arrangement comprising:
- a. a first supporting member for connection to said first unit, the first supporting member defining first and second curved bearing surfaces;
- b. a second supporting member for connection to said second unit and movable relative to said first supporting member, the second supporting member including first pivot means defining a first pivot axis nearer to said first bearing surface than to said second bearing surface and second pivot means defining a second pivot axis nearer to said second bearing surface than to said first bearing surface; and
- c. follower means controlling relative movement of said first and second supporting members, the follower means comprising a first quadrant pivotally mounted adjacent the apex thereof by said first pivot means for movement about said first pivot axis with the arcuate surface thereof in contact with said second bearing surface and a second quadrant pivotally mounted adjacent the apex thereof by said second pivot means for movement about said second pivot axis with the arcuate surface thereof in contact with said first bearing surface.

3,870,107
TOOL BAR LIFT ASSIST WHEEL
Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.
Filed June 11, 1973, Ser. No. 368,955
Int. Cl. A01b *63/22*
U.S. Cl. 172—413 **9 Claims**

1. A tool bar assembly comprising,

an elongated tool bar,

hitch means connected to said tool bar,

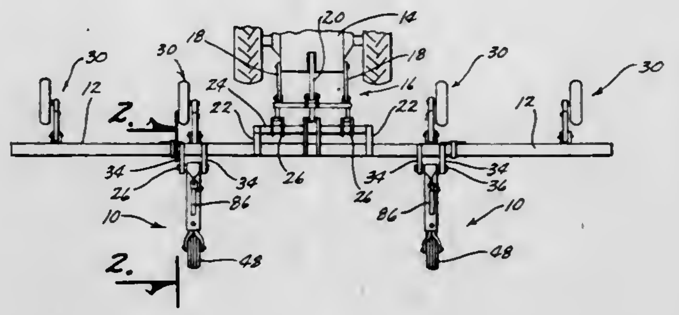
ground working tools on said tool bar,

a rearwardly extending arm pivotally connected to said tool bar and a ground-engaging wheel means on the lower end of said arm,

a hydraulic power cylinder operatively connected between said tool bar and said arm for raising and lowering said arm,

a hydraulic accumulator connected to said power cylinder to receive fluid from said power cylinder when a predetermined upward force is applied to said arm and return said fluid upon said force being removed to relieve strain on the power cylinder and associated hydraulic equipment,

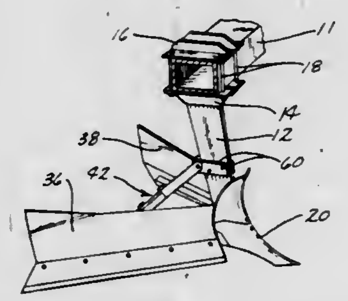
said accumulator including a cylinder, a piston movable in said cylinder, a yieldable pressure means for selectively applying pressure to one side of said piston, and said power cylinder being connected to the cylinder of said accumulator on the other side of said piston whereby fluid introduced into said cylinder is opposed by said pressure means,



adjustment means being provided for varying the point along said arm where said power cylinder is connected to said arm,

said power cylinder being connected at one end to said arm through a post pivotally connected to said arm and said adjustment means is an extendable member connected to and between said post and said arm whereby adjustment of said adjustment means, pivots said post.

3,870,108
SEEDBED SPLITTER AND SHAPER
Henry Orthman, Lexinton, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.
Filed Oct. 3, 1973, Ser. No. 403,285
Int. Cl. A01b *39/20*
U.S. Cl. 172—722 **5 Claims**



1. A ground working implement comprising,

a tool bar,

a shank having upper and lower ends,

said shank connected at its upper end to said tool bar and extending downwardly therefrom,

a shovel on the lower end of said shank,

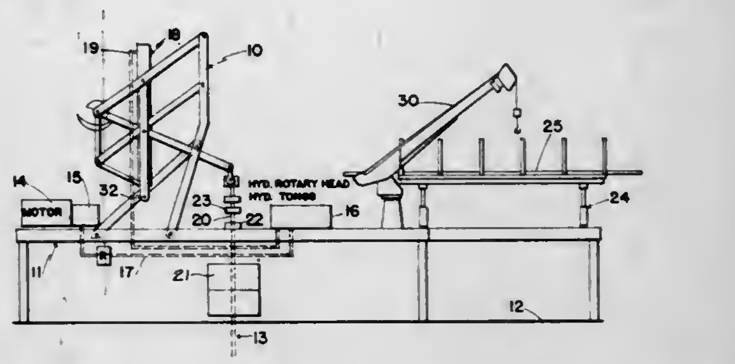
a pair of mold boards having rearward and forward ends,

said pair of mold boards vertically and horizontally pivotally connected at their forward ends to said shank and extending rearwardly and outwardly therefrom,

an inverted laterally and longitudinally extendable T-shaped member having a cross and a mast, said cross having opposite ends, said mast having a free end, the opposite ends of said cross being pivotally connected to the rear ends of said mold boards and the free end of said mast being pivotally connected to said shank above the connection of the mold boards to said shank,

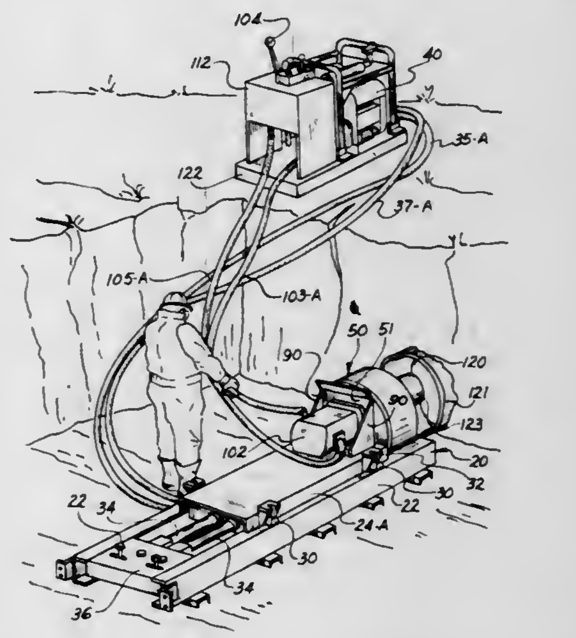
means for selectively vertically adjustably connecting the forward ends of said mold boards to said shank whereby said mold boards may be moved vertically with respect to said shank.

3,870,109
HYDRAULIC DRILLING OR SERVICING RIG
Benjamin C. Gray, Box 1646, Brooks, Alberta, Canada
Filed Mar. 22, 1974, Ser. No. 453,832
Claims priority, application Canada, Apr. 11, 1973, 168664
Int. Cl. E21b *3/02, 19/08*
U.S. Cl. 173—38 **10 Claims**



1. In an hydraulic drilling rig which includes supporting structure, a source of power, an hydraulic pump, a control panel and hydraulic hoses interconnecting same; the improvement comprises an operating unit mounted upon said supporting structure, said unit comprising in combination support members extending upwardly from said supporting structure, a parallelogram outer linkage system pivotally secured by one end thereof to said support members, an hydraulic piston and cylinder assembly, a rotary head supporting linkage system pivotally secured intermediate the ends thereof to said cylinder intermediate the ends thereof, a rotary head pivotally securing one end of said supporting linkage system, and link means interconnecting said piston rod to said outer linkage system, the other end of said supporting link system being pivotally connected to the other end of said outer linkage system.

3,870,110
POWER TRAIN FOR HORIZONTAL EARTH BORING MACHINE
Albert R. Richmond, West Salem, and William S. Appleman, Ashland, both of Ohio, assignors to The Richmond Manufacturing Company, Ashland, Ohio
Division of Ser. No. 153,281, June 15, 1971, , and a continuation-in-part of Ser. No. 85,600, Oct. 30, 1970, Pat. No. 3,769,006. This application Mar. 1, 1973, Ser. No. 337,211
Int. Cl. E21c *1/10*
U.S. Cl. 173—163 **3 Claims**



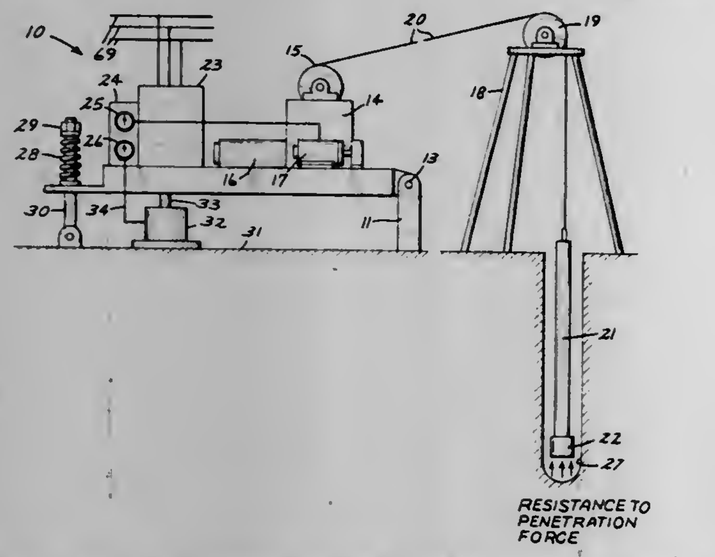
1. A portable earth boring machine comprising, in combination, track means, carriage means mounted for movement

along said track means and including an upper carriage frame portion removably mounted on said carriage means for operational use in either a carriage mounted or a remote location; an engine mounted on said upper carriage frame portion; variable volume pump means mounted on said upper carriage frame portion and driven by said engine; fluid motor means mounted on said carriage means; flexible conduit means for connecting said fluid motor to said pump means in either of said locations; auger connecting shaft means including a front end for connection with an earth boring auger and a rear end driven by said fluid motor; and a casing pusher ring at the forward end of said carriage means in surrounding relationship with said auger connecting shaft means.

3,870,111
FEED RATE CONTROL FOR JET PIERCER

Robert M. Tuomela; Gustave W. Schroeder, both of Babbitt, and Robert O. Mattila, Ely, all of Minn., assignors to Reserve Mining Company, Silver Bay, Minn.

Filed Sept. 10, 1973, Ser. No. 395,976
Int. Cl. E21b *7/14, 19/08*
U.S. Cl. 175—11 **8 Claims**



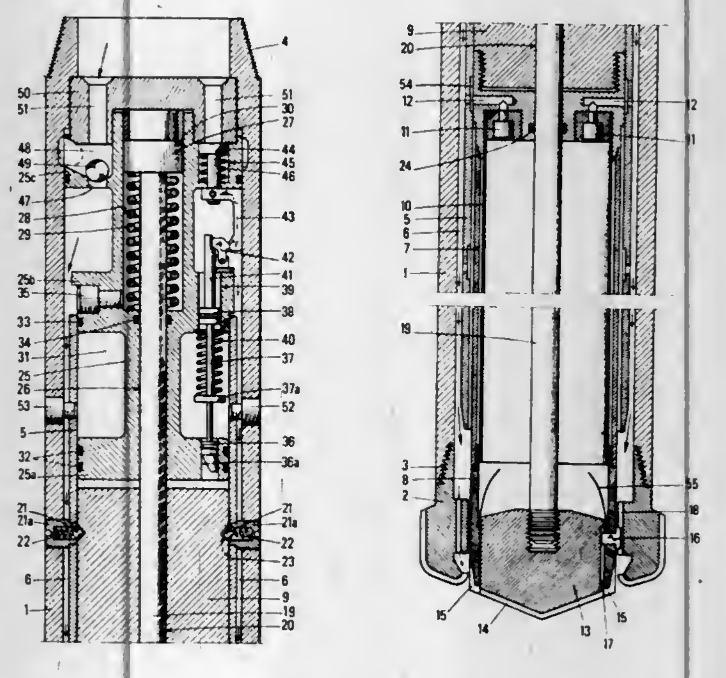
1. A jet piercing drilling machine having automatic drilling feed rate control, comprising, in combination:

a. a frame support member;
b. a frame pivotally attached to the frame support member;
c. a burner assembly;
d. hoist assembly means mounted on the frame for supporting the burner assembly so that the burner assembly normally counterbalances the weight of the frame and hoist assembly about the frame support member;
e. weight cell means associated with the frame and operable to produce control signals indicative of the resistance to penetration of the burner assembly, in response to the pivoting of the frame about the support member;
f. motor means drivably connected to the hoist assembly for raising and lowering the burner assembly into a drill hole;
g. a motor driving circuit having an input for receiving a speed command voltage, and having an output connected to the motor means, the motor driving circuit operable to control the speed and direction of the motor means in response to a received speed command voltage;
h. a transistor amplifier normally connected to receive the control signals from the weight cell means, and connected to the motor driving circuit for supplying a speed command voltage thereto, the transistor amplifier operable in a normal mode to vary the speed command voltage in response to the control signals so as to maintain the drilling feed rate substantially inversely proportional to the instantaneous resistance to penetration of the burner assembly, over a predetermined range of operation; and,
i. means for switching a bias signal into the input of said transistor amplifier when a predetermined drilling condition is encountered, whereby a predetermined fixed drilling speed command voltage is produced in response thereto.

3,870,112
DEVICE FOR TAKING SAMPLES FROM LOOSE GROUND LAYERS

Yvon Castel, Le Pecq, and Andre Castela, Mesnil Le Roi, both of France, assignors to Institut Francais Du Petrole Des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Feb. 12, 1974, Ser. No. 441,895
Claims priority, application France, Feb. 20, 1973, 73.06000
Int. Cl. E21b *49/02, 25/00, 9/20*
U.S. Cl. 175—93 **18 Claims**



1. A device for sampling cores from loose ground layers, comprising a rigid tubular body, a core barrel housed in said tubular body and slidable therein under the action of controlled propulsion means, from a first position, in which said core-barrel is secured through locking means to said tubular body, to a second position in which said core barrel at least partially projects beyond said tubular body and penetrates the loose ground layer, this rigid tubular body being adapted to be connected to a source of drilling fluid and to means for driving in rotation said tubular body and comprising, in combination, a crown-type drill bit provided with a bore through which said core barrel can slide from said first position to said second position, an obturator means for said core barrel, said obturator means being slidably mounted in said core barrel and being provided at its lower part with ground cutting elements, said obturator means being further connected to said core barrel and maintained substantially at the level of said drill bit in said first position of said core barrel, the lower end of said core barrel being also provided with ground cutting elements and being also located at the level of said drill bit in said first position of said core barrel, said lower end and said obturator means thus cooperating with said core barrel for obturating the bore of the drill bit by the cutting elements, thereby preventing the formation of a core within said bore in said first position which thus defines a position of full bore drilling of the device.

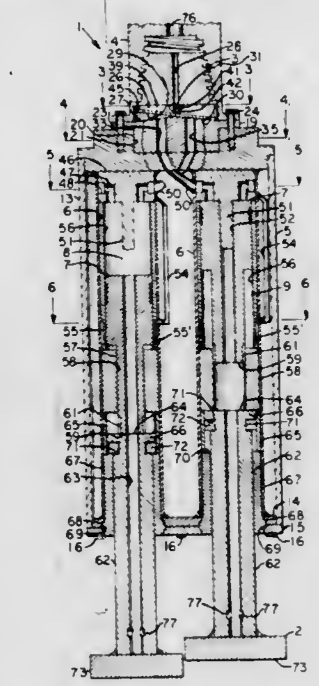
3,870,113
PNEUMATIC DRILL APPARATUS

Newell E. Slawson, 319 Cleveland Ave., Garnett, Kans. 66032

Filed Feb. 14, 1974, Ser. No. 442,350
Int. Cl. E21b *1/06, 3/08*
U.S. Cl. 175—96 **9 Claims**

7. A pneumatic drilling apparatus adapted to be secured to an end of a drill pipe and rotatable thereby for drilling, said apparatus comprising:

a. a housing having at least two cylinders therein;
b. a piston reciprocably mounted in each said cylinder with said pistons dividing said cylinders into first and second chambers with said first chamber being on a first end of said piston and said second chamber being on a second end of said piston, said pistons each having a reduced diameter portion extending from said second end and through said second chamber, said pistons each having an exhaust passage longitudinally therethrough;
c. a pressure responsive valve in said housing;
d. a passage communicating with said valve for conducting pressurized air thereto;
e. passages communicating between said valve and said first and second chambers for selectively conducting pressurized air thereto for effecting reciprocating movement of said pistons within said cylinders;
f. drill bits mounted in said cylinders and having opposed ends with one end of each adjacent a portion of a respective said piston whereby movement of said piston on a power stroke urges said piston portion to engage a respective said drill bit end, said engagement being an impact type engagement, said drill bits each having an exhaust passage communicating between said cylinders and the exterior of said housing;
g. a member in each said cylinder selectively receivable in a respective piston exhaust passage for closing same until a predetermined position of the power stroke of said piston is reach wherein said exhaust passage is opened for allowing pressurized air in said first chambers to be exhausted through respective said piston exhaust passages and respective said drill bit exhaust passages;
h. means forming an exhaust passage between said second chambers and said respective drill bit exhaust passages; and
i. means cooperating with said piston reduced diameter portion for closing said respective second chamber exhaust passages until a predetermined position of a return stroke of said pistons is reached wherein pressurized air is allowed to be exhausted from said second chambers into said respective drill bit exhaust passages.



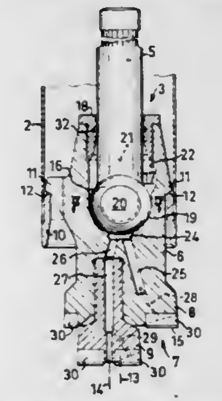
3,870,114
DRILLING APPARATUS ESPECIALLY FOR GROUND DRILLING

Elgas Pulk, deceased, late of Uppsala, Sweden (by Carlgustaf Hallsenius, administrator), and John Paul Noren, Upplands Vasby, Sweden, assignors to Stabilator AB, Bromma, Sweden

Filed July 23, 1973, Ser. No. 381,556
Int. Cl. E21b *9/26*
U.S. Cl. 175—258 **6 Claims**

1. Apparatus for drilling a hole in the ground along a center line comprising

a casing pipe adapted to be disposed in the hole,
a drill unit received in said casing pipe and having an adaptor portion and a drill bit and a central axis parallel to and spaced from the center line of the hole,
driving means inside said casing pipe supplying torque and percussive force to said drill unit through said adaptor portion and along the central axis of said drill unit,
a generally cylindrical driving shoe attached to the end of said casing pipe and having on its inner side a supporting surface in the general form of a downwardly directed truncated cone, and
engaging means on said drill unit engaging the supporting surface of said driving shoe to pull said casing pipe into the hole without rotation as the hole is drilled,

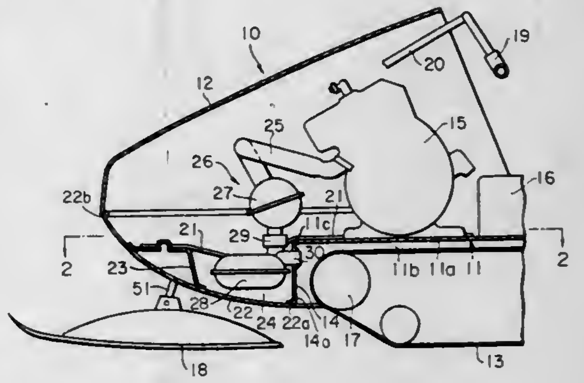


said drill bit including a ring bit with its center at the central axis of said drill unit and extending beyond said casing pipe to drill a hole wider than said casing pipe and a pilot bit extending from said ring bit with its center at the center line of the hole.

3,870,115
SNOWMOBILE EXHAUST ARRANGEMENT

Hideonori Hase, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed May 11, 1973, Ser. No. 359,334
Claims priority, application Japan, May 13, 1972, 47-55730
Int. Cl. B60k *13/06*
U.S. Cl. 180—5 R **3 Claims**

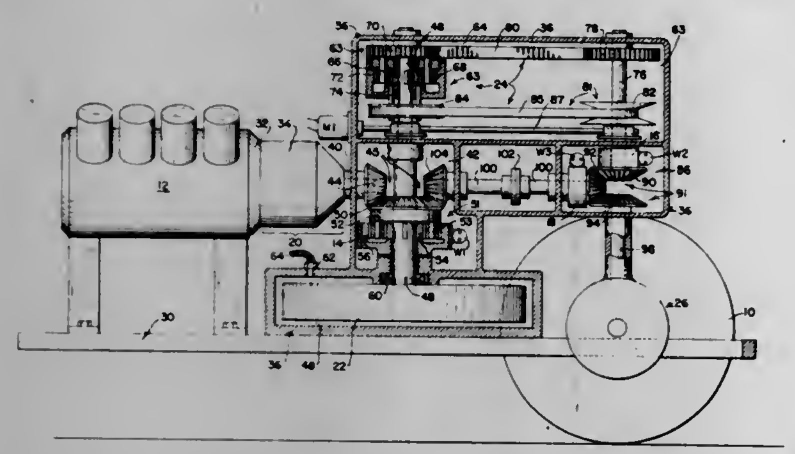


1. A snowmobile comprising:

an inverted channel shaped main frame having a top plate; an endless track equipped under said main frame;
an internal combustion engine mounted on the front end portion of said top plate for driving said endless track;
a pair of front side plates connected with said main frame and projecting forwardly therefrom;
a main front plate extending downwardly from the front end of said main frame;
a forwardly progressively elevated front bottom plate fixed to the lower edges of said front side plates and having the rear end connected with the lower end of said main front plate, said front bottom plate having the shape of the hull of a vessel;
a first exhaust silencer connected with said engine; a second exhaust silencer connected with said first exhaust silencer and disposed in a well defined by said front side plates. main front plate and front bottom plate, thereby utilizing the space of said well; and
a stay positioned over said well for suspending said second exhaust silencer.

3,870,116
LOW POLLUTION AND FUEL CONSUMPTION FLYWHEEL DRIVE SYSTEM FOR MOTOR VEHICLES

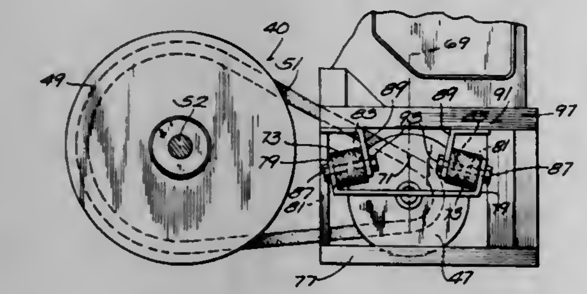
Joseph Seliber, 313 Hibbard Rd., Wilmette, Ill. 60091
Filed Aug. 15, 1973, Ser. No. 388,637
Int. Cl. B60k *9/04*
U.S. Cl. 180—54 K **8 Claims**



1. In an automotive vehicle, a hybrid vehicle propulsion system comprising a traction driving wheel, an energy-producing engine, a rotatable energy-storing flywheel, a first power train including a first variable speed power transmission, said first power train extending between said engine and flywheel, a second power train including a second and continuously variable speed transmission, said second power train extending between said flywheel and traction wheel, a third power train extending between said engine and traction wheel, a first clutch interposed in said first power train and effective when engaged to connect the first transmission to the flywheel in driving relationship for flywheel acceleration purposes, a second clutch interposed in said second power train and effective when engaged to connect the second transmission to the traction wheel in driving relationship, and a third clutch interposed in said third power train and effective when engaged to connect said first transmission to said traction wheel in driving relationship.

3,870,117
SNOWMOBILE MOTOR MOUNTING

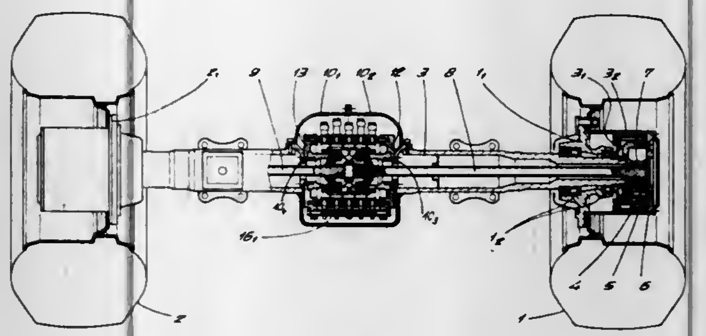
Robert T. Larsen, Memomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 296,975, Oct. 12, 1972, Pat. No. 3,819,000. This application Aug. 10, 1973, Ser. No. 387,372
Int. Cl. B60k *5/04*
U.S. Cl. 180—64 R **4 Claims**



1. A snowmobile comprising a frame, an internal combustion engine including a crankshaft and two alternately firing cylinders, and a pair of resilient mounting means for supporting said engine from said frame at each end of said crankshaft with the axis of said crankshaft extending transversely of said frame and with the axis of said cylinders located in a generally vertical plane extending transversely of said frame and for providing relative softness in the vertical direction and relative stiffness in the direction transverse to the vertical direction and transverse to the crankshaft axis, whereby to minimize fore and aft crankshaft movement.

3,870,118
BRAKE ARRANGEMENT FOR VEHICLES

Hermann Klaue, 24, Tour D'Ivoire, 1820 Montreaux, Switzerland
Continuation-in-part of Ser. No. 190,615, Oct. 19, 1971, abandoned. This application Feb. 7, 1973, Ser. No. 330,432
Claims priority, application Germany, Oct. 26, 1970, 2052420; Switzerland, Feb. 10, 1972, 1932/72; Apr. 7, 1972, 5122/72; June 21, 1972, 9338/72
Int. Cl. B60t *5/00*
U.S. Cl. 180—75 **12 Claims**



1. A vehicle brake arrangement, comprising in combination:

a vehicle provided with at least one pair of oppositely arranged non-driven wheels and an elongated hollow axle body fixed to the vehicle and extending between said wheels;

a liquid-cooled disc brake located in the axle body, said disc brake comprising a set of brake rings fixed against rotation but movable axially in the longitudinal direction of the axle body, said brake rings including liquid compartments, and including supply means for delivering liquid into said compartments and drain means for removing liquid therefrom, to thereby circulate cooling fluid therethrough;

a divided axle shaft located in the axle body and consisting of a left hand and a right hand part, each part having an inner end at the disc brake and an outer end connected one to each of said wheels, and each of said axle shaft parts being movable axially outwardly through the axle body;

at least one brake lamination having friction linings and removably fixed on the inner end of each of said axle shaft parts for rotation therewith, said brake laminations being located between said brake rings;

said axle body having an opening closed by a removable cover through which opening the braking assembly can be removed after the axle shaft parts have been pulled out axially beyond the braking assembly, and wherein the complete braking assembly including the brake rings is removable with the said compartments still containing the liquid coolant and operatively connected to said supply and drain means.

3,870,119
AUXILIARY BRAKE CONTROL FOR AUTOMOTIVE VEHICLES PARTICULARLY HAVING AUTOMATIC TRANSMISSIONS

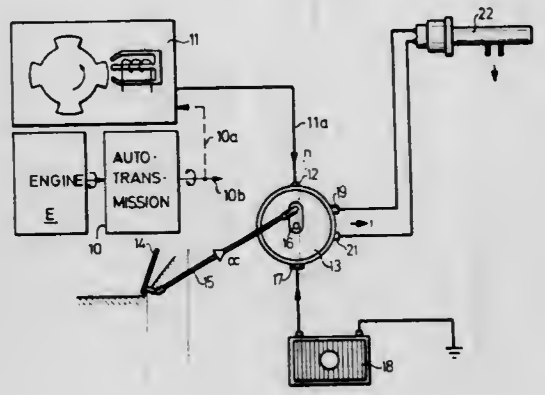
Bert Wurst, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 5, 1973, Ser. No. 376,432
Claims priority, application Germany, July 27, 1972, 2236833
Int. Cl. B60l *7/12*
U.S. Cl. 180—77 R **7 Claims**

1. Auxiliary braking control apparatus for automotive vehicles, particularly having automatic transmissions, to derive a control signal indicative of

a. position of engine speed controller (14) and
b. vehicle motion,
comprising

a potentiometer (31) coupled to the engine speed controller (14) and changing slider position representative of engine speed controller position, the slider on the potentiometer (31) and the engine speed controller (14) being so connected that the output voltage from the slider of the potentiometer is essentially zero when the motor is controlled to operate at its idling speed condition, and increases proportionately as the motor speed controller (14) is operated to increase motor speed above idle, to provide an engine control electrical signal representative of position (α) of the engine speed controller (14);

a tachometer generator (11; FIGS. 6–11) having a rotating element mechanically coupled with the output from the transmission of the automotive vehicle to provide a vehicle motion signal;

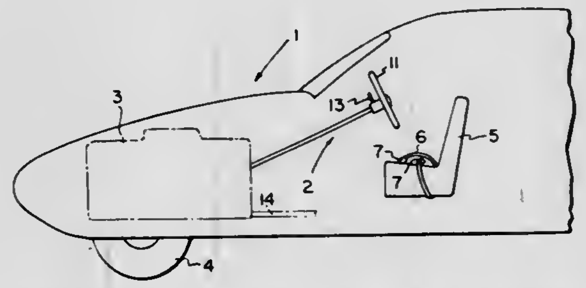


a difference amplifier (25) connected to the tachometer generator (11), said difference amplifier comparing the vehicle motion signal with a reference, and providing an output which is 0 when the vehicle motion signal representative of speed of a rotating element within the drive train is essentially 0, and further providing an output which is substantially different from 0 if the output of a rotating element coupled to the drive train is not 0, to provide a 0–1 binary type vehicle motion signal;

and logic means (13, 24) having said engine signal and said binary type motion signal applied thereto and providing a control output indicative of the logical conjunction of:
i. engine controller set to operate the engine at idling speed; and
ii. no vehicle motion.

3,870,120
VEHICLE GEAR SELECTOR CONTROL APPARATUS

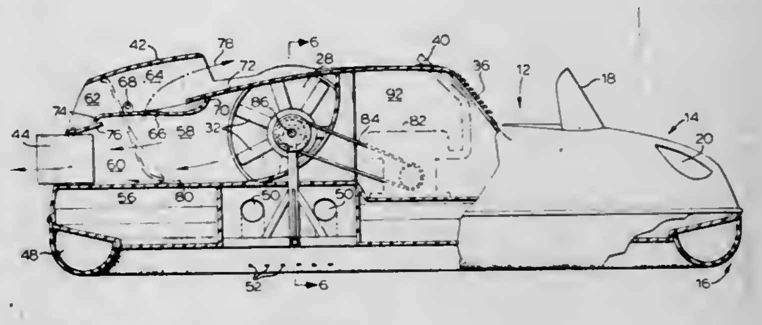
Paul J. Blinkilde, Lathrup Village, Mich., assignor to Epsex International, Inc., Fort Wayne, Ind.
Filed Feb. 11, 1974, Ser. No. 441,351
Int. Cl. B60r *21/10*
U.S. Cl. 180—82 C **11 Claims**



1. Apparatus adapted for use with a vehicle having transmission selector means shiftable between at least one drive mode and at least one non-drive mode, said apparatus comprising lock means movable between lock and unlock positions in which said selector means is respectively disabled from and enabled for movement from a non-drive mode to a drive mode; energizable and deenergizable magnetic drive means operable when energized to drive said lock means to said lock position; energizable and deenergizable magnetic holding means operable in response to energization of said drive means to hold said lock means in said lock position; means for energizing and deenergizing said drive means; and means for energizing and de-energizing said holding means, said means for deenergizing said holding means being independent of the means for de-energizing said drive means.

3,870,121
AIR CUSHION VEHICLE

Ralph W. Schneider, 15 Easterbrooke Ave., Willowdale, Ontario, Canada
Filed Dec. 4, 1972, Ser. No. 311,842
Int. Cl. B60v *1/14*
U.S. Cl. 180—117 **7 Claims**



1. In an air cushion vehicle:

a rigid frame;

a power source driving first and second axial flow fans at a constant r.p.m. to deliver a substantially constant flow of air from the two fans during operation of the vehicle;

first duct means communicating with said first fan so as to direct a first flow of air therefrom to beneath said rigid frame;

second duct means communicating with said second fan so as to direct a second flow of air rearwardly therefrom to a thrust control means;

said thrust control means including:

at least one steering control vane;

forward and reverse thrust ducts in communication with each other, and a controllable valve means supported by said rigid frame and positioned downstream of said second duct means and relative to said second flow of air so as to control both the degree of communication between said forward and reverse thrust ducts and the amount of said second flow of air being directed to each of said forward and reverse thrust ducts;

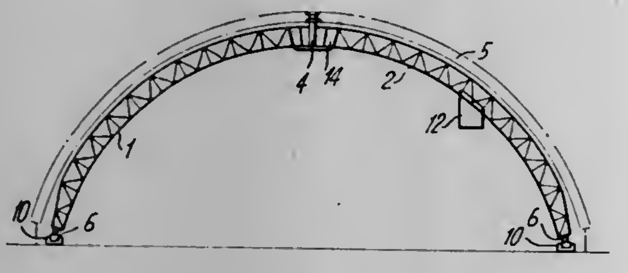
and means for permitting a portion of said second flow of air to pass continuously over said at least one steering control vane; said forward thrust duct comprising a third duct means having said at least one steering control vane mounted therein, and a fourth duct means being located proximate to said third duct means and in communication, under the control of said controllable valve means, with said reverse thrust duct and said second duct means.

3,870,122
SERVICE DEVICE

Pierre Faucheux, Paris, France, assignor to Etablissement Fresa, Vaduz, Liechtenstein
Filed Jan. 24, 1973, Ser. No. 326,274
Claims priority, application Switzerland, Jan. 28, 1972, 1292/72
Int. Cl. E04g *3/14*
U.S. Cl. 182—36 **9 Claims**

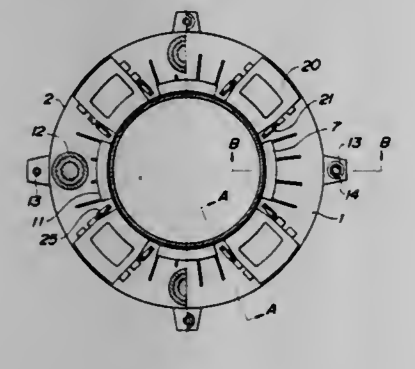
1. A service device for a building including a generally dome shaped roof, said device comprising a track within said roof, pivot means fixed to the top of said roof and extending downwardly and inwardly thereof, at least one catwalk disposed within the interior of said roof and connected at its

upper end to said pivot means, said catwalk corresponding substantially to the curvature of said roof and comprising a metallic framework having an upper surface juxtaposed the interior surface of said roof, roller means carried by the lower end of said catwalk engaging said track to permit said lower end of the catwalk to be movable therein, flooring means within the interior of said catwalk framework substantially from said pivot means to said roller means, a motor disposed at the lower end of said catwalk and said motor connected to said roller means for driving the same.



3,870,123
APPARATUS FOR RAISING AND LOWERING A HEAVY WEIGHT

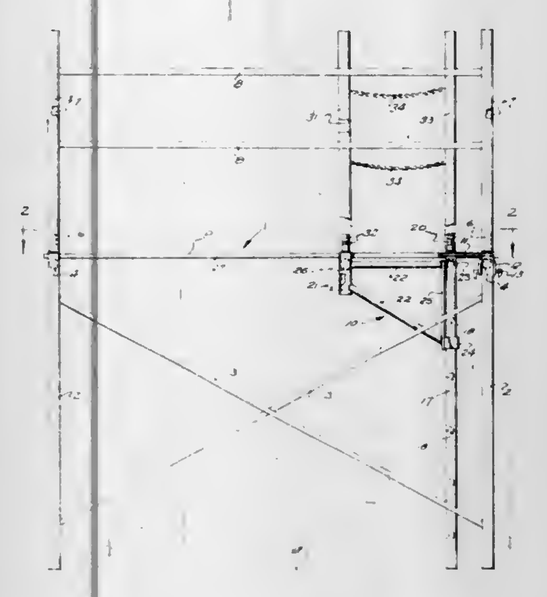
Hitoshi Izumi, Yokohamashi, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed May 7, 1974, Ser. No. 467,780
Claims priority, application Japan, May 10, 1973, 48/51910
Int. Cl. E04g *3/02*
U.S. Cl. 182—136 **1 Claim**



1. Apparatus for raising and lowering a heavy weight comprising a column, a floatable working platform adapted to be moved along said column, an upper outer ring surrounding said column, a lower outer ring surrounding said column and having a spaced distance from said upper outer ring, each of said outer rings having a tapered inner surface, a plurality of upper and lower wedges each of which has a tapered outer surface which may be engaged with the corresponding tapered surface of either of said outer rings, frames for holding said upper and lower wedges, several cylinders for operating said wedges, upper and lower inverted tapered blocks disposed on said upper and lower outer rings respectively, upper and lower inverted tapered wedges which may be engaged with the corresponding tapered surfaces of said inverted tapered blocks, frames for holding said upper and lower inverted wedges, cylinders for operating said upper and lower inverted wedges, guide means for moving said upper and lower inverted wedge holding frames in the direction parallel to the inverted tapered surface, main cylinders coupling said upper and lower outer rings and adapted to move said working platform and column, and tie rods passing through the upper and lower outer rings and connected to the working platform with the top end of said tie rod being projected, each said tie rod having means for preventing the upper outer ring from removing from the tie rod at the top end and having a step portion for receiving the lower outer ring.

3,870,124
SCAFFOLD LADDER STRUCTURE

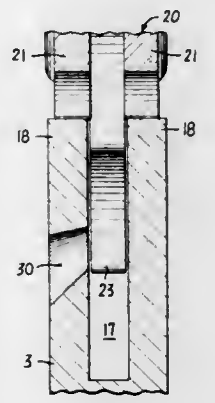
Ivy J. Howard, 2020 Minda Drive, Eugene, Oreg. 97401
Filed Jan. 9, 1974, Ser. No. 432,081
Int. Cl. E04g *1/14*
U.S. Cl. 182—178 **7 Claims**



1. Ladder structure for attachment interiorly of a scaffold, said ladder structure comprising,
  a ladder offset inwardly within the scaffold confines,
  connector means extending intermediate a scaffold member and the upper end of the ladder securing the ladder against displacement, said connector means detachably mounting the ladder to said scaffold member, and
  a framework in supported engagement with the upper end of said ladder and defining therewith an accessway for workers, said framework adapted to support guard rail posts of a protective enclosure above said accessway to prevent inadvertent entry by a worker on the scaffold work surface.

3,870,125
GUIDE BAR OILING SYSTEM FOR CHAIN SAW

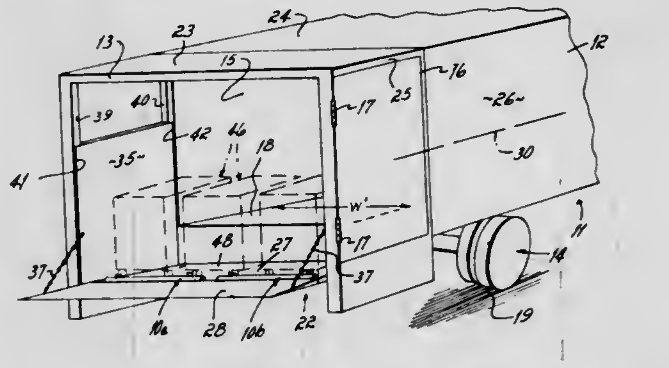
Walter Gorski, Armonk, N.Y., assignor to Textron Inc.,, Providence, R.I.
Filed Feb. 2, 1973, Ser. No. 329,207
Int. Cl. F16n *7/16*
U.S. Cl. 184—15 R **15 Claims**



1. In a chain saw having a power head with a support surface to receive a guide bar, a guide bar having an inboard end portion, means for removably securing the inboard end portion of said guide bar to the power head of the chain saw in a position overlying said support surface, said guide bar having at its periphery two peripherally extending side flanges defining betweem them a peripherally extending groove, a saw chain running on said guide bar and comprising links having support surfaces sliding on outer edges of said side flanges to support the chain on the guide bar and links with tangs extending into said peripheral groove of the guide bar a distance less than the depth of said groove and slidably engageable with an area of the inner surface of each said side flange extending in from the outer edge of said flange a distance equal to the inward extent of said tangs, said guide bar having in its inboard end portion an oil hole extending through one said side flange and opening into said peripheral groove, the inner end of said oil hole opening in the inner face of the respective side flange wholly within the area thereof engageable by said tangs and the diameter of the inner end of said oil hole where it opens into the groove of the guide bar being between one thirty-second inch and one-eight inch, and means on said power head for supplying lubricating oil under pressure to said oil hole to lubricate said chain, including a recess in said supporting surface in position to communicate with said oil hole and an oil supply passage communicating with said recess, the cross sectional area of said oil hole varying within the thickness of the respective side flange so as to have a larger cross sectional area at the outer face of said side flange for communication with said recess than at the inner face of said side flange, said tangs sweeping the inner end of said oil hole to inhibit clogging of said oil hole by sawdust or other particles.

3,870,126
CART STOP STRUCTURE FOR AN ELEVATOR

William H. Himes, Dayton, Ohio, assignor to Leyman Manufacturing Corporation, Cincinnati, Ohio
Filed July 18, 1973, Ser. No. 380,170
Int. Cl. B60p *3/06*
U.S. Cl. 187—8.52 **9 Claims**

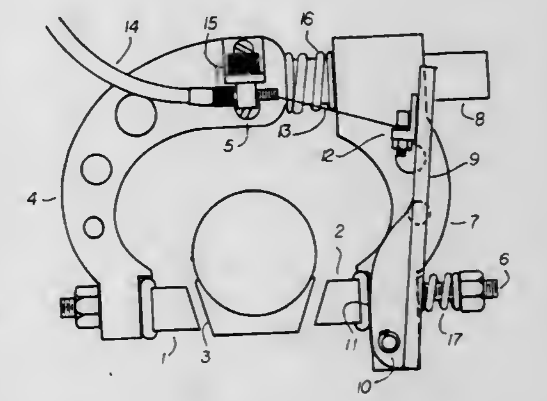


5. An elevator platform of a width adapted to hold a wheeled vehicle during up and down operation of said platform, said platform comprising
  a chock bar permanently connected to a floor surface of said platform, said permanent connection permitting movement of said chock bar on a vertical hinge line between chocking attitude where said chock bar is located transverse to the travel path of said wheeled vehicle across said floor and a storage attitude where said chock bar is located parallel to the travel path of said wheeled vehicle, and said permanent connection comprising a hinge pin fixed to the underside of said chock bar, said hinge pin being received in permanent pivot relationship with said floor, primary latch means fixed to said chock bar, said primary latch means on said chock bar cooperating with secondary latch means in said floor to insure that said chock bar is retained in chocking attitude when disposed in the chocking attitude, and said primary latch means including a latch pin fixed to the underside of said chock bar and said secondary latch means including structure defining a hole in said floor, and
  said latch pin and hinge pin each cooperating with a coller fixed to said floor, the diameter of said hinge and latch pins relative to the diameter of said collars providing a sloppiness of fit that allows said chock bar to be easily lifted out of chocking attitude and swung to storage attitude, and vice verse.

8. An elevator platform of a width adapted to hold a wheeled vehicle during up and down operation of said platform, said platform comprising
  a chock plate connected to a floor surface of said platform along a hinged edge thereof, said plate being adapted to pivot on a horizontal axis between a storage attitude where same is angularly upraised with respect to said floor and disposed transverse to the travel path of said wheeled vehicle,
  a latch plate hingedly connected adjacent the free edge of said chock plate, said latch plate being movable relative to said chock plate as said chock plate is pivoted between storage and chocking attitudes,
  a well provided in said floor within which said latch plate is positioned when said chock plate is in the storage attitude, thereby permitting said chock plate to lie flush with said floor, and
  immobile ledge means fixed to one side wall of said well, said latch plate being provided with a center of gravity such that said latch plate pivots toward that side wall of said well which mounts said ledge means as said chock plate is raised, said latch plate being trapped on said ledge means upon lowering said chock plate after said latch plate has been raised sufficiently to clear said ledge means initially, thereby restraining said chock plate in an angularly upraised position.

3,870,127
VARIABLE-LEVERAGE BRAKES FOR BICYCLES AND THE LIKE

David G. Wilson, 42 Winston St., Cambridge, Mass. 02138; Brian D. Hanson, 5101 Park Rd. Apt. 106, Charlotte, N.C. 28209, and John M. Malarkey, 328 Marlborough St., Boston, Mass. 02215
Filed June 14, 1972, Ser. No. 262,457
Int. Cl. B62l *1/00*
U.S. Cl. 188—24 **3 Claims**

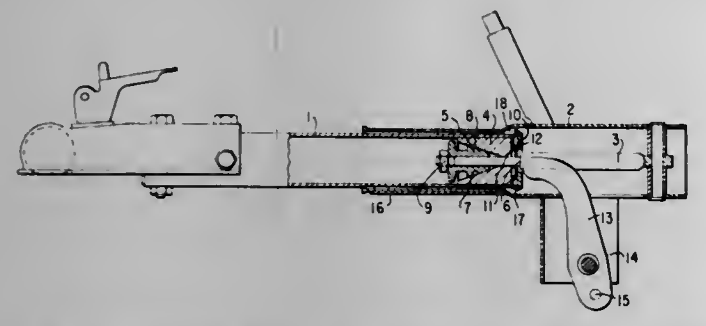


1. A braking mechanisms for bicycle wheels and the like, comprising a pair of caliper elements each carrying a respective brake block;
  one such caliper element being carried by the other caliper element and having relative movement thereon; and means predetermining an initial braking force whereby said one caliper element has said relative movement to a limiting position responsive to said brake blocks having initial wheel engagement for braking thereof with said initial predetermined braking force;
  manually operable means for effecting relative movement of said caliper elements to effect said initial wheel engagement;
  a lever carried by said one caliper element and securing means providing relative movement with respect thereto; said manually operable means being attached to said lever to effect said initial relative movement of said caliper elements and respective brake blocks to effect wheel engagement;
  said means predetermining an initial braking force comprising a movable mount means for the respective brake block of said one caliper element for subsequent movement of said brake block after said initial engagement to

effect increased braking pressure upon continued operation of said manually operable means;
and drive means whereby said lever effects movement of said latter brake block to effect said increased braking pressure.

3,870,128
OVERRUNNING BRAKE FOR TRAILERS

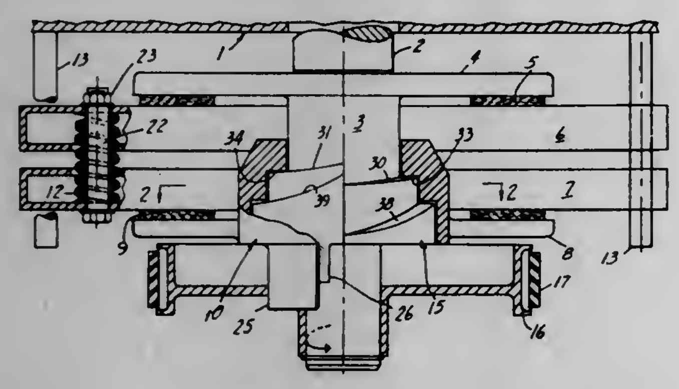
Heinz Nicolay, and Hans Gruner, both of Heidelberg, Germany, assignors to Graubremse GmbH, Heidelberg, Germany
Filed Oct. 25, 1972, Ser. No. 300,747
Claims priority, application Germany, Oct. 25, 1971, 2152993
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **10 Claims**



1. An overrunning brake for a trailer, said brake comprising a first pull member displaceably mounted in a second pull member, power transmission means coupled to the first pull member for acting on the brake, and shock absorbing means positioned between the first and second pull members for absorbing shocks and vibrations, said shock absorbing means including a mechanically operating friction member positioned in the second pull member and prestressed for displacement between first and second lugs fixedly positioned in and attached to the second pull member, said friction member being operatively coupled to the second pull member and having a friction face forced against the first pull member, and said first pull member being provided with a third lug adapted for movement to a position between the first and second lugs so as to shorten the displacement of the friction member between the first and second lugs during starting action of the trailer and for movement to another position so as not to shorten the displacement of the friction member between the first and second lugs during braking action of the trailer.

3,870,129
LOAD BRAKE

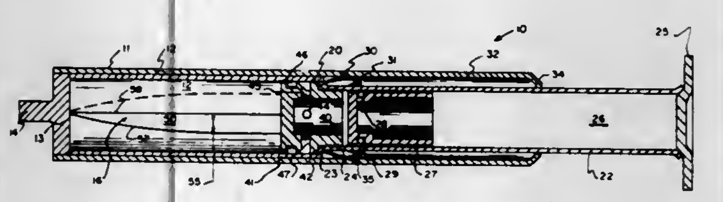
Carter H. Arnold, 317 Rocky Point Rd., Palos Verdes Estates, Calif. 90274
Filed Mar. 20, 1972, Ser. No. 236,086
Int. Cl. B60t *7/12*
U.S. Cl. 188—134 **29 Claims**



1. In a brake structure that includes a pair of brake plates and further includes a pair of brake shoes adapted to engage the opposite outer faces of said plates, resilient means for urging said plates apart with a predetermined force when said brake is disengaged,
a cam member,
first camming means on said member for causing said plates to move apart a predetermined amount upon movement of said cam member a certain distance in one direction, second camming means on said member for restoring said resilient means to apply said predetermined force upon said movement of said cam member said certain distance, whereby said plates are moved apart to compensate for wear of said brake shoes while the force of said resilient means remains the same.

3,870,130
SHOCK ABSORBER

Gerald R. Miller, Hillsburgh, Ontario, Canada, assignor to Gabriel of Canada Limited, Hillsburgh, Ontario, Canada
Filed Apr. 9, 1973, Ser. No. 349,565
Claims priority, application Canada, May 15, 1972, 142077
Int. Cl. F16f *9/48*
U.S. Cl. 188—288 **1 Claim**

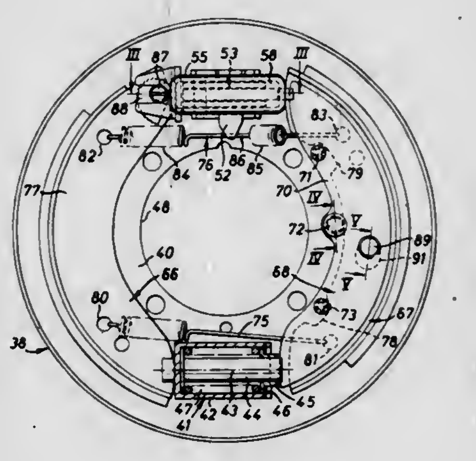


1. An impact absorber comprising:
a. a pressure cylinder;
b. an orificed metering sleeve disposed within the pressure cylinder;
c. an accumulator cylinder having a closure at one end;
d. a movable damping piston affixed to the other end of the accumulator cylinder, the piston, disposed within the sleeve of the pressure cylinder and adapted for reciprocation therein, the piston including orifice means communicating the interior of the accumulator cylinder with the interior of the sleeve through the orifice of the sleeve, irrespective of the position of the piston within the sleeve;
e. a floating piston located within the accumulator cylinder;
f. a thixotropic fluid disposed in the sleeve whereby impact on the accumulator cylinder causes the thixotropic fluid to flow through the orifice of the absorber to present an essentially constant retarding force against the impact.

3,870,131
INTERNAL SHOE DRUM BRAKES

Anthony Christopher Firth, and Robin Edward Child, both of Leamington Spa, England, assignors to Automotive Products Company Limited, Leamington Spa, England
Filed June 25, 1973, Ser. No. 373,275
Int. Cl. F16d *51/22*
U.S. Cl. 188—325 **4 Claims**

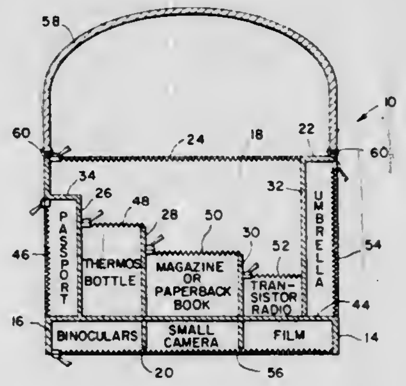
1. An internal shoe drum brake comprising a pair of arcuate brake shoes, a shoe expanding device adjacent one end of the shoes to urge the brakes into contact with a brake drum, a carrier member for one brake shoe comprising substantially parallel spaced arcuate plates, rivet means holding said one brake plate in said spaced relationship, said one brake shoe having its web projecting radially into the space between said plates and being circumferentially movable between said spaced plates, a fixed abutment member disposed adjacent the opposite end of said brake shoes, pin means extending through openings in said spaced plates and an enlarged opening in said one brake plate with said enlarged opening extending in a direction permitting movement of said one plate when it is desired to brake in one direction, and abutment means adjacent the opposite end of said one brake shoe to contact it



when said shoe expanding device is operated for parking and the brake drums tends to rotate in the opposite direction.

3,870,132
PORTABLE TRAVEL BAG

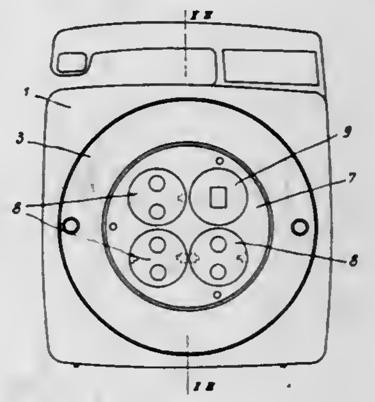
Hanley, John J., Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Mar. 1, 1974, Ser. No. 447,231
Int. Cl. A45c *11/00*
U.S. Cl. 190—52 **3 Claims**



1. A travel bag comprising front and rear walls; opposed side walls; top and bottom walls forming a sack; a plurality of horizontal and vertical partitions in said sack; a horizontal shelf extending between said end walls spaced above said bottom wall and defining bottom compartments with some of said partitions and said bottom wall; and a zipper extending along said bottom wall to close said bottom compartments; a plurality of inner compartments formed by said horizontal and vertical partitions and said shelf, a zipper closing the top of each of said inner compartments; a pair of outer vertical compartments on either side of said inner compartments, one of said compartments being defined by a part of said top wall, said shelf, one of said vertical partitions and said side wall; said one compartment having a vertical zipper for closing same; said other outer compartment being defined at its top by one of said horizontal partitions, at its bottom by said shelf and at its sides by one of said side walls and by one of said vertical partitions, a vertical zipper for closing said other compartment; a horizontal zipper extending substantially the length of said sack in said top wall for gaining access to said inner compartments and a handle extending above said top wall and secured to the top of said side walls.

3,870,133
CABLE DRUMS

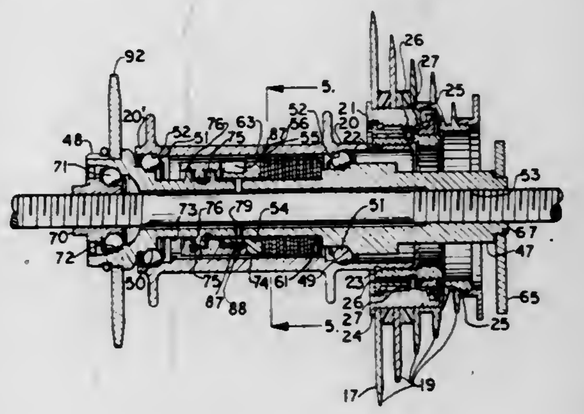
Hugo Brennenstuhl, Seestr. 1-3, Tubingen-Prondorf, Germany
Filed Sept. 10, 1973, Ser. No. 395,555
Claims priority, application Germany, Sept. 10, 1972, 7233401[U]
Int. Cl. H02g *11/00*
U.S. Cl. 191—12.2 R **13 Claims**



1. A cable drum, particularly for household, workshops, building sites and the like, comprising a carrier, a drum body for taking an extension cable containing a cylindrical part with a first and second end wall on its axial ends and with a plug base having at least one socket connected electrically with an extension cable in which the drum body has a holder and a lamp and a switch for the electrical connection between the lamp and the extension cable, and in which the switch is arranged in the region of the plug base on the first end wall and the holder and lamp is placed in a central opening in the second end wall opposite to the first end wall.

3,870,134
BRAKE AND MULTI-SPEED DRIVE FOR A BICYCLE

Joseph L. Anthamatten, Precious Blood Seminary, Ruth Ewing Rd., Liberty, Mo. 64068
Filed May 13, 1974, Ser. No. 469.238
Int. Cl. F16d *67/02*
U.S. Cl. 192—6 A **6 Claims**

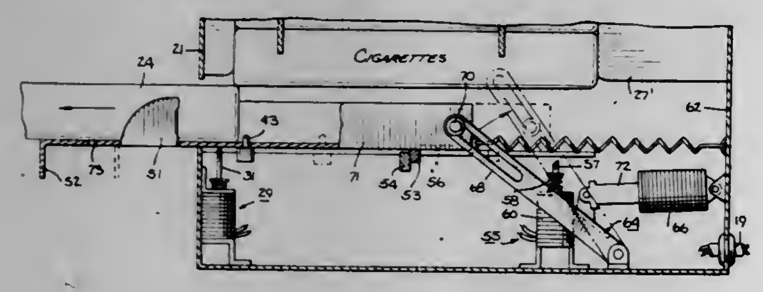


1. A drive and braking apparatus for multi-speed bicycles comprising:
a. an axle;
b. a hub rotatably mounted on said axle, said hub having first and second ends;
c. a multi-stage sprocket assembly mounted on said hub adjacent said first end and having a clutch operatively connecting same and said hub for selectively driving said hub in one direction, said clutch being mounted on said hub on the exterior thereof and having said multi-stage sprocket thereon;
d. brake means between the axle and said hub, said brake means including a plurality of brake members;
e. actuator means mounted on said axle and operatively associated with said brake means, said actuator means

having a portion rotatable in a direction opposite to said one direction;
- f. a pedal crank and drive sprocket;
- g. a drive chain operably connecting said drive sprocket and multi-stage sprocket assembly;
- h. means operably connecting said actuator means rotatable portion to said pedal crank whereby rotation of said pedal crank rotates said rotatable portion in said opposite direction and actuates said brake means;
- i. a bicycle frame having a rear portion with said axle secured thereto, said pedal crank and drive sprocket being rotatably mounted on said frame forwardly of said axle, said frame having opposite sides with said drive sprocket being positioned on one of said sides and said means being positioned on the other side;
- j. a first brake sprocket mounted on said pedal crank and rotatable therewith, said first brake sprocket being on the other side of said bicycle frame;
- k. a second brake sprocket being mounted on said actuator means rotatable portion said second end;
- l. A brake chain extending between and operably connected to said first and second brake sprockets;
- m. an arm operatively connected to said brake means and positioned on the exterior of said hub adjacent said one end and having one end secured to a portion of said bicycle frame, said arm preventing relative rotation between said axle and certain of said brake members.

3,870,135
CIGARETTE CARTON DISPENSING SYSTEM

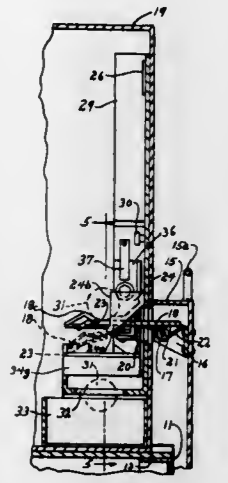
Corey M. Allen, Mamaroneck, N.Y., assignor to Carton Sales, Inc., Mammaroneck, N.Y.
Continuation of Ser. No. 125,174, March 17, 1971, abandoned. This application Dec. 15, 1972, Ser. No. 315,407
Int. Cl. G07f *7/00*
U.S. Cl. 194—4 **8 Claims**



1. In a system for dispensing cigarette cartons a vending machine comprising
- a housing of modular construction having a floor therein for supporting a stack of cigarette cartons thereon, a door for exposing the interior thereof for replenishment of cigarette cartons to the stack, and an opening of a size corresponding to one of the cigarette cartons aligned with the lowermost carton of the stack;
- a tray slidably mounted on said floor with the lowermost carton therein, said tray having a tab exposed to the exterior of said housing and a pair of slots therein;
- gate means adjacent said opening of said housing including a gate plate disposed between said opening and the lowermost carton of the stack to pass through one of said slots in said tray to block the passage of the lowermost carton through said opening, and means for retracting said gate plate from said tray;
- a lock mounted below said tray and having a plate to pass through the other of said slots in said tray and means for retracting said plate from said tray; and
- retraction means mounted to the rear of said housing and including a yoke pivotally mounted in said housing with a pair of arms having elongated grooves therein, a solenoid pivotally mounted in said housing and having a reciprocally mounted piston hingedly secured to said yoke, and cams on said tray disposed in said grooves of said arms to permit said tray to be retracted into said housing upon retraction of said piston into said solenoid.

3,870,136
COIN-OPERATED LATCH MECHANISM WITH COIN RETURN MEANS

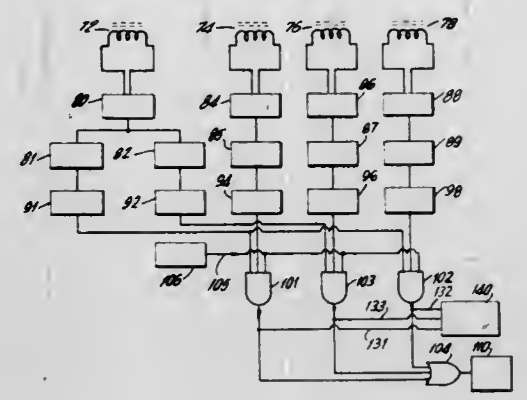
Henry Carl Voegeli, 918 Gibbs Rd., Venice, Fla. 33595
Filed June 10, 1974, Ser. No. 477,585
Int. Cl. G07f *5/00*
U.S. Cl. 194—54 **11 Claims**



1. A latch mechanism for use in a coin-operated dispensing device including a cabinet having a cooperative opening to provide access to said cabinet, closure means to selectively close said opening, and a coin-operated mechanism actuatable upon receipt of at least one coin of selected value, comprising:
- a. a latch mounted for both pivotal movement about and axial movement along a generally horizontal long axis of an axle carried by said closure menas;
- b. first yieldable means yieldably uring said latch toward a first axial position along said long axis of said axle;
- c. a strike mounted on said cabinet and having a first portion releasably engageable in an aperture provided in said latch when said closure means is located in a position closing said opening;
- d. a coin-receiving member mounted on said cabinet so as to trap a coin received therein generally vertically with its edge located atop a cam section provided on said latch and with one of the coin sides located contiguously to a second portion of said strike and thus to pivot said latch about said long axis of said latch axle against the yieldable urging of second yieldable means and disengage said aperture from said strike upon attempted removal of said closure means from a position closing said opening and to then discharge said coin into a coin-collecting receptacle; and
- e. coin-return means including retractable plunger means mounted on said cabinet for movement along a second axis generally parallel to said long axis of said latch axle,
- f. said plunger means having a first end protruding from the exterior of said cabinet and a second end being engageable with said latch and said coin-receiving member by movement of said first end towards the interior of said cabinet to cause said latch to overcome said yieldable urging of said first yieldable means and be moved axially along said long axis of said latch axle to a second position and, thus, to cause said coin to be released from said coin-receiving member and to be diverted by said second portion of said strike into a coin-return opening extending through an outer wall of said cabinet, rather than into said coin-collecting receptacle.

3,870,137
METHOD AND APPARATUS FOR COIN SELECTION UTILIZING INDUCTIVE SENSORS

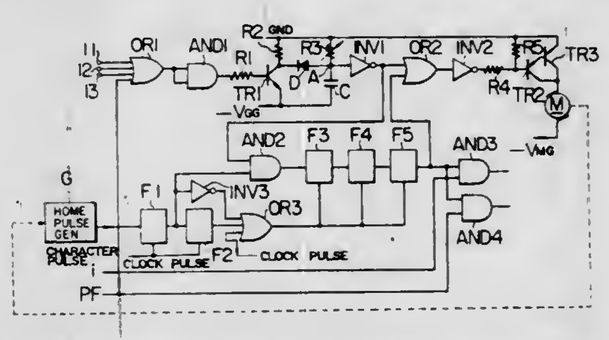
Guy L. Fougere, Lincoln, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.
Continuation of Ser. No. 255,814, May 22, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,881
Claims priority, application Great Britain, Feb. 25, 1972, 8385/72
Int. Cl. G07f *3/02*
U.S. Cl. 194—100 A **60 Claims**



1. A method for examining conductive coins with respect to both their authenticity and their denomination within a set of acceptable coins of various denominations comprising the steps of generating a first electromagnetic field of a low frequency range, subjecting the coin to the first field, generating a second electromagnetic field of a substantially higher frequency range than that of the first field, subjecting the coin to the second field, producing signals indicative of the degree of interaction of the coin with each field, and producing a signal indicative of the acceptability of the coin and selective of its denomination within the set only if the degree of each interaction is within predetermined tolerances of those of acceptable coins of one of the denominations of the set.

3,870,138
MOTOR CONTROL UNIT FOR TABLE-TYPE ELECTRONIC CALCULATOR WITH PRINTER

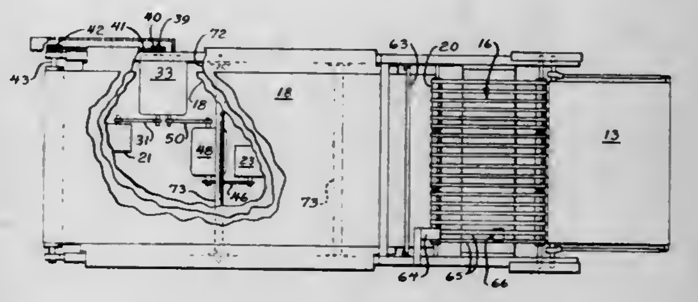
Yostbumi Sato, and Masaaki Ogura, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed July 13, 1973, Ser. No. 378,803
Claims priority, application Japan, July 17, 1972, 47-84230
Int. Cl. B41j *23/08*
U.S. Cl. 197—17 **4 Claims**



1. A motor control unit for a table-type electronic calculator with a printer and a keyboard providing character pulse trains in response to the operation of a keyboard key, said unit comprising: an integrating circuit including a capacitor which is discharged by a signal produced in response to the operation of a key on the keyboard and means for charging the capacitor at a defined rate, an electric motor for driving the printer, a drive circuit rendered conductive upon discharge of the capacitor for starting the motor, means for providing a home pulse for each revolution of the motor and a clock pulse train upon the operation of a keyboard key, a control circuit including means for providing an output signal in response to a defined home pulse and a clock pulse train and means for allowing the passage of said character pulse train to the printer during said output signal, said printer including means responding to the output signal from the control circuit to start a printing operation, means for resetting the control circuit upon the charging of the capacitor in the absence of an operation of the key, and means for interrupting the drive circuit to thereby stop the motor in response to said resetting of the control circuit.

3,870,139
SHINGLING APPARATUS FOR FOOD ITEMS

Richard C. Wagner, c/o Integral Process Systems, Inc., 70 North St., Park Forest, Ill. 60466
Filed July 27, 1973, Ser. No. 383,340
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **7 Claims**



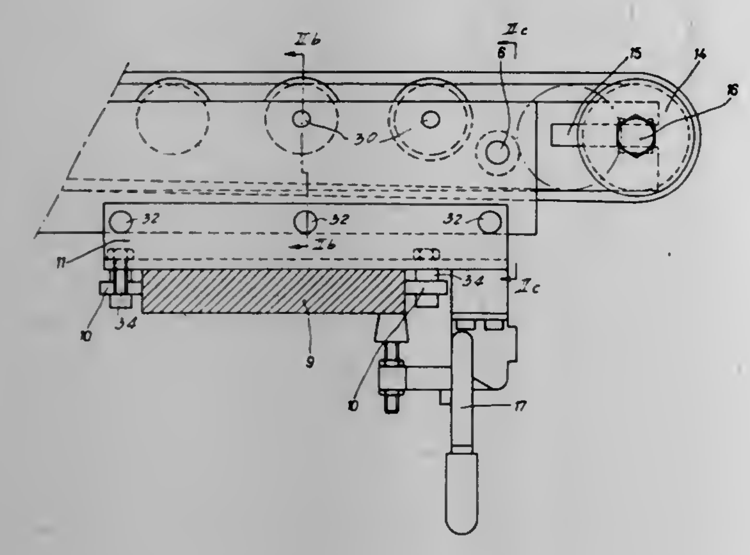
1. Apparatus for shingling stackable food items in spaced successive groups of a predetermined plurality of items in each group, comprising: feed means for supplying said items in at least one row; a light permeable transfer conveyor arranged to receive said items from said feed means and space the items apart a distance greater than the corresponding spacing of said items on said feed means; a shingling conveyor adjacent to said transfer conveyor receiving said items therefrom; first speed control means for periodically operating said shingling conveyor at a speed less than said transfer conveyor as an aid in assembling said items in groups in which successive items in each group have overlapped edges; second speed control means for periodically operating said shingling conveyor at a speed greater than said transfer conveyor at the conclusion of the assembling of each group to separate from each other successive said groups; and a photoelectric switch means for projecting a light beam through said conveyor, said light beam being interrupted by said items for operating said second speed control means at said conclusion of a preselected number of interruptions equivalent to a said group.

3,870,140
FEEDING DEVICE FOR A CARTON FORMING MACHINE

Louis Wieser, Ecublens, Switzerland, assignor to J. Bobst & Fils SA, Prilly, Switzerland
Filed Jan. 23, 1973, Ser. No. 326,070
Claims priority, application Switzerland, Jan. 25, 1972, 1093/72
Int. Cl. B65g *15/12*
U.S. Cl. 198—190 **5 Claims**

1. In conveyor apparatus having a plurality of endless conveyor belts mounted in side-by-side relationship with the upper reaches of said belts defining a horizontal surface, the combination comprising: a separate supporting carriage for one of said conveyor belts, said carriage comprising first and second walls fixed in relationship to each other, a plurality of pulleys extending between said side walls for supporting one of said belts therebetween, means for supporting said first side wall for horizontal sliding movement away from an adjacent conveyor belt, said second side wall being supported by said first side wall and having a perimeter less than the perimeter

of said belt, whereby said belt may be removed by being slipped from said pulleys and over said second side wall, and



means for driving said conveyor belts including a detachable drive connection.

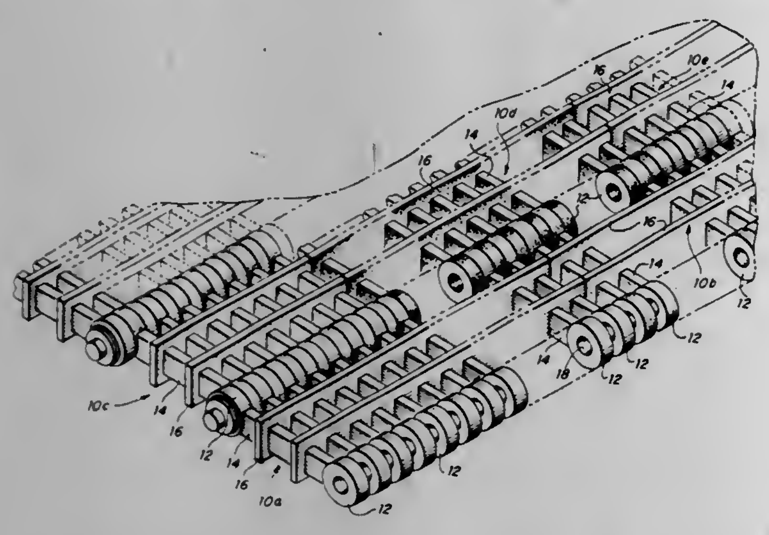
3,870,141
MODULAR BELT

James M. Lapeyre, and Fernand S. Lapeyre, both of New Orleans, La., assignors to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 63,523, Aug. 13, 1970. This application Oct. 8, 1971, Ser. No. 187,746

Int. Cl. B65g *15/32*

U.S. Cl. 198—193 **28 Claims**



1. A module for constructing linked structures, said module comprising, in combination:
  a first plurality of link ends of substantially identical width, each being formed to circumscribe a pivotal hole, said holes of said first plurality being arranged coaxially;
  a second like plurality of link ends of substantially indentical width, each being formed to circumscribe a pivotal hole, said holes of said second plurality being arranged coaxially, the axes of respective holes of both pluralities of link ends being substantially parallel; and
  a plurality of spaced apart elongated members each integrally formed with and joining a pair of corresponding link ends of said first and second pluralities, said members being joined by at least one cross rib also formed integrally therewith and extending parallel to said axes;
said link ends being dimensioned and spaced apart by a distance slightly greater than said width so that said module is end-to-end reversible, so that a plurality of said modules may be engaged with each other at said ends.

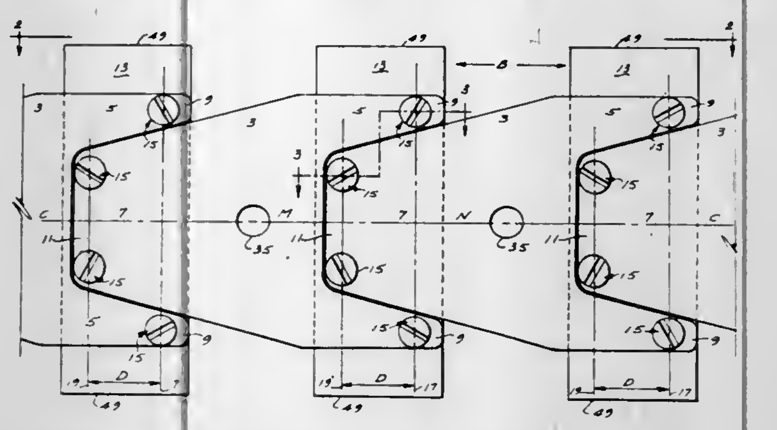
3,870,142
FLEXIBLE BELT CARRIER MECHANISM

Duane W. Woltjen, Manchester, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 286,141, Sept. 5, 1972, which is a continuation of Ser. No. 884,511, Dec. 12, 1969, abandoned. This application Feb. 20, 1974, Ser. No. 444,060

Int. Cl. B65g *15/30*

U.S. Cl. 198—193 **16 Claims**



14. A flexible belt comprising at least one pair of adjacent portions, at least one extension from each portion, said extension from the first portion projecting opposite the extension from the other portion so as to obtain lapping of said extensions in the direction of the belt length, a connector, fastening means securing said connector to each extension, the location where one fastening means securing the first extension to the connector being at a location in the area of lapping and spaced beyond the location where another fastening means secures the other extension to said connector, whereby in an arcuate form of the belt said connector maintains said extensions substantially in a plane outside of and tangent to said arcuate form, thereby to avoid bending of the extensions proximate the location of their fastening to said connector.

3,870,143
FEEDING CIGARETTES

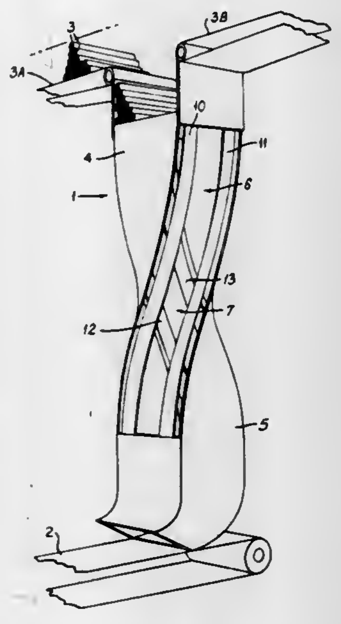
Frank Heybourn, and Dennis Hinchcliffe, both of London, England, assignors to Molins Limited, Deftsford, London, England

Filed Oct. 31, 1972, Ser. No. 302,401

Claims priority, application Great Britain, Mar. 1, 1972, 9444

Int. Cl. B65g *11/06*

U.S. Cl. 198—280 **6 Claims**



1. A twisted chute for feeding vertically downwards a stack of cigarettes, comprising two twisted parallel end walls arranged on opposite sides of a vertical rectilinear axis and equidistant therefrom and being spaced from each other by a distance substantially equal to the length of a cigarette, each of the said end walls extending across substantially the whole width of the said stack and arranged to restrict endwise movement of the cigarettes in the said stack, and two twisted parallel side walls which are arranged to lie on opposite sides of the said stack and to contact and guide the outer layers of cigarettes in the stack so as to progressively rotate the stack about the said axis as the stack is fed down the chute, the two side walls being substantially equally spaced from the said axis along their lengths; said side walls and end walls defining a downwardly extending channel of rectangular cross section of sufficient size to accommodate at least two cigarettes, each side wall comprising two narrow parallel strips adapted to engage respectively near the opposite ends of the cigarettes forming the outer layers of the stack.

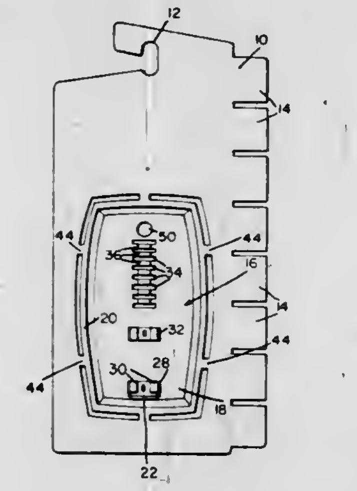
3,870,144
DISPLAY CARD AND FRANGIBLY SEPARABLE CONTAINER

Henry Lloyd Hanson, Henry L. Hanson Company, Inc., 25 Union St., Worcester, Mass. 01608

Filed June 28, 1973, Ser. No. 374,668

Int. Cl. B65d *25/10, 73/00*

U.S. Cl. 206—45.14 **5 Claims**



1. A display and inventory card for merchandise comprising a relatively flat sheet of material, hanger means thereon, an opening in the sheet,
  a merchandise container mounted in said opening,
  tabs on the card extending into the opening, said tabs being connected to the container, said tabs being easily broken to separate the container from the display card,
  a bottom for the container, a series of mutually spaced frangible fingers in alignment extending from the bottom of said container, said fingers being disruptable according to the length of the merchandise to be held in the container,
  wherein the merchandise is a tool having a shank and said container including snap-in means for holding the shank of the tool, and an abutment for the end of the shank of the tool, the other end of the tool held in the container also substantially abutting one of the fingers.

3,870,145
TREATMENT OF FABRICS IN MACHINE DRYERS

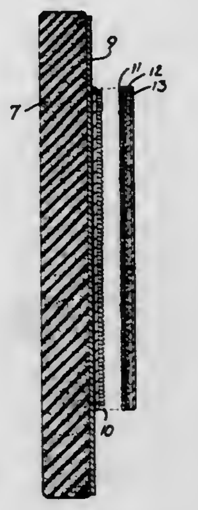
William G. Mizuno, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 17, 1972, Ser. No. 254,054

Int. Cl. B44d *1/46;* **B05c** *11/12;* **E01b** *29/04;* **F26b** *3/00*

U.S. Cl. 206—84 **8 Claims**

1. An article of manufacture comprising:
  a. an impregnated sponge having an average pore size of 0.05 to 4 millimeters which has been impregnated from its surface into its interior with about 0.3 to about 0.7 gram, per cubic centimeter of unimpregnated sponge, of a heatsoftenable fabric conditioning agent comprising a quaternary ammonium salt, said fabric conditioning agent having a softening point range of at least 10 C. ° being softened within the range of 50° to 90°C.; and



  b. attaching means operably associated with said impregnated sponge for attaching the impregnated sponge to a wall of a machine dryer.

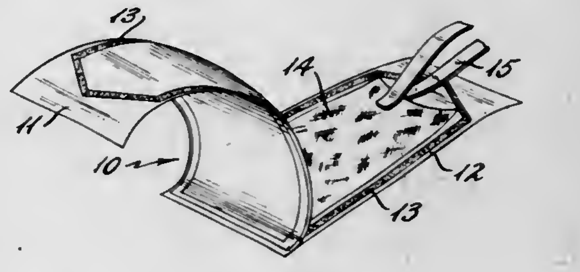
3,870,146
WRIGHT'S STAIN PACKET

Walter Greenfield, Ardlsey, and Raymond Berg, Scarsdale, both of N.Y., assignors to Sci-Med Laboratories, Inc., Hartsdale, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,456

Int. Cl. B65d *81/00*

U.S. Cl. 206—84 **3 Claims**



1. A Wright's Stain packet which comprises a single use air and liquid impermeable package containing therein a microscope slide sized pad impregnated with a buffered methanolic solution of Wright's Stain.

3,870,147
CONTAINER FOR STORAGE AND PREPARATION OF A PLANT PROTECTIVE MATERIAL CONTAINING AT LEAST TWO COMPONENTS

Gunther Orth, Birken, Germany, assignor to Wolf-Gerate GmbH, Belzdorf, Sieg, Germany

Filed Apr. 19, 1973, Ser. No. 352,508

Claims priority, application Germany, Apr. 28, 1972, 2221101

Int. Cl. B65d *25/08, 1/04*

U.S. Cl. 206—222 **7 Claims**

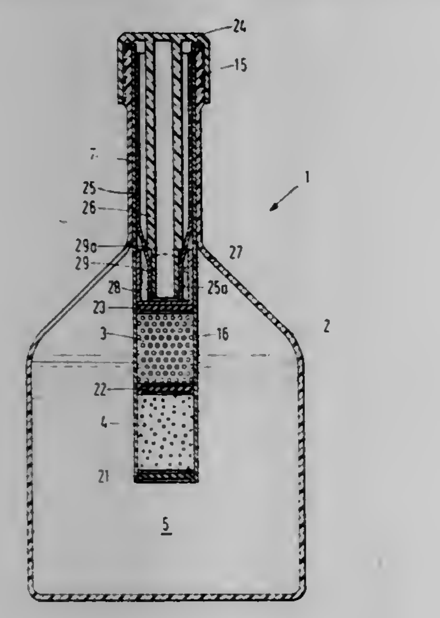
1. Container means for separate storing and for mixing at least two components, one a dissolving component and another a solvent; said container means comprising:
  a container for containing one component; said container having a body, an opening into said body and a neck leading from said body to said container opening;
  a capsule for containing the other component and being positioned to extend into said container body; said capsule having sidewalls, a normally sealed openable base, a normally sealed first stopper spaced away from and above

said base along said sidewalls, whereby said capsule is sealed closed

a removable second stopper for closing said body opening; affixed to said second stopper and normally positioned in and extending into said neck toward said first stopper is an operating sleeve of a first length for operating a capsule rammer; said sleeve having a first free end portion that is away from its said second stopper and which is shaped to define a first abutment to abut the capsule rammer;

also normally positioned in said neck and extending along at least part of the length of said sleeve is a removable capsule rammer; said rammer having a second end portion that is shaped to define a second abutment to abut said first abutment; said rammer having a rammer end opposite its said second end portion; said rammer end in the said normal position of said rammer extending up through said neck toward said second stopper and away from said capsule; with both said sleeve and said rammer in their respective said normal positions, said first and said second abutments are separated and are out of engagement with each other;

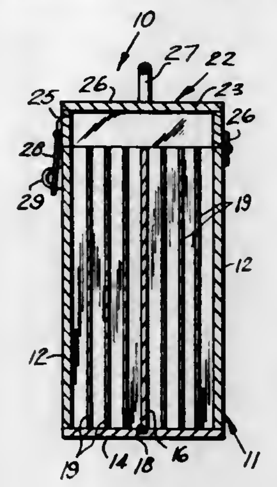
upon removal of said rammer from said container neck, inversion of said rammer and replacement of said rammer in said neck in the inverted position such that said rammer end extends into said container and said rammer second end portion extends toward said second stopper, and upon moving of said second stopper and its said sleeve onto said container neck toward said container body, said first and said second abutments abut; said rammer being of a length such that its said rammer end engages and breaks through both said capsule first stopper and said capsule base, thereby causing mixing of the components in said capsule and said container.



3,870,148
CIRCULAR SAW BLADE CONVEYANCE BOX

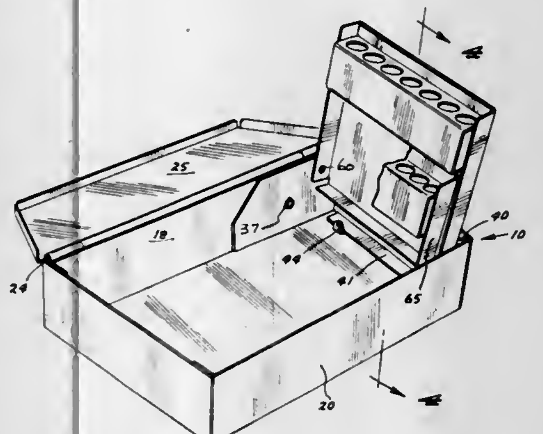
Harold H. Hite, Rd.-2-Co. Rd.-40, Pataskala, Ohio 43062
Filed Feb. 7, 1973, Ser. No. 330,269
Int. Cl. B65d *25/04, 85/54*
U.S. Cl. 206—372 **1 Claim**

1. A circular saw blade conveyance box, comprising a rectangular container for the storage of a plurality of circular saw blades, a pair of parallel spaced apart side walls, a pair of parallel spaced apart end walls and a bottom wall carried by said container defining compartment means for a plurality of inserts, a central separator wall carried within said container serving to provide two compartments within said container, a plurality of circular saw blades in each compartment, a plurality of self-supporting inserts loosely received in said compartments and unconnected to said container, each insert being of substantial thickness and located intermediate two adjacent blades for spacing said blades, said partition and said inserts having a height less than the height of said saw blades for facilitating visual observation and grasping of the blades, a rectangular cover carried by said container, with handle grip means and fastener means for locking said container and hinge means carried by said container and said cover for rendering said cover hingeable thereto.



3,870,149
DRILL HOLDING CASE

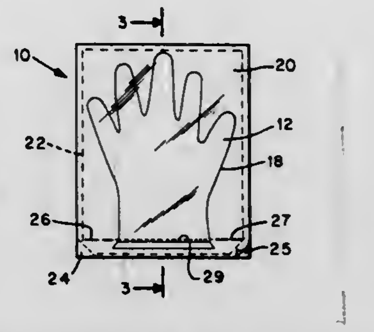
William J. Huot, Mahtomedi, Minn., assignor to Huot Manufacturing Company, St. Paul, Minn.
Filed Apr. 23, 1973, Ser. No. 353,408
Int. Cl. B65d *85/20*
U.S. Cl. 206—379 **1 Claim**



1. A drill holding case structure having in combination
a housing having a bottom wall and upstanding end and side walls,
a substantially U-shaped plate member comprising an end wall and forwardly extending side walls forming an insert member,
projecting inwardly of said side walls are aligned pairs of collars,
means removably securing said insert member within said housing,
a drill holding member comprising a back wall and projecting side walls,
a pair of aligned outwardly extending projections adjacent the bottoms of said side walls received within a pair of said aligned projecting collars of said insert member, whereby said insert member has said drill holding member pivotally disposed therein and is then disposed within said housing,
a flange projecting from the bottom of the end wall of said insert member, and
a tongue struck from said bottom wall of said housing engages said projecting flange removably securing said insert member.

3,870,150
STERILE PLASTIC GLOVE AND PACKAGE ASSEMBLY

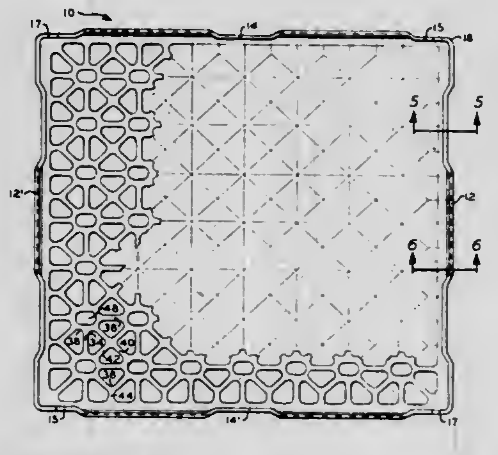
John Hummel, Tulsa, Okla., assignor to Poly-Version, Inc., Tulsa, Okla.
Filed May 24, 1973, Ser. No. 363,570
Int. Cl. B65d *85/18;* **A61b** *19/02*
U.S. Cl. 206—438 **10 Claims**



1. A disposable, sterile article of manufacture and a disposable container therefor comprising, in combination:
a. a flexible support member;
b. a plastic film glove having closed fingers and an open wrist portion defining a peripheral edge, said glove being positioned on said support member prior to said glove being used so as to permit removal of the glove from the support member by mechanically pulling without damaging the glove; and
c. a plastic film sheath superimposed over said glove and secured to said support member along a primary seal line completely surrounding and spaced from the peripheral edge of said glove whereby said glove is sealed in a sterile condition, said sheath and said support member, in combination, defining an initially sealed, internally sterile container for said glove, said container having an openable end for receiving the glove after its removal and use whereby said container may be discarded together with said glove therein.

3,870,151
TRAY

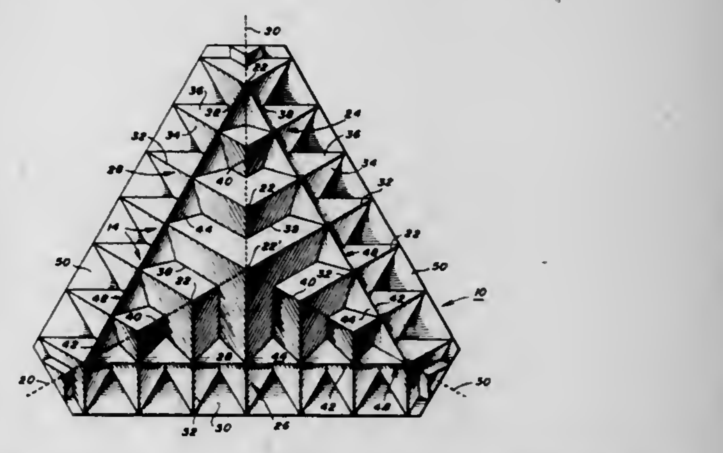
Lewis T. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed July 30, 1973, Ser. No. 383,720
Int. Cl. B65d *21/04, 1/22*
U.S. Cl. 206—507 **14 Claims**



1. A tray comprising:
a pair of upstanding opposed first walls;
a pair of upstanding opposed second walls, having a length greater than said first walls, joined to said first walls along the upstanding edges thereof;
said second walls having a height, substantially along the full length thereof, which is less than the height of said first walls for permitting cross-nesting of an upper tray in a like lower tray between the higher first walls thereof;
a bottom panel joined to the lower end portions of said first and said second walls to provide a generally rectangular open top structure;
a generally flat wall means formed in each end portion of, and recessed inwardly from a nonrecessed portion of, each of said second walls; and
an outwardly extending shoulder formed in each of said second walls at each junction of a said flat wall means and a said nonrecessed portion of said second walls for, together with said flat wall means, interlocking said second walls of an upper tray with said first walls of a like lower tray when an upper tray is cross-nested in a like lower tray.

3,870,152
LOAD BEARING DEVICE

Paul N. Kaplan, Livingston, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed June 7, 1973, Ser. No. 367,763
Int. Cl. B65d *81/02*
U.S. Cl. 206—523 **17 Claims**



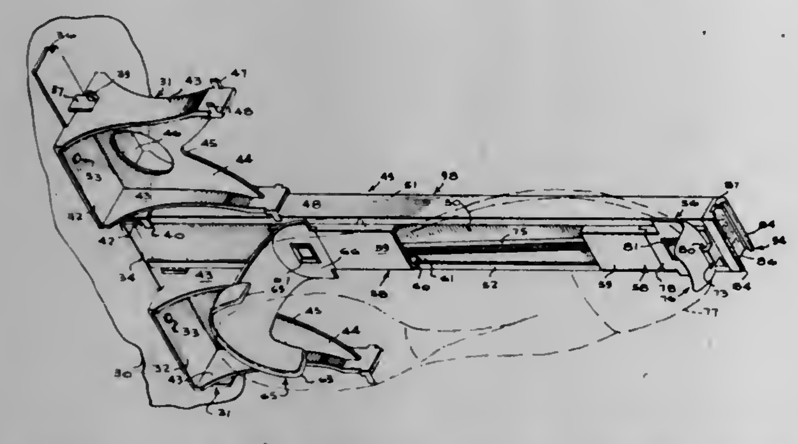
1. A load bearing device for protectively packaging articles inserted therein formed of moldable plastic and comprising a plurality of fluted elements forming
a peripheral outer surface and
an undulating inner surface of said load bearing device,
said outer surface having a pyramidical envelope geometrical contour,
said pyramidical contour envelope forming a triangular pyramid envelope having three contiguous faces defining said inner and outer surfaces of said load bearing device, each of said fluted elements passing to an apex defining an intersection between adjacent faces of said pyramidical contour envelope, a pair of fluted elements on adjacent faces of said pyramidical contour envelope forming a common apex on said intersection line between said adjacent faces,
said fluted element apices forming a monotonically increasing positional location along said intersecting line from a base plane of said load bearing device to a geometrical centroidally located apex of said pyramid envelope,
said fluted elements on each of said faces of said load bearing device being defined by a pair of walls interfacing at a load bearing ridge extending substantially parallel each to the other.

3,870,153
SHOE MERCHANDIZING AND HANDLING SYSTEM

Ivor J. Allsop; Jon I. Allsop; Michael G. Allsop, and James D. Allsop, all of P.O. Box 23, Bellingham, Wash. 98225
Filed Apr. 30, 1973, Ser. No. 355,698
Int. Cl. A47f *7/08*
U.S. Cl. 211—37 **2 Claims**

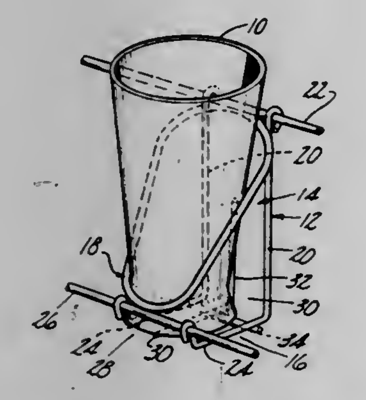
1. In a shoe merchandizing and handling system, a support member, a plurality of spaced apart brackets affixed to said support member and each bracket including a base portion, first and second members extending from said base portion, a flange extending from said first member and having a lug thereon, a flanged member extending from said second mem-

ber and having a lug thereon, the brackets including flanges having spaced apart lugs thereon, a web between the flanges of the brackets; a bar mounted between adjacent brackets and each bar including a flat section and channel portions thereon for engagement by the lugs of the brackets, a locking means for retaining the bar in place between the brackets, said locking means including an opening in an end portion of the bar for selectively receiving a lug on one of the members projecting from the bracket; shoe holding means operatively connected to each bar and each shoe holding means comprising a pair of similar base elements, said base elements having portions slidably engaging said bar, there being a groove in each base element, a heel piece and a toe piece having a finger engaging the corresponding groove in the base element, L-shaped keepers on said base element for engaging grooves in the outer surfaces of the heel piece and base piece, resilient means operatively connecting said pair of base elements together; there being a slot in the outer end of the bar, an end piece mounted on the outer end of said bar for selectively engaging the base element having the toe piece thereon, and said end piece having indicia therein.



3,870,154
DISPLAY APPARATUS

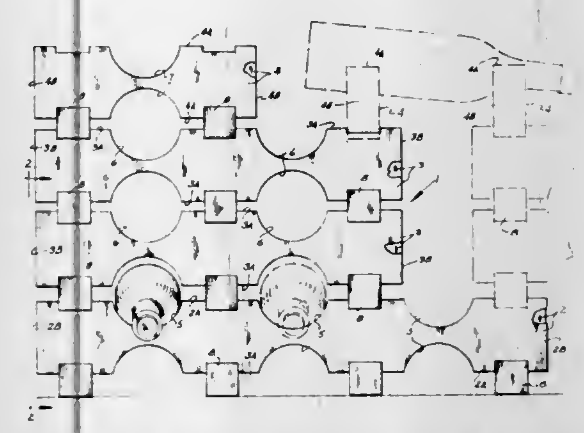
John E. Monet, Birmingham, and Fredrick Brunette, Farmington, both of Mich., assignors to John E. Monet, Birmingham, Mich.
Filed Apr. 23, 1973, Ser. No. 353,349
Int. Cl. A47b *73/00*
U.S. Cl. 211—74 **5 Claims**



1. In combination with a number of vases each having an enlarged lower lip portion, a display device for holding in place vases in side by side relationship, said display device comprising: a back wall; a base structurally associated with said back wall and upon which said vases rest; and clamping means to securely clamp each of said vases in position to said display device; each of said clamping means comprising a closed peripheral rim extending from said back wall and completely encompassing said vase; means formed adjacent said base for receiving the lip portion of said vase and a resilient member disposed opposite said lip portion receiving means and engaging said lip portion to urge the vase in a direction in which said lip portion extends into said lip portion receiving means to thereby securely clamp said vase to said display device.

3,870,155
STORAGE RACK FOR WINE BOTTLES

John D. Galloway, Box 523, Eugene, Oreg. 97401
Filed June 25, 1973, Ser. No. 373,149
Int. Cl. A47b *73/00*
U.S. Cl. 211—74 **1 Claim**

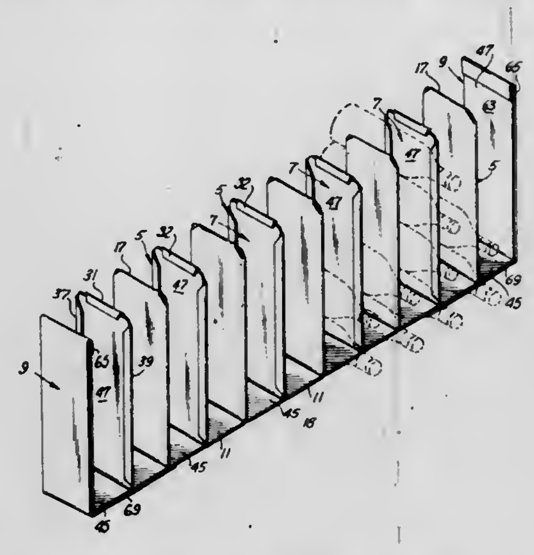


1. A storage rack for wine bottles with the rack being of modular construction permitting addition or removal of rack components to accommodate a fluctuating number of bottles, said rack comprising,
  a plurality of bottle supporting members of different lengths each being of elongate shape having top and bottom edges, end walls and being of a uniform thickness,
  said bottle supporting members having arcuate recesses evenly spaced along their top and bottom edges to define bottle receiving areas,
  said bottle supporting members additionally having irregular surface areas evenly spaced at uniform intervals along their top and bottom edges intermediate each arcuate recess, to permit connector means disposed between stacked bottle supporting members to engage the irregular surface areas in the opposing top and bottom surfaces of two or more vertically spaced bottle supporting members regardless of the differing length of said members,
  connector means joining horizontally spaced bottle supporting members and having top and bottom edges with irregular surface areas thereon for interlocking rested engagement with corresponding irregular surface areas of the bottle supporting members, said irregular surface areas of the connector means spaced apart at the same distance as consecutive irregular areas on said bottle supporting members, and
  said irregular areas on said bottle supporting members and said connectors being of square configuration and of the same interval to permit bottle supporting members to rest at right angles upon subjacent bottle supporting members thereby functioning in a dual manner as connectors while also permitting bottles to be stored pointing in two or more mutually perpendicularly related directions.

3,870,156
MODULAR WINE BOTTLE RACK

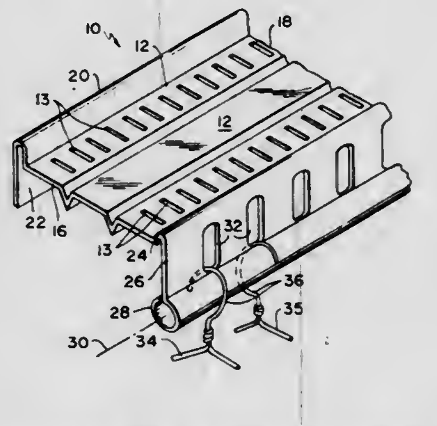
Edward M. O'Neill, Anchorage, Alaska, assignor to Brown Jug, Inc., Anchorage, Ala.
Filed Aug. 20, 1973, Ser. No. 389,666
Int. Cl. A47b *73/00;* **A47g** *29/14*
U.S. Cl. 211—74 **5 Claims**

1. A modular wine bottle rack formed of a plurality of juxtaposed, interconnected components, comprising: a plurality of first components formed of stiff sheet material, each of said first components having a bottom wall and a pair of substantially planar side walls, each of said side walls having an inner and an outer surface, a tab integral with the end portion of each of said side walls and disposed parallel with and closely adjacent said outer surface and providing therewith an end recess of generally U-shape cross section, each of said side walls having substantially parallel edge portions, a tab integral with each of said edge portions and disposed parallel with and closely adjacent said outer surface and providing therewith a pair of side recesses of generally U-shape cross section; and a second component juxtapositioned between a pair of said first components, said second component being formed of stiff sheet material and having a base wall and a pair of substantially planar lateral walls, the side edges of said lateral walls being substantially parallel and disposed with a close sliding fit within the side recesses of the adjacent side wall of the juxtaposed first component, the end edge of each of said lateral walls being disposed within the end recess of the adjacent side wall of the juxtaposed first component.



3,870,157
COMBINED LINEAL SHELF AND CLOTHES BAR SYSTEM

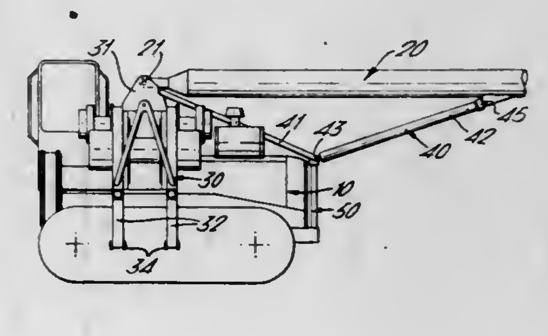
Donald M. Hayward, Orchard Lake, Mich., assignor to Rack-More Shelf Co., Detroit, Mich.
Filed Nov. 7, 1973, Ser. No. 413,752
Int. Cl. A47b *23/00*
U.S. Cl. 211—90 **4 Claims**



1. A combined shelf and clothes bar system adapted to be cut to the proper length at the time of installation in a closet of a house, mobile home, motor home or the like including:
  a flat, generally elongated, substantially planar support surface having front, side, and rear edges,
  an elongated flange extending downwardly from the rear edge of said support surface and generally perpendicular thereto, and
  a second elongated flange extending downwardly from the front edge of said support surface and generally perpendicular thereto,
  said second flange having a plurality of apertures therein to receive clothes hangers therethrough from in front of and from behind said second flange, and
  said second flange terminating at its lower edge in a substantially circular bar having a curvature adapted to support a clothes hanger inserted in either direction through said apertures, the lower edges of the apertures terminating substantially at the beginning of the curvature of said bar, said circular bar having an elongated central axis lying in the same plane as said second flange to provide substantially equal support to said clothes hangers regardless of the direction of insertion of each hanger through an aperture.

3,870,158
MOBILE SPAR

Murray E. Burley, Nanaimo, British Columbia, Canada, assignor to S. Madill Ltd., Nanaimo, British Columbia, Canada
Filed May 3, 1974, Ser. No. 466,831
Claims priority, application Canada, Apr. 18, 1973, 169111
Int. Cl. B66c *23/00*
U.S. Cl. 212—8 R **6 Claims**



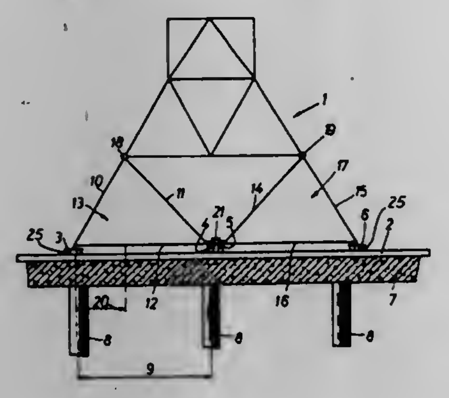
1. In a boom pivotally mounted on a support for swinging movement in a generally vertical plane to raise and lower the same:
  a. a first support;
  b. means pivotally mounting one end of said boom on said support;
  c. power actuated articulated link means for pivoting the boom from one of a horizontal position and a vertical position to the other to raise and lower said boom, said link means comprising:
    1. a rigid link member freely pivotally connected at one end to said first support adjacent the pivotal connection of the boom; and
    2. a power actuated extendible and retractable member pivotally connected at one end to the other end of said rigid link member and at the opposite end to said boom, said latter pivotal connection being spaced from the pivotal connection of the boom to said first support;
  d. a second support spaced horizontally from said first support upon which said first rigid link member detachably rests when in a generally horizontal position, said second support being disposed below the boom in a boom horizontal position, and
  e. a winch mechanism mounted on said first support and including a cable, said cable being operatively associated with said winch and said boom for hauling in a load connected to the cable.

3,870,159
FRAMEWORK FOR TRAVELLING CRANE

Bonde Moeller, Zurich, Switzerland, assignor to Geschafts-und Industriebau B. Moeller & Co., Zurich, Switzerland
Filed July 27, 1972, Ser. No. 275,554
Claims priority, application Switzerland, Aug. 3, 1971, 11392/71
Int. Cl. B66c *5/02*
U.S. Cl. 212—13 **4 Claims**

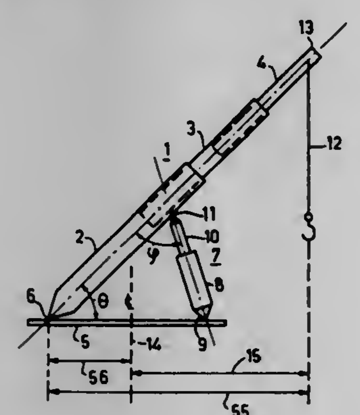
1. A framework for a travelling ship crane on a rail, comprising
  a pair of articulated support units, each constructed of struts rigidly joined in a triangular configuration to form a horizontal base and an upward extending apex,

said bases extending longitudinally and serially along the rail,
hinge means at the apex of each articulated support unit for supporting the crane,
wheel means at the base corners of each of the articulated support units for supporting the support units and crane on the rail, and



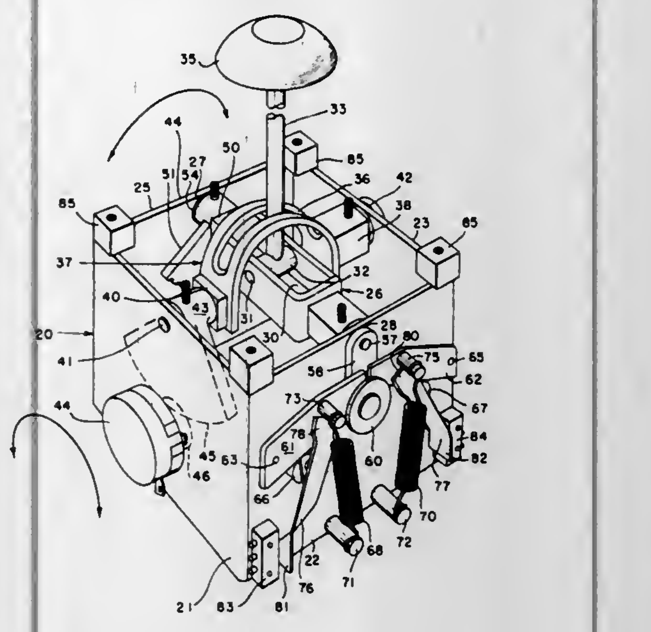
sliding joint means interconnecting the adjacent base corners of the articulated support units,
the apex of each articulated suport unit located at a horizontal spacing between the wheel means on the corners of each base to produce substantially equal loading on each wheel-means-engaged unit length of the full length of the rail beneath the pair of support units.

3,870,160
CRANE SAFE LOAD INDICATOR
Bernard David Francis Hutchings, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed June 22, 1972, Ser. No. 265,329
Claims priority, application Great Britain, June 25, 1971, 30024/71
Int. Cl. B66c *13/16*
U.S. Cl. 212—39 R **10 Claims**



7. A safe load control system for a crane having an extensible boom pivotally mounted on a support structure and extensible boom supporting means for adjusting the boom luff angle comprising, means for producing a first signal which is proportional to the reaction of the extensible boom supporting means, means for modifying said first signal as a function of the sine of the angle formed between the boom and the extensible boom supporting means to produce a first resultant signal, means for producing a second signal which is a function of the cosine of the boom luff angle, means for mofifying said second signal as a function of the boom length to produce a second resultant signal indicative of the actual load radius, means responsive to said second resultant signal for computing a reference signal representative of the maximum safe turning moment of the boom about its pivot and corresponding to the load radius indicated by said second resultant signal, and means responsive to said first resultant signal and said reference signal for indicating the available lifting capacity of the crane at the current load condition.

3,870,161
JOY STICK CONTROLLER FOR TOWER CRANE
Eldon F. Cording, Galena, Ill., assignor to Heede International, Inc., Greenwich, Conn.
Filed Feb. 28, 1973, Ser. No. 336,587
Int. Cl. B66c *23/02*
U.S. Cl. 212—56 **2 Claims**

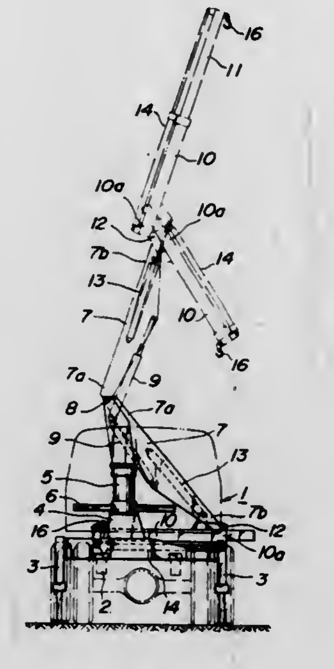


1. In a tower crane having
a. a mast portion extending vertically;
b. a boom portion extending horizontally from and rotating about the mast portion;
c. a track on the boom having riding thereon a trolley;
d. a lift cable on the trolley and adapted to lift and lower crane loads; and
e. separate driving means for rotating the boom, moving the trolley, and lifting and lower a load;

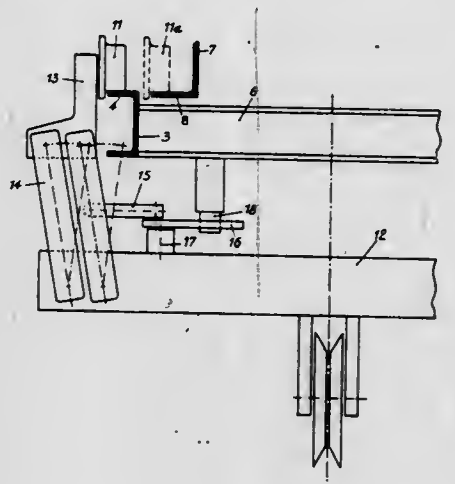
a lever pivoted on a pair of axes disposed normal to one another, means on each of the axes for determining a signal proportional to lever movement, and means for transmitting the determined signals to the separate driving means; wherein the lever is pivoted within a first trunnion, and said lever extends within a groove in a U-shaped portion of a second trunnion pivoted normally to said first trunnion, whereby said lever can selectively rotate both said first and second trunnions separately or simultaneously; said device having a gear segment fixed on each of the first and second trunnions; a pinion engaged with each of said segments, potentiometers adapted to be operated by rotation of said pinions, whereby electrical signals proportional to lever movement are determined, and means for returning said lever to an origin, or dead center position, including
a. cams on the first and second trunnions;
b. cam followers in engagement with the cams, and
c. springs biasing the cam followers against the cams.

3,870,162
FOLDABLE CRANE
Toshihiro Nakajo, Tokyo, Japan, assignor to Unic Corporation, Tokyo, Japan
Filed Oct. 12, 1972, Ser. No. 296,852
Claims priority, application Japan, Oct. 20, 1971, 46-96323
Int. Cl. B66c *23/62*
U.S. Cl. 212—59 R **1 Claim**

1. A foldable crane, comprising: a cradle having opposed side walls and a top wall connecting the upper ends of said side walls which walls define an opening extending horizontally through the length of the cradle; a swivel mechanism mounted on the top wall of said cradle; a swivel post rotatably supported by said swivel mechanism; a first boom having a U-shaped cross-section, pivotally connected at the base portion thereof to the top of the post which also has a U-shaped cross-section; a hydraulic cylinder connected between said post and first boom for elevating said first boom; a cylindrical second boom pivotally connected at the base portion thereof to the top of said first boom; a hydraulic cylinder connected between said first and second booms for elevating said second boom; a cylindrical third boom slidably fitted into said second boom, and a hydraulic cylinder for actuating the third boom extending parallel to and along the outer side of the third boom, said crane being foldable from a working position in which said booms extend generally upwardly in alignment with each other, to a folded position in which said second boom said third boom and its associating hydraulic cylinder are housed in the opening of said cradle after the first boom has been rotated downward after the second boom has been rotated to an acute angle relative to the first boom.

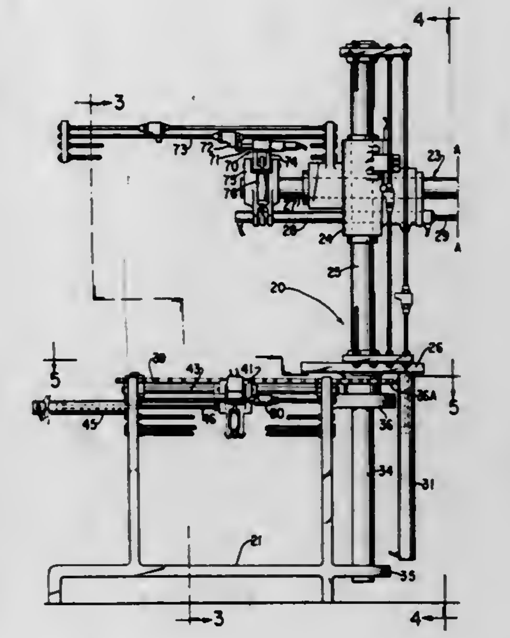


3,870,163
TELESCOPIC BOOM AND CARRIAGE WITH SHIFTABLE WHEELS THEREFOR
Pierre Joseph Pingon, 7 Ave. du Parmelan, Annecy, France
Filed Dec. 27, 1973, Ser. No. 428,912
Int. Cl. B66c *23/06, 19/00*
U.S. Cl. 212—73 **10 Claims**



1. A telescopic boom for a tower crane or the like, comprising at least two telescopic boom sections and a carriage having wheels that roll on said sections, said sections having track surfaces disposed in a common horizontal plane, said track surfaces of one boom section being disposed in close lateral proximity to the track surfaces of another of said boom sections but laterally offset therefrom, and means for shifting said carriage wheels laterally upon passage from one said boom section to another said boom section so that said wheels pass substantially uninterruptedly along a said track surface from boom section to boom section.

3,870,164
WORK TRANSFER DEVICE
Harold A. Haase, Taunton Hill Rd., Newtown, Conn. 06470
Filed July 12, 1972, Ser. No. 271,138
Int. Cl. B66c *1/10*
U.S. Cl. 214—1 BB **8 Claims**

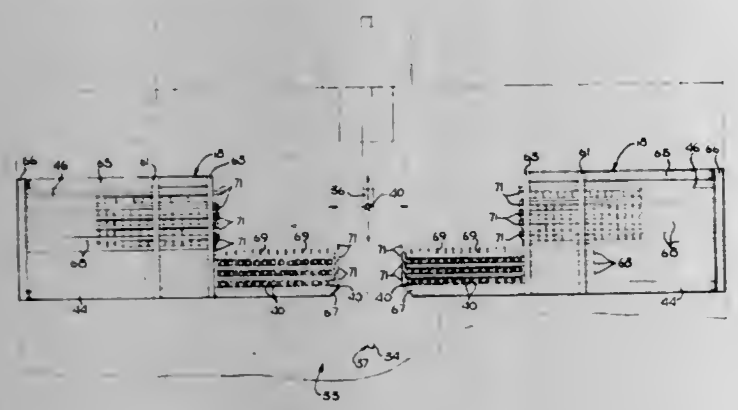


1. In a transfer means for moving a reaching arm to a preselected position, the combination including frame means, carriage means carrying said reaching arm, said carriage means being vertically movable relative to said frame means, arm means having said reaching arm thereon, said arm means being horizontally movably mounted on said carriage means and movable relative thereto, positioning means including shock absorbing means mounted on said arm means and movable therewith, a plurality of stop means on said carriage means, said positioning means and stop means being movable relative to each other as said arm means moves, said positioning means contacting the one of said plurality of stop means which is in the line of movement of said positioning means and shock absorbing means for stopping said arm means at a preselected position, and means for transversely moving said positioning means and shock absorbing means relative to said stop means so as to preselect the one of said stop means to be contacted by the positioning and shock absorbing means.

3,870,165
RACKING BOARD
Jan Hendrik Besijn, Bergambacht Lekdyk-Oost, Netherlands
Filed Feb. 1, 1973, Ser. No. 328,887
Int. Cl. E21b *19/00*
U.S. Cl. 214—2.5 **6 Claims**

4. Pipe racking apparatus for use on drilling rigs comprising:
a frame;
a plurality of generally elongate coplanar racking arms, each of said racking arms being moveable along its axis with respect to said frame, said plurality of racking arms being transversely spaced in substantially parallel relationship;
said racking arms having a front and back side facing respectively the back and front sides of adjacent racking arms;
a plurality of transverse locking fingers longitudinally spaced along, and affixed to, the front side of said racking arms, said locking fingers being slideably engaged with the back side of the adjacent racking arm whereby the

adjacent front and back side of two adjacent racking arms and two adjacent locking fingers define a cell for receiving a stand of pipe; and



drive means for progressively and controllably moving and inter locking each of said racking arms with respect to said frame.

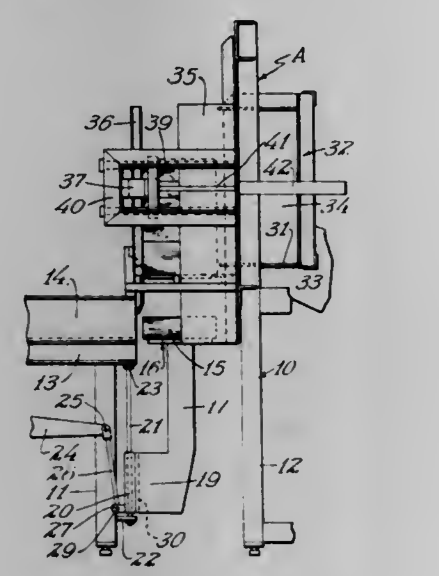
3,870,166
STACKING AND TRANSFERRING UNIT

Herbert G. Tull, III, Charlottesville, Va., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 73,967, Sept. 21, 1970, Pat. No. 3,701,314. This application Dec. 30, 1971, Ser. No. 213,886

Int. Cl. B65g *57/30*

U.S. Cl. 214—6 BA **2 Claims**



1. A stacking apparatus for use in combination with generally flexible rectangular objects including:
an elevator platform,
two pairs of supporting plates, the plates of each pair being in spaced parallel relation with the plates of one pair in substantially right angular relation to the plates of the other pair, said plates engaging all four edges of said objects,
means pivotally supporting each of said plates adjacent the outer edges thereof for movement from a generally horizontal position to an upwardly and inwardly inclined position,
said platform being of proper dimensions to pass between said plates in horizontal position thereof,
guide means guiding the objects against said plates upon upward movement of said platform, pivoting said plates upwardly as they pass the plates, said plates swinging downward to horizontal position after the objects pass therebetween, whereby the flexible objects will sag downwardly near the central portions thereof,
means for reciprocating said platform,
transfer means engageable with a series of objects stacked upon said supporting plates to move said objects out of alignment with said elevator platform,
said transfer means including laterally spaced bars, and including,
hook-shaped elements pivotally secured to the lower ends of said bars,
said elements, in one position, engaging beneath the trailing edges of said stacked objects during movement thereof by said transfer means, and are retracted in a second position,
means urging said hook-shaped elements toward said one position, and
means holding said hook-shaped elements in said second position prior to movement of said transfer means.

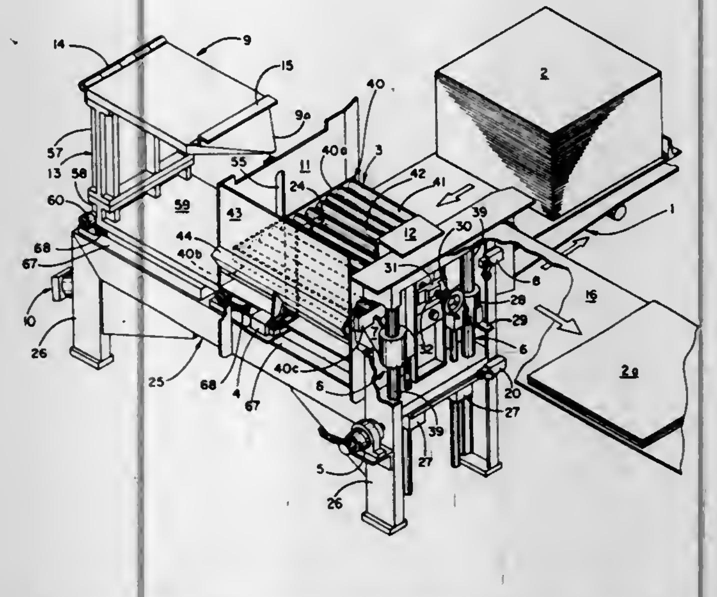
3,870,167
SHEET PULP SEPARATOR AND FEEDER FOR BALED PULP

Edward E. Werner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 3, 1973, Ser. No. 403,062

Int. Cl. B65g *59/02*

U.S. Cl. 214—8.5 SS **5 Claims**



1. In apparatus for separating sheets of pulp from a pulp bale, an elevator for raising a bale of pulp, lateral support means for a bale of pulp carried on the elevator, a pulp sheet separator, carrier means supporting the pulp sheet separator for movement transversely across and above the elevator in the direction of the said lateral support means and through a bale on the elevator to remove sheets from the bale, a mounting for the said carrier means, other means pivotally supporting the pulp sheet separator with respect to said carrier means so that said pulp sheet separator may be jogged in a direction transverse to the plane of the pulp sheet separator to break pulp sheets loose from a pulp bale into which the separator has penetrated, and fourth means for jogging the pulp sheet separator when the pulp sheet separator is over the elevator, said fourth means being upwardly inclined cam means on the mounting positioned to be traversed by the carrier means in said movement of the carrier means.

5. The method of separating a plurality of pulp sheets from a bale of pulp sheets comprising the steps of moving a bale of the pulp continuously upwardly, penetrating the bale with a relatively wide pulp separator by urging the separator substantially horizontally into the bale, and then when the separator is within the bale jogging the separator in a vertical direction to break the upper pulp sheets loose from the bale, and then removing the loosened sheets from the bale, the said method including that the lowermost sheets of the bale, following removal of the upper sheets, are raised on an edge facing the pulp separator to permit the pulp separator to pass beneath the lowermost sheets of the bale

3,870,168
ASSEMBLY FOR PREVENTING THE ESCAPE OF DUST PARTICLES DURING A MORE OR LESS FLOWING TRANSFER OF POWDERED MATERIAL

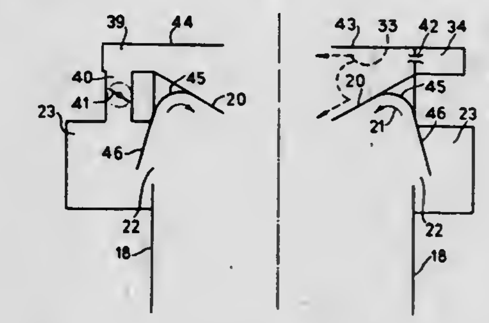
Per Tybring Aralt, Hop, Norway, assignor to Kristian Gerhard Jebsen, Bergen, Norway

Filed Mar. 2, 1973, Ser. No. 337,307

Claims priority, application Norway, Mar. 6, 1972, 692/72

Int. Cl. A01f *25/00*

U.S. Cl. 214—17 **4 Claims**



1. An assembly for preventing the escape of dust particles from a hopper having upstanding walls during transfer thereto of powdered material and the like from a powdered material supply means, said assembly comprising
baffles located interiorily of said hopper adjacent the top thereof and defining an access opening in said hopper to permit entry thereto of said powdered material supply means, said baffles extending downwardly and inwardly of said hopper to deflect any movement of dust particles away from said access opening,
first and second opposedly directed housing components disposed at the top of said hopper at a location above said baffles,
a source of compressed air,
conduit means for comunicating compressed air from said source to the first of said housing components, said first housing component including means for directing a curtain flow of compressed air therefrom across said hopper access opening in the direction of said second housing component, said second housing component being open to permit entry of compressed air thereto,
a duct encircling an upper portion of said hopper,
means for maintaining a condition of vacuum in said duct, and
means for establishing communication between said duct and both the interior of said hopper and said second housing component.

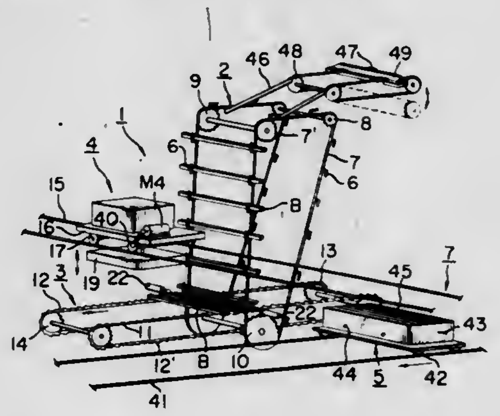
3,870,169
CONVEYOR APPARATUS FOR METAL BARS

Hiromitsu Kojima, Takehara, Japan, assignor to Mitsui Mining and Smelting Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1974, Ser. No. 440,069

Int. Cl. B65g *57/04*

U.S. Cl. 214—41 **2 Claims**



1. A conveyor apparatus for metallic bar-formed objects comprising:
1. a first coveyor having a vertically disposed, and intermittenly driven member, adapted to receive laterally disposed metallic bar-formed objects at its upper portion during its stationary phase, and to convey the received objects sequentially downward;
2. a second conveyor having an intermittently driven member that is horizontally disposed underneath said first conveyor in an intersecting relationship therewith, adapted to receive on its upper side those metallic bar-formed objects, which are delivered by said first conveyor, during its stationary phase, and to convey them sequentially in a horizontal direction;
3. a hanging truck having a vertically movable electromagnet in its lower part, adapted to be driven along a line intersecting the travelling direction of said second conveyor, at a predetermined distance therefrom, whereby said electromagnet is normally positioned above said second conveyor at a predetermined distance upward therefrom, but when a required number of metallic bar-formed objects are aligned on the second conveyor, said electromagnet is lowered, siezes the aligned objects through electromagnetic attraction, and is lifted, thereupon the truck is driven horizontally to its stroke end position where the electromagnet is deenergized.

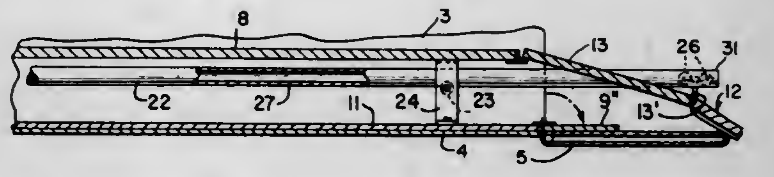
3,870,170
LOADING RAMP FOR PICK-UP TRUCKS AND THE LIKE

Donald E. Noble, Rt. No. 4, and Robert H. Sanderson, Star Rt., both of Canton, N.Y. 13617

Filed June 6, 1973, Ser. No. 367,318

Int. Cl. B60p *1/00*

U.S. Cl. 214—85 **3 Claims**

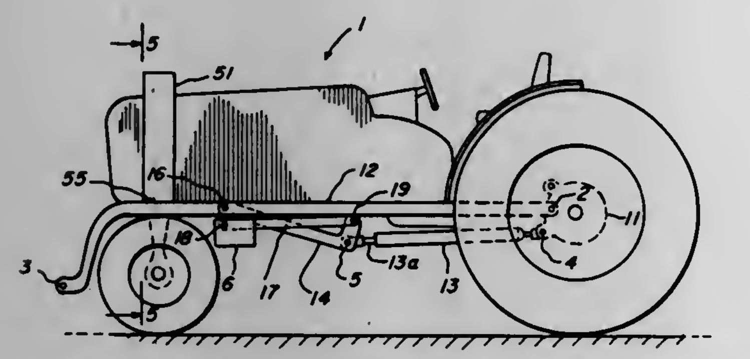


1. The combination with a load-receiving platform, of means defining a storage compartment beneath said platform, said compartment defining an entrance at one end of the same, a gangplank normally stored within said compartment when not in use but being withdrawable from said compartment to provide a ramp extended from the adjacent edge of the platform, said ramp having roller means mounted thereon at one end thereof, and guide track means mounted in the storage compartment and extended longitudinally thereof for receiving and guiding the roller means aforesaid during withdrawal and retraction of the gangplank out of and into the storage compartment, said track means being movably supported above the bottom of the storage compartment for permitting partial extension of the track means beyond the entrance of the compartment, and the gangplank being suspended from and below the track means by the gangplank rollers coacting therewith.

2. The combination as defined in claim 1, wherein the gangplank is provided with a foldable flap which is hingedly connected to one end thereof, said flap normally overlying the ramp in a reversely folded position when the ramp is retracted into the storage compartment but being pivotally movable to an unfolded position to form an extended continuation of the gangplank when the gangplank is withdrawn from the storage compartment.

3,870,171
LIFTING MECHANISM FOR FRONT END LOADER

Emil F. Zimmerman, Richardton, N. Dak. 58652
Filed May 18, 1973, Ser. No. 361,518
Int. Cl. B66f *9/00*
U.S. Cl. 214—131 R **13 Claims**

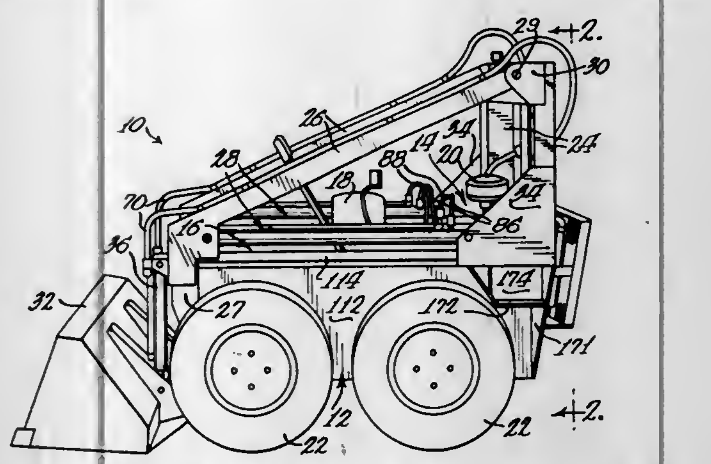


1. An apparatus for connecting to lifting tools and attachable to a tractor frame, comprising:
a pair of elongated booms each pivotally mounted on a side of the tractor at a point near the tractor rear axle, and extending forwardly to the tractor front end for connection to a lifting tool and movable between a substantially horizontal rest position and an elevated position, the apparatus having on each side of the tractor:
a. a first link pivotally mounted at one end to the boom, and a second link pivotally mounted at one end to the tractor frame forward of the tractor's center of gravity and at its other end to the other end of the first link, the links being crossed when the booms are in the rest position
b. a hydraulic jack pivotally mounted to the tractor frame at a point near the tractor rear axle and having an extendible rod pivotally connected to the other end of the first link at a point lower than the pivotal connection between the first and second links when the booms are in the rest position; and
c. an upwardly extending guide frame mounted to said tractor in slideable, guiding engagement with said boom.

8. Lifting apparatus for attachement to a tractor frame and rear axle, comprising:
a pair of rear axle housings, each having means for rigidly attaching to the tractor rear axle at a point interior to a rear wheel, and having at least two pivotal mounting connections;
a pair of booms, each mounted at one of its ends to said housing pivotal mounting connections and extending therefrom to a position forward the tractor frame, and having a forward end adaptable for connection to a tool; a pair of first frame brackets, each rigidly attached to the tractor frame in alignment with a boom at a point forward the center of gravity of said tractor, and having a pivotal mounting connection;
a pair of upwardly extending boom guide frames rigidly attached to respective sides of said tractor and slidably engaging the respective booms to stabilize lateral motion of the latter
a pair of L-shaped first links each pivotally connected at one end to a respective boom at a point substantially adjacent said first frame bracket pivotal mounting connection and having a rearwardly extending link end
a pair of second links each pivotally connected at one end to a respective first frame bracket pivot mounting point and extending rearwardly in crossing relation to the first link for pivotal connection to the rearwardly extending link end of the first link; and
pair of hydraulically actuated cylinders, each of said cylinders pivotally mounted to said rear axle housing pivotal mounting connections, and having an extendible rod pivotally connected to the vertex of one of the L-links at a distance below the pivotal connection between the first and second links.

3,870,172
FRAME STRUCTURE FOR LOADER

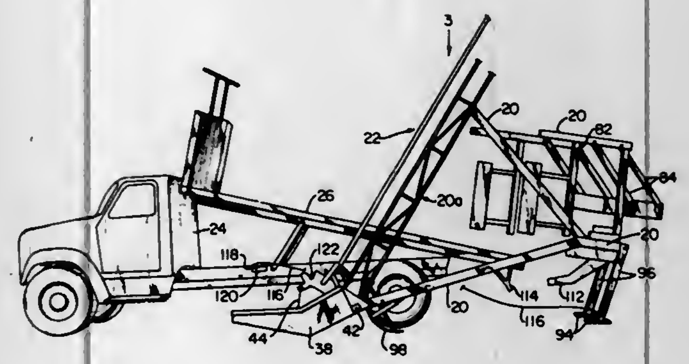
Mortimer J. Huber, 5901 W. Bald Eagle Blvd., St. Paul, Minn. 55110
Filed May 15, 1972, Ser. No. 252,997
Int. Cl. B66f *9/00*
U.S. Cl. 214—140 **13 Claims**



1. A tractor vehicle for use in handling material comprising: a vehicle body having an engine space at the rear end thereof and a forward space for the operator's leg with a seat for the operator mounted on said body intermediate said engine space and forward space, said body including a rigid plate bent at spaced locations to define a bottom wall and side walls for said spaces with an outwardly directed flange at the upper end of each of said side walls; an engine mounted in said engine space; ground engaging members rotatably supported on each of said side walls; drive means connecting said engine to said ground engaging members; a stanchion projecting upwardly from each of said flanges adjacent the engine space; a lifting arm pivotally connected to each stanchion with each arm extending forwardly along the associated flange and downwardly adjacent the front end of said body; a material handling member mounted on the forward end of said arms; and means cooperating with said arms to raise said arms and the material handling member mounted thereon.

3,870,173
BALE LOADER

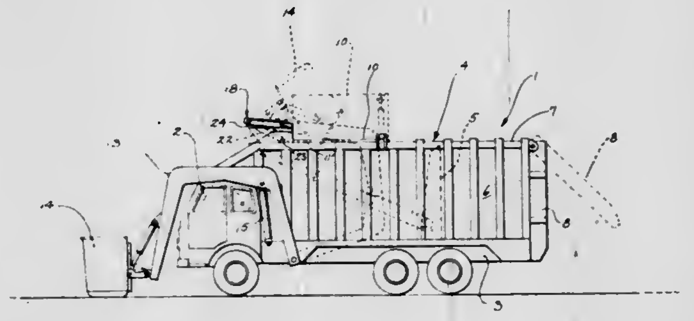
Richard B. Miskin, Ucon, Idaho, assignor to Miskin Scraper Works, Inc., Ucon, Idaho
Division of Ser. No. 233,430, March 9, 1972, Pat. No. 3,809,256. This application Mar. 1, 1974, Ser. No. 447,067
Int. Cl. B65g *57/32*
U.S. Cl. 214—152 **1 Claim**



1. A method for loading spaced bales of hay lying on a field onto the bed of a truck in abutting stacked configuration within a generally rectangular parallelepiped reference space above the bed as the truck continuously moves along the field, comprising the steps of:
a. attaching a bale loader which rests on the field when not in use to the truck at the field loading locus;
b. sequentially picking up the bales with the loader and conveying same to an assembly station above the rear end of the bed while in a forwardly and upwardly inclined position and depositing same thereat in layers normal to the bed until a bale wall of desired height is formed;
c. pushing the wall toward the front end of the bed a distance at least the thickness of the wall to thereby provide a space behind same in which a next wall may be formed;
d. continuing the formation and pushing of the walls until a desired bed load is formed on the bed;
e. clamping the rearmost wall against the bed to prevent it from falling or sliding rearwardly;
f. lowering the bed to horizontal position after it has been filled with a bale load;
g. transporting same to an unloading locus while in horizontal position, and
h. elevating the bed toward a vertical position at the unloading locus for unloading.

3,870,174
OVERFLOW SHIELD FOR REFUSE COLLECTION VEHICLE BODY HOPPER OPENING

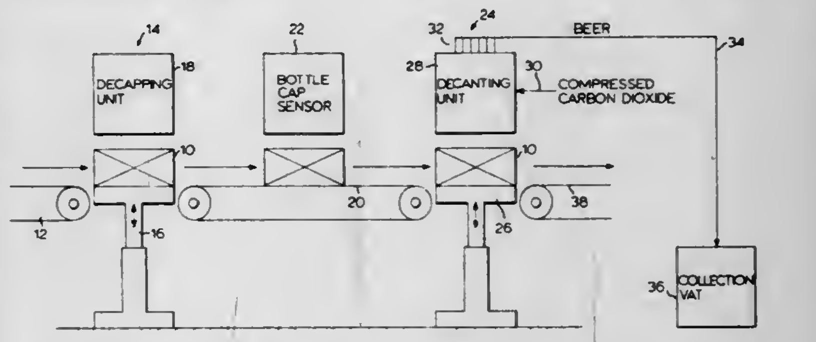
John R. Brisson, Kingsford, Mich., assignor to Lodal Inc., Kingsford, Mich.
Filed Sept. 13, 1973, Ser. No. 396,847
Int. Cl. B65f *3/02*
U.S. Cl. 214—303 **2 Claims**



1. A refuse collection vehicle comprising, in combination:
a. a frame mounted on the vehicle,
b. a refuse receiving body disposed on said frame, said body having a top roof section with an opening therein,
c. closure means for closing said opening,
d. control means for actuating said closure means to selectively open or close said opening,
e. a pivotable boom on the forward portion of said vehicle and adapted to receive a refuse container thereon,
f. means to pivot said boom from a lowered position upwardly to a raised position so that refuse is dumped from said container through said opening and into said body when said closure means is open,
g. a transversely extending shield member independent of said closure means and with said shield member having a rearward edge disposed proximate the forward edge of said opening, said shield member receiving spillage of refuse forwardly of said forward edge of said opening during dumping,
h. means hinging said rearward shield edge to said frame,
i. and means independent of said control means to hingedly tilt said shield from a normal generally horizontal position forwardly of said opening to a generally vertical position subsequent to refuse dumping for returning spillage into said opening before said closure means closes said opening.

3,870,175
DECAPPING OF BOTTLES AND DECANTING THE LIQUID CONTENTS THEREOF

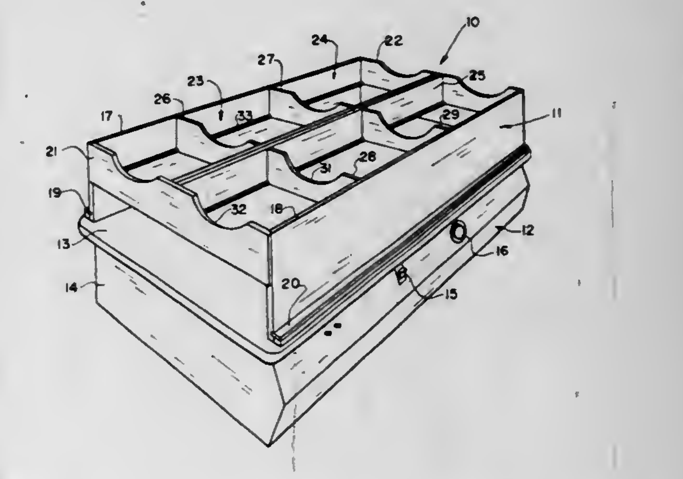
Daniel DiIanni, Toronto, Ontario, Canada, assignor to Carling O'Keefe Limited, Toronto, Ontario, Canada
Filed May 6, 1974, Ser. No. 467,013
Int. Cl. B65d *81/32*
U.S. Cl. 214—304 **14 Claims**



1. A bottle decapping and decanting apparatus comprising: conveying means to convey a case containing a plurality of capped beer-containing bottles to a decapping station,
decapping means at said decapping station for removing simultaneously the caps from all said bottles in said case, conveying means for conveying said case containing decapped bottles from said decapping station to a decanting station,
sensing means situated between said decapping and decanting stations for sensing the absence of caps on the bottles in said case,
decanting means at said decanting station for displacing simultaneously the beer from all said decapped bottles and including tube means insertable into each of said bottles and conduit means capable of connecting a source of compressed gas substantially inert to beer with beer in each of said bottles for displacement of beer from said bottles through said tube means,
conveying means for conveying said case containing decanted bottles away from said decanting station, and
conduit means extending from said decanting means to a collection means for conveying decanted beer from said decanting station to said collection means, whereby the said bottles to be decapped and decanted are conveyed such that the bottles always remain upright during the conveying, decapping and decanting operations.

3,870,176
APPARATUS FOR REMOVING ARTICLES FROM ENVELOPES

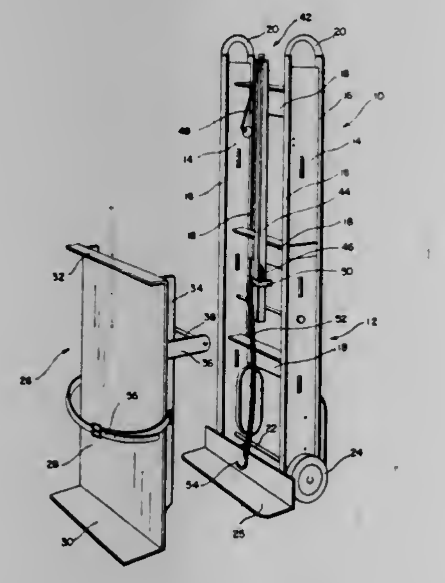
David W. Gernetzke, 420 Montgomery, Novato, Calif. 94104
Filed Aug. 24, 197[illegible] Ser. No. 283,547
Int. Cl. B65b *21/02*
U.S. Cl. 214—308 **11 Claims**



1. Apparatus for removing articles contained within an envelope having oppositely facing, closely spaced-apart, flat side walls joined together along common peripheral edge portions thereof, said envelope being open along at least an additional common peripheral edge portion of said side walls, comprising the combination of an envelope carrier, said carrier having means forming at least one compartment, means associated with the compartment to support a group of said envelopes along at least a portion of their additional common edge portions in substantially vertically extending planes and with said open edge portions disposed lowermost, and means for imparting vibratory motion to said envelopes for separating the side walls thereof and causing said articles to move downwardly from said envelopes through said open edge portions.

3,870,177
MOBILE HAND TRUCK HAVING A DETACHABLE LOAD CRADDLE

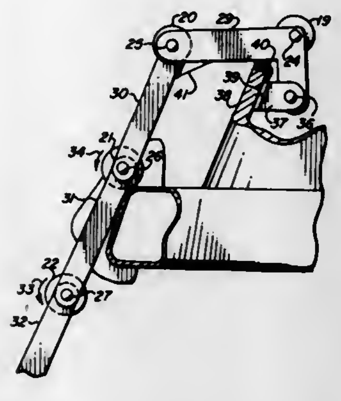
Willard J. Cobb, Rt. 5, Raleigh, N.C. 27607
Filed June 25, 1973, Ser. No. 373,154
Int. Cl. B62b *1/04*
U.S. Cl. 214—372 **8 Claims**



1. A mobile hand truck comprising: a frame structure including a pair of laterally spaced side frame members; a wheel means mounted to said frame structure; a detachable load cradle movably mounted on said frame structure and including a back slidably mounted on one side of said frame structure, said load cradle including a pair of laterally spaced arms fixed about the outside edges thereof and extending rearwardly therefrom, said arms being particularly spaced greater than the width of said side frame members as to extend adjacent the outer sides thereof and having a length greater than the width of said side frame members such that the rear terminal ends of said arms normally project past the rear edge of said side frame members; detachable securing means associated with said load cradle for detachable securing the latter to said frame structure, said detachable securing means including a transverse rod detachably secured to the rear terminal ends of said arms and normally engaged with the rear side of said side frame members so as to hold and confine said load cradle against the front side of said frame structure, whereby said load cradle may be completely detached and separated from said frame structure by detaching said transverse rod from said arms; elevating means disposed on said frame structure; and means for operatively interconnecting said elevating means with said load cradle whereby said load cradle may be raised and lowered relative to said frame structure by actuating said elevating means.

3,870,178
AUTOMOBILE TRUNK MOUNTED CONVEYOR FOR HANDLING HEAVY OBJECTS

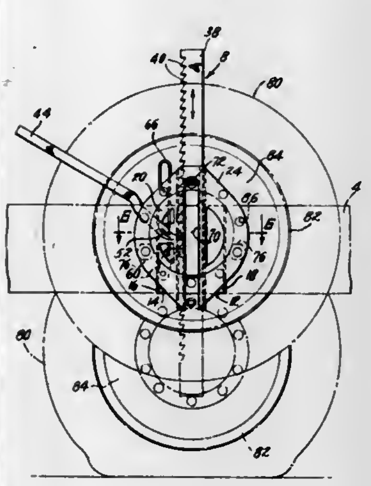
Harry J. Ellen, 499 W. Missouri Ave., Phoenix, Ariz. 85013
Division of Ser. No. 346,718, April 2, 1973,. This application Mar. 8, 1974, Ser. No. 449,233
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **3 Claims**



1. A collapsible ramp for mounting in the trunk of an automobile for aiding in loading and unloading luggage therefrom comprising;
  a pair of brackets for spacedly mounting in the trunk adjacent the edge of the trunk opening at the rear of the automobile,
  a pair of identical L-shaped brackets having common legs thereof each pivotally mounted to a different one of said brackets so that the other of said legs of said L-shaped brackets may be pivotally moved to lie horizontally within the trunk and when rotated about said brackets assumes another horizontal position with their free ends outside of the trunk,
  a first roller pivotally mounted to extend between said L-shaped brackets at the interconnection of the legs of the brackets, and
  a second roller pivotally mounted to extend between the free end of said L-shaped brackets,
  said first and second rollers aiding in supporting luggage being placed in or removed from the trunk.

3,870,179
SPARE WHEEL CARRIER FOR LOGGING TRUCKS

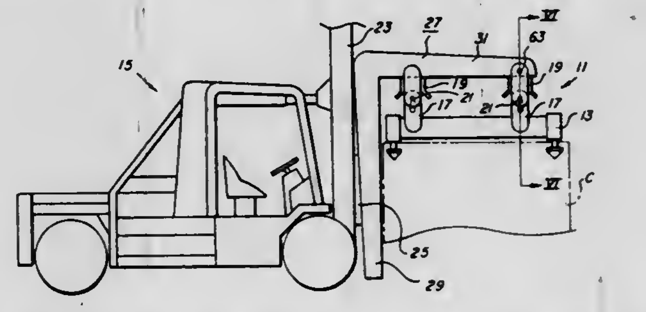
Willard E. Colpitts, Box 324, Dayville, Oreg. 97825
Filed June 1, 1973, Ser. No. 366,994
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **6 Claims**



1. A spare wheel carrier for mounting on a vehicle frame, comprising: a bracket; a ratchet bar having teeth along one edge thereof; means on said bracket mounting said ratchet bar for vertical sliding movement; a jack handle; means pivotally mounting said jack handle on said bracket, whereby said jack handle is engageable with said teeth on said ratchet bar to effect vertical movement thereof; a dog pivotally carried by said bracket, and engageable with said teeth on said ratched bar to prevent downward sliding movement of said ratchet bar; a stud bolt mounted on the central portion of the front face of said ratchet bar for securing a wheel thereto, said bracket having an inverted U-shaped slot for vertically slidingly receiving said stud bolt; and means operable for securing a wheel carried by said stud bolt on said ratchet bar to said bracket when said wheel has been elevated into a carriage position relative to said bracket.

3,870,180
APPARATUS FOR CONNECTING A SPREADER ASSEMBLY TO A VEHICLE LIFT

Murdock M. Snelling, Jr., Louisville, Miss., assignor to Taylor Machine Works, Louisville, Miss.
Filed May 21, 1973, Ser. No. 362,046
Int. Cl. B66f *9/12*
U.S. Cl. 214—621 **9 Claims**

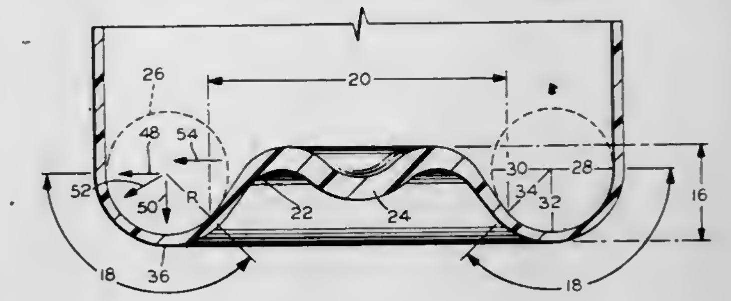


1. An apparatus for removably connecting a spreader assembly to a lift vehicle including a normally vertical boom, a load carriage movably mounted on the boom, and a frame member mounted on the carriage having normally horizontal arm portions, said apparatus comprising:
  a. pilot means mounted on the upper surface of the spreader assembly, said pilot means including a plurality of male members, each of said male members having an enlarged transverse hole therethrough;
  b. connecting means mounted on the lower surface of the arm portions for self-aligning engagement with said pilot means to removably connect the spreader assembly to the lift vehicle, said connecting means including a plurality of female members for coacting with the plurality of said male members, each of said female members having a transverse hole therethrough; and
  c. securing means for securely connecting said pilot means to said connecting means, said securing means including primary pins for passing through said holes in said male and female members thereby securing said male members to said female members when said male members are positioned in said female members while allowing limited movement of said male members.

3,870,181
MOLECULARLY ORIENTED BOTTLE

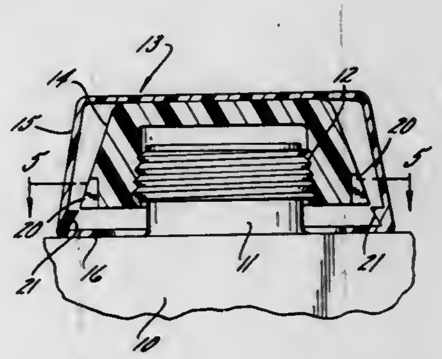
Thomas F. Sincock, Simsbury, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 12, 1973, Ser. No. 331,475
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **11 Claims**

1. A bottle for a beverage under pressure formed of a polymer wherein the major constituent is polymerized acrylonitrile monomer, said bottle comprising:
  a. a generally cylindrical body which includes a sidewall portion having a discharge opening at its upper end and means formed therein adjacent said opening for cooperating with a pressure-confining closure;
  b. a bottom portion at the other end of the sidewall portion comprising a substantially toroidal segment between the sidewall and an inner base wall surrounded by and integral with said toroidal segment and closing off the bottom portion of the bottle, the radius of curvature of said toroidal segment being between 10 to 20 percent of the maximum diameter of the generally cylindrical body, the surface area of said toroidal segment being at least 30 percent of that of a full torus, said toroidal segment having a varying overall wall thickness within a range of between 12 to 60 mils, said thickness gradually increasing within such range along said toroidal segment toward said inner base wall; and
  c. the polymer in at least a portion of said segment being molecularly oriented exhibiting an orientation release stress of at least 50 psi in both the axial and circumferential directions.



3,870,182
SAFETY CAP FOR THREADED CLOSURE

Walter L. Georgi, Cary, Ill., assignor to Palspros, Inc., Woodstock, Ill.
Filed Apr. 23, 1973, Ser. No. 353,471
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—220 **4 Claims**



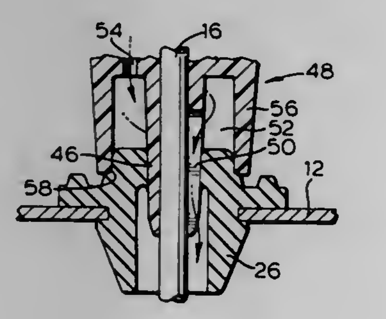
1. A safety closure for containers having external threaded openings, said closure comprising the combination of an internally threaded inner closure member adaptepd to be threaded onto the externally threaded opening of the container to close said opening, said inner closure member and said container being shaped to form an open space directly beneath at least the outer peripheral portion of the bottom of said inner closure member when said member is threaded onto said container, said inner closure member also forming a plurality of recesses in the outer side wall thereof, an outer closure member fitted over said inner member and freely rotatable relative to said inner member to normally prevent rotation of said inner member, the top of said outer member overlapping the top of said inner member and the bottom of said outer member forming a flange extending radially inwardly beyond the outer periphery of the bottom of said inner member in said open space to hold said outer member captive on said inner member, the axial dimension of the internal space between the top of said outer member and said flange being substantially greater than the maximum axial dimension of said inner member to permit limited axial movement of said outer member relative to said inner member, said outer closure member forming a plurality of lugs projecting inwardly from the inner sidewall thereof, said lugs being axially spaced away from the recesses in the outer sidewall of said inner member when said outer member is in its lowermost position where said flange is spaced away from the bottom of said inner member, said lugs also being normally radially spaced away from said recesses at

any axial position of said outer member relative to said inner member, said lugs being located for axial alinement with said recesses when said outer member is in its uppermost position where said flange engages the bottom of said member, the sidewalls of said outer closure member being sufficiently flexible to permit said lugs to be pressed into said recesses when alined therewith to provide latching engagement between said inner and outer members whereby said inner member may be rotated to remove the closure from said container.

3,870,183
CLOSURE FOR LIQUID CONTAINERS

John Luczkiw, Toronto, Ontario, Canada, assignor to Viceroy Manufacturing Company Limited, Toronto, Ontario, Canada

Filed Apr. 9, 1973, Ser. No. 349,645
Int. Cl. B65d *47/36*
U.S. Cl. 215—247 **5 Claims**



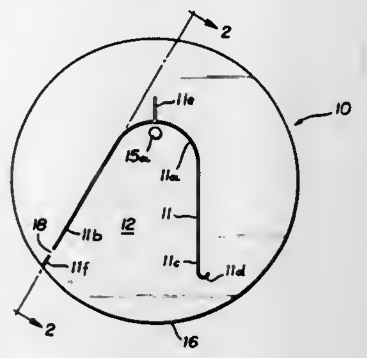
1. A closure for liquid containers from which the liquid therein is to be withdrawn through a hollow tube inserted into said container through said closure, when said liquid is acted against by gas pressure within said container and communicated thereto from a source of pressurized gas external to said container;

said closure being of a deformable material which may be pierced by said tube and which, when pierced with said tube extending therefrom, forms a substantially gas and liquid-tight seal around said tube;
said closure being adapted to be fitted into an opening in said container, and having a peripheral neck portion formed therein and dimensioned so as to form a substantially gas and liquid-tight seal between the closure and the edges of said opening;
said closure having
  an upwardly extending channel formed in the underside thereof for communication with the interior of said container, said channel having an annular wall;
  a gasket portion overlying said upwardly extending channel and having a diaphragm portion formed therein, said diaphragm portion being of lesser thickness than said gasket portion and with its upper surface recessed below the upper surface of said gasket portion;
  a flange portion surrounding said gasket portion and below the upper surface thereof;
  an annular upwardly extending rim formed on the upper surface of said flange portion,
the height of said annular rim being such that the top thereof tends to interfere with the edges of said gasket portion when said flange portion is turned upwardly at any place;
  the diameter of said diaphragm portion being such as to accommodate the neck portion of a tapping device in which said tube is secured, the diameter of said upwardly extending channel being greater than the diameter of said neck portion of said tapping device.

3,870,184
EASY OPEN METAL CLOSURE

Thomas D. Fuchs, Toledo, and John J. Micka, Maumee, both of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed July 9, 1973, Ser. No. 377,641
Int. Cl. B65d *41/32*
U.S. Cl. 215—255 **5 Claims**

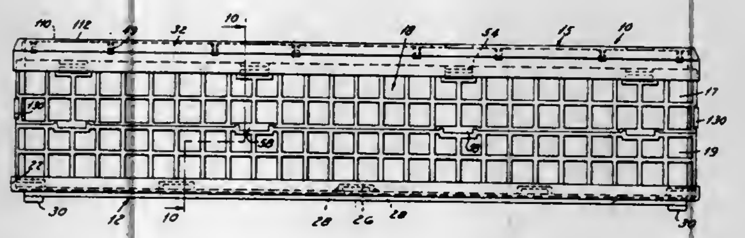


1. A closure of the tear-open type for use in closing an opening of a container comprising a severable tear strip integral in said closure, said closure having a top panel portion, annular depending skirt portion adapted to encircle said opening of the container, and an annularly extending corner radius portion joining said top and skirt portions, said tear strip being defined by a score line weakening means, said tear strip including two spaced apart legs of the score line that join together only in the top portion, one leg extending from the top portion into the skirt portion and to the free edge at the periphery thereof and is interrupted and discontinuous near said free edge of said skirt, the free edge of the skirt being rolled and said interrupted portion of the one score leg being disposed in said rolled edge portion of the skirt, a pull member for severing the tear strip, and means connecting the pull member to said tear strip near the junction of said two score line legs in the top portion for effecting the severing of the integral tear strip of said closure for removal of the latter from a container.

3,870,185
COLLAPSIBLE CONTAINER

Ellsworth E. Sanders, Sanibel Island, Fla., and Elsmer W. Kreeger, Pontiac, Mich., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Continuation-in-part of Ser. No. 259,844, June 5, 1972, Pat. No. 3,796,342. This application Oct. 29, 1973, Ser. No. 410,374
Int. Cl. B65d *7/24*
U.S. Cl. 220—6 **8 Claims**

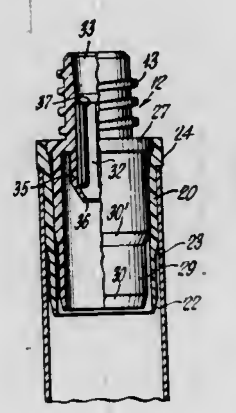


1. A plastic collapsible container comprising a rectangular bottom wall, two opposed vertical side walls, two opposed vertical end walls, a top rectangular border frame defining the top of the container, said side walls each having upper and lower wall sections, said border frame, upper and lower side wall sections, said end walls and said bottom wall being separately formed, means providing snap hinge connections between the adjacent edges of said upper and lower wall sections, means providing snap hinge connections between the upper edges of said upper wall sections and said border frame and means providing snap hinge connections between the lower edges of said lower wall sections and said bottom wall to permit inward folding of said side walls when said container is collapsed, and means providing snap hinge connections between the upper edges of said end walls and said border frame to permit inward swinging of said end walls to a substantially horizontal position when said container is collapsed.

3,870,186
CONTAINER CONSTRUCTION FOR MASCARA AND LIKE SUBSTANCES

Willy Reinhard, Buergeln, Germany, assignor to Gebruder Seidel KG, Marburg, Germany

Filed Feb. 20, 1973, Ser. No. 333,780
Int. Cl. A46b *11/00*; **A45d** *44/18*; **F16l** *21/04*
U.S. Cl. 220—212 **16 Claims**



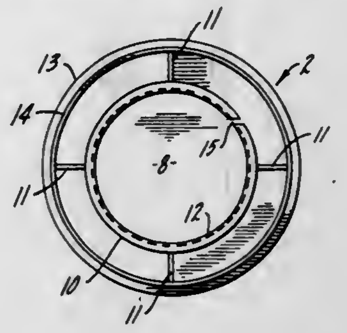
1. In a container for liquid cosmetic or the like substance, a body having a tubular open end, a flanged cylindrical tubular bushing of relatively yieldable material received in said open end to an extent axially limited by the flanged portion of said bushing, and a flanged relatively stiff dispensing fitting including an upwardly extending threaded neck with an internal passage open at both axial ends, said fitting having a tubular sleeve received in said bushing to an extent axially limited by the flanged portion of said fitting, said bushing having an unstressed external cylindrical diameter less than the bore diameter of the tubular open end in which it is received, whereby bushing sub-assembly to said body is essentially frictionless, and said sleeve having an external cylindrical diameter greater than the unstressed bore diameter of said bushing and being chamfered at the lower end, whereby assembly of said fitting to the sub-assembled bushing and body is a force-fit in which said bushing is radially expanded, the extent of sleeve-to-bushing interference being such in relation to the unstressed clearance of the subassembled parts that said bushing is radially compressionally loaded in circumferentially continuous engagement with the body bore upon assembly of said fitting.

3,870,187
CHILDPROOF AEROSOL CAP

Richard H. Bennett, Kenilworth, Ill., assignor to Knight Engineering and Molding Co., Arlington Heights, Ill.

Continuation of Ser. No. 81,260, Oct. 16, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,515
Int. Cl. B67d *5/00*; **B65d** *43/10*
U.S. Cl. 220—281 **4 Claims**

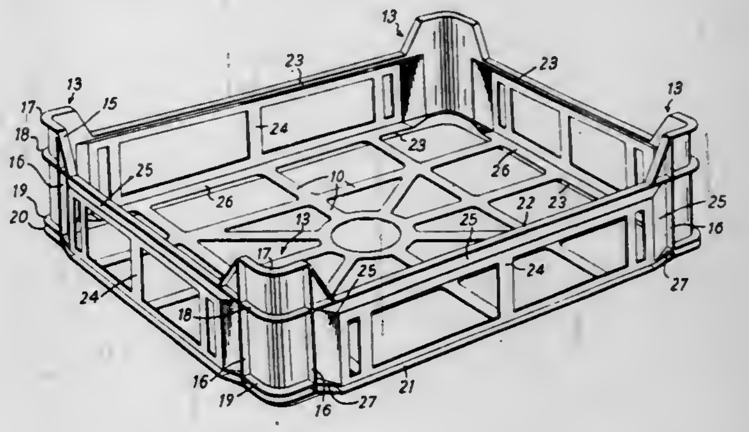
1. A removable and replaceable cover for a container such as an aerosol container having a domed roof, a circular collar having an undersurface located above said domed roof and surrounding a dispensing actuator, said cover including:
  a top wall, a relatively thin flexible outer sleeve depending from said top wall, a relatively thin flexible inner sleeve generally coaxial with said outer sleeve and also depending from said top wall, an inwardly projecting distortable locking flange carried by said inner sleeve and adapted to engage the undersurface of said circular collar of said container when said cover is installed on said container, at least one slit formed in said inner sleeve and extending through said locking flange to allow distortion of said locking flange, and
  a plurality of ribs connecting said inner and outer sleeves to transmit forces applied to said outer sleeve between said sleeves, said ribs being spaced around the periphery of said inner sleeve so as to cause distortion of said locking flange upon the transmission of forces between said sleeves.



3,870,188
TRAY OR CRATE

Thomas Vigus Buffett, London, England, assignor to International Partners Research Corporation, Panama City, Panama

Filed Dec. 22, 1972, Ser. No. 317,690
Claims priority, application Great Britain, Jan. 13, 1972, 1752/72
Int. Cl. B65d *1/42, 1/22*
U.S. Cl. 220—72 **4 Claims**



1. A tray of moulded construction having two pairs of opposite upstanding side walls and curved corner portions extending between adjacent side walls, each of said side walls having outwardly projecting stiffening flanges extending along its top and bottom edges and vertical stiffening flanges where the side wall joins the corner portions, the whole of each side wall except those parts of the side wall adjoining said flanges being offset outwardly substantially into a plane containing the outer edges of said stiffening flanges.

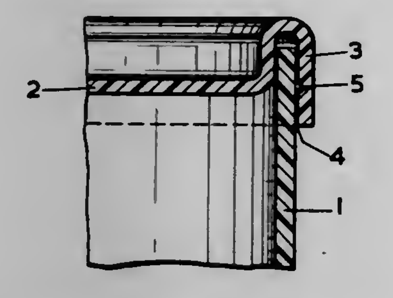
3,870,189
CONTAINER WITH A FRANGIBLE LID AND A TOOL FOR OPENING SAID CONTAINER

Reinder Zuideveld, Ewshott, England, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Jan. 12, 1973, Ser. No. 322,925
Int. Cl. B65d *17/00*
U.S. Cl. 220—277 **6 Claims**

1. A container with a lid, both made of thermoplastic synthetic material, said lid having an inverted channel-shaped edge portion fitting over the upper edge of the container and attached to the outer surface of the container wall with the inner surface of the outer leg of said channel-shaped edge, said outer leg between the upper edge of the container wall and the attachment of the outer leg of the lid to said container

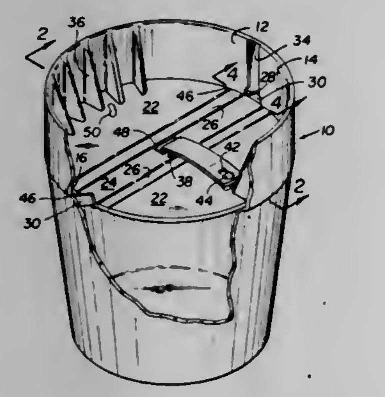
wall being provided with a peripheral wall portion of reduced thickness, and a circumferentially extending clearance located radially inwardly of said leg portion of reduced thickness and between said leg portion and the container wall, said portion of reduced thickness at least at one place being provided with an opening connecting the clearance with the outside of the container and lid.



3,870,190
CONTAINER

Edward Camp Tibbals, Jr., 2680 Young Field St., Boulder, Colo. 80215

Filed Feb. 12, 1973, Ser. No. 331,507
Int. Cl. B65d *43/16*
U.S. Cl. 220—338 **10 Claims**



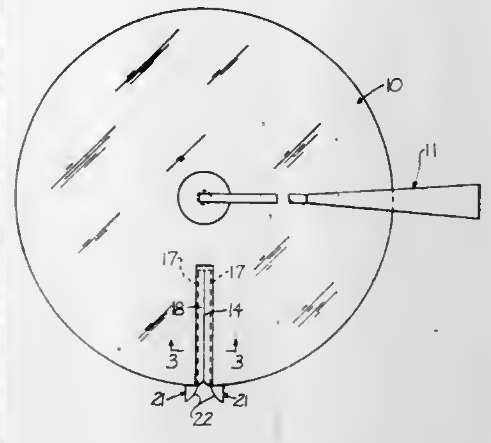
1. A container comprising
vessel means including an opening,
supporting shelf means perimetrically disposed on the interior surface of said vessel means in predetermined spaced relation with the opening therein,
lid means perimetrically supported by said shelf means and peripherally engageable with the interior surface of said vessel means adjacent to said shelf means for closing said container,
said lid means including a rotatably displaceable central portion and a pair of substantially lineally displaceable end portions,
and manually manipulable means for rotatably displacing said central portion of said lid means in one direction to selectively advance the perimetric edges of said end portions into peripheral compressive engagement with the interior surface of said vessel means to close said container and in a second direction to selectively retract said end portions to displace said perimetric edges thereof into spaced relation with the interior surface of said vessel to open said container.

3,870,191
HOT GREASE GUARD FOR COOKING UTENSIL

Harold J. Franklin, 1410C - 24th St., North, Birmingham, Ala. 35234

Filed May 20, 1974, Ser. No. 471,362
Int. Cl. B65d *51/16*
U.S. Cl. 220—370 **6 Claims**

1. A hot grease guard for a cooking utensil comprising
a. a disc-like member of a size to cover a cooking utensil,
b. a handle pivotally connected to a central portion of said disc-like member with said disc-like member being adapted for pivotal movement to selected angular positions relative to said handle, and

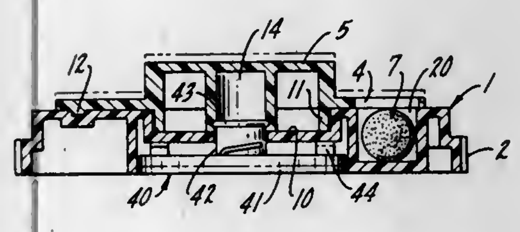


c. a laterally and outwardly opening slot in said disc-like member disposed to receive a fork-like member so that said disc-like member is rotatable to position said fork-like member at selected angular positions and said fork-like member is movable to selected positions inwardly of said disc-like member.

3,870,192
SELF-LOCKING DISPENSER

Chester J. Haley, Waukegan, Ill., assignor to Northwest Molded Products Corp., Waukegan, Ill.

Continuation of Ser. No. 206,841, Dec. 10, 1971, abandoned. This application June 29, 1973, Ser. No. 375,098
Int. Cl. G07f *11/00*
U.S. Cl. 221—86 **5 Claims**

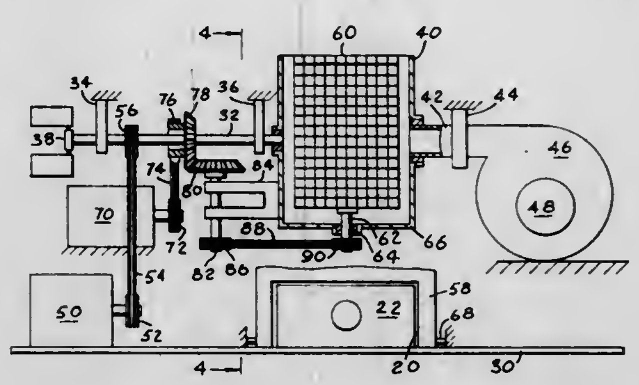


1. A dispensing container comprising,
a base member having a plurality of pockets positioned thereon to contain objects to be dispensed,
an outlet member rotatably connected to said base member and having an outlet opening sequentially positionable over said pockets to permit escape of said objects from said container,
cooperating locking configurations carried by said outlet and base members,
said locking configurations, when engaged, preventing relative rotational movement of said outlet and base members,
means biasing said locking configurations into engagement one with the other,
nd a connection between said biasing means and said outlet member which allows rotation of the outlet member relative to said biasing means and by which a digital force applied directly to the baising means in the direction of the outlet member lifts the outlet member to disengage said locking configurations permitting relative rotation of said outlet and base members.

3,870,193
APPARATUS FOR HEATING AND DISPENSING FRENCH FRIED POTATOES

J. Raymond Schneider, 97 N. Chadsworth Ave., Larchmont. N.Y. 10538

Filed Mar. 1, 1973, Ser. No. 337,144
Int. Cl. A47j *43/00*
U.S. Cl. 221—150 A **6 Claims**

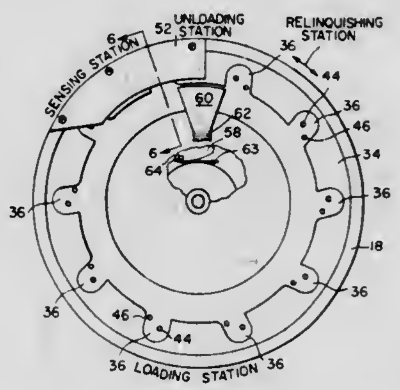


1. Apparatus for heating and delivering freshly heated French Fried potatoes, comprising
rotatable open ended cage means sequentially displaceable from a first charge receiving position to a second charge tumbling position and to a third charge delivering position,
means for independently rotating said cage means in said second and third positions thereof, means for directing a stream of heated air into heat transfer relation with the tumbling charge in said cage means when the latter is rotatably disposed in its second position,
and cyclically operable control means for effecting the sequenced displacement of said cage means in predetermined timed relation from said first to said second to said third position.

3,870,194
APPARATUS FOR ORIENTING AND FEEDING ARTICLES

Clarence Taylor, 28 Woodside Dr., Rochester, N.Y. 14526

Filed Jan. 28, 1974, Ser. No. 437,156
Int. Cl. B23q *7/02;* **B65h** *9/00*
U.S. Cl. 221—160 **18 Claims**

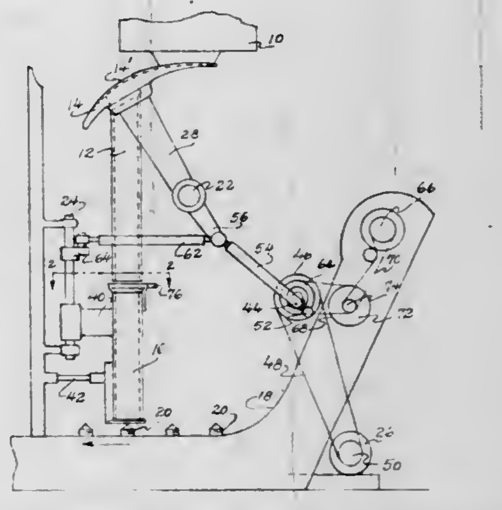


1. In an article feeding mechanism for feeding articles of the type having a substantially planar surface on one side and a non-planar surface on the opposite side, the combination comprising:
a movable work table having at least one article receiving pocket which is movable successively through loading, sensing and unloading stations, said pocket having an article supporting surface;
means for loading an article in said pocket in random orientation at said loading station, said article being properly oriented in said pocket when said substantially planar surface is in engagement with said supporting surface, and improperly oriented when said non-planar surface is in engagement with said supporting surface;
sensing means associated with said pocket and movable between a retracted position in which a part of said sensing means does not extend through said supporting surface into said pocket, and an extended position in which said part extends through said supporting surface into said pocket to prevent an article in said pocket from escaping;
means at said sensing station on one side of said supporting surface for retaining an article in said pocket;
means at said sensing station on the opposite side of said supporting surface for biasing said sensing means to its extended position when an article is missing from said pocket or improperly oriented in said pocket;
said part of said sensing means adapted to engage said substantially planar surface of a properly oriented article at said sensing station to prevent movement of said sensing means to its extended position by said biasing means; and
holding means at said unloading station adapted when said sensing means is in its retracted position at said sensing station to releasably hold said sensing means in its retracted position while said pocket is moved through said unloading station whereby a properly oriented article is free to be fed from said pocket, and adapted when said sensing means is moved to its extended position at said sensing station to releasably hold said sensing means in its extended position while said pocket is moved through said unloading station whereby an improperly oriented article in said pocket is retained therein for passage through said unloading station.

3,870,195
APPARATUS FOR AND METHOD OF FEEDING BOBBIN TUBES

Lester W. Pray, and Gordon C. Anderson, both of Clemson, S.C., assignors to Saco-Lowell Corporation, Easley, S.C.

Filed Apr. 26, 1973, Ser. No. 354,847
U.S. Cl. 221—225 **13 Claims**



1. In a bobbin orienting and feeding apparatus having bobbin orienting means for successively receiving unoriented bobbins through an inlet thereof and for discharging oriented bobbins through an outlet thereof, and bobbin transporting means movable between a bobbin receiving position adjacent said orienting means and a bobbin discharging position adjacent a bobbin-loading station distal from said orienting means for transporting oriented bobbins one at a time from said orienting means to said loading station, the improvement comprising:
bobbin retaining means responsive to movement of said transporting means for permitting discharge of oriented bobbins from said outlet of said orienting means when said transporting means is in said bobbin-receiving position thereof and for at other times restraining discharge of bobbins from said orienting means; said bobbin retaining means comprising a platform-like member mounted upon said transporting means in adjacent relationship to

said outlet for movement in unison with said transporting means between a closed position wherein said member prevents discharge of bobbins through said outlet and an open position wherein said member permits discharge of bobbins through said outlet.

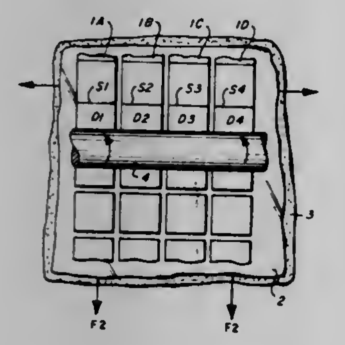
3,870,196
HIGH YIELD METHOD OF BREAKING WAFER INTO DICE

Don Hargraves, Pepperell, Mass., assignor to Laurier Associates, Inc., Littleton, Mass.

Filed Sept. 28, 1973, Ser. No. 401,940

Int. Cl. B26f *3/00*

U.S. Cl. 225—1 **2 Claims**



1. The method of breaking a wafer into dice wherein the wafer has a face upon which a first set of parallel grooves crosses a second set of parallel grooves, the method comprising the steps of

1. placing the wafer with its scribed face down on a sheet of stretchable material to which the wafer is adherent,
2. providing a resilient mat beneath the stretchable sheet,
3. applying pressure upon the upper face of the wafer along the scribed grooves of the first set to cause the wafer to fracture along the grooves and break into strips,
4. stretching the sheet to cause the facing edges of adjacent strips to be spaced apart with their scribed grooves in alignment,
5. and thereafter applying pressure upon the upper faces of the spaced apart strips along the aligned scribed grooves to break the strips into dice.

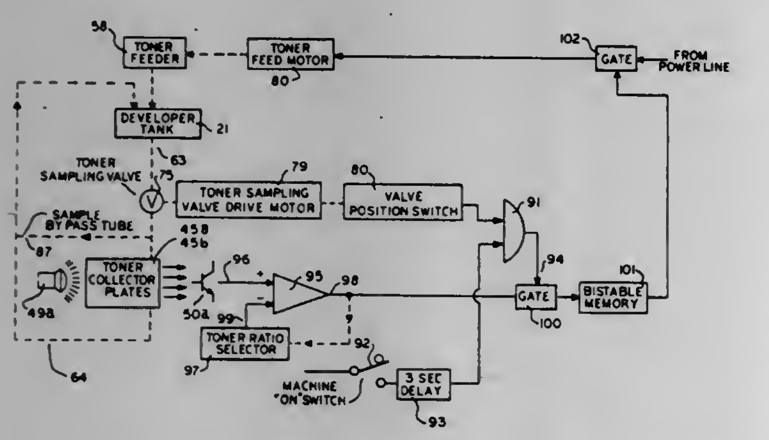
3,870,197
XEROGRAPHIC TONER CONCENTRATION CONTROL APPARATUS

James Edward Landrith, Wharton, N.J., assignor to Van Dyk Research Corporation, Whippany, N.Y.

Division of Ser. No. 227,978, Feb. 22, 1972, Pat. No. 3,777,173. This application June 21, 1973, Ser. No. 372,054

Int. Cl. B05b *5/02;* **G03g** *15/00*

U.S. Cl. 222—52 **33 Claims**



1. Apparatus for controlling the toner concentration in the developer of a xerographic copying apparatus, comprising:

a toner collecting plate;

supply means for periodically providing a stream of said developer, said supply means including a developer sample chamber, and an orifice communicating with said chamber for limiting the rate of flow of the developer in said stream;

a supply conduit for transporting said developer to said chamber from the developer tank of said copying apparatus;

a valve element comprising a rotatable vane within said chamber for permitting developer to enter said chamber from said supply conduit during a first recurrent time interval and for permitting developer to leave said chamber through said orifice during a second recurrent time interval;

a valve drive motor for rotating said vane;

means for directing said periodic stream onto a surface of said collecting plate to (i) cause toner particles to be dislodged from the developer carrier granules to which the particles are electroscopically adherent to deposit a layer of toner on at least a portion of said collecting plate and (ii) remove toner from said collecting plate portion when the concentration of toner in said periodic stream decreases;

means for sensing the amount of toner deposited in the form of said layer on said collecting plate portion during intervals when said stream is not impinging on said collecting plate; and

control means coupled to said sensing means for varying the concentration of toner in the developer within said tank in accordance with the amount of toner deposited in the form of said layer on said collecting plate portion.

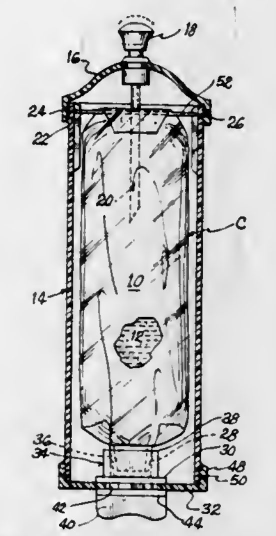
3,870,198
TWISTABLE BAG TYPE DISPENSER

Milton J. Cohen, 9201 Persimmon Tree Rd., Potomac, Md. 20854

Filed Aug. 13, 1973, Ser. No. 387,706

Int. Cl. B65d *35/56*

U.S. Cl. 222—105 **4 Claims**



1. In a bag type fluid or paste dispenser, a rigid enclosure having a dispensing valve at one end, a bag filled with the fluid or paste to be dispensed extending lengthwise within the enclosure in which the bag is formed of a flexible material which is impervious to the material being dispensed, means communicating the interior of one end of the bag with the dispensing valve, means stabilizing the one end of the bag against turning movement relative to the enclosure comprising an arm extending laterally from the upper end of the bag and an abutment fixed to the enclosure to extend into the path of the arm, and means operatively engaging the other end of the bag for turning the bag in one direction and to block turning movement of the bag in the opposite direction comprising a turntable supported in the bottom wall for rotational movement relative to the enclosure; male and female members one of which is fixed to the end of the bag while the other is fixed to the turntable for twisting the bag in response to turning movement of the turntable; and rake teeth in the adjacent peripheral surfaces between the turntable and bottom wall to enable override during turning movement in one direction while blocking turning movement in the opposite direction.

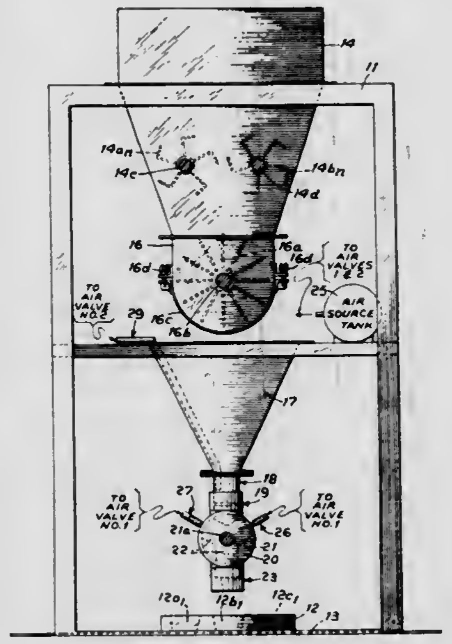
3,870,199
DEPOSITING APPARATUS

William H. Dugger, Kansas City, Kans., and Wayne K. Alexander, Kansas City, Mo., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 176,459, Aug. 31, 1971, Pat. No. 3,757,833. This application Mar. 12, 1973, Ser. No. 340,124

Int. Cl. G01f *11/24*

U.S. Cl. 222—189 **8 Claims**



1. Material depositing apparatus comprising:

a housing having an entrance and exit port;

material dispensing means positioned adjacent said entrance port for dispensing a material into said entrance port;

a drum mounted coaxially in said housing for rotational movement, said drum having branches defining a Y-shaped bore with each branch of said bore being spaced approximately 120° in a plane perpendicular to the drum axis;

means coupled to said housing to assist the filling of said bore and depositing of said material from said bore; and means for intermittently rotating said drum so that one branch of said bore communicates first with said entrance port to fill said Y-shaped bore with said material and then another branch of said bore communicates with said exit port for depositing said material from said Y-shaped bore.

3,870,200
VALVELESS DISPENSER FOR FLUENT MASSES

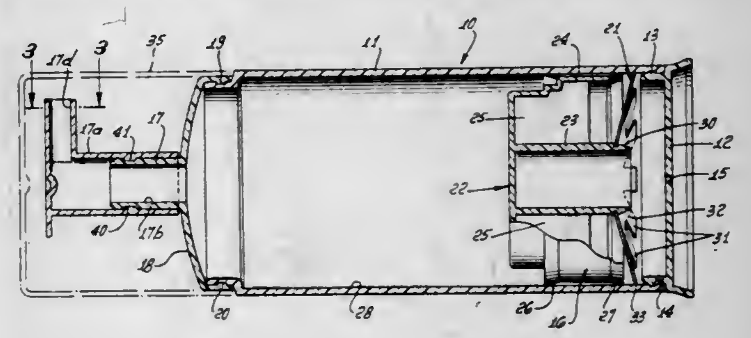
Walter B. Spatz, Pacific Palisades, Calif., assignor to Spatz Corporation, Venice, Calif.

Filed May 14, 1973, Ser. No. 360,180

Int. Cl. B65d *37/00*

U.S. Cl. 222—206 **11 Claims**

1. In a dispenser: a container; a viscous fluent mass in said container; said container having a forward continuously open elongate discharge outlet; piston means in said container movable in a forward direction toward the outlet and against the mass in the container; means for restricting movement of said piston means in a rearward direction away from said outlet at all axial positions of said piston means in said container while permitting movement of said piston means in the container in the forward direction; means for reducing the volume of the container forwardly of the piston means to dispense a portion of the mass through said open discharge outlet; means for then increasing the volume of the container forwardly of the piston means to produce a partial vacuum in said container forwardly of said piston means; the cross-sectional area of said outlet and the length of said open outlet being so related to the viscosity of said fluent mass that said partial vacuum is incapable of effecting significant withdrawal of said mass back into said outlet, whereby air at atmospheric pressure moves said piston means forwardly in said container toward said outlet.



3,870,201
DEVICE FOR DISPENSING OF A PASTE PRODUCT

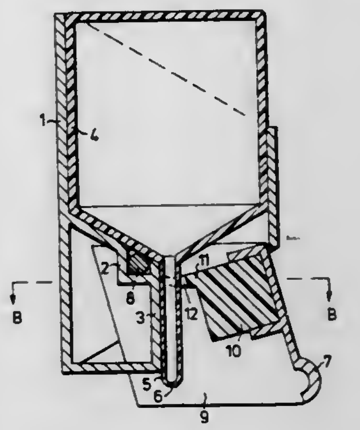
Alf Ake Asplund, Kristinehamn, Sweden, assignor to Industrikompaniet, Kristinehamn, Sweden

Filed Jan. 29, 1973, Ser. No. 328,474

Claims priority, application Sweden, Aug. 12, 1971, 10270/71

Int. Cl. B65d *37/00*

U.S. Cl. 222—207 **3 Claims**



1. Apparatus for dispensing of a paste product, said apparatus comprising

a. a container having an elastic outlet tube, said elastic outlet tube normally receiving paste from said container and adapted to be pressed to have paste expelled therefrom through an opening therein,

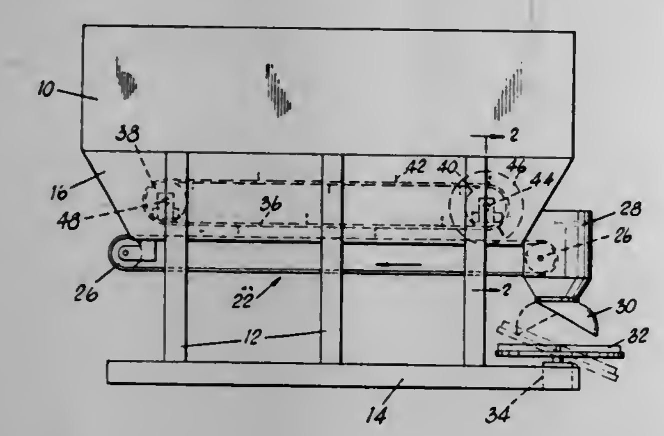
b. a casing for receiving said container, said casing having an abuting member abuting said container outlet tube,

c. means for pressing said elastic outlet tube against said casing abuting member for expelling paste therefrom without damage thereto; said means comprising a push means removably pivotally mounted in said casing and having a contact piece of elastic material disposed therein, said contact piece having a first integral projection of elastic material for engaging said outlet tube and closing off said outlet tube against said abuting member, whereby said projection engages and closes off said outlet tube and then said contact piece of said push means presses said outlet tube to expel paste therefrom, and

d. means for biasing said push means to a position wherein said outlet tube is not pressed but is free to receive paste from said container, said means comprising a pair of second projections of elastic material extending from and integral with said contact piece and straddling said first projection and said outlet tubing, each of said projections having a free end thereof engaging said abuting member of said casing.

3,870,202
SPREADER WITH AGITATOR TO BREAK UP MATERIAL BRIDGING

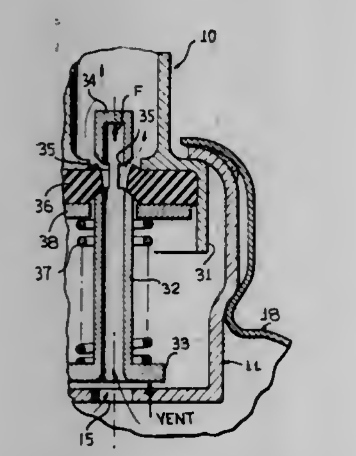
Harold A. Skibbe, and John H. Skibbe, both of Sodus, Mich., assignors to Skibbe Manufacturing Co., Inc., Sodus, Mich.
Filed Jan. 28, 1974, Ser. No. 437,291
Int. Cl. A01c *19/00*
U.S. Cl. 222—226 **5 Claims**



1. In a spreader for agricultural materials having a material receiving hopper with a driven material feed belt in the bottom thereof,
  - means for breaking clods and bridges in the material being fed comprising a chain loop located near the bottom of said hopper and having material breaking tines secured thereto at spaced intervals around said chain loop,
  - sprockets on shafts supporting said chain loop,
  - a drive sprocket on one of said shafts drivingly engaged with said feed belt,
  - and bearings for the ends of said shafts supported on the sides of said hopper.

3,870,203
AEROSOL DISPENSING VALVE

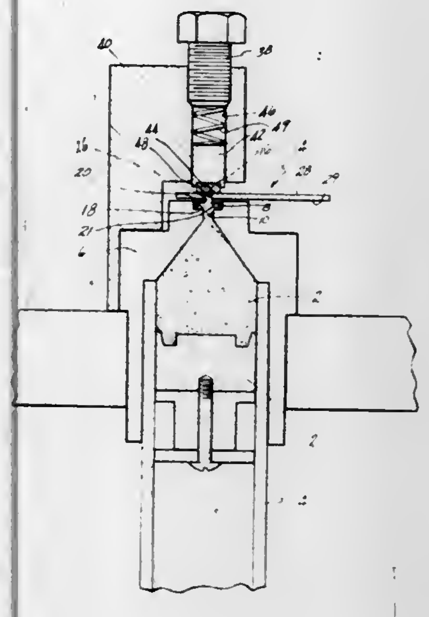
Henry E. Frankenberg, Boca Raton, Fla., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 17, 1974, Ser. No. 470,977
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **8 Claims**



1. An aerosol dispensing valve comprising a valve housing having upper and lower axially spaced walls, an aperture in each wall, a tubular stem having axially opposite ends, a first open end of said tubular stem being seated upon said lower wall aperture with said lower wall aperture and an interior chamber of said tubular stem being in fluid communication, a second end remote from said first end being closed by an end wall, a venting and dispensing port in said tubular stem between said first and second ends thereof, sealing means normally closing said port, a dispensing nozzle surrounding said tubular stem second end, said dispensing nozzle having a shoulder, and means normally biasing said sealing means against said shoulder and into seating relationship with said port whereby said port is normally closed yet can be opened and vented to atmosphere by axial motion of said tubular stem under the influence of a pressurized medium acting against said tubular stem end wall.

3,870,204
APPARATUS FOR THE AUTOMATIC CHARGING OF PRIMER MIX

Edward A. Staba, Killingworth Rd., Higganum, Conn. 06441
Continuation-in-part of Ser. No. 253,481, May 15, 1972, Pat. No. 3,820,578. This application Mar. 25, 1974, Ser. No. 454,053
Int. Cl. G01f *11/00*
U.S. Cl. 222—262 **2 Claims**

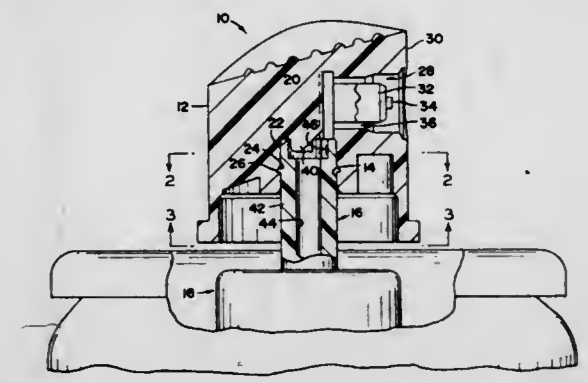


1. An apparatus for automatically forming a precisely measured charge of an extrudable priming composition, said apparatus comprising:
  a. extrusion means for extruding the priming composition through an orifice, said extrusion means including an extrusion block having a cavity, a grommet freely movably mounted in said cavity, said grommet having a bore therethrough forming the orifice;
  b. transfer means for transferring a predetermined volume of the priming composition from said extrusion means to a point offset therefrom, said transfer means including means forming at least one measuring chamber for containing a measured amount of the priming composition, said transfer means being disposed in sliding engagement with an outer surface of said grommet and said grommet being biased into snug engagement with said transfer means by pressure applied to said grommet by the priming composition; and
  c. means for moving said transfer means to move said measuring chamber from a position aligned with said orifice to a position offset from said orifice and return.

3,870,205
VARIABLE SPRAY RATE AEROSOL

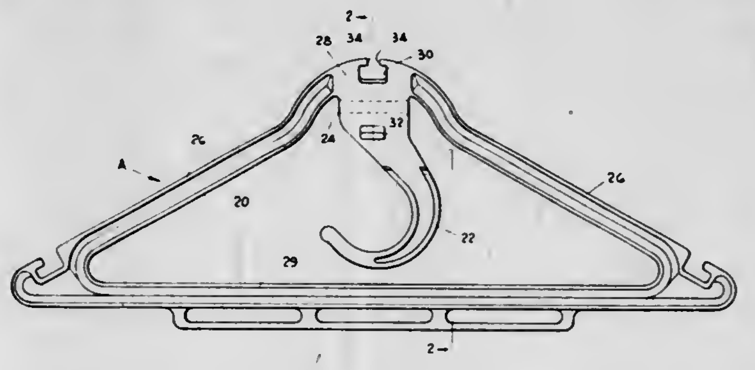
Russell J. Bucaro, Schaumburg, Ill., assignor to Sequist Valve Company, Cary, Ill.
Filed Nov. 23, 1973, Ser. No. 418,781
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.17 **9 Claims**

1. A variable spray aerosol system for use with an aerosol dispenser, said variable spray aerosol system comprising: a button and valve stem combination, said button comprising a button body including at least one terminal orifice recess formed in the side wall thereof, a valve stem recess formed in the bottom thereof and feed supply channel means extending between said terminal orifice recess and said valve stem recess, said button body further including a key means formed thereon, said valve stem including keyway means disposed in operative engagement with said key means and further including feed passage means extending longitudinally along the interior of at least a portion of said valve stem, said valve stem further including at least a first and second feed supply passage, said feed passage means disposed in fluid communication between said dispenser interior and said one terminal orifice insert via said first and second supply passage and said feed supply channel means, said button body movable between at least a first and second position relative to said valve stem, said first and second feed supply passage disposed to alternately communicate with said feed supply channel means, said first feed supply passage communicating with said feed supply channel means when said button body is in said first position and said second feed supply passage communicating with said feed supply channel means when said button body is in said second position.



3,870,206
GARMENT HANGER FRAME HAVING A HINGED HOOK

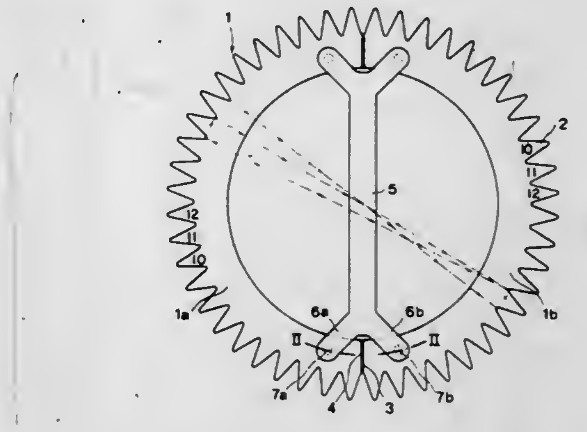
Irvin Feinberg, Saddle Brook, N.J., assignor to Presto Lock Company, Garfield, N.J.
Filed Sept. 25, 1972, Ser. No. 291,926
Int. Cl. A47j *51/097*
U.S. Cl. 223—88 **5 Claims**



1. A one-piece molded plastic garment hanger or the like comprising a substantially rigid supporting frame having a pair of garment supporting arms extending from a central portion, a substantially rigid hook, hinge means connecting the hook to the supporting frame, the hinge means being a flexible section having a thickness less than the thickness of the hook, the hinge means having an axis of rotation extending substantially parallel to the plane of the supporting frame, the hook being rotatable perpendicularly to the plane of the supporting frame from a first position where it is entirely within the perimeter of the supporting frame to a second position where it is outside the perimeter and substantially parallel to the plane of the supporting frame, the central portion having an upwardly open slot, and the hook having stud means dimensioned to enter and to be frictionally held in the slot when the hook is in said second position.

3,870,207
DEVICE FOR MAKING RADIALLY EXTENDING MOTIFS OF TEXTILE FIBERS

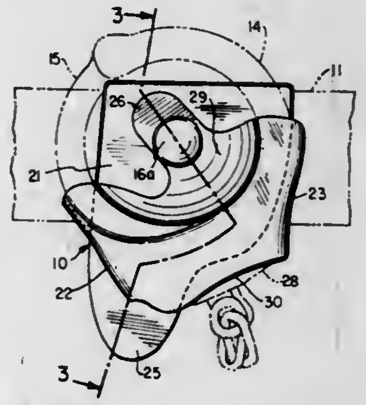
Francoise Gosse, Nord, France, assignor to Societe En Commandite Par Actions: Establissements M. Caulliez Et Delaoutre, Tourcoing, France
Filed Jan. 7, 1974, Ser. No. 431,049
Claims priority, application France, Apr. 25, 1973, 73.14994
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 **7 Claims**



1. A device for making radial motifs in textile fibers comprising, an annular support projections disposed on said support in at least one circle concentric thereto, the annular support being comprised of a ring of semi-rigid thermoplastic material having radial projections on the periphery thereof situated in the plane of the ring and arranged thereabout, said ring having a pair of slots across one of its diameters through a portion of its thickness, the resulting slots leaving, on one surface of the ring, a continuous thickness of material sufficient to ensure connection of the two half-rings while forming a simple hinge, a bar adapted to cross the ring diametrally, studs projecting from ends of the bar, and two holes being formed, one on either side of each slot to receive frictionally, the studs projecting from the ends of the bar.

3,870,208
HANDCUFF CASE

Paris Theodore, New York, N.Y., assignor to Seventrees, Ltd., New York, N.Y.
Filed Dec. 5, 1973, Ser. No. 421,973
Int. Cl. A45c *11/00;* **F41c** *33/02*
U.S. Cl. 224—2 F **8 Claims**



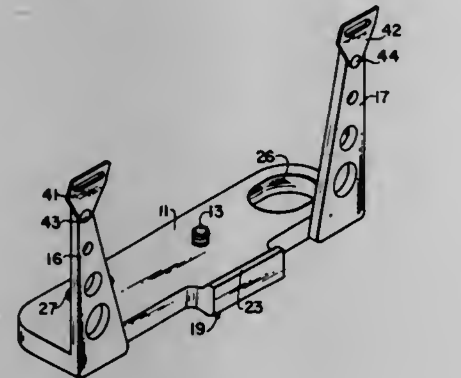
1. A handcuff case comprising:
  - a piece of sheet material having a belt loop portion, a medial portion adjacent said belt loop portion and a handcuff-enclosing portion adjacent said medial portion, means for fastening said medial portion and a first part of said handcuff enclosing portion so as to form a pocket to enclose the lock portions of a set of handcuffs while leaving the frame and jaw portions of the handcuffs exposed to the grasp of the user;

a snap fastener having a first part and a second part releasably fastenable to said first part, said first part of said snap fastener being mounted on said medial portion of said sheet material, said second part of said fastener being mounted on an opposing part of said handcuff-enclosing portion for releasably fastening said handcuff-enclosing portion to said opposing part of said medial portion of said sheet material through the center of said handcuffs so as to retain the lock portions of the handcuffs in said pocket but allow the handcuffs to be withdrawn from said handcuff case by pulling the lock portions through said first and second parts of said snap fastener; and

means for releasably fastening said belt loop portion of said sheet material to said medial portion to form a belt loop for securely holding said handcuff case in position on the belt of a wearer.

3,870,209
CAMERA CARRYING DEVICE

Harry E. Mazur, P.O. Box 4508, Palm Springs, Calif. 92262
Filed July 30, 1973, Ser. No. 383,766
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V **4 Claims**



1. A device for carrying a camera having a body including a bottom and a lens mounting part extending forwardly of said body comprising:

a base plate adapted for underlying and attachment to said camera bottom for protection of said body;

means for demountably fastening said plate to said camera bottom;

a pair of upright arms secured to and extending generally perpendicularly from said plate;

a neck strap connected to the upper ends of said arms for free hanging support of said device and camera from the neck of the user with said plate underlying and supporting the bottom of the camera body; and

said plate being formed with an integrally forwardly projecting portion medially between said arms and projecting forwardly of said arms and being formed to underlie, engage and support said camera lens mounting part for preventing flexing of said camera body thus maintaining proper optical alignment of said body with a lens mounted on said part.

3,870,210
CONTAINER UNIT FOR AN AUTOMOBILE

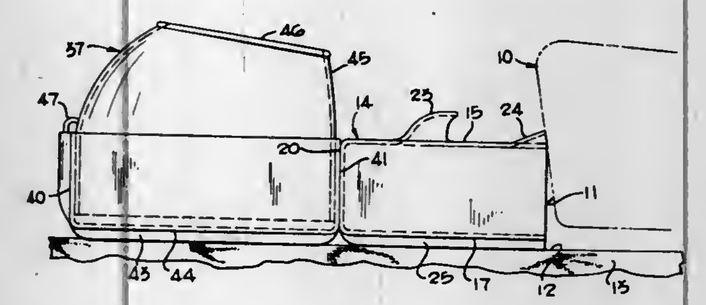
Earl M. Trammell, Jr., c/o E.M.T. Enterprises, Box 435, St. Louis, Mo. 63166
Filed Oct. 5, 1973, Ser. No. 404,027
Int. Cl. B60r *7/04*
U.S. Cl. 224—42.45 R **9 Claims**

1. A convenience container unit for attachment in an automobile having a support surface and an abutment surface disposed angularly to the support surface, the unit comprising:

a. a container adapted to seat on the support surface adjacent the abutment surface,

b. resilient means detachably connected to the container and located between the container and the support surface,

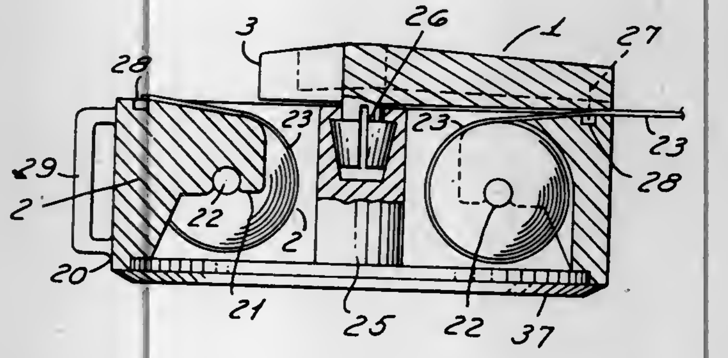
c. an anchorage means connects the resilient means to the support surface in front of the abutment surface, the resilient means exerting a pull on the container for holding the container against the abutment surface, and



d. a second container seating on the support surface adjacent the first said container, one of the containers being provided with a top-open socket, and the other container being provided with a tongue interfitting the socket to detachably connect the two containers in tandem.

3,870,211
MULTIPLE TAPE DISPENSER

Fred G. Schriever, 19950 Harper Woods, Harper Woods, Mich. 48225
Filed Mar. 14, 1974, Ser. No. 450,999
Int. Cl. B26f *3/02*
U.S. Cl. 225—34 **7 Claims**



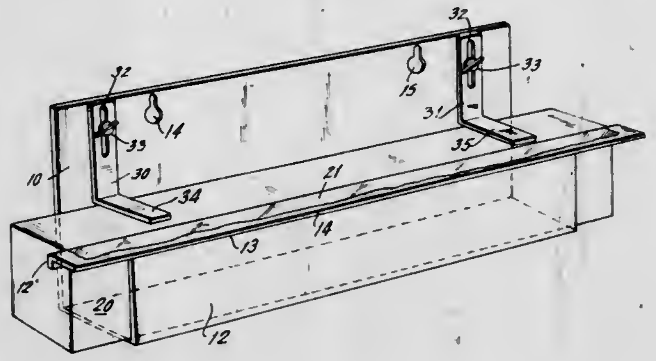
1. A multiple tape dispenser comprising;

a cylindrical housing having a plurality of reels of tape rotatably mounted in the housing and spaced apart in fixed relationship to each other, the axis of the reels being chordal to the cylindrical housing, said housing having an edge over which the housed tape may be dispensed; and a cutting means affixed to the housing and located near the edge of the housing for cutting a length of desired tape at the point the tape is dispensed.

3,870,212
FOIL DISPENSER

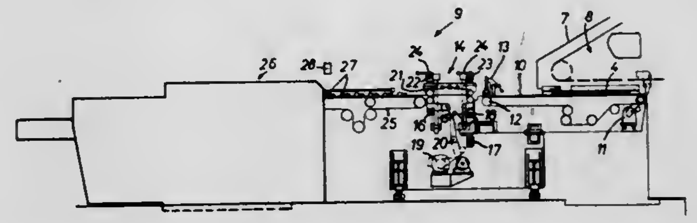
Isaac H. Polk, Santa Clara, Calif., assignor to Harold C. Kuhn, San Francisco, Calif., a part interest
Filed Mar. 18, 1974, Ser. No. 451,856
Int. Cl. B26f *3/02*
U.S. Cl. 225—42 **6 Claims**

1. A dispensing holder for foil packaged on a roll within a box of square cross-sectional shape, comprising an elongated structure of substantially uniform cross-sectional shape throughout its length having a rectilinear pocket adapted to receive the foil package, said pocket being formed by a back side, bottom side, a third side and at least a pair of cross-bar means each pivotally mounted on one of said sides so as to, in its normal position, extend across the fourth side of the rectilinear pocket, a ledge extending horizontally beyond the area of the pocket on the side adjacent the free end of the pivotal means, said ledge having a cutting edge at the free end thereof.



3,870,213
APPARATUS FOR SEPARATING AND STACKING BLANKS

Geroges Meylan, Preverenges, Switzerland, assignor to J. Bobst & Fils S.A.
Filed Mar. 2, 1973, Ser. No. 337,656
Claims priority, application Switzerland, Mar. 17, 1972, 3345/72
Int. Cl. B26f *3/00*
U.S. Cl. 225—100 **11 Claims**

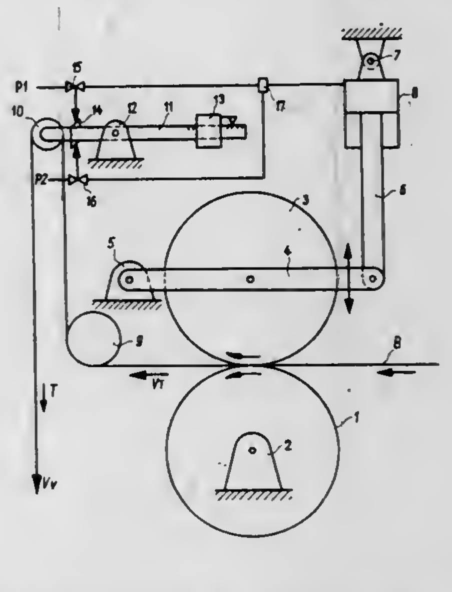


1. Separating and stacking apparatus for a plurality of interconnected box blanks formed from a single sheet, comprising an input conveyor, a separating conveyor juxtaposed with said input conveyor for accepting sheets therefrom, said separating conveyor operating at a linear speed greater than the speed of said input conveyor whereby blanks are separated from said sheet by said separating conveyor, and a plurality of divertor stations juxtaposed with said separating conveyor downstream from the place at which said blanks are separated from each other, each of said divertor stations having a divertor gate, and means for operating all of said divertor gates simultaneously for selectively simultaneously diverting individual blanks from a path aligned with the direction of movement of said separating conveyor into a plurality of stacks.

3,870,214
WEB TENSIONING DEVICE

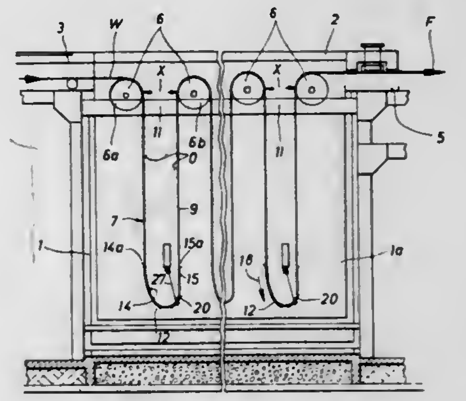
Jurg Friedrich Schmid, Gumligen, Switzerland, assignor to Maschinenfabrik Wifag, Bern, Switzerland
Filed Feb. 26, 1974, Ser. No. 446,012
Claims priority, application Sweden, Feb. 27, 1973, 7302756
Int. Cl. B65h *25/04*
U.S. Cl. 226—34 **6 Claims**

1. Web tensioning device for regulating the tension of a web of material, such as a web of paper, to a constant value, characterized in that a pair of feed rolls are disposed in contacting relationship and arranged to provide a bite through which the web can be passed, a first bearing mounted in a fixed position, one of said feed rolls fixed in said first bearing and arranged to be driven so that its surface speed corresponds substantially to the processing speed of the material web, a second bearing mounted in a fixed position, a first lever pivotally mounted on said second bearing, the other said feed roll being mounted on said first lever, a third bearing mounted in a fixed position, a piston assembly including a piston rod secured to said third bearing with said piston rod connected to said lever, a guide roll spaced from the pair of said feed rolls and arranged for the web of material to pass over said guide roll after passing through the bite formed by said feed rolls, a measuring and storage roll spaced downstream of said guide roll in the direction of movement of the web of material so that the web passes over it, a fourth bearing mounted in a fixed position, a second lever pivotally mounted on said fourth bearing, said measuring and storage roll mounted on said second lever, a member mounted on said second lever for applying an adjustable force thereto in accordance with the constant web tension value, a regulating means operatively associated with said lever and in operative communication with said piston assembly for maintaining the constant value of web tension by continuously adjusting said piston assembly which adjustment is conveyed to the other said feed roll over said first lever for maintaining the constant web tension value.



3,870,215
SUSPENSION LOOP DAMPER FOR HEAVY WEBS

Gunther Schiffer, Dusseldorf, Germany, assignor to Fa. Kleinewefers Industrie-Companie GmbH, Krefeld, Germany
Filed Mar. 29, 1973, Ser. No. 346,060
Claims priority, application Germany, Apr. 7, 1972, 2216666
Int. Cl. B65h *23/22*
U.S. Cl. 226—42 **16 Claims**



1. A suspension loop damper for a traveling web of material such as carpet or the like comprising in combination:

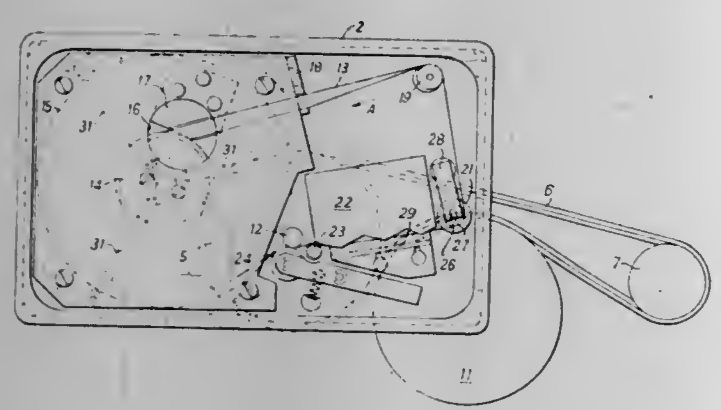
first and second rotatable carrier rollers arranged so that the web passes over the top of said rollers and depends in a free hanging loop therebetween;

a damper means positioned for engaging the outer surface of the loop laterally of the lowermost point of the loop and movable therewith;

and means movably supporting the damper so that it moves with change in length of the loop between the rollers.

3,870,216
DATA RECORDERS

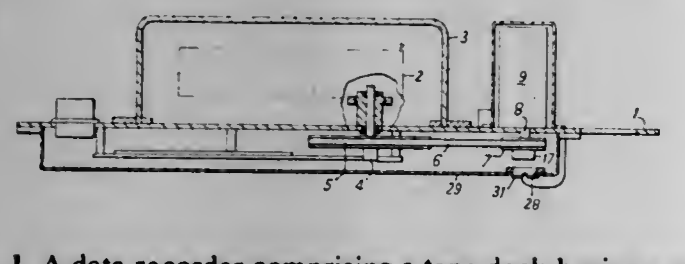
Frank Richard Towner, Wokingham, and John Robert Snook, Bracknell, both of England, assignors to Sperry Rand Limited, London, England
Filed Sept. 10, 1973, Ser. No. 396,030
Claims priority, application Great Britain, Sept. 29, 1972, 45021/72
Int. Cl. B65h *17/20*
U.S. Cl. 226—181 **6 Claims**



1. A data recorder comprising a tape deck having a capstan operable to drive a recording medium in the form of a tape, and drive means operable to drive the capstan, the drive means comprising a motor drivingly connected to the capstan through flywheel means comprising a pair of flywheels which in use are arranged to rotate in opposite directions, wherein the tape is in the form of a continuous loop wound on a reel, wherein the capstan is located closely adjacent the point of return of the tape to the reel and wherein a removable generally cylindrical cover is provided for the reel, the cover having an annular top and a cylindrical body with two spaced slots in the cylindrical body portion thereof through which respective portions of the tape extend in passing from the reel over guides and magnetic heads and back to the reel, both slots being open on the bottoms thereof to permit the slots encompass the respective portions of the tape as the cover is installed over the reel and to permit removal of the cover from the reel with the respective portions of the tape passing through the open bottoms of the slots as the cover is removed, the cover also having an aperture in the top thereof across part of which extends a first guide member for the tape operable to guide the plane of the tape through substantially 90°, said tape and first guide member being manually accessible through said aperture.

3,870,217
DATA RECORDERS

Frank Richard Towner, Wokingham, and John Robert Snook, Great Hollands, both of England, assignors to Sperry Rand Limited, London, England
Filed Sept. 10, 1973, Ser. No. 396,029
Claims priority, application Great Britain, Sept. 29, 1972, 45021/72
Int. Cl. B65h *17/22*
U.S. Cl. 226—188 **8 Claims**



1. A data recorder comprising a tape deck having a recording medium in the form of a tape which is drivable by first drive means, in a recording mode, at one speed and drivable by second drive means, in a replay mode, at a different speed, the first and second drive means being operable to drive the tape through common drive elements and the arrangement being such that when the second drive means is in a driving position relative to the tape deck, the first drive means automatically is disconnected from the common drive elements, and when the second drive means is removed from its driving position, the first drive means automatically is reconnected to the common drive elements,

wherein the first drive means is connected to and disconnected from the common drive elements by relative movement between the first and second drive means such as to disconnect and connect, respectively, the second drive means from and to the common drive elements,

wherein the first drive means is operable to drive one of the common drive elements through movable means biased into an operative position and movable by the second drive means into an inoperative position,

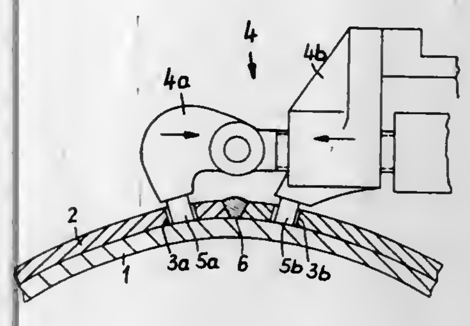
wherein the movable means is a spring-loaded ball which in the operative position connects said one common drive element to the first drive means and in the inoperative position disengages said one common drive element from the first drive means,

wherein the first drive means is a motor having an output shaft, and said one common drive element is a pulley mounted on said output shaft by a ball race and carrying the spring-loaded ball, the output shaft being provided with a member having a recess into which the ball projects in its operative position,

wherein the second drive means is a motor having an output shaft to which is connected an attachment comprising a shaft, a sleeve keyed to the latter, and a plunger carried by the sleeve and releasably engageable with a recess in the pulley to provide a drive connection between the second drive means and the pulley.

3,870,218
DEVICE FOR EFFECTING A CLOSE ENGAGEMENT BETWEEN LAYERS OF SHEET METAL WHEN MAKING LAMINATED PRESSURE CONTAINERS

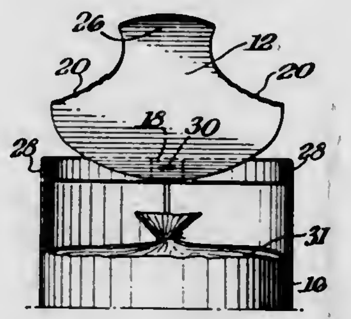
Joachim Ehle, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Aug. 21, 1973, Ser. No. 389,651
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **1 Claim**



1. A device for making a cylindrical pressure container by means of a core pipe and at least one sheet metal layer to be placed thereabout and provided with two rows of bores respectively arranged near the end edges of said sheet metal layer, which includes: first supporting means, a first series of studs pivotally supported by said first supporting means for engagement with one of the rows of bores in said sheet metal layer, second supporting means movable selectively relative toward and away from said first series of studs, a second series of studs pivotally supported by said second supporting means for engagement with the other row of bores, and means operatively connected to said first and second supporting means for actuating the same.

3,870,219
TUBULAR CARTON

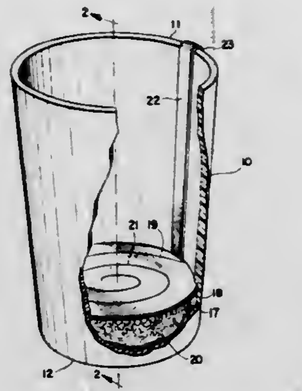
Howard Reisman, c/o J. Reisman & Sons, Rt. 138, Pennsauken, N.J.
Continuation-in-part of Ser. No. 302,264, Oct. 30, 1972, Pat. No. 3,820,865. This application Jan. 31, 1973, Ser. No. 328,479
Int. Cl. B65d *3/04, 3/26*
U.S. Cl. 229—4.5 **14 Claims**



1. A tubular carton comprising a tubular wall of fairly stiff flexible sheet material having a predetermined end configuration, end closures of fairly stiff flexible sheet material having a predetermined configuration of a slightly smaller diameter than the inner end configuration of said tubular wall, peripherally spaced tabs about said end closures, said end closures being inserted within said end configuration of said tubular wall with said tabs being bent to lie contiguous to said ends, fastening means securing said tabs within said ends, and at least one of said end closures having a segment severable from its main portion about at least all but one of said tabs whereby said main portion may be swung clear of said tubular wall about its fastened tab after the segments about all of said tabs except said fastened tab are severed for providing access to said carton and may be swung back about said fastened tab into engagement within said tubular wall to reclose said carton.

3,870,220
CUP WITH BEVERAGE CONCENTRATE CONTAINER

Ronald William Koury, 18 Luttrel Ave., Toronto, Ontario, and Marvin Cooper, 18 Fisherville Ave., Downsview, Ontario, both of Canada
Filed Feb. 7, 1973, Ser. No. 330,228
Int. Cl. B65d *3/00*
U.S. Cl. 229—1.5 C **3 Claims**

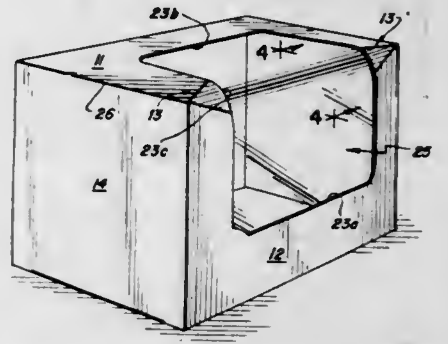


1. A beverage cup for dispensing a single portion of a beverage, from a beverage concentrate contained within the cup, said cup comprising;

- a drinking receptacle, of sufficient size to contain a single serving of a liquid beverage, said receptacle having a bottom and side walls, said side walls defining a rim, said side walls of said receptacle defining an upper and a lower portion, said upper portion being of a predetermined thickness and said lower portion being of a reduced thickness with respect thereto, whereby to define an inner annular shoulder running around the interior of said receptacle adjacent to but spaced above said bottom wall thereof, at the junction between the lower and upper wall portions the outer surface of said receptacle side walls being smooth and regular;
- a container for said beverage concentrate secured in the bottom of said receptacle, said container containing a single serving of a beverage concentrate, and being formed with a bottom, side walls, and an open top accessible to the interior of said receptacle;
- a peripheral lip running around the open top of said container and dimensioned to fit within said lower side wall portion of said receptacle and be retained therewithin by interengagement with said annular shoulder, said container being formed of a material which is harmless when immersed in said liquid beverage, and being secured as aforesaid in said bottom of said receptacle to prevent removal thereof upon opening thereof;
- closure panel means extending over the open top of said container, and sealably fastened therearound, and,
- tab means connected to said closure panel, whereby said closure panel may be removed from said container while said container remains secured in the bottom of said receptacle thereby exposing said beverage concentrate within said container at the bottom of said receptacle, the receptacle then being readied for the addition of liquid without removal of said container.

3,870,221
FOLDING CARTON

Charles R. Zeitter, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Oct. 9, 1973, Ser. No. 404,607
Int. Cl. B65d *5/18*
U.S. Cl. 229—16 D **7 Claims**



1. A folding carton comprising a plurality of panels separated from one another by a plurality of foldlines, at least one pair of adjacent panels and the foldline connecting same having an enlarged window opening formed therein; and a bendable window member overlying said opening and having the margin of said member overlapping and being secured to the concealed surfaces of said panels and foldline cicumjacent said window opening; said opening separating said foldline into opposed aligned sections, each foldline section including a pair of scorelines extending laterally outwardly and convergently from the perimeter of the opening and intersecting one another at a point spaced laterally outwardly from the periphery of said window member.

3,870,222
COMBINATION REUSABLE CARTON AND LIFT-OUT CARRY TRAY FOR PAPER AND THREE-WAY COVER

Ralph R. Butler, Erie, Pa., assignor to Hammermill Paper Company, Erie, Pa.
Filed July 11, 1972, Ser. No. 270,868
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R **6 Claims**

1. In combination, a carton and a cover, said cover being adapted to be released at the front to be used as a swinging

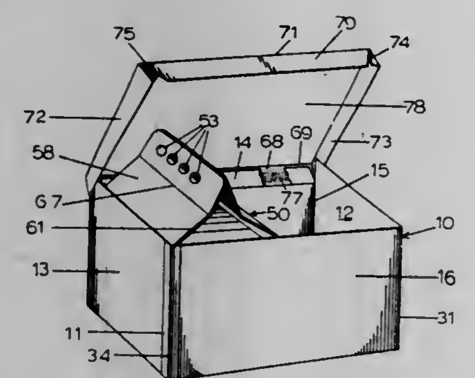
cover and selectively to be detached both front and back providing a removable cover to be removed and used as a carrying tray,

said carton having a bottom, a front wall, a rear wall, a first end wall and a second end wall defining an enclosure,

said front wall, said first end wall, said second end wall and said rear wall rising upwardly from said bottom and terminating at upper edges all disposed at substantially the same distance from the said bottom,

said cover having a front flange, a rear flange, a first end flange, a second end flange, and a smooth one-piece top, said top being of substantially the same area as said carton bottom,

said flanges being fixed to said top and extending downward therefrom,



said flanges having extensions from said top downwardly of substantially less than half the extension of said walls of said carton upwardly from said bottom,

said flanges being fixed together at the adjacent edges,

a scored line extending across said rear wall of said carton parallel to the top of said rear wall defining a hinge flap, said scored line being spaced below said rear wall top edge approximately the distance equal to the width of said flanges,

means fixing said rear flange of said cover to said hinge flap of said carton whereby said cover can be used as a swinging cover,

said means fixing said rear flange to said hinge flap comprising an adhesive weak in tension yet strong in shear whereby said cover can be removed and used as a tray having a bottom and four sides to carry two reams of paper.

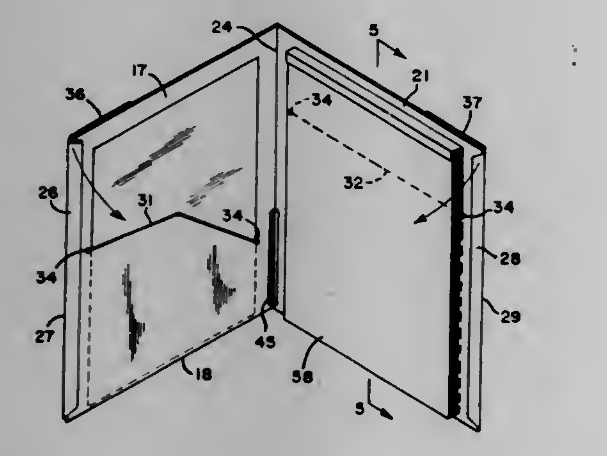
3,870,223
DOUBLE WING POCKET PORTFOLIO AND FILE FOLDER

Jon Richard Wyant, Marietta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 7, 1974, Ser. No. 431,355

Int. Cl. B65d *27/08*

U.S. Cl. 229—72 17 Claims



1. A twin pocket portfolio and file folder formed from a single, integral blank, comprising:

a. a front outer panel,

b. a rear outer panel hingedly connected to said front outer panel along a first center fold line,

c. a front inner panel facing said front outer panel and connected thereto along a first bottom fold line on an edge of said front outer panel adjacent the edge on said first center fold line, said facing front panels forming a front pocket in said portfolio,

d. a rear inner panel facing said rear outer panel and connected thereto along a second bottom fold line forming an extension of said first bottom fold line, and hingedly connected to said front inner panel along a second center fold line forming an extension of said first center fold line, said facing rear panels forming a rear pocket in said portfolio,

e. means attaching said front outer panel to said front inner panel along the respective edges thereof opposite said center fold lines,

f. means attaching said rear outer panel to said rear inner panel along the respective edges thereof opposite said center fold lines,

g. said front and rear inner panels being longer along said second center fold line than said front and rear outer panels along said first center fold line to lengthen said inner panels with respect to said outer panels to define respective front and rear exterior file folders opening into said front and rear pockets opposite said bottom fold lines, said shorter front and rear outer panels providing ready access to said exterior file folders, and

h. slit means in said front and rear inner panels providing access through said inner panels to said respective front and rear pockets for reception, filing, storage, and support therein of papers, notepads, envelopes and so on.

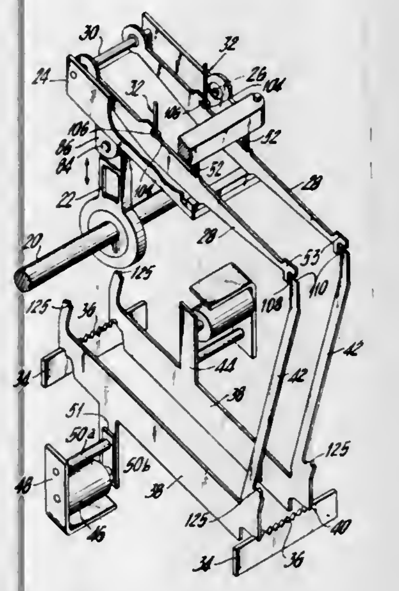
3,870,224
TAPE PERFORATOR

Leon N. Canick, Fresh Meadows, and Charles S. Aldrich, St. James, both of N.Y., assignors to Precision Mechanisms Corporation

Filed Aug. 6, 1973, Ser. No. 386,215

Int. Cl. G06k *1/02*

U.S. Cl. 234—110 18 Claims



1. A tape perforator comprising:

a. a cradle pivotally mounted on a fixed support for oscillating movement about a first transverse axis;

b. drive means for oscillating said cradle about said first axis;

c. a first plurality of elongated lift levers pivotally mounted proximate one end thereof in said cradle for selective oscillating movement about a second, transverse axis that is substantially parallel to and spaced from said first axis;

d. an elongated punch mounted at one end on each said first lever proximate said first axis, the longitudinal axis of each said punch being substantially perpendicular to said first axis, the axis of said punches being in a plane that is approximately coincidental with said first axis;

e. means for advancing the tape along a plane that traverses the plane of the longitudinal axis of said punches;

f. a second plurality of elongated fulcrum levers equal in number to said first plurality of levers, said second levers being pivotable about axes that are substantially parallel to the planes of said first levers and movable between a first, non-punching mode position and a second, punching mode position whereby, in said first position of said second levers, said cradle and said first levers oscillate as a unit about said first axis and said punches are substantially devoid of movement in directions along the longitudinal axis thereof so that said punches do not perforate the tape and whereby, in said second position, said second levers interfere with the movement of said first levers so that said cradle continues to oscillate about said first axis but said first levers oscillate about said second axis to cause said punches to move longitudinally above the plane of and through the tape; and

g. means for selectively moving said second levers from said first position to said second position.

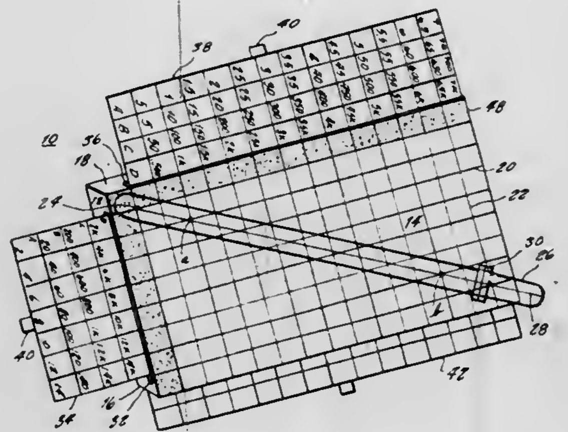
3,870,225
VARIABLE LINEAR GRAPH

John E. Murphy, 11 Phyllis Dr., Bethpage, N.Y. 11714

Continuation-in-part of Ser. No. 299,829, Oct. 24, 1972, abandoned. This application Apr. 15, 1974, Ser. No. 461,258

Int. Cl. G06c *3/00*

U.S. Cl. 235—89 R 10 Claims



1. In a variable linear graph, the combination of rectangular case means having a horizontal top surface portion and vertical side portions, at least two of said side portions being orthogonally adjacent to each other thereby establishing an ordinate side and an abscissa side, each of said two side protions containing therein pocket means, on said surface portion there being first and second sets of lines intersecting each other to form an orthogonal graph arrangement of ordinate and abscissa lines having an origin at one corner thereof, at least one each of an ordinate card and an abscissa card, each of said cards respectively including at least one scale thereon, the divisions of the scale of said ordinate and abscissa cards corresponding respectively to said ordinate and abscissa lines, said ordinate and abscissa cards being independently insertable into said respective pocket means of said ordinate and abscissa side portions such that the scales thereon are respectively adjacent to said ordinate and abscissa lines, and arm means pivotally attaahed to the surface of said case means at said origin of said graph to rotate on said graph.

3,870,226
COMPACTION OF A SURFACE WITH A COMPACTOR HAVING WHEELS

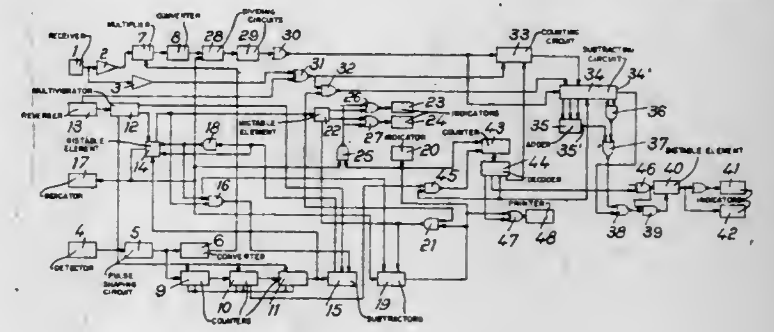
Maurice Leroy, Sotteville les Rouen, France, assignor to Societe anonyme dite: Richier, Paris, France

Filed May 21, 1973, Ser. No. 362,203

Claims priority, application France, May 25, 1972, 72.18773

Int. Cl. G06f *15/56*

U.S. Cl. 235—151.3 12 Claims



3. A device for determining the degree of compaction of a surface by a compactor having wheels, in successive sweeps, which comprises:

A. means for providing a signal representative of the torque applied to the wheels during at least a part of each sweep;

B. means for comparing the signals provided during two successive sweeps, and

C. means for determining the degree of compaction as a function of the result of the comparison of said signals.

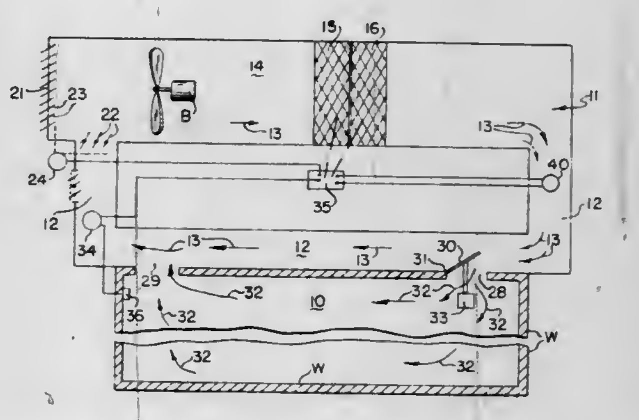
3,870,227
COMFORT TEMPERATURE CONTROL SYSTEM FOR A ZONE

Russell G. Attridge, Jr., Columbus, Ohio, assignor to Ranco Incorporated; Columbus, Ohio

Filed Aug. 10, 1972, Ser. No. 279,743

Int. Cl. F24f *11/09*

U.S. Cl. 236—49 4 Claims



1. A method of controlling temperatures in a zone comprising:

a. providing a fluid tempering system comprising fluid tempering means and a fluid circulating system for directing a given flow of fluid from said tempering means toward the zone and for returning said flow of fluid from said zone towards said tempering means, said system providing for a variable flow of fluid to said zone and for bypassing the remaining fluid of said given flow around said zone;

b. sensing the temperature in said zone;

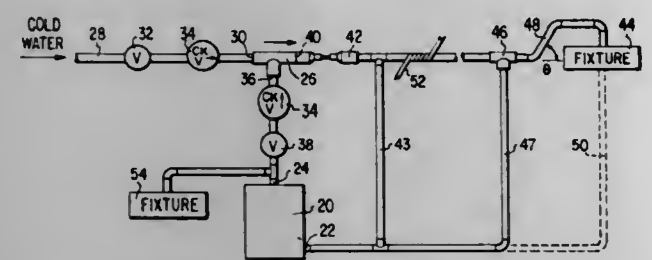
c. altering the flow of fluid to bypass more or less fluid around said zone in response to sensed changes in zone temperature to maintain a predetermined zone temperature level;

d. mixing the fluid which has flowed to the zone with the fluid which has been bypassed around the zone;

e. sensing the temperature of the mixed zone and bypass fluids to determine the load on said zone;
f. controlling the temperature of said given flow of fluid flowing toward said zone in response to the sensed temperature of the mixed zone and bypass fluids; and,
g. maintaining the flow rate of fluid to the zone relatively constant except when the load on the zone changes substantially and abruptly.

3,870,228
WATER HEATING SYSTEM

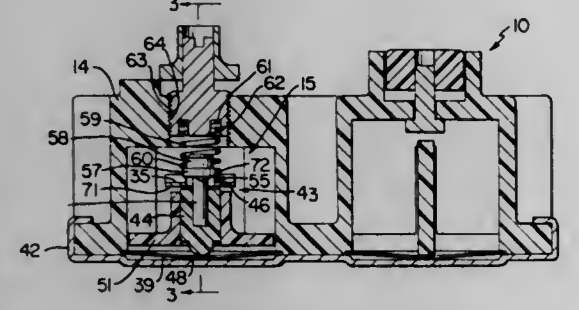
Charles D. Moseley, Jr., P.O. Box 449, Lynchburg, Va. 24503
Continuation-in-part of Ser. No. 260,667, June 7, 1972,. This application Jan. 15, 1973, Ser. No. 323,739
Int. Cl. F24d *3/00*
U.S. Cl. 237—59 **9 Claims**



1. A system for supplying heated water at a constant temperature from a source to the inlets of a plurality of fixtures, said system comprising:
a. water heater means having an inlet and an outlet, said outlet providing said source of heated water, and
b. jet entrainer means having a first and second inlet and an outlet, said first inlet being connected to said outlet of said source of heated water, said second inlet being connected between a nozzle and a source of relatively cold water, and said outlet of said jet entrainer being connected to each of said inlets of said plurality of fixtures, said nozzle being positioned in said entraining means for providing a high velocity stream of water which entrains water from said first inlet in proportion to its velocity to thereby maintain the temperature of the water at said outlet of said entrainer means substantially constant.

3,870,229
THERMOSTAT CONSTRUCTION AND ELECTRICAL CONTROL SYSTEM UTILIZING THE SAME

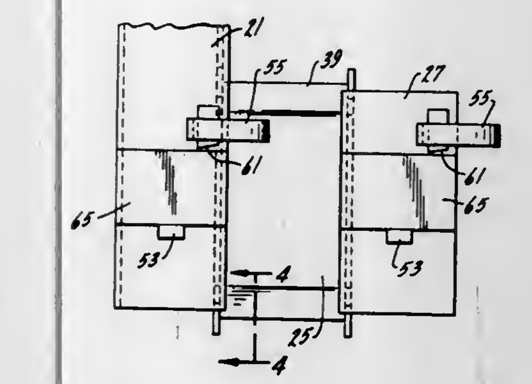
Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Continuation of Ser. No. 260,107, June 6, 1972, abandoned. This application Jan. 4, 1974, Ser. No. 430,893
Int. Cl. H01h *71/16*
U.S. Cl. 337—57 **22 Claims**



1. In a thermostat construction having a fixed contact and a blade-carried movable contact supported by a frame means and bimetallic snap disc carried by said frame means for controlling movement of said movable contact relative to said fixed contact in response to snapped temperature sensing conditions of said disc together with temperature setting means carried by said frame means for selecting the temperature of operation of said disc for moving said movable contact out of contact with said fixed contact, the improvement wherein said blade has opening means passing therethrough and said temperature setting means comprises plunger means passing loosely through said opening means provided through said blade and engaging said snap disc, spring means carried by said frame means and being operatively associated with said plunger means to urge said plunger means into engagement with said snap disc, and means for adjusting the force of said spring means that urges said plunger means into said engagement with said snap disc.

3,870,230
RAILROAD TRACK CONSTRUCTION

Sergio R. Damy, Apartado Postal 39-56, Guadalajara, Mexico
Filed Feb. 4, 1974, Ser. No. 439,099
Claims priority, application Mexico, Mar. 27, 1973, 142462
Int. Cl. E01b *3/16*
U.S. Cl. 238—26 **2 Claims**

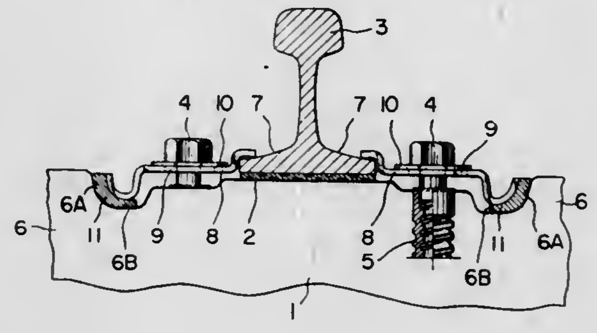


1. A railroad track support including:
a pair of longitudinally extending members spaced laterally of each other a distance apart equal to the desired spacing of the rails of a railroad track,
said longitudinally extending members each including alternately spaced base and rail support portions with said rail support portions projecting above said base portions,
said rail support portion of each longitudinally extending member being aligned with similar portions of the other longitudinally extending member,
at least one cross member extending between and engaging said longitudinally extending members to maintain the lateral spacing of said longitudinally extending members, said cross members including rail support portions,
rail fastening means carried by said rail support members of said longitudinally extending members and said cross member,
said rail fastening means including lugs and clips fastened to said rail support portions on opposite sides of each rail, each clip extending parallel to a track and being spiral shaped with the outer end of said clip fastened to said rail support portion and the inner end equipped with a laterally projecting tab adapted to the forced into engagement with its rail.

3,870,231
RAIL FASTENING DEVICE

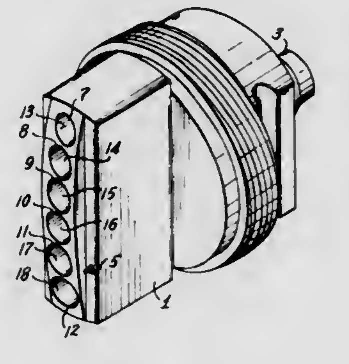
Shigetaro Toyama, and Yoshio Matsuo, both of Tokyo, Japan, assignors to Tetsudo Kizai Kogyo Company Limited, Tokyo, Japan
Filed July 17, 1974, Ser. No. 489,355
Int. Cl. E01b *9/66*
U.S. Cl. 238—324 **5 Claims**

1. In a rail fastening device coacting between a flange portion of a rail placed on a concrete tie and a stepped portion inclined with respect to said rail and formed on said concrete tie, the fastening device including a fastening member bridged between said stepped and flange portions, whereby the rail is firmly held on the concrete tie by fastening said fastening member with bolts, the improvement comprising a wedge-like member interposed between said fastening member and said stepped portion, said stepped portion being formed into a configuration so as to have a substantially vertical side surface which progressively approaches the rail and a substantially horizontal upper surface which progressively inclines downwardly in the direction in which said vertical side surface progressively approaches the rail, said wedge-like member being associated with said stepped portion and having vertically and horizontally extending portions which are shaped to respectively conform with said vertical and horizontal surfaces.



3,870,232
NOZZLE FOR PROJECTING POWDERED SOLID PRODUCTS

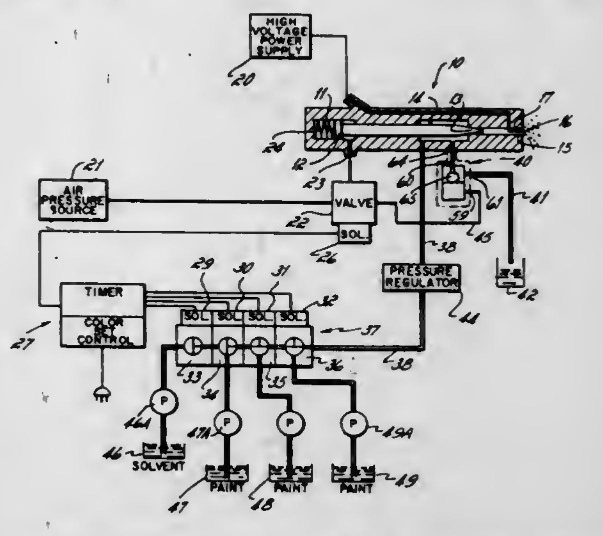
Adrien Lacchia, Meylan, France, assignor to Air-Industrie, Paris, France
Filed Apr. 30, 1973, Ser. No. 355,306
Claims priority, application France, May 26, 1972, 72.19635; Feb. 1, 1973, 73.04028
Int. Cl. B05b *1/04, 5/02, 7/04*
U.S. Cl. 239—15 **8 Claims**



1. A spray nozzle for projecting solid particles carried by a conveyor gas from a spray gun of the type equipped with means for supplying secondary air, said nozzle being adapted to shape the projected particles and said conveyor gas into a single fan-shaped outlet spray, said nozzle comprising:
a nozzle body defining a plurality of separate ducts passing through said body in the direction of said spray, each separate duct having an inlet and a spray outlet and adapted to be completely traversed by a portion of said particles, said plurality of ducts being positioned to form beyond said outlets a spray in which said particles are uniformly distributed, and
a suction device of the venturi type associated with each of said separate ducts, each suction device comprising a constriction at the inlet of the separate duct with which it is associated and at least one injection conduit positioned for discharging auxiliary gas received from sid secondary air supply means into said associated duct downstream of said constriction.

3,870,233
COLOR CHANGE OF ELECTROSTATIC SPRAY APPARATUS

Frederick R. Wilhelm, Avon Lake; Donald R. Hastings, Elyria, and William W. Lyth, Cleveland, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Sept. 12, 1973, Ser. No. 394,422
Int. Cl. B05b *5/02, 7/24, 15/02*
U.S. Cl. 239—15 **27 Claims**



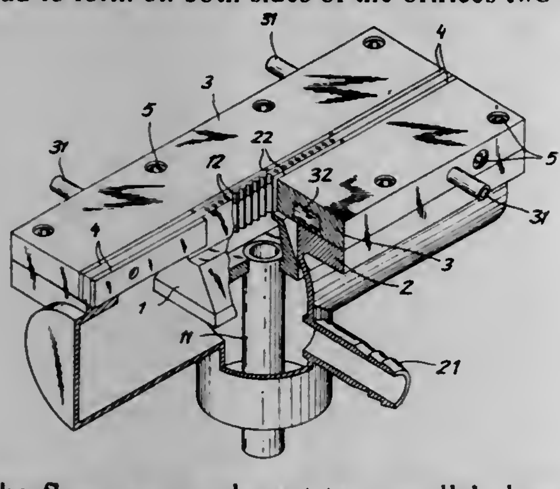
1. An electrostatic spray system for selectively spraying any one of a plurality of spray materials from a common spray gun, which system comprises
a spray gun having a spray material flow passage terminating in an outlet orifice and a selectively operable valve for controlling the emission of spray material from said orifice,
means including a high voltage power supply for applying an electrical charge to spray material as it is emitted from said spray gun,
a plurality of spray material reservoirs and a solvent reservoir,
means including an electrical control circuit for selectively connecting any one of said reservoirs to said spray gun so as to enable spray material to be supplied from a selected reservoir to said gun,
a dump tank, and
a dump valve operatively connected to the spray material flow passage of said gun and operable when opened to bypass spray material from said flow passage to said dump tank, said dump valve being positioned immediately adjacent said gun and made from components which have a capacitance sufficiently low as to preclude said dump valve from storing a potentially dangerous electrical charge,
said dump valve comprising a valve housing, said housing having an inlet port and an outlet port interconnected by a dump flow passage, and
a needle valve element located within said dump flow passage and operable to control the flow of spray material through said dump valve.

3,870,234
LAMINAR FLAME SEPARATE AEROSOL BURNER FOR USE IN ATOMIC ABSORPTION SPECTROSCOPY

Janex Stupar, Ljubljana, Yugoslavia, assignor to Institut Jozef Stefan, Jamova, Yugoslavia
Filed Nov. 6, 1972, Ser. No. 304,269
Claims priority, application Yugoslavia, Apr. 11, 1972, 973/72
Int. Cl. B05b *15/00*
U.S. Cl. 239—132.3 **1 Claim**

1. A laminar-flame separate-aerosol-injection burner for use in atomic absorption spectroscopy, comprising an aerosol chamber provided with a plurality of orifices on the upper side and connected by a tube to an aerosol supply, said aerosol chamber being positioned inside a burner body and clamped between two halves of a burner head which are screwed tightly

to the top of the burner body, and that four thin metal spacers are placed between the aerosol chamber and the halves of the burner head to form on both sides of the orifices two parallel slots for the flame gases, whereat two parallel channels are drilled on each side of the burner head connected by pipe connections to a water supply and drain respectively.



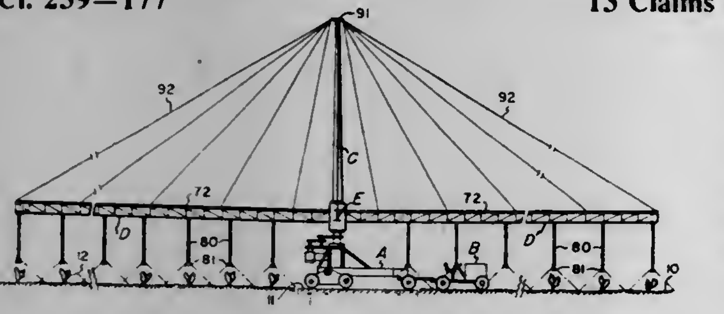
3,870,235
PORTABLE PEDESTAL MOUNTED TOWER IRRIGATOR

Stephen D. Newell, Du Bois, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 17, 1973, Ser. No. 425,523

Int. Cl. B05b *3/02, 1/20*

U.S. Cl. 239—177 **13 Claims**



1. In an improved overhead rotary pedestal-supported effluent-dispensing unit, a support base, a primary cage-like support frame of vertically elongated shape secured on said support base, a secondary cage-like rotatable upper support frame of vertically elongated shape, a pipe connector membe. fixedly mounted within a lower end of said primary support frame on said support base and having a coupling at one end thereof for detachably receiving an effluent supply member and having an upwardly open end portion; a vertically elongated and positioned rotatable pipe member extending at its lower end into the upwardly open end portion of said connector pipe member and being journaled therein to extend upwardly within and along said primary support frame into within and along said secondary support frame; a reinforcing sleeve member secured over said vertical pipe member and extending from a position adjacent said pipe connector member centrally vertically upwardly along said primary support frame and at its upper end being secured to and supporting said secondary support frame in a spaced relation above said primary support frame, a bearing sleeve secured within and extending downwardly from an upper end portion of said primary support frame and along said reinforcing sleeve member for journaling said sleeve member along and within said primary support member, end thrust bearing means positioned within the spacing between said primary and secondary support frames and cooperating with said sleeve member for rotatably supporting said secondary frame on and with respect to said primary support frame, a mast extending centrally upwardly from and mounted on an upper end of said secondary support frame, a pair of opposite, substantially horizontally extending, fluid dispensing truss arm assemblies mounted on said secondary support frame to extend substantially horizontally outwardly therefrom, a pair of balanced tension arms extending substantially horizontally from said secondary support frame at right angles to said pair of truss arm assemblies, and cable means connecting said pair of truss arm assemblies and said pair of tension arms together and to an upper end portion of said mast.

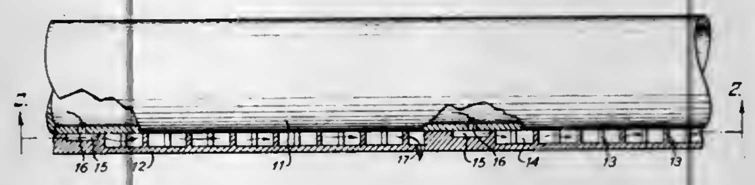
3,870,236
DRIPPING IRRIGATION TUBING

Jaime Sahagun-Barragan, Calle del Teco 287, Zamora, Michoacan, Mexico

Filed Mar. 14, 1973, Ser. No. 341,219

Int. Cl. B05b *15/00*

U.S. Cl. 239—542 **2 Claims**



1. A dripping irrigation tubing for distributing irrigation liquid, comprising a pipe line having a plurality of spaced perforations along its length through which irrigation liquid under pressure emerges from the pipe line, and a one piece depressurizing channel member outside the pipe line covering said perforations and extending partly around the external circumference of said pipe line, said channel member having a curved bottom wall corresponding to the pipe line wall curvature and side walls of uniform height extending around the edges of said bottom wall, said side walls being firmly attached to the outside of the pipe line wall to space the channel member from the pipe line, a plurality of cross walls being provided projecting alternately from each of said side walls and of the same height as said side walls and engaging with the outside of the pipe line wall but not reaching the opposite side wall and arranged to form passages providing a plurality of obstacles to liquid flow, and reception chambers for incoming liquid being provided in said channel member located respectively under each pipe line perforation and of less height than said side walls thereby filtering out large particles from the incoming liquid, and including a plurality of spaced outlet holes in said channel member at a preselected distance between said reception chambers along its length to distribute liquid at a predetermined lowered pressure after passing through said passages.

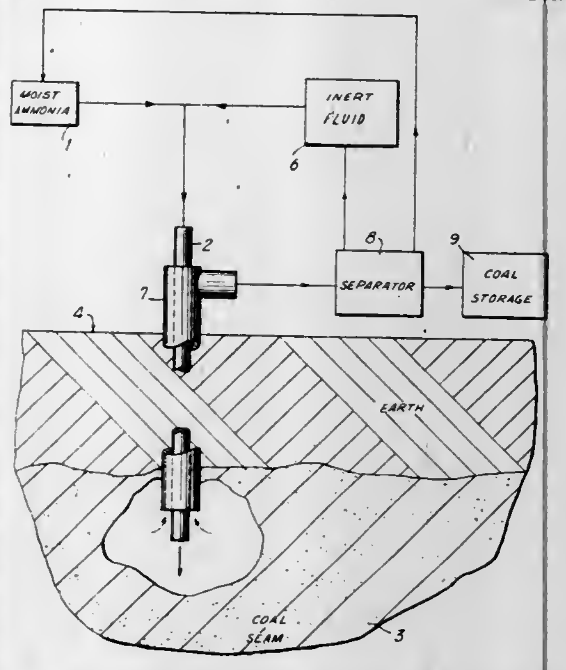
3,870,237
CHEMICAL COMMINUTION OF COAL AND REMOVAL OF ASH INCLUDING SULFUR IN INORGANIC FORM THEREFROM

Robert G. Aldrich, Manilius, N.Y., assignor to Syracuse University Research Corp., Syracuse, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,559

Int. Cl. B02c *19/00*

U.S. Cl. 241—1 **2 Claims**



1. A method of reducing interlayer forces at natural interfaces present in coal, comprising the step of treating said coal with an effective amount of moist ammonia where the ratio of water to ammonia is up to 72:28 by weight.

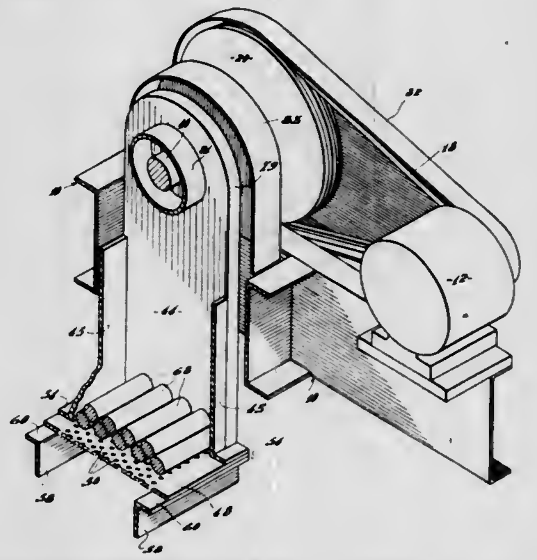
3,870,238
SAND FRACTURING APPARATUS AND METHOD

George L. Sellars, Cincinnati, Ohio, assignor to Dravo, Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1973, Ser. No. 334,695

Int. Cl. B02c *17/14*

U.S. Cl. 241—27 **9 Claims**



1. A sand fracturing machine comprising, in combination: an open topped container with a horizontal bottom wall with apertures therethrough and vertical side walls, said apertures being shaped to prevent sand grains from becoming wedged therein and large enough to pass substantially all the sand aggregate introduced into said container, said container being mounted for movement substantially only in a vertical direction;

- a plurality of elongated rods disposed within said container with the longitudinal axis of each rod being disposed substantially parallel to said bottom wall, said rods being unattached to said container and free to move in a vertical direction; and
- a vibrator apparatus operably connected to said container to vibrate said container and rods in a generally vertical direction wherein the larger grains of sand in a sand aggregate placed into said open topped container are fractured by the vibrating rods to produce a greater percentage of mid-size sand grains in the output sand aggregate of the machine than is contained in sand aggregate introduced into the machine without substantially increasing the percentage of fine sand grains in the output sand aggregate.

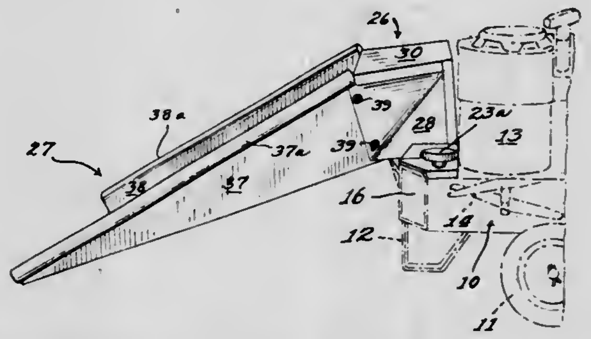
3,870,239
DETACHABLE LOADING DEVICE FOR GARDEN SHREDDER

Robert D. Lautzenheiser, and Howard M. Ullman, Jr., both of Bluffton, Ind., assignors to The Red Cross Manufacturing Corporation, Bluffton, Ind.

Filed Feb. 3, 1972, Ser. No. 223,140

Int. Cl. B02c *13/16*

U.S. Cl. 241—186 R **2 Claims**



1. In a shredding and bagging machine for yard usage, the combination comprising a base of shallow cup shape having a bottom wall and a circular side wall defining a shredding chamber, transport means for supporting the base in horizontal position slightly upraised above the ground, a cover plate fitted to the base for enclosing the same, an engine mounted on the cover plate and having a drive shaft which extends into the base, a rotor mounted on the shaft including a blade having tip portions extending to the region of the side wall, a plurality of stationary breaker members at spaced positions on the side wall and having horizontal notches formed therein for registering with the tip portions of the blade, means including a discharge conduit penetrating the side wall for forcible discharge of the shredded material, the cover plate having a receptacle for feeding material into the chamber, a ramp of flaring construction having side walls defining a narrow upper end and a wide lower end, and means for securing the ramp with respect to the receptacle so that the narrow end communicates with the receptacle and so that the wide end extends downwardly at a shallow angle into engagement with the ground thereby permitting leaves or the like lying on the ground to be swept upwardly into the receptacle.

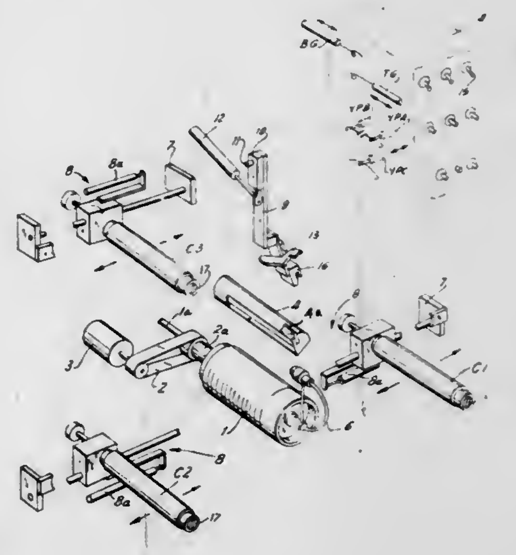
3,870,240
YARN CUTTER FOR USE IN YARN WINDERS

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Filed May 25, 1973, Ser. No. 364,074

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 A **8 Claims**



1. A yarn pick-up and severing device, particularly for mounting on a rotating winder chuck, comprising a support adapted to be mounted for rotation about an axis and having a surface extending transversely of said axis; engaging means mounted on said surface and operative for clampingly engaging a proximal yarn, with reference to which said support rotates, in such a manner that the yarn becomes convoluted about said engaging means during such rotation, said engaging means comprising an engaging member mounted on said surface and defining a slight gap therewith, a clamping arrangement extending from said surface across said gap into biased contact with said engaging member so as to clampingly engage and retian a yarn which enters into said gap; and severing means on said engaging means and operative for severing said yarn only upon at least partial completion of a yarn convolution about said engaging means.

3,870,241

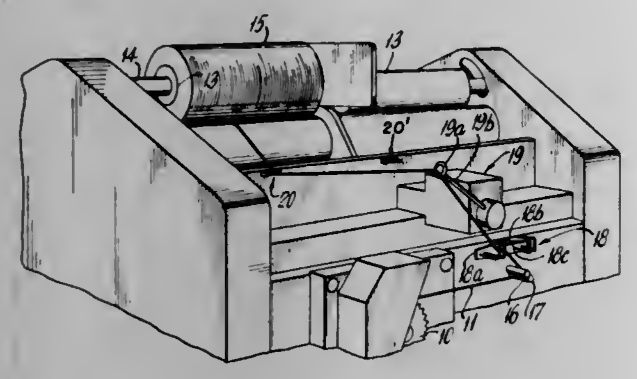
APPARATUS AND METHOD FOR TREATING YARN

David W. Norwood, Baltimore, Md., assignor to Concorde Fibers Inc., Columbia, Md.

Continuation of Ser. No. 172,704, Aug. 18, 1971, abandoned. This application July 23, 1973, Ser. No. 382,103

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 A **5 Claims**



1. In an apparatus for winding yarn comprising means for holding a yarn package support onto which support the yarn is to be wound, a rotationally driven roller for engaging the surface of the yarn package support upon threading-up and thereafter the surface of the package of yarn being formed on the support thereby to define a nip with and rotationally to drive the yarn package support and the yarn package being formed thereon, a traverse guide for guiding the yarn to said nip whereupon the yarn is wound onto the package support, means for reciprocating the traverse guide relative to the rotating package support thereby to distribute windings of the yarn on the package support, means for holding a second yarn package support in juxtaposition to the first yarn package support, a second rotationally driven roller for engaging the surface of the second yarn package support upon threading-up and thereafter the surface of the package of yarn being formed on the support thereby to define a nip with and rotationally to drive the second yarn package support and the yarn package being formed thereon, a second traverse guide for guiding the yarn to said nip of the rotating second roller and rotating second package support, means for guiding the yarn to the second nip whereupon the yarn is wound on the second package support, means for reciprocating the second traverse guide relative to the second package support thereby to distribute windings of the yarn on the second package support, a change-over guide, means for moving said change-over guide from a first position for guiding the yarn to the first traverse guide to a second position for guiding the yarn to the second traverse guide, and means for guiding the yarn to the change-over guide, the improvement in which the means for guiding the yarn to the change-over guide and the two traverse guides each comprise means defining at least two surfaces for passage of the yarn in contact therewith in a zig-zag path, said means for guiding the yarn to the change-over guide and the two traverse guides each thereby being adapted to maintain the arrangement of a yarn fed thereto which yarn is constituted of a plurality of ends arranged in mutually parallel side by side relation.

3,870,242

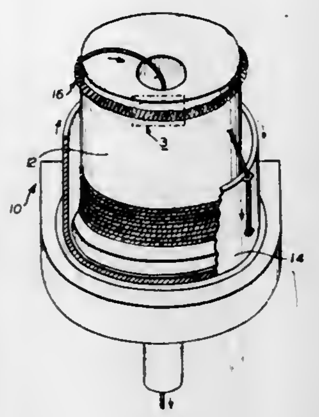
YARN RETARDING DEVICE

Edward W. Schussel, King of Prussia, Pa., assignor to Wesco Industries, Corporation, Plainview, N.Y.

Filed Apr. 22, 1974, Ser. No. 463,099

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.01 **4 Claims**



1. In a yarn storage device having a storage drum adapted to have yarn wound tangentially thereon and unwound axially therefrom, a retarding device surrounding said drum and adapted to have said yarn passed thereunder as it is axially withdrawn, said retarding device comprising a coiled spring whose opposite ends are secured to each other to form a continuous retarding ring having an inner contour smaller than the outer contour of said drum before said ring is mounted on said drum, whereby said ring is placed under tension when mounted on said drum, each coil of said spring having a curved portion in bearing engagement against said drum which defines a constant resistance to the yarn which passes thereunder as it is axially withdrawn from the drum.

3,870,243

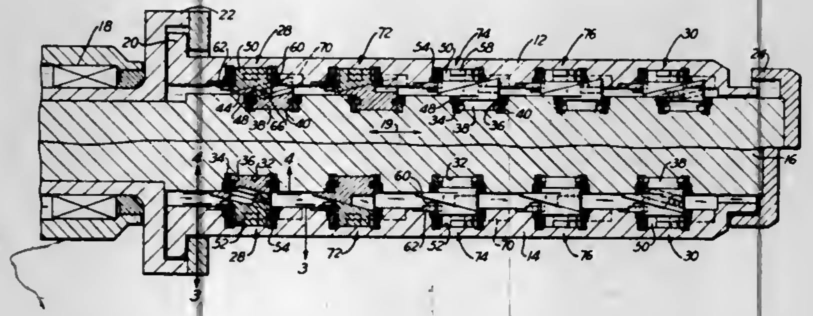
COLLAPSIBLE REEL

Albert Theodore Briggs, Tarentum, Pa., assignor to Wean United Inc., Pittsburgh, Pa.

Filed Sept. 13, 1973, Ser. No. 397,196

Int. Cl. B65h *75/24*

U.S. Cl. 242—72.1 **7 Claims**



6. An expandable reel having a central arbor,
radially movable segments arranged circumferentially around said arbor in a manner to form a continuous supporting surface for strip-like material,
a series of spaced-apart cylindrical bores formed in said arbor for each segment,

other series of cylindrical bores formed in each of said segments, one for each arbor bore and in radial alignment therewith to form associated pairs of bores,
first elements having cylindrical portions received in one of said bores of each pair, each having similar inclined surfaces disposed in the same direction,
second elements having cylindrical portions received in the other bores of each pair having means for engaging with and being displaced by said inclined surfaces,
said inclined surfaces being such that on relative axial movement of said segments and arbor said segments are caused to move radially relative to said arbor,
said first element and said second element each having locking means,
holding means arranged in said both series of bores, and
said locking means of first and second elements including means adapted to be held by said holding means when said elements are rotated in a certain position relative to said holding means.

3,870,244

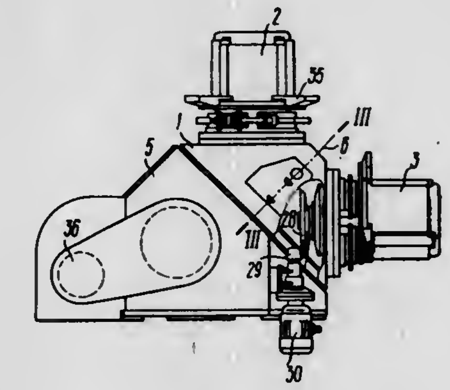
METAL STRIP COIL CHANGING DEVICE

Rafael Tevosovich Sarkisov, ulitsa Aga-Neimatula, 20a, kv. 28; Ernst Arakelovich Stepanian, ulitsa Druzhby Molodezhi, 2, kv. 36, and Valentin Grigorievich Bondarenko, Leningradsky prospekt, 115, kv. 11, all of Baku, U.S.S.R.

Filed May 29, 1973, Ser. No. 364,401

Int. Cl. B21c *47/00*

U.S. Cl. 242—80 **4 Claims**



1. A device for changing coils of metal strip having a weight of over 100 kg which strip is fed into an automatic press with a vertical plane of pressing, said device comprising: a platform with radial mandrels, one of which is horizontal and carries a standby coil, and the other is directed vertically upwards and carries the coil being unreeled; means for securing said coils on said mandrels; a carriage movable in the direction of said horizontal mandrel and mounting said standby coil so as to align its axis with the axis of said horizontal mandrel, means connecting said carriage with said means securing said coils on the mandrels such that with the carriage in one position the coils are secured on the mandrel whereas in a second position the coils are loose on the mandrel, said first and second positions being disposed axially along the mandrel, means for axially displacing said carriage between said positions, said means for axially displacing said carriage comprising a rotatable drive, and means threadably connecting said carriage to said drive such that upon rotation of said drive said carriage is correspondingly displaced axially between said positions, and means for turning said platform about the bisector of the angle formed by said radial mandrels, such that after each turn of the platform the previously vertical mandrel assumes the horizontal position coaxial with said standby coil, and the previously horizontal mandrel together with its standby coil secured thereon assumes the vertical position.

3,870,245

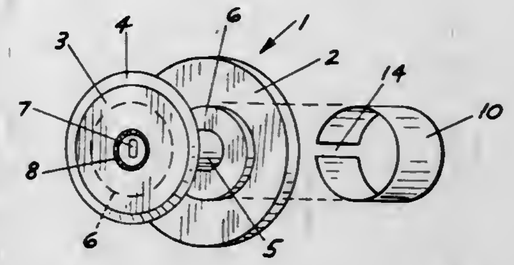
FISHING SPOOL

E. F. Witteborg, Jr., 3050 Duncan Rd., Shreveport, La. 71109

Filed July 5, 1973, Ser. No. 376,415

Int. Cl. B65h *55/00, 75/14*

U.S. Cl. 242—167 **4 Claims**



1. A spool for fishing reels comprising:
a. A shaft;
b. Base means, having an inside face and an outside face, said base means being attached to one end of said shaft;
c. An insert mount attached to said inside face of said base means;
d. A line guide means having an inside face and an insert mount attached to said inside face in essentially parallel relationship to said insert mount attached to said base means; and
e. An insert having a smooth inside and outside surface and a gap therein across the entire width thereof adapted to removably and rotatably fit on said insert mounts and span the distance between said base means and said line guide means.

3,870,246

AUTOMATIC CARTRIDGE TAPE DRAW-OUT DEVICE

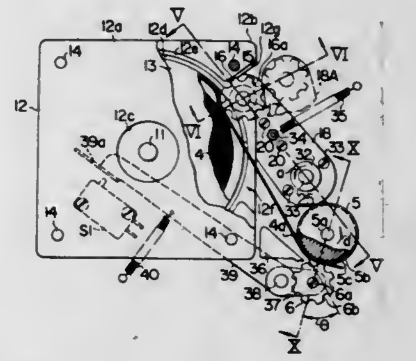
Hiroshi Yamada, Ichikawa, and Kenji Kojima, Tokyo, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,416

Claims priority, application Japan, Mar. 10, 1972, 47-28216; Mar. 10, 1972, 47-29853

Int. Cl. G03b *1/04;* **G11b** *15/32*

U.S. Cl. 242—192 **11 Claims**

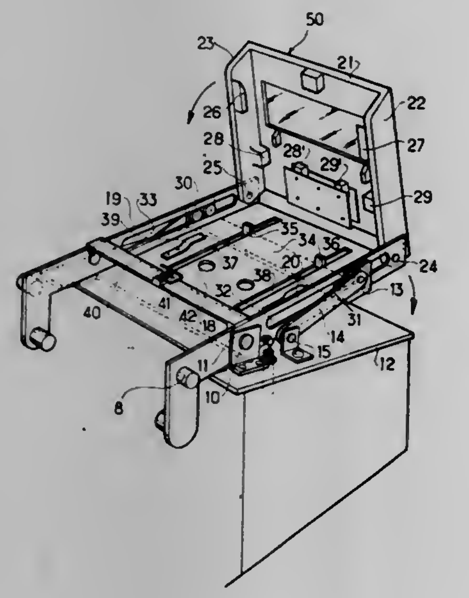


5. An automatic cartridge tape draw-out device for a tape wound on a circular supply reel rotatable in a cartridge and having at least one annular flange at the radial periphery thereof, comprising, in combination, a reel drive roller, means for rotating the reel drive roller in pressing engagement of the periphery thereof with the periphery of a flange of the reel to rotate the reel for causing the outer convolutions of the tape wound thereon to move radially outwardly by centrifugal force, a tape draw-out roller concentric with and in rigid connection with said reel drive roller and having a diameter greater than that of the reel drive roller, said tape draw-out roller including means defining a plurality of irregularities on its circumferential peripheral surface for engaging the leading forward end of the tape on said supply reel by means of said irregularities, said tape draw-out roller rotating at the same angular velocity as the reel drive roller and extending radially

inwardly of the periphery of the reel flange engaged by said reel drive roller to be in pressing engagement with the leading forward end of the tape on the supply reel when the outer tape convolutions thereof are caused to move radially outwardly by rotation of the reel to advance the tape from the cartridge with the forward end of the tape being maintained in engagement with at least some of the irregularities on the tape draw-out roller, and support means rotatably mounting said rollers and means for selectively moving the rollers into their respective engaging positions with the reel and with the tape wound on the reel, wherein the means defining the irregularities on the circumferential periphery of the tape draw-out roller comprise means defining a plurality of axially oriented grooves in the peripheral circumferential surface of the tape draw-out roller, and means defining a plurality of axially extending projections interspersed with said grooves and separating said grooves.

3,870,247
CASSETTE-HANDLING SYSTEM

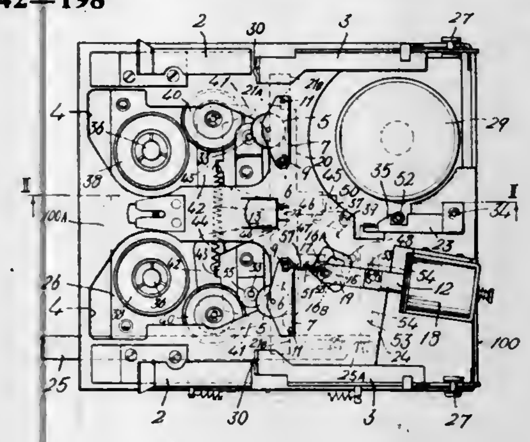
Camille Carisey, Creteil, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France
Filed July 28, 1972, Ser. No. 276,050
Claims priority, application France, July 30, 1971, 71.28141
Int. Cl. G11b *23/10, 15/66*
U.S. Cl. 242—198 **17 Claims**



1. A cassette-handling system comprising a cassette housing having guide and retaining means for guiding and holding a cassette, said housing having an opening in one end for receiving the cassette by movement of the cassette in its own plane, a casing containing a cassette drive system including a drive element projecting from said casing, a cradle pivoted to the casing and carrying said housing, said housing being pivoted to said cradle, and pivoting means for pivoting said housing and cradle from a loading position with the housing and cradle angularly disposed from the casing to a driving position against the casing so that said drive element of the cassette drive system engages the cassette for driving the medium contained therein, and then to an ejecting position, said cradle having an aperture therein, so that when the housing contains a cassette and is pivoted to lie against the cradle and the cradle is pivoted to lie against the casing, said drive element of the cassette drive system passes through said aperture in the cradle to engage the cassette and drive the medium contained therein.

3,870,248
TAPE PLAYER

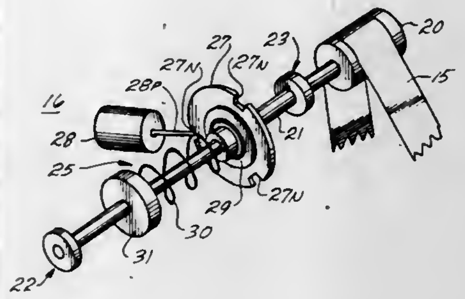
Hirotoshi Nara, Urawa; Wataru Watanabe, Hagi; Tadashi Yokota, Urawa, and Chiak Yanagi, Tokyo, Japan, assignors to Clairion Co., Ltd., Tokyo, Japan
Filed Sept. 27, 1972, Ser. No. 292,673
Claims priority, application Japan, Sept. 30, 1971, 46-88745[U]; Sept. 30, 1971, 46-89732[U]
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **6 Claims**



1. In a tape player of the type having a sound reproducing head and wherein a cassette containing a pair fo reels on which a sound tape is wound is removably loaded in a predetermined position in said player and said tape is passed between a first drive pair comprising pinch roller and a capstan and then between a second drive comprising a pinch roller and a capstan, and said first and second tape drive pairs are selectively operated to reverse the direction of running of said tape with respect to said sound reproducing head, thereby enabling continuous reproduction of a plurality of channels recorded on said tape, the improvement which comprises the combination of switching means for selectively operating either one of said first and second pairs; control means for constantly urging said switching means in a given direction thereby permitting loading of said cassette while said tape is driven in a given direction; and a movable plate which is moved in a vertical direction with respect to the reel hubs of said cassette loaded in said player, said control means being actuated in response said switching means when said player is prepared for loading and unloading of said cassette.

3,870,249
CONTROLLED FRICTION TAPE ROLLER

William A. Schrader, Mission Viejo, and Joe Schmidt, Fullerton, both of Calif., assignors to Ex-Cell-O Corporation, Detroit, Mich.
Filed Oct. 24, 1973, Ser. No. 409,081
Int. Cl. B11b *15/32;* **G03b** *1/04;* **B65h** *23/06*
U.S. Cl. 242—201 **7 Claims**



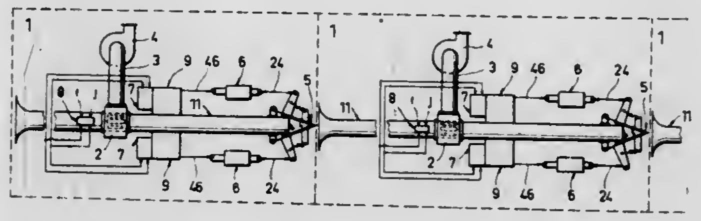
1. In a tape transport system including at least a single rotatable tape storage reel having tape extending therefrom to be wound from a tape source and unwound therefrom,

means for driving the storage reel to transfer tape thereto from the tape source, tensioning means coupled to the tape adjacent the storage reel for increasing the tension of the tape extending between the storage reel and said tensioning means whereby the tape wound on the reel is tightly wound thereon,

said tensioning means comprising a rotatable drum and braking means arranged coaxially therewith for providing a preselected amount of drag for the drum and being arranged to be normally operative, and means for selectively rendering the braking means inoperative.

3,870,250
PROCESS AND PLANT FOR PNEUMATIC TRANSPORT

Constantin Gh. Teodorescu, and Stefan P. Ardeleanu, both of Bucharest, Romania, assignors to Institutul Pentru Creatie Stiintifica Si Technica-Increst, Bucharest, Romania
Filed Mar. 28, 1973, Ser. No. 345,722
Claims priority, application Romania, Mar. 31, 1972, 70354
Int. Cl. B65g *51/04*
U.S. Cl. 243—6 **8 Claims**

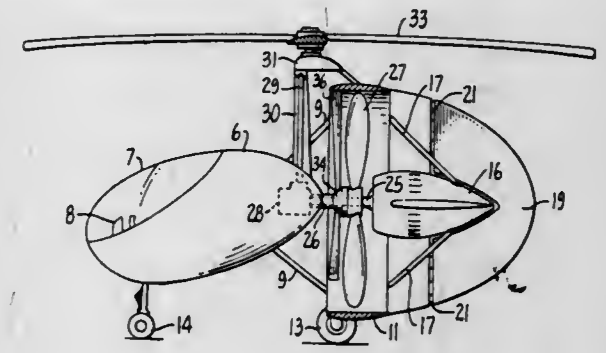


1. A system for transporting an object comprising:
a plurality of in-line tube sections, each including:
an elongated tube having an upstream end and a downstream end,
a plurality of rollers mounted at a lower portion and/or opposite lateral portions of each tube along the interior thereof and uniformly spaced along the entire length of the tube,
two flaps extending from the exterior toward one another to normally close said downstream of said tube by sealing engagement with one another, said tube being open at its upstream end;
an elongated object adapted to traverse said tubes riding on said rollers;
a device proximal to but spaced from the downstream end of each of said tubes for creating a low-pressure zone between said downstream end and said object for drawing said object from each upstream end toward the respective downstream end of each tube;
means adjacent said device for detecting the proximity of said object for applying to each pair of flaps an opening force insufficient to swing said flaps apart and open said downstream end in the absence of an additional force, but sufficient upon the generation of an over-pressure ahead of said object to open said flaps and permit the object to pass into the upstream end of the next following tube, said rollers being each sealingly mounted in housings external to said tubes with each roller penetrating through a hole formed along the wall of the tube, each tube comprises a pair of triangular walls which define with the respective flaps a normally closed gate, said walls being mounted on the downstream end of the respective tube, and means for pivoting each pair of flaps on the respective downstream end of a tube.

3,870,251
AUTOGYRO

Gerald L. Breuner, 50 Milady Ln., Orinda, Calif. 94563
Continuation-in-part of Ser. No. 329,076, Feb. 2, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 452,712
Int. Cl. B64c *27/02*
U.S. Cl. 244—17.21 **3 Claims**

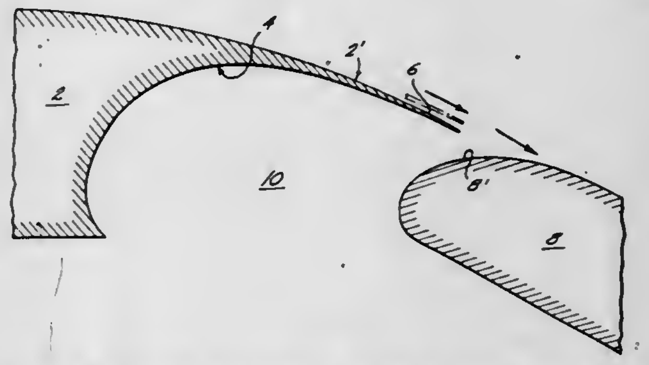
1. An autogyro comprising a cabin,
a tubular duct supported on the cabin rearwardly thereof and in spaced relation thereto,
an engine supported within the duct in substantial axial alignment therewith and spaced from the cabin,
a propeller located between the engine and the cabin,
a rotatable first shaft extending forwardly from the engine and driven by the engine,
gear means connected to the first shaft forwardly of the propeller,
a tubular shaft concentric with the first shaft and rotatable by the gear means,



the propeller fixed on the tubular shaft for rotation therewith within the duct and between the engine and cabin,
upright rotor support pylon means supported on the cabin,
upright rotor drive shaft means supported by the pylon means and connected to the gear means to be rotated thereby,
and rotor blade means fixed on the rotor drive shaft means for rotation therewith.

3,870,252
VARIABLE CAMBER AIRFOIL TRAILING EDGE

James Byron Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 9, 1973, Ser. No. 339,640
Int. Cl. B64c *9/08*
U.S. Cl. 244—42 CC **5 Claims**



1. An aircraft having a wing which has two or more airfoil segments chordwise thereof, the relatively forward of which segments has a resiliently bendable lip cantilevered from the main body thereof along the upper margin thereof, and the relatively aft of which segments is mounted to extend and retract in relation to the relatively forward segment, between (1) a relatively extended position wherein the relatively aft segment is spaced apart from the relatively forward segment, to form an aerodynamic slot therebetween, and (2) a relatively retracted position wherein the aft segment nests with the relatively forward segment to close the slot therebetween, said lip having a terminal edge portion and being cantilevered from the main body of the relatively forward segment so that (1) the relatively aft segment engages the lip in the relatively retracted position thereof and deflects the lip upward in relation to the main body of the relatively forward segment, to cause the lip to assume a relatively bent condition in which the upper side of the lip is faired into the contour of the upper side of the wing, and (2) the relatively aft segment disengages from the lip in the relatively extended position thereof and enables the lip to relax in relation to the main body of the relatively

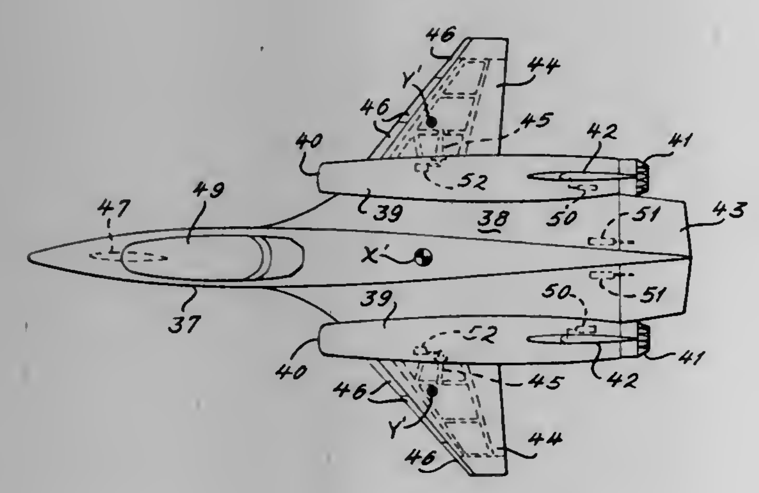
forward segment, to assume a relatively unbent condition in which the edge portion of the lip is spaced apart from the relatively aft segment to define the upper end of the slot therewith, and pointed across said upper end of the slot so that the contour of the upper side of the forward segment follows a smooth line of projection coinciding with the upper side of the lip and intersecting the body of the aft segment.

3,870,253
AIRCRAFT VECTORED FLIGHT CONTROL MEANS
William S. Leidy, O'Fallon, and Donald M. Scheller, Ballwin, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 164,621, July 21, 1971, abandoned. This application July 2, 1973, Ser. No. 375,633

Int. Cl. B64c *3/38*

U.S. Cl. 244—46 5 Claims



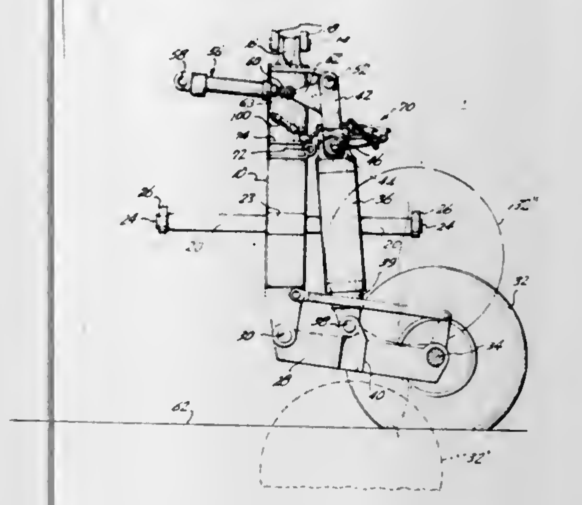
1. In an aircraft, the combination of:
1. an elongated fuselage providing a primary lifting surface having the aerodynamic center and center of gravity offset from each other on the longitudinal axis of the fuselage;
2. all movable wing surfaces pivotally mounted on the outboard sides of said fuselage and having the aerodynamic center offset from said aerodynamic center and center of gravity in the direction of the longitudinal axis of the aircraft,
   a. said primary surface and wing surfaces having the respective aerodynamic centers thereof acting to impose pitching moments in opposition to each other about the center of gravity;
3. longitudinal elevator control surface means operable on said fuselage aft of the center of gravity,
   a. said elevator control surface means providing longitudinal flight control forces to trim and control pitching moments on the aircraft imposed by said primary surface and wing surfaces;
4. and control means connected to said wing surfaces and elevator control surface means for selective operation for
   a. controlling the pointing of the longitudinal axis of the aircraft about the center of gravity independently of a predetermined longitudinal flight path and load factor by deflection of said elevator control surface and counter deflection of said wing surfaces,
   b. and controlling a change in the altitude of the aircraft while flying a predetermined flight path by vertical translation of the aircraft to a different elevation generally parallel to said predetermined flight path by concurrent deflection of said wing and elevator surfaces to positive and negative angles of incidence in a selective mode.

3,870,254
LANDING GEAR AND LOCKING APPARATUS THEREFOR
John Watts, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 28, 1973, Ser. No. 345,673

Int. Cl. B64c *25/26*

U.S. Cl. 244—102 SL 2 Claims



1. A retractable landing gear apparatus comprising in combination:
- a main support strut,
- a trailing arm and first means pivotally connecting said trailing arm to the lower portion of said main strut,
- a wheel and means mounting said wheel for rotation on the aft portion of said trailing arm,
- an articulated retraction strut including shock absorber means, second means mounting one end of said retraction strut to said trailing arm for pivotal movement about a first axis and third means mounting the other end of said retraction strut to said main strut for pivotal movement about a second axis parallel to said first axis, said retraction strut including means for articulating said retraction strut about a third axis parallel to said first and second axes and located between said first and second axes, said third axis lying substantially in a first plane defined by said first and second axes when said trailing arm is in an extended position, said third axis being spaced from said first plane when said trailing arm is pivoted upwardly to a retracted position to thereby decrease the distance between said first and second axes,
- a first link and means connecting said first link to said main strut for pivotal movement about a fourth axis parallel to said first axis,
- a second link and means connecting said second link to said retraction strut for pivotal movement about a fifth axis parallel to said first axis, and means connecting said first and second links for pivotal movement about a sixth axis parallel to said third axis,
- said links and connecting means cooperating such that, when said trailing arm is in said extended position, said links fold toward each other so that said sixth axis is on one side of a second plane defined by said fourth and fifth axes when said link means are folded, said first and second links including first stop means cooperating to prevent further movement of said sixth axis away from said second plane,
- said links and connecting means cooperating such that, when said trailing arm is in a retracted position and said third axis of said articulated strut is moved away from said first plane, said links unfold to a position wherein said sixth axis is located on the other side of said second plane defined by said fourth and fifth axes, said first and second links including second stop means cooperating to prevent further movment of said sixth axis away from the other side of said second plane, and

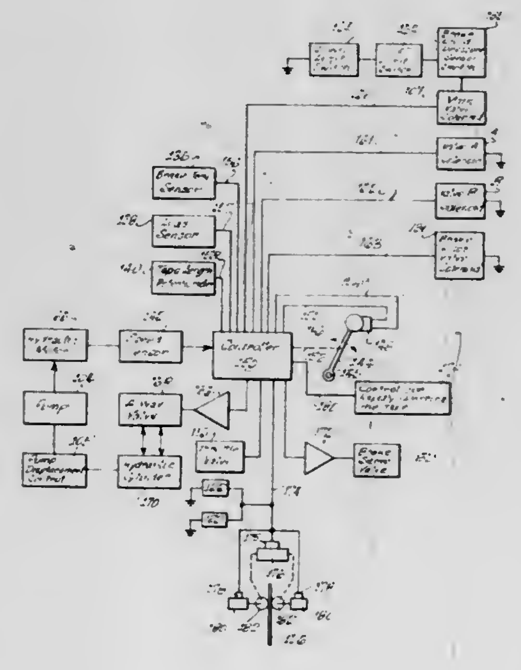
- force-producing means operatively connected to at least one of said link means for biasing said sixth axis away from said second plane when said trailing arm is in said extended position and when said trailing arm is in said retracted position, and
- power means operatively connected to said articulated retraction strut for moving said articulating means to extend and retract said trailing arm.

3,870,255
HOIST DRIVE SYSTEM
Harold Edminston Lemont, Calabasas, Calif., assignor to Hughes Tool Co., Culver City, Calif.

Continuation of Ser. No. 53,479, July 7, 1970, abandoned. This application Mar. 20, 1973, Ser. No. 343,128

Int. Cl. B64c *1/22*

U.S. Cl. 244—137 5 Claims



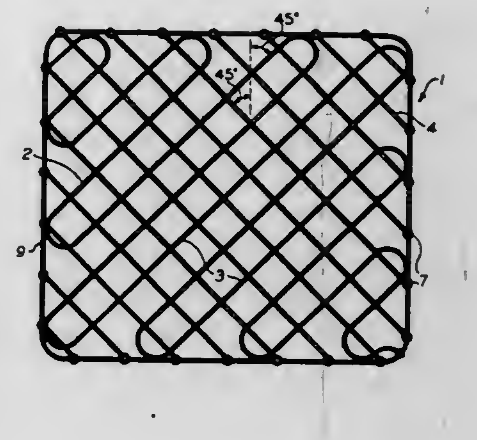
1. In a hoist system for lifting and lowering loads from a hovering type aircraft, the combination of:
- an elongated flexible tension member to support loads;
- rotary means on the aircraft in engagement with the tension member for extension and retraction thereof;
- fluid motor means connected to said rotary means for actuation thereof;
- fluid pump means;
- means connecting the pump means to the motor means for flow of fluid thereto,
- said connecting means including reversible means operable in one respect for flow of fluid in one direction through the fluid motor means to cause the tension member to travel in one direction and operable in the opposite respect for flow of fluid in the opposite direction to cause the tension member to travel in the opposite direction;
- means for remote operation of said reversible means in its opposite respects selectively to control the direction of travel of the tension member;
- means to vary the displacement of one of said pump means and said fluid motor means to control the rate of travel of the flexible member;
- said motor means being constructed to act as temporary pump means on said fluid with the temporary pump means actuated by the weight of a descending load on the tension member;
- means to restrict the fluid discharge of the temporary pump means to retard the lowering of the load and said restricting means is normally ineffective;
- brake means to retard the lowering of the load; and
- means to make the restricting means effective in response to rise in temperature of the brake means.

3,870,256
HEAVY-DUTY WIRE-NET STRUCTURE
John A. Mazzella, and Joseph S. Mazzella, both of 2315 Eastchester Rd., Bronx, N.Y. 10461

Filed May 24, 1973, Ser. No. 363,720

Int. Cl. B66c *1/12*

U.S. Cl. 245—8 4 Claims



1. A wire-net structure comprising:
- a generally rectangular frame;
- a multiplicity of first wire elements anchored at their ends to said frame, said first wire elements extending substantially parallel to one diagonal of the rectangle defined by said frame; and
- a continuous cable of meandering configuration with sections substantially parallel to the other diagonal of said rectangle, said sections constituting second wire elements intermeshed with said first wire elements, said continuous cable being secured to said frame only through said first wire elements.

3,870,257
ELECTROSTATIC RECORDING USING DISCHARGE SPACE POTENTIAL
Toshio Ohkubo, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,743

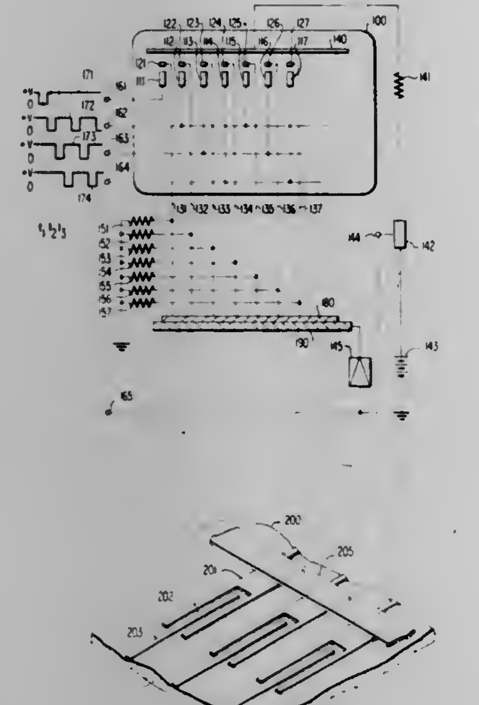
Claims priority, application Japan, Aug. 22, 1972, 47-84281

Int. Cl. G01d *15/06*

U.S. Cl. 346—74 ES 5 Claims

1. In an electrostatic recording device for facsimile and the like comprising: an envelope adapted to hermetically contain at least one kind of gas for developing a gas discharge; a first plurality of electrodes arranged to cause gas discharges one after another and thereby to provide a spatial scanning by the discharges; a second plurality of electrodes disposed adjacent respective ones of said scanning electrodes for picking up voltages induced at the conductive state of said gas discharges; at least one common electrode provided opposite to said first plurality of electrodes, said gas discharges occurring between said common electrode and said first plurality of electrodes; a plurality of stylus electrodes each connected at one of their ends to respective ones of said second plurality of electrodes with the other end thereof arranged in a straight line with the corresponding ends of the remaining stylus electrodes on the outside of said envelope and positioned to come in contact with one surface of a recording medium; variable resistance means connected to said common electrode for controlling the currents of said discharges in response to the level of a video signal to be recorded; and means for applying said video signal to the other surface of said recording medium, the improvement wherein said first plurality of electrodes each

have a notch formed in one end thereof remote from said common electrode and said second plurality of electrodes are

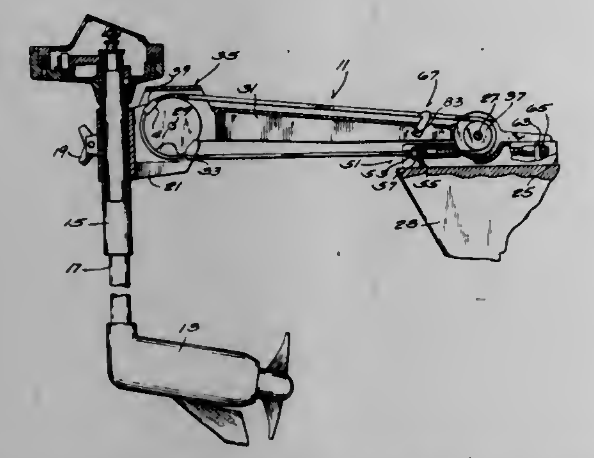


disposed in a one-to-one correspondence in the notches formed in said first plurality of electrodes.

3,870,258
PULLEY MOUNTING SYSTEM FOR ELECTRIC OUTBOARDS

William J. Shimanckas, Waukegan, and W. Wayne Beem, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 23, 1973, Ser. No. 381,602
Int. Cl. F16m *1/02*
U.S. Cl. 248—4 **9 Claims**

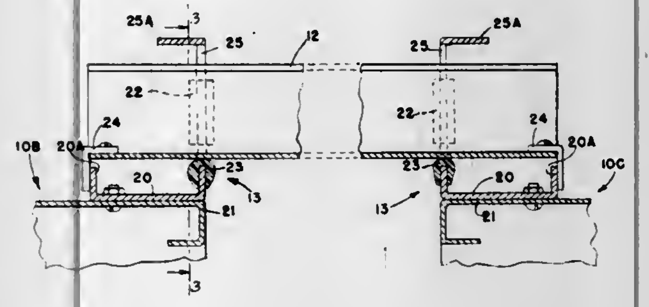


1. An outboard motor mounting arrangement comprising a member adapted to be mounted on a boat hull, a bracket adapted to support an outboard motor, an arm pivotally connected to said bracket and pivotally connected to said member for pivotal movement relative to said member between a storage position in which said arm extends in one direction from said member and an operating position in which said arm extends in the direction generally opposite to said one direction, an arcuate surface on said bracket co-axial with the pivotal connection of said bracket to said arm, and means including an element operably connected to said member and to said bracket and extending tangentially to said arcuate surface for rotating said bracket relative to said arm through an angle of about 90° in response to movement of said arm through an angle of about 180° between said storage position and said operating position.

3,870,259
FISHING ROD HOLDER

Lester A. Reynolds, 95-184 Mohai Pl., Mililani Town, Hawaii 96889

Filed Aug. 8, 1973, Ser. No. 386,646
Int. Cl. A01k *97/10*
U.S. Cl. 248—43 **6 Claims**

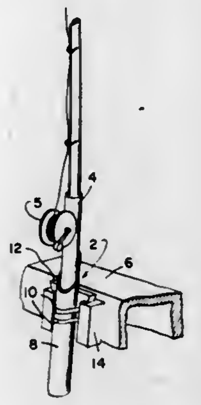


1. A fishing rod holder comprising:
a tubular holder structure surrounding and supporting the entire wooden handle and a part of the metal upper portion of a fishing rod, wherein the upper edge of the tubular holder structure is uniformly steeply sloped at an angle to provide mechanical support for the metal portion of the rod by partially embracing the metal portion of the rod opposite the region on which a fishing reel is normally attached, and
a means attached to a side the tubular holder structure for affixing the tubular holder structure to a boat from which fishing is conducted, so that the tubular holder structure and fishing rod are maintained in a generally vertical orientation.

3,870,260
SHIFTABLE CABLE SUPPORT

Gary M. Swart, Lincroft, N.J., assignor to Estey Corporation, Red Bank, N.J.

Filed Oct. 19, 1973, Ser. No. 399,707
Int. Cl. F16l *3/02*
U.S. Cl. 248—49 **8 Claims**

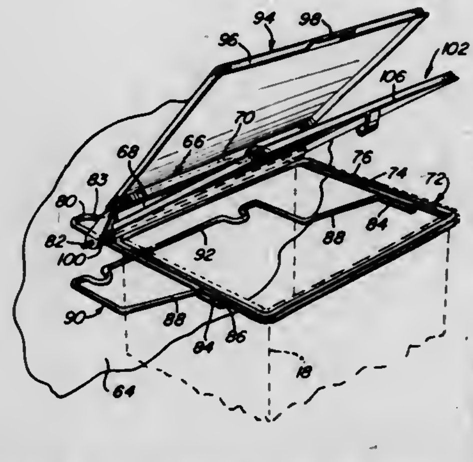


1. A cable support for positioning electrical conductors connected to articles which are movable with respect to each other comprising: a channel for housing the conductors; said channel including closed sides and a closed bottom and an open top for the insertion of said conductors; mounting means for the channel on each of the articles for slidably supporting the channel when either one of the articles is moved; said mounting means including bracket means secured to the articles and having an opening which is aligned with the open top of said channel permitting the insertion of conductors and a plurality of plastic bearing covers held by the bracket means and arranged for sliding contact with the channel sides and bottom.

3,870,261
FLEXIBLE BAG HOLDER

Thad M. McSwain, 1908 S. Columbus St., Stuttgart, Ark. 72160

Filed Jan. 22, 1973, Ser. No. 325,527
Int. Cl. B65b *67/12*
U.S. Cl. 248—101 **1 Claim**



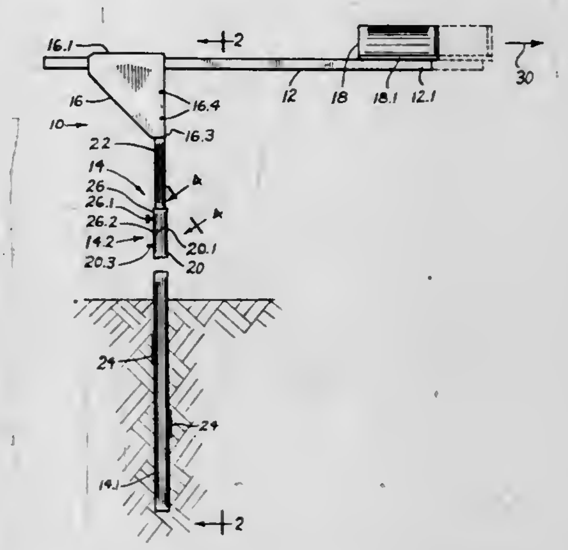
1. As an article of manufacture, a support and holder tor a flexible bag, a U-shaped adapter bracket having a bight portion removably fastened to a vertically oriented support, a pair of spaced parallel arms extending horizontally from said bight portion, a rigid bag suspending frame attached to said arms, said frame around its periphery having upwardly facing convexly rounded bag seating surfaces receiving the lip portion of the open mouth of a bag, said bight portion being spaced from said frame and having bent portions which extend from said bight portion toward said frame, the space between the bent portions and the adjacent parts of the frame providing space for the storage of bags, a horizontal hinging rod spanning said storage space and having end portions supported by the spaced parallel arms, a clamping frame having attaching ears pivotally mounted on said hinging rod, coextensive in dimensions with said suspending frame, and being channel-shaped in cross-section and coacting with the bag seating surfaces of said suspending frame to clamp the lip portion of a bag therebetween, a lid generally coextensive in dimensions with both said frames, having apertured ears which also pivotally support said lid from said hinging rod, having a latching means on the periphery thereof opposite said bight portion engaging the suspending frame, and covering the open mouth of a bag and the two frames when in closed position, said bight portion of said bracket includes hinge means allowing said bracket to assume either a horizontally disposed in-use position or a downwardly disposed collapsed position and wherein said bracket includes a sleeve member secured to a central portion of each of said parallel arms, and being substantially parallel thereto, for receiving the end of bracing means, extending from the sleeves to a vertical support, which braces the bracket, frames and lid in an in-use position, but when removed, allows the bracket, frames and lid to pivot about the bight portion of the bracket to a collapsed position.

3,870,262
SWINGABLE, DEMOUNTABLE MAILBOX SUPPORT

James D. Manning, Jr., 514 Old Hwy. 8, New Brighton, Minn. 55112

Filed Oct. 25, 1973, Ser. No. 409,658
Int. Cl. A47g *29/12*
U.S. Cl. 248—145 **9 Claims**

1. A swingable, demountable mailbox support for roadside use comprising a substantially horizontal bar having a mailbox at one end, an upright mounting post having at its upper end a bracket extending over the horizontal bar, the upper end of the post defining an upwardly oriented bearing and the bracket providing a downwardly oriented bearing, said bearings being horizontally and vertically spaced and slidingly receiving therebetween and horizontally supporting the horizontal bar, the bar being free of obstructions preventing it from sliding outwardly from between and completely disengaging the bearings, the upwardly oriented bearing being nearest the end of the bar bearing the mailbox and the bearings being fixedly oriented with respect to each other, and means permitting the bearings to swing about a vertical axis while retaining their fixed mutual orientation,

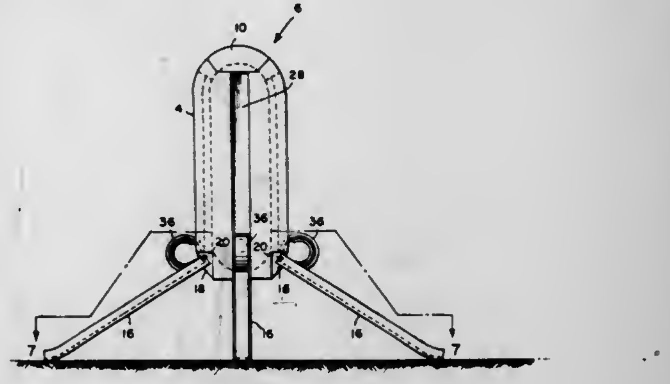


whereby the horizontal bar is caused to swing about the vertical axis in contact with the bearings when the mailbox is struck by a vehicle, the bar sliding outwardly from between the bearings and becoming freed from the post.

3,870,263
SELF-ERECTING POD

Russell J. Hardiman, Sellersville; Leigh David Leiter, Willow Grove, and Howard C. Valle, Doylestown, all of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,271
Int. Cl. F16m *11/38*
U.S. Cl. 248—168 **3 Claims**

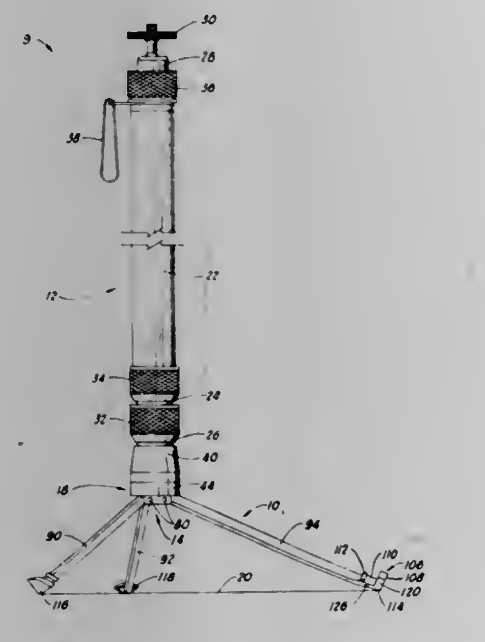


1. A self-erecting pod comprising:
an elongated body,
at least three substantially equally spaced legs pivoted to the body closely adjacent one end of the body and extending towards the other end of the body in their stowed position,
spring means to erect the pod with said one end nearer the ground from a substantially prone position by reacting against at least one arm supported by the ground to pivot the body relative to the ground supported arms and to pivot the remaining arms relative to the body to their supporting positions, said spring means comprising in each leg a tightly coiled ribbon spring having one end secured adjacent the pivot of the leg and the remainder of the spring extending in the uncoiled condition between the leg and the body, and

means to releasably retain said legs in the stowed position, said retaining means including means actuated on impact with the ground to release said retaining means to free the legs for pivoting and erection of the pod on the ground.

3,870,264
STAND

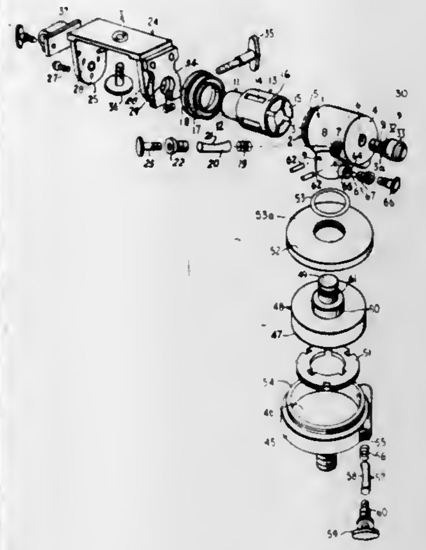
William I. Robinson, 201 N. Main, Wichita, Kans. 67202
Filed Mar. 26, 1973, Ser. No. 344,902
Int. Cl. F16m *11/38*
U.S. Cl. 248—171 **8 Claims**



1. A stand structure for mounting a camera or the like, comprising:
- a. an upright positionable stand member having a hollow lower end portion, and means on the upper end portion thereof to mount a camera or the like,
- b. hub means,
- c. at least three leg members pivotally attached to said hub means in their inner end portions, said leg members extendable to a support position and retractable to a prestored position,
- d. hollow mounting means, said mounting means receiving said leg members therethrough and having means to mount same in said lower end portion of said stand member,
- e. gearing means with said hub means operatively connected between the inner end portions of said leg members to provide for pivoting said leg members simultaneously to said support position or said prestored position upon movement of any one of said leg members, and
- f. means with said leg members and said mounting means to removably secure said leg members with said mounting means in a retracted stored position, said means to removably secure said leg members having first latch portions on outer end portions of said leg members, and a second latch portion interiorly of said hollow mounting means, said first latch portions and said second latch portion being removably engagable to secure said leg members in said stored position, and said means to removably secure said leg members having means to maintain said first latch portions and said second latch portion in temporary engagement, and
- g. one of said leg members being warped relative the other said leg members so as to press against said other leg members and urge said first latch portions and said second latch portion into engagement.

3,870,265
BASE MOUNTING FOR INSTRUMENTS AND MACHINES TO BE TILTED

George H. Osborne, Artarmon, New South Wales, Australia, assignor to R. E. Miller Pty. Limited, Artarman, New South Wales, Australia
Filed Aug. 17, 1973, Ser. No. 389,129
Int. Cl. F16m *11/12*
U.S. Cl. 248—183 **6 Claims**

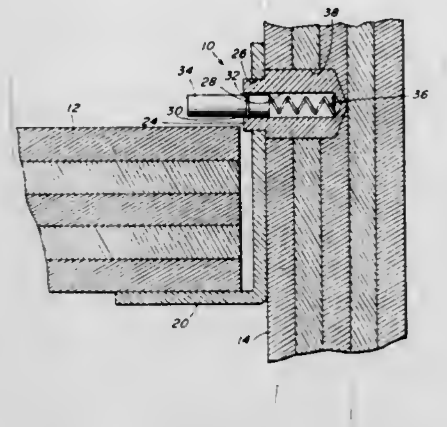


1. A mounting for an instrument or machine which has to be tilted in the operation of aligning the instrument or machine with an object, said mounting comprising a housing, a cylindrical bore in the housing, a cylindrical piston in the housing bore, the piston periphery having working clearance from the bore periphery, a cylindrical extension of the piston concentric with the piston body and projecting beyond the housing, retaining means having a hole therethrough fixed to the housing with the cylindrical piston body extension passing through the retaining means hole, said retaining means restraining the piston against axial movement but permitting rotary movement thereof, sealing means held in position by the retaining means and sealing the housing to render it liquid tight, means on the housing whereby the housing is mountable on a mounting system; machine support, a first leg on said machine support fixed to the piston extension, a second leg on the support, a stub axle on the housing axially aligned with the piston, a hole in the second leg of the support engaging the stub axle and clamp means to lock the second leg of the support to the stub axle so as to prevent rotary movement of the piston in the housing.

3,870,266
SELF-LOCKING SHELF SUPPORT

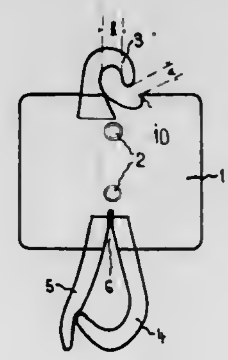
Paul M. MacDonald, North Abington, Mass., assignor to P.X. Industries, Inc., Rockland, Mass.
Filed June 7, 1973, Ser. No. 367,745
Int. Cl. A47b *96/06*
U.S. Cl. 248—235 **3 Claims**

1. A self-locking shelf support, comprising
- a. a plate formed with a lip extending perpendicularly from the front face thereof,
- b. a plug fixed to said plate in spaced parallel relation to said lip and above said lip and extending perpendicularly from the rear face of said plate for mounting said support to a cooperating socket in an upright cabinet wall and the like.
- c. said plug being formed with a chamber open at the front face of said plate and closed at the rear of said plug
- d. a pin retractably mounted for limited axial movement in said chamber parallel to said plug, and,
- e. resilient means engaging said pin and normally urging said pin to a position extending perpendicularly from the front face of said plate in spaced parallel relation to said lip, said pin adapted to be temporarily retracted into said chamber by axial pressure applied to the outer end thereof.



3,870,267
COMBINED PRODUCT HANGER AND LABEL SUPPORT

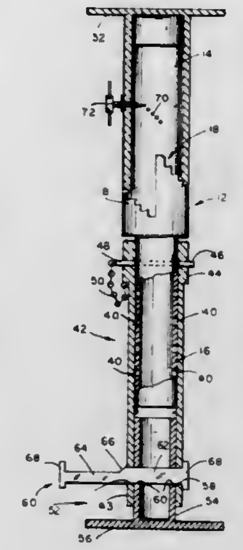
Kurt Okle, Tubach, Switzerland, assignor to Stoba AG, Horn, Switzerland
Filed Sept. 24, 1973, Ser. No. 400,568
Int. Cl. A47g *29/00*
U.S. Cl. 248—339 **2 Claims**



1. A combined hanger and label support comprising:
- a label support member formed by an essentially flat plate member having opposed edges;
- expandable resilient arm members for engaging the product to be suspended, said members protruding from the plane of the label support member at the region of one of the opposed edges;
- a suspension hook extending from the opposite edge of the label support member for engagement with a suspension element to thereby suspend the combined hanger and label support, said suspension hook having a free end;
- a nose member protruding from the plane of the label support member adjacent the free end of said suspension hook, said nose member and the free end of said suspension hook delimiting an opening for receiving therebetween said suspension element, said opening being smaller in size than the suspension element so that the suspension element can only be forcefully inserted through said opening for engagement by the suspension hook to thereby prevent unintentional release of the combined hanger and label support from the suspension hook; and
- projection means protruding generally perpendicularly from the plane of said label support member for facilitating stacking of a plurality of such combined hanger and label supports, the projection means of one of said label support members being engageable with the projection means of an overlying label support member when a plurality of combined hanger and label supports are placed in a stack-like array.

3,870,268
SHORING APPARATUS

Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,600
Int. Cl. E04g *25/00*
U.S. Cl. 248—354 P **4 Claims**



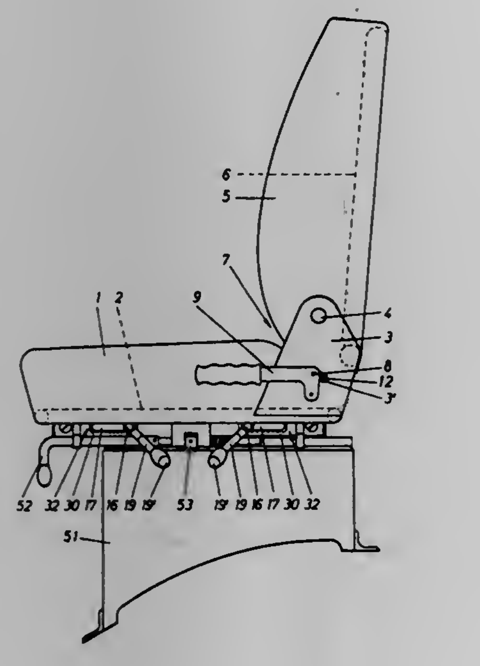
1. Shoring apparatus comprising a support post; a first telescoping sleeve slidably mounted on one end of said support post; first incremental step means cooperating with said support post and said first telescoping sleeve for selectively locking the relative positions therebetween in one of a first plurality of discrete steps; a second telescoping sleeve slidably mounted on the other end of said support post; second incremental stop means cooperating with said support post and said second telescoping sleeve for selectively locking the relative positions therebetween in a second plurality of discrete steps, each of the steps of said second plurality of steps being substantially greater than each of the steps of said first plurality of steps, whereby the overall length of the shoring apparatus can be adjusted finely by adjusting said first incremental stop means, and can be adjusted coarsely by adjusting said second incremental stop means; an elongate member mounted coaxially on said second telescoping sleeve for slidable movement relative to the latter, one of said elongate member and said second telescoping sleeve being slotted; and a release slide slidably passing through the slot in said elongate member and said second telescoping sleeve, said release slide being provided with thicker and thinner portions which can be selectively positioned within said slot, whereby insertion of the thicker portion in said slot causes the overall length of the shoring apparatus to increase, and insertion of the thinner portion into said slot causes the overall length of the shoring apparatus to decrease in length to thereby facilitate removal of the shoring apparatus while a load is still applied thereto.

3,870,269
SEAT, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Udo Werner; Kurt Biesen, both of Solingen, and Jurgen Sroka, Hilden, all of Germany, assignors to Firma Bremsky Aktiengesellschaft, Solingen-Ohligs, Germany
Filed July 2, 1973, Ser. No. 375,929
Claims priority, application Germany, June 30, 1972, 2232117
Int. Cl. A47c *3/22*
U.S. Cl. 248—394 **9 Claims**

1. A seat, particularly for automotive vehicles, comprising: a seat-cushion frame adjustable in height and inclination, two pairs of extension links;

a seat-base frame;
toggle lever links;
transverse-extending connecting rods; said seat cushion frames being connected via said two pairs of said extension links with said seat-base frame, said extension links being supported via said toggle lever links on said seat-base frame and being connected in pairs with each other by said transverse-extending connecting rods;
spring means, said connecting rods being urged by said spring means into a raised position of said seat-cushion frame and displaceably guided in slots in said seat-base frame;

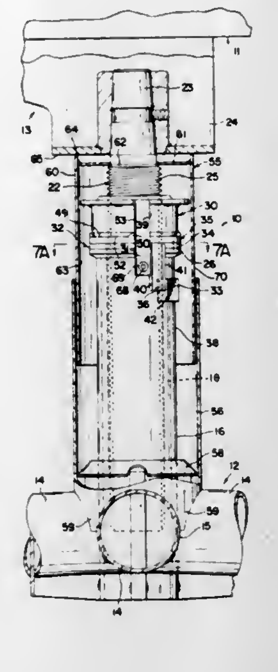


a releasable tooth-engagement lock, including teeth disposed within the range of said slots between each of said connecting rods and said seat-base frame such that said teeth being directed parallel to the plane of said slot, and wherein said connecting rods are tubular, a separate pin is disposed in each of said connecting rods and passing through said slot, being urged by spring means in the direction of rotation, and equipped with an operating lever, said pins are provided within the range of said slot with two diametrically opposite detent teeth, said teeth engage in an inclined position to said slot on oppositely disposed toothed slats extending parallel to edges of said slot.

3,870,270
FULLY ENCLOSED, ADJUSTABLE, SUPPORT COLUMN FOR A PIVOTAL CHAIR

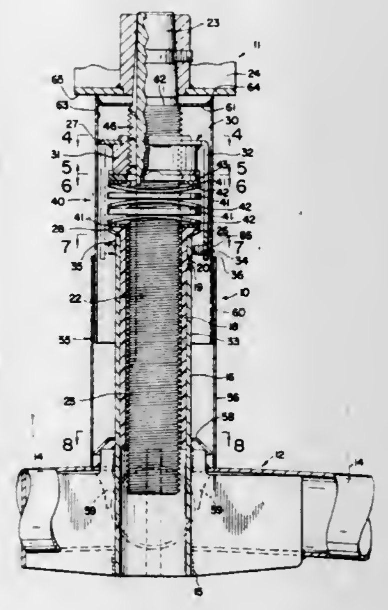
Richard L. Holtz, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed Oct. 31, 1973, Ser. No. 411,197
Int. Cl. F16m *11/24*
U.S. Cl. 248—406 **13 Claims**

1. An adjustable support column for pivotally mounting the seat section of a chair to a base portion comprising: a hub tube extending upwardly from the base, a threaded spindle non-rotatably secured to, and extending downwardly from, the seat section, at least a portion of said threaded spindle being rotatably and reciprocatingly received within said hub tube, an adjusting nut threaded onto said spindle to establish the extent to which said spindle can extend within said hub tube and thereby control the height of the seat section, a stop presented from said hub tube, a first arm means secured to said adjusting nut, and a lost motion device interposed between said arm and said first stop to permit relative rotation of said spindle with respect to said adjusting nut in order to effect adjustment in the height of said seat section only after the seat section has rotated within a range of free pivotal movement in either direction, the total range of such free pivotal movement being at least one full revolution.



3,870,271
FULLY ENCLOSED, ADJUSTABLE, SUPPORT COLUMN FOR A PIVOTAL CHAIR

Gary L. Bowman, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed Oct. 31, 1973, Ser. No. 411,196
Int. Cl. A47c *3/24*
U.S. Cl. 248—406 **12 Claims**

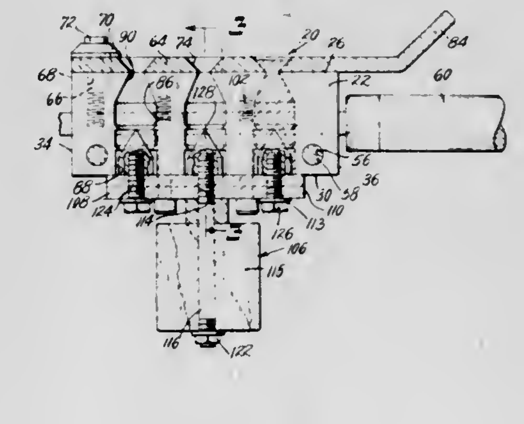


1. An adjustable support column for pivotally mounting the seat section of a chair to a base portion comprising; a hub tube extending upwardly from the base portion, a threaded spindle extending downwardly from the seat section, at least a portion of said spindle being rotatably and reciprocatingly received within said hub tube, an adjusting nut assembly threaded onto said spindle, a resilient means interposed axially between said adjusting nut assembly and said hub tube such that contact of the adjusting nut assembly with the hub tube through said resilient means establishes the extent to which said spindle can extend within said hub tube and thereby control the height of the seat section, stop means presented radially from said hub tube, contact means presented from said adjusting nut assem-

bly and extending axially past said resilient means to engage said stop means and permit relative rotation of said adjusting nut assembly with respect to said spindle in the absence of weight being supported on said spindle, said resilient means being compressed between said adjusting nut assembly and said hub tube in response to weight being supported on said spindle to displace said contact means with respect to said stop means and permit free rotation of the threaded spindle and adjusting nut assembly with respect to said hub tube.

3,870,272
BULLET MOLD

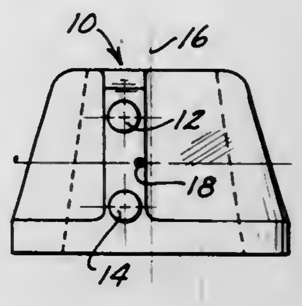
John A. Jackman, 8 Beaudoin St., Bedford, N.H. 03102
Filed June 11, 1973, Ser. No. 369,109
Int. Cl. B41b *11/62*
U.S. Cl. 249—170 **1 Claim**



1. A bullet mold for casting bullets from molten metal, the mold comprising:
first and second mold bodies, each of said bodies having inner faces with matching mold cavities formed therein, and each having upper and lower sides and opposite ends; an actuating jaw member for each mold body, the jaw members each having hinge sections and being hingedly connected to one another at said hinge sections;
the jaw members having ends remote from the hinge sections, and having handles on such ends;
the jaw members being connected between the hinge sections and the handles to the respective mold bodies;
a sprue plate hingedly connected to the upper side of one of said mold bodies and being detachably engageable with the upper side of the other of said mold bodies, the sprue plate having openings therein aligned with said mold cavities when the body inner faces are in abutting relation and the sprue plate is in engaged condition;
laterally opposed engagement means carried by the lower sides of respective mold bodies;
a removable mold insert assembly for the formation of hollow sections in the castings made in said mold cavities, including an insert member for each of said cavities, and including a base member commonly supporting said insert members and engaged on respective sides by the engagement means of the lower sides of the mold bodies upon pivoting of said jaw members to closed position to capture said assembly with said inserts properly positioned within said cavity; and
the engagement means of the lower sides of the mold bodies comprising oppositely facing bracket members each having a lower projecting flange and wherein said base member is of stepped cross sectional configuration with lower recesses on opposed sides receiving respectively said projecting flanges.

3,870,273
SELF-INVERTING HOT TOP CASING

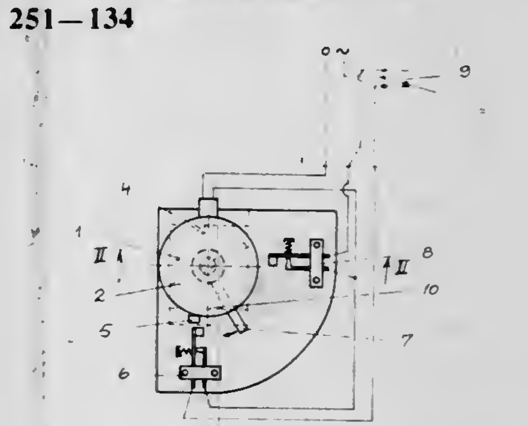
Joseph Perri, Corapolis, Pa., assignor to Aetna Business Credit, Inc., New York, N.Y.
Filed May 25, 1971, Ser. No. 146,701
Int. Cl. B22d *7/10*
U.S. Cl. 249—202 **3 Claims**



1. In a hot top casing having a central pouring opening therethrough and an external surface, the improvement comprising:
a. two independent pairs of lift trunnions extending from said external surface,
b. one of said pairs of trunnions being positioned above the center of gravity of said casing,
c. the other of said pair of trunnions being positioned below the center of gravity of said casing,
d. both of said pairs of trunnions being horizontally offset from the center of gravity of said casing to give said casing a designed weight imbalance so that said casing will rotate when elevated by the lower most pair of said two pairs of trunnions, whereby the casing is inverted automatically each time it is picked up by the lower most pair of said two pairs of lift trunnions.

3,870,274
MOTOR DRIVEN VALVE

Max Broe, Horsens, Denmark, assignor to Aktieselskabet Chr. Nielsens Eftf., Armaturfabrik, Horsens, Denmark
Filed June 29, 1973, Ser. No. 375,188
Claims priority, application Denmark, June 30, 1972, 3272/72
Int. Cl. F16k *31/04*
U.S. Cl. 251—134 **8 Claims**



1. In a motor operated valve of the type that includes a valve housing having a valve seat; a valve body mounted in the housing for movement between an open position and a shut position with respect to the valve seat; a motor mounted on the housing; means for coupling the motor to the valve member for moving the member between the open and the shut positions; first mechanical stop means positioned with respect to the housing for preventing movement of the valve body in one direction past the open position; second mechanical stop means positioned with respect to the housing for preventing movement of the valve body in the opposite direction past the shut position; a first single throw limit switch having one terminal connected to the motor and positioned with respect to the housing for disconnecting current to the motor when the valve body reaches the open position; a second single throw limit switch having one terminal connected to the motor

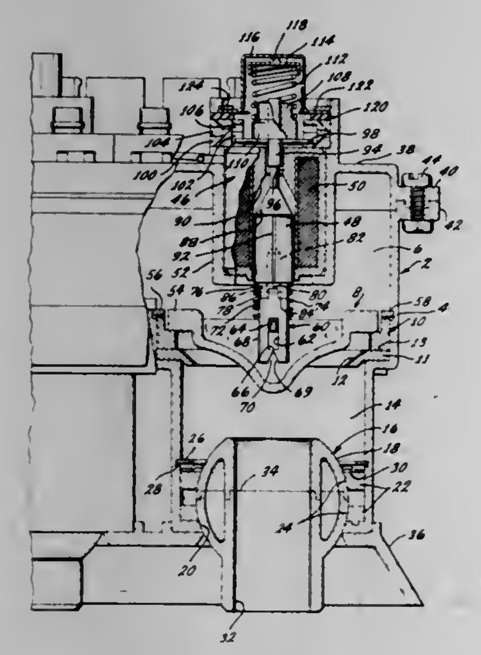
and positioned with respect to the housing for disconnecting current to the motor when the valve body reaches the shut position; and a double throw control switch having a movable contact connectable to a source of electric power, a first fixed contact connected to the other terminal of the first limit switch and a second fixed contact connected to the other terminal of the second limit switch, the improvement wherein: the motor consists of one single-phase, alternating current, synchronous motor having arbitrary directions of rotation that are reversible if rotation in either direction is blocked;

the one terminal of the first switch and the one terminal of the second switch are connected to the same motor lead; and

the first and second limit switches are positioned for disconnecting current to the motor before the valve body reaches the open and shut positions, respectively, so that the motor will stop before further movement of the valve body is blocked by the respective stop means.

3,870,275
VALVE CONSTRUCTION

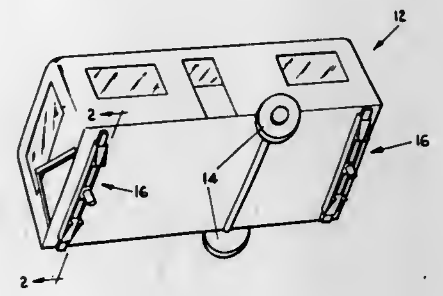
Allen Kallel, Santa Ana, Calif., assignor to Wemac Company, Santa Ana, Calif.
Filed May 24, 1973, Ser. No. 363,656
Int. Cl. F16k *31/10*
U.S. Cl. 251—252 **11 Claims**



1. A valve construction comprising:
an axially movable valve member;
a valve seat engageable by the valve member in a closed position;
follower means connected to said valve member;
ramp means positioned to support said valve member in a closed or open position through contact with said follower means;
said ramp means including a ramp surface having stepped portions positioned at different levels to contact said follower means in supporting said valve member at different levels with respect to said valve seat;
first means connected to said valve member through a last motion connections to move said valve member axially with respect to said valve seat; resiliently yieldable means positioned between said first means and said valve member to urge said first means and said valve member apart; second means to rotate said valve member through an incremental arc as said valve member is moved axially;
said incremental arc corresponding to the distance between said stepped portions of said ramp surface, and
said lost motion connection permitting relative movement between said first means and said valve member when said follower means is brought into contact with said stepped portions with the extent of relative movement being dependent on the level of the stepped portion which is contacted by said follower means.

3,870,276
STABILIZING JACK

David P. Phillips, Lookout Mountain, Tenn., assignor to Wildwood Products, Inc., Lookout Mountain, Tenn.
Continuation-in-part of Ser. No. 281,459, Aug. 17, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 399,856
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **5 Claims**



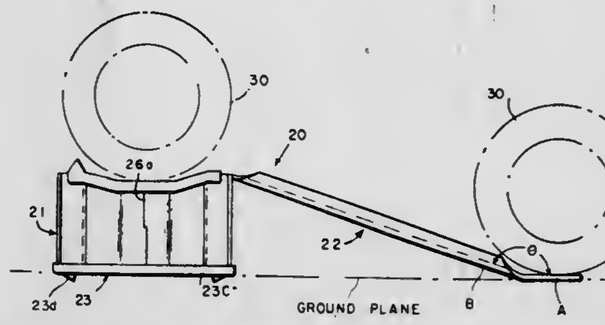
3. A mechanical jack for stabilizing a vehicle with respect to the ground comprising:
at least two legs spaced apart and movably mounted on the underside of the vehicle, each leg being movable from a raised position, wherein the leg is not in contact with the ground, to a lowered position, wherein the leg is in contact with the ground, the legs comprising upper ends that are mounted on movable rollers and lower ends that are pivotable about the upper ends into and out of contact with the ground;
means for guiding the upper ends of the rollers in a linear transverse path along the underside of the vehicle;
mechanical linkage means interconnecting the upper ends of the legs, said mechanical linkage means being adapted, upon receiving a mechanical driving force, to apply the mechanical driving force to the legs in the form of a horizontal transverse force applied to the upper ends of the legs, so as to cause the upper ends of the legs to move transversely on their rollers in their housings, said mechanical linkage means being further adapted to transmit said mechanical driving force to each leg equally and independently, regardless of the distance traveled by each leg;
arm means pivotably connecting a point on each leg spaced apart from the upper end thereof to a fixed position with respect to the underside of the housing, said arm means being adapted to cause each arm to pivot about its upper end between its raised and lowered positions as the upper end of the arm is moved along its transverse path on the underside of the vehicle;
drive means adapted to apply a mechanical driving force to said mechanical linkage means.

3,870,277
RAMP FOR VEHICLES

Roland J. West, Andover, Mass., assignor to Vaughn Corporation, Salisbury, Mass.
Filed Mar. 15, 1973, Ser. No. 341,765
Int. Cl. E02c *3/00*
U.S. Cl. 254—88 **9 Claims**

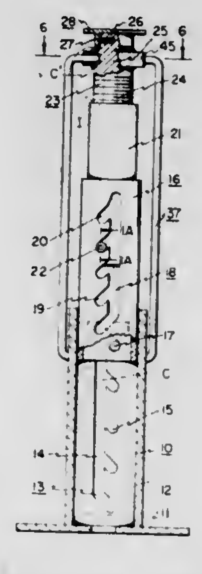
1. A portable vehicle ramp which includes a pedestal comprising a base member, at least two brace members having bottoms positionable on the base member and which interlock with and cross over each other, a top member supportable on the top of the brace members, means for holding the members together, an incline member positionable on said pedestal for coupling thereto to permit one wheel of a vehicle to move to

a position so that it is supported on the top member, and in which the brace members each have cutouts in the central portion thereof so that the brace members cross over each other while the bottoms thereof lie in the same plane.



3,870,278
TELESCOPING STAND JACK

George W. Lee, Rangely, Colo., assignor to Arnold Bryce Booker and Shirl R. Kump, both of Rangely, Colo., a part interest to each
Filed Mar. 18, 1974, Ser. No. 452,197
Int. Cl. B66f *3/08*
U.S. Cl. 254—98 **10 Claims**

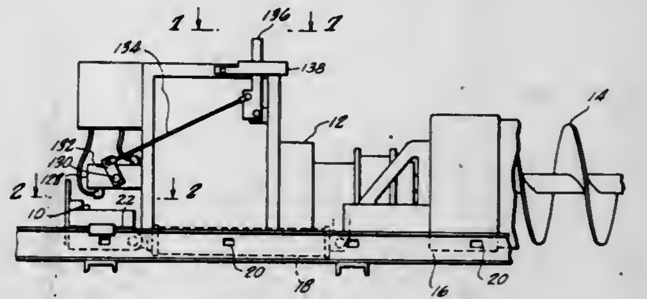


10. An improved telescoping jack stand including, in combination, plural telescoping members comprising a series and having respective means for mutually, releasably detent positioning said members, an upper screw-threaded member threadedly supported by and operatively engaging an upper one of said series, load supporting means upstanding from said screw-threaded member, and ratchet means for revolving said screw threaded member, said ratchet means comprising a U-shaped, resilient lever handle having inwardly directed ends, said screw-threaded member having plural radial bores selectively receiving said ends, and a ring member rotatably mounted about said screw-threaded member and over said radial bores and journaling said ends.

3,870,279
STEPPER CARRIAGE ADVANCEMENT SYSTEM

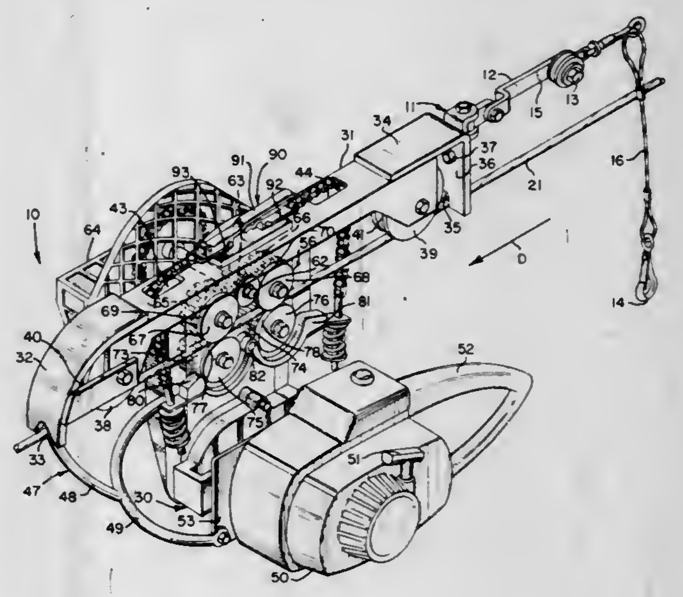
Bernard A. Century, Cleveland, Ohio, assignor to Allied Steel & Tractor Products, Incorporated, Cleveland, Ohio
Filed Sept. 11, 1972, Ser. No. 287,782
Int. Cl. B23g *5/26;* B61d *15/00;* F16h *21/44*
U.S. Cl. 254—105 **6 Claims**

1. An advancement mechanism for a horizontal earth boring machine supported on rails and comprising
a base capable of being moved along the rails in first and second directions,
rigid members pivotally mounted to said base and extending to the rails, and
means on the rails for engaging said rigid members with the rails, said engaging means allowing pivotal movement of said rigid members into and out of engagement with the rails when said base is moved in said first direction and said engaging means allowing pivotal movement of said rigid members into and out of engagement with the rails when said base is moved in said second direction, and
stops movably mounted on said base capable of being positioned to selectively interfere with pivotal movement of said rigid members to constrain said members when in engagement with said means.



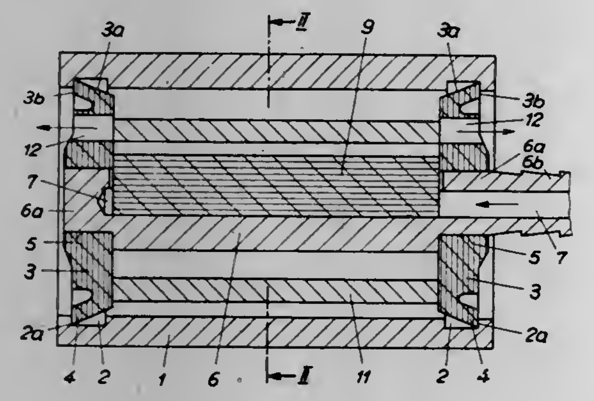
3,870,280
HIGH LINE TOWING DEVICE

Leslie E. Victor, 120 Lunden Dr., Ventura, Calif. 93003
Filed July 26, 1974, Ser. No. 492,341
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R **19 Claims**



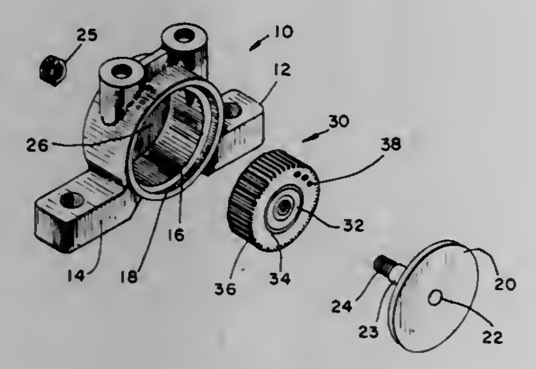
1. A high line towing device capable of travelling along while being suspended from the messenger line, comprising:
a. a framework;
b. an overhead mounting bar secured to a top portion of the framework;
c. a support sheaves carried by forward and rearward portions of the overhead mounting bar and formed with guide grooves, the guide grooves being tandemly aligned to define an imaginary axis of travel along the messenger line;
d. a motor coupled to the framework and having a power output shaft, the motor being slung beneath the axis of travel and arranged to assist in load balancing;
e. upper drive means coupled to the framework and operatively engaged to the power output shaft of the motor;
f. lower drive means coupled to the framework at a position beneath the upper drive means, the upper drive means and lower drive means being respectively located above and below the axis of travel; and,
g. a drive release mechanism coupled to the overhead mounting bar and being structured to mutually disengage and drivingly engage the upper and lower driving means.

3,870,281
COMPRESSED AIR VIBRATOR
Willy Fink, Zollikerberg, Switzerland, assignor to Findeva AG, Zollikerberg, Switzerland
Filed Nov. 2, 1972, Ser. No. 303,141
Claims priority, application Switzerland, Dec. 15, 1971, 18296/71
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **3 Claims**



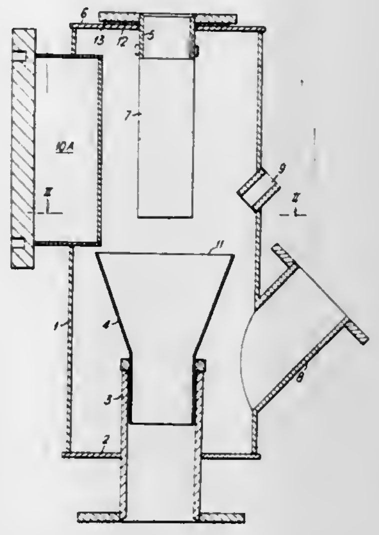
1. A compressed air vibrator comprising a cylindrical casing open at its opposite ends, a cover for each of the opposite ends of said casing for forming closures therefor, wherein the improvement comprises that said casing has a circumferentially extending groove in its inner surface adjacent each of its open ends, each said cover is formed of a plastic material and has a circumferentially extending edge which fits into the groove in said casing, the circumferentially extending edge of each said cover has a tapered configuration converging inwardly toward the axis of said casing in the direction facing toward the opposite end of said casing, a resilient lip formed around the circumferential edge of each said cover on the outer surface thereof with said lip fitted into said groove and having a portion of its surface bearing in sealed engagement against a corresponding wall surface within said groove, an eccentric mass positioned within said casing and movable therein under the influence of compressed air, said grooves of said casing being formed with at least the surface thereof adjacent the end of said casing extending perpendicularly to the axis of said casing, and the portion of said lip of said cover bearing in sealed engagement against a corresponding wall surface of said groove being in bearing contact with said perpendicularly extending surface of said groove.

3,870,282
NOISELESS AIR-ACTUATED TURBINE-TYPE VIBRATOR
Theodore S. Wadensten, P.O. Box 8 Stilson Rd., Allendale, N.J. 02898
Filed Apr. 30, 1973, Ser. No. 355,681
Int. Cl. B06b *1/16*
U.S. Cl. 259—1 **25 Claims**



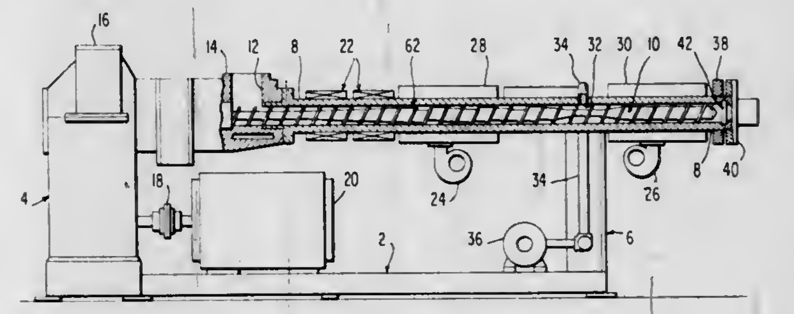
1. A relatively silent, compressed gas-actuated, turbine-type vibrator having a rotor of not less than 1¼ inches and not more than 5½ inches diameter and within a speed range of 6,000 to 10,000 rpms having a noise level not greater than 85 decibels hz., the vibrator including: (a) a substantially closed housing having a cylindrical chamber therein; (b) a dynamically unbalanced rotor freely rotatable in the cylindrical bore of the chamber, the diameter and length of the rotor being established so that not less than one thirty-second of an inch clearance is provided between the rotor and ends and bore of the chamber, the rotor having a plurality of tooth-like configurations formed on its outer periphery, the tooth-like configuration further having a depth which corresponds to a distance not exceeding 7 percent and not less than 1½ percent of the diameter of the rotor; (c) an air outlet formed in the housing and extending from the rotor chamber to the outside of the housing, and (d) an air inlet formed in the housing and extending from the outside of the housing to the rotor chamber, the air inlet arranged to direct the incoming pressurized air tangentially against the teeth of the mounted rotor and with the tooth like configurations so formed that in a plane normal to the axis of the rotor the face of the tooth like configuration against which the incoming air impinges defines an angle of intersection with the theoretical radial line of said rotor, said defined angle being as little as 0° and as great as 30° as measured from said point of intersection and inclined in such a direction that the circumferential thickness of the tooth like configurations tends to decrease as the radial distance from the axis increases and with the tooth-like configuration so formed that in a plane normal to the axis of the rotor the face of the tooth-like configuration against which the incoming air impinges defining an angle of intersection with a theoretical radial line of said rotor, said defined angle being as little as zero and as great as 30° as measured from said point of intersection and inclined in such a direction that the circumferential thickness of the tooth-like configurations tend to decrease as the radial distance from the axis increases, the cross-sectional area of the inlet being 30 to 55 percent of the area of the outlet diameter.

3,870,283
METHOD AND APPARATUS FOR MIXING A POWDER WITH A FLOWABLE SUBSTANCE
William Edward Hurst, Potters Bar, Hertfordshire, England, assignor to Mono Pumps (Engineering) Limited, London, England
Filed Dec. 7, 1972, Ser. No. 312,922
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **10 Claims**



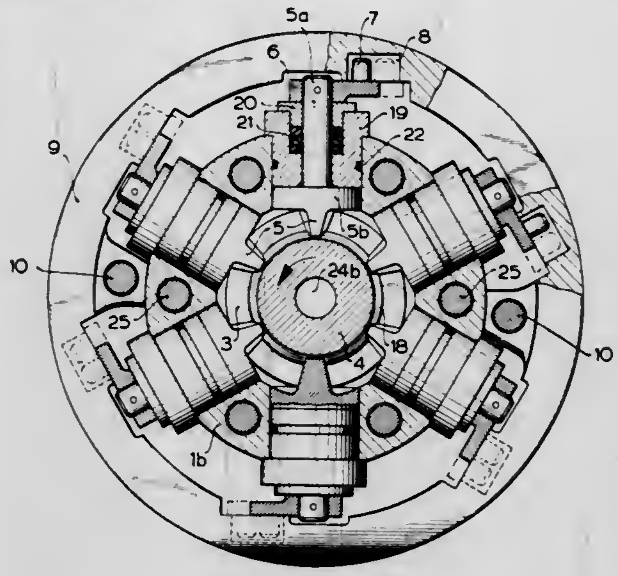
1. A method of mixing powder with a flowable substance including the steps of introducing substance into an enclosed mixing chamber, sucking the substance downwardly out of the chamber through a discharge passage thereby to generate a vortex in the flowable substance exiting from the chamber and simultaneously to create a partial vacuum in the chamber and introducing the powder into the vortex thus generated at a level above the discharge passage.

3,870,284
EXTRUDER SCREWS
George A. Kruder, Marion, Ohio, assignor to Koehring Company, Milwaukee, Wis.
Filed Aug. 23, 1972, Ser. No. 282,905
Int. Cl. B29b *1/06*
U.S. Cl. 259—191 **16 Claims**



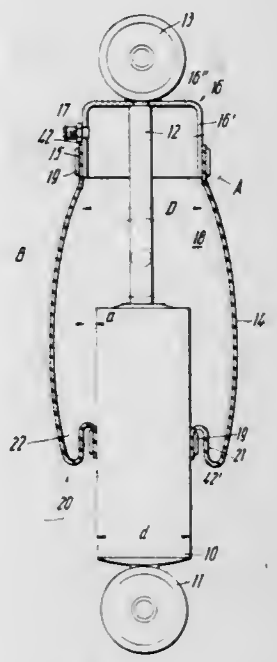
3. A multiple stage screw for extruders comprising at least two pumping sections spaced apart along the length of the screw and having a vent section therebetween, said vent section having a helical material flow channel therein, at least one of said pumping sections having a helical channel which varies in depth cyclically along its length through at least three cycles with the maximum channel depth portion of each cycle being of less depth than the depth of said channel in said vent section.

3,870,285
CONTINUOUSLY OPERATING KNEADING AND MIXING SCREW DEVICE FOR KNEADING AND MIXING KNEADABLE AND MIXABLE MATERIALS
Gunther Bausch, Vaihingen/Enz; Christian Millauer, Stuttgart, and Harald Paul, Kornwestheim, all of Germany, assignors to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany
Filed Sept. 4, 1973, Ser. No. 393,838
Claims priority, application Germany, Sept. 1, 1972, 2243039
Int. Cl. B29b *1/06*
U.S. Cl. 259—191 **7 Claims**



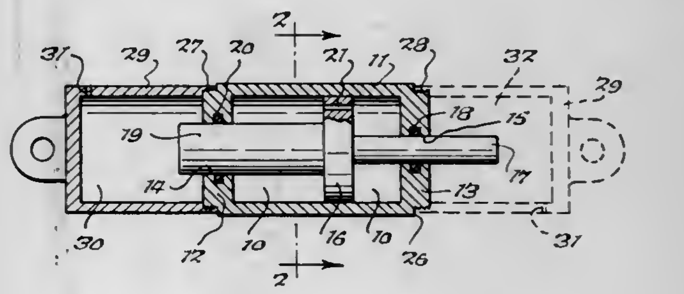
1. A continuously operating kneading and mixing screw device for kneading and mixing kneadable and mixable materials, said device comprising in combination:
a housing;
a power driven shaft rotatably mounted in said housing and mounting screw flights, said flights being interrupted to define spaces therebetween;
kneading and mixing elements extending from the inside of the housing into said spaces between the flights, said elements being disposed in circumferentially spaced relationship and arranged in groups, each of said groups being located in a plane normal to the center axis of said shaft;
mounting means rotatably supporting said mixing elements; and
drive means coacting with said elements for turning the same independently of rotation of said shaft, said drive means being coupled to the elements in said groups for joined turning of the elements, said drive means being adjustable for controlling the angular positions of the elements in said groups.

3,870,286
FLUID SPRINGS, PARTICULARLY FOR VEHICLES
Jean Herbert Willich, Ennepetal, Germany, assignor to Firma August Bilstein, Ennepetal, Germany
Filed Oct. 17, 1973, Ser. No. 407,238
Claims priority, application Germany, Nov. 11, 1972, 2255304
Int. Cl. B60q *11/26*
U.S. Cl. 267—64 R **9 Claims**



1. A fluid spring, particularly for vehicles, comprising two components arranged to be connected to two masses which are to be resiliently held apart, and an elastic, internally reinforced, rolling sleeve clamped at each end in gas-tight sealing relationship to the respective components, wherein the reinforced rolling sleeve is a portion of a continuously manufactured cylindrical tube of constant wall thickness cut to a desired length, and wherein the ends of the rolling sleeve are secured by annular clamping means.

3,870,287
GAS SPRING
John McMahon, 57 Leacliff Ln., West Seneca, N.Y. 14224
Filed Dec. 26, 1973, Ser. No. 428,089
Int. Cl. F16f *9/00*
U.S. Cl. 267—113 **9 Claims**



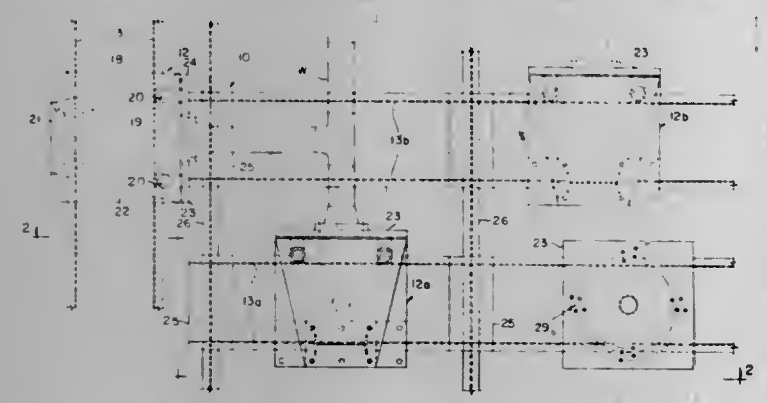
1. An improved gas spring comprising:
a. a gas loaded chamber defined by a rigid wall, and

- b. opposite end walls each having a bore therethrough, but of different diameters,
- c. a piston slideably mounted within said chamber,
- d. a first piston rod rigidly fixed to the piston, extendible through the bore of one end wall,
- e. a first seal mounted within the bore of said end wall and cooperating with the first piston rod to prevent escape of gas from the chamber,
- f. a second piston rod, of different diameter than the first piston rod, rigidly fixed to the piston, extendible through the bore of the other end wall, and
- g. a second seal mounted within the bore of said other end wall and cooperating with the second piston rod to prevent escape of gas from the chamber.

3,870,288
PIPE FABRICATION JIG

J. Stanley McLarnon, 460 Fairfield Ave., Greenfield Park, Quebec, Canada

Filed July 9, 1973, Ser. No. 377,296
Int. Cl. B23p *19/00*
U.S. Cl. 269—45 7 Claims



1. In a welded pipe fabrication jig for supporting large and heavy pipe sections; the combination comprising a pair of parallel rails extending in a horizontal direction;

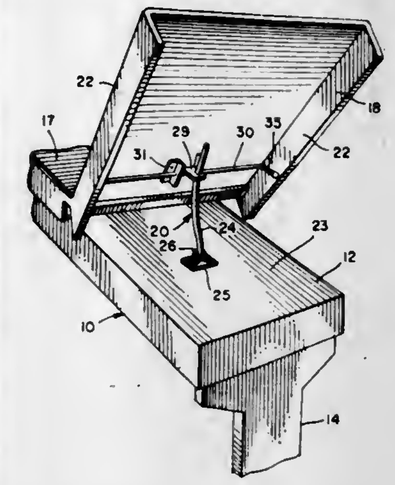
- a horizontally extending first track parallel to said parallel rails and spaced a horizontal direction therefrom;
- a horizontally extending second track located perpendicular to said first track such that one end of said second track is horizontally spaced from said first track;
- means for movably supporting said second track on said parallel rails;
- at least one first locating plate assembly movable along said first track;
- at least one second locating plate assembly movable along said second track and hence movable in a perpendicular direction to the direction of movement of said first assembly on said first track, each said assembly including a carriage movably mounted on the respective said track, a locating plate, means for mounting said locating plate on said carriage, means for adjusting said locating plate to a predetermined attitude relative to said mounting means, and pipe component supporting means on said locating plate.

3,870,289
BACK SUPPORT MECHANISM FOR MEDICAL EXAMINATION TABLE

Clarence J. Aulik, Manitowoc, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed July 5, 1973, Ser. No. 376,456
Int. Cl. A61g *13/00*
U.S. Cl. 269—324 15 Claims

1. In an examination table having a base, a subtop supported by the base, and a top supported by the subtop, the top having a tiltable back section pivotable about a horizontal axis between a substantially horizontal lowered position in which the back section is spaced slightly from the subtop and a raised position, an improved support assembly for the back section of the top comprising an elongated curved rod having first and second end portions, the rod being pivotally secured adjacent its first end portion to one of the subtop and back section for pivotal movement about a horizontal axis spaced from the pivot axis of the back section, the rod having a first curved portion adjacent the first end portion and a second curved portion extending from the first curved portion to the second end portion, the first and second curved portions having opposite curvatures to provide the rod with a generally S-shaped intermediate portion, the second curved portion flowing smoothly from the first curved portion and being longer than the first curved portion, the first curved portion curving away from its pivotal securement to one of the subtop and back section toward the other of the subtop and back section and the second curved portion curving away from said other of the subtop and back section toward said one of the subtop and back section when the back section is in its lowered position, the length of the second curved portion being such that the first and second end portions form an included angle opening toward said one of the subtop and back section of less than 180°, the rod being enclosed completely within the space between the subtop and the back section when the back section is in the lowered position, a latch plate mounted on the other of the subtop and the back section for pivotal movement about a horizontal axis, the latch plate having an opening therethrough slightly greater than the thickness of the rod, the rod extending through the opening in the latch plate and the periphery of the opening in the latch plate being engageable with the rod when the latch plate is moved away from a perpendicular relationship with the rod whereby the latch plate can be frictionally locked against the rod at selected positions along the first and second curved portions of the rod to support the back section at a desired inclination, the rod being pivotable between the subtop and the back section as the back section is moved between the lowered and raised positions without interfering with the subtop or the back.

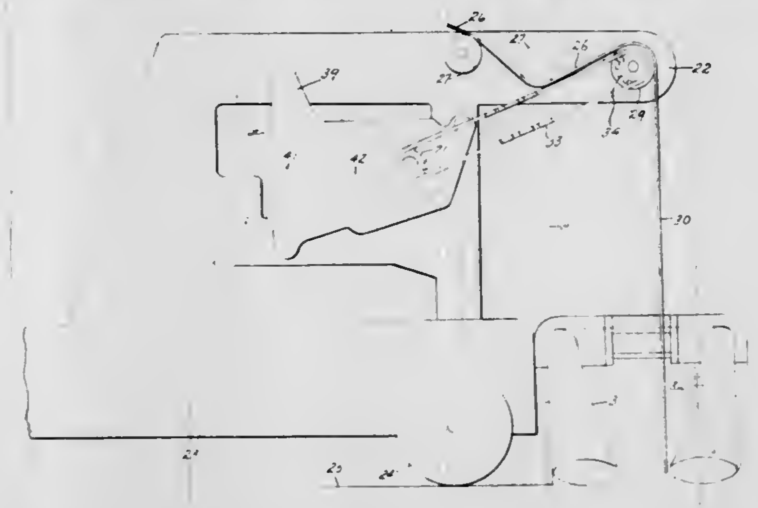


3,870,290
PHASE SHIFTING DEVICE FOR CLOTH LAYING CARRIAGE

Stephen Paterson, Forest Hills, N.Y., assignor to Cutting Room Appliances Corp., New York, N.Y.

Continuation-in-part of Ser. No. 145,194, June 20, 1971, abandoned. This application Jan. 4, 1973, Ser. No. 320,978
Int. Cl. B65h *22/46*
U.S. Cl. 270—30 2 Claims

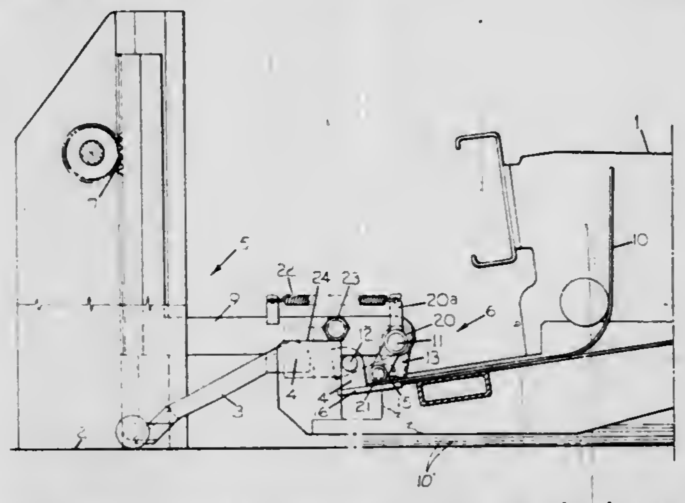
1. In a cloth laying machine carriage of a type including a positively driven feed roller having an outer surface, which roller rotates in a single direction and is driven by means responsive to movement over a cloth laying table in either of two opposite directions, said carriage having a pair of movably mounted fold-forming bars having spaced guiding edges which selectively guide a web of cloth from said driven roller beneath a catcher bar positioned to fall thereupon, improved means for preventing the accumulation of cloth caused by continued rotation of said feed roller during movement of said carriage caused by the reversal of direction of movement of said carriage at the completion of a cloth laying cycle and the commencement of another cloth laying cycle in which a previously inactive fold-forming bar of said pair of bars moves into active position and subsequently moves against a surface of said web, said means comprising lost motion means interconnecting said feed roller and said means responsive to movement operative upon reversal of the direction of said movement, said lost motion means interrupting the continuous rotation of said feed roller for a predetermined length of the path of travel of said carriage at either end of said cloth laying table corresponding to the distance between the cloth guiding edge of an inactive fold-forming bar and the point at which said bar contacts said web following the commencement of movement of said carriage at the beginning of a cloth laying cycle.



3,870,291
CLAMP DEVICE FOR LAYING-UP MACHINES SUITABLE TO KEEP EACH LAYER OF FABRIC DURING ITS LAYING-UP

Mario Fonio, Via Ticino 131, Galliate, Italy

Filed Apr. 6, 1973, Ser. No. 348,605
Claims priority, application Italy, Apr. 22, 1972, 23460/72
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 4 Claims



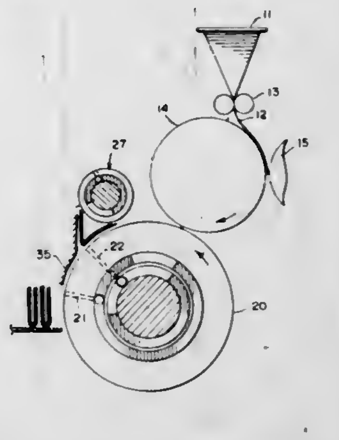
1. In a fabric laying-up machine of the type having a supporting table and a carriage with a fabric supply movable to and fro on the table for tentering and cutting successive layers of fabric of pre-determined length on the table, a fabric clamping device comprising:

- a. clamping means adjacent one end of the table for receiving the end of a supply of fabric presented by the carriage including separately mounted cooperating series of clasps with means mechanically linking said clasps one to the other;
- b. means movable with the carriage to effect actuation of said clamping means;
- c. operating means operatively associated with one series of said clasps and with said actuating means to effect gripping and release of each layer of fabric; and
- d. means included with said clamping means to be operatively contacted by said actuating means to cause raising of the clamping means during the tentering of a layer of fabric an amount preventing interference of each new layer with the previous tentered layer of fabric.

3,870,292
METHOD AND APPARATUS FOR TRANSVERSE FOLDING OF WEBS

John J. Bradley, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Mar. 16, 1973, Ser. No. 341,843
Int. Cl. B65h *45/14*
U.S. Cl. 270—68 R 1 Claim



1. In a method of producing napkins, hankies or the like from an elongated web, the steps of advancing a continuous web into wrapping engagement on a rotating carrier roll, severing said web on said carrier roll to provide a sequence of separate web segments while temporarily maintaining each segment in general wrapping engagement with said carrier roll, rotating a first folding roll adjacent to and in synchronism with said carrier roll and in a direction opposite the direction of rotation of said carrier roll, applying vacuum to a first vacuum port in said first folding roll when a midlength portion of each segment on said carrier roll is aligned with said first vacuum port to start withdrawing each segment from said carrier roll while forming a first transverse fold of each segment about a first fold line located at the midlength of each segment, continuing rotating said first folding roll while causing each web segment portion immediately behind said first transverse fold line to move in a path diverging from the rotation of said carrier roll and thereby bring the trailing portion of each web section behind said first transverse fold line into engagement with said first folding roll with the previously leading portion superimposed thereon, then applying vacuum to a second vacuum port in said first folding roll, said second vacuum port being located behind said first vacuum port approximately one-quarter legnth of a web segment while continuing to apply vacuum to said first port whereby for a discrete time the said trailing portion is held against said first folding roll by simultaneous application of vacuum to both of said ports, thereafter substantially simultaneously terminating the application of vacuum to said first port and applying vacuum to a port in a second folding roll positioned adjacent said first folding roll to bring the leading edge of each web segment adjacent said first transverse fold into wrapping engagement with said second folding roll and to positively divert said leading edges from wrapping engagement with said first folding roll to commence the development of a second transverse fold adjacent said second port, thereafter terminating the application of vacuum to said second folding roll port while continuing to apply vacuum to the second port of said first folding roll, urging the portion of each web segment diverted by said second folding roll into general conformity with the trailing portion remaining held by said second vacuum port on said first folding roll, and terminating the application of vacuum to said second port and removing in generally planar configuration the twice transversely-folded segment from engagement with said first folding roll.

3,870,293

DEVICE FOR ALIGNING THE SHEETS ON THE FEED TABLE OF SHEET-FED MACHINES, PARTICULARLY OFFSET PRINTING PRESSES

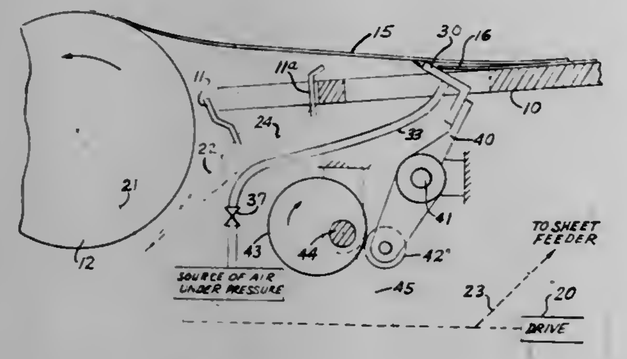
Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik & Schleicher AG., Offenbach/Main, Germany

Filed Sept. 20, 1973, Ser. No. 399,452

Claims priority, application Germany, Sept. 20, 1972, 2246140

Int. Cl. B65h *9/14*

U.S. Cl. 271—231 **3 Claims**



1. In a sheet feeding means for a printing press, the combination comprising a feed table having front guides and having an associated impression cylinder adjacent the guides and equipped with grippers, means for feeding sheets onto the table in overlapped relation with the top sheet leading and the bottom sheet trailing, a sheet separator head recessed with respect to the table and extended horizontally in the direction of movement of the sheets, said head having a horizontal passageway therein flaring in the direction of motion of the sheets and terminating in a generally horizontally directed nozzle, means for applying pressurized air to the passageway for formation of a jet of air at the nozzle, the upper surface of the head having a suction port rearwardly adjacent the nozzle so that when air is ejected from the nozzle there is produced by the Bernoulli principle downward suction in a direction substantially perpendicular to the jet, means for cyclically rocking the head about a transverse axis timed with the feeding of the sheets so that the head is upwardly tilted with the result that the air jet is directed from the nozzle with a vertical component for blowing the top sheet clear of the bottom sheet and so that the head is subsequently restored to near horizontal position to present the suction port to the bottom sheet so that the bottom sheet is prevented from being drawn along with the top sheet as the latter is removed by the grippers on the impression cylinder.

3,870,294

APPARATUS FOR THE EXTRACTION OF SHEETS

Sigmar Donner, Augsburg, Germany, assignor to Kleindienst & Co. Maschinenfabrik, Augsburg, Germany

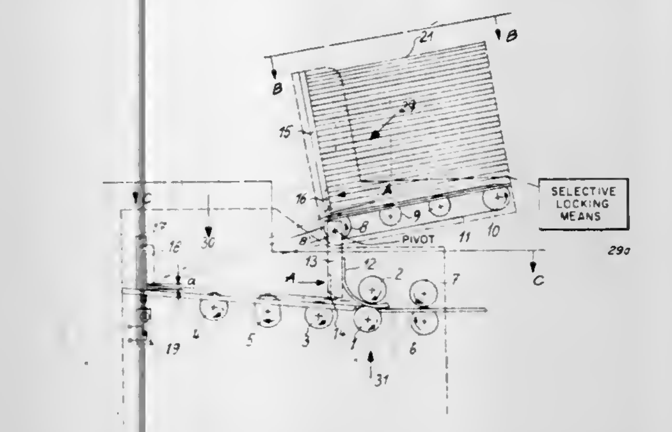
Filed Jan. 17, 1973, Ser. No. 324,355

Claims priority, application Germany, Jan. 26, 1972, 2203626

Int. Cl. B65h *1/30, 3/04*

U.S. Cl. 271—3.1 **8 Claims**

1. An apparatus for feeding sheets to a processing unit, comprising:
a magazine adapted to receive a main stack of sheets of variable height and having a support surface at the bottom of the magazine and an outlet at said surface for passing sheets from the bottom of said main stack in one direction;
first feed means for advancing sheets from the bottom of said main stack through said outlet in said direction;
a further surface disposed below the first-mentioned surface and ahead of said outlet in said direction for receiving a minor stack of sheets, said first surface being inclined at an acute angle to said further surface;
an abutment extending generally transversely to said further surface remote from said outlet for intercepting leading edges of sheets fed through said outlet and depositing same upon said further surface in said minor stack with the sheets thereof aligned along said edges;
second feed means for drawing the lowermost sheet from said minor stack and advancing same beneath said magazine in the opposite direction with the aforementioned edges of the sheets withdrawn from said minor stack trailing in said opposite direction; and
stack-height-detection means on said abutment and responsive to the height of the minor stack on said further surface for controlling said first means to maintain at least the maximum height of said minor stack constant.



3,870,295

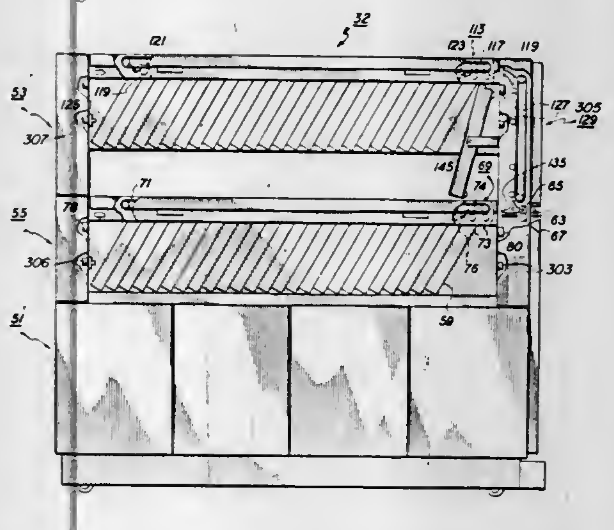
SORTER SUPPLEMENT CONTROL

William P. Kukucka, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 312,167

Int. Cl. B65h *31/24*

U.S. Cl. 271—173 **2 Claims**



1. In a reproduction system for producing and collecting copies from a set of documents, the system including a processor and a collator, said collator having at least one copy storage section with trays for receiving copies therein, the improvement comprising:
means for programming said system to provide a preset number of document copies arranged in collated order in said collator section,
copy sensing means including a light source and light responsive means in alignment with said light source in said collator, presence of a copy in said collator trays blocking passage of light from said light source to said sensing means,
control means to prevent start-up of said system unless said sensing means senses the light from said light means, and means adapted when actuated to override said control means to permit copies in addition to said preset number of document copies to be arranged in the trays of said collator section together with said preset number of document copies produced from said program.

3,870,296

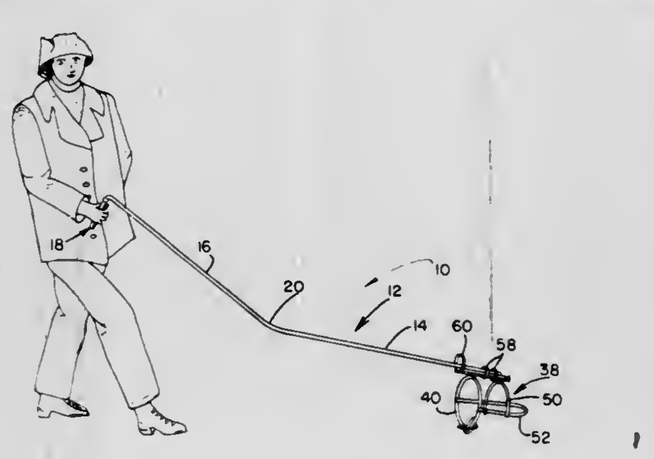
NOVELTY AND AMUSEMENT DEVICE SIMULATING AN ANIMAL LEASH

Joel F. Ellis, Lincolnwood, Ill., assignor to H. Fishlove & Company, Chicago, Ill.

Filed Nov. 10, 1972, Ser. No. 305,576

Int. Cl. A63j *5/00*

U.S. Cl. 272—8 N **1 Claim**



1. A novelty and amusement device so constructed and arranged to be held by a person and simulating an animal leash and conveying the impression to observers that an animal such as a dog or the like formerly secured to the leash has escaped therefrom with the person holding the leash being unaware of said escape, said device comprising a longitudinal nonextendible rod member of substantial length with a handle portion adjacent the rear thereof, an animal harness secured to the front end thereof, and a substantial distance forwardly of the handle portion, said harness being of conventional appearance and being so shaped and constructed as to be the type of harness that an animal could be harnessed in when leashed, said device simulating an animal leash to be held by a person so that the harness is held spaced from the ground surface, said harness at all times being free of securement to any animal, simulated animal, or portion of any simulated animal, said rod member being preformed into a shape which gives the appearance that a dog or other animal was still leashed to the harness, and said rod member being generally rigid to maintain said shape but sufficiently flexible and resilient so that when held by a person the rod member will tend to move up and down simulating the movement as though a dog or other animal was still leashed to the harness.

3,870,297

EXERCISE TREADMILL WITH INCLINATION CONTROLLED CHAIR MOUNTED THEREON

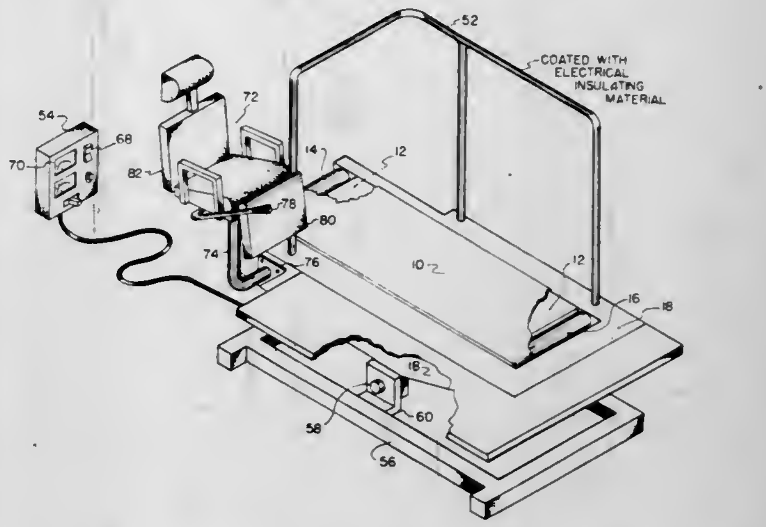
Boyd B. Elder, Redondo Beach, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Division of Ser. No. 371,066, June 18, 1973, Pat. No. 3,826,491. This application Feb. 19, 1974, Ser. No. 443,623

Int. Cl. A63b *23/06*

U.S. Cl. 272—58 **1 Claim**

1. A treadmill for diagnostic and therapeutic purposes, and the like, including: a base; a frame pivotally mounted on said base; a pair of rollers mounted on said frame in spaced and parallel relationship; platform means interposed between said rollers and mounted on said frame to define a walking surface; an endless belt looped around said rollers and over said platform means; a drive mechanism mechanically coupled to said belt; an inclination control mechanism coupled to said frame including means to change the inclination of the walking surface relative to said base; a chair mounted on the frame adjacent said belt and to one said thereof; and a linkage mechanism coupled to the chair and to the frame including means for controlling the inclination of said chair as the inclination of the walking surface is changed, so that an established relationship between the plane of the seat of the chair and the base remains the same regardless inclination of the walking surface relative to the base.



3,870,298

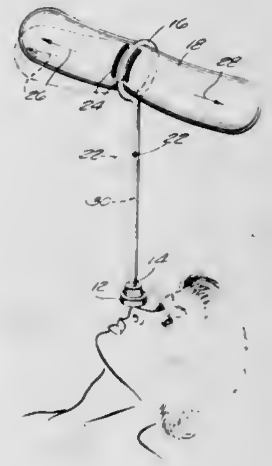
BALLOON BALANCING TOY

Zoltan Varga, 2561 S. Clement Ave., Milwaukee, Wis. 53202

Filed June 24, 1974, Ser. No. 482,384

Int. Cl. A63f *9/00*

U.S. Cl. 273—1 R **3 Claims**



1. A balancing toy comprising an elongated post, a ring at one end of said post, and an inflatable member having a longitudinal axis substantially greater than its transverse axis centered in said ring and captured by said ring.

3,870,299

COMBINATION GOLF PUTTING AID AND DIVOT REPAIRER

James M. Howe, 9 Scenic View Dr., Johnston, R.I. 02919

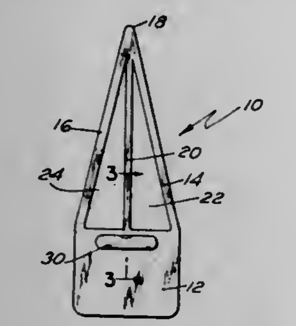
Filed Jan. 7, 1974, Ser. No. 431,333

Int. Cl. A63b *57/00*

U.S. Cl. 273—32 B **5 Claims**

1. A device for aligning a putt on a golf putting green, comprising a base portion of relatively flat stock, an elongated sighting rod integrally joined to said base portion in coplanar relation therewith and extending at right angles with respect thereto, said sighting rod normally projecting upwardly from said base portion when said device is in a position of use, a leveling element fixed to said base portion so as to be adjacent to the bottommost end of said sighting rod when said device is in the position of use, said leveling element being oriented with respect to said sighting rod in the position of use such that the midpoint of said leveling element is located in alignment with said sighting rod, and opposed legs joined to said base

portion in spaced relation with respect to said sighting rod and located in coplanar relation with respect to said base portion and sighting rod, spaces being formed between said legs and sighting rod and defining sighting spaces, the outermost ends of said legs being sufficiently spaced outwardly from said base portion for cooperating therewith to form a tool that is usable to repair divot marks in said green.



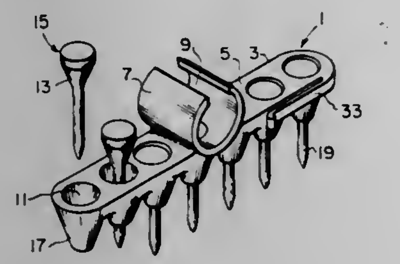
3,870,300
GOLF TEE HOLDER USABLE TO FORM A RAKE

Warren R. Amendola, 357 W. Neck Rd., Lloyd Harbor, N.Y. 11743

Filed May 6, 1974, Ser. No. 467,314

Int. Cl. A63b *57/00*

U.S. Cl. 273—32 B **8 Claims**



1. In a golf tee holder having a plurality of spaced identically shaped bores for receiving complementarily shaped portions of respective golf tees to be held, the improvement comprising:

  a. an elongated spine through which said bores are provided, said bores having axes of symmetry which are respectively perpendicular to the length direction of said spine and which lie in a common plane, the shape of said bores being complementary to that of the respective head portions of the golf tees to be held; and
  b. a generally cylindrical split ferrule integral with said spine and disposed athwart said spine midway between the spine ends for temporarily attaching said tee holder to a golf club shaft by frictional engagement of the ferrule interior with a grip on said shaft, said ferrule being in substantially tangential relationship to a spine surface at which the golf tees to be held are insertable in said bores, said tee holder, when holding a full complement of golf tees, thereby serving as a rake head whose tines are the respective pointed shaft portions of said tees.

3,870,301
GOLF BALL PUTTING CUP

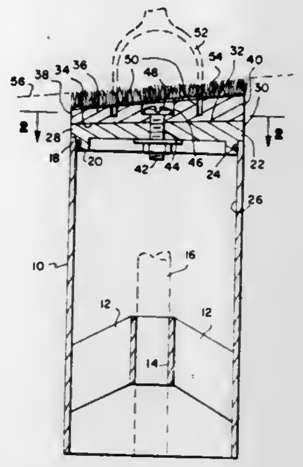
Lynam S. Brisendine, 1901 W. 3rd St., Mesa, Ariz. 85202

Filed Jan. 11, 1974, Ser. No. 432,804

Int. Cl. A63b *69/36, 57/00*

U.S. Cl. 273—34 B **8 Claims**

1. In a synthetic turf cap for golf ball cups used on golf course greens, the invention comprising: a golf ball cup having an open upper end, a cap on said upper open end; first means on said open end of said cup for supporting said cap at said open end of said golf ball cup; said cap having a plate disposed in close proximity to said upper open end of said cup; synthetic turf on said plate; and second means for adjustably supporting said plate relative to said first means; said second means disposed to provide elevational and inclinational adjustment of said plate relative to said first means, thereby permitting alignment of said synthetic turf relative to natural turf on a golf course green surrounding a golf ball cup thereon.



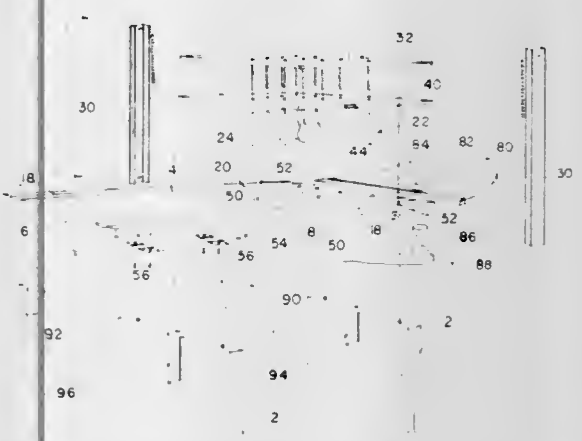
3,870,302
TETHERED PINS BOWLING GAME APPARATUS

Anthony E. Redling, 1727 Kalakaua Ave., Apt. A-4, Honolulu, Hawaii

Filed Sept. 8, 1972, Ser. No. 287,522

Int. Cl. A63d *5/08*

U.S. Cl. 273—44 **10 Claims**



1. Bowling game apparatus comprising a frame, a flat rectangular alley supported on the frame, the alley having a proximal ball-releasing end, a pin-receiving area near a distal end, a plurality of upstanding guides connected to the frame near the pin-receiving area of the alley, a platform connected to upper extremities of the guides, a reset plate mounted between the alley and the platform and mounted between the guides for vertical movement, followers mounted on the reset plate and extending laterally therefrom adjacent the guides for engaging the guides, whereby movement of the reset plate between the alley and platform is controlled by the guides and followers, bowling pins positioned on the pin-receiving area of the alley, and spring means connected to upper ends of the bowling pins and extending through holes in the reset plate and connected to the platform for drawing the pins upward toward openings in the reset plate, ten magnets arranged in spaced triangular planform in the pin-receiving area with alternate magnets having opposite polarity at an upper surface of the pin-receiving area, and wherein the bowling pins comprise ten pins arranged in complementary triangular form with second magnets in the pins having alternated polarity opposite the polarity of corresponding first magnets in the pin-receiving area, for holding the pins downward against spring pressure on the pin-receiving area of the alley, whereby knocking a pin toward an alternate magnet results in repulsion of the pin by the alternate magnet, whereby when the pins and second magnets are forced away from the first magnets the pins are drawn upward toward the reset plate by the spring means, and whereby the pins are reset on the pin-receiving area by moving the reset plate downward until the pins touch the area and then moving the reset plate upward, leaving the pins held by magnets on the area.

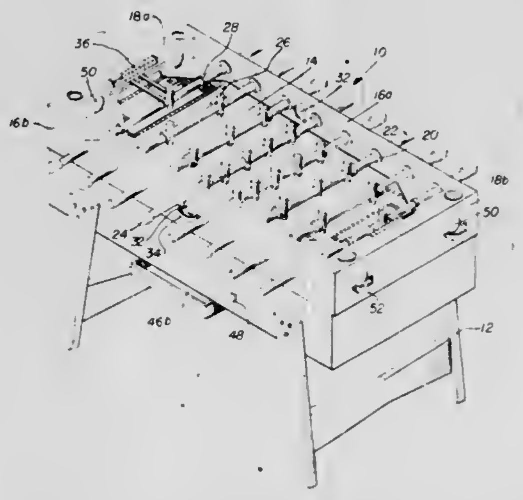
3,870,303
SOCCER TABLE WITH GOAL AND PENALTY OPENING

Lawrence T. Patterson, Jr., Cincinnati, Ohio, assignor to Patterson International Corporation, Cincinnati, Ohio

Filed Feb. 26, 1970, Ser. No. 14,502

Int. Cl. A63f *7/06*

U.S. Cl. 273—85 D **1 Claim**



1. In a game table of the type having a recessed playing surface and a plurality of balls to be used thereon, opposed side and end members on said playing surface, a series of bars mounted parallel to each other and said end members through said side members, said bars being rotatable and movable longitudinally of said side members, and normal thereto, a plurality of figurines fixedly attached to said bar members adjacent said playing surface, a goal pocket located in each of said end members, and a common chamber communicating with said goal pockets; the improvement, in combination therewith, comprising at least one penalty pocket adjacent each side of said goal pockets, each penalty pocket comprising a perforation extending through at least a portion of its respective end member near a corner thereof and leading to ball retaining means, the adjacent corners of said recessed playing surface being upturned and said perforations being flush therewith, said common chamber being centrally positioned beneath said playing surface and extending outwardly beyond one of said side members, a pair of baffles positioned on each side of said common chamber which communicate with one of said goal pockets, each of said pairs of baffles being mounted on an inclined surface leading from one of said goal pockets to said common chamber, a pivoted button member dividing said common chamber into a first portion, which communicates with said goal pockets through said pairs of baffles, and a second portion comprising said ball retaining means, said second portion including said outwardly extending portion and duct means communicating between each one of said perforations and said second portion of said common chamber.

3,870,304
INFLATABLE STRIKING MEMBER AND PROJECTILE DISPENSING RECEPTACLE

George D. Minnick, 468 Manor St., Lancaster, Pa. 17603

Filed Dec. 26, 1973, Ser. No. 428,018

Int. Cl. A63b *71/02*

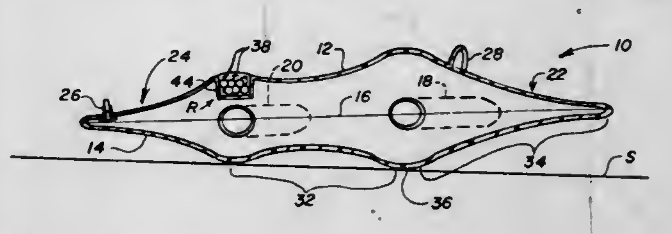
U.S. Cl. 273—95 R **10 Claims**

10. A game device comprising:

an inflatable structure having upper and lower surfaces, the upper surface having spaced apart first and second portions, said lower surface having a first portion which normally supports the inflatable structure in a first plane and a second portion which extends away from the first portion at an angle to said first portion,

a projectile receiving receptacle, and

means mounting the projectile receiving receptacle upon the first portion of the upper surface of said structure at a point remote from the intersection of the first and second portions of said lower surface, and second portion of the upper surface being disposed above the second portion of the lower surface, the parts being so arranged and constructed that when the second portion of the upper surface receives a blow the structure will pivot about the intersection of the first and second portions of the lower surface to move the receptacle upwardly and cause any projectiles within the receptacle to be projected upwardly.



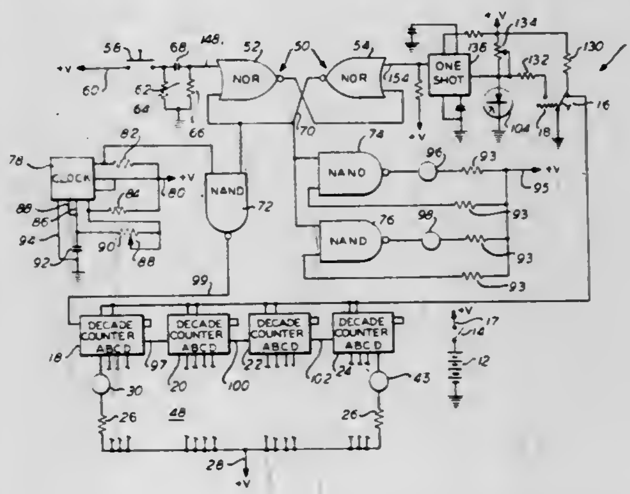
3,870,305
LIGHT RAY GUN AND TARGET INCLUDING ELAPSED TIME COUNTER

Thomas J. Harclerode, 1817 Crest Dr., Hagerstown, Md. 21740

Filed May 4, 1973, Ser. No. 357,100

Int. Cl. A63f *9/02*

U.S. Cl. 273—101.1 **9 Claims**



1. Apparatus for testing of target shooting ability, comprising in combination:

A. a hand-held light gun adapted to project a beam of light along a course cited by the operator thereof; and

B. a light activated target and timing system comprising:
  1. photo receptor target means providing an output upon being struck by said light beam;
  2. digital clock means;
  3. digital counter means for receiving the output pulses from said clock means;
  4. first gating means connected between said clock means and counter means;
  5. starter means for opening said gate means to start said counter means;
  6. means responsive to the output from said photo receptor means for closing said first gating means to stop said counter means;
  7. display means connected to the output from said counter means for accepting the cumulative count

thereof, and displaying to said operator the total elapsed time between opening and closing of said first gating means; and

8. means to reset said counter means and dislay means upon conclusion of a testing period.

3,870,306

ARTIFICIAL TARGET RECOVERY AND DELIVERY EQUIPMENT FOR USE IN NEW SHOOTING GAME

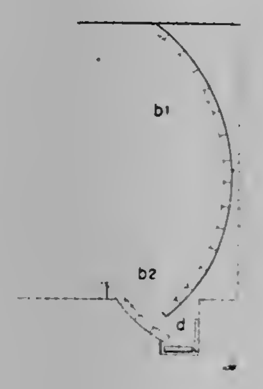
Hideo Iino, and Satoru Iizuka, both of Tomobe-machi, Japan, assignors to SKB Arms Company; Comet Corporation, both of Tokyo and Yoshiaki Noguchi, Tokushima-City, Tokushima-Pref., all of, Japan

Filed Apr. 23, 1973, Ser. No. 353,633

Claims priority, application Japan, Dec. 7, 1972, 47-122007; Jan. 19, 1973, 48-07850; Jan. 31, 1973, 48-11906

Int. Cl. F41j *9/16*

U.S. Cl. 273—105.6 **1 Claim**



1. An artificial inanimate target recovery and delivery equipment for use in a shooting game wherein a light beam gun and an artificial inanimate target are employed in combination, which comprises in operative connection a cushioning wall member and a cushioning floor member both of said members being arranged in a concave state viewed from the front side thereof and located in areas over which said artificial inanimate target thrown out by a throwing device ranges, said cushioning wall member being in the form of an endless belt conveyor having a plurality of ridges and adapted to resiliently capture said artificial target, and a conveying means located operatively adjacent to said members, and adapted to receive and deliver said target coming to drop from said members, thereby to convey said target toward a predetermined point of recovery.

3,870,307

PIN BALL GAME APPARATUS

Burton C. Meyer, Downers Grove, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 21, 1973, Ser. No. 334,416

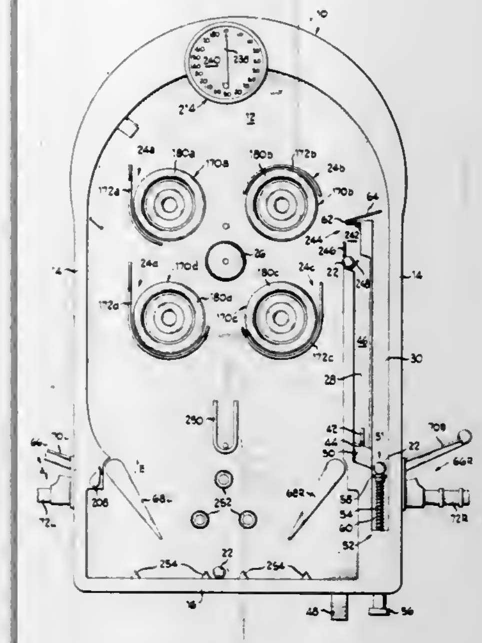
Int. Cl. A63f *7/10*

U.S. Cl. 273—121 A **13 Claims**

1. In a pinball type game including a housing having an inclined playing surface over which a ball may be propelled, at least one ball to be propelled on said playing surface, a launcher for propelling a ball onto the playing surface, and target means mounted on the playing surface for striking by a ball, the improvement wherein said target means comprises:

an upstanding, generally circular guide rail mounted on the playing surface; and

rotatably driven ball propulsion means mounted at least in part within the circumference of said guide rail for engaging a striking ball and positively propelling said ball from the periphery of said propulsion means along the inside of the guide rail whereby the ball is directed by the guide rail to other areas of the playing surface.



3,870,308

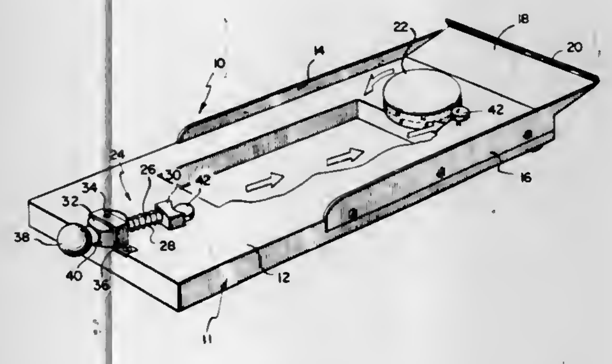
MAGNETIC TARGET AND DISC SURFACE PROJECTILE GAME APPARATUS

Jerry Reilly, Blandford Dr., Sudbury, Mass. 01776

Filed Dec. 26, 1972, Ser. No. 318,496

Int. Cl. A63f *3/00*

U.S. Cl. 273—126 A **8 Claims**



1. An amusement apparatus which comprises a base member providing a substantially smooth playing surface having front and rear ends, at least one non-rotating stationary cylindrical target magnet element positioned at one end of said playing surface, a cylindrical projectile magnet element which can be projected along said playing surface toward said target magnet element, said elements arranged on said playing surface so that the polarity of the surface of the target magnet element and the polarity of the surface of the projectile magent element which communicates with said playing surface are opposite each other so that the target magnet element and the projectile magnet element are in attracting relationship and proper contact between said elements can cause said projectile magnet element to spin about the periphery of said target magnet element, and means to propel said projectile magnet element toward said target magnet element.

3,870,309

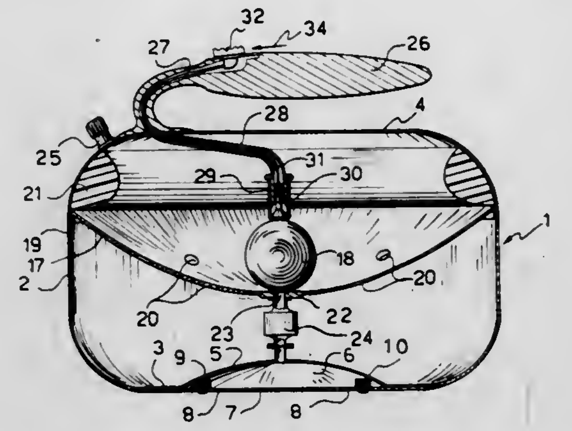
SLIDING GAME PIECE HAVING FRICTION REDUCTION AIR CUSHION

Joseph Donatien Leo Tessier, 1 Guevremont St., Drummondville, Quebec, Canada

Filed Nov. 20, 1973, Ser. No. 417,538

Int. Cl. A63b *71/00*

U.S. Cl. 273—128 CS **14 Claims**



1. A sliding game piece comprising a body forming a bottom face having gas outlet means therein, gas supply means mounted onto said body and operatively connecting to said gas outlet means to exhaust gas therethrough, and inertia-responsive valve means connecting said gas supply means to said gas outlet means and arranged to control said exhaust of gas through the latter in response to displacement of said body.

3,870,310

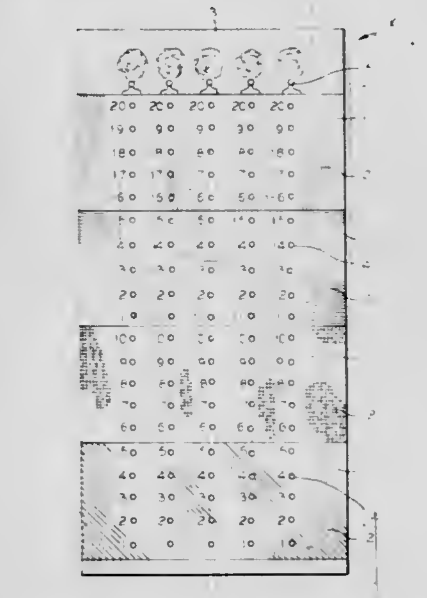
GAME BOARD PRIMARILY FOR SMALL CHILDREN

Richard Jeffery, 4347 Packard Ave., Cudahy, Wis. 53110

Filed Sept. 6, 1973, Ser. No. 394,955

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 BA **5 Claims**



1. A game board for a number of players, the game board comprising rows and columns of holes with a start line at a first of said rows and a goal line at the last of said rows, each column of holes being assigned to one of said players, a plurality of periodic background bands each containing a plurality and predetermined number of said rows of said holes, whereby successive plays comprises a selection of any hole in the next successive background band, control means comprising a separate board used by a player who is "it," the separate control board containing a duplicate column of holes having duplicate periodic background bands, the total number of holes and the area of the separate control board being substantially less than the total number of holes and the area of the game board, each band on the separate control board corresponding to a band on the game board, the separate control board providing means for storing a memory of successive positions selected by a player who is "it," and marker means which each player and the player who is "it," and marker means which each player and the player who is "it" may successively position in the column assigned to him for play whereby a player is "out" if he plays a position on the game board corresponding to a position on the separate control board which is selected by the player who is "it."

3,870,311

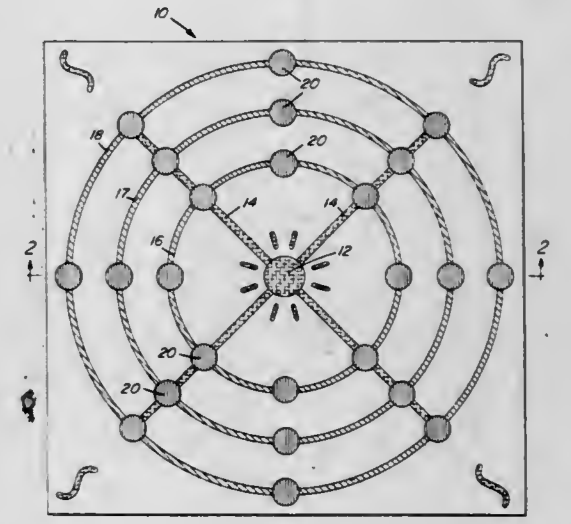
BOARD GAME APPARATUS

George A. Klupp, Billings, Mont., assignor to Myrla Bratton, Billings, Mont.

Filed Apr. 22, 1974, Ser. No. 463,156

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 AB **2 Claims**



1. In a game device, the combination of a playing surface having a central circle and a plurality of concentric larger circles surrounding and spaced from each other and from said central circle, four movement lines radiating from the central circle to the outermost concentric circle, each of the four lines being 90° from its next adjacent line, a plurality of dots, one at each intersection of each concentric circle with movement lines, an attacker or predator fox-like figurine for one player, or one team, and plural, identical, pursued geese-like figurines for the opposing player, or opposing team, one for each of the concentric circles outside the central circle, and one more dot on each concentric circle placed at each intersection of imaginary bisectors of the angles between adjacent movement lines with the concentric circle, the central circle and the movement lines being color coded in a first color, the concentric circles being color coded in a second color, and the dots being color coded in a third color.

3,870,312

GAME

Douglas A. Hamar, 0236 S.W. Palatine Hill Rd., Portland, Oreg. 97219

Filed July 10, 1974, Ser. No. 487,276

Int. Cl. A63f *3/00;* **A63h** *33/04*

U.S. Cl. 273—135 F **3 Claims**

1. A game comprising in combination,

a game board having groups of projections uniformly spaced from one another on the upper surface of the board,

body playing pieces having horizontally projecting arms,

discrete hand playing pieces for placement on said arms,

discrete head playing pieces for placement on said body playing pieces,

each of said body playing pieces defining a recessed area adjacent its lower end permitting inserted engagement with some of said projections retaining the body playing piece upwright against lateral loads, and

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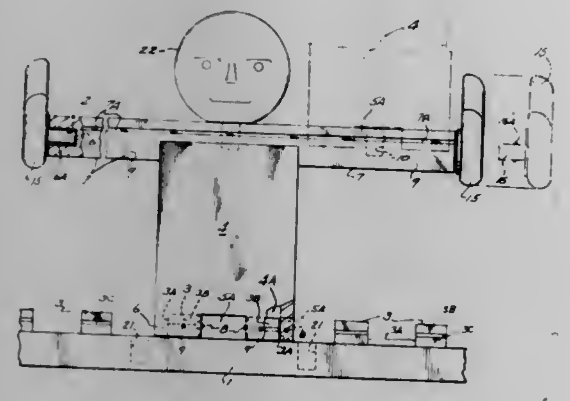
each of said body playing pieces additionally defining cut-out areas for engagement with the arms of a subjacent board mounted body playing piece during the course of play, means



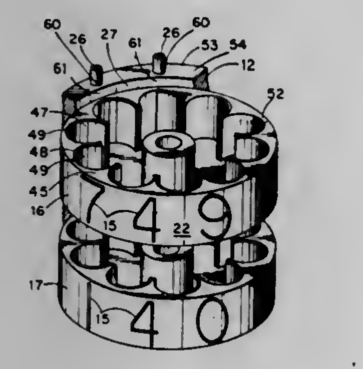
interengageable between said body playing pieces and the arms of said second body playing piece to prevent subsequent tipping of the bodies.

3,870,313

MAGNETICALLY INDEXED ROTATING DISKS CHANCE DEVICE

Philip J. Rowman, Hillsboro Pk., Derry Rd., Hudson, N.H. 03051

Filed July 27, 1972, Ser. No. 275,688
Int. Cl. A63f ***5/04***
U.S. Cl. 273—143 C **6 Claims**



1. In an amusement apparatus of the type having a shaft within a housing upon which a plurality of disks are supported, each disk carrying a plurality of different characters spaced thereon the improvement comprising:

said housing being vertical and formed by a one piece hollow cylindrical shell of heavy metal, having a sealed bottom closure of said metal and a vertically extending flat chordal planar face in the side wall thereof with a vertically extending opening therein,

said shaft being vertical and removably, but non-turnably mounted within said housing and extending along the central vertical axis thereof,

said disks being heavy and mounted on said shaft within said housing, for independent rotation in horizontal planes around said vertical axis, each said disk having an arcuate portion protruding into said opening, slightly beyond said flat planar face to permit turning thereof by the fingers of an operator and

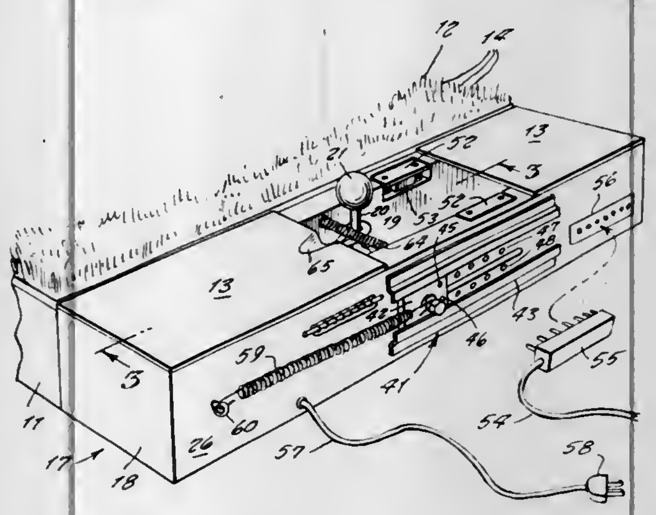
permanent magnet means of varying magnetic susceptibility operably associated with each said disk so as to cause each said disk to be indexed with a character disposed in said opening, said varying magnetic susceptibility serving to vary the frequency with which said characters will stop in said opening.

3,870,314

GOLF PRACTICE MACHINE

Dominick Bertucci, 153 Wilderness Rd., Saint James, N.Y. 11780

Filed Apr. 8, 1974, Ser. No. 458,544
Int. Cl. A63b ***69/36***
U.S. Cl. 273—185 D **3 Claims**



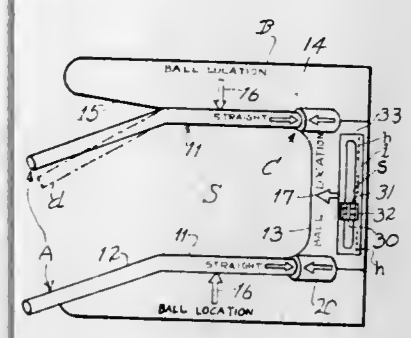
1. In a golf Practice Driving Range the combination of a base upon which a golf player can stand, an operative unit in said base, including a housing having a slot on its top side, an upstanding shaft protruding upwardly through said slot, a ball secured on an upper end of said shaft for being struck by a golf club held by said player and means for indicating a quality of a driving force by said player to said ball, said means comprising a scoring unit separately located from said base, and an electric circuit including switch means in said operative unit activated by movement of said ball, and lamp indicating means in said scoring unit, said ball shaft being pivotable about a cross shaft slidable in slots of sidewalls of a housing of said operative units, said cross shaft carrying electrical contacts engagable with sets of stationary contacts of said housing, said contacts sets being in circuit with different ones of a set of differently identified lamps of said scoring units.

3,870,315

GOLF SWING TRAINING DEVICE

Robert E. Lawlor, 19341 Weymouth Ln., Huntington Beach, Calif. 92646; Carlton B. Watson, Jr., 23 Richlee Dr., Camillus, N.Y. 13031, and Michael E. McGill, 8245 Graham Green, Buena Park, Calif. 90620

Filed May 21, 1973, Ser. No. 362,278
Int. Cl. A63b ***69/36***
U.S. Cl. 273—186 R **6 Claims**



6. A golf swing training device comprising:

a base embodying

a pair of feet sections and a bridge section extending between and detachably secured to corresponding ends of said feet sections to provide a base of U-configuration defining between said feet a space open at its end remote from said bridge, in which a golf club head may contact the ground on which said base is supported;

and a pair of sensors detachably secured to said base, at least one of said sensors being attached near the area of attachment of a respective foot to said bridge section;

said one sensor being a bar having an obtuse-angle bend intermediate its ends to provide a shank which is attached to the base, and a tusk extending obliquely from the free end of said shank, said shank extending generally parallel to the major axis of the base, and said tusk diverging from said axis;

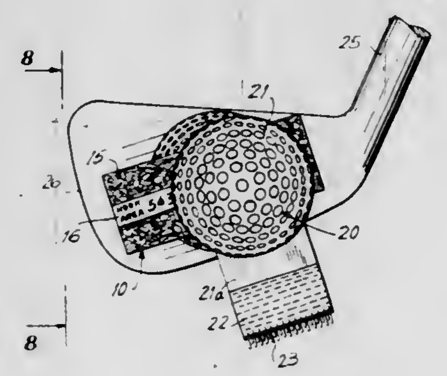
and connector means attaching said base sections to one another, at least one of said connector means also functioning to mount said one sensor bar to the base and providing for adjustment of elevational tilt thereof and for rotary adjustment thereof to vary the direction of oblique extension of said tusk.

3,870,316

GOLF CLUB SWING TRAINING DEVICE

Ben H. DeBrocke, 41-22-45th St., Apt. 1-A, Sunnyside, Long Island, N.Y. 11105

Filed Mar. 14, 1974, Ser. No. 451,092
Int. Cl. A63b ***69/36***
U.S. Cl. 273—186 E **7 Claims**



1. A golf stroke-training device comprising in combination: first and second separate sheet structures each having forward and rearward faces, each having on the forward faces thereof joining means for causing said first and second sheet to adhere to one another when brought into contact with one-another, the forward face of the first sheet being of predetermined height and length dimensions smaller than and substantially corresponding to the area of a ball-striking face of a golf club, the first sheet's forward face including indicia means serially programming variations in a height dimension and serially programming variations in a length dimension corresponding respectively to vertical and lateral dimensions of a striking face of a golf club, the first sheet including attaching means for attaching the first sheet's rearward face to a ball-striking face of a golf club, the second sheet having broad face thereof an area substantially corresponding to that of a golf ball, and support means for mounting the second sheet in a substantially upright position relative to a substantially horizontal support surface.

3,870,317

BODY GUIDE FOR ATHLETIC CLUB SWINGING TRAINING

Bradford W. Wilson, 4676 Noyes St., Apt. E, San Diego, Calif. 92109

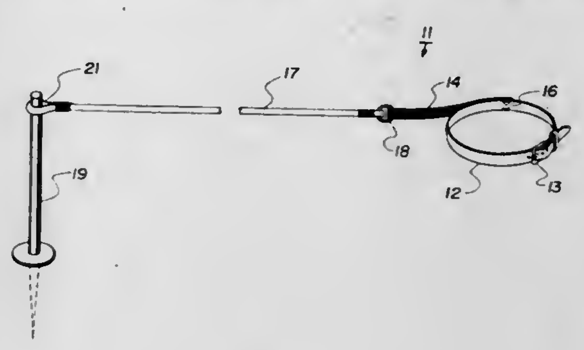
Continuation of Ser. Nos. 63,440, Aug. 13, 1970, abandoned, and Ser. No. 293,385, Sept. 29, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,054
Int. Cl. A63b ***53/04***
U.S. Cl. 273—188 R **1 Claim**

1. An athletic swing trainer comprising:

a relatively wide belt of sufficient extent to encircle the waist of an athlete;

only a single elongated elastomeric section attached at one end to said belt at one point only, said section being

1. tangential to the said belt when said belt encircles the waist of the athlete while using said swing trainer; and
2. the attachment being at a point on said belt adjacent



to that hip of the athlete which is opposite the swing of the athlete;

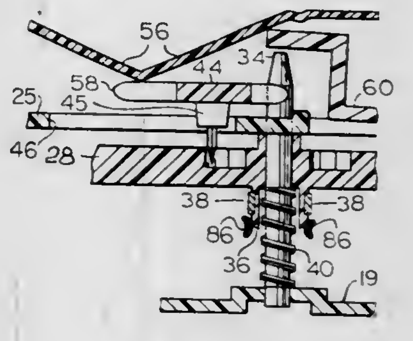
said elastomeric section being coupled at its opposite end to a rope connected to a stake which when driven into the ground constitutes a stationary geographic point to which said swing trainer is attached.

3,870,318

REMOTELY ACTUATED SOUND REPRODUCING DEVICE

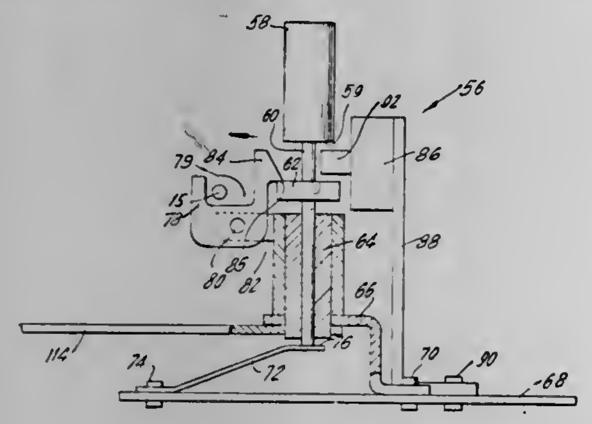
Donald B. Poynter, 7 Arcadia Pl., Cincinnati, Ohio 45208

Filed Mar. 1, 1972, Ser. No. 230,875
Int. Cl. G11d ***25/04***
U.S. Cl. 274—9 R **21 Claims**



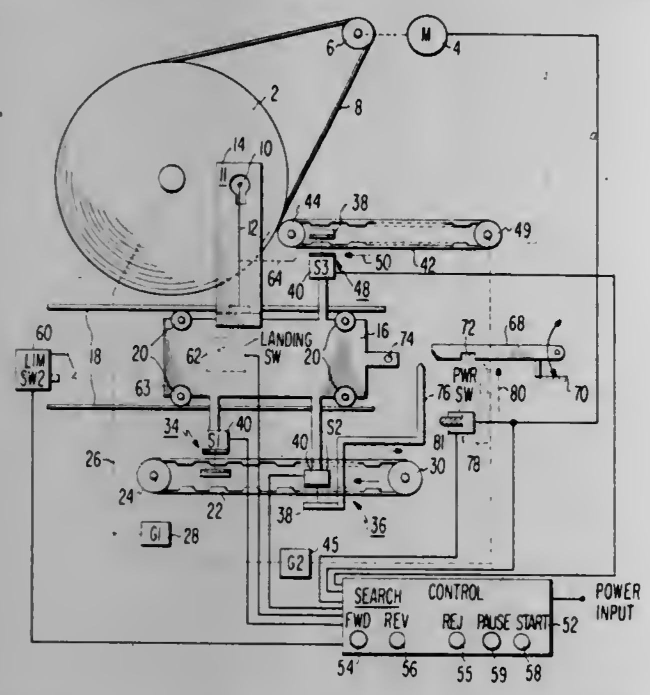
1. A sound reproducing device of the type including a housing having a rotatable and axially shiftable recording disc mounted therein, said disc having a spiral groove in one face thereof with a predetermined configuration for reproducing a recorded message, a movable stylus carried by the housing in a position for selective engagement and disengagement with the groove, means connected with said stylus to move said stylus in response to axial shifting of said disc in a first direction to initiate playback of a recorded message on the disc, a speaker operatively connected with the stylus for generating an audible sound in response to rotation of the disc with the stylus engaged in the groove thereof, remotely actuated means operatively connected with the disc to move the disc axially in said first direction to initiate a cycle of operation, and electrical circuit means including a motor means operatively connected with the disc to rotate the disc when the disc is in its aforesaid first axially shifted position, an axially extending non-conductive projection on said disc coaxial therewith, electrically conductive means carried by the projection and connected in said circuit, and a switch including a pair of electrical contacts connected in said circuit and yieldably biased into engagement with circumferentially spaced portions of said non-conductive projection in a second axial position of the disc, whereat the circuit is deenergized, and biased into engagement with said electrically conductive means in the first axially shifted position of the disc to energize the circuit and cause rotation of the disc for playing of the recorded message.

3,870,319
DICTATING AND PLAYBACK APPARATUS
Henry A. Sherwood, 30 North Road, Short Hills, N.J. 07078
Filed Nov. 21, 1969, Ser. No. 878,800
Int. Cl. G11b *17/06*
U.S. Cl. 274—13 **13 Claims**



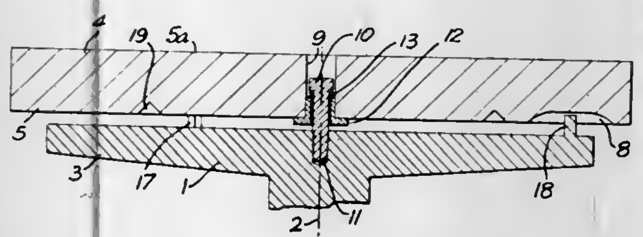
1. A combined recording and playback mechanism adapted to be utilized with pregrooved disc records only comprising a tone arm having a single sound transducer for both recording and playback operation, said transducer being provided with a needle that engages the preformed groove in said pregrooved record for embossing during the recording operation and for the transmission of signals during the playback operation, in addition, means for exerting substantially the same pressure on the transducer during both recording and playback operations, means for manually setting the mechanism for recording operation and automatically setting the mechanism for playback operation, and in which the means for automatically setting the mechanism for playback operation are operably actuated by the lifting of the tone arm.

3,870,320
PICKUP ARM CONTROL FOR VIDEO DISC PLAYER
Leslie Albert Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,168
Int. Cl. G11b *3/22, 25/04*
U.S. Cl. 274—23 A **13 Claims**



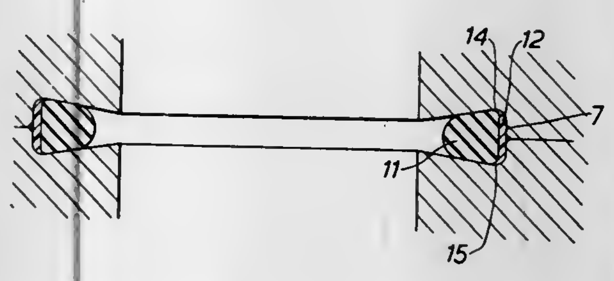
1. Apparatus for controlling a movable transducer assembly with respect to a disc type record medium, comprising:
- a first drive belt;
- means for driving said first belt at a first given velocity;
- a second drive belt;
- means for driving said second belt at a velocity different from said first given velocity;
- a first means arranged to selectively couple said transducer assembly to different portions of said first drive belt for providing motion to said assembly toward and away from the center of said disc; and
- a second means arranged to selectively couple said transducer assembly to portions of said second drive belt for providing motion to said transducer assembly toward the center of said disc.

3,870,321
DISC MOUNTING ARRANGEMENT
Colin Howard Stanwell Smith; Alexander Bennett Gosling, and Donald George Buchanan, all of London, England, assignors to Decca Limited, London, England
Filed Aug. 1, 1973, Ser. No. 384,637
Claims priority, application Great Britain, Aug. 9, 1972, 37208/72
Int. Cl. G11b *3/60*
U.S. Cl. 274—39 A **6 Claims**



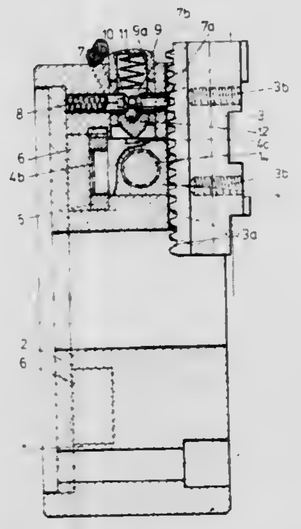
1. A rotary assembly comprising in combination a drive member which is rotatable about an axis and a driven member which is rotatable by the drive member about said axis by means of a balanced three-point kinematic support, wherein the support consists of three parts each consisting of a ridged projection on one of the members and a complementary notched region in the other member, two of the said notched regions are disposed on a circle centred on the said axis and the third notched region is directed radially with respect to the said axis.

3,870,322
FLUID-TIGHT SEALS AND METHODS OF MAKING THEM
John Stephen Marshall, Woking, England, assignor to Sperry Rand Limited, London, England
Filed Oct. 19, 1973, Ser. No. 407,968
Claims priority, application Great Britain, Oct. 19, 1972. 48171/72
Int. Cl. F16j *9/00;* **F16l** *21/02*
U.S. Cl. 277—167.5 **10 Claims**



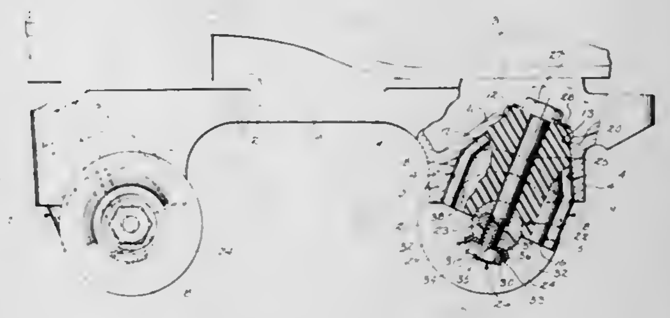
1. A pressure-tight O-ring seal between two surfaces comprising an annular recess having a cylindrical outer wall and a pair of side walls, said outer wall merging by curves into the side walls of the recess, an O-ring in said recess, a thin collar of a plastics material which is flexible but does not flow under the conditions in which the seal is required to operate, said collar surrounding said O-ring, the width of the collar being slightly greater than the axial width of said recess such that said collar is deformed at its contact with the side walls.

3,870,323
CHUCK
Heinz Beckers, Viersen, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany
Filed Aug. 20, 1973, Ser. No. 389,590
Claims priority, application Germany, Aug. 19, 1972, 2240871
Int. Cl. B23b *31/16*
U.S. Cl. 279—112 **5 Claims**



1. A chuck for turning machines, which includes: a chuck body, a plurality of clamping jaws provided with teeth and radially movably supported by said chuck body, adjusting means respectively associated with said clamping jaws and selectively movable in said chuck body into a first section of its path of movement which first section represents the working range of said adjusting means for engagement with and adjustment of the pertaining clamping jaw, said adjusting means also being movable into a second section of its path of movement out of said working range to thereby disengage the respective pertaining clamping jaw and permit removal and exchange of the latter, a plurality of holding pin means respectively associated with said clamping jaws and operable to engage a tooth space of the pertaining clamping jaw for holding the same in its respective adjusted position, said holding pin means also being operable to disengage the tooth space of the pertaining clamping jaw to permit other adjustments and also the removal and exchange of the respective clamping jaw, and locking means operable automatically in response to said adjusting means occupying said second section to prevent withdrawal of said holding pin means from the respective tooth space of the teeth of the pertaining clamping jaw, said locking means including manually operating means for making said locking means ineffective to thereby allow withdrawal of the respective holding pin means from the respective tooth space of the pertaining clamping jaw, each of said holding pin means having a shank provided with an annular groove, and said holding means including: a first member in the form of a cup having each of two diametrically oppositely located wall portions provided with a slot through which reciprocably extends the respective pertaining holding pin means, a second member arranged within said first member and reciprocable relative thereto, ball means supported by said second member and operable to enter said annular groove for locking the respective pertaining holding pin means, and spring means continuously urging said first and second members to occupy such relative positions with regard to each other as to keep said ball means in locking engagement with the annular groove of the pertaining holding pin means, said first member being provided with recess means arranged in diametrically opposite wall sections of said first member and offset in axial direction of said first member with regard to the position in which said ball means are in locking engagement with the annular groove of the pertaining holding pin means to thereby permit said holding pin means to press said ball means out of said annular groove into said recess means when moving said first member relative to said second member to a position in which said recess means register with said ball means.

3,870,324
ROLLER SKATE CONSTRUCTION
Edward Balstad, Box 90, Cambridge, Wis. 53523
Filed Dec. 17, 1973, Ser. No. 425,153
Int. Cl. A63 *17/02*
U.S. Cl. 280—11.28 **5 Claims**

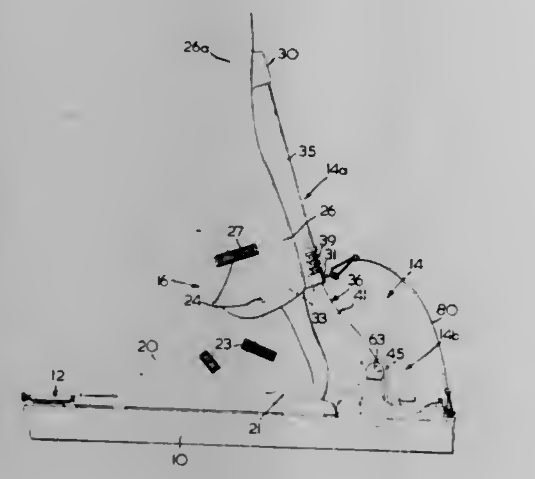


1. A roller skate comprising:
- a. a foot plate,
- b. a plurality of sockets extending downwardly from said foot plate,
- c. a resilient cushion block disposed in each said socket,
- d. a horizontally extending axle support member disposed at the lower end of said block,
- e. an axle extending through said support member,
- f. skate wheels mounted on the ends of said axle,
- g. means to secure said support member to said block, said means comprising:
    - 1. a bore extending downwardly through said block and said support member,
    - 2. a bolt disposed in said bore,
    - 3. a nut on the lower end of said bolt,
    - 4. and a washer member disposed between said nut and said support,
- h. complimentary engaging flats on said bolt and said washer to lock said bolt against rotation due to torque forces occurring during shating,
- i. and a recess disposed in the outer wall of said support member remote from said cushion block and with said recess having opposed side walls,
- j. said washer being generally rectangular and disposed within said recess and locked against rotation by said side walls.

3,870,325
COMBINED SKI BOOT AND BINDING
Edgar H. Davis, 201, 355 Heritage Dr., S.E., Calgary 27, Alberta, Canada
Filed Jan. 29, 1973, Ser. No. 327,432
Int. Cl. A63c *9/086*
U.S. Cl. 280—11.35 N **12 Claims**

2. The combination of claim 1, wherein said rear binding includes locating means for the heel which limit rearwards movement of boot, and wherein the front binding comprises a support adapted to be permanently attached to the ski by means permitting pivotal movement about a vertical axis, said support having two parallel bores spaced apart on opposite sides of said vertical axis, each of said bores carrying a spring loaded plunger having a projecting end, the boot toe being provided with two laterally spaced, forwards facing depressions for receiving the projecting ends of the plungers, the spring loading of said plungers normally holding said projecting ends thereof in the depressions to hold the toe of the boot in place in normal skiing, the plungers being axially displaceable by an amount sufficient to allow the boot to release by

simultaneous sideways swivelling movement of the boot and of the support beyond a position in which a projecting end of a plunger lies directly between said vertical axis and the locating means for the heel.



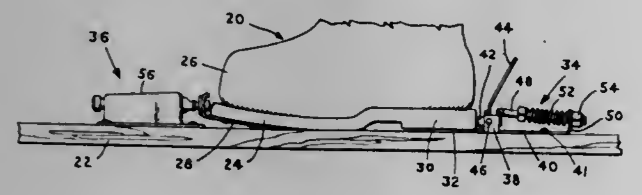
3,870,326
RELEASABLE SKI BINDING WITH REGULATABLE TOE RELEASE MECHANISM

Mitchell H. Cubberley, Nutley, N.J., assignor to Cubco, Inc., Nutley, N.J.

Filed Apr. 2, 1973, Ser. No. 347,117

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **4 Claims**



1. A ski binding having a toe release mechanism comprising:
a toe post member having:
a first portion adapted to engage a toe plate of a ski boot; and
a second portion adapted to engage resilient means;
resilient means contacting said second portion of said toe post member to urge said first portion of said toe post member toward engagement with said toe plate;
fulcruming means connected to said toe post member and having two side surfaces, said fulcruming means coacting with said resilient means to urge said first portion of said toe post member into position for operative engagement with said toe plate;
a housing adapted to be secured to a ski and enclosing at least a portion of said toe post member and said resilient means, said housing having;
a front wall providing a fulcruming surface for said fulcruming means;
a rear wall engaged by said resilient means; and
two side walls disposed on opposite sides of said front wall and continuous with said rear wall;
said fulcruming means dimensioned to provide a ratio of fulcrum effect against vertical and lateral displacement of said first portion of said toe post member; and
said housing dimensioned so that the said side walls of the housing coact with the said surfaces of the fulcruming means to prevent rotation of the fulcruming means with relation to the said front wall of the housing.

3,870,327
SELF-RELEASING SKI-BINDING

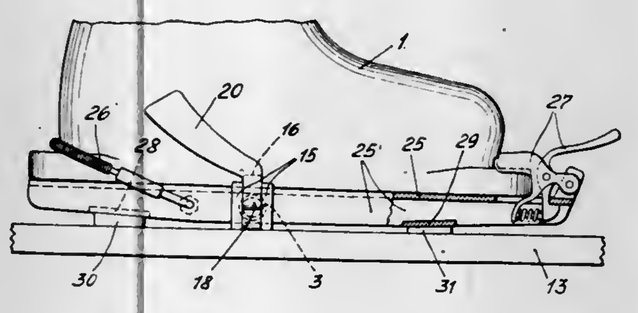
Alois Betschart, Jr., Algeristrasse, 6417 Sattel, Switzerland

Division of Ser. No. 195,136, Nov. 3, 1971, Pat. No. 3,779,570. This application Sept. 17, 1973, Ser. No. 397,517

Claims priority, application Switzerland, Aug. 11, 1971, 11783/71

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 K **9 Claims**



1. The combination comprising a ski, a base member for supporting a ski boot, means for securing a ski boot to said base member and a binding for connecting said base member to said ski, said binding comprising:
- a. an elongated passage in said base member extending between opposite sides thereof,
- b. a piston slidable in said passage,
- c. stop means preventing said piston from sliding out one end of said passage,
- d. a pin having a frusto-conical surface normally extending from said one end of said passage,
- e. means adjustably mounting said pin on said piston such that the axial distance between said frusto-conical surface on said pin and said piston may be varied,
- f. a plug removably secured in the end of said passage member opposite said one end, said plug having a frusto-conical surface extending radially from said opposite end of said passage,
- g. a plurality of conical spring washers arranged within said passage and extending between said plug and said piston biasing said piston towards said stop means, and
- h. fitting means arranged on said ski including a pair of spaced conical recesses therein for receiving said conical surfaces of said pin and plug,
- i. whereby the axial distance between said frusto-conical surface of said pin and plug may be changed by adjusting said pin mounting means and the biasing pressure applied to said piston may be changed by removing said plug and rearranging said spring washers relative to each other.

3,870,328
PRACTICE WEIGHT FOR ICE SKATES

John F. Gemmel, 566 Wardlaw Ave., and Charles C. Brown, 46 Nichol Ave., both of Winnipeg, Manitoba, Canada

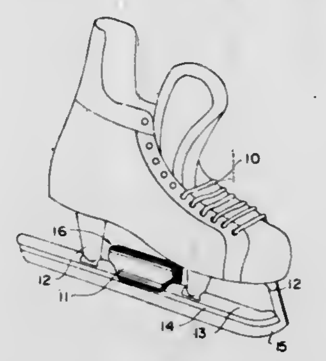
Filed Feb. 2, 1973, Ser. No. 329,035

Claims priority, application Canada, Feb. 2, 1972, 133731

Int. Cl. A63c *3/00*

U.S. Cl. 280—11.37 E **4 Claims**

1. A practice weight for detachable securement to the central longitudinal tube of ice skates immediately above the skate blade holder comprising a pair of weight portions, means on said portions engaging around the central tube of the associated skate and means cooperating between said portions to detachably clamp same to said tube, each of said portions being provided with an arcuately curved outer surface when viewed in end elevation, the ends of said portions being rounded whereby said weight, when installed, presents a smoothly curved outer surface.



3,870,329
SKI-BOB

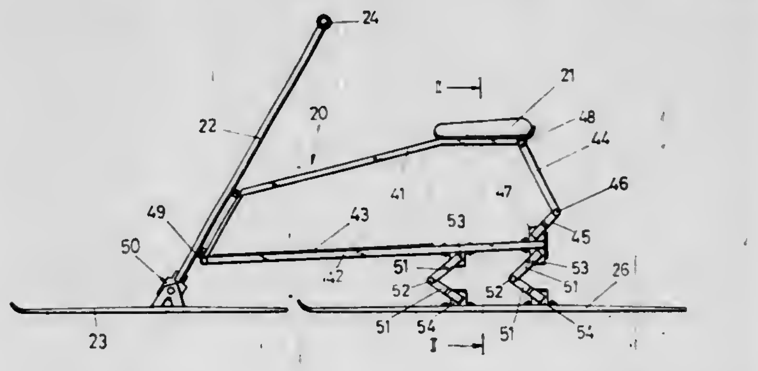
Jean-Yves Evequoz, 17, route de la Dixence, 1950 Sion, Switzerland

Filed Oct. 12, 1973, Ser. No. 405,849

Claims priority, application Switzerland, Oct. 14, 1972, 15053/72; July 31, 1973, 11111/73

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **8 Claims**



1. In a ski-bob comprising a chassis, a steering column pivotally connected to the chassis about a first axis, a front ski connected to the steering column, and a pair of rear skis connected to the chassis by two independent suspension devices, the improvement wherein the chassis includes a first part to which the steering column is connected and a pair of independent elongate frame members each having a first end and a second end, said frame members being independently articulated about said first ends thereof to said first part for independent pivotal movement thereof in generally side-by-side spaced-apart relation about a second axis transverse to said first axis and transverse to the general longitudinal direction of said frame members, and wherein each of said suspension devices is independently connected to a respective one of said frame members towards the second end thereof.

3,870,330
SNOW SCOOTERS

Fukuji Hatano, and Yukio Kobayashi, both of Tokyo, Japan, assignors to Gakken Co. Ltd., Tokyo, Japan

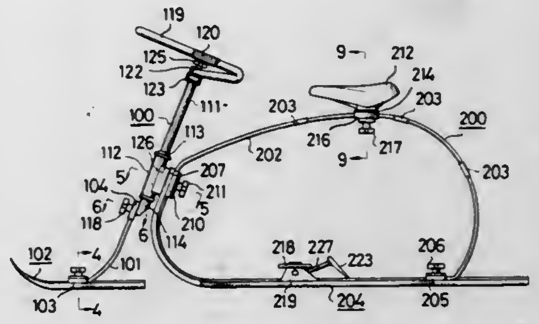
Filed Jan. 28, 1974, Ser. No. 437,466

Claims priority, application Japan, Mar. 5, 1973, 48-27396

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **8 Claims**

1. A disassemblable snow scooter, comprising:
a steering part which consists of a front ski plate, a front fork separably connected in its lower part on said ski plate and separably connected in its upper part with the lower end of a handle shaft;
said handle shaft being separably connected in its upper part with a steering handle and a part rotatably holding said handle shaft;
a body which consists of a curved frame and rear ski plate and in which the rear part of said frame and the rear part of said rear ski plate are separably connected with each other;
the forward end part of said rear ski plate and forward end part of said frame are respectively bent and overlapped on each other and are separably connected with said handle shaft holding part of said steering part;
a saddle part for the operator provided in the center of said frame; and
a foot resting part and braking parts to be pushed down with feet are provided on said rear ski plate.



3,870,331
SNOWMOBILE SKI ANTI-SKID ASSEMBLY

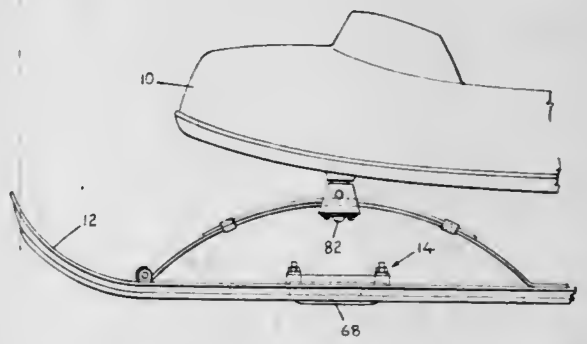
Gordon R. Cryderman, Skead, Ontario, Canada

Filed Jan. 29, 1974, Ser. No. 437,656

Claims priority, application Canada, Sept. 12, 1973, 181008

Int. Cl. B62b *17/02*

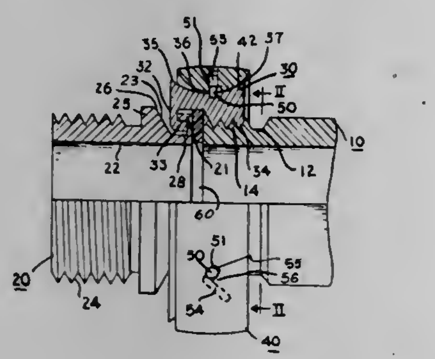
U.S. Cl. 280—28 **4 Claims**



1. A snowmobile ski anti-skid assembly comprising:
- a. a flat elongated blade; and
- b. blade mounting means comprising an elongated blade guide adapted to be secured to the upper surface of the ski in alignment with a longitudinal slot in the ski, the blade guide defining an elongated vertical passage adapted to receive the blade, the vertical passage having a pair of vertically extending cylindrical portions connected by a straight narrow central portion; a pair of bolt members secured to the blade to extend vertically upwards therefrom; a pair of coil springs located respectively on the bolt members to continually bias the blade downward whereby a lower portion of the blade projects resiliently downward through the slot, the bolt members and corresponding springs being matingly received in the cylindrical portion of the vertical passage in the blade guide; a pair of stop means fixed to the blade guide in alignment with a respective one of the cylindrical portions of the vertical passage to limit upward movement of the upper end of the corresponding spring while allowing the upper end of the corresponding bolt member to project upwardly therebeyond; and a pair of nuts each threadably engaging the upper end of a respective one of the bolt member projecting beyond the stop means.

3,870,332
COUPLING IMPROVEMENTS

Edward M. Eaton, 1253 E. Adele St., Anaheim, Calif. 92805
Filed Sept. 18, 1973, Ser. No. 398,440
Int. Cl. F16l *37/10*
U.S. Cl. 285—35 **9 Claims**



1. A coupling for interconnecting a pair of tubular members and the like which comprises:
- a. a body having a through opening and bearing attachment means at one end thereof permitting its removable, fixed attachment to one of said pair of tubular members and annular groove means at the opposite end thereof;
- b. a plurality of closely spaced, segmented arcuate jaws carried at said opposite end, each jaw bearing an inboard radial flange cooperative with said annular groove of said body to provide a connection of said jaws on said body permitting the pivotal movement of said jaws in a radial direction between radially expanded and radially compressed positions;
- c. tubular member engaging means carried on the outboard end of each of said jaws and mutually cooperative to engage the mating end of the other of said pair of tubular members when in the radially compressed position;
- d. a curvilinear concave cam guide surface on the outside of each of said segmented, arcuate jaws; a cam ring surrounding the assembly of said jaws on said body and having a curvilinear, concave inner surface in engagement with the cam guide surfaces of said jaws; and
- e. pin means carried on each of said jaws and cooperative helical groove means carried on engaging surfaces of said cam ring whereby rotation of said ring imparts axial movement thereto between a coupling closed position wherein said cam ring engages said jaws to urge said jaws into said radially compressed position and a coupling open position wherein said cam ring engages the inboard edges of said jaws to urge said jaws into said radially expanded position.

3,870,333
TRANSPORTATION CART

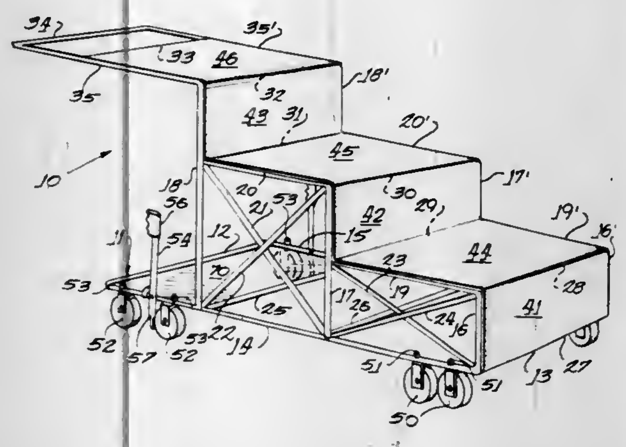
Steve Burdick, 15002 N. 32nd Dr., Phoenix, Ariz. 85023, and Roger Picard, 8401 N. 67th Ave., No. 81, Glendale, Ariz. 85302
Filed Sept. 17, 1973, Ser. No. 397,848
Int. Cl. B62b *3/00*
U.S. Cl. 280—47.35 **3 Claims**

1. A transportation cart for supporting articles at preselected heights in accordance with the heights of the shelves to which said articles are to be transferred and subsequently providing steps of consecutively ascending elevations as the lower said articles are sequentially removed therefrom, said transportation cart comprising:
- a. a frame including a rectangular base and having a front end and a back end;
- b. a plurality of horizontal platforms supported by said frame,

each said platform extending transversely across said frame, each subsequently rearward platform being spaced above the adjacent forward platform;
- c. a handle extending rearward from the rearwardmost said platform;
- d. a first pair of spaced support wheels depending from said base proximate the back thereof,

said wheels rotatable about a common axis which is horizontal in one direction and perpendicular to said frame in the other direction;
- e. a second pair of spaced support wheels depending from said base proximate the front thereof,

said wheels being rotatable about a horizontal axis and pivotal about a vertical axis; and
- f. selective brake means associated with each of said first pair of support wheels including
  - i. an elongate lever having an upper end and a lower end and pivotally connected to said base for rotation about a horizontal axis intermediate said upper end and said lower end,

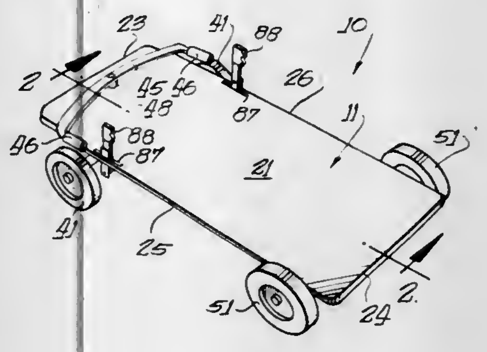


  - ii. a flat arcuate member secured to said lever and having a face abutting said base,
  - iii. first and second spaced detents projecting from the face of said arcuate member and arranged to sequentially and operatively engage said base as said lever is rotated about its axis,
  - iv. wheel engaging means carried proximate the lower end of said lever, and
  - v. handle means proximate the upper end of said lever,

whereby movement of said handle in one direction urges said wheel engaging means against one of said first wheel and engages said first detent and movement of said lever in the opposite direction spaces said wheel engaging means from said wheel and engages said second detent.

3,870,334
SIDEWALK COASTER SLED

Kenneth E. Cole, 306 6th Pl., St. Elmo, Ill. 62458
Filed Nov. 5, 1973, Ser. No. 413,164
Int. Cl. B62b *11/00*
U.S. Cl. 280—87.01 **4 Claims**

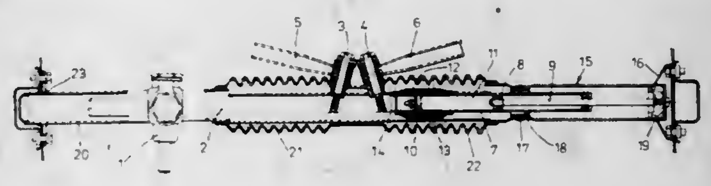


1. A sidewalk coaster sled intended for rolling along a suitable supporting surface comprising a platform having a top surface, a bottom surface, opposed front and back edges, and opposed side edges, a front pair of wheels interconnected at their axis by an axle extending therebetween, means rotatably mounting the axle to the platform beneath the bottom surface thereof in a manner permitting free rotative movement of the wheels in the general longitudinal direction of the platform, a handle bar disposed above the top surface of the platform near the front and edge thereof, means interconnecting the handle bar to the front wheel axle to effect the rotative movement of the axle between a front wheel normal straight-ahead position and angular positions relative thereto in a manner to effect the steering movement of the platform, a pair of laterally spaced apart back wheels, a back axle rotatably interconnecting the back wheels, means rotatably supporting the back axle beneath the platform bottom surface in a manner permitting free rotative movement of the back wheels in planes parallel to the longitudinal axis of the platform, each of the back wheels having an interior circular hub portion, a brake pad associated with each back wheel hub portion and adapted for movement into and out of engagement therewith, a brake pad rod interconnecting the brake pads and extending transversely of the platform, the brake pad rod being mounted for longitudinal movement forwardly and rearwardly of the platform, the rear most position of the brake pad rod defining the disengaged position between the brake pads and the wheel hub, forward longitudinal movement of the brake rod effecting the engagement of the brake pads with the wheel hub, spring means resiliently biasing the brake pad rod and connected brake pads in a manner to maintain the brake pads normally disengaged from the wheel hubs, said spring means normally biasing the brake pad rod in the rearmost position, a brake operating handle disposed forwardly of the platform and operatively connected to the brake pad rod to slectively effect movement thereof into a wheel hub engaging position to apply a braking force to the back wheels, the brake operating handle comprising a pair of laterally spaced apart and transversely aligned brake handles, each handle disposed adjacent an opposite side edge of the platform near the front end portion thereof, the brake handles each being identical and of an elongated configuration having their bottom ends projecting beneath the bottom surface of the platform and rigidly interconnected by a rod extending therebetween, the midportion of each brake handle being pivotally connected to the platform for swinging movement in a vertical plane about the horizontal axis of the pivot in a manner to effect the longitudinal forward and rearward movement of the handle rod, the top end of each handle member terminating in a hand grip portion adapted to be gripped in the hand of an individual to effect the movement of the associated handle member, and means interconnecting the handle rod with the brake rod for substantially equal and simultaneous movement in like directions by both rods whereby movement of the handle grip portions about their respective pivot points will effect forward movement of the handle rod which in turn will effect forward movement of the brake rod against the spring means to urge the brake pads into frictional engagement with the wheel hubs to apply a braking force thereto, the release of the brake handles permitting the springs to return the brake rod to the brake disengaging position rearwardly of the platform, such movement simultaneously returning the brake handles to their normal at rest positions.

3,870,335
STEERING ARRANGEMENT FOR MOTOR VEHICLES

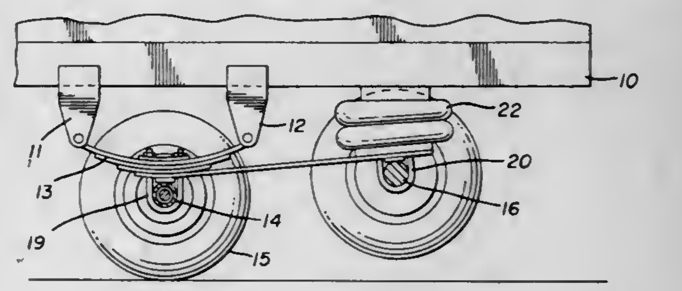
Waldemar Schulz, Dannenbuettel, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed July 5, 1973, Ser. No. 376,339
Claims priority, application Germany, July 25, 1972, 2236379
Int. Cl. B62d *3/00*
U.S. Cl. 280—90 **9 Claims**

1. In a motor vehicle, a fixedly supported steering gear coupled to a steering wheel, at least a pair of tie rods, each coupled to one of the vehicle wheels, a force translating member mounted shiftable transversely with respect to the longitudinal axis of the vehicle and coupled to said steering gear and operably coupled to said tie rods, a shock absorbing means mounted at one end of said force translating member coaxially therewith, said shock absorbing means comprising a pipe means and a piston means placed operably in said pipe means for moving telescopically therein, said pipe means of said shock absorbing means being rigidly coupled to said one end of said force translating member, a fixed retaining means, said pipe means at least partially protruding into said fixed retaining means, said piston means for said shock absorbing means being fixedly coupled to the vehicle frame.



3,870,336
VEHICLE SUSPENSION

Michael Bilas, 2730 Columbiana-New Castle Rd., New Springfield, Ohio 44443
Continuation-in-part of Ser. No. 208,073, Dec. 15, 1971, Pat. No. 3,740,071. This application June 1, 1973, Ser. No. 366,136
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 F **5 Claims**



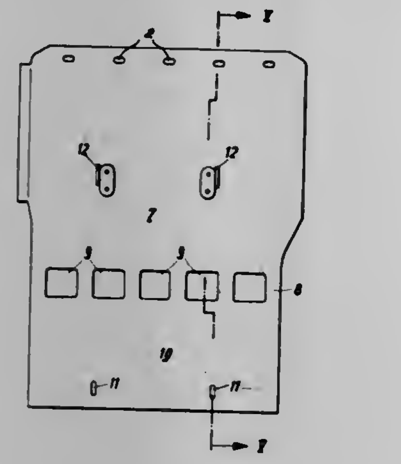
1. A wheel suspension for a vehicle having a first wheel and axle assembly and first springs on said wheel and axle assembly arranged to pivotally engage said vehicle, said suspension including an auxiliary wheel and axle assembly, parallel elongated secondary springs having opposite end portions attached to said first wheel and axle assembly and to said auxiliary wheel and axle assembly, said parallel elongated secondary springs normally urging said auxiliary wheel and axle assembly toward said vehicle and air bags positioned between said auxiliary wheel and axle assembly and said vehicle acting when inflated to move said auxiliary wheel and axle assembly away from said vehicle and means for inflating and deflating said air bags.

3,870,337
CASING FOR TRACK-LAYING AND WHEEL-EQUIPPED VEHICLES

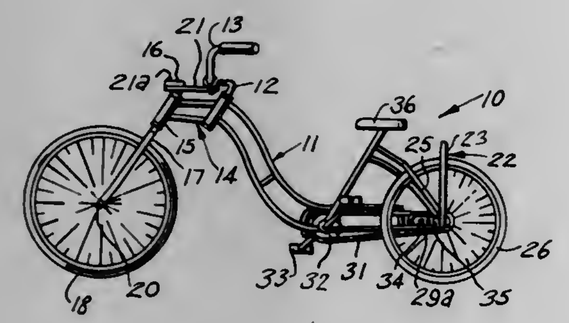
Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummisverke AG, Cologne, Germany
Division of Ser. No. 189,385, Oct. 14, 1974, Pat. No. 3,776,571. This application Aug. 21, 1973, Ser. No. 389,653
Claims priority, application Germany, Oct. 15, 1970, 2050492
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **1 Claim**

1. A cover for use in combination with track-laying and wheel-equipped vehicles comprising a body portion which has a variable length and which is of an elastic material, and means forming a row of spaced windows therewith extending along the length of said cover to thereby weaken said cover so as to make it more readily foldable along the line of said windows in an articulation free of wear and tear as well as

being free of any maintenance requirements though said body portion at least in part is subject to folding upwardly and downwardly as a result of wind caused by travel, by objects thrown up and by positive folding, the lower portion of said cover being foldable upwardly onto the upper portion of said cover, one of said portions being provided with hook means and the other one of said portions being provided with eyes adapted selectively to engage said hook means to thereby hold the lower portions in upwardly folded condition onto said upper portions.



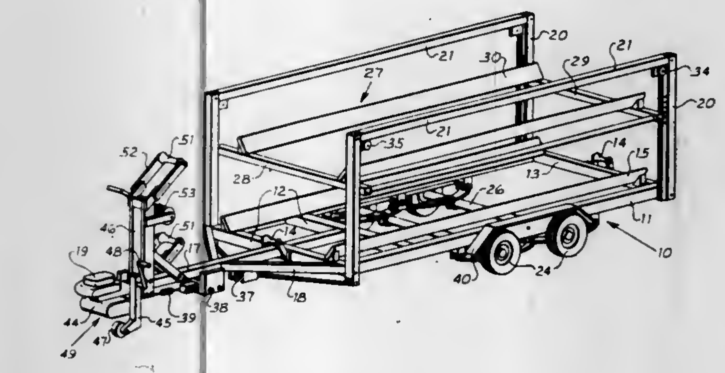
3,870,338
DUAL TRICYCLE KIT
Frank W. Holub, 1440 Columbus Ave., Burlingame, Calif. 94010
Filed Aug. 2, 1973, Ser. No. 385,061
Int. Cl. B62k *13/06*
U.S. Cl. 280—209 **1 Claim**



1. A dual tricycle kit for attaching a pair of standard bicycle frames in side-by-side relationship, each frame having a front portion, a rear portion and a drive chain, said kit comprising: a front assembly having (a) a wheel for supporting the front of the dual tricycle, (b) fork means rotatably carrying said wheel, (c) means for fastening said fork means midway between the front portion of each bicycle frame, (d) tie-rod means for connecting said fork with one bicycle frame for enabling steering of the dual tricycle; and

a rear assembly having (a) a shaft, said shaft being longer than the distance between the assembled bicycle frames, (b) two drive sprockets, one of said sprockets being mounted at an end of said shaft, the other of said sprockets being mounted on said shaft a distance equal to the spacing between the assembled bicycle frames from said end, (c) two wheels for supporting the rear of the dual tricycle, (d) rear frame means having (1) bar means, said bar means being longer than said shaft, (2) yoke means at each end of said bar means for rotatably carrying said wheels, (3) means for rotatably supporting said shaft such that the other end of said shaft is adjacent to one of said wheels, (4) means for rigidly attaching the rear portion of each bicycle frame to said bar means such that the drive chain of each bicycle frame can be connected to one of said drive sprockets, and (e) means connecting said other end of said shaft to said adjacent wheel for driving the wheel upon rotation of said shaft.

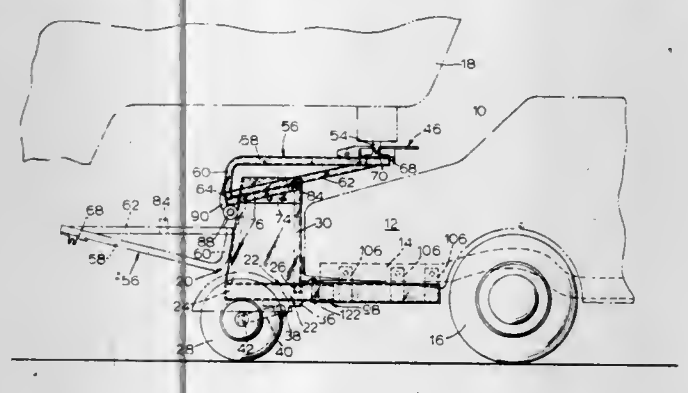
3,870,339
MULTI-PURPOSE TANDEM TRAILER
Jerry J. Goff, Fortville, Ind., assignor to Samuel Dowden, Ingalls, Ind., a part interest
Filed May 22, 1974, Ser. No. 472,119
Int. Cl. B60p *3/10*
U.S. Cl. 280—414 R **20 Claims**



1. A tandem multi-purpose trailer for transporting and storing at least two boats comprising:

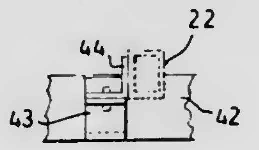
a. a first support structure, said first support structure having means mounted thereon for carrying and securing a boat in a fixed position;
b. a second support structure, said second support structure being movable from a lower position immediately above said first support structure to a raised position of from about 3 inches to about 7 feet above said lower position, said second support structure having means for carrying and securing a boat in a fixed position;
c. a plurality of vertical guide members, said guide members having means for allowing said second support structure to move from said lower position to said raised position;
d. means for raising and lowering said second support structure along said guide members; and
e. a tongue assembly, said tongue assembly connecting said first support structure to the vehicle pulling the trailer, said tongue assembly having mounted thereon means for fixedly attaching said trailer to said vehicle.

3,870,340
TOW HITCH FOR FIFTH WHEEL TYPE TRAILER
Charles M. Winter, 2580 W. Philadelphia St., York, Pa. 17404
Filed May 30, 1973, Ser. No. 365,288
Int. Cl. B62d *53/08*
U.S. Cl. 280—415 B **20 Claims**



1. A tow hitch mechanism for attaching a fifth wheel type trailer to the rear portionof the chassis of an automotive vehicle comprising in combination, a hitch frame adapted to extend transversely to the longitudinal axis of such vehicle adjacent the rear end thereof, auxiliary wheels supported by the lower portion of said frame for engagement with a roadway, means upstanding from said hitch frame adjacent the rear end of said vehicle when said hitch frame is attached thereto, cantilever frame means supported by the upper end of said upstanding means and extending forwwardly therefrom relative to said vehicle, a fifth wheel hitch supported by said cantilever frame means at a height arranged to support the forward end of a fifth wheel type trailer at a lever in which the trailer is substantially level longitudinally when connected thereto, and coupling means includng interengageable members respectively connected to said hitch frame and interconnectable to the rear portion of the chassis frame members of such vehicle.

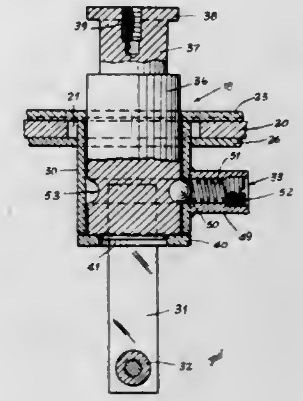
3,870,341
STRADDLE TRAILER HITCH
Dwen R. Younger, 2181 D Lone Oak Ave., Napa, Calif. 94558
Continuation of Ser. No. 392,612, Aug. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 237,471, March 23, 1972, abandoned. This application July 29, 1974, Ser. No. 492,570
Int. Cl. B62d *53/06*
U.S. Cl. 280—423 R **22 Claims**



1. A straddle trailer hitch assembly for connecting a trailer having forwardly directed elevated tongue with a tow vehicle of the type that includes a chassis having front and rear ends and front and rear ground wheels adjacent said front and rear ends and a body on said chassis, comprising:

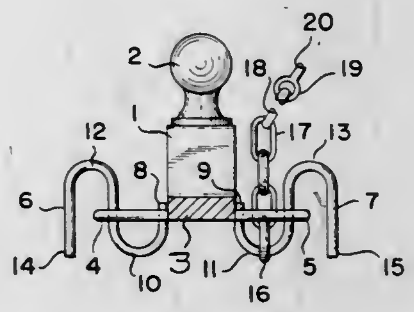
a. a hitch element for releasable connection with said tongue;
b. a frame for supporting said hitch element on said chassis in a trailer towing position spaced above said body located centrally relative to the lateral sides of said body and at a point intermediate said front and rear ends;
c. securing means for releasably securing said frame to such chassis with said hitch element in said towing position;
d. said frame including a cross member of a length for extending transversely across the top of said body from side-to-side of the latter, with said hitch element rigid on said cross member centrally between the ends of the latter, and rigid members connected with said cross member extending downwardly therefrom having said securing means at the lower ends thereof when said hitch element is in said trailer towing position;
e. said rigid members comprising a pair of struts having forward end portions connected with the ends of said cross member, said struts extending longitudinally of said chassis and downwardly to the rear ends of the latter adjacent the rear end of said body when said hitch element is in said trailer towing position, and said rigid members including vertically extending legs connected with said struts adjacent their forward ends extending across opposite sides of said body to opposite sides of said chassis at their lower ends when said hitch element is in said trailer towing position.

3,870,342
RETRACTABLE KING PIN AND CLAMPING ASSEMBLY
Bobby G. Baxter, and Theodore B. Splitt, both of Warrenton, Mo., assignors to The Binkley Company, Warrenton, Mo.
Filed Jan. 11, 1973, Ser. No. 322,640
Int. Cl. B62d *53/08*
U.S. Cl. 280—433 **13 Claims**



1. In a coupler for use with a towing vehicle and a trailer: a king pin assembly including a king pin holder adapted to be mounted on the bed of the towing vehicle and a king pin mounted therein for vertical movement from a retracted position to a position wherein it stands up from the bed of the vehicle a predetermined distance, and a coupler assembly engageable with the king pin in its upwardly extended position; the coupler assembly having a base and jaw means positioned above the base a distance to correspond to the elevation of the king pin, the king pin holder comprising a mounting plate adapted to overlie a part of the bed of the vehicle and a sleeve depending therefrom, the king pin being manually movable from a retracted position flush with the mounting plate to the projecting position, and spring detent means for releasably retaining the king pin in projecting position, said means comprising interengaging components on the king pin and sleeve that are disengaged when the king pin is retracted, so that it may remain in retracted position.

3,870,343
TRAILER HITCH AND SAFETY CONNECTOR
Welbourne D. McGahee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.
Filed May 2, 1974, Ser. No. 466,344
Int. Cl. B60d *1/12*
U.S. Cl. 280—457 **9 Claims**



1. A trailer hitch and safety connector comprising a hitch tongue means for a connection between a towing and towed vehicle, a left and right horizontal ring portions connected to said hitch tongue means, a left and right vertical connector members affixed to said hitch tongue means, said left and right vertical connector members each including an inner lower loop and an outer upper loop, said vertical connector members being located about midway of said ring portions and cooperating therewith, and safety chains connected to the towed vehicle and removably connected to said left and right vertical connector members.

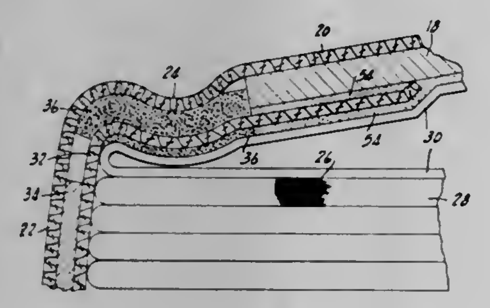
3,870,344
BOOK ARTICLE

William C. Heller. Jr.. 1840 N. Farwell. Milwaukee. Wis. 53202, and Leonard Shatzkin, 132 Old Post Rd., North, Croton-On-Hudson, N.Y. 12534

Division of Ser. No. 74,271, Sept. 22, 1970, Pat. No. 3,730,806. This application Feb. 26, 1973, Ser. No. 335,556

Int. Cl. B42d *1/04;* B42c *9/02*

U.S. Cl. 281—21 4 Claims



1. A bound book having a pair of covers separated by a spine and embracing a body of leaves bound along one edge, said body and covers having abuttable surfaces suitable for joinder at a hinge area of the book, said book having a composite hinge joint comprising abutting surfaces of the covers located adjacent the spine and abutting surfaces of said body of leaves adjacent said bound edge, said hinge joint having a first portion joined by conventional book binding paste and a second portion which is subjected to stress during use of the book, said second portion being joined by a solidified bonding agent comprised of a thermoplastic adhesive carrier containing dispersed particulate gamma Fe_2O_3.

3,870,345
TIGHT UNDERWATER CONNECTOR

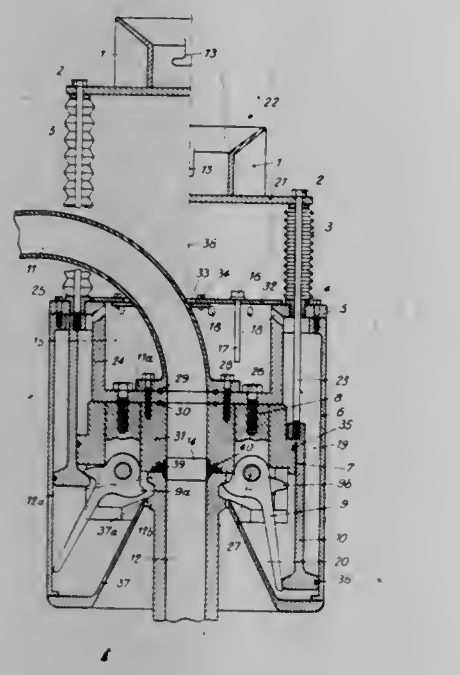
Jean Alphonse Eugene Liautaud, Paris, France, assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed Apr. 3, 1973, Ser. No. 347,526

Claims priority, application France, Apr. 7, 1972, 72.12239

Int. Cl. F16l *55/00*

U.S. Cl. 285—24 15 Claims



1. A connector for releasably connecting a first conduit to a second conduit on the bed of a body of water solely by an external force applied from the surface of the body of water by a single linear motion in the direction perpendicular to the open face of the second conduit, said connector comprising:

a. a connection seating adapted to be rigidly attached to a first conduit adjacent to the open face thereof and to extend radially therefrom;

b. a plurality of connecting rods slidably disposed in said connection seating for motion perpendicular to the open face of the first conduit when the connector is attached thereto;

c. a control plate to which each of said plurality of connecting rods is rigidly connected and which simultaneously operates said plurality of connecting rods; and

d. a plurality of locking levers pivotably mounted on said connecting seating, each of said plurality of locking levers:

   i. being operatively connected to a related one of said plurality of connecting rods so that the linear motion of the related one of said plurality of connecting rods in the direction away from the open face of the first conduit when the connector is attached thereto and towards the open face of a second conduit to which the first conduit is to be attached will cause the locking lever to pivot about its axis from a first position to a second position and the linear motion of the related one of said plurality of connecting rods in the opposite direction will cause the locking lever to pivot about its axis from the second position to the first position and

   ii. having a lug thereon positioned to releasably engage the second conduit when the connector is attached to the first conduit, the open face of the second conduit is positioned in face to face relationship with the open face of the first conduit, and the locking lever is in its second position,

whereby a first conduit to which the connector is attached may be releasably connected to a second conduit by first placing the open faces of the first and second conduits in face to face relationship and then forcing said plurality of connecting rods to slide in said connection seating in the direction perpendicular to the open face of the second conduit.

3,870,346
CONDUIT ELBOW

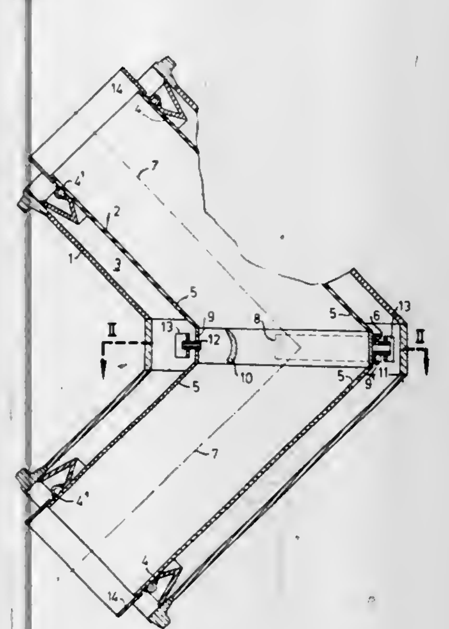
Peter Kappeler, and Klaus Uhlig, both of Zurich, Switzerland, assignors to Brown-Boveri-Sulzer Turbomaschinen Aktiengesellschaft, Zurich, Switzerland

Filed Nov. 12, 1973, Ser. No. 415,139

Claims priority, application Switzerland, Nov. 14, 1972, 16575/72

Int. Cl. F16l *59/14*

U.S. Cl. 285—47 9 Claims



1. An elbow section for an insulated conduit for a high pressure, high temperature medium which flows at high speed, the conduit including coaxial external and internal pipes spaced from each other by an intermediate layer of insulating material and the internal pipe containing apertures for equalizing the pressures acting on its inside and outside surfaces and thereby relieving it from pressure loading, the conduit having a longitudinal axis which changes direction in a bend plane in the region of the elbow section, and characterized by a support strip which is secured to the external pipe and is looped about a portion of the internal pipe so that it accepts and transmits to the external pipe the forces of the flowing medium which act radially outward on the internal pipe in the bend plane as a result of said direction change; and by guide means centered in the bend plane, reacting between the two pipes, and serving to allow movement of said portion of the internal pipe relatively to the external pipe only in the radial direction in the bend plane.

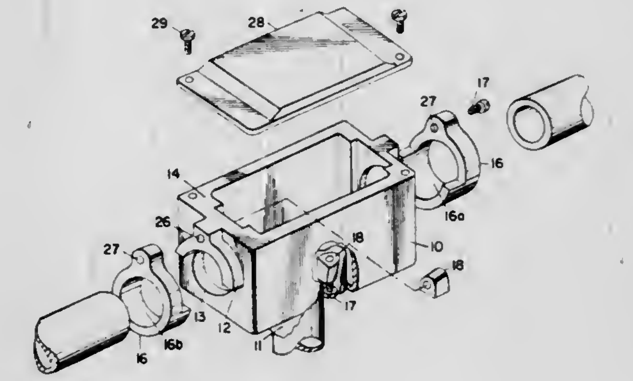
3,870,347
COUPLING SYSTEM RELATING ESPECIALLY TO CONDUIT FITTINGS, ELECTRICAL BOXES OR SPECIAL FITTINGS FOR OTHER APPLICATIONS

Kenneth C. Haubenestel, 2633 Grant Ave., Dayton, Ohio 45406

Continuation of Ser. No. 139,687, May 3, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,064

Int. Cl. F16l *41/00*

U.S. Cl. 285—156 9 Claims



1. Conduit fitting for connection to tubular elements such as pipes and conduits comprising

a housing having walls defining

an aperture in at least one wall of the housing and also defining

a guide way extending along the axis of said aperture and extending axially outwardly from at least one wall and having a surface angularly disposed relative to said axis and diverging therefrom in a direction from the exterior toward the interior of said housing,

a first arcuate portion terminating with outer ends which lie in a plane generally parallel to the axis of said aperture, said first arcuate portion connected to said guide ring and said one wall and extending axially outwardly from said one wall and coaxial with said aperture,

a clamp member having a hole therethrough registering with said aperture and having an arcuate end portion terminating with outer ends bearing against the outer ends of said first portion and having a second arcuate portion axially spaced from said end portion coaxial with said hole,

means releasably connecting said clamp member to said housing against relative movement thereto thereby providing lateral support for said tubular element when said element is disposed in said aperture including

a nut mounted for reciprocation in said guide way with opposite faces of said nut in engagement with said angularly disposed surface and with said tubular elements respectively, and

a screw threadedly engaging said nut and extending through said housing and said clamp member.

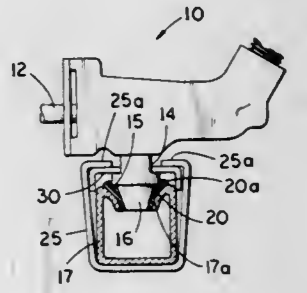
3,870,348
DUAL SEALING JUNCTION FOR GAS VALVE AND MANIFOLD

Samuel D. Hawkins, 21 E. Mulberry St., Lebanon, Ohio 45036

Continuation-in-part of Ser. No. 343,116, March 20, 1973, abandoned. This application Nov. 19, 1973, Ser. No. 417,107

Int. Cl. F16l *41/00*

U.S. Cl. 285—197 5 Claims



1. In combination, a gas valve having an extending inlet tube and a gas manifold pipe adapted to supply gas to the valve, an aperture in the wall of said manifold pipe with a portion of pipe wall bordering said aperture being turned inwardly to form a frusto-conical surface extending within the manifold pipe, the inlet tube of said valve having the outer surface of its tip formed in a frusto-conical surface matching that of said pipe wall and having an annular radially outwardly extending shoulder defining the wider end margin of said frusto-conical surface, a deformable member having a conical configuration and an outwardly flanged margin, said deformable member being interposed between said pipe wall and inlet tube frusto-conical surfaces with said flanged margin adjacent said annular shoulder, and releasable clamp means cooperating with said valve inlet tube and said manifold pipe for drawing said two frusto-conical surfaces into sealing relation with said deformable member and drawing said annular shoulder into sealing engagement with said flanged margin of the deformable member.

3,870,349
CONNECTING DEVICE BETWEEN A PIPE STUB AND A FLEXIBLE HOSE SURROUNDING THE STUB

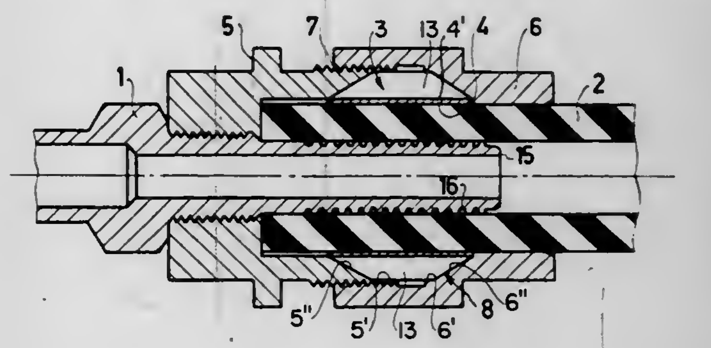
Hans Oetiker, Oberdorfstrasse 21, 8810 Horgen, Switzerland

Filed Aug. 13, 1973, Ser. No. 387,640

Claims priority, application Switzerland, Aug. 14, 1972, 11993/72

Int. Cl. F16l *33/00*

U.S. Cl. 285—249 17 Claims

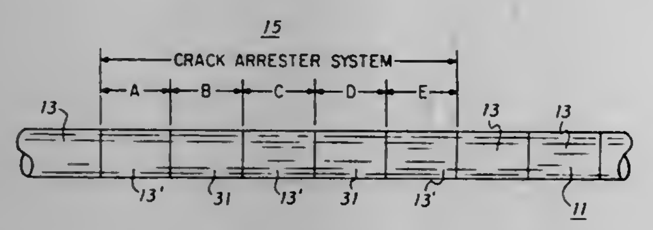


1. A connecting device between a pipe stub and a flexible hose surrounding said stub, comprising a substantially axially symmetrical clamping means surrounding said hose and two clamping collar means which are arranged axially at each end of said clamping means and which are adapted to be axially tightened with each other, said clamping collar means having axial portions of substantially hollow cylindrical form which face one another, characterized in that the clamping means consists of a deformable, yet substantially non-compressible material, and in that the outer surface of the clamping means is provided with groove means that extend at least approxi-

mately parallel to the axis and have a depth smaller than the radial thickness of the clamping means within the areas thereof devoid of groove means so that a continuous internal surface is provided by the clamping means which is uninterrupted.

3,870,350
CRACK ARRESTER SYSTEM

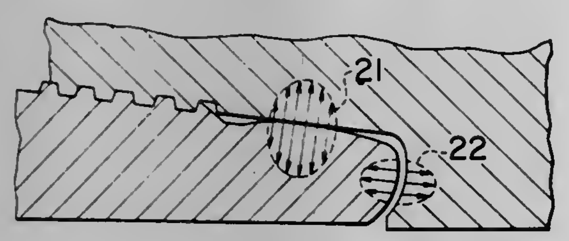
Rado G. Loncaric, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 15, 1974, Ser. No. 461,018
Int. Cl. F16l *13/02*
U.S. Cl. 285—286 **29 Claims**



1. In a pipeline formed from a plurality of sections of pipe, at least one crack arrester system in said pipeline at at least one intermediate point between the ends of said pipeline, said crack arrester system being in open communication with sections of said pipeline and being comprised of at least three zones along the longitudinal axis of said pipeline, two of said zones being at the two ends of said crack arrester system and being joined to sections of said pipeline on either end of said crack arrester system, and at least one of said zones being between said two end zones and having a resistance to crack propagation lower than said two end zones and lower than said sections of said pipeline on either side of said crack arrester system.

3,870,351
THREADED TUBE JOINT STRUCTURE FOR CASING, PARTICULARLY OIL WELL TUBING

Norio Matsuki, Osaka, Japan, assignor to Sumitomo Metal Industries Limited, Osaka, Japan
Filed Mar. 30, 1973, Ser. No. 346,302
Claims priority, application Japan, Mar. 31, 1972. 47/32953
Int. Cl. E21b *17/08;* **F16l** *15/00*
U.S. Cl. 285—334 **7 Claims**



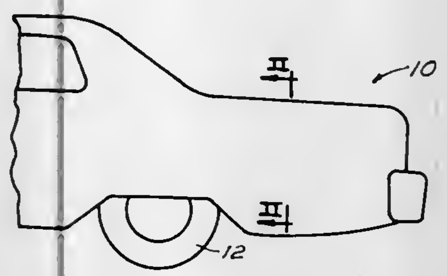
1. A threaded tube joint for casing, particularly oil well tubing, including male and female threaded tube members, each having a substantially cylindrical wall and said joint having a structure having:

a first metal-to-metal contact seal formed upon make-up of the joint between an outer surface of a thread-free end portion of the male threaded tube member having a longitudinally extending reference axis within its wall and a corresponding inner surface of the female threaded tube member having a longitudinally extending reference axis within its wall, said outer surface of the male member having a substantially spherical profile, said inner surface of the female member having a straight profile; and

a second metal-to-metal contact seal formed also upon make-up of the joint between the end face of the wall of said end portion of the male member and a corresponding face of the wall of the female member, one of said faces of the male and female members substantially having with respect to its reference axis a profile of a convex surface of revolution for aligning the reference axis of the male member with the reference axis of the female member, and the other of said faces of the male and female members substantially having with respect to its reference axis a profile of a concave surface of revolution so as to be complementary to that of the one face.

3,870,352
TRACK GRIT SPREADER APPARATUS

John R. Engler, 4842 Crescent Ave., and Ronald F. Dompke, 4223 Ottawa Ave., both of Norridge, Ill. 60634
Filed July 2, 1973, Ser. No. 375,768
Int. Cl. B60b *36/06;* **B61c** *15/10;* **B61h** *11/00*
U.S. Cl. 291—15 **13 Claims**



1. In apparatus for increasing traction between the drive wheels of a vehicle and an icy surface, supply means adapted to contain a supply of coarse salt, and feed means for feeding said coarse salt downwardly from said supply means to drop on icy surface portions directly in front of said drive wheels, said vehicle being an automoble having a trunk space defined in part by wheel well members over said drive wheels, said wheel well members including wall portions in generally vertical planes spaced inwardly from the vertical planes of the inside surfaces of said drive wheels to define clearance spaces, said wall portions having openings located approximately in a vertical plane through the drive wheel axis and in spaced relation above said axis, said supply means being disposed in said trunk space and said feed means defining passages for flow of salt from said supply means through said openings and thence downwardly, forwardly and outwardly to drop in front of said drive wheels, said feed means comprising a pair of substantially straight chute means defining portions of said passages and mounted against said wall portions in said clearance spaces, said chute means having upper ends for receiving salt flowing out through said openings in said wall portions and being inclined downwardly and forwardly to lower open ends approximately in horizontal alignment with said drive wheel axis and approximately in a vertical plane ahead of the forward circumferential portions of said drive wheels, the cross-sectional size of said chute means being large enough for free flow of coarse salt fed into said upper ends of said chute means to be propelled by gravity and to be directed forwardly from the said lower open ends of said chute means.

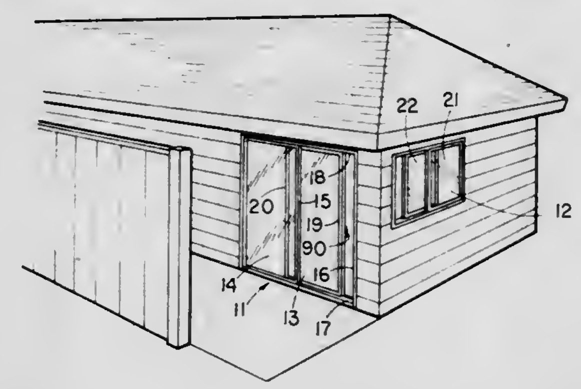
3,870,353
LATCHES

Wesley E. Miller, 13641 Milton Ave., Westminster, Calif. 92683
Continuation-in-part of Ser. No. 193,725, Oct. 29, 1971, abandoned. This application May 21, 1973, Ser. No. 362,602
Int. Cl. E05c *1/12*
U.S. Cl. 292—37 **6 Claims**

1. For a sliding panel installation in which a door or window opening adjacent to a fixed wall or window panel is opened and closed by a sliding panel mounted for sliding movement in upper and lower tracks that extend alongside said fixed panel and across the opening, in combination:

a panel capable of being mounted in said tracks for movement between an open position in which it is disposed next to said fixed panel and a closed position in which it covers said opening and which has a rear portion disposed next to said fixed panel; and

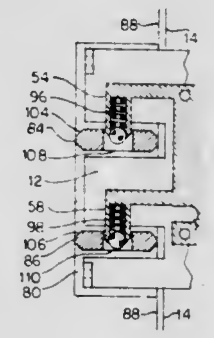
a latching structure carried by one of said panels and including a bolt and means for actuating said bolt to and from a keeper opening on the other of said panels, said means for actuating said bolt comprising biasing means for biasing said bolt to extended position and retraction means responsive to forces applied remotely for retracting the bolt against said bias;



said means for actuating said bolt further comprising a cam in the fomr of a slotted member movable from one position to another and a cam follower fixed to said bolt and positioned in the slot of said slotted member, said bias spring being mounted to move the cam follower toward a position in which said bolt is extended.

3,870,354
DROP BOLT SNAP LATCH LOCKING MECHANISM

Herman Prahl, 48-38 Fifty Eight Ln., Woodside, N.Y. 11377
Eiled June 18, 1973, Ser. No. 371,141
Int. Cl. E05b *63/12, 15/10*
U.S. Cl. 292—116 **4 Claims**



1. A drop bolt locking mechanism and strike member combination capable of snap latch operation comprising:

a bolt element housing for mounting upon a door with a portion of said housing extending beyond the edge of said door, said portion consisting of a plurality of sections with spaces between said sections extending in a direction substantially perpendicular to said edge of said door;

a bolt element mounted within said housing for movement therein relative to said housing in a direction substantially parallel to said edge of said door, said bolt element having finger means thereon for movement in said spaces in a direction parallel to said edge of said door;

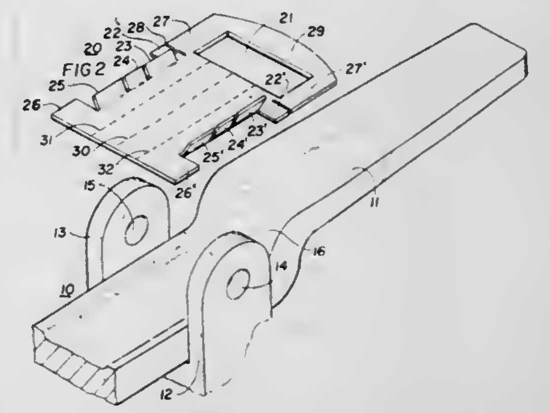
means in said housing for resiliently biasing said bolt element in a first direction parallel to said edge of said door for normally maintaining said finger means in said spaces; a strike member for mounting on the door frame opposite said housing, said strike member having a plurality of projecting flange means for mating with said spaces and said flanges having apertures therein for receipt of said finger means;

said flange means having bevelled edges for engaging said finger means and pushing said bolt element in a second direction opposite to said first direction upon closing of said door to enable said snap latch operation; and

said finger means having ball bearings projecting therefrom into said spaces to facilitate said snap latch operation.

3,870,355
DETERRENT SPRING CLIP

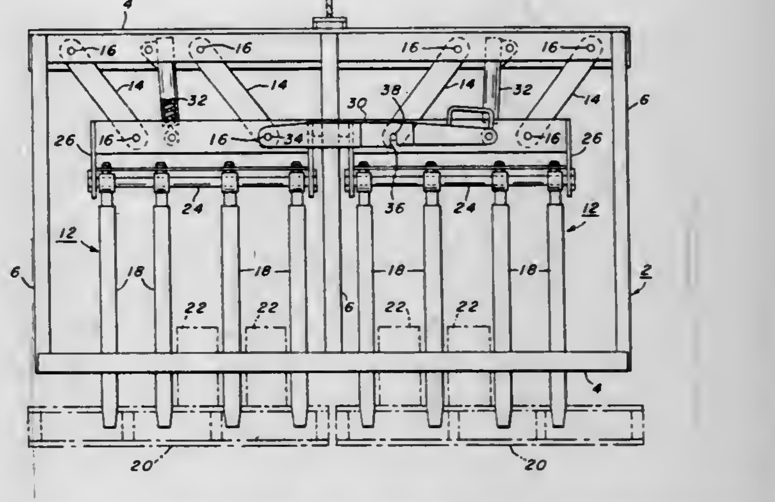
Charles T. Biscardi, Maple Shade, N.J., assignor to Merit Metal Products Corp., Warrington, Pa.
Filed Feb. 15, 1973, Ser. No. 332,619
Int. Cl. E05c *19/18*
U.S. Cl. 292—307 R **7 Claims**



1. A clamping plate to be nestingly secured between two projecting members of predetermined length and breadth which are separated by a predetermined dimension, comprising: a flat sheet of rigid material having a width exceeding said predetermined dimension; a pair of slits on opposing edges of said flat sheet; each pair of slits defining a central ear having a length substantially conformed to the length of one of said projecting members, a first end ear extending past one side of said one projecting member, and a second ear extending past the other side of said one projecting member, the width of said sheet between the slits on the opposing edges, being slightly less than said predetermined distance between said projecting members; said central ears projecting substantially outward from the sides of said flat sheet, being inherently biased by the characteristic of said sheet to retain this orientation, and having transverse slots substantially orthogonal to the opposed faces of said projecting members when said plate is secured thereto; said end ears being deformed in a direction opposite to the projection of said projecting members along bend lines on opposing edges of said sheet which are separated by slightly more than said predetermined distance between said projecting members.

3,870,356
ADJUSTABLE MATERIAL HANDLING FORK

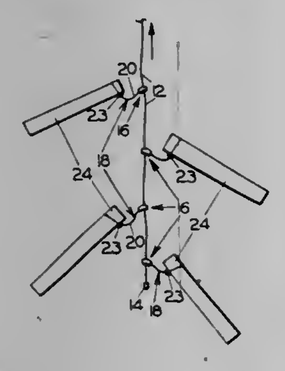
Charles D. Meads, Hellam, Pa., assignor to DICO Company, Inc., York, Pa.
Filed Nov. 7, 1973, Ser. No. 413,701
Int. Cl. B66c *1/22*
U.S. Cl. 294—67 A **7 Claims**



1. An expandable fork for transferring a plurality of objects from a location in which they are a lesser predetermined distance apart to a location in which they are a greater predetermined distance apart, which fork comprises:

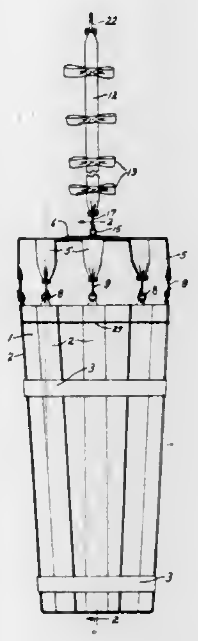
a suspendable frame;
first and second tine units, each of said units including a plurality of horizontal tines capable of supporting a load; a plurality of support members, at least one of which members pivotally secures each tine unit to the frame such that, when the fork rests upon a surface, the tine units are in a proximate lateral relationship corresponding to the lesser predetermined distance and the frame is supported by the tine units, and when the fork is suspended, the tine units move relative to the frame and to each other and are suspended from the frame in a remote lateral relationship corresonding to the greater predetermined distance; and
means for releasably securing the tine units in the proximate lateral relationship when the frame is suspended.

3,870,357
SELF-LOCKING WINCH LINE HOOK
Kenneth L. Wernsing, 1931 N.E. 72nd, Portland, Oreg. 97212
Continuation of Ser. No. 148,379, June 1, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 349,019
Int. Cl. B66c *1/12*; F16g *11/14*
U.S. Cl. 294—74 **1 Claim**



1. In combination with a winch line and a ferruled choker line in log skidding and like operations, a winch line hook comprising:
- a. an annular body defining a single laterally elongated, unobstructed opening longitudinally therethrough,
- b. one lateral end portion of the opening defining a winch line guide sleeve slidably receiving the winch line and having a lateral dimension larger than the cross sectional dimension of the choker line ferrule and also larger than the combined diameters of the winch line and choker line,
- c. the opposite lateral end portion of the opening defining a ferrule pocket dimensioned to seat the choker line ferrule with the outer end of the ferrule facing the winch line in the sleeve,
- d. the longitudinal axis of the ferrule pocket being disposed at an angle of about 20°–60° to the longitudinal axis of the sleeve opening,
- e. the ferrule pocket being defined by a pair of side walls, a bottom wall and a front wall extending from the bottom wall and terminating adjacent the sleeve opening a distance from the winch line less than the length and the diameter of the ferrule, whereby the winch line obstructs movement of the seated ferrule inwardly of the front wall,
- f. the front and bottom walls of the ferrule pocket having a continuous central slot having a width greater than the diameter of the winch line and the choker line but less than the diameter of the choker line ferrule,
- g. the back of the ferrule pocket opposite the front wall being open to pass the ferrule rearwardly between the winch line and bottom wall,
- h. said one lateral end portion of the single opening affording common access by and free interchange of positions of both lines, whereby the choker line is movable into the winch line guide opening and the winch line is movable into the ferrule pocket opening for removal and installation of the ferruled choker line through the winch line guide opening.

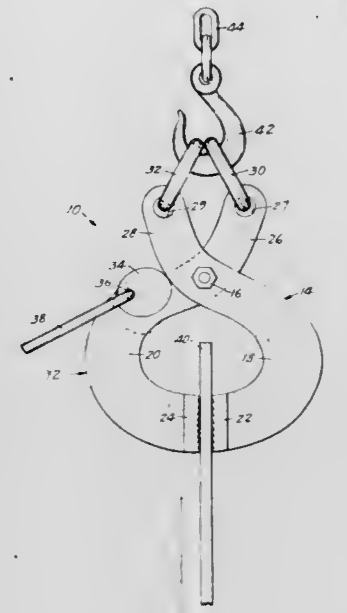
3,870,358
APPARATUS FOR MANUALLY RAISING AND LOWERING BULKY PACKAGES
Julia A. S. Bennett, 315 Wall St., Apt. No. 3, Jeffersonville, Ind. 47130
Filed Dec. 26, 1973, Ser. No. 428,188
Int. Cl. B66c *1/12*
U.S. Cl. 294—77 **2 Claims**



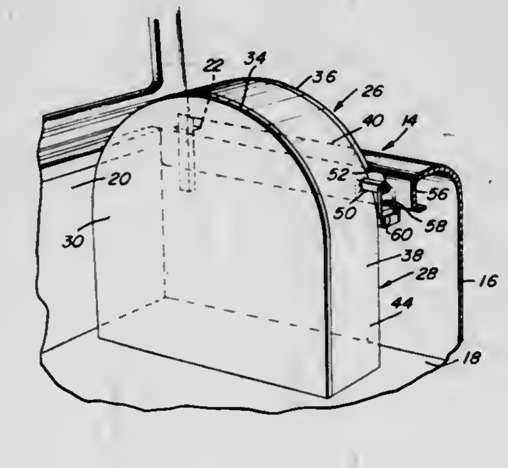
1. An apparatus for manually raising and lowering bulky or otherwise burdensome packages between the floors of an apartment, dwelling or like building, comprising:
- A. a bag having a mouth at its upper end and a capacity large enough to receive a manually-handable package;
- B. a lid removably securable over the mouth of the bag,
  - 1. said lid having a central section and a series of straps secured to said section and arranged to extend from the periphery of said section for bag supporting purposes and terminating in free ends, which are detachably securable to the mouth end portion of said bag,
    - a. said central section being relatively stiff in comparison to said straps;
- C. an elongate cable having a lid end;
- D. means for securing said cable to said lid with the lid end of the cable located over said central section of the lid; and
- E. handgrips mounted on the cable along its length to facilitate the raising and lowering of the bag in step-by-step fashion when the bag, lid and cable are secured together.

3,870,359
CLAMP CONSTRUCTION
John V. Hultquist, 836 Hayward St., Anaheim, Calif. 92804
Filed Aug. 8, 1973, Ser. No. 386,833
Int. Cl. B66c *1/48*
U.S. Cl. 294—118 **7 Claims**

1. A C-clamp comprising a pair of clamping members pivotally attached to one another intermediate their ends, the portions of said members to one side of the pivotal attachment comprising generally C-shaped arms terminating in facing clamping jaws, the portions of said members to the other side of the pivotal attachment comprising handle elements, cam means movably carried by the arm of one of said members for engagement with the handle element of the other of said members to hold the clamping jaws in clamped position upon clamping a workpiece therebetween.

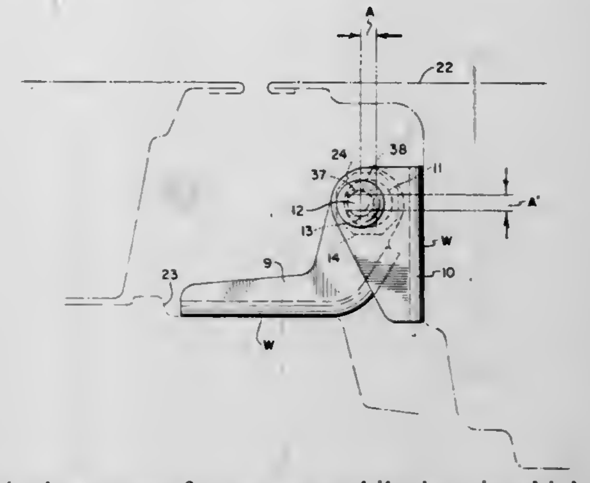


3,870,360
PICKUP TRUCK SPARE TIRE MOUNT AND COVER
William W. Nichols, 4218 Delwood, Odessa, Tex. 79760
Filed Sept. 21, 1973, Ser. No. 399,615
Int. Cl. B60r *7/00*
U.S. Cl. 296—37 A **9 Claims**



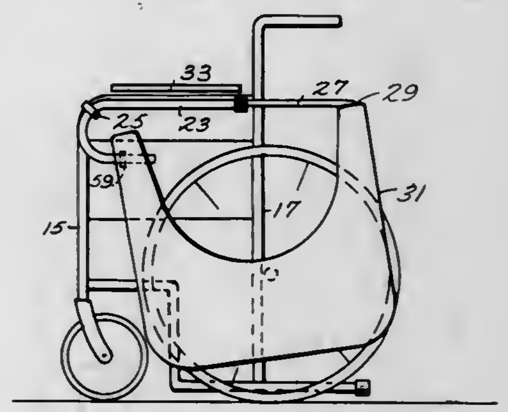
1. In combination with a pickup truck load bed of the type including a floor and a side wall projecting upwardly from said floor provided with an upwardly opening socket of appreciable vertical extent in the upper marginal edge portion of said side wall, a hollow vertically elongated downwardly opening upstanding housing disposed immediately inwardly of and extending along the inner side of said side wall and directly removably supported on said floor with one side of said housing adjacent and opposing said inner side of said side wall, said housing being of a height and width to be downwardly telescoped over an upstanding pickup truck spare tire and wheel supported on said floor in upright position immediately inwardly of said side wall, said housing including an upper portion projecting above said side wall, said upper portion of said housing including a depending stake supported from the housing and removably downwardly telescoped in said socket.

3,870,361
HINGING SYSTEM FOR AUTOMOBILE DOORS WITH HINGE HALVES WELDED TO BODY AND DOOR
Herbert Krause, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Feb. 12, 1973, Ser. No. 331,817
Int. Cl. E05d *7/04*
U.S. Cl. 296—146 **13 Claims**



1. In a hinging system for an automobile door in which there are hinge members on the door and body that are permanently and nonadjustably fixed to said door and body, respectively, and in which said hinge members are adapted to be pivotally connected together by a pintle, the pintle being pivotally received in aligned holes in knuckles on one of said hinge members, the improvement which consists of a bushing having a hole provided therein longitudinally thereof in which the pintle is received with a rotatable fit, the bushing being rotatably adjustable in a hole provided in the other of said hinge members, the axis of the hole in said bushing being eccentrically positioned with respect to the axis of said bushing, said bushing having a polygonal portion on which a wrench may be engaged for rotary adjustment of the bushing, said bushing being of a length to reach from the inner side of one outer hinge knuckle to the inner side of the other outer hinge knuckle, said pintle having a head on one end abutting the outer side of one knuckle of the outer hinge member and a threaded portion on the other end projecting from the outer side of the other knuckle of the outer hinge member, and a jam nut threaded on the projecting threaded end of said pintle and tightenable so as to clamp the bushing endwise between said knuckles in its rotatably adjusted position.

3,870,362
TRAY ATTACHMENT FOR WHEELCHAIRS
Richard L. Large, Lincoln, Nebr., assignor to RVL Industries, Inc., Lincoln, Nebr.
Filed Aug. 29, 1973, Ser. No. 392,812
Int. Cl. A47c *39/00*
U.S. Cl. 297—155 **5 Claims**



1. A wheelchair tray which is attached to the arm rest member of a wheelchair, said wheelchair including a pair of side frame members, each including an arm rest portion and drive

wheels rotatably attached thereto, the wheelchair tray improvement comprising in combination:

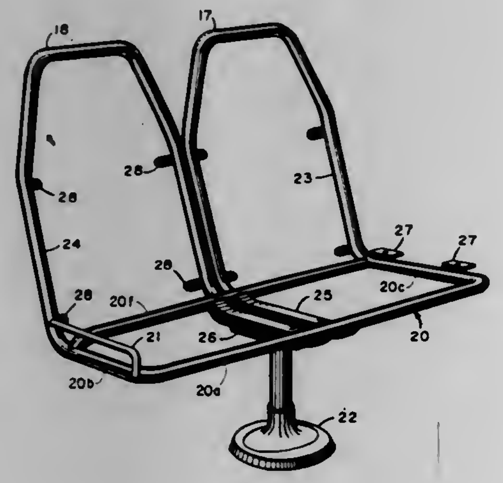
a mounting tube rigidly but removably connected to one of said side frames, said tube being substantially horizontal and having an open end toward the rear of said wheelchair,

an extension tube slidably and rotatably positioned in said mounting tube through said open end for telescopic movement with respect thereto, said extension tube being terminated in a swivel portion, and

a tray rotatably connected to said swivel portion of said extension tube, said tray having a recessed portion, said tray resting on said arm rest portion of said frame when in a utilization position and being rotated against the side of said drive wheel and slid rearward to such position that the drive wheel is exposed so the occupant of the wheelchair can propel the wheelchair.

3,870,363
SEMI-CANTILEVER TWIN-SEAT CHAIR

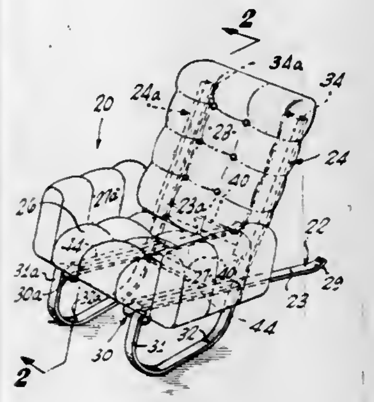
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Continuation of Ser. No. 149,729, June 3, 1971, abandoned. This application May 4, 1973, Ser. No. 357,397
Int. Cl. A47c *3/00*
U.S. Cl. 297—232 6 Claims



1. A semi-cantilever multiple passenger transit chair comprising: a tubular frame including a one-piece tubular member forming a front stretcher tube, aisle and wall side frame members extending rearwardly of said front stretcher tube at the ends thereof, said tube being thence formed upwardly from the rear of said aisle and wall side farme members respectively and thence toward the longitudinal center of said chair and thence downwardly to provide separate back cushion support frames, said frame further including a rear stretcher tube generally parallel to said front stretcher tube and extending between the rear portions of said aisle and wall side frame members, the lower center portions of said back cushion support frames being connected to the approximate midpoint of said rear stretcher tube; a rigid reinforcing cross beam structure including first and second tubular cross beam members connected at their forward and rear ends respectively to the approximate midpoints of said forward and rear stretcher tubes; a single pedestal located beneath said cross beam structure and cooperating with said wall to support said chair, said pedestal including only one upright column attached to said reinforcing cross beam structure and a base mounted to the floor of said vehicle; means for securing said wall side frame member to an upright wall of a vehicle; and cushion means on said frame providing seats and backs for two passengers side by side, said cushion means providing said backs each including rigid back panel means rigidly secured to an associated back cushion support frame.

3,870,364
RECLINABLE CHAIRS AND SEATS

Ignacio Cortina O., Paseo de Las Palmas 765, Mexico 10, D.F., Mexico
Continuation-in-part of Ser. No. 229,447, Feb. 25, 1972, abandoned. This application Feb. 26, 1973, Ser. No. 335,788
Int. Cl. A47c *3/00*
U.S. Cl. 297—294 22 Claims



1. A reclining structure for a chair or the like, which includes:

a base member having a frontal end and a rear end, a substantial portion of said base member being elongated and adapted to contact with the floor;

a backrest member fixedly mounted to the rear of said base member and curved upwardly and rearwardly therefrom, the radius of curvature, and angle, between said base member and said backrest member being such as to allow a smooth pivoting action about the juncture of said base and backrest member to occur;

a seat member;

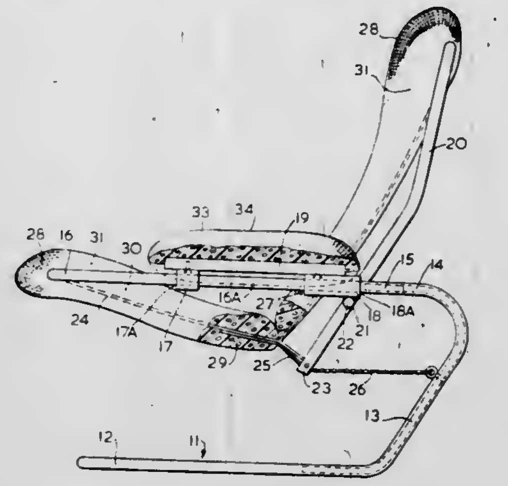
hinge connection means provided between said seat member and said base member near the frontal end of said base member, said seat member not being otherwise connected to said base member or backrest member, said hinge connection means providing a pivotal axis about which said seat member and said base member can rotate with respect to each other, and without restriction, under the influence of moments of force applied to said seat member and said backrest member by a person in moving to a reclining position in said structure;

rear floor support means, for said seat member, mounted to said seat member, but not to said backrest member, to permit rearward movement of said backrest member; and means for limiting the rearward movement of said backrest member prior to reaching a point of instability of the structure.

3,870,365
CHAIR OR ANALOGOUS ARTICLE OF FURNITURE

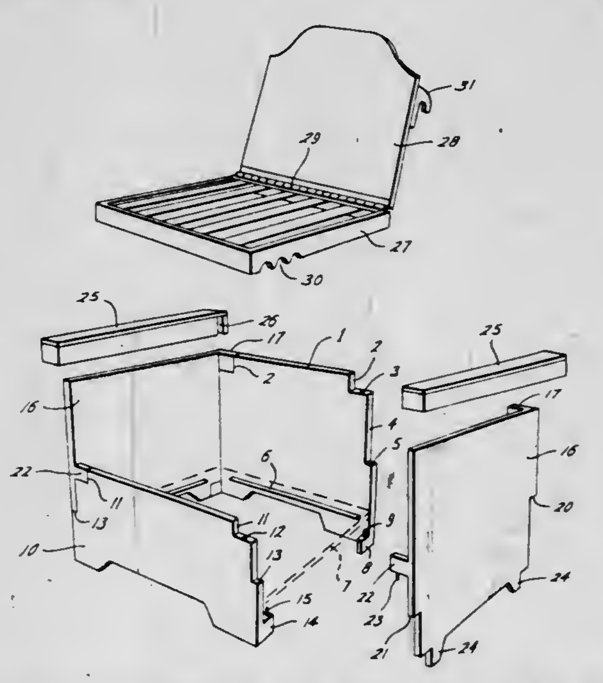
Odd Knutsen, N-7208 Mageroy, Norway
Filed Nov. 20, 1973, Ser. No. 401,445
Int. Cl. A47c *1/032, 7/54*
U.S. Cl. 297—320 15 Claims

1. In a chair or an analogous article of furniture, having a back structure and a seat structure which are hinged together to allow for an adjustment of the inclination of the back structure, and wherein the back structure is connected with slides which are carried by a substantially horizontal guide member on each side of the chair, the improvement comprising a supporting structure for maintaining stationary said seat structure at its front end and means for effecting a substantially vertical movement of the line of connection between the back structure and the seat structure when the inclination of the back structure is adjusted.



3,870,366
KNOCKDOWN FURNITURE

Lucious E. Rogers, 1011 W. Fugate, Houston, Tex. 77009
Filed July 9, 1973, Ser. No. 377,742
Int. Cl. A47c *4/02, 7/20*
U.S. Cl. 297—440 5 Claims



1. In knockdown furniture, a front and a back member formed with marginal shoulders having pin receiving holes and inwardly extending members having upwardly extending pins, and having side members with matching load bearing shoulders and pins and pinholes adapted to join the front and back members, and channeled members adapted to be loosely mounted on the upper margin of the side members and engaging the rear member, and a seat member mounted on said front and back members, said seat member being comprised of two hinged sections, notches on one section to be selectively engaged with the upper margin of the front member and a hanger on the other section adapted to engage the upper margin of the back member.

3,870,367
WHEELBARROW LIKE VEHICLE FOR TRANSPORTING BULKY MATERIAL SUCH AS LEAVES, TRASH OR THE LIKE

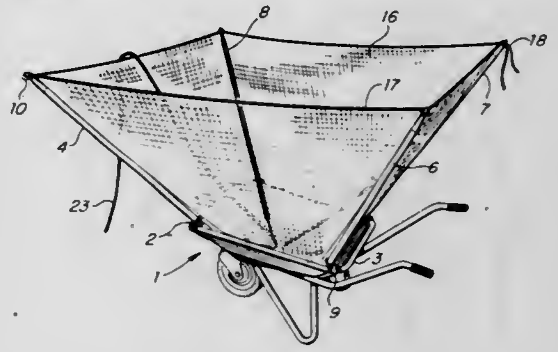
John A. O'Brien, 35 Longview Rd., Reading, Mass. 01867
Filed May 21, 1973, Ser. No. 362,543
Int. Cl. B60p *1/64*
U.S. Cl. 298—1 B 4 Claims

1. A vehicle particularly well adapted for transporting bulky items comprising:

a. a wheelbarrow having sloping side walls;

b. a superstructure positioned above said wheelbarrow and including a plurality of widely diverging elongated support members wherein lower portions of said elongated support members are affixed to the sloping walls of said wheelbarrow so that the longitudinal axis of said elongated support members are substantially parallel with said walls to thereby provide for the widely diverging orientation of said elongated support members;

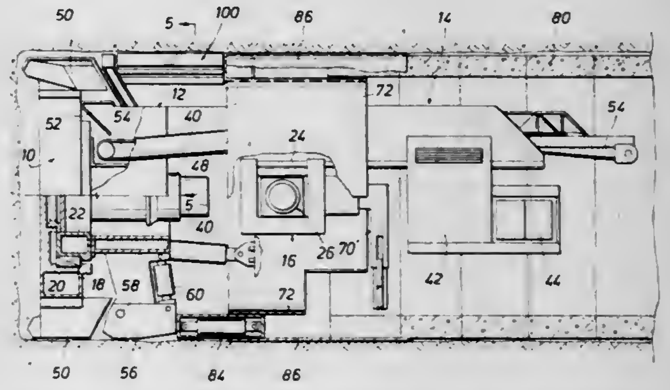
c. a net capable of being turned inside out, coupled to said superstructure, said net having a greater volumetric capacity at upper portions thereof relative to lower portions; and



d. an elongated pulling member coupled to said net for enabling said net to be readily turned inside out by pulling on said pulling member in spite of the presence of said bulky items therein.

3,870,368
TUNNELING SHIELD

Douglas F. Winberg, Issaquah, Wash., and Norman D. Dyer, Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed May 23, 1973, Ser. No. 363,035
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 12 Claims



1. A machine for boring a tunnel in a subterranean formation comprising:

a. a main beam assembly for longitudinal disposition within said tunnel;

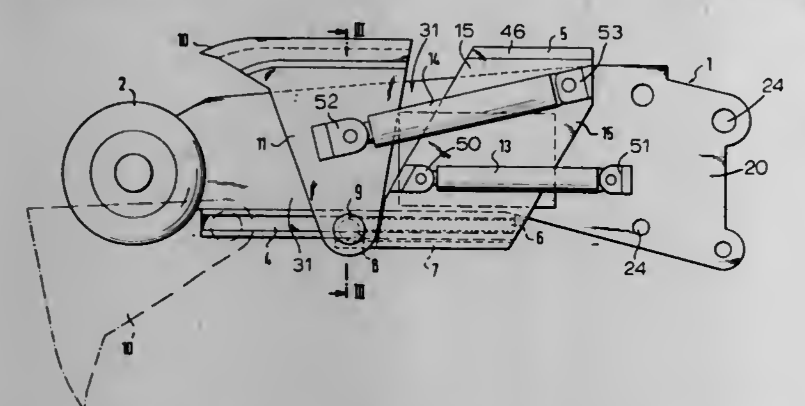
b. cutterhead support assembly connected to said main beam assembly;

c. a cutterhead assembly rotatably mounted on said cutterhead support assembly;

d. a gripper assembly slidably connected to said main beam assembly and engageable with the walls of said tunnel for advancing said main beam, cutterhead support and cutterhead assemblies longitudinally through said tunnel; and

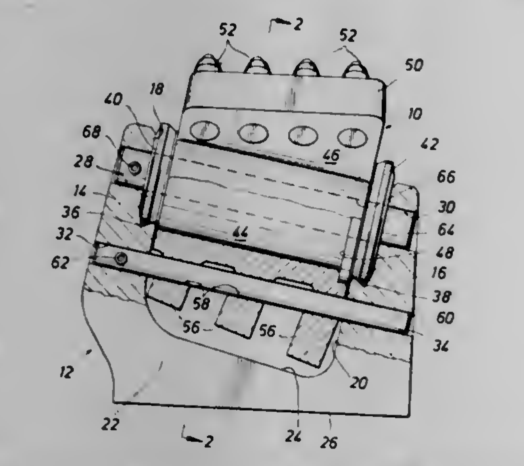
e. extendable and retractable shield means connected to said cutterhead support and gripper assemblies for shielding the area of said tunnel between said cutterhead support and gripper assemblies regardless of the relative longitudinal distance therebetween, said shield means comprising flexible joint means at each end thereof connecting said shield means to said cutterhead support and gripper assemblies.

3,870,369
DEVICE FOR USE WITH TUNNEL DRIVING MACHINES
Armin Lobbe, Bergk-Oberaden, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany
Filed Nov. 15, 1973, Ser. No. 416,333
Claims priority, application Germany, Nov. 15, 1972, 2256020
Int. Cl. E21c *25/52, 27/30*
U.S. Cl. 299—71 **24 Claims**



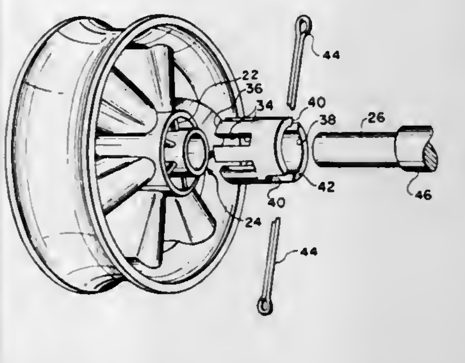
1. In or for a tunnel driving machine a device for detaching material from a working face, said device comprising:
a. a generally elongate body arranged for attachment at one end to said machine;
b. a first material cutting means disposed at the opposite end of said body;
c. a carriage;
d. means for guiding the carriage for movement along said elongate body;
e. a second selectively-operable material cutting means in the form of a tool;
f. side members supporting said tool and projecting on opposite sides of said elongate body; and
g. journals on said carriage for pivotally supporting said side members;
h. whereby material can be detached from said working face by said first cutting means or by said first and second cutting means working simultaneously.

3,870,370
UNIVERSAL SADDLE MOUNTING FOR FIXED AND ROLLING CUTTERS
Douglas F. Winberg, Issaquah, Wash., and Norman D. Dyer, Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 23, 1973, Ser. No. 353,539
Int. Cl. E21b *9/08;* **E01g** *3/04*
U.S. Cl. 299—91 **24 Claims**



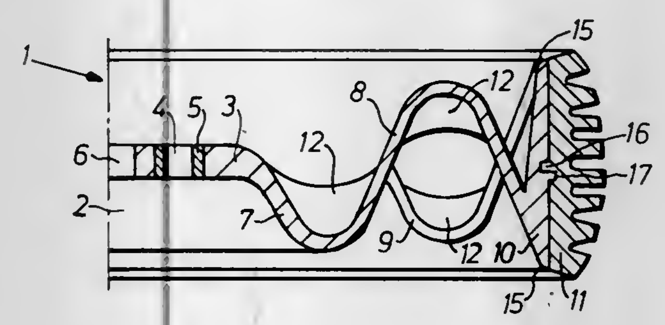
1. A rolling cutter assembly support and fixed cutter assembly combination comprising: a rolling cutter assembly support having a base portion adapted to be secured to a bit body, holding means on said support spaced from said base portion engageable with a non-rotating part of a rolling cutter assembly to rotatably support a cutting element of said rolling cutter assembly; and a non-rotating cutter assembly having a mounting part compatible with and mounted on said holding means and also having a cutting structure projecting from said holding means in a direction away from said base portion; a fixed surface on said cutter support and a fixing surface on said non-rotating cutter assembly engageable with said fixed surface to prevent said cutting structure from rotating relative to said support.

3,870,371
DRIVEN PLASTIC SMALL VEHICLE WHEEL
Milton Solomon, Schaumburg, Ill., assignor to Circle Engineering Co., Inc., Arlington Heights, Ill.
Filed Oct. 25, 1972, Ser. No. 300,468
Int. Cl. B60b *37/04*
U.S. Cl. 301—1 **23 Claims**



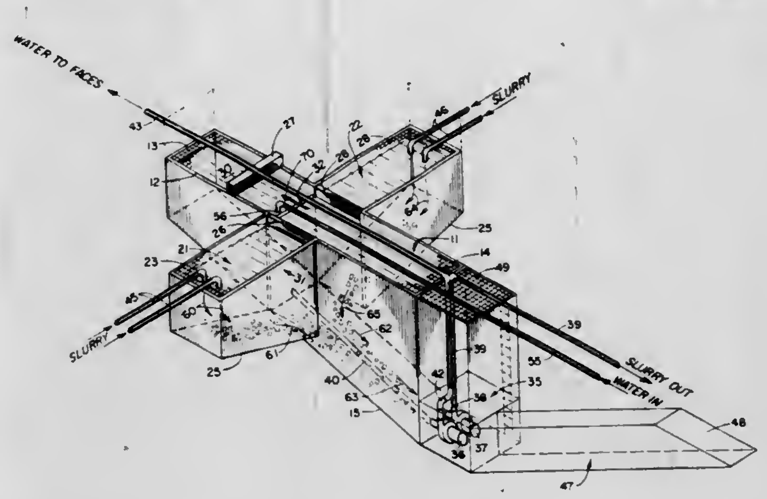
1. A vehicle wheel for mounting to a cylindrical shaft and driven thereby, said wheel comprising a rim, a cylindrical hub, connecting structure joining the rim to the hub, the hub having a cylindrical bore and radially extending rib means formed along a substantial portion of the axial length of the hub, hollow cylindrical bushing means constructed and arranged for securement in coupled condition with said hub and having first through slot means formed in one end face of said bushing means circumferentially spaced about the said end face and extending only part way along the circumferential wall of said bushing means and positively engageable with said rib means received in said first slot means and means coupling said shaft to said bushing whereby a driving connection is established through said hollow bushing between said wheel and shaft.

3,870,372
VEHICLE WHEEL
Ulrich Knipp, Schildgen-Nittum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 22, 1974, Ser. No. 472,009
Claims priority, application Germany, June 6, 1973, 2328794
Int. Cl. B60b *5/00*
U.S. Cl. 301—63 PW **13 Claims**



1. A plastic vehicle wheel comprising a dish, means for securing the dish to a hub, a concentric rim carried on the peripheral edge of the dish, webs leading from the dish to the rim, a tread secured to the rim ,said dish having a centrally disposed base, and between the base and rim, an intermediate web portion in the form of half a sinusoidal wave integral with the base and integral with a number of circumferentially spaced webs curved into the form of at least half a sinusoidal wave, said intermediate portion being integral with oppositely curved webs in the shape of at least half a sinusoidal wave, disposed in the spaces between the first said webs, both webs terminating in the rim.

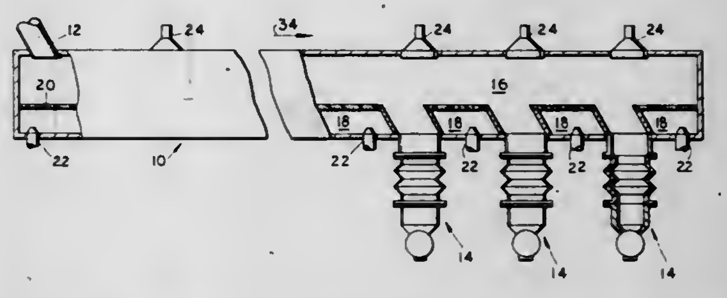
3,870,373
UNDERGROUND COAL SLURRY CONCENTRATING SUMP
Richard E. Doerr; David L. McCain, and Hilbert D. Dahl, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Apr. 15, 1974, Ser. No. 461,035
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **4 Claims**



1. An underground mine slurry sump for a plurality of slurry lines inside said mine;
said mine having at least a first tunnel and a second tunnel formed normal to said first tunnel, said sump comprising: a trench formed in said first tunnel and having first and second ends, a bottom tapering downward toward said second end and substantially vertical side walls;
second and third trenches formed in said second mine tunnel, the bottom of each said second and third trenches sloping downwardly into said first trench, said second and third trenches each having vertical side walls;
partition means formed at the intersection of the side walls of said first trench and the side walls of said second and third trenches to form a water storage chamber;
weir means formed through the top of said partition to permit excess water to decant from the deeper end of said first trench and from said second and third trenches by permitting water to flow into said water storage chamber; water pump means connected between said water storage chamber and a source of water for said slurry mine system;
slurry pump means connected through the bottom of said second end to the surface of said mine for removing concentrated slurry from said sump, slurry inlet means communicating with said second and third trenches.

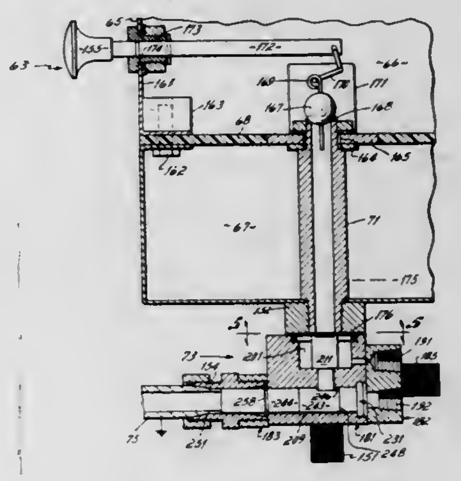
3,870,374
INTEGRAL IN-LINE DISCHARGE AIR GRAVITY CONVEYOR
Warren W. Wentzel, Jr., and Robert A. Harper, Jr., both of Pittsburgh, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 26, 1972, Ser. No. 301,068
Int. Cl. B65g *53/20*
U.S. Cl. 302—28 **4 Claims**

1. A system for fluidized transport and bulk delivery of finely divided particulate material comprising
an elongate particulate material transport conduit having a floor portion of gas permeable material,
means for introducing a diffused upwardly directed flow of gas through said floor portion into said transport conduit to fluidize the particulate contents thereof,
a plurality of bulk material discharge assemblies disposed in intersecting particulate material communication with the floor portion of said conduit at longitudinally spaced locations therealong and located intermediate the point of introduction of particulate material thereinto and a remote terminal end thereof, and
means located substantially above each of the discharge assemblies and adjacent the roof portion of said transport conduit for externally venting said fluidizing gas introduced through said floor portion thereof, and
each of said bulk discharge assemblies including,
a first inclined wall portion having its upper terminal end disposed coterminous with said floor portion and a second terminal end disposed a predetermined distance below the downstream thereof,
a second inclined wall portion having its upper terminal end disposed coterminous with said floor portion and in downstream spaced relation with the upper end of said first inclined wall portion and defining in said floor portin



a transversely disposed, unobstructed particulate material receiving aperture therebetween and extending substantially the full width of said floor portion, and having a second terminal end disposed in spaced relation with said second terminal end of said first inclined wall portion, said first and second inclined wall portions cooperatively defining an inclined bulk material transfer conduit downwardly dependent from the floor portion of said transport conduit,
and selectively controllable delivery means disposed in bulk particulate material communication with the dependent end of said transfer conduit for effecting bulk delivery of particulate material accumulated therein upon demand therefor, with bulk particulate material flowing within said transport conduit being transported over said transversely disposed aperture when the transfer conduit is filled with particulate material.

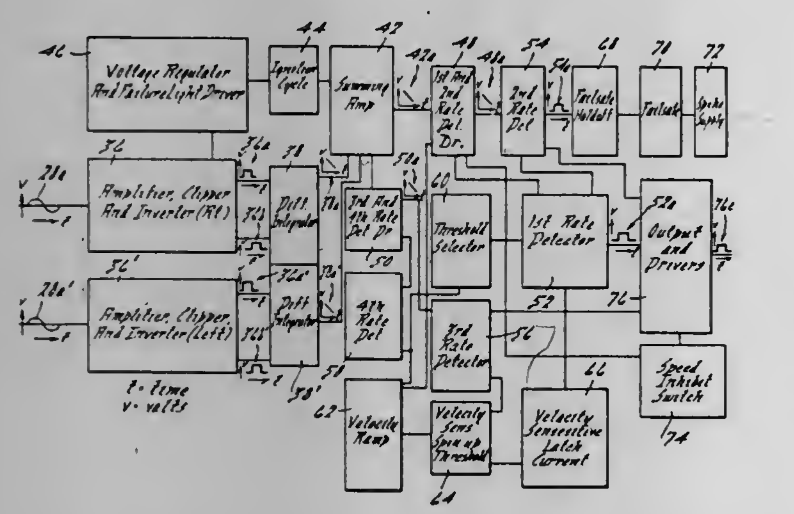
3,870,375
POWDER SPRAY SYSTEM
Lane S. Duncan, Elyria; Simon Z. Tamny, Lorain, and Charles H. Riedy, Lakewood, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Continuation-in-part of Ser. No. 194,830, Nov. 2, 1971, Pat. No. 3,746,254. This application June 5, 1972, Ser. No. 259,591
Int. Cl. B65g *53/40*
U.S. Cl. 302—42 **3 Claims**



1. A feeder for feeding a powder-air mixture comprising:

- a fluidizing bed including a fluidizing chamber, a generally horizontal porous floor for said chamber and means for directing air through said floor into said chamber to fluidize powder therein;
- a venturi pump having at least one small diameter air inlet opening into a large diameter expansion chamber, a powder inlet and an outlet;
- means connecting said powder inlet of said venturi pump to said fluidizing chamber of said fluidizing bed so as to enable said venturi pump to draw powder from said fluidizing bed into said expansion chamber of said pump,
- said connecting means comprises an elongated vertical passage having an inlet connected to the bottom of said fluidizing bed chamber and an outlet located vertically beneath said elongated passage inlet, said elongated passage outlet being connected to said powder inlet of said venturi pump for communicating powder from said bed to said venturi pump expansion chamber,
- said connecting means comprising an elongated vertical pipe, said inlet of said elongated vertical passage being located above and out of the horizontal plane of said generally horizontal porous floor,
- said elongated vertical pipe being horizontally spaced and separated from said generally horizontal porous floor by a non-porous portion of said floor.

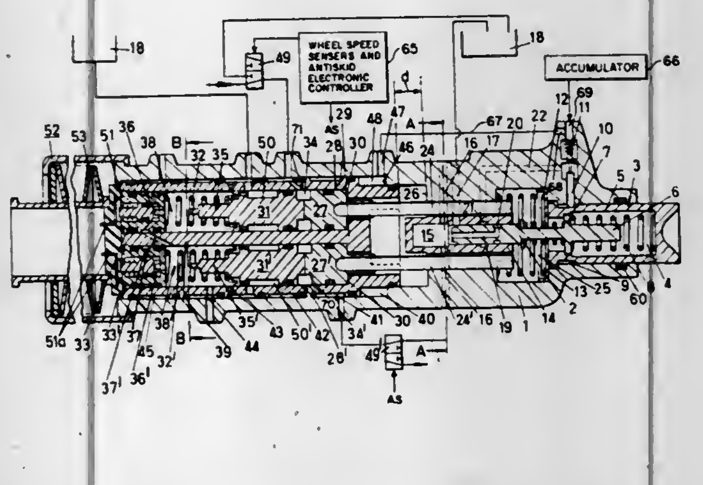
3,870,376
SKID CONTROL SYSTEM
Hugh E. Riordan, Wyckoff, N.J., assignor to Kelsey-Hayes Company, Romulus, Mich.
Continuation of Ser. No. 761,045, Sept. 20, 1968, abandoned. This application Oct. 28, 1971, Ser. No. 193,393
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 P **32 Claims**



1. In a skid control system for controlling fluid pressure actuated brakes of at least one wheel of a wheeled vehicle by controlling the fluid pressure to the brakes via a modulating valve actuated to one condition for relieving the fluid pressure from an original high pressure to a lower pressure and to another condition for applying the fluid pressure toward the original high pressure, the invention comprising:
- control circuit means for actuating the modulating valve to the one condition in response to a selected occurrence which is indicative of an incipient skid condition to allow said wheel to accelerate, said control circuit means comprising acceleration means responsive to acceleration of the wheel of a first high determinable magnitude which is substantially greater than zero following actuation of the modulating valve to the one condition for actuating the valve to the other condition, and further comprising velocity means for providing a velocity signal representative of the velocity of the vehicle and for varying said first determinable magnitude in response to variations in the magnitude of said velocity signal.

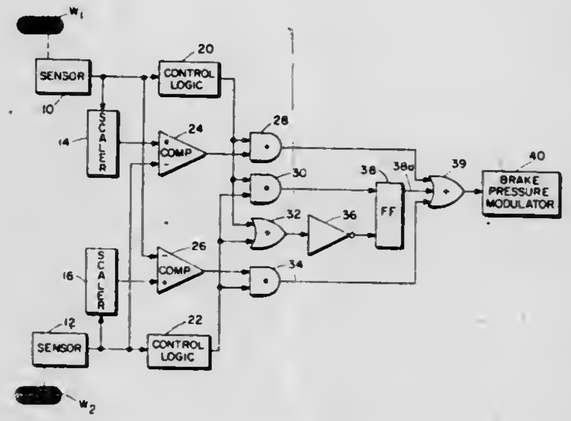
12. In a skid control system for controlling fluid pressure actuated brakes of at least one wheel of a wheeled vehicle on a surface, the method comprising the steps of: sensing the deceleration of the wheel and providing a signal for relieving the pressure for a predetermined time interval in response to a deceleration of a determinable magnitude, alternatively subsequently reapplying the pressure at the expiration of said preselected time interval whereby said preselected time interval is operative for lower coefficients of friction between the wheel and surface or subsequently reapplying the pressure in response to acceleration of the wheel of a second high determinable magnitude occurring prior to the expiration of said time interval.

3,870,377
BRAKE PRESSURE MODULATOR
Juan Belart, Walldorf; Werner Fink; Dieter Kircher, both of Frankfurt, and Hubertus Von Grunberg, Niederhochstadt, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed July 9, 1973, Ser. No. 377,476
Claims priority, application Germany, July 15, 1972, 2234862; Oct. 9, 1972, 2249352
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **36 Claims**



1. A combined brake pressure modulator and brake actuator arrangement for an antiskid control system comprising:
- a source of pressurized brake pressure medium;
- a brake pressure medium reservoir;
- a housing having a longitudinal axis;
- a first chamber within said housing coupled to said source to receive said pressurized medium upon actuation of a brake actuator, said first chamber supplying said pressurized medium to at least a first of a plurality of brake circuits;
- at least a first floating piston disposed in said housing spaced from said first chamber and parallel to said axis, said first floating piston having an actuating surface in transverse relation to said axis adjacent said first chamber, said first floating piston when actuated supplying braking pressure to at least a second of said plurality of brake circuits connected to said housing adjacent the surface of said first floating piston opposite and parallel to said actuating surface; and
- at least a first control valve external to said housing having a first operating position to connect said first chamber to said actuating surface to thereby actuate said first floating piston by said pressurized medium upon actuation of said brake actuator and a second operating position to connect said actuating surface to said reservoir, said first control valve responding to an antiskid control signal to switch between said first and second operating positions to control the motion of said first floating piston to enable modulation of said braking pressure in said second of said plurality of brake circuits to prevent wheel lock.

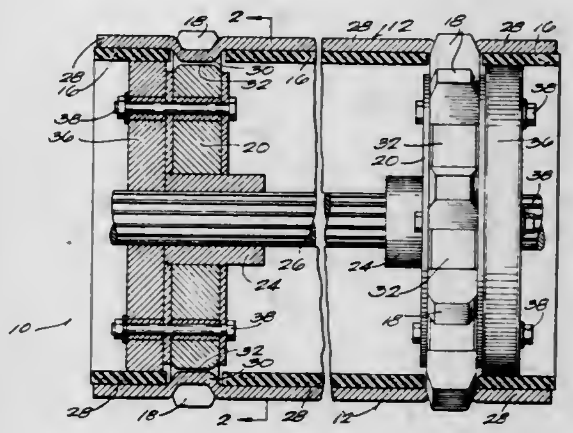
3,870,378
ADAPTIVE BRAKING SYSTEM CONTROL WHEEL SELECTION BY COEFFICIENT COMPARISON
Ralph W. Carp, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 27, 1973, Ser. No. 391,925
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 EB **3 Claims**



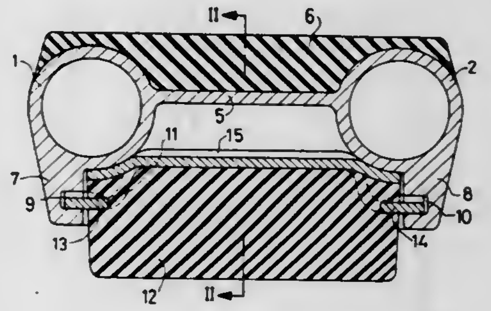
1. In a wheeled vehicle braked by braking force, an adaptive braking system having means for attenuating braking force in response to a first signal and for subsequently restoring braking force in response to a second signal comprising:
- first means for generating a signal related to the speed of a first vehicle wheel;
- second means for generating a signal related to the speed of a second vehicle wheel;
- control logic means for generating a first group of third and fourth signals in response to the signal generated by said first means and for generating a second group of third and fourth signals in response to the signal generated by said second means;
- means responsive to the simultaneous generation of third signals of said first and second groups of signals for generating said first signal and subsequently responsive to the simultaneous generation of said fourth signals of said first and second group of signals for generating said second signal;
- comparator means for generating a comparator output signal when the speed of one of said first and second vehicle wheels is without a predetermined relationship with the speed of the other of said first and second vehicle wheels; and,
- means responsive to said comparator output signal for applying only the group of third and fourth signals, of said first and second group, generated in response to the signal related to the speed of the faster rotating of said first and second vehicle wheels, to said means for attenuating braking force, the group of third and fourth signals so applied to said means for attenuating braking force thereby comprising said first and second signals respectively.

3,870,379
ENDLESS TRACTION ASSEMBLY
Guy D. Payne, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Dec. 11, 1972, Ser. No. 313,809
Int. Cl. B62d *65/24*; **B62m** *27/02*
U.S. Cl. 305—35 EB **10 Claims**

1. An endless traction assembly comprising a sprocket having a predetermined root diameter and uniformly spaced teeth extending from said root diameter, means for rotatably driving said sprocket, an endless track trained about said sprocket including two flexible belts positioned in spaced, parallel relation to each other, and a plurality of uniformly spaced and transversely extending traction bars mounted on the outer surface of said belts and each having at least one drive section with sprocket teeth engaging surfaces extending into the space between said belts for sequential engagement by said sprocket teeth, and being arranged with respect to said belts so that the line of engagement between said sprocket teeth and said sprocket engaging surfaces substantially coincides with the neutral axis of said track, a guide wheel having an outer diameter slightly greater than said root diameter, and means for fixing said guide wheel to one side of said sprocket for common rotation therewith and in concentric relation thereto said guide wheel and with said outer diameter engaging one of said belts so as to locate said track for driving engagement between said traction bars and said sprocket along the track neutral axis and for maintenance of a small clearance between said drive sections and said root diameter.



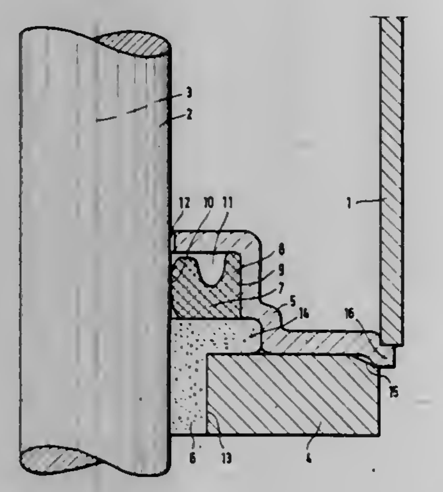
3,870,380
TRACK LINK UNIT
Otto Korner, Wermelskirchen, Germany, assignor to DIEHL, Nurnberg, Germany
Filed Feb. 15, 1974, Ser. No. 443,009
Claims priority, application Germany, Feb. 16, 1973, 2307633
Int. Cl. B62d *55/20*
U.S. Cl. 305—36 **5 Claims**



1. A track link unit which includes: a track link having lateral tubular members arranged in spaced relationship to each other, connecting means rigidly connecting said tubular members to each other, pad means connected to one and the same side of said tubular members, each of said tubular members having that side thereof which is opposite to and faces away from said pad means provided with a groove, said grooves facing each other, and a slip-on plate structure having a first resilient section with lateral portions resting against said lateral tubular members, said slip-on plate structure also having a second resilient section having its lateral end portions angled off from the major plane of said slip-on member toward the respective adjacent groove and resiliently engaging same.

3,870,381
GLAND ASSEMBLY

Franz Josef Overkott, Gevelsberg, Germany, assignor to Dr. Carl Ullrich Peddinghaus, Wuppertal-Barmen, Germany
Filed Mar. 12, 1973, Ser. No. 339,996
Claims priority, application Germany, Mar. 15, 1972, 2212471
Int. Cl. F16c *77/00*
U.S. Cl. 308—3.5 **1 Claim**



1. A gland assembly for a piston rod of a piston and cylinder unit comprising:

a guide bush having an axially extending portion and a radially extending flange;

a pair of annular retaining members;

an annular flexible seal element;

the exterior surface of said axially extending portion of said guide bush engaging the inner surface of one of said annular retaining members to locate said one retaining member;

the outer peripheral surface of said radially extending flange of the guide bush engaging a portion of the inner surface of the other retaining member;

the outer periphery of said other annular retaining member on the side thereof adjacent to said other annular retaining member is chamfered;

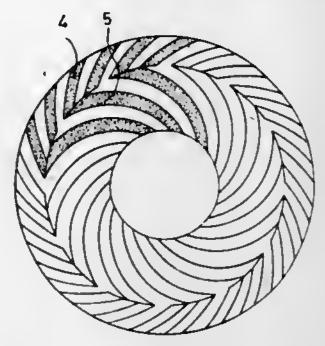
the outer edge of said other annular retaining member is cranked to engage on one side said chamfered part of said one retaining member and on the other side is adapted to be secured to the cylinder of said piston and said cylinder units; and

said other annular retaining member having a centrally disposed dished portion to define with said radially extending flange of the guide bush a recess in which said annular flexible seal element is located.

3,870,382
AXIAL BEARING

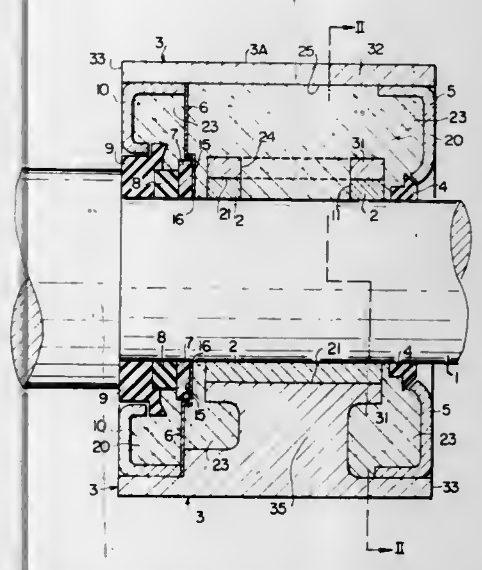
Jacobus Pieter Reinhoudt, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Aug. 7, 1973, Ser. No. 386,337
Claims prlority, application Netherlands, Sept. 29, 1972, 7213192
Int. Cl. F16c *39/04*
U.S. Cl. 308—9 **3 Claims**

1. An axial bearing of the type having two faces rotatable with respect to each other, a medium present in a gap between the two faces during operation of the bearing, and at least two groove patterns which, upon relative rotational movement of the faces, produce oppositely directed pressures in the medium, wherein the geometry of the groove patterns is such that, for a given direction of rotation, a first pattern produces a positive bearing force dependent on the gap height with a high stiffness, and a second pattern having grooves deeper than the grooves of the first pattern produces a negative bearing force with low stiffness, so arranged that a gap height exists at which the two bearing forces are equal and opposite, and the bearing has a high positive rigidity.



3,870,383
CASSETTE-TYPE BEARING UNIT

Nobukazu Morisaki, Aichi-ken, Japan, assignor to Daido Metal Company, Ltd., Kita-ku, Nagoya, Japan
Filed June 5, 1974, Ser. No. 476,608
Claims priority, application Japan, Oct. 3, 1973, 48-111296
Int. Cl. F16c *33/04*
U.S. Cl. 308—82 **7 Claims**



1. A cassette-type bearing unit comprising;

a bearing housing including an annular inner wall concentric with the axis and extending in the axial direction, an annular outer wall concentric with said inner wall, and ribs extending radially between said inner and outer walls and connecting said inner and outer walls together in the radial direction, and further including a shaft hole defined by the inner surface of said inner wall, recesses formed inwardly of the both axial ends of said outer wall and outwardly of the end edges of said ribs, through holes defined by said ribs and establishing axial communication between said two recesses at positions radially outwardly of said inner wall an oil hole extending from said through hole to said shaft hole;

a bushing-type plain bearing or a ball-and-roller bearing press fitted into said shaft hole to support together with said housing the load applied to the main shaft in the radial direction;

a thrust plate inserted into at least one of said recesses to support the thrust produced in the main shaft;

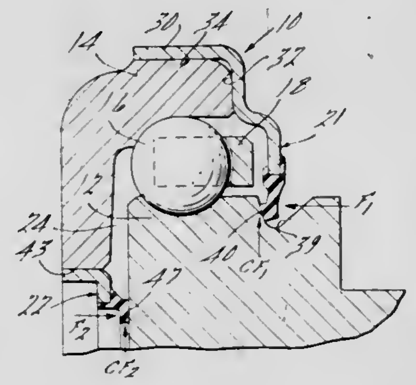
a thrust washer provided in at least one of said recesses to be in contact with said thrust plate and to be concentric with said shaft hole and adapted to support the thrust produced in the main shaft together with said thrust plate; first and second oil slingers having oil-throwing collars which are provided outwardly of the both ends of said bearing to be concentric with said bearing and adapted to prevent the outflow of lubricating oil running on the main shaft;

first and second end cups press fitted to the inner surface of the outer wall at the both axial ends of the housing;

and a fibrous member having oil affinity filled in said recesses and said through holes to hold lubricating oil and supply the lubricating oil to the bearing.

3,870,384
PRELOADING AND SEALING SYSTEM FOR CLUTCH BEARINGS

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Continuation of Ser. No. 289,580, Sept. 15, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 432,232
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **17 Claims**



1. A clutch release bearing assembly comprising,

a first annular race member having means defining a first raceway thereon,

said first raceway being generally semi-circular in cross-section,

a second annular race member having means defining a second raceway thereon,

said second raceway being generally semi-circular in cross-section,

a plurality of generally spherical anti-friction bearing elements interposed between said first and second raceways,

a first seal means of generally circular shape extending from said first race member and making a first sealing force contact with a surface portion on said second race member,

a second seal means of generally circular shape extending from said first race member and making a second sealing force contact with another surface portion on said second race member,

said first sealing force being greater in magnitude than said second sealing force contact thus causing relative axial movement between the first and second raceways to preload the assembly.

3,870,385
INTERCONNECTING SYSTEMS AND DEVICES USING CONDUCTIVE ELASTOMER PELLETS IN PLANAR COMPONENT SUPPORTING STRUCTURES AND IN ELECTRONIC CIRCUIT CONNECTORS

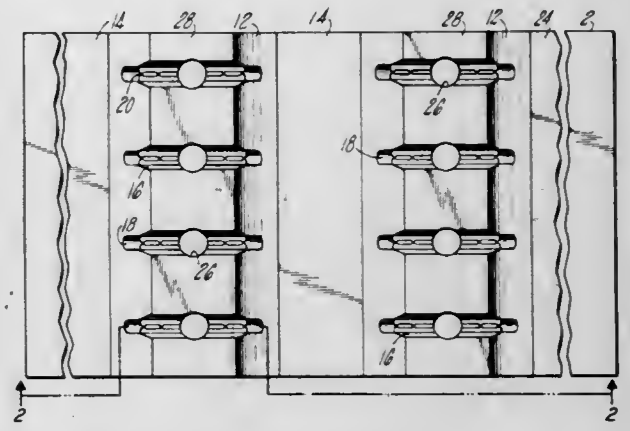
Emik Avakian, 92 Juana St., Crestwood, N.Y. 10707, and David Laizerovich, Manchester, Conn., assignors to said Avakian, by said Laizerovich
Filed Sept. 10, 1973, Ser. No. 395,393
Int. Cl. H01r *9/00;* **H05k** *1/02*
U.S. Cl. 339—48 **18 Claims**

1. An interconnecting device for electronic circuitry including:

a matrix having top and bottom surfaces;

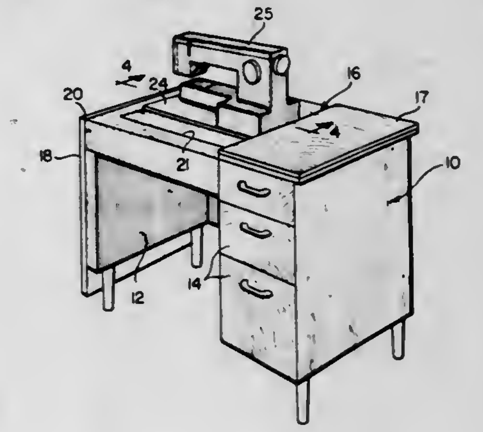
a plurality of spaced parallel ridges in the top surface to define grooves therebetween;

a plurality of spaced notches in each ridge to define effectively aligned pyramids between the notches, each notch having a horizontal passage at the base thereof, each notch being less deep than the height of the ridges; and a plurality of slugs of a conductive material positioned in vertical recesses extending upwardly from the bottom surface of the board in vertical alignment with the notches, the ridges having vertical openings from the top communicating with the slugs and connecting with the notches the slugs terminating below the base of the notch, the slugs being penetrable by a wire or pin inserted therein and, making contact therewith.



3,870,386
RETRACTION MECHANISM AND SEWING MACHINE CABINET

Don W. Shepherd, Glenview, Ill., assignor to A. C. Weber & Co., Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 271,688, July 14, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 393,910
Int. Cl. A47b *81/00*
U.S. Cl. 312—30 **13 Claims**



1. A sewing machine cabinet adaptable for use with both a flat bed type sewing machine and a free arm type sewing machine, comprising in combination,

a cabinet having a pair of side walls, a back wall, and a front which is at least partially open, and a top wall having a cutout therein,

a storage well positioned below said cutout portion, access to said storage well being through said cutout portion,

the cutout portion having a front leading edge and a rear bounding edge, the rear bounding edge providing a mounting spot for a sewing machine assembly to be pivotally secured thereto, upon said mounting spots,

a bib pivotally secured to said fron leading edge of said cutout portion, said bib having an arcuate path of travel bounded at the lower portion of the arc by the top surface of said cabinet and having an arcuately upward oath of travel limited only by the top wall of said cabinet,

said bib further including support engaging means extending along the length thereof,

support means removably associated with said bib, said support means being engageable with said bib support engaging means in order to provide a support shelf for use in conjunction with a flat bed sewing machine and being removably therefrom to accommodate the support of a free arm type sewing machine,

whereby the provision of a cabinet having a storage well and a pivotally secured bib mounted on the cutout portion, and having support means associated therewith, the support means being removably engageable with respect to said bib, renders the sewing machine cabinet useful for both flat bed type sewing machines and free arm type sewing machines.

3,870,387

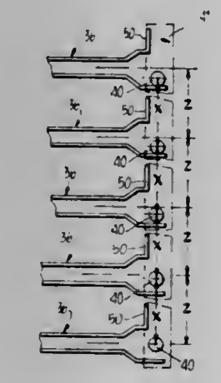
FILE DRAWER INTERLOCK MECHANISM

Merle H. Mortashed, Union City, Calif., assignor to Harbor Universal, Inc., San Leandro, Calif.

Filed Mar. 27, 1974, Ser. No. 455,164

Int. Cl. E05b *65/46*

U.S. Cl. 312—218 **10 Claims**



1. In a cabinet having a plurality of slideable units mounting at first spaced intervals, an interlock device for preventing the opening of more than one unit, said interlock device comprising:

an interlock bar slideably secured to said cabinet in a generally vertical position;

a plurality of interlock members rotatably attached to said bar at second spaced intervals different from said first spaced intervals said first and second spaced intervals extending in a direction substantially normal to the sliding direction of said units and

a corresponding plurality of interlock channels secured to different ones of said units at said first spaced intervals in selective misalignment with said interlock members, said interlock channels having camming portions arranged in cooperative relationship with said interlock members so that the opening of a single unit forceably aligns the corresponding interlock member and channel and causes mis-alignment of the remaining interlock members and channels.

3,870,388

SELF-LOCKING CORNER JOINT FOR THE WALLS OF CUPBOARD-LIKE STRUCTURES

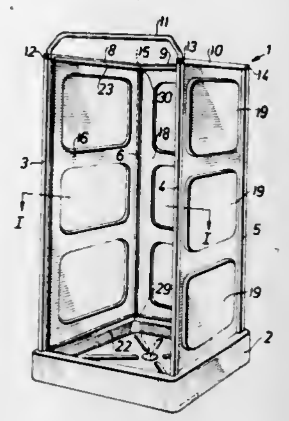
Stig Tore Johannes Lofgren, Taby, Sweden, assignor to Innovare I Taby Aktiebolag, Taby, Sweden

Filed Mar. 12, 1973, Ser. No. 340,306

Int. Cl. A47b *43/00*

U.S. Cl. 312—257 A **8 Claims**

1. A self-locking corner joint for structures such as cupboards, cabinets and the like comprising a frame structure having at least two substantially parallel rigid posts, a rear wall and two side walls fitted to said frame structure, each of said side walls having an edge section partially embracing one of said rigid posts on the surfaces of the latter facing the interior of the frame, each of said edge sections of said side walls having means defining a groove, said rear wall having edge sections provided with a flange, said flanges being received in and abutting the bottom of the respective groove in said edge sections of said side walls, said rigid posts and said side walls being consructed and arranged such that the distance between the bottoms of the grooves in said edge sections of said side walls when the latter are in their assembled position is less than the distance between the edges of said flanges on said rear wall when the latter is in its natural and unassembled state, said rear wall being made of a resiliently yieldable material such that the flanges of said rear wall abut the bottoms of the respective grooves in the edge sections of said side walls under resilient yielding of said rear wall when the latter and said side walls are in their assembled position in the frame, said rear wall being bowed slightly when the edges of said flanges are accomodated in the bottoms of said grooves to thereby continuously apply a biasing force urging said edge sections of said side walls against the respective rigid posts of said frame and thereby obviating the requirement for any additional holding elements for securing the corner joint.



3,870,389

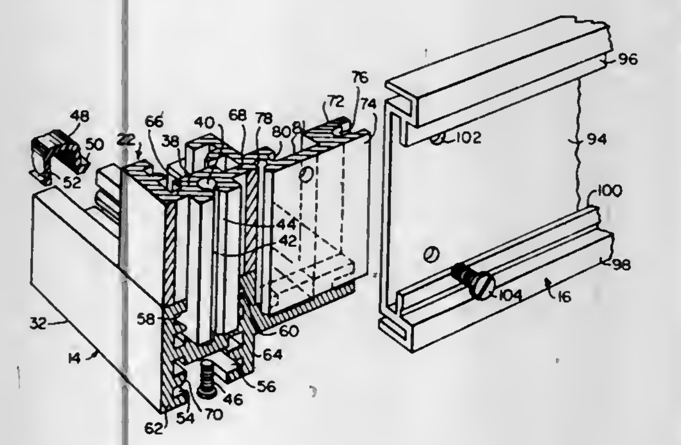
FILING CABINET CONSTRUCTION

Oliver P. Killam, 269 Pleasant St., Marblehead, Mass. 01945

Filed July 9, 1973, Ser. No. 377,257

Int. Cl. A47b *43/00, 47/00;* **F16b** *12/00*

U.S. Cl. 312—257 R **7 Claims**



1. A cabinet for drawers and the like, comprising

a. elongated first frame members connected to one another to define a rectangular front frame section and a rectangular rear frame section,

b. at least one first frame member mounted vertically between the top and bottom first frame members of said front section, and between the side frame members thereof,

c. at least one elongated second frame member mounted to said rear frame section parallel to said one first frame member,

d. cooperating pairs of elongated coplanar third frame members horizontally connecting said front and rear frame sections,

e. said first frame member having a body portion formed with channels along two sides thereof, a flange along a third side thereof and a central core formed with a longitudinal passage adapted to threadably engage screws driven perpendicularly through the core of a perpendicularly adjacent first frame member, the sides of said channel being formed with oppositely facing longitudinal grooves,

f. said second frame member being substantially T-shaped in cross-section including a cross-piece serving as a drawer stop and a center leg extending between and supporting adjacent third frame members and formed with an elongated passage to threadably engage screws driven through the flange of mutually perpendicular first frame member of said rear frame section,

g. said third frame member being formed with a longitudinal flange adapted to slidably support a drawer mounted between each cooperating pair of third frame members,

h. an elongated facia piece formed with outwardly extending longitudinal parallel lips slidably mounted in the grooves of at least one of said channels and having a raised center portion extending outwardly beyond the channel portion to slidably support a drawer thereon, and,

i. a rectangular drawer slidably mounted between each pair of said third frame members.

3,870,390

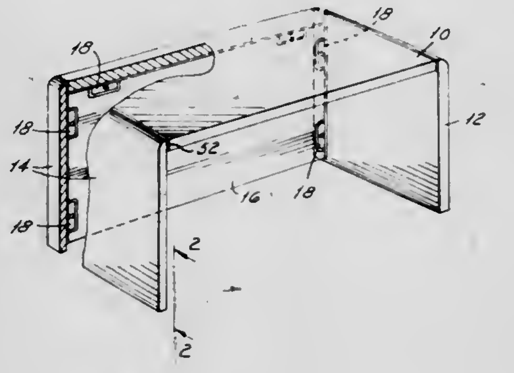
FURNITURE CONSTRUCTION

Frederick H. Herrmann, 3015 Lakehaven Ct., Ann Arbor, Mich. 48105

Filed July 23, 1973, Ser. No. 381,855

Int. Cl. A47b *47/00*

U.S. Cl. 312—263 **2 Claims**



1. In a furniture assembly comprising a plurality of panels to be joined, one normal to the other, that improvement which comprises:

a. a first panel having a plurality of short recesses opening to a converging side and edge thereof,

b. a receptacle bar secured in each of said recesses, each receptacle bar comprising a base plate to lie against the base of a recess, end plates normal to said base plate to extend to a terminal surface at the edge of the said first panel, and a ledge block extending from said base between said end plates having a bearing surface extending lengthwise between said end plates parallel to said base and lying in a plane disposed at a predetermined acute angle to said base, said block terminating at a face a predetermined distance away from said base and spaced within the terminal surfaces of said end plates,

c. a second panel having side walls and edge walls,

d. a support bar projecting from a wall of said second panel having a bar base plate secured to said second panel parallel to an edge wall thereof to fit within free space between the ends of said receptacle bar and a lodging block extending in cross-section outwardly from said bar base plate and longitudinally along said base plate having one bearing surface lying in a plane disposed at said same predetermined acute angle to said bar base plate, and

e. means transfixing said bars serving to secure said bars together with said bearing surfaces in complemental juxtaposition to hold said panels in tight engagement.

3,870,391

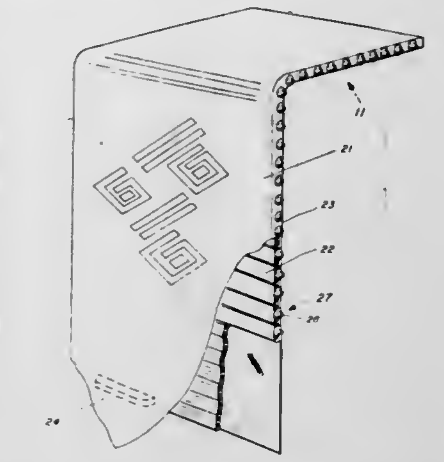
CABINET DOOR STRUCTURE

Vernon J. Nims, 2124 West Pine St., Orlando, Fla. 32805

Filed Aug. 20, 1973, Ser. No. 390,004

Int. Cl. E06b *9/08*

U.S. Cl. 312—297 **9 Claims**



1. A cabinet door structure comprising in combination:

a. a cabinet structure having an opening therein for a door;

b. a pair of guide channels attached to said cabinet structure for guiding a door therein and having curved portions;

c. a plurality of slats adapted to follow said guide channels to form a flexible door frame to cover said opening in said cabinet structure;

d. flexible backing material attached to said slats to hold said slats together in a flexible manner in spaced relationship to each other; and

e. flexible and stretchable front door covering material removably attached over the front of said slats held together by said flexible backing material and over spaces between said slats to form a decorative front for said flexible door frame whereby said door structure can slide in said pair of guide chambers to cover and uncover the opening in said cabinet structure.

3,870,392

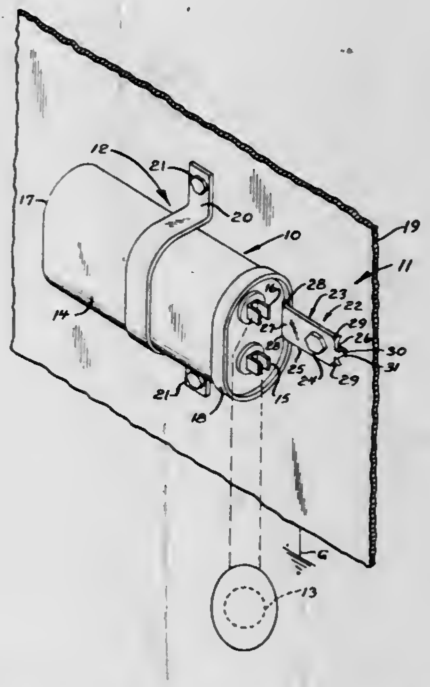
GROUNDING MOUNTING MEANS

Ralph W. Bond, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 14, 1973, Ser. No. 415,550

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 R **14 Claims**



1. In an appliance such as an air conditioner, structure for mounting a capacitor in grounded association with a metal

wall provided with an insulating covering, the capacitor having a metal housing provided with a projecting metal portion having an insulating covering, said structure comprising:

means embracing the capacitor housing for retaining the capacitor to said wall;

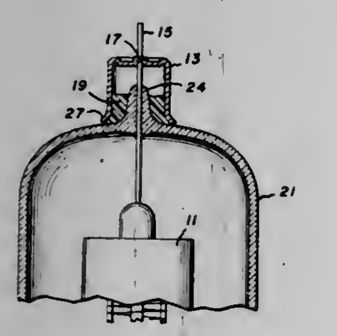
a metal grounding clip having a first tooth portion engaging said capacitor housing projecting portion and a second tooth portion engaging said wall; and

means for urging said first tooth portion of the clip through said insulating covering of said capacitor housing projecting portion into electrical conductive association with said capacitor metal housing projecting portion and urging said second tooth portion of the clip through said wall insulating covering into electrically conductive association with said metal wall.

3,870,393
CORONA-FREE TOP CAP TERMINAL ASSEMBLY FOR ELECTRON DISCHARGE DEVICES

Robert L. Hill, Owensboro, Ky., and Othmar E. Ringeman, St. Meinrod, Ind., assignors to General Electric Company, Owensboro, Ky.

Filed Feb. 11, 1974, Ser. No. 441,053
Int. Cl. H01j *5/06*
U.S. Cl. 339—144 T **5 Claims**



1. An electron discharge tube comprising:

a. an evacuated envelope having a top wall portion with an external protuberance thereon;

b. at least one electrode sealed within said envelope;

c. a lead wire extending from said electrode, said wire passing through and sealed in said protuberance;

d. a cup-shaped top cap terminal disposed over said protuberance with the rim of said top cap disposed adjacent an outer surface of said top wall portion, and said top cap electrically connected to said lead; and

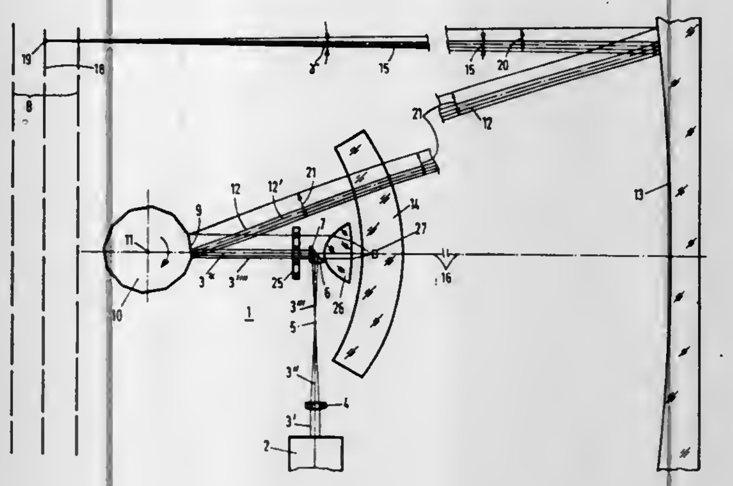
e. an electrically conductive cement disposed between said top cap, said protuberance, and said surface providing an electrically conductive path between said top cap rim and said surface and bonding said top cap to said protuberance and said top wall portion.

3,870,394
OPTICAL SCANNER MECHANISM

Johann Ploeckl, Unterhaching, Germany, assignor to Zellweger AG, Uster, Switzerland

Filed July 20, 1973, Ser. No. 381,364
Claims priority, application Switzerland, Aug. 10, 1972, 11881/72
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **12 Claims**

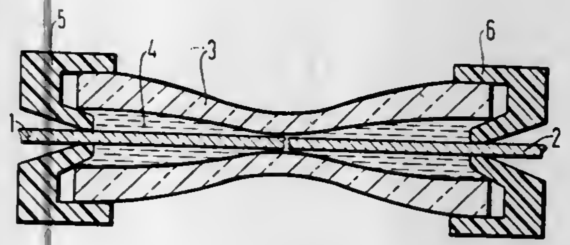
1. An optical scanner mechanism, especially for optically discernible characters associated with or applied to articles, comprising a light source for generating a scanning light beam, guide means for determining a scanning region, a beam deflection mechanism including a movable component having a central axis and serving for transmitting the scanning light beam to said scanning region determined by said guide means, said movable component of said beam deflection mechanism incorporating reflecting surface means, optical means for directing the bundle of light rays emanating from the light source against the reflecting surface means of said beam deflection mechanism, a concave mirror, a substantially torus-shaped meniscus lens arranged between said beam deflection mechanism and said concave mirror for reducing the effects of possible non-parallelism of said reflecting surface means of the movable component with respect to its central axis, the scanning light beam which is reflected by the reflecting surface means of said beam deflection mechanism being directed by said torus-shaped meniscus lens member against the concave mirror, said concave mirror focusing said scanning light beam reflected by the concave mirror at said scanning region determined by the guide means.



3,870,395
CONNECTING PLUG FOR OPTICAL GLASS FIBERS

Dieter Schicketanz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 5, 1973, Ser. No. 376,345
Claims priority, application Germany, July 10, 1972, 2233916
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 C **4 Claims**



1. A reusable connecting plug for connecting two optical glass fibers in light transmitting relationship, said fibers each having a central core surrounded by a casing, said core having a higher index of refraction than said casing, said plus comprising a rigid capillary tube having an inner diameter slightly greater than the outer diameter of the fibers to be connected, the inner diameter of said tube increasing gradually towards the ends thereof, said tube being adapted to receive two glass fibers inserted into opposite ends thereof, said fibers adapted to contact each other at the reduced portion of said tube, said capillary tube having an index of refraction equal to that of said casing.

3,870,396
OPTICAL COUPLER

Jerome G. Racki, and Frank L. Thiel, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,579
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **18 Claims**

1. A light coupler for use in an optical communication system including first and second sections of optical signal transmission line, said coupler comprising

a first transparent member having first and second opposed, nonparallel planar surfaces and a third planar surface intersecting said second planar surface and making an acute angle therewith,

a second transparent member having first and second opposed, nonparallel planar surfaces and a third planar surface intersecting said second surface and making an acute angle therewith, at least a portion of said second surface of said second member being parallel to and slightly spaced from said second surface of said first member,

a first sheet of transparent material disposed between said first and second members, the refractive index of said sheet being less than those of said members, said sheet being disposed adjacent to at least a portion of said second surface of said first member and being disposed adjacent to less than the entire second surface of said second member,

a layer of transparent material disposed adjacent to that portion of said second surface of said second member that is not adjacent to said first sheet, the refractive index of said layer being lower than that of said first sheet,

first coupling means disposed adjacent to said first surface of said first member for coupling an optical signal from said first section of optical signal transmission line into said first member, the longitudinal axis of said first section of transmission line making an angle other than 90° with said second surface of said first member,

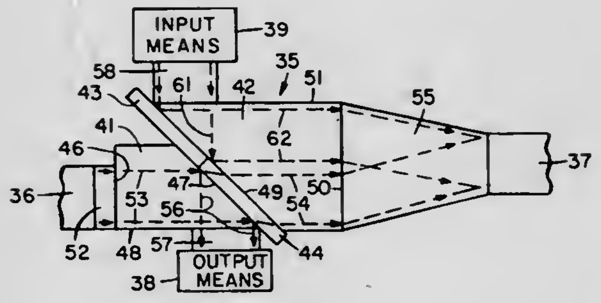
output means for receiving that light which reflects from the interface between said first member and said first sheet, second coupling means disposed adjacent to said third surface of said first member for coupling light between said first member and said output means,

input means for providing an input optical signal,

third coupling means for coupling said input optical signal into said third surface of said second member at such an angle that said input optical signal is substantially totally reflected from the interface between said layer and said second member,

fourth coupling means disposed adjacent to said first surface of said second member for combining said input optical signal and the unreflected portion of the optical signal from said first member and coupling the resultant optical signal into said second section of optical signal transmission line, and

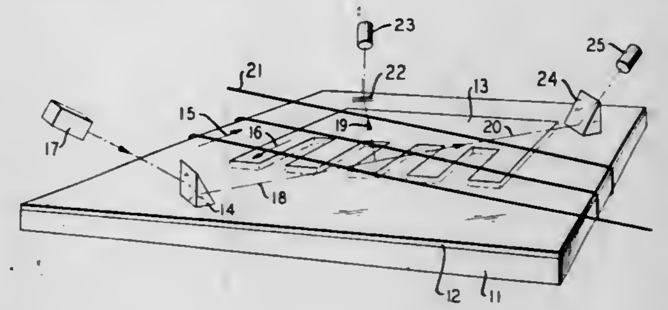
means for replacing said first sheet with a second sheet having a refractive index which is different from said first sheet and which is less than the refractive indices of said members.



3,870,397
THIN FILM MAGNETO-OPTIC SWITCH

Joseph Francis Dillon, Jr.; Ernst Michael Gyorgy Madison, and Legrand Gerard Van Uitert, all of Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 13, 1973, Ser. No. 415,369
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **17 Claims**

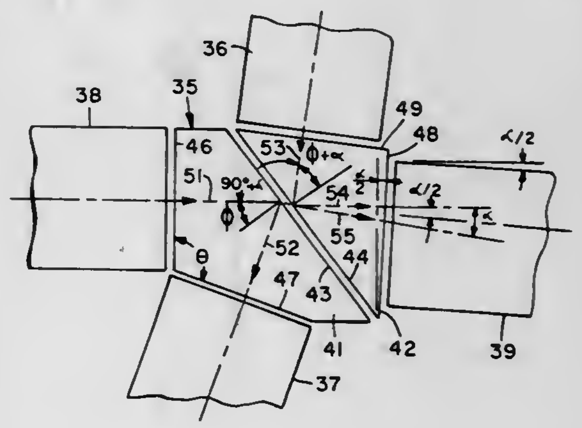


1. Device comprising a thin magnetic film transparent to electromagnetic radiation propagating in the plane of the film, means for inserting electromagnetic radiation into the film, means for extracting energy corresponding to radiation traveling in the plane of the film, means for magnetically biasing the film characterized in that said device has a pattern defined by a region of a composition different from the composition of the area surrounding the region and whose coercivity is different from that of the area surrounding said regions, said difference in coercivity being due to said different composition and allowing said regions to be switched selectively by means of an external magnetic field between at least two magnetic states, in at least one of said states the regions being magnetically saturated and in at least one of said states their magnetization having a component in the direction of propagation of said electromagnetic radiation, said electromagnetic radiation being caused to follow a path which differs in accordance with said magnetic state of said regions.

3,870,398
PASSIVE COUPLER FOR OPTICAL COMMUNICATION SYSTEM

Roy E. Love, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,574
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 C **10 Claims**



1. A light coupler for use in an optical communication system including first and second optical signal transmission lines, each of which comprises at least one optical waveguide having an acceptance half angle β, each of said transmission lines having an end portion which terminates in an endface that is substantially perpendicular to the axis of said end portion, the axes of said end portions being substantially disposed in a reference plane, said first transmission line being adapted to provide a first optical signal, said light coupler comprising first and second transparent members, each of which has at

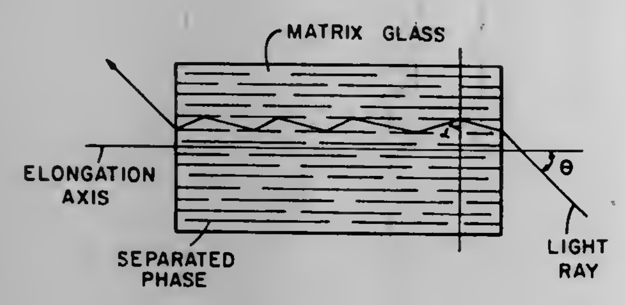
least first, second and third planar surfaces which lie in planes that are perpendicular to said reference plane, said first surface of said second member being parallel to and slightly spaced from said first surface of said first member, said second surface of said first member being disposed in light-receiving relationship with respect to the first optical signal radiating from said endface of said first transmission line, the angle between the axis of said first transmission line and the local perpendicular to said first surface of said first member being ϕ, the angle between said second and third surfaces of said first member being 180°−2ϕ, said endface of said second transmission line being disposed in light-receiving relationship with respect to said second surface of said second member, said second surface of said second member being substantially perpendicular to the axis of said second transmission line, the angle between the axes of said first and second transmission lines being $\alpha/2$, where α is an angle greater than 0° but no greater than the angle β,

a layer of air disposed between said first surfaces of said first and second members,

means for directing a second optical signal onto said third surface of said second member, said second optical signal being directed toward said first surface of said second member at an angle $\phi + \alpha$ with respect to the local perpendicular at said first surface of said second member, the angle $\phi + \alpha$ being greater than the critical angle of the interface between said second member and air, and

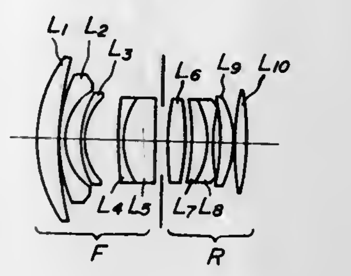
output means for receiving that portion of said first optical signal which reflects from said first surface of said first member, the remaining portion of said first optical signal being transmitted across said layer of air and into said second member.

3,870,399
PSEUDO-FIBER OPTIC DEVICES
Lyman J. Randall, and Thomas P. Seward, III, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Nov. 28, 1973, Ser. No. 419,594
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 B **6 Claims**



1. A pseudo-fiber optic device consisting of a phase-separated glass article comprising a continuous glass light-transmitting phase in the form of a matrix and an internal discontinuous light-reflecting phase in the form of elongated particles uniformly dispersed throughout the matrix, oriented essentially parallel with respect to one another in the direction of elongation, said particles having an index of refraction less than that of the glass light-transmitting phase and aspect ratios of at least about 5:1.

3,870,400
WIDE-ANGLE LENS SYSTEM WITH MOVABLE LENS FOR CORRECTING SHORT DISTANCE PHOTOGRAPHIC FACULTY ARRANGED NEAR DIAPHRAGM
Nobuo Yamashita, and Toru Fujii, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Filed May 7, 1973, Ser. No. 358,122
Claims priority, application Japan, May 10, 1972, 47-46085
Int. Cl. G02b *9/64*
U.S. Cl. 350—214 **4 Claims**

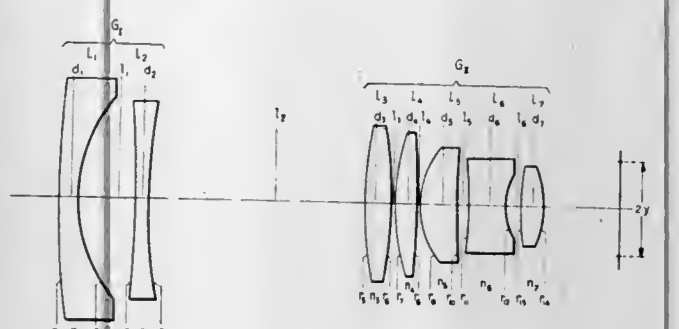


3. A wide-angle lens system comprising a front lens group F and a rear lens group R separated by a diaphragm space, said wide-angle lens system effecting focussing by movement of the whole lens system, said rear lens group R including a movable lens arranged near said diaphragm and adapted for correcting the short distance photographic faculty, said movable lens consisting of a lens adapted to be moved along an optical axis when said whole lens system is focussed to the short distance, said movable lens being a positive lens adapted to be moved in response to the change of its distance from an object toward said diaphragm, and the conditions

$$0.6 < |f_m/f| < 3.5 \text{ and}$$
$$|f_{FB}| < 1.0\,|f_F|$$

are satisfied where f_m is the focal length of said movable lens, f is the overall focal length of the total lens system, f_F is the focal length of the front lens group F followed by the movable lens and f_{FB} is the back focal length of the front lens group F followed by the movable lens.

3,870,401
INVERTED TELEPHOTO-TYPE LENS
Trude Muszumanski, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria
Continuation-in-part of Ser. No. 130,582, April 2, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,884
Claims priority, application Austria, Apr. 8, 1970, 3237/70
Int. Cl. G02b *9/64*, *9/04*
U.S. Cl. 350—214 **8 Claims**



1. An inverted telephoto-type lens having far and near conjugate foci and comprising

a negative forward lens element group disposed at that end of the lens which faces said far conjugate focus, and

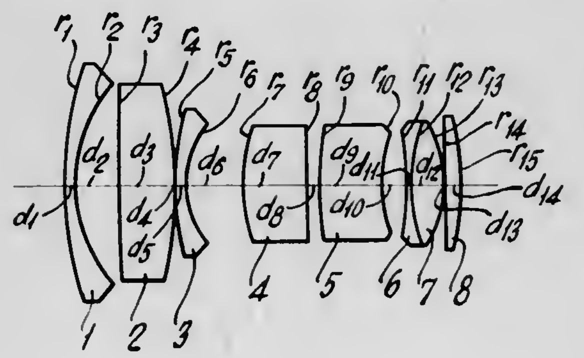
a positive rear lens element group disposed at that end of the lens which faces said near conjugate focus and separated from said forward lens element group by a substantial air gap,

said forward lens element group consisting of a first negative lens component and a biconcave second lens component, said biconcave lens component has a rear surface adjoining said air gap and a forward surface remote from said air gap,

said forward and rear surfaces having radii of curvature r_3 and r_4, respectively, which meet the condition:

$2r_4 < r_3 < 4r_4$.

3,870,402
WIDE, ANGLE, HIGH APERTURE RATIO, LONG BACK FOCUS LENS SYSTEM
Yasuo Takahashi, Tokyo, and Sadao Okudaira, Saitama-ken, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 17, 1973, Ser. No. 380,050
Claims priority, application Japan, July 25, 1972, 47-74426
Int. Cl. G02b *1/00*, *9/00*
U.S. Cl. 350—214 **3 Claims**



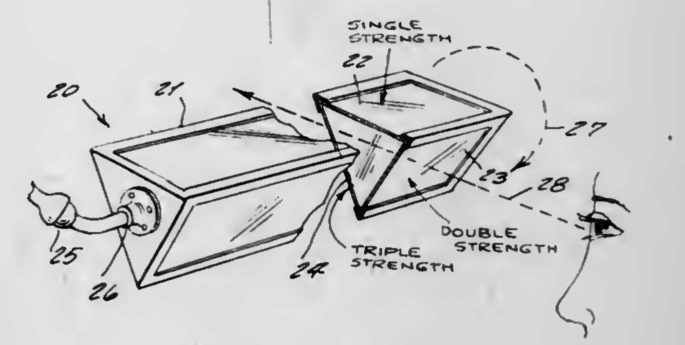
1. A wide angle, high aperture ratio, long back focus lens system comprising eight successively designated lens elements in which the sixth and seventh lens elements are joined at their confronting faces to form a doublet, the lens system having the following dimensions and relationships, the lens faces being successively designated from the first to the fifteenth faces with the confronting faces of the sixth and seventh lenses defining a singly designated lens face:

r_1	231.5	d_1	8.0	n_1/v	1.64000/60.2
r_2	95.8	d_2	26.9		
r_3	974.8	d_3	34.5	n_2/v_2	1.80610/40.8
r_4	−330.0	d_4	0.4		
r_5	202.8	d_5	8.5	n_3/v_3	1.62041/60.3
r_6	60.2	d_6	36.4		
r_7	118.9	d_7	41.7	n_4/v_4	1.81554/44.5
r_8	7148.9	d_8	8.8		
r_9	270.2	d_9	38.1	n_5/v_5	1.80518/25.4
r_{10}	109.6	d_{10}	15.5		
r_{11}	−382.9	d_{11}	4.2	n_6/v_6	1.80518/25.4
r_{12}	122.3	d_{12}	19.1	n_7/v_7	1.80300/46.7
r_{13}	−103.9	d_{13}	0.4		
r_{14}	888.1	d_{14}	10.3	n_8/v_8	1.80300/46.7
r_{15}	−249.0				

wherein r_j is the radius of curvature of the jth lens face, d_k is the distance between the jth lens face and the next successive lens face, n_i is the refractive index and ν_i is the Abbe number of the ith lens.

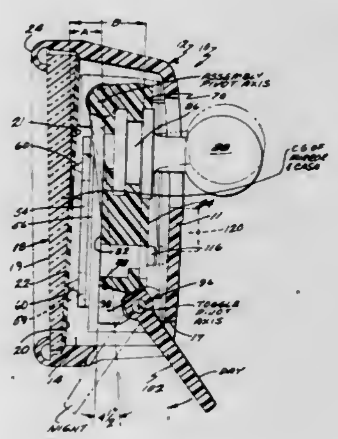
3,870,403
ADJUSTABLE DENSITY ANTI-GLARE VISOR FOR VEHICLES
John H. Ward, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed June 25, 1973, Ser. No. 372,988
Int. Cl. G02b *5/22*; B60j *3/04*
U.S. Cl. 350—276 **3 Claims**

1. A transparent visor for reducing variably glare on the eyes of a vehicle driver, comprising a frame having a polygonal transverse and an extended longitudinal cross-section dimension with external sides in the longitudinal dimension having tinted transparent windows therein to reduce glare effect of light passing through said windows, each window being disposed at an angle to each adjacent window whereby light reaching the driver's eyes will pass through two windows,



said frame being rotatably mounted on a shaft having an axis coincident with the longitudinal axis of said frame, whereby the frame can be rotated to predetermined positions wherein said light will pass successively through two windows at selected angles.

3,870,404
MIRROR ACTUATOR AND SUPPORT MEANS THEREFOR
Harold R. Wilson, and Marc A. Kamerling, both of Holland, Mich., assignors to Donnelley Mirrors, Inc., Holland, Mich.
Filed May 1, 1973, Ser. No. 356,075
Int. Cl. B60r *1/04*
U.S. Cl. 350—281 **27 Claims**



1. A day-night mirror assembly comprising a mirror case, a prismatic mirror element having non-parallel, generally planar front and back surfaces supported and retained therein, and an actuator means for shifting said case and mirror element with respect to a support external of said assembly between a predetermined reflectivity day position and a reduced reflectivity night position, said actuator means including two side edges and two spaced, generally parallel shaft means for supporting said actuator means in said case; said case including spaced support means for pivotally supporting said actuator means therebetween; said support means including a one-piece support member adjacent and along each side edge of said actuator means, each of said support members including means defining apertures having completely closed peripheries for receiving the ends of both of said shaft means along one side edge of said actuator means whereby said two shaft means and their corresponding apertures are maintained in the same spaced relationship by said one-piece support member throughout said shifting of said case and mirror; said support members being movable with respect to one another to permit insertion of said actuator means; and locking means for positively securing said support members following insertion of said actuator means to retain said actuator means in position in said case.

3,870,405

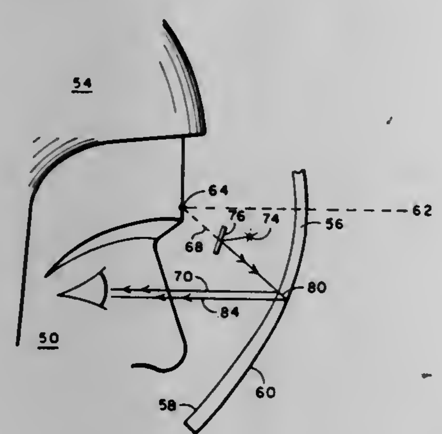
HELMET SIGHT VISORS

George D. Hedges, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 12, 1973, Ser. No. 369,357

Int. Cl. G02b *5/10*

U.S. Cl. 350—294 **6 Claims**



1. A visor for use with a helmet sight system, which comprises:
- a concave inner surface whose shape is a first paraboloid of revolution having a first axis; and
- a convex couter surface whose shape is a second paraboloid of revolution having a second axis, said second axis being substantially coincident with said first axis, said outer surface and said inner surface being substantially cofocal, so that the reflections of a light ray from said inner surface and said outer surface will be substantially parallel.

3,870,406

MECHANISM FOR MOVING FILM INTO AND FROM ENGAGEMENT WITH SPROCKETS IN MOTION PICTURE PROJECTORS

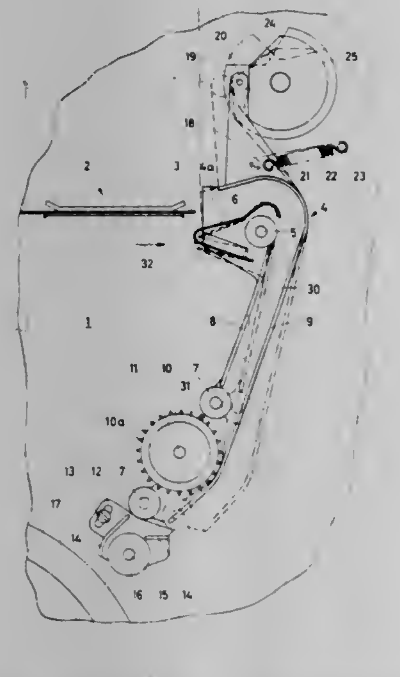
Rodolfo Nebbia, Torino, Italy, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Mar. 9, 1973, Ser. No. 339,944

Claims priority, application Germany, Mar. 15, 1972, 2212422

Int. Cl. G03b *1/56*

U.S. Cl. 352—159 **5 Claims**



1. In a motion picture projector, a combination comprising a housing; a reel rotatably supported by said housing; at least one film advancing device supported by said housing and operable to advance motion picture film lengthwise along a predetermined path one end of which is adjacent to said reel; a film gate remote from said reel and arranged to guide the film along a portion of said path; elastic loop former means adjacent to said path between said gate and said advancing device; shifting means actuatable to establish or terminate a driving connection between said advancing device and the film, said shifting means including film guide means pivotable between first and second positions in which said advancing device respectively drives and is disengaged from the film, said film guide means defining an elongated channel for the film and having an opening through which said advancing device extends into said channel at least in the first position of said film guide means; means for pivotably supporting said film guide means in the region of said loop former means; and actuating means for moving said film guide means with respect to said advancing device.

3,870,407

FILM SPEED CHANGE-OVER DEVICE IN A MOTION PICTURE PROJECTOR

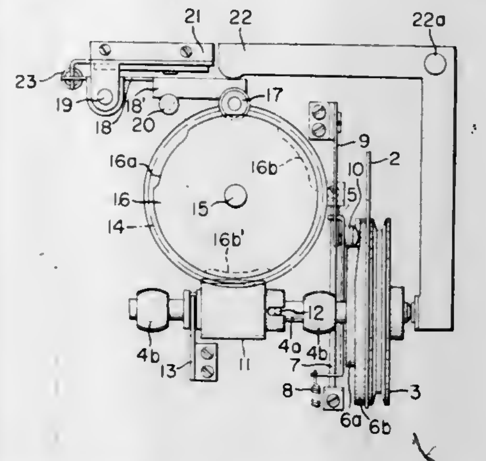
Shigeo Wakahara, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 14, 1974, Ser. No. 479,507

Claims priority, application Japan, June 20, 1973, 48/73355

Int. Cl. G03b *1/22*

U.S. Cl. 352—194 **10 Claims**



1. A film speed change-over device in a motion picture projector having a rotatable shutter shaft, the device comprising:
- a film-feeding pawl;
- driving means for moving the film-feeding pawl into a predetermined position to engage a perforation in the film and then for moving the film-feeding pawl in the desired direction of film movement to advance the film a single frame;
- camming means for rotation at 1/*n* times the speed of rotation of the shutter shaft, where *n* is an integer, the camming means providing a camming surface having a radially recessed portion and a radially projecting portion;
- change-over means including a cam follower biased to engage said camming surface, the cam follower and the camming means being axially movable relative to each other for enabling the cam follower to be moved selectively to a first axial position in engagement with the camming surface and to second and third axial positions out of engagement with the camming surface, the cam follower in said first axial position having a first radial position when received by said recessed portion of the camming surface and a second radial position when engaging said projecting portion of the camming surface; and
- holding means for holding the cam follower in substantially said first radial position when the cam follower is in said second axial position and for holding the cam follower in substantially said second radial position when the cam follower is in said third axial position, said change-over means having means cooperable with the driving means for permitting movement of the film-feeding pawl into said predetermined position when the cam follower is in substantially one of said first and second radial positions and for preventing movement of the film-feeding pawl into said predetermined position when the cam follower is in substantially the other of said first and second radial positions.

3,870,408

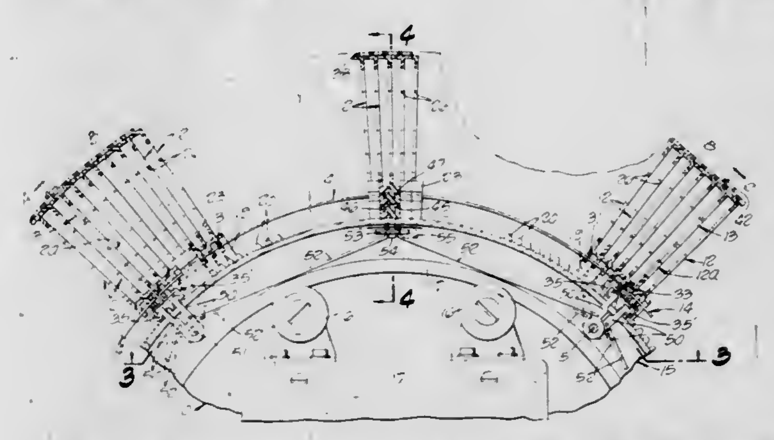
VARIABLE CAPACITY FLEXIBLE SLIDE MAGAZINE

Frederick M. Kirr, Sunland, Calif., assignor to Spindler & Sauppe, Inc., North Hollywood, Calif.

Filed Mar. 20, 1972, Ser. No. 236,302

Int. Cl. G03b *21/00, 23/06*

U.S. Cl. 353—120 **47 Claims**



1. A slide magazine comprising a multiplicity of thin-walled plaques arranged side by side and with adjacent pairs of plaques cooperating to hold a single image slide therebetween, and means for locking said multiplicity of plaques captively assembled to one another with limited freedom to pivot toward and away from one another, whereby said slide magazine is adapted for use selectively in a rectilinear rack feed and in a drum feed slide projector mechanism.

3,870,409

STORAGE DEVICE FOR INFORMATION RECORDING SHEETS

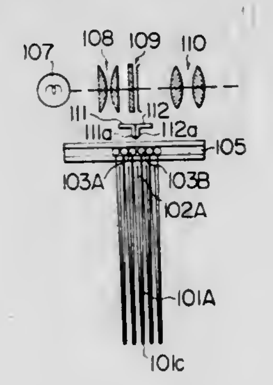
Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed Jan. 23, 1973, Ser. No. 326,106

Claims priority, application Japan, Jan. 25, 1972, 47-9235; Jan. 25, 1972, 47-9238

Int. Cl. G03b *23/08*

U.S. Cl. 353—27 **17 Claims**



8. A storage device for information recording sheets, comprising information recording sheets support means capable of being bent in zigzag fashion and movable in a bellows-like fashion between an extended position and a contracted position to form crests and valleys, a number of support pins each mounted on one of the crests formed in said information recording sheets support means bent in zigzag fashion, a pair of guide channels for slidably supporting opposite ends of said support pins and for guiding the pins in their movements, information recording sheets holding portions provided in said information recording sheets support means, means for moving any selected pair of adjacent support pins apart along the guide channels to thereby extend and straighten the portion of the support means disposed between the last recited pair of support pins while maintaining all other adjacent pairs of support pins close to each other, and means for selectively projecting optically the information on any information recording sheet held by the holding portions of the extended portion of the support means between the moved apart support pins, wherein means for fixing and holding a lowqer end portion of each information recording sheet are provided in each valley formed in said information recording sheets support means bent in zigzag fashion.

3,870,410

MARK READER

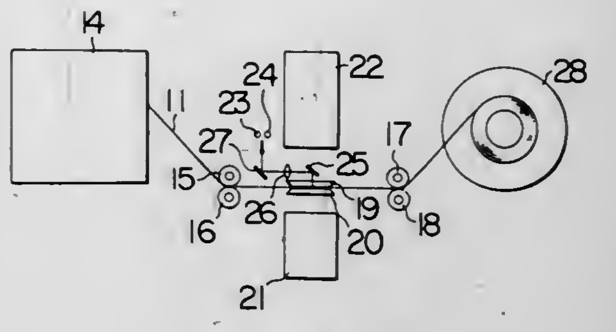
Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1973, Ser. No. 392,178

Claims priority, application Japan, Sept. 12, 1972, 47-90921

Int. Cl. G03b *23/12, 21/11*

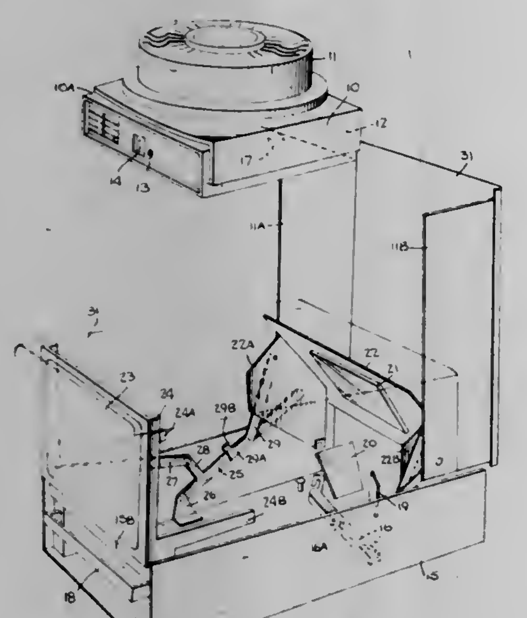
U.S. Cl. 353—26 **6 Claims**



1. A system for indexing with a projection position a selected frame of a film roll having a plurality of frames and a plurality of frame marks, each mark associated with a frame and capable of modulating a light beam, including:
- means for moving the film along a defined path to thereby move successive film frames along a frame path intersecting the projection position and to move the marks along a mark path;
- means for generating a light beam intersecting the mark path and modulated by the frame marks traversing the beam as the film moves along its path;
- a first and a second detector disposed in the path of the modulated beam and spaced from each other along the mark path by a distance less than the maximum width of the modulated beam so that the first detector and then both detectors are illuminated by the modulated beam as a mark traverses the beam moving in a first direction along the mark path, but the second detector and then both detectors are illuminated by the modulated beam as a mark traverses the beam moving in the opposite direction along the mark path, each detector providing a mark detection signal when illuminated by the modulated beam;
- first and second means for nonlinearly transforming the mark detection signals of said first and second detector respectively to provide a respective first and second transformed signal;
- means for comparing the transformed signals and for providing on the basis of the comparison a signal indicating the direction of movement of the film along its path and the number of frames that have traversed the projection position, and means responsive to said signal to stop the film when a selected film frame is indexed with the projection position.

3,870,411
COLLAPSIBLE SLIDE PROJECTION THEATRE

Robert C. Schwartz, Woodmere, N.Y., and Frederick Burke, Riverside, Conn., assignors to Motiva, Ltd., New York, N.Y.
Filed Feb. 26, 1973, Ser. No. 335,643
Int. Cl. G03b *21/28, 21/30*
U.S. Cl. 353—73 **6 Claims**



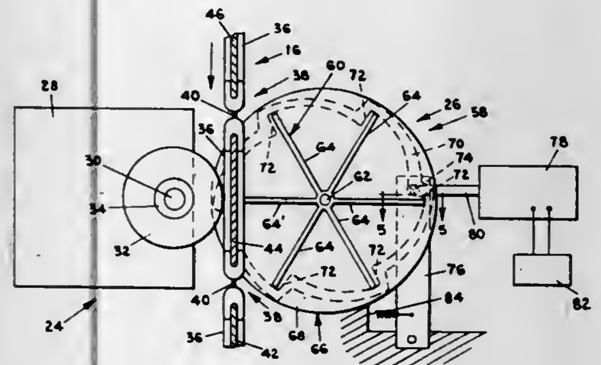
1. A compact, collapsible theatre for a standard slide projector having a box-like housing on whose front wall is mounted a projection lens that is disposed adjacent one side of the housing, said theatre comprising:

- A. an open top box-like casing for accommodating said projector and having a narrow zone therein at one end of the casing in advance of the front wall of the housing, the optical axis of said projection lens being parallel to the side of the casing which corresponds to said one side of said housing, said casing having a width which is substantially the same as that of said housing and a height substantially the same as that of said housing;
- B. a translucent screen hinged to said casing at the other end thereof and shiftable from an operative position in which the screen is erect, to a collapsed position in which the screen is folded over the top of the casing;
- C. a reflecting system constituted by a minor reflector disposed in said zone and oriented to receive an image from said lens and to direct it laterally onto an intermediate reflector disposed in said zone and oriented to direct the image upwardly toward a major reflector, said major reflector being hinged to said casing at said one end thereof and being shiftable from an operative position in which it is oriented to direct the image received from the intermediate reflector onto the rear of said erect screen along an optical path parallel to the optical axis of said projection lens, to a collapsed position in which it is folded over the top of the casing; and
- D. a cover for said casing, said cover being operatively linked both to said screen and said major reflector whereby when said cover is lifted it causes both said screen and said major reflector to shift to their operative positions at which point the cover extends therebetween, and when said cover is lowered it causes both said screen and said major reflector to shift to their collapsed positions, at which point the cover lies thereover to enclose said casing.

5. A theatre as set forth in claim 1, wherein the linkage between said cover and both said screen and said major reflector includes a lever arm, one end of which is pivotally connected to said cover, a point adjacent the other end being pivotally connected to a fulcrum mounted on the base of said casing, said arm being tilted upwardly when said cover is lifted, said screen being coupled to said arm by a first link member and said major reflector being coupled to said arm by a second link member whereby when said arm is tilted, said screen and said major reflector are shifted to their operative positions.

3,870,412
SLIDE PROJECTOR

John R. DenBleyker, 644½ E. 10th St., Holland, Mich. 49423
Filed Apr. 16, 1973, Ser. No. 351,315
Int. Cl. G03b *23/08, 23/12*
U.S. Cl. 353—109 **12 Claims**



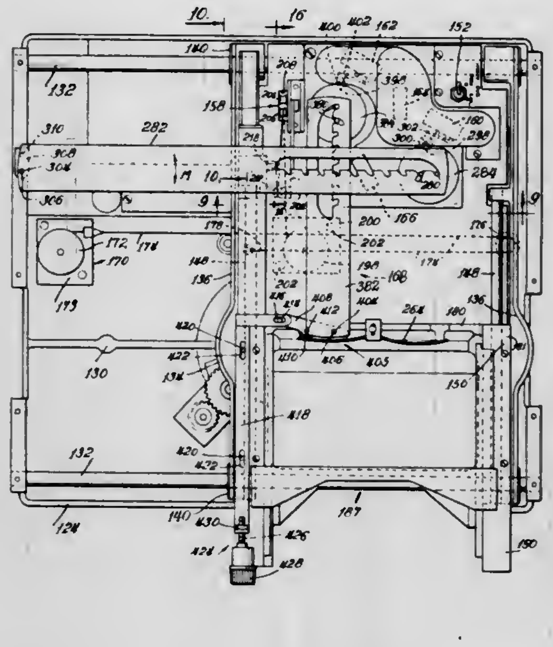
1. A slide projector for projecting slides connected together in a continuous chain comprising:

A light source and lens mounted in the projector and defining a viewing position for slides therebetween;
electrically operated drive means for successively moving each slide in the continuous chain through the viewing position in the projector, said drive means being adapted upon actuation to move the slide continuously through the viewing position until deactuated;
stop means in the slide projector adapted to sense the position of each individual slide in the chain as it passes through the projector, said position being sensed independently of the position or movement of the drive means, said stop means being further adapted to automatically engage the chain of slides and stop the chain of slides each time the stop means senses a slide in the viewing position;
release means adapted to release the stop means; and
control means adapted to actuate the drive means in response to the release of the stop means and to deactuate the drive means in response to the stopping of the chain of slides by the stop means.

3,870,413
MICROFICHE DRIVE ASSEMBLY AND TRANSPORT ASSEMBLY

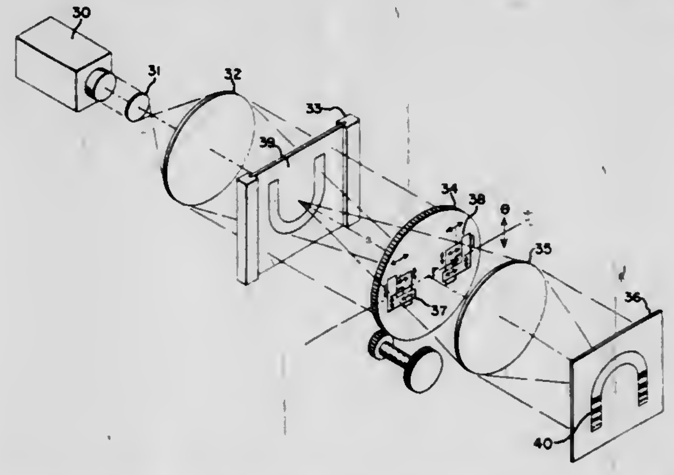
Joseph Goebel, The Hague, Netherlands, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio
Filed Aug. 16, 1973, Ser. No. 389,025
Int. Cl. G03b *27/58*
U.S. Cl. 355—53 **25 Claims**

1. A drive assembly comprising
an elongated rack,
a plurality of slots disposed along said rack,
a plurality of drive pins releasably engageable with said rack by receipt within said slots,
means for positioning said drive pins in varying ones of said slots to thereby cause relative movement between said rack and said drive pins along a path of travel and
means for mounting said rack and for preventing movement of said rack by said positioning means along said path of travel during said relative movement.



3,870,414
METHOD FOR SENSING SURFACE DISPLACEMENT ORTHOGONAL TO THE DIRECTION OF OBSERVATION

Donald E. Duffy, Edmond, Okla., assignor to General Electric Company, Syracuse, N.Y.
Filed May 25, 1973, Ser. No. 363,974
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **9 Claims**

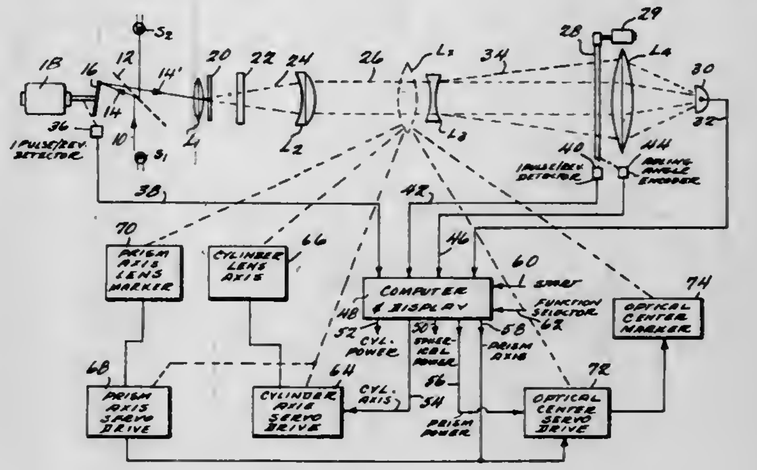


1. The method of sensing differential displacement of surface elements of an object orthogonal to the direction of observation comprising:

- a. imaging said observed object under conditions of illumination providing appreciable surface detail at spatial frequencies suitable for resolving the orthogonal surface displacements to be sensed,
- b. recording two correlatable images of said object between which surface elements of said object are displaced relative to the observer in a direction orthogonal to the direction of observation,
- c. simultaneously superimposing elements of said correlatable images without relative rotation upon a transparency,
- d. illuminating said transparency by a narrow spectral band light source, and
- e. imaging said transparency through a narrow band spatial filter positioned to form an interference pattern whose spacing and orientation indicates the magnitude and direction of differential orthogonal displacement of said surface elements.

3,870,415
METHOD AND MEANS FOR MEASURING THE REFRACTIVE PROPERTIES OF AN OPTICAL SYSTEM

Tom N. Cornsweet, Washington, D.C., assignor to Acuity Systems, Incorporated, McLean, Va.
Filed Oct. 27, 1972, Ser. No. 301,365
Int. Cl. G01b *9/00*
U.S. Cl. 356—124 **28 Claims**

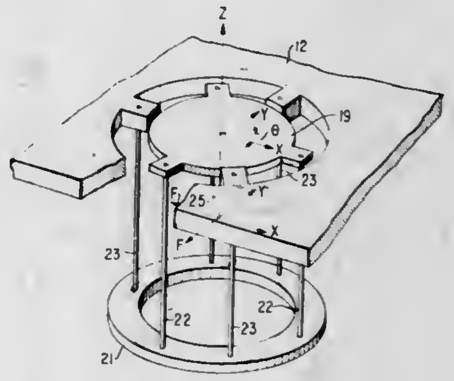


1. Apparatus for measuring refractive properties of an optical system, said apparatus comprising:

source means for directing an incident beam of light rays onto said optical system,
a rotatable ruling disposed to intercept a refracted light beam passing from said optical system,
photodetector means disposed to intercept the refracted light beam after it has been chopped by said ruling as a result of relative motion between said refracted light beam and said ruling to thereby produce signal pulses, and
computation means for analyzing said signal pulses over one revolution of said ruling to provide a quantitative measure of at least one refractive property of said optical system, and wherein
said source means comprises drive means for rotating said incident beam at a predetermined radius to sweep out a cylindrical surface with the incident beam.

3,870,416
WAFER ALIGNMENT APPARATUS

Kevin James Brady, Murray Hill; Victor Andrew Firtion, Secaucus; Leif Rongved, Summit, and Thomas Edward Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed Jan. 9, 1974, Ser. No. 432,082
Int. Cl. G01b *11/26*
U.S. Cl. 356—138 **9 Claims**

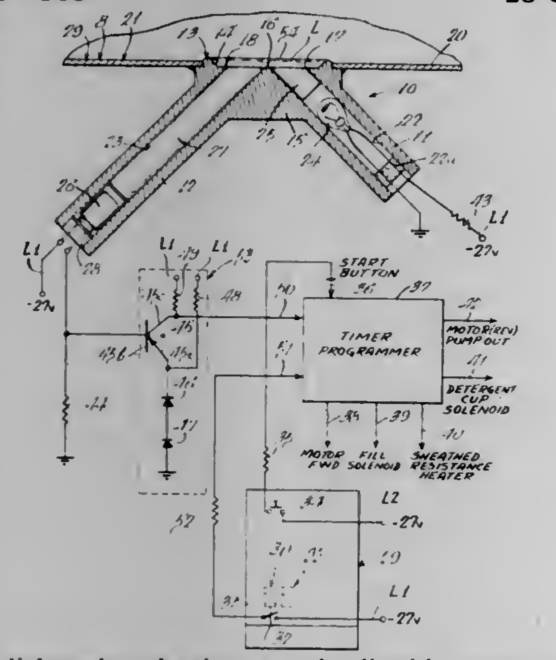


1. Alignment apparatus comprising:
means for supporting an object to be aligned comprising a support platform;
a plurality of substantially parallel first rods extending from the support platform to a relatively movable linking member;

- a plurality of second rods substantially parallel to the first rods extending from the linking member to a relatively stationary table member; and
- means for adjusting the orientation of the support platform while observing the object, thereby to align the object with a reference.

9. A method for aligning a wafer pattern with a mask pattern comprising the steps of:
- mounting the wafer on a support platform having a plurality of substantially parallel flexible first rods extending therefrom to a linking member, and a plurality of second rods substantially parallel to the first rods extending vertically upwardly from the linking member to a support table;
- optically superimposing the mask and wafer patterns;
- observing the superimposed patterns through a microscope; applying horizontal forces so as to displace the platform and to align the wafer pattern with the mask pattern;
- said horizontal forces being applied to a positioning member extending vertically downwardly from the platform, and being applied at a vertical location corresponding substantially to the midpoints of the first rods, thereby to avoid any vertical displacement of the support platform during the alignment process.

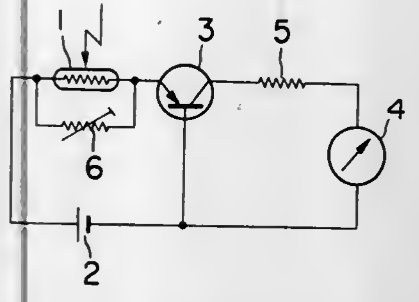
3,870,417
SENSOR FOR DISHWASHER
Larry Thomas Bashark, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed July 17, 1973, Ser. No. 380,101
Int. Cl. G01n *21/24*
U.S. Cl. 356—208 **28 Claims**



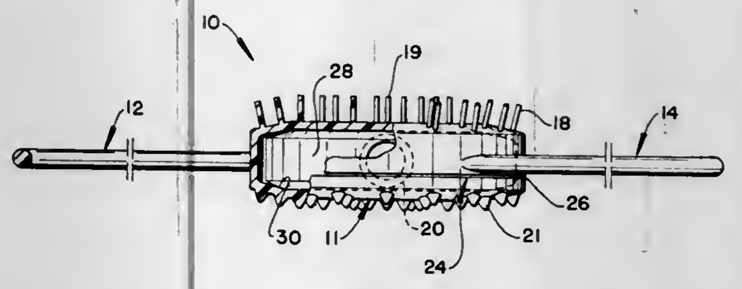
1. In a dishwasher having a tub, liquid sensor means mounted in a lower wall portion of said tub, said sensor means comprising: means defining a well opening upwardly to said tub for receiving and holding a preselected quantity of liquid from the tub, said well having a bottom wall; means for directing preselected light upwardly through said bottom wall to be redirected downwardly by liquid in said well; means for sensing light so deflected; and means providing an output signal corresponding to the level of the sensed deflected light.

3,870,418
EXPOSURE METER
Soichi Nakamoto, Machida, and Takeshi Yanagisawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 23, 1972, Ser. No. 265,520
Claims priority, application Japan, June 25, 1971, 46/46125
Int. Cl. G01j *1/44, 1/42*
U.S. Cl. 356—226 **2 Claims**

1. A light exposure indication system comprising a transistor having emitter, base, and collector electrodes; current indicating means connected between said collector and base electrodes for indicating current therethrough, a DC voltage source and a photosensitive element connected in series between said base and emitter electrodes; said DC voltage source being the only biasing potential for said transistor.



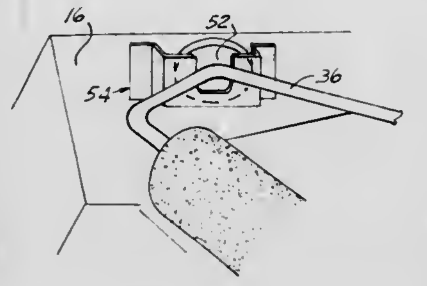
3,870,419
BACK SCRUBBER, MASSAGER AND LOTION APPLICATOR
George H. Sage, P.O. Box 732, Galveston, Tex. 77550
Filed Oct. 23, 1973, Ser. No. 408,812
Int. Cl. A47k *7/03;* A61h *7/00*
U.S. Cl. 401—8 **6 Claims**



1. Apparatus for scrubbing, massaging, and applying liquid to one's back comprising a resilient body having opposed faces and bounded by a side wall, said body having means forming a chamber therein, opposed straps attached to and depending from said body for enabling a person to hold a strap in each hand in order to scrub his back with said opposed faces;
- a plurality of fingers affixed to and depending from one of said faces, a plurality of projections depending from the other of said faces, a plurality of apertures formed in one of said faces for enabling fluid flow to occur therethrough; means forming a deformable soap receiving slot about a marginal portion of said side wall; said slot being spaced between said opposed faces;
- thereby enabling a bar of soap to be forced through the slot and into the chamber so that the soap can co-mingle with water and flow through said apertures while one is scrubbing his back;
- a container for a lotion supply, said container having opposed faces and bounded by a side wall to form a chamber therewithin, outlet means for enabling lotion to flow from the last said chamber;
- said container being of a size relative to said chamber of said resilient body to be received therein and through said slot.

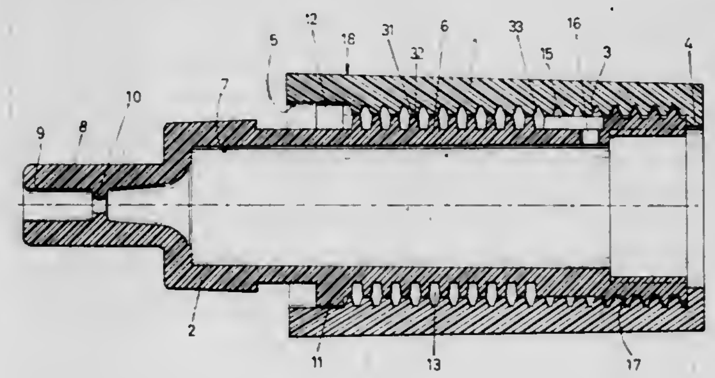
3,870,420
PAINT TRAY
Gary D. Hawk, Iola, Kans., assignor to Harding Development Company, Warren, Mich.
Filed July 19, 1973, Ser. No. 380,603
Int. Cl. B44d *3/12*
U.S. Cl. 401—121 **1 Claim**

1. In a paint tray for use with a paint roller or the like, said paint roller having a bent wire rod supporting a paint applying portion at one end and having a handle at the other end, said bent wire rod including a self standing paint roller button, said paint tray including substantially coplanar front and rear edgs, a paint well adjacent to and extending vertically below said rear edge for storing a supply of paint, and an integral inclined surface tapering upwardly from said paint well to said front edge for rolling excess paint off said paint applying portion whereby excess paint flows into said well, the improvement comprising:



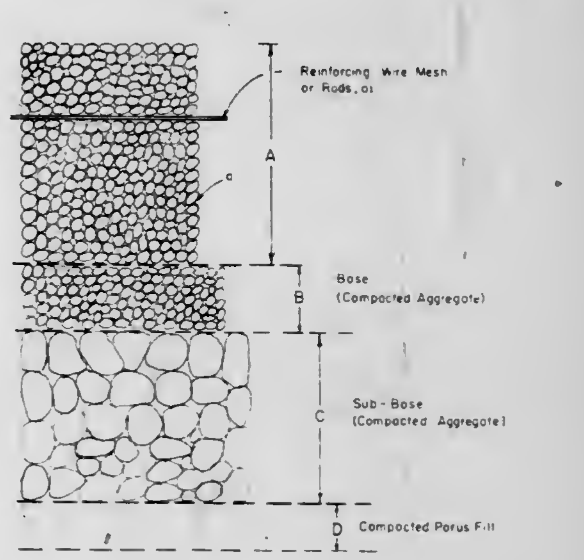
- a small relatively thin support member secured to said paint tray, said support member having a flat base with a slot therein, said flat base spaced a slight distance from said paint tray, said slot for receiving a part of the wire rod of said paint roller with said self standing button positioned in the space between said flat base and said paint tray and with the wire rod and paint applying portion on the opposite side of said flat base for supporting and storing the paint applying portion of said roller above the paint well.

3,870,421
TUBULAR NIB-TYPE PEN WITH A SCREWED-IN NIB
Otto Mutschler, Heidelberg, Germany, assignor to J. S. Staedtler, Nurnberg, Germany
Filed Dec. 1, 1972, Ser. No. 311,127
Claims priority, application Germany, Dec. 8, 1971, 2160835
Int. Cl. B43k *8/00*
U.S. Cl. 401—259 **3 Claims**



1. A tubular nib-type pen structure comprising in combination:
- a hollow holding shank; and
- a hollow tubular nib having a writing end and including a space constituting a reservoir for writing fluid, said nib being inserted into the shank with its writing end protruding from one end of the shank, said shank having an internal threading extending along substantially the entire length of the shank and said nib having at its other end an external threading engageable with the shank threading for releasably retaining the nib in the shank, said nib further having in and along its outer wall a helical groove axially separated from the threading on the other end of the nib by a gap and extending along and parallel to the threading on the shank, the positions of the shank threading and of the helical groove being correlated so that the valleys between the turns of the shank threading and the groove turns are in registry thereby forming a continuous venting channel along the major portions of the lengths of the shank and the nib, said channel terminating at one end at said gap in communication therewith said nib having at the other end of the venting channel an outwardly protruding shoulder and said holding shaft having a juxtaposed inner wall portion resting against said shoulder as a bearing, said nib shoulder including an opening therethrough connecting said other end of the venting channel with the atmosphere, a wall portion of the nib in said gap including a vent hole communicating with the reservoir in the nib, thereby constituting an equalization passage between the reservoir and the atmosphere.

3,870,422
POROUS PAVEMENT
John J. Medico, Jr., Sarasota, Fla., assignor to Christine Medico, Sarasota, Fla.
Filed June 7, 1974, Ser. No. 477,431
Int. Cl. E01c *11/00*
U.S. Cl. 404—31 **9 Claims**

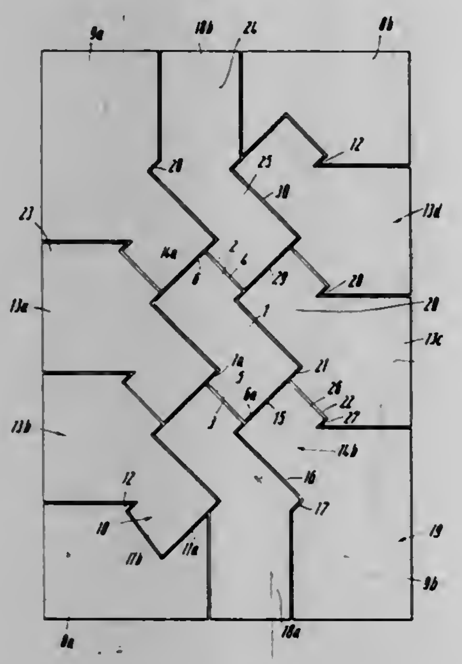

Reinforcing Wire Mesh or Rods, or
A
a
B
Base (Compacted Aggregate)
C
Sub-Base (Compacted Aggregate)
D
Compacted Porus Fill

1. A pavement for ground surfaces, such as parking lots, roadways, etc. formed of a mixture of aggregates, cement and an admixture of water and an adhesive compatible with water and cement to form a compact surface having voids between the aggregates to provide a porous hard surface of pavement and allow water to percolate through the voids to the surface below the pavement.

3,870,423
COMPOSITE STONE ARRANGEMENT FOR PAVEMENTS
Josef Peitz, Jr., Rochusweg 4, 479 Paderborn, Germany
Filed July 17, 1973, Ser. No. 379,951
Claims priority, application Germany, Mar. 9, 1973, 7308973
Int. Cl. E01c *5/00*
U.S. Cl. 404—41 **5 Claims**

1. In a stone arrangement for composite pavements, a combination comprising at least one center stone having a substantially rectangular center piece, said center piece forming a pair of protrusions transversely spaced on opposite lateral sides of said center piece, and two lateral extensions disposed substantially at right angles to and at opposite sides of said center piece, each of said extensions having a front edge and a smaller and a larger lateral edge so that each lateral edge makes an oblique angle with the respective front edge, each of said extensions defining with said center piece a recess transversely spaced from said protrusions; and a plurality of neighboring border stones including first and second border stones which abut said center stone and one of which has a protrusion and a recess respectively extending into and receiving one of said recesses and one of said protrusions of said center stone, each of said border stones having a projection and a cutout, and the projection and cutout of each border stone respectively extending into and receiving the cutout and projection of the adjacent border stone, the area of each of said border stones exceeding the area of said center stone,

whereby the border stones are interlocked with respect to each other and with respect to said center stone so that tipping of said border stones is prevented when exposed to unequal loading.



3,870,424
EXPANSION GAP SEALING DEVICE

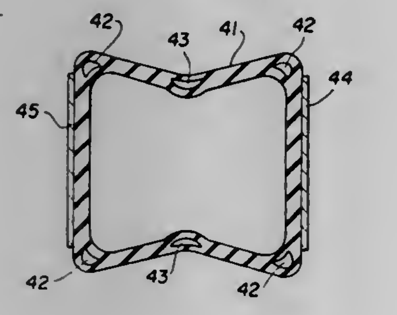
Waldemar Koester, Forsbach, Germany, and Reinhold Huber, Rorbas, Switzerland, assignors to Kober AG, Glarus, Switzerland

Filed Mar. 23, 1972, Ser. No. 237,287

Claims priority, application Germany, Sept. 7, 1971, 2144620

Int. Cl. E01c ***11/12***

U.S. Cl. 404—67 **20 Claims**



1. A sealing device for an expansion gap between opposite surfaces of structural members, comprising a body of elastomeric material having cross wall means, side wall means, and joint means between said side wall means and said cross wall means to define a substantially closed body, a pair of stiff non-rubber connecting strips, only one surface of each connecting strip being vulcanized to a separate side wall means, whereby the other sides of said connecting strips are free of said body and connectable to said opposite surfaces, said cross wall means having foldably inclided wall portions, said joint means having cavities therein providing reduced joint wall thicknesses as compared with the wall thickness of said body outside of said joint means for facilitating the movement of said wall means relative to each other, said cavities having curvatures arranged so that cavities at diametrically opposite joints of said body are oppositely directed relative to each other, and wherein said joint means have double walls defining said cavities therebetween, said cavities having sickle-shaped cross sections, whereby the walls at each of said joint means may move relative to each other.

10. A sealing device for an expansion gap defined between opposite surfaces of structural members, comprising a body of elastomeric material including cross wall means, connecting strip means for securing said cross wall means to said opposite surfaces, and a vulcanized bond between said body of elastomeric material and a region of one side of said connecting strip means, said connecting strip means comprising a material, other than natural and synthetic rubber, which is compatible with said vulcanized bond, the region of the other side of said strip means opposite said region on said one side thereof being free of elastomeric material and being connectable to said opposite surfaces, and wherein said body of elastomeric material comprises folds formed by oppositely inclined wall portions in said cross wall means, side wall means, and junction means for interconnecting said side wall means with said cross wall means and adjacent ones of said wall portions to each other to form a substantially closed body, said junction means comprising joint means with cavities therein having sickle-shaped cross sections including a convex and a concave curvature for facilitating the movement of said wall means and wall portions relative to each other, said cavities reducing the wall thickness at the junction means as compared to the wall thickness outside said joint means, said cavities having curvatures arranged so that the curvatures of cavities at diametrically opposite points of said body are oppositely directed.

3,870,425
DRY SOIL PROCESS

George Peter Karonis, 1766 Hondo Rd., S. Port St. Lucie, Fla. 33452

Continuation-in-part of Ser. No. 249,679, May 1, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,400

Int. Cl. E01c ***7/36***

U.S. Cl. 404—76 **7 Claims**

1. A method for stabilizing soil including the steps of:

a. forming a solution comprised of 1 part sodium methyl silicate and from 8½ parts to 44 parts of water,

b. applying the solution to soil in a dry state at from 0.25 of a gallon to 3 gallons per square yard of soil.

3,870,426
METHOD OF PROTECTING PAVEMENT FROM CORROSIVE SALTS AND AN IMPERMEABLE PAVEMENT MEMBRANE AND PAVEMENT OVERLAY FOR USE IN SAID METHOD

John Howard Kietzman, Golden, and Mario Peter Tocci, Englewood, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 148,205, May 28, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,892

Int. Cl. E01c ***19/00***

U.S. Cl. 404—82 **27 Claims**

17. A method of protecting a pavement from deterioration comprising:

applying to said pavement a membrane layer comprising about 4 to about 10 weight percent asbestos fibers, about 12 to about 20 weight percent asphalt and about 70 to about 84 weight percent of fine aggregate, said asbestos and said asphalt present in amounts to produce an asbestos fiber/asphalt ratio in the range of about 0.3 to about 0.5, said aggregate having a gradation such that at least about 70% by weight of said aggregate is capable of passing a No. 10 U.S. Standard Sieve Screen and at least about 10% by weight of said aggregate is capable of passing a No. 200 U.S. Standard Sieve screen;

applying a layer of asphalt concrete wearing course over said membrane as a hot mix having a thickness and a temperature sufficient to heat said membrane layer to a temperature sufficiently high that upon compaction of the wearing course the membrane layer is rendered impermeable; and

applying a compaction force to said asphalt concrete wearing course, whereby said membrane layer is compacted and rendered impermeable to water.

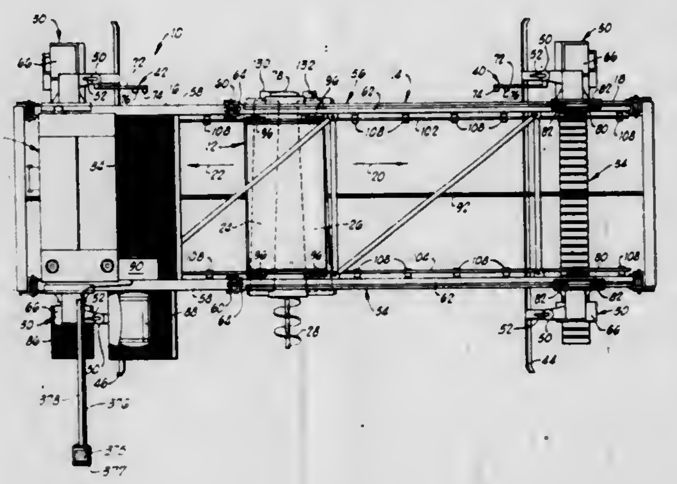
3,870,427
SURFACE FINISHING METHOD AND APPARATUS

Thomas E. Allen, Mustank, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Filed July 26, 1972, Ser. No. 275,232

Int. Cl. E01c ***19/28***

U.S. Cl. 404—103 **28 Claims**



1. Apparatus for moving hydraulically operated apparatus between predetermined positions and providing operating power fluid therefore, comprising:

a frame assembly extending generally between the predetermined positions;

a support frame for supporting the hydraulically operated apparatus, the support frame moveably supported on the frame assembly;

chain means, having opposite ends, drivingly supported on the frame assembly generally between the predetermined positions, the chain means being rotatable in a first rotating direction and in a second rotating direction, in a driven position of the chain means, one end of the chain means connected to one portion of the support frame and the opposite end of the chain means connected to one other portion of the support frame to move the support frame in one direction along the frame assembly in the first rotating direction of the chain means and to move the support frame in one other direction in the second rotating direction of the chain means;

chain drive means drivingly connected to a portion of the chain means to drive the chain means in the first rotating direction and in the second rotating direction;

hydraulic pump means responsive to the chain means and supported on a portion of the support frame to provide power fluid to the hydraulically operated apparatus supported thereon, in a driven position of the hydraulic pump means; and

gear means in gearing engagement with the chain means and having a portion thereof drivingly connected to the hydraulic pump means to drive the hydraulic pump means in a driven position of the chain means in the first rotating direction and the second rotating direction thereof.

3,870,428
SECURING MEANS FOR CONCRETE REINFORCING BASKET

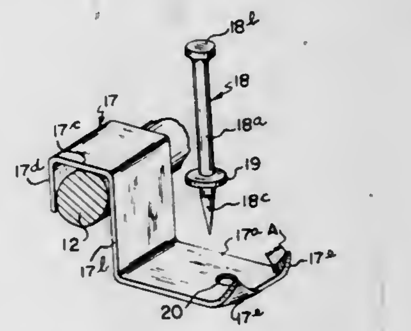
Jeffrey Mack Jackson, 24455 Lakeshore Blvd., Euclid, Ohio 44123

Continuation-in-part of Ser. No. 304,415, Nov. 7, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,883

Int. Cl. E01c ***11/18***

U.S. Cl. 404—134 **2 Claims**

1. Means for securing a concrete reinforcing basket to a base of concrete or black asphalt or the like, wherein said basket comprises a rigidly connected assembly of spaced wires or rods including vertical spacers extending a predetermined spaced distance below said rods; said securing means comprising a plurality of spaced metal clips, each clip having a planar horizontal leg adapted to rest on said base and an integral upstanding leg at the laterally inner end of said horizontal leg and an integral hook inwardly extending at the upper end of said upstanding leg and having a downwardly opening bight of a size to snugly embrace a rod of said basket with the top of said bight at approximately said predetermined distance from the under side of said horizontal leg, said horizontal leg being rectangular and the outer corners being turned up slightly in position to engage snugly a low velocity tool driving said pin, there being a hole through said horizontal leg concentric with said outer corners, said horizontal leg being long enough to receive the muzzle of a high velocity powder actuated gun between said hole and said upstanding leg, and adapted to receive a pin fastener means for securing said horizontal leg to said base.



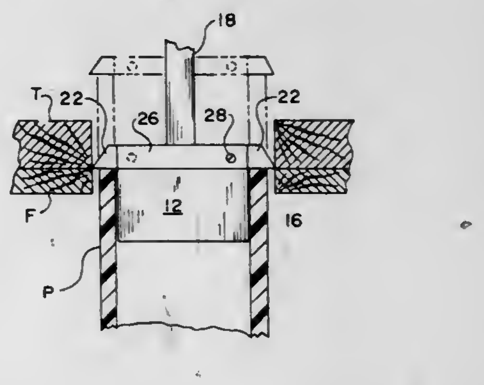
3,870,429
APPARATUS FOR TRIMMING PLUMBING PIPES BELOW FLOOR LEVEL

Harold R. Lomax, 901 Cardinal Place, Thomasville, N.C. 27360, and Bobby K. Potts, R.F.D. 2, High Point, N.C. 27460

Division of Ser. No. 236,901, March 22, 1971, Pat. No. 3,799,688. This application Dec. 3, 1973, Ser. No. 421,156

Int. Cl. B23b ***35/00***

U.S. Cl. 408—1 **1 Claim**



1. An improved method for preparing plastic bathroom plumbing pipe for the reception of a water closet wherein the pipe is first rough cut to a height above a finished floor level prior to the installation of the finished floor, said method further comprises trimming said pipe to a prescribed distance below the surface of the finished floor subsequent to the installation of the finished floor, whereby the final trimming operation comprises the steps of providing a rotary cutting tool having an exposed cutting edge approximately equal to the pipe wall thickness and a pilot extending from said cutting tool having a diameter substantially equal to the inside diameter of the pipe, inserting said pilot into the pipe with the cutting edge bearing against the exposed end of the pipe and rotating the cutting tool while pushing the tool longitudinally against the end of the pipe until a desired amount of pipe is removed, whereupon a portion of the pipe is removed cleanly and evenly to the prescribed distance below the surface of the finished floor without disturbing the finished floor around the pipe.

3,870,430
ARRANGEMENT FOR THE DETECTION, WITH A ROCKING FEELER, OF THE PRESENCE OF A PART

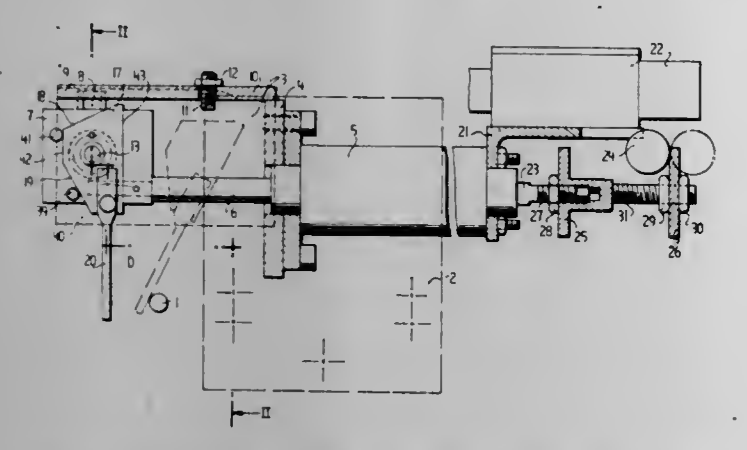
Rene Guenot, Sceaux, France, assignor to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 25, 1974, Ser. No. 445,812

Claims priority, application France, Mar. 29, 1973, 73.11404

Int. Cl. B23b *47/24*

U.S. Cl. 408—6 **8 Claims**



1. An arrangement for the detection of the presence of a part, such as for example, the tool of an automatic machine, comprising;

a framework;

a carriage movably supported upon said framework;

a feeler pivotably mounted upon said carriage and including means for contacting said tool part for pivoting said feeler;

means for driving said carriage and said feeler in a predetermined cyclical path so as to perform a detection operation;

a fixed stop means mounted upon said framework and disposed within said path whereupon said feeler detecting the presence of and contacting said tool part, said feeler will pivot so as to pass said fixed stop means and permit said carriage and said feeler to complete a first movement phase of said detection operation thereby indicating the presence of said part;

a unidirectional stop means fixedly mounted upon said carriage in abutting relationship with said feeler when said feeler is not pivoted and for cooperating with said fixed stop means so as to retain said feeler therebetween and prematurely arrest the movement of said carriage and said feeler when said feeler is not pivoted due to the absence of said tool part so as to thereby indicate the absence of said part; and

means for detecting the completion of said first phase of movement of said detection operation and for initiating a second movement phase of said operation for returning said feeler and said carriage to their initial positions.

3,870,431
CUTTER FOR PLASTIC PIPE AND DRILLING TOOL

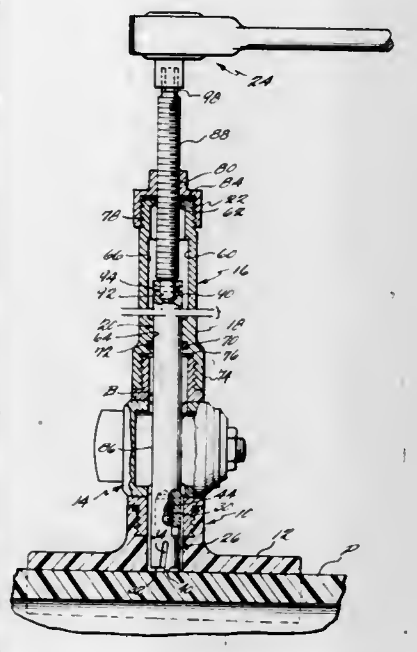
Lawrence F. Luckenbill, and Daniel A. Ellis, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Dec. 18, 1973, Ser. No. 425,791

Int. Cl. B23b *47/18, 51/04*

U.S. Cl. 408—111 **30 Claims**

1. A rotatable cutter member for cutting a hole in a plastic pipe by cutting a coupon when the cutter member is positively advanced against the pipe a predetermined distance per rotation of the same, said cutter member comprising a cylindrically shaped metal hollow body member having an outside wall surface and an inside wall surface and a wall thickness sufficient to resist distortion during cutting of the hole in the plastic pipe and having a cutting end portion with a flat end surface along a substantial portion thereof being normal to a longitudinal axis of the body member and a shank end portion for attachment to a tool, said body member further having at least one slot in said wall extending in a generally lengthwise direction from said flat end surface, said slot having a leading face and a trailing face, as defined by direction of rotation of the cutter member, a tooth of short arcuate extent projecting from the flat end surface of the body member, said tooth having an outside wall surface, an inside wall surface, and a face in the direction of rotation of the cutter member which are continuations of said outside wall surface and said inside wall surface of said body member and said trailing face of said slot, respectively, said tooth projecting from the flat end surface of said body member a predetermined length being at least as great as the predetermined distance of advancement per rotation whereby bearing between the flat end surface of the body member and the pipe is substantially eliminated to reduce torque and/or thrust loads, and said slot being positioned with at least one-half its width being located on one side of a diameter of said body with its trailing face parallel to a plane through the diameter so that said trailing face is inclined toward the interior of said body and an acute angle is formed at the exterior edge thereof, whereby said face of said tooth and said trailing face of said slot are oriented so that initial chips and then a continuous peeling chip are cut from the pipe, fed upwardly in the slot, and inwardly into the hollow body member above the coupon.



3,870,432
TUBE WORKING TOOL

Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,308

Int. Cl. B23d *79/02;* **B23b** *5/16*

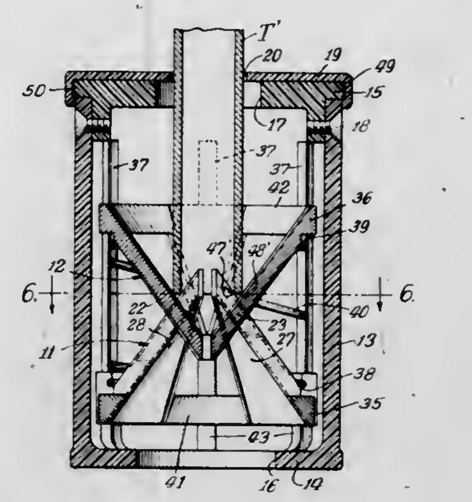
U.S. Cl. 408—191 **15 Claims**

1. A tool for concurrently reaming the inner edge of a cut tube end and deburring the outer edge of the cut tube end comprising:

a first cutter having an open conical arrangement of a plurality of equiangular conical segments spaced equiangularly apart to define alternating first cutter blades and first spaces;

a second cutter having a similar open conical arrangement of said plurality of equiangular conical segments spaced similarly equiangularly apart to define alternating second cutter blades and second cutter spaces, said cutter blades having sharp side edges, said second cutter being coaxially apposed to said first cutter with the large ends of the conical cutters outermost and offset from said first cutter about the common axis thereof to align said first cutter blades of said first cutter with said second spaces of said second cutter, and said second cutter blades of said second cutter with said first spaces of said first cutter; and

resilient means urging said cutters coaxially apart while permitting a tube end urged coaxially through the large end of either cutter into engagement with the inner surfaces of the cutter blades thereof to move said one cutter into interleaved relationship with the other cutter to a position wherein the inner edges of the cut end of the tube engages the cutter blades of said other cutter, whereby coaxial relative rotation between said tube end and said tool causes concurrent reaming of the inner edge of the cut tube end by said sharp side edges of said other cutter and deburring of the outer edge of the cut tube end by said sharp side edges of said one cutter.



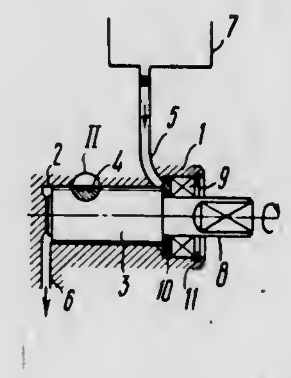
3,870,433
WORM PUMP

Ivan Yakovlevich Raikov, ulitsa B. Galushkina; Pavel Andreevich Ivaschenko, ulitsa Glebovskaya 4, kv. 51, and Igor Vasilievich Samoilovsky, ulitsa B. Spasskava 1/2 korpus 2, kv. 9, all of Moscow, U.S.S.R.

Filed Aug. 30, 1973, Ser. No. 393,137

Int. Cl. F01d *5/00*

U.S. Cl. 415—72 **1 Claim**



1. A worm pump comprising a body having a port; a screw conveyer disposed in said port of said body, said screw conveyor having a side face with at least one screw groove; two ducts extending from said port in the said body and disposed near the butt ends of said screw conveyor, one of said ducts communicating said port in said body with the source of the fluid being pumped, and the other duct communicating with the consumer; a screw groove made in the said screw conveyer, whose hydraulic diameter is less than 0.5 mm, said screw groove in said screw conveyer having the ratio between its width and depth ranging from 1 to 4, said hydraulic diameter being the ratio of four times the cross-sectional area divided by the wetted perimeter of the cross-section.

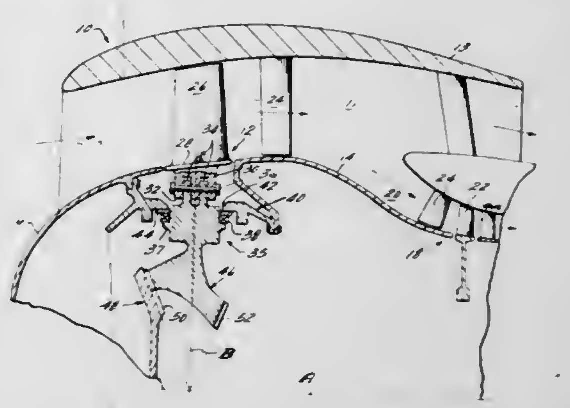
3,870,434
GEAR ARRANGEMENT FOR VARIABLE PITCH FAN

Elmir Edward Paulson, Topsfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 21, 1973, Ser. No. 427,377

Int. Cl. B63h *3/06*

U.S. Cl. 416—160 **7 Claims**



1. In a turbomachine of the type having plurality of spaced apart variable pitch blades, journalled in a rotable hub member, a gear arrangement comprising:

a plurality of spaced apart sector gears in respective driving engagement with the blades wherein each gear has a plurality of teeth spaced apart at varying distances along the length of a conical surface of revolution,

said sector gears arranged such that the spaced apart teeth of any two adjacent gears overlap without engaging each other, and

a unison bevel gear having a plurality of circumferentially spaced apart teeth in simultaneous driving engagement with the teeth of the sector gears.

3,870,435
VISUAL RECORDING METHOD AND MEANS

Akio Watanabe, and Yasuzo Murata, both of Hiratsuka, Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 53,054, July 7, 1970, abandoned. This application Sept. 19, 1972, Ser. No. 290,353

Claims priority, application Japan, July 9, 1969, 44-54399

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.2 **7 Claims**

1. A visual recording method which comprises inscribing a record with an aqueous ink containing a color coupler having a chromatic appearance in the range of from colorless to lightly colored which is selected from the group consisting of ammonium metavanadate, sodium metavanadate, and vanadium pentoxide on a recording structure comprising a base structure provided over a surface thereof with a coated layer containing at least a dispersion of a fine white powder selected from the group consisting of calcium carbonate, silicon dioxide, talc, titanium dioxide, aluminum oxide and clay and a color developer which is at most only slightly soluble in water and is selected from the group consisting of lauryl gallate, stearyl dihydroxybenzoate, calcium dihydroxynaphthalenesulfonate, and 2-ethylhexylammonium dihydroxynapthalenesulfonate, which developer thereby reacts with said color coupler to form a visual record of strong color.

3,870,436
AIR RELEASE VALVE FOR SELF-PRIMING PUMPS

Dennis K. Remy, Galion, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio

Filed Mar. 18, 1974, Ser. No. 451,794

Int. Cl. F04b *49/00;* **F16k** *31/12*

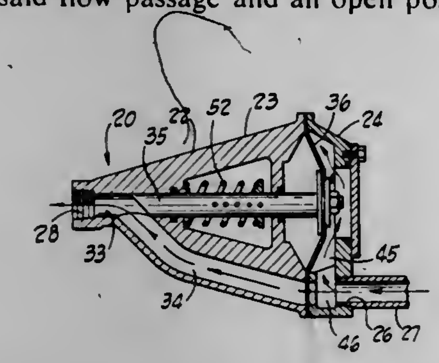
U.S. Cl. 417—299 **15 Claims**

1. In a pumping system including a self-priming pump having an inlet and an outlet, a check valve downstream from said outlet, and an air release valve operatively arranged between

said outlet and said check valve for permitting the flow of fluid therethrough when said check valve is closed, the improvement wherein said air release valve comprises:

a. a housing having an inlet port connected to said pump outlet, an outlet port communicating to exhaust, and a flow passage extending between said ports,

b. a valving plug reciprocally mounted in said housing for pressure responsive movement between a closed position in which an end portion of said plug extends into and blocks said flow passage and an open position in which said end portion of said plug is withdrawn from said passage so as to permit unobstructed flow, and



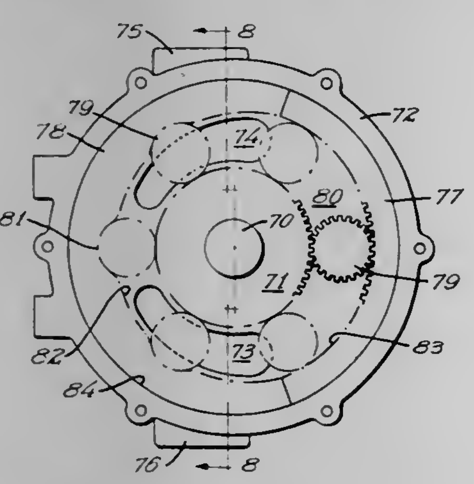
c. actuating means for causing movement of said plug between said positions,

d. said actuating means including movable means mounted in said housing to define an expansible chamber communicating with one of said ports,

e. said movable means being connected to said plug at a location remote from said passage and said one end portion and being movable by pressure generated in said chamber to move said plug to one of said positions.

3,870,437
PLANETARY GEAR PUMP

John T. Gondek, Columbia Heights, Minneapolis, Minn.
Division of Ser. No. 267,560, June 29, 1972,. This application Nov. 21, 1973, Ser. No. 417,763
Int. Cl. F01c *5/00;* **F03c** *3/00;* **F04c** *5/00*
U.S. Cl. 417—310 **7 Claims**



1. A fluid pump comprising:

a generally cylindrical drive member adapted for rotation about its axis and having gear teeth about its circumference to form a sun gear;

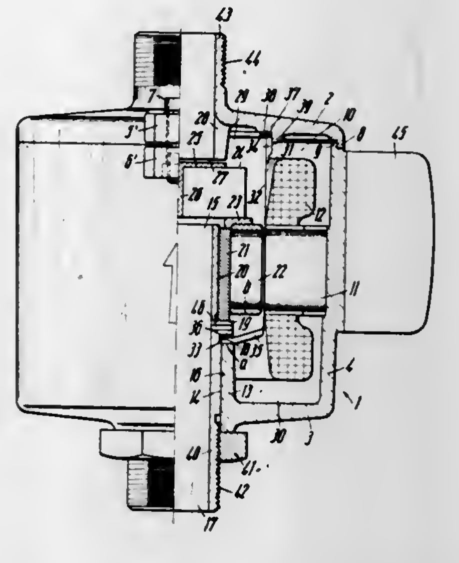
a housing surrounding and supporting said drive member and having a flexible inner circumferential surface disposed at a varying distance from said generally cylindrical drive member so as to form a pumping chamber therebetween said inner surface having gear teeth thereon to form a ring gear;

inlet and outlet passageways in communication with said pumping chamber;

a plurality of generally rigid rolling members held between said drive member and said inner circumferential surface adapted to be rolled by said drive member about said inner surface and carry fluid through said pumping chamber from said inlet ports to said outlet ports said rolling members having gear teeth about their circumference to form planetary gears.

3,870,438
PUMP

Paul Dannenmann, Welzheim, and Gunter Kratz, Plochingen, both of Germany, assignors to G. Bauknecht Gesellschaft mit beschrankter Haftung Electrotechnische Fabriken, Stuttgart, Germany
Filed May 17, 1973, Ser. No. 361,048
Claims priority, application Germany, May 18, 1972, 2224213; May 8, 1973, 2323089
Int. Cl. F04b *17/00*
U.S. Cl. 417—356 **17 Claims**



1. In combination: a pump impeller and a drive motor therefor in coaxial adjacent relation, said motor comprising a stator and a tubular rotor, said impeller being drivingly connected to one end of said rotor, a common housing for said pump impeller and stator, a collimator sleeve extending axially along the inside of the stator and forming a fluid seal in the housing isolating the rotor and pump impeller from the stator, a fluid inlet in said housing leading into one end of said sleeve and a fluid outlet in said housing leading from the other end of said sleeve, a hollow shaft comprising a readily separable knock-out spindle interchangeably carried by said housing in centered accurate alignment therewith and secured against axial displacement extending axially into and rotatably supporting said rotor for quiet operation and being less susceptible to wear, said hollow shaft communicating with said fluid inlet and the discharge side of said pump impeller communicating with said fluid outlet, said housing having a generally radial shoulder thereon facing said rotor, and a substantially radial flange extending transversely of said knock-out spindle and located on one end of said sleeve only sealingly clamped engaging in a centered position against said shoulder.

3,870,439
HIGH PRESSURE PUMP FLUID END

John E. Stachowiak, and John B. Goss, both of Houston, Tex., assignors to American Aero Inc., Houston, Tex.
Filed Jan. 8, 1973, Ser. No. 321,757
Int. Cl. F04b *21/00, 39/00*
U.S. Cl. 417—454 **4 Claims**

1. A high pressure pump fluid end, comprising,

a manifold block having both an inlet suction manifold and an outlet discharge manifold located therein,

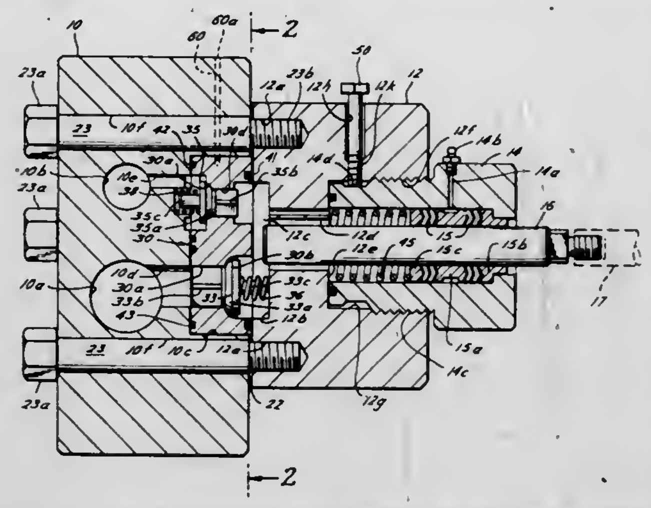
a pump cylinder mounted adjacent and perpendicular to said manifold block and having a plunger opening therein,

connector means releasably connecting said pump cylinder to said manifold block,

a pump plunger operably mounted in said pump cylinder for reciprocation in said opening,

said manifold block including a recessed valve cartridge cavity having communication with said inlet manifold, said outlet manifold and said plunger opening, said cavity being located at the interface between the block and the plunger opening, and being larger than the plunger opening and encompassing said plunger opening,

an integral replaceable generally oval valve cartridge disposed in said valve cartridge cavity and having a first valve means therein for permitting fluid flow from said inlet manifold into said plunger opening upon movement of said pump plunger in a direction away from said manifold block, and a second valve means therein for permitting fluid flow from said plunger opening to said outlet discharge manifold upon movement of said pump plunger in a direction towards said manifold block,



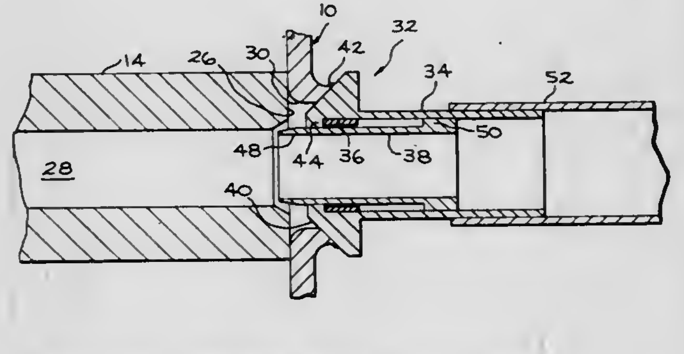
said first and second valve means comprising wing guided valves situated wholly within the cartridge, mounted side by side and parallel to the axis of the pump plunger,

said cartridge positioned between the plunger opening and said manifold block, and extending outwardly beyond the depth of the cavity, and

an oval seal mounted in a groove in the cartridge and encircling said plunger opening for sealing between said pump cylinder and said valve cartridge whereby fluid pumped by said pump plunger is caused to exert peak fluid pressure directly on said cartridge and peak fluid pressure is isolated from said manifold block.

3,870,440
HERMETICALLY SEALED COMPRESSOR SUCTION TUBE ASSEMBLY

Edward A. Zuercher, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Mar. 11, 1974, Ser. No. 449,920
Int. Cl. F04b *17/00*
U.S. Cl. 418—248 **2 Claims**



1. A hermetic compressor unit comprising:

a casing including a side wall;

a compressor including a cylinder block positioned in said casing and having an outer surface adjacent the inner surface of said casing wall;

a suction passage in said block opening into said outer surface;

said casing having an opening aligned with and larger than said passage;

a suction tube connector having a reduced end portion extending into said opening in axial alignment with said suction passage;

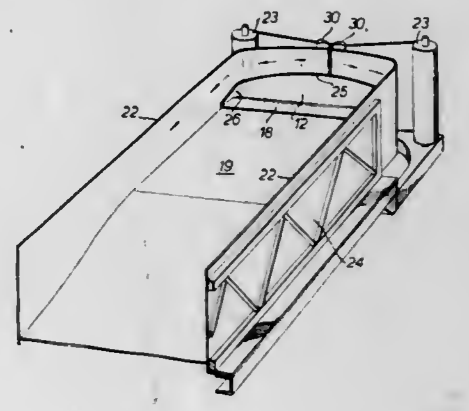
a circumferentially disposed flange formed on the inner surface of said tube connector adjacent said reduced end portion;

a tubular ring member being of greater ductility than engaging parts arranged on said flange; and

a tubular fitting having an end portion press fit in said passage and a shoulder portion projecting over said flange for engaging and compressing said ring member between said flange and said shoulder to seal the casing and suction tube connector to the compressor cylinder block.

3,870,441
PRODUCTION OF POLYMERIC FOAM

Nicholas George Petzetakis, Athens, Greece, assignor to Unifoam AG, Glarus, Switzerland
Filed Sept. 10, 1973, Ser. No. 395,607
Claims priority, application Great Britain, Sept. 11, 1972, 42008/72
Int. Cl. B29d *27/04*
U.S. Cl. 425—4 C **8 Claims**



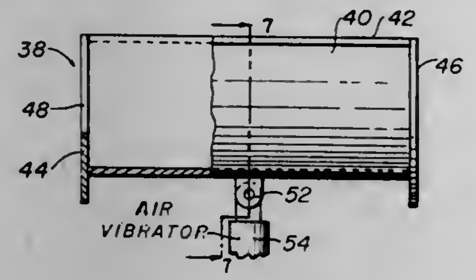
1. Apparatus for the continuous production of polymeric foam from a mixture of liquid foam reactants, comprising an open-topped vessel in which liquid foam reactants may expand upwardly, means for supplying liquid foam reactants to the bottom of said vessel, a weir structure associated with a forward portion of the rim of said vessel so that foam rising by expansion in said vessel will flow as partially-expanded foam over said weir structure, a channel-shaped conveyor associated with said weir structure and arranged continuously to convey partially-expanded foam away from said weir structure, the foam completing the expansion process within said channel-shaped conveyor, and means for assisting partially-expanded foam to flow over said weir structure comprising upward extensions of said vessel which are continuously movable around the whole rim of said vessel, except said forward portion, towards said weir.

3,870,442
APPARATUS FOR APPLYING REFRACTORY COVERING TO SKID RAIL

Frank W. Schaefer, 1678 Cory Dr., Dayton, Ohio 45406
Division of Ser. No. 260,372, June 7, 1972,. This application July 19, 1974, Ser. No. 490,096
Int. Cl. B29c *5/00*
U.S. Cl. 425—117 **3 Claims**

1. A mold assembly especially adapted to casting coverings to the undersides of horizontally oriented members having anchoring structures projecting therefrom, comprising a relatively rigid form having a surface contoured to the desired configuration of the cast material, a flexible sheet placed

against said surface, means engaging said sheet for tying said sheet to the member on which the liner is to be cast, and



vibrator means connected to said form for vibrating said form while advancing said assembly toward said member.

3,870,443
HOT-PRESSING SYSTEM

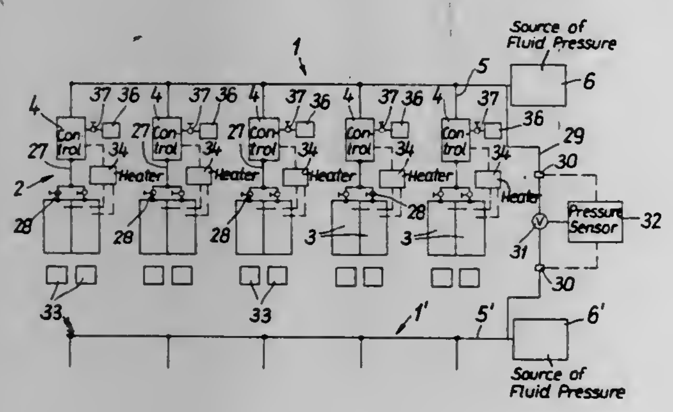
Oskar Schatz, Harburg-Neu-Leversen, Germany, assignor to Frid. Krupp Gesellschaft mit Beschrankter Hoftung, Essen, Germany

Filed Apr. 15, 1974, Ser. No. 461,140

Claims priority, application Germany, Apr. 17, 1973, 2319295

Int. Cl. B29h *5/02*

U.S. Cl. 425—28 R **16 Claims**



1. A hot-press system comprising:

a plurality of subsystems each including a pair of presses each having a frame, a first mold half carried on said frame, a pair of hydraulic cylinders carried on said frame to either side of a central plane thereof, and a second mold half carried on said cylinders, each subsystem futher including control means connected on one side to both of said presses for displacing the second mold halves thereof with the respective cylinders toward and away from the respective first mold halves; and

hydraulic actuating means including a common source of fluid pressure and conduits connected between said source and the other sides of each of said control means for hydraulic operation of each of said pairs of presses by the respective control means.

3,870,444
PLANT FOR PRODUCING WAX PATTERNS FOR USE IN INVESTMENT CASTING

Malachy Herron, Halesowen, England, assignor to British Leyland UK Limited, London, England

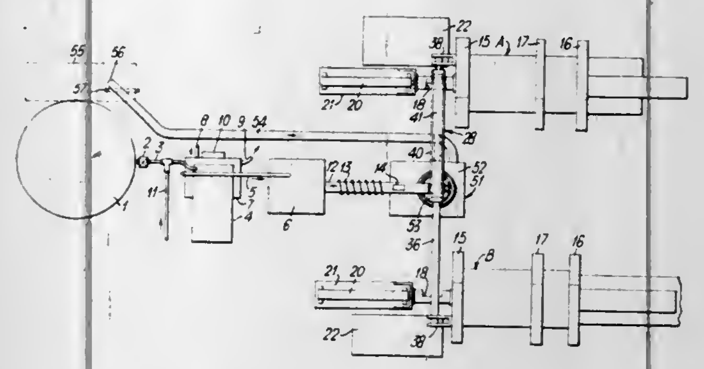
Filed Jan. 8, 1973, Ser. No. 321,676

Int. Cl. B29c *24/00;* **B22c** *7/02*

U.S. Cl. 425—143 **7 Claims**

1. A plant for use in producing a wax pattern for use in investment casting which comprises:

a. an extrusion press incorporating a die for the wax pattern to be produced;
b. a container for holding molten wax;
c. a machine supplied with molten wax from said container for forming said wax into a continuous extrusion of plastic wax having a circular cross-section of the same diameter as the die opening;
d. said machine having an outlet tube lying parallel to the line of action of the extrusion press and from which said extrusion of plastic wax issues;
e. a breech adjoining, and in alignment with, the die opening; and



f. a transfer mechanism comprising a heated transfer tube movable between a position in alignment with said outlet tube in which it receives from the outlet tube a substantially cylindrical wax billet having a volume at least equal to the volumetric capacity of the die, and a position within said breech, and means for moving said transfer tube laterally between said two positions, said breech being positioned to locate the billet coaxially with respect to the die opening preparatory to extrusion of the billet by the press from the breech to fill the die.

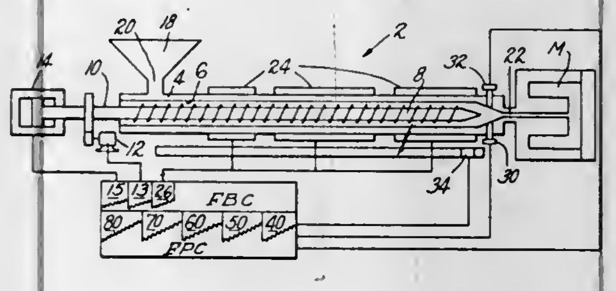
3,870,445
INJECTION MOLDING MACHINE CONTROLS

Peter Hold; Angelo J. Notte, both of Milford, and Marc A. Rizzi, Orange, all of Conn., assignors to USM Corporation, Boston, Mass.

Continuation of Ser. No. 326,877, Jan. 26, 1973, abandoned, which is a division of Ser. No. 194,280, Nov. 1, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,347

Int. Cl. B29f *1/06, 1/08*

U.S. Cl. 425—144 **23 Claims**



1. A system for the adaptive control of a machine for injecting plasticated material into a mold, said machine having a heated barrel connected to the mold by a nozzle, means for inserting material into the barrel, a plasticating screw rotatably and slidably mounted in the barrel, and means, first, to rotate and retract said screw in order to plasticate the material and collect an amount thereof in front of the screw and, second, to force the plasticated material into the mold by a forward sliding thrust of the screw between charged and final positions, said system comprising:

A. a first monitor for detecting the position of the screw and generating a signal relative thereto;
B. a second monitor for detecting the sliding speed of the screw during injection and generating a signal relative thereto;
C. a third member for detecting the temperature of the plasticated material and generating a signal relative thereto;
D. means for setting predetermined standards for final screw position and for the temperature of the plasticated material and generating signals relative thereto;

E. means for receiving and analyzing the speed monitor signal, and generating a timing signal when said speed signal indicates that the screw has substantially stopped;
F. means for receiving and comparing the temperature monitor signal with the standard temperature signal, and generating a signal relative to the difference therein;
G. means responsive to the timing signal for receiving and comparing the position monitor signal and the standard final position signal and generating a signal relative to the difference therein;
H. means responsive to the position differential signal for adjusting the charged screw position on recharge an amount which tends to reduce the final position differential signal to zero;
I. a first regulator for adjusting the rotating speed of the screw during plastication;
J. a second regulator for adjusting the sliding force which is applied to the screw during plastication;
K. a third regulator for adjusting the supply of energy to the barrel heaters during plastication; and
L. a selector, responsive to the temperature differential signal, to selectively activate the regulators in a manner which tends to reduce said temperature differential signal to zero.

17. A system for the adaptive control of a machine for injecting plasticated material into a mold, said machine having a heated barrel connected to the mold by a nozzle, means for inserting material into the barrel, a plasticating screw rotatably and slidably mounted in the barrel, and means to, first, rotate and retract the screw in order to plasticate the material and collect an amount thereof in front of the screw, and, second, to force the plasticated material into the mold by a forward sliding thrust of the screw between charged and final positions, said system comprising:

A. a first monitor for detecting the position of the screw and generating a signal relative thereto;
B. a second monitor for detecting the sliding speed of the screw during injection and generating a signal relative thereto;
C. means for setting a predetermined standard for final screw position and generating a signal relative thereto;
D. means for receiving and analyzing the speed monitor signal, generating a first timing signal when said speed signal indicates that the mold is full, and generating a second timing signal when said speed signal indicates that the screw has substantially stopped;
E. means responsive to the second timing signal for receiving and comparing the position monitor signal and the standard final position signal and generating a signal relative to the difference therein;
F. means responsive to the position differential signal for adjusting the charged screw position on recharge an amount which tends to reduce the final position differential signal to zero;
G. means responsive to the first timing signal to adjust the forward pressure exerted by the screw during injection to a predetermined holding pressure level and to maintain said pressure level for a predetermined period; and
H. means for initiating resumption of the plasticating cycle, thereby retracting the screw to the charged position for subsequent injection cycling after the predetermined period has elapsed.

3,870,446
CLAMPING JAWS WITH OFFSET TINES FOR ALIGNMENT AND TRANSFER OF PARISONS

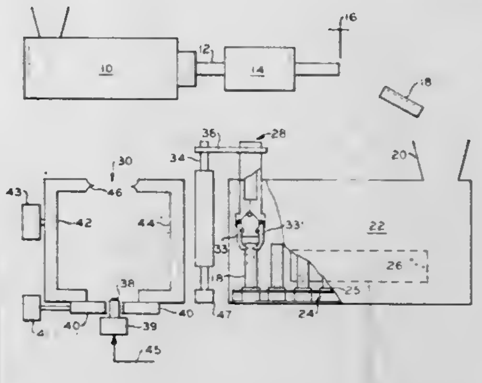
Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 29, 1973, Ser. No. 375,126

Int. Cl. B28b *13/00*

U.S. Cl. 425—174.4 **6 Claims**

1. A parison transfer device comprising in combination: a first clamping jaw having a first and a second tine pointing forwardly and outwardly, a second clamping jaw having a first and second tine pointing forwardly and outwardly, a lower surface of said first tine of each jaw being offset above an upper surface of said second tine of each jaw, said first and second jaw means being disposed in opposed relationship such that on closing a first space is present between said lower surface of said first tine of said first jaw and said upper surface of said second tine of said second jaw and a second space is present between an upper surface of said second tine of said first jaw and a lower surface of said first tine of said second jaw; means to close said clamping jaws; and means to move said clamping jaws axially and laterally.



3,870,447
SCRAPERS FOR PELLETIZING DISKS

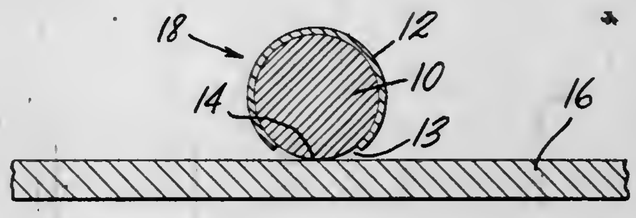
Hans Skretting, Vagsbygd, and Ole Egeland, Kristiansand, both of Norway, assignors to Elkem-Skigerverket A/S, Oslo, Norway

Filed Apr. 10, 1974, Ser. No. 459,608

Claims priority, application Norway, Apr. 13, 1973, 1545/73

Int. Cl. B29c *1/00*

U.S. Cl. 425—225 **3 Claims**



1. In a pelletizing disk apparatus for the formation of pellets from finely divided material comprising a pelletizing disk and at least one scraper, the improvement comprising having the working edge of the scraper composed of a silicon carbide rod rigidly affixed in a surrounding tubular holder.

3,870,448
MACHINES FOR MOULDING HOLLOW BODIES FROM SYNTHETIC RESIN

Eric Desmond Thomas Majors, Chichester, and John Kenneth Davey, Clanfield, both of England, assignors to Cope Allman Plastics Limited, Farlington, Portsmouth, Hampshire, England

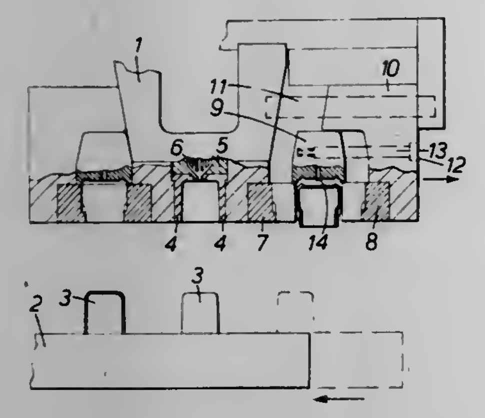
Filed Feb. 12, 1974, Ser. No. 441,871

Int. Cl. B29d *23/03*

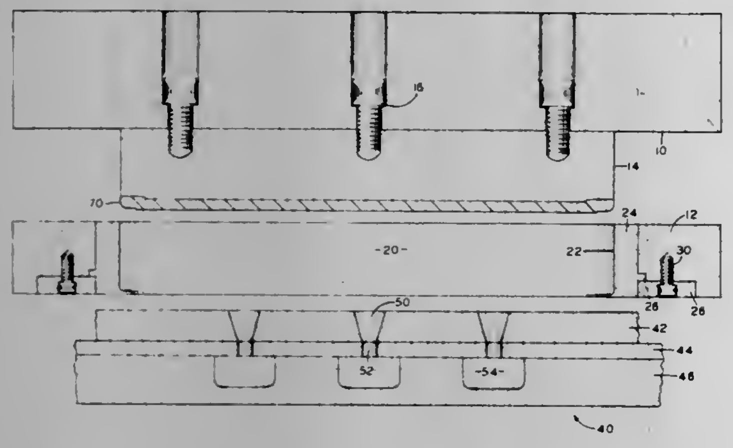
U.S. Cl. 425—242 B **2 Claims**

1. A tool for moulding hollow articles, such as containers from thermoplastic synthetic resin material by a combined injection and blow molding process, said tool comprising first means defining an injection mold cavity having an axis, second means defining a blow mold cavity having an axis, said first and second means being disposed side by side with said axes mutually parallel, a first block supporting said first and second means, a second block, said blocks being movable relatively apart in a direction parallel to said axes, a core mounted on said second block, and extending parallel to said axes, said

core being movable laterally relative to said cavities between a position in which it is aligned with said injection mold cavity and a position in which it is aligned with said blow mold cavity, the invention lying in the feature that said second means comprise three mold sections, namely, a first mold section which is fixed in relation to said first block, and defines one side of said blow mold cavity, a second mold section defining the other side of said blow mold cavity, said second mold section being movable towards and away from said first section in a direction perpendicular to said axes, a third section defining a base of said cavity, said third section being movable with respect to said first section in the same direction as said second section, means for moving said second section through a predetermined distance in said direction away from a closed position, and means for simultaneously moving said third section a lesser distance in the same direction.

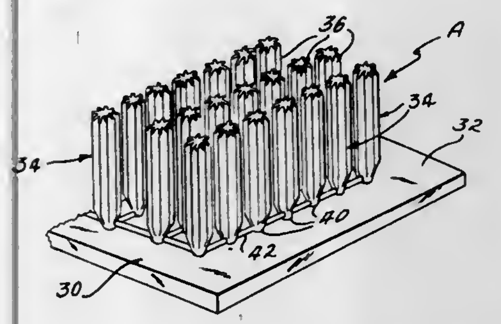


3,870,449
PERMANENT FLASHPAD FOR TRANSFER MOLDING
Jerry D. Stringfellow, Fort Smith, Ark., assignor to The General Tire & Rubber Company, Akron, Ohio
Filed July 23, 1973, Ser. No. 381,843
Int. Cl. B29h *3/12*
U.S. Cl. 425—251 **5 Claims**



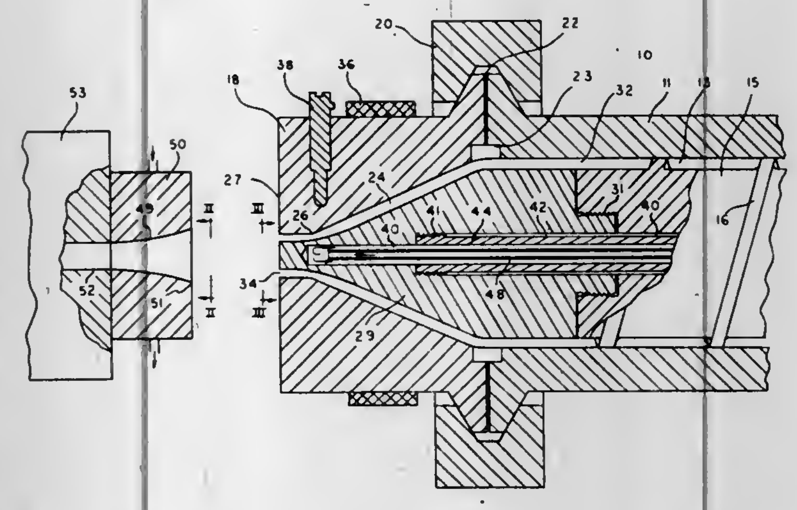
1. In a transfer molding press including a transfer ram having a substantially flat bottom surface, a transfer ram pot, a plate defining at least one mold cavity and a plate defining at least one sprue in open communication between the ram pot and the mold cavity, wherein the uncured charge material substantially fills the cavity and the sprue, the remainder of the charge material forming a flashpad of generally uniform thickness in the ram pot, the flashpad curing during the cure cycle and subsequently being scrapped, the improvement comprising:
- a pad of polymeric material of generally uniform thickness of about 0.100 to about 0.200 inch (2.54 – 5.08 mm) and having higher durometer than the charge material at room temperature, said durometer being in the range of about 80 to about 90 on the Shore A scale, said pad being attached to the bottom surface of the transfer ram and extending over substantially the entire area thereof, and said pad being adapted to effectively seal against the surface of the transfer ram pot, thereby substantially preventing leakage of the charge material under pressure.

3,870,450
MULTICELLED STRUCTURE APPARATUS FOR MAKING SAME
Robert H. Graebe, 4 Signal Hill Blvd., Belleville, Ill. 62223
Filed May 16, 1973, Ser. No. 360,743
Int. Cl. B29c *13/00*
U.S. Cl. 425—269 **14 Claims**



1. An apparatus for producing from an initially fluent material a cushioning device having flexible inflatable cells formed integral with and projecting outwardly from an intervening layer, said apparatus comprising: a base member and mandrels projecting outwardly from the base member such that each of the mandrels except those mandrels located at the periphery of the base is surrounded by other mandrels, the base member having an intervening surface extended between the mandrels with that surface being substantially continuous and substantially free of voids, the mandrels being fluted along their sides to form grooves and ribs with the longitudinal axes of the grooves and ribs for each mandrel being at a steep angle with respect to the portion of the intervening surface surrounding that mandrel whereby, when the mandrels and intervening surface are coated with the initially fluent material and that material is allowed to solidify, the cushioning device is formed with the shape of the flexible cells being determined by the mandrels and the shape of the intervening layer being determined by the intervening surface on the base.

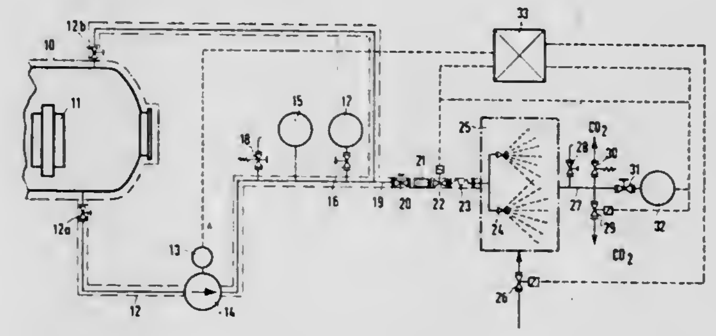
3,870,451
APPARATUS FOR EXTRUDING FOAMED THERMOPLASTIC MATERIAL
Cem M. Gokcen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Apr. 30, 1973, Ser. No. 355,766
Int. Cl. B29f *3/08*
U.S. Cl. 425—378 R **8 Claims**



1. A structure for producing a foamed thermoplastic product comprising an extruder, a die structure attached to the outlet end of said extruder and in fluid communication therewith, a plasticizing screw rotatably disposed within said extruder, the improvement comprising:

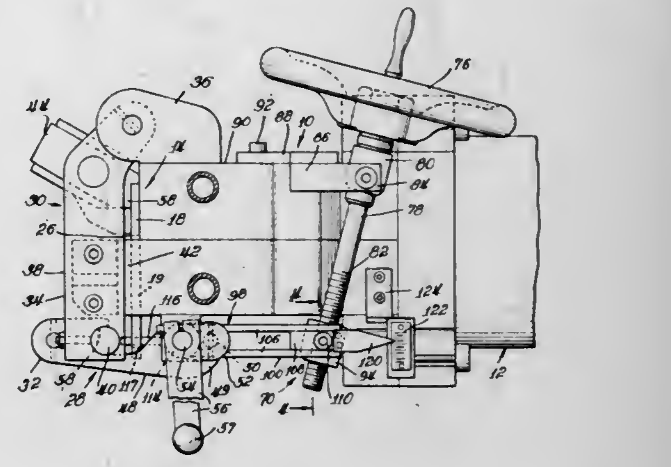
- a mandrel secured to the downstream end of said screw to rotate therewith,
- said mandrel extending into and to the outlet end of said die structure and cooperating therewith to form an outlet orifice,
- said screw and mandrel defining a generally toroidal shaped melt flow passageway of substantially uniform thickness from the downstream end of the screw to the outlet of the die structure and having at least a portion of decreasing cross-sectional area.

3,870,452
APPARATUS FOR THE PRODUCTION OF AN ARTICLE FROM THERMOPLASTIC SYNTHETIC PLASTIC, USING BLOWING, INJECTION AND BLOWING OR FOIL BLOWING PROCESS
Karl Frank, 8, Lohhohl, Linz/Rhineland, Germany
Division of Ser. No. 221,793, Jan. 28, 1972, Pat. No. 3,783,157, which is a continuation of Ser. No. 868,672, Oct. 21, 1969, abandoned. This application Nov. 8, 1973, Ser. No. 413,892
Claims priority, application Germany, Oct. 24, 1968, 1805011; Dec. 23, 1968, 1816771; May 22, 1969, 1926275
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **21 Claims**



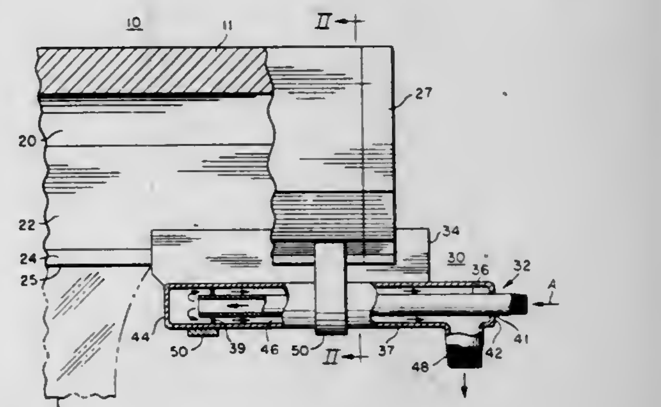
1. Apparatus for the production of an article from synthetic thermoplastic material comprising:
- a mold having a cavity therein;
- a source of liquid coolant;
- a neck forming pin attached to said mold, said pin being provided with at least one duct which opens into said cavity;
- a ring pipe connected at each end to said coolant source, said ring pipe including a pipe union which branches off therefrom;
- a liquid circulating and pressurizing pump connected with said ring pipe and being operable to circulate and pressurize liquid coolant carried by said ring pipe;
- a first shut-off valve provided in said pipe union;
- a flexible pipe conduit providing fluid communication between said neck forming pin and said first shut-off valve; thermal insulation provided for said coolant source, said ring pipe, said pump, said union, said first shut-off valve and said flexible pipe conduit;
- a coolant outlet pipe provided within said mold whereby coolant may be exhausted from said mold cavity;
- an outlet pipe shut-off valve connected with said outlet pipe;
- a pair of safety valves connected with said outlet pipe; and the cross sectional area of said pipe union and said flexible pipe progressively decreasing from said coolant source to said at least one duct.

3,870,453
ADJUSTMENT MECHANISM FOR AN EXTRUDER DIE
Walter B. Howard, Lima, Ohio, assignor to National-Standard Company, Lima, Ohio
Filed Oct. 15, 1973, Ser. No. 406,185
Int. Cl. A01j *21/00, 25/12;* **B28b** *21/52*
U.S. Cl. 425—465 **6 Claims**



1. An adjustment mechanism for use with an extruder having a die supporting means for supporting a two-plate die at the discharge outlet of said extruder with one plate held stationary and the other disposed in a sliding relation toward and away from said one plate, the opposing marginal edge of said plates defining a die opening whose width dimension varies by sliding displacement of said other plates, comprising a die plate displacement means for controlling the position of said other die plate relative to said one die plate, setting means operatively connected to said die plate displacement means for effecting movement of said other die plate to selectively set the width of said die opening, gauge means for providing a visual indication of the amount of displacement of said other die plate, said gauge means comprising an elongated incremental scale mounted on said extruder and a pointer operatively connected to said setting means in a manner to traverse across said scale in proportion to displacement of said other die plate.

3,870,454
COOLED DECKLE FOR DIE STRUCTURE
William R. Penrod, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Feb. 1, 1973, Ser. No. 328,517
Int. Cl. B29f *3/04, 3/08*
U.S. Cl. 425—466 **8 Claims**



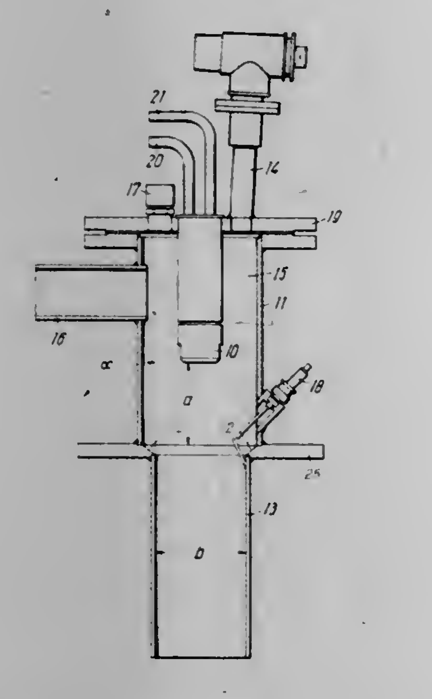
1. In a die structure having an outlet slot for extruding plastic therethrough, deckle means for controlling the width of plastic exiting from said slot, said deckle means comprising: a deckle member associated with said die structure to block a portion of said outlet slot,

means to cool said deckle member, including means for bringing a cooling fluid into thermal contact with said deckle member to increase the viscosity of the plastic to prevent leakage through the blocked portion of the die.

3,870,455
METHOD FOR CATALYTICALLY SUPPORTED THERMAL COMBUSTION
Saul G. Hindin, Mendham, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.
Filed Dec. 10, 1973, Ser. No. 423,096
Int. Cl. F23d *3/40*
U.S. Cl. 431—7 **6 Claims**

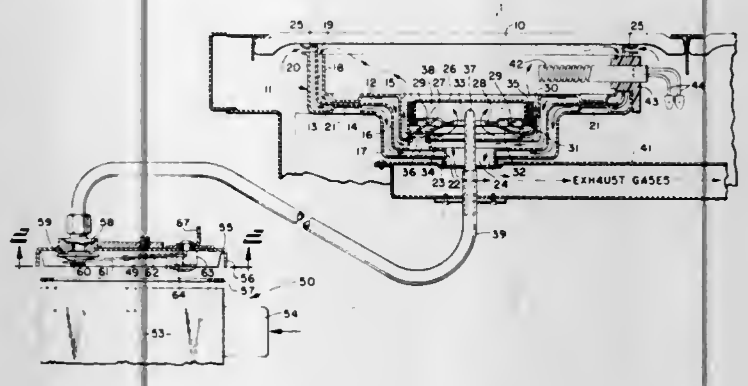
1. A method for the catalytically supported thermal combustion of carbonaceous fuel to form an effluent of high thermal energy said fuel being in vaporous form and intimately admixed with air; said combustion being under essentially adiabatic conditions and being characterized by said fuel-air admixture having an adiabatic flame temperature such that upon contact with said catalyst, the operating temperature of said catalyst is substantially above the instantaneous auto-ignition temperature of said fuel-air admixture but below a temperature that would result in any substantial formation of oxides of nitrogen comprising: contacting said fuel-air admixture with an oxidation catalyst having a surface area of at least 20 m^2/g after calcination for 2 hours at 1,200°C. consisting essentially of (a) a catalytically-active, calcined composite of alumina, ceria, and chromia and (b) a catalytically-effective amount of platinum group metal added thereto after calcination of said composite at a temperature of at least 850°C.

3,870,456
BURNER FOR THE STOICHIOMETRIC COMBUSTION
Johannes W. Graat, Overasselt, Netherlands, assignor to Smit Nymegen B.V., Nymegen, Netherlands
Filed May 10, 1973, Ser. No. 359,197
Int. Cl. F23b *7/00*
U.S. Cl. 431—8 **11 Claims**



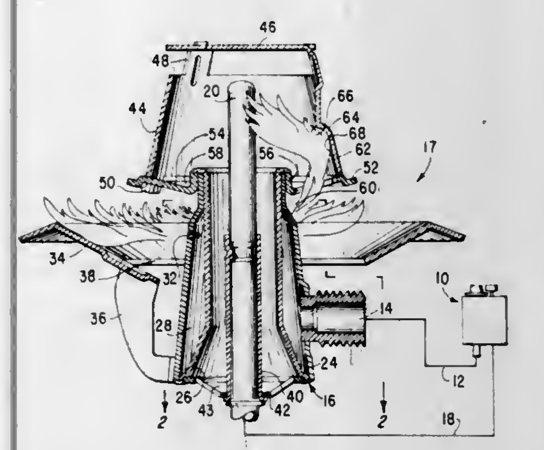
1. A method for the combustion of liquid fuel such as fuel oil or diesel oil with air comprising the steps of: mechanically atomizing the liquid fuel, directing the atomized medium tangentially to the mechanically atomized fuel within an atomizing passage, directing combustion air coaxially and in the same direction as the flow of said atomized fuel and medium, and contracting the combustion air and atomized fuel and medium by at least 10 percent before burning on a contracting wall to mix the combustion air and atomized air and atomized fuel and medium without settling of atomized fuel on said contracting wall.

3,870,457
BLUE FLAME GAS SMOOTH TOP RANGE
Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Continuation of Ser. No. 223,451, Feb. 4, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,547
Int. Cl. F23h *5/00*
U.S. Cl. 431—66 **18 Claims**



1. Ignition and control means for a gas burner, comprising a glow type electric igniter the wattage of which is not less than about fifty watts, a thermal fuel valve having a heat responsive actuator and an electric heater means for heating said heat responsive actuator, the glow type electric igniter adapted to be positioned adjacent the burner port area and the thermal fuel valve being in the gaseous fuel supply line to the same, circuit means for electrically connecting in series circuit relation the glow type electric igniter and the thermal fuel valve electric heater means, and means for pre-adjusting the thermal fuel valve heat responsive actuator to determine the response thereof while in at least simulated operating condition with the thermal fuel valve electric heater means in such circuit relation to the glow type electric igniter, the response times of the thermal fuel valve and the glow type electric igniter being related in normal operation of the ignition and control means such that the thermal fuel valve remains closed until the glow type electric igniter attains a temperature approximately at which ignition of the gas occurs.

3,870,458
PLURAL RATE BURNER WITH DEFLECTION OF HIGH RATE FLAME AGAINST FLAME SENSING ELEMENT
Fred W. Hendrick, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Sept. 26, 1973, Ser. No. 400,993
Int. Cl. F23q *9/00*
U.S. Cl. 431—80 **9 Claims**



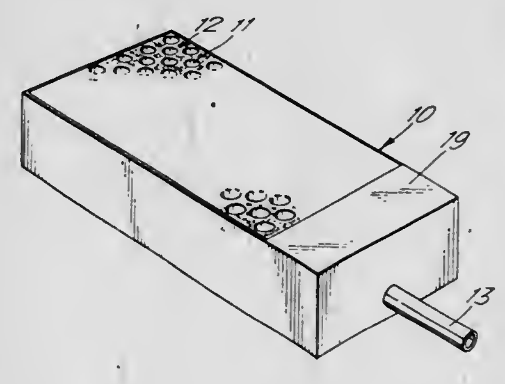
1. A burner apparatus for operating at both high and low rates comprising

a burner member having a chamber, an inlet communicating with the chamber, and an outer peripheral section with a plurality of first ports for projecting burning gas outward from the burner member at the high rate of operation and upward from the burner member at the low rate of operation;

a flame sensing element above the burner member in the path of upward burning gas at the low rate of operation; said outer peripheral section of the burner member having a second port for projecting burning gas outward at the high rate of operation; and

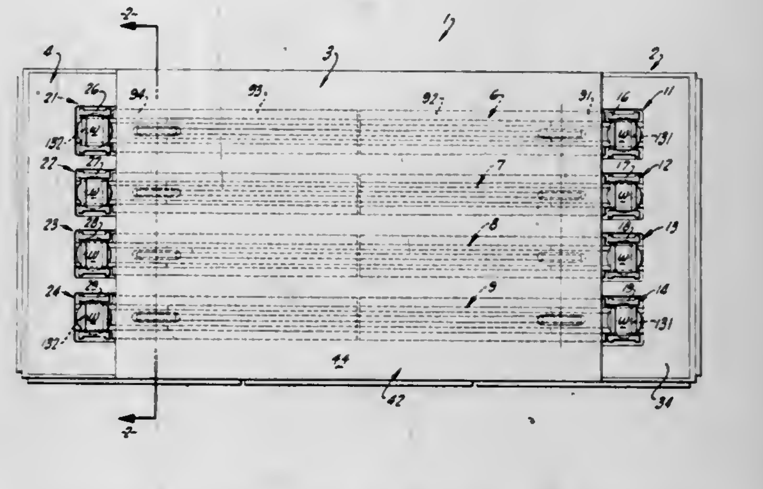
means spaced outwardly from the outer peripheral section of the burner member in the path of outward-projected burning gas from the second port for deflecting outward projected burning gas from the second port upward to a direction impinging upon the flame sensing element.

3,870,459
BURNER FOR USE WITH FLUID FUELS
Denis Henry Desty, Weybridge; Barry Herbert Francis Whyman, Teddington, and David Montagu Whitehead, Camberley, all of England, assignors to The British Petroleum Company Limited, London, England
Continuation of Ser. No. 866,481, Oct. 15, 1969, abandoned. This application Nov. 12, 1973, Ser. No. 415,074
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **10 Claims**



1. A diffusion flame burner for fluid fuels which comprises a fuel chamber having a fluid-tight bottom portion defining an air inlet zone, a top portion defining a combustion zone, and a fluid-tight side portion between said bottom portion and said top portion, said fuel chamber being open to the atmosphere only at its said top portion and being divided into upper and lower fuel zones, metal sponge having a pore size of 0.1 to 0.5 mm average diameter packed in said upper fuel zone for controlling the flow of fuel therethrough towards the combustion zone, said metal sponge being exposed to the atmosphere and unobstructed at its upper surface, said lower fuel zone constituting a fuel inlet zone adapted to be connected to a fuel supply and said upper packed fuel zone constituting a fuel outlet zone adjacent to and communicating with said combustion zone, and a plurality of combustion air tubes passing through said fuel chamber from said bottom portion to said top portion for conducting primary combustion air through said chamber from said air inlet zone to substantially the entire area of the surface of said fuel outlet zone adjacent to and communicating with said combustion zone in confined streams out of contact with fuel in said chamber, whereby, during the use of the burner primary combustion air flows through the combustion air tubes into the combustion zone where it reacts with the fuel which flows upwardly and through said fuel outlet zone into the combustion zone thereabove, said fuel and said primary combustion air mixing only in said combustion zone by low velocity diffusion, and the resulting fuel-air mixture burning as a diffusion flame in said combustion zone, the bore of each of said combustion air tubes being 0.01–1.0 cm^2 where it opens into the combustion zone and the bores of the tubes accounting for at least 25 percent of the surface of said fuel outlet space adjacent to the combustion zone.

3,870,460
SINGLE OR MULTI-TRACK FLUID BEARING HEATING APPARATUS AND METHOD
Alan G. Flint. San Jose. Calif.. assignor to GCA Corporation. Bedford, Mass.
Filed Apr. 3, 1974, Ser. No. 457,432
Int. Cl. F27b *9/14*
U.S. Cl. 432—11 **37 Claims**



1. Apparatus for transporting articles, such as semiconductor wafers, past a treating station, comprising

A. infeed means at an infeed station for introducing articles in sequence into said apparatus,
B. means at a station adjacent said infeed station for treating articles presented thereto,
C. conveyor track means for receiving articles in sequence from said infeed means and presenting the same in spaced sequence to said treating station, comprising
  1. directional fluid bearing structure on which articles are supported and by which the articles are positively moved from said infeed station to and past said treating station,
  2. an endless pacer belt having article spacers carried thereon for maintaining articles spaced during transport past said treating station and for pacing movement of such articles by restricting movement thereof under controlled conditions as the articles are supported and moved by said fluid bearing structure, and
  3. mechanism for positively driving said belt in accordance with a predetermined rate schedule, and
D. means at a discharge station for receiving articles in sequence after the same have passed from said treating station.

18. A method of transporting articles to and past a treating station, comprising

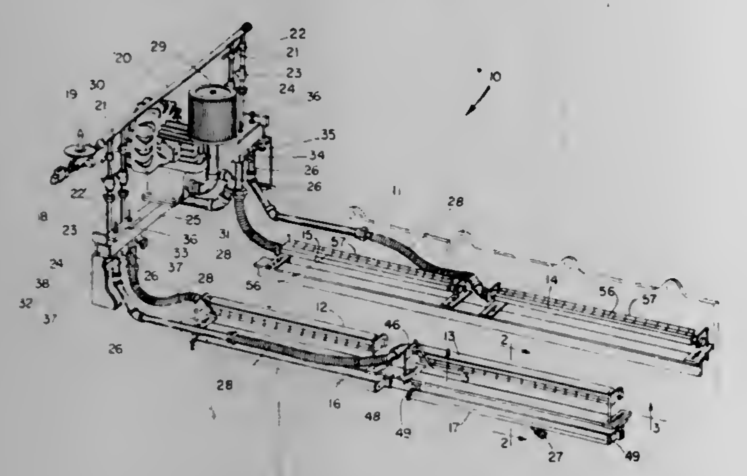
A. introducing articles in spaced sequence onto a fluid bearing structure,
B. introducing directional article supporting fluid through said fluid bearing structure and supporting said articles thereon while the same are moved by said article supporting fluid past said treating station,
C. while said articles are supported by and moved on said supporting fluid positively restricting their movement to pace the rate of travel thereof past said treating station, and
D. discharging treated articles in spaced sequence from said treating station.

3,870,461
FLAME TREATING OF PAPERBOARD AND METHOD THEREFOR
Walter G. Wise, P.O. Box 27066, Indianapolis, Ind. 46227
Filed Feb. 5, 1974, Ser. No. 440,083
Int. Cl. F27b *9/14*
U.S. Cl. 432—11 **15 Claims**

6. A method of flame treating paperboard while preventing scorching thereof comprising the steps of:

providing an elongated tube with length and outlets along said length;

forcing a gas/air mixture from said outlets under sufficient pressure to produce a first intense, continuous flame extending said length when ignited;



pre-mixing sufficient air with said gas prior to said forcing step to insure complete combustion of the gas; and,

igniting said mixture to produce a flame with length;

directing said flame toward and adjacent a paperboard to directly heat said paperboard with said flame while said paperboard moves along said length of said flame.

3,870,462
FURNACE FOR DIRECT NON-OXIDIZING HEATING OF MATERIAL UNDER THERMAL TREATMENT

Nikolai Nikolaevich Semenov, Vorobievskoe shosse, 2b, kv. 1; Lev Abramovich Gussak, Leninsky prospekt, 57, kv. 86; Vasily Konstantinovich Bobolev, Vorobievskoe shosse, 11, kv. 36; Evgeny Pavlovich Unxov, Rusakovskaya naberezhnaya, 6, kv. 95; Anatoly Alexandrovich Astafiev, Sharikopodshipnikovskaya ulitsa, 4, kv. 34; Mikhail Semenovich Khazanov, Festivalnaya ulitsa, 14, korpus 3, kv. 67; Vitaly Iosifovich Moroz, Sharikopodshipnikovskaya ulitsa, 2a, kv. 76, all of Moscow; Mark Alexandrovich Severov, ulitsa Gromova, 8, kv. 30, Leningrad; Roman Stepanovich Kuleshov, ulitsa Pugacheva, 9, kv. 65, Leningrad; Vladimir Konstantinovich Levitsky, ulitsa Detskaya, 11, kv. 28, Leningrad; Dmitry Petrovich Yakushev, ulitsa Sedova, 29, kv. 19, Leningrad; Gennady Demyanovich Rudkov, prospekt Obukhovskoi Oborony, 35, kv. 16, Leningrad; Ivan Petrovich Zubov, Sharikopodshipnikovskaya ulitsa, 2a, kv. 59, Moscow; Viktor Vasilievich Afanasiev, Sharikopodshipnikovskaya ulitsa, 4, kv. 159, Moscow; Vladimir Vasilievich Yakovlev, Nagatinskaya naberezhnaya, 22, kv. 172, Moscow; Leonid Sememovich Baranovsky, 1 Vladimirovskaya ulitsa, 27, kv. 28, Moscow, and Margarita Borisovna Koroleva, derevnya Sobolikha, 8, Zheleznodorozhnv Moskovskoi oblast, all of U.S.S.R.

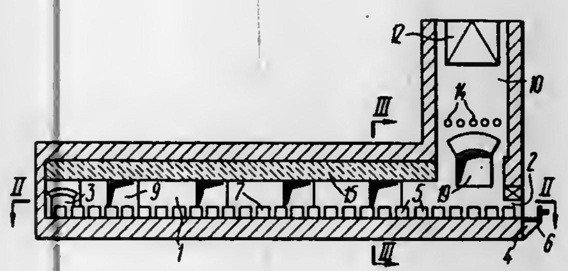
Filed Nov. 20, 1973, Ser. No. 417,512

Int. Cl. F27b *9/14, 3/22*

U.S. Cl. 432—72 **8 Claims**

1. A furnace for directing non-oxidized heating of material under thermal treatment, comprising an elongated working chamber formed by elongated opposed side walls and relatively short end walls, a hearth, a crown above the hearth, and having an opening for charging said material under thermal treatment onto said hearth and an opening for discharging said material from said hearth;

means for primary burning of fuel spaced along one of said side walls and directly across said elongated working chamber toward the other opposed side wall; gas outflow openings in the other opposed side wall in substantially opposed relation to the means for primary burning of fuel;



a gas-escape channel located behind and parallel to said other opposed side wall of the elongated work chamber and communicating with the gas outflow openings, said gas outflow openings being of a height substantially equal to the height of said chamber;

a second chamber communicating with said gas-escape channel for secondary burning of combustion products received from the gas outflow opening through the gas-escape channel; and means for secondary burning of combustion products in the second chamber.

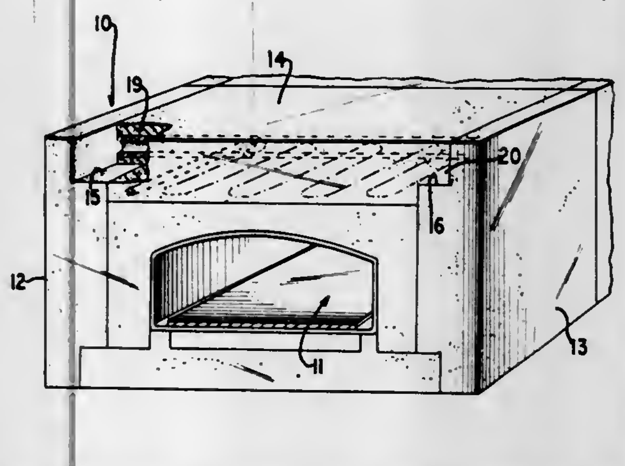
3,870,463
IN-SITU MOLDED REINFORCED FURNACE PANELS

Ewald R. Werych, Elm Grove, Wis., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Mar. 27, 1974, Ser. No. 455,336

Int. Cl. F23m *5/00*

U.S. Cl. 432—247 **8 Claims**



1. In an industrial furnace and the like having a heating chamber enclosed by side walls, a top insulating wall element positioned across said side walls comprising heating element means embedded in said top insulating wall element in heating relationship to said heating chamber and reinforcing means embedded in said top insulating wall means above said heating element means coextensive with the breadth of said top wall element.

CHEMICAL

3,870,464
PROCESS FOR TANNING WITH A MULTIVALENT METAL AND AN ORGANIC COMPOUND

Philip Stanley Briggs, Leeds, England, assignor to National Research Development Corporation, London, England

Filed July 23, 1971, Ser. No. 165,725

Claims priority, application Great Britain, July 24, 1970, 35994/70The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

Int. Cl. C14c *3/04*

U.S. Cl. 8—94.26 **31 Claims**

1. A process for the tanning of a hide or skin which comprises firstly treating the hide or skin with a basic tanning salt of a multivalent metal, secondly treating the hide or skin with an organic compound having a long chain aliphatic group while maintaining alkaline pH conditions during such treatment said compound having at least one reactive group capable of entering into a metal complex with the basic tanning salt of a multivalent metal, and thirdly treating the hide or skin with a salt of a multivalent metal at an acid pH.

22. A leather tanned with a basic tanning salt of a multivalent metal and containing on adsorbed complex of an organic compound, having a long chain aliphatic group and a single reactive group, and a salt of a multivalent metal, said leather being produced by the process of claim 1.

3,870,465
PROCESS AND DEVICE FOR THE QUANTITATIVE ANALYSIS OF FREE LIME

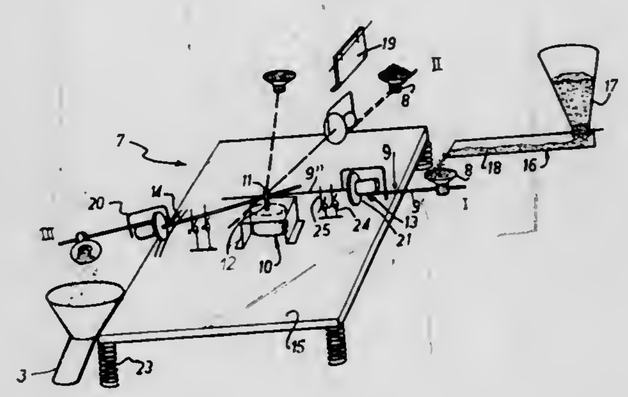
Claude Marechal, Lozanne, France, assignor to Ciments Lafarge S.A., Paris, France

Filed Nov. 29, 1972, Ser. No. 310,218

Claims priority, application France, Dec. 8, 1971, 71.44017

Int. Cl. G01n *33/38, 33/42*

U.S. Cl. 23—230 A **12 Claims**



1. A method of controlling at least one operating parameter of a kiln adapted to subject a product containing free lime to a heat treatment, comprising the steps of:

crushing the heat treated product issuing from the kiln to obtain a powderous substance; sampling at substantially regular time intervals successive amounts of said powderous substance, said sampling step being carried out by filling at said substantially regular intervals of time a calibrated receptacle with said powderous substance so as to obtain therein successive measured amounts of said substance;

introducing said measured amounts successively into a container while simultaneously introducing into the latter measured amounts of a reagent adapted to allow the free lime content of said powderous substance to be determined by analysis;

quantitatively analyzing the mixture of powderous substance and reagent thus obtained in said container so as to determine the free lime content of said powderous substance in said container;

producing a signal representing the free lime content thus determined; and

transmitting said signal to an appliance associated to said kiln and adapted to determine said at least one operating parameter of said kiln in response to said signal.

3,870,466
METHOD AND APPARATUS FOR AUTOMATIC TITRATION

Werner Rellstab, Steg, and Hans Steiner, Greifensee, both of Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland

Filed Jan. 15, 1973, Ser. No. 323,971

Claims priority, application Switzerland, Feb. 1, 1972, 1472/72

Int. Cl. B01k *3/00;* **G01n** *31/16*

U.S. Cl. 23—230 R **22 Claims**

1. A method for the automatic titration of a specimen to be tested, comprising the steps of discontinuously supplying in individual amounts to the specimen a constituent which causes a reaction with the specimen, determining the variation in time in the value of an electrical measurement parameter characterizing the condition of the specimen, and supplying a respective next individual amount of said constituent only after the variation in time in the value of said electrical measurement parameter has entered a preselected range.

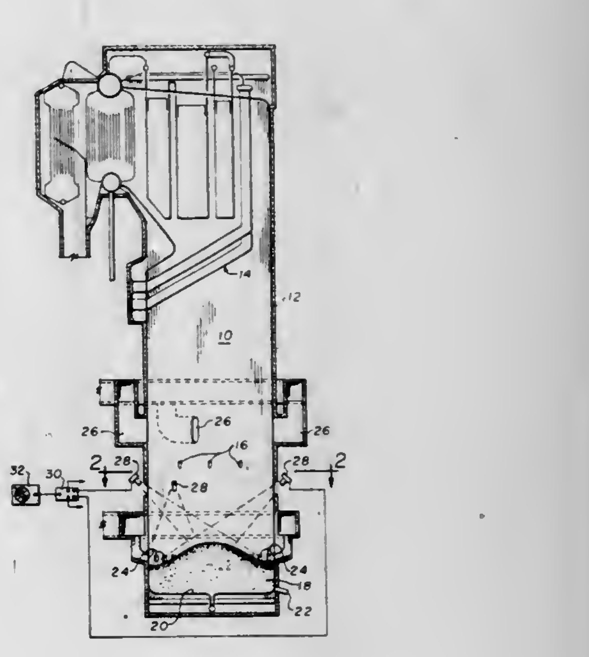
3,870,467
MONITORING CHEMICAL RECOVERY FURNACE

Hugh Wharton Nelson, West Hartford, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Apr. 23, 1973, Ser. No. 353,828

Int. Cl. G01j *3/30;* **G01n** *31/12*

U.S. Cl. 23—230 R **4 Claims**



1. A method of monitoring the reduction efficiency in a chemical recovery furnace in which Na_2SO_4 is reduced to Na_2S in a char bed in said furnace and in which sodium gas is produced and burned to form Na_2O fume comprising the step of monitoring the intensity of only that portion of the visible light spectrum in the region of the wave length characteristic of excited sodium atoms coming from said char bed.

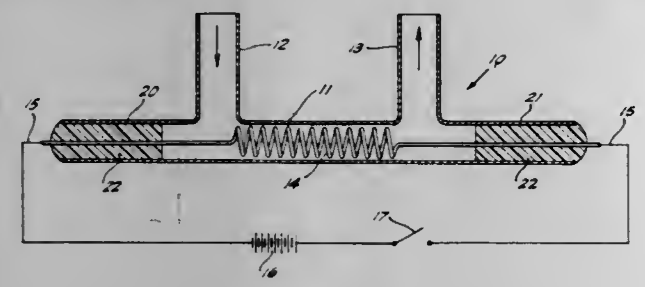
3,870,468
NITROGEN DIOXIDE ANALYSIS

Radhakrishna M. Neti, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed June 16, 1972, Ser. No. 263,543

Int. Cl. G01n *31/12;* **H05b** *3/10*

U.S. Cl. 23—232 R **10 Claims**



1. A method of treating nitrogen dioxide comprising:

passing said nitrogen dioxide through a small, confined volume containing a catalytic agent selected from the group of vitreous carbon, and a carbon and ceramic mixture, and

applying heat to said confined volume to heat said nitrogen dioxide to a temperature in the range of from 200°–600°C. whereby the nitrogen dioxide is substantially fully converted to nitric oxide during application of said heat.

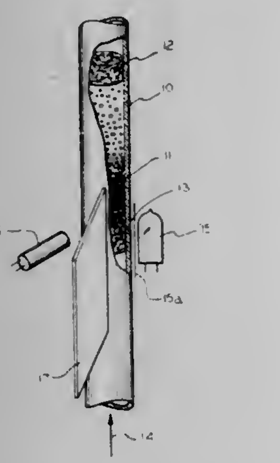
3,870,469
APPARATUS AND METHOD FOR MONITORING THE PRESENCE OF VOLATILE ORGANIC LEAD COMPOUNDS

Alfred O. Walker, Lake Jackson, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,594

Int. Cl. G01n *21/00, 33/00;* **G08b** *21/00*

U.S. Cl. 23—232 E **4 Claims**



1. Apparatus for continuously monitoring the presence of volatile organic lead compounds in an atmosphere and automatically producing a signal when a predetermined amount of lead compounds is detected therein which comprises, a tube of light transmitting material, iodine crystals in said tube, means causing the iodine crystals in said tube to be exposed to the atmosphere to be monitored by driving a stream of air from the atmosphere through the tube, a photo-optical sensor adjacent said tube sensing a predetermined color caused by lead iodide developing on the inner surface of the tube, said photo-optical sensor including a light source positioned adjacent the tube in the area of the crystals, a photocell positioned adjacent the tube in the area of the crystals and relative the tube axis about ninety degrees from the light source to receive scattered light from the lead iodide if it develops said predetermined color, and means preventing direct illumination of the photocell from the light source, and alarm means driven by said sensor and triggered when the crystals are subjected to a predetermined amount of lead compounds to cause said predetermined color to produce said signal.

3,870,470
BUBBLE-TYPE BLOOD OXYGENATOR WITH BAFFLES

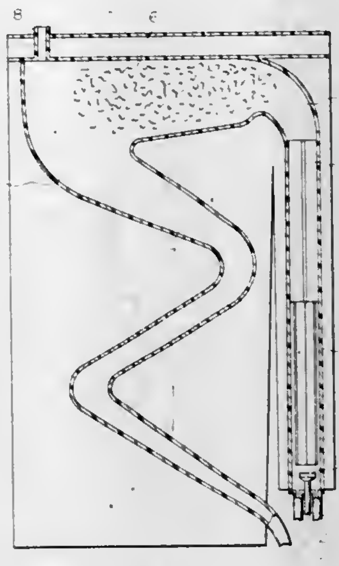
Fumitake Yoshida, and Norio Ohshima, both of Kyoto, Japan, assignors to Fumitake Yoshida, Kyoto, Japan

Continuation of Ser. No. 162,043, July 13, 1971, abandoned. This application June 18, 1973, Ser. No. 371,266

Claims priority, application Japan, July 24, 1970, 45-64376

Int. Cl. A61m *31/00;* **A61f** *7/00*

U.S. Cl. 23—258.5 **8 Claims**



8. In a bubble-type blood oxygenator having a blood inlet, an oxygen inlet, an oxygenated-blood outlet disposed for passing oxygenated-blood to a defoaming section and a gas disengaging section, the improvement which consists essentially of an elongated tubular oxygenating chamber having a vertical longitudinal axis, a baffle positioned within said oxygenating chamber, said baffle having superposed flat disks joined by an axially positioned hollow cylinder having a temperature-controlled liquid inlet channel and a temperature-controlled liquid outlet channel, said hollow cylinder defining a heat exchange member, said disks each having a plurality of perforations and being horizontally positioned within said chamber, said blood and oxygen inlet being at a lower end of the chamber, said oxygen inlet having an oxygen disperser connected thereto, and said outlet for oxygenated blood being at the upper end of the chamber.

3,870,471
DISSOLVING APPARATUS

Joseph J. Tepas, Jr., Easton, Conn., and Arlon G. Sangster, Sterling, Mass., assignors to Olin Corporation, New Haven, Conn.

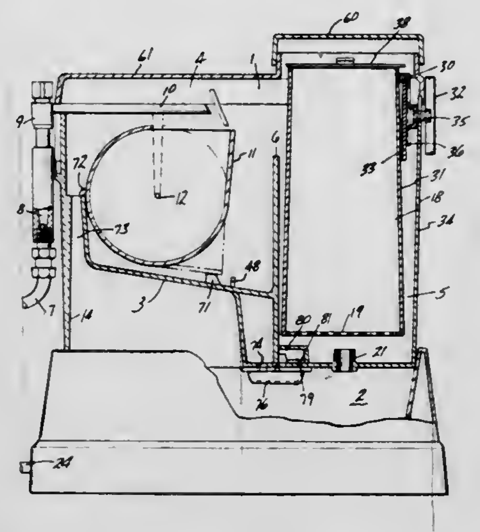
Continuation-in-part of Ser. No. 394,007, Sept. 4, 1973. This application Jan. 28, 1974, Ser. No. 437,077

Int. Cl. B01d *11/02;* **B01f** *1/00*

U.S. Cl. 23—267 E **15 Claims**

1. In an apparatus for dissolving and dispensing soluble solid material including in combination a closed container having an upper chamber and a lower chamber and at least one partition separating said chambers, said upper chamber having, a first and a second compartment separated by a divider; an inlet for liquid in the upper part of said first compartment, a rotary receptacle in said first compartment and attachment means therefore comprising a pair of trunnions, said receptacle receiving said liquid from said inlet and upon rotation periodically emptying said receptacle; first flow control means associated with at least one opening for controlling liquid flow between said first compartment and said second compartment; a magazine in said second compartment to hold soluble solids, said magazine having a pervious lower end permitting said liquid to contact the lower portion of said solids, at least one opening for liquid flow between said second compartment and said lower chamber, an outlet in said lower chamber and second flow control means for liquid flow through said outlet, the improvement which comprises said magazine having vertical adjustment means comprising:

a. a bracket attached to and spaced apart from a wall of said magazine,



b. a an eccentric cam having the configuration of a continuous curve housed in said bracket,

c. a rotary member engaging said cam,

d. said cam frictionally engaging said bracket on said wall of said magazine and upon rotation of said rotary member to control said dissolving of said soluble solids by adjusting the height of said magazine in contact with said liquid.

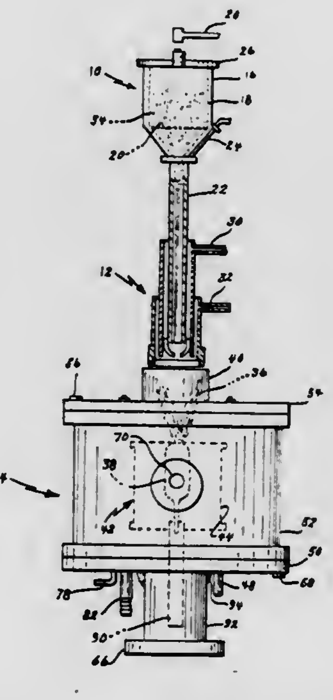
3,870,472
METHOD AND APPARATUS FOR GROWING CRYSTALS BY ANNEALING THE CRYSTAL AFTER FORMATION

Joseph A. Adamski, 468 Central St., Framingham, Mass. 01701; Joseph R. Weiner, 49 Cedar St., Marblehead, Mass. 01945, and Girard H. Lavoie, 12 So. Main, Suncook, N.H. 03275

Filed Nov. 26, 1969, Ser. No. 880,000

Int. Cl. B01j *17/22*

U.S. Cl. 23—273 SP **2 Claims**



1. A method for simultaneously growing and annealing a fracture-free monocrystalline body in a crystal-growing zone which includes a high temperature flame, and an elongated chamber having a crystal-growing surface positioned within said chamber in axial alignment with said flame, which comprises the steps of: passing a flow of powdered oxide material through the high temperature flame to fuse said material, directing said flame and fused material toward the crystal-growing surface, depositing and accumulating said fused material onto said growing surface at a temperature and for a time sufficient to grow a monocrystalline body thereon while simultaneously lowering said growing body at a rate sufficient to maintain a predetermined distance between the flame and the top portion of the growing body, continuing to lower the growing body while simultaneously providing additional heat to the crystal-growing zone to achieve a predetermined temperature therein, maintaining and controlling said predetermined temperature for a time sufficient to attain the simultaneous growth and anneal of a monocrystalline body of desired length, stopping said powder flow, continuing to lower said grown monocrystalline body onto said crystal-growing zone while simultaneously maintaining said predetermined temperature annealing environment, simultaneously stopping said crystal movement and said flame while continuing to maintain said grown crystal in said predetermined temperature annealing environment, cooling said crystal to complete said anneal by reducing said predetermined temperature to room temperature slowly at a programmed rate, and removing the grown and annealed crystal from said growing zone.

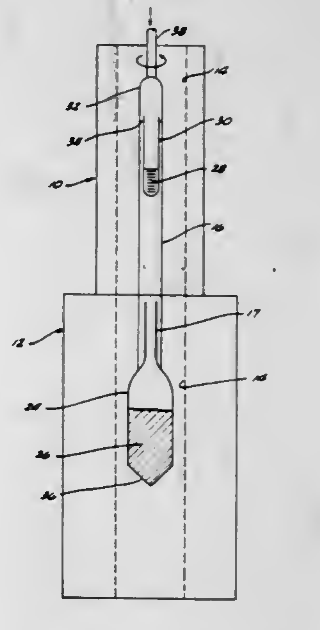
3,870,473
TANDEM FURNACE CRYSTAL GROWING DEVICE

Nanse R. Kyle, Long Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 69,025, Sept. 2, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302.317

Int. Cl. B01j *17/26*

U.S. Cl. 23—273 SP **4 Claims**



1. An apparatus for obtaining desired conductivity type and carrier concentration in semiconductor crystal compounds selected from one of the II–VI, III–V, and IV–VI Groups of the Periodic Table of Elements comprising:

a pair of furnace means placed in tandem and having central opening means extending therethrough, each of said furnace means having means for providing elongated isothermal temperature portions of specified lengths and for providing a decreasing temperature gradient terminating the first of the isothermal temperature portions and passing through the crystallization temperature of the selected compound;

means for positioning a crystal growth tube in and moving said tube through said central opening means, said tube comprising first and second sections and means for attaching said sections together,

said first section having means for containing the selected Group compound, said first section being placeable within and movable through the first of the isothermal temperature portions and the decreasing temperature gradient by said positioning and moving means, and

said second section having means for containing one constituent of the selected Group compound, said second section being placeable within and movable only within the second of the isothermal temperature portions by said positioning and moving means said first and second containing means having a specified distance therebetween, the length of the second isothermal temperature portion being at least as long as the combined length of the first isothermal temperature portion and the decreasing temperature gradient and being at least as long as the specified distance between said first and second containing means, and the said containing means of said second tube section remaining within the second isothermal temperature portion when the containing means of said first tube section moves through the first isothermal temperature portion and the decreasing temperature gradient.

4. A crystal growth tube closed from the external environment for use in synthesizing crystal materials comprising:

a first section for nucleating the crystal materials;

a second section for receiving at least some materials to be nucleated and spaced from and physically above said first section;

spacing means separating said first and second sections; and means for defining a barrier secured to the interior of said tube within said spacing means, intermediate said first and second tube sections, and opening towards said second section for collecting refluxed material.

3,870,474

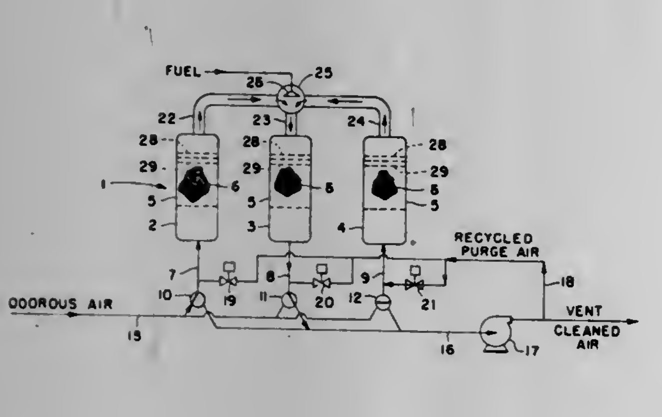
REGENERATIVE INCINERATOR SYSTEMS FOR WASTE GASES

Reagan Houston, 146 Curtis Dr., Avon Lake, Ohio 44012

Filed Nov. 13, 1972, Ser. No. 305,997

Int. Cl. F23g *7/06;* **B01j** *9/02*

U.S. Cl. 23—277 C **20 Claims**



1. A regenerative incinerator system comprising a plurality of regenerators each containing packing material, directing means for alternately directing the contaminated air or gas through said regenerators first in one direction and then in the reverse direction to purify the contaminated air and transfer heat from the packing material to the air and vice versa, a combustion chamber common to all of said regenerators for receiving the air passing from one regenerator to another to assure complete oxidation of the contaminants in the air prior to being discharged from the system, and purging means for purging said regenerators of any contaminated air remaining in said regenerators when the flow of air through said regenerators is reversed and reintroducing such purged air back into said combustion chamber to remove the contaminants from the purged air prior to being discharged from the system.

3,870,475

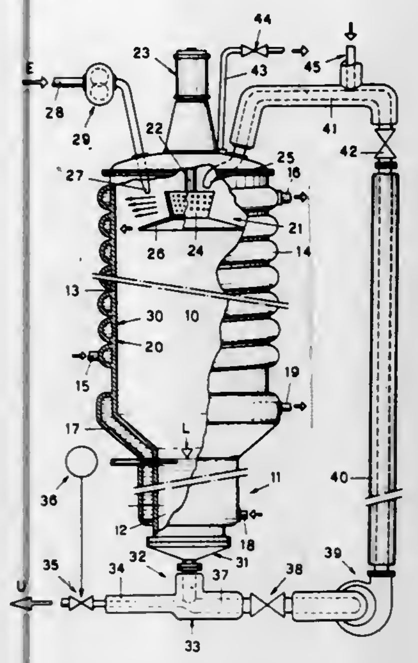
APPARATUS FOR THE CONTINUOUS PERFORMANCE OF CHEMICAL PROCESSES, MORE PARTICULARY ESTERIFICATION, AND/OR TRANSESTERIFICATION AND POLYCONDENSATION PROCESSES

Francesco Siclari; Cesano Maderno; Franco Magnoni, and Sergio Fulmini, all of Milan, Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Division of Ser. No. 813,914, April 7, 1969, Pat. No. 3,787,481. This application Sept. 18, 1972, Ser. No. 289,949

Int. Cl. B01j *1/00, 4/00*

U.S. Cl. 23—285 **4 Claims**



1. Apparatus for continuously performing chemical and physical processes and reactions conducive to the formation and treatment of liquid intermediates with concurrent production of volatile coproducts of the reaction, such as esterification, transesterification and polycondensation processes forming the initial and intermediate stages of methods for the production of polyesters in a continuous run, comprising

a reactor having a metal peripheral wall whose inner face is vertical at least in the upper and middle portions of the reactor and which defines a chamber with a vertical axis, means for circulating a fluid thermal medium in contact with the external surface of said wall to heat said wall,

a shaft rotatably mounted in said reactor with the axis of said shaft coaxial with the axis of said chamber,

a vessel having a perforated perimetrical wall secured to said shaft at a first level in the upper part of said chamber to rotate with said shaft,

a disc secured to said vessel at a lower level than said first level and forming a flange around said vessel, said flange extending substantially radially outwardly from said perimetrical wall,

means for introducing into the reactor a reagent liquid said introducing means being located between said inner face of said peripheral wall and said perimetrical wall and positioned to cause said reagent liquid to drop onto the upper surface of said disc,

means for removing a reacted liquid product continuously from the bottom of said reactor,

means for withdrawing a portion of the removed reacted product for subsequent treatment,

means for recirculating to the top of the reactor and into said vessel at a point closer to said shaft than the point at which the reagent liquid is delivered onto said disc the remaining portion of the removed reacted product, and

means for rotating said shaft and said vessel and said disc therewith so that the recirculated reacted liquid product is thrown through the perforations in said vessel wall onto the inner face of said reactor wall and the reagent liquid is hurled by said disc also against said inner face but at a level lower than that which the recirculated liquid product is projected against said inner face so that the reagent liquid is dispersed into a liquid film formed by the recirculated liquid product on said inner face and the two liquids flow downwardly together on said inner face mingling and absorbing the heat therefrom.

3,870,476

DEVICE FOR PERFORMING CATALYTIC ENDOTHERMIC REACTIONS

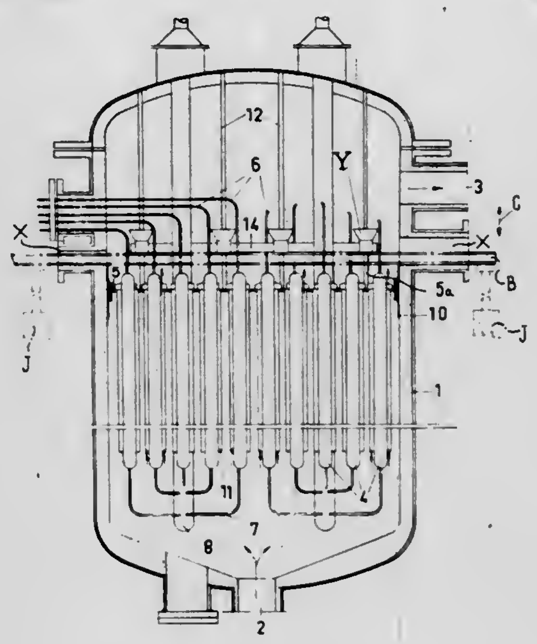
Hans-Dieter Marsch, Wandweg 9, Dortmund-Ospel, Germany

Continuation-in-part of Ser. No. 179,788, Sept. 13, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,942

Claims priority, application Germany, Nov. 11, 1970, 2055439

Int. Cl. B01j *9/04*

U.S. Cl. 23—289 **6 Claims**



1. A device for the reforming of gaseous hydrocarbons mixed with steam by a heating gas, said hydrocarbons and heating gas being under pressure of more than 5 atm.g. comprising in combination

a vertically disposed internally insulated pressure vessel,

a supporting plate in the upper portion of said vessel in essentially gastight connection with the inner insulated wall thereof, said supporting plate having a plurality of apertures,

heating gas inlet and outlet means for said vessel,

open ended shell tubes fitting said supporting plate apertures respectively, and seal welded therein to be supported by said plate, and having their lower ends disposed in the lower part of said vessel,

a catalyst-containing reaction tube in each shell tube and spaced from the walls thereof to enable passage of heating gas therethrough,

means for supporting said reaction tubes on said supporting plate and within said shell tubes,

catalyst-free gas feed tubes extending to the upper inlet ends of said reaction tubes, and

catalyst-free gas discharge tubes connected to the lower ends of said reaction tubes.

3,870,477

OPTICAL CONTROL OF CRYSTAL GROWTH

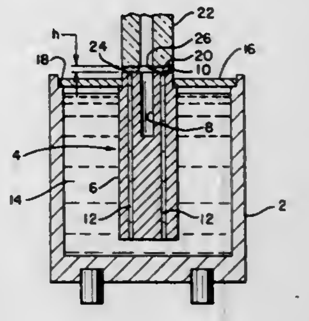
Harold E. Labelle, Jr., Quincy, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed July 10, 1972, Ser. No. 269,985

Int. Cl. B01j *17/00*

U.S. Cl. 23—301 SP **10 Claims**

1. In a method of growing a crystalline body of a selected material so that said body has a selected cross-sectional shape for an indefinite distance along its length, said method comprising growing and pulling said crystalline body from a growth pool of melt which is replenished via a capillary member by action of capillary rise from a reservoir supply of melt, said growth pool of melt also being characterized by a vertical meniscus which extends between the interface thereof with said crystalline body and an edge of said capillary member, the improvement comprising:



optically monitoring and measuring the height of said meniscus; and

adjusting as required the speed at which said body is being pulled or the temperature of said growth pool of melt so as to maintain the height of said meniscus within predetermined limits, whereby to cause said body to grow with a cross-section of substantially constant size.

3,870,478

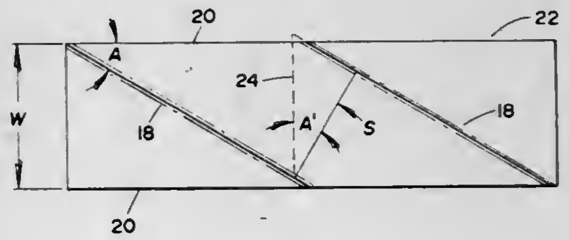
METHOD OF PREPARING A BIAS FABRIC

Raymond A. Rohlfing, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Continuation of Ser. No. 57,378, July 17, 1970, abandoned. This application July 19, 1972, Ser. No. 273,089

Int. Cl. B26d *3/16*

U.S. Cl. 29—2.1 **3 Claims**



1. A method of precluding occurrence of more than one selvage across the width of a strip of bias fabric comprising the steps of:

helically cutting a length of flatly and generally squarely woven tubular fabric having two diametrically opposed and substantially parallel selvages, at least twice at a helical angle less than forty-five degrees and forming strips of bias fabric having cut widths such that the cut widths of the strips of bias fabric is less than the ratio of the selvage spacing to the cosine of the helical angle whereby only one selvage occurs across the bias fabric width at any point along the strip of bias fabric.

3,870,479

LITHOGRAPHIC TYPE DIFFUSION TRANSFER DEVELOPER

Kikuo Kubotera; Shinpei Ikenoue; Eiichi Mizuki, all of Saitama, and Tadahiro Fujiwara, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1972, Ser. No. 297,559

Claims priority, application Japan, Oct. 15, 1971, 46–81378

Int. Cl. G03c *5/30*

U.S. Cl. 96—29 L **19 Claims**

1. A lithographic type diffusion transfer developer for use in the diffusion transfer developing of a light-sensitive silver halide material, which consists essentially of at least one of ascorbic acid, an ascorbic acid derivative or a water-soluble alkali salt thereof in a developer containing as the developing agent 1-phenyl-3-pyrazolidone-polyhydroxybenzene or p-

aminophenol-polyhydroxybenzene, the developer further including a silver complexing agent, sulfite or alkali bromide being present in the developer in an amount of 0–1g per one liter of the developer, said developer providing a fringe-free half tone dot photographic original plate directly from an original, and providing increased sensitivity at the positive image portion of an image receiving layer when used in diffusion transfer development.

3,870,480

PROCESS AND APPARATUS FOR THE PRODUCTION OF COMBUSTIBLE GASES

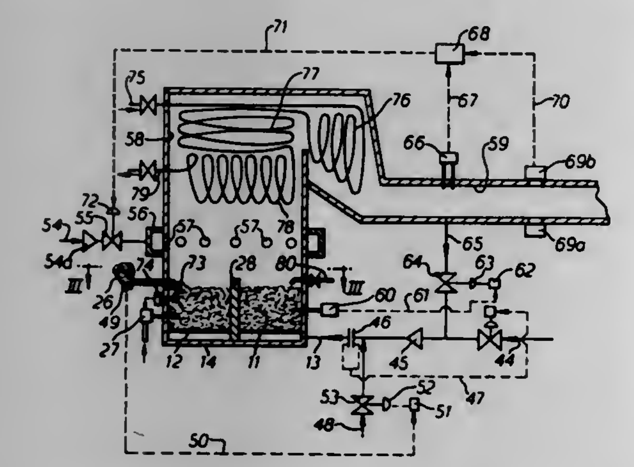
Gerald Moss, Oxford, England, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 15, 1972, Ser. No. 234,764

Claims priority, application Great Britain, Mar. 19, 1971, 7310/71

Int. Cl. C10j *3/16*

U.S. Cl. 48—71 **21 Claims**



6. A method of producing a substantially sulfur-free combustible gas from a solid carbonaceous material selected from the group consisting of coal, lignite, peat and shale and mixtures thereof, which comprises reacting said carbonaceous material in the upstream region of a reactor bed of fluidized particles containing at least one alkaline earth metal oxide at a temperature of between about 800℃. and 1,025℃. with an oxygen-containing gas having an oxygen content of between about 20 percent and 50 percent of the amount required for stoichiometric combustion of said carbonaceous material to convert said carbonaceous material to a substantially sulfur-free combustible gas and combining the sulfur in said carbonaceous material with the alkaline earth metal of said particles to form alkaline earth metal sulfides, transferring said particles from a downstream region of said reactor bed to a regenerator bed wherein said transferred particles are reacted at a temperature in the range of about 1000° to 1100℃. with an oxygen-containing gas to thereby convert the alkaline earth metal sulfides to alkaline earth metal oxides with the concurrent evolution of sulfur dioxide, returning said particles from said regenerator to the upstream region of said reactor bed, introducting a hydrocarbon oil in the said downstream region of said reactor bed and introducing steam in the oxygen-containing gas entering at least upstream of the region of said oil introduction.

3,870,481

METHOD FOR PRODUCTION OF SYNTHETIC NATURAL GAS FROM CRUDE OIL

William P. Hegarty, 31 Fairway Ln., Wescoville, Pa. 18106

Filed Oct. 12, 1972, Ser. No. 297,012

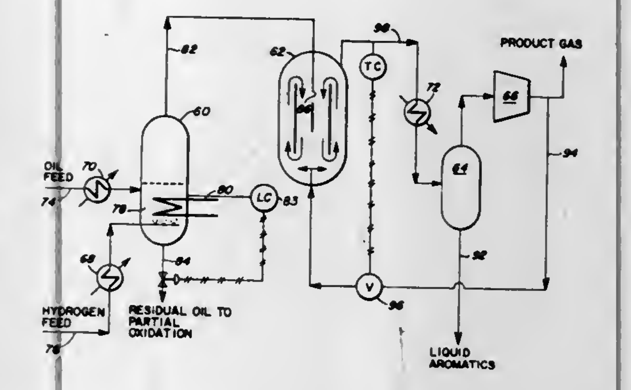
Int. Cl. C01b *2/16*

U.S. Cl. 48—213 **19 Claims**

14. A method of gasifying a crude oil to produce a gaseous effluent consisting essentially of hydrogen, methane, ethane, hydrogen sulfide and uncondensed aromatics comprising the steps of:

introducing a liquid crude oil into a vaporization vessel heated to between 800° and 1000°F;

maintaining a pool of liquid residual crude oil in said vaporization vessel and introducing warmed gaseous hydrogen into the pool of liquid residual crude oil thereby forming a mixture of vaporized hydrogen and crude oil above the pool of liquid residual crude oil; and



withdrawing the vaporized crude oil hydrogen mixture and injecting said mixture into a hydrogasification vessel wherein the mixture is recirculated at a temperature of about 1400°F to cause the mixture to react to form a gasifier effluent consisting essentially of hydrogen, methane, ethane, aromatic hydrocarbons and hydrogen sulfide and lowering the temperature of said effluent and recovering heat thereby thus condensing and separating condensible aromatic hydrocarbons.

3,870,482

PROCESS FOR THE SEPARATION OF C_4 ACETYLENIC HYDROCARBONS FROM GAS STREAMS

David G. Walker, Baytown; Donald A. Keyworth, Houston, and Jerome R. Sudduth, Pasadena, all of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sept. 19, 1973, Ser. No. 398,678

Int. Cl. B01d *53/04*

U.S. Cl. 55—62 **14 Claims**

1. In the process for the separation of diacetylene and vinylacetylene from a hydrocarbon pyrolysis gas that contains from 1 to 10 mole percent of said compounds wherein said hydrocarbon pyrolysis gas is passed through a bed of activated carbon until the surface of the carbon is saturated with adsorbed C_4 acetylenic hydrocarbons and a stream of inert gas is passed through the bed of saturated activated carbon thereby desorbing said acetylenic hydrocarbons and forming a gas stream that contains about 30 to 50 mole percent of C_4 acetylenic hydrocarbons in said inert gas, the improvement that comprises saturating the surface of the activated carbon with an inert, non-explosive compound that has carbon adsorption characteristics similar to those of diacetylene and vinylacetylene and thereafter cooling said activated carbon before the hydrocarbon pyrolysis gas is passed into the bed of activated carbon.

3,870,483

SEPARATING ARRANGEMENT

Bo Ritzler, Sodertalje, Sweden, assignor to AB Filtrator, Sodertalje, Sweden

Filed Aug. 22, 1973, Ser. No. 390,610

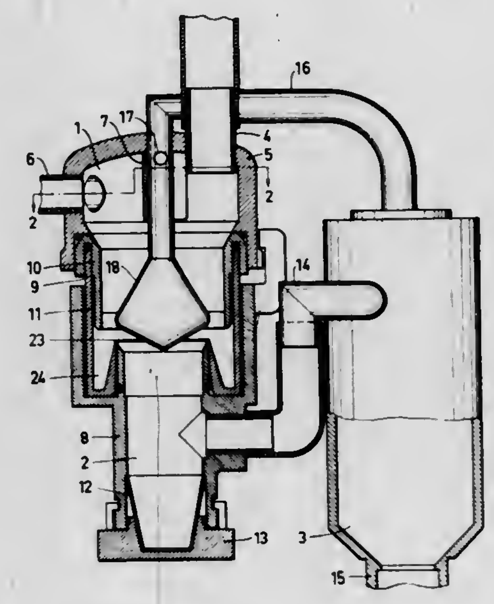
Claims priority, application Sweden, Aug. 23, 1972, 10957/72

Int. Cl. A61c *17/04*

U.S. Cl. 55—192 **20 Claims**

1. Arrangement for separating into components a fluid comprising at least one component and solid material particles, characterized in that an upper and a lower means of essentially cylindrical shape enclose one upper and one lower part, respectively, of a first liquid; whereby the cavity defined by the lower cylindrical means has a smaller radius than that

of the upper one; that an annular pocket is provided around the lower cylindrical means and below the upper one, the upper end of said pocket being terminated by a capillary slot arranged around the upper cylindrical means; that the pocket contains a second liquid having higher specific gravity than that of the first liquid, a boundary surface formed between said first and second liquids having essentially the shape of a frustrum of a funnel between the lower edge of the upper cylindrical means and the upper edge of the lower cylindrical means due to the capillary influence which the capillary slot



has on the second liquid, said capillary slot being arranged around the upper cylindrical means whereby, at separation, said particles together with the liquid form components of said fluid are forced by influence of the gravity to move downwards through said first liquid towards the funnel-shaped boundary surface between said first and said second liquids, whereby heavier particles will penetrate the boundary surface and collect in said pocket, whereas lighter particles together with the liquid form components of the fluid will slide along the funnel-shaped boundary surface and down into the lower cylindrically shaped part of said first liquid.

3,870,484

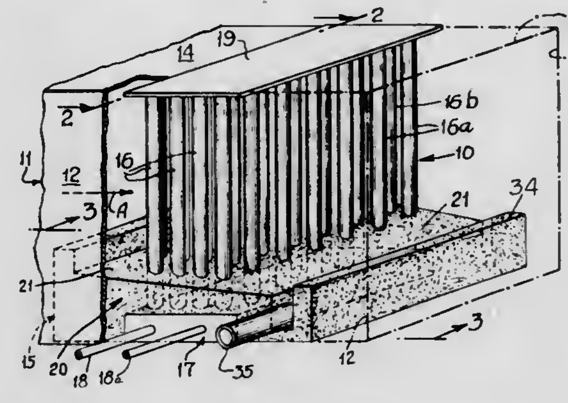
INDUSTRIAL SCRUBBER

Roy E. Berg, Ft. Lauderdale, Fla., assignor to Interstate Utilities Corporation, Miami, Fla.

Filed June 13, 1972, Ser. No. 262,317

Int. Cl. B01d *45/10*

U.S. Cl. 55—229 **5 Claims**



1. A scrubber for removing solid particulate and gaseous pollutants from a gas stream as said stream is circulated and conveyed therethrough, said scrubber comprising: a support base having associated therewith parallel side walls and a removable top defining a passage for the flow of a hot waste gas stream therethrough; a plurality of vertical, scrubber tubes; means for independently and removable mounting the lower ends of said scrubber tubes in said support base to provide parallel rows of said tubes in direct communication with a water supply in said base, each row being offset from each adjacent row such that said scrubber tubes are arranged in a staggered relationship transverse to the direction of flow of a gas stream to be circulated and conveyed therethrough; means for pumping water upwardly through said scrubber tubes such that the water is forced out of the tops thereof and is permitted to flow and cascade down and about their outer surfaces; said base further comprising supplemental means at the lower portion of said scrubber for engaging and supporting said tubes and for removing contaminated water containing solid particulate and gaseous pollutants from the scrubber, individually detachable spacing and securing means at the upper ends of said tubes, and said removable top comprising a plate member in closely spaced relation to the upper ends of said scrubber tubes, said plate member resting on said spacing and securing means to apply downward pressure to said tubes and serving to deflect water from the tops of said scrubber tubes downwardly between and about the outer surfaces thereof.

3,870,485

COOLING TOWER

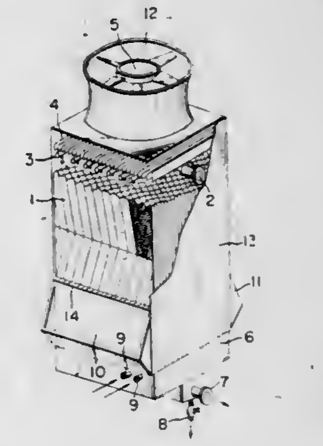
Hiroo Shiraishi, Fukuoka; Hiroyoshi Kurohara, Chikushi; Shinjiro Tomita, Fukuoka; Senji Takenaka; Nobuo Yamada, both of Yokohama, and Motoyoshi Hashitani, Niiza, all of Japan, assignors to Japan Gasoline Co., Ltd.; Shin-Nihon Reiki Co., Ltd., both of Tokyo; Aza-yunohara and Oaze-Futsuk-aichi, both of Chikushino-shi, Fukuoka-ken,, Japan

Filed Nov. 9, 1972, Ser. No. 305,126

Claims priority, application Japan, Mar. 6, 1972, 47-22373; Mar. 22, 1972, 47-28670

Int. Cl. B01f *3/04*

U.S. Cl. 55—257 **5 Claims**



1. A cooling tower comprising a casing having side wall means with air inlet opening means for atmospheric air near the lower end thereof, said casing having outlet opening means at its upper end for discharging heated air; a basin disposed below said casing for receiving cooled liquid therefrom; an air-moving impeller associated with said outlet opening means for drawing air into said casing through said inlet opening means and discharging the air through said outlet opening means; gas-liquid contact means comprising a plurality of generally upright porous sheet-like screens each having an undulating configuration, said screens being arranged in association with each other to define upright passages for flow of upwardly rising air which air is adapted to contact liquid flowing downwardly on the screens; a plurality of liquid distributors mounted inside said casing between the upper ends of said screens and said outlet opening means, said liquid distributors being arranged in a generally horizontal array for distributing liquid substantially uniformly onto the upper ends of said screens, each liquid distributor comprising an elongated outer tube which is closed at both its axial ends and which has a series of axially spaced openings of essentially the same size along its lower side for discharging liquid substantially vertically downwardly onto the upper ends of the screens, an elongated inner tube fixed to and projecting

through one axial end of said outer tube and extending axially therein substantially to the other axial end of said outer tube, said inner tube being radially spaced from the interior wall of said outer tube to define therewith an annular zone for holding a quantity of the liquid, the axial end of said inner tube disposed within said outer tube being closed and the other axial end of said inner tube being connected to a source of the liquid, the portion of said inner tube located within said outer tube having a series of axially spaced openings along its upper side, so that liquid supplied to said inner tube overflows therefrom upwardly through said openings in said inner tube and then flows downwardly in said annular zone and accumulates to a substantial depth therein and the liquid flows downwardly through the openings in said outer tube under substantially uniform pressure along the entire length of said outer tube and onto the upper ends of said screens; and eliminator means mounted in said casing above said liquid distributors for minimizing the flow of splash liquid through said outlet opening means.

3,870,486
FLOOR SURFACE TREATING APPARATUS

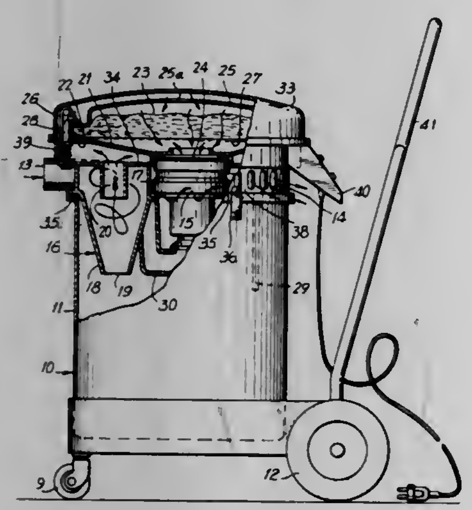
Bolik Anders Gottfrid Eriksson, Johanneshov; Erik Karl Gustav Johansson, Sollentuna, and Milos Vukotic, Tumba, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 19, 1973, Ser. No. 398,846

Claims priority, application Sweden, Sept. 22, 1972, 12242/72

Int. Cl. B01d ***45/16***

U.S. Cl. 55—276 **7 Claims**



1. A floor surface treating apparatus comprising a container having an upper part provided with an inlet opening for dust-laden air or liquid and discharge opening for clean air and a lower part for collecting separated dust or separated liquid, a generally vertically disposed cyclone separator in said container operatively connected to said inlet opening, at least one motor-fan unit in said container for moving air through said container, a relatively flat filter extending substantially across the entire width of the upper part of said container, means supporting said filter above both said separator and said motor-fan unit; said support means comprise means forming a housing around said filter; and said housing having an air inlet above said filter and air outlet below said filter, and said support means further forms a passageway from said separator to the inlet of said housing whereby air leaving said separator follows said passageway to the inlet of said housing and then flows through said filter and said housings outlet to the inlet of said motor-fan unit and subsequently to said discharge opening for clean air, and said separator being provided with a dust and liquid outlet communicating with said lower part of said container.

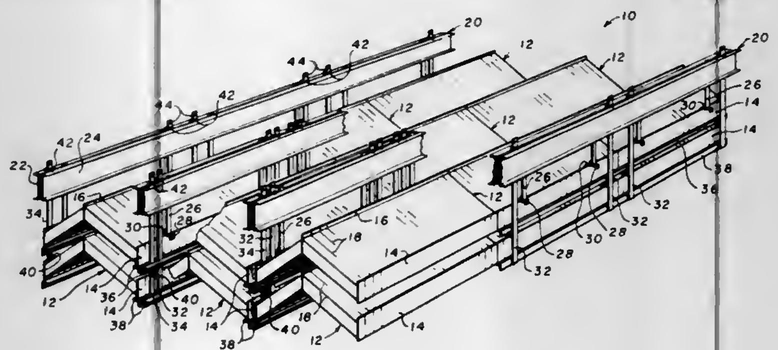
3,870,487
MODULE SUSPENSION SYSTEM

William Barrett Hurlbut, Sr., East Hartford; Preston Dean Liebig, West Hartford, and Gerald Maurin, Newington, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed June 28, 1972, Ser. No. 266,852

Int. Cl. B01d ***45/08***

U.S. Cl. 55—436 **7 Claims**



1. An apparatus for supporting vertically stacked modules comprising:

a horizontally disposed longitudinally extending support;

a first vertically extending support integrally attached to and extending downward from said horizontal support;

a second vertically extending support removably supported from and extending downward from said horizontal support a greater distance than said first vertical support;

first retaining means mounted on said first vertical support at a first vertical elevation from said horizontal support; second retaining means mounted on said second vertical support at a second vertical elevation from said horizontal support, said second vertical elevation being vertically below said first vertical elevation;

a first resting surface means mounted on said second vertical support at a third vertical elevation from said horizontal support, said third vertical elevation being vertically between said first and second vertical elevations;

a second resting surface means mounted on said second vertical support at a fourth vertical elevation from said horizontal support, said fourth vertical elevation being vertically below said second vertical elevation;

said first retaining means and first resting surface means forming a first holding assembly and said second retaining means and second resting surface means forming a second holding assembly vertically below said first holding assembly, said holding assemblies each supporting at least one of the modules between its respective retaining means and resting surface means; and

said second vertical support being detachable from said horizontal support to vertically move said first resting surface means relative to said first retaining means to release said module supported therebetween.

3,870,488
LIQUID ELIMINATOR

Frederick W. Arndt, and Joseph H. Gavin, both of Bay Village, Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

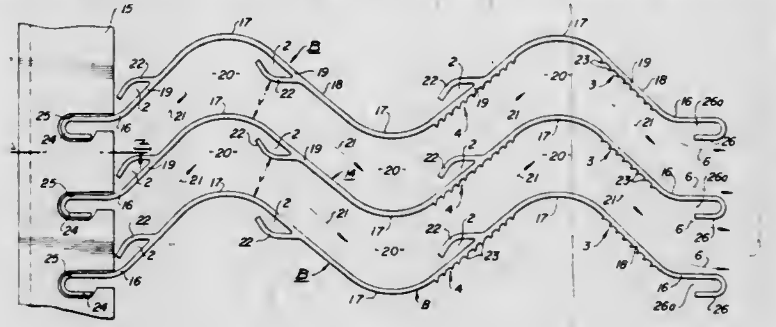
Continuation of Ser. No. 72,405, Sept. 15, 1970, abandoned. This application June 29, 1973, Ser. No. 374,881

Int. Cl. B01d ***45/08***

U.S. Cl. 55—440 **20 Claims**

1. In an eliminator for removing moisture from a gas stream, the combination of a pair of sinuous continuour moisture eliminator blades, each blade having bends with alternate convex and concave apexes, and means supporting said blades in spaced complementary parallelism and defining therewith an open sinuous path for said stream from an inlet at one end of the blades to an outlet at the other end of the blades, a first blade on one side of said path having a convex apex opposite a concave apex of a second blade on the other side of said path, a crescent-shaped vane joined to said second blade

downstream of said concave apex and defining with said second blade a liquid trap opening toward said concave apex, the opening of said trap being located between said concave apex and an adjacent convex apex of said second blade and at no



greater distance from said concave apex than midway between said concave and convex apexes, said vane having a crescent-shaped convex surface facing a portion of said convex apex on said first blade and defining therewith a venturi-like restriction in said path.

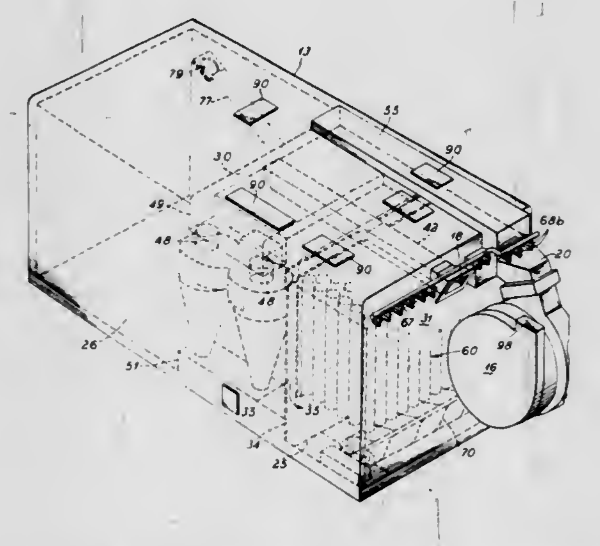
3,870,489
AIR FILTER SYSTEMS FOR DEBRIS COLLECTING APPARATUS

Roland E. Shaddock, Streator, Ill., assignor to Myers-Sherman Company, Streator, Ill.

Filed Oct. 13, 1972, Ser. No. 297,408

Int. Cl. B01d ***50/00***

U.S. Cl. 55—314 **4 Claims**



3. A mobile debris collection apparatus comprising:

a vehicle having a frame;

a debris collection box mounted on said frame;

a vertical dividing wall mounted in said box and dividing it into first and second compartments;

a debris-laden air inlet to said first compartment;

a first air filtration mounted in said first compartment and formed with a filter passage such that air can pass up through said first air filtration system from said first compartment;

an air outlet extending to the top of said first air filtration system;

means exterior to said box for inducing air flow from said air outlet;

a first closure means mounted on the top of said first filtration system to disconnect it from said air outlet;

a second separate and distinct air filtration system of a type different from said first air filtration system mounted in said second compartment and its outlet communicating with said air outlet;

a second closure means mounted in said vertical dividing wall such that when said second closure means is open and said first closure means is closed, the debris-laden air passes exclusively through said second air filtration system, and when said second closure means is closed and said first closure means is opened, the debris-laden air passes exclusively through said first air filtration system.

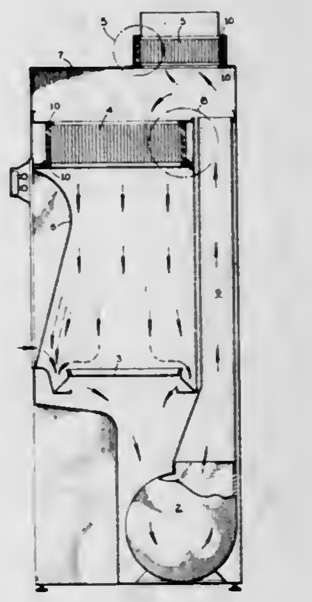
3,870,490
FILTER AND SEAL

Jerome J. Landy, 13700 S.W. 78th Ct., Miami, Fla. 32158

Filed Apr. 29, 1974, Ser. No. 464,816

Int. Cl. B01d ***31/00***

U.S. Cl. 55—355 **9 Claims**



1. A filter and seal, said filter having a frame periphery with marginal edges to be secured to a support, said seal comprising, in combination:

a gasket body of resilient material,

a plurality of tongues on one face of said gasket body,

a plurality of grooves defined between said tongues on said gasket body,

means for securing said gasket body in sealed adhesive relationship to the filter frame,

and a sealant of inert stable grease-like material in the grooves defined between said tongues, whereby, upon compressing the gasket members against the sealant in compressive relationship to the support means for holding the filter, a seal is defined between the interface of the tongues of the gasket and the support means which is wetted by the sealant.

3,870,491
MEANS FOR REMOVABLY CONNECTING A DIRT COLLECTING RECEPTACLE IN A VACUUM CLEANER

Dale M. Friesen, and Erwin E. Nordeen, both of Saint Paul, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

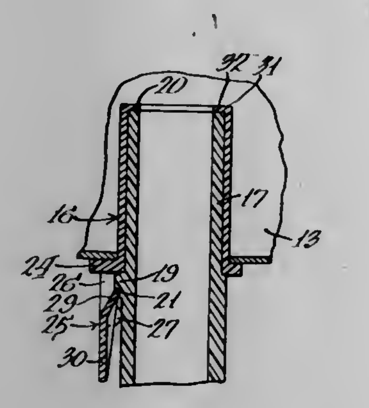
Filed Jan. 16, 1974, Ser. No. 433,914

Int. Cl. B01d ***46/02***

U.S. Cl. 55—376 **13 Claims**

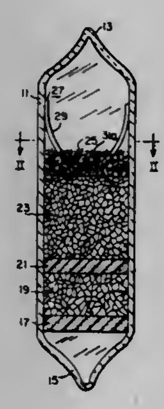
1. In a vacuum cleaner having an air flow means including a duct having an outer end, and a dirt collecting receptacle, means for releasably connecting the dirt collecting receptacle to the outer end of the duct comprising: means defining a first shoulder on said duct spaced from said duct outer end; tubular connector means on said dirt collecting receptacle removably fitted about said duct outer end to provide an air flow connection between said duct and receptacle; means carried by said tubular connector means defining a lever having a first end normally disposed in retained engagement with said first shoulder when said tubular connector means is fitted to said duct outer end, and an opposite, manipulating end; and means defining a fulcrum adjacent the mid-portion of the lever to arrange said lever as a first class lever, depression of said

manipulating end of the lever causing swinging of said first lever end free of engagement with said first shoulder to permit removal of said tubular connector means and dirt collecting receptacle from said air flow duct as for disposal of collected dirt therefrom, said fulcrum being spaced relative to said first shoulder to cause a component of the force of depression of said lever manipulating portion to be directed to urge said tubular connector means away from the fitted connection with said duct outer end.



3,870,492
APPARATUS FOR COLLECTING SAMPLES OF CONTAMINANTS

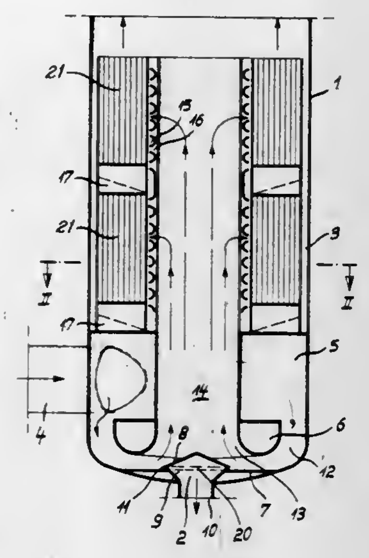
Lloyd V. Guild, 358 Park Rd., Bethel Park, Pa. 15102
Filed Aug. 9, 1973, Ser. No. 387,016
Int. Cl. B01d *53/04*
U.S. Cl. 55—387 **2 Claims**



2. Apparatus for collecting samples of contaminants in the fluid of a region comprising a tube through which said fluid is to flow having therein, at least one layer of particulated contaminant-adsorbing or absorbing material, said layer extending throughout the whole cross-section of said tube, a mass of permeable material in said tube engaging said layer, said mass being permeable but the cross-sectional area of the pores in said mass being predominately smaller than the smallest cross-sectional area of the particles of said adsorbing or absorbing material, and a U-shaped spring having an apex engaging said mass and having legs engaging, and compressed by, the walls of said tube and by the compression exerted by said walls causing said apex to exert a force on said mass to preclude movement of said mass away from said layer and this movement of the particles of said adsorbing or absorbing material away from said layer along said tube, the developed length of the spring being greater than twice the inner diameter of the tube.

3,870,493
APPARATUS FOR SEPARATING LIQUID FROM A LIQUID CONTAINING GAS FLOW

Horst Kall, and Klaus Riedel, both of Gummersbach, Germany, assignors to L. & C. Steinmuller G.m.b.H., Germany
Filed June 9, 1972, Ser. No. 261,372
Claims priority, application Germany, June 11, 1971, 2128897
Int. Cl. B01d *45/12*
U.S. Cl. 55—391 **5 Claims**

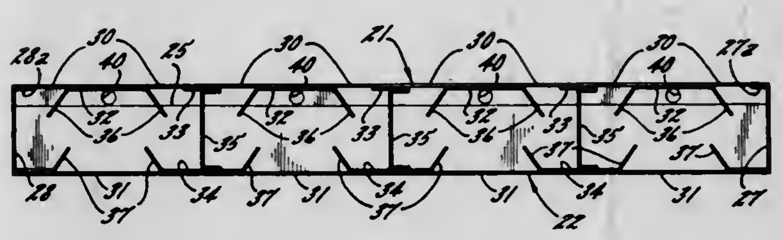


1. An apparatus for separating liquid from a liquid containing gas flow, which includes: container means, coarse separator means arranged in the lower portion of said container means, fine separator means arranged in the upper portion of said container means in vertically spaced relationship to said coarse separator means and provided with means for discharging the gas from which liquid has been separated in said fine separator means, annular chamber forming means interposed between said coarse separator means and said fine separator means and having at least one inlet forming means tangentially disposed for connection with a source of liquid containing gas to be processed, said annular chamber means being open at the bottom and closed at the top thereof, means forming a region of communication including conduit means axially arranged within said container means and closed at the top and communicating at the bottom with said annular chamber means, deviating means arranged within the region of communication of said conduit means with said annular chamber means and together with said container means and said coarse separator means forming nozzle means tapering in the direction toward said conduit means and establishing the communication between said annular chamber means and said conduit means, and gas flow guiding and distributing means forming part of at least a portion of that section of the wall of said conduit means which is located above said annular chamber, said guiding and distributing means forming with each other nozzle-shaped passages communicating with said fine separator means.

3,870,494
GREASE FILTER FOR KITCHEN VENTILATORS

DeWitt H. Doane, Rt. No. 2, Long Grove, Ill. 60047
Filed Jan. 24, 1973, Ser. No. 326,266
Int. Cl. B01d *45/06*
U.S. Cl. 55—443 **7 Claims**

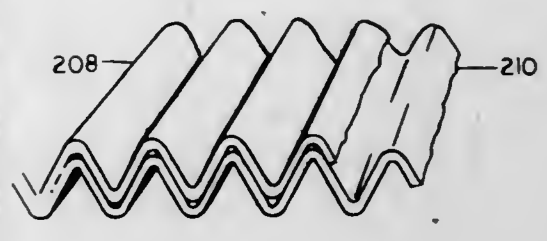
1. A grease filter for kitchen ventilating systems and the like, said filter comprising the combination of a housing that is elongated in the X and Y directions and less than 2 inches in the Z direction so that the housing will fit in the space normally provided for mesh-type filters in a kitchen ventilating system, said housing forming closed top and bottom walls lying substantially in X–S planes, closed side walls lying substantially in the Y–Z planes, and front and rear walls lying substantially in X–Y planes, said front wall forming a multiplicity of spaced entrance openings which are uniformly elongated in the Y direction and relatively narrow in the X direction, each of said entrance openings formed by a pair of edges of said front wall elongated in the Y direction on opposite sides of the opening said rear wall forming a multiplicity of exit openings each of which is located midway between a pair of adjacent entrance openings, said exit openings also being uniformly elongated in the Y direction and relatively narrow in the X direction, a multiplicity of interior baffles lying substantially in Y–Z planes within said housing, each of said interior baffles comprising a single sheet of metal extending from a line midway between an adjacent pair of said exit openings on said rear wall to a line midway between an adjacent pair of said entrance openings on said front wall so that opposite sides of each of said interior baffles are exposed to said adjacent pair of entrance openings, a multiplicity of entrance baffles equal to the number of entrance openings extending into said housing from the elongated edges of said entrance openings, each of said entrance baffles extending from one of the elongated edges of one of said entrance openings toward the side wall or the interior baffle that is closest to said entrance opening with the rear edge of each entrance being spaced farther away from said closest sidewall or interior baffle than the other elongated edge of its entrance opening, the entrance baffle originating at the entrance opening edge in said front wall that is farther away from said closest side wall or interior baffle and extending toward said closest side wall or interior baffle at an acute angle relative to said front wall so as to deflect an entering exhaust stream toward said closest side wall or interior baffle as the exhaust stream passes rearwardly through said housing, and a multiplicity of exit baffles equal to the number of entrance baffles extending into said housing from the elongated edges of said exit openings, each of said exit baffles extending from an elongated edge of one of said exit openings toward the opposite elongated edge of the same exit opening at an acute angle relative to said rear wall so as to deflect the exhaust stream moving rearwardly from each entrance opening in the forward direction away from said rear wall before the exhaust stream is discharged through said exit opening, said bottom wall forming a multiplicity of drain openings adjacent said front wall and spaced away from said entrance openings in the X direction.



3,870,495
PARTICULATE AND/OR GAS FILTERS AND ASSOCIATED FILTERING EQUIPMENT TO PURIFY AIR TO BE BREATHED BY PERSONS IN VEHICLES AND/OR BUILDINGS, AND MANUFACTURE AND INSTALLATION OF THESE FILTERS

Bruce E. Dixson, Grand Junction; Marcus I. Hoffman, III, Palisade, and Milton A. Walls, Grand Junction, all of Colo., assignors to Air Purification Systems, Inc., Grand Junction, Colo.
Filed Dec. 22, 1972, Ser. No. 317,829
Int. Cl. B01d *50/00*
U.S. Cl. 55—489 **22 Claims**

1. For installation in fluid filtering equipment, a fluid filter cartridge comprising at least two layers of filter materials each of said layers including random multiple through passageways of non-uniform, varying diameters, in consequential portion of said passageways being oversized with respect to the predetermined porosity of said filter material, said two layers being juxtaposed and retained in a fixed, face-to-face relationship, so that the air to be purified passes directly through both of said layers in substantially undeviating fashion and whereby there is no substantial alignment of said oversized passageways in the filter materials through which fluid might pass without being sufficiently filtered.



3,870,496
METHOD OF CREATING A FOAMED GLASS PRODUCT FROM WASTE GLASS

Ivan B. Cutler, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah
Continuation of Ser. No. 174,220, Aug. 23, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 387,883
Int. Cl. C03b *19/08*
U.S. Cl. 65—22 **3 Claims**

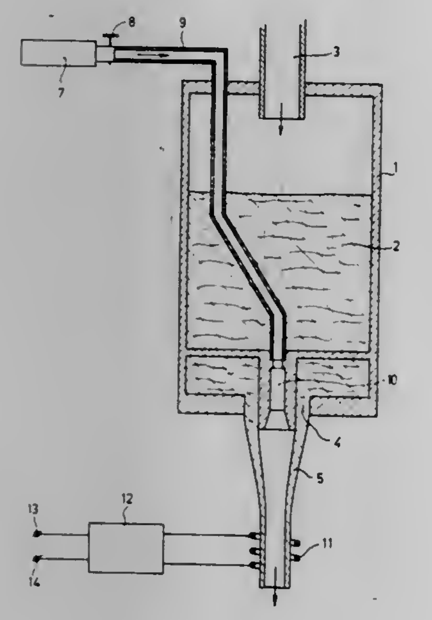
2. A method of creating a foamed glass product comprising the steps of:
obtaining a finely divided waste glass;
reacting the molecular structure of the glass with hydroxide groups thereby lowering the softening temperature of the glass from a first, higher softening temperature to a second, lower softening temperture;
heating the glass to the lower softening temperature but below the melting point of the unmodified glass to thereby soften the modified glass and release the hydroxide groups from the structure of the glass, the hydroxide groups combining to form water vapor;
foaming the softened glass with the water vapor while raising the softening temperature of the glass by releasing the hydroxide groups from the glass molecular structure; and
cooling the foamed glass.

3,870,497
METHOD ELIMINATING DISCONTINUITIES IN A QUARTZ ARTICLE

Raymond Francois Spiessens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 25, 1973, Ser. No. 409,419
Claims priority, application Netherlands, Nov. 2, 1972, 7214796
Int. Cl. C03c *15/00;* **C03b** *15/14, 21/00*
U.S. Cl. 65—32 **7 Claims**

1. A method of eliminating discontinuities and removing impurities by means of a thermal treatment, in an elongated quartz tube comprising: first providing a plasma burner thermal source which includes a coil and which generates a high frequency field; second, moving the tube with respect to said thermal source in a direction which is substantially parallel to the axis of the tube, third, passing an inert gas to the burner

thermal source and to the tube in such a manner that said inert gas is at least present at the area of said burner thermal source



near the tube to bring the tube locally to a temperature above its softening point.

3,870,498
METHOD OF MANUFACTURING HOLLOW GLASS ARTICLES

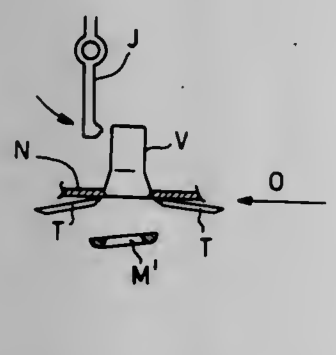
Herman Buurman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,641

Claims priority, application Netherlands, Apr. 16, 1973, 7305264

Int. Cl. C03b *21/00*

U.S. Cl. 65—106 **2 Claims**



1. A method of manufacturing hollow glass articles, comprising the steps of:
  depositing molten glass on a carrier having an opening therethrough, said glass covering the opening;
  moving the carrier along a closed path while performing the successive steps in the following sequence of:
    permitting a first portion of said glass to sag through said opening;
    forming said molten glass into a hollow article having one open end directed upward at the level of said opening; rotating said carrier about a horizontal axis to invert said article so that said open end is opened downward; severing a second portion of said article protruding downward from said opening; and removing said article from said carrier while said end is opened downward.

3,870,499
APPARATUS FOR MANUFACTURING SOLID DOUBLE LAYER SHEET GLASS

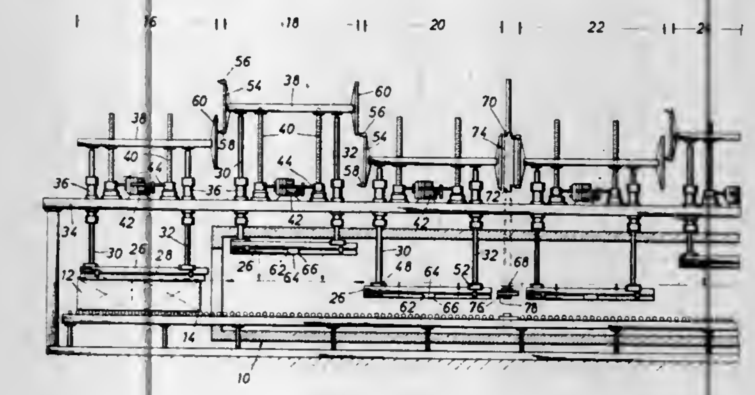
Otto Stehl, Brucker Holt 46, Essen-Bredeney, Germany

Filed Feb. 20, 1974, Ser. No. 444,185

Claims priority, application Germany, Mar. 24, 1973, 2314715

Int. Cl. C03b *23/24*

U.S. Cl. 65—156 **5 Claims**



1. Apparatus for the manufacture of all-glass double windowpanes by welding the longitudinal and transverse edges of single panes carried upright through a tunnel oven, having a lower guide track for the support and guidance of the lower pane edges, a vertically adjustable upper guide track for the guidance of the upper pane edges, and fusing means that is adjustable in height according to the pane height for fusing the upper, horizontal pane edges, the upper guide track being divided into sections which are each automatically and vertically adjustable independently of one another by means of a driving device associated with each guide track section according to the height of the particular pane therein contained, the length of said sections in the conveying direction being substantially the same as the length of the individual panes to be fused together, each guide track section further having means for sensing the relative heights of any two adjacent guide track sections and for equalizing the vertical position of the guide track section next following in the direction of conveyance to that of the preceding one.

3,870,500
APPARATUS FOR BENDING GLASS SHEETS

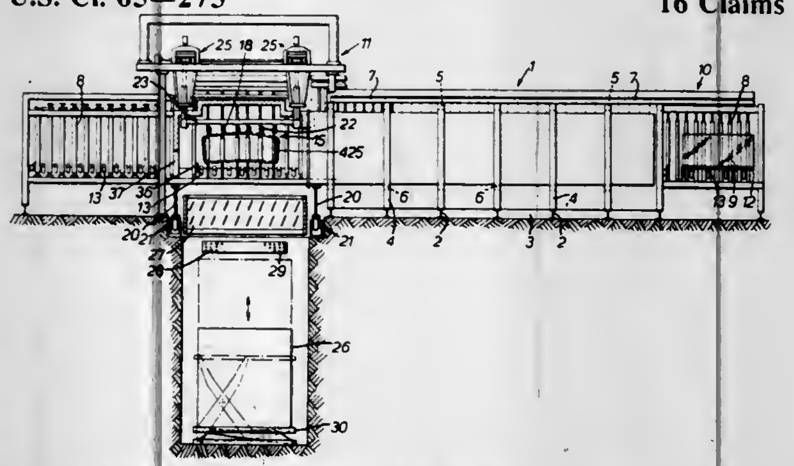
Harry Ross Scarlett Jack, Springfield; Peter Henry Richards, Kenilworth, and Kenneth George Skelding, Hollywood, all of England, assignors to Triplex Safety Glass Company Limited, London, England

Filed Mar. 12, 1974, Ser. No. 450,341

Claims priority, application Great Britain, July 20, 1973, 34704/73

Int. Cl. C03b *23/02*

U.S. Cl. 65—273 **16 Claims**



1. Apparatus for bending a hot glass sheet comprising support means against which a hot glass sheet which is supported on its lower edge leans at a near-vertical angle, co-operating male and female dies associated with said support means one of which dies is constructed to pass from behind and through said support means as the dies close on to the glass sheet, forwardly projecting lifting fingers mounted at the bottom of said one die, which fingers are normally downwardly depressed to pass beneath the supported lower edge of a hot glass sheet as said one die passes through said support means, and an actuating mechanism for the lifting fingers operable to raise the lifting fingers sufficiently to lift the glass sheet and provide support for the sheet as it is carried by said one die towards the other die.

3,870,501
BENZOXAZOLES AS DESUCKERING AGENTS

Yoshihiko Hirono, Hiratsuka; Hatsuo Ogino; Seiichi Nishikawa, both of Oiso-machi; Koshin Miyazaki; Masatoshi Yakushiji, both of Odawara, and Tomio Yagihara, Oiso-machi, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

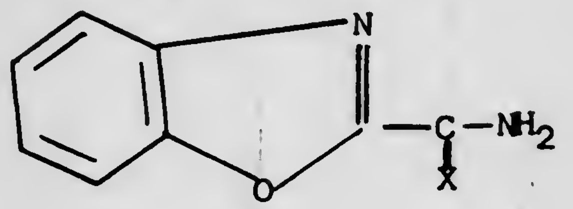
Filed Oct. 9, 1973, Ser. No. 404,265

Claims priority, application Japan, Oct. 11, 1972, 47-101147

Int. Cl. A01n *9/22*

U.S. Cl. 71—78 **1 Claim**

1. A method for controlling the growth of tobacco suckers comprising the step of applying to the plant a desuckering amount of a compound of the formula:



wherein

X is oxygen or sulfur, thereby inhibiting the growth of axillary buds.

3,870,502
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhein, Germany

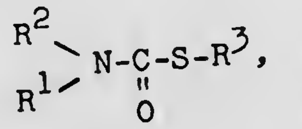
Filed Apr. 4, 1973, Ser. No. 348,084

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **5 Claims**

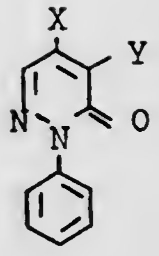
1. A selective herbicide composition containing a herbicidally effective amount of

a. a thiol carbamate of the formula

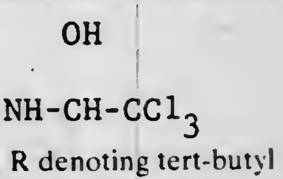


wherein R^1 denotes lower alkyl or alkynyl of a maximum of 4 carbon atoms, R^2 denotes cyclohexyl or a bicycloaliphatic or tricycloaliphatic hydrocarbon radical of a maximum of 8 carbon atoms and R^3 denotes lower alkyl of a maximum of 4 carbon atoms and

b. a compound of the formula



where Y denotes chlorine or bromine and X denotes



$$-NH-\overset{OH}{\overset{|}{CH}}-CCl_3$$

or NH—CO—COO—R, R denoting tert-butyl or isopropyl, in a weight ratio of a to b in the range of 1:5 to 5:1.

3,870,503
RIPENING OF SUGARCANE BY USE OF N-VALERIC ACID

Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters Association, Honolulu, Hawaii

Filed Oct. 3, 1973, Ser. No. 403,019

Int. Cl. A01n *9/24*

U.S. Cl. 71—106 **10 Claims**

1. A process for increasing the sugar yield of grown sugarcane which comprises applying an effective amount of a sugarcane ripening agent taken from the group consisting of n-valeric acid and sodium salts or ethyl esters of alkanoic monoacids having 1 to 5 carbon atoms to the cane at a time at least about 2 and up to about 10 weeks prior to harvest.

3,870,504
CYCLOALKYLPHENYL UREAS AS HERBICIDES

Jan Johannes Van Daalen, and Jasper Daams, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

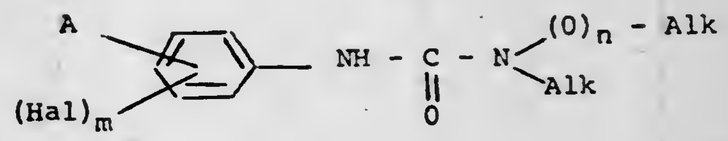
Division of Ser. No. 262,331, June 13, 1972, Pat. No. 3,799,964, which is a continuation-in-part of Ser. No. 61,402, Aug. 5, 1970, abandoned. This application Dec. 26, 1973, Ser. No. 428,392

Claims priority, application Netherlands, Aug. 13, 1969, 6912348

Int. Cl. A01n *9/20*

U.S. Cl. 71—120 **8 Claims**

1. A preparation for controlling undesirable plant growth, wherein the preparation contains an effective amount of a compound of the formula



where

A is a cycloalkyl group containing 3 or 4 carbon atoms,

Hal is a halogen atom,

Alk is an alkyl group containing from 1 to 4 carbon atoms,

$n = 0$ or 1 and

$m = 0$ or 1,

as an active ingredient in combination with a solid or liquid inert carrier material.

3,870,505

WEED CONTROL WITH SUBSTITUTED PHENYLHYDRAZONES

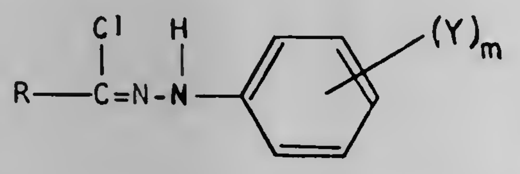
Girts Kaugars, Cooper, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 874,976, Nov. 7, 1969, Pat. No. 3,745,215. This application Jan. 26, 1973, Ser. No. 326,804

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **7 Claims**

1. The process of controlling weeds which comprises applying to weeds or a weed situs a herbicidally effective amount of a compound of the formula:



wherein R is alkyl of from 1 to 5 carbon atoms, inclusive; Y is alkyl of from 1 to 6 carbon atoms, inclusive, halogen, trifluoromethyl, and nitro; *m* is an integer from 0 to 3, inclusive; there may be no more than one nitro group, and the Y's may be selected independently when m is 2 or 3.

3,870,506

BENEFICIATION OF ORES

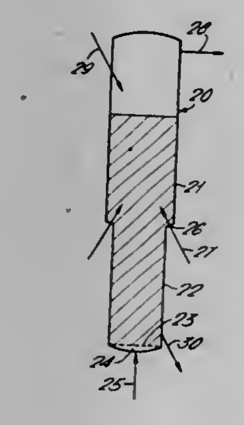
Michael Robinson, Grimsby; Harry Brian Wilson, North Thoresby, and David Antony Gray, Grimsby, all of England, assignors to Laporte Industries Limited, London, England

Filed Jan. 24, 1972, Ser. No. 220,243

Claims priority, application Great Britain, Jan. 27, 1971, 03241/71

Int. Cl. C22b *1/00*

U.S. Cl. 75—1 **10 Claims**



1. In a method for the beneficiation of an ore containing titanium dioxide and a mixture of iron oxides to produce a beneficiate containing a reduced proportion of iron oxides, wherein the improvement comprises forming a mixture of the ore containing the said mixture of iron oxides and carbon, the carbon content of the mixture being in the range of from 20 to 40% by weight and said carbon content being in excess of that necessary for reaction, enclosing the mixture in a fluidized bed reactor, treating the mixture in a fluidized bed reactor at a temperature in the range of 800° to 1,000°C. with a treatment gas essentially consisting of 20 to 50% by volume of chlorine, 0 to 10% by volume of oxygen and a diluent gas whereby control of the beneficiation reaction is effected by the proportion of chlorine in the reactant gas, and recovering the resulting beneficiate from the reactor.

3,870,507

CONTROL OF POLLUTION BY RECYCLING SOLID PARTICULATE STEEL MILL WASTES

John E. Allen, Lake Forest, Ill., assignor to Ferro-Carb Agglomeration Ltd., Inc., Chicago, Ill.

Filed May 14, 1973, Ser. No. 359,776

Int. Cl. C21b *1/28*

U.S. Cl. 75—4 **3 Claims**

1. In the operation of a steel mill, the method of disposing of iron- and carbon-containing particulate waste of principally dust size which comprises (1) mixing the particulate waste containing at least 5% of Fe with 2 to 15%, based on total weight of waste and binder, of a bituminous binder having a ball and ring softening point below 212°F and being free of combustibles volatile at 500°F, to produce a briquettable mix consisting essentially of the said particulate waste and the said binder; (2) briquetting the mix; (3) heating the briquettes in gas containing at least 10% of oxygen at a gas temperature of 350° to 600°F for 30 to 90 minutes to selectively remove hydrogen from the binder and induce a cementing reaction between the binder and the iron-containing waste to produce briquettes strong enough to be charged into plant processes; and (4) recycling said heat-treated briquettes into the plant processes to recover their iron and carbon values.

3,870,508

ELECTROSLAG REFINING

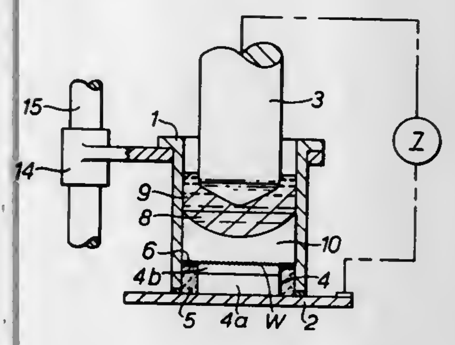
John Barry Cartwright, Sheffield, England, assignor to The British Iron and Steel Research Association, London, England

Filed Jan. 12, 1973, Ser. No. 323,320

Claims priority, application Great Britain, Jan. 27, 1972, 3886/72

Int. Cl. C22d *7/00;* **B22d** *27/02*

U.S. Cl. 75—10 **8 Claims**



1. A method of forming an ingot of refined metal by the electroslag refining process comprising the steps of introducing into the lower open end of a cooled mould a solid uncooled electrically-conductive member of a material weldably compatible with the metal to be refined, the member having a surface area sufficient to conduct the full working current employed in the process but small enough to leave an annular space beneath the top of said member between its periphery and the internal walls of the mould, filling said annular space with a compactible electrically insulating material which accommodates reductions in the annular spacing caused by differential thermal expansion between the member and the lower end of the mould into which the member extends and which is readily removed from the surfaces of the member and the ingot formed following completion of the process, forming a bath of molten slag within the mould and above the member and the electrically insulating material, passing an electric current through the slag bath to maintain the temperature of the bath at or above the melting point of the metal to be refined and causing droplets of unrefined metal to travel through the molten slag bath and to collect above the member and compactible electrically insulating material, which droplets form a pool of refined liquid metal which progressively solidifies to form an ingot of refined metal which is supported by the aforesaid member and electrically insulating material and is welded to the upper surface of the member.

3,870,509

METHOD OF DISPOSING OF PARTICULATE SCRAP IRON

John E. Allen, Lake Forest, Ill., assignor to Ferro-Carb Agglomeration Ltd., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 359,776, May 14, 1973,. This application Nov. 19, 1973, Ser. No. 416,966

Int. Cl. C21b *1/30;* **75** *4;3;43;44 R;44 S*

U.S. Cl. 75—44 S **3 Claims**

1. The method of disposing of particulate iron and steel scrap consisting essentially of metallic iron in pieces no larger than ¼ inch which comprises (1) mixing the particulate scrap with a bituminous binder having a ball and ring softening point below 212°F, and free of combustibles volatile at 500°F to produce a mix containing between 2 and 10% of binder with the balance of the mix being essentially the particulate scrap; (2) briquetting the mix; (3) heating the briquettes in gas containing at least 10% of oxygen at a gas temperature of 350° to 600°F for 30 to 90 minutes to selectively remove hydrogen from the binder and induce a cementing action between the binder and the iron; and (4) recycling the briquettes into a metal-making process.

3,870,510

METHOD FOR THE INTRODUCTION OF SOLID PRODUCTS

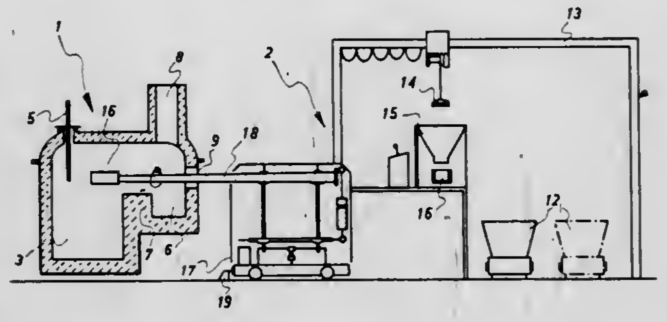
Danièl Martin, and Pierre Vayssiere, both of Metz, France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), St.-Germain-en-Laye, France

Filed Mar. 26, 1973, Ser. No. 344,718

Claims priority, application France, Mar. 29, 1972, 72.11119

Int. Cl. C21c *5/56*

U.S. Cl. 75—61 **5 Claims**



1. A method of introducing solid products into a plant for the continuous refining of pig iron steel, said plant being of the type comprising a reaction container and a settling tank separated from the reaction container by a sill; said method comprising introducing said solid products through an aperture formed in the wall of the settling tank, then conveying said solid products across said settling tank and said sill into said reaction container, and then discharging said products in said reaction container.

3,870,511

PROCESS FOR REFINING MOLTEN ALUMINUM

Andrew Geza Szekely, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

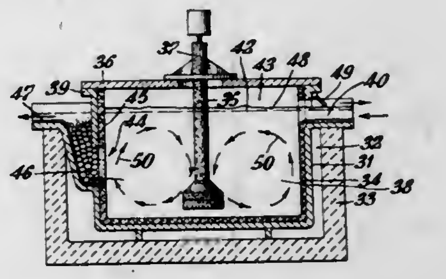
Division of Ser. No. 211,950, Dec. 27, 1971, Pat. No. 3,743,263. This application Jan. 15, 1973, Ser. No. 323,785

Int. Cl. C22b *21/06, 9/12*

U.S. Cl. 75—68 R **19 Claims**

1. A process for refining molten aluminum comprising the steps of:

1. feeding molten aluminum into a refining zone,
2. maintaining a protective atmosphere above the surface of said molten aluminum at a greater than atmospheric pressure, thereby preventing contact of the melt with air or atmospheric moisture,
3. providing a gas injection device submerged in said molten aluminum comprising (a) a shaft fixedly attached to a vaned rotor at its lower end, (b) a stationary sleeve surrounding said shaft, and (c) a passageway for conveying and discharging inert gas into the molten metal running the length of said gas injection device,
4. introducing an inert gas into the upper end of said passageway under sufficient pressure to be injected into the melt,
5. preheating the inert gas by contact thereof with the hot walls of the passageway, whereby the gas is expanded, before being sub-divided into gas bubbles, to the point where thermal growth of said bubbles in the melt is substantially prevented,
6. directing the preheated gas to the vanes of said rotor of said gas injection device,



7. sub-dividing the inert gas into discrete gas bubbles by rotating said vaned rotor at a speed sufficient to create a circulation pattern in the molten aluminum such that the gas bubbles are transported substantially radially outward with a downward component relative to their points of entry into the melt thereby coming into intimate contact with substantially the entire mass of molten aluminum in said refining zone, resulting in the removal of dissolved hydrogen and substantially all non-metallic impurities from said melt,
8. withdrawing the spent inert gas containing hydrogen while collecting other non-metallic impurities in a dross layer on the surface of the molten aluminum, and
9. withdrawing the refined molten aluminum from said refining zone.

3,870,512

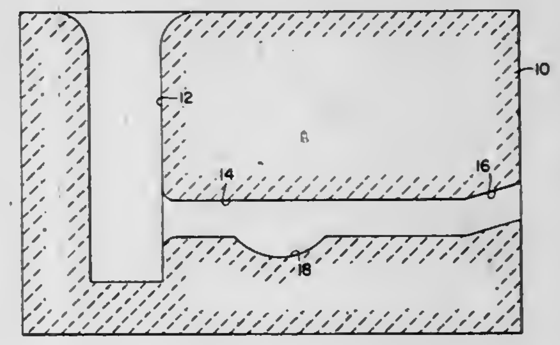
METHOD OF PRODUCING SPHEROIDAL GRAPHITE CAST IRON

Robert Stormo Lee, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 5, 1973, Ser. No. 338,140

Int. Cl. C22c *37/04*

U.S. Cl. 75—130 R **8 Claims**



1. A method of treating molten cast iron for the production of spheroidal graphite cast iron comprising passing molten cast iron of such composition as to freeze with free graphite in flake form through a channel having a width greater than its height and which includes a shallow depression in the lower surface thereof, a nodularizing agent being present in the depression in an amount sufficient to convert the graphite to spheroidal form, said molten cast iron passing through the

channel with a substantially laminar flow and contacting said nodularizing agent as it passes through the channel and when passing through the channel traveling at a rate sufficient to scrub away any vapor which forms at the interface between the molten cast iron and the nodularizing agent.

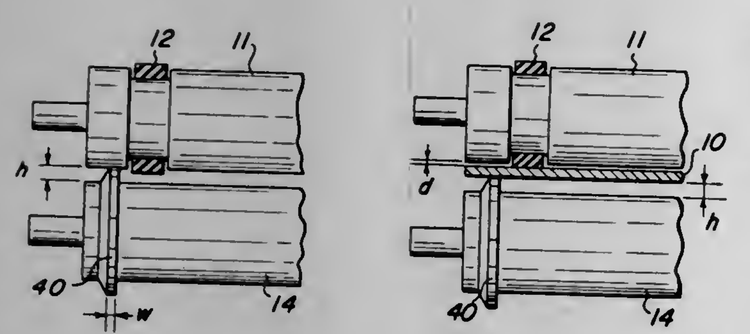
3,870,513
WHITE METAL CASTING ALLOY AND METHOD OF MAKING SAME

Robert S. Darnell, Washington, R.I., and Everett G. Morrissey, Bristol, Mass., assignors to A. J. Oster, Co., Providence, R.I.
Filed Dec. 3, 1973, Ser. No. 420,948
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 A **3 Claims**

1. A white metal alloy consisting of 91.5 – 92.5% tin, 2.9 – 3.1% antimony, 1.4 – 1.6% cadmium, and 3.3 – 3.7% lead.

3,870,514
LIQUID DEVELOPMENT FOR THE ELECTRONIC PHOTOGRAPHY

Masamichi Sato, and Shigeru Tezuka, both of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed June 18, 1973, Ser. No. 370,908
Int. Cl. G03g *13/10*
U.S. Cl. 96—1 LY **2 Claims**



1. The method of producing a visual reproduction of an object on the surface of an imaging member which comprises insulating support rollers for said imaging member from development electrode rollers in an electrophotographic device by passing successive portions of said imaging member between said support rollers and said development electrode rollers wherein said support rollers have upraised flanges at both ends thereof of a height between about 0.3 to 0.5 mm and a width between about 0.1 to about 1 mm, applying a developing voltage only when said imaging member has been inserted between said support rollers and said development electrode rollers so that no voltage is applied in the absence of said imaging member, and supplying liquid developer to said imaging member.

3,870,515
METHOD FOR ELECTROSTATIC PAPER STRIPPING BY NEUTRALIZATION OF TRANSFER CHARGE

Norbett H. Kaupp, Newark, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Continuation of Ser. No. 41,668, May 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 585,816, Oct. 11, 1966, abandoned. This application Jan. 15, 1974, Ser. No. 433,971
Int. Cl. G03q *13/16, 13/22*
U.S. Cl. 96—1.4 **9 Claims**

8. In the method of producing a xerographic copy which includes the steps of charging a photoconductive surface with an electrostatic charge, exposing the charged surface to dissipate the charge in an image configuration corresponding to the object to be reproduced, developing the exposed surface with charged toner particles and electrostatically transferring the toner particles to an insulating backing sheet, including electrostatically bonding the backing sheet to the photoconductive surface by applying charges of a first polarity onto the backing sheet, the improvement comprising:

subsequently decreasing the electrostatic bonding between the backing sheet and the photoconductive surface to electrostatically strip the toner-bearing backing sheet from the photoconductive surface,

wherein the electrostatic bonding decreasing step is carried out by applying to the backing sheet corona emissions having a net second polarity opposite from the first polarity charges on the backing sheet and large enough to minimize said electrostatic bonding but lower than the potential which would repel the toner particles back onto the photoconductive surface; and

the backing sheet is then allowed to separate from the photoconductive surface where said surface is cylindrical by the self-straightening resiliency of the backing sheet.

3,870,516
METHOD OF IMAGING PHOTOCONDUCTOR IN CHANGE TRANSPORT BINDER

Michael Smith, Rochester; Charles F. Hackett, Williamson, and Richard W. Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 93,994, Dec. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 14,281, Feb. 26, 1970, abandoned. This application June 20, 1973, Ser. No. 371,646
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **13 Claims**

1. A method of imaging which comprises:

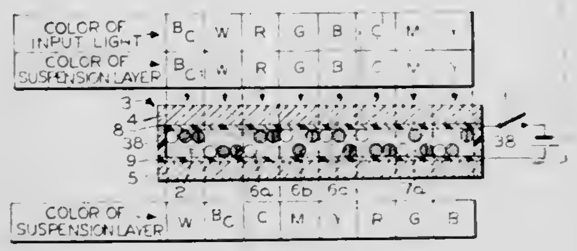
a. providing an imaging member having a binder layer contained on a supporting substrate, said binder layer having a thickness from about 2 to 100 microns comprising photoconductive particles dispersed in an unoriented fashion in an electrically active organic matrix material, said photoconductive particles having the facility for photo-excited hole generation and injection, said active matrix material exhibiting a facility for supporting hole injection from said photoconductive particles and capable of facile hole transport, said photoconductive particles being present in an amount from about 0.1 to 5 percent by volume of said binder layer, and wherein said active matrix comprises at least one material selected from the group consisting of poly-1-vinylpyrene, polymethylene pyrene, N-substituted polymeric acrylic acid amides of pyrene, pyrene, tetraphene, 1-acetylpyrene, 2,3-benzochrysene, 6,7-benzopyrene, 1-bromopyrene, 1-ethylpyrene, 1-methylpyrene, perylene, 2-phenylindole, tetracene, picene, 1,3,6,8-tetraphenylpyrene, chrysene, fluorene, fluorenone, phenanthrene, triphenylene, 1,2,5,6-dibenzanthracene, 1,2,3,4-dibenzanthracene, 2,3-benzopyrene, 2,3-benzochrysene, anthraquinone, dibenzothiophene and naphthalene;

b. uniformly electrostatically charging said binder layer, followed by:

c. exposing said charged layer to a source of activating radiation to which the photoconductor particles are absorbing and to which the active organic matrix material is non-absorbing, the exposure being in the form of a pattern of light and shadow optically projected toward the layer, whereby the photo-excited holes generated by said photoconductive particles are injected into and are transported through said active matrix material to form a latent electrostatic image on the surface of said binder layer.

3,870,517
COLOR IMAGE REPRODUCTION SHEET EMPLOYED IN PHOTOELECTROPHORETIC IMAGING

Isao Ota, and Tetsuro Otsuka, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Division of Ser. No. 81,290, Oct. 16, 1970, Pat. No. 3,689,400. This application June 5, 1972, Ser. No. 259,817
Claims priority, application Japan, Oct. 18, 1969, 44-83561
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **10 Claims**



1. A color image reproduction sheet for reproducing a directly visible color image thereon, the sheet consisting essentially of an electrophoretic suspension layer having a whitte colored opaque electrically insulating suspending medium and at least three differently colored photosensitive electrophoretic materials in the form of finely divided powder suspended in said white colored opaque suspending medium, said white colored opaque electrically insulating suspending medium being non-fracturable during the image reproduction and said at least three differently colored photosensitive electrophoretic materials consisting essentially of cyan colored material which is principally photosensitive to red light, magenta colored material which is principally photosensitive to green light, and yellow colored material which is principally photosensitive to blue light, and a base on which said suspension layer is supported, whereby when said sheet is passed between a substantially transparent first electrode and a second electrode which are spaced from and opposed to each other with the electrodes against the two opposite major surfaces of said suspension layer, respectively, with the transparent electrode against the free surface of the suspension layer, and a D. C. electric field is applied across the suspension layer between said electrodes, and said suspension layer is exposed to a color image through said transparent electrode, the D.C. electric field changes electrophoretically, in cooperation with the color image, the spatial distribution of said at least three differently colored photosensitive electrophoretic materials so that the optical reflective property of the suspension layer changes in accordance with said color image, a directly visible color image being thus reproduced on said sheet without fracturing said electrophoretic suspension layer.

3,870,518
METHOD OF TRANSFERRING PHOTOGRAPHIC FILM BETWEEN CASSETTE AND AN EXPOSURE DRUM

Werner Fels, Kiel, Germany, assignor to Dr. Ing Rudolf Hell GmbH
Filed Feb. 26, 1973, Ser. No. 335,956
Claims priority, application Germany, Feb. 29, 1972, 2209515
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 R **5 Claims**

1. A method of handling film before and after exposure, comprising:

mounting unexposed film on a shiftable film supporting frame within a cassette having an access opening normally closed by a shiftable closure;

mounting the cassette on a housing of an exposure reproduction apparatus with the access opening of the cassette in registration with an access opening into the housing;

shifting said closure to open the cassette access opening to provide for communication between the openings;

shifting said frame carrying the film through the aligned openings into the housing;

within the housing transferring the film from the frame to a rotary drum;

shifting the frame back into the cassette;

rotating the drum to fully withdraw the film from the cassette;

exposing the film while the drum continues in rotation;

reversing the direction of rotation of the drum;

stripping the film from the drum and guiding the film during such reversal of rotation of the drum to return the film into the cassette;

shifting said closure to close the access opening in the cassette;

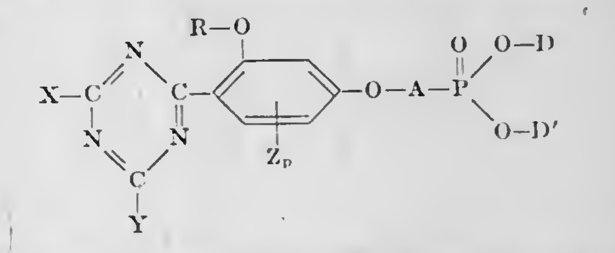
and removing the cassette from the housing.

3,870,519
S-TRIAZINE DERIVATIVES AS ULTRAVIOLET PROTECTING AGENTS

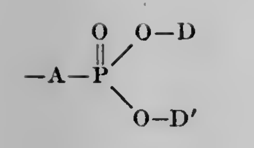
Bernhard Piller, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Division of Ser. No. 262,855, June 14, 1972, Pat. No. 3,845,049. This application Jan. 14, 1974, Ser. No. 433,429
Claims priority, application Switzerland, June 23, 1971, 9167/71
Int. Cl. G03c *1/84*
U.S. Cl. 96—51 **15 Claims**

1. Process for protecting organic material against ultravoilet radiation, which comprises incorporating into the material or applying to it an s-triazine derivative of the formula

(I)



wherein X and Y independently of one another each represents an unsubstituted or substituted alkyl radical, an alkenyl, cycloalkyl or aralkyl radical or an unsubstituted or substituted monocyclic or bicyclic, aromatic or heterocyclic radical, which is bonded directly or via a divalent heteroatom grouping to the s-triazine ring, A represents a hydrocarbon radical, D and D'either both represent a hydrogen atom, a cycloalkyl radical, an alkenyl radical or an unsubstituted or substituted alkyl or phenyl radical, or one represents hydrogen and the other represents a cycloalkyl radical, an alkenyl radical or an unsubstituted or substituted alkyl or phenyl radical, R represents a hydrogen atom or the group



$$-\mathrm{A}-\overset{\overset{\displaystyle \mathrm{O}}{\|}}{\mathrm{P}}\begin{matrix}\diagup \mathrm{O-D}\\ \diagdown \mathrm{O-D'}\end{matrix}$$

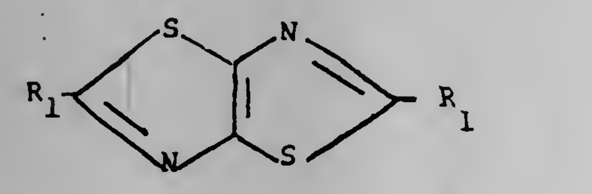
wherein A, D and D′ have the above-mentioned meanings, Z represents a halogen atom, an RO group, wherein R is defined as above, an alkyl or alkoxy radical, a phenylalkyl radical or the phenyl radical and *p* is 0, 1 or 2.

3,870,520
PHOTOGRAPHIC PROCESSING COMPOSITION

Isao Shimamura; Tadao Shishido; Reiichi Ohi, and Haruhiko Iwano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

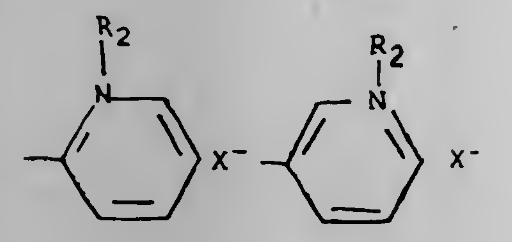
Filed Oct. 3, 1973, Ser. No. 403,293
Claims priority, application Japan, Oct. 5, 1972, 47-100081
Int. Cl. G03c *5/32, 7/16*
U.S. Cl. 96—60 R **27 Claims**

1. A photographic silver bleaching composition selected from the group consisting of a bleaching solution and a bleaching and fixing solution which comprises (1) a ferric ion complex or a persulfate and (2) a compound represented by the following general formula (I)

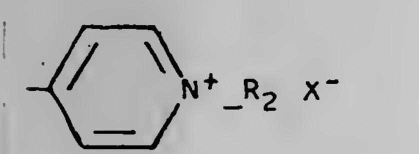


(I)

in which R_1 is



or



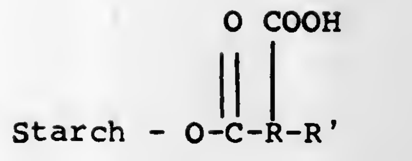
R_2 is an alkyl group or a $-CH_2-_nSO_3^-$ group; *n* is 3 or 4; and X^- is an anion, and being absent when R_2 is a $-CH_2-SO_3^-$ group.

3,870,521
PHOTOGRAPHIC OVERCOAT COMPOSITION OF AN ALKENYL HALF ESTER OF STARCH

E. Scudder Mackey; Karl Pechmann, and Donald E. Tritten, all of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,485
Int. Cl. G03c *1/76*
U.S. Cl. 96—67 **5 Claims**

1. In a photographic element comprising a support, at least one silver halide layer, and at least one overcoat layer, the improvement comprising said overcoat layer containing a composition comprising an aqueous dispersion, the solids content of which comprises (A) a soluble alkenyl half ester of starch of the formula:



$$\text{Starch}-O-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle COOH}{|}}{R}-R'$$

wherein R is a radical selected from the group consisting of dimethylene and trimethylene and wherein R′ is a C_{2-8} alkenyl radical, and (B) gelatin, in weight proportions of about 1.1 to 2.0 parts of (A) per 1 part of (B), said overcoat layer being capable of protecting the exterior surface of at least one silver halide layer which is furthermost from said support.

3,870,522
FOGGED, DIRECT-POSITIVE EMULSION CONTAINING HETERODISPERSE AND IRREGULAR COMPOSITE SILVER HALIDE GRAINS

Erik Moisar, and Sieghart Klotzer, both of Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 16, 1973, Ser. No. 360,845
Claims priority, application Germany, May 20, 1972, 2224837
Int. Cl. G03c *1/28*
U.S. Cl. 96—107 **5 Claims**

1. A photographic material comprising a support and a light-sensitive layer containing at least one fogged light-sensitive direct positive silver halide emulsion layer being spontaneously developable with silver halide grains containing internal electron traps wherein the improvement comprises silver halide grains of the fogged emulsion are heterodispersed and irregular having cores which contains interval electron traps and outer shells of silver halide on the cores and having a grain size distribution wherein at least 10 percent of the grains have a size which deviates by at least 40 percent from the average grain diameter, said outer shells of silver halide have been fogged.

3,870,523
HEAT DEVELOPABLE PHOTOGRAPHIC MATERIAL CONTAINING AZO DYES AS SENSITIZERS

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 17, 1974, Ser. No. 434,453
Claims priority, application Japan, Jan. 17, 1973, 48-7624
Int. Cl. G03c *1/02*
U.S. Cl. 96—114.1 **12 Claims**

1. A heat developable photographic material having at least one photosensitive layer on a support, said layer containing the following components:
a. an organic silver salt,
b. a catalytic amount of a photosensitive silver halide or a compound capable of reacting with said organic silver salt (a) to produce a photosensitive silver halide,
c. a reducing agent,
d. a binder, and
e. as a sensitizer, at least one of the following Compounds (I) and (II):

$$Ar_1-N=N-Ar_2 \qquad (I)$$

$$AR_3-N=N-Ar_4-N=N-Ar_5 \qquad (II)$$

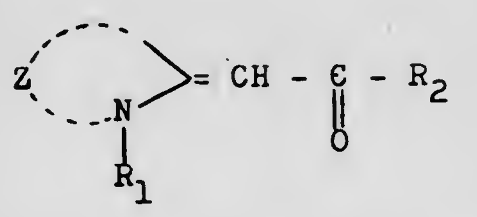
wherein Ar_1, Ar_2, Ar_3 and Ar_5 each represents an aryl group and Ar_4 represents an arylene group, with the proviso that at least one of Ar_1 and Ar_2, and at least one of Ar_3, Ar_4 and Ar_5 is substituted with a $-SO_3M$ group or a $-COOM$ group, M being a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, or a $-NH_4$ group.

3,870,524
PHOTOPOLYMERIZABLE COMPOSITION

Masaru Watanabe; Kesanao Kobayashi; Hiroshi Misu; Akira Sato, all of Kanagawa, and Eiichi Hasegawa, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 7, 1974, Ser. No. 440,426
Claims priority, application Japan, Feb. 7, 1973, 48-14803
Int. Cl. G03c *1/68, 1/04*
U.S. Cl. 96—115 P **11 Claims**

1. A photopolymerizable composition comprising (A) a monomer containing at least two terminal unsaturated groups and photopolymerizable upon irradiation of actinic rays and (B) as a photopolymerization accelerator for said photopolymerizable monomer, a compound represented by the formula:



where Z represents a non-metallic atomic group necessary forming a nitrogen-containing heterocyclic nucleus; R_1 represents an alkyl group; and R_2 represents an alkyl group or an aryl group.

3,870,525
PROCESS FOR PRODUCING PHOTOGRAPHIC FILM HAVING A MAGNETIZABLE LAYER THEREON AND SUCH A PHOTOGRAPHIC FILM

Nobuo Yamamoto; Hideo Kawaguchi, and Katsuharu Furukawa, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 24, 1973, Ser. No. 354,055
Claims priority, application Japan, Apr. 12, 1972, 47-41123
Int. Cl. G03c *5/14, 1/84;* **C22c** *39/00*
U.S. Cl. 96—39 **21 Claims**

1. A process for producing a photographic film having thereon a magnetic recording layer by applying a dispersion of a magnetic substance to an antihalation layer of a light-sensitive film for cinema, wherein the dispersion contains a compound or compounds, having at least two isocyanato groups or thioisocyanato groups capable of rendering said antihalation layer alkali insoluble, thereby rendering said antihalation layer alkali insoluble.

4. The process as claimed in claim 1 wherein said compound has from 2 to 4 isocyanato groups or thioisocyanato groups.

5. The process as claimed in claim 4 wherein said compound is selected from the group consisting of Compounds (I) to (XI) below:

Compound (I)

$OCN(CH_2)_nNCO$ n=2 - 12,

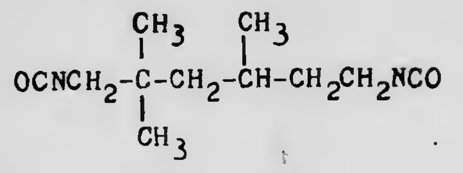
Compound (II)

$OCN(CH_2)_m-X-(CH_2)_nNCO$ X=0 or S,
m, n=2 - 4,

Compound (III)

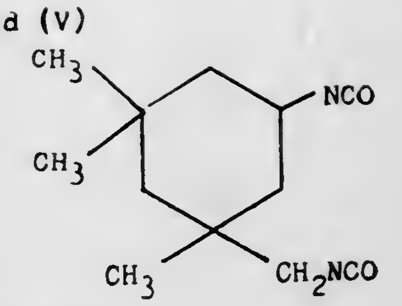
$SCN(CH_2)_nNCS$ n=2 - 10,

Compound (IV)

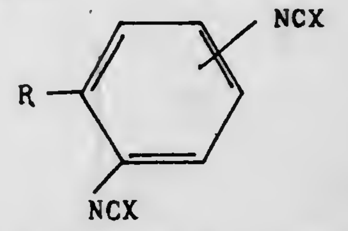


$$OCNCH_2-\underset{\underset{\displaystyle CH_3}{|}}{\overset{\overset{\displaystyle CH_3}{|}}{C}}-CH_2-\overset{\overset{\displaystyle CH_3}{|}}{CH}-CH_2CH_2NCO\ ,$$

Compound (V)

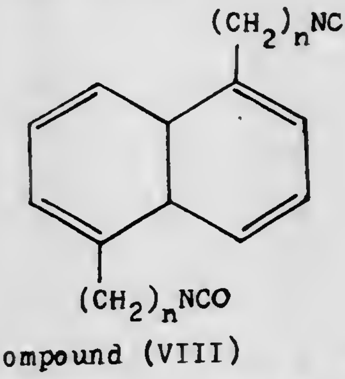


Compound (VI)



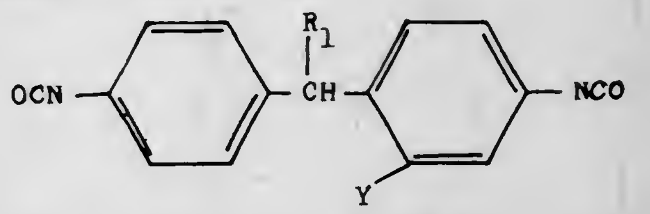
wherein the floating NCX group is located at the o-, m-, or p-position to R, X represents O or S, and R represents a hydrogen atom or a methyl group,

Compound(VII)

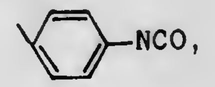


, where *n* is 0 or 1,

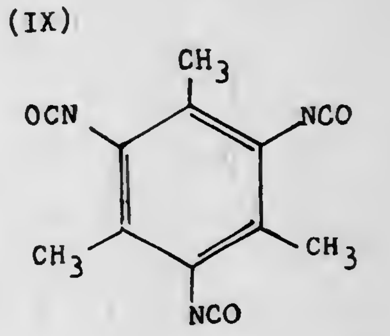
Compound (VIII)



wherein Y represents a hydrogen atom or NCO, and R_1 represents a hydrogen atom or

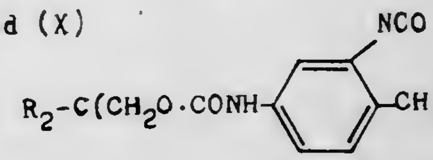


Compound (IX)



,

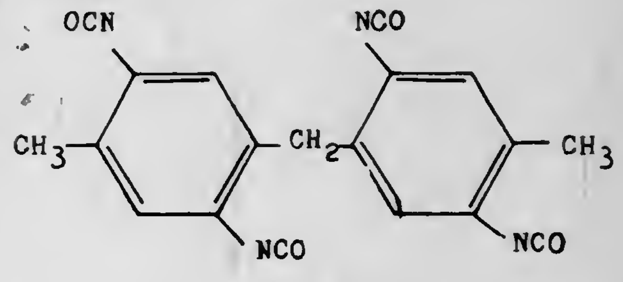
Compound (X)



,

wherein R_2 represents a $C_1 - C_6$ alkyl group, and

Compound (XI)



3,870,526
ELECTROLESS DEPOSITION OF COPPER AND COPPER-TIN ALLOYS

Fred Pearlstein, and Robert F. Weightman, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1973, Ser. No. 399,771
Int. Cl. C23c *3/00*

U.S. Cl. 106—1 **11 Claims**

1. An electroless plating bath for providing a predominately copper deposit which is firmly adherent to various substrates, said bath being devoid of formaldehyde or potassium heptagluconate and comprising

0.5 to 3.0 g/l copper sulfate.$5H_2O$,
1.0 to 10.0 g/l disodium salt of EDTA,
5 to 150 ml/l NH_4OH(28 percent NH_3), and
0.5 to 10.0 g/l DMAB.

3,870,527
GRANULAR STARCH-BASED GUMS

Allen C. Kryger; Charles S. Nevin, and Donald L. Wilhelm, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed June 26, 1972, Ser. No. 266,021
Int. Cl. C09k *3/00;* **C08b** *19/06*

U.S. Cl. 106—2 **5 Claims**

1. In an aqueous solution for coating lithographic plates, a hydrophilic film forming hydrocolloid comprising a starch derivative containing 30 percent or less by weight amylose, said starch comprising an acid hydrolyzed, initially granular starch derivative which has a Brookfield viscosity in the range of about 50 to about 500 centipoises when measured in a 25 percent by weight aqueous solution at 80°F. using a No. 1 spindle at 20 r.p.m.; said solution remaining viscosity stable for at least one month; said granular starch having a degree of substitution of about 0.1 to about 0.3 of at least one substituent having 1–4 carbon atoms and selected from the group consisting of alkyl, hydroxyalkyl, cyanoalkyl, amidoalkyl, and acyl groups, and said granular starch derivative having been washed with water to remove substantially all lower molecular weight, water soluble impurities including starch cleavage products and inorganic salts.

3,870,528
INFRARED AND VISIBLE DUAL DYE JET PRINTER INK

Kenneth E. Edds, Versailles; Donald L. Elbert, Lexington, and Jerry F. Stone, Georgetown, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,346
Int. Cl. C09d *11/02, 11/12*

U.S. Cl. 106—22 **4 Claims**

1. An optical character reader readable and visually readable ink jet ink formulation comprising:

an infrared absorbing dye which exhibits high absorptivity for radiation with a wavelength of about 9000 A, present in the ink formulation in about 1 to 5 percent;
a dye which highly absorbs in the visible spectrum and which permanently dyes the fibers of a cellulosic substrate present in about 2 to 5 percent concentration and where said dye is selected from group consisting of dyes having color index numbers of 30235 and 30245;
a polyethylene glycol of an average molecular weight of from about 500 to 600, present in the ink in about 1 to 3.5 percent;
a dye solvent for at least one of said dyes, present in the ink in the amount of about 2.0 to 4.5 percent wherein said solvent is selected from the group consisting of N-methyl-2-pyrrolidone and diethylene glycol monoethyl ether;
diethylene glycol monobutyl ether present in the ink in the amount of about 0.25 to 0.75 percent;
and the balance water, all percentages being percentages by weight with respect to the weight of the entire ink formulation.

3,870,529
METHOD OF PRODUCING CASTING MOULDS FOR PRECISION CASTING

Takeomi Okumoto, Kamakura; Hiroshi Ueda, Kashiwa; Junji Sakai, Tokyo, and Yogo Shimada, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,410
Claims priority, application Japan, Mar. 21, 1972, 47-27394

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.3 **33 Claims**

1. A method for producing a casting mould for use in precision casting comprising preparing a flowable refractory slurry comprising a mixture of a powdered refractory material, a binder obtained by the hydrolysis of ethyl silicate with an amount of water smaller than the theoretical hydrolysis amount of water, and a sufficient amount of a gelling promoting agent so that gelling will commence is about 6 to 8 minutes after said slurry is poured into a shaping mould; pouring said flowable refractory slurry into a shaping mould; removing the resultant casting mould from said shaping mould after said slurry has gelled; immersing said casting mould in a hardening water containing sufficient surface active agent therein to decrease the surface tension of said hardening water to thereby completely harden said casting mould; and then drying and calcining said casting mould to obtain said casting mould.

3,870,530
CATALYTIC AMORPHOUS GLASS FIBERS

Gordon J. Roberts, Shaker Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Aug. 9, 1972, Ser. No. 279,211
Int. Cl. C03c *13/00;* **B01j** *11/32, 11/22*

U.S. Cl. 106—50 **10 Claims**

1. An oxidation-inducing, catalytic amorphous glass consisting essentially of an amorphous base glass in highly divided form having a surface area exceeding 0.2 square meter per gram and containing in smelted admixture therewith from about 10% to about 70% by weight of an essentially binary metal oxide system, said system consisting essentially of at least 5% by weight of said glass of CuO and the balance of a metal oxide selected from the group consisting of MnO_2, Cr_2O_3, Fe_2O_3, CoO, NiO, V_2O_5, La_2O_3, CeO_2, ZrO_2, and admixtures thereof.

3,870,531
OPTICAL FLINT GLASS WITH RELATIVELY LOW REFRACTIVE INDICES AND HIGH DISPERSION

Walter Jahn, Ingelheim, Germany, assignor to JENAer Glaswerk Schott & Gen, Mainz, Germany

Filed July 17, 1972, Ser. No. 272,628
Claims priority, application Germany, July 28, 1971, 21377480

Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **5 Claims**

1. Optical flint glass with relatively low refractive indices from nd 1.68 to nd 1.87, a high dispersion from d 30 to d 21, and differing relative partial dispersions consisting essentially on a 100 percent total weight basis of

1. 5-45% by weight of SiO_2
2. 5-27% by weight of K_2O and/or Na_2O
3. 8-40% by weight of Nb_2O_5 and/or Ta_2O_5, said amount being sufficient to stabilize the glass against crystalization without intensifying the yellowish coloring of the glass
4. 15-41% by weight of TiO_2

5. 0-35% by weight of PbO and
6. 0-6% by weight of at least one oxide of the group consisting of WO_3, AS_2O_3 and Bi_2O_3

the maximum content of TiO_2+PbO amounting to not more than 52% by weight and the content of TiO_2+PbO+Nb_2O_5+Ta_2O_5 amounting to 35–70% by weight.

3,870,532
PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATES

Hanns Biegler, Nagoya, Japan, and Juergen Wiljes, Wesseling, Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfort am Main, Germany

Filed Apr. 18, 1973, Ser. No. 352,395
Claims priority, application Germany, Apr. 21, 1972, 2219503

Int. Cl. C01b *33/32*

U.S. Cl. 106—74 **11 Claims**

1. A process for preparing a composition comprising an alkali metal silicate having an $Me_2O:SiO_2$ ratio of 1:>3.3, wherein Me represents sodium or potassium, said process comprising:

1. heating at boiling for a period of about 90 minutes a mixture comprising a fluorine — containing silicic acid and a concentrated sodium or potassium hydroxide solution, said hydroxide in an amount in excess of the stiochiometric amount required to completely react with the flourine, said silicic acid having a fluorine content of less than 10 weight percent dry basis, a BET — surface area of less than about 100 m^2/g and a free water content less than about 40 weight percent;
2. adding to the resulting hot suspension about 1 – 15 weight percent calcium hydroxide based on the weight of the fluorine — containing silicic acid;
3. heating the resulting mixture from step (2) at boiling for a period of about 60 minutes;
4. adding an additional quantity of the concentrated sodium or potassium hydroxide to the resulting mixture from step (3);
5. heating at boiling the resulting mixture from step (4) for a period of about 3 hours;
6. separating the alkali metal silicate from the hot mixture from step (5).

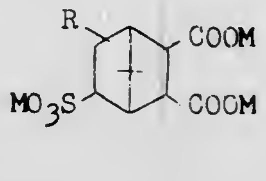
3,870,533
HYDRAULIC COMPOSITION

Shunichiro Ogura, Tokyo, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,062
Claims priority, application Japan, Dec. 8, 1972, 47-12310
Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **2 Claims**

1. A hydraulic composition comprising 100 parts by weight of a hydraulic substance and 0.01 – 5 parts by weight of a 3,6-endomethylene-hexahydro-o-phthalic acid-4-sulfonic acid derivative of the formula



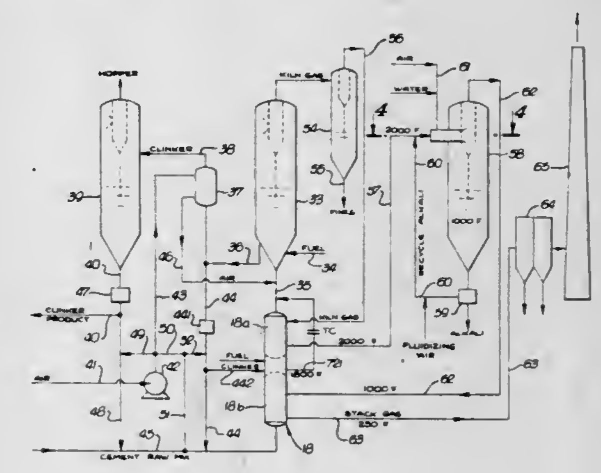
wherein R is a member selected from the group consisting of hydrogen, an alkyl radical of 1 – 4 carbon atoms and the —COOM group, and M is a member selected from the group consisting of hydrogen, an alkali metal atom, a half atom of an alkaline earth metal and the ammonium group, which M may be the same or different.

3,870,534
MAINTENANCE OF HIGH HEAT EXCHANGE TRANSFER RATES AND IMPROVED ALKALI DESUBLIMATION CONDITIONS IN PORTLAND CEMENT PRODUCTION

Edward M. Van Dornick, 1150 Fallen Leaf Rd., Arcadia, Calif. 91006

Filed May 25, 1973, Ser. No. 363,815
Int. Cl. C04b *7/36*

U.S. Cl. 106—100 **13 Claims**



1. In a system for the production of Portland cement wherein gas-entrained raw mix is fed through a heat exchange zone to a calcining zone from which hot clinker and gases are separately discharged and wherein said heat exchange zone comprises multiple vertical tubes through which the raw mix flows in heat transfer relation with hot gases from the calcining zone; the process of maintaining high heat transfer rates from the kiln gases to the entrained raw mix within the heat exchange zone that includes recycling gas-entrained solid clinker particles from the calcining zone and introducing said particles to the raw mix streams flowing through the tubes so that the clinker particles become gas-entrained therewith and exert scouring and cleaning action against the inside surfaces of the tubes.

3,870,535
METHOD OF TREATING COAL MINING REFUSE

Leonard John Minnick, Cheltenham; Charles L. Smith, Conshohocken, and William C. Webster, Norristown, all of Pa., assignors to IV Conversion Systems, Inc., Philadephia, Pa.

Continuation-in-part of Ser. No. 222,384, Jan. 31, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,702
Int. Cl. C04b *7/321*

U.S. Cl. 106—118 **17 Claims**

1. Method of treating sulfuric acid-containing coal mining refuse comprising intimately admixing said refuse, in the presence of water, with lime, the amount of lime exceeding that stoichiometrically necessary to neutralize said sulfuric acid content of said refuse, and permitting said admixture to harden, at atmospheric pressure, for at least several days.

3,870,536
CERAMIC DECALCOMANIA

Louis A. Blanco, Tuckahoe, and Hazel W. Meade, Pleasantville, both of N.Y., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 110,261, Jan. 27, 1971, Pat. No. 3,772,049, which is a continuation-in-part of Ser. No. 727,649, May 8, 1968, abandoned. This application Aug. 15, 1973, Ser. No. 388,375
Int. Cl. C08h *17/34;* **C08b** *27/42, 27/36*

U.S. Cl. 106—146 **3 Claims**

1. A bonding agent for ceramic decalcomanias, the decalcomania containing a pigment and an organic material, said bonding agent consisting essentially of from about 20 to about

70% of a fast-acting solvent selected to act on the organic material in the decalcomania, said fast-acting solvent being a lower alkyl monoether of a C_2 to C_8 glycol wherein the lower alkyl groups have up to about six carbons, a monohydride alcohol containing up to about six carbons, a C_2 to C_5 ester of acetic acid and/or lactic acid, in admixture with turpentine, and from about 30 to about 70% of a moderating agent selected to moderate the action of the solvent on the organic material, and selected from the group consisting of propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, octylene glycol, decylene glycol, and dodecylene glycol and mixtures thereof and mixtures of one or more thereof with water.

3,870,537
SHAPED SOLID BODY OF PULLULAN ETHER AND METHODS OF MAKING AND USING THE SAME

Hiromi Hijiya, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated,, Okayama, Japan

Filed Feb. 25, 1974, Ser. No. 445,092

Claims priority, application Japan, Mar. 1, 1973, 48-23710

Int. Cl. C08b *25/00, 27/42*

U.S. Cl. 106—162 **10 Claims**

1. A shaped, solid body essentially consisting of a lower-alkyl or hydroxy-lower-alkyl ether of pullulan and 0% to 5% of a polyhydric alcohol at least as soluble in water as sorbitol, said lower-alkyl having one to four carbon atoms, and said pullulan having a molecular weight of 10,000 to 5,000,000.

3,870,538
GYPSUM SET ACCELERATOR

Edward A. Burkard, East Amherst, and Donald A. Kossuth, Buffalo, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Filed May 7, 1973, Ser. No. 358,191

Int. Cl. C04b *11/14*

U.S. Cl. 106—315 **4 Claims**

1. An accelerator for accelerating the setting reaction of calcium sulfate hemi-hydrate and water consisting essentially of the finely ground product of a compression milling of a mixture of about 1 to 99 percent calcium sulfate dihydrate and about 1 to 99 percent starch.

3,870,539
TEMPORARY PRINTING CARRIERS

Heinz Glaser, Kandern, Germany, and Vassil Zlatareff, Fullinsdorf, Switzerland, assignors to Societe d'Etudes du Procede Noridem, Glarus, Switzerland

Filed Oct. 4, 1972, Ser. No. 297,032

Claims priority, application Switzerland, Oct. 6, 1971, 14481/71; July 28, 1972, 11293/72

Int. Cl. B32b *7/06, 27/10;* **C09j** *7/02*

U.S. Cl. 117—3.1 **13 Claims**

1. A temporary carrier of paper, aluminium, regenerated cellulose, polyester terephalate or polyolefine sheets, or laminates thereof, which carries on one of its surfaces a detachable film of pigmented vinyl resins with a preferably multi-coloured pattern or design, an underlying layer consisting of a mixture of nitrocellulose and an aminoplast or of nitrocellulose and an alkyd resin, wherein there is present on the detachable film a thin adhesive layer containing resins which are soluble in organic solvents and possess a pendulum hardness according to Konig (DIN 53 157) of at least 85 seconds.

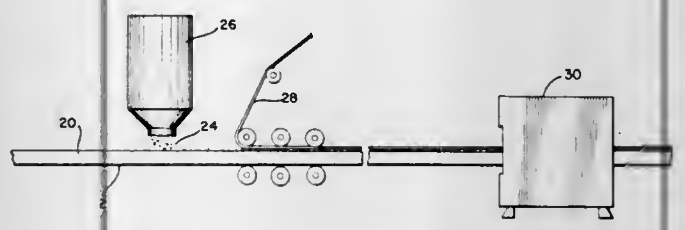
3,870,540
SURFACE TEXTURE FOR FIBROUS BOARDS

Fred C. Norgard, 45 Marie Ave., Somerville, N.J. 08876

Continuation-in-part of Ser. No. 49,325, June 24, 1970, abandoned. This application Apr. 5, 1972, Ser. No. 241,161

Int. Cl. B32b *19/00*

U.S. Cl. 117—16 **5 Claims**



1. A method of texturing the surface of a water-laid lap of entangled fibers comprising:
  a. forming a water-laid lap of entangled fibers;
  b. substantially uniformly distributing a layer of discrete particles of a foamed synthetic organic thermoplastic resinous materials on one surface of the water-laid lap of entangled fibers such that most of the particles abut one another before pressing the wet lap;
  c. pressing the particles into the wet lap to embed the particles in the wet lap; and,
  d. heating the wet lap to reduce the volume of the foamed material and leave depressions in the surface which produce a unique random surface texture.

3,870,541
SELECTIVE TRANSFER OF AN ELECTROSTATIC TONER IMAGE

Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 221,230, Jan. 27, 1972,. This application Mar. 27, 1973, Ser. No. 345,385

Int. Cl. G03g *13/00*

U.S. Cl. 117—17.5 **8 Claims**

1. Improved methods for transferring all or selected toner images on a photoreceptor to a transfer member, comprising the steps of:
  disposing a substantially non-conductive transfer member in a position with respect to a surface portion of said photoreceptor from which a selected toner image may be transferred so that a portion of said transfer member is adjacent to said surface portion of said photoreceptor;
  charging at least said portion of said transfer member on a continuous basis with an ion charging source; and
  placing at least a lineal segment of the charged portion of said transfer member in a transfer relationship with said surface portion of said photoreceptor from which a selected toner image may be transferred while said portion of said transfer member is being charged by displacing said lineal segment of said transfer member from said adjacent position to said transfer relationship within a time interval which is less than that required by said ion charging source to cause ionization of a gap between said surface portion of said photoreceptor and at least said lineal segment of said transfer member being placed in a transfer relationship therewith.

3,870,542
PROCESS OF TREATING FIBROUS ARTICLES WITH MICROCAPSULES CONTAINING HYDROPHOBIC TREATING AGENT

Syunya Ida, Nara, and Kenjiro Hosokawa, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 65,244, Aug. 19, 1970, abandoned. This application Sept. 26, 1972, Ser. No. 292,414

Claims priority, application Japan, Aug. 22, 1969, 44-66574; Aug. 23, 1969, 44-66786; Aug. 25, 1969, 44-67429; Oct. 15, 1969, 44-82727

Int. Cl. B44d *5/06*

U.S. Cl. 117—33.3 **18 Claims**

1. A process for treating a fibrous article selected from yarns, knitted fabrics, woven fabrics or non-woven fabrics consisting of at least one kind of natural or artifical fibers, comprising the steps of:
  1. forming a suspension, in water, of a multitude of discrete microcapsules having particle sizes in the range of 100 to 1 μm, each microcapsule consisting essentially of:
  a. a liquid core consisting essentially of a solution of at least one hydrophobic fiber treating agent dissolved in a non-aqueous solvent which is not miscible with water, said fiber treating agent comprising elasticity-improving agents, antipilling agents, ultra-violet ray absorbers, softening agents, flame proof agents, anti-static agents, water repellent agents, soil-releasing agents, heat proof agents, shrink proof agents, crease proof agents, cross-linking agents, dyes or pigments and being capable of being adhered, absorbed or reacted with said fibers upon contact therewith, and
  b. a solid, thin synthetic resin shell deposited on and completely surrounding said core, said resin being selected from the group consisting of polyurethane resins, silicone resins, polyolefins, epoxy resins, polyamides and polyesters, said shell having a breaking tenacity of not in excess of 50 g/cm^2, the weight ratio of (b) to (a) being in the range of 1 :500 to 1 : 5,000;
  2. applying the suspension of said microcapsules in water onto said fibrous article; and
  3. breaking the microcapsules on said fibrous article to impregnate said article with said solution whereby said fibrous article is treated by said fiber treating agent.

3,870,543
METHOD OF BONDING HYDROXYQUINOLINE TO AN INORGANIC MATERIAL

Howard H. Weetall, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 9, 1973, Ser. No. 377,626

Int. Cl. B44d *1/20;* **C03c** *17/28*

U.S. Cl. 117—54 **7 Claims**

1. A method of chemically bonding 8-hydroxyquinoline to an inorganic material which comprises the steps of:
  a. reacting with an aqueous solution of cyanogen bromide an essentially water-insoluble inorganic material having surface hydroxyl or oxide groups and a surface area of at least 5 M^2/gram, the inorganic material being selected from the group consisting of porous glass and zirconia-coated porous glass;
  b. removing the material from the solution;
  c. reacting the material with a benzidine solution to couple benzidine residues on the surface of the material, said benzidine residues having attached thereto free amino groups;
  d. diazotizing the free amino groups; and
  e. reacting the material having the diazotized groups attached thereto with an aqueous solution of 8-hydroxyquinoline.

3,870,544
FIBROUS BOARD PRODUCTS HAVING IMPROVED SURFACE

Walter S. Shisko, Ottawa, Ontario, Canada, assignor to Domtar Limited, Montreal, Canada

Filed June 19, 1972, Ser. No. 263,922

Claims priority, application Canada, June 16, 1972, 144986

Int. Cl. B44d *1/092*

U.S. Cl. 117—60 **3 Claims**

1. In a fibrous board made from lignocellulosic fibres and having on at least one surface thereof a coat of water-base resin paint, the improvement for rendering said surface resistant to browning which comprises a coating on said surface underlying said coat of water-base resin paint, said coating consisting of a dried aqueous solution of a water-soluble salt of the group consisting of the chloride, acetate and nitrate of barium, the chloride, acetate and nitrate of strontium, the chloride, acetate and nitrate of calcium, lead nitrate and lead acetate, the concentration of said salt solution being at least 2%.

3,870,545
PROCESS FOR COATING A CATALYST SUPPORT

Joseph A. Tabacek, New Kinsington; Brian W. Taylor, Richland Township, and Roger F. Vogel, Jefferson Township, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 23, 1973, Ser. No. 381,978

Int. Cl. B01j *11/46;* **B44d** *1/44*

U.S. Cl. 117—71 R **24 Claims**

1. A process for applying a high surface area coating to catalyst supports having a low surface area which comprises coating said support with an alumina sol mixture consisting essentially of about 2.6 to about 19 per cent by weight of aluminum, about 1.3 to about 25 per cent by weight of chlorine, about 36 to about 95.7 per cent by weight of water and about 0.4 to about 20 per cent by weight of an amine or consisting essentially of about 2.6 to about 16 per cent by weight of aluminum, about 2.2 to about 37 per cent by weight of nitrate, about 30 to about 94.8 per cent by weight of water and about 0.4 to about 17 per cent by weight of an amine and then calcining said coated support.

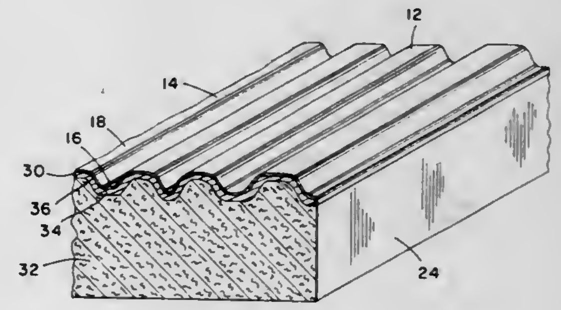
3,870,546
ASBESTOS-CEMENT PRODUCT AND PROCESS

Fred J. Gelsomino, Buffalo, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,827

Int. Cl. B32b *13/12;* **B44d** *1/14*

U.S. Cl. 117—72 **10 Claims**



1. The process for manufacturing durable, weather-resistant, non-blocking, non-tacky asbestos-cement products which comprises coating the surface of an autoclave steam-cured asbestos-cement sheet with a water-dispersed pigmented acrylic polymer, drying said coating to a degree such that said coating is substantially dry to the touch but not cured, applying thereover an aqueous coating of an unpigmented mixture of acrylic polymer and polyethylene, said polyethylene comprising at least about 5 percent of the total weight of solids of said mixture, and simultaneously curing

said acrylic and said acrylic-polyethylene mixture to form a tough coating with a surface which is relatively slippery, non-tacky and non-blocking.

3,870,547

STARCH COATED FIBERS FOR EMBEDDING IN RESIN MATRIX FORMING MATERIALS AND COMPOSITES SO FORMED

Gerald B. Workman, Granville, and Lawrence R. Deardurff, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 24, 1974, Ser. No. 436,291

Int. Cl. C03c *25/02, 25/00*

U.S. Cl. 117—72 **11 Claims**

1. In the process for producing glass fiber reinforced plastics wherein essentially bare glass fibers are coated with a size, and are then wound into a package, and following which the fibers are run through machinery and embedded into a liquid resin prepolymer that is cured insitu around the fibers to bond therewith, the improvement comprising: applying starch, emulsified particles of a nonionic lubricant, a water soluble cationic organic lubricant, and an organo-silane coupling agent which couples said liquid resin prepolymer to glass fibers that are devoid of interferring films in a manner causing said organo-silane to treat the glass and form a coating of starch, nonionic lubricant, and cationic lubricant over the organo-silane treated glass fiber surface; dissolving the non-ionic lubricants and cationic lubricant out of the coating with a mutual solvent but in which the silane is not dissolvable to expose the silane treated surface of the glass fibers; and bonding a matrix resin prepolymer to the silane treated surface of the glass fibers.

3,870,548

PRIMER COMPOSITION FOR HEAT CURABLE SILICONE

Joseph Eugene Stevenson, Charleston, S.C., assignor to Stauffer Chemical Company, Adrian, Mich.

Division of Ser. No. 241,421, April 5, 1972, Pat. No. 3,769,253, which is a continuation-in-part of Ser. No. 70,196, Sept. 8, 1970, abandoned, which is a continuation of Ser. No. 716,340, March 27, 1968, abandoned. This application July 23, 1973, Ser. No. 381,939

Int. Cl. B44d *1/14*

U.S. Cl. 117—72 **2 Claims**

1. An article of manufacture comprising a substrate and a cured primer composition bonded thereto, said primer composition containing a silicone polymer substantially free of hydroxyl groups and consists of silicon atoms, oxygen atoms and radicals selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals and has recurring structural units of the formula R''_2SiO in which the ratio of R'' groups to Si atoms is from 1.9 to 2.0 and from 0.01 to about 5.0 mol percent of the R'' groups are unsaturated and the remaining R'' groups are selected from the class consisting of hydrocarbon and halogenated hydrocarbon groups; an organic peroxide catalyst and a silane of the formula

$$R_nSi\,(OOCR')_{4-n}$$

wherein R is an alkenyl radical having from one to 10 carbon atoms, R' is an alkyl radical having from one to five carbon atoms; and n is a number of from 1 to 2.

3,870,549

INK RECEIVING MATTE SHEET MATERIALS OVERCOATED WITH AN ALKYL MONOESTER OF POLY (ALKYL VINYL ETHER-MALEIC ACID)

Albertus Pieter Ruygrok, Leiden, Netherlands, assignor to GAF Corporation, New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,173

Int. Cl. B32b *23/08, 27/36*

U.S. Cl. 117—73 **9 Claims**

1. Improved matte sheet material capable of receiving ink markings comprising a polyester film base at least one surface of which carries a first layer of cellulosic matte film-forming lacquer composition, the surface of said first layer carrying a second layer comprising an alkyl monoester of poly(alkyl vinyl ether-maleic acid).

3,870,550

METHOD OF PREVENTING INGESTION OF LEAD BASE PAINT COATINGS

Seymour Mann, New York, N.Y., assignor to Aceto Chemical Co., Inc., Flushing, N.Y.

Continuation-in-part of Ser. No. 220,410, Jan. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 112,041, Feb. 2, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,623

Int. Cl. C08b *25/00;* **B44d** *1/12*

U.S. Cl. 117—84 **9 Claims**

1. A method of minimizing the danger of ingestion of a lead-base painted coating which coating is harmful when ingested, which comprises applying to a surface coated with a lead-base paint a composition consisting essentially of a solution of sucrose octa-acetate in a solvent selected from the group consisting of methylene chloride, trichlorethylene and isopropyl alcohol, said solution containing a sufficient amount of sucrose octa-acetate to cause the surface to which it is applied to have such bad taste that ingestion of the same is discouraged, whereby said solvent partially dissolves and softens the lead-base paint coated surface and causes said sucrose octa-acetate to adhere to the coated surface and permitting evaporation of the solvent, whereby the sucrose octa-acetate remains adhereing to said surface.

3,870,551

METHOD OF TREATING GLASS FIBERS USING ULTRASONIC VIBRATION

Ichiro Iwami; Tsutomu Matsunaga, and Ken Yoneyama, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 837,730, June 30, 1969, abandoned. This application Aug. 15, 1972, Ser. No. 280,803

Claims priority, application Japan, July 8, 1968, 43-47174

Int. Cl. B01j *1/12;* **C03c** *25/02;* **B44d** *1/44*

U.S. Cl. 117—115 **5 Claims**

1. A method for improving the resistance of a bundle of glass fibers against folding and friction and for improving the adhesivity of a bundle of glass fibers with a rubber by treating a bundle of glass fibers with a resorcin-formaldehyde-rubber latex composition, which comprises;

passing said bundle through a bath of said composition which has a solids content of 5 – 40% by weight and is kept at a temperature of 20 – 80°C, applying an ultrasonic wave having a frequency of 100 – 600 Kc/s uninterruptedly to said bath thereby to accelerate the penetration of said composition between fibers, and

drying the composition treated fibers.

3,870,552

PRESSURE-SENSITIVE ADHESIVE TAPE

Robert H. Hackhel, 414 Hickory, Lombard, Ill. 60148

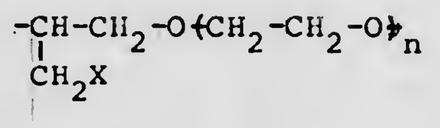
Division of Ser. No. 205,284, Dec. 6, 1971, Pat. No. 3,808,288. This application Jan. 31, 1974, Ser. No. 438,188

Int. Cl. C09j *7/04*

U.S. Cl. 117—122 PF **9 Claims**

1. An adhesive tape comprising a flexible backing and supported thereon a pressure-sensitive adhesive consisting essentially of

a. an elastomeric epihalohydrin polymer comprising recurring units having the formula



$$-\underset{\substack{|\\CH_2X}}{CH}-CH_2-O\!\left(CH_2-CH_2-O\right)_n$$

wherein X is chlorine or bormine and n is zero to 2, and

b. a thermoplastic polyketone resin comprising the condensation product of an aliphatic ketone having a total of 3 to 6 carbon atoms; a monoaryl alkyl ketone having from 6 to 10 ring carbon atoms in the aryl group and from 1 to 4 carbon atoms in the alkyl group; an aliphatic ketone having a total of 3 to 6 carbon atoms with a lower aliphate aldehyde; a monoaryl alkyl ketone having from 6 to 10 ring carbon atoms in the aryl group and from 1 to 4 carbon atoms in the alkyl group with a lower aliphatic aldehyde; or a carbocyclic ketone having 3 to 7 ring carbon atoms with a lower aliphatic aldehyde;

said thermoplastic polyketone resin being present in an amount from about 30 to about 150 parts per 100 parts of said epihalohydrin polymer.

3,870,553

CELLULAR CONCRETE UNIT COATED WITH AIR PERMEABLE, WATER REPELLENT CONCRETE COATING

Edward B. Hussey, Beaconsfield, Quebec, Canada, assignor to Domtar Limited, West Montreal, Canada

Continuation-in-part of Ser. No. 152,985, June 4, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,703

Claims priority, application Canada, July 8, 1970, 87712

Int. Cl. B32b *13/04;* **C04b** *7/02*

U.S. Cl. 117—123 A **6 Claims**

1. A precast concrete building unit comprising a lightweight cellular concrete unit having on at least one face thereof and integral therewith a finishing layer of dense, high-strength concrete material, said dense concrete material consisting essentially of an inorganic cementitious binder, a siliceous aggregate containing a coarse fraction and a fine fraction and between 2 and 12 percent solids based on the total weight of said concrete material of a resin binder, said coarse fraction consisting essentially of aggregate substantially all of which passes through a 30 mesh screen and a portion constituting at least 70 percent of said coarse fraction being in the −40 to +100 mesh range, said fine fraction having a particle size such as less than 10 percent of said fine fraction is retained on a −200 mesh screen; said fine fraction constituting between 12 and 40 percent of the total of said portion and said fine aggregate, the weight ratio of said fine fraction to the total of said portion and said fine fraction and the weight ratio of said resin binder solids to said dense concrete material being coordinated thereby to provide a finishing layer having a water repellency greater than 90 percent and a water vapour permeance of between 6 and 12 perms.

3,870,554

THERMAL SHRINKAGE RESISTANCE OF LEATHER

Alfred O. Minklei, Grand Island, and John A. Peterson, Niagara Falls, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 250,208, May 4, 1972, Pat. No. 3,824,124. This application Jan. 2, 1973, Ser. No. 320,339The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.

Int. Cl. C14c *9/00;* **C09k** *3/28*

U.S. Cl. 117—138 **6 Claims**

1. A process for improving the thermal shrinkage resistance of leather which comprises the steps of treating the leather with an aqueous solution of tetrapotassium pyrophosphate at a temperature of from about 20° to 85° C, and thereafter, treating the resulting leather with a solution of a salt of magnesium at a temperature of from about 5° to 85° C, both of said treatments being carried out for a time sufficient to impregnate the leather with at least 0.5 percent by weight of the reaction product of said magnesium salt and said tetrapotassium pyrophosphate metal salt.

3,870,555

ARYL STEARIC ACID TREATED TEXTILES

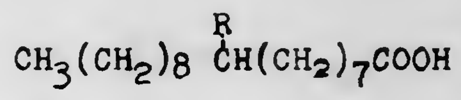
Ronald Swidler, Pasadena, Calif.; Ray S. Smith, Greensboro, N.C., and Harry A. Miller, Altavista, Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 40,717, May 26, 1970, Pat. No. 3,592,786, which is a division of Ser. No. 683,139, Nov. 15, 1967, Pat. No. 3,521,993, which is a continuation-in-part of Ser. No. 645,599, June 13, 1967, abandoned. This application Feb. 3, 1971, Ser. No. 112,457

Int. Cl. C10m *3/18;* **D06m** *11/02, 13/20*

U.S. Cl. 117—138.8 F **8 Claims**

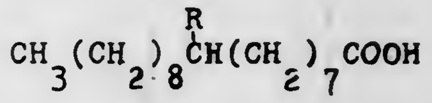
1. A process comprising impregnating a textile material with aqueous aryl stearic acid having the formula



$$CH_3(CH_2)_8\overset{R}{\overset{|}{C}}H(CH_2)_7COOH$$

wherein R is an aromatic group and isomers thereof wherein the aromatic group is disposed at any point from the second to the seventeenth carbon atoms and thereafter drying the material to remove water retained by said textile material through impregnation with said aqueous aryl stearic acid.

6. A textile material prepared by a process comprising impregnating a textile material with aqueous aryl stearic acid having the formula



$$CH_3(CH_2)_8\overset{R}{\overset{|}{C}}H(CH_2)_7COOH$$

wherein R is an aromatic group and isomers thereof wherein the aromatic group is disposed at any point from the second to the seventeenth carbon atoms and thereafter drying the material to remove water retained by said textile material through impregnation with said aqueous aryl stearic acid.

3,870,556
TEXTILE FINISHING COMPOUNDS

Klaus Noll; Gunter Oertel, both of Koeln, and Karl Schafer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 244,200, April 14, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,764

Claims priority, application Germany, Apr. 24, 1972, 2120090

Int. Cl. C08h *19/02*

U.S. Cl. 117—141 **4 Claims**

1. A textile, containing keratin fibres, treated with a polyisocyanate having the general formula:

$$A—[O—CO—(O)_n—R—NCO]_m$$

wherein

m is an integer of from 2 to 10;

n is 0 or 1;

A is an m-valent residue having a molecular weight of from about 500 to about 18,000 which residue is free of Zerewitinof-active hydrogen atoms and which is obtained by removal of the hydroxyl groups from a polymer which contains hydroxyl groups; and

R is a divalent aliphatic or cycloaliphatic hydrocarbon radical containing one to 20 carbon atoms to impart shrink-proofing properties to said textile.

3,870,557
TREATMENT OF POROUS WEB STRUCTURES WITH AQUEOUS SUSPENSIONS OF A SYNTHETIC RESIN

Herbert Fink, Bickenbach; Manfred Munzer, Bensheim, and Horst Dinklage, Darmstadt-Arheilgen, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed July 7, 1972, Ser. No. 269,731

Claims priority, application Germany, July 17, 1971, 2135828

Int. Cl. B44d *1/02*

U.S. Cl. 117—161 R **3 Claims**

1. In a process for coating or strengthening a porous web structure by contacting said web with a synthetic resin contained in particulate form in an aqueous medium, the improvement wherein said web structure (1) is contacted with an aqueous suspension, prepared by an aqueous suspension polymerization process, of a synthetic resin having a glass transition temperature below about 35°C., the resin particles in said suspension having an average particle diameter between about 0.05 mm and about 0.5 mm and being present in said suspension in an amount giving a solids content of up to 70 percent by weight, and (2) is then dried at a temperature between about 80°C. and about 180°C., the amount of resin suspension employed being such as to leave between about 10g/m^2 and about 200g/m^2 of resin in said web structure after drying.

3,870,558
PROCESS FOR PREPARING A LAYER OF COMPOUNDS OF GROUPS II AND VI

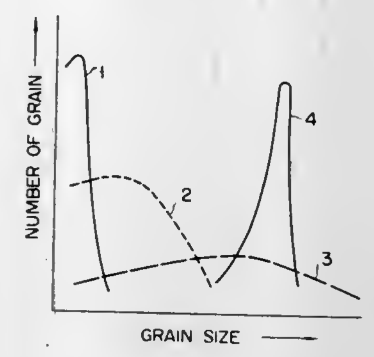
Kazuo Shimizu; Okio Yoshida, both of Yokohama; Kazuo Terakawa, Tokosuka, and Satoshi Aihara, Yokohama, all of Japan, assignors to Tokyo Shibouro Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 172,454, Aug. 17, 1971, Pat. No. 3,793,069. This application June 8, 1973, Ser. No. 368,309. The portion of the term of this patent subsequent to Feb. 19, 1991, has been disclaimed.

Int. Cl. B44d *1/02*

U.S. Cl. 117—201 **7 Claims**

2. A process for preparing a layer of Group II-VI compound which comprises forming a layer of cadmium selenide on a substrate plate and heat-treating it in an atmosphere comprising an inert gas, 0.1–10% by volume of oxygen on the basis of said inert gas and vapour of sulfur or mixtures of sulfur with selenium, whereby uniform grain growth with narrow range grain size distribution is effected.



3,870,559
PAPER TREATMENT

Ronald Cowling, and James Nairn Greenshields, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

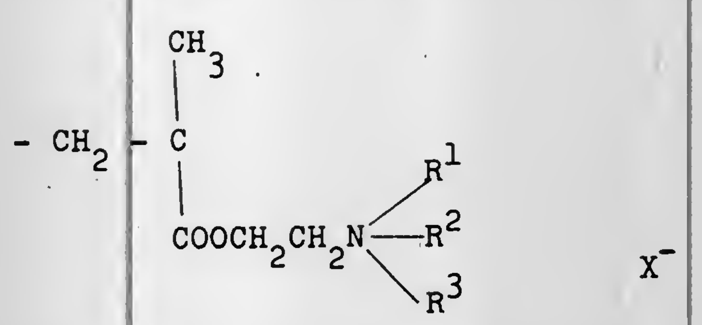
Continuation of Ser. No. 115,844, Feb. 16, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,184

Claims priority, application Great Britain, Feb. 25, 1970, 9115/70

Int. Cl. B44d *1/18;* **G03g** *7/00*

U.S. Cl. 117—201 **3 Claims**

1. A method of improving the electroconductivity of paper which comprises applying to at least one surface of the paper an aqueous solution of a copolymer containing in the molecule 15–80% by weight of repeating units of the formula:



wherein R^1 represents methyl or ethyl, R^2 and R^3 each independently represents methyl or ethyl or R^2 and R^3 taken together represent $—CH_2CH_2OCH_2CH_2—$ or $—(CH_2)_n—$ where n represents 4 or 5 and X$^-$ represents a chloride or acetate ion, the remainder of the copolymer consisting of styrene, vinyl toluene, 2-ethylhexyl acrylate or methyl methacrylate units, said copolymer having an average molecular weight in the range 5,000 to 2,000,000.

3,870,560
SILICATE-AND HYDROXIDE-CONTAINING CLEANING COMPOSITIONS, AND LIQUID CONCENTRATES FOR THE PREPARATION THEREOF

Gary Allen Shumaker, Ashtabula, Ohio, assignor to The Lubrizol Corporation, Thickliffe, Ohio

Filed Jan. 2, 1973, Ser. No. 320,343

Int. Cl. C23g *1/14;* **C11d** *3/08*

U.S. Cl. 134—2 **24 Claims**

1. A liquid cleaning concentrate containing at least 20% dissolved solids by weight, which comprises an aqueous solution of about 15–25% of at least one alkali metal hydroxide, about 35–45% of at least one alkali metal silicate, about 1–5% of at least one organic sequestrant, and about 2–15% of at least one anionic surfactant.

18. A method of cleaning a metal object which comprises contacting said object with a composition according to claim 11.

3,870,561
ELECTRIC ACCUMULATOR

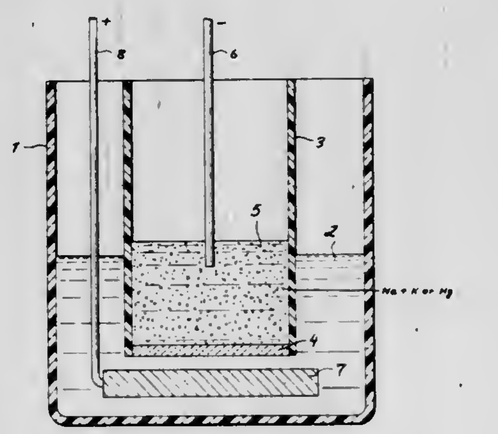
Jean-Claude Charbonnier, St.-Germain-en-Laye, France, and Helmut Tannenberger, Geneve, Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Continuation-in-part of Ser. No. 79,204, Oct. 8, 1970, Pat. No. 3,730,771, and a continuation-in-part of Ser. No. 232,798, March 8, 1972, Pat. No. 3,773,558. This application Nov: 17, 1972, Ser. No. 307,560

Claims priority, application Switzerland, Oct. 9, 1969, 15148/69; Mar. 9, 1971, 3400/71. The portion of the term of this patent subsequent to Nov. 20, 1990, has been disclaimed.

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 LN **14 Claims**



1. An electric accumulator comprising:

a container divided into an anodic compartment and a cathodic compartment;

an anode in said anodic compartment consisting essentially of a composition of an active metallic constituent and at least one other metal, said metallic constituent being taken from Group IA, IIA, IIB or IIIB of the Periodic Table, said metallic constituent forming with said other metal an alloy which is liquid at an operating temperature of up to about 100°C;

a solid cathode in said cathodic compartment having a sintered electronically conductive structure incorporating a cathodically reducible metal compound;

a solid fluidtight separator consisting of beta alumina permeable to the ions of said metallic constituent between said compartments; and

an electrolyte in said cathodic compartment consisting essentially of a solution of a salt of the metal of said constituent in an organic solvent capable of dissolving a reaction product composed of cations of said constituent and anions of said reducible compound, said cathode being immersed in said electrolyte in spaced relationship with said separator.

3,870,562
USE OF Ni(OH)$_2$ IN PRESSED PLATE ELECTRODES

Henry A. Catherino, Gainesville, Fla., assignor to General Electric Company, Owensboro, Ky.

Filed June 17, 1974, Ser. No. 480,017

Int. Cl. H01m *43/04*

U.S. Cl. 136—24 **10 Claims**

1. In a rechargeable cell having an alkali-electrolyte resistant container having at least one insulated terminal thereon, a positive electrode, an alkali electrolyte, and a cadmium pressed negative electrode, the improvement comprising said negative electrode comprising:

a. substrate;

b. a compressed mixture supported on said substrate, said mixture comprising:

  1. stabilized cadmium metal generally spherically shaped particles formed by condensing cadmium metal vapors in the presence of oxygen having an average particle size of about 3–12 microns;
  2. about 0.01–5% by weight nickel hydroxide powder;
  3. a cadmium compound powder selected from the group of CdO, Cd(OH)$_2$, and mixtures thereof;
  4. a binder.

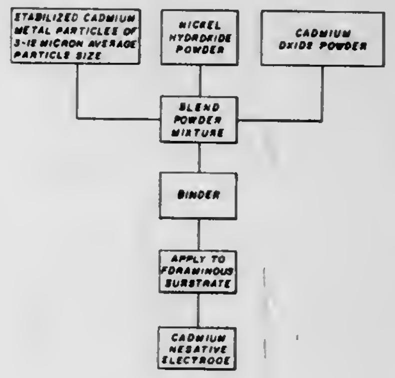
3. A pressed cadmium negative electrode having a substrate, the improvement comprising a compressed mixture supported on said substrate, said mixture comprising:

a. a cadmium compound powder selected from the group of CdO, Cd(OH)$_2$, and mixtures thereof;

b. generally spherically shaped cadmium metal particles having an average particle formed by condensing cadmium metal vapors in the presence of oxygen size of 3–12 microns and stabilized with a minor amount of CdO, said cadmium metal particles comprising not more than 34% by weight of the powder mixture;

c. about 0.01–5% by weight nickel hydroxide powder; and

d. a binder.


STABILIZED CADMIUM METAL PARTICLES OF 3-12 MICRON AVERAGE PARTICLE SIZE
NICKEL HYDROXIDE POWDER
CADMIUM OXIDE POWDER
BLEND POWDER MIXTURE
BINDER
APPLY TO FORAMINOUS SUBSTRATE
CADMIUM NEGATIVE ELECTRODE

7. An improved process for producing a cadmium negative electrode for a rechargeable cell having enhanced anti-fading properties comprising:

a. providing generally spherically shaped particles of stabilized cadmium metal powder formed by condensing cadmium metal vapors in the presence of oxygen having an average particle size of about 3–12 microns and containing about 1% by weight CdO to inhibit oxidation of the metallic powder;

b. mixing together said metallic cadmium powder with nickel hydroxide and a cadmium compound powder selected from the group of CdO, Cd(OH)$_2$, and mixtures thereof to form a mixture containing from not more than 34% by weight metallic cadmium, about 0.1–5% by weight nickel hydroxide, about 60–98% by weight cadmium oxide compound;

c. blending said powder mixture with a binder; and

d. compressing the mixture on foraminous substrate to form an electrode.

3,870,563
HERMETICALLY SEALED STORAGE BATTERY

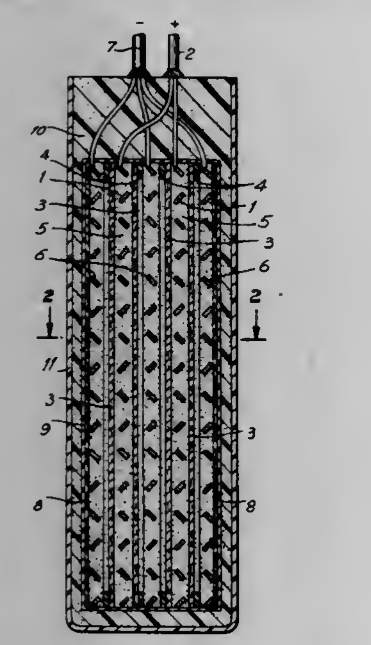
Samuel Ruben, 53 Seacord Rd., New Rochelle, N.Y. 10801

Continuation-in-part of Ser. Nos. 82,701, Oct. 21, 1970, abandoned, and Ser. No. 252,724, May 12, 1972, Pat. No. 3,798,070, and Ser. No. 277,787, Aug. 3, 1972, abandoned, and Ser. No. 293,367, Sept. 29, 1972, abandoned. This application July 16, 1973, Ser. No. 379,443

Int. Cl. H01m *39/00*

U.S. Cl. 136—26 **10 Claims**

1. An electric storage battery having a positive electrode comprising a grid of titanium, a thin layer of nickel on the titanium, a dense layer of lead over the nickel and a coating of lead peroxide on said lead; a negative electrode comprising a grid of stainless steel, a thin layer of nickel on the stainless steel, a dense plating of lead on the nickel, a porous spongy coating of lead on said plated lead, and an electrolyte of sulfuric acid.



3,870,564
ALKALINE CELL

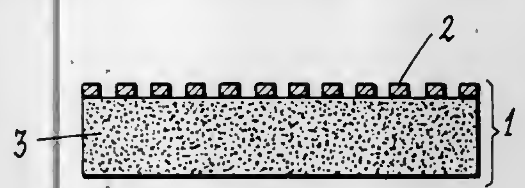
Isutomu Takamura, Kawasaki; Yoshimi Kanada, Tokorozawa, and Shintari Suzuki, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd.
Filed Mar. 30, 1973, Ser. No. 346,433
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **6 Claims**

1. In an alkaline cell comprising:
   a. a positive electrode consisting of a positive electrode composition;
   b. a separator disposed between said positive electrode and a negative zinc electrode;
   c. an alkaline electrolyte as a component of said negative electrode material;
   d. a negative zinc electrode comprising a negative electrode material; wherein the improvement comprises said negative electrode material comprising finely divided zinc particles, from 0.1 to 20 percent by wt zinc oxide, a sufficient quantity of an alkaline electrolyte, from 0.05 to 10 10 percent by wt of a gel forming material durable to said alkaline electrolyte, 0.1 to 10 percent by wt of boric acid, its salts or boron oxide, from 0.1 to 20 percent by wt of an inorganic oxide or hydroxide which is stable to said eletrolyte and 0.1 to 10 percent by wt of pulverized cellulose, wherein the metal of said inorganic oxide or hydroxide is less noble than zinc.

3,870,565
CATHODE FOR THE REDUCTION OF OXYGEN AND A RECHARGEABLE CELL COMPRISING SAID CATHODE

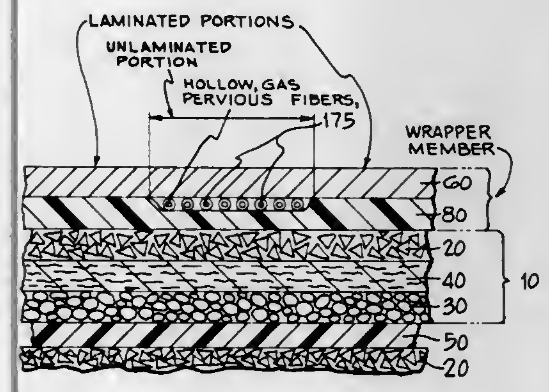
Maurice Bonnemay, 240, bd. Jean-Jaures, Boulogne-Billancourt, Haut-de-Seine; Guy Rene Bronoel, 60, avenue des Etats-Unis, Versailles, Yvelines; Jean-Baptiste Donnet, 29, rue Zwiellem, Didenheim, Haut-Rhin; Jacques Lahaye, 31, rue George Sand, Mulhouse, Haut-Rhin, and Joel Alain Sarradin, 46, avenue de Cressac "commanderie des Templiers", Elancourt, Yvelines, all of France
Filed June 14, 1974, Ser. No. 480,139
Claims priority, application France, June 19, 1973, 73.22182
Int. Cl. H01m *27/04, 35/00*
U.S. Cl. 136—86 A **6 Claims**

1. A cathode for the reduction of oxygen and especially for a rechargeable cell, comprising a support on which is placed an electrochemical catalyst consisting of finely-divided carbon, wherein said carbon is of the non-porous carbon-black type constituted by a chain of substantially spherical particles and having a specific surface within the range of 50 to 600 m²/g, said carbon black having been subjected to a thermochemical treatment in a chlorine atmosphere at a temperature within the range of 1500° to 3000°C.



3,870,566
BATTERY HAVING VENTING PASSAGEWAY OUTSIDE OF OR IN GAS-PERVIOUS LAYERS

Bernard C. Bergum, and Tor Oppedal, both of Madison, Wis., assignors to ESB Incorporated, Philadelphia, Pa.
Filed Dec. 3, 1973, Ser. No. 421,159
Int. Cl. H01m *1/06*
U.S. Cl. 136—111 **19 Claims**



1. An improvement in a battery having
   a. at least one cell comprising
      i. a positive electrode,
      ii. a negative electrode, and
      iii. a electrolyte-containing layer separating the two electrodes, and
   b. a cell terminal member in contact with the outside face of one of the end electrodes and providing a terminal therefor, the cell terminal member comprising an electrically conductive, liquid impervious plastic inner layer which is pervious to the gases generated by the cell,

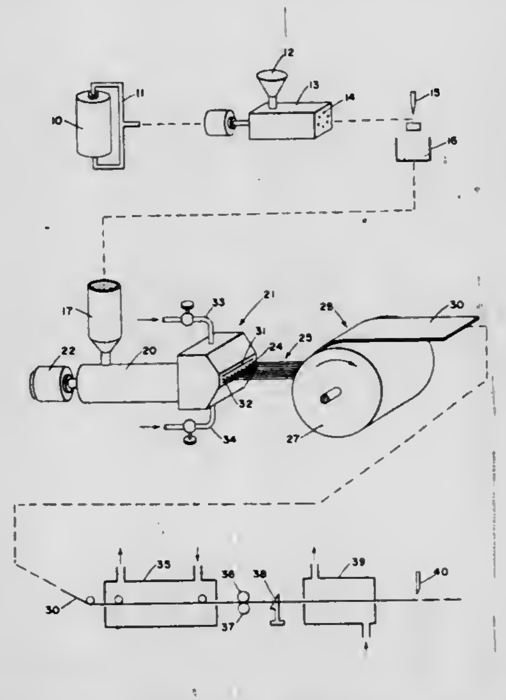
wherein the improvement provides a gas-venting passageway, the passageway comprising
   c. a hollow fiber made from a material which is pervious to the gases to be vented from the cell, the fiber being situated beyond the inside face of the gas-pervious inner layer so that gases generated by the cell must first pass through the inner layer before reaching the fiber, the hollow interior of the fiber communicating with the exterior of the battery.

3,870,567
BATTERY SEPARATOR MANUFACTURING PROCESS

Nigel Innes Palmer, Lexington, and Nathan Sugarman, Needham, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Dec. 21, 1972, Ser. No. 317,487
Int. Cl. H01m *3/00*
U.S. Cl. 136—148 **8 Claims**

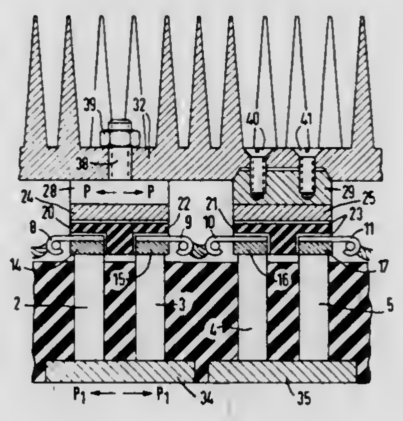
1. A method for producing a battery separator using nonwoven fibers formed from a polymeric resin having a degree of undesirable hydrophobia, solid below 180°F, extrudable as a hot melt and resistant to degradation by at least either acids or alkalies comprising forming a mixture of said polymeric resin and wetting agent, the wetting agent being included in an

amount of 0.5 – 20 percent by weight based on the weight of the resin with said amount being (a) incompatable with the resin below the resin's melting point such that the wetting agent will bloom over a period of time at ambient temperatures in a battery yet (b) compatable with the resin at the extrusion temperature; extruding said mixture as a hot plastic through a die opening and forming a fiber containing said wetting agent therein; forming said fiber into a web comprising other like fibers; developing said wetting agent by heating said fiber and forming said battery separator.



3,870,568
HEAT GENERATOR

Gerhard Oesterhelt; Josef Winkler, both of Nurnberg; Dieter Falkenberg, Erlangen, and Eugen Szabo de Bucs, Bubenruth, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation of Ser. No. 290,161, Sept. 18, 1972, abandoned, and a continuation-in-part of Ser. No. 38,766, May 19, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 447,010
Claims priority, application Germany, May 24, 1969, 1926645
Int. Cl. H01z *1/30*
U.S. Cl. 136—212 **6 Claims**



1. A heat generator for converting heat energy into electrical energy, comprising a plurality of thermoelements with two thermoelement legs of opposite conductivity type of germanium-silicon alloy connected electrically in series and thermally in parallel, each of said thermoelement legs having a hot end and a cold end with the cold end being connected in electrical insulation and thermal conductivity with one another and with a cold heat exchanger, a pair of first metal layers contacting each of said cold ends of said thermoelements, one of said pair of said first metal layers having electrical terminals, rigid coupling means coupling said pair of first metal layers to said cold heat exchanger in electrically insulating and thermally conducting relation, said coupling means including a ceramic plate and a second metal plate, a metal layer on both sides of said ceramic plate, said ceramic plate having one of its metal layer sides facing said thermoelements and affixed to one of said pair of first metal layers, and said second metal plate bridging the cold ends of the legs and affixed to the other of the metal layer sides of said ceramic plate, said second metal plate and the part of said pair of first metal layers which contacts said thermoelements being of the same material selected from the group consisting of tungsten and molybdenum.

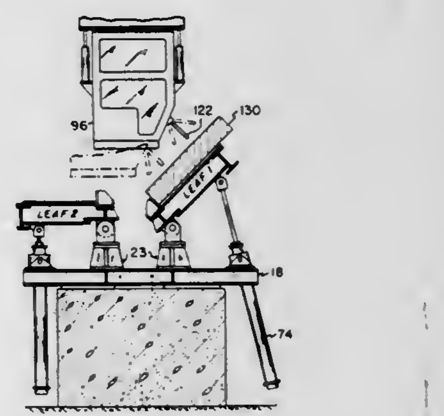
3,870,569
PROCESS FOR BORIDING REFRACTORY METALS AND THEIR ALLOYS

Harald Krzyminski, Koenigstein, Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany
Filed May 14, 1973, Ser. No. 360,190
Claims priority, application Germany, May 25, 1972, 2225378
Int. Cl. C23f *7/00*
U.S. Cl. 148—6 **12 Claims**

1. A process for boriding a refractory metal consisting essentially of annealing amorphous boron powder in an oxygen-free vacuum and then packing the refractory metal in the oxygen-free amorphous boron powder and boriding the metal in a vacuum at an elevated temperature.

3,870,570
METHOD FOR CONDITIONING METAL SLABS

Arthur H. Fieser, P.O. Box A, Allison Park, Pa. 15101, and Loreley S. Mobley, 4420 Sebald Dr., Franklin, Ohio 45005
Division of Ser. No. 305,794, Nov. 13, 1972, Pat. No. 3,829,072. This application Oct. 3, 1973, Ser. No. 403,116
Int. Cl. B23k *7/02*
U.S. Cl. 148—9.5 **1 Claim**



1. A method for scarfing metal slabs comprising:
   A. delivering a slab to a first rotatable slab support means from a first direction;
   B. inclining said slab upon said first support means to expose the top surface of said slab;
   C. longitudinally traversing said top surface of said slab with a scarfing torch to selectively condition said top surface of said slab;
   D. transferring said slab from said first slab support means to a second rotatable slab support means;
   E. inclining said slab upon said second support means to expose the bottom surface of said slab;
   F. longitudinally traversing said bottom surface of said slab with said scarfing torch to selectively condition said bottom surface of said slab; and
   G. discharging said slab from said second slab support means in a direction opposite from said first direction.

3,870,571
METHOD FOR SURFACE TREATMENT OF INTERMEDIATE PRODUCTS WHICH ARE BEING FLAME SCARFED

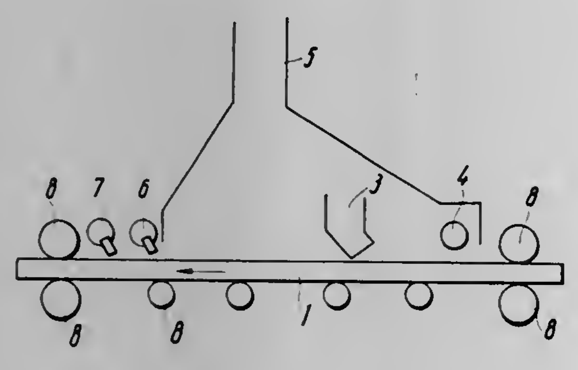
Karl Monreal, Angermund, and Rudolf Schwitzgobel, Krefeld-Traar, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 31, 1973, Ser. No. 411,225

Claims priority, application Germany, Jan. 31, 1973, 2305285

Int. Cl. B23k *7/06*

U.S. Cl. 148—9.5 **9 Claims**



1. In a method for flame scarfing the surface of an intermediate product, wherein the product is subjected to a flame followed by wetting the surface with water, the improvement comprising a step, succeeding the wetting, of blowing the surface by means of an air jet until completely dried.

3,870,572
PROCESS FOR NITRIDING UNALLOYED OR LOW-ALLOY STEEL

Hans Brugger, and Helmut Mallener, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrechshafen AG., Friedrechshafen, Germany

Filed Apr. 26, 1973, Ser. No. 354,731

Claims priority, application Germany, Apr. 29, 1972, 2221169

Int. Cl. C23c *11/16, 11/18*

U.S. Cl. 148—16.5 **6 Claims**

1. A process for nitriding a body of low-alloy or non-alloyed steel which comprises treating said body in a first stage for a period of about 2 hours to 8 hours at a temperature of about 650° C, said temperature being above the α–γ transformation temperature in the iron-nitrogen system, in an ammonia-containing gas and sufficient to effect nitrogen diffusion into at least a surface zone of said body; thereafter slowly cooling said body; and subsequently treating said body with an ammonia-containing gas stream at a temperature of about 570°C for a period of 2 to 4 hours, said temperature being below the α–γ transformation point, to effect equalization in said zone, the gas stream in said first stage having a residual ammonia content of at least 10% by volume and the gas stream in said second stage having a residual ammonia content of 45 to 60% by volume.

3,870,573
SCALE MODIFIER FOR PHOSPHATE SOLUTIONS

Colin Smith, Brentford, England, assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Feb. 4, 1974, Ser. No. 439,671

Claims priority, application Great Britain, Feb. 9, 1973, 6551/73

Int. Cl. B23k *35/22;* **C23f** *7/08*

U.S. Cl. 148—22 **3 Claims**

1. In an aqueous acidic phosphating composition containing scale forming metal ions the improvement comprising including at least 0.0005% of a naphthalene sulfonic acid/formaldehyde condensation product or a salt thereof.

3,870,574
TWO STAGE HEAT TREATMENT PROCESS FOR THE PRODUCTION OF UNALLOYED, COLD-ROLLED ELECTRICAL STEEL

Mihaly Stefan; Zoltan Hegedus; Fulop Balazs, and Gyula Juhasz, all of Budapest, Hungary, assignors to Csepeli Femmu, Budapest, Hungary

Filed Oct. 5, 1972, Ser. No. 295,250

Claims priority, application Hungary, Oct. 21, 1971, CE 854

Int. Cl. H01f *1/00*

U.S. Cl. 148—122 **2 Claims**

1. A process for the production of unalloyed electrotechnical steel strip of improved magnetic and mechanical properties, consisting of hot rolling low carbon steel having not more that 0.10 percent carbon to produce hot-rolled strip covered with hot-rolling scale, then covering said scale with a layer of a member selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxide, alkaline earth metal carbonate, aluminum hydroxide and a mixture thereof, then heating the strip with covered scale to 700° to 950°C. for a time sufficient to reduce the carbon content to not more than 0.01 percent, then pickling and cold rolling to its final gauge the decarburized strip, and thereafter heating the strip in a first stage to 350° to 600°C. for about 2 hours and in a second stage to 600° to 780°C. for about 0.5 hour.

3,870,575
FABRICATING A GALLIUM PHOSPHIDE DEVICE

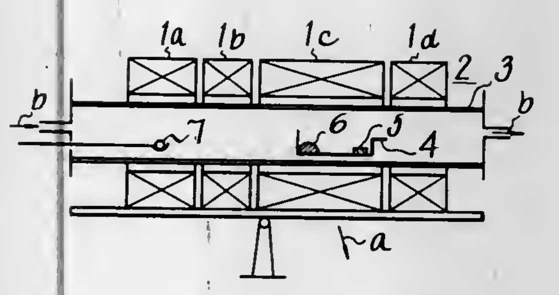
Masashi Dosen, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 342,371, March 19, 1973, abandoned. This application June 25, 1973, Ser. No. 373,449

Claims priority, application Japan, Mar. 21, 1972, 47-28285

Int. Cl. H01b *7/38*

U.S. Cl. 148—171 **12 Claims**



1. A method of fabricating a gallium phosphide device comprising the steps of:

a. providing a substrate of N-type gallium phosphide;
b. forming a melt of gallium-gallium phosphide solution including a P-type impurity, said impurity having a concentration that maintains approximately equilibrium with that of the ambient vapor phase; and
c. growing a P-type epitaxial layer on said substrate from said melt, said impurity concentration therein being not more than $n_d/2.486\ k \times 10^{-20}$ mol % wherein n_d (cm^{-3}) is the carrier concentration in said substrate and k is a distribution coefficient of said impurity.

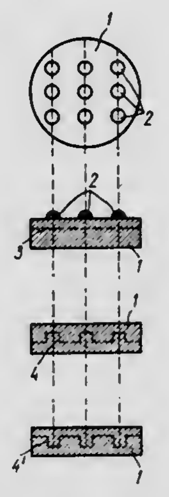
3,870,576
METHOD OF MAKING A PROFILED P-N JUNCTION IN A PLATE OF SEMICONDUCTIVE MATERIAL

Ilya Leonidovich Isitovsky, 15 Parkovaya ulitsa, 43, korpus 2, kv. 39, and Grigory Avrumovich Zelikman, ulitsa Alexeya Tolstoga, 26, kv. 27, both of Moscow, U.S.S.R.

Continuation of Ser. No. 32,870, April 29, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,157

Int. Cl. H01l *7/34*

U.S. Cl. 148—188 **3 Claims**



1. A method of diffusion forming a profiled p-n junction in a plate of semiconductive material, comprising: covering a surface of the plate with a solution of a first substance to be diffused and drying the applied solution; selectively applying by the use of a mask, a patch of a protective material in accordance with a predetermined profile, the protective material not dissolving in the solvent of said solution of a first substance; applying on the layer of the first substance to be diffused, having a layer of protective material thereon, a solution of a second substance to be diffused which does not affect the layer of protective material; drying the applied solution of the second substance; removing the protective layer by subjecting the semiconductive plate to a solvent which does not dissolve the first and second substances; and subjecting the semiconductive plate to thermal treatment to form the required profiled p-n junction by diffusing said first and second substances.

3,870,577
PROCESS FOR MAKING WHISKER-LIKE CRYSTALS OF AMMONIUM PERCHLORATE

Marian E. Hills, China Lake, and William M. Ayres, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1970, Ser. No. 79,680

Int. Cl. C06b *11/00*

U.S. Cl. 149—2 **4 Claims**

1. A process for producing whisker-like crystals of ammonium perchlorate which comprises the following steps:

a. providing a quantity of a solution of ammonium perchlorate;
b. providing a porous glass tube;
c. rubbing a thin, uniform film of silicone adhesive onto the outside walls of said tube; and
d. feeding said solution into said tube under ambient conditions;

whereby diffusion of said solution through said walls produces whisker-like crystals which grow so long as said solution diffuses through the walls of said tube.

3,870,578
POLYURETHANE PROPELLANT

Peter L. Nichols, Jr., Sacramento, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

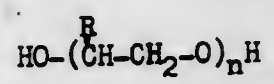
Filed July 24, 1962, Ser. No. 212,762

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.4 **12 Claims**

1. A polyurethane propellant composition comprising

a. an oxidizing salt, selected from the group consisting of ammonium nitrate and ammonium perchlorate,
b. a polymeric diol having the formula



$$HO\text{–}(\overset{R}{C}H\text{–}CH_2\text{–}O)_nH$$

where R is selected from the group consisting of CH_3- and O_2NOCH_2-,

c. 2, 4-toluene diisocyanate,
d. a trihydroxy alcohol,
e. a catalyst from the group consisting of cobaltic acetyl acetonate, cobalt naphthenate, and ferric acetyl acetonate, and
f. a plasticizer selected from the group consisting of dioctyl azelate and dioctyl sebacate--;

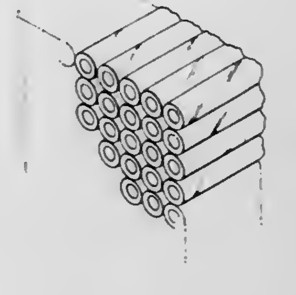
3,870,579
METHOD OF MAKING A PERFORATE WAFER FROM FILAMENTARY MATERIAL

Richard Danby Uncapher, San Fernando, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,525

Int. Cl. B65h *81/00*

U.S. Cl. 156—174 **7 Claims**

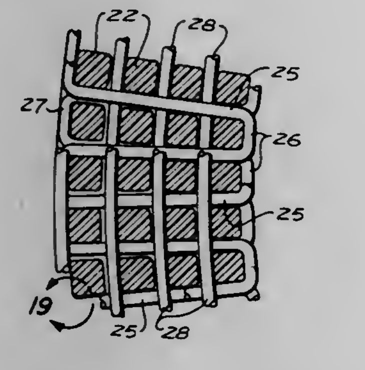


1. The method of making a perforate wafer, said method comprising the steps of: laying a thin flexible tube on a drum, rotating the drum, and simultaneously moving it axially to wind said tube in a helix on said drum; blowing the last turn being wound approximately at its initial point of contact with the drum against the next turn adjacent thereto; cutting each turn of said tube off of said drum by cutting each turn in a direction approximately perpendicularly to the tube axis and along a line extending lengthwise along the drum axis; laying the severed turns flat in predetermined positions such that each severed turn has a surface contiguous to the other severed turns immediately adjacent thereto, each severed turn being contiguous to at least one other severed turn, all the axes of said severed turns being substantially parallel and lying in a single plane; bonding the most contiguous surfaces of each severed turn to the other contiguous surfaces of the others contiguous thereto in said predetermined positions; cutting said bonded turns perpendicularly to the axes thereof to provide smaller sheet-like sections, each section having a set of parallel tube axes; bonding the said sections together into a laminate in a manner such that a plane through all the tube axes of one section is substantially parallel to each corresponding plane through the axes of the other sections, all of said tube axes being parallel; cutting said laminate in a direction transverse to said tube axes to provide thin wafers, said

wafers being perforate by virtue of the holes in the severed tubing.

3,870,580
METHOD OF MANUFACTURING OF A FIBER REINFORCED STRUCTURE AND METHOD OF MANUFACTURE

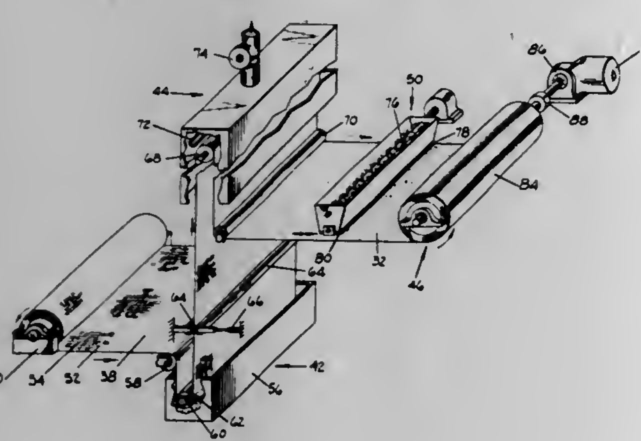
Jack T. Belcher, 1100 E. Sahara Ave., Las Vegas, Nev. 89105
Division of Ser. No. 118,708, Feb. 25, 1971, abandoned. This application May 4, 1973, Ser. No. 357,448
Int. Cl. B29h *9/04*
U.S. Cl. 156—181 **5 Claims**



1. The method of making a high strength fiber reinforced structure, comprising the steps of:
arranging a plurality of bundles, of reinforcing fibers, in spaced, generally parallel relation and in a pattern defining a plurality of channels between said bundles with a first set of parallel channels transversely intersecting a second set of parallel channels;
securing said bundles, at one end thereof, in said described spaced relation and rendering each bundle sufficiently rigid to be self-supporting;
substantially filling said sets of channels with additional bundles of reinforcing fibers arranged in layers with the bundles of adjacent layers extending alternately along said first and second sets of channels; and
encasing all said fibers in an initially fluid bonding agent, then solidifying said agent to form said structure.

3,870,581
FRICTION ELEMENT AND METHOD OF MAKING SAME

Frank D. Afflerbach, Levittown, Pa.; Irvin Barnett, Martinsville, and Walter B. Peters, South Orange, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed May 10, 1972, Ser. No. 252,119
Int. Cl. B65h *54/00;* **B31c** *13/00*
U.S. Cl. 156—192 **11 Claims**

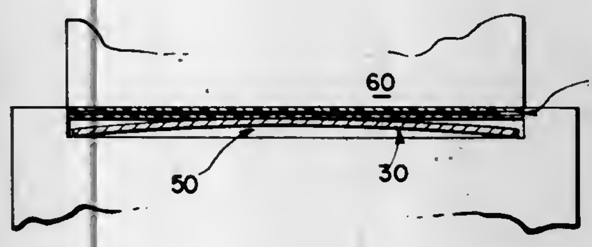


1. A method of making a friction element comprising:
a. forming a fabric consisting essentially of glass having warp strands and fill strands;
b. impregnating said glass fabric with a curable cement;
c. winding said glass fabric onto a mandrel to form a spirally wrapped hollow cylinder;
d. slicing said cylinder into disc preforms, each of said discs having a series of spirally wound, continuous, parallel strands of glass fiber extending in a circumferential direction thereof and a series of parallel strands of glass fiber disposed normally of the faces of said disc to provide frictional properties thereto, each of said disc preforms having an axial thickness substantially less than the annular width thereof; and
e. molding said disc preforms under heat and pressure to form friction elements containing glass fiber

2. The method of making a friction element as defined in claim 1 further comprising distributing non-ferous metal chips over said glass fabric prior to winding said glass fabric onto the mandrel.

3,870,582
NOVEL LAMINATING SYSTEM

Robert D. Brackett, Wakefield, and Paul A. Plasse, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 5, 1972, Ser. No. 295,203
Int. Cl. C09j *9/00;* **B32b** *31/00*
U.S. Cl. 156—306 **8 Claims**



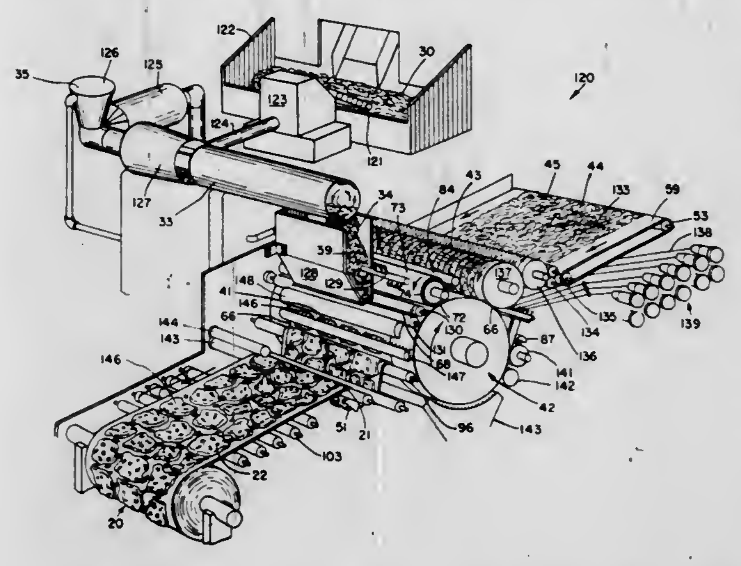
1. In a system for the heat lamination of I.D. cards or I.D. credit cards including means to restrain a laminar assembly during heat lamination thereof and wherein said laminar assembly comprises an information storage medium interposed between protective sheet materials at least one of which provides means for viewing said information and wherein at least one of said sheet materials has an adherent capability integrated therewith and wherein said system includes means for applying sufficient heat and pressure to laminate said assembly, the improvement wherein pressure distribution means which comprises a deformable element which is arcute along both the longitudinal and latitudinal axis are arranged in relation with said laminar assembly to distribute pressure applied to said assembly as said assembly is heated so that initially said pressure is applied to a preselected portion of the assembly and as further pressure is applied, the area of the assembly to which pressure is applied is progressively increased until pressure is applied substantially uniformly to all portions of said assembly.

3,870,583
PRE-FORMED, MULCH CARPET AND APPARATUS AND METHOD FOR MAKING SAME

Lester Gidge, Nashua, N.H., assignor to Terra-Tex Corporation, Nashua, N.H.
Division of Ser. No. 160,425, July 7, 1971, abandoned. This application Apr. 17, 1973, Ser. No. 352,040
Int. Cl. B29b *1/12*
U.S. Cl. 156—500 **11 Claims**

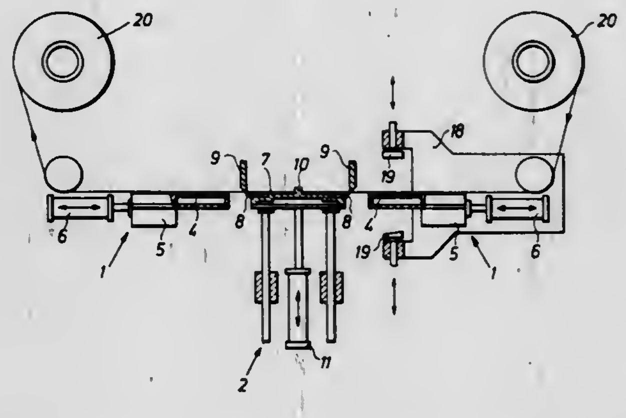
1. Apparatus for making elongated webs of artificial mulch material from wood bark, said apparatus comprising:
means for grinding redwood bark into particles, drying said particles and delivering the same to a charring oven
charring oven means for heating said particles to a predetermined temperature;

conveyor means advancing along a path from a feeding zone, through a heating zone and a molding zone into a discharge zone;
hopper means in said feeding zone for continuously receiving said charred, ground particles and metering a mixture of said particles and a plastic binder onto said conveyor;
heating means along said path, in said heating zone, for activating said plastic binder to form a heated, semicohesive layer of said mixture;
molding means along said path in said molding zone, including a rotatable, hard, pocketed pattern roll forming a nip with a hard pinch-off roll, for pressing said layer into an irregular, grooved, random pattern on one face to simulate natural mulch the pockets of said roll having rims therearound;
means for supplying a strong, non-tearable backing of relatively high tensile strength to said molding zone;
compression roll means along said path for pressing said strong, non-tearable backing on the other face of said molded mulch layer; and
stripping means along said path in said discharge zone for stripping said web from said moving pocketed surface.



3,870,584
AUTOMATIC DOUBLE-SIDE ADHESIVE DEVICE FOR BANDS OR WEBS

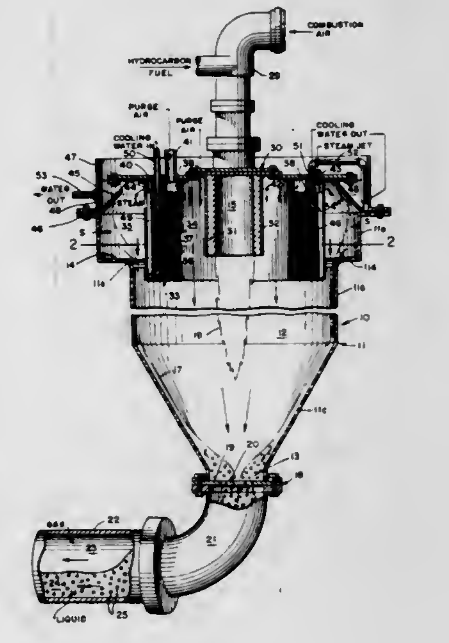
Willi Jores, Opladen; Franz Hoffacker, Langenfeld, and Helmut Lehmann, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 17, 1973, Ser. No. 352,015
Claims priority, application Germany, Apr. 22, 1972, 2219826
Int. Cl. B31f *5/00*
U.S. Cl. 156—505 **9 Claims**



1. An apparatus for joining two elongated webs end-to-end to each other comprising a pair of web supplies for feeding the two webs together in substantial abutment end-to-end in a plane, an adhesive tape dispenser having a pair of spaced adhesive tape supplies disposed above and below the abutting ends of the webs for feeding a pair of adhesive tapes in mutually adhesive contact with each other in the plane of abutment of the webs, traversing means connected to the adhesive tape dispenser for moving it laterally across the abutting ends of the webs, a pair of pressure rollers on the dispenser disposed immediately above and below the plane of the abutting ends of the webs and plane of contact of the adhesive tapes which adhesively join the ends of the adhesive tapes in a joint end, a clamp on the adhesive tape dispenser having gripping jaws disposed above and below the plane of the abutting ends of the webs and in line with the contacting surfaces of the pressure rollers whereby the clamp grasps the joint ends of the adhesive tapes fed from the adhesive tape supplies between the pressure rollers and through them in a direction disposed away from the abutting ends of the webs whereby the joint ends are securely engaged in the clamp, an anchor on the clamp for holding it and the clamped joint ends of the tapes and restraining them against movement toward the abutting ends of the webs as the traversing means moves the adhesive tape dispenser and adhesive tape supplies across both sides of the abutting ends of the webs with the pressure rollers passing forcefully against opposite surfaces of the abutting ends of the webs whereby lengths of tapes are applied above and below the abutting ends of the webs to join them together without pulling the webs to one side, and final cutting means for severing the ends of the applied adhesive tapes at the sides of the abutting ends of the webs which they have joined together.

3,870,585
APPARATUS AND METHOD FOR EVAPORATIVE CONCENTRATION OF AQUEOUS SOLUTIONS AND SLURRIES

Tommy Carter Kearns, Lisle, and Donald A. Stoltenberg, Park Ridge, both of Ill., assignors to Pureco Systems, Inc., Rosemont, Ill.
Filed Feb. 15, 1973, Ser. No. 332,596
Int. Cl. B01d *1/22, 1/16;* **F26b** *3/12*
U.S. Cl. 159—4 A **33 Claims**



15. The method of recovering inverse solubility inorganic salts from water solutions, characterized by the combination of steps comprising:

a. introducing and flowing a water solution of the inverse solubility inorganic salt to be recovered downwardly over the interior wall surfaces of a wet-wall evaporator, said solution being introduced into the upper portion of said evaporator;
b. directing a stream of hot combustion gas downwardly within said evaporator between the wet walls thereof, said hot gas stream radiating heat directly to the flowing solution on said walls for evaporation of water therefrom;
c. thereafter turbulently intermixing said heated solution with said combustion gases to transfer sensible heat from said gases to said solution for further evaporation of water, part of the dissolved inorganic salt being converted to precipitated solids by the said evaporations;
d. separating the cooled gases from the residual solution containing said precipitated solids;
e. recycling to said evaporator in admixture with fresh solution at least part of said residual solution containing suspended solids and repeating steps a and d therewith to produce additional precipitated solids; and
f. separating at least part of said solids from at least part of said residual solution to obtain recovered solid product of said inorganic salt;
g. maintaining in said upper portion of said evaporator on the walls thereof a circumferentially extending zone having its lower portion in contact with said introduced solution and its upper portion substantially out of contact therewith;
h. introducing water vapor into the upper portion of said evaporator to maintain a high humidity atmosphere therein adjacent said circumferential zone; and
i. cooling said circumferential zone to condense said water vapor on said exposed upper portion thereof and to maintain said solution-contacted lower portion at a temperature below that of said introduced solution.

26. A direct heat exchange evaporator for evaporative concentration of water solutions, including vertically-extending wall means enclosing an evaporator chamber, the lower portion of said chamber having an outlet; liquid feed inlet and distributor means in the upper portion of said chamber arranged to distribute the water feed solution to be concentrated around the inside surfaces of said wall means to continuously wet said surfaces below said feed inlet and distributor means with downwardly flowing liquid, said liquid exiting through said chamber outlet; and tubular hot gas supply means centrally located in the upper portion of said chamber and extending downwardly therein to direct a stream of hot gas downwardly through said chamber in heat radiation relation with inner walls thereof and exiting through said chamber outlet; wherein the improvement comprises: said evaporator chamber wall means including upper and intermediate portions of circular cross-section, the said upper portion being of larger diameter than said intermediate portion and being connected thereto by an inwardly extending ledge portion of generally annular configuration, said liquid feed means being arranged to introduce said feed onto said ledge portion for distributing flow therearound, the inner corner portions of said ledge connecting with said intermediate chamber portion for providing smooth continuous flow of said feed downwardly over the inner wall surfaces of said intermediate chamber portion, baffle wall means disposed around said tubular hot gas supply means in outwardly spaced relation thereto and extending downwardly to at least the level of the said ledge portion of said feed inlet distribution means while being spaced inwardly therefrom, said baffle wall means providing both a liquid splash shield and heat radiation shield to prevent feed liquid from splashing onto said tubular gas supply means and heat from being radiated from said tubular means directly on said feed inlet and distribution means, and liquid-gas intermixing means disposed across the path of flow of said exiting liquid and hot gas for producing a turbulent intermixture thereof, said intermixing means comprising liquid vortex creating venturi means maintaining a swirling vortex of liquid in the lower portion of said chamber immediately above said venturi means.

3,870,586
DECORATIVE FLOWER

Christopher W. Backus, 26 W. Golden St., Beverly Hills, Lecanto, Fla.

Filed May 14, 1973, Ser. No. 359,882
Int. Cl. A41g *1/00*
U.S. Cl. 161—30 **5 Claims**

1. An artificial flower comprising: stem means including a first attachment means, leaf means including a second attachment means, said first attachment means comprising aperture means formed in said stem means, said second attachment means comprising tab means integrally attached to said leaf means and formed from a flexible material, said tab means positioned within said aperture means and wrapped about at least a portion of the outer peripheral surface of said stem means, whereby said leaf is secured to said stem means; flower means connected to said stem means, a first fastener means interconnected between said stem means and said flower means.

3,870,587
ICE FLOOR

Franklin O. Merrell, Yorba Linda, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

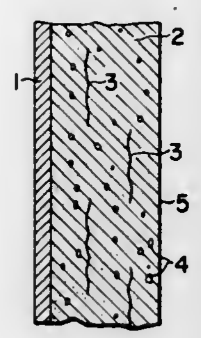
Filed May 14, 1973, Ser. No. 359,880
Int. Cl. B32b *5/18*
U.S. Cl. 161—37 **2 Claims**

1. A removable load-bearing panel for a sub-floor over ice, comprising:
a. a sheet metal top surface,
b. a rigid lower surface,
c. a heat-insulating core of plastic foam bonded between said surfaces,
d. a wooden frame bonded between said surfaces and to the outer edges of said core, said frame having flat smooth outer sides whereby a plurality of panels can be placed contiguous to each other to form a floor, and including panel handling means provided in the outer sides of said frame, said handling means being hand holds for lifting and placement of said panel.

3,870,588
METHOD OF CONSTRUCTING A HEAT INSULATING WALL OF FOAMED SULFUR

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefield Gas Company, Ltd., Tokyo, Japan

Filed Mar. 9, 1973, Ser. No. 339,659
Claims priority, application Japan, Mar. 13, 1972, 47-25488
Int. Cl. B32b *5/18;* **B29h** *7/20;* **B32b** *3/26;* **B65d** *25/18;* **B29d** *27/00;* **B32b** *5/16*
U.S. Cl. 264—42 **7 Claims**

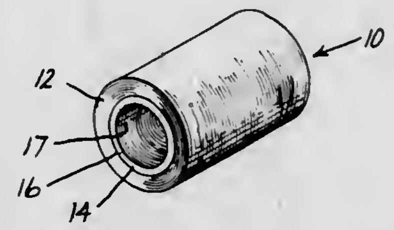


1. A method of constructing a heat insulating wall of foamed sulfur which comprises blowing, in the form of a layer, melted sulfur containing a foaming agent to the inner surface of an outer vessel of a rigid structure, said sulfur foaming and solidifying upon its application to said surface to form a substantially continuous wall.

3,870,589
CARBON-FLUOROCARBON FIBER-PLASTIC COMPOSITE BEARING

Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind. 46544

Filed July 20, 1973, Ser. No. 381,219
Int. Cl. F16c *13/02, 37/00*
U.S. Cl. 161—47 **11 Claims**



1. A low-friction bearing comprising a body of self-supporting, hardened plastic having at least two adjacent laminations of fibrous material securely imbedded therein, one of said laminations having a bearing surface and including fibers arranged in layer form of fluorocarbon resin secured in place by said plastic, portions of said fibers being exposed through said plastic to define said bearing surface, the other of said laminations being a rigid backing for said one lamination and including a mass of adjacent fibers in layer form of carbon secured in place by said plastic, said mass of carbon fibers and plastic together forming said rigid backing which serves as a support for said one lamination, said carbon fibers being adjacent to said layer of fluorocarbon resin thereby providing thermal conductivity between fibrous layers.

3,870,590
NON-FLAMMABLE POLYESTER TEXTILE ARTICLES AND METHODS FOR MAKING THEM

Melvin D. Hurwitz, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

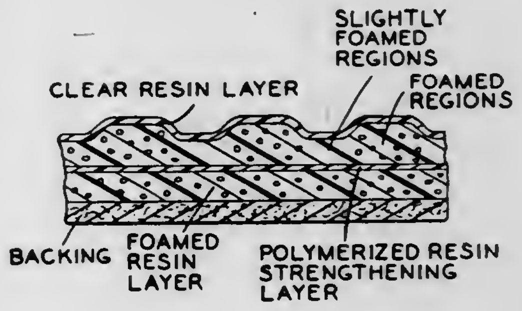
Filed Jan. 21, 1974, Ser. No. 435,351
Int. Cl. D03d *1/00*
U.S. Cl. 161—92 **16 Claims**

1. A non-flammable polyester textile comprised of
A. 65 to 95 percent by weight of polyester fibers and
B. 5 to 35 percent by weight of fibers of a halogen containing polymer selected from the group consisting of polymers of vinyl chloride, vinylidene chloride, vinyl fluoride, vinylidene bromide and tetrafluoroethylene, coated or bonded to each other with from about 5 to 50 percent by weight, based on the weight of fibers, of a copolymer of
a. from about 60 to 90 percent by weight of one or more chlorine containing monomers selected from the group consisting of vinyl chloride, vinylidene chloride or a mixture thereof;
b. from about ½ to about 5 percent by weight of N-methylolacrylamide, N-methylolmethacrylamide, N-methylol-4-pentenoguanamine or mixtures thereof;
c. up to 5 percent by weight of other comonomers containing a reactive hydrogen;
d. from about 9.5 to about 40 percent by weight of an alkyl acrylate, alkyl methacrylate, vinyl acetate, styrene, acrylonitrile or mixtures thereof; and
up to about 10 parts by weight of a flame retardant synergist per hundred parts of fiber.

3,870,591
DIMENSIONALLY STABLE, FLEXIBLE PLASTIC SURFACE COVERINGS

Jack H. Witman, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 266,585, June 27, 1972, Pat. No. 3,819,438. This application Jan. 25, 1974, Ser. No. 436,468
Int. Cl. B32b *3/26*
U.S. Cl. 161—119 **5 Claims**

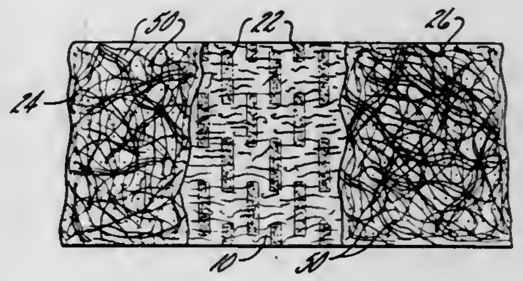


1. A flexible, dimensionally stable, plastic surface covering comprising upper and lower foamed vinyl resin layers, an unfoamed, intermediate, reinforcing layer of vinyl resin containing, polymerized cross-linked monomer, and a vinyl resin top coat.

3,870,592
LAMINATES CONTAINING OUTER PLIES OF CONTINUOUS FILAMENT WEBS

Robert J. Brock, and David W. Hudson, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 14,930, Feb. 27, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 247,962
Int. Cl. B32b *5/12, 5/26, 7/24, 31/12, 31/06*
U.S. Cl. 161—148 **8 Claims**



1. An absorbent, substantially opaque nonwoven material having desirable isotropic strength characteristics and simulating in hand and feel a woven cloth or fabric comprising, in combination,
a. a web of cellulose wadding having a basis weight of about 0.3 — about 0.7 oz./yd.^{2},
b. disposed on either side of said cellulose wadding, a low basis weight nonwoven web of substantially continuous and randomly deposited, molecularly oriented filaments of a hydrophobic thermoplastic polymer, each of said webs having a basis weight of up to about 0.7 oz./yd.^{2} and the filaments thereof having a denier of about 0.5 — about 6, and
c. patterned areas of adhesive disposed between said webs which penetrate into said cellulose wadding web at spaced open areas in a manner so as to provide delamination resistance in combination with fabric-like flexibility, the placement of said nonwoven webs on either side of said web of cellulose wadding providing a desirable degree of wrinkle recovery and permitting the material to be washed several times without deterioration thereof.

6. An absorbent, substantially opaque nonwoven material having desirable isotropic strength characteristics and simulating in hand and feel a woven cloth or fabric comprising, in combination,

a. a web of cellulose wadding having a basis weight of about 0.3 — about 0.7 oz./yd.^{2},

b. disposed on either side of said cellulose wadding, a low basis weight nonwoven web of substantially continuous and randomly deposited, molecularly oriented filaments of a hydrophobic thermoplastic polymer selected from polyolifins, polyurethanes, polyvinyls, polyamides and polyesters, each of said webs having a basis weight of up to about 0.7 oz./yd.^{2} and the filaments thereof having a denier of about 0.5 — about 6, and

c. spaced areas of adhesive occupying less than about 25% of the area of cellulosic web and penetrating each surface of said cellulosic web and the adjacent nonwoven webs to bond the webs together, the placement of said nonwoven webs on either side of said cellulose wadding web providing a desirable degree of wrinkle recovery and permitting the material to be washed several times without deterioration thereof.

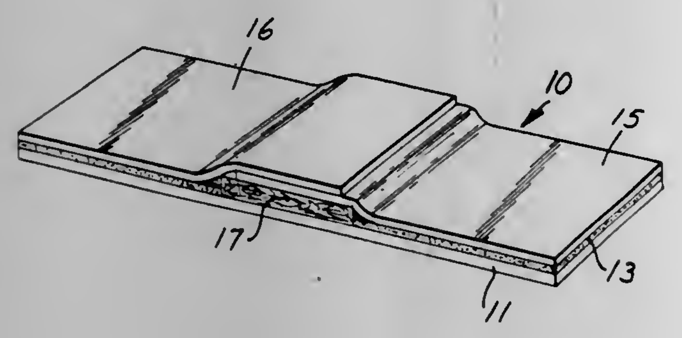
3,870,593
STRETCH-ORIENTED POROUS FILMS AND PREPARATION AND USE THEREOF

Robert L. Elton, White Bear Lake, and John F. Vander Louw, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 260,321, June 6, 1972, Pat. No. 3,844,865. This application Apr. 29, 1974, Ser. No. 465,273

Int. Cl. B32b *3/00;* **B29c** *17/02*

U.S. Cl. 161—159 **6 Claims**



1. A stretch-oriented, elastomeric, porous polyurethane film less than 80 mils in thickness having a void volume of about 5 – 60 volume percent, said void volume being in the form of an interconnecting network of voids, said voids averaging about 3 – 250 microns in their longest dimension, said polyurethane film having been stretch-oriented at a stretch ratio of at least 1.5:1 in at least one direction, thereby being enlarged in area to at least 1.5 times as large as the original area and thereby being decreased in thickness, said polyurethane film containing 5 to 60 percent by volume of an inorganic water insoluble pore nucleating agent distributed throughout said interconnecting network of voids and being smaller in average size than the said average size of said voids, said polyurethane film having a moisture vapor transmission value of at least 500microgram/cm^{2}hr for a relative humidity difference on opposite sides of said polyurethane film of no less than 100/60 percent.

6. A first aid dressing comprising a film according to claim 1 laminated to an absorbent pad.

3,870,594
LAMINATED METAL-BASED FACING

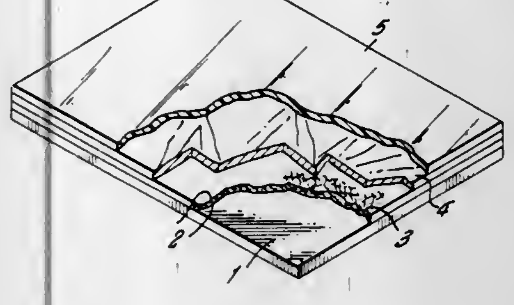
Shinji Kudo, Osaka, Japan, assignor to Yodogawa Steel Works, Limited, Osaka-shi, Japan

Filed Aug. 11, 1972, Ser. No. 279,930

Claims priority, application Japan, Aug. 16, 1971, 46-62219; Mar. 24, 1972, 47-30151

Int. Cl. B32b *5/00, 15/14, 21/08*

U.S. Cl. 161—165 **8 Claims**



1. A laminated metal-based facing capable of being bent without cracking or separating due to the bending and useful as an interior finishing or building material, said facing having as base a metal sheet, a resin adhesive layer on the metal sheet and a veneer of natural wood over the resin adhesive layer, said metal sheet, resin adhesive layer and natural wood veneer being laminated together under heat and pressure, and said resin adhesive layer being nonwoven cloth of nonbinder construction obtained from synthetic resin fiber and impregnated with a thermoplastic phenolic resin adhesive having less than 60 mol % of phenol resin groups which is flexible and adheres to the metal sheet.

7. A laminated metal-based facing capable of being bent without cracking or separating due to the bending and useful as an interior finishing or building material, said facing having as base a metal sheet, a resin adhesive layer on the metal sheet and a veneer of natural wood over the resin adhesive layer, said metal sheet, resin adhesive layer and natural wood veneer being laminated together under heat and pressure, and said resin adhesive layer being nonwoven cloth of nonbinder construction obtained from synthetic resin fiber and impregnated with a thermoplastic phenolic resin adhesive having less than 60 mol % of phenol resin groups which is flexible and adheres to the metal sheet and a flexible film of synthetic resin paint on said veneer.

3,870,595
PROTECTION OF TURBINE CASINGS

Peter Frederick Hawthorne, Nechells, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Division of Ser. No. 77,348, Oct. 1, 1970, Pat. No. 3,752,683. This application Jan. 29, 1973, Ser. No. 327,650

Claims priority, application Great Britain, Oct. 6, 1969, 49044/69; July 2, 1970, 32217/70

Int. Cl. B32b *7/02, 15/04*

U.S. Cl. 161—166 **15 Claims**

1. A composite layered article, consisting essentially of two layers having different densities, each layer of which is a refractory heat insulating material comprising a dry composition consisting essentially of an inorganic refractory fibre and a water-soluble binding agent, said refractory fibre and binding agent being present in a homogeneous relationship and each of said layers further having uniform hardness, strength and density across the thickness thereof.

8. A composite layered article comprising one layer which is the casing of a turbine engine and another layer which is a shaped casing liner of refractory heat insulating material comprising a dry composition consisting essentially of an inorganic refractory fibre and a water soluble inorganic binding agent, said refractory fibre and binding agent being present in a homogeneous relationship and said liner further having uniform hardness, strength and density across the thickness of the liner.

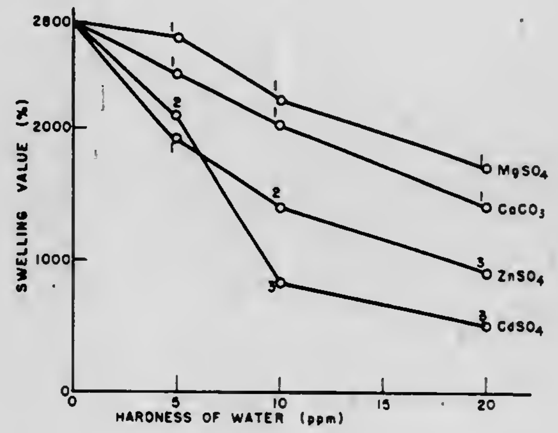
3,870,596
PROCESS FOR THE PREPARATION OF DISPERSION WATER FOR INCOMPLETELY REGENERATED CELLULOSE SUBSTANCE

Takashi Asadea, and Shin Okamoto, both of Kyoto-fu, Japan, assignors to Tachikawa Research Institute, Kyoto, Japan

Filed June 22, 1971, Ser. No. 155,429

Int. Cl. D02g *3/00;* **G32b** *7/00*

U.S. Cl. 162—157 C **1 Claim**



1. In a process, wherein paper or non-woven fabric is manufactured in the wet process by dispersing into dispersion water an incompletely regenerated cellulose substance having a PSV of **250 – 10,000** percent which is prepared in the spinning of a viscose having a high viscosity and a high gamma value, the steps of introducing a water softener in the dispersion water to bring it substantially to zero hardness and then adjusting the hardness of the water to **0.5 – 100** ppm by adding one or a combination of Mg, Ca, Zn and Cd inorganic salts to the water.

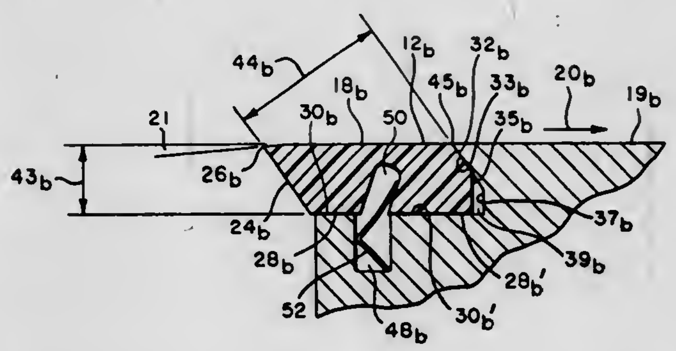
3,870,597
DRAINAGE FOIL HAVING A FOIL BLADE INSERT

Darryl L. Getman, South Beloit, and Marshall G. Swenson, Rockford, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 256,471, May 24, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,628

Int. Cl. D21f *7/00*

U.S. Cl. 162—352 **11 Claims**



1. An elongated drainage foil for removing liquid from a contiguous drainage wire traveling in a given direction on a web making machine, the foil extending transversely to the direction of wire travel when in operating position, comprising:

a. a body member having top and leading edge surfaces extending along the length thereof and having a coextending groove in the intersection of said top and leading edge surfaces, said groove having just two mounting surfaces which are inclined one to the other;

b. a foil blade insert member polyhedron disposed within said groove having abrasion resistant leading and top bearing surface faces forming a leading edge toward the oncoming traveling wire direction, said top bearing surface face being flush with said top surface and positionable against the wire, and having just two inclined mounting surfaces engaged with respective ones of said groove mounting surfaces;

c. resilient means interposed between said body and foil blade members within the groove urging said foil blade member against said body member in the direction of wire travel, thus cooperating with the two mounting surfaces to provide the sole means of attaching the foil blade insert member to the body member.

3,870,598
INFLUENZAL VACCINE FOR PERORAL ADMINISTRATION AND A METHOD OF PRODUCING SAME

Alexandra Konstantinovna Alexeeva, Obolensky pereulok, 9, korpus 6, kv. 24; Ljudmila Alexandrovna Yakovleva, ulitsa Vostrukhina, 6, korpus I, kv. 5I; Irina Nikolaevna Vasilieva, Novo-Ostapovskaya ulitsa, 12a, kv. 8; Otar Georgievich Andzhaparidze, Sadovo-Sukharevskaya, 8/12, kv. 43, and Angelina Nikolaevna Alexandrova, ulitsa 1812 goda, 1, kv. 139, all of Moscow, U.S.S.R.

Filed Apr. 1, 1971, Ser. No. 130,482

Int. Cl. C12k *7/00*

U.S. Cl. 195—1.5 **5 Claims**

1. A method of preparing an influenzal virus for peroral administration as a vaccine which comprises adding to a culture medium containing sources of carbon, nitrogen, glucose and mineral salts a disintegrated nephric tissue obtained from chick nephrocytes from chick embryos at least 17 days-old up to chickens at most 3 weeks-old, and an apathogenic influenza virus strain adapted to a culture of chick nephrocytes cultivating the resulting mixture at a temperature of 34°–38°C for a period of 48–120 hours, and isolating the desired product.

3,870,599
MICROBIAL DEGRADATION OF PETROLEUM

Edward N. Azarowicz, Vienna, Va., assignor to Bioteknika International, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 43,226, June 3, 1970, Pat. No. 3,769,164. This application Feb. 20, 1973, Ser. No. 333,706

Int. Cl. C12b *1/00*

U.S. Cl. 195—2 **9 Claims**

1. A process for the microbial degradation of aqueous polluting petroleum and oily wastes which comprises treating the petroleum or oily waste with at least one microorganism selected from the group consisting of *Candida parapsilosis* ATCC 20246, *Candida tropicalis* ATCC 20247 and *Candida utilis* ATCC 20248, and mutants thereof, in an aqueous system for a sufficient time until the treated petroleum oily waste has been substantially degraded.

3,870,600
SELECTIVE AND ENRICHMENT MEDIUM FOR THE ISOLATION IDENTIFICATION AND PROPAGATION OF YEASTS AND FUNGI

Kamal Abdou Youssef, 233 74th St., Brooklyn, N.Y. 11209

Continuation of Ser. No. 129.256, March 29, 1971, abandoned. This application June 25, 1973, Ser. No. 373,185

Int. Cl. C12b *1/00;* **C12k** *1/06*

U.S. Cl. 195—81 **2 Claims**

1. A selective and enriched composition for the isolation, identification and propagation of yeasts and fungi in presence of bacteria which comprises an aqueous extract of the pulp of the ripe fruit of the tree *Cassia fistula that contains* 1,8,dihydroxy-anthraquinone-3-carboxylic acid and an anthraquinone substance having a melting point of about 250°C. a nitrogen source and sugar.

3,870,601

NOVEL DIAGNOSTIC SYSTEM FOR DIFFERENTIATION OF ENTEROBACTERIACEAE

Bert Warren, Tuxedo Park, N.Y., and George L. Evans, Hopatcong, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed May 4, 1973, Ser. No. 357,318
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **18 Claims**

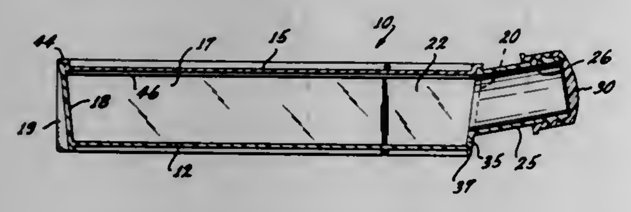
1. A culture medium having a pH in the range of about 6.7–7.2 suitable for determining the identification of bacteria of the family Enterobacteriaceae which comprises a chromogenic β-galactosidase substrate in combination with a member of the group consisting of (a) a decarboxylase substrate, (b) a deaminase substrate, (c) a urease substrate, (d) a hydrogen sulfide detecting system, or (e) a carbohydrate fermentation system.

3,870,602

GAS PERMEABLE STERILE CULTURE BOTTLE

Seymour Froman, Northridge, and William L. Chandler, Altadena, both of Calif., assignors to California Laboratory Industries, Inc., North Hollywood, Calif.

Filed Apr. 30, 1973, Ser. No. 355,754
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 **10 Claims**



1. A sterile, disposable culture bottle for growth of microorganisms in a controlled environment of a gas and water vapor comprising: an elongated flask-like member including a bottom wall and a spaced top wall; side walls integral with said bottom wall and defining therewith and with said top wall a flask of unitary structure; one of said side walls including a neck integral with said side arranged at an upwardly inclined angle with respect to said bottom wall, all of said walls and said neck being inseparably secured to each other, said neck having a free end to receive a cap sealably engaging said neck to prevent passage of microorganisms therethrough; said walls of said flask being of an impact resistant plastic material permeable to said gas and water vapor, but impermeable to microorganisms; said top wall being essentially flat, transparent and optically distortion free so as to permit microscopic examination of the culture within said flask, and means on said bottle for maintaining said bottom wall spaced from a supporting surface.

3,870,603

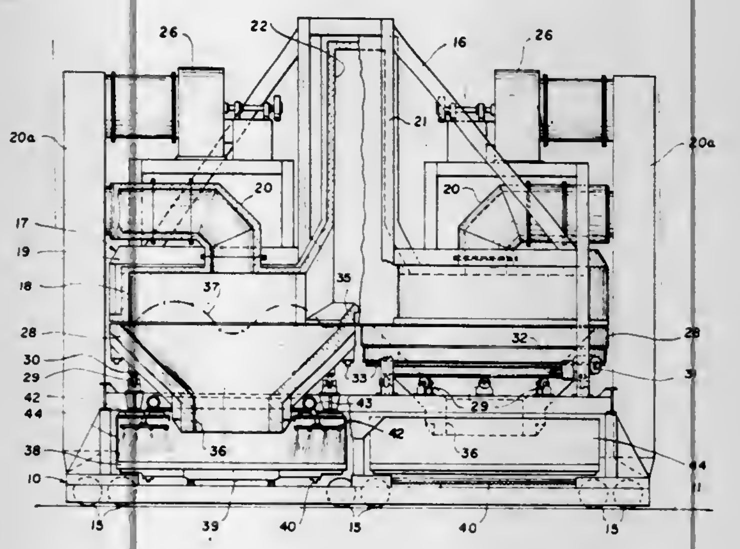
Patent Not Issued For This Number

3,870,604

MOBILE ROTARY TYPE CONTINUOUS COKE QUENCHER

Charles R. Wilt, Jr., Upper Saint Clair, Pa., assignor to Salem Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1972, Ser. No. 292,963
Int. Cl. C10b *39/14*
U.S. Cl. 202—227 **11 Claims**



1. In a mobile rotary type coke quenching apparatus having a dual bin structure, the improvement comprising a pair of rotary hoppers respectively forming part of the individual bins of said dual bin structure, motor means for concurrently rotating said rotary hoppers in opposite directions, a wedge element of inverted V-shape in cross-section located between the upper inlet openings of said pair of rotary hoppers, and a common inlet with which said wedge element is in centered alignment and through which heated coke is pushed and deposited principally on said wedge element.

3,870,605

COMBINATION SOLAR AND MANUAL DISTILLER AND RAIN CATCHER

Minoru Sakamoto, 3911 Nioi Pl., Honolulu, Hawaii 96816

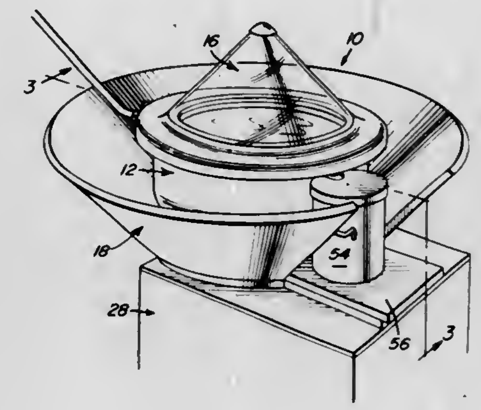
Filed Jan. 24, 1973, Ser. No. 326,400
Int. Cl. B01d *3/08*
U.S. Cl. 202—234 **10 Claims**

1. Apparatus, comprising, in combination:

a. a container provided with a fluid receiving and discharging opening;

b. a base member having a planar portion provided with a hole, and a frusto-conical wall diverging from the planar portion and arranged partially around same; and

c. a cover including a hollow cone having an open base and an open apex, the container being arrangeable on the base member over the hole provided therein, and the open base of the cover being arrangeable on the container about the opening of same for the cover forming a condensation surface over the container opening, the base member, cover, and container cooperating to form a still, and the apex of the cover arrangeable for fitting in the hole in the base member and forming a fluid ctacher in cooperation with the base member.

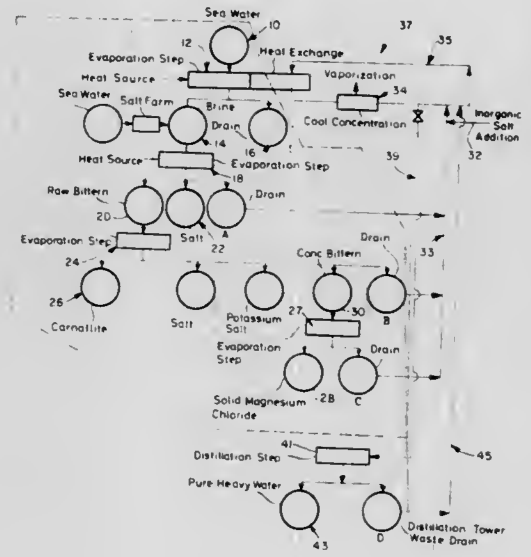


3,870,606

PROCESS FOR PREPARING HEAVY WATER FROM SEA WATER

Hisanobu Tabata; Norimasa Tabata, both of 968, Kou, Ohgoshi-machi, and Robkuo Nakajima, 1831, Ohyabu-cho, all of Sakaide-shi, Kagawa-ken, Japan

Continuation of Ser. No. 47,992, June 22, 1970, abandoned. This application May 26, 1972, Ser. No. 257,352
Claims priority, application Japan, June 26, 1969, 44-50501; Aug. 18, 1969, 44-65148
Int. Cl. B01d *1/00*, *3/00*
U.S. Cl. 203—5 **1 Claim**



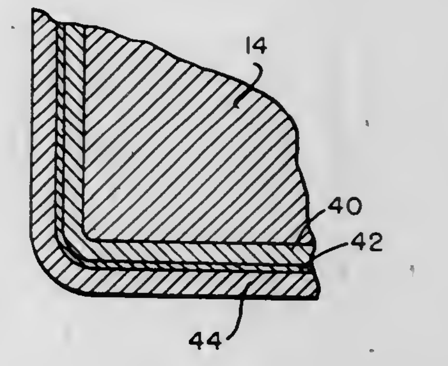
1. A process for preparing heavy water from sea water which comprises adding 0.1–10.0 percent, calculated as Mg^{++} ion of a soluble halide salt to a mixture of drains produced by the evaporation of sea water in a conventional process for the manufacture of common salt, warming the mixture of drains between room temperature and 40°C using the heat energy from the salt manufacturing process, concentrating the warmed mixture of drains to a heavy water content of about 1 percent by exposing large surface areas of the warmed mixture to the atmosphere, removing the added halide salt from the concentrated mixture by evaporating the mixture, and collecting the condensate from the evaporation step and subjecting the condensate to distillation to yield a high concentration heavy water.

3,870,607

BEARING MANUFACTURE

Herbert Bardach, Danbury, Conn., assignor to Avco Corporation, Stratford, Conn.

Division of Ser. No. 136,083, April 21, 1971,. This application July 10, 1972, Ser. No. 270,355
Int. Cl. C23b *5/48*, *5/46*, *5/50*
U.S. Cl. 204—15 **6 Claims**



1. A method of manufacturing a bearing, said bearing being coated with silver with at least one radioactive atom species embedded in the coating at a particular depth, the amount of radioactive species in said coating being insufficient to affect the properties of the silver coating when it functions as an antifriction bearing silver coating and yet being an amount sufficient to be detected in the silver coating wear particles carried away by lubricant when the radioactivated silver incorporated in the silver coating is being worn away, said method comprising:

depositing a relatively thin layer of non-radioactive silver on a base metal;

masking portions of said layer thereby defining at least one wear receiving surface;

electrodepositing an extremely thin layer of silver doped with at least one radioactive atom species to said wear receiving surface;

removing the mask from the resulting article; and

thereafter depositing a relatively thick layer of silver on said article.

3,870,608

PROCESS FOR COLORING ALUMINUM OR ALUMINUM ALLOYS BY ANODIZING WITH IMPERFECTLY RECTIFIED CURRENT

Ikuo Mita, Tokyo, Japan, assignor to Tokyo Metropolitan Government, Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,645
Claims priority, application Japan, May 18, 1972, 47-48621
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **6 Claims**

1. A process for coloring an article of aluminum or alloys of aluminum comprising anodizing the article in a sulfuric acid electrolytic solution containing at least one ingredient selected from the group consisting of SeO_4^{2-}, MoO_4^{2-}, WO_4^{2-}, TeO_4^{2-}, CrO_4^{2-}, CrO_7^{2-}, AsO_3^{3-}, AsO_4^{3-}, VO_4^{3-}, sulfates, nitrates, phosphates, sulfamates, borates, chromates, dichromates, chlorides, silicates, oxalates, malonates, tartarates, and succinates of nickel, cobalt, tin, copper, lead, titanium, cad-

mium, iron, molybdenum, zirconium and manganese by subjecting the article to imperfectly rectified current having a ratio of positive component to negative component of at least 2:1, the current density of the positive component being approximately 0.5 to 6.0 A/dm^2 and that of the negative component being approximately 0.05 to 6.0 A/dm^2, the amount of the ingredient in the sulfuric acid electrolytic solution being approximately 0.1 to 200 g./1.

3,870,609
IRRADIATED INSOLUBLE AMYLOSE STARCH

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 822,763, Jan. 23, 1969, abandoned, which is a division of Ser. No. 455,771, May 14, 1965, Pat. No. 3,468,777. This application Jan. 25, 1971, Ser. No. 109,590The portion of the term of this patent subsequent to Sept. 23, 1986, has been disclaimed.

Int. Cl.^{2} C08b *1/00*

U.S. Cl. 204—160.1 **10 Claims**

1. A method for increasing the insolubility of starch having a high amylose content comprising

a. intimately contacting said starch with water and then
b. irradiating said starch to a dosage of less than 10 megarads and sufficient to increase the insolubility of the starch in boiling water to at least 20 per cent and to yield an irradiated starch of at least about 20 per cent amylose content.

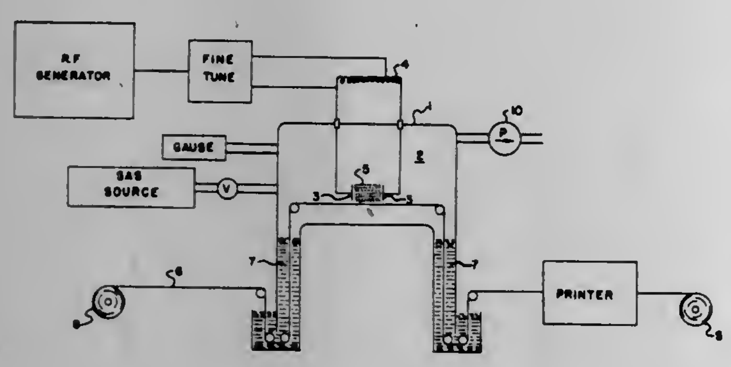
3,870,610
COLD PLASMA TREATMENT OF MATERIALS

Richard W. Baird, and William G. Baird, Jr., both of Spartanburg, S.C., assignors to W. R. Grace and Co., Duncan, S.C.

Continuation-in-part of Ser. No. 233,278, March 9, 1972, abandoned. This application Feb. 27, 1973, Ser. No. 336,287

Int. Cl. C08f *47/22;* **H01t** *19/00*

U.S. Cl. 204—165 **9 Claims**



1. A process for treating polymeric materials comprising the steps of:

a. evacuating a confined region to a pressure less than 100 torr;
b. creating and maintaining a cold plasma within said region, the ionized species comprising said plasma being created within said region and not being transported therefrom; and,
c. exposing at least one side of said material directly to said plasma within said region.

3,870,611
PROCESSING OF COAL TO PRODUCE LIQUID AND VAPOROUS HYDROCARBONS

George W. Vestal, Rt. 4, Box 238, Denton, Tex. 76201

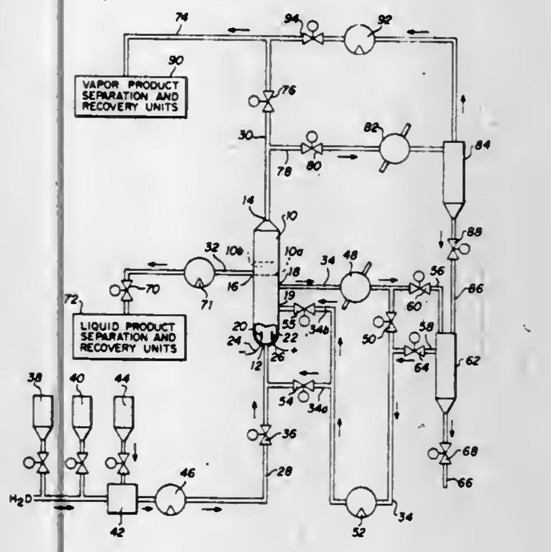
Filed Oct. 19, 1973, Ser. No. 407,969

Int. Cl. B01k *1/00*

U.S. Cl. 204—168 **17 Claims**

9. A process of converting coal to lower molecular weight hydrocarbons comprising:

a. suspending coal particles within an aqueous stream;
b. passing said aqueous stream containing said suspended coal particles into a liquid aqueous medium contained within a reaction zone and heating said coal particles between spaced electrodes as they are passed into said liquid aqueous medium to cause decomposition of at least a portion of said coal particles and form said lower molecular weight hydrocarbons;
c. passing said lower molecular weight hydrocarbons through said liquid aqueous medium; and
d. recovering said lower molecular weight hydrocarbons from said liquid aqueous medium.



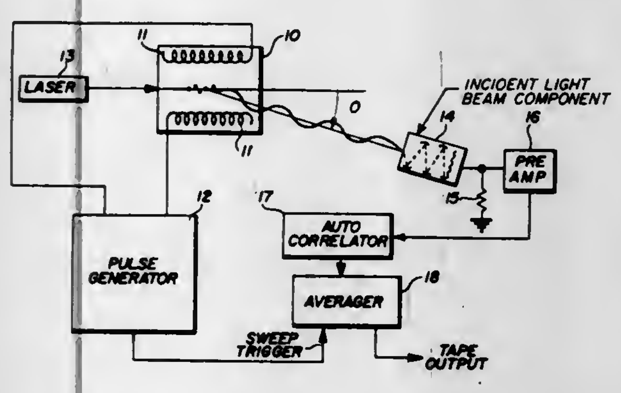
3,870,612
ANALYSIS FOR POLYMER MIXTURES IN SOLUTION UTILIZING ELECTROPHORETIC LIGHT SCATTERING APPARATUS

Willis H. Flygare, Urbana, Ill., and Bennie R. Ware, Arlington, Mass., assignors to University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 309,272, Nov. 24, 1972, Pat. No. 3,766,048. This application Aug. 2, 1973, Ser. No. 385,055

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **4 Claims**



1. A method of determining the electrophoretic mobility and diffusion coefficient of a macromolecular polymer in solution, which method comprises the following steps:

establishing an electric field across said solution to move said macromolecules through said solution in a direction parallel with said electric field at a velocity proportional to said electrophoretic mobility;
applying a light beam comprising monochromatic electromagnetic radiation incident on said macromolecules;
detecting said light beam scattered by said macromolecules;
heterodyning said detected scattered light beam with said incident light beam to produce beat frequency signals; and
analyzing said beat frequency signals to determine the Doppler shift of said scattered light beam which is reprsentative of said electrophoretic mobility and to determine the frequency distribution of said scattered light beam which is representative of said diffusion coefficient.

3,870,613
PROCESS FOR THE REMOVAL OF MINERAL SALTS FROM MILK

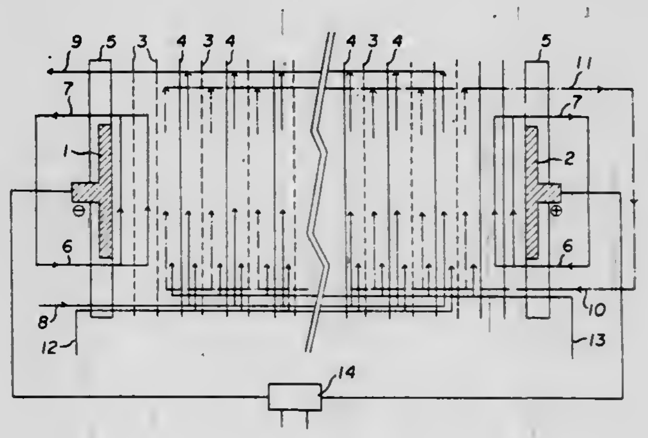
Tsutomu Nakamura, Tokyo; Kensuke Itoh, Sayama; Hajime Murata, Kawagoe; Makoto Ishikawa, Hokkaido; Eiichi Furuichi, Kawasaki; Yasuhiro Arakawa, Gunma-ken; Shinichi Taneya, Tachikawa; Hiroji Motomura, Shinnanyo; Katsutoshi Yoshimoto, and Hisao Tomokawa, both of Tokuyama, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Higashi-ku, Sapporo-shi, Hokkaido and Tokuyama Soda Kabushiki Kaisha, Tokuyama-shi, Yamaguchi-ken, both of, Japan

Filed Feb. 28, 1974, Ser. No. 446,730

Claims priority, application Japan, Mar. 12, 1973, 48-28060

Int. Cl. B01d *13/02*

U.S. Cl. 204—180 P **15 Claims**



1. A process for the removal of mineral salts from milk or milk products of aqueous liquid by ion exchange membrane electrodialysis apparatus having dilution compartments and concentration compartments which comprises dispersing gas bubbles continuously or intermittently into the above said milk or its products in the dilution-compartments, while simultaneously passing the above said milk or its products through said dilution compartments at a linear velocity of above 5 cm./sec. and reversing the polarities of the electrodes intermittently.

3,870,614
SELENIUM DEPOSITION

John Duckles Underwood, Bishop Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

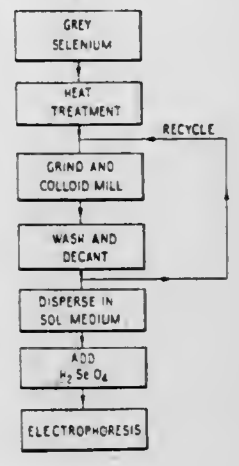
Filed June 6, 1974, Ser. No. 476,986

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **8 Claims**

1. A method of electrophoretically depositing selenium comprising:

colloid milling selenium with a liquid containing an antiflocculation agent to a particle size suitable for forming a sol;
washing the particles;
dispersing the particles in a liquid to form a sol;
adding a trace of selenic acid; and



applying an electric field between electrodes immersed in the sol to deposit selenium on the cathode.

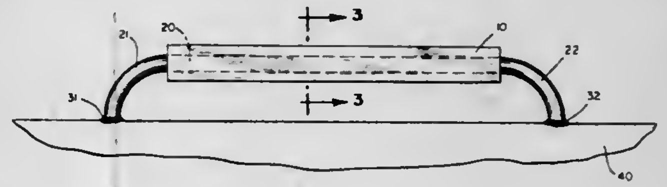
3,870,615
SACRIFICIAL ANODE

Fred V. Wilson, and Henry J. Leblanc, Sr., both of Port Arthur, Tex., assignors to Standard Brass and Manufacturing Company, Port Arthur, Tex.

Continuation of Ser. No. 214,207, Dec. 30, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,360

Int. Cl. C23f *13/00*

U.S. Cl. 204—197 **2 Claims**



1. A sacrificial anode structure comprising:

a. a one-piece pipe core of 4-inch Schedule 80 steel pipe having an elongated straight central section and 90° arcuate sections at each opposite end of said straight section, the radius of curvature of said arcuate sections being about four times the diameter of the pipe core;
b. and a body of sacrificial anode material surrounding and supported by the elongated straight central section of said pipe, said central section of said pipe emerging from opposite ends of the body of anode material.

3,870,616
CURRENT CONTROLLED REGULATION OF GAS EVOLUTION IN A SOLID POLYMER ELECTROLYTE ELECTROLYSIS UNIT

Russell M. Dempsey, Hamilton; Mary E. Nolan, Marblehead; Anthony B. La Conti, Lynnfield, and Robert A. Torkildsen, Danvers, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Jan. 2, 1973, Ser. No. 320,165

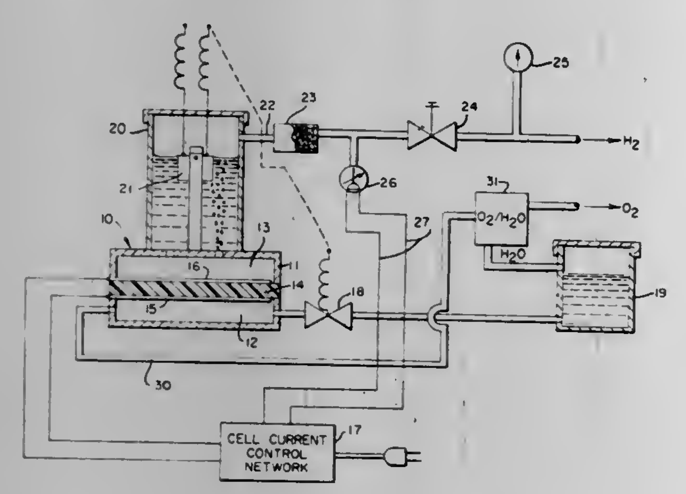
Int. Cl. B01k *3/00, 3/10*

U.S. Cl. 204—230 **4 Claims**

1. In a gas generator having a controllable gas output the combination comprising:

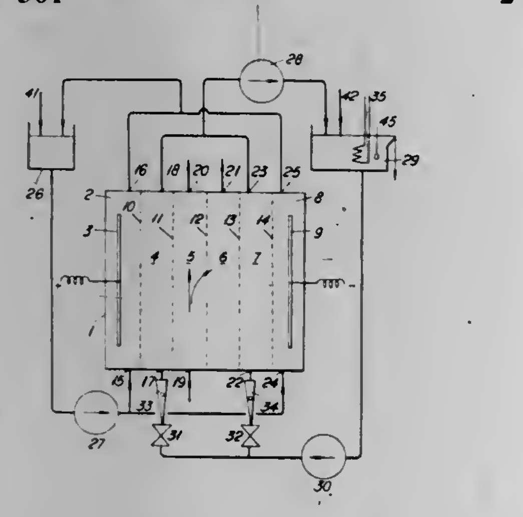
a. an electrolysis cell having:
   1. a solid polymer, ion-exchange electrolyte membrane,
   2. catalytic electrodes positioned adjacent to opposite surfaces of said membrane to dissociate a chemical compound to evolve gas,
b. a source of electrical power coupled to the electrodes of said cell,
c. means to furnish a chemical compound to one of said electrodes for dissociation, the ionic form of one of the

elements of the dissociated compound being transported across said ion-exchange-membrane to evolve the gas,
d. means for sensing the output gas pressure and producing a control signal in response thereto;
e. means responsive to the control signal responsive to the sensed gas pressure for controlling the current flow from said source of electrical power on a time ratio basis to vary the current level to the cell electrodes thereby to control the rate of gas evolution including:
1. a current source including a pair of alternately conducting solid state switching devices for supplying the cell current,



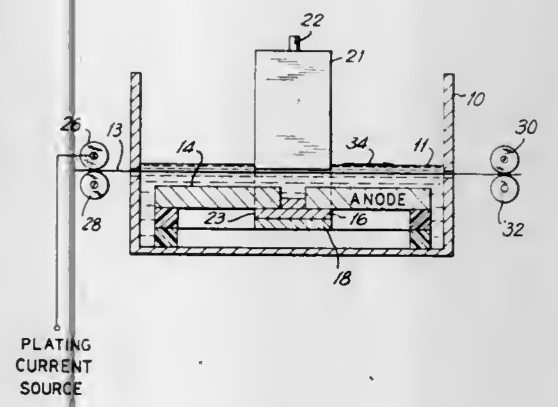
2. a voltage responsive variable repetition frequency, pulse generator coupled to said switching devices having a voltage responsive timing network for controlling the repetition pulse frequency, said pulse generator producing triggering pulses for said switches to control the average current level to said cell,
3. means coupling the signal from said gas pressure sensing means to said pulse generator timing network to vary the pulse repetition rate of the pulses from said generator in response to said signal to vary the cell current as a function of the outlet gas pressure.

3,870,617
APPARATUS FOR FORCED FLOW ELECTROPHORESIS
Guy Bourat, Bourg-la-Reine, France, assignor to Rhone-Poulenc S.A., Paris, France
Division of Ser. No. 238,764, March 28, 1972, Pat. No. 3,829,370. This application Feb. 15, 1974, Ser. No. 443,158
Claims priority, application France, Mar. 30, 1971, 71.11180
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 **2 Claims**



1. A forced flow electrophoresis cell for the continuous fractionation of an aqueous liquid containing colloidal compounds which are mobile in an electric field into one fraction enriched and one fraction depleted in at least one of the compounds, said cell comprising an anode and a cathode, a plurality of spaced apart ion-permeable membranes dividing said cell into six compartments, including two end compartments containing said anode and cathode respectively, two intermediate compartments and two central compartments, the membrane separating said two central compartments being a microporous membrane the membranes separating said central compartments from the intermediate compartments being dialysing membranes, and the membrane separating the intermediate compartments from the end compartments containing the anode and the cathode being impermeable respectively to anions and cations, means for feeding the liquid to be fractionated under pressure to one of said central compartments, means to withdraw a filtered portion of the liquid from the other central compartment and the remaining unfiltered portion from said one central compartment, means for feeding a main electrolyte to and from the end compartments and means for feeding an auxiliary electrolyte to and from the intermediate compartments, whereby the average pH of one stream of the auxiliary electrolyte between its introduction and removal from the cell differs from the said average pH of the second stream of the auxiliary electrolyte.

3,870,618
CHROMIUM PLATING METHOD
Edgar J. Seyb, Jr., Oak Park, and Richard E. Woehrle, Berkley, both of Mich., assignors to M & F Chemicals Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 202,648, Nov. 26, 1971, abandoned, which is a division of Ser. No. 869,343, Oct. 24, 1969, abandoned. This application Aug. 30, 1973, Ser. No. 392,952
Int. Cl. C23b *5/58;* **B60l** *9/00;* **C23b** *5/06*
U.S. Cl. 204—28 **2 Claims**

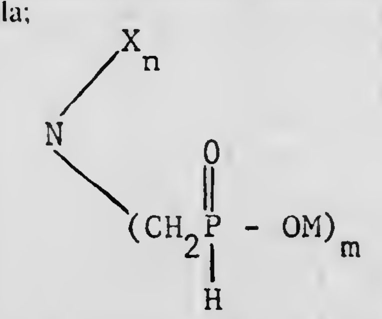


1. In a method of electroplating a bright protective chromium plate which comprises maintaining a chromium plating bath containing chromic acid and sulfate; maintaining an anode in said bath; passing through said bath continuously moving continuous strip of thin-gauge metal; passing an electric current through said anode, said bath, and said cathode thereby electroplating a bright protective plate on said moving strip of thin-gauge metal whereby said strip of metal is maintained as cathode, the improvement comprising preventing "arc burns" by passing immediately and without rinsing said moving strip of metal, bearing at least some portion of the contents of said plating bath from said bath into contact with a cathodic contact roll outside of said bath which has a contact surface of solid cast iron having a carbon content of about 2 to 6 percent by weight.

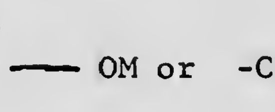
3,870,619
PROCESS FOR PRODUCING BRIGHT ELECTRODEPOSITS OF GOLD AND ITS ALLOYS
Alfred M. Weisberg, Providence, R.I., and Florence P. Butler, Franklin, Tenn., assignors to Technic Inc., Cranston, R.I.
Filed Jan. 29, 1973, Ser. No. 327,681
Int. Cl. C23b *5/28, 5/42*
U.S. Cl. 204—43 G **6 Claims**

1. In an electroplating bath for producing bright gold or gold-base alloy deposits, in a pH range between 3.7 and 6.6, from an aqueous solution containing as the gold source, a water soluble gold cyanide, the improvement comprising, including

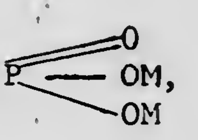
a small but useful amount in the range from about 0.5 gram to 400 grams per liter of a chelating agent selected from the group consisting of those compounds represented by the formula;



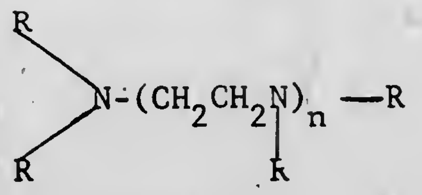
where m, is 1, 2, or 3, n is 0, 1, or 2, $n + m$ is 3; M is H or an alkali metal cation; and X is



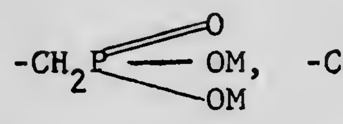
or

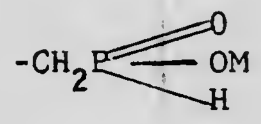


and those represented by the formula:



where n is 1, 2, or 3 and R is H,



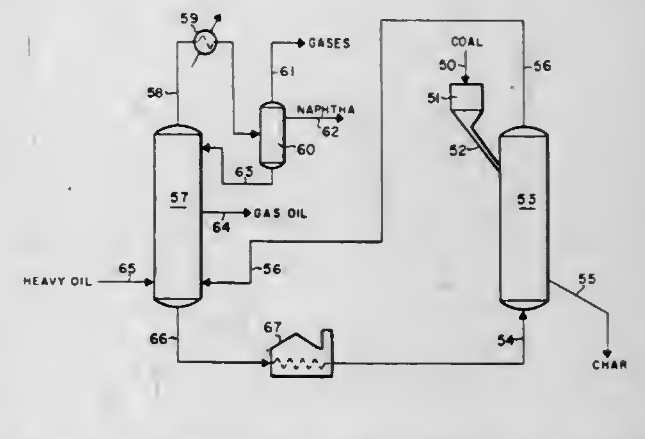


or $-CH_2COOM$, but at least one R group must be a methylene phosphinic acid and M is hydrogen or an alkali metal cation.

3,870,620
PHOTOPOLYMERIZATION PROCESS FOR THE MANUFACTURE OF COPOLYMER OF BUTADIENE AND ACRYLONITRILE
Akira Onishi; Toshio Yukuta, both of Tokyo; Yutaka Iseda, Kyoto, and Kouichi Iwami, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jan. 21, 1971, Ser. No. 108,563
Claims priority, application Japan, Jan. 23, 1970, 45-5674
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **7 Claims**

1. A process for manufacturing butadiene acrylonitrile alternating copolymer in which butadiene and acrylonitrile units are alternately combined so that the mole ratio of the total acrylonitrile units to the total butadiene units is always 1 to 1, as the sole polymerization promoter selected from the group consisting of adding a photosensitizer comprising at least one compound selected from the group consisting of ortho-xylene, meta-xylene, para-xylene, durene, ethylbenzene, chlorobenzene, ortho-dichlorobenzene, bromobenzene, para-dibromobenzene, biphenyl, diphenylmethane and 1,2,3,4-tetrahydronaphthalene to reactants of butadiene and acrylonitrile in the mole ratio of 20/1 to 1/20 and irradiating the mixture with light having a wave length ranging from 2,000 to 6,000 Angstrom units at a temperature of −100° to +100° C.

3,870,621
RESIDUUM PROCESSING
George T. Arnold, Baytown, Tex.; Jack M. Hochman, Cobham, England, and Robert E. Pennington, Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.
Filed July 30, 1973, Ser. No. 383,755
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **10 Claims**



1. A process for the production of low boiling liquid hydrocarbons from coal and a high boiling hydrocarbon oil composed primarily of constituents boiling in excess of about 700° F. which comprises contacting said oil in a contacting zone with a finely divided sub-bituminous or lower rank coal at a temperature in the range between about 700° F. and about 900° F., a pressure in the range between about 10 and about 100 pounds per square inch gauge, and a space velocity between about 0.1 and about 3.0 pounds of oil per hour per pound of coal; withdrawing liquid products overhead from said contacting zone; fractionating said liquid products to obtain a high boiling liquid fraction boiling in excess of about 700° F. and a lighter fraction; recycling said high boiling fraction to said contacting zone; and withdrawing char from said contacting zone.

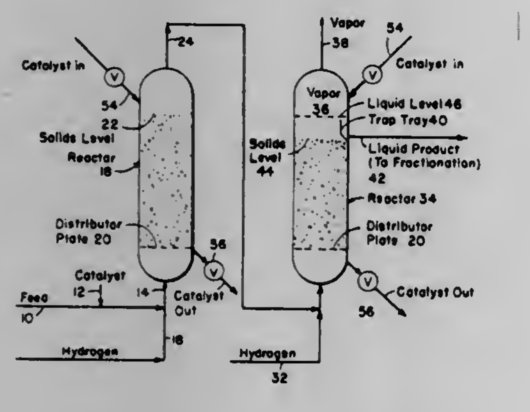
3,870,622
HYDROGENATION OF A HYDROCRACKED LUBRICATING OIL
William B. Ashton, Nederland; Luis A. Gonzalez, Port Arthur; Gerald V. Nelson, Nederland, and Theodore C. Mead, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.
Continuation-in-part of Ser. No. 129,231, Sept. 9, 1971, abandoned. This application June 25, 1973, Ser. No. 373,332
Int. Cl. C10g *37/06*
U.S. Cl. 208—93 **10 Claims**

1. A method of treating a hydrocracked lubricating oil stock having an initial boiling point of about 600°F, and having an end point in the range of from about 950°F to about 1,100°F, and containing a substantial portion of mononuclear and dinuclear aromatic compounds, for increasing, the viscosity index thereof, which method comprises:
a. fractionating the hydrocracked lubricating oil stock into a light fraction boiling in the range of about 600°F to about 750°F, and a heavy fraction having an initial boiling point of about 750°F;
b. hydrogenating the light fraction at a temperature of from about 600°F to about 725°F, a pressure of from about 1,000 to about 10,000 psig, a liquid hourly space velocity of from about 0.1 to about 3.0 volumes light fraction per hour per volume of catalyst with from about 500 to about

30,000 standard cubic feet of hydrogen per barrel of light fraction in the presence of a hydrogenation catalyst for saturation of mono-nuclear and di-nuclear aromatics hydrocarbons;
  c. reblending the hydrogenated light fraction and the heavy fraction; and
  d. separating low boiling cracked hydrocarbon from the reblended lubricating oil of step (c) for adjustment of the initial boiling point to about 600°F.

3,870,623
HYDROCONVERSION PROCESS OF RESIDUUM OILS

Axel R. Johnson, North Babylon; Ronald H. Wolk, Trenton, both of N.J., and Seymour B. Alpert, Los Altos, Calif., assignors to Hydrocarbon Research, Inc., New York, N.Y.
Continuation of Ser. No. 210,436, Dec. 21, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 397,071
Int. Cl. C10g *13/02, 9/16;* **B01j** *11/74*
U.S. Cl. 208—108 **2 Claims**



1. In a process for the continuous hydrogenation of a Lagunillas vacuum bottoms having in excess of 500 ppm of metals from the group of vanadium and nickel wherein the residuum and hydrogen are passed upwardly through a reaction zone containing a macroporous microspherical particulate catalyst being closely sized within the range of 60 to 325 U.S. Standard mesh at a rate to place the microspherical catalyst in random motion in the liquid without substantial carryover from the reaction zone and wherein the operating conditions are within a pressure range of 1,000 to 3,000 PSIG, and a temperature range of 750° to 850°F and a liquid space velocity of 0.2 to 2.0 $V_f/hr/V_r$ such as to maintain conversion of at least 80 percent of the portion of the residuum boiling above 975°F to material boiling below 975°F wherein the improvement comprises:
  adding said catalyst to and removing said catalyst from the reaction zone at a rate between 0.2 and 0.5 pounds of catalyst per barrel of feed oil such that the percent of vanadium on the spent catalyst is less than 23 percent.

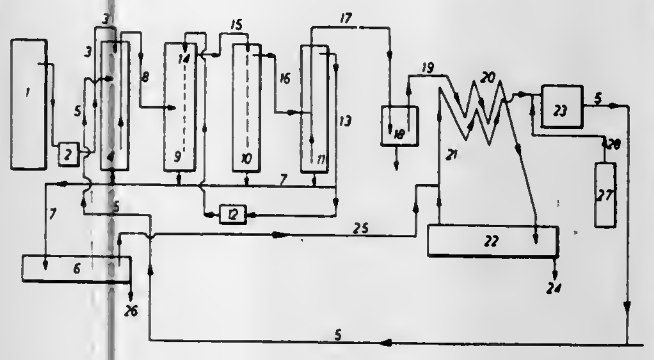
3,870,624
HYDROGENATION CATALYST ACTIVATION

John D. Tice, Wilmington, Del., and Robert I. Benner, Upper Chichester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Filed Aug. 2, 1971, Ser. No. 168,436
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 **5 Claims**

1. A method for reactivating a sulfided Group VI metal hydrogenation catalyst which has become deactivated during use in hydrogenation of hydrocarbons comprising continuing said hydrogenation at an operating pressure of at least about 300 psig, an operating temperature range of at least about 350°F. to at least about 700°F. and a LHSV of at least about 0.2 to at least about 10.0 in the presence of added CS_2 or H_2S, thereby reactivating said catalyst in situ resulting in increased cycle life and decreased temperature required to maintain a fixed conversion level.

3,870,625
PROCESS AND EQUIPMENT FOR THE DE-ASPHALTING OF RESIDUES FROM VACUUM DISTILLATION OF PETROLEUM, AND APPLICATION TO THE REMAINING OF LUBRICANT OIL

Leck Godfryd Wielezynski, 1 Ave. George V., Paris, France
Filed Oct. 17, 1973, Ser. No. 407,157
Claims priority, application France, Dec. 1, 1972, 72.37293
Int. Cl. C10g *21/14*
U.S. Cl. 208—180 **3 Claims**



1. A method for regeneration of used lubricant oils, comprising spraying used lubricant oil in pulses into the top of a first column, introducing liquid propane into said first column to dissolve a regenerative fraction of the oil therein, removing the thus formed solution of propane and oil fraction from the top of the column along with propane, and undissolved oil in admixture therewith, removing insoluble residue of the oil from the bottom of the column, passing the mixture of oil, propane and oil dissolved in propane successively in a plurality of further columns disposed in series, said mixture being introduced successively into each of said further columns, introducing into one of the further columns, at the top thereof, propane in pulses in counter current flow in said one column with said mixture introduced therein, removing, at the bottom of the further columns, impurities which settle by gravitation in said further columns, removing from the last column a solution of the oil in liquid propane, and separating the oil thus purified from the liquid propane by vaporization of the latter.

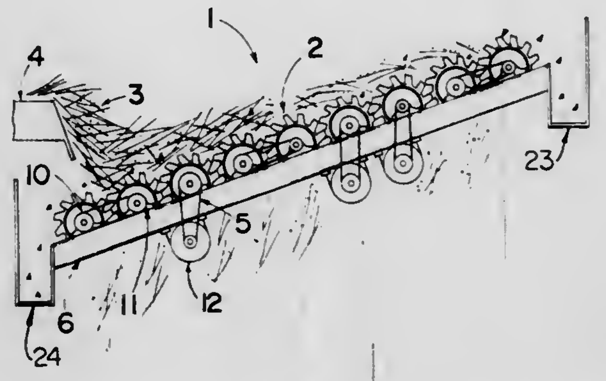
3,870,626
METHOD FOR REDUCING THE MERCAPTAN CONTENT OF A MIDDLE DISTILLATE OIL

Robert A. Plundo, Greensburg; Thomas C. Readal, McCandless Township, and James R. Strom, O'Hara Township, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Feb. 27, 1973, Ser. No. 336,383
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **12 Claims**

1. A relatively low pressure process for hydrotreating a straight run No. 2 home heating fuel oil feed having a total sulfur content of less than 0.2 weight percent, comprising passing said oil over a hydrotreating catalyst, said straight run feed oil containing more than 30 ppm of mercaptan sulfur, the pressure in said process being no greater than about 150 psi, the temperature in said process being from 400° to below 500°F., hydrogen consumption including solution losses in said process being no greater than about 25 standard cubic feet of hydrogen per barrel of feed oil, and recovering an effluent oil containing less than 30 ppm of mercaptan sulfur, said catalyst having been employed in a prior hydrotreating process operated at a higher pressure than the pressure of the present process until it has been substantially permanently deactivated for purposes of said high pressure process.

3,870,627
MECHANICAL SCREENING DEVICE FOR MACHINE-HARVESTED SUGAR CANE

John W. Herkes, 425 High St., Santurce, P.R. 96793
Filed Nov. 27, 1972, Ser. No. 309,896
Int. Cl. B07b *1/14*
U.S. Cl. 209—3 **7 Claims**



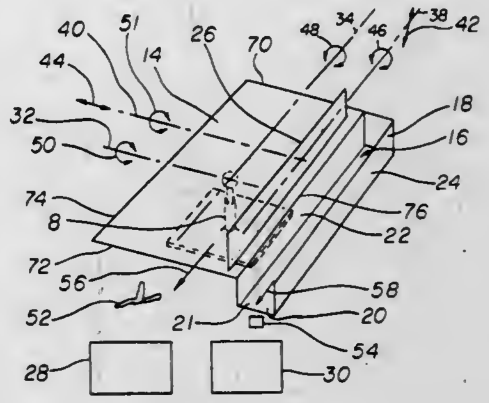
1. In a mechanical screening device comprised of a set of spaced parallel toothed cylindrical horizontal rolls arranged on a slope and power-rotated to pass material deposited thereon up the slope, with the teeth on each roll arranged in spaced rows and the rows of teeth on each roll centered on the space between rows of teeth of the adjacent rolls, the following:
  a. each roller tooth has a substantially straight sweptback leading edge of about 52°;
  b. the rows of teeth are so located as to provide a lateral space between adjacent teeth of about 6 inches;
  c. the roll spacing provides a space of about 12 inches between adjacent rolls;
  d. the mechanical screening device also comprises means to drive the rolls at tooth tip speed of at least 350 feet per minute with each roll after the first one to three rolls rotated at a tooth tip speed which is about 15 percent higher than the next preceding roll; and
  e. the effective length of the mechanical screening device is at least 21 feet;

whereby as a mat of dirty machine-harvested sugar cane is fed onto the lower end of the mechanical screening device, sugar cane stalks will be disentangled, extraneous material will be loosened from the cane stalks removing large rocks from the mat and all but rocks will progressively pass through the screening device, being spread out in length and thus separated farther because of the progressive increase in speed of the toothed rolls.

3,870,628
PARTS SEPARATOR

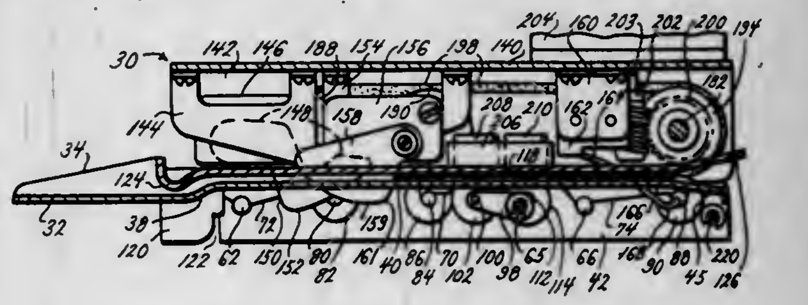
Donald B. DeNoyer, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 7, 1973, Ser. No. 422,840
Int. Cl. B07b *13/04*
U.S. Cl. 209—90 **3 Claims**

1. Apparatus for separating objects according to size and shape, such as the products and the runners from a plastic molding machine, comprising:
  a frame member;
  a table having longitudinal and transverse axes, about which it is biaxially adjustably mounted on the frame member and rotatably positioned about both axes to provide the table with a biaxial slant toward a lower end and edge thereof;
  a plurality of trough means, each having a bottom wall and a discharge end, arranged in cascading array extending from the table with one trough means positioned adjacent the lower table edge and each succeeding trough means positioned adjacent the bottom wall of the preceding trough means, the bottom walls extending in the same general direction as the table;
  gate means positioned in spaced relationship with the lower edge of the table and the bottom wall of each trough means, save the outermost one from the table, whereby each of the objects received on the table are successively separated into one portion passing beneath a gate and onto the succeeding trough, and another portion passing off the table end, or trough discharge end, all of which portions being collected separately, and each gate means is adjustable normally to, and parallel with, the associated table or trough bottom wall.



3,870,629
PAPER CURRENCY VALIDATOR

Ronald W. Carter, and Charles D. Nash, both of Hot Springs, Ark., assignors to UMC Industries, Inc., New York, N.Y.
Filed Oct. 11, 1973, Ser. No. 405,535
Int. Cl. B07c *5/344;* **G06k** *9/00*
U.S. Cl. 209—111.8 **28 Claims**



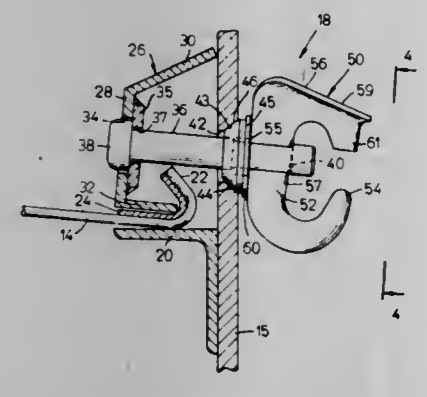
1. A validator for documents which comprises a sensor that can respond to relative movement between itself and markings on a document to develop signals, means to provide relative movement between said sensor and said document to enable said sensor to respond to one group of markings on said document to develop a signal and to respond to another group of markings on said document to develop another signal, a sub-circuit which responds to the first said signal to develop an output signal at the end of a predetermined length of time after the termination of said first said signal if further markings are not sensed by said sensor within said predetermined length of time, a second sub-circuit which responds to said other signal to develop a second output signal, means responsive to the development of the first said output signal to enable utilization of said second output signal if the first said output signal is developed by the first said sub-circuit before said second output signal is developed by said second sub-circuit.

3,870,630
SCREEN TENSIONING DEVICE

Raymond S. Tylinski, Milwaukee, Wis., assignor to Rock Industries Machinery Corporation, Milwaukee, Wis.
Filed Aug. 15, 1973, Ser. No. 388,365
Int. Cl. B07b *1/48*
U.S. Cl. 209—403 **4 Claims**

1. A vibrating screen tensioning device for securing the upturned edges of a screen to the opposite sidewalls of a material vibrator, said device comprising:

side rails positioned in a parallel spaced relation along the inside surface of the sidewalls, each side rail including,
a central web,
a pivot flange along the upper edge of the central web,
and a screen locking flange along the lower edge of the central web,
a plurality of openings spaced along the central web in positions corresponding to openings in the sidewalls,
a tensioning shaft extending through each pair of corresponding openings in said web and in said sidewall,
a slot in said tensioning shaft having one edge spaced outwardly from said sidewall,

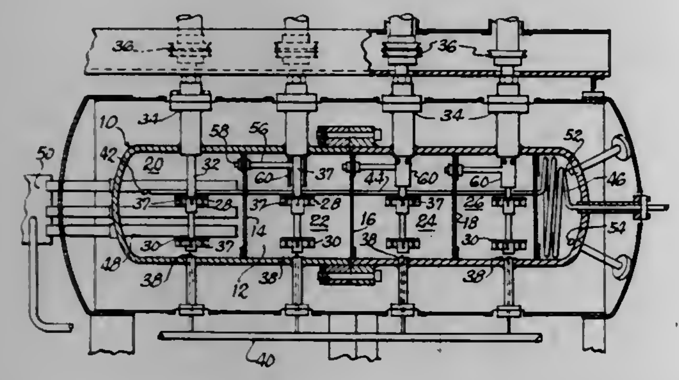


a C-shaped wedge for each shaft, each wedge including a tapered center section, a tapered arcuate section at one end of said center section, and an acute angled flat section at the other end of said center section, a centering washer on each of said shafts between said sidewall and said center section of said wedge when said screen is in tension, one of said wedges being positioned in each of said slots with one edge of said center section bearing on the said washer and the other edge bearing on one end of said slot.

3,870,631
APPARATUS AND METHOD FOR WET OXIDATION OF ORGANIC MATTER

W. Martin Fassell, Newport Beach, and Donald W. Bridges, Irvine, both of Calif., assignors to Barber-Colman Company, Rockford, Ill.

Continuation-in-part of Ser. No. 346,152, March 29, 1973,. This application Sept. 24, 1973, Ser. No. 400,123
Int. Cl. C02b *3/08;* C02c *5/04*
U.S. Cl. 210—63 7 Claims



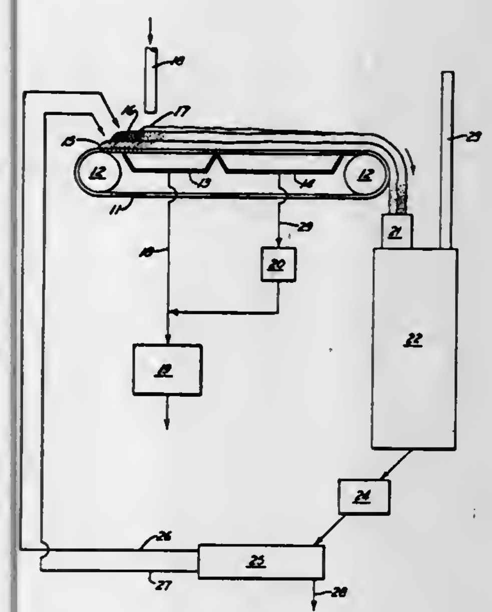
1. In a process for oxidation of combustible organic matter in an aqueous system in the form of solution or dispersion by exposure to an oxygen containing gas under elevated pressure and temperature conditions, for a time sufficient to effect substantial reduction in chemical oxygen demand, the improvement which comprises vigorously agitating the aqueous system and simultaneously introducing the oxygen containing gas into the area adjacent high agitation to effect immediate breakdown of the oxygen containing gas into fine increments which are rapidly distributed throughout the aqueous system and to effect rapid transport of free radicals generated by the oxidation reaction to other sites capable of oxidation of combustible organic matter before expiration of the life of the free radicals, thereby to catalyze the oxidation reaction to achieve a high rate of oxidation of combustible organic matter in the aqueous medium.

7. In a reactor for the wet oxidation of combustible organic matter in an aqueous dispersion or solution, an elongate horizontally disposed continuous chamber having an inlet at one end portion and an outlet at the other end portion, vertically disposed walls subdividing the chamber into a plurality of compartments in side by side arrangement with an inlet in the compartment at one end for the introduction of the aqueous solution and dispersion of organic matter and an outlet in the compartment at the other end for the removal of aqueous liquor which has been subjected to wet oxidation during travel through the compartments, an agitator in the compartments for agitation of the aqueous solution or dispersion within the compartment, a source of oxygen containing gas, and means for continuous introduction of the oxygen containing gas into compartments in the vicinity of high agitation of the liquid within the compartment for immediate dispersion of the oxygen containing gas as fine increments in the liquid and for rapid transport of free radicals generated upon combustion to other combustion sites before expiration of the free radicals to catalyze the oxidation reaction, and a passage through the separating walls for communicating the adjacent compartments for flow of fluid from one compartment to the other through the chamber.

3,870,632
TRAVELING FILTER FOR USE WITH FILTER MEDIUM INCINERATION PROCESS

Donald Baldwin Erskine, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1970, Ser. No. 76,788
Int. Cl. B01d *37/00*
U.S. Cl. 210—67 4 Claims

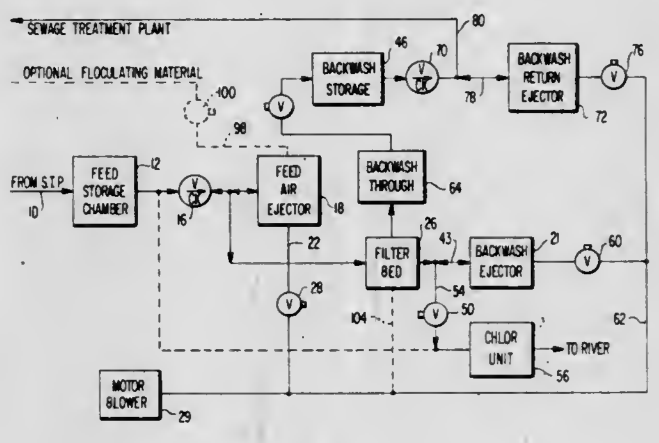


1. Method of treating sewage comprising placing an unoxidizable filter medium on a movable permeable support, depositing sewage on said filter medium, collecting substantially liquid effluent therefrom, withdrawing said support and depositing fouled filter medium in a furnace, incinerating the filter medium and sewage solids therein, recovering the filter medium, and replacing the filter medium on the moving support.

3,870,633
SELF-CONTAINED TERTIARY FILTER PLANT AND CHLORINATION UNIT

William R. Setterstrom, 99 Winfield Rd., Saint Albans, W. Va. 25177

Filed Nov. 15, 1973, Ser. No. 416,218
Int. Cl. B01d *23/16*
U.S. Cl. 210—136 6 Claims

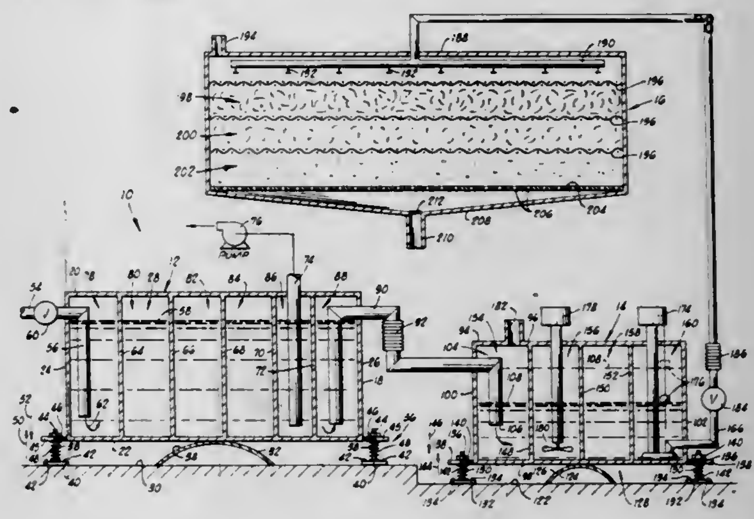


1. A self-contained tertiary filter plant and chlorination unit for treatment of effluent from an aerobic sewage treatment plant, said tertiary filter plant comprising a retangular unit container including imperforate top, bottom, side and end walls and provided with a pair of laterally spaced internal vertical bulkheads defining a center vertical dry well section and outer vertical liquid chamber sections to each side thereof, horizontal and vertical partitions within at least one outer section defining upper and lower feed storage and feed air ejector chambers side by side with an upper filter chamber and a lower backwash ejector chamber on one side of the center dry well section, said other outer section having means forming at least a chlorinator chamber, said filter plant and chlorination unit further including:
closable inlet means for fluid coupling the upper feed storage chamber to an upstream sewage treatment plant for receiving liquid effluent therefrom;
first pipe means fluid coupling the feed storage chamber to the underlying feed air ejector chamber;
said filter bed chamber including a filter bed positioned at a vertical height above that of said feed air ejector chamber;
a feed trough overlying said filter bed and adapted to permit effluent to overflow onto said filter bed for filtration thereof;
said chlorinator chamber including chlorine treatment means;
a discharge outlet from said chlorination chamber;
second pipe means for gathering filtered effluent from the bottom of said filter bed and rising to a level above said filter bed and extending across said center section of said unit and terminating with its discharge end opening up into said chlorination chamber for normally discharging said filtered effluent into said chlorination chamber;
a source of pressurized air;
said first pipe means having an upper end overlying said feed trough, first air ejector means carried by said first pipe means;
a check valve within said first pipe means opening up into said feed storage chamber to prevent liquid effluent from entering said pipe from said feed storage chamber but not vice-versa, said air ejector means comprising an air injection pipe fluid coupled to said air source extending within said fluid pipe means and discharging into the feed air ejector chamber for forcing effluent stored therein to flow up through the first pipe means for discharge into said feed trough;
third pipe means fluid coupling said second pipe means at a level about said filter bed directly to said lower backwash ejector chamber underlying said upper filter chamber;
whereby, filtered liquid is maintained within said lower backwash ejector chamber to the full height of the same, and within said second pipe means and said third pipe means to a level above that of said filter bed and unfiltered liquid to a level above that of said filter bed within said filter chamber;
a backwash removal trough extending horizontally across said filter chamber at a height below the feed trough and above said second pipe means and having its discharge end extending through the vertical bulkhead separating said central section from said one outer section;
said second pipe means including selectively closable valve means for shutting off flow of filtered liquid through said second pipe means to said chlorinator chamber; and
said filter plant and chlorinator unit further comprises means responsive to loss of filtering capability of said filter unit to close said selectively operated valve means within said second pipe means and to terminate effluent flow into said feed storage chamber and to force liquid stored within said backwash ejector chamber to reverse flow through said third pipe means, and said second pipe means, to backwash the filter and to be removed from said filter chamber automatically when the liquid level within the filter bed chamber rises to the level of the backwash removal trough.

3,870,634
MARINE SEWAGE TREATMENT SYSTEM FOR WATER CRAFT

Frank Humphrey, P. O. Box 74966, Oklahoma City, Okla. 73107

Continuation-in-part of Ser. No. 258,719, June 1, 1972, abandoned. This application May 8, 1974, Ser. No. 467,932
Int. Cl. B01d *23/02, 21/10*
U.S. Cl. 210—220 11 Claims



1. A marine sewage treatment system for installation on a marine vessel, comprising:
a first tank having a top, a bottom and a chamber for retaining a predetermined amount of fluid;
an inlet pipe having a portion extending through the first tank disposing one end thereof in the first tank chamber for discharging sewage effluent into the first tank chamber;
an outlet pipe having a portion extending through the first tank disposing one end thereof in the first tank chamber receiving fluid discharging from the first tank chamber;
a baffle disposed within the first tank chamber between the portions of the inlet pipe and the outlet pipe disposed in the first tank chamber, the baffle connected to the first tank and having baffle openings formed therethrough providing a passageway for the fluid discharged via the inlet pipe and moving through the first tank chamber toward the outlet pipe;
a base;
an anchor connected to the base and having a tank supporting surface engaging a portion of the first tank bottom

supporting the first tank a distance above the base, the first tank being pivotable about the anchor agitating the fluid within the first tank chamber;

guides, each guide connected to the base and having a portion connected to the first tank bottom and cooperatingly positioning the first tank relative to the anchor during the pivotal movement of the first tank about the anchor; and

means having a portion biasingly engaging the first tank bottom biasing the first tank toward a level position on the anchor, the first tank being pivotally movable about the anchor generally against the biasing force.

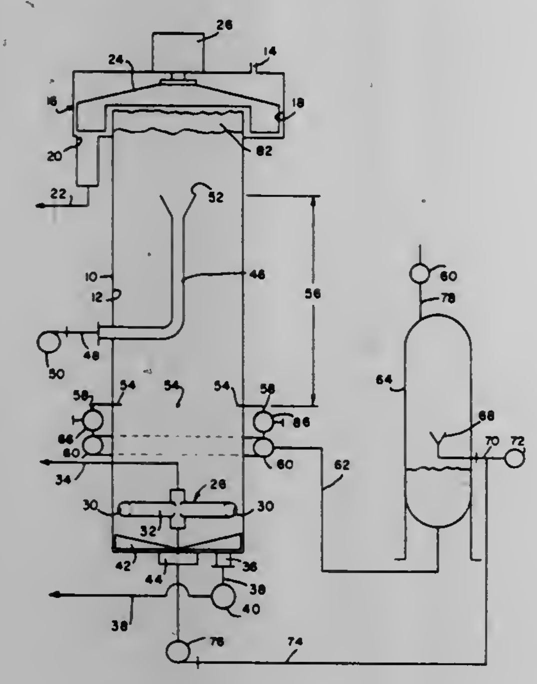
3,870,635
APPARATUS FOR CLARIFYING AN INFLUENT WATER

Ian J. H. Clarke-Pounder, Pennington, N.J., assignor to Improved Machinery Inc., Nashua, N.H.

Continuation of Ser. No. 314,797, Dec. 13, 1972, abandoned. This application June 24, 1974, Ser. No. 482,076

Int. Cl. B03d *1/00*

U.S. Cl. 210—221 **2 Claims**



1. Apparatus for clarifying an influent water, comprising a vessel containing a generally vertically elongated, totally enclosed, clarifying chamber, influent water supply means operatively associated with said clarifying chamber for supplying influent water into said clarifying chamber, said influent water supply means comprising influent water supply conduit means extending upwardly in said clarifying chamber and diffuser means in said clarifying chamber at a location substantially spaced above the lower end of said clarifying chamber, a second vessel, means operatively associated with said second vessel for supplying gas thereto for intermixture with carrier liquid therein, bubble-producing-and-discharge means for producing gaseous bubbles and discharging such bubbles intermixed with carrier liquid into said clarifying chamber, said bubble-producing-and-discharge means being operatively associated with said clarifying chamber for producing the gaseous bubbles immediately adjacent the discharge thereof into said clarifying chamber, said bubble-producing-and-discharge means comprising a plurality of discharge nozzles spaced around said clarifying chamber adjacent the periphery thereof and arranged for discharging the gaseous bubbles into said clarifying chamber in a direction at least generally transversely thereof; said discharge nozzles being substantially spaced longitudinally of said clarifying chamber below said diffuser means and also spaced longitudinally of said clarifying chamber above the lower end thereof, said discharge nozzles being more adjacent to the lower end of said clarifying chamber than to the upper end thereof, means communicating said discharge nozzles with said second vessel for supplying gas intermixed with carrier liquid from said second vessel to said discharge nozzles, said communicating means comprising a header extending around said vessel and conduits connecting said discharge nozzles to said header, valve means operatively associated with said conduits for controlling fluid flow therethrough, solid material discharge means operatively associated with said clarifying chamber for discharging solid material from adjacent the upper end thereof, liquid discharge means operatively associated with said clarifying chamber for discharging liquid from adjacent the lower end thereof, and conduit means communicating said clarifying chamber with said second vessel for supplying liquid discharged from said clarifying chamber to said second vessel for intermixture with gas therein, the portion of said clarifying chamber between said diffuser means and said discharge nozzles being free of transversely extending separating media to permit the supplied gaseous bubbles to readily rise in said clarifying chamber and cause upward movement of solid material contained in a supplied influent water while liquid in the influent water passes downwardly to said liquid discharge means.

3,870,636
STRAIGHT-THROUGH FILTER APPARATUS

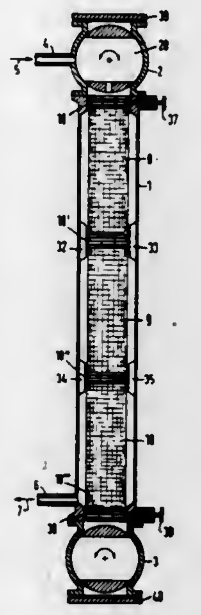
Kurt Schettler, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Oct. 31, 1972, Ser. No. 302,581

Claims priority, application Germany, Nov. 2, 1971, 2154363

Int. Cl. B01d *27/08*

U.S. Cl. 210—236 **9 Claims**



1. A straight-through filter apparatus for contaminated liquid comprising a tubular body forming housing, a plurality of serially connected filter media disposed in said tubular housing; connecting means disposed between said filter media and serially connecting said filter media one to the other; said filter media and said tubular housing defining therebetween an annular passageway for receiving therein clean liquid filterable through said filter media; valve means located respectively at each end of said tubular housing; contaminated liquid inlet means commucating with one of said valve means, and clean liquid outlet means communicating with said annular passageway, said one valve means being constructed and arranged so that in a first position it transmits contaminated liquid introducible through said inlet means to said filter media for filtering contaminants therefrom, the clean liquid passing into said annular passageway and being dischargeable from said annular passageway through said outlet means; said valve means at each end of said tubular housing being formed with a respective valve opening having a cross section corresponding to the cross sectional area of said filter media and including a respective housing cover located on each of said valve means, the other valve means being constructed and arranged so that in a first position it blocks fluid flow from said tubular housing to its respective cover, the apparatus further comprising respective tubular containers interchangeable with said housing covers for removing the filter media from said tubular housing and replacing them with other filter media, said valve means being shiftable to a second position wherein said respective valve openings are aligned with said tubular housing and means for urging fresh filter media from one of said tubular containers through one of said valve openings into said tubular housing and simultaneously urging spent filter media in said tubular housing through the other of said valve openings into the other of said tubular containers.

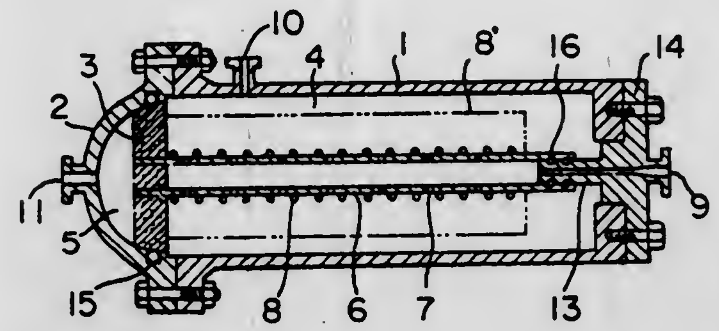
3,870,637
APPARATUS FOR SEPARATING FLUIDS

Isao Miyoshi; Sadao Sanjo; Toshisuke Takenaka; Shoji Mizutani; Isao Hamana, and Seiichi Hayashi, all of 2-1, Hinode-machi, Iwakuni-shi, Japan

Filed Apr. 3, 1973, Ser. No. 347,471

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—243 **10 Claims**



1. In a fluid separatory apparatus in which a shell having an inlet and an outlet, and a cover having an outlet are joined in a tight seal and form a vessel, a filter is stored in the shell-side zone, and the vessel is partitioned into two chambers of fluid separation and fluids treatment with a cast flange forming one end of the filter, for separating a specified component from a fluid mixture utilizing their different permeation rates through a permeable membrane wall, the improvements characterized in that the filter comprises the cast flange, a hollow porous core in about the centers of the fluids treatment chamber and said flange and a multiplicity of permeable, hollow filaments spirally wound around the core, said flange being of a truncated cone and tapered toward said cover with the tapered portions of said flange cooperating with the corresponding tapered portions of said cover in fluid-tight relation thereto; one end of said core in the cover-side zone is closed and the other end is opened; both ends of hollow filaments spirally wound around said core are imbedded and secured in said flange and have their open ends in the fluid separatory chamber; said permeable hollow filaments being spirally wound around said core by starting the winding in the flange-side zone and after winding a given fiber length reversing in the direction of the flange, such windings being repeated to form a bundle of the filaments, so that each filament satisfies the following conditions:

1. $0.20 \quad D \quad 0.67$
2. $0 < T \quad -20(D-1)$
3. $0 < L \quad -22.7 \times 10^{-4} (\eta Q/NR^4) + 650$

wherein D is the ratio of the actual volume of the hollow filaments to an apparent volume of the bundle of hollow filaments, T is a thickness of said bundle, L is a filament length in centimeters from one end to the other end of each hollow filament forming the bundle, N is the number of filament end openings in the surface of the flange in the fluid separatory chamber, η is a viscosity coefficient in poises flowing in the interior of the hollow filaments and Q is the rate of flow in cc/sec of fluids flowing through the interior of the N hollow filaments, and having in the opening of said core a protuberance of the shell so that said core is longitudinally slidably held in position.

3,870,638
PULSATING FILTER-THICKENER

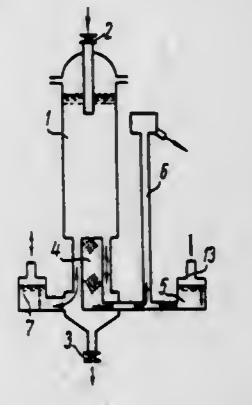
Susanna Mikhailovna Karpacheva, 2 Schukinsky Prozed, 2, kv. 88; Jury Georgievich Karkhachev, Astakovsky Pereulok 1/2, kv. 118; Valeryan Matveevich Muratov, 7 ulitsa Oktyabrskogo Polya, 5, kv. 6, and Leonid Solomonovich Raginsky, Nikitinskya ulitsa, 16, kv. 29, all of Moscow, U.S.S.R.

Continuation of Ser. No. 819,321, April 25, 1969, abandoned. This application May 27, 1971, Ser. No. 147,636

Claims priority, application U.S.S.R., May 6, 1968, 1238756

Int. Cl. B01d *29/38*

U.S. Cl. 210—333 **8 Claims**



1. A pulsating filter-thickener for continuous clarification of solutions, said thickener comprising a vessel; means for filling the vessel with a slurry to be clarified; at least one filter element having an inner cavity, said filter element being disposed in said vessel and immersed during filtration in the slurry; a first pulsator chamber connected to said inner cavity of said filter element to produce alternate high and low pressure pulses in said cavity and cause filtrate to enter the cavity and the first pulsator chamber during the low pressure pulses and flow back to the filter element during the high pressure pulses; a pipe connected to the first pulsator chamber for the discharge of filtrate therefrom during the high pressure pulses whereby a portion of the filtrate is withdrawn from the thickener during the high pressure pulses while another portion flows back through the filter element; a second pulsator chamber connected to said vessel to produce periodic pressure pulses to cause the slurry to flow in a pulsating, reciprocating fluid stream at the outside of the filter element and dislodge solid particles caked on the outside of the filter element; and means for discharging thickened slurry from said vessel.

3,870,639
FILTERING DEVICE

Francis C. Moore, and Leon R. Perkinson, both of Indianpolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

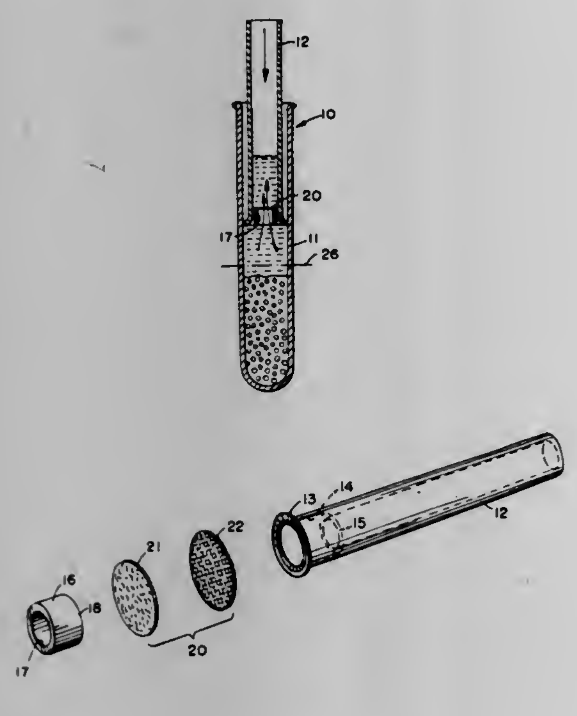
Filed Jan. 2, 1974, Ser. No. 429,594

Int. Cl. B01d *33/00*

U.S. Cl. 210—359 **17 Claims**

1. A device for filtering liquids to separate and confine the particulates contained therein, comprising an outer tube closed at the lower end thereof and adapted to contain the liquid to be filtered, an open-ended inner tube, and flexible lip means projecting outwardly at the lower end of said inner tube for slidably and sealingly engaging the inside surface of said outer tube, wherein the improvement comprises

a filter retaining sleeve having an outer surface with a diameter slightly smaller than the inside diameter of said inner tube at the lower end thereof and having a relatively large flow passage extending axially therethrough, said retaining sleeve being disposed within the lower end of said inner tube, and a thin flexible membrane filter of generally circular configuration having planar dimensions substantially larger than the inside diameter of said inner tube, said filter membrane having a central portion extending over one end of said sleeve and have a peripheral skirt portion tightly interfitted between the outer surface of said sleeve and the inside surface of the inner tube at the lower end thereof, said filter membrane thereby being supported to filter liquid flowing through the flow passage of said sleeve and providing a sealing gasket for securing the sleeve and membrane in place within the inner tube.



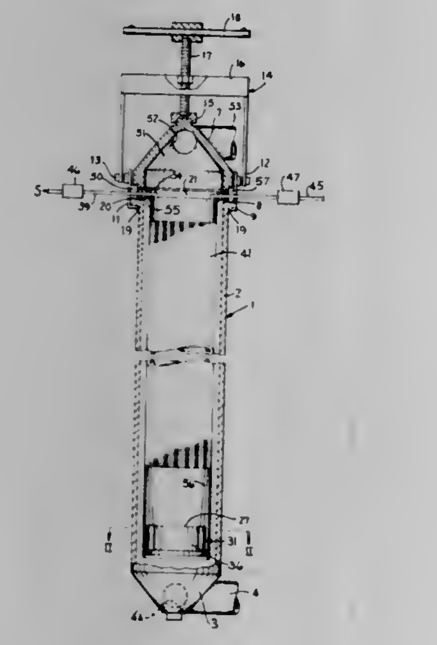
3,870,640
FILTER WITH VIBRATION OF SCREEN

Thomas L. Reece, Texas Twp., Kalamazoo County, Mich., assignor to Dover Corporation, Kalamazoo, Mich.

Division of Ser. No. 212,461, Dec. 27, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,786

Int. Cl. B01d *33/00*

U.S. Cl. 210—388 **6 Claims**



1. In a filter apparatus for inhibiting the accumulation of solid material on or across the openings of a filter element and including a liquid line having vertically spaced first and second liquid conduits, a casing having a first end outlet closure member and a second end closure member each of which is provided with an aperture and means for respectively connecting the first and second end closure members to the first and second liquid conduits through said apertures in sealing relationship therewith whereby the casing closure members provide a closed liquid connection for carrying liquid between said conduits, the filter element being pendently disposed within the casing and having an upper end portion supported by the casing and in communication with the first conduit leaving a liquid chamber within the casing surrounding and extending below and beyond the lower free end portion of the filter element, the improvement comprising:

- a vibrator directly fixed to and supported by the lower end portion of said filter element, said vibrator being spaced within said casing and from the upper end of the filter element;
- means defining a pair of vibrator energizing passageways, said passageways including a pair of conduits in the casing and having ends essentially fixed with respect to the corresponding ends of said filter element, said conduits having lower ends connected to said vibrator and extending longitudinally of the filter element to source ends at the upper end of said filter element, said passageways further including conduits external of said casing for respective connection with external supply and return energy means; and
- flange means pendently supporting said filter element and releasably holding the upper end of said filter element onto said casing, said flange means incorporating intermediate portions of said passageways which interconnect said conduits in the casing to said conduits external of said casing;
- said flange means, filter element, passageway means and vibrator defining a single integral unit for insertion into and removal from said casing.

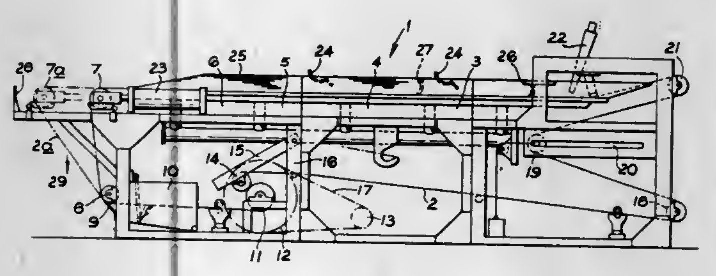
3,870,641
HORIZONTAL BELT FILTERS

Henri Gerhard Willem Pierson, Greenwood Bozeat, Wellingborough, England

Filed Sept. 24, 1973, Ser. No. 399,997

Int. Cl. B01d *33/04*

U.S. Cl. 210—400 **1 Claim**



1. A horizontal belt filter, comprising as a filtering medium, an endless belt of filter cloth arranged to have an upper horizontal reach, vacuum trays disposed beneath said upper horizontal reach, and means for feeding material to be filtered onto said upper horizontal reach, means for intermittently advancing the belt by a predetermined distance comprising a movable roller and rams which are extensible to move the roller outwardly, wherein the belt is driven through a roller which has a ratchet device to prevent pulling back of the belt on movement of the movable roller and including a tensioning roller which takes up a slack in the belt which is pulled out on movement of the movable roller.

3,870,642
GREASE THICKENED WITH OXYGEN-LINKED POLYUREAS

Eberhard Gegner, Hamburg, Germany, assignor to The British Petroleum Company Limited, London, England

Filed Nov. 29, 1973, Ser. No. 420,004

Claims priority, application Germany, Dec. 11, 1972, 2260496

Int. Cl. C10m *5/20, 7/32, 7/30*

U.S. Cl. 252—51.5 A **31 Claims**

18. A grease composition comprising a lubricating oil thickened by 3–30% by weight of a polyurea formed in situ, said composition being formed by a process which comprises reacting a monoamino component and a diamino component with a di-isocyanate component in a lubricating oil at a temperature in the range 20° to 150°C wherein

a. the monoamino component comprises a mixture of at least two members selected from the following general formulae:

$$R^1—NH_2$$
$$R^2—NH_2 \text{ and}$$
$$R^3—O—R^4—NH_2$$

in which R^1 is a monovalent aliphatic radical containing 12 to 24 carbon atoms, R^2 is a monovalent aromatic radical, R^3 is a monovalent aliphatic radical containing 2 to 10 carbon atoms and R^4 is a divalent aliphatic radical containing 2 to 4 carbon atoms,

b. the diamino component comprises a dioxa-alkane diamine or a mixture of dioxa-alkanediamines of the general formula: $NH_2—R^5—O—R^6—O—R^7—NH_2$

in which R^5 and R^7 are divalent aliphatic radicals containing 2 to 4 carbon atoms and R^6 is a divalent aliphatic radical containing 2 to 10 carbon atoms, and

c. the di-isocyanate component comprises an aromatic di-isocyanate or a mixture of aromatic di-isocyanates wherein the molar ratio of the monoamino, diamino and di-isocyanate components is in the range of 2:1:2 to 2:2:3.75.

3,870,643
PETROLEUM HYDROCARBON COMPOSITIONS

Paul M. Kerschner, Trenton, and Alphonso W. Marcellis, Boonton, both of N.J., assignors to Cities Service Oil Company, Cranbury, N.J.

Division of Ser. No. 139,142, April 30, 1971,. This application Feb. 1, 1973, Ser. No. 328,572

Int. Cl. C10m *1/26*

U.S. Cl. 252—56 R **4 Claims**

1. A petroleum hydrocarbon composition comprising a petroleum hydrocarbon and from between about 1 to 20 percent by volume of a condensation product of a polyether-polyester polyol having 2 to about 12 hydroxyl groups and a monocarboxylic acid wherein at least about 85 percent of the hydroxyl groups of said polyol are converted to ester groups by condensation of said monocarboxylic acid containing about 12–24 carbon atoms

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3,870,644
LIQUID DEVELOPER FOR PLURAL-COLOR ELECTROPHOTOGRAPHY

Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 9,971, Feb. 9, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,993

Claims priority, application Japan, Feb. 10, 1969, 44-9277

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **5 Claims**

1. In a set of liquid developers for plural-color electrophotography, in which each developer comprises a toner dispersed in a carrier liquid, said carrier liquid being a liquid hydrocarbon having an electric resistance of at least $10^9 \Omega$.cm and a dielectric constant of not greater than 3, said set of liquid developers comprising separate liquid developers respectively containing as the only toner present therein

a. a magenta-color toner consisting essentially of finely divided particles of photoconductive substance colored with a magenta-coloring agent;

b. a cyan-color toner consisting essentially of finely divided particles of photoconductive substance colored with a cyan-coloring agent;

c. a black-color toner consisting essentially of finely divided particles of photoconductive substances colored with a black-coloring agent;

d. a yellow-color toner consisting essentially of finely divided particles of photoconductive substance colored with a yellow-coloring agent, the improvement which comprises: the photoconductive substance in each of said toners is a colorless, transparent photoconductive substance selected from the group consisting of anthracene, imidazole, carbazole, poly-3,6-dibromovinylcarbazole, poly-2,3-dichlorovinylcarbazole, poly-2,4-dichlorovinylcarbazole, poly-3,6-dichlorovinylcarbazole, poly-3-bromo-6-chlorovinylcarbazole, poly-3-bromovinylcarbazole, poly-3-chlorovinylcarbazole, poly-N-vinylcarbazole, polyvinyllanthracene, polyvinylcarbazole, polydimethylaminostyrene, polyorthobromocarbazole, poly-2,3-dichlorovinylanthracene, polyorthochlorovinylcarbazole, poly-2,4-dichlorocarbazole, and poly-2-chlorovinylanthracene.

3,870,645
FERROMAGNETIC COMPOSITIONS OF MATTER

Ephraim H. Frei; Shmuel Yerushalmi, and Yusuf Benmair, all of Rehovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rehovoth, Israel

Continuation-in-part of Ser. No. 94,380, Dec. 2, 1970, abandoned.

Filed May 8, 1973, Ser. No. 358,404

Claims priority, application Great Britain, Dec. 3, 1969, 58966/69

Int. Cl. C04b *35/26*

U.S. Cl. 252—62.56 **6 Claims**

1. A ferromagnetic composition of matter for diagnostic purposes, consisting essentially of a magnetic physiologically acceptable ferrite, from the group consisting of magnesium ferrite, barium ferrite, manganese ferrite, manganese-zinc ferrite, magnesium-zinc ferrite, and nickel ferrite, and having incorporated therewith, at least one member from the group consisting of sorbitol and citric acid.

3,870,646
SUBSTITUTED AMIDES

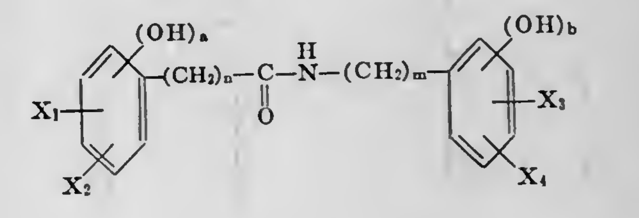
Edward S. Blake, Dayton, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 92,898, Nov. 25, 1970, Pat. No. 3,706,796. This application Dec. 15, 1972, Ser. No. 315,381

Int. Cl. C11d *9/50*

U.S. Cl. 252—107 **10 Claims**

1. An antiseptic detergent composition comprising a detergent soap and 0.1 to 10 percent by weight based on the detergent soap of a compound of the formula



wherein,

- n and m independently are 0 or 1 provided that the sum of $n + m$ is at least 1;
- a and b independently are 0 or 1 provided that the sum of $a + b$ is at least 1; and provided that when n is 0 a is 0; and X_1, X_2, X_3 and X_4 are independently selected from the halogens chlorine and bromine.

3,870,647
LIQUID CLEANING AGENT

Hal Travers, Snyder, N.Y., assignor to Seneca Chemicals, Inc., Buffalo, N.Y.

Filed June 5, 1972, Ser. No. 259,548
Int. Cl. C11d *9/02, 9/30*

U.S. Cl. 252—118 **7 Claims**

1. A biodegradable liquid laundry detergent composition consisting essentially of:
   a. from about 1.2 to 75 volume percent of a hydrophillic solvent consisting essentially of propylene glycol,
   b. from 5.6 to 33 volume percent of tall oil acids,
   c. from 1.0 to 6.5 volume percent of an alkanolamine of from about 2 to 7 carbon atoms sufficient to provide a pH in the range above 7 and below about 10 in the resulting liquid laundry detergent composition, and
   d. from 0.5 to 60 volume percent of at least one ethoxylate of an alcohol of from 12 to 15 carbon atoms produced by the reaction of from 3 to 9 moles of ethylene oxide per mole of alcohol, said amounts based on the non-aqueous components of said composition.

3,870,648
POLYELECTROLYTES AS DETERGENT BUILDERS

Richard Anthony Grifo, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,549
Int. Cl. C11d *3/04, 11/00*

U.S. Cl. 252—135 **2 Claims**

1. A process for producing an ecologically desirable detergent composition suitable for washing textiles, comprising admixing, as essential ingredients, a detergent selected from the group consisting of nonionic, anionic, cationic and amphoteric detergents, together with a composite builder, as sole builder, consisting of a member selected from the group consisting of polyvinyl methyl ether/maleic anhydride, salts and hydrolysis products thereof having a K value of from 10 to about 200 and at least one alkali metal salt selected from the group consisting of alkali metal carbonates, alkali metal silicates, and alkali metal borates wherein the ratio of polyvinyl methyl ether/maleic anhydride group member to alkali metal salt group member is, in parts by weight, from 1:100 to 1:2, the ratio of the detergent to the composite builder being, in parts by weight, 8:1 to 1:100, whereby to produce an ecologically desirable detergent composition at least substantially devoid of non-polluting nitrogen and phosphorus.

3,870,649
PROCESS FOR COMMINUTING FLUORESCENT WHITENING AGENTS AND COMPOSITIONS OBTAINED THEREBY

Theodore A. Langstroth, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 201,198, Nov. 22, 1971, Pat. No. 3,781,215, which is a continuation-in-part of Ser. No. 839,703, July 7, 1969, abandoned. This application June 1, 1973, Ser. No. 366,069The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.
Int. Cl. D06l *3/12*

U.S. Cl. 252—301.3 W **8 Claims**

1. A process for treating a presscake consisting essentially of water and relatively large crystals of a fluorescent whitening agent selected from the group consisting of disodium 4,4′-bis-(4,6-dianilino-s-triazin-2-ylamino)-2,2′-stilbenedisulfonate, disodium 4,4′-bis(4-anilino-6-morpholino-s-triazin-2-ylamino)-2,2′-stilbenedisulfonate, disodium 4,4′-bis(4-anilino-6-[2,2′-dihydroxyethylamino]-s-triazin-2-ylamino)-2,2′-stilbenedisulfonate, disodium 4,4′-bis(4-anilino-6-[2-hydroxyethylamino]-s-triazin-2-ylamino)-2,2′-stilbenedisulfonate and sodium 2-(4-stilbyl)-naphtho-[1′,2′:4,5]-1,2,3-triazole-2-sulfonate, which comprises grinding said presscake at a temperature of 20° to 60°C in the presence of at least one and up to eight molecular equivalents of anhydrous sodium sulfate for each ten molecular equivalents of water in said presscake until the crystals are reduced to an average particle size of approximately 5 microns with substantially none of the crystals greater than 15 microns in the largest dimension.

3,870,650
EUROPIUM-ACTIVATED RARE EARTH OXIDE PHOSPHORS

John L. Ferri, Towanda, and James E. Mathers, Ulster, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 155,330, June 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 812,825, April 2, 1969, abandoned. This application Sept. 13, 1973, Ser. No. 397,013
Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 R **7 Claims**

1. A particulate cathodoluminescent phosphor having the empirical formula, $(Y_{1-x}Gd_x)_2O_3$:Eu, wherein x is from 0 to 1, the molar ratio of europium to yttrium and gadolinium being from about 0.1:100 to about 20:100, having at least 70 percent of parallelepipedonal particles and an overall average size of from about 1 to about 20 microns.

3,870,651
CARBONATED ORGANIC SOLVENT

David D. Pipkins, Downers Grove, Ill., assignor to The Valspar Corporation, Minneapolis, Minn.

Division of Ser. No. 154,411, June 18, 1971, Pat. No. 3,747,523, which is a continuation-in-part of Ser. No. 80,833, Oct. 15, 1970, Pat. No. 3,705,044. This application Apr. 18, 1973, Ser. No. 352,215
Int. Cl. B01f *3/04;* **C09d** *11/00*

U.S. Cl. 252—364 **2 Claims**

1. A carbonated solvent for paints and inks comprising: an aromatic hydrocarbon solvent selected from the group consisting of toluol and xylol; and gaseous carbon dioxide interstitially spaced in the solvent in an amount in excess of one volume of gaseous carbon dioxide per volume of solvent and up to four volumes per volume.

3,870,652
PRODUCTION OF ACTIVATED CHAR USING A MOVING GRATE STOKER FURNACE

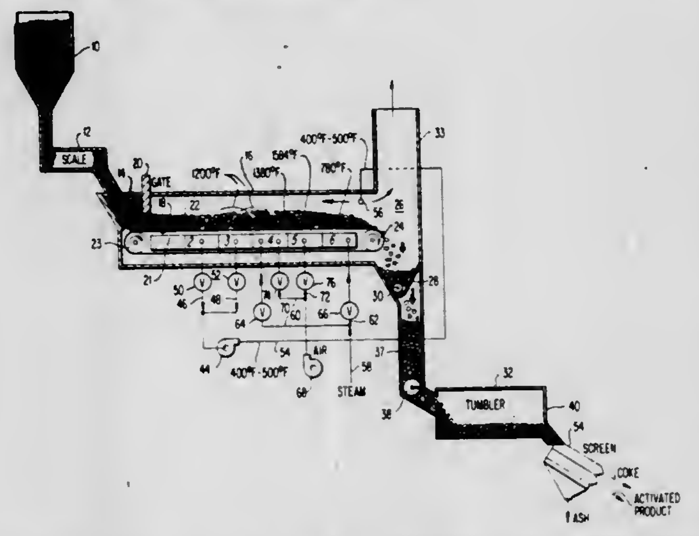
Charles M. Whitten, Rt. 7, Golf Course Ln., Columbia, Tenn. 38401, and Robert G. Hagstrom, 2401 Sterling Rd., Nashville, Tenn. 37215

Continuation-in-part of Ser. No. 130,737, April 12, 1971, abandoned, and a continuation-in-part of Ser. No. 35,771, April 13, 1973, Pat. No. 3,642,170. This application Aug. 13, 1973, Ser. No. 387,753
Int. Cl. C10b *49/06*

U.S. Cl. 252—421 **5 Claims**

1. The method of making activated carbon from a carbonaceous starting material selected from the class consisting of wood, peat, brown coal, lignite, subbituminous coal, bituminous coal, semi-anthracite coal and antracite coal, which method comprises,
   continuously depositing said starting material onto a continuously moving grate running horizontally from front to rear through a hot carbonizing furnace and, in so doing, passes over a series of first, second and third airbox zone means consecutively arranged from front to rear of the furnace,
   downdrafting hot gases through the bed from above that portion of the bed which is disposed towards the rear of the furnace from the first airbox zone means as the bed moves over first airbox zone means so as to drive off moistuure and volatile matter from and pre-heat the material,

   simultaneously feeding air upwardly through the bed as the latter passes over the second airbox zone means and thereby raising the bed temperature from the pre-heat temperature to a charring temperature,
   simultaneously feeding steam upwardly through the bed as the latter passes over third airbox zone means so as to reduce the bed temperature, and



   simultaneously feeding the downdrafted gases ladened with moisture and volatile matter into the rear portion of the furnace over that portion of the bed which is then passing over the third airbox zone means and thereby maintaining a reducing atmosphere in the furnace over the bed.

3,870,653
MODIFIED HALOGENATED ALUMINA CATALYST FOR ISOMERIZING SATURATED HYDROCARBONS

Bernard Torck, Boulogne-sur-Seine; Michel Derrien, Rueil-Malmaison, and Jean-Pierre Franck, Bougival, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Oct. 25, 1972, Ser. No. 300,587
Claims priority, application France, Oct. 29, 1971, 71.39151
Int. Cl. C07c *5/28*

U.S. Cl. 252—429 R **15 Claims**

1. In a process for manufacturing a catalyst, wherein alumina composited with a platinum group metal is halogenated with a halogen compound selected from the group consisting of chlorinated hydrocarbon, chlorine, $SOCl_2$, SO_2Cl_2 and S_2Cl_2, to form a composite consisting essentially of alumina, about 1–20 percent by weight of halogen, and about 0.01–5 percent by weight of said platinum group metal, the improvement of also compositing with said alumina an aromatic compound of the formula $(R)_m\ Ar\ (Z)_x$ where x is an integer of at least 2, m is zero or an integer, (x + m) being at most the maximum valence of Ar, Ar is an aromatic hydrocarbon radical containing at least one carbocyclic ring, the m groups R are independently halogen atoms or monovalent hydrocarbon radicals and the x groups Z are independently hydroxy, oxo or hydrocarbyloxy, the aromatic compound content of said composite being about 0.001–20 percent by weight.

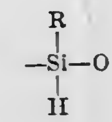
3,870,654
PROCESS AND CATALYST FOR INCREASING THE MOLECULAR WEIGHT OF LOW-PRESSURE POLYETHYLENE

Gottfried Piekarski, Burghausen, Germany, assignor to Wacker-Chemie GmbH, Munich, Germany

Claims priority, application Germany, Feb. 10, 1972, 2206386
Filed Feb. 7, 1973, Ser. No. 330,278
Int. Cl. B01j *11/84*

U.S. Cl. 252—429 B **8 Claims**

1. In a catalyst for the production of low-pressure polyethylene powder of increased molecular weight consisting essentially of the reaction product of (a) from 1 to 3.5 mols of a polysiloxane containing hydrogen bonded to silicon having the formula



$$-\overset{\displaystyle R}{\underset{\displaystyle H}{\overset{|}{\underset{|}{Si}}}}-O-$$

wherein R is a member selected from the group consisting of alkyl having 1 to 6 carbon atoms, cycloalkyl having 5 to 6 carbon atoms and aryl, and the terminal silicons of the polymer are satisfied with R, (b) 1 mol of a titanium compound selected from the group consisting of the halides, oxyhalides and mixtures of the halides and alkoxides, and (c) from 5 to 200 millimols of an aluminum salt selected from the group consisting of halides, alkoxyhalides and alkoxides, the improvement of adding to the reaction mixture in the absence of ethylene, (d) an organic tin compound of the formula

$$SnR_4$$

wherein R is a member selected from the group consisting of alkyl having 2 to 10 carbon atoms and cycloalkyl having 5 to 10 carbon atoms, said ingredient (d) being present in an amount of from 0.5 to 200 millimols per mol of said compound of ingredient (b).

3,870,655
CATALYST FOR THE PREPARATION OF ANTHRAQUINONE

Yoku Nanba, Osaka; Tetsuji Ono, Amagasaki, and Yukio Okuda, Osaka, all of Japan, assignors to Nippon Shokubai Kagaku Kogyod Co., Ltd., Osaka, Japan

Filed Jan. 26, 1973, Ser. No. 326,814
Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **11 Claims**

1. A catalyst for the preparation of anthraquinone by vapor phase oxidation of anthracene with a molecular oxygen-containing gas consisting essentially of a catalytic material supported on an inert carrier, said catalytic material consisting essentially of 100 parts by weight of TiO_2, 1 to 45 parts by weight of V_2O_5 and 0.05 to 15 parts by weight of at least two metal oxides selected from the group consisting of Li_2O, Na_2O, K_2O, Rb_2O, Cs_2O and Tl_2O.

2. A catalyst for the preparation of anthraquinone by vapor phase oxidation of anthracene with a molecular oxygen-containing gas consisting essentially of a catalytic material supported on an inert carrier, said catalytic material consisting essentially of 100 parts by weight of TiO_2, 1 to 45 parts by weight of V_2O_5, 0.05 to 15 parts by weight of at least two metal oxides selected from the group consisting of Li_2O, Na_2O, K_2O, Rb_2O, Cs_2O and Tl_2O, 0.05 to 5 parts by weight of P_2O_5 and 0.05 to 5 parts by weight of Nb_2O_5.

3,870,656
PREPARATION OF SILICA-CONTAINING COMPOSITIONS

Terry D. Brown; Joseph A. Delap, and Benny E. Nasser, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 25, 1972, Ser. No. 256,900
Int. Cl. B01j *11/36, 11/06*

U.S. Cl. 252—451 **10 Claims**

1. A method of preparing a silica-containing composition which comprises:
   a. forming a hydrogel comprising silica;
   b. contacting said hydrogel with an organic compound to form a composite comprising silica and an azeotropic mixture of water and said organic compound;
   c. distilling said composite in a distillation zone to produce an overhead stream comprising said organic compound and water and to produce a xerogel;

d. passing said overhead stream into contact with a coalescing material to separate water from said organic compound;
e. passing said organic compound from contact with said coalescing material to said distillation zone; and,
f. recovering said xerogel from said distillation zone as said silica-containing composition.

3,870,657
ALUMINA-SUPPORTED CATALYSTS HAVING SUBSTANTIAL AREA IN LARGE PORES

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 81,600, Oct. 16, 1970, Pat. No. 3,726,936. This application Jan. 17, 1973, Ser. No. 324,392

Int. Cl. B01j *11/06;* **B01j** *11/32*

U.S. Cl. 252—464 **9 Claims**

1. A catalyst consisting essentially of a porous alumina support, at least one metal selected from the group consisting of nickel, iron and cobalt and at least one material selected from the group consisting of antimony and arsenic, said catalyst being in a reduced state, a substantial portion of the surface area of said support being in pores having a diameter not less than 500 A, said pores of said diameter comprising a surface area of not less than 2 square meters per gram of said catalyst.

3,870,658
COPPER CHROMITE-ALUMINA CATALYSTS HAVING HIGH-TEMPERATURE STABILITY

Robert J. Farrauto, Painted Post; Karl E. Hoekstra, Corning, and Robert D. Shoup, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,293

Int. Cl. B01j *11/22*

U.S. Cl. 252—465 **2 Claims**

1. A leached copper chromite-alumina catalyst having a composition consisting essentially of 5–25% alumina and the remainder copper chromite by weight, said catalyst consisting essentially of crystal phases of Al_2O_3 and $CuCr_2O_4$ and being resistant to the formation of the crystal phase $Cu_2Cr_2O_4$, said catalyst being formed by:
a. preparing an aqueous solution of a mixture of an aluminum salt or alumina, a copper salt, and a chromium salt or chromium oxide wherein the copper-to-chromium atom ratio exceeds 0.5:1, drying to remove water and sintering to produce a product containing Al_2O_3, $CuCr_2O_4$ and excess CuO; and
b. removing the excess CuO from the product by leaching with a strong mineral acid to produce a catalyst wherein the copper-to-chromium atom ratio is about 0.5:1.

3,870,659
BICYCLIC ODORANTS

Giulinao Bozzato, Kusnacht; Mario Pesaro, Zurich; Peter Schudel, Wetzikon; Marianne Hug-Inderbitzin, Schwerzenbach, all of Switzerland, and Robert Edward Erickson, Westfield, N.J., assignors to Givaudon Corporation, Clifton, N.J.

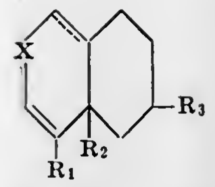
Division of Ser. No. 111,736, Feb. 1, 1971, Pat. No. 3,819,711. This application Sept. 21, 1973, Ser. No. 399,593

Claims priority, application Switzerland, Feb. 19, 1970, 2394/70

Int. Cl. C11b *9/00*

U.S. Cl. 252—522 **4 Claims**

1. An odorant composition containing an olfactible amount of a compound having the formula



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wherein R_1 and R_2 signify hydrogen or methyl, but at least one of the symbols R_1 or R_2 signifies hydrogen, X represents one of the residues

$$>C=O \text{ or } >CHOH,$$

R_3 is isopropyl, isopropenyl or isopropylidene and the symbol represents a C—C single bond or C=C double bond in a carrier.

3,870,660
METHOD OF CLEANING HAIR

Stanley C. Pavlak, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 90,835, Nov. 18, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,960

Int. Cl. C11d *1/18*

U.S. Cl. 252—545 **6 Claims**

1. A method of cleansing hair which comprises adding to the hair sufficient water and a shampoo composition consisting essentially of an aqueous solution of from about five to about 40 weight percent of an alkali metal, ammonium, or mono, di, or triethanolamine alpha-olefin sulfonate prepared from at least one normal alpha-olefin in having from 14 to 18 carbon atoms and about two to about 15 weight percent based on the alpha-olefin sulfonate salt of a primary normal of 2-methyl alkanol having from 10 to 15 carbon atoms to result in a wet, creamy, stable lather upon manipulation; manipulating said hair containing the shampoo composition and water to produce a wet, creamy, stable lather and cleanse the hair of foreign matter; and water rinsing said foam and foreign matter from said hair.

3,870,661
FOAMED REACTION PRODUCT OF A RESOLE WITH A SULFONATED NOVOLAC

Peter John Crook, Billinge, and Stephen Philip Riley, Saint Helens, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed July 28, 1972, Ser. No. 275,999

Claims priority, application Great Britain, July 30, 1971, 36015/71

Int. Cl. C08g *53/08;* **C08j** *1/26*

U.S. Cl. 260—2.5 F **37 Claims**

1. A foamed phenol-formaldehyde resin comprising the product of condensing at least one phenol with formaldehyde in proportions of 1 mole phenol to not more than 1 mole formaldehyde, at a pH not greater than 7, to form a novolac resin, subsequently sulphonating the novolac resin so as to incorporate sulphonic acid groups therein, and reacting said sulphonated novolac resin with a resole resin in the presence of a surfactant and a foaming agent to form said solid foam.

3,870,662
NOVEL FOAMED MULTIPHASE THERMOPLASTIC COPOLYMER COMPOSITIONS

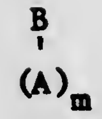
Robert D. Lundberg, 4 Brian Dr., Somerville, N.J. 08876

Filed Mar. 29, 1973, Ser. No. 345,971

Int. Cl. C08f *47/10;* **C08g** *53/10;* **C08j** *1/28*

U.S. Cl. 260—2.5 R **10 Claims**

1. A composition of matter which comprises a foamed product derived from a multiphase thermoplastic copolymer having an average molecular weight of at least 10,000, selected from the group consisting of copolymers represented by graft copolymers having the general formula



$$\begin{array}{c} B \\ | \\ (A)_m \end{array}$$

and block copolymers having the general formula $xB-(AB)_n-yA$ wherein n is an integer 1, m is >1, x and y are 0 or 1, and y is 1 when n is 1, A is a thermoplastic polymer block, and B is a thermoplastic polymer block having a softening point of at least about 35°C., said softening point being at least 10°C. below that of the A block, and which comprises from about 50 to about 97 weight percent of said copolymer, said foamed product having a density of about 1.0 lb./cubic foot to about 45 lbs/cubic foot.

3,870,663
POROUS STYRENE POLYFUNCTIONAL METHACRYLATE POLYMERS

David H. Clemens, Willow Grove, and Herman C. Hamann, Melrose Park, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 267,336, June 29, 1972, Pat. No. 3,817,878, which is a continuation-in-part of Ser. No. 155,279, June 21, 1971, abandoned, which is a continuation-n-part of Ser. No. 884,325, Dec. 11, 1969, abandoned. This application Feb. 27, 1974, Ser. No. 446,555

Int. Cl. C08f *19/10, 19/20*

U.S. Cl. 260—2.5 B **7 Claims**

1. A porous, resinous polymer consisting essentially of a polymerized mixture of from 60 percent to 99.9 percent by weight of styrene and from 0.1 percent to 40 percent of a methacrylate monomer selected from the class consisting of trimethylolpropane trimethacrylate, pentaerithritol trimethacrylate, pentareithritol tetramethacrylate, and glycerol trimethacrylate or a mixture of said methacrylate monomer with a minor amount of divinylbenzene.

3,870,664
RESINOUS REACTION PRODUCT OF A SUCROSE PARTIAL ESTER, A CYCLIC DICARBOXYLIC ACID ANHYDRIDE AND A DIEPOXIDE

Raymond Noel Faulkner, Esher, England, assignor to Research Corporation, New York, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,135

Claims priority, application Great Britain, Jan. 19, 1973, 3010/73

Int. Cl. C08b *25/00*

U.S. Cl. 260—9 **28 Claims**

1. An oil-modified sucrose resin which is the reaction product at reaction temperatures below those at which substantial charring or decomposition of the sucrose takes place of (a) a sucrose partial ester wherein the ester groups are derived from the class consisting of fatty acids, aromatic acids, and vegetable and marine oil unsaturated fatty acids of the drying oil, semi-drying oil and non-drying oil types, and mixtures thereof, (b) at least about two moles of a cyclic dicarboxylic acid anhydride per mole of sucrose partial ester and (c) about 0.7 to about 3 moles of a diepoxide per mole of sucrose partial ester.

3,870,665
PROCESS FOR MAKING PRESSURE MOLDED LIGNOCELLULOSE ARTICLES COMPRISING ISOCYANURATE GROUP FORMING MOLD RELEASE AGENT

Hans-Joachim Diehr, Wuppertal, Germany; Karl-Josef Kraft, Coraopolis, Pa., and Hanns Immo Sachs, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 9, 1974, Ser. No. 468,788

Claims priority, application Germany, May 22, 1973, 2325926

Int. Cl. C08g *51/18*

U.S. Cl. 260—17.2 **16 Claims**

1. In a process for compression molding of lignocellulose-containing materials wherein an organic polyisocyanate is mixed with the materials during molding, the improvement which comprises including a catalyst which promotes isocyanurate formation from isocynates in the mixture as a mold release agent.

3,870,666
CURING AGENT FOR AQUEOUS EPOXIDE RESIN DISPERSIONS

Wilhelm Becker, Hamburg, Germany, assignor to Reichhold-Albert Chemie Aktiengesellschaft, Hamburg, Germany

Filed July 18, 1973, Ser. No. 380,343

Claims priority, application Switzerland, July 25, 1972, 11106/72

Int. Cl. C08g *45/10*

U.S. Cl. 260—21 **10 Claims**

1. Curing agent for aqueous epoxide resin dispersions, which is an association compound of
1. a polyamidoamine-epoxide adduct of a stoichiometric excess of
  a. a polyamidoamine having an amine number of from about 80 to about 450 obtained from
    i. an alkylene polyamine having from 2 to 6 nitrogen atoms and wherein each alkylene radical has from 2 to 6 carbon atoms, either individually or as mixtures but when mixtures are used the ethylenediamine and propylenediamine contained therein amounts to at least one half of the polyalkylenepolyamines used; and
    ii. a polymeric fatty acid obtained by polymerization of drying or semi-drying oils containing mono-, di- or trimerized fatty acids containing 8 to 24 carbon atoms in the monomeric form, or the methyl, ethyl, propyl or butyl esters of such fatty acids, or an amide-forming derivative of such fatty acid with an aromatic vinyl compound, in a molar ratio of (i) to (ii) between 1:0.2 and 1:5, and
  b. from 5 to 35 percent, by weight, relative to the polyamidoamine (a) of an aliphatic epoxide having from three to six terminal epoxide groups per molecule, and
2. from 5 to 30 percent, by weight, relative to the polyamidoamine (a) of a phenol/formaldehyde/polyamine condensation product wherein the polyamine has from 2 to 8 amino hydrogens inclusive, and the remainder of the polyamine is an aliphatic, araliphatic, cycloaliphatic or heterocyclic moiety.

3,870,667
SURFACE COATING COMPOSITIONS WHICH COMPRISE ALKYD RESIN AND NON-AROMATIC PETROLEUM RESIN

John William Syson, and John Charles Kerridge, both of Stockton-On-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 4, 1973, Ser. No. 366,979

Claims priority, application Great Britain, June 15, 1972, 28070/72

Int. Cl. C09d *3/66, 11/00*

U.S. Cl. 260—22 CB **9 Claims**

1. A surface coating composition which comprises a mixture of an alkyd resin, an aromatic, aliphatic or cycloaliphatic hydrocarbon solvent and a non-aromatic petroleum resin which is the product of polymerization of a petroleum fraction boiling in the range −10° to 80°C. derived from a steam cracked naphtha or gas oil and containing more than one hydrocarbon selected from the group consisting of butene-1, butene-2, isobutene, isoprene, cis-piperylene, trans-piperylene, n-pentane, isopentane, pentene-1, cyclopentadiene, dicyclopentadiene, transpentene-2, 2-methylbutene-2, cyclopentene and cyclopentane and wherein the composition contains 25 to 85% by weight alkyd plus petroleum resin and the petroleum resin is 5 to 15% by weight of the alkyd.

3,870,668
LOW FLUID LOSS ADDITIVE COMPOSITION

Paul W. Fischer, Whittier; David S. Pye, Brea, and Julius P. Gallus, Anaheim, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Sept. 29, 1972, Ser. No. 293,389

Int. Cl. C08f *45/52;* **E21b** *43/01*

U.S. Cl. 260—28.5 R **13 Claims**

2. A well treating composition comprising discrete particles of a homogeneous solid solution of (1) about 30 to 75 weight percent of wax; (2) about 10 to 25 weight percent of an oil-soluble polyhydroxy higher fatty acid partial ester surface active agent; (3) about 15 to 35 weight percent of a water-dispersible surface active agent selected from the group consisting of polyoxyethylene alkyl phenols, polyethylene glycol higher fatty acid esters, polyoxyethylene polyhydroxy higher fatter acid esters, polyoxyethylene tertiary fatty amines, and polyoxyethylene fatty amide condensates; (4) about 1 to 4 weight percent of a polymer selected from the group consisting of (i) addition polymers of an olefin having between two and four carbon atoms, (ii) copolymers of an olefin having between two and four carbon atoms and an alkyl acrylate containing not more than four carbon atoms in the alkyl group, (iii) copolymers of an olefin having between two and four carbon atoms and an ester formed by the reaction of butenic acid and an alcohol having no more than four carbon atoms, and (iv) copolymers of olefins having between two and four carbon atoms and an ester formed by the reaction of acetic acid and an unsaturated alcohol having no more than four carbon atoms; and (5) about 0.5 to 5 weight percent of a fatty alcohol containing 10 to 14 carbon atoms.

3,870,669
PROCESS FOR THE MANUFACTURE OF DISPERSIONS OF THERMOSETTING REACTION PRODUCTS

Heinz-Bernard Hofel; Hans-Joachim Kiessling, both of Hamburg; Fred Lampert, Barsbut, and Johann Kuhr, Bargteheide, all of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed June 18, 1973, Ser. No. 371,045

Claims priority, application Switzerland, June 21, 1972, 9344/72

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **4 Claims**

1. A process for the manufacture of water-dilutable, aqueous dispersions, containing emulsifiers and protective colloids, of thermosetting reaction products of monohydroxybenzene compounds or mixtures of monohydroxybenzene compounds with formaldehyde in water, wherein these components are reacted with one another in water in the presence of basic nitrogen compounds, whilst warming, characterised in that, in a three-stage process

1. first a mixture consisting of alkyl phenol, formaldehyde or formaldehyde donors and basic nitrogen compounds, selected form the group consisting of ammonia, primary and secondary amines and mixtures thereof, and optionally with addition of tert. -amines, are allowed to react in the presence of water and in the absence of emulsifiers, whilst warming at the boil, under reflux until the formaldehyde, the ammonia and any primary or secondary amine have practically been condensed into the product, alkyl phenol and formaldehyde being employed in a molar ratio of 1:1 to 1:2 and the basic nitrogen compound selected from the group consisting of ammonia and/or primary or secondary amines, the ratio of alkyl phenol to the active H equivalent weight of the basic nitrogen compound selected from the group consisting of ammonia, primary and secondary amines, and mixtures thereof is 1:1, after removing of the optionally added tert. -amines by distillation,

3 2. phenol, at least one non-ionic emulsifier which is compatible with phenolic resin, and formaldehyde or formaldehyde donors are added to the condensation product obtained in above part (1) which does not contain free ammonia and/or primary or secondary amines, the ratio of the added phenol to the alkyl phenol already condensed into the condensation product being so chosen that the average functionality of the sum of the phenolic compounds towards formaldehyde is between 2.1 and 2.8, and the amount of formaldehyde being so chosen that the molar ratio of the total sum of added formaldehyde to the sum of the phenolic compounds from stages (1) and (2) is between 0.9 and 1.5:1, and the batch is warmed at the boil, under reflux, until a sample of the condensation product, when withdrawn, has a curing time of 6–15 minutes at 160°C, the batch is cooled to below 100°C and the resulting water-in-phenolic resin dispersion, of the water-in-oil type, is

(3.) (3.) with water and protective colloid and agitated mechanically until a phase inversion of the dispersion has taken place, so that a dispersion of the oil-in-water type is present, and the "phenolic resin-in-water dispersion" is further condensed, by warming, until a sample of the dispersions, when withdrawn, has a curing time of 30 seconds to 10 minutes at 160°C, and thereafter the batch is cooled whilst stirring.

3,870,670
PROCESS FOR THE MANUFACTURE OF DISPERSIONS OF THERMOSETTING REACTION PRODUCTS

Heinz-Bernhard Hofel; Hans-Joachim Kiessling, both of Hamburg; Fred Lampert, Barsbuttel, and Johann Kuhr, Bargteheide, all of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed June 18, 1973, Ser. No. 370,962

Claims priority, application Switzerland, June 21, 1972, 9345/72; June 19, 1972, 9197/72; May 14, 1972, 6796/72

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **5 Claims**

1. Process for manufacture of water-dilutable, aqueous dispersions containing emulsifiers and protective colloids of thermosetting reaction products of mixtures of monohydroxybenzene compounds with formaldehyde in water, wherein these components are reacted with one another in water in the presence of basic nitrogen compounds, whilst warming, characterised in that, in a two-stage process

1. in the first step: a mixture (A) consisting of: one or more substituted phenols which contain, as substituents, alkyl radicals with 1–30 C atoms, cycloalkyl radicals with 5–10 C atoms which can be of monocyclic or bicyclic structure, alkenyl radicals with 1–30 C atoms and/or cycloalkenyl radicals with 5–10 C atoms, which are again of monocyclic or bicyclic structure, halogen-substituted phenols and aryl-substituted phenols having an aromatic ring in the substituent, and which have at least one but no more than two carbon atoms in the phenolic ring being reactive with formaldehyde, with the condition that the speed of reaction of the substituted phenol with formaldehyde is 40 to 150 percent of the speed of reaction of the unsubstituted phenol, and

phenol

or

a mixture (B) consisting of: one or more substituted phenols which contain, as substituents alkyl radicals with 1–30 C atoms, cycloalkyl radicals with 5–10 C atoms which can be of monocyclic or bicyclic structure, alkenyl radicals with 1–30 C atoms and/or cycloalkenyl radicals with 5–10 C atoms, which are again of monocyclic or bicyclic structure, halogen-substituted phenols having an aromatic ring in the substituent, and which have at least one but no more than two carbon atoms in the phenolic ring being reactive with formaldehyde, with the condition that the speed of reaction of the substituted phenol with formaldehyde is 40 to 150 percent of the speed of reaction of the unsubstituted phenol, and

one or more other substituted phenols which contain, as substituents, alkyl radicals with 1–30 C atoms, cycloalkyl radicals with 5–10 C atoms which can be of monocyclic or bicyclic structure, alkenyl radicals with 1–30 C atoms and/or cycloalkenyl radicals with 5–10 C atoms, which are again of monocyclic or bicyclic structure, halogen-substituted phenols and aryl-substituted phenols having an aromatic ring in the substituent, and which have three carbon atoms in the phenolic ring which are reactive with formaldehyde, with the condition that the speed of reaction of the substituted phenol with formaldehyde is 40 to 150 percent of the speed of reaction of the unsubstituted phenol, or

a mixture (C) consisting of: one or more substituted phenols which contain, as substituents, alkyl radicals with 1–30 C atoms, cycloalkyl radicals with 5–10 C atoms which can be of monocyclic or bicyclic structure, alkenyl radicals with 1–30 C atoms and/or cycloalkenyl radicals with 5–10 C atoms, which are again of monocyclic or bicyclic structure, halogen-substituted phenols and aryl-substituted phenols having an aromatic ring in the substituent, and which have at least one but no more than two carbon atoms in the phenolic ring being reactive with formaldehyde, with the condition that the speed of reaction of the substituted phenol with formaldehyde is 40 to 150 percent of the speed of reaction of the unsubstituted, phenol, and

phenol

and

one or more other substituted phenols which contain, as substituents, alkyl radicals with 1–30 C atoms, cycloalkyl radicals with 5–10 C atoms which can be of monocyclic or bicyclic structure, alkenyl radicals with 1–30 C atoms and/or cycloalkenyl radicals with 5–10 C atoms, which are again of monocyclic or bicyclic structure, halogen-substituted phenols and aryl-substituted phenols having an aromatic ring in the substituent, and which have three carbon atoms in the phenolic ring which are reactive with formaldehyde, with the condition that the speed of reaction of the substituted phenol with formaldehyde is 40 to 150 percent of the speed of reaction of the unsubstituted phenol, is mixed with formaldehyde or formaldehyde donors and basic nitrogen compounds, selected from the group consisting of ammonia and/or primary or secondary amines, the mixture A, B or C being employed in such ratios that the average functionality of the sum of the phenolic compounds in the mixture A, B or C relative to formaldehyde is between 2.1 and 2.8, and the amount of formaldehyde being so chosen that the molar ratio of the total sum of added formaldehyde to the sum of the phenolic compounds in the mixture A, B or C is between 0.9 and 1.5:1, the basic nitrogen compound being employed in amounts of 5 to 50 mol percent relative to the total weight of phenol components in the mixture A, B or C, and warmed at the boil under reflux for reaction until a sample of the condensation product withdrawn has a curing-time of 6 to 15 minutes at 160°C, the batch is cooled to below 100°C and the resulting water-in-phenolic resin dispersion of a water-in-oil type is

2. in the second step: mixed with water and protective colloid and agitated mechanically until a phase inversion of the dispersion takes place, so that a dispersion of the oil-in-water type is present, and the phenolic resin-in-water-type dispersion is further condensed, by warming, until a sample of the dispersion, when withdrawn, has a curing-time of 30 seconds up to 10 minutes at 160°C, and thereafter the batch is cooled whilst stirring.

3,870,671
METHOD FOR DISPERSING

Alois Aignesberger, Trostberg; Ulrich Kriele, Traunreut, and Horst Michaud, Trostberg, all of Germany, assignors to Suddeutsche Kalkstickstoff-Werke AG, Postfach, Germany

Filed Apr. 4, 1973, Ser. No. 347,893

Claims priority, application Germany, Apr. 13, 1972, 2217929

Int. Cl. C08g *9/32, 9/30, 51/24;* **B01f** *17/52*

U.S. Cl. 260—29.4 R **5 Claims**

1. A method for dispersing finely divided, water-insoluble solids, comprising dialyzing a sulfite, amidosulfonic acid or sulfonic acid modified melamine-formaldehyde resin, the sulfite or sulfonic acid group of which is in the form of a sodium salt, said resin being of a molecular weight between 5,000 and 50,000, admixing said resin in an amount from 1 to 10 percent by weight with said finely divided water-insoluble solid, in an aqueous medium having a pH range above 6.5 and dispersing said solid in said aqueous medium in the presence of said resin.

3,870,672
WATER COMPATIBLE POLYESTER BORATE COMPOSITIONS

Julio Lopez Mesa, 638-B Salem St., Glendale, Calif. 91203

Continuation-in-part of Ser. No. 103,807, Jan. 4, 1971, abandoned. This application Aug. 28, 1972, Ser. No. 283,944

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **15 Claims**

1. A curable, water extendable water-in-oil emulsion comprising:

a. a resin system comprising at least one unsaturated polyester resin prepared by the reaction of a polybasic carboxylic acid and a dihydric alcohol and including at least one unsaturated monomer cross-linkable herewith;
b. at least one water soluble, basic inorganic borate salt as the emulsifying agent; and
c. an amount of water at least sufficient to dissolve said basic inorganic borate salt to form the emulsion.

3,870,673

PROCESS FOR THE PREPARATION OF POLYMER DISPERSIONS OF A VINYL ESTER-ETHYLENE-AN ACRYLAMIDE BEING FREE FROM EMULSIFIERS

Karl Josef Rauterkus, Kelkheim/Taunus, and Jan Blazek, Bad Soden/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Jan. 17, 1973, Ser. No. 324,412

Claims priority, application Germany, Jan. 18, 1972, 2202189

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 TA **3 Claims**

1. An aqueous polymer dispersion being free from emulsifiers and having a polymer content of from **40** to **65**% by weight, said polymer consisting essentially of units of at least one vinyl ester of a saturated aliphatic monocarboxylic acid having from one to **18** carbon atoms, ethylene, and from **2** to **15**% by weight, based on said vinyl ester, at least one acrylamide component of the formula

$$CH_2{=}CX{-}CO{-}NHY$$

wherein X is hydrogen or a methyl group, Y is hydrogen or the group $-CH_2-O-Z$, and Z is hydrogen or an alkyl or acyl group having up to four carbon atoms, said ethylene derived units in said polymer being in an amount polymerizable with said vinyl ester and said acrylamide at a pressure from **10** to **100** atmospheres.

2. A process for the preparation of an aqueous polymer dispersion as claimed in claim **1** which comprises polymerizing the monomers at a pressure of from **10** to **100** atmospheres and a temperature from **40°** to **100°** C in the presence of a redox initiator system comprising an organic peroxide or hydroperoxide and a water-soluble reducing agent.

3,870,674

PARTICULATE POLYIMIDE COMPOSITIONS CONTAINING PHENAL OR DIPOLAR APROTIC SOLVENTS

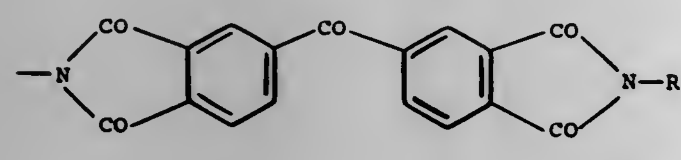
William J. Farrissey, Jr., and Karl W. Rausch, Jr., both of New Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 16, 1974, Ser. No. 433,809

Int. Cl. C08g *51/44, 51/34, 51/46*

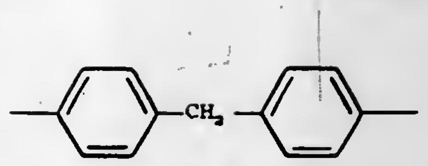
U.S. Cl. 260—30.2 **7 Claims**

1. A solid particulate, non-cellular, polyimide composition having a softening point in the range of about 50°C to about 150°C and comprising a blend of
   a. from about 85 percent to about 65 percent by weight of a copolyimide selected from the class consisting of
      i. a copolyimide characterized by the recurring unit

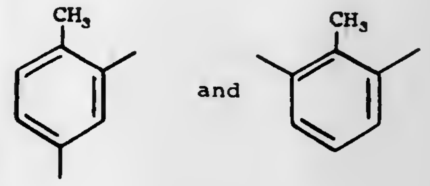


(I)

wherein from 10 to 30 percent of said recurring units are those in which R represents

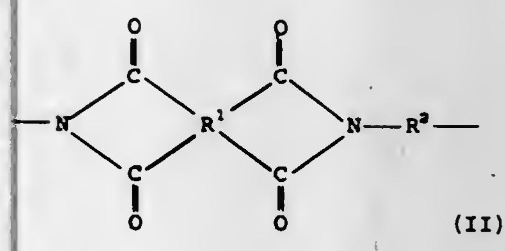


and the remainder of said units are those in which R represents a member selected from the group consisting of



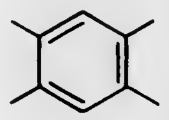
and mixtures thereof; and

ii. a copolyimide characterized by the recurring unit

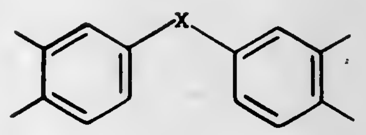


(II)

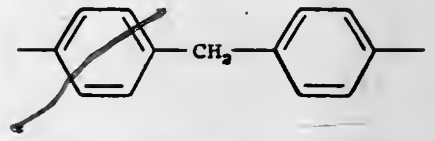
wherein, in 75 to 100 percent of said recurring units R¹ represents



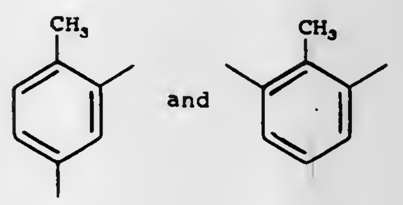
and, in the remaining 0 to 25 percent of said units, R¹ represents



where X is a member selected from the group consisting of CO, O and SO_2; and wherein, in 10 to 35 percent of said recurring units, R² represents



and, in the remaining 65 to 90 percent of said units, R² represents a member selected from the group consisting of



and mixtures thereof; and

b. from about 15 percent to about 35 percent by weight of at least one member of the class consisting of dipolar aprotic solvents and phenols each having a boiling point which is at least 50°C higher than that of the softening point of said blend and is not higher than about 225°C.

3,870,675

TWO-COMPONENT ADHESIVE

Seiji Kusayama; Koichi Ohashi, and Shinzo Takada, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-shi, Osaka-fu, Japan

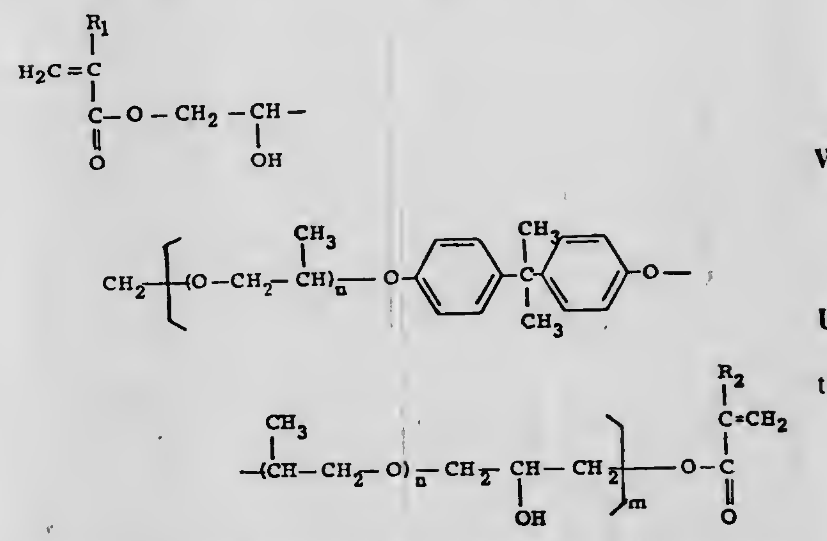
Filed July 24, 1972, Ser. No. 274,424

Claims priority, application Japan, July 22, 1971, 46-55028

Int. Cl. C08g *51/34;* **C08f** *19/20*

U.S. Cl. 260—32.8 A **26 Claims**

1. A two-component adhesive comprising of (1) a main composition comprising about 40 to about 80 parts by weight of at least one of divinyl compounds of the formula:



wherein R_1 and R_2 are each hydrogen, methyl or ethyl, *n* is an integer of 1 to 5 and *m* is an integer of 1 to 10, about 0.05 to about 10 parts by weight of an organic peroxide, about 2 to about 120 parts by weight of at least one mono-vinylic monomer selected from the group consisting of vinyl acetate, methacrylic acid, acrylic acid, glycidyl methacrylate and β-hydroxyethyl methacrylate (the amount of each mono-vinylic monomer not exceeding 40 parts by weight) and about 0.5 to about 15 parts by weight of at least one rubber material selected from the group consisting of acrylonitrile-butadiene-styrene polymer, acrylonitrile-butadiene rubber and carboxylated NBR and (2) an accelerator composition comprising about 0.01 to about 10 parts by weight of a thiourea compound, about 0.01 to about 10 parts by weight of α, α′-dipyridyl, about 0.001 to about 5 parts by weight of at least one of copper salts, cobalt salts, manganese salts, chromium salts and vanadium salts of organic and inorganic acids and about 75 to about 100 parts by weight of an organic volatile solvent.

3,870,676

STABILIZED BLOCK COPOLYMER COMPOSITIONS

Nancy J. Condon, Long Beach, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 23, 1973, Ser. No. 353,866

Int. Cl. C08c *11/22;* **C08g** *45/04;* **C08f** *45/58*

U.S. Cl. 260—33.6 AQ **5 Claims**

1. A block copolymer composition comprising:
   a. 100 parts by weight of a block copolymer of the group consisting of copolymers having at least one monoalkenylarene polymer block having an average molecular weight between about 5,000 and 150,000, and at least one conjugated diene polymer block having an average molecular weight between about 20,000 and 500,000 and hydrogenated derivatives thereof wherein at least 95% of the olefinic double bonds are saturated, the monoalkenyl arene being selected from the group consisting of styrene, alphamethyl styrene, ring alkylated styrenes and mixtures thereof, and the conjugated diene being selected from the group consisting of butadiene, isoprene and mixtures thereof, and
   b. 0.5–5 parts by weight of a hydroxyl-containing polyepoxide having an epoxide equivalency greater than 1.0 and an epoxide equivalent weight of between about 200 and 6,000.

3,870,677

HEAT RESISTANT REINFORCED COMPOSITES OF COPOLYIMIDES

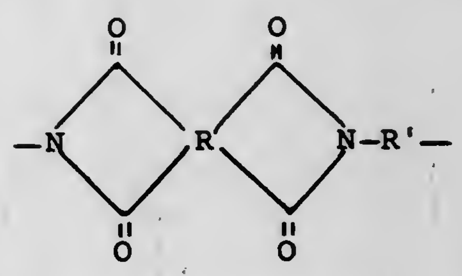
William J. Farrissey, Jr., Northford, and Philip S. Andrews, New Haven, both of Conn.

Division of Ser. No. 310,398, Nov. 29, 1972, Pat. No. 3,787,367. This application Nov. 5, 1973, Ser. No. 412,976

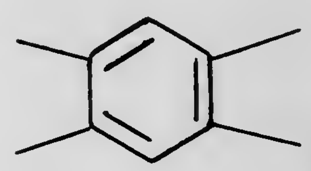
Int. Cl. C08g *51/04, 51/16*

U.S. Cl. 260—37 N **4 Claims**

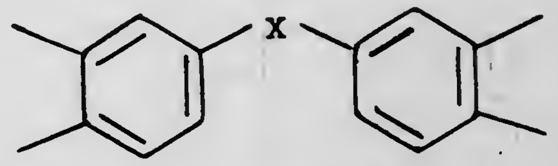
1. A heat resistant reinforced composite comprising a mixture of (1) a copolyimide having the recurring unit



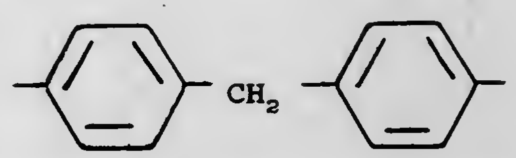
wherein R in 75 – 100 percent of said recurring units represents



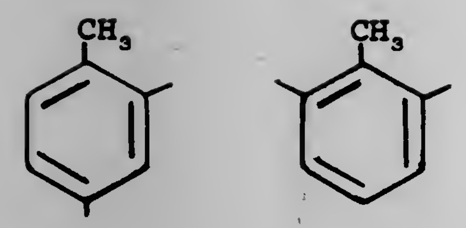
and, in the remaining 0 – 25 percent of said units, represents



where X is a member selected from the group consisting of CO, O, and SO_2; wherein R′ in 10 – 35 percent of said recurring units represents



and in the remaining 65 – 90 percent of said units represents a member selected from the group consisting of



and mixtures thereof, and (2) a fibrous reinforcement material.

3,870,678
REACTION PRODUCT OF AN ORGANOMETALLIC COMPOUND AND AN ORGANIC NITRO COMPOUND AS AN ANTIOXIDANT FOR CONJUGATED DIOLEFIN POLYMERS

Gary Allan Harpell, Brecksville, Ohio, assignor to Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio

Division of Ser. No. 116,266, Feb. 17, 1971, Pat. No. 3,754,056. This application Mar. 19, 1973, Ser. No. 342,746

Int. Cl. C08d *11/04*

U.S. Cl. 260—45.9 R **9 Claims**

1. Conjugated diolefin homopolymers or vinyl and conjugated diolefin copolymers are stabilized against oxidative degradation with a stabilizing amount of an antioxidant composition comprising the reaction product of (1) A—M wherein A is an alkyl, aryl, aralkyl or cycloalkyl radical containing from 1 to about 20 carbon atoms and M is an alkali metal and (2) a composition of the formula $Q_m—R—(NO_2)_n$ wherein Q is halogen, hydroxy, alkoxy or aryloxy; R is alkyl, aryl, aralkyl or cycloalkyl containing from 1 to about 20 carbon atoms; *m* is an integer from 0 to about 10 and n is an integer from about 1 to about 4.

3,870,679
SMOKE RETARDANT VINYL HALIDE POLYMERS

Lawrence C. Mitchell, Mount Vernon, Ind., and Gary L. Ter Haar, Farmington, Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 196,802, Nov. 8, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,572

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 N **5 Claims**

1. As a composition of matter, a polyvinyl halide admixed with a smoke retardant amount of molybdenum hexacarbonyl.

3,870,680
COPPER INHIBITORS FOR POLYOLEFINS

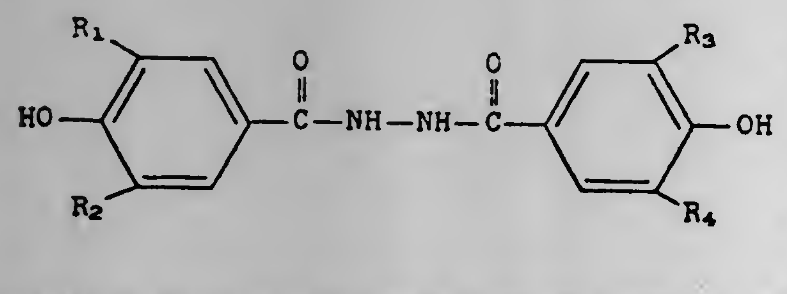
Edward Schurdak, 4 Harry Rd., Somerville, N.J. 08876

Filed Oct. 19, 1973, Ser. No. 408,212

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.85 B **11 Claims**

10. Polypropylene stabilized against copper-catalyzed thermal degradation by the combination of (a) an amount of a hindered-phenol antioxidant sufficient to stabilize said polypropylene against thermal degradation in the absence of copper and (b) an amount of a compound of the formula



wherein R_1, R_2, R_3, and R_4 are each branched-chain alkyl of three to eight carbon atoms sufficient to reduce the effects of copper on such thermal degradation even in the presence of said hindered-phenol antioxidant.

3,870,681
MODIFIED SULFONATED RESIN SURFACTANTS

Sten I. Falkehag, Mount Pleasant, and Carl W. Bailey, III, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,995

Int. Cl. C08g *5/02, 5/18*

U.S. Cl. 260—49 **15 Claims**

1. Reaction products of sulfomethylated phenolic-formaldehyde resins having molecular weights between about 500 and 30,000, and 0.25 moles to 20 moles per 1,000 grams of said resins of chloromethane sulfonate, to give resin adducts with the phenolic hydroxyl at least partially blocked.

3,870,682
ALDEHYDE CONDENSATION PRODUCTS OF FLUORALIPHATIC PHENOLS

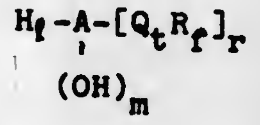
Leland S. Endres, San Luis Obispo, Calif.; Leo F. Gehlhoff, Lake Elmo, and Dallas D. Zimmerman, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 85,278, Oct. 29, 1970, Pat. No. 3,832,409. This application Jan. 23, 1974, Ser. No. 435,670

Int. Cl. C08g *5/02, 5/10, 5/16*

U.S. Cl. 260—49 **6 Claims**

1. A condensation polymer having an average molecular weight of about 800 to about 1,500 of the condensation catalyst catalyzed reaction of a phenol of the formula



$$\underset{(OH)_m}{H_l-\overset{}{A}}-[Q_tR_f]_r$$

wherein *l*, *m* and *r* are 1 or 2, *t* is 1; H is a hydrogen atom sufficiently reactive to undergo a catalyzed condensation reaction with an aldehyde; A is an aryl nucleus containing from 6 to 15 carbon atoms; OH is a phenolic hydroxyl group; R_f is a monovalent fluorinated saturated aliphatic radical containing from 3 to 20 carbon atoms and Q is selected from the class consisting of sulfonate, sulfonyl and sulfonamide and a saturated aliphatic aldehyde containing not more than 7 carbon atoms in addition to the aldehyde carbon atom or benzaldehyde.

3,870,683
LIGHT STABLE POLYURETHANES BASED ON DICYCLOHEXYL AND DIISOCYANATES

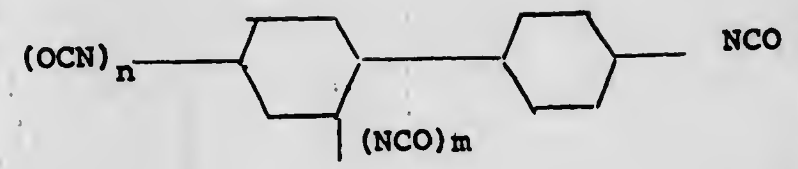
Robert J. Freure, Clarkson, Ontario, and Maurice Moyle, Oakville, Ontario, both of Canada, assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Continuation of Ser. No. 89,050, Nov. 12, 1970, abandoned, which is a division of Ser. No. 839,665, July 7, 1969, abandoned. This application Dec. 21, 1971, Ser. No. 210,599

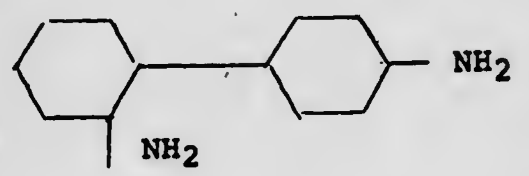
Int. Cl. C08g *22/24, 22/00*

U.S. Cl. 260—75 NT **1 Claim**

1. A polyurethane comprising the reaction product of a diisocyanate of the formula:



where *n* and *m* are each 0 or 1 and the sum of $n + m$ is 1, and an organic compound containing at least two active hydrogens, said polyurethane being cross-linked by a compound of the formula:



3,870,684
PREPARATION OF CROSS-LINKED PARTICLES OF POLYURETHANE OR POLYUREA CONTAINING IONIC GROUPS

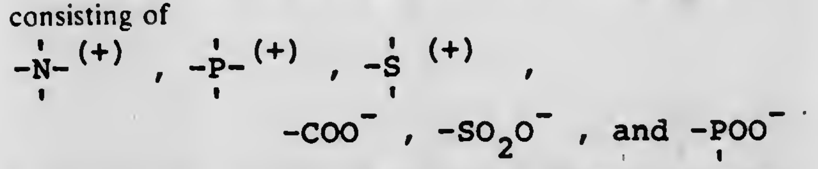
Harro Witt, Cologne-Buchheim, and Dieter Dieterich, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 43,651, April 29, 1970, abandoned, which is a continuation of Ser. No. 634,086, April 27, 1967, abandoned. This application June 29, 1972, Ser. No. 267,349

Int. Cl. C08g *22/16, 22/30, 51/24*

U.S. Cl. 260—75 NH **8 Claims**

1. A process for the preparation of sedimenting and redispersible cross-linked particles, said particles being insoluble in dimethyl formamide and containing urea groups which comprises dispersing a polyurethane or a polyurea polymer containing free NCO groups and from about 0.001 to about 0.2 equivalent per cent of an ionic group selected from the group consisting of



$$-\overset{|}{\underset{|}{N}}-^{(+)},\ -\overset{|}{\underset{|}{P}}-^{(+)},\ -\overset{|}{\underset{|}{S}}\ ^{(+)},\quad -COO^-,\ -SO_2O^-,\ \text{and}\ -\underset{|}{P}OO^-$$

in water in the presence of an organic aliphatic polyamine containing a total of at least three primary and/or secondary amino groups of which groups at least two are primary amino.

3,870,685
CATALYTIC METHOD FOR PRODUCING AROMATIC POLYAMIDES

Rufus S. Jones, Dover, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed June 15, 1973, Ser. No. 370,273

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **13 Claims**

1. A method for preparing high molecular weight aromatic carbocyclic polyamides comprising heating in the substantial absence of oxygen an aromatic carbocyclic dicarboxylic acid and an aromatic carbocyclic diamine in about a mole to mole ratio in the presence of about 2,500 to 2500 percent, by weight, based on the polymer weight, of an aryl sulfone and about 0.2 to 15 mole percent, based on the reactants, of a combination of boric acid and an, aryl or alkyl sulfonic acid of from 1 to 16 carbon atoms wherein the molar ratio of the boric acid to organic sulfonic acid is between about 10:1 and 1:10, to a temperature above the melting point of said sulfone to just below the decomposition temperature of the reactants and continuing said heating with the removal of condensation by-products for a period of time sufficient to form a product having an inherent viscosity of at least 0.4 as measured using a solution of 0.4 grams of product per 100 milliliters of concentrate, 97–99% by weight, aqueous sulfuric acid at 25°C.

3,870,686
ARYLENE SULFIDE POLYMERS

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,771

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **26 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one organic amide, at least one organic sulfur-containing compound selected from the group consisting of mercaptans, mercaptides and sulfides, each having an alpha or a beta activating substituent, and at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,870,687
ARYLENE SULFIDE POLYMERS

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,781

Int. Cl. C08g *25/00*

U.S. Cl. 260—79.1 **22 Claims**

1. A method of producing polymers which comprises:

a. forming a composition by contacting at least one polyhalo-substituted aromatic compound in which the halogen atoms are attached to aromatic ring carbon atoms, at least one sulfur-containing compound selected from thiocarboxylic acids and thiocarboxylates, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, and at least one organic amide, said sulfur-containing compound having the formula $R[CXS(M/y)]_n$, wherein R is a hydrocarbon radical having one to 20 carbon atoms and a valence of *n*; *n* is an integer having a value within the range of 1 to 4; X is selected from oxygen and sulfur; M is hydrogen or a metal selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium; and *y* is the valence of M; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,870,688
TITANIUM TARTRATE CATALYZED POLYESTERIFICATION

Osamu Makimura, and Teruo Goto, both of Ohtsu, Japan, assignors to Toyoboseki Kabushiki Kaisha, Osaka-fu, Japan

Continuation-in-part of Ser. No. 251,979, May 10, 1972, abandoned. This application Apr. 9, 1974, Ser. No. 459,304

Claims priority, application Japan, May 12, 1971, 46-31838; Dec. 23, 1971, 46-2512

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **9 Claims**

1. In the polycondensation of an alkylene glycol-aromatic dicarboxylic acid ester reaction mixture, the improvement which comprises adding a catalytic amount of a titanium tartrate compound to the reaction mixture and polycondensing said ester in the presence of said titanium tartrate compound.

3,870,689

CRYSTALLINE COPOLYMERS OF ETHYLENE AND TETRAFLUOROETHYLENE HAVING HIGH WORKABILITY CHARACTERISTICS

Mario Modena, Bollate; Mario Ragazzini, Milan; Giancarlo Borsini, Rome, and Marco Valera, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 143,637, May 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 730,190, May 17, 1968, abandoned. This application Aug. 16, 1973, Ser. No. 388,910

Int. Cl. C08f *1/06, 15/02*

U.S. Cl. 260—87.5 B **2 Claims**

1. A process for preparing crystalline ethylene/tetrafluoroethylene copolymers containing from 53 to 63% by moles of tetrafluoroethylene homogeneously distributed along the copolymeric chain axis and among the chains, having a high degree of thermal stability, and showing a temperature gap of at least 80°C, measured by differential thermal analysis, between their ultimate melting temperature and the temperature at which oxidative decomposition of the copolymers begins, said process being characterized in that the starting mixture of ethylene and tetrafluoroethylene which is copolymerized to obtain the copolymers contains more than 78% of tetrafluoroethylene by moles and the concentration of tetrafluoroethylene in the mixture of monomers is maintained above 78% by moles and essentially during the copolymerization reaction.

3,870,690

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Wolfgang Gordon, Hofheim, Taunus; Kurt Rust, Frankfurt am Main, and Erwin Schrott, Sulzbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 10, 1973, Ser. No. 349,755

Claims priority, application Germany, Apr. 15, 1972, 2218345

Int. Cl. C08f *15/04, 19/02, 3/02*

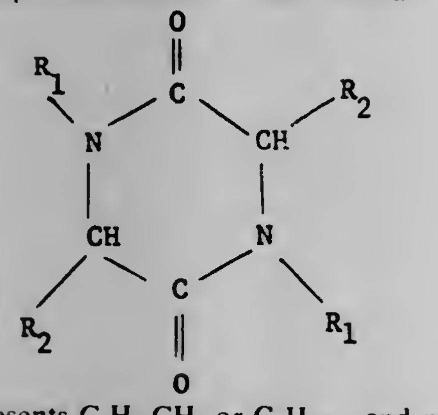
U.S. Cl. 260—88.2 R **4 Claims**

2. In a process for the preparation of a crystalline polyolefin by polymerization of at least one α-olefin of the formula $CH_2{=}CH{-}R$, wherein R represents an aliphatic radical having one to four carbon atoms, in suspension or in the gas phase, at a temperature of from 20° to 130°C. and a pressure of from 1 to 50 kg/cm², the improvement which comprises carrying out the polymerization in the presence of a mixed catalyst prepared from

a. a halogen compound of trivalent titanium (component A)

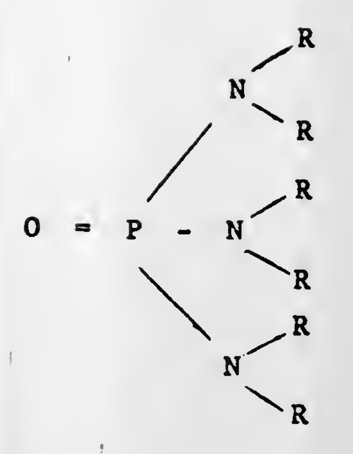
b. a halogen-free organo-aluminum compound (component B) and

c. a cyclic dipeptide derivative of the formula



wherein R_1 represents $C_6H_5\text{-}CH_2$ or C_nH_{2n+1} and $n = 1$ to 4, and R_2 represents H, $C_6H_5\text{-}CH_2$ or $C_n\ H_{2+1}$ and n = 1 to 4 (component C) and

d. a phosphoric acid-N-alkyl amide of the formula



wherein R represents identical or different aliphatic hydrocarbon radicals having up to four carbon atoms and wherein the radicals R can also be connected with one another (component D).

3,870,691

METHOD FOR POLYMERIZING TETRAFLUOROETHYLENE AND THE POLYMERS OBTAINED THEREFROM

Edouard Grimaud, Oullins, and Claude Tournut, Saint Genis Laval, both of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,255

Claims priority, application France, Sept. 13, 1971, 71.32874

Int. Cl. C08f *3/24*

U.S. Cl. 260—92.1 **5 Claims**

1. A method for polymerizing tetrafluoroethylene in an aqueous suspension comprising initiating polymerization in the absence of any other polymerization initiating agent with a tetrafluoroethylene polymer initiator previously prepared by coagulation of a dispersion of polytetrafluoroethylene being about 0.1 to about 0.5 microns obtained by polymerization of tetrafluoroethylene in an emulsion.

3,870,692

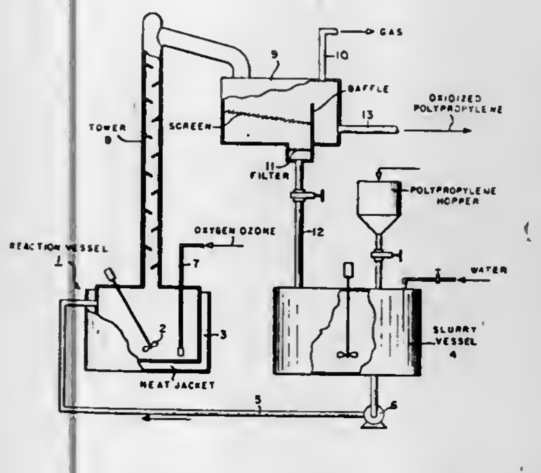
SELECTIVE HYDROPEROXIDATION OF POLYOLEFINS IN AN AQUEOUS SLURRY

Tad L. Patton, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 633,789, April 26, 1967, abandoned. This application July 12, 1971, Ser. No. 161,819

Int. Cl. C08f *27/22*

U.S. Cl. 260—93.7 **7 Claims**



1. A process for selective hydroperoxidation of finely divided solid polypropylene particles, which consists essentially of:

- contacting a cationic surfactant-free, slurry of said polypropylene, having a particle size of about 30 to 1,000 microns in water with a 50 to 90 mg. of ozone per liter of air mixture as the sole free radical initiator, at a temperature within the range of from 75° C. to 95° C.,
- and for a time sufficient to obtain a hydroperoxide concentration in said polypropylene between 0.014 and 0.050 weight percent,
- whereby formation of higher oxidation products than hydroperoxides is significantly less than said formation at temperatures outside said 75° C. to 95° C. range.

3,870,693

HOMOPOLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE

Karl Wisseroth, 80 Wittelsbachstrasse, 6700 Ludwigshafen, Germany

Filed Jan. 26, 1972, Ser. No. 221,029

Int. Cl. C08f *1/66*

U.S. Cl. 260—94.9 D **6 Claims**

1. In a process for the polymerization of ethylene and mixtures of ethylene and up to 50 percent by weight of propene and/or butene-1 with the aid of a low-pressure catalyst and wherein said catalyst is formed by heating a carrier material containing silica and/or alumina and impregnated with a chromium compound to temperatures above 300°C in an oxygen-containing stream of gas to activate said catalyst, the improvement which consists essentially of exhaustively extracting said activated catalyst with water to remove water soluble chromium therefrom, drying said catalyst, and thereafter reactivating said catalyst by reheating said catalyst in an oxygen-containing stream of gas to temperatures between 250° and 400°C.

3,870,694

PEPTIDE SYNTHESIS WITH N-HYDROXY-5-NORBORNENE-2,3-DICARBOXIMIDE

Masahiko Fujino, Hyogo; Shigeru Kobayashi, Osaka; Mikihiko Obayashi, Osaka; Susumu Shinagawa, Osaka, and Tsunehiko Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1973, Ser. No. 340,893

Claims priority, application Japan, Mar. 14, 1972, 47-26467; Mar. 21, 1972, 47-28740; Mar. 21, 1972, 47-28741

Int. Cl. C07c *103/52;* **C08h** *1/00*

U.S. Cl. 260—112.5 **5 Claims**

1. In a method for producing a peptide which comprises allowing an amino acid or peptide whose N-terminal amino or imino group has been protected to react with an N-hydroximide compound in the presence of a carbodiimide reagent to produce an N-hydroximide ester of an amino acid or peptide whose N-terminal group is protected and allowing thus produced N-hydroximide ester to react with an amino acid, peptide or derivative thereof whose N-terminal amino or imino group is free and optionally liberating the protected peptide into the free form, with the proviso that:

1. if the amino acid or peptide whose N-terminal amino or imino group has been protected has free functional group or groups in side chain, none, some or all of these functional group or groups are protected, and
2. if the amino acid or peptide derivative whose N-terminal amino or imino group is free has free functional group or groups in side chain or/and a C-terminal carboxyl group, none, some or all of these groups are protected, the improvement wherein 2,3N-hydroximide compound is N-hydroxy-5-norbornene-a-dicarboximide.

3,870,695

HEAVY METAL COMPLEXES OF AZO DYESTUFFS CONTAINING A 2-AMINO-3-HYDROXYPYRIDINE AS COUPLING COMPONENT

Gerhard Back, Loerrach, Germany, and Arthur Buehler, Rheinfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

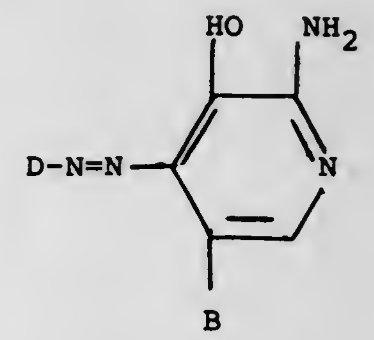
Filed July 21, 1972, Ser. No. 274,147

Claims priority, application Switzerland, July 27, 1971, 11034/71

Int. Cl. C09b *45/14, 45/20, 45/24*

U.S. Cl. 260—146 R **2 Claims**

1. The copper, nickel, chromium or cobalt complex of a compound of formula



in which B is chloro, bromo or hydrogen;

D is phenyl or naphthyl that contains, in the position ortho to the azo bridge, hydroxyl, amino or carboxyl, and where said phenyl is further unsubstituted or substituted by chloro, bromo, methyl, nitro, cyano, methylsulphonyl, trifluoromethyl, carbomethoxy, carboethoxy, hydroxyethylsulphonyl, chloroethylsulphonyl, sulfonamido, N-methylsulphonamido, N,N-dimethylsulphonamido, N,N-diethylsulphonamido, N,N-di(hydroxyethyl) sulfonamido, N-phenylsulfonamido, methoxy, sulfophenylazo, sulfonaphthylazo phenylazo, acetylamino, acetyl, $CONH_2$, tosylamino, or a fibre-reactive acylamino group where fibre-reactive acyl is selected from the group consisting of chloroacetyl, bromoacetyl, β-chloropropionyl, β-bromopropionyl, α,β-dichloropropionyl, α,β-dibromopropionyl, chloromaleyl, acrylyl, β-chloroacrylyl, β-bromoacrylyl, α-chloroacrylyl, α-bromoacrylyl, α,β-dichloroacrylyl, α,β-dibromoacrylyl, trichloroacrylyl, chlorocrotonyl and propiolyl,

and where

said naphthyl is further unsubstituted or substituted by sulfo, sulfonamido, nitro, acetylamino or sulfophenylazo.

3,870,696

BENZTHIAZOLE-AZO-(4-N-SULFOPROPYL)PHENYL COMPOUNDS

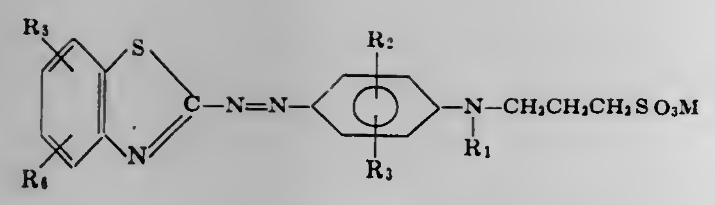
James F. Feeman, Wyomissing, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 4,096, Jan. 17, 1970, abandoned, and Ser. No. 102,231, Dec. 28, 1970, abandoned. This application July 5, 1973, Ser. No. 376,604

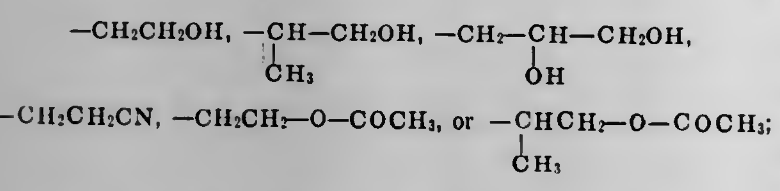
Int. Cl. C09b *29/08, 29/26*

U.S. Cl. 260—158 **6 Claims**

1. A compound having the structure:



wherein R_1 is alkyl having from 1 to 8 carbon atoms, benzyl, cyclohexyl,



$-CH_2CH_2OH$, $-\underset{CH_3}{CH}-CH_2OH$, $-CH_2-\underset{OH}{CH}-CH_2OH$,
$-CH_2CH_2CN$, $-CH_2CH_2-O-COCH_3$, or $-\underset{CH_3}{CH}CH_2-O-COCH_3$;

R_2 is —H, -alkyl having 1 to 4 carbon atoms, halogen, —O— alkyl having 1 to 4 carbon atoms or $-NHCOR_4$;
R_3 represents —H, -alkyl having 1 to 4 carbon atoms, —O— alkyl having 1 to 4 carbon atoms or $-NH-COR_4$;
R_4, as used in R_2 and R_3, represents -alkyl having 1 to 4 carbon atoms, -tolyl, -phenyl or -halophenyl;
R_5 is —H, $-NO_2$, halogen, $-SO_2$-alkyl, -alkyl and —O—alkyl;
R_6 is —H, $-NO_2$, halogen and alkyl; and
M is —H, —Na, —K, —Li or $-NH_4$.

3,870,697
TRISAZO DYESTUFFS CONTAINING TWO CARBOXAMIDE GROUPS

Alfred Froehlich, Marly-Le-Grand, and Hansrolf Loeffel, Bern, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

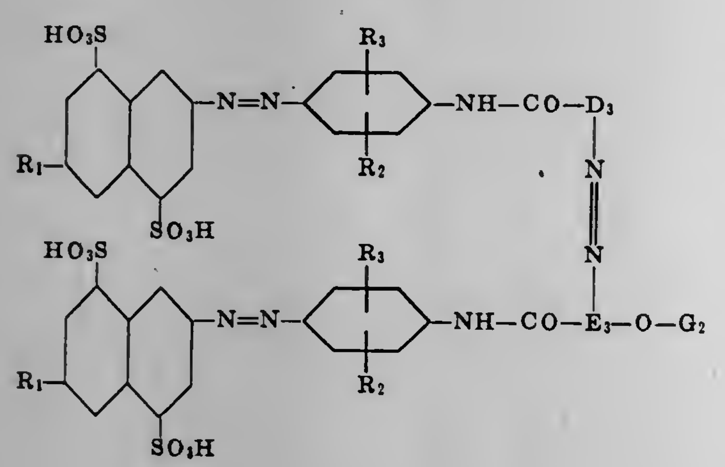
Continuation of Ser. No. 798,792, Feb. 12, 1969, abandoned. This application Oct. 2, 1972, Ser. No. 293,964

Claims priority, application Switzerland, Feb. 15, 1968, 2253/68

Int. Cl. C09b *43/12*

U.S. Cl. 260—173 **8 Claims**

1. A trisazo dyestuff of the formula



wherein R_1 denotes hydrogen, halogen, nitro or sulphonic acid, R_2 denotes hydrogen, chlorine, alkyl, alkoxy, hydroxyalkoxy, alkoxyalkoxy in each case having one to five carbon atoms in the alkyl moiety, phenoxy, hydroxyacetic acid, acetic acid or acylamino where acyl represents alkanoyl having one to five carbon atoms or of benzoyl, or carboxyacylamino which is derived from alkylene dioic acid having one to five carbon atoms, R_3 is hydrogen, methyl or methoxy or acylamino in which acyl has the significance given for R_2, D_3 is phenylene, naphthylene, toluylene, anisoylene or chlorophenylene, E_3 is phenylene, naphthylene, toluylene or anisoylene and G_2 is hydrogen, methyl or ethyl, the residues D_3 and E_3-OG_2 being different from one another.

3,870,698
QUINTOMYCIN COMPOUNDS

Katsura Munakata, Nagoya; Takeshi Oda, Tokyo; Toshito Mori, Tokyo, and Hisakatu Ito, Tokyo, all of Japan, assignors to Kowa Company Ltd., Nagoya, Japan

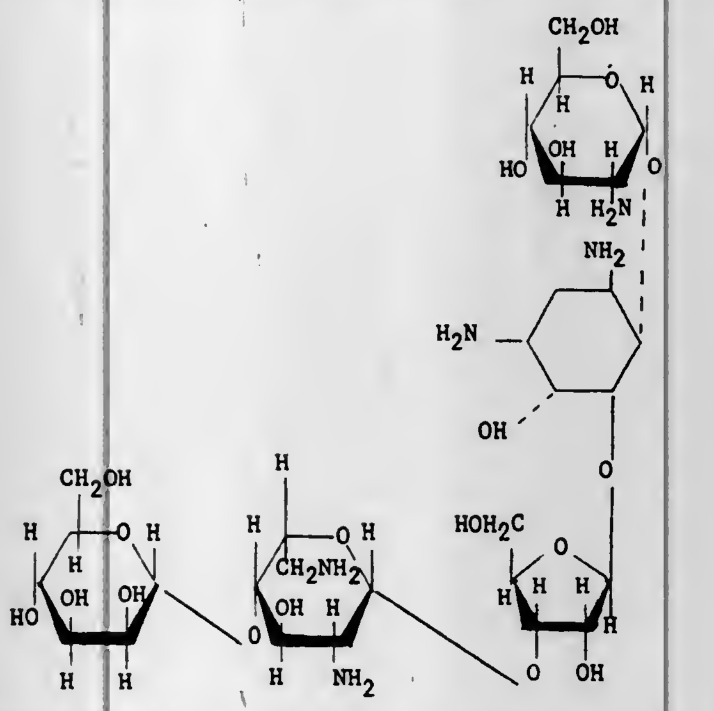
Continuation-in-part of Ser. No. 737,333, June 17, 1968, abandoned. This application Nov. 19, 1971, Ser. No. 200,524

Claims priority, application Japan, June 21, 1967, 42-39296; June 15, 1968, 43-40863

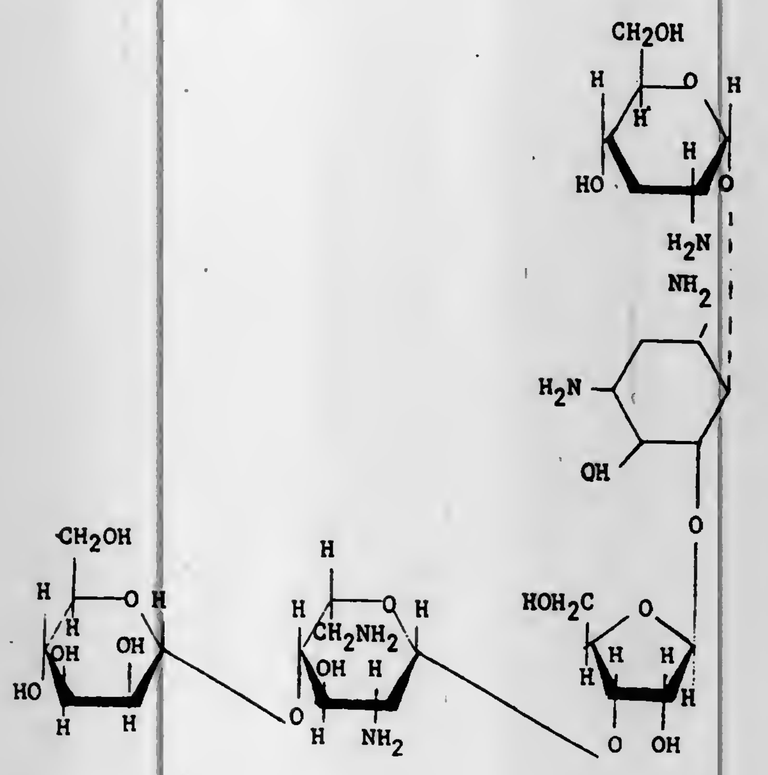
Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **4 Claims**

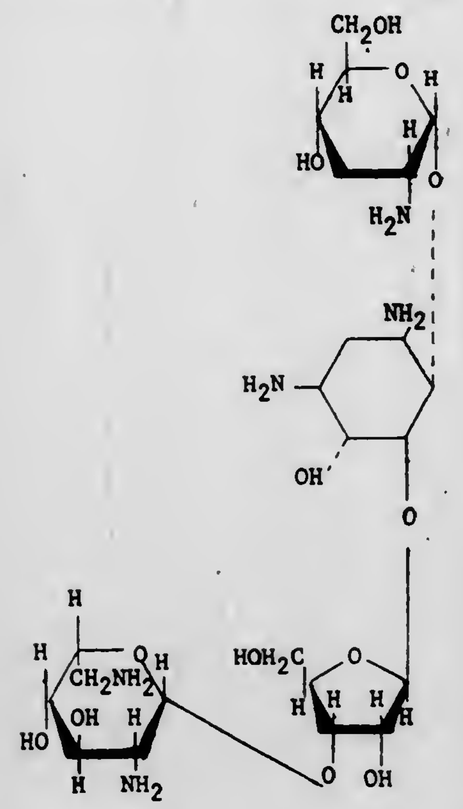
1. Antibiotic Quintomycin of the aminocyclitol group which inhibits the growth of gram-positive bacteria, gram-negative bacteria, and acid-fast bacteria, and contains at least one compound expressed by the chemical name O-α-D-mannopyranosyl(1 → 4), α-L-2,6-diamino-2,6-dideoxy-idopyranosyl(1 → 3), β-D-ribofuranosyl (1 → 5) O-[α-D-2-amino-2-deoxy-glucopyranosyl(1 → 4)] 1,3-diamino-1,2,3-trideoxy-myoinositol, corresponding to the structural formula



and the empirical formula $C_{29}H_{55}N_5O_{19}$, an Rf-value of 0.23, the pentahydrochloride of which has a specific rotation $[\alpha]_D^{22}$ of + 59° and a decomposition point of 190° to 200°C, and showing the infrared spectrum as in FIG. 1, a compound expressed by the chemical name O-α-D-mannopyranosyl(1 → 4), α-L-2,6-diamino-2,6-dideoxy-idopyranosyl(1 → 3), β-D-ribofuranosyl(1 → 5), O-[α-D-2-amino-2,3-dideoxy-glucopyranosyl(1 4)] 1,3-diamino-1,2,3-trideoxy-myoinositol, corresponding to the structural formula



and the empirical formula $C_{29}H_{55}N_5O_{18}$, an Rf-value of 0.50, the pentahydrochloride of which has a specific optical rotation $[\alpha]_D^{22}$ of + 50° and a decomposition point of 185° to 195°C and showing the infrared spectrum as in FIG. 2 and a compound expressed by the chemical name O-α-L-2,6-diamino-2,6-dideoxy-idopyranosyl (1 → 3), β-D-ribofuranosyl(1 → 5), O-[α-D-2-amino-2,3-dideoxy-glucopyranosyl(1 → 4)] 1,3-diamino-1,2,3-trideoxy-myoinositol, corresponding to the structural formula



and the empirical formula $C_{23}H_{45}N_5O_{13}$, an Rf-value of 0.75, the pentahydrochloride of which has a specific optical rotation $[\alpha]_D^{22}$ of + 36° and a decomposition point of 198° to 208°C and showing the infrared spectrum as in FIG. 3.

3,870,699
LINCOMYCIN ANALOGS

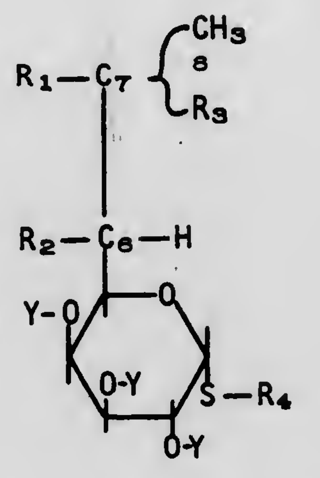
Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 6, 1973, Ser. No. 338,459

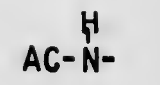
Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **21 Claims**

1. A compound of the formula:

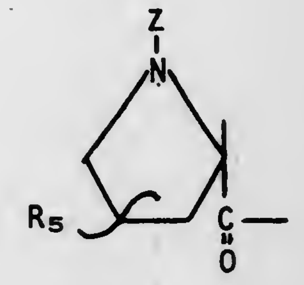


wherein R_1 when taken independently represents hydrogen; R_2 when takene independently represents the monovalent moiety

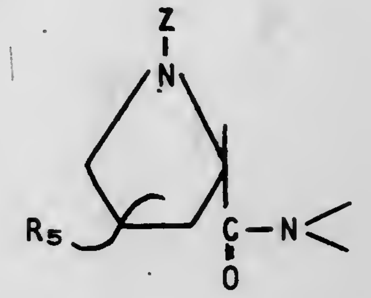


$Ac-\overset{H}{N}-$

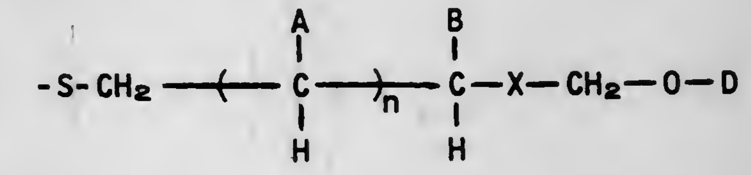
wherein Ac is selected from carboxyacyl of from 2 to 18 carbon atoms, inclusive, and an acyl radical of formula:



wherein Z is selected from hydrogen, lower alkyl and an amino protecting group removable by hydrogenolysis; R_5 is lower alkyl; R_1 and R_2 when taken together form the divalent group of the formula:



wherein Z and R_5 are as defined above; R_3 is hydrogen when R_1 and R_2 are taken together and when R_1 and R_2 are taken independently, R_3 is a monovalent thio group in the 7(S)-position, having the formula:



wherein A is selected from hydrogen and hydroxy, B is selected from hydrogen and monohydroxyloweralkyl, *n* is the integer 0 when B is monohydroxyloweralkyl and an integer of from 0 to 1 when B is hydrogen, X is selected from oxygen and sulfur, D is an acyl radical of a lower hydrocarbon carboxylic acid; R_4 represents lower alkyl; and Y is selected from carboxacyl of from 2 to 18 carbon atoms, inclusive, and hydrogen.

3,870,700
2-HALOGENO-2-DEOXY-5-(SUBSTITUTED)URIDINES

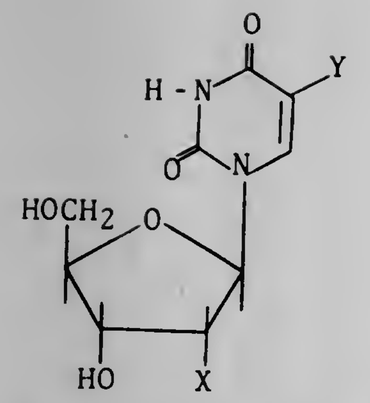
Michael Paul Kotick, and Joseph Odo Polazzi, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 29, 1973, Ser. No. 364,700

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R **4 Claims**

1. A compound having the formula



wherein:

X is selected from substituents consisting of fluoro, chloro, and bromo; and,

Y is thiocyanato.

3,870,701

BENZYL HYDROXYPROPYL CELLULOSE ACETATE AND PROCESS

James Teng, St. Louis County, and Marcella C. Stubits, St. Louis, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 15, 1973, Ser. No. 406,238

Int. Cl. C08b *13/00, 21/34*

U.S. Cl. 260—226 **12 Claims**

1. The compound benzyl hydroxypropyl cellulose acetate having a degree of molar substitution of about 2 to about 6 hydroxypropyl groups, a degree of substitution of benzyl groups of about 0.1 to about 0.8 and a degree of substitution of acetyl groups of about 1.0 to about 2.5 and further characterized by being soluble in organic solvents.

3,870,702

CELLULOSE ETHER COMPOSITIONS USEFUL AS ENTERIC COATINGS

Shunichi Koyanagi; Kinya Ogawa; Yoshiro Onda, and Akira Yamamoto, all of Naoetsu, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation of Ser. No. 171,005, Aug. 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 118,555, Feb. 24, 1971, Pat. No. 3,712,886. This application Nov. 9, 1973, Ser. No. 414,186. The portion of the term of this patent subsequent to Jan. 23, 1990, has been disclaimed.

Claims priority, application Japan, Mar. 19, 1971, 46-15953

Int. Cl. C08b *11/00*

U.S. Cl. 260—226 **19 Claims**

1. A coating composition consisting essentially of a solution of an organic solvent and at least one monoester selected from the group consisting of a tetrahydrophthalic acid monoester and hexahydrophthalic acid monoester of a cellulose ether represented by the general formula

$$R^1{}_mR^2{}_nA$$

wherein R^1 is a hydroxyl alkyl radical having three to four carbon atoms, R^2 is selected from the group consisting of hydrogen and alkyl radicals of one to two carbon atoms, *m* and *n* are positive integers, and A is a cellulose residue.

3,870,703

PRODUCTION OF CELLULOSE ESTERS

Kelly B. Gibney, Burnaby; John Howard, and Russell S. Evans, both of Vancouver, British Columbia, all of Canada, assignors to Canadian Cellulose Company, Limited, Vancouver, British Columbia, Canada

Filed June 21, 1973, Ser. No. 372,147

Int. Cl. C08b *3/06, 3/10*

U.S. Cl. 260—229 **6 Claims**

1. In the production of a solution of a cellulose lower alkanoate suitable for use in the formation of fibers wherein a cellulose source is subjected to the esterification with a lower alkanoic acid anhydride in a lower alkanoic acid thereby forming said cellulose lower alkanoate dissolved in said acid, the improvement which comprises employing as said cellulose source, cellulose having a hemicellulose content in excess of about 5% by weight, and prior to esterification with said lower alkanoate acid anhydride, reacting said cellulose with an anhydride esterifying agent different from the lower alkanoate ester ultimately desired for a period of from 5 to 30 minutes, said agent being employed in more than the stoichiometric amount required for reaction with the hemicellulose, whereby said hemicellulose is preferentially esterified and whereby the solution of cellulose lower alkanoate ultimately produced is characterized by a performance during subsequent processing comparable to that of initially more pure cellulose sources.

3,870,704

NITROGEN CONTAINING AMYLOSE DERIVATIVES

Mikihiko Yoshida, and Shokichi Yuen, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Continuation of Ser. No. 112,405, Feb. 3, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,777

Claims priority, application Japan, Feb. 3, 1970, 45-9428

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **2 Claims**

1. Amylose-O-CO-NH_2, wherein said amylose has a DP of 15–50.

3,870,705

6-ISOCYANATOAMINOPENICILLANIC ACID DERIVATIVES AND PROCESS FOR PRODUCING THEM

Peter Wolfgang Henniger, Leiden, and Peter Max Smid, Delft, both of Netherlands, assignors to Koninklijke Nederlandsche Gist-En Spiritusfabried N.V., Delft, Netherlands

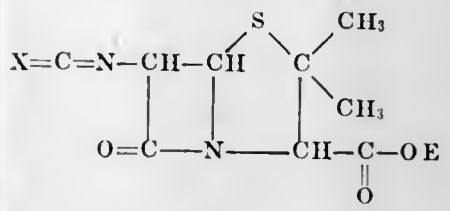
Continuation-in-part of Ser. No. 98,445, Dec. 15, 1970, Pat. No. 3,741,958, which is a continuation-in-part of Ser. Nos. 834,544, June 18, 1969, abandoned, and Ser. No. 98,462, Dec. 15, 1970, abandoned. This application Jan. 25, 1972, Ser. No. 220,713

Claims priority, application Great Britain, Dec. 18, 1969, 61840/69

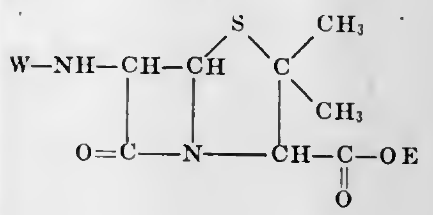
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **14 Claims**

1. A process for the preparation of 6-isocyanatopenicillanic acid compounds of claim 18 having the formula



wherein X is oxygen and E is selected from the group consisting of a silyl, optionally halo-substituted phenacyl, benzyl and benzhydryl consisting essentially of reacting phosgene with a penicillanic acid derivative of the formula



wherein W is selected from the group consisting of hydrogen and $(R)_3Si$— where R is selected from the group consisting of lower alkyl, phenyl and phenyl lower alkyl and E is as defined above in an inert organic medium to convert the group W-NH- into an isocyanato group without affecting the rest of the molecule.

3,870,706

6H-S-TRIAZOLO[4,3-a][1,4]BENZODIAZEPIN-6-ONES

Hans Allgeier, Haagen, Germany, and Andre Gagneux, Basle, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

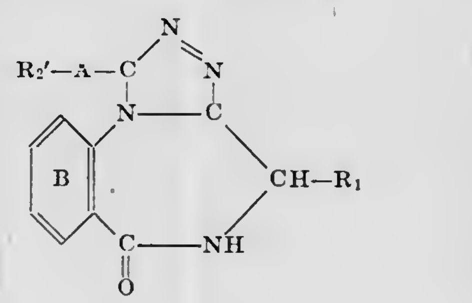
Filed Feb. 23, 1973, Ser. No. 335,268

Claims priority, application Switzerland, Feb. 29, 1972, 2917/72; May 8, 1972, 6818/72

Int. Cl. C07d *53/06, 55/06*

U.S. Cl. 260—239.3 T **8 Claims**

1. A compound of the general formula II



(II)

wherein

- R_1 represents hydrogen, or an alkyl group having 1 to 3 carbon atoms,
- A represents an alkylene group having 1 to 3 carbon atoms, R_2' represents alkoxy having 1 to 6 carbon atoms, benzyloxy, chlorobenzyloxy, methyl-benzyloxy, methoxybenzyloxy, trimethoxy-benzyloxy, diphenylmethoxy, dialkylamino, wherein the alkyl groups contain 1 to 6 carbon atoms, N-alkylaralkylamino, wherein the alkyl group contains 1 to 6 carbon atoms and the aralkyl group is a phenyl-substituted alkyl group wherein the alkyl group has 1 to 3 carbon atoms, diaralkylamino wherein the aralkyl groups are phenyl-substituted alkyl groups wherein the alkyl group has 1 to 3 carbon atoms, polymethyleneimino having 5 to 7 ring members or morpholino, and said polymethyleneimino and morpholino members substituted by lower alkyl and which contain including these at most 10 carbon atoms, or
- R_2'-A together represent dialkoxymethyl of which the alkoxy radicals have 1 to 4 carbon atoms, or alkylenedioxymethyl having in all 3 to 6 carbon atoms, and
- the ring B is unsubstituted or substituted by halogen up to atomic number 35, alkyl or alkoxy each having 1 to 6 carbon atoms, or a trifluoromethyl group.

3,870,707

PROCESS FOR THE MANUFACTURE OF N,N-DISUBSTITUTED CARBAMIC ACID HALIDES

Tibor Somlo, Birsfelden, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

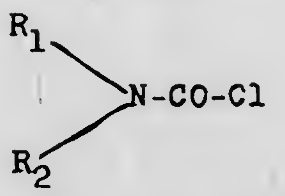
Filed Feb. 14, 1972, Ser. No. 226,320

Claims priority, application Switzerland, Feb. 16, 1971, 2246/71

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **5 Claims**

1. A process for the manufacture of N,N-disubstituted carbamic acid chlorides of the formula



in which R_1 and R_2 each represent alkyl of 1 to 18 carbon atoms or benzyl, or R_1 and R_2 taken together with the nitrogen atom represent aziridino, pyrrolidino, piperidino, hexamethyleneimino or morpholino, consisting of the step of treating a secondary amine of the formula R_1R_2NH with phosgene, at a temperature in the range of 60 to 160°C, wherein the solvent is the N,N-disubstituted carbamic acid chloride being manufactured.

3,870,708

AMINE DERIVATIVES OF PENICILLINS AND THE METHOD OF THEIR PRODUCTION

Wojciech Gruszecki, Gdansk; Emil Taszer, and Edward Borowski, both of Gdansk-Wrzeszcz, all of Poland, assignors to Politechnika Gdanska Instytut Chemii i Technologii Organicznej Oraz Zywnosciowej, Gdansk-Wrzeczcz, Poland

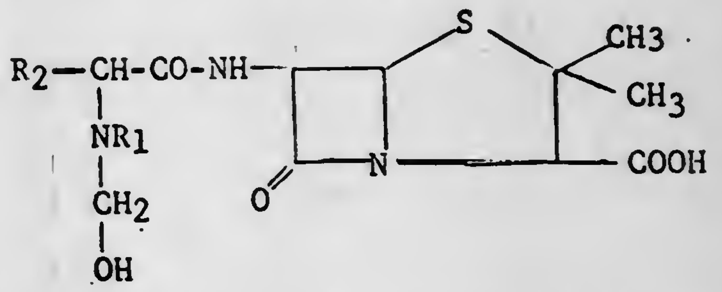
Filed Sept. 30, 1971, Ser. No. 185,382

Claims priority, application Poland, Oct. 1, 1970, 143728

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **9 Claims**

1. Amine derivatives of penicillin having the formula



wherein R_1 is selected from the group consisting of benzyloxycarbonyl and p-nitrobenzyloxycarbonyl and R_2 is selected from the group consisting of phenyl, p-hydroxyphenyl, p-methoxyphenyl, propionyl and phenyl propionyl.

3,870,709

6-(ALPHA-(OMEGA-GUANIDINOALKANOYLAMIDO)ACYLAMIDO)-PENICILLANIC ACIDS

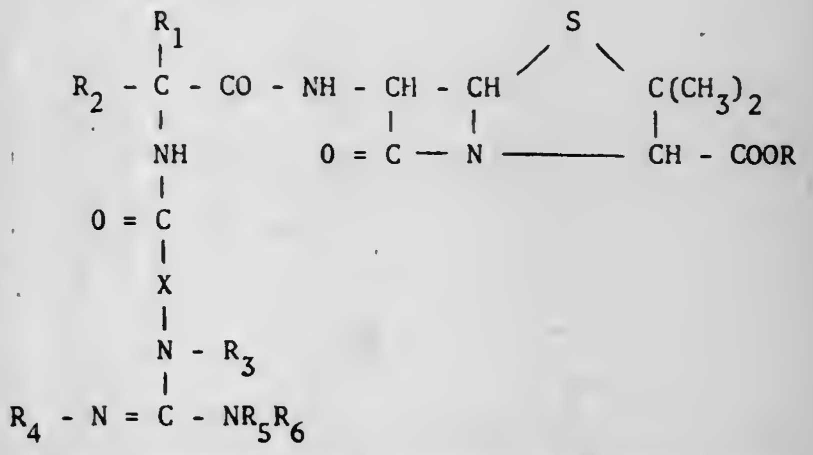
Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,344

Int. Cl. C07d *99/16*

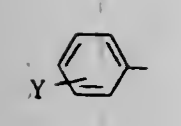
U.S. Cl. 260—239.1 **13 Claims**

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R is selected from the group consisting of hydrogen and acyloxy lower alkyl wherein acyloxy is selected from the group consisting of lower alkanoyloxy, benzoyloxy and substituted benzoyloxy wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, lower alkyl, lower alkoxy and trifluoromethyl;

R_1 is selected from the group consisting of hydrogen, alkyl of from 1 to 14 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, 1,4-cyclohexadienyl, naphthyl, benzyl, phenethyl, furyl, thienyl, and



wherein

Y is selected from the group consisting of hydrogen, nitro, di(lower alkyl)amino, lower alkanoylamino, lower alkyl, lower alkoxy, hydroxy, sulfamyl, chloro, bromo, fluoro, iodo and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and lower alkyl;

R_1 and R_2 when taken together with the carbon atom to which they are attached are cycloalkylidene of 3 to 10 carbon atoms;

each of R_3, R_4, R_5 and R_6 is selected from the group consisting of hydrogen, lower alkyl, benzyl and phenyl;

X is selected from the group consisting of alkylene having from 1 to 7 carbon atoms, phenylene, cycloalkylene having from 3 to 9 carbon atoms, propenylene whose $-CH_2$ group is bound to the adjacert nitrogen; vinylenephenylene, methylene oxyphenylene and phenylenemethylene, each of whose phenylene group is bound to the adjacent nitrogen;

X and $N-R_3$ when taken together form a 5- or 6-membered heterocyclic ring selected from the group consisting of pyrrolidyl and piperidyl;

X and R_5 when taken together with the guanidino moiety to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of 2-amino-2-imidazolinyl and 2-amino-2-(1,4,5,6-tetrahydropyrimidinyl);

R_3 and R_4 when taken together with the guanidino moiety to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of 2-imidazolino and 2-(1,4,5,6-tetrahydropyrimidino); and R_3 and R_5 when taken together with the guanidino moiety to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of imidazolidino and hexahydropyrimidino.

3,870,710

CYCLOPENTANONE DERIVATIVES

Jacques Martel, Bondy; Edmond Toromanoff, Paris, and Jean Buendia, Fontenay-Sous-Bois, all of France, assignors to Roussel-Uclaf, Paris, France

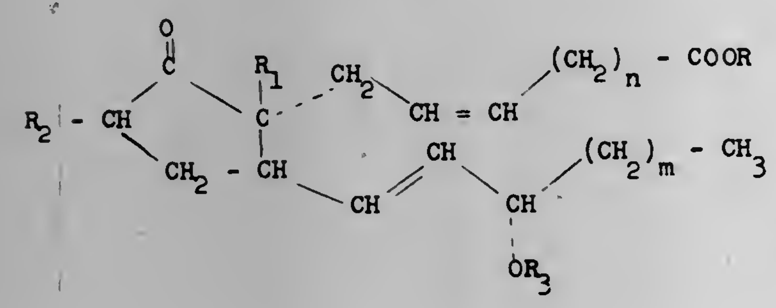
Division of Ser. No. 138,276, April 28, 1971, Pat. No. 3,801,623. This application Feb. 7, 1973, Ser. No. 330,411

Claims priority, application France, Apr. 30, 1970, 70.15910

Int. Cl. C07c *69/74;* **C07d** *7/04*

U.S. Cl. 260—240 R **12 Claims**

1. A prostanoic acid compound of the formula



wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 7 carbon atoms, R_1 is selected from the group consisting of hydrogen and carbalkoxy of 1 to 7 alkyl carbon atoms, R_2 is selected from the group consisting of hydrogen, carboxy and carbalkoxy of 1 to 7 alkyl carbon atoms, R_3 is selected from the group consisting of hydrogen and α-tetrahydropyranyl, *m* is 3, 4 or 5 and *n* is 2, 3 or 4 with the proviso that when R_1 is carbalkoxy, R is alkyl of 1 to 7 carbon atoms, R_2 is hydrogen and R_3 is α-tetrahydro-pyranyl; when R_2 is carbalkoxy, R is alkyl of 1 to 7 carbon atoms, R_1 is hydrogen and R_3 is α-tetrahydropyranyl and when R_2 is carboxy, R and R_1 are hydrogen and R_3 is α-tetrahydropyranyl and when R is hydrogen, at least one of R_1, R_2 and R_3 is other than hydrogen.

3,870,711

PREPARATION OF PROSTANOIC ACID DERIVATIVES

Jacques Martel, Bondy; Jean Buendia, Fontenay-Sous-Bois, and Edmond Toromanoff, Paris, all of France, assignors to Roussel-UCLAF, Paris, France

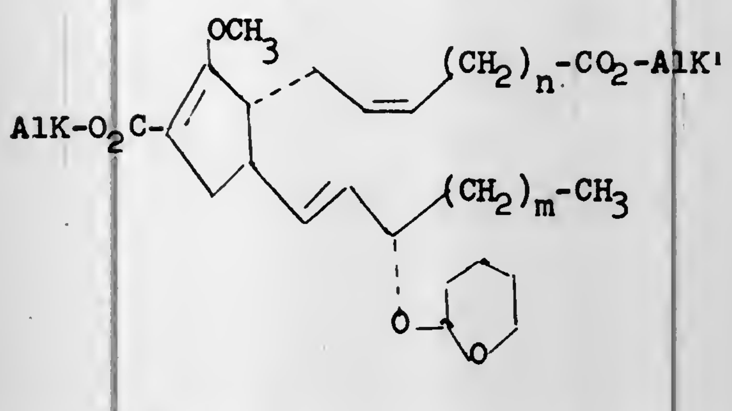
Division of Ser. No. 176,234, Aug. 30, 1971,. This application Sept. 26, 1973, Ser. No. 400,709

Claims priority, application France, Sept. 4, 1970, 7032255

Int. Cl. C07d *7/02*

U.S. Cl. 260—240 R **15 Claims**

1. A compound of the formula



wherein AlK and AlK′ are lower alkyl, *n* is 2, 3 or 4 and *m* is 3, 4 or 5.

3,870,712

CINCHONINIC ACID DERIVATIVES

Richard E. Holmes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

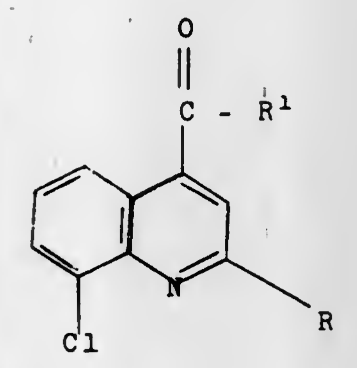
Division of Ser. No. 235,850, March 17, 1972, Pat. No. 3,799,929. This application Nov. 8, 1973, Ser. No. 414,005

Int. Cl. C07d *33/14*

U.S. Cl. 260—240 A **4 Claims**

1. The compounds of the formula:

[I]



wherein R represents:

a. 2-indolyl,
b. 1-methyl-2-indolyl,
c. 3-indolyl,
d. 1-methyl-3-indolyl,
e. 2-phenoxathiinyl,
f. 2-furyl,
g. (2-furyl)vinyl,
h. (5-nitro-2-furyl)vinyl,
i. 2-thienyl, or

j. 5-nitro-2-thienyl; and

R^1 represents:

a. OH or
b. loweralkoxy of 1 to 3 carbon atoms,

and the pharmaceutically-acceptable, alkali-metal and alkaline-earth-metal salts derived from those compounds of Formula I wherein R^1 is OH.

3,870,713

PHOSPHONO SUBSTITUTED ALKYLCEPHALOSPORINS

Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

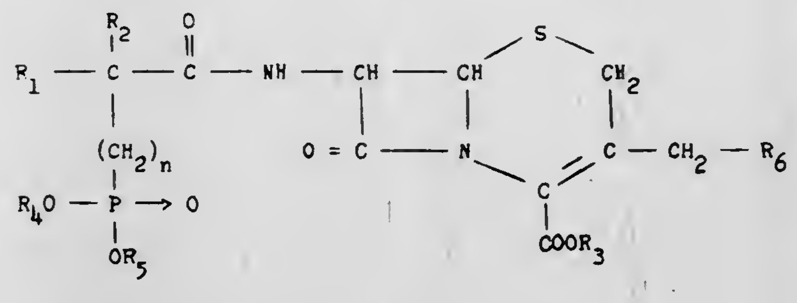
The portion of the term of this patent subsequent to Aug. 6, 1974, has been disclaimed.

Filed Dec. 7, 1970, Ser. No. 95,918

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **12 Claims**

1. A compound of the formula



and the non-toxic cationic salts thereof wherein

R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl and substituted phenyl wherein the substituent is selected from the group consisting of lower alkyl, lower alkoxy, chloro, bromo, fluoro and trifluoromethyl;

R_2 is hydrogen;

R_1 and R_2 when taken together with the carbon atom to which they are attached are selected from the group consisting of cycloalkyl of from four to six carbon atoms;

R_3 is selected from the group consisting of hydrogen and acyloxy lower alkyl wherein the acyloxy moiety is selected from the group consisting of lower alkanoyloxy, and benzoyloxy and substituted benzoyloxy wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, lower alkyl, lower alkoxy trifluoromethyl;

each of R_4 and R_5 is selected from the group consisting of hydrogen, lower alkyl, substituted lower alkyl wherein the substituent is selected from the group consisting of lower alkoxy and fluoro; phenyl and substituted phenyl wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, lower alkoxy, lower alkyl annd trifluoromethyl;

R_6 is selected from the group consisting of hydrogen, hydroxy, acetoxy and pyridine; and

n is 0 or an integer from 1 to 4.

3,870,714

CERTAIN 6-PHENYL-4H-S-TRIAZOLO[1,5-a][1,4]BENZODIAZEPINE-2-CARBOXAMIDES

Andre Gagneux, Basel; Roland Heckendorn, Arlesheim, Basel-Land, and Rene Meier, Buus, Basel-Land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

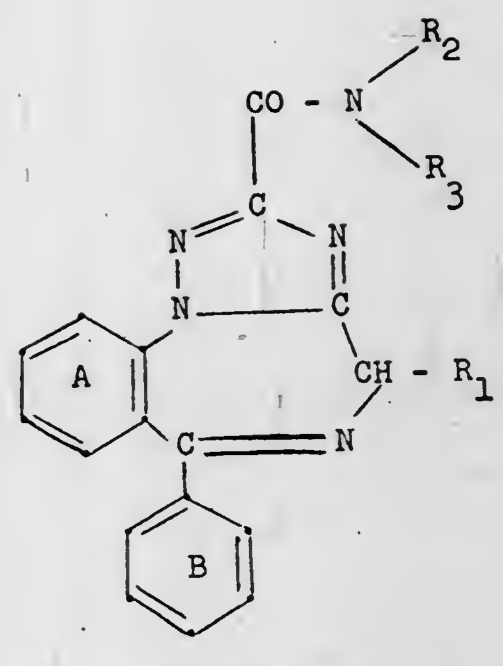
Filed Jan. 31, 1973, Ser. No. 328,815

Claims priority, application Switzerland, Feb. 7, 1972, 1738/72; Aug. 31, 1972, 12843/72; Nov. 3, 1972, 16045/72

Int. Cl. C07d *57/02, 57/04, 99/02*

U.S. Cl. 260—247.5 EP **31 Claims**

1. A diazepine derivative having the formula



wherein

R_1 represents hydrogen, or an alkyl group having 1 to 3 carbon atoms, and

R_2 and R_3 independently of each other, represent hydrogen, alkyl groups having 1 to 6 carbon atoms, or hydroxyalkyl groups having in all 4 to 7 carbon atoms, or aralkyl groups having 7 to 9 carbon atoms, or together with the adjacent nitrogen atom, the 1-pyrrolidinyl-, piperidino-, 4-methyl-1-piperazinyl, or morpholino group;

wherein each of the rings A and B independently of the other, is unsubstituted or substituted by one member of the group consisting of halogen up to atomic number 35, trifluoromethyl or nitro groups,

its 5-oxide and its pharmaceutically acceptable acid addition salts.

3,870,715

SUBSTITUTED AMINO ETHYL META BENZOIC ACID ESTERS

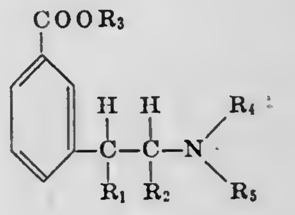
Nikolaus R. Hansl, 196 La Vereda Rd., Santa Barbara, Calif. 93108

Continuation-in-part of Ser. No. 233,339, March 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 745,352, July 17, 1968, and a continuation-in-part of Ser. No. 85,283, Oct. 29, 1970, Pat. No. 3,792,048. This application Apr. 2, 1973, Ser. No. 347,287

Int. Cl. C07d *87/36*

U.S. Cl. 260—247.2 B **19 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, hydroxy, lower alkoxy or lower alkyl; R_2 is hydrogen or lower alkyl; R_3 is lower alkyl, aralkyl or lower alkyl aryl; R_4 taken independently is hydrogen, lower alkyl, aralkyl, lower alkyl aryl, hydroxy lower alkyl and lower alkoxy lower alkyl; R_5 taken independently is lower alkyl, aralkyl, lower alkyl aryl or lower alkoxy lower alkyl; and R_4 and R_5 taken together with the adjacent nitrogen atom form a saturated five or six membered heterocyclic ring which may contain one additional hetero atom selected from the group consisting of —O— and $-NR_6-$ where R_6 is hydrogen or lower alkyl

and the optical antipodes and the pharmaceutically acceptable acid addition salts thereof.

3,870,716

PROCESS FOR PRODUCTION OF ALKYLENE OXIDE ADDUCTS OF IRIS(2-HYDROXYALKYL)ISOCYANURATE

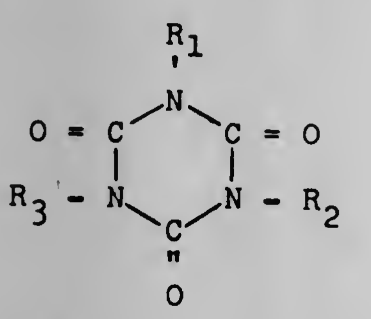
Stephen Edward Belsky, Parsippany, and John Henry Bonfield, Basking Ridge, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 126,884, March 22, 1971, Pat. No. 3,726,871, which is a continuation-in-part of Ser. No. 39,855, May 20, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 294,062

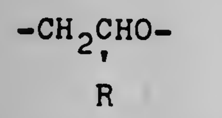
Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **11 Claims**

1. In the process for preparing hydroxyalkylated isocyanurate compounds of the formula:

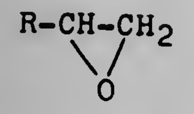


wherein R_1 is a hydrogen-terminated oxyalkylene chain of from 2 to 30 oxyalkylene units, and R_2 and R_3 are each a hydrogen-terminated oxyalkylene chain of from 1 to 30 oxyalkylene units, wherein each oxyalkylene unit has the formula



$$-CH_2\underset{R}{\underset{|}{C}}HO-$$

wherein R is hydrogen, methyl or ethyl, by reacting in a reaction vessel tris(2-hydroxyalkyl)isocyanurate wherein said hydroxyalkyl group contains of from 2 to 4 carbon atoms with at least an equimolar amount of an alkylene oxide of the formula:



wherein R has the meaning given above, in the presence of an acid catalyst at a temperature of about 80°C to 165°C, the improvement which comprises effecting said reaction in the presence of a hydroxyalkylated isocyanurate compound of the above formula.

3,870,717

NEW VAT DYESTUFFS, THEIR MANUFACTURE AND USE

Paul Ulrich, and Max Stauble, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

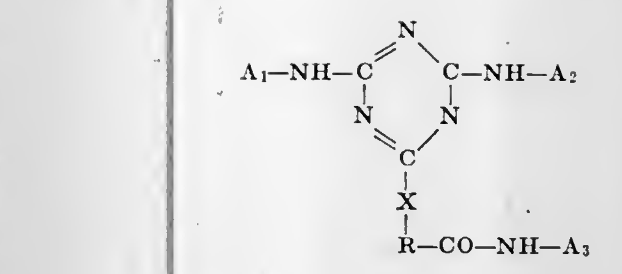
Filed Feb. 28, 1973, Ser. No. 336,574

Claims priority, application Switzerland, Mar. 3, 1972, 3133/72; Jan. 22, 1973, 855/73

Int. Cl. C07d *55/20*

U.S. Cl. 260—249 **4 Claims**

1. A vat dyestuff of the formula



in which A_1 and A_2 are independently anthraquinone, phthaloylacridone or thiazoleanthrone, optionally substituted by methoxy, chloro and benzoylamino, X is —O— or —S—, R is benzene, naphthalene or anthracene, optionally substituted by chloro, hydroxy, methyl, chlorobenzoylamino, dichlorobenzoylamino and anthraquinonylcarbonylamino, and A_3 is anthraquinone, phthaloylacridone, thiazoleanthrone or anthrapyrimidine, optionally substituted by chloro, phenylamino, phenylthio, benzoylamino, chlorobenzoylamino and hydroxybenzoylamino, and in which the radical R is bound in ortho- or meta-position.

3,870,718

2-IMIDAZOLIDINE SUBSTITUTED QUINOXALINE-1,4-DIOXIDES AND INTERMEDIATES THEREFOR

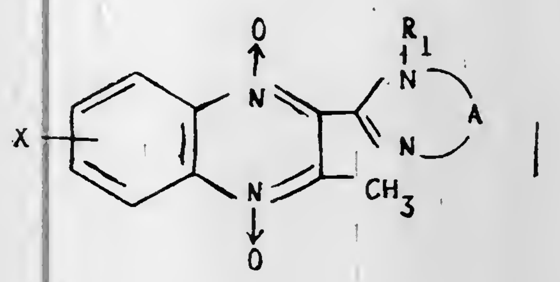
Marwan J. Abu El-Haj, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 207,534, Dec. 13, 1971, abandoned, which is a division of Ser. No. 20,842, March 18, 1970, Pat. No. 3,671,521. This application Oct. 10, 1973, Ser. No. 405,114

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 Q **7 Claims**

1. A compound having the formula



wherein X is selected from the group consisting of hydrogen, chloro, bromo, fluoro, methyl, methoxy and trifluoromethyl; R_1 is selected from the group consisting of hydrogen and alkyl having one to four carbon atoms;

A is alkylene of from two to five carbon atoms which places at least two carbon atoms between the N atoms to which it is attached;

and the non-toxic acid addition salts thereof.

3,870,719

SYNTHESIS OF N-5-METHYLTETRAHYDROHOMOFOLIC ACID AND RELATED REDUCED DERIVATIVES OF HOMOFOLIC ACID

Roger L. Knott, and Alison Taunton-Rigby, both of Waltham, Mass., assignors to The United States of America as represented by the Secretary of the Department of Health Education and Welfare, Washington, D.C.

Filed June 16, 1972, Ser. No. 263,559

Int. Cl. C07d *51/48*

U.S. Cl. 260—251.5 **2 Claims**

1. 5-methyltetrahydrohomofolic acid and alkali metal salts thereof.

3,870,720

POTASSIUM DERIVATIVES OF 2-PHENYL-6-SULPHAMYL-7-CHLORO-1,2,3,4-TETRAHYDRO-4-QUINAZOLINONE

Massimo Carissimi, 3, Via Cesare Cantu, and Franco Ravenna, 57/a Via Vincenzo Monti, both of Milan, Italy

Filed May 2, 1973, Ser. No. 356,403

Claims priority, application Italy, May 5, 1972, 23925/72

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.5 R **2 Claims**

1. As a novel, nontoxic, nonmercurial diuretic compound, the derivative of 2-phenyl-6-sulphamyl-7-chloro-1,2,3,4-tetrahydro-4-quinazolinone, wherein either hydrogen of the sulphamyl group of the starting quinazolinone is replaced by a potassium atom.

2. As a novel, nontoxic, nonmercurial diuretic compound, the derivative of 2-phenyl-6-sulphamyl-7-chloro-1,2,3,4-tetrahydro-4-quinazolinone, wherein either hydrogen of the sulphamyl group of the starting quinazolinone and the hydrogen in the 3-position of the tetrahydroqinazoline ring of same starting quinazolinone are replaced by a potassium atom each.

3,870,721

4-ALKANOYLAMINO ISOQUINOLINE DIONES AND 3-ALKANOYLOXY-4-ALKANOYLAMINO ISOQUINOLONES

John Leheup Archibald, Windsor; John Terence Arnott Boyle, and John Christopher Saunders, both of Maidenhead, all of England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, Berkshire, England

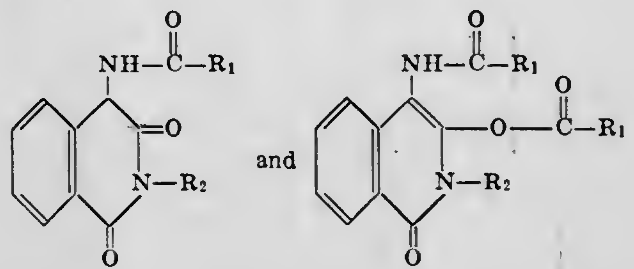
Filed Nov. 21, 1973, Ser. No. 417,867

Claims priority, application Great Britain, Nov. 30, 1972, 55252/72

Int. Cl. C07d *35/30*

U.S. Cl. 260—281 **4 Claims**

1. A compound selected from those of the formula



wherein R_1 is lower alkyl and R_2 is selected from the group consisting of hydrogen and lower alkyl.

3,870,722

2-METHYL-3-SUBSTITUTED-4-ARYL ISOQUINOLINES

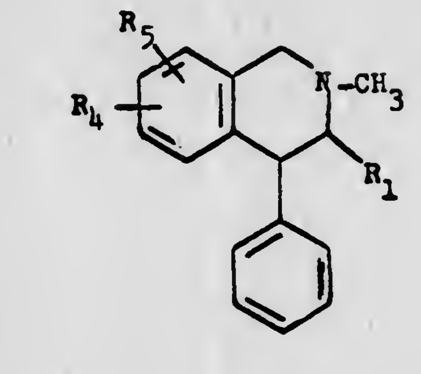
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Nov. 2, 1973, Ser. No. 412,132

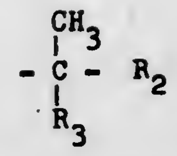
Int. Cl. C07d *33/34*

U.S. Cl. 260—283 R **5 Claims**

1. A compound of the formula



where R_1 represents



$$-\underset{R_3}{\underset{|}{\overset{CH_3}{\overset{|}{C}}}}-R_2$$

where R_2 and R_3 are each, independently, methyl or ethyl, or R_2 and R_3 together represent $(CH_2)_n$
where *n* represents 4, 5, or 6,
and R_4, and R_5 each, independently, represent hydrogen, halo of atomic weight 19–36, trifluoromethyl, lower alkyl, or lower alkoxy, provided that R_4 and R_5 may not represent alkyl at the 8-position, and provided further that two trifluoromethyl or two tertiary butyl groups or a trifluoromethyl and a tertiary butyl group are not on adjacent carbon atoms
and the pharmacologically acceptable acid addition salts thereof.

3,870,723

2-AZACYCLOALKYLMETHYL SUBSTITUTED BENZHYDRYL KETONES AND CARBINOLS

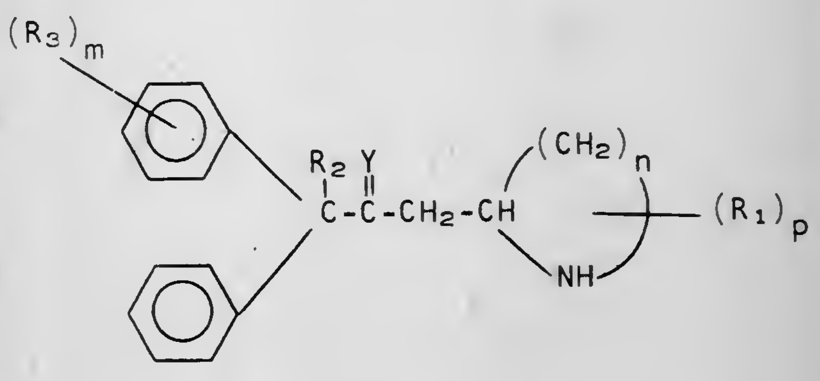
J. Martin Grisar, and George P. Claxton, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,315

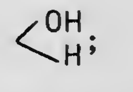
Int. Cl. C07d *29/20*

U.S. Cl. 260—293.8 **5 Claims**

1. A 2-azacycloaklylmethyl substituted benzhydryl ketone and carbinol having the formula:



wherein *m* is an integer of from 1 to 3; *n* is an integer of from 3 to 5; *p* is an integer of from 1 to 2; R_1 is selected from the group consisting of hydrogen or lower alkyl having from 1 to 4 carbon atoms; R_2 is selected from the group consisting of hydrogen and lower alkyl having from 1 to 4 carbon atoms; R_3 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 4 carbon atoms, lower alkoxy having from 1 to 4 carbon atoms, lower alkylthio having from 1 to 4 carbon atoms and halogen; Y is the radical =O or



$$<^{OH}_{H};$$

or a pharmaceutically acceptable acid addition salt thereof.

3,870,724

PROCESS FOR PREPARING PYRIDOXAL-5′-MONOPHOSPHATE

Hitoshi Uno, Takatsuki-shi, and Akira Irie, Hirakata-shi, both of Japan, assignors to Dainippon Pharmaceutical Co. Ltd., Osaka, Japan

Filed Mar. 7, 1969, Ser. No. 805,345

Claims priority, application Japan, Mar. 12, 1968, 43-16124; Mar. 13, 1968, 43-16381

Int. Cl. C07d *31/32*

U.S. Cl. 260—297 V **10 Claims**

1. A process for preparing pyridoxal -5- mono phosphate which comprises the steps of reacting a pyridoxal hydrochlo-

ride or pyridoxal hydroxy sulfonic acid with a metal salt selected from the chlorides and sulfates of nickel, cobalt and iron and an amine selected from the group consisting of lower alkyl amines, cyclo (5-6 carbon alkylamines,) phenyl lower alkylamines and anilines, in water, a water miscible lower alkanol or a mixture of water and said lower alkanol to produce a reaction mixture, adjusting the pH of the reaction mixture to about 7 to 10 to precipitate from the reaction mixture a pyridoxal Schiff's base metal chelate, separating the precipitated Schiff's base metal chelate from the reaction mixture, reacting the separated precipitated pyridoxal Schiff's base metal chelate with a phosphorylating agent selected from the group consisting of a mixture of phosphoric acid and phosphoric acid anhydride, a mixture of phosphoric anhydride and water, meta phosphoric acid, a mixture of phosphorous oxychloride and water and tetrachloro pyro phosphoric acid to produce a phosphorylated Schiff's base metal chelate and heating the phosphorylated Schiff's base metal chelate with water to hydrolyze it and produce said pyridoxal-5-mono phosphate.

3,870,725
NITROTHIAZOLE DERIVATIVES

Peter Graham Hughes, Sunningdale, and John Pomfret Verge, Middle Assendon, both of England, assignors to Lilly Industries Limited, London, England

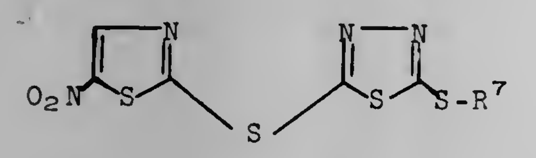
Filed Mar. 13, 1972, Ser. No. 234,376

Claims priority, application Great Britain, Mar. 30, 1971, 8252/71; Aug. 20, 1971, 39106/71

Int. Cl. C07d *99/10*

U.S. Cl. 260—302 H **4 Claims**

1. Compound having the formula



wherein R^7 is hydrogen, C_{1-10} alkyl, allyl, propargyl, β-hydroxyethyl, benzyl, N,N-dimethylthiocarbamyl or N,N-diethylthiocarbamyl.

3,870,726
DERIVATIVES OF 3-AZOLYLPROPYNE AND PROCESSES FOR THEIR PREPARATION AND USE

Gerhard Jager; Manfred Plempel, and Karl Heinz Buchel, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

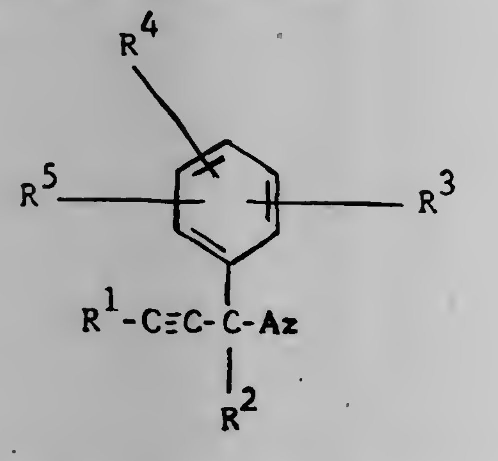
Continuation of Ser. No. 177,843, Sept. 3, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,581

Claims priority, application Germany, Sept. 9, 1970, 2044621

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **24 Claims**

1. A compound selected from the group consisting of a 3-azolylpropyne derivative of the formula:



wherein

R^1 is hydrogen, chloro, bromo, iodo or lower alkyl;
R^2 is lower alkyl or phenyl;
R_3, R_4 and R_5 are the same or different and selected from hydrogen, halogeno, trifluoromethyl, nitro, lower alkyl or lower alkoxy but are not all identical; and
Az is imidazole linked to the adjacent carbon atom in the 1-position; or

a physiologically acceptable acid addition salt thereof.

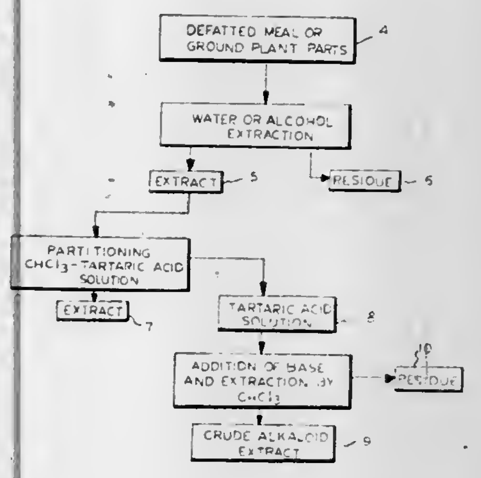
3,870,727
PRODUCTION OF HARRINGTONINE AND ISOHARRINGTONINE

Richard G. Powell, Peoria, and Cecil R. Smith, Jr., Dunlap, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 26,995, April 9, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,189

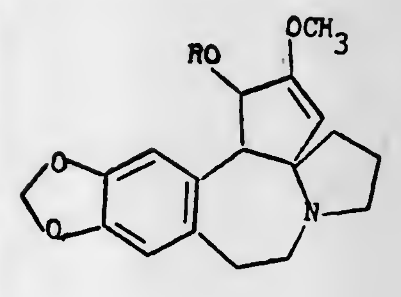
Int. Cl. C07d *27/04*

U.S. Cl. 260—326.5 **3 Claims**

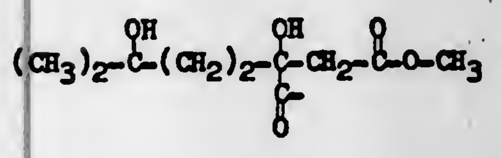


DEFATTED MEAL OR GROUND PLANT PARTS
4
WATER OR ALCOHOL EXTRACTION
EXTRACT
5
RESIDUE
6
PARTITIONING CHCl₃-TARTARIC ACID SOLUTION
EXTRACT
7
TARTARIC ACID SOLUTION
8
ADDITION OF BASE AND EXTRACTION BY CHCl₃
10
RESIDUE
CRUDE ALKALOID EXTRACT
9

1. The alkaloid compound having the following structure:

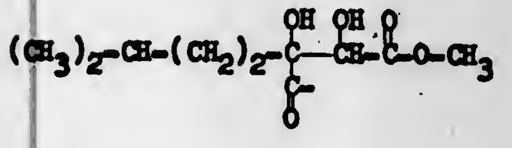


where R equals



$$(CH_3)_2\text{-}\overset{OH}{\overset{|}{C}}\text{-}(CH_2)_2\text{-}\underset{\underset{O}{\overset{\|}{C}}\text{-}}{\overset{OH}{\overset{|}{C}}}\text{-}CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_3$$

or



$$(CH_3)_2\text{-}CH\text{-}(CH_2)_2\text{-}\underset{\underset{O}{\overset{\|}{C}}\text{-}}{\overset{OH}{\overset{|}{C}}}\text{—}\overset{OH}{\overset{|}{CH}}\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_3$$

3,870,728
DERIVATIVES OF 4'-AMINOMETHYL-DIBENZO (B,E)-11-OXEPINE-2'-SPIRO-1',3'-DIOXOLANE, THEIR METHOD OF PREPARATION AND THEIR THERAPEUTIC APPLICATION

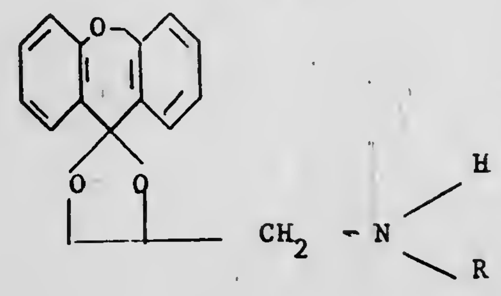
Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Albert Y. Le Cloarec, Saint-Maur; Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon la Foret, all of France, assignors to Delalande S.A., Courbevoie (Hauts de Seine), France

Filed Jan. 29, 1973, Ser. No. 327,810

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **5 Claims**

1. A compound having the formula



(I)

in which R is alkyl having 1 to 4 carbon atoms.

3,870,729
PROCESS FOR THE EPOXIDATION OF OLEFINES

Pierre-Etienne Bost, Paris; Michel Costantini, Lyon, and Guy Lartigau, Tassin-La-Demi Lune, Rhone, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Jan. 31, 1974, Ser. No. 438,461

Claims priority, application France, Feb. 2, 1973, 73.03729

Int. Cl. C07d *1/08*

U.S. Cl. 260—348.5 L **15 Claims**

1. In a process for the epoxidation of an olefinic compound by contacting the said compound with an organic hydroperoxide in the presence of a soluble titanium compound, the improvement which consists in carrying out the said epoxidation in the presence of a phosphoric acid ester.

3,870,730
PRODUCTION OF ANTHRAQUINONE FROM NAPHTHALENE

Gerhard Scharfe, and Johann Grolig, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 12, 1973, Ser. No. 350,570

Claims priority, application Germany, Apr. 15, 1972, 2218316; Sept. 16, 1972, 2245555

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 **12 Claims**

1. In the production of anthraquinone wherein naphthalene is oxidized to form naphthoquinone and phthalic anhydride, the naphthoquinone is reacted with butadiene to form tetrahydroanthraquinone, and the tetrahydroanthraquinone is reacted with oxygen to form anthraquinone, the improvement which comprises effecting the reaction of naphthoquinone with butadiene at a temperature of about 80 to 250°C in the presence of about 20 to 90% by weight of naphthalene based on the weight of naphthalene, naphthoquinone and phthalic anhydride, to produce a reaction mixture comprising naphthalene, tetrahydroanthraquinone and phthalic anhydride, separating the naphthalene from said reaction mixture, reacting the remaining mixture comprising tetrahydroanthraquinone and about 50 to 90% by weight of phthalic anhydride at a temperature of about 150 to 300°C with molecular oxygen, and removing phthalic anhydride from an oxidation reaction mixture comprising anthraquinone and phthalic anhydride.

3,870,731
OXIDATION OF PHENOLS AND ALKYL SUBSTITUTED PHENOLS TO THEIR CORRESPONDING PARA-BENZOQUINONE

David A. Hutchings, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 28, 1973, Ser. No. 401,724

Int. Cl. C07c *49/64*

U.S. Cl. 260—396 R **11 Claims**

1. A process comprising reacting a solution of phenol in a solvent with oxygen in the presence of at least one copper containing material, as catalyst, said catalyst being selected from the group consisting of copper (I) ions, copper (II) ions and metallic copper and a promoter selected from the group consisting of chloro, bromo, iodo, thiocyanate, cyanate and cyanide ions and wherein the reaction is carried out at an oxygen partial pressure up to 750 psig and at a temperature of 30° to 150°C. in the presence of from 0.01 mole of catalyst per mole of phenol to 5.0 moles of catalyst per mole of phenol said solvent being selected from the group consisting of:

A. water,
B. N-alkyl substituted amides selected from the group consisting of dimethylformamide, diphenylformamide, N-methyl-2-pyrrolidone, cyclohexylmethylformamide, and phenylmethylformamide,
C. alcohols selected from the group consisting of methanol, ethanol and isopropanol and
D. sulfoxides selected from the group consisting of dimethylsulfoxide, cyclohexylmethylsulfoxide and phenylmethylsulfoxide.

3,870,732
MIXED SALTS OF ALUMINUM

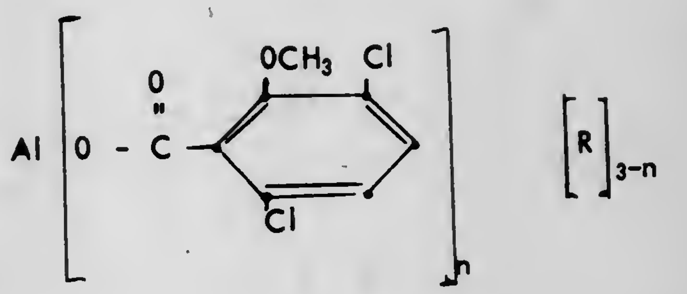
Takeo Hokama, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Aug. 21, 1973, Ser. No. 390,286

Int. Cl. C09f *5/00, 7/00*

U.S. Cl. 260—408 **8 Claims**

1. A mixed salt of aluminum having the empirical formula



wherein R is an organic acid radical of from 7 to 20 carbon atoms and n has an average value of from 0.5 to 2.5 .

3,870,733
MIXTURES OF GLYCERIDES HAVING CYTO-C22 FATTY ACID CONTENT

Hayato Kubota, Kobe; Sadao Nakayama, Hirakata, and Teizaburo Tateishi, Toyonaka, all of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

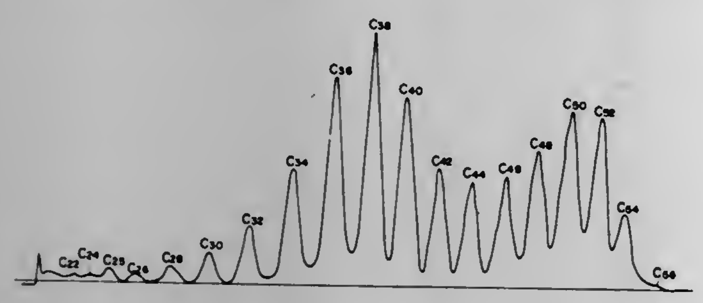
Continuation-in-part of Ser. No. 4,111, Jan. 20, 1970, abandoned, and a continuation-in-part of Ser. No. 5,906, Jan. 26, 1970, abandoned, and a continuation-in-part of Ser. No. 53,146, July 2, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,153

Int. Cl. C11c *3/10;* **A23d** *3/00, 3/02*

U.S. Cl. 260—410.8 **3 Claims**

1. An oil or fat composition exhibiting a buttery flavor consisting essentially of a mixture of glycerides having carbon numbers from 22 to 54, the total content of C_{36} and C_{38} glycerides being up to 25 wt percent, and the contents of C_{22}, C_{24} and C_{26} glycerides being from 0.2 to 3.8 wt percent, from 0.2 to 15.0 wt percent and from 0.4 to 25.0 wt percent, respec-

tively, based on the weight of said composition and said glycerides having a C_4 to C_{22} fatty acid content, the content of at least one of the C_4 and C_6 fatty acids being from 1 to 25 wt percent, the content of C_8 fatty acid being 0.5 to 10 wt percent, the content of C_{10} fatty acids being 0.5 to 10 wt percent and the content of C_{12} fatty acid being from 0.5 to 10 wt percent based on a total weight of the fatty acid content in the composition.



3,870,734
PRODUCTION OF MIXTURES OF CARBOXYLIC ACIDS FROM MIXTURES OF OLEFINS

Anatoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 5, 1973, Ser. No. 367,178
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 **15 Claims**

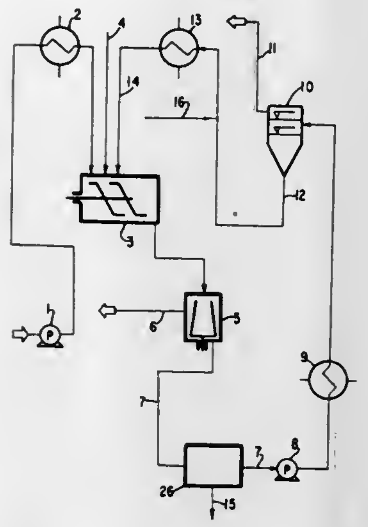
1. A process for the production of carboxylic acids from mixtures of olefins having from 24 to 40 carbon atoms, sulfuric acid of at least 92 percent strength, carbon monoxide and water which comprises adding said mixture of olefins dispersed in a hydrocarbon carrier in which less than about 6 grams of said olefin mixture is soluble per 100 grams of said carrier while maintaining the same at a temperature of about 35° to about 150° C. to a reaction zone having a lower temperature than the entering fluid mixture containing carbon monoxide and said sulfuric acid, maintaining the resulting mixture at a temperature of about −15° to about 75° c., adding water to the reaction product so formed and thereafter recovering the desired carboxylic acid product.

3,870,735
CONTINUOUS PROCESS FOR THE SEPARATION OF MIXTURES OF FATTY SUBSTANCES OF DIFFERENT MELTING POINTS

Werner Stein, Erkrath-Unterbach, and Helmut Hartmann, Langenfeld, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Oct. 26, 1972, Ser. No. 300,895
Claims priority, application Germany, Nov. 11, 1971, 2155988
Int. Cl. C09f *5/10*
U.S. Cl. 260—419 **11 Claims**

1. A continuous process for the separation of mixtures of fatty acids containing from 0.8 percent to 15 percent by weight of non-fatty acid organic impurities into fatty acid mixtures of different melting points by the steps of continuously dispersing said mixture of fatty acids consisting of an oily phase and a solid phase in a recycling aqueous wetting agent solution at a temperature whereby a dispersion of liquid and solid fatty acid particles is obtained, continuously separating said dispersion into two phases of different specific gravities, a lighter phase consisting substantially of liquid fatty acid fractions and a heavier phase consisting substantially of solid fatty acid particles dispersed in said aqueous wetting agent solution, continuously withdrawing said liquid fatty acid fractions, continuously separating said solid fatty acid particles from 10 percent to 70 percent by weight of said aqueous wetting agent solution, continuously withdrawing said separated aqueous wetting agent, solution, continuously melting said solid fatty acid particles containing adhering aqueous phase and wetting agent, in an aqueous phase, continuously separating said melted fatty acid particles containing little wetting agent from an aqueous phase enriched with wetting agent, continuously withdrawing said melted fatty acid particles, continuously recycling said aqueous phase enriched with wetting agent to said dispersing step and continuously replacing said withdrawn part of said recycling aqueous wetting agent solution with a fresh aqueous solution whereby the concentration of said recycling aqueous wetting agent solution is maintained substantially constant at said dispersing step.



3,870,736
METHOD FOR MAKING ORGANOTIN THIOGLYCOLLIC ACID ESTERS

Hans Plum, Heessen, and Friedrich Runggas, Dortmund, both of Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Filed Jan. 14, 1974, Ser. No. 432,824
Claims priority, application Germany, Jan. 20, 1973, 2302749
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **6 Claims**

1. The method of making an organotin thioglycollic acid ester which comprises reacting a tetraalkyl tin compound with a tin tetrathioglycollic acid ester at a temperature between about 100°C. and about 250°C.

3,870,737
PHOSPHATES

James Derek Birchall, and John Edward Cassidy, both of Runcorn, England, assignors to Imperial Chemical Industries, Limited, London, England

Continuation of Ser. No. 42,499, June 1, 1970. This application July 25, 1972, Ser. No. 274,964
Claims priority, application Great Britain, June 12, 1969, 29862/69
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 R **15 Claims**

1. A method of preparing a complex phosphate of aluminium other than a phosphate ester wherein said complex phosphate contains at least one chemically bound molecule of an alcohol, which comprises interacting an aluminum compound selected from the group consisting essentially of aluminium halides, aluminium oxyhalides, aluminium alkoxyhalides and aluminium alkoxides with an alcohol containing one to ten carbon atoms and phosphoric acid and, when the aluminium compound is an alkoxide, a halogen acid.

3,870,738
PROCESS FOR MANUFACTURING GASES RICH IN METHANE

Kenzo Yamamoto; Seiichi Matsuoka, both of Yokohama, and Toshio Shioda, Yokosuka, all of Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1973, Ser. No. 326,007
Claims priority, application Japan, Jan. 24, 1972, 47-9296
Int. Cl. C07c *1/02, 1/04*
U.S. Cl. 260—449 S **6 Claims**

1. In a process for producing a gas rich in methane wherein a gaseous mixture of feed hydrocarbon containing at least two carbon atoms and steam is subjected to steam reforming in contact with a reforming catalyst at a temperature within the range of 350°C and 550°C and a pressure within the range of 0 kg/cm^{2}G and 100 kg/cm^{2}G to produce an effluent stream of reformed gas mixture comprising as constituent gases methane, water, hydrogen, carbon monoxide and carbon dioxide, and subjecting the said effluent steam of reformed gas to exothermic methanization by passing it through a reaction zone under methanization reaction conditions of a temperature in the range of 2,000°C to 550°C and a pressure in the range of 0 kg/cm^{2}G and 150 kg/cm^{2}G and in contact with methanization catalyst to produce a methane-rich gas, the improvement which comprises:

dividing said effluent stream of reformed gas into two stream parts to constitute a first stream part and a second stream part;

flowing through a first methanization reaction zone containing methanization catalyst and under said methanization reaction conditions, only said first stream part containing all of said constituent gases to obtain a first methanized reaction product gas;

cooling said second stream part to condense the water therein and separating the condensed water from the remainder of said second stream part to obtain a dewatered gaseous second stream part;

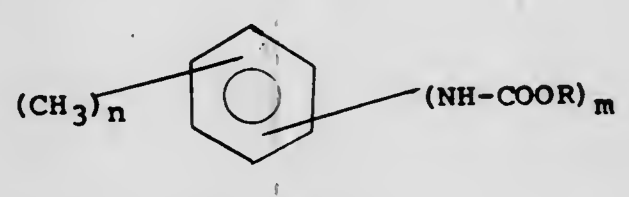
flowing said dewatered gaseous second stream part conjointly with said first methanized reaction product gas through one or more additional methanization reaction zones containing methanization catalyst and under said methanization reaction conditions, said additional methanization reaction zone or zones being separate from said first methanization zone and connected in series with said first methanization zones and all of the methanization reactions being carried out adiabatically, and separating from the last of the methanization reaction zones an effluent gas enriched in methane.

3,870,739
ISOCYANATES FROM URETHANES

George B. DeLaMater, Media; Elbert C. Herrick, West Chester, and Barton Milligan, Ardmore, all of Pa., assignors to Air Products and Chemicals Inc., Wayne, Pa.

Filed Mar. 5, 1973, Ser. No. 337,954
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **5 Claims**

1. In a process for thermally dissociating a urethane to products including the corresponding isocyanate, said urethane having the following formula:



where n is an integer from 0 to 2,
where m is an integer from 1 to 3,
where R is methyl,

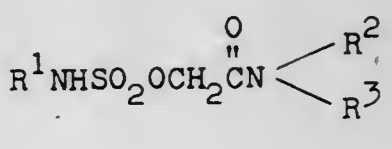
which comprises introducing the urethane into a non-catalytic pyrolysis zone maintained at a reaction temperature of the range of about 350°-550°C, and at a pressure less than (m + 1) times the vapor pressure of product isocyanate at the reaction temperature, removing vapor phase reaction products from said reaction zone cooling the reaction product vapors to condense out substantially all of the isocyanate therefrom while leaving at least 95 percent of the alcohol product in vapor form, the improvement wherein the urethane is introduced into the pyrolysis zone in solid particulate form and the residence time of the dissociation products in the pyrolysis zone is less than 1 second whereby a yield of at least 95 percent of theory isocyanate is prepared and recovered.

3,870,740
SUBSTITUTED O-(AMINOSULFONYL)-GLYCOLIC ANILIDES

Adolf Fischer, Mutterstadt; Gerbard Hamprecht, Mannheim; Dietrich Mangold, Neckargemuend, and Wolfgang Rohr, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 5, 1973, Ser. No. 321,548
Claims priority, application Germany, Jan. 13, 1972, 2201432
Int. Cl. C07c *143/02, 143/08, 143/20*
U.S. Cl. 260—456 A **15 Claims**

1. A substituted 0-(aminosulfonyl)-glycolic anilide of the formula



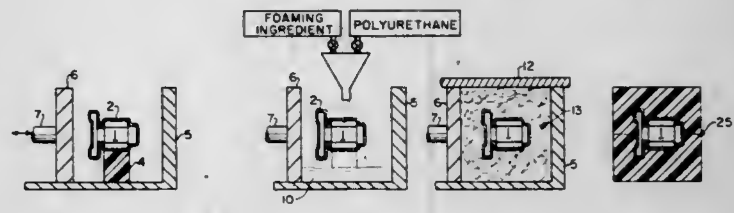
$$R^1NHSO_2OCH_2\overset{\overset{O}{\|}}{C}N\begin{matrix}\diagup R^2\\ \diagdown R^3\end{matrix}$$

where R^1 denotes hydrogen, lower alkyl, lower haloalkyl or lower cycloalkyl, R^2 denotes phenyl, and R^3 denotes lower alkynyl.

3,870,741
METHOD OF MAKING A FOAM PACKAGE

George B. Kuhn, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 29,870, April 20, 1970, abandoned. This application May 4, 1972, Ser. No. 250,460
Int. Cl. B29d *27/00;* **B65d** *75/00, 85/30*
U.S. Cl. 264—46.4 **1 Claim**



1. The method of forming a foam package which comprises supporting a piece of film on a support in a mold, placing the article to be packaged on the film above the support, covering the top and sides of the article with another piece of film, the pieces of film being large enough to overlap at the sides of the article, introducing into the mold (a) sufficient polyurethane precursor of the class consisting of polyesters and polyethers, (b) an excess of polyisocyanate, and (c) foaming agent in the proportions to produce a foam and allowing the mixture to foam and completely enclose the article, whereby the rising foaming mixture lifts the outer portion of the lower piece of film and closes it against the portions of the upper piece which are at the sides of the article and fills the mold to surround the article, and then removing the foam package from the mold.

3,870,742
ISOMERIC MIXTURE OF BICYCLIC NITRILES AND THEIR METHOD OF PREPARATION

Erich Klein, Holzminden, Germany, assignor to Dragoco Spezialfabrik konz. Riech-und Aromastoffe Gerberding & Co. GmbH, Holzminden, Germany

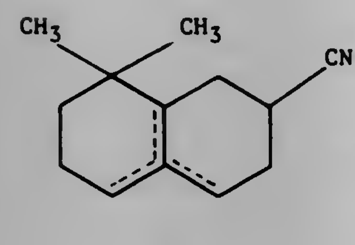
Filed July 5, 1972, Ser. No. 269,027

Claims priority, application Germany, Mar. 6, 1972, 2210762

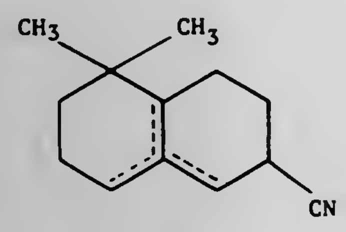
Int. Cl. C07c *121/02, 121/48*

U.S. Cl. 260—464 **2 Claims**

1. A mixture of isomers of bicyclic nitriles comprising



and



Ia

Ib

the single double bond present in Ia and Ib being located in any of the three positions indicated by the dotted line, said mixture of isomers being prepared by the cyclization of the isomers obtained by the reaction of equivalent amounts of myrcene and acrylonitrile.

3,870,743
PREPARATION OF AROMATIC DINITRILES

Gunther Ibing, Gladbeck, and Kurt Neubold, Bottrop, both of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed June 17, 1970, Ser. No. 47,875

Claims priority, application Germany, June 18, 1969, 1930880

Int. Cl. C07c *121/02, 121/54*

U.S. Cl. 260—465 C **9 Claims**

1. In the production of nitriles of aromatic dicarboxylic acids by the reaction of dialkyl-substituted benzenes with oxygen and ammonia at elevated temperature, the improvement which comprises employing as catalyst a mixture of vanadium and molybdenum oxides on alumina as carrier, which has been activated by about 0.1 to 50% of the combined weights of molybdenum and vanadium oxide of at least one of cerium, chromium, manganese, tungsten, bismuth, tin, antimony, titanium, lithium, sodium and potassium oxides, the mole ratio of vanadium oxide to molybdenum oxide ranging from about 0.5–2:1.

3,870,744
PROCESS FOR OXYGEN-ALKYLATION OF STERICALLY HINDERED PHENOLS

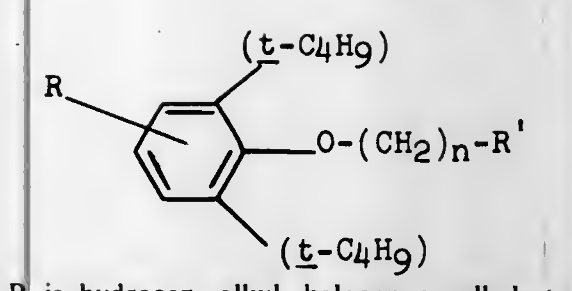
Eugene R. Wagner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 41,557, May 28, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,935

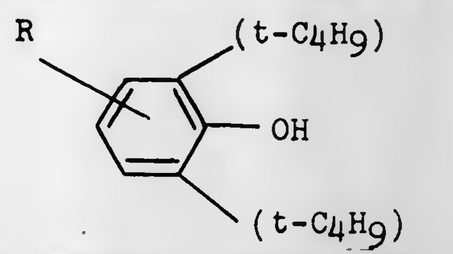
Int. Cl. C07c *43/20, 65/02, 121/74*

U.S. Cl. 360—465 F **9 Claims**

1. A method for preparing oxygen-alkylated 2,6-di-tert-butylphenols of the formula:



wherein R is hydrogen, alkyl, halogen or alkylester; R′ is hydrogen, carboxy, amino, dialkylamino, nitrilo or alkyl ester, and *n* is an integer of from 1 to 6, inclusive, with the proviso that when R′ is hydrogen, *n* is at least 2, which comprises reacting a 2,6-di-tert-butylphenol reactant of the formula:



wherein R is as hereinbefore described, with an alkylating agent of the formula

$X\text{-}(CH_2)_n\text{-}R'$

wherein *n* and R′ are as hereinbefore described and X is halogen, said reaction being carried out at ambient temperatures and in the presence of a dipolar aprotic solvent and a base medium.

3,870,745
COMPLEX OF 2,6-DIMETHYLNAPHTHALENE AND 2-CYANO-6-METHYLNAPHTHALENE

Howard P. Angstadt, Media, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Filed Oct. 29, 1973, Ser. No. 410,650

Int. Cl. C07c *121/62*

U.S. Cl. 260—465 R **3 Claims**

1. As a composition a substantially equimolar complex of 2,6-dimethylnaphthalene and 2-cyano-6-methylnaphthalene.

3,870,746
PROCESS FOR RECOVERY OF PURE ACETONITRILE

Theodor Lussling; Gerd Schreyer; Ferdinand Theissen, all of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt, Main, Germany

Filed Jan. 14, 1972, Ser. No. 217,843

Claims priority, application Germany, Jan. 22, 1971, 2102886

Int. Cl. C07c *121/18, 121/32*

U.S. Cl. 260—465.3 **9 Claims**

1. In a process for the recovery of pure acetonitrile from an aqueous solution of acetonitrile containing organic impurities boiling below and above acetonitrile, said aqueous solution of acetonitrile having been obtained as byproduct in the reaction of propylene with ammonia and oxygen to form acrylonitrile, the improvement comprising:

1. extracting the aqueous solution of acetonitrile with an organic solvent extraction agent which has a higher boiling point than acetonitrile, is only slightly miscible with water, and does not form an azeotropic mixture with acetonitrile, said extraction agent being an alkyl substituted benzene having a total of 3 to 20 carbon atoms in the alkyl group or groups, benzonitrile or toluonitrile;
2. distilling off the portion volatile up to about 76°C. from this extract;
3. freeing the acetonitrile containing more difficulty volatile residue from water by distillation in the presence of a water entraining agent; and
4. recovering the pure acetonitrile by a fractional distillation.

3,870,747
INTERMEDIATES AND PROCESS FOR PROSTAGLANDIN SYNTHESIS

Norman L. Wendler, Summit; David Taub, Metuchen; Harry L. Slates, Westfield, and Zbigniew S. Zelawski, Piscataway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 24, 1971, Ser. No. 201,959

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 G **5 Claims**

1. 3α,6,7,7α-Tetrahydro-1α-(loweralkoxycarbonyl)-4-methyl-2-oxindaneheptanoic acid and loweralkyl esters or esters with a loweralkyl group substituted with an aromatic group of from 6 to 10 carbon atoms.

3. The process of preparing the compound of claim 1 in which the diloweralkyl ester or diloweralkyl ester substituted with an aromatic group of from 6 to 10 carbon atoms of 3-methyl-3-cyclohexene-1α,2α-diacetic acid is treated with an alkali metal loweralkoxide in a solvent at from 50°C. to the boiling point of the reaction mixture for from ½to 3 hours, and subsequently treated with the loweralkyl ester or loweralkyl ester substituted with an aromatic group of from 6 to 10 carbon atoms of ω-iodoheptanoic acid at from 100°–200°C. for from 10 to 30 hours.

3,870,748
2-HYDROXY-1,1,2,3,3-PENTAHYDRO-PERFLUOROALKYL DERIVATIVES

Atsuo Katsushima; Iwao Hisamoto; Shoshin Fukui; Chiaki Maeda; Akitoshi Iwatani; Takahisa Kato; Masayuki Nagai; Hiroyuki Shinkai, all of Osaka, and Masayuki Asaoka, Kyoto, all of Japan, assignors to Daikin Kogyo Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 877,497, Nov. 17, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 299,741

Claims priority, application Japan, Nov. 18, 1968, 43-84276; Dec. 5, 1968, 43-89252; Dec. 19, 1968, 43-93513; Dec. 19, 1968, 43-93514; Feb. 7, 1969, 44-9524; Mar. 10, 1969, 44-18411; Sept. 18, 1969, 44-74146

Int. Cl. C07c *69/34, 69/60, 69/80*

U.S. Cl. 260—475 F **5 Claims**

1. A compound of the formula:

$[RfCH_2CH(OH)CH_2OOC]_mQ$

wherein Rf is a perfluoroalkyl group, an ω-hydroperfluoroalkyl group or an ω-chloro-perfluoroalkyl group having 4 to 20 carbon atoms, Q is $—(CH_2)_p—$, $—CH{=}CH—$, or $—C_6H_4—$, in which *p* is an integer of 1–4 and *m* is 2.

3,870,749
PREPARATION OF SALTS AND COMPLEXES OF SUBSTITUTED OXYACETATE

Andre Danesh, 8 Browne St., Brookline, Mass. 02146

Filed Mar. 10, 1971, Ser. No. 123,025

Int. Cl. C07c *59/22, 69/66*

U.S. Cl. 260—484 P **9 Claims**

1. A process for the preparation of the disodium salt of diglycolic acid or lower alkyl ester thereof, said process comprising reacting formaldehyde with a member selected from the group consisting of carbon monoxide and sodium glycolate, said reaction being performed in a liquid medium selected from the group of water and a lower alkyl alcohol at a temperature in excess of 30°C. and a pressure in excess of 1 atmosphere in the presence of sodium hydroxide.

3,870,750
PROCESS FOR THE PRODUCTION OF AMINOMETHANE-DIPHOSPHONIC ACID AND ITS SALTS

Klaus Wollmann; Walter Ploger, both of Hilden, and Karl-Heinz Wopms, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

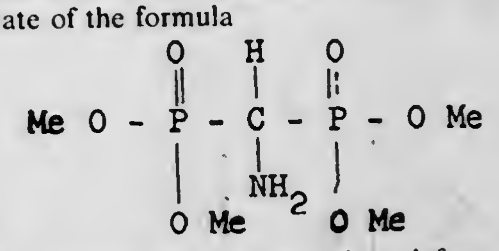
Continuation of Ser. No. 90,455, Nov. 17, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,605

Claims priority, application Germany, Nov. 19, 1969, 1958124

Int. Cl. C07f *9/38*

U.S. Cl. 260—502.5 **10 Claims**

1. A process for the production of an amino-methane-diphosphonate of the formula



$$\mathrm{Me\,O-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O\,Me}{|}}{P}}-\overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle NH_2}{|}}{C}}-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O\,Me}{|}}{P}}-O\,Me}$$

wherein Me represents a member selected from the group consisting of hydrogen and alkali metal which comprises the steps of reacting a phosphorus trihalide selected from the group consisting of phosphorus trichloride and phosphours tribromide with formamide at a temperature of from 0° to 75°C, wherein the molar ratio of said phosphorus trihalide to formamide is from about 4:1 to 1:4, subjecting the resultant reaction product to hydrolysis and recovering said aminomethane-diphosphonate.

3,870,751
SUBSTITUTED PHENYL ACETIC ACIDS

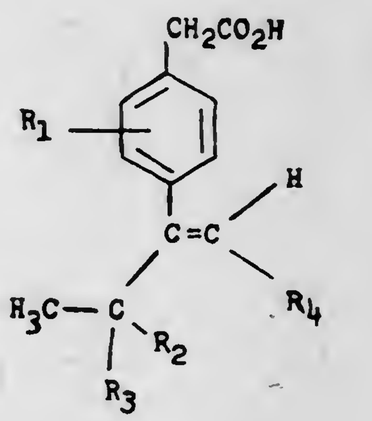
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Feb. 20, 1973, Ser. No. 333,894

Int. Cl. C07c *63/60*

U.S. Cl. 260—515 R **5 Claims**

1. A compound of the formula



where,
- R_1 represents hydrogen, halo having an atomic weight of about 19 to 36 or straight chain lower alkoxy and
- R_2 and R_3 each independently represent alkyl having one or two carbon atoms, and
- R_4 represents hydrogen, or lower alkyl or a pharmaceutically acceptable salt thereof.

3,870,752

ACYL SUBSTITUTED INDANE CARBOXYLIC ACIDS

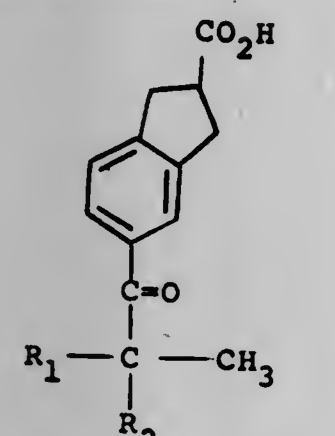
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsipanny, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Aug. 31, 1973, Ser. No. 393,475

Int. Cl. C07c *65/20*

U.S. Cl. 260—515 R **3 Claims**

1. A compound of the formula



where R_1 and R_2 each independently represent alkyl having 1 to 2 carbon atoms, or a pharmaceutically acceptable salt thereof.

3,870,753

PROCESS FOR PREPARING INDENYL ACETIC ACIDS

Roger J. Tull, Metuchen; Robert F. Czaja, Scotch Plains; Richard F. Shuman, Westfield, and Seemon H. Pines, Murray Hill, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 20, 1973, Ser. No. 426,864

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **6 Claims**

1. A process for preparing 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid or its acid addition salt which comprises the steps of:

a. condensing in the presence of a base 5-fluoro-2-methyl-1-R_1-benzylindene, wherein R_1 is p-methylthio or p-methylsulfinyl with glyoxylic acid, its salt or ester, to form the corresponding 5-fluoro-2-methyl-1-(p-methylthio[or methylsulfinyl]benzyl)-indenylidene-3-acetic acid, salt or ester; and

b. isomerizing said indenylidene compound in the presence of a base or acid to form the desired indenyl-3-acetic acid compound when R_1 is p-methylsulfinyl; when R_1 is methylthio, isomerizing said indenylidene-3-acetic acid from Step (a) to form 5-fluoro-2-methyl-1-p-methylthiobenzylidene-3-indenyl acetic acid and subsequently oxidizing said 3-indenyl acetic acid or alternatively first oxidizing said 3-indenylidene acetic acid to form the corresponding 1-p-methylsulfinyl compound and subsequently isomerizing said 1-p-methylsulfinyl compound.

3,870,754

PROCESS FOR THE PREPARATION OF 2,6-NAPHTHALENEDICARBOXYLIC ACID

Gentaro Yamashita, and Kiyoshi Yamamoto, both of Iwakuni, Japan, assignors to Teljin Limited, Osaka, Japan

Filed Aug. 28, 1972, Ser. No. 284,109

Int. Cl. C07c *63/38, 63/02*

U.S. Cl. 260—524 R **5 Claims**

1. A process for the preparation of 2,6-naphthalenedicarboxylic acid which comprises contacting 2,6-dimethylnaphthalene with molecular oxygen in acetic acid containing less than 20 percent by weight of water as the solvent and in the presence of an oxidation catalyst, wherein:

A. not more than 1 mole of 2,6-dimethylnaphthalene is used per 100 mols of acetic acid;

B. the contact is at a temperature of from 160° to 250°C.; and

C. the oxidation catalyst consists essentially of

1. cobalt compounds wherein at least 0.05 but not more than 2.0 grams atoms of cobalt per 100 mols of acetic acid are present,
2. manganese compounds wherein at least 0.02 but not more than 2.0 gram atoms of manganese per 100 mols of acetic acid are present, and
3. bromine or bromine compounds wherein at least 0.02 but not more than 2.0 gram atoms of bromine per 100 mols of acetic acid are present.

3,870,755

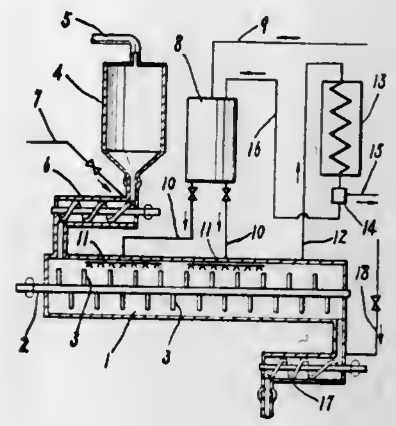
METHOD FOR MANUFACTURING NITROGEN-CONTAINING COMPOUNDS

Seiichi Kamo, Tokyo; Noriyoshi Yanai, and Naoto Osako, both of Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 864,273, Sept. 29, 1969, which is a continuation of Ser. No. 731,665, Jan. 24, 1968, abandoned, Continuation of Ser. No. 637,609, May 10, 1967, abandoned, Continuation of Ser. No. 451,538, May 28, 1965, abandoned. This application Feb. 16, 1972, Ser. No. 226,957

Int. Cl. C07c *127/12*

U.S. Cl. 260—553 R **10 Claims**



1. In a method of manufacturing an alkylidene diurea product by the reaction of solid urea and an alkyl aldehyde having 3 to 4 carbon atoms in the substantial absence of a solvent for said urea in the presence of a aqueous acid catalyst selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, acetic acid, formic acid, monochloroacetic acid, oxalic acid, citric acid, tartaric acid, benzene sulfuric acid and toluene sulfonic acid, the improvement which comprises carrying out the reaction with stirring in a nongas-tight vessel; continuously introducing solid urea into said reaction zone and continuously introducing said aldehyde in liquid form into said reaction zone by spraying in the ratio of 1 mole of urea to 0.6 to 1.1 moles of said aldehyde; maintaining the temperature of the reaction mixture above the boiling temperature of said aldehyde in the reaction zone and up to 20°C higher than the said boiling temperature by an autogenous balance between the heat of reaction and the latent heat of evaporation of by-product water and said aldehyde by permitting said water and unreacted aldehyde to evaporate;

maintaining the pH of reaction product less than 6 by addition of said catalyst to said reaction zone;

continuously discharging the evaporated aldehyde as vapor from said aldehyde vapor outlet; and continuously removing the product from said zone.

3,870,756

PROCESS FOR THE MANUFACTURE OF N,N-DIETHYL-TOLUAMIDE BY AQUEOUS CAUSTIC PROCEDURE

Leonard C. Ellis, Chesapeake, and Mearl A. Kise, Portsmouth, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Continuation-in-part of Ser. No. 84,157, Oct. 26, 1970, abandoned. This application Nov. 17, 1972, Ser. No. 307,619

Int. Cl. C07c *103/34*

U.S. Cl. 260—558 A **3 Claims**

1. A method in the preparation of N,N-diethyl-m-toluamide comprising:

A. first reacting meta-toluic acid with phosphorus trichloride while simultaneously draining waste products and thereafter substantially raising the reaction temperature to the range of 90°–140°C. to complete conversion of the acid in the reaction to yield meta-toluoyl chloride;

B. secondly, charging an amidation reactor with an entire charge of diethylamine, thereafter gradually feeding portions of the meta-toluoyl chloride into the reactor while agitating same, thereby forming the N,N-diethyl-m-toluamide and the by-product diethylamine hydrochloride;

C. thirdly, forming an aqueous solution of caustic soda having a concentration up to and including 50 percent and continuously alternating: the addition to the by-product of portions of said caustic solution, with the addition of portions of fresh meta-toluoyl chloride, to form by said additions a reaction mixture having a water content of less than 40 weight percent; simultaneously maintaining the reaction temperature at 20°–55°C. and agitating said reaction mixture to liberate diethylamine from its hydrochloride salt;

D. sequentially heating the product mixture at 70°–75°C. to yield a crude organic product layer of N,N-diethyl-m-toluamide.

3,870,757

PROCESS FOR THE PREPARATION OF OXOCARBOXYLIC ACID AMIDES AND OXOCARBOXYLIC ACIDS

Richard Kirchlechner; Werner Rogalski, and Jurgen Seubert, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 18, 1972, Ser. No. 281,651

Claims priority, application Germany, Aug. 21, 1971, 2141947

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **3 Claims**

1. 5-Chloro-8-methoxy-3-methyl-1-oxo-1,2,3,4-tetrahydro-3-naphthylacetamide.

3,870,758

CATALYTIC PREPARATION OF FORMANILIDE

Theodore C. Kraus, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 10, 1973, Ser. No. 405,249

Int. Cl. C07c *103/24*

U.S. Cl. 260—562 R **2 Claims**

1. A process for the preparation of formanilide which comprises reacting aniline with carbon monoxide in the presence of a catalytic amount of nickel-bis-quinoline diiodide at a temperature of 150°–325°C. and at an elevated pressure in the range of 1000 to 5000 psig.

3,870,759

1-ADAMANTYL ALKYL KETONES AND THEIR PREPARATION

Yoshiaki Inamoto, and Hirokazu Nakayama, both of Wakayama, Japan

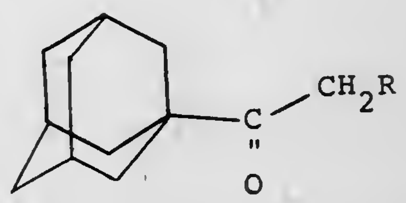
Filed July 13, 1970, Ser. No. 54,585

Claims priority, application Japan, July 19, 1969, 44-57130

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 G **4 Claims**

1. A process for preparing 1-adamantyl alkyl ketone of the formula (I)



(I)

wherein R is a linear or a branched alkyl group having 1 to 20 carbon atoms, which comprises alkylating ethyl 1-adamantylcarbonylacetate with a compound of the formula RX, wherein R has the same meaning as in formula I and X is halogen, sulfate, $C_6H_5SO_3$— or p—$CH_3C_6H_4SO_3$, saponifying the resulting α-alkyladamantylcarbonyl acetic ester in an alcoholic alkali metal hydroxide solution and then decarboxylating the free acid thus obtained in an acidic aqueous medium.

3,870,760

PREPARATION OF OXIDATION PRODUCTS OF CYCLOALKANES

Kyugo Tanaka, Yokohama; Shozo Oshima, Tokyo, and Itaru Watanabe, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1972, Ser. No. 239,390

Claims priority, application Japan, Mar. 31, 1971, 46-18783; Aug. 2, 1971, 46-57498; Nov. 1, 1971, 46-86278

U.S. Cl. 260—586 P **11 Claims**

1. A process for producing a mixture of the corresponding cycloalkylhydroperoxide, cycloalkanol and cycloalkanone which comprises oxidizing a cycloalkane having 5 to 12 carbon atoms with molecular oxygen in the liquid phase in the presence of an aliphatic or aromatic hydrocarbon nitrile compound having 2 to 8 carbon atoms at a temperature of from about 100° to 200°C. under a pressure of from atmospheric pressure to about 50 Kg./cm^2 gauge at a weight ratio of said cycloalkane to said aliphatic or aromatic nitrile compound of from 20:1 to 1:3.

3,870,761

MANUFACTURE OF PIPERITENONE

Heinrich Pasedach, Ludwigshafen, and Albrecht Friederang, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 17, 1972, Ser. No. 272,147

Claims priority, application Germany, July 23, 1971, 2136885; Jan. 27, 1972, 2203807

Int. Cl. C07c *49/48, 45/00, 29/00*

U.S. Cl. 260—586 C **6 Claims**

1. A process for the manufacture of piperitenone by reaction of methyl vinyl ketone with mesityl oxide in the presence of a basic catalyst, in thich methyl vinyl ketone is slowly introduced into a mixture consisting essentially of excess mesityl oxide and, as the catalyst, 40 to 60% w/w aqueous potassium hydroxide solution, the mixture is brought to a temperature of 50° to 80°C, the potassium hydroxide is used in an amount of 0.05 mole to 1.5 mole per mole of methyl vinyl ketone, and the methyl vinyl ketone is introduced into said mixture at said temperature.

3,870,762
DEHYDROCHLORINATION PROCESS

Martyn Hugh Stacey, and Terrence Donald Tribbeck, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 16, 1972, Ser. No. 307,209

Claims priority, application Great Britain, Dec. 2, 1971, 56007

Int. Cl. C07c *21/08*

U.S. Cl. 260—654 D **7 Claims**

1. In a process for the manufacture of vinylidene chloride from 1,1,2-trichloroethane by catalytic dehydrochlorination, the improvement which comprises dehydrochlorinating in the vapour phase in the presence of a catalyst which comprises member of the group consisting of the chlorides and fluorides of potassium, caesium, rubidium and mixtures thereof at a temperature in the range from 125℃ to 275℃.

3,870,763
CONVERSION OF ACYCLIC POLYENES

Louis F. Heckelsberg, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 190,287, Oct. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 73,65, Jan. 28, 1970, abandoned, which is a continuation of Ser. No. 627,858, April 3, 1967, abandoned. This application Nov. 29, 1971, Ser. No. 203,066

Int. Cl. C07c *3/62*

U.S. Cl. 260—666 A **18 Claims**

1. The process of converting an acyclic polyene in the olefin reaction process to produce at least one olefinic hydrocarbon having a different number of carbon atoms per molecule than the acyclic polyene which comprises contacting at a reaction temperature in the range of about 400° to 1100°F a feedstream containing said acyclic polyene with a catalyst active for disproportionation of propylene into ethylene and butene and under conditions selected within the temperature range for which the selected catalyst is active for promoting the olefin reaction process which, as defined herein, can be visualized as comprising the reaction between two first pairs of carbon atoms, the two carbon atoms of each first pair being connected by an olefinic double bond, to form two new pairs from the carbon atoms of said first pairs, the two carbon atoms of each of said new pairs being connected by an olefinic double bond, the amount of said acyclic polyene in said stream being at least about 1 part per 20 parts of any monoolefin present, there being at least about 1 part of monoolefin per 20 parts of acyclic polyene when the reaction temperature is less than about 600°F wherein said catalyst is

a. silica promoted by an oxide of tungsten.

3,870,764
OXIDATIVE DEHYDROGENATION PROCESS

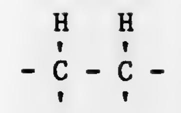
Robert S. Gichowski, San Luis Obispo, Calif., and Floyd E. Farha, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 21, 1972, Ser. No. 264,932

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **10 Claims**

1. An oxidative dehydrogenation process which comprises contacting at least one dehydrogenatable organic compound containing at least one



$$-\overset{\overset{\displaystyle H}{|}}{\underset{|}{C}}-\overset{\overset{\displaystyle H}{|}}{\underset{|}{C}}-$$

grouping under oxidative dehydrogenation conditions including the presence of molecular oxygen with a catalyst composition comprising (I) iron, (II) phosphorus, (III) gallium, and (IV) oxygen, sulfur, or oxygen and sulfur, each of said (I), (II), (III), and (IV), calculated as the element, present in a ratio sufficient to provide catalytic effectiveness, wherein said catalyst composition contains about 15 to 45 weight percent said (I), about 15 to 40 weight percent said (II), and about 0.1 to 10 weight percent said (III),

wherein said dehydrogenatable organic compound comprises an acyclic hydrocarbon monoolefin of 3 to 12 carbon atoms per molecule, cyclic hydrocarbon alkenes of 4 to 10 carbon atoms per molecule, alkylpyridines or alkylaromatics containing 1 to 4 alkyl groups per molecule wherein the alkyl group contains 1 to 6 carbon atoms per group such that at least 1 alkyl group has at least 2 carbon atoms, and cyclic or acyclic alkadienes of 4 to 12 carbon atoms per molecule.

3,870,765
ALKYLATION AIDS

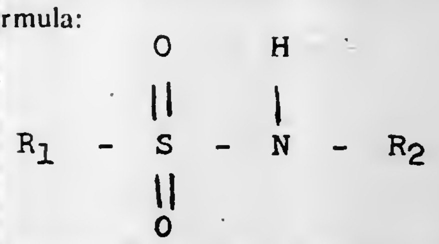
Frederic C. McCoy, Beacon, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 14, 1973, Ser. No. 370,195

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.51 **7 Claims**

1. In an alkylation process wherein an isoparaffin hydrocarbon is alkylated with an olefin hydrocarbon in the liquid phase, in the presence of an alkylation catalyst comprising an acid selected from the group consisting of hydrogen fluoride, sulfuric acid, and mixtures of sulfuric acid and fluorosulfonic acid, and employing an alkylation aid selected from the group consisting of aliphatic amines having an alkyl radical of 12 to 24 carbon atoms, halogen salts of alkyl ammonium compounds having at least one alkyl radical of 12 to 20 carbon atoms, phosphonium salts having at least one aliphatic radical of 12 to 20 carbon atoms, sulfonium salts having at least one aliphatic radical of 12 to 20 carbon atoms, and compounds having the formula:



$$R_1-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-\overset{\overset{\displaystyle H}{|}}{N}-R_2$$

wherein R_1 is selected from alkyl, aromatic, and alkyl aromatic radicals, and wherein R_2 is alkyl of from 8 to 30 carbon atoms;

The improvement which comprises:

a. mixing said alkylation aid with an alkyl phenol solubilizing agent selected from the group consisting of mono- and di-nuclear aromatics having at least one phenolic hydroxyl group and at least one aliphatic side chain of from 6–50 carbon atoms, and with hydrocarbon solvent boiling in the range of from 25°C to about 220°C, forming a clear solution comprising about 5 to 15 weight percent alkylation aid, about 5 to 50 weight percent alkyl phenol and about 40 to 90 weight percent hydrocarbon solvent; and

b. employing, in the alkylation process, from about 0.0033 weight percent to about 20 weight percent, based on acid catalyst, of said solution.

3,870,766
METHOD OF CURING ORGANIC POLYMERS AND COPOLYMERS

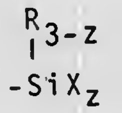
Rajendra Nath Chadha, Farmingdale, N.Y., assignor to Stauffer Chemical Company, Adrian, Mich.

Division of Ser. No. 154,594, June 18, 1971, Pat. No. 3,776,977, which is a continuation-in-part of Ser. No. 37,409, May 11, 1970, abandoned. This application Sept. 4, 1973, Ser. No. 394,215

Int. Cl. C08g *47/10*

U.S. Cl. 260—825 **9 Claims**

1. A curable composition comprising a hydroxylated organopolysiloxane fluid and a silylated organic polymer having one or more silyl groups of the formula



$$-\overset{\overset{\displaystyle R_{3-z}}{|}}{Si}X_z$$

connected thereto, wherein R is selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals, X is a reactive group capable of condensing with the hydroxyl groups of the organopolysiloxane, and z is a number of from 1 to 3, said silylated organic polymer being derived from organic monomers containing a carbon-to-carbon double bond and contains at least 3 reactive X groups per molecule.

3,870,767
OLEOPHOBIC AND HYDROPHOBIC POLYMERS CONTAINING POLYMERIZATION PRODUCT OF FLUORINATED SULFONAMIDO ETHYLENE MOIETIES

Edouard Grimaud, Oullins, and Maurice Troussier, Pierre-Benite, both of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

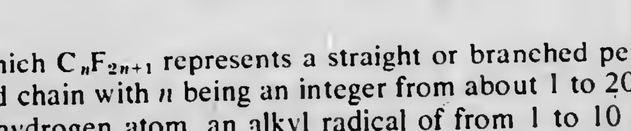
Filed Oct. 6, 1972, Ser. No. 295,653

Claims priority, application France, Oct. 8, 1971, 71.36310

Int. Cl. C08g *45/04, 19/00*

U.S. Cl. 260—836 **6 Claims**

1. Oleophobic and hydrophobic polymers obtained from the polymerization of one or more polyfluorinated sulfonamidoethylene acrylate or methacrylate monomers in the presence of a nonfluorinated acrylic resin which represents from 20 to 80% by weight of the monomer and resin and wherein the fluorinated sulfonamidoethylene moiety of the monomers is presented by the radical



$$C_nF_{2n+1}-CH_2-CH_2-SO_2-\underset{\underset{\displaystyle R}{|}}{N}-CH_2-CH-$$

in which C_nF_{2n+1} represents a straight or branched perfluorinated chain with *n* being an integer from about 1 to 20 and R is a hydrogen atom, an alkyl radical of from 1 to 10 carbon atoms, a cycloalkyl radical of from 5 to about 12 carbon atoms, and unsubstituted aryl radical or an aryl radical substituted with an an alkyl radical of from 1 to about 6 carbon atoms or the radical R′OH with R′ being an alkylene radical of from 2 to 4 carbon atoms and the nonfluorinated acrylic resin is selected from the group comprising an alkylacrylate or an alkylmethacrylate homopolymer in which the alkyl radical contains from about 1 to 20 carbon atoms; a copolymer containing several alkylacrylates or alkylmethacrylates in which the alkyl radicals contain from about 1 to 20 carbon atoms; and a copolymer containing one or more alkylacrylates or alkylmethacrylates wherein the alkyl radicals contain from about 1 to 20 carbon atoms and from 0.5 to 20% by weight of one or more monomers selected from N-methylolacrylamide, hydroxyethylacrylate, hydroxpropylacrylate, hydroxyethylmethacrylate, hydroxypropylmethacrylate, glycidylacrylate, glycidylmethacrylate, acrylic acid and methacrylic acid.

3,870,768
UNSATURATED AMIDES OF OXYBIS(BENZENESULFONIC ACID) AND THEIR USE AS CROSS-LINKING AGENTS

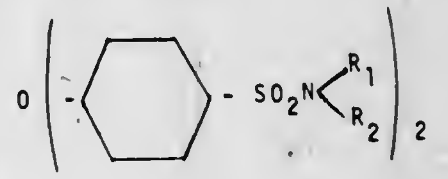
John C. Blackwood, Melrose; Edwin O. Hook, Marshfield, and Walter Beck, Bedford, all of Mass., assignors to Stepan Chemical Company, Wilmington, Mass.

Division of Ser. No. 180,850, Sept. 15, 1971, Pat. No. 3,725,476. This application Oct. 27, 1972, Ser. No. 301,301

Int. Cl. C07c *143/78;* **C08f** *27/06*

U.S. Cl. 260—857 G **15 Claims**

1. A process of preparing a cross-linked polymer, which process comprises: incorporating an unsaturated oxybis(benzenesulfonamide) in a polymer subject to cross-linking, the sulfonamide having the formula:



wherein:

R_1 is a C_2—C_{12} alkenyl radical wherein the terminal carbon atom has two hydrogen atoms and is bonded to the penultimate carbon atom by means of a double bond; and

R_2 is a R_1 radical, a C_1—C_6 alkyl radical, a phenyl radical or hydrogen,

the oxybis(benzenesulfonamide) being present in an amount ranging from about 0.1 to 30% by weight of the polymer; and, thereafter, cross-linking the polymer with the unsaturated oxybis(benzenesulfonamide).

3,870,769
THERMOPLASTIC RESIN-GRAFT-POLYBLEND COMPOSITIONS

Shuji Yoshida, Chiba, and Tateo Iguchi, Ichihara, both of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 334,702, Feb. 22, 1973, Pat. No. 3,830,873. This application Mar. 12, 1974, Ser. No. 450,299

Claims priority, application Japan, Feb. 26, 1972, 47-20045

Int. Cl. C08f *41/12, 29/56*

U.S. Cl. 260—876 R **6 Claims**

1. Thermoplastic resin compositions prepared by the steps of copolymerizing 0.5 to 25 parts by weight of at least one compound selected from the group consisting of acrylic and methacylic esters of 3-methoxy butanol with 99.5 to 75 parts by weight of monomers consisting of alkyl acrylate wherein the alkyl group has 2 to 8 carbon atoms to obtain a rubbery copolymer A; graftpolymerizing 100 parts by weight of said rubbery copolymer A with 100 to 300 parts by weight of at least one compound selected from the group consisting of aromatic vinyl compounds, vinyl cyanides and mixtures of either of said both types of compounds and monomers copolymerizable therewith in the presence of 0 to 0.5 parts by weight of a chain transfer reagent to obtain a graftpolymer B; and blending said graftpolymer B with a polymer C separated prepared from at least one compound consisting of aromatic vinyl compounds, vinyl cyanides and mixtures thereof so as to cause said graftpolymer B to be uniformly dispersed in particle sizes of 150 to 1000 millimicrons in said polymer C.

3,870,770
GRAFT COPOLYMER OF ETHYLENICALLY UNSATURATED CARBOXYLIC ACIDS ONTO A SUBSTRATE OF POLY-N-VINYL LACTAMS

William R. Peterson, and Walter N. Johnson, both of Chattanooga, Tenn., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 171,006, Aug. 11, 1971, abandoned. This application June 15, 1973, Ser. No. 370,421

Int. Cl. C08f *15/00*

U.S. Cl. 260—879 **6 Claims**

1. A graft copolymer of a monomer mixture containing at least one monomeric unsaturated aliphatic carboxylic acid and at least one monomer selected from the group consisting of aliphatic conjugated dienes and monoalkenyl aromatic compounds polymerized on a polymeric N-vinyl lactam substrate, said copolymer containing approximately by weight 0 to 98 parts of said diene, 0 to 75 parts of said monoalkenyl aromatic compound, 0.5 to 20 parts of said acid, and 1 to 99 parts of said polymeric lactam.

3,870,771
DIALKYL ALKYL AND AROMATIC SULFONAMIDOMETHYL PHOSPHONATES

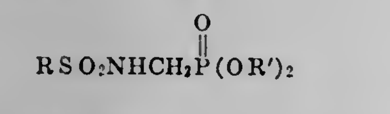
Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemical & Plastics Corporation, Niagara Falls, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,757

Int. Cl. C07f *9/40*

U.S. Cl. 260—944 **6 Claims**

1. A compound of the formula



$$RSO_2NHCH_2\overset{O}{\overset{\|}{P}}(OR')_2$$

wherein R is selected from the group consisting of lower alkyl of 1–6 carbon atoms, phenyl and alkyl substituted phenyl and R′ is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1–6 carbon atoms.

3,870,772
2-CHLOROETHYL-PHOSPHONOTHIOIC ESTERS AND THIOESTERS

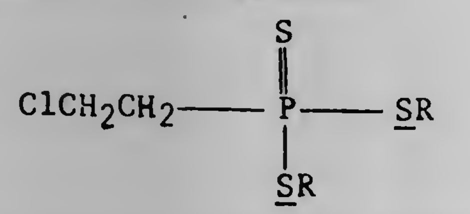
David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 869,915, Oct. 27, 1969, abandoned. This application Sept. 22, 1972, Ser. No. 291,365

Int. Cl. C07f *9/40, 9/38;* **A01n** *9/36*

U.S. Cl. 260—961 **2 Claims**

1. Compounds of the following formula



$$ClCH_2CH_2-\underset{\underset{SR}{|}}{\overset{\overset{S}{\|}}{P}}-SR$$

wherein R is, alkyl of 1 to 5 carbon atoms, phenyl, tolyl, xylyl, or benzyl.

3,870,773
COOLING TOWER

Samuel Luzaich, Santa Rosa, Calif., assignor to Ecodyne Corporation, Chicago, Ill.

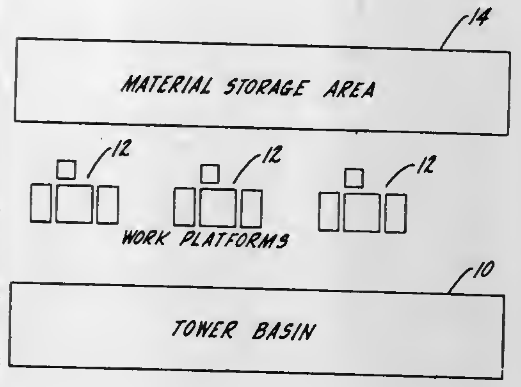
Filed May 22, 1972, Ser. No. 255,602

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **1 Claim**

1. A method of constructing the fill area of a large wood frame cooling tower wherein air is displaced to flow directionally, generally laterally, within the fill area of the tower in cooling relation with dropping particulate liquid, comprising the steps of:

a. pouring a concrete foundation to serve as the cold water storage basin;
b. constructing special work platforms adjacent the foundation;
c. fabricating the framework of lower, intermediate, and upper fill area modules on said work platforms;
d. connecting fill hangers within the framework of said modules;



e. positioning fill material within said modules on said fill hangers;
f. attaching cell separating partition walls to specific modules while on said platform;
g. attaching longitudinal cross braces to specific modules while on said platforms; and
h. lifting said lower, intermediate, and upper modules from said platform and respectively securing them directly to each other one alongside another and one atop of another above said foundation to form the entire structure of said fill area.

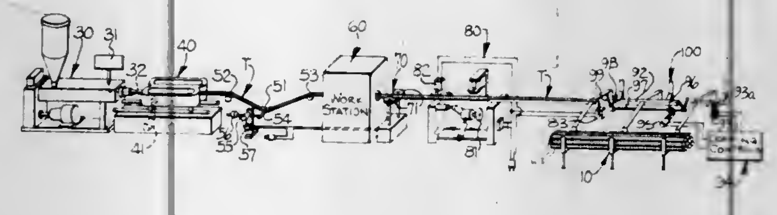
3,870,774
PIPE DOFFING AND BUNDLING METHOD

Ernest J. Maroschak, Box 878, Rosenboro, N.C. 28382

Continuation-in-part of Ser. No. 278,003, Aug. 4, 1972,. This application Sept. 1, 1972, Ser. No. 285,928

Int. Cl. B29c *17/07, 17/16;* **B65b** *13/02*

U.S. Cl. 264—40 **13 Claims**



1. A method of forming bundles of cut lengths of an elongate flexible plastic tube, said method comprising continuously extruding a tube of plastic material into a molding zone while molding annular corrugations of alternating ribs and valleys on the tube during the forward movement thereof through the molding zone, delivering the corrugated tube from the molding zone and advancing the tube through a cutting station while successively cutting the tube into predetermined cut lengths, feeding each successive individual cut length along a path of travel forwardly of the cutting station a predetermined distance and in response thereto quickly ejecting each successive cut length out of the path of travel by engaging each cut length intermediate its ends and moving the same laterally out of the path of travel, accumulating and stacking a plurality of cut lengths in nesting relation, and securing pliable binding elements around the stacked cut lengths to form a bundle thereof after a predetermined number of the cut lengths have been accumulated.

3,870,775
METHOD OF MAKING SHAPED ARTICLES

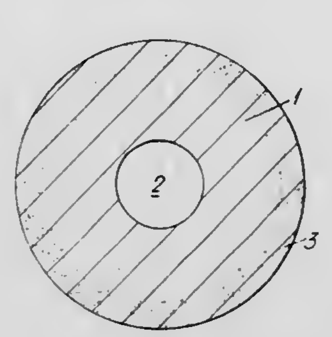
Roger Albert Castro, East Varnet; Richard John Orman, Welwyn Garden City, and James Ernest Ryan, Knebworth, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 6, 1972, Ser. No. 231,858

Claims priority, application Great Britain, Mar. 10, 1971, 6460/71

Int. Cl. B29c *5/04*

U.S. Cl. 264—53 **8 Claims**



1. A method of forming a shaped article having a cellular structure and a fibrous filler concentrated at one surface thereof, comprising emulsifying a substantially water-immiscible curable resin as the continuous phase with an aqueous disperse phase, adding said fibrous filler to said emulsion and stirring the mixture so formed to distribute said filler throughout the emulsion, centrifuging the mixture in a mold for the article so as to migrate said filler to one surface thereof, and curing the rsin while maintaining the dispersed state of the aqueous phase to provide the cellular structure and while continuing rotation of the mold to maintain the concentration of said filler at said one surface.

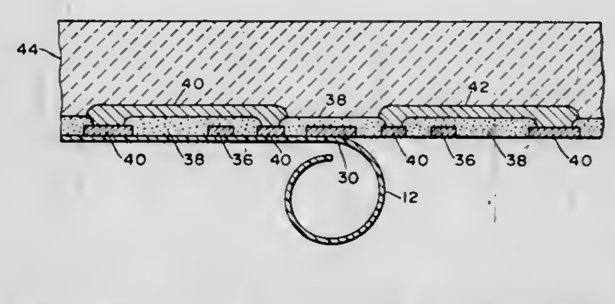
3,870,776
METHOD FOR MAKING CERAMIC-METAL STRUCTURES

John F. McMahon, Barrington, R.I., assignor to Metalized Ceramics Corporation, Providence, R.I.

Filed Jan. 2, 1973, Ser. No. 320,621

Int. Cl. C04b *35/64, 37/02*

U.S. Cl. 264—61 **4 Claims**



1. In the manufacture of composite structures for use as multi-layered components of a hermetic package from dielectric ceramic such as those composed mainly of alumina mixed with plasticizers, binders and solvents for said plasticizers and from a paste of powdered metal selected from the group composed of tungsten, molybdenum, manganese or mixtures thereof, the method which comprises the steps of depositing said paste upon a transport film to form a thin predetermined metallic pattern thereon, drying said metallic pattern, applying a thick body of said ceramic over said metallic pattern and upon said transport film, drying said ceramic body to form a green composite structure, and firing said green composite structure at a temperature higher than approximately 1,600°C to vitrify said ceramic and bond said metal hermetically to said ceramic, said transport film being burned away during said firing to leave a continuous planar surface suitable for hermetic sealing thereto of a further layer.

2. In the manufacture of composite structures for use as multi-layered components of a hermetic package from dielectric ceramic such as those composed mainly of alumina mixed with plasticizers, binders and solvents for said plasticizers and from a paste of powdered metal selected from the group composed of tungsten, molybdenum, manganese or mixtures thereof, the method which comprises the steps of depositing said paste upon a transport film to form a thin predetermined metallic pattern thereon, drying said metallic pattern, applying a thick body of said ceramic over said metallic pattern and upon said transport film, drying said ceramic body to form a green composite structure, stripping away said transport film, and firing said green composite structure at a temperature higher than approximately 1,600°C to vitrify said ceramic and bond said metal hermetically to said ceramic, the removal of said transport film leaving a continuous planar surface suitable for hermetic sealing thereto of a further layer.

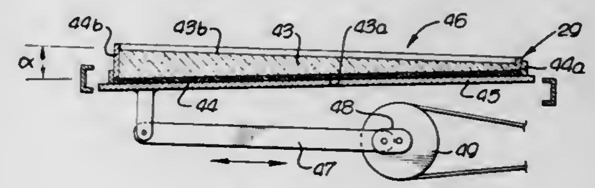
3,870,777
CEMENTITIOUS ROOFING AND SIDING PRODUCTION

Gus R. Jakel, Glendale, Calif., assignor to California Cement Shake Co., Inc., Alhambra, Calif.

Filed Nov. 2, 1972, Ser. No. 303,225

Int. Cl. B28b *21/16*

U.S. Cl. 264—71 **7 Claims**



1. In the method of making a cementitious product slab useful in construction, and employing a generally rectangular mold frame, a screen and a plate, the steps that include

a. preparing a flowable aqueous cementitious slurry consisting of about 58 percent water, about 39.5 percent lime, cement and perlite and the balance being non-aqueous components,
b. forming a selected quantity of the slurry into tapered slab shape, said forming step including supporting the mold frame and screen on the plate with the screen overlying the plate and inclined relative to horizontal, transferring said slurry quantity into the mold frame and onto the inclined screen, and vibrating said mold frame and screen via vibration transmission to said plate in the general direction of said taper and at a frequency of about 300 cycles per second and an amplitude of about ⅜ inch thereby vibrating said slurry quantity to aid slab shape formation, said forming step carried out with the upper surface of the slab maintained free to assume a generally horizontally flat configuration in response to said vibration and in the absence of direct pressurization of said surface, and including the step of maintaining the screen in supporting relation to the underside of the slab and to have inclination relative to said upper surface during said forming step so that the resultant slab has tapered shape,
c. thereafter transferring the mold frame and screen to a pressurizing station and pressurizing the formed slab supported on the screen to squeeze water therefrom by subjecting the tapered slab to a sequence of pressurization applications, and
d. curing the resultant slab.

3,870,778

PROCESS FOR PIGMENTING A PILE SURFACED PRODUCT

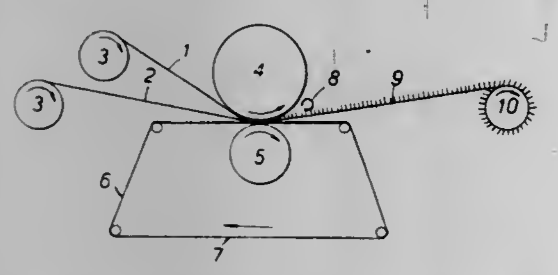
Margaret Lilian Steel, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 19, 1972, Ser. No. 264,402

Claims priority, application Great Britain, June 21, 1971, 28958/71; Aug. 9, 1971, 37294/71

Int. Cl. B29c *17/02;* **B32b** *5/00*

U.S. Cl. 264—164 **16 Claims**



1. A process for the production of a pile surfaced product pigmented with a given pigment comprising passing a synthetic thermoplastic material having at least one surface which is free of the given pigment and a backing material to a heated pressing surface with said one surface of the synthetic material against said pressing surface under conditions such that if the synthetic thermoplastic material is not prebonded to the backing material bonding occurs between the two and the temperature of the pressing surface being such that the synthetic thermoplastic material temporarily adheres to said heated pressing surface, applying the given pigment to at least one of the synthetic material or the backing material prior to separating the synthetic thermoplastic material from said surface, and then separating the synthetic thermoplastic material from said heated pressing surface so that fibrils are drawn out from the synthetic thermoplastic material, the fibrils becoming pigmented with the given pigment under the influence of the action of said heated pressing surface on the synthetic thermosplastic material.

3,870,779

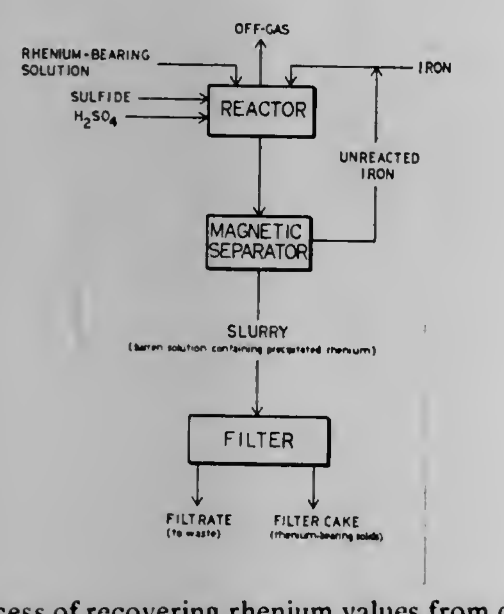
PROCESS OF RECOVERING RHENIUM VALUES FROM COMPLEX INDUSTRIAL SOLUTIONS

Craig Nellis Wright, and Kenneth Julian Richards, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,921

Int. Cl. C01g *47/00*

U.S. Cl. 423—50 **6 Claims**



1. A process of recovering rhenium values from dilute solutions thereof, comprising introducing a soluble sulfide into the solution in an amount of at least about 2 molecules sulfide per molecule of rhenium in the solution; introducing a base metal selected from the group consisting of iron, zinc, nickel, and manganese into the solution in an amount sufficient to precipitate soluble rhenium values therein as an insoluble species while maintaining the pH of the solution between about 0.5 and about 3.5; separating the precipitate from the solution; and recovering the rhenium from the precipitate.

3,870,780

PURIFICATION OF SODIUM CARBONATE

Joel P. Guptill, Syracuse, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 14, 1972, Ser. No. 289,032

Int. Cl. C01d *7/22*

U.S. Cl. 423—206 **11 Claims**

1. A method of reducing soluble silicates from an aqueous sodium carbonate solution prepared from calcined trona having at least about 20 percent by weight sodium carbonate dissolved therein, and containing as impurities, soluble silicates and suspended insoluble matter, which method comprises the steps of: digesting the aqueous sodium carbonate solution in the absence of additives to insolubilize the silicates at a temperature within the range of 160° and 240°F. for a time sufficient to remove at least 25 percent of the soluble silicates contained therein; and separating the digested solution from contained insoluble matter.

3,870,781

AIR POLLUTION CONTROL SYSTEM

Herschel Alan Klein, Windsor, and Carl Richard Bozzuto, Waterbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 27, 1972, Ser. No. 275,662

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **6 Claims**

1. A method of removing SO_2 from a flue gas stream comprising the steps of:

a. contacting said flue gas with an aqueous scrubbing solution containing NaOH and $CaSO_4$ whereby a portion of said NaOH reacts with said SO_2 to form sodium ions and bisulfite ions, said NaOH being present in an amount greater than that required to react with said SO_2 whereby excess NaOH will always be present and wherein the pH is maintained in the range of 5.0 to 5.6;

b. contacting said aqueous scrubbing solution from step (a) with oxygen whereby said bisulfite ions are oxidized to form hydrogen ions and sulfate ions in solution;

c. contacting said aqueous scrubbing solution from step (b) with CaO whereby $CaSO_4$ is precipitated and NaOH is formed in solution;

d. separating precipitated $CaSO_4$ from said aqueous scrubbing solution; and

e. recycling said aqueous scrubbing solution to step (a).

3,870,782

AMMONIUM NITRATE NEUTRALIZER

Toby M. Cook; Gerald L. Tucker, and Marion L. Brown, Jr., all of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Division of Ser. No. 152,063, June 11, 1971, Pat. No. 3,758,277. This application June 7, 1972, Ser. No. 260,392

Int. Cl. C01b *21/48;* **C01c** *1/18*

U.S. Cl. 423—396 **5 Claims**

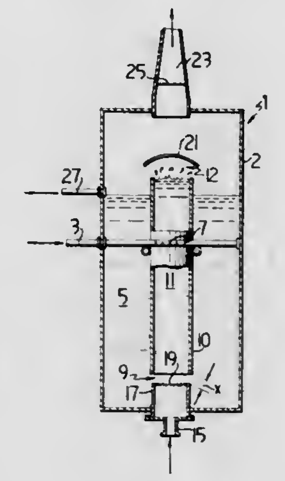
1. A method for neutralizing nitric acid with ammonium which comprises:

feeding nitric acid into an aqueous reaction zone;

feeding ammonia into an aqueous second reaction zone, which is contiguous with said first reaction zone and is in circulating communication therewith;

circulating the nitric acid into said second reaction zone such that when the acid enters the second reaction zone its concentration has been diluted to less than 0.5 percent by weight;

reacting a predominant proportion of the nitric acid with ammonia in said second reaction zone so as to form an ammonium nitrate containing solution; and



removing said ammonium nitrate containing solution from said second reaction zone, recirculating said solution to said first reaction zone and recovering an ammonium nitrate product from the recirculated solution before additional nitric acid diffuses into said recirculated solution.

3,870,783

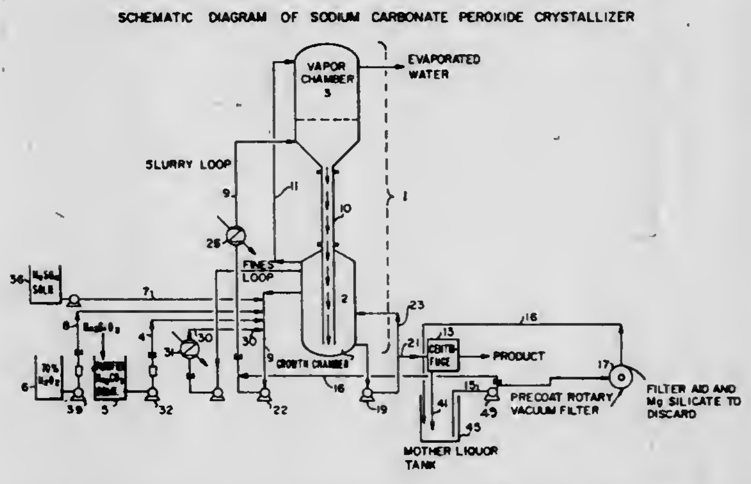
PROCESS OF PREPARING SODIUM CARBONATE PEROXIDE

Richard E. Hall, Trenton, and Sushil K. Bhalla, Cranbury, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,658

Int. Cl. C01b *15/10*

U.S. Cl. 423—415 **7 Claims**



1. A continuous process for the production of sodium carbonate peroxide comprising;

a. reacting aqueous feed solutions of hydrogen peroxide and sodium carbonate in essentially stoichiometric amounts in crystallization zone operated in the region of the phase diagram wherein the hydrogen peroxide concentration is about 1.5 to 4.0% or 17 to 50 g per 1, and the sodium carbonate is about 12 to 20% or from about 150 g to 250 g per 1, thereby making for a molar ratio of hydrogen peroxide to sodium carbonate from about 0.2 to about 0.7, at a pH from about 11.2 to about 11.7, at a temperature of from about 25°C to about 35°C, at a residence time of from about 5 hours to about 15 hours in the presence of about 10 to 70 ppm Mg as magnesium silicate, and about 0.005 to 0.5 g per 1 sodium silicate;

b. removing the so-formed crystalline slurry of sodium carbonate peroxide from the crystallization zone;

c. filtering the slurry;

d. drying the sodium carbonate peroxide product;

e. returning the mother liquor to the crystallizer and

f. evaporating under vacuum excess water from the system while continuously introducing fresh hydrogen peroxide and sodium carbonate solution.

3,870,784

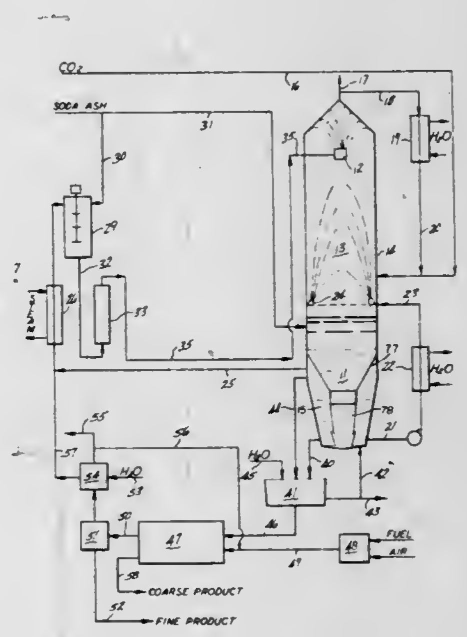
SODIUM BICARBONATE PRODUCTION

Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 213,562, Dec. 29, 1971, abandoned. This application Nov. 10, 1972, Ser. No. 305,397

Int. Cl. C01d *7/10*

U.S. Cl. 423—422 **15 Claims**



1. A method for producing sodium bicarbonate by carbonating sodium carbonate in an absorber-crystallizer to precipitate sodium bicarbonate crystals which comprises:

1. maintaining in a crystallization zone a mixture comprising sodium bicarbonate crystals in an aqueous solution of sodium carbonate saturated and in equilibrium with sodium bicarbonate;
2. maintaining in a contiguous carbonating zone above said crystallization zone an atmosphere having at least 4% carbon dioxide;
3. spraying said mixture upwardly and inwardly into said atmosphere from the perimeter of said carbonating zone, through opposed nozzles adapted to maximize mid-air impingement of sprays eminating therefrom, removing evaporated water therefrom and collecting the resulting carbonated mixture in said crystallization zone;
4. removing from said carbonated mixture an aqueous stream containing suspended crystals of sodium bicarbonate;
5. separating said crystals as product from said aqueous stream and recycling the resultant mother liquor to said absorber-crystallizer.

3,870,785

PREOXIDATION AND PELLETING OF CARBON BLACK

Eulas W. Henderson, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1973, Ser. No. 386,306

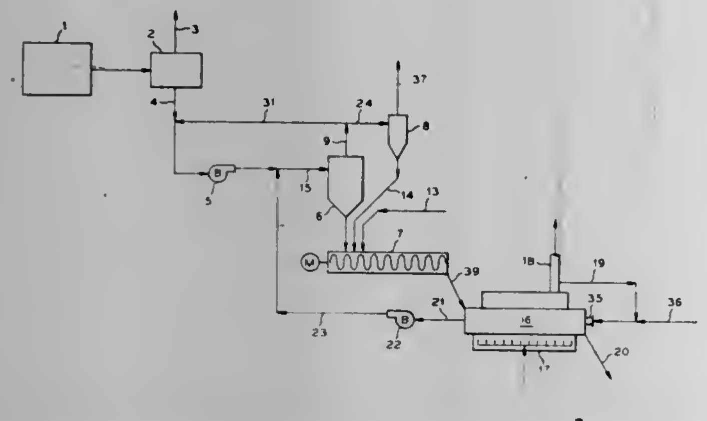
Int. Cl. C01b *31/08*

U.S. Cl. 423—460 **10 Claims**

1. A method of pelleting carbon black which comprises:

A. withdrawing flocculent carbon black from a filter and introducing said flocculent carbon black and nitric acid into a pelleter;

- B. pelleting said carbon black in contact with said nitric acid;
- C. drying the carbon black pellets thereby releasing oxides of nitrogen therefrom; and



- D. introducing said oxides of nitrogen into contact with said carbon black downstream of the filter and prior to the introduction of the flocculent carbon black into the pelleter so as to preoxidize said carbon black prior to the pelleting thereof in step (A).

3,870,786

REMOVAL OF PHOSPHATE COMPOUNDS FROM FLUORIDE CONTAINING SOLUTIONS

Gustave E. Kidde, 201 South Lake Avenue, Pasadena, Calif. 91101

Continuation of Ser. No. 89,126, Nov. 12, 1970, abandoned. This application Mar. 26, 1973, Ser. No. 345,112

Int. Cl. C01b *7/22, 7/00, 33/00*

U.S. Cl. 423—484 **11 Claims**

1. A process for the removal of phosphate contaminants from impure fluosilicic acid and hydrofluoric acid aqueous solutions having a pH of less than 2.6 comprising:

- adding to said solution a water soluble aluminum salt in an amount sufficient to precipitate any phosphate contaminants as aluminum phosphate;
- decreasing the acidity of said solution to a pH of at least 2.6 to 3.1; and
- separating the resulting precipitate from the resulting phosphate contaminant free solution.

3,870,787

PIGMENT AND PREPARATION THEREOF

Warren B. Blumenthal, North Tonawanda, N.Y., assignor to N. L. Industries, Inc., New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,178

Int. Cl. C01g *23/00;* **C09c** *1/36*

U.S. Cl. 423—598 **15 Claims**

1. A crystalline compound having a composition which can be represented by the formula $CaTiZr_3O_9$ and characterized by an X-ray diffraction spectrogram, the most prominent *d* spacings of which are as follows:

d	R.I.
7.56	7
3.48	11
2.93	100
2.53	21
2.17	6
1.79	51
1.65	6–7
1.59	5
1.53	30
1.46	5–6

the relative intensities of the several listed diffracted reflections with respect to the intensity of the strongest reflection in the X-ray diffraction spectrogram of a typical product being as set forth in the column headed R.I..

3,870,788

HAFNIUM-TITANIUM-CALCIUM-OXYGEN PRODUCT

Warren B. Blumenthal, North Tonawanda, N.Y., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,179

Int. Cl. C01g *23/00;* **C09c** *1/36*

U.S. Cl. 423—598 **6 Claims**

1. A process for producing a crystalline hafnium-titanium-calcium-oxygen reaction product having a composition corresponding substantially to the formula $CaTiHf_3O_9$ which comprises calcining in an oxidizing atmosphere and to a temperature of at least about 800°C, a chemically homogeneous, glassy conglomerate which consists essentially of Ti, Ca, Hf, O, and at least one thermally fugitive ligand per atom of metal content, the atomic ration of Ti, Ca, Hf therein being approximately 1:1:3 and the oxygen being present in the amount necessary to form the highest oxides of the three metals, and said calcining being for a period of at least 3 hours at 800°C.

3,870,789

ENHANCEMENT OF MORPHOLOGIC DETAIL IN TISSUE

Kurt W. Mikat, 6061 Rolling Green, Grand Blanc, Mich. 48439

Filed Dec. 1, 1972, Ser. No. 311,349

Int. Cl. G01n *1/00, 1/30;* **G02b** *21/34*

U.S. Cl. 424—3 **7 Claims**

1. A method for preparing a tissue for microscopic examination said tissue having intercellular connective matter, said method comprising the steps of subjecting said tissue to a centrifugal force of sufficient magnitude and duration to flatten the cells of said tissue and simultaneously treating said tissue with a tissue fixative to prevent, following such centrifugation, said flattened cells from reverting significantly toward their original shape.

3,870,790

SOLID PHARMACEUTICAL FORMULATIONS CONTAINING HYDROXYPROPYL METHYL CELLULOSE

Hans Lowey, Mamaroneck, and Herbert Henry Stafford, Staten Island, both of N.Y., assignors to Forest Laboratories, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 5,140, Jan. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 626.968, March 30, 1967, abandoned. This application Oct. 25, 1972, Ser. No. 300,745

Int. Cl. A61k *17/00, 21/00, 27/00*

U.S. Cl. 424—19 **3 Claims**

1. A method of preparing a long-acting compressed buccal composition for the administration of transmucosally absorbed therapeutic agents consisting essentially of the therapeutic agent and a carrier which comprises subjecting an effective amount of a dry carrier consisting of from 80 to 100% of hydroxypropyl methyl cellulose having a methoxyl content of 28 to 30% and a hydroxypropyl content of 7 to 12% and from 20 to 0% of ethyl cellulose having an ethoxy content of 48 to 49.5% to controlled humidity for a time sufficient to establish a moisture content of from about 5 to about 25%, mixing the moisturized carrier with a therapeutically effective amount of the therapeutic agent and compressing the mixture into solid shaped units at a pressure of from about 5 to about 8 pounds per square inch.

3,870,791

SOLID STATE OPHTHALMIC MEDICATION DELIVERY METHOD

Heskel M. Haddad, 1200 Fifth Ave., New York, N.Y. 10029; and Spiro P. Loucas, 16 Toni Ct., Plainview, N.Y. 11803

Continuation of Ser. No. 246,661, April 24, 1972,. This application Jan. 22, 1974, Ser. No. 435,475

Int. Cl. A61k *27/12*

U.S. Cl. 424—22 **13 Claims**

1. A complete ophthalmic dosage of medicament in solid form for insertion into the cul-de-sac of the eye between the eyeball and lid to dispense the medicament to the eye over a prolonged period and leave the cul-de-sac free from tear insoluble residue, comprising a solid matrix of a non-irritating pharmacologically acceptable polyuronic acid or carboxymethylcellulose salt of a medicament, said matrix adapted to form a gel-matrix after insertion into the cul-de-sac to slowly diffuse said dosage of medicament to the eyeball, said matrix being free from tear insoluble carriers.

3,870,792

CERTAIN DIHYDROPHTHALIZINES FOR TREATING HEMORRHAGE AND THROMBOSIS

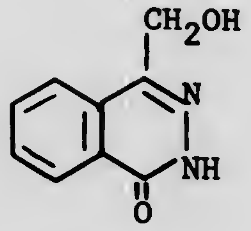
Michiro Inoue, 26-3, 6-chome, Kokuryo-cho, Tokyo; Masayuki Ishikawa, 14-13, 3-chome, Akazutsumi, Setagaya-ku, Tokyo; Takashi Tsuchiya, 13, Kitamachi, Shinjuku-ku, Tokyo, and Takio Shimamoto, 17-25, 5-chome, Minamikoiwa, Edogawa-ku, Tokyo, all of Japan

Division of Ser. No. 274,512, July 24, 1972, Pat. No. 3,840,662. This application Aug. 10, 1973, Ser. No. 387,297

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **2 Claims**

1. A method of treating cerebral thrombosis which comprises administering to a human patient suffering therefrom an effective amount of the compound of the following formula



or a pharmaceutically acceptable inorganic acid salt thereof in a dose of 1 to 100 mg/kg body weight/day.

3,870,793

ANIMAL FEED AND PROCESS

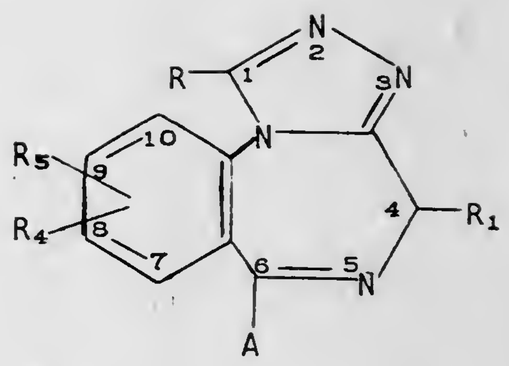
Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 170,328, Aug. 9, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,909

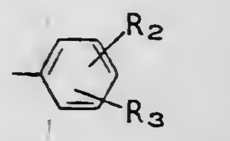
Int. Cl. A61k *27/00*

U.S. Cl. 424—269 **6 Claims**

1. A process for obtaining increased meat, milk or egg production comprising the feeding of from about 0.01 to about 250 mg./day of a compound selected from the group consisting of 1,6-disubstituted-4H-s-triazolo[4,3-a] [1,4]benzodiazepine of the formula:



wherein R is a cycloalkyl of 3 to 8 carbon atoms, inclusive, wherein R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, hydroxy or acetoxy wherein A is selected from the group consisting of cycloalkyl in which the ring consists of 5 to 7 carbon atoms, inclusive, and



in which R_2 and R_3 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amino, dialkylamino, and alkanoylamino, in which the carbon moieties are of 1 to 3 carbon atoms, inclusive; pyridyl (2, 3, or 4) and pyrimidyl; wherein R_4 and R_5 are defined like R_2 and R_3; the 5 N-oxides thereof and a pharmacologically acceptable salt thereof in combination with the nutrient feed to a healthy meat-producing, milk-producing or egg-laying animal.

3,870,794

TREATMENT OF CERTAIN EMOTIONAL DISORDERS WITH NICOTINE COMPOUNDS

Ronald R. Hutchinson, Augusta; Grace S. Emley, Ross Township, Kalamazoo County; Edward R. Hallin, Barry Township, Barry County, and Nancy J. Murray, Charlestown Township, Kalamazoo, all of Mich., assignors to Foundation for Behavioral Research, Kalamazoo County, Mich.

Filed Feb. 20, 1974, Ser. No. 444,035

Int. Cl. A61l *27/00*

U.S. Cl. 424—264 **8 Claims**

1. A method of producing (A) reduction of anger, hostility, irritability, frustration and the behavioral expression of these emotions, without producing general depression, drowsiness or sedation, or (B) reduction of fear, anxiety, nervousness and the behavioral expression of these emotions, with the simultaneous increase in focus upon and performance of necessary tasks, in mammals requiring such treatment, which comprises administering to such a mammal a unit dosage form of a therapeutic composition containing an effective, non-toxic amount of nicotine, pharmaceutically acceptable acid addition salt of nicotine, nornicotine or cotinine, with a pharmaceutically acceptable carrier, diluent or vehicle.

3,870,795
STABILIZATION OF SOLUTIONS OF 3-ISOTHIAZOLONES EMPLOYING CERTAIN METAL NITRATES AND NITRITES

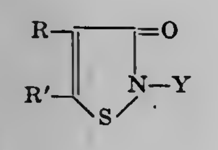
George A. Miller, Glenside, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 28, 1973, Ser. No. 336,659

Int. Cl. A01n *9/12*

U.S. Cl. 424—270 **8 Claims**

1. A method of stabilizing an aqueous or polar organic solvent solution containing a microbiocidal 3-isothiazolone against chemical decomposition of the 3-isothiazolone wherein the 3-isothiazolone has the formula



wherein

- Y is a hydrogen atom, an alkyl group of 1 to 18 carbon atoms, an alkenyl or alkynyl group of 2 to 18 carbon atoms, a cycloalkyl group of 3 to 12 carbon atoms having a 3 to 8 carbon atom ring, an aralkyl group of up to 10 carbon atoms, or an aryl group of up to 10 carbon atoms; R is a hydrogen atom, a halogen atom, or a (C_1-C_4) alkyl group; and
- R' is a hydrogen atom, a halogen atom, or a C_1-C_4) alkyl group or

R and R' can be taken together to complete a benzene ring; which comprises incorporating in the solution a stabilizing amount of a metal salt selected from the group consisting of metal nitrates, metal nitrites and mixtures thereof, wherein the metal is selected from the group consisting of sodium, potassium, calcium, magnesium, copper, iron, nickel, zinc, barium, manganese, silver, and cobalt.

3,870,796
PHARMACEUTICAL PREPARATION

Alfred Hunger, Basle, and Hans-Jochen Janssen, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 201,548, Nov. 23, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 400,285

Claims priority, application Switzerland, Nov. 27, 1970, 17597/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **1 Claim**

1. A pharmaceutical preparation which contains, by weight, 2-5 parts of 9-(γ-methylaminopropyl)-9,10-dihydro-9,10-ethano-anthracene-hydrochloride per part of 9-(methylaminomethyl)-9,10-dihydro-9,10-ethano-anthracene-hydrochloride together with a pharmaceutical carrier.

3,870,797
ANESTHETIC HALOGENATED CYCLOBUTANES

Robert S. Holdsworth; Gerald Joseph O'Neill, both of Arlington, and Charles William Simons, Bedford, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass., by said Simons

Continuation-in-part of Ser. No. 170,280, Ser. No. 170,331, and Ser. No. 170,293, all Aug. 9, 1971, said Ser. No. 170,280 is a Continuation-in-part of Ser. No. 91,521, Nov. 20, 1970, and said Ser. No. 170,331 is a Continuation-in-part of Ser. No. 93,437, Nov. 27, 1970 and Ser. No. 141,934, May 10, 1971, all abandoned.

Int. Cl. A61k *27/00*

U.S. Cl. 424—352 **14 Claims**

1. The process of inducing anesthesia in a mammal which comprises administering by inhalation to said mammal an effective quantity for inducing anesthesia of a cyclobutane selected from the group consisting of 1-chloro-1,2,2-trifluorocyclobutane, 1,4-dichloro-1,2,2-trifluorocyclobutane, 1-chloro-1,2,2,4-tetrafluorocyclobutane, 1,4-dichloro-1,2,2,4-tetrafluorocyclobutane, 1-chloro-2,2,3,3-tetrafluorocyclobutane, 1,2,2,3,3-pentafluorocyclobutane, 1-chloro-1,2,2,3,3-pentafluorocyclobutane, 1,2,2-trifluorocyclobutane, 1-chloro-2,3,3-trifluorocyclobutane, 1-chloro-2,4,4-trifluorocyclobutane, 1-bromo-1,2,2-trifluorocyclobutane, 1-bromo-2-methyl-1,4,4-trifluorocyclobutane and 1-bromo-2-chloro-1,4,4-trifluorocyclobutane.

3,870,798
PROCESS FOR PRODUCING A LIVESTOCK FEED

Frank J. Hruby, 2809 Tallmadge Rd., Ravenna, Ohio 34266

Continuation-in-part of Ser. No. 70,763, now Pat. No. 3,787,583, is a continuation of Ser. No. 550,798, May 17, 1966, abandoned. This application Sept. 13, 1973, Ser. No. 397,072. The portion of the term of this patent subsequent to Jan. 22, 1991, has been disclaimed.

Int. Cl. A23k *1/10, 1/06, 1/08*

U.S. Cl. 426—53 **3 Claims**

1. A process of producing livestock feed from a raw garbage mass, comprising the steps of:

a. first refining said garbage mass by
   i. removing foreign, non-food, particles,
   ii. comminuting the garbage mass;
b. then batch processing the garbage mass by
   i. feeding a batch of uncooked garbage mass into a pressure tank,
   ii. adding a neutralizer to the batch in an amount sufficient to establish a substantially neutral state of the batch,
   iii. cooking the neutral batch in the pressure tank at pressure above atmospheric and at temperatures above 212° F. for a sufficient time to sterilize and liquify said batch,
   iv. thereafter cooling the batch to a temperature below 150° F.,
   v. adding a fermenting agent to the cooled batch,
   vi. then fermenting the entire liquified batch until emission of carbon dioxide substantially stops, and
   vii. introducing oxygen under pressure into the liquified batch during the fermenting step;
c. subsequently drying said fermented batch;
d. thereafter comminuting said dried batch;
e. said entire process being carried out while retaining the grease of the garbage mass.

3,870,799
DOUGH CONDITIONING COMPOSITION AND METHOD

Ralph J. Tenney, Kansas City, Mo., assignor to C. J. Patterson Company, Kansas City, Mo.

Filed Feb. 28, 1974, Ser. No. 446,717

Int. Cl. A21d *2/16*

U.S. Cl. 426—62 **29 Claims**

1. A conditioning and softening agent for incorporation into wheat based doughs which comprises a hydrated additive containing a member selected from the group consisting of the alkali and alkaline earth metal salts of the acyl lactylates of C_{14}–C_{22} fatty acids, and a member selected from the group consisting of the ethoxylated mono- and diglycerides of C_{14}–C_{22} fatty acids, the weight ratio of said lactylate component to said glyceride component in said additive ranging from about 1:1 to 10:1.

3,870,800
FOODSTUFF FLAVORED WITH 4-(METHYLTHIO)BUTANE DERIVATIVES

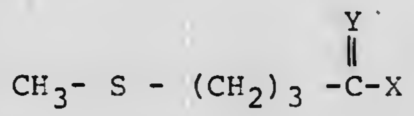
Alan O. Pittet, Atlantic Highlands; John V. Pascale, Jackson, both of N.J.; Stuart Patton, State College, Pa., and Michael H. Brodnitz, Matawan, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,524

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **7 Claims**

1. A method for altering the flavor of a foodstuff which comprises adding a flavor effective amount of at least one 4-(methylthio)butane derivative having the formula



$$CH_3-S-(CH_2)_3-\overset{\overset{\Large Y}{\|}}{C}-X$$

wherein X is hydrogen and Y is carbonyl oxygen; X is hydroxy and Y is two hydrogen atoms or a carbonyl oxygen; or X is lower alkoxy and Y is (a) carbonyl oxygen or (b) hydrogen and lower alkoxy, the alkoxy groups containing from one to three carbon atoms.

3,870,801
FLUID AQUEOUS PROTEIN COMPOSITIONS AND FOOD PRODUCTS PREPARED THEREFROM

Michael Peter Tombs, Pavenham, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 155,029, June 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 848,600, Aug. 8, 1969, abandoned. This application Mar. 19, 1973, Ser. No. 342,590

Claims priority, application Great Britain, Aug. 9, 1968, 38211/68

Int. Cl. A23j *3/00*

U.S. Cl. 426—92 **15 Claims**

1. A fluid aqueous protein composition comprising from about 15 to about 50% by weight of a substantially undenatured plant protein in the dissolved state, and a dissolved water-soluble edible salt selected from the group consisting of water-soluble edible salts of sodium, potassium, ammonium, calcium and magnesium, said dissolved water-soluble edible salt having a concentration sufficient to keep the protein dissolved and to give an ionic strength (based on the water content of said composition) of at least about 0.2, the composition containing at least about 50% by weight of water and having a pH in the range of about 4 to about 6 and being capable of being coagulated by heat.

3,870,802
PACKAGING NITRILE CONTAINING RESINS

Alva F. Harris, and Peter Shapras, both of Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 15, 1973, Ser. No. 323,771

Int. Cl. C08f *37/00, 27/18*

U.S. Cl. 426—106 **33 Claims**

1. In the process for preparing shaped packaging materials for foods, beverages and related substances from nitrile polymers containing from 55 to 85% by weight, based on the total polymer weight, of a nitrile monomer unit selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile wherein the methacrylonitrile is present in amounts of up to 16% by weight based on the total polymer weight, which process involves at least one forming operation comprising heating the polymer in an essentially solvent free condition to a molten state and shaping the polymer into a packaging material, the improvement which comprises having a formaldehyde compound in intimate contact with the nitrile polymer before or during at least one of the forming operations wherein the polymer is heated to a molten state, said formaldehyde compound being employed in an amount sufficient to provide a shaped packaging material having an extractable HCN content below 50 parts per billion.

3,870,803
INSTANT STUFFING MIX

Ruth M. Siems; Anthony C. Capossela, Jr., both of Tarrytown, N.Y.; John F. Halligan, Old Greenwich, Conn., and C. Robert Wyss, Scarsdale, N.Y., assignors to General Foods Corporation, White Plain, N.Y.

Filed July 16, 1971, Ser. No. 163,437

Int. Cl. B65d *85/00*

U.S. Cl. 426—128 **3 Claims**

1. A conveniently packaged stuffing mix for ready hydration to form a stuffing composition comprising:

i. a stuffing flavor component comprising a mixture of condiments with dehydrated vegetables or dehydrated fruits or mixtures of said vegetables or fruits, and
ii. a low moisture content farinaceous crumb component, said crumb having a moisture content of less than 15% and comprising a member selected from the group consisting of
a. yeast-leavened corn bread crumb,
b. mixtures of yeast-leavened white bread crumb with corn bread crumb or yeast-leavened whole wheat bread crumb or mixtures thereof, and
c. mixtures of corn bread crumb with yeast-leavened whole wheat crumb or yeast-leavened corn bread crumb or mixtures thereof, and
said crumb having a particle size such that at least 95% by weight passes through a 2 mesh screen and no greater than 5% by weight passes through a 50 mesh screen,

each of said components being packaged separately to form a segregated unit package.

3,870,804
PREPARATION OF FRIED PARBOILED RICE AND THE RESULTING PRODUCT

Ray C. Tolson, Sr., 1720 W. Miramonte Dr., Woodland, Calif. 95695, and Ray C. Tolson, Jr., Rt. 1, Box 165, Harold, Calif. 95638

Continuation-in-part of Ser. No. 293,077, Sept. 28, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,580

Int. Cl. A23l *1/18*

U.S. Cl. 426—141 **4 Claims**

1. A method for producing a partially expanded edible rice product comprising the steps of:

parboiling rough unhulled rice kernels;
drying said rice kernels back to about their original, as harvested, moisture content;
milling the dried parboiled rice kernels to remove the rough outer hull and outer bran layer, and to smooth the kernels;
frying the milled kernels in an edible oil at a temperature of from about 350° to about 410°F. for from about 5 to about 20 seconds to produce a partially expanded product;
separating the fried kernels from the oil and removing excess oil from the surface of the kernels; and
cooling the fried kernels.

3,870,805
PROCESS FOR PREPARING TEXTURIZED PROTEIN COMPOSITIONS AND THE RESULTING PRODUCT

Lester P. Hayes, Decatur; John W. Robinson, Blue Mound; Ross P. Simms, Decatur, and Millard E. Russell, Blue Mound, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 4, 1970, Ser. No. 86,908

Int. Cl. A23l *1/36*

U.S. Cl. 426—148 **25 Claims**

1. A method of preparing shredded protein products pos-

sessing an improved meat-like texture from hydrated protein extrudates, said method comprising the steps of:

- a. providing a plurality of hydrated extrudate pieces, characterized as containing on a solid weight basis a minor amount of water-soluble carbohydrates and protein as a principal constituent, said extrudates being further characterized as individually comprising a cellular, reticulated structure of a multiplicity of fibers bonded to one another, said fibers being enshrouded by a matrix of water soluble constituents with a plurality of pores and channels communicating within said matrix, the pores and channels being oriented predominantly in juxtaposition to the fibers and separated from one another by cellular walls comprised of said fibers and said matrix of water-soluble constituents, and
- b. subjecting the hydrated extrudate pieces to a shredding force sufficient to rupture and split the hydrated extrudate pieces predominantly along the longitudinal axis of said hydrated extrudate pieces and thereby provide a plurality of fragments of a substantially lesser cross-sectional diameter than the hydrated extrudate pieces.

3,870,806
METHOD FOR IMPROVING TEXTURE OF BREAD/BREAD CRUMBS

Anthony C. Capossela, Tarrytown; Michael T. McGuire, Elmhurst; Gordon C. Smith, Congers, and Joseph D. Albaum, Pleasantville, all of N.Y., assignors to General Foods Corporation, White Plain, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,099
Int. Cl. A21d *13/00*
U.S. Cl. 426—152 **8 Claims**

1. A process for conditioning continuous process bread to render it suitable for use as crumb in a stuffing mix for hydration to form a stuffing composition comprising subjecting continuous process bread slices or pieces to a temperature within the range of 200° to 375°F. for a period of time sufficient to strengthen the cellular structure of the bread without causing toasting and excessive browning and sufficient to reduce the moisture content of the bread to below about 10 percent by weight, and grinding and screening said bread to form a crumb having a particle size such that at least about 95 percent by weight passes through a 2 mesh screen and no greater than about 5 percent by weight passes through a 50 mesh screen.

3,870,807
PROCESS FOR MANUFACTURE OF EDIBLE, FLOWABLE SUSPENSIONS OR SOLID GLYCERIDES IN LIQUID GLYCERIDES OR MIXTURES OF LIQUID AND SOLID GLYCERIDES AND PRODUCTS OBTAINED THEREBY

Josef Baltes, Sendenhorst, Germany, assignor to Harburger, Oelwerke, Brinckman & Mergell, Hamburg, Germany

Filed Aug. 18, 1971, Ser. No. 172,926

Claims priority, application Germany, Aug. 31, 1970, 2043084

Int. Cl. A23d *5/02, 3/02;* **C11c** *3/10*
U.S. Cl. 426—194 **13 Claims**

1. A process for the manufacture of at least one of (ii) edible, flowable suspensions of solid glycerides in liquid glycerides, and (iii) mixtures of liquid and solid glycerides, which mixtures are suitable for the manufacture of margarine, which process comprises:

- 1a. hydrogenating soya oil with a nickel contact catalyst, at 110° to 150° C., to an iodine number of 90 to 115;
- b. subjecting the hydrogenated soya oil to controlled trans-esterification with a trans-esterification catalyst at 25° to 30° C., to produce higher-melting triglycerides; and
- c. fractionating the material from step (b) by slowing cooling it to a temperature of 0° to 10° C. and keeping it for at least 2 hours at this temperature, and then separating the solid constituents and recovering the liquid, cold-stable constituents (i); and
- d. mixing the material from step (b) in about equal proportions by weight with the cold-stable oil obtained from step (c) and then cooling the mixture to a temperature of 10° to 18° C., so that the high-melting triglycerides crystallize out almost completely, and then keeping the mixture at a temperature of about 25° C. until the solid constituents have been converted into the stable crystal form, said crystal form being the β'-modification or β-modification and then cooling to produce edible, flowable suspensions, (ii) of solid glycerides in liquid glycerides; or
- 2a. hydrogenating soya oil with a nickel contact catalyst, at 110° to 150° C., to an iodine number of 90 to 115;
- b. subjecting the hydrogenated soya oil to controlled trans-esterification with a trans-esterifications catalyst at 25° to 30° C., to produce higher-melting triglycerides; and
- c. fractionating the material from step (b) by slowing cooling it to a temperature of 0° to 10° C. and keeping it for at least 2 hours at this temperature, and then separating the solid constituents and recovering the liquid, cold-stable constituents (i); and
- e. combining material from step (b) with solid constituents obtained from step (c) to produce glyceride mixtures (iii) suitable for the manufacture of margarine.

3,870,808
METHOD OF PRODUCING A MEAT SIMULATING TEXTURED FOOD PRODUCT

Robert A. Boyer, Creve Coeur, and John E. Middendorf, Affton, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Mar. 16, 1971, Ser. No. 124,953
Int. Cl. A23j *3/00*
U.S. Cl. 426—250 **13 Claims**

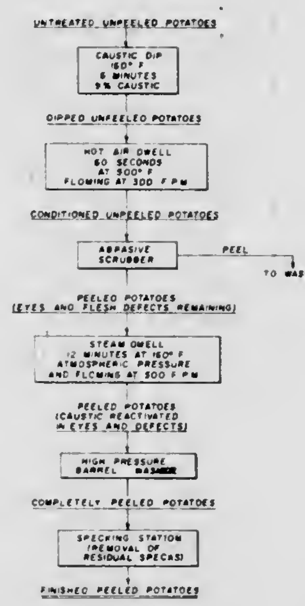
1. A method of producing a meat simulating textured food product from protein sources comprising the steps of: forming an aqueous slurry of the proteinaceous material having a solids content of about 10 – 40 percent by weight, controlling the pH of the proteinaceous slurry to between about 4 and 6, confining the proteinaceous slurry, freezing the proteinaceous slurry to form ice crystal layers in said slurry thereby compressing and molding the protein material of the slurry into layers spaced apart by the ice crystals and heat setting the protein layers into an irreversible substantially insoluble form by heating the frozen slurry to a temperature sufficiently high to allow the protein layers to irreversibly set and lower than a temperature at which the protein will degrade thereby melting the ice crystal layers to produce the meat simulating textured food products.

3,870,809
STEAMING CAUSTIC TREATED, PEELED POTATOES TO LOOSEN AND REMOVE THE EYES AND DEFECT PORTIONS THEREOF

Glen R. Green, and Jay B. Bennion, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Ontario, Oreg.

Filed Jan. 22, 1973, Ser. No. 325,618
Int. Cl. A23l *1/12*
U.S. Cl. 426—287 **4 Claims**

1. A process for peeling potatoes, comprising the steps of treating the entire surface of raw unpeeled potatoes with caustic, the strength of the caustic and the length of time it is applied to the potatoes being effective to loosen the potato skins; abrasively scrubbing the potatoes for removing the loosened skins from superficial surfaces thereof; subjecting the so-peeled potatoes still containing eyes and defective portions having residual caustic present therein to the action of steam to effect localized caustic action of said residual caustic in said eyes and defective portions of the potatoes to loosen said eyes and defective portions; and water-flushing the thereby loosened eyes and defective portions from the otherwise peeled potatoes.


UNTREATED UNPEELED POTATOES
CAUSTIC DIP 160° F 6 MINUTES 9% CAUSTIC
DIPPED UNPEELED POTATOES
HOT AIR DWELL 60 SECONDS AT 300° F FLOWING AT 300 F P M
CONDITIONED UNPEELED POTATOES
ABRASIVE SCRUBBER
PEEL
TO WASTE
PEELED POTATOES (EYES AND FLESH DEFECTS REMAINING)
STEAM DWELL 12 MINUTES AT 160° F ATMOSPHERIC PRESSURE AND FLOWING AT 500 F P M
PEELED POTATOES (CAUSTIC REACTIVATED IN EYES AND DEFECTS)
HIGH PRESSURE BARREL WASHER
COMPLETELY PEELED POTATOES
SPECKING STATION (REMOVAL OF RESIDUAL SPECKS)
FINISHED PEELED POTATOES

3,870,810
INHIBITING BEER GUSHING

Anthony Martin Humphrey, Ickenham, Uxbridge, England, assignor to Bush Boake Allen Limited, London, England

Filed Mar. 9, 1973, Ser. No. 339,679

Claims priority, application Great Britain, Mar. 9, 1972, 11077/72

Int. Cl. C12h *1/12;* **C12c** *9/02*
U.S. Cl. 426—329 **10 Claims**

1. A method for reducing the tendency of beer to gush which comprises admixing with said beer an unsaturated fatty acid having from 10-20 carbon atoms in a proportion of from 1–20 percent based on the weight of iso-α-acids in the finished beer.

3,870,811
PROCESSES FOR THE PRODUCTION OF PROTEIN-RICH FOODSTUFFS FROM NATURAL PROTEIN-CONTAINING FOODS THAT ARE SUBJECT TO SYNERESIS

Max Erich Schulz, Ascheberg, Germany, assignor to Gervais-Danone AG, Munich, Germany

Continuation-in-part of Ser. No. 254,794, April 17, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,688

Claims priority, application Germany, Apr. 16, 1971, 2118532

Int. Cl. A23j *3/00;* **A23l** *1/00*
U.S. Cl. 426—348 **10 Claims**

1. A process for producing a foodstuff containing a high content of protein in the form of a cake or loaf that can be cut into firm slices and which can be further cooked by boiling, baking, roasting, sauteeing, or deep frying without crumbling which comprises preparing an intimate mixture consisting essentially of an albumin or globulin and a water-containing natural protein-containing food that is subject to syneresis of the group consisting of milk curds containing casein, milk curd coprecipitates containing casein and lactalbumin, whey protein, fresh and ripened cheeses, and soybean curd, in which mixture the ratio of albumin or globumin or globulin to the other protein which show syneresis, on a dry-weight basis is between 20:80 and 50:50, placing the same mixture into a mold or container and heating the mixture therein at a temperature between 80 and 100°C for a period between 5 and 60 minutes.

3,870,812
PROTEIN GEL MODIFICATION

John T. Hayes, Jr., North Tarrytown, and William E. Marshall, Mount Kisco, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 25,284, April 2, 1970, abandoned. This application Apr. 27, 1973, Ser. No. 355,104

Int. Cl. A23j *3/00*
U.S. Cl. 426—350 **4 Claims**

1. A method for making a gelled protein food product having a softer and controlled texture comprising:

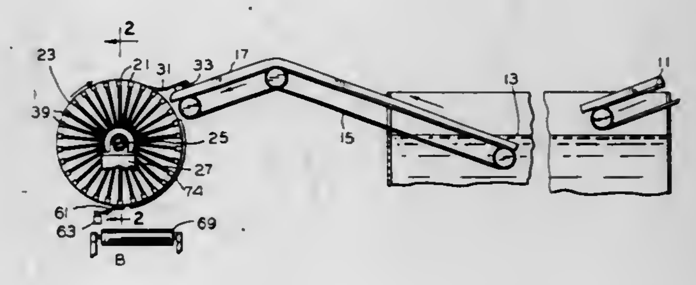
- a. mixing vegetable protein isolate prepared by precipitating protein at about the iso-electric point of the protein with a major amount of water to produce an aqueous dispersion of protein isolate in water,
- b. said dispersed isolate being present in an amount effective to form a thermally irreversible gel upon autoclaving, c. said dispersion further containing an effective amount of a disulfide bond breaking agent sufficient to control and reduce the viscosity of the aqueous dispersion and effective to give a softer gel after autoclaving,
- d. adjusting the pH of the dispersion to about 5.0 to about 8.0,
- e. encasing the reduced viscosity dispersion to shape the dispersion,
- f. autoclaving the shaped reduced viscosity dispersion at a temperature and for a time period sufficient to produce a stable, thermally irreversible gel, said gel being softer than that obtained without treatment of the isolate with disulfide bond breaking agent.

3,870,813
TWO STAGE INTERIOR-EXTERIOR BLANCHING PROCESS

William F. Filz, Portland, Oreg., assignor to North Pacific Canners & Packers, Inc., Portland, Oreg.

Division of Ser. No. 271,243, July 13, 1972, Pat. No. 3,804,000, which is a division of Ser. No. 83,767, Oct. 26, 1970, Pat. No. 3,707,384. This application Jan. 25, 1974, Ser. No. 436,528

Int. Cl. A23l *1/00*
U.S. Cl. 426—509 **1 Claim**



1. The method of blanching an ear of corn having an uncored pith portion comprising:

subjecting the ear of corn to two independent blanching steps, one of which comprises applying a hot fluid to the exterior of an ear for a sufficient time to blanch the kernels without blanching the cob portion of the ear,

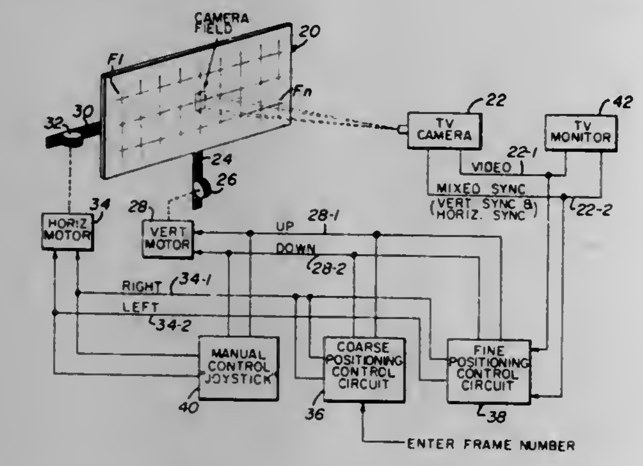
and the other blanching step comprising at another time, independently of the said one blanching step, injecting a hot fluid under pressure into the pithy cob portion of the ear to blanch that portion of the ear.

3,870,814

IMAGE POSITIONING APPARATUS AND METHOD

Thomas H. Woods, Middletown, and William M. Voss, Martin, both of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Sept. 11, 1973, Ser. No. 396,190
Int. Cl. H04n *5/38*
U.S. Cl. 178—7.2 **8 Claims**



1. Apparatus for viewing and positioning an object having sensible material thereon, including at least a rectangular reference mark of predetermined length and width, comprising:

- a camera having a field of view repeatedly scanned along successive lines parallel to said mark length and spaced from each other in the direction of said mark width, said mark width being greater than twice the spacing between adjacent scan lines, said successive scanning of said lines being at a specified line scan rate,
- said camera including means providing a) a video output signal representing sensible material transduced by said camera during said scanning, b) successive line sync signals synchronized with scans of successive lines of said field, and c) successive field sync signals synchronized with successive scans of said field,
- means responsive to said video and sync signals for visually displaying said sensible material transduced by said camera during said scanning,
- clock means for generating clock signals at a rate substantially in excess of said specified line scan rate,
- means responsive to said video, clock, and line sync signals for detecting traversal of said mark during scanning of a line, said means including a first counter under control of said video and line sync signals which counts the clock signals occurring during scanning traversal of a mark in a single line and producing a mark traversal signal when said first counter achieves a specified clock count condition,
- a second counter for counting said mark traversal signals occurringduring scanning of said field to determine the number of occurring during in which said mark was traversed during scanning of said field,
- means responsive to said second counter for generating a mark sensed signal when said second counter achieves a specified count condition,
- third counting means reset by said line sync signals and responsive to said clock signals and said mark sensed signals for determining a first actual coordinate position of a specified point of said mark in the direction of said mark length,
- fourth counting means reset by said field sync signals and responsive to said line sync signals and said mark sensed signals for determining a second actual coordinate position of said specified point of said mark in the direction of said mark width,
- means responsive to said third and fourth counters for comparing said actual coordinate positions of said specified point of said mark against desired coordinate positions and in response thereto generating length-directed and width-directed repositioning signals correlated to the differences between said actual coordinate positions and said desired coordinate positions,

and

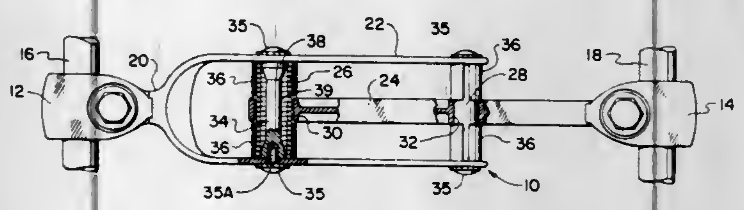
- motor means responsive to said length-directed and width-directed repositioning signals for relatively repositioning said object and camera field in said length and width directions to locate said specified point of said mark at said desired coordinate positions.

3,870,815

CONDUCTOR VIBRATION DAMPING DEVICE

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,322
Int. Cl. H02g *7/12, 7/14*
U.S. Cl. 174—42 **6 Claims**



1. A conductor vibration damping device comprising a conductor clamping member and a second adjacent member, one of said members having two spaced arms spaced from and located respectively on two opposed sides of an arm of said other member,

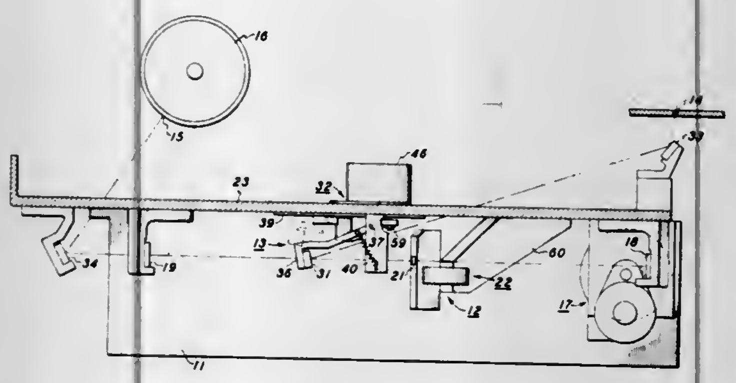
- a close wound helical spring and a rigid pin means mechanically connecting said members together, with both of said members directly engaging the pin means and being supported thereby in a manner that allows pivotal movement of at least one of the members about the pin means, and, means spacing the arm of one member from the spaced arms of the other member, the longitudinal axes of the spring and pin means extending between the spaced arms of the one member and through the arm of the other member in a direction substantially perpendicular thereto, and at spaced apart locations therealong.

3,870,816

OPTICAL SYSTEM FOR TRANSMIT/RECEIVE MODE CONDITIONING OF FACSIMILE TRANSCEIVERS

Peter John Mason, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 17, 1973, Ser. No. 361,388
Int. Cl. H04n *1/42*
U.S. Cl. 178—7.6 **9 Claims**



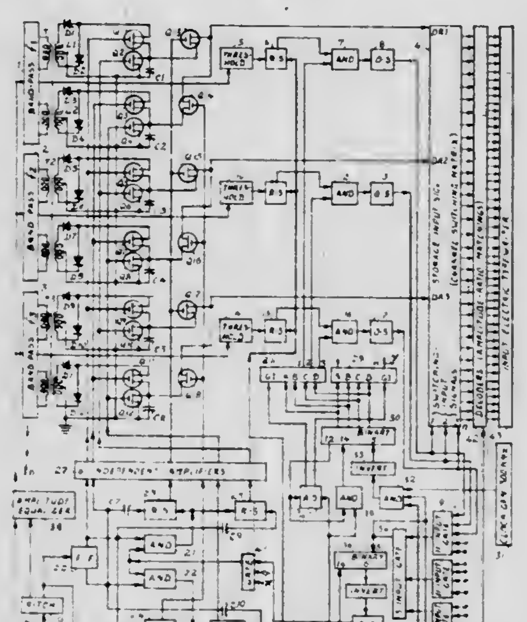
5. In an apparatus having means for supplying a beam of collimated light along a given path, first deflecting means located in said path to receive said beam thereon and for cyclically sweeping said beam through a predetermined scan angle, spaced apart line-like scanning and printing stations, said first deflecting means being optically located between said stations and said beam supplying means, one of said stations being located in the normal path of said cyclically sweeping beam and the other of said stations being located out of the normal path of said cyclically sweeping beam, second deflecting means optically located between said stations and said first deflecting means, means for moving said second deflecting means into a deflecting position in the normal path of said cyclically sweeping beam to intercept said sweeping beam and deflect the same to the other of said stations and for moving the same out of said deflecting position to a beam passing position to allow said sweeping beam to reach said one station, whereby said apparatus is conditioned for either scanning or printing.

3,870,817

PHONETIC SOUND RECOGNIZER FOR ALL VOICES

Meguer V. Kalfaian, 962 Hyperion Ave., Los Angeles, Calif. 90029

Continuation of Ser. No. 209,661, Dec. 20, 1971, abandoned. This application June 8, 1973, Ser. No. 368,264
Int. Cl. G01l *1/00*
U.S. Cl. 179—1 SA **3 Claims**



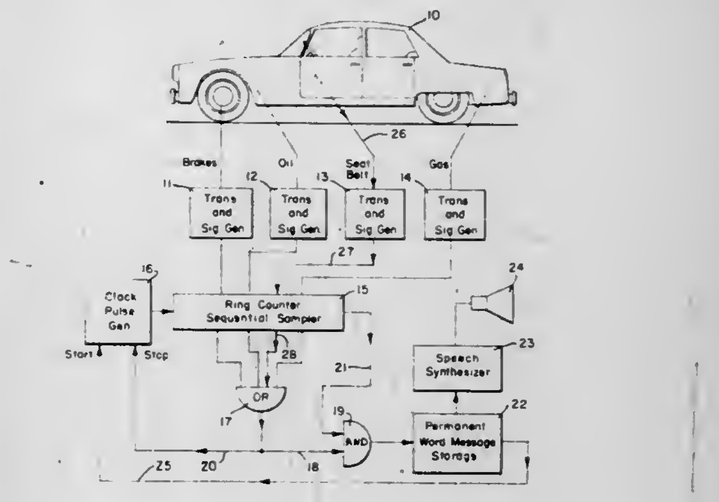
1. In complex sound waves wherein the information is contained within the time periods of trains of waves, and said information is represented by the frequency and amplitude ratios between a group of resonances in each train of the complex wave, but wherein spectral variations occur, for different voices, the system for detecting and storing the peak amplitudes of said group of resonances during the time periods of said trains successively, adaptable to stored-signal regrouping as a representation of normalyzing said spectral variations, and analyzing the amplitude ratios between said regrouped signals, said system comprising a plurality of band-pass filters to separate the voice signal's peak amplitude resonances into corresponding channels, each filter output feeding a parallel-pair of channels of detector/gate/storage/ discharge and mixer-gate channels to a common gated mixer output, said parallel pair of detector channels for alternate switching and storage of the filter output, where a plurality of detector means for detecting and storing the peak ampltudes of the resonances in said complex wave, each detector means consisting of a first pair of storage means for alternate storage of said detected signals, a second pair of discharging means for said storages, and a third pair of mixing means for said stored signals to a common output terminal; means for producing undirectional timing pulses at the frequency rate of said trains; a flip-flop (block **20**), and means for operating it by said unidirectional timing pulses for producing alternate steady state output signals at the rate of said trains; coupling means from said steady state signals to said first pair of storage means alternately for effecting alternate signal storages of the detected peaks of said resonances during the successive time periods of said trains; normally inoperative A and B AND-gates (blocks **21, 22**); parallel connections of the first inputs of said A and B AND-gates; direct coupling means from said steady state signals alternately to the second inputs of said A and B AND-gates; a one-shot (block **35**) having operating time period not longer than the shortest time period that occurs during said trains; coupling means from said one-shot to said parallel connected first inputs of said A and B AND-gates; coupling means from said unidirectional timing pulses to said one-shot for operation, whereby operating said A and B AND-gates alternately during the first time portions of said trains; means for deriving alternate timing pulses (from block **20**) at the frequency rate of said trains; first, second and third, fourth set-reset flip-flops (R-S blocks **23, 24** and **25, 26**), each flip-flop having set and reset inputs and set and reset outputs, respectively; A parallel coupling means of the set input of the first flip-flop with that of the reset input of said fourth flip-flop, and B parallel coupling means of the set input of the second flip-flop with that of the reset input of the third flip-flop; means for applying said alternate timing pulses to said A and B coupling means alternately, whereby effecting operation of the first and second flip-flops in alternate set states during the operating time periods of said one-shot, and operation of the third and fourth flip-flops in alternate reset states during quiescence of said one-shot; and coupling means from the set outputs of said first and second flip-flops to said third pair of mixing means, and the reset outputs of said third and fourth flip-flops to said second pair of discharging means, for effecting storages of the detected signals of said common outputs, adaptable to said spectral normalization and analysis of said amplitude ratios.

3,870,818

SOLID STATE DIGITAL AUTOMATIC VOICE RESPONSE SYSTEM

William A. Barton, and John E. Stork, both of Malibu, Calif., assignors to Speech Technology Corporation, Santa Monica, Calif.

Filed Aug. 24, 1973, Ser. No. 391,297
Int. Cl. G10l *1/04*
U.S. Cl. 179—1 SM **2 Claims**



2. In a signaling system for providing an automatic voice announcement of a condition being monitored, which system includes a plurality of transducers each of which is adapted to produce a signal above a distinct threshold voltage level when a corresponding condition being monitored occurs, and which system also includes permanent word message storage means, a speech synthesizer responsive to signals generated from the storage means for generating a word message, and a loud speaker for announcing the word message, the improvement comprising: sequential sampling means for sampling the outputs of said transducers in sequence;

- clock pulse generating means for driving said sequential sampling means;
- gating means controlled by said sequential sampling means for initiating the generation by the storage means of signals representing the word message corresponding to the occurrence of the condition being monitored by a particular transducer; and
- additional gating means controlled by said sequential sampling means for selectively enabling said first-named gating means and for concurrently stopping the operation of said clock pulse generating means until the generation of the word message signals from said storage means has been completed.

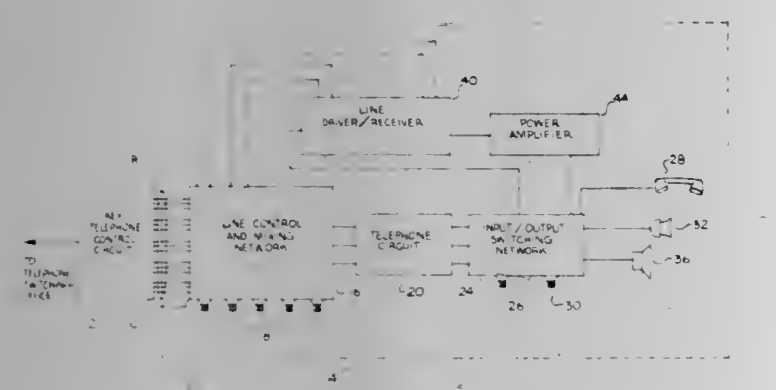
3,870,819
CONFERENCE CALL APPARATUS FOR USE WITH KEY TELEPHONE SYSTEM EQUIPMENT

Roderick A. Dennis, 2855 S. Monaco Pky., Denver, Colo. 80222; Thomas J. Consiglio, 252 Penn, Denver, Colo. 80203, and Gerald McGowan, 4175 S. Sidney Ct., Denver, Colo. 80237

Filed Dec. 26, 1973, Ser. No. 427,715

Int. Cl. H04m ***3/56***

U.S. Cl. 179—1 CN **31 Claims**



1. Conference call apparatus for use in a key telephone system which includes a key telephone control circuit, the conference call apparatus including
   - a mixing network,
   - a plurality of telephone lines coupling the mixing network to the key telephone circuit,
   - a telephone set coupled to the mixing network and including a transmitter and receiver and dialing apparatus, and line driver and receiver circuity coupled to the mixing network and to the telephone set,
   - said mixing network including first and second transformers, each coupled to the line driver and receiver circuitry, a plurality of impedance means, and switch means for selectively coupling each of said telephone lines to said first transformer and for selectively coupling each of said impedance means to said second transformer so that the impedance presented by said second transformer to the line driver and receiver circuitry is substantially the same as the impedance presented by said first transformer to the line driver and receiver circuitry, and
   - said line driver and receiver circuitry including means for applying to the receiver of said telephone set signals induced on said first transformer by voice signals transmitted over the telephone lines coupled to the first transformer, and means for applying to said first transformer signals from the transmitter of said telephone set to thereby induce corresponding signals on each of the telephone lines coupled to said first transformer.

3,870,820
MICROPHONE WITH DIFFERENT DIRECTIONAL MODES

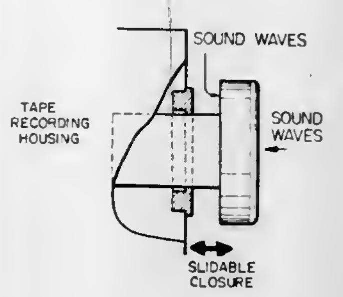
Tomohide Suzuki, and Toshio Aoki, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed June 29, 1973, Ser. No. 374,870

Claims priority, application Japan, June 30, 1972, 47-77450; June 30, 1972, 47-77451; June 30, 1972, 47-77452

Int. Cl. H04r ***1/38***

U.S. Cl. 179—1 DM **2 Claims**



1. In combination, a recording apparatus having a casing and a microphone having a housing with a larger diameter portion and a smaller diameter portion defining a shoulder portion therebetween, said apparatus casing having an opening receiving said smaller diameter portion slidably movable with respect to said casing, said shoulder portion having at least a first opening therein, a diaphragm mounted in said larger diameter portion of said housing and having a first major surface exposed to frontal soundwaves and a backside second major surface opposite to said first major surface, a sensor operatively coupled to said diaphragm, a backplate mounted in said larger diameter portion spaced from said second surface of said diaphragm and defining a space between it and said shoulder, said backplate having therein at least a second opening communicating with said first opening through said space, whereby upon slidable movement of said smaller diameter portion away from said apparatus casing said second opening is uncovered and soundwaves impinge on said second surface through said first and second openings.

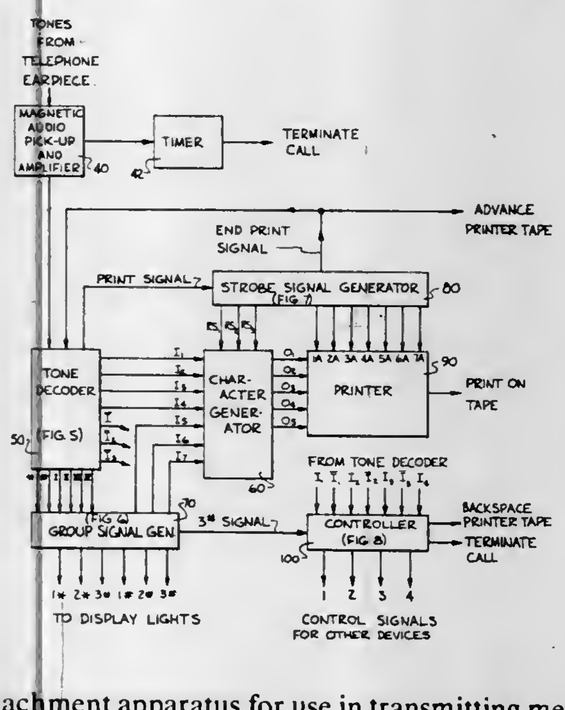
3,870,821
PUSHBUTTON TELEPHONE PRINTER/RECORDER

Donald P. Steury, 9380 S.W. Lake St., Tigard, Oreg.

Filed Nov. 29, 1972, Ser. No. 310,236

Int. Cl. H04m ***11/06***

U.S. Cl. 179—2 DP **6 Claims**



1. An attachment apparatus for use in transmitting messages by a pushbutton-type tone-signalling telephone having numeric keys and non-numeric keys, each key when actuated generating respectively distinct audio-frequency tone signals, comprising:
   - a. converter means for receiving and converting said audio-frequency tone signals generated by said message sending telephone into corresponding distinct electrical signals:
   - b. selector means coupled to said converter means for responding to those of said electrical signals which correspond to transmitted tone signals generated by actuation of a non-numeric key on said sending telephone, said selector means selecting among a plurality of character grouping modes and generating signals representative of the particular mode selected, wherein at least one of said non-numeric keys has assigned thereto more than one character grouping mode of said plurality of character grouping modes; and
   - c. display means coupled to said selector means and responsive to said mode selection signals for visually indicating which particular one of said character grouping modes of the plurality of character grouping modes assigned to a respective non-numeric key, has been selected as well as indicating the characters comprising said selected character grouping mode.

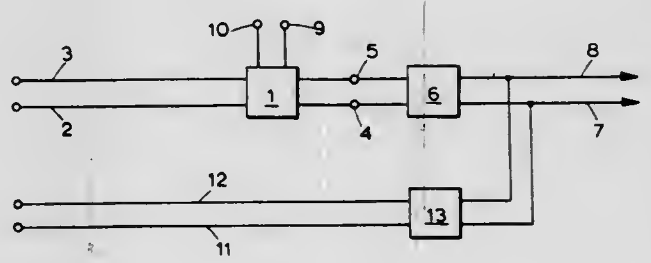
3,870,822
SUPPLYING A CHARGING CURRENT BY WAY OF TELEPHONE LINES OR THE LIKE

Oliver Charles Matthews, Edgware, England, assignor to The Post Office, London, England

Filed Feb. 14, 1972, Ser. No. 225,902

Int. Cl. H04m ***11/06***

U.S. Cl. 179—4 **8 Claims**



1. A power supply system for supplying current from an electrical direct current power source to an auxiliary load at a remote location by way of a telecommunication transmission line, said system including a power transmit unit and a line power receiver unit situated at the location remote from the transmit unit; said transmit unit including first means to sense the state of communication and to connect, and to disconnect, the power source to, and from, the line, when the line is idle, and busy, respectively, said connection being made at the end of a first predetermined time interval from the line becoming idle, and said disconnection being made when the line is busied; and, said receiver unit including second means to sense the idle, and busy state of communication, and arranged to connect the load to the line when the line is idle and to cause the current from the power source to flow at the end of a second predetermined time interval from the line becoming idle, and said second means being arranged to disconnect the load from the line when the line is busied and required as a telecommunication link.

3,870,823
TELEPHONE EXCHANGE METERING SYSTEM

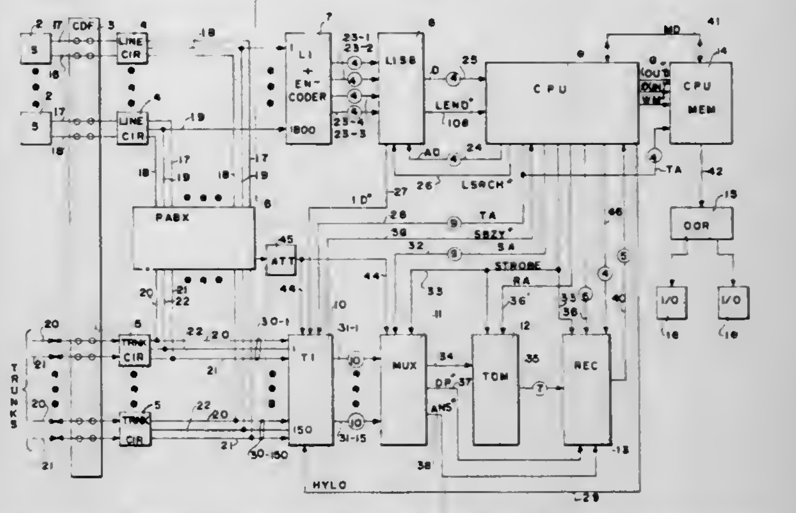
Winston D. Gayler, Mountain View, and James E. Ahern, Cupertino, both of Calif., assignors to Vidar Corporation, Mountain View, Calif.

Filed Oct. 10, 1973, Ser. No. 404,873

Int. Cl. H04n ***15/38***

U.S. Cl. 179—7 MM **16 Claims**

1. A message metering system for detecting and storing information concerning station usage of outgoing trunk lines, the improvement comprising,
   - means for addressing said trunk lines with a sample address SA,
   - a plurality of addressable receivers for connection when addressed to said trunk lines, each of said receivers including means to sample and analyze signals on a connected trunk line to produce output information,
   - means for addressing said receivers with a receiver address RA,



   - means for stepping said sample address SA and said receiver address RA in synchronism whereby trunk lines addressed by said sample address are sampled and analyzed by receivers addressed by said receiver address, respectively,
   - means for storing the information from said receivers in a memory location unique to each trunk line

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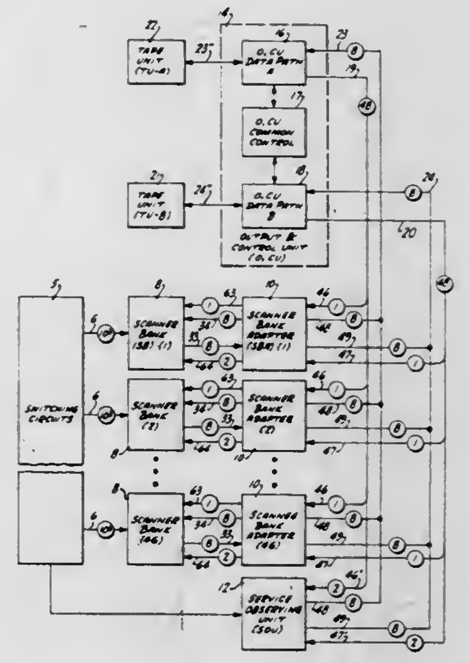
3,870,824
REDUNDANT DATA TRANSMISSION SYSTEM

James R. Baichtal, and John C. McDonald, both of Los Altos, Calif., assignors to Vidar Corporation, Mountain View, Calif.

Filed May 29, 1973, Ser. No. 365,045

Int. Cl. H04m ***15/10***

U.S. Cl. 179—7 R **14 Claims**



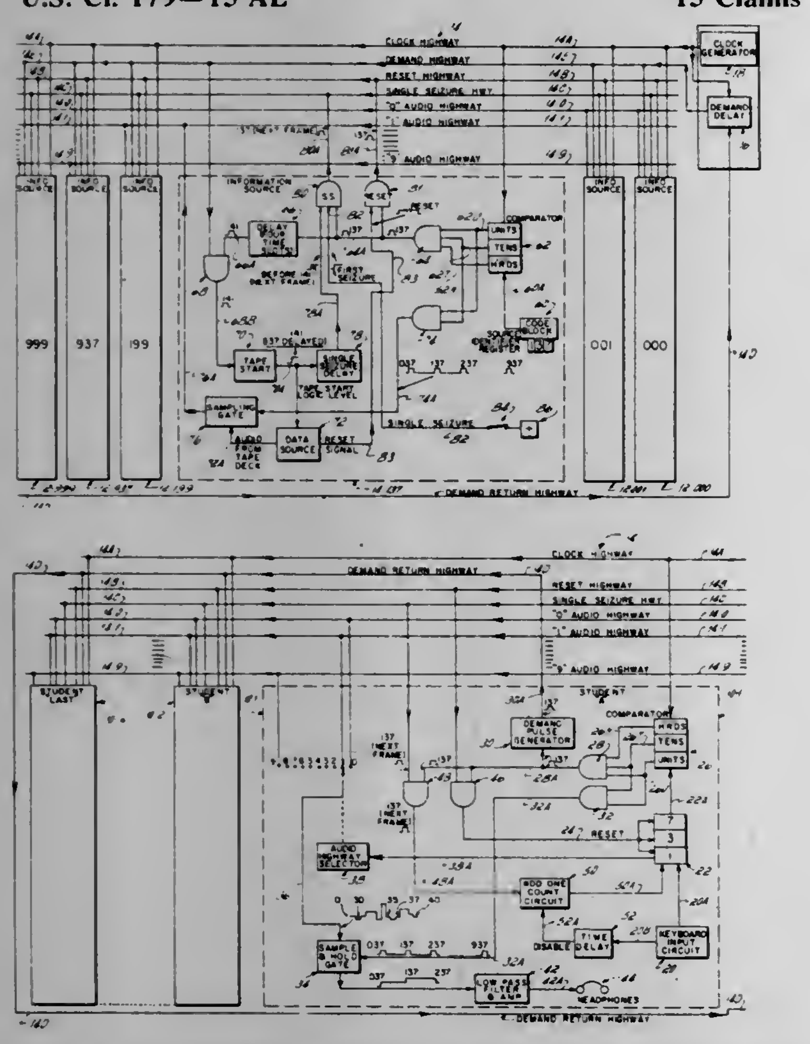
1. A message metering system, for metering the usage of a plurality of subscribers in a telephone system where each subscriber is associated with a multi-state signal, comprising, means responsive to the addressing of each subscriber for sensing the associated multi-state subscriber signal,
   - memory means having memory locations corresponding to each subscriber, said memory means concurrently addressed during the addressing of each corresponding subscriber for storing usage information derived from said multi-state signal in a memory location associated with the addressed subscriber,

first and second storage units connected to said memory means over redundant first and second data paths, respectively, where only one of said storage units and the connected data path is active while the other of said storage units and the connected data path is inactive, and first and second control network means for enabling one at a time said first and second redundant data paths, respectively.

3,870,825
TIME-DIVISION MULTIPLEX COMMUNICATION SYSTEM

Robert C Roberts, and Edward B. Alcorn, both of Lexington, Ky., assignors to Engineered Devices Company, Lexington, Ky.

Filed Jan. 5, 1973, Ser. No. 321,394
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **15 Claims**



1. A time-division multiplex communication system comprising:

at least first and second receiving stations,
at least first and second transmitting stations,
a data highway interconnecting said receiving and transmitting stations,
a calling highway interconnecting said receiving and transmitting stations,
a clock number highway interconnecting said receiving and transmitting stations,

a clock number generator for sequentially generating at least first and second different clock number signals per clock frame, said clock generator being connected to apply said clock signals to said clock highway,

first and second recognition means included in said first and second receiving stations, respectively, for recognizing receipt at said first and second receiving stations, respectively, of said first and second clock number signals,

first and second calling means included in said first and second receiving means, respectively, responsive to said first and second recognition means, respectively, for generating first and second demand signals in response to recognition by said first and second recognition means of said first and second clock number signals, said first and second calling means being connected to said calling highway to apply said first and second demand signals thereto in a specified timed relation to receipt at said first and second receiving station of said first and second clock number signals, respectively,

first and second identifier means included in said first and second transmitting stations, respectively, for recognizing receipt at said first and second transmitting stations, respectively, of said first and second clock signals, respectively, and in response thereto generating first and second outputs, respectively,

first and second calling highway sampling means included in said transmitting stations, respectively, and responsive to said first and second outputs of said first and second identifier means, respectively, for sampling said calling highway in a specified timed relation to receipt at said first and second transmitting stations of said first and second clock number signals, respectively, to detect receipt at said first and second receiving stations of said first and second demand signals, respectively,

first and second data sources at said first and second transmitting stations responsive to said first and second calling highway sampling means, respectively, for generating first and second data in response to detection of a demand signal by said first and second call highway sampling means,

first and second data gating means at said first and second transmitting stations for gating data to said data highway, generated by said first and second data sources, in specified timed relation to receipt at said first and second transmitting stations of said first and second clock signals, and

first and second data sampling means at said first and second receiving stations responsive to said first and second recognition means for sampling said data highway in predetermined timed relation to receipt at said first and second receiving means of said first and second clock number signals, respectively,

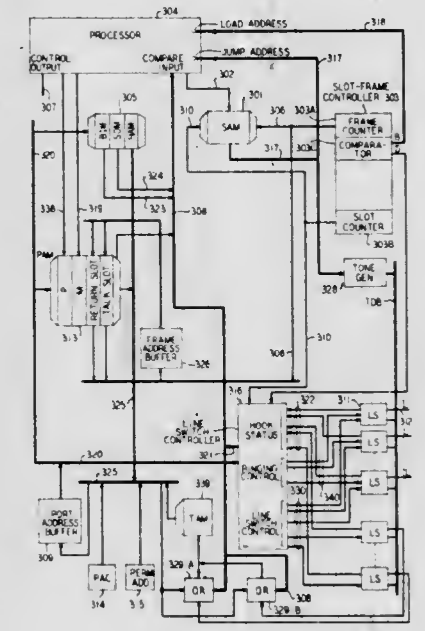
said data, calling and clock highways follow substantially the same physical path to maintain synchronism between propagation of a specified clock number signal along said clock highway and the propagation of demand and data signals associated with said specified clock number signal.

3,870,826
TONE CONTROL SYSTEM FOR A TIME DIVISION SWITCHING SYSTEM

Robert Lawrence Carbrey, Boulder; John Christian Moran, Broomfield, and Nelson Tsin Tsao-Wu, Boulder, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1973, Ser. No. 427,339
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 BY **11 Claims**

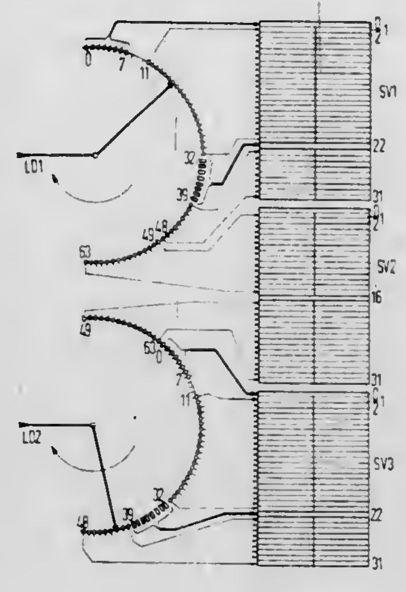
1. In a time division switching system, means for assigning each call served by said system to a unique time slot in a repetitively reccurring series of time slots, a tone generator, means effective upon each occurrence of a slot for applying to said tone generator a call status word representing the current call serving state of said slot, a time division bus, and means responsive to the reception of each status word by said generator for applying a service tone from said generator to said bus whenever said word represents a call state that requires the application of a tone.



3,870,827
DIGITAL TIME-DIVISION MULTIPLEX SWITCHING METHOD

Allan Darre, Munich, and Wolf Springstubbe, Gauting, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 3, 1974, Ser. No. 430,570
Claims priority, application Germany, Dec. 29, 1972, 2264179
Int. Cl. H03k *13/22*
U.S. Cl. 179—15 AP **4 Claims**



1. A method for operating pulse code modulation (PCM), time division multiplex exchange switching apparatus to connect interexchange trunks carrying delta-modulation information to PCM interexchange trunks, comprising the steps of:

combining bits of delta-modulation information in a given channel, which bits occur during the delta-modulation system periods contained within a PCM system period in an integral number equalling no more than the number of PCM bits in a PCM word,

coupling said delta-modulation bits in the order of their appearance in PCM word form to said exchange switching apparatus,

writing said delta-modulation bits into first storage locations of a storage row in a first switching storage in said exchange switching apparatus, said storage row being individually assigned to said given channel,

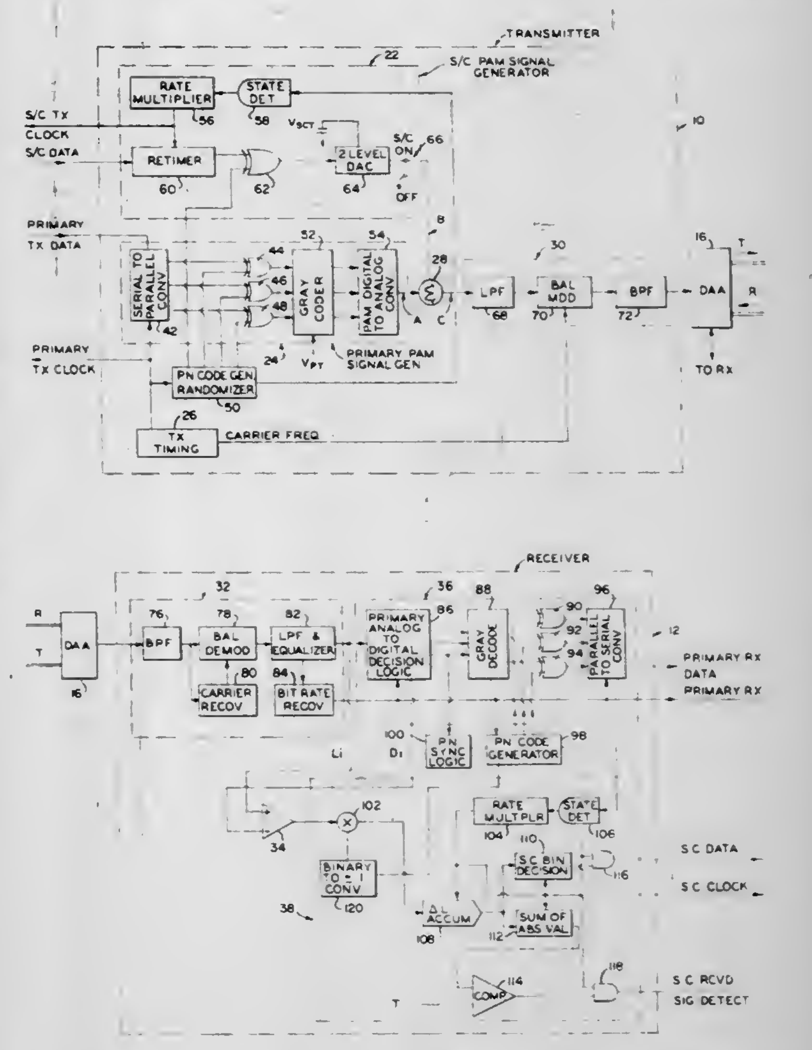
transferring said delta-modulation bits in PCM word form for the duration of a period when no further delta-modulation bits appear, to other locations in said assigned storage row and

if the number of delta-modulation system periods exceeds the number of half the information bits in a PCM word, transferring said delta-modulation bits to the corresponding row of a second switching storage having an identical storage capacity for retransmission therefrom as at least a portion of a PCM word.

3,870,828
SUPERIMPOSED BINARY SIGNAL

Thomas V. Saliga, Clearwater, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Sept. 6, 1973, Ser. No. 394,766
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 BY **14 Claims**



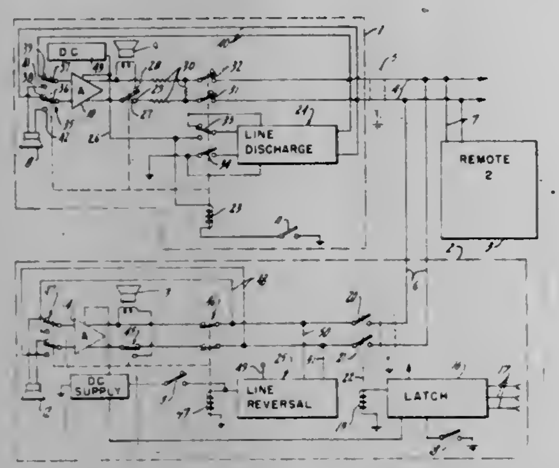
1. A superimposed channel signalling device for transferring secondary channel signals simultaneously with primary channel signals: said signalling device comprising transmitter means including signal superimposing means coupled between data termainal equipment and signal transmitter means and receiver means including signal separator means coupled between data terminal equipment and signal receiver means, said signal superimposing means comprising logic means to superimpose said secondary channel signals on said primary channel signals to generate a summed channel signal for transmission by said signal transmitter means, said receiver means including decision logic means to determine the signal level of said primary channel signals, said signal separator means coupled to said decision logic means and said receiver means to receive said summed signal and said primary channel signal, said signal separator means comprising logic means to determine the magnitude of said superimposed secondary channel signals and secondary channel decision logic means coupled

to said signal separator means, said secondary channel decision logic means including logic means to compare said secondary channel signal with a predetermined acceptance region to generate an output signal wherein said secondary channel signal is within a predetermined acceptance region.

3,870,829
AUDIO-COMMUNICATION SYSTEM HAVING A PLURALITY OF INTERCONNECTED STATIONS

Manuel Frank Chacon, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 8, 1972, Ser. No. 304,612
Int. Cl. H04m *9/02*
U.S. Cl. 179—30 **17 Claims**

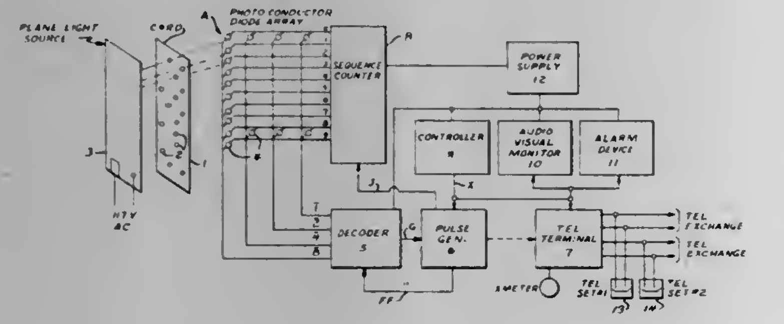


1. A multiple station audio communication system, comprising a plurality of spaced stations, a single pair of transmission lines interconnecting said stations, an audio transmitting device at each station, an audio receiving device at each station, an amplifier at each station having a relatively high impedance input means and a low impedance output means, said amplifier having a local power supply, and a talk-listen switch means at each station having a first state connecting said input means of said amplifier to said audio transmitting device and the output means to said transmission line pair and having a second state connecting the input means of said audio amplifier to said transmission lines and the output of said amplifier to the said related audio receiving device.

3,870,830
AUTOMATIC TELEPHONE DIALER

Fa-Kuei Liu Tapiei. 64-3 Lane 40 San Road, Taiwan

Filed Jan. 14, 1974, Ser. No. 432,895
Int. Cl. H04m *1/48*
U.S. Cl. 179—90 CS **12 Claims**

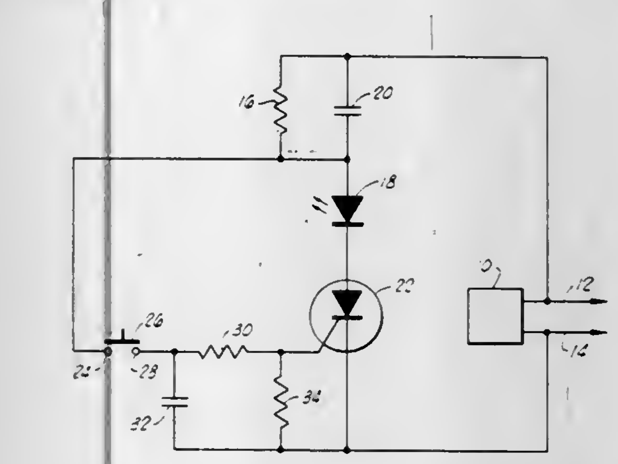


1. A system for automatic telephone dialing comprising: a card defining a plurality of apertures representative of dialing information; sensing means including a source of light on one side of said apertured card and an array of photoconductor elements on the other side of said card for generating sets of electrical signals in sequence and representative respectively in binary coded decimal notation of the decimal digits of the number to be dialed; decoder circuit means receiving said sets of signals for storing the same and including comparison circuit means responsive to sets of binary-coded decimal signals; pulse generator means responsive to a start signal for generating a train of dial pulse signals and for feeding said train of dial pulse signals to said comparison circuit means of said decoder means and to a telephone terminal for transmitting dial pulses, said decoder means accumulating said train of pulses and said comparison circuit means comparing the accumulated pulses with the binary-coded decimal signals from said diode array for terminating said pulse generator when the number of pulses transmitted thereby equals the number represented by said binary-coded decimal signals from said photoconductor array; and controller circuit means for initiating said pulse generator means when it is desired to dial a number, said decoder means being further responsive to the end of a dialed digit sequence to terminate the generation of dial pulses by said pulse generator and to connect the telephone line for signal communication.

3,870,831
TELEPHONE HOLD CIRCUIT

William I. McCarley, 901 24th Ave. S.W., Norman, Okla. 73069

Filed June 27, 1973, Ser. No. 375,796
Int. Cl. H04n *1/00*
U.S. Cl. 179—99 **4 Claims**

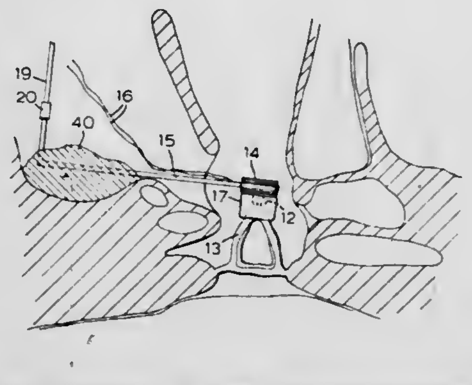


1. A telephone hold circuit for connection to a telephone line having a positive conductor and a negative conductor:
a load including a first and second terminal;
electronic switch means having an input electrode, an output electrode, and a control electrode;
visual indicator means connected in series between the first terminal of said load and the input electrode of said electronic switch means for providing visual indication when current passes therethrough;
means connecting the second terminal of said load to the positive conductor of the telephone line;
means connecting the output electrode of said electronic switch means to the negative conductor of the telephone line;
first capacitor means connected across said load; second capacitor means including two leads;
second switch means including two terminals having current passing and current blocking states;
means connecting said second switch means and said second capacitor means in series across said visual indicator means and said electronic switch means with one terminal of said second switch means being connected to the junction between said load and said visual indicator means, and with a first lead of said second capacitor means being connected to the output electrode of said electronic switch means;
actuation means coupled to said second switch means for establishing said second switch means in the current passing state whereby said second capacitor means may be charged; and
resistance means coupling the second lead of said second capacitor means to the control electrode of said electronic switch means to render said electronic switch means conductive when said second capacitor means is charged to permit a current to pass through said load and said visual indicator means.

3,870,832
IMPLANTABLE ELECTROMAGNETIC HEARING AID

John M. Fredrickson, 24 Queen Mary's Dr., Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 364,938, May 29, 1973, abandoned. This application July 29, 1974, Ser. No. 492,675
Claims priority, application Great Britain, July 18, 1972, 33476/72
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 E **10 Claims**



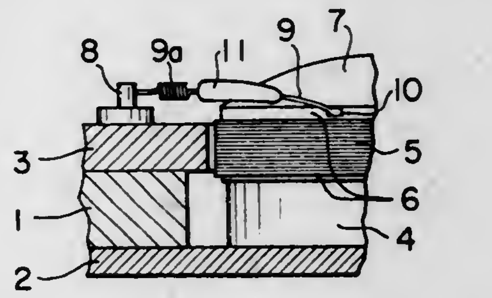
1. A hearing aid having certain components thereof that are implanted in the ear of the user, said hearing aid comprising sound transducer means for converting audio signals to electrical signals and electromagnetic transducer means for receiving said electrical signals and converting said electrical signals into mechanical movement of the stapes bone of the ear of the user, said electromagnetic transducer means being implantable in the ear of the user and comprising a magnet, means for firmly securing said magnet to the head of the stapes bone of the user such that said magnet and said stapes bone move as a unit without relative movement therebetween when said magnet is attracted by a magnetic field and a coil of a size that permits it to be implanted in the middle ear space of the ear of the user, said coil being adapted to be implanted in the middle ear space of the ear of the user in close proximity to said magnet, said coil when energized by said electrical signals producing a magnetic field in which said magnet is located, said coil and said magnet being positioned with respect to each other such that upon energization of said coil said stapes bone moves as a result of the interaction between the magnetic field of said magnet and said magnetic field of said coil in the same manner as said stapes bone normally is moved by the incus bone, said hearing aid also including implantable support means for said coil, said support means being adapted to be secured to a bone that holds said coil in a fixed position in said middle ear space.

3,870,833
EXPANDABLE SUSPENSION SYSTEM FOR LOUDSPEAKER BOBBIN

Showzo Kinoshita, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 23, 1973, Ser. No. 362,983
Claims priority, application Japan, June 20, 1972, 47-72181
Int. Cl. H04r *9/04*
U.S. Cl. 179—115.5 VC **5 Claims**

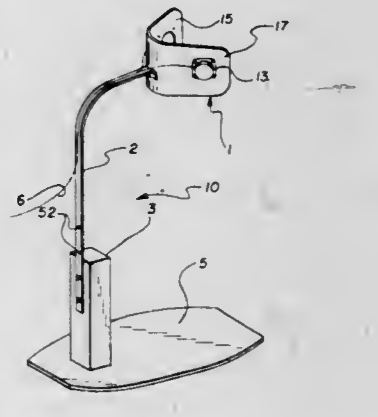
1. A loudspeaker including a cylindrical bobbin having a voice coil wound about its periphery and being suspended within a cylindrical air gap of the loudspeaker magnetic circuit which includes a fixed magnetic member, by means of a plurality of suspension wires which extend tangentially in the same direction from the outer periphery of the bobbin at equally spaced circumferential positions to the fixed magnetic member and are fixed at one end to the bobbin and at the opposite end to the fixed magnetic member, the improvement comprising: an integral, wire coil portion intermediate the ends of each wire and aligned coaxially therewith to permit the wires to expand and contract in the direction of the wire axis to diminish rotary oscillation of the bobbin during energization of the voice coil, but permitting the wire coil portion to bend along with the remaining portion of each wire to permit axial movement of the bobbin with respect to the fixed magnetic member.



3,870,834
PERSONAL STEREOPHONIC SPEAKER SYSTEM

Ronald N. Yeaple, Fairport, N.Y., assignor to Yeaple Corporation, Rochester, N.Y.

Filed June 11, 1973, Ser. No. 369,069
Int. Cl. H04m *1/04*; **H04r** *1/28*
U.S. Cl. 179—146 H **11 Claims**



1. A personal loudspeaker system comprising:
a. a baffle frame,
b. near field effect means including first and second spaced opposed loudspeakers mounted on said baffle frame in cooperative relationship for deriving between said first and second loudspeakers, first and second near field effects proximal to said first and second loudspeakers respectively, in response to electrical signals applied to said first and second loudspeakers,
   i. said first and second opposed loudspeakers being spaced apart to receive a listener's head therebetween so that the ears of said listener are in registry with said first and second near field effects of said first and second loudspeakers respectively, and
c. said frame having means for guiding and registering said ears of said listener with said first and second near field effects between said first and second loudspeakers.

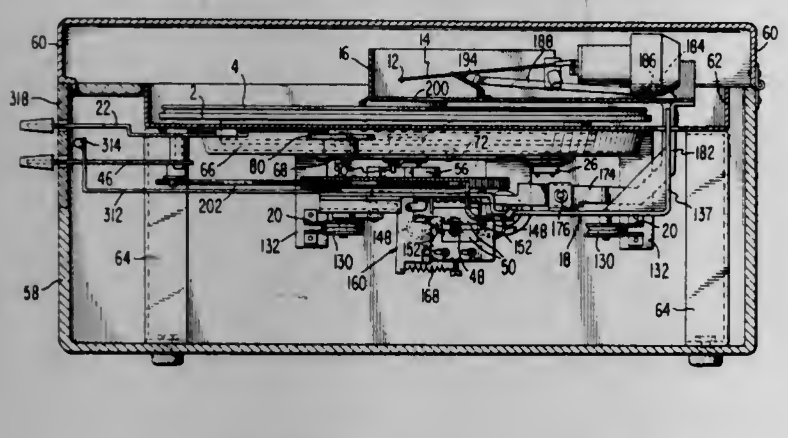
3,870,835
STYLUS CONTROL APPARATUS FOR A VIDEO DISC RECORD PLAYER

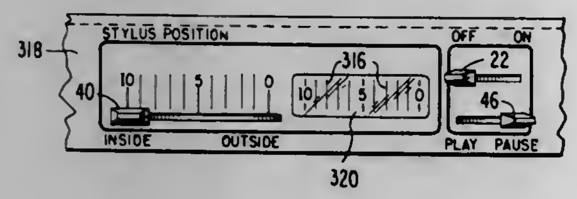
Fredrick Roland Stave, Oaklandon, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,600
Int. Cl. G11b *17/06, 3/00*
U.S. Cl. 179—100.4 R **12 Claims**

1. In a disc record playback system including a rotatably driven turntable, apparatus for controlling cooperation of a playback stylus with a turntable-supported disc record comprising, in combination:

a stylus support housing;
an arm carrying said stylus at one end thereof;
a stylus arm pivot for coupling an end of said arm, remote from said one end, to said stylus support housing; said pivot permitting both lateral and vertical motions of said stylus relative to said stylus support housing;
said stylus support housing being subject to translatory motion to provide a translation of said stylus arm pivot permitting travel of said stylus substantially radially of said record;
stylus control means for providing vertical movement of said stylus relative to said housing between a first depressed position permitting stylus engagement with a turntable-supported record and a second elevated position precluding stylus engagement with a turntable-supported record;
first drive means coupled to said stylus support housing and selectively responsive to rotation of said turntable for moving said stylus support housing between a standby position and a playback position;
said stylus being in vertical registry with a region of said turntable when said stylus support housing is in a playback position, and out of vertical registry with said turntable when said stylus support housing is in said standby position;
second drive means, independent of stylus-record engagement, coupled to said stylus support housing and selectively responsive to rotations of said turntable for moving said stylus support housing during playback of said record; and
selective drive control means intercoupled with said first and second drive means and said stylus control means for selectively energizing said first drive means with said stylus disposed in said elevated position and for selectively energizing said second drive means while concomitantly disposing said stylus in said depressed position.



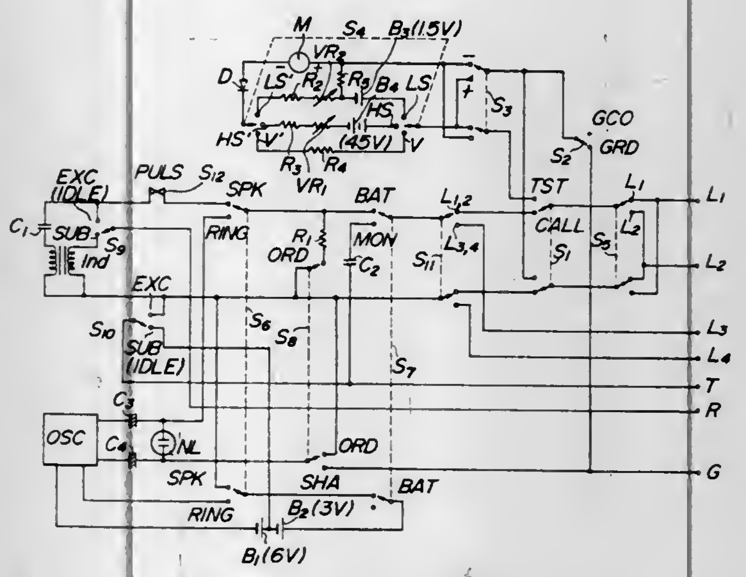


3,870,836
PORTABLE TESTER FOR TELEPHONE SUBSCRIBER LINES

Mikio Kusama, Urawa, Japan, assignor to Daimei Tsushin Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 31, 1974, Ser. No. 438,423
Claims priority, application Japan, Feb. 2, 1973, 48-13880
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **3 Claims**

1. A portable tester for telephone subscriber lines provided with subscriber line connecting terminals L_1 and L_2, further line connecting terminals L_3 and L_4, headset connecting terminals T and R and a ground wire connecting terminal G and further provided with a test circuit and a speech and ringing circuit, wherein the test circuit comprises;

a reverse key S_5 for reversing said lines L_1 and L_2,
a first test key for connecting the lines L_1 and L_2 to the test circuit or to the speech and ringing circuit,
a second test key S_3 for reversing said lines leading to a dc meter circuit,
a dc meter circuit connected to said second test key S_3 and including further switching key S_4 for switching the meter circuit including a dc meter M in either of the following three circuits of the following,
a series resistance circuit for measuring voltages between terminals of the meter circuit,
a series high dc voltate circuit for measuring insulation resistance between the terminals,
a series low voltage and low resistance circuit for measuring low resistance between the terminals,
a further key S_2 for connecting ground from the ground terminal G to either side of the meter circuit by use of said second test key S_3; and



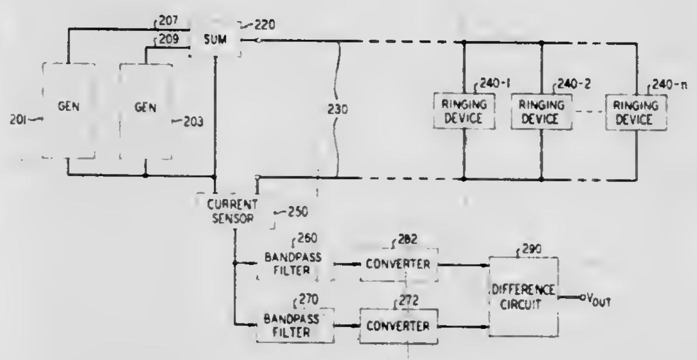
the speech and ringing circuit comprises,
an oscillator for producing about 16–25 Hz ac ringing voltage by an excitation of housed battery,
a neon lamp shunt connected to an output circuit of the oscillator for supervising an answering condition of a called subscriber,
a key S_{11} for selectively connecting the lines L_1 and L_2 or lines L_3 and L_4 to said speech and ringing circuit,
a monitoring key S_7 for inserting a monitoring condenser of small capacitance in series with the terminals T and R for connecting a headset in order to monitor the condition of line to be tested,
a speech circuit to be fed by a local battery,
key S_9 and S_{10} for connecting said local battery to the line terminals, and
a shunt resistor inserted in parallel with the output circuit of the ringing oscillator to prevent repeated excitation of relay groups provided in the exchange.

3,870,837
TELEPHONE RINGER COUNTER

John William Adams, Jamestown; Ihsan Mustafa Hasan Babaa, Greensboro, and Donald Larry Hester, Kernersville, all of N.C., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Feb. 15, 1974, Ser. No. 443,129
Int. Cl. H04m *1/24*
U.S. Cl. 179—175.2 B **9 Claims**

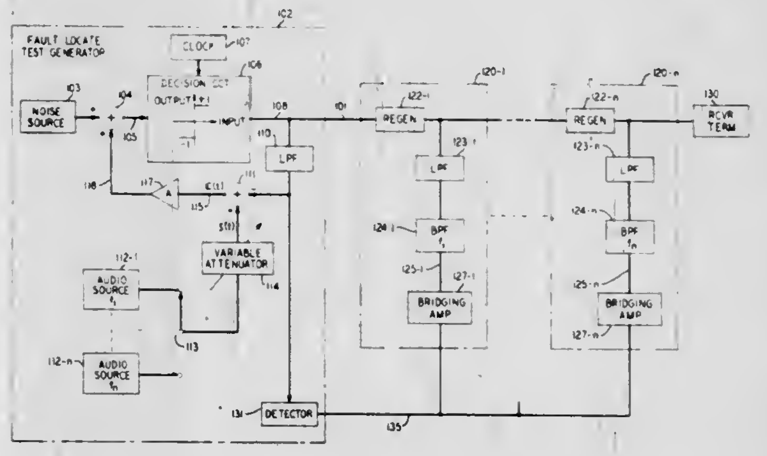
1. A circuit for counting ringing devices connected to a communication loop comprising first means for generating a first frequency signal; second means for generating a second frequency signal; means for coupling said first and second frequency signals to said communication loop, each ringing device comprising a resonance circuit having a resonance frequency intermediate said first and second frequencies; means connected to said communication loop for detecting a resultant communication loop signal responsive to said coupled first and second frequency signals having first and second

frequency components; means for separating said resultant first frequency component from said resultant second frequency component; means connected to said separating means for producing a third signal corresponding to said separated first frequency component and for producing a fourth signal corresponding to said separated second frequency component; and means for subtracting said fourth signal from said third signal, the output of said subtracting means corresponding to the number of ringing devices connected to said communication loop.



3,870,838
MEANS AND APPARATUS FOR FAULT LOCATING PULSE REGENERATORS

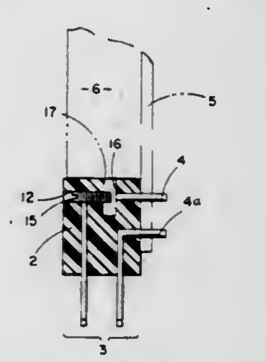
Walter Leo Corwin, Freehold; Robert Emerson Keeler, Colts Neck, and Philip Edward Rubin, Madison Township, Middlesex County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 11, 1974, Ser. No. 450,170
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.31 R **6 Claims**



1. A method for testing a pulse regenerator comprising the steps of generating a noise voltage having random voltage fluctuations, perturbing the mean of said noise voltage in a predetermined manner, applying to said regenerator at a fixed repetition rate at test instants random sequences of successive first test pulse levels and second test pulse levels, the probability that the first test pulse level being applied at a test instant and the probability that the second test pulse level being applied at said test instant being functionally determined by the mean of the perturbed noise voltage, deriving at the pulse regenerator a response to the successively applied random test pulse levels, comparing the derived response with an anticipated response to determine whether said regenerator is faulty, said anticipated response being determined by the predetermined manner in which the mean of the noise voltage is perturbed.

3,870,839
TRAINING MODULE CONNECTOR

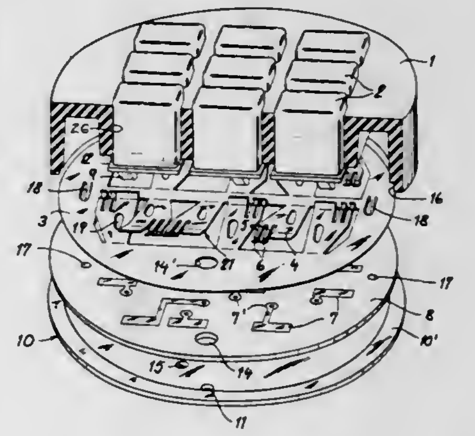
Clarence L. Almich, Anaheim; Jack D. Polk, Jr., Whittier, and Robert A. Aulick, Fullerton, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed Apr. 20, 1973, Ser. No. 353,079
Int. Cl. H05r *1/06;* **H01b** *3/40*
U.S. Cl. 200—5 A **3 Claims**



1. A pre-faulted electrical circuit connector for use in a training device, comprising:
a. a connector body having a plurality of plug-in contact pin elements therein;
b. means forming a narrow elongated slot cut into said body from one surface thereof, said slot intersecting and cutting through a continuous number of said pin elements internally of said body to form an inoperative open circuit condition in each circuit normally connected by said intersected pins;
c. means forming a plurality of apertures in said body equal to said number of intersected pins, each said aperture having an external opening in said body different from where said slot is cut into said body surface and directed toward each of the respective said open circuits so as to communicate with both cut sides of the respective pin across said slot; and
d. an adjustable conductive closure member positioned in each said aperture to selectively close or open the respective said open circuit condition.

3,870,840
SWITCH PUSHBUTTON-TYPE DIGIT KEYBOARD SWITCH WITH LEAF SPRING CONTRACT AND ACTUATOR BIASING MEANS ON COMMON CONDUCTIVE FRAME

Gianfranco Rivetta, Milan, and Egidio Marcotti, Arona, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed Oct. 15, 1973, Ser. No. 406,220
Claims priority, application Italy, Oct. 16, 1972, 30518/72
Int. Cl. H01h *13/70*
U.S. Cl. 200—5 A **10 Claims**



1. A keyboard switch for the selective closure of a multiplicity of circuits, comprising:

- a support;
- a printed-circuit board on said support having a face provided with a multiplicity of contact areas respectively included in the circuits to be selectively closed;
- a conductive frame on said support;
- a multiplicity of pushbuttons on said support spacedly overlying said face with limited mobility perpendicular thereto; and
- an array of resilient contact elements on said frame interposed between said board and respective pushbuttons for completing any of said circuits under the control of the associated pushbutton, each of said contact elements being provided with a fixed end and a movable end, said movable end being split into an upbent prong bearing under pressure upon the associated pushbutton and relatively downwardly bent tongue means alongside said prong normally spaced from the corresponding contact area but engageable therewith upon displacement of said prong toward said board by depression of said associated pushbutton.

3,870,841

FLEXIBLE POLYMERIC COMPOSITIONS COMPRISING A NORMALLY PLASTIC POLYMER SULFONATED TO ABOUT 0.2 TO ABOUT 10 MOLE % SULFONATE

Henry S. Makowski; Robert D. Lundberg, and Gopal H. Singhal, all of Westfield, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 2, 1972, Ser. No. 294,489

Int. Cl. C08f *27/06;* **C08d** *11/02, 13/30*

U.S. Cl. 260—23.7 R **47 Claims**

1. A flexible composition comprising:

- a normally plastic polymer sulfonated to about 0.2 to about 10 mole percent sulfonate, said plastic polymer being substantially amorphous and having a softening point between about 25°C and 260°C; and
- b. about 20 to about 500 parts per hundred by weight based on the sulfonated plastic polymer of a polymer chain plasticizer, said plasticizer being a normally liquid compound having a boiling point of at least 120°C.

3,870,842

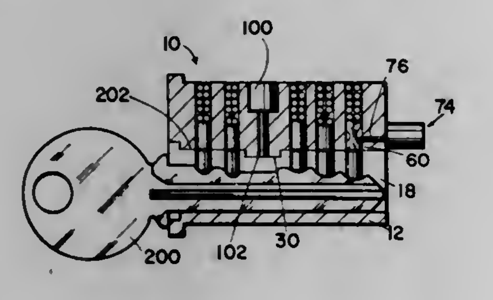
LOCKING DEVICE

Robert Paul Bergsman, Philadelphia, Pa., assignor to Leonard Lebowitz, Philadelphia, Pa., a part interest

Filed Nov. 21, 1973, Ser. No. 418,062

Int. Cl. H01h *27/00*

U.S. Cl. 200—44 **13 Claims**



1. A locking device comprising a lock body having a plurality of aligned bores therein; a key barrel having a key passage therein and a plurality of aligned bores formed therein, which are in alignment with respective bores of said lock body, the space between said bores of said barrel and said bores of said lock body comprising a shear line, said barrel being rotatably carried by said lock body and adapted to rotate between at least first and second predetermined positions key operable means comprising a first set of lock pins movably carried in the bores of said barrel; a second set of lock pins movably carried in the bores of said lock body, and disposed substantially in alignment with respective lock pins of said first set; biasing means for normally biasing said lock pins of said second set so that a portion of each of said lock pins extend from the bores of said lock body into the aligned bores of said barrel to prohibit relative movement of said barrel in said lock body; first switch means comprising a first microswitch including a follower pin operatively and selectively linked through said follower pin to at least one lock pin of said second set of lock pins, said one lock pin comprising an hour glass-shaped cam, said first switch means being adapted to be activated upon insertion of a key or like means in said key passage of said barrel, said key or like means causing movement of said hour glass-shaped cam and corresponding movement of said follower pin; and second switch means operatively and selectively linked to said barrel, and adapted to be activated upon rotation of said barrel in said lock body.

3,870,843

ELECTRICAL APPLIANCE WITH HOUSING OF PLASTIC FOAM MATERIAL

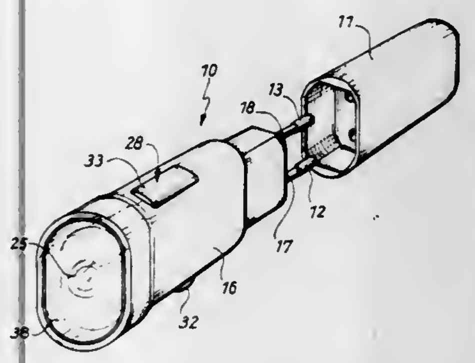
Waldemar Witte, Panoramaweg 17, D-7157 Murrhardt, Germany

Filed Dec. 22, 1972, Ser. No. 317,721

Claims priority, application Germany, Feb. 17, 1972, 2207347

Int. Cl. H01h *9/04, 9/06*

U.S. Cl. 200—302 **4 Claims**



1. A small cordless electrical appliance having a main body, comprising in combination,

- a plurality of stationary electrical components;
- said plurality of stationary electrical components being firmly embedded in solidified plastic foam material;
- said solidified plastic foam material forming a passage;
- a single slidably movable switching element mounted in said passage;
- said plastic foam material forming the final outer surface of said main body.

3,870,844

VAPOR PROOF JUNCTION BOX IN COMBINATION WITH ELECTRICAL FLOAT SWITCH ADJUSTABLE FOR HEIGHT

Joseph H. De Frees, 414 Liberty St., Warren, Pa. 16365

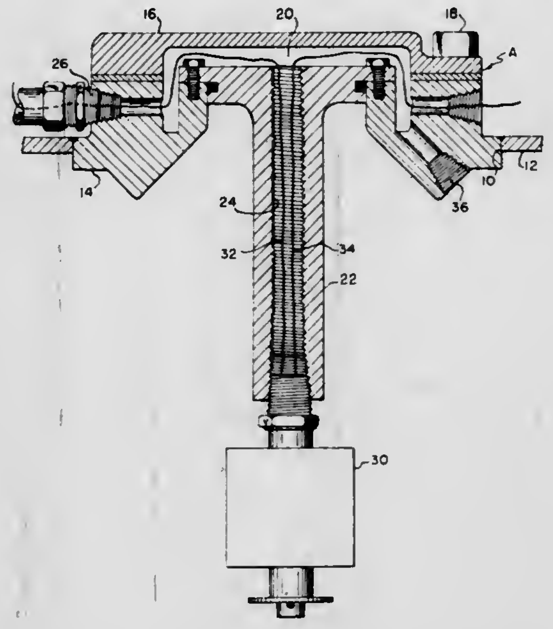
Filed Oct. 1, 1973, Ser. No. 401,998

Int. Cl. H01h *35/40*

U.S. Cl. 200—84 R **1 Claim**

1. A float switch for a top opening in a fluid storage tank consisting of a switch body disposed in said opening and extending only slightly above and below the top of the tank; a planar switch cover secured to the top of the body in sealing relation therewith, said cover being of a flat disk type configuration in vertical section of low height so that the body and cover extend only a very slight distance above the top of the tank; said cover forming a shallow chamber between such cover and the body; said body having an elongated downwardly extending stem extending into the tank; said stem having a vertical threaded longitudinal bore in communication with said chamber; at least one electrical junction connection

disposed on the side of the body and in communication with the chamber and below the top of said body; a float switch detachably secured to the bottom of the stem by threads connected in said bore; said switch having wires internally



thereof leading therefrom thence up the bore, thence through the chamber and at least one wire extending out through the junction connection; and said stem being formed of cuttable material so that it may be cut to adjust the height of said float switch in said tank.

3,870,845

VACUUM CIRCUIT INTERRUPTER WITH A PLURALITY OF INTERRUPTING UNITS

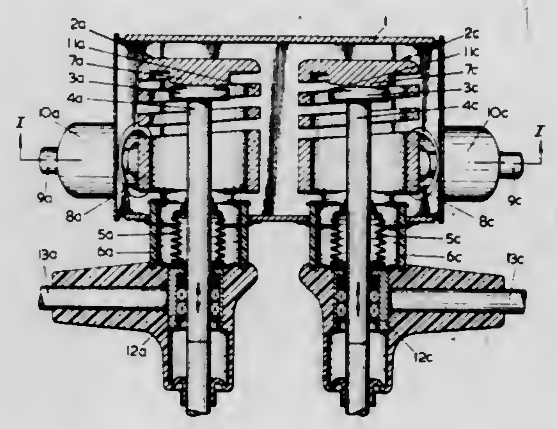
Jan Christiaan Clason, Hengelo, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Filed Oct. 25, 1973, Ser. No. 409,445

Claims priority, application Netherlands, Oct. 27, 1972, 7214615

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **3 Claims**



1. In a vacuum circuit interrupter of the type having two or more identical interrupting units arranged in one evacuated housing, each interrupting unit having a stationary contact and a movable contact, and a plasma screen, which blocks access to the other interrupting units of the plasma generated by the interrupting process of a particular interrupting unit, the improvement comprising: a helicoidal winding of conductive material electrically connected with the electric current circuit of the associated interrupting unit, said helicoidal winding generating a magnetic field for enclosing the plasma of the associated interrupting unit.

3,870,846

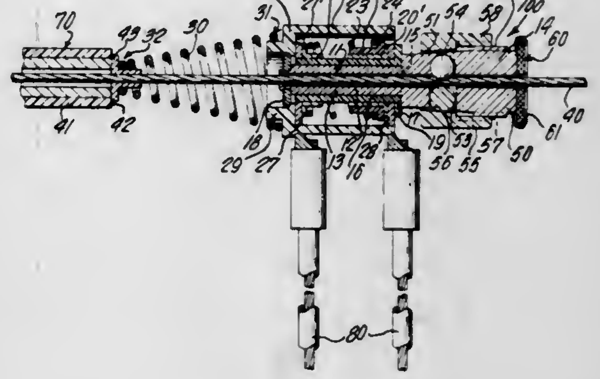
CABLE ACTIVATED SWITCH

Stanislaw F. Filip, Don Mills, Ontario, Calif., assignor to I.C.S. Ignition Control Systems Ltd., Montreal, Quebec, Canada

Filed Sept. 18, 1973, Ser. No. 398,375

Int. Cl. H01h *17/08*

U.S. Cl. 200—161 **15 Claims**



1. A cable activated switch comprising a switch support body having a through bore, a first switch contact member retained on said body, a second switch contact member slidingly retained on said body and insulated therefrom, clamping means for securing a cable extending through said bore, said clamping means having a circular body member with a tapered outer surface portion and a threaded outer portion, said cable extending in a through bore in said body member, at least one transverse bore extending from said tapered outer surface to said through bore, a ball in said transverse bore, said ball being of larger diameter than the depth of said transverse bore, a cylindrical locking sleeve having a tapered inner surface portion and threaded inner portion, said tapered inner surface portion extending substantially parallel to said tapered outer surface so that when said locking sleeve is threaded on said body said tapered inner surface will push said ball into said transverse bore to squeeze said cable on the through bore wall and rigidly retain said cable in said through bore, first resilient means for biasing said contact members, said first and second contact members being displaced relative to each other by predetermined axial movement of said cable.

3,870,847

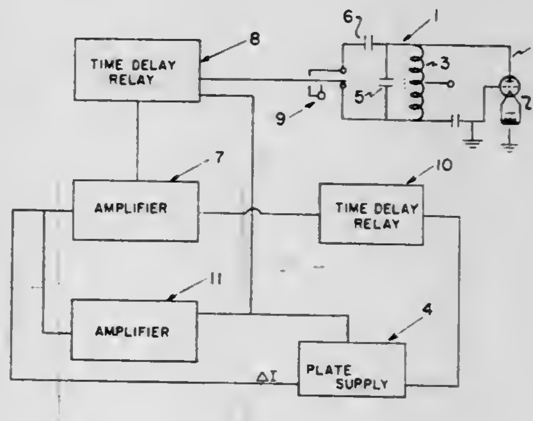
RADIO FREQUENCY HEATER AND CONTROL THEREFOR

John P. Shields, Cleveland, Ohio, assignor to Allegheny Plastics, Inc., Corapolis, Pa.

Filed May 29, 1973, Ser. No. 365,038

Int. Cl. H05b *5/06*

U.S. Cl. 219—10.77 **9 Claims**



7. In an RF heater including an oscillator having a tank circuit and a heating coil, a control circuit for the heater comprising:

A. a power source;

B. **at least** two capacitors engagable in the tank circuit;
C. **means for sensing** a change in operating current in the **circuit;**
D. **means responsive** to said sensing means for de-energizing **the power source** and for selecting the capacitors to **achieve a high** L-C ratio thus increasing the circulating **current in the** tank circuit; and
E. **means** for energizing said power source after the capacitors are selected.

3,870,848
MAKING OF CONNECTIONS IN ELECTRICAL POWER DISTRIBUTION SYSTEMS

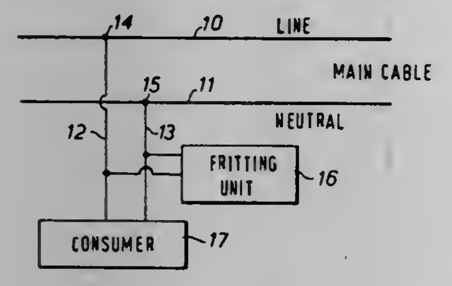
Robert Douglas Naybour, Mynydd Isa, Mold, North Wales; Trevor Farrell, Tarporley, England, and William Elwyn Roberts, Llandudno, Wales, assignors to The Electricity Council, London, England

Filed Aug. 4, 1972, Ser. No. 277,951

Claims priority, application Great Britain, Aug. 5, 1971, 36910/71

Int. Cl. H05b *1/00*

U.S. Cl. 219—50 **12 Claims**



1. Apparatus for fritting a joint in an alternating current power distribution system comprising a fritting unit having two terminals for connection to two conductors of the distribution system on the side of the joint remote from the power supply source, and including a triggerable discharge device connected across said terminals, a manually operable switch, pulse shaping means connected to said terminals for producing pulses synchronised with cycles of the alternating supply fed to said terminals from said conductors, and circuit means connected between the pulse shaping means and the triggerable discharge device and including said switch, which circuit means are operable on closure of said switch to apply to said discharge device one trigger pulse of predetermined duration derived from one of the pulses from the pulse shaping means to make the discharge device conductive for a short time period, said circuit means further including resettable inhibit means preventing application to said triggerable discharge device of further trigger pulses after said one trigger pulse.

3,870,849
MULTI-ARC PIPE WELDING

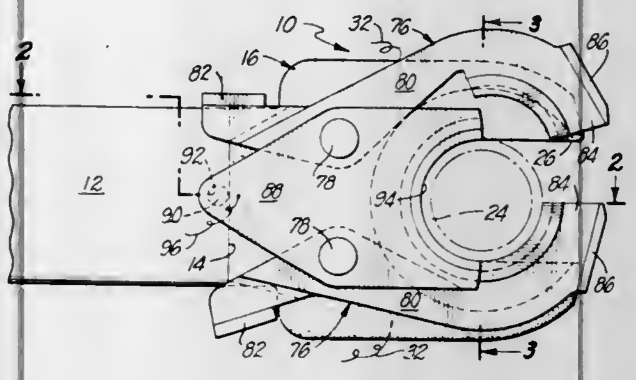
Henry V. Rygiol, 3146 Purer Rd., Escondido, Calif. 92025

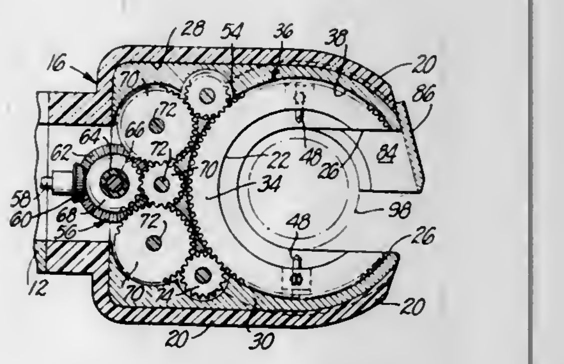
Division of Ser. No. 235,705, March 17, 1972, Pat. No. 3,780,254. This application Aug. 21, 1973, Ser. No. 390,221

Int. Cl. B23k *9/02*

U.S. Cl. 219—60 A **2 Claims**

1. An apparatus for welding along a continuous ring-like line which comprises:
- a mounting means for supporting parts of said apparatus adapted to be located relative to parts to be welded,
- said mounting means including a support, a non-conductive housing mounted on said support, said housing having an internal cavity located therein, an opening extending therethrough and a notch extending into said cavity from the exterior thereof of said opening, said notch and said opening being of such dimension that parts to be welded are capable of being inserted into said opening through said notch,
- a holding means comprising an electrode assembly rotatably mounted within said housing, said assembly having a centrally located opening therein in alignment with said opening in said housing and a notch leading from its exterior to said opening, said notch and said opening being capable of fitting around parts to be welded located so as to extend into said opening,
- a plurality of electrodes mounted on said holding means so as to be capable of being rotated by the rotation of said holding means,
- said electrodes being insulated from one another, being spaced equally from one another around the axis of rotation of said holder and being located at equal distances from said axis, and being in the same plane transverse to the axis of said opening in said holding means,
- means for rotating said holding means relative to said mounting member, and





- slip ring means for supplying separate welding currents to each of said electrodes as said holding means and said electrodes are rotated,
- retainer means for securing parts to be welded within said housing rotatably mounted on said housing so as to be capable of being moved to secure such parts relative to said housing so that such parts are positioned within said openings,
- said slip ring means for supplying separate welding currents includes electrically conductive plates mounted within said housing,
- said electrode assembly includes electrode holders in engagement with said plates and rotatably mounted on said plates so that current can pass through said plates to said electrode holders and said electrodes,
- terminal plates for use in grounding said parts to be welded within said apparatus attached to said housing so as to extend therefrom in engagement with such parts held in said housing and extending into said openings.

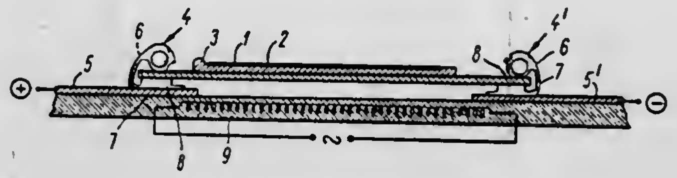
3,870,850
METHOD OF CONNECTING ELECTRICALLY CONDUCTING BODIES

Igor Naumovich Larionov, Kalanchevskaya ulitsa 11, kv. 65, Moscow, and Tom Pavlovich Chernetsky, ulitsa Kommunisticheskaya, 7, kv. 191, Ramoskoe, Moskovskoi oblasti, both of U.S.S.R.

Continuation of Ser. No. 228,652, Feb. 23, 1972, abandoned. This application Apr. 27, 1973, Ser. No. 355,293

Int. Cl. B23k *1/04*

U.S. Cl. 219—85 **3 Claims**



1. A method of connecting electrically conducting bodies using a low-melting material which is introduced into a gap between the bodies being joined and removed from said gap by means of a direct current, comprising:
- bringing the bodies to be joined into contact;
- bringing a portion of the low-melting material into contact with the end gap between said bodies to be connected;
- bringing at least one of said bodies to be connected into contact with external electrodes so that the direction of the electric current passing through the body be parallel to the surface to be connected and be such as to cause movement of said low-melting material in its molten state from the end edges of said bodies into the gap between them;
- placing the whole composition comprising the two bodies to be joined and the low melting material into the zone of action of an external heater;
- placing said composition in a protective medium;
- melting said low-melting material under the action of said external heater;
- introducing the melt into said gap between the bodies by means of a first switching-on of a direct current;
- a first switching-off of the direct current after the melt has been introduced into said gap;
- increasing the temperature by means of said heater to a magnitude sufficient at least for dissolving a layer of material of at least one of said bodies being connected in a quantity slightly exceeding the thickness of the initial gap between said bodies;
- reducing the temperature of the external heater to a magnitude slightly exceeding the melting point of said low-melting material;
- a second switching-on of direct current of such intensity that the heat evolved upon passage of the current would not cause melting of said bodies being connected;
- maintaining passage of the direct current for a time until said low-melting material will collect at one of the end surfaces of said gap between said bodies near the electrode;
- a second switching-off of the direct current;
- cooling said composition; and
- removing the end portion of said bodies being connected together with said low-melting material protruding from the end gap.

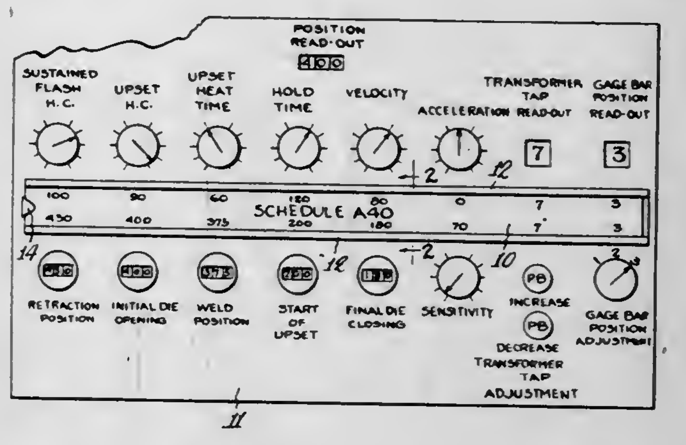
3,870,851
WELDING MACHINES

James F. Deffenbaugh; Arthur L. Williams, Warren, and Robert S. Ellis, Canfield, all of Ohio, assignors to Wean United, Inc., Youngstown, Ohio

Filed Mar. 21, 1973, Ser. No. 343,478

Int. Cl. B23k *11/04*

U.S. Cl. 219—97 **4 Claims**



1. In a welding machine having a program box control panel having a grouped plurality of diverse manually adjustable control devices for welding components wherein each control device is provided with a movable member extending from said panel to effect adjustment thereof to an operational setting required for welding workpieces of differing characteristics with said movable members having a predetermined array on said panel, the improvement comprising:
- a plurality of discrete reference members of substantially planar configuration for selective cooperative association with said control panel,
- means on the exterior of said panel for removably receiving and supporting a single said reference member on said panel adjacent said array of control device movable members,
- each said reference member having indicia thereon specifying the operational setting of each said control device movable member for a desired work to be performed,
- said indicia for each said device having a position on said reference member to dispose the same in juxtaposition to its associated said movable member, respectively, when said reference member is received and supported on said panel.

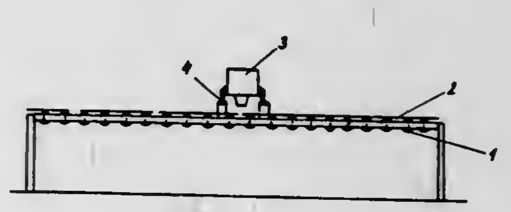
3,870,852
PROCESS AND APPARATUS FOR CUTTING RUBBERISED STRANDED WIRE

Herbert Kogert, Wien, Austria, assignor to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria

Filed Dec. 1, 1969, Ser. No. 881,235

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **4 Claims**



1. A process for simultaneously cutting two dissimilar materials such as rubberised metal wire for use as reinforcing inserts for the manufacture of tires, comprising the steps of:
- placing rubberised wire composed of metallic wire elements enclosed by a rubber coating in a position for performing a cutting operation, the metallic wire elements and the

rubber coating having respectively different melting points;

directing a laser beam along the desired line of cut of the rubberised wire;

enclosing in a nonreactive shielding gas atmosphere said laser beam and said rubberised wire at the point of incidence of said laser beam in order to remove any danger of the rubber igniting;

clamping said rubberised wire with cooled bars, the combination of the steps of enclosing in a non-reactive shielding gas atmosphere and clamping said rubberised wire with cooled bars acting to effectively prevent destruction of the rubber coating in the area adjacent the cut;

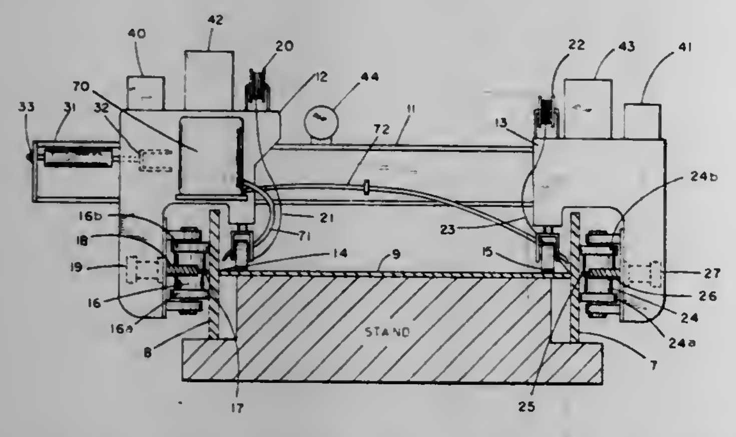
removing by suction any decomposition products which may appear at the region of the line of cut of the rubberised wire; and

simultaneously cutting by means of the directed laser beam both the rubber coating and the metallic wire elements.

3,870,853
TRAVELING WELDING MACHINE

Paige J. Reinhardt, St. Paul, and Fred A. Olson, Minneapolis, both of Minn., assignors to Paper, Calmenson & Co., St. Paul, Minn.

Filed Aug. 1, 1973, Ser. No. 384,592
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 1 Claim



1. A traveling welding machine for simultaneously holding, guiding, welding and propelling the welding machine along components of an unwelded girder having a web and a first flange and a second flange to thereby produce a welded plate girder, said traveling welding machine comprising:

a support member for extending transverse of a girder to be welded, said support member including a first set of rollers for rollably transferring and supporting the traveling welding machine in an upright position, said first set of rollers having axis of rotation located in a first plane, said first set of rollers operable for forming rolling engagement with the web of a girder;

a second set of rollers for guiding said welding machine, said second set of rollers operable for forming rolling engagement with said first and said second flange of said girder, said second set of rollers having axis of rotation substantially perpendicular to said first set of rollers so that said second set of rollers can maintain the orientation of said support member with respect to the girder that is being welded;

a third pair of rollers located in a spaced relationship and having axis of rotation substantially parallel to said second set of rollers, said third set of rollers operable for forming rolling engagement with said first and said second flange of said girder;

a power actuated member attached to said third pair of rollers for simultaneously compressing the components of the girder into a weldable position and for propelling the traveling welding machine along the girder to be welded; welding means mounted on said welding machine for welding the components of the girder into an integral plate girder member including a pair of welding heads, a pair of flux supply units, a pair of welding rod supply units and a pair of ducts for removing excess flux; whereby said welding means, said guide mechanism and said rollers mounted on said support member coact to simultaneously perform the function of holding, guiding, compressing, welding and propelling the welding machine along an unwelded girder.

3,870,854
ARC WELDING ELECTRODE

Gilbert Vandenbroucke, Zwevegem, Belgium, assignor to N. V. Behaert S.A., Zwevegem, Belgium

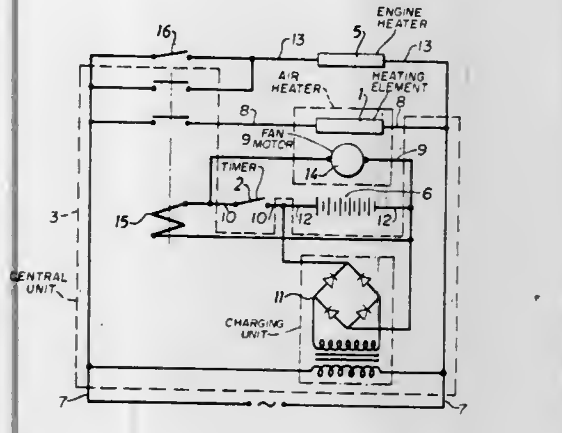
Filed Feb. 20, 1974, Ser. No. 444,057
Claims priority, application Germany, Feb. 20, 1973, 2308298
Int. Cl. B23k *35/10*
U.S. Cl. 219—145 12 Claims

1. An arc welding electrode object of steel, characterized in that the elongated electrode member having a smooth surface comprises a uniform covering layer, at most 3 mu thick, containing Fe_3O_4.

3,870,855
ELECTRIC HEATING AND BATTERY CHARGING SYSTEM FOR MOTOR VEHICLE

Lars Anders Edlund, Kalmar, and Berth Atle Wikstrom, Ljungbyholm, both of Sweden, assignors to Berth Wikstrom AB, Slojdgatan, Kalmar, Sweden

Filed Jan. 23, 1974, Ser. No. 436,016
Claims priority, application Sweden, Jan. 23, 1973, 7300890
Int. Cl. H05b *1/02;* F02n *17/02*
U.S. Cl. 219—202 3 Claims



1. A combination battery charger and heater system for a motor vehicle, said system adapted to be energized by a conventional alternating current power source such as 115 volt a. c. or the like, comprising:

a. a warm air heater permanently mounted in the vehicle and including an electric heating element and an electric fan,

b. a central control unit permanently mounted in the vehicle and including:

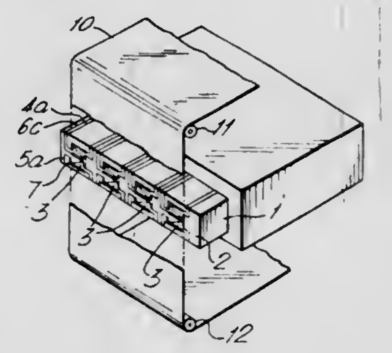
1. an electric connector adapted to be connected to an outside source of alternating current,
2. a battery charger permanently coupled between the connector and the vehicle battery, and
3. a relay coil and associated contacts for coupling the electric heating element to the connector, and

c. a timer permanently mounted in the vehicle and connected in series with the vehicle battery and the electric fan for energizing the fan with low voltage DC power, the timer also being connected in series with the relay coil and the battery simultaneously energizing the relay coil with low voltage DC power.

3,870,856
THERMAL PRINTING HEAD

Hideo Taniguchi, Kyoto, Japan, assignor to Toyo Electronics Industry Corporation, Ukyo-ku, Kyoto, Japan

Filed Feb. 20, 1973, Ser. No. 334,093
Claims priority, application Japan, Feb. 24, 1972, 47-22941
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 14 Claims



1. A thermal printing head, coupled to a source of electrical energy having first and second terminals, for printing by actuation adjacent thermally sensitive paper, comprising:

a body having a first surface composed primarily of electrically insulating material;

a plurality of heating elements positioned on said first surface of said body two of said heating elements being positioned to define a common junction therebetween and forming a first L-shaped heating element section, two other heating elements being positioned to define a common junction therebetween and forming a second L-shaped heating element section, and three additional heating elements being positioned to define a common junction therebetween and forming a T-shaped heating element section;

first electrically conductive means for connecting in common a first portion of substantially all of said heating elements to the first terminal, wherein said first portion of said two heating elements is adjacent said common junction; and

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3,870,857
CIGAR LIGHTER IGNITING UNIT

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Casco Products Division, Sun Chemical Corporation, Bridgeport, Conn.

Filed Apr. 4, 1974, Ser. No. 457,963
Int. Cl. F23q *7/22*
U.S. Cl. 219—267 6 Claims

1. A low cost, automated-production, automatic electric cigar lighter igniting unit subassembly comprising, in combination:

a. a plug body having a metal transverse wall at its inner end,

b. a metal heating element cup aligned with the plug body and having an integral transverse back wall juxtaposed to the transverse wall of said body, said cup being adapted to have secured in it an electric heating element,

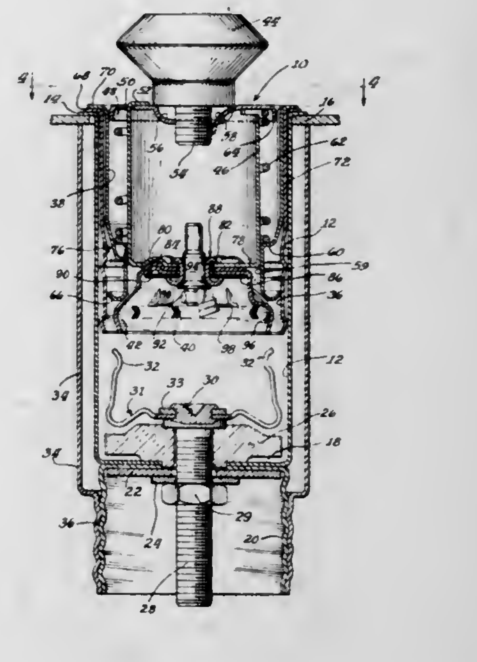
c. a thin smooth-surfaced, deformable insulating wafer disk interposed between said transverse walls,

d. one transverse wall having at least one nib which is offset from its center and projects toward the other wall,

e. said other wall having a plurality of closely spaced recesses facing the said one wall and arranged in a substantially circular configuration about its center, each recess being capable of receiving said nib of the one wall, and

f. rivet means passing through said walls and wafer, for insulatedly securing the same in assembled relation,

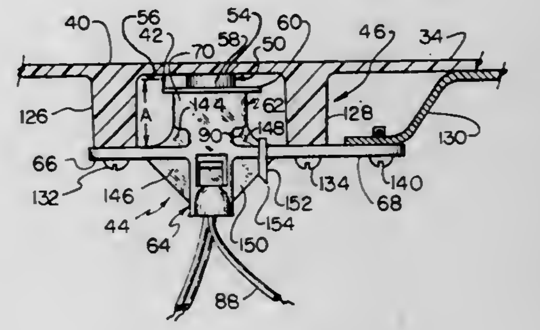
g. said nib being rounded, the spacing of said recesses being sufficiently close and the wafer being readily deformable when compressed between the transverse walls during assembly of the cup to the plug body whereby the nib and recesses are mutually seeking and effect a rotatable orientation of the cup and body so as to lodge the nib securely in one recess.



3,870,858
THERMOSTAT MOUNTING

Thomas O. Schimke, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 9, 1973, Ser. No. 414,382
Int. Cl. F24h *1/00*
U.S. Cl. 219—328 8 Claims



1. A dishwasher of the type comprising a tub and a door together providing a wash chamber, means for heating the wash chamber, a thermostat for deenergizing the heating means in response to a predetermined temperature in the wash chamber and means mounting the thermostat in heat exchange relation with the wash chamber, the improvement wherein

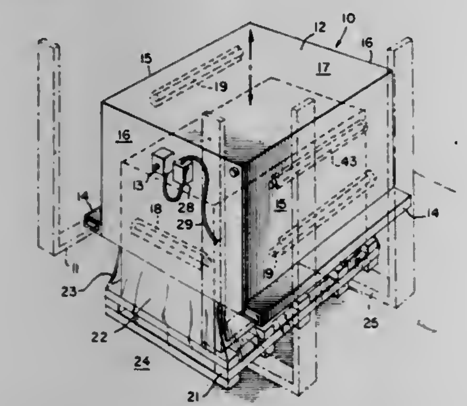
the tub includes an imperforate wall section having a surface exposed to the wash chamber and an opposite surface;

the thermostat includes a body having a flange extending outwardly therefrom past the periphery of the thermostat body and a metallic heat transfer member, including a central projection, between said wall section and said body mating with the opposite surface of the imperforate wall section; and

the mounting means includes means comprising a receptacle having a cavity therein for receiving the thermostat body and an upper edge abutting said flange and means securing said receptacle to said tub thereby binding the heat transfer member against the opposite surface.

3,870,859
CONTROL SYSTEM FOR FRYING APPARATUS

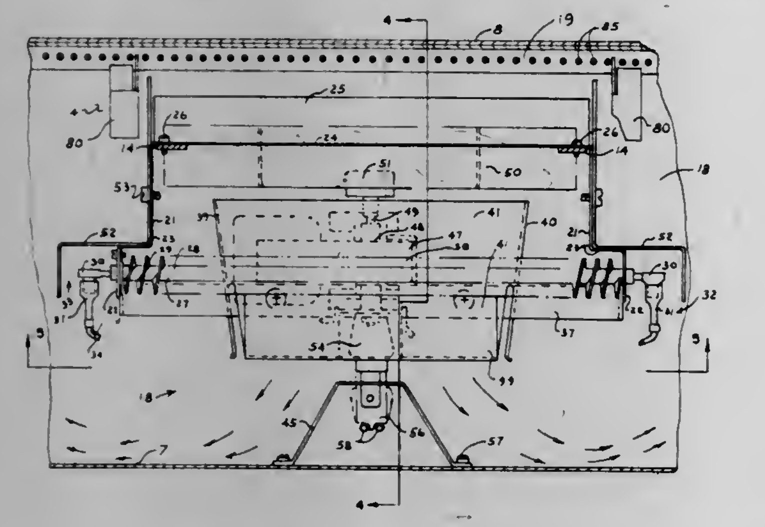
George M. Price, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, Caddo Parish, La.
Filed June 17, 1974, Ser. No. 479,761
Int. Cl. F27d *11/02*
U.S. Cl. 219—437 **20 Claims**



1. In a system for frying foods, control apparatus for regulating the temperature of heating elements during a cooking phase with the heating elements immersed in cooking fluid in a frypot and during a pyrolytic cleaning phase with the heating elements exposed to the atmosphere, comprising:
first control means for maintaining the temperature of said elements below a first predetermined limit during said cooking phase,
second control means for maintaining the temperatures of said elements below a second predetermined limit during said pyrolytic cleaning phase, and
switch means for connecting said first control means in communication with said heating elements during said cooking phase and for connecting said second control means in communication with said heating elements during said pyrolytic cleaning phase.

3,870,860
FLOOR DROP-IN FORCED CIRCULATION ELECTRIC SPACE HEATER

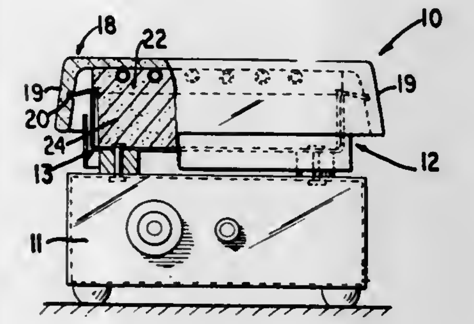
Robert E. Steiner, Creve Coeur, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 15, 1973, Ser. No. 341,399
Int. Cl. H05b *1/00;* **F24h** *3/04*
U.S. Cl. 219—370 **16 Claims**



1. A heater comprising:
an enclosure defining a chamber including first and second pairs of oppositely opposed side walls, a bottom wall and a top wall, said top wall comprising a grated area having a central portion, a first side portion, and a second side portion, said first and said second side portions being on opposite sides of said central portion, at least one of said oppositely opposed side walls having an opening in it permitting access to said chamber for electrical conducting means;
a member mounted to said enclosure bottom wall and defining a raceway therewith, said opening in said side wall communicating with said raceway, said member forming a protecting shield for said electrical conducting means, said member having at least one opening through it;
a unit removably mounted in said enclosure, said unit including a supporting structure defining a first terminal board area, a second terminal board area spaced from said first terminal board area, a first riser portion extending upwardly from said first terminal board area, a second riser portion extending upwardly from said second terminal board area, and a surface extending from and between said first and said second riser portions, said surface having an opening in it;
heating means attached to said unit and removable therewith, said heating means being mounted from and between said first and said second terminal board areas and electrically connected thereto;
electrical conducting means carried in the raceway defined by said bottom wall and said member;
an electrical plug mounted in said enclosure, said plug including a male connecting part and a female connecting part, one of said male and said female connecting parts being mounted in the opening of said member and electrically connected to said electrical conducting means, and the other of said male and said female parts being attached to said unit and electrically connected to said terminal board areas, said male and said female members being aligned for electrical interconnection upon insertion of said unit in said enclosure; and
a fan mounted to said unit and removable therewith, said fan being electrically connected to said terminal board areas, said fan being positioned so as to draw air inwardly through said central portion of said top wall grated area and to direct a volume of air against said bottom wall.

3,870,861
ELECTRIC HOT PLATE HEATING UNIT WITH A CERAMIC COVER

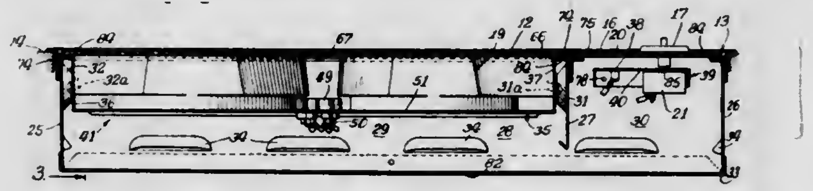
Ewald R. Werych, Elm Grove, Wis., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed Mar. 7, 1974, Ser. No. 449,345
Int. Cl. H05b *3/68*
U.S. Cl. 219—459 **4 Claims**



1. In an electric hot plate heating unit, the combination of means defining an enclosure having a bottom and sides, electrical heating and insulating means arranged in said enclosure, latch means at the top edges of said enclosure, a thermally conductive top plate heating surface unit positionable in heat conductive position over said heating and insulating means, said top plate unit having depending flange means therearound positionable over the top of said enclosure and said heating and insulating means, there being indentations in the inner faces of said flange means to receive said latch means when said top plate is in position on said enclosure and heating and insulating means whereby said top plate is retained thereon.

3,870,862
GLASS-CERAMIC COOKTOP CONSTRUCTION

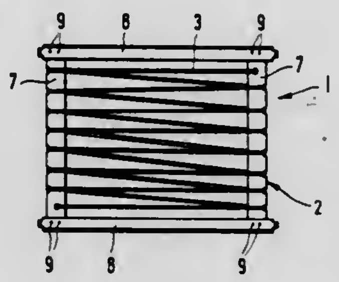
John T. Doner, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 412,328, Nov. 2, 1973, Pat. No. 3,838,505. This application June 21, 1974, Ser. No. 482,469
Int. Cl. H05b *3/68*
U.S. Cl. 219—464 **8 Claims**



1. A glass-ceramic cooktop comprising:
a glass-ceramic panel;
a frame member;
gasket means around the periphery of the glass-ceramic panel;
burner box side means mounted to said frame and securing the glass-ceramic panel and gasket means to said frame member;
a tray having a sidewall spaced below said panel within the burner box side means;
an insulator in said tray having an upper surface, said insulator having sidewall means projecting above the sidewall of the tray;
an electric heating element disposed on said upper surface of the insulator;
means adjustably securing the tray to the burner box side means for providing abutting relationship between the upper end of the insulator sidewall means and the glass-ceramic surface; and
a burner box bottom member cover attached to said burner box side means enclosing the tray.

3,870,863
ELECTRICAL HEATING ELEMENT FOR BREAD TOASTER OR THE LIKE

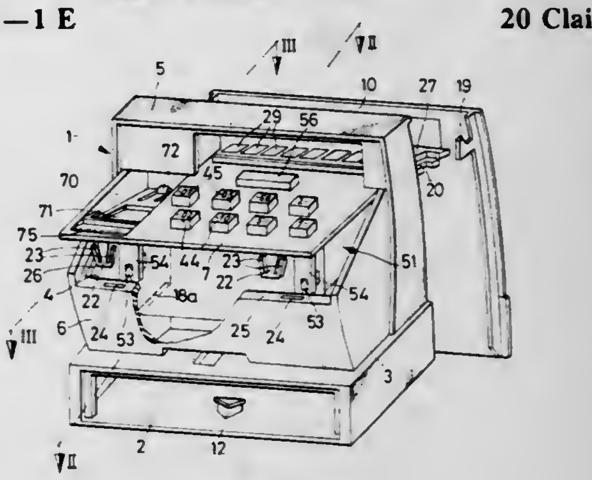
Helmut Ohnmacht, D-6744, Germany, assignor to Fritz Eichenauer, Kandel, Germany
Filed Mar. 9, 1973, Ser. No. 339,915
Claims priority, application Germany, Mar. 11, 1972, 2211911
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 **8 Claims**



1. A heating element for a bread toaster comprising
an electric heating conductor including a core of a low coefficient of thermal expansion material, said core consisting of threads of mineral fiber material twisted together, electric conducting heating wire helically wound about said core, and means for providing electrical connection of said electric heating conductor, said electric heating conductor being sufficiently rigid to maintain its shape during heating, and
an open framework means for supporting a plurality of loops of said electric heating conductor, said framework means consisting of two spaced insulating support means for supporting said plurality of loops, each of said two insulating support means having a first longitudinal dimension much greater than the width, and two spaced rigid connecting means for holding said two insulating support means in stationary spaced relationship, said two connecting means each having a second longitudinal dimension much greater than the width thereof, and each of said two insulating support means being fixed at respective opposite ends of each of said two spaced connecting means such that said two insulating support means are fixed apart from one another by a distance equal to said second longitudinal dimension of said two connecting means to form an open rectangular area without any structure therebetween, said electric heating conductor being only in contact with said two spaced insulating means of said open framework means and extending across said open framework means between said two spaced insulating means to radiate heat in both directions outwardly from the plane of the open area of said open framework means,
wherein said two spaced connecting means include means for securing the heating element to a housing of a toaster.

3,870,864
TOY CASH REGISTER

Horst Brandstatter, Zirndorf, Germany, assignor to geobra Brandstatter GmbH & Co. KG, Zirndorf, Germany
Filed Jan. 30, 1974, Ser. No. 437,866
Claims priority, application Germany, Feb. 1, 1973, 7303849
Int. Cl. G06c *27/00*
U.S. Cl. 235—1 E **20 Claims**



1. A toy cash register comprising
a molded plastic frame having a base, two side walls, a head plate extending between upper portions of said two side walls, a front wall and means defining a frame opening above said front wall;
a face plate mounted in said frame opening;
a rear wall member mounted on said frame and closing the latter from the rear;
a plurality of depressable keys slidably mounted on said face plate;
a plurality of numeral slider means mounted on said face plate and movable into register positions to indicate the register amounts;
lever means operatively connecting associated slider means and keys to effect movement of said slider means to said register positions upon depression of said keys;
pivotal means pivotally mounting said levers on said face plate; and
clearance frame means tiltably mounted on said face plate and operable to engage said levers to temporarily retain the latter and their associated numeral slider means in said register position and to effect release of said levers;
said molded plastic frame and face plate being constructed and arranged such that the face plate with said keys, lever means, and clearance frame means mounted thereon is insertable as an assembled unit into said molded plastic frame.

3,870,865

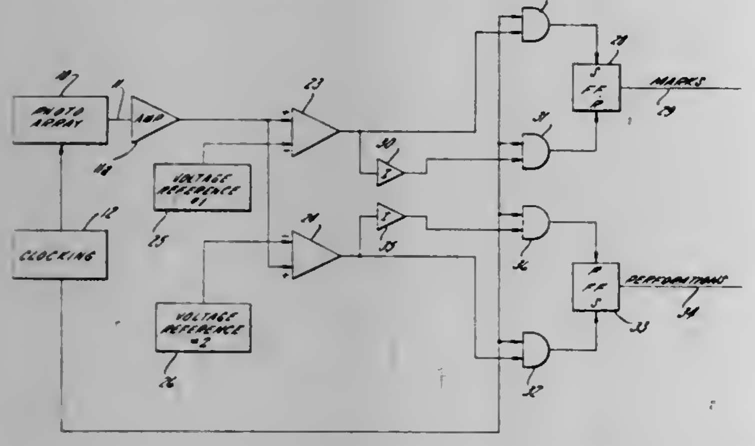
METHOD AND APPARATUS FOR OPTICAL READING OF RECORDED DATA

Edward M. Schneiderhan, Buffalo Grove; John E. Jones, Winnetka, and Henry P. Briggs, Northbrook, all of Ill., assignors to Cummins-Allison Corp., Glenview, Ill.

Filed July 5, 1973, Ser. No. 376,361

Int. Cl. G06k *7/10;* **G08c** *9/06*

U.S. Cl. 235—61.11 E **5 Claims**



1. A data processing method comprising the steps of recording data on a record medium with the data being represented by a plurality of lines of indicia of different types and having a plurality of different center-to-center spacings, said indicia being selected from the group consisting of reflective optical marks on the record medium and perforations in the record medium, providing a self scanning photodiode array in the form of an integrated circuit with at least two photodiodes located within each center-to-center space of adjacent indicia having the smallest center-to-center spacing of all the indicia to be read so that all of the different types of indicia with different spacings are read by the single self scanning photodiode array, and moving the record medium relatively past said photodiode array with the array extending transversely across the lines of said indicia while directing light onto said indicia to generate electrical signals representing said indicia in response to movement of said indicia relatively past said self scanning photodiode array.

3,870,866

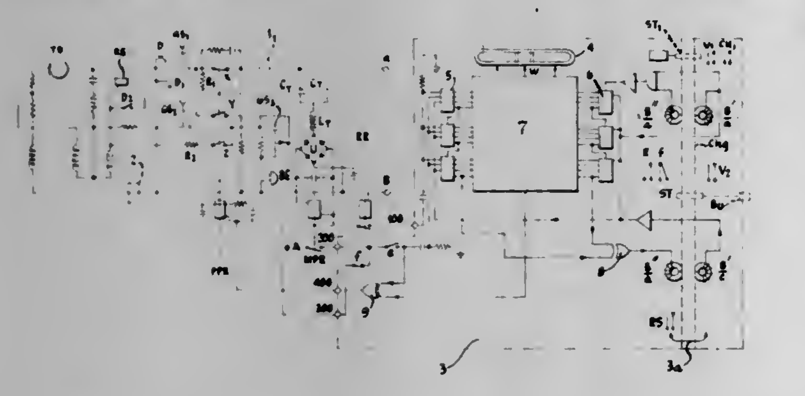
FEE CHARGING SYSTEM

John W. Halpern, 2490 Channing Way, Room 518, Berkeley, Calif. 94704

Continuation-in-part of Ser. No. 197,702, Nov. 11, 1971, abandoned, and a continuation-in-part of Ser. No. 502,652, Oct. 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 261,529, March 12, 1963, abandoned, which is a continuation-in-part of Ser. No. 659,196, April 16, 1957, abandoned. This application Aug. 9, 1972, Ser. No. 279,148

Int. Cl. G06k *5/00, 15/18;* **H04m** *17/02*

U.S. Cl. 235—61.7 R **20 Claims**



1. An apparatus for the automatic changing of service fees in pay token operated stations, with the pay token having a recorded value, wherein a service charge is determined as a function of units expended including:

a. means for translating numbers of units expended into numbers of service charge units;
b. means for storing said service charge units in a first memory circuit;
c. means for reading and storing the recorded value of a pay token in a second memory circuit;
d. means for relating the contents of said first memory circuit and said second memory circuit, so as to derive a residual value as a difference signal representing the recorded value of the pay token minus the service charge; and
e. means for replacing said value of the pay token by said residual value.

3,870,867

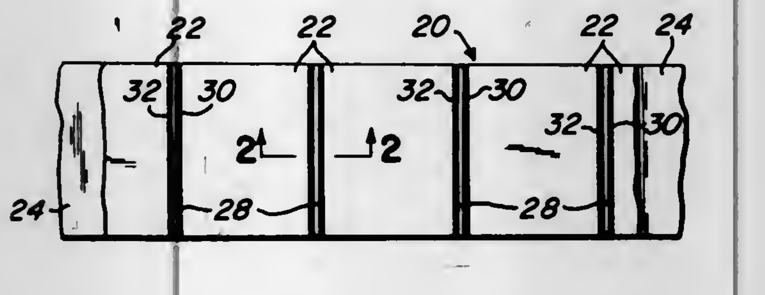
WEB OF RECORD MEMBERS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 92,468, Nov. 24, 1970, Pat. No. 3,783,783. This application Apr. 9, 1973, Ser. No. 349,131

Int. Cl. G09f *3/14;* **G06k** *19/02;* **B44b** *5/00*

U.S. Cl. 235—61.12 R **1 Claim**



1. A web of record members, comprising: a web of supporting material, label material, pressure-sensitive adhesive releasably adhering the label material to the supporting material, web, transverse butt cuts through the label material across the entire width of the label material to separate the web into a plurality of labels, and a printed mark extending along the entire length of at least one edge of each label at the butt cut, the mark being formed by invisible ink which is capable of being sensed by reading apparatus.

3,870,868

CONTROL MECHANISMS FOR DOCUMENT-HANDLING APPARATUS

Alan P. Jones, Levittown, Pa., assignor to Pennsylvania Research Associates Inc., Cornwells Heights, Pa.

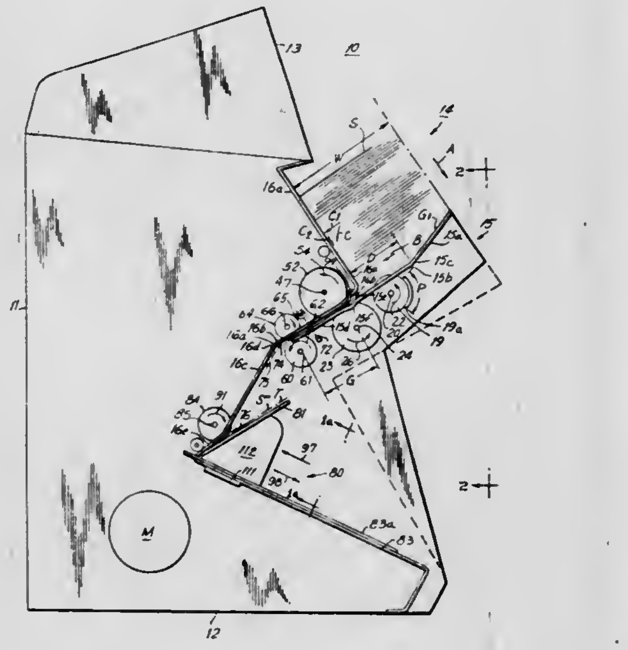
Filed July 21, 1972, Ser. No. 273,999

Int. Cl. G06m *9/00*

U.S. Cl. 235—92 SB **15 Claims**

1. A sensor for detecting the presence of gaps between documents fed in a first direction at spaced intervals with said gaps occurring between the trailing edge of a document and the leading edge of the next document, said sensor comprising:

a light source positioned to one side of the path of movement of the documents;
light sensitive means positioned to receive light of maximum intensity from said light source when the trailing edge of each document passes said light sensitive means to activate said light sensitive means and to receive light of a minimum intensity when a document is positioned between said light sensitive means and said source, said light sensitive means developing a signal at its output which varies with the intensity of light;
energy storage means;
first means coupled to said light sensitive means output for rapidly charging said energy storage means when said light sensitive means is activated by light of maximum intensity;
comparator means having first and second inputs for generating an output signal when the signal level at its first input exceeds the signal level at its second input;
said first input being coupled to the output of said light sensitive means;
second means coupled between said first means and said comparator means second input for coupling a portion of the signal level developed by said storage means to said second input;



said second means providing a discharge path for said energy storage means and being adapted to cause said energy storage means to discharge at a rate much slower than the charging rate to cause a substantial portion of the signal level developed by said storage means to be retained when said light sensitive means is deactivated due to the movement of the document past said light source.

3,870,869

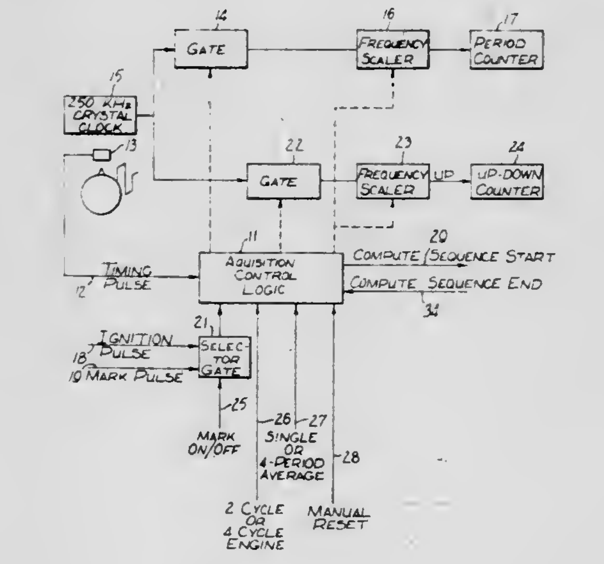
DIGITAL APPARATUS FOR THE TIMING AND ANALYSIS OF INTERNAL COMBUSTION ENGINES

Arthur Eberle, Upper Arlington, and Nicholas A. Spitzer, Columbus, both of Ohio, assignors to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Apr. 26, 1973, Ser. No. 354,849

Int. Cl. H03k *21/34*

U.S. Cl. 235—92 FQ **20 Claims**



1. Digital analyzing means for a rotating body, said means comprising:

A. clock signal source means to produce fixed repetition rate clock signals;
B. a first counter;
C. first connecting means to connect said first counter to said source means to count a first number n_1 of said clock signals at a repetition rate of f_c while said body rotates through a first angle;
D. a second counter;
E. second connecting means to connect said second counter to said source means to count a second number n_2 of said clock signals at a rate of kf_c proportional to the repetition rate f_c while said body rotates through a second angle;
F. first signal generating means connected to said clock signal source means to generate a first signal having a repetition rate f_1 proportional to the repetition rate f_c and to said number n_1 and inversely proportional to a maximum count n_m;
G. means connected to said first signal-generating means to count a selected number n_3 at said repetition rate f_1 to establish a first time interval $t_1 = n_3/f_1$;
H. second signal-generating means connected to said clock signal source means to generate a second signal having a repetition rate f_2; and
I. means connected to said second signal-generating means to count from zero to a number n_4 at a rate f_2 for said time t_1 such that $n_4 = t_1f_2$ is a measure of angular rotation of said rotating body.

3,870,870

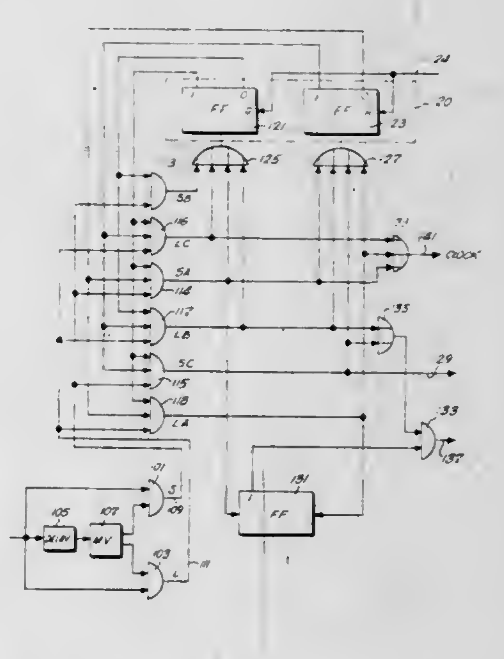
DECODER FOR HIGH DENSITY DECODING SYSTEM

Andrew Gabor, Huntington, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Continuation of Ser. No. 167,437, July 29, 1971, abandoned, which is a continuation of Ser. No. 735,931, Feb. 26, 1968, abandoned, which is a division of Ser. No. 458,110, May 24, 1965, Pat. No. 3,374,475. This application July 25, 1973, Ser. No. 382,550

Int. Cl. H03k *21/10*

U.S. Cl. 235—92 MB **6 Claims**



1. A decoding means for representing clock and information pulses from a train of pulses which are separated by first and second intervals of different lengths, comprising:

means to separate said pulses into a first group which are preceded by said first interval and a second group which are preceded by said second interval,
a counter,
a first plurality of gates connected to receive said pulses of said first group,
a second plurality of gates connected to receive said pulses of said second group,

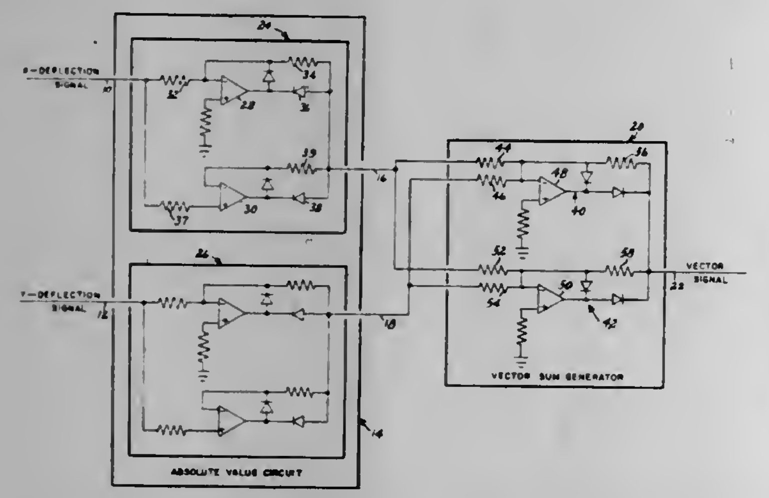
means to enable a different one of the gates in each of said first and second pluralities in response to each different condition of said counter, and

means to switch said counter between its conditions in a first manner in response to pulses of said first group and to shift said counter between its conditions in a second manner in response to pulses of said second group.

3,870,871
VECTOR MAGNITUDE SUMMING CIRCUIT

Thomas Edward Nead, 11645 Thistlehill Dr., Loveland, Ohio 45140

Filed Nov. 29, 1973, Ser. No. 420,066
Int. Cl. G06g *7/22*
U.S. Cl. 235—197 **10 Claims**



1. An apparatus for producing a vector signal representing approximately the vector magnitude of first and second input signals representing quantitative magnitudes occurring in perpendicular directions, the apparatus comprising:

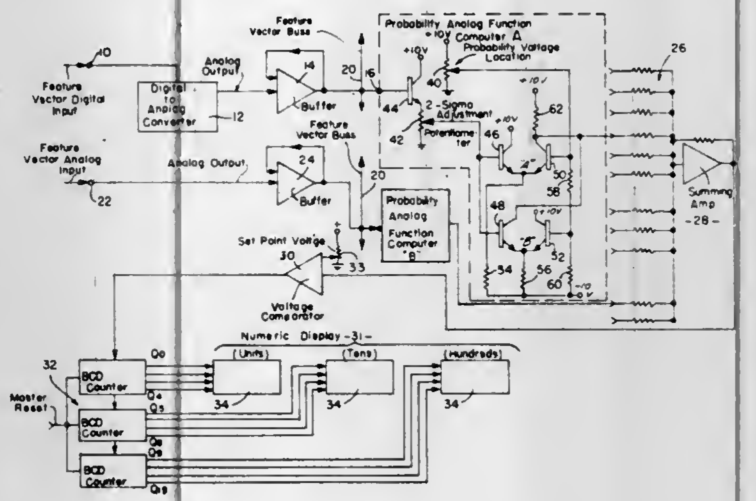
a. means responsive to the first and second input signals for producing first and second control signals respectively;
b. a first means having an output and inputs connected to the producing means for modifying the first control signal by a first fractional constant and the second control signal by a second fractional constant to provide a first output signal therefrom; and
c. a second means having an output connected to the output of the first modifying means and inputs connected to the producing means for modifying the first control signal by the second fractional constant and the second control signal by the first fractional constant to provide a second output signal therefrom, whereby said first and second means being operative to sustain as the vector signal the output signal having the larger magnitude.

3,870,872
PROBABILITY ANALOG FUNCTION COMPUTER

Wayne R. Johnson, Woodland Hills, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 1, 1974, Ser. No. 438,844
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **6 Claims**

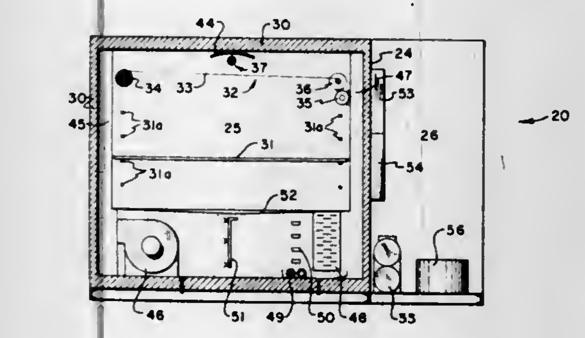
1. A probability analog function computer comprising: an input circuit for receiving input analog voltages; a first differential amplifier circuit connected to said input circuit for producing in accordance with a first transfer function curve a negative-going output signal in response to analog input voltages below a predetermined reference voltage and a positive-going output signal in response to analog input voltages above said predetermined reference voltage; a second differential amplifier circuit connected to said input circuit for producing in accordance with a second transfer function curve a positive-going output signal in response to analog input voltages below said predetermined reference voltage and a negative-going output signal in response to analog input voltages below said predetermined reference voltage; a common output circuit connected to said differential amplifiers; an unbalancing impedance means interconnecting said differential amplifiers for displacing the cross-over point of said first and second transfer function curves to enable said output circuit to produce output signals in the vicinity of said cross-over point in accordance with an approximate Gaussian distribution function curve; means connected to said differential amplifiers for establishing a selected 2-sigma width for said Gaussian distribution function curve; and means connected to said differential amplifiers for establishing a selected value for said predetermined reference voltage.


Feature Vector Digital Input
Digital to Analog Converter
Analog Output
Feature Vector Buss
Buffer
Feature Vector Analog Input
Probability Analog Function Computer A
Probability Voltage Location
2-Sigma Adjustment Potentiometer
Probability Analog Function Computer "B"
Set Point Voltage
Voltage Comparator
Summing Amp -28-
Numeric Display -31-
(Units)
(Tens)
(Hundreds)
BCD Counter
Master Reset

3,870,873
ENVIRONMENTAL CHAMBER

Roy E. Mallory, Salt Lake City, Utah, assignor to MBR Corporation, Salt Lake City, Utah

Division of Ser. No. 131,879, April 7, 1971, Pat. No. 3,746,080. This application June 29, 1973, Ser. No. 376,400
Int. Cl. F21v *9/02*
U.S. Cl. 240—1.1 **2 Claims**



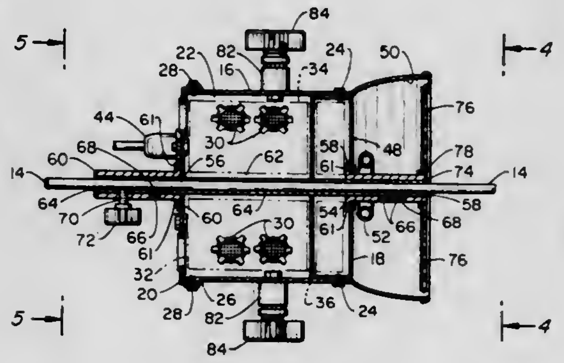
1. An environmental chamber comprising

an enclosure having
  a top having a reflective inner surface;
  a bottom;
  end walls interconnecting said top and said bottom;
  side walls interconnecting said top, bottom, and end walls;
an Xenon lamp having a spectrum closely approaching that of natural daylight positioned close to and beneath the top;
a reflector positioned between the lamp and the top whereby the reflector and the top reflect light from the lamp uniformly throughout the enclosure such that uniform energy levels are maintained at constant distances from the lamp within the enclosure;
circuit means connecting said Xenon lamp to a source of electricity;
means for continuously circulating a liquid coolant around the Xenon lamp;
filter means comprising a plurality of filters of different degrees opaqueness positioned below the Xenon lamp and above the bottom; and
means for positioning said filter means to stretch substantially between the end and side walls, said means comprising programming means to selectively position the filters whereby the light spectrum at the side of the filters opposite the Xenon lamp can be varied as necessary to correspond to changing natural daylight spectrum.

3,870,874
SELF-CONTAINED LIGHT SOURCE DEVICE FOR CENTER MOUNTING OF PHOTOGRAPHIC REFLECTOR

Raymond George Larson, 9731 Rainier Cir., Huntington Beach, Calif. 92646

Filed July 23, 1973, Ser. No. 381,926
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **3 Claims**



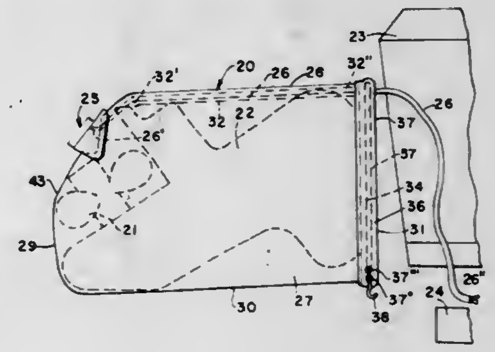
1. A photography light source device for cooperative center mounting of a reflector comprising the combination of: an outer housing forming an interior chamber and having a flared end which is of larger diameter than the remainder of said housing; a rear wall member secured to said housing opposite said flared end; a front wall member inwardly positioned with respect to said flared end and secured to said housing adjacent said flared end; said front wall and the interior surface of said flared end having light reflective surfaces; each of said front and rear wall members having aligned outwardly extending boss-like members having a bore therethrough an elongate sleeve member disposed within the bore of said boss-like members and extending through said interior chamber; means for securing said sleeve member to said boss-like members; an elongate rod shiftably disposed in said sleeve member for mounting a light reflector; said boss-like members extending a sufficient distance exteriorly of said front and rear walls to provide a support for said elongate sleeve member and said elongated rod when the latter is positioned within said sleeve member; a light source mounted within said flared end of said outer housing; a light-protective screen or grid member secured to the front wall boss-like member in front of said light source; means secured to the side of the outer housing for mounting said housing or a tripod support member; said sleeve member and said rear boss-like member having aligned threaded openings when secured together adapted to receive a thumbscrew for locking said elongate rod in selected positions; and electrical means mounted within said chamber in electrical conductive relationship with said light source and adapted to be connected to an energy source to energize said light source.

3,870,875
INBOARD OUTBOARD MOTOR COVER

William B. Altimus, Box 968, Livingston, Mont. 59047

Filed Apr. 2, 1973, Ser. No. 347,047
Int. Cl. F21v *33/00;* **B65b** *11/54*
U.S. Cl. 240—2 R **1 Claim**

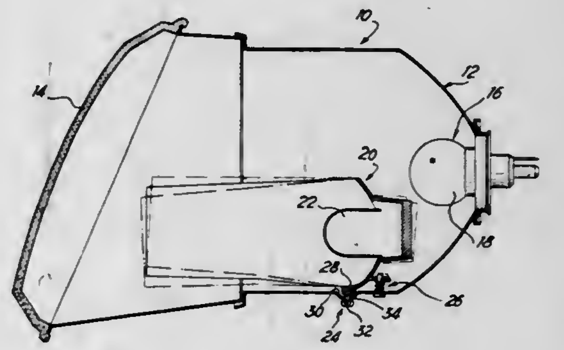
1. A cover in combination with a propellor and adjacent rear drive assembly for an outboard motor boat wherein said propellor and rear drive assembly project from the rear of the boat, said cover comprising an elongated sleeve-like flexible waterproof sheet member permanently closed at one end and open at the other end and adapted to be slipped over said propellor and drive assembly through the open end with the open end being of a diameter so as to fully enclose about the drive assembly, said cover being only of a length to cover and surround the rear drive assembly and the propellor, with the closed end covering and surrounding the propellor, draw string tightening means mounted around the open end of the cover to draw the open end of the cover snuggly about the rear drive assembly as to embrace the assembly in substantially watertight relation, the cover having an opening in said rearward closed end for air to ventilate out of the interior of the cover, a folded panel member permanently attached to the exterior of said cover with its top and side edges secured to the top and side edges of the opening and draping downward therefrom to form a weather shield over said side edges and top edges of said opening to shield the opening and with the bottom edge of the shield permanently bowed out, so that air may pass freely through the opening and from the interior to the exterior of the cover via the bottom edge of the shield, an electric light mounted to the exterior surface of the shield to direct light rearward to serve as a taillight, electric cord means electrically connected at one end to the taillight and extending along the sleeve to the open end for connection to a source of electric current.



3,870,876
MOTOR VEHICLE HEADLAMP

Olivier Puyplat, Bobigny, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Oct. 18, 1973, Ser. No. 407,745
Claims priority, application France, Oct. 25, 1972, 72.37832
Int. Cl. F21m
U.S. Cl. 240—41 R **8 Claims**



1. A motor vehicle headlamp comprising:

a first light source disposed within a main parabolic reflector,
a secondary parabolic reflector, together with a second light source disposed therewithin, positioned within the main reflector,
a pivotal connection provided between the secondary and main reflectors for allowing relative angular displacement therebetween, said pivotal connection comprising coop-

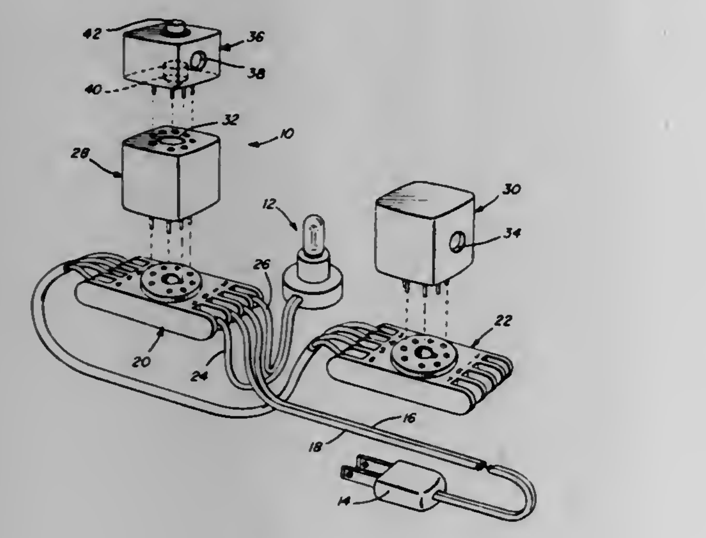
erating arcuate abutment surfaces, at least one of which is disposed on each reflector,

readily releasable means for maintaining said cooperating abutment surfaces in contact, and

an adjustment device for controlling the relative angular displacement of the secondary reflector with respect to the main reflector.

3,870,877
STATIC SWITCHING CONTROL

Paul D. Tolbird, P.O. Box 7103, Monroe, La. 71201
Filed Oct. 2, 1973, Ser. No. 404,813
Int. Cl. H05b *37/02;* **H01h** *47/24;* **H01j** *39/12*
U.S. Cl. 250—209 **14 Claims**

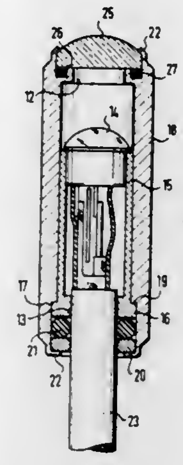


1. A light responsive control system comprising a source of electrical energy, an electrically controlled device, terminal connecting means interconnecting the source and the device for supply of energizing current to the device, a pair of light actuated switch modules for respectively closing and opening an energizing circuit through said device, and circuit holding means for maintaining said energizing circuit closed upon actuation of one of the switch modules until reset by actuation of the other of the switch modules, said circuit holding means including rectifier means connected to said source for establishing a dc power supply, illumination generating means connected to said power supply for actuating one of the switch modules when energized, light activated, latching switch means connected to the illumination generating means for energizing the same and reset means connecting the latching switch means to the other of the switch modules for unlatching the switch means to deenergize the illumination generating means.

3,870,878
LIGHT BARRIER APPARATUS

Arthur A. W. Walter, Denzlingen, and Erwin Langenbach, Buchholz, both of Germany, assignors to Erwin Sick Optik-Elektronik, Waldkirch, Germany
Filed May 16, 1973, Ser. No. 360,966
Int. Cl. H01j *5/02*
U.S. Cl. 250—239 **16 Claims**

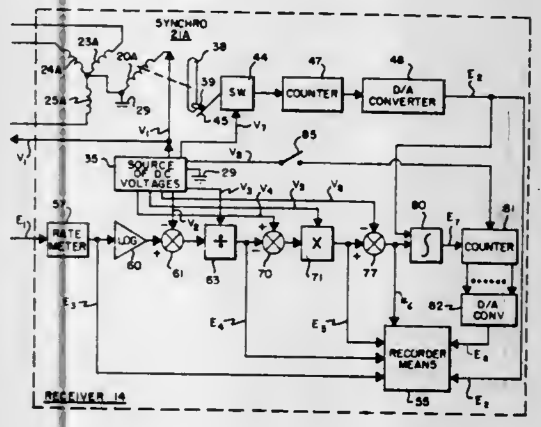
1. An enclosure for defining a chamber optically communicating with an environment external to said chamber, for housing an active optical element, said enclosure comprising:
- a. a housing having an elongated bore extending therethrough, said bore having first and second ends communicating to the exterior of said housing and a first step peripheral to said first end of said bore;
- b. a lens sealed over said second housing end; and
- c. an integral optical element-bearing assembly comprising:
  - i. a sleeve slidable into said bore, and having first and second ends;
  - ii. an active optical element comprising one of a lamp and a photocell mounted proximate said second end of said sleeve;
  - iii. an electrical connector for connecting said active optical element to an electrical circuit for enabling operation of said active optical element; and



  - iv. said sleeve having a flange around the periphery of a first end thereof, said flange being engageable with said first step for establishing a press fit relation of said sleeve in said bore defining the maximum extension of said sleeve into said bore at which maximum extension said active optical element is located substantially at the focal point of said lens.

3,870,879
MEANS AND METHOD FOR PROVIDING AN OUTPUT CORRESPONDING TO THE EXPECTED SUBSIDENCE OF A FROZEN EARTH FORMATION

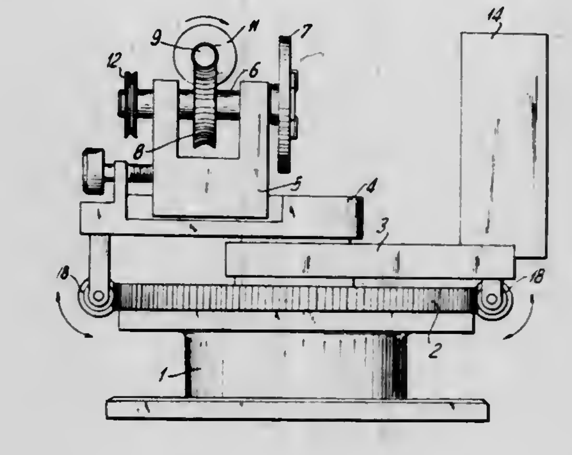
Alexander S. McKay, Calgary, Alberta, Canada, assignor to Texaco Exploration Canada Ltd., Calgary, Alberta, Canada
Division of Ser. No. 296,422, Oct. 10, 1972,. This application July 5, 1973, Ser. No. 376,768
Int. Cl. G01t *1/16*
U.S. Cl. 250—269 **8 Claims**



1. A method for providing an output corresponding to the expected subsidence of a frozen earth formation, having a borehole, upon thawing, which comprises the following steps of inserting a sensor in the borehole, sensing a characteristic of the frozen earth formation with the sensor, providing a signal corresponding to the sensed characteristic, providing a signal corresponding to the density of the frozen earth formation in accordance with the sensed characteristic signal, and providing the output corresponding to the thaw subsidence in accordance with the density signal.

3,870,880
PROCESS AND DEVICE FOR STUDYING THE STRUCTURE OF SINGLE CRYSTALS

Henri Merigoux; Jean-Francois Darces, both of Besancon, and Jean-Yves Exertier, Valence, all of France, assignors to Henri Merigoux, Besangon, France
Filed Oct. 9, 1973, Ser. No. 404,247
Claims priority, application Switzerland, Oct. 11, 1972, 14809/72
Int. Cl. G01t *23/20*
U.S. Cl. 250—273 **11 Claims**

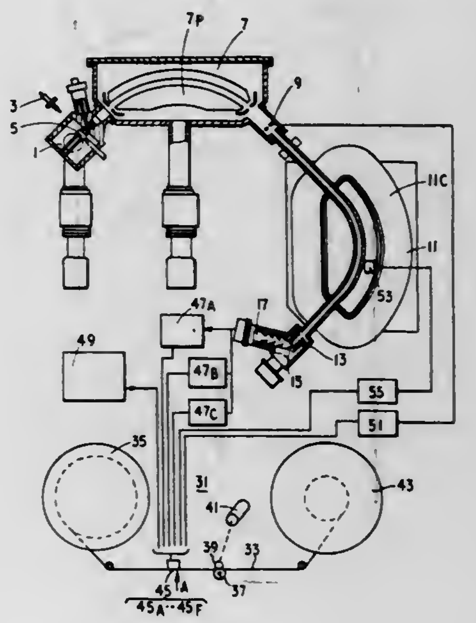


1. A method for the control of single crystals by the detection of the reflections of X-rays irradiating said single crystals, comprising the steps of:
- a. positioning a specimen crystal on a rotatable support;
- b. rotating said support about its own axis at a fast speed of rotation and simultaneously sweeping with said rotatable support at least a part of the angular field of irradiation of the X-rays to obtain reflections;
- c. determining the orientation of a direction of the specimen from the angles of said reflections;
- d. replacing said rotatable support at one of the positions of reflection derived from said fast rotation of the rotatable support;
- e. rotating said rotatable support about its own axis at a low speed of rotation until the said reflection occurs again;
- f. reading the angular position of said rotatable support; and
- g determining therefrom the orientation of another direction of the specimen.

3,870,881
METHOD OF ANALYZING OUTPUT SIGNALS REPRESENTING THE MASS SPECTRUM FROM A SCANNING MASS SPECTROMETER

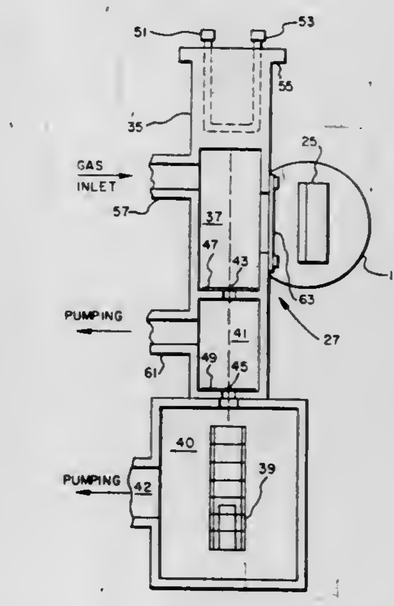
John Stephen Halliday, Sale, and Brian Noel Green, Manchester, both of England, assignors to Associated Electric Industries, London, England
Continuation of Ser. No. 82,479, Oct. 20, 1970, abandoned, which is a continuation of Ser. No. 538,876, Jan. 6, 1966, abandoned. This application June 6, 1972, Ser. No. 260,315
Claims priority, application Great Britain, Jan. 7, 1965, 755/65
Int. Cl. H01j *39/34*
U.S. Cl. 250—283 **24 Claims**

1. The method of mass measuring a sample with a mass spectrometer including means to ionize substances, an analyzer, and collector means comprising:
- a. simultaneously ionizing the sample and a reference compound;
- b. concurrently passing ions from both the sample and the reference compound through the analyzer to the collector means while scanning the mass spectrum to collect data as to the mass spectrum of the sample and the reference compound with the collector means;
- c. producing electrical outputs with said collector means representative of the data collected;
- d. digitizing signals derived from said collection means outputs;
- e. evaluating the digitized signals with a computer and in so doing evaluating a first peak of the sample with respect to a pair of reference compound peaks of different positions on the mass spectrum to locate the position of the first sample peak with respect to a segment of the spectrum established by said reference peaks and with respect to one of the reference peaks whereby to identify said first sample peak with respect to its position relative to said one peak, said segment thereby minimizing the effects of deviations in the results of the scan producing said first sample peak and said first and second reference peaks from an ideal scan;
- f. said evaluation of said first peak of the sample being made according to assumed scan conditions established by said pair of reference compound peaks to compensate for variations from an ideal scan due to hysteresis and the like and whereby to produce a mass analysis of a sample without need for a visible spectrum.



3,870,882
ESCA X-RAY SOURCE

Paul E. Larson, Acton, Mass., assignor to GCA Corporation, Bedford, Mass.
Filed May 23, 1973, Ser. No. 363,141
Int. Cl. H01j *37/00*
U.S. Cl. 250—305 **6 Claims**



1. An electron spectrometer comprising:
means for holding a sample which is to be analyzed;

means for analyzing photoelectrons given off by said sample as a function of their energies thereby to obtain an energy spectrum;

housing means defining an X-ray target chhamber;

means for providing neon gas to said chamber at substantial pressure, said housing means also defining a chamber separate from said target chamber, there being a small aperture between said chambers;

in said separate chamber, an electron gun for directing, through said small aperture a narrow beam of electrons into said target chamber at an energy level above that required to excite the neon Kα emission line;

means for pumping the electron gun chamber to maintain a vacuum in the presence of gas flow through said aperture; and an X-ray window in said target chamber allowing X-rays comprising mainly the Kα neon emission line to essentially directly irradiate said sample without intervening dispersive selection thereby to obtain from said analyzing means a spectrum of improved resolution.

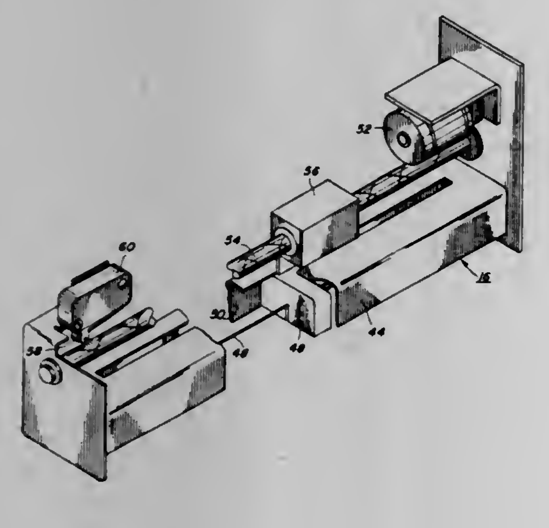
3,870,883
ELECTROSTATIC PRINTING MACHINE WITH SELF-CLEANING CORONAL GENERATING DEVICE

Jack R. Oagley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 24, 1973, Ser. No. 400,077

Int. Cl. G03g *15/00*

U.S. Cl. 250—324 **4 Claims**



1. An improved electrostatic printing machine comprising means defining a photoconductive surface which is adapted to move around a closed path, means including at least one corona generating device for making a copy of an original document, the corona generating device being disposed adjacent the photoconductive surface along the closed path, the corona generating device having a corona wire and a generally U-shaped elongated shield around the corona wire, and a cleaning pad contacting the corona wire and the inner surface of the shield such that when moved along the device, the wire and substantially the entire inner surface of the shield will be cleaned, the improvement comprising:

means for automatically moving the cleaning pad along the corona wire and shield to complete a cycle of operation upon receiving an input signal after a predetermined machine event has occurred.

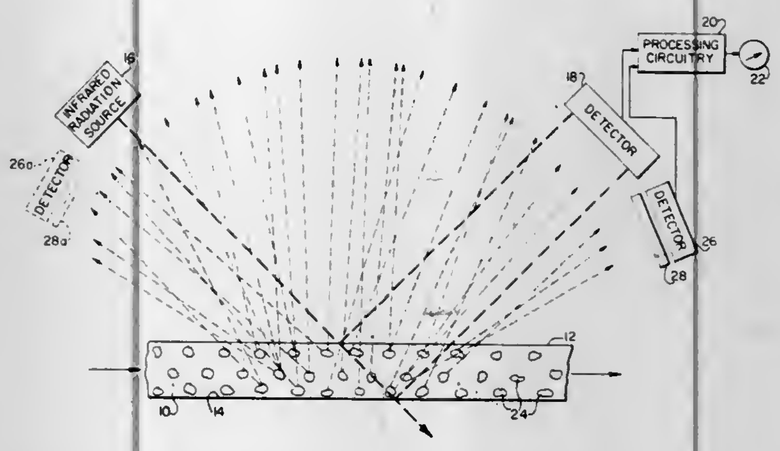
3,870,884
APPARATUS FOR NEGATING EFFECT OF SCATTERED SIGNALS UPON ACCURACY OF DUAL-BEAM INFRARED MEASUREMENTS

Paul Williams, Columbus, Ohio, assignor to Infra Systems, Inc., Columbus, Ohio

Continuation of Ser. No. 391,046, Aug. 24, 1973, abandoned. This application June 26, 1974, Ser. No. 483,085

Int. Cl. G01t *1/16*

U.S. Cl. 250—339 **10 Claims**



10. A dual-beam, reflection-type infrared measuring system for measuring a property of a film by the use of infrared absorption phenomena comprising:

a. an infrared radiation source for generating first and second beams of infrared energy, each of said beams being at different respective wavelengths, one of said beams being the absorption beam which is selected to undergo greater absorption with respect to the film property being measured than the other beam known as the reference beam,
b. first means positioned with respect to said source for detecting energy from said beams specularly reflected from the front and rear surfaces of said film, as well as beam energy scattered from the film,
c. means for processing the detected energy to provide a ratio measurement of the detected signals corresponding to the detected absorption and reference beams,
   1. said processing means including second means positioned with respect to said source for detecting energy from said beams scattered from the film but not detecting energy specularly reflected from the film surfaces and responsive to the scattered energy at the wavelength of the reference beam but not at the wavelength of the absorption beam, for substantially negating the effect on said ratio measurement of scattered energy received at said first detecting means.

3,870,885
DEVICE FOR MEASURING ABSORPTION

Ernst Ammann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

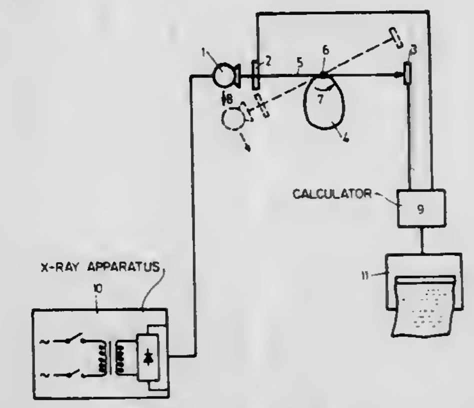
Filed Jan. 23, 1974, Ser. No. 435,825

Claims priority, application Germany, Feb. 7, 1973, 2306006

Int. Cl. G01t *1/16*

U.S. Cl. 250—360 **1 Claim**

1. A device for absorption measurements by X-rays, comprising, in combination with a source of X-rays producing a central ray, two measuring devices adapted to be located on opposite sides of the object being measured for measuring ray intensity, said devices being located in the path of said central ray, means connected with said source and said two measuring devices for jointly rotating them about a point located in the path of said central ray and for jointly shifting them in directions perpendicular to said central ray and to their axis of rotation, and a computer connected with said two measuring devices for determining absorption values from the ratios of the signals delivered by said measuring devices.



3,870,886
SCANNING DEVICE FOR SCINTIGRAPHY

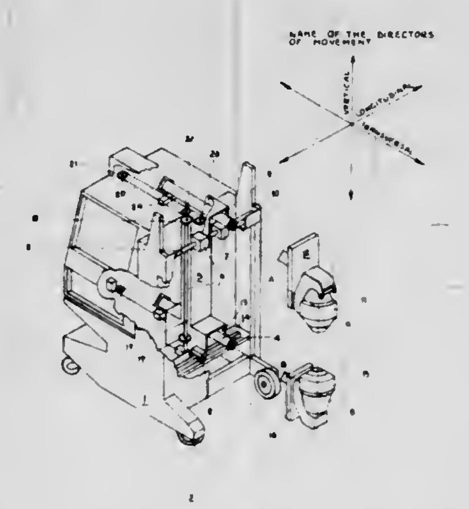
Renato Casale, Rome, Italy, assignor to Ital Elettronica S.p.A., Rome, Italy

Filed July 5, 1972, Ser. No. 269,009

Claims priority, application Italy, July 28, 1971, 51968/71

Int. Cl. G01t *1/20*

U.S. Cl. 250—367 **6 Claims**



1. A device for the scintigraphic scanning according to a horizontal plane, characterized in comprising:

a. A support provided with two linear guides horizontally and longitudinally located, one of which is located in the upper part of the support, while the second is located in the lower part of the support;
b. A carriage, movable with respect to the support along said guides, being provided in its upper part, projecting above the support, with rolling means for supporting and causing to slide along a linear axis thereof a support rod for supporting a supporting a detector, being horizontally and transversely located, said carriage being further provided in its lower part with a recess for receiving rolling means for supporting and causing to slide along an axis thereof a second support rod for a second detector, said second rod being located parallel to the first rod and below it;
c. A pair of support rods for detectors, at least one support rod having thereon a radiation detector, the first of said rods being supported above the support in a sliding way along its axis, by the rolling means located in the upper part of the carriage, and the second rod supported slidingly along its axis by rolling means contained in a recess provided in the lower part of the carriage;
d. A vertical shaft supported by said carriage on which is mounted a toothed wheel for each rod, each toothed wheel engaging a positive drive chain or the like, which is connected to each said rod so that the rotation of the shaft determines the simultaneous displacement of the two rods along their axes; and single motor means for driving both said shaft and carriage during a scanning operation.

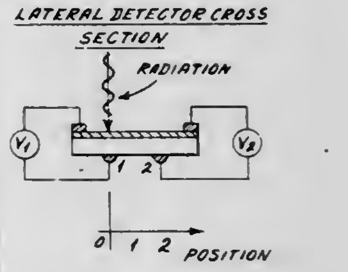
3,870,887
OPTICAL IMAGE POSITION INDICATOR MEANS USING TIME AND PHASE DELAY SENSING

James E. Dueker, and Lloyd E. Brunkhorst, both of Florissant, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 10, 1973, Ser. No. 405,022

Int. Cl. G01t *1/16*

U.S. Cl. 250—370 **18 Claims**



1. A detector device comprising a wafer-like element formed by contiguous layers of p and n type semi-conductor materials arranged and positioned to form a barrier therebetween, means forming a conductor layer on one of said layers on one side of the device, means biasing said conductor layer to a predetermined operating condition, a second electrode attached to the other semi-conductor layer at a location thereon spaced laterally from the conductor layer on the opposite side of the device, voltage sensitive means connected to said second electrode including means responsive to the time of occurrence of voltages produced thereat when radiation energy impinges on the said one semi-conductor layer, the time of occurrence of the voltage produced at said second electrode depending on the distance between where the radiation energy impinges and the said electrode and on the charge carrier mobility characteristic of at least one of the layers of semi-conductor material in a direction substantially parallel to the barrier.

3,870,888
ELECTRON CAPTURE DETECTORS

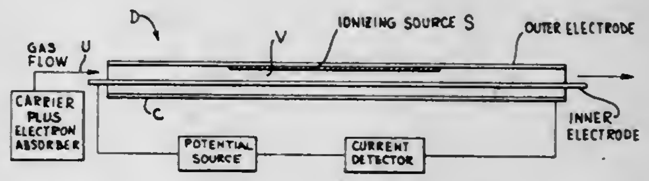
James Ephraim Lovelock, Bowerchalke, near Salisbury, Wiltshire, England

Filed May 8, 1972, Ser. No. 250,953

Claims priority, application Great Britain, May 8, 1971, 13877/71; July 29, 1971, 35593/71

Int. Cl. G01t *1/16*

U.S. Cl. 250—384 **1 Claim**



1. In an electron capture detector of the type having a detector defining an ionization chamber through which a gas sample including an electron absorber is flowable, and comprising an outer electrode, a radiation source at the inner surface of said detector, and an inner electrode mounted within said detector, an improvement particularly for improving performance with relatively weak electron absorbers and comprising:

- a radioactive tritium ionizing source distributed lengthwise through the chamber for subjecting all gas therein to radiation;
- an ionization chamber length which is at least ten times greater than any lateral dimension of said chamber for causing a gas sample to move along said chamber as a discrete plug, and with a minimum of mixing between adjacent sample portions, in which the chamber length is 15 cm. and the chamber diameter is 5 mm;
- means for flowing the gas sample into and along said chamber at a relatively high flow rate in excess of 50 mls/minute to provide a large mass flow of said detectable electron absorber, the reduction in proportion of said electron absorber converted into negative ions occasioned by said high flow rate being substantially compensated by a corresponding large chamber volume, whereby high flow rate and large chamber volume facilitate detecting low concentrations of electron absorbers;
- whereby to tend to minimize the time required to remove last detectable traces of even relatively weak electron absorbers from the chamber.

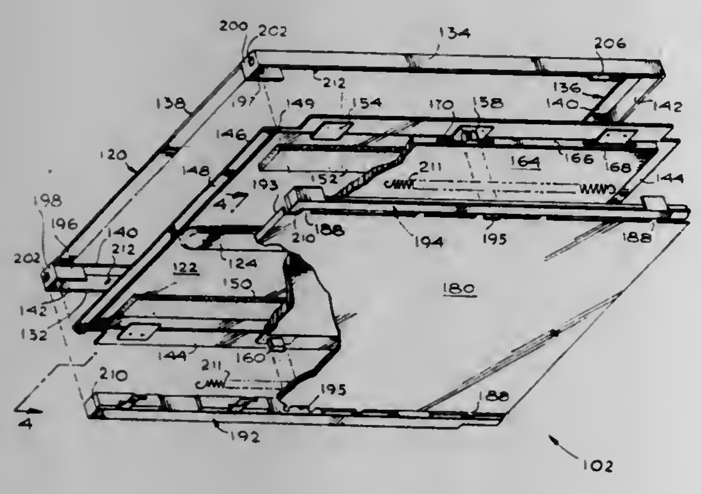
3,870,889
FILM SHEET CASSETTE

Gunter Schmidt, Malibu, Calif., assignor to Production, Inc., Los Angeles, Calif.

Filed Dec. 26, 1973, Ser. No. 428,618

Int. Cl. G01n *21/34*

U.S. Cl. 250—480 **10 Claims**



1. A film sheet cassette comprising:

- a back plate and cover plate fixed in spaced substantially parallel relationship;
- raised elongated means disposed on said back plate projecting toward said cover plate;
- a resilient back screen plate disposed between said back plate and cover plate;
- a resilient pressure screen plate disposed between said back screen plate and cover plate; and
- actuatable means supported in said cassette for moving said pressure screen plate between an open first position spaced from said back screen plate and a closed second position engaging said back screen plate and deforming both said back screen plate and said pressure screen plate around said raised means.

3,870,890
METHOD AND APPARATUS FOR MEASURING MUTUALLY PERPENDICULAR DIMENSIONS

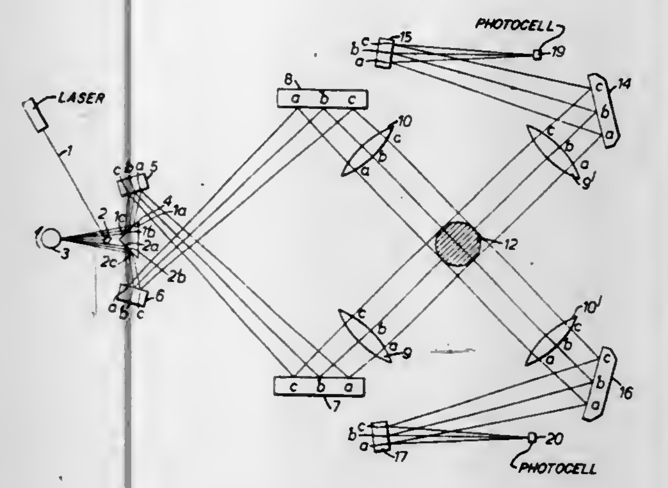
Sidney David Binks, and William Hurton, both of Sheffield, England, assignors to Davy Instruments Limited, Sheffield, England

Filed Nov. 30, 1973, Ser. No. 420,708

Claims priority, application Great Britain, Dec. 1, 1972, 55478/72

Int. Cl. G01b *7/04*

U.S. Cl. 250—560 **15 Claims**



15. Apparatus suitable for determining first and second mutually perpendicular cross sectional dimensions of an elongate workpiece comprising a measuring zone for receiving the workpiece, a laser, a mirror for reflecting a narrow light beam from the laser onto the reflecting surfaces of a rotatable *n* sided polygon, means for rotating said polygon at a known constant speed, a prism arranged to receive the reflected light from the polygon and to reflect the beam in one direction during the first part of the scan and in another direction during the second part of the scan, optical means for directing the beam during the first part of the scan across the measuring zone, optical means for focussing the beam passed across the zone onto a first photo-electric transducer, electronic means associated with the transducer for determining the time during each scan in which the beam impinges upon a workpiece in the zone and electronic means for determining the dimension of the workpiece from a plurality of scans, optical means for directing the beam during the second part of each scan across the measuring zone in a direction at right angles to the beam during the first part of each scan, optical means for focussing the beam passed across the zone during the second part of each scan onto a second photo-electric transducer, electronic means associated with the second transducer for determining the time during each scan in which the beam impinges upon a workpiece in the zone and electronic means for determining the dimension of the workpiece from a plurality of scans.

3,870,891
MAGNETIC LENSES

Thomas Mulvey, Birmingham, England, assignor to The National Research Development Corporation, London, England

Filed Aug. 31, 1973, Ser. No. 393,532

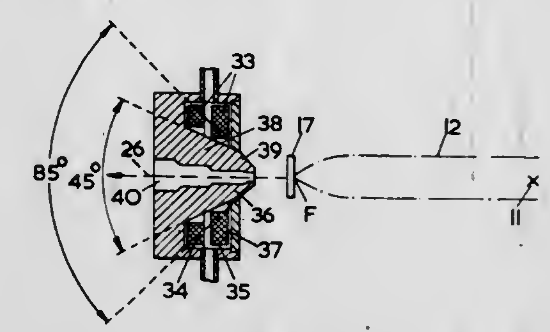
Claims priority, application Great Britain, Sept. 4, 1972, 40888/72

Int. Cl. H01j *37/26*

U.S. Cl. 250—398 **9 Claims**

1. An apparatus which comprises a source operative to produce a beam of charged particles along a given axis, and a magnetic lens which provides substantially the only means for focusing the said beam onto a target position on the axis between the said source and magnetic lens, the said magnetic lens being operative to provide a substantially radial field in the focusing region, said lens being located on the side of said target position opposite to said source and comprising an electrically conducting wire coil having a front face which lies

in a plane perpendicular to the said given axis, the axis of said coil being coaxial with said given axis, said lens further comprising a polepiece composed of material of high magnetic permeability which extends along said core axis towards said source at least within the space surrounded by the coil.



3,870,892
SYSTEM FORMED BY THE COMBINATION OF A SOLID - STATE IMAGE INTENSIFIER AND A COMPATIBLE ADAPTED X-RAY FILM

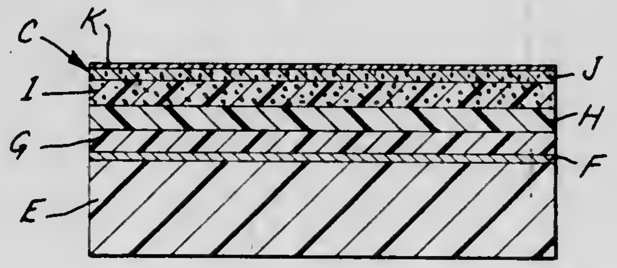
Leonard Fass, Albisola Superiore, and Ennio Fatuzzo, Ferrania, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 26, 1973, Ser. No. 326,741

Claims priority, application Italy, Feb. 2, 1972, 48114/72

Int. Cl. G01t *1/20*

U.S. Cl. 250—483 **10 Claims**



1. An X-ray image intensifying device for radiography comprising the following sequential layers:

- A. A supporting film base,
- B. A conducting layer which is at least partially transparent to X-rays,
- C. An X-ray sensitive photoconductive layer,
- D. A light opaque layer,
- E. An electroluminescent layer comprising an electroluminescent compound dispersed in a binder,
- F. An at least partially light-transparent electrically conducting layer, and
- G. A protective layer whose thickness is such that the resolving power loss is not greater than 20 percent lower than that of the same element without any protective layer.

3,870,893
WAVE OPERATED POWER PLANT

Henry A. Mattera, 736 Fern St., Yeadon, Pa. 19050

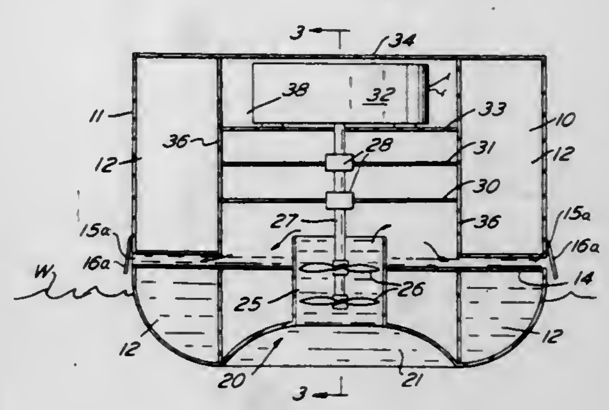
Filed Oct. 15, 1973, Ser. No. 406,545

Int. Cl. F03b *13/12*

U.S. Cl. 290—53 **4 Claims**

1. A wave operated power plant which comprises

- a vessel having a hull,
- a plurality of flotation and ballast chambers carried within said hull,
- at least one vertically extending tube extending upwardly from the bottom of said hull,
- water deck means contiguous to the hull water line above which said tube terminates,
- a discharge passageway being provided for discharge of water from said water deck means,
- said passageway having at least one port extending through said hull and having an outwardly opening door for permitting water discharge but preventing entry of water from outside said hull,
- water driven members in each said tube having an output shaft, and
- electric generator means connected to each shaft.



3,870,894
ELECTRONIC SENSOR FOR TRIGGERING SAFETY DEVICES DURING THE CRASH OF VEHICLES

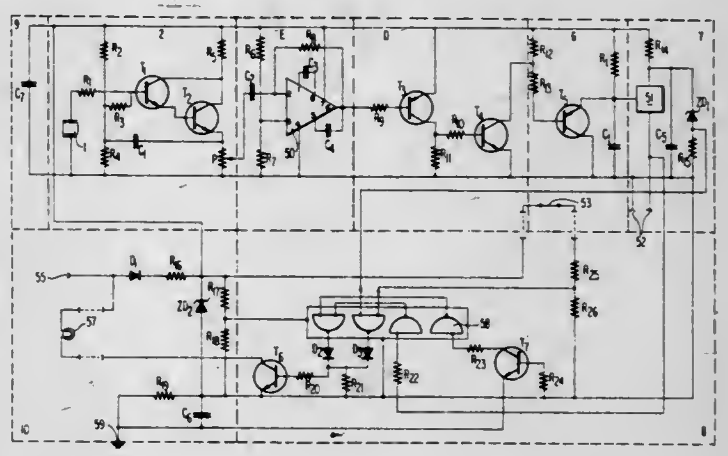
Uwe Brede, Schwaig; Karl-Egon Flach, Cologne-Riehl; Heinz Gawlick, Furth, Bayern; Gunter Hirschmann, Volkach am Main, and Walter Kreibich, Furth, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Feb. 20, 1973, Ser. No. 334,023

Claims priority, application Germany, Feb. 19, 1972, 2207831

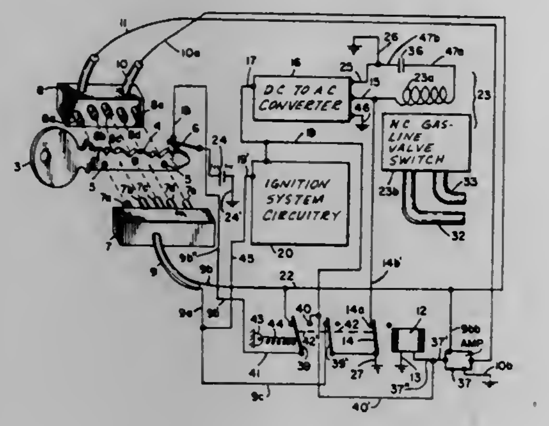
Int. Cl. H01h *35/14*

U.S. Cl. 307—9 **34 Claims**



1. An electronic sensing system for triggering the actuation of a safety mechanism during a vehicle collision comprising acceleration pickup transducer means responsive to vehicle shock acceleration for providing an output signal indicative thereof, evaluating and safety triggering circuit means for processing the output signal of the transducer means in accordance with predetermined dynamic deformation characteristics of the vehicle, said evaluating and safety circuit means including threshold means providing first and second threshold values and for providing triggering output signal upon the output signal of said transducer means exceeding the first and second threshold values, and ignition circuit means responsive to the triggering signal for actuating the safety mechanism.

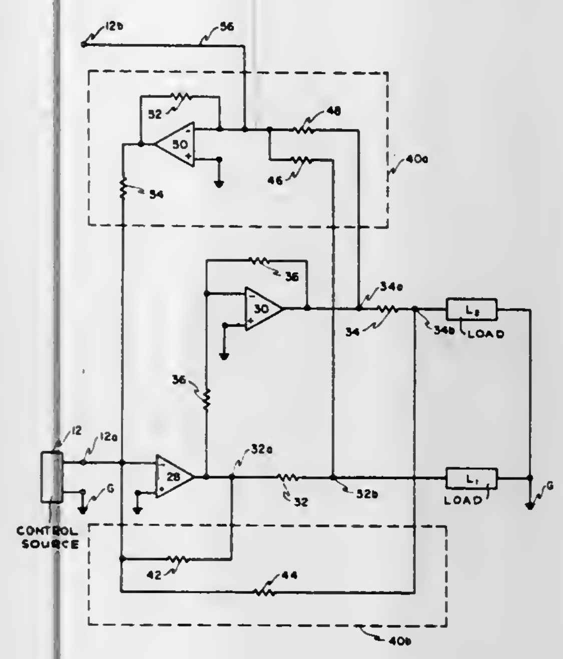
3,870,895
AUTOMOTIVE ANTI-THEFT DEVICE
Jacob Lax, 850 44th St., Brooklyn, N.Y. 11220, and Sandor Goldner, 4308 10th Ave., Brooklyn, N.Y. 11219
Filed Oct. 9, 1973, Ser. No. 404,270
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **8 Claims**



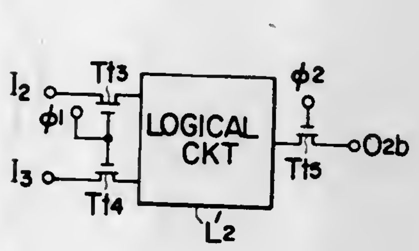
1. An automotive anti-theft device comprising in combination ignition switch means (A) including (a) circuitry for an automotive ignition system and (b) a switch for opening and closing alternately the circuitry, and (B) defining a receptacle structure, receivable of a switch key of predetermined coded structure; a switch key means having said predetermined coded structure such that the switch key means is operatively insertable into the receptacle structure and will close and open the circuitry; a converter means for converting direct current to alternating current, having DC-input and output terminals and having AC-terminals, the DC-input and output terminals being operatively connected to said circuitry; a gas line relay valve-switch means mountable in series within an automotive gas-line and including an alternating-current switchrelay operatively responsive to solely alternating current, the alternating-current switch-relay being operatively connected between said AC-terminals; grounding-out means connected to said AC-terminals for separately grounding-out each of the AC-terminals, the grounding-out means including a grounding-out relay-switch with power circuitry connected to a relay thereof, the grounding-out relay-switch being adapted to alternately close and open grounding-out circuitry, in electrical series with at least one of the AC-terminals for making and breaking ground alternately of at least one of said AC-terminals; and said switch key means having further coded structure for turning alternately off and on relay-activating power to the relay of said grounding-out relay-switch.

3,870,896
CONTROLLABLE CURRENT SOURCE
Frederick Kiko, Sheffield Village, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio
Division of Ser. No. 301,968, Oct. 30, 1972, abandoned. This application Sept. 11, 1973, Ser. No. 396,225
Int. Cl. G05f *1/10*
U.S. Cl. 307—34 **8 Claims**

1. In a circuit for generating two currents which are substantially equal and opposite and which have magnitudes that are substantially independent of the impedance of the circuitry to which the currents are applied, the combination of, a circuit input, first and second circuit outputs, first and second current generating means each having inverting input means and output means, first and second current sampling means for generating respective signals which vary in accordance with the currents at respective circuit outputs, means for connecting the input means of said first generating means to said circuit input, means for connecting said first sampling means between the output means of said first generating means and said first circuit output, means for connecting the input means of said second generating means to the output means of said first generating means, means for connecting said second sampling means between the output means of said second generating means and said second circuit output, feedback means for energizing the input means of said first generating means with a feedback signal indicative of the current through both said first and said second sampling means and means for connecting said feedback means to said first and second sampling means and to the input means of said first generating means.



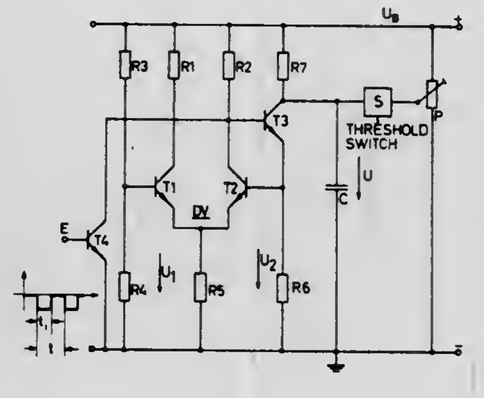
3,870,897
DIGITAL CIRCUIT
Yoshikazu Hatsukano; Kosei Nomiya, and Hiroto Kawagoe, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 14, 1973, Ser. No. 332,522
Claims priority, application Japan, Feb. 14, 1972, 47-14805
Int. Cl. H03k *19/08, 19/36;* **G11c** *11/34*
U.S. Cl. 307—208 **10 Claims**



1. A circuit comprising:
at least two input terminals to which at least two information signals are to be respectively applied;
circuit means, coupled to said at least two input terminals, for providing an output signal which is a function of said at least two input signals applied thereto;
an output terminal, coupled to said circuit means, from which said output signal may be derived;
first and second delay means, connected between said input terminals and said circuit means, for controlling the application of information signals to said circuit means in accordance with a first pulse signal applied thereto; and third delay means, connected between said circuit means and said output terminal, for controlling the reading out of the said output signal, in accordance with a second pulse signal having a pulse difference relative to said first pulse signal.

2. A circuit according to claim 1, wherein the phase difference of said second pulse signal relative to said first pulse signal is at least equal to the delay effected by the operation of said circuit means on information signals applied thereto.

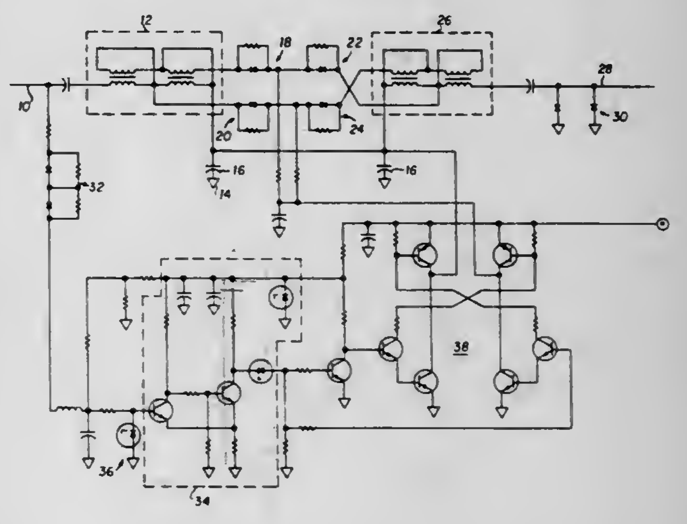
3,870,898
FREQUENCY-TO-VOLTAGE CONVERTER
Wolfgang Hoehn, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Apr. 17, 1974, Ser. No. 461,664
Claims priority, application Germany, Sept. 8, 1973, 2345421
Int. Cl. G01r *23/06*
U.S. Cl. 307—233 **7 Claims**



1. A monolithic integrable frequency-to-voltage converter in which a voltage is generated across a capacitor as a function of the pulse duty cycle of a square-wave input signal, said voltage being compared in a threshold circuit with a supply-voltage-dependent threshold value, said converter comprising:
a supply-voltage source having a first terminal supplying a given polarity supply voltage and a second terminal which is grounded;
a symmetrical differential amplifier including a first amplifying transistor and a second amplifying transistor connected between said first and second terminals;
a first voltage divider connected between said first and second terminals, said voltage divider having a junction point connected to the base of said first transistor;
a second voltage divider including a first resistor connected between said second terminal and the base of said second transistor, a first additional transistor having its emitter connected to the base of said second transistor, its base connected to the collector of said second transistor, and its collector connected by a second resistor to said first terminal;
said capacitor being connected between the collector of said first additional amplifier and one of said first and second terminals; and
an input circuit for said square-wave input signal to apply said input signal to the collector of said second transistor and the base of said first additional transistor.

3,870,899
RECEIVER PROTECTION CIRCUIT APPARATUS
Cornelis Daniel Stoffer, Markham, Ontario, Canada, assignor to Rockwell International Corporation, Dallas, Tex.
Filed Dec. 14, 1973, Ser. No. 424,995
Int. Cl. H03k *5/70, 17/74*
U.S. Cl. 307—235 **3 Claims**

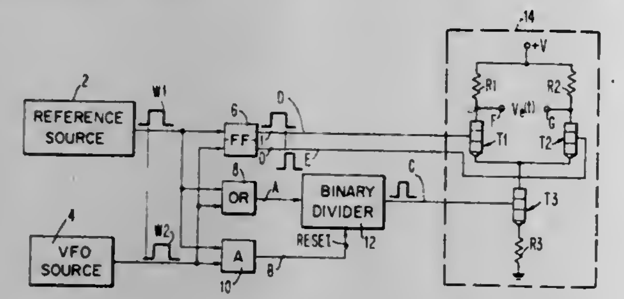
1. Signal decoupling means comprising, in combination:
apparatus input means for supplying an input signal;
first transformer means including primary winding means for receiving a signal and tapped secondary winding means;
voltage level sensing means, including input and output means, for providing in the alternative a first output when signals applied to said input means thereof are less than a predetermined value and a second output when signals applied to said input means thereof are greater than said predetermined value, said voltage level sensing means comprising from input means to output means,
zener diode means,
Schmitt Trigger means,
switching amplifier means, and
means connecting each of said above named means between said input means and said output means of said voltage level sensing means for providing said second output only when input signals are greater than said predetermined value;
apparatus output means;
means connecting said apparatus input means to said first transformer means and to said input means of said voltage level sensing means for supplying input signals thereto;
secondary transformer means including tapped primary winding and secondary winding means;
means connecting said tapped secondary winding means to said apparatus output means;
diode means connected between the ends of said secondary winding means of said first transformer means and said primary winding means of said secondary transformer means, said diode means comprising,
a first pair of diodes with common junctions connected together and the remaining junction of each diode connected to an end of said tapped secondary winding means and said tapped primary means, respectively, and a second pair of diodes similarly connected to the other end of each of said tapped winding means, and
the connection of said output means of voltage level sensing means is to the common junction of each of said diode pairs; and
means connecting said output means of said voltage level sensing means to the taps of said winding means of said first and second transformer means and to said diode means, said diode means permitting signal passage when said voltage level sensing means provides the first output and restricting signal passage when said voltage level sensing means provides the second output.



3,870,900
PHASE DISCRIMINATOR HAVING UNLIMITED CAPTURE RANGE
Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 12, 1973, Ser. No. 415,054
Int. Cl. H03d *13/00;* **H03k** *5/20*
U.S. Cl. 307—232 **19 Claims**

1. A phase discriminatoı responsive to the delay between two input signals for providing an output waveform indicative both of the relative occurrence of said signals and of the difference in said delay comprising:
circuit means responsive to said input signals for generating an output signal having a duration equal to the delay between said pulses;
logic means responsive to said input signals for generating an output signal identifying the relative occurrence of said signals; and

current switch means responsive to said logic means for generating said output waveform having a potential level indicative of the relative occurrence of said input signals,

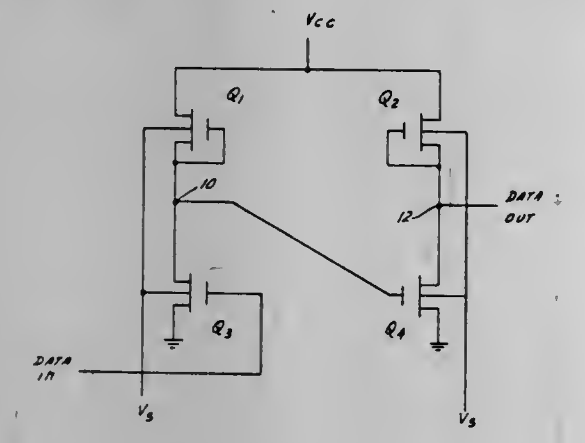


and responsive to said circuit means for generating said output waveform for a duration indicative of the delay between said input signals.

3,870,901
METHOD AND APPARATUS FOR MAINTAINING THE CHARGE ON A STORAGE NODE OF A MOS CIRCUIT

Kent F. Smith, Salt Lake City, and Robert J. Huber, Bountiful, both of Utah, assignors to General Instrument Corporation, Newark, N.J.

Filed Dec. 10, 1973, Ser. No. 423,422
Int. Cl. H03k *3/286, 3/33;* **G11c** *11/38*
U.S. Cl. 307—238 **27 Claims**



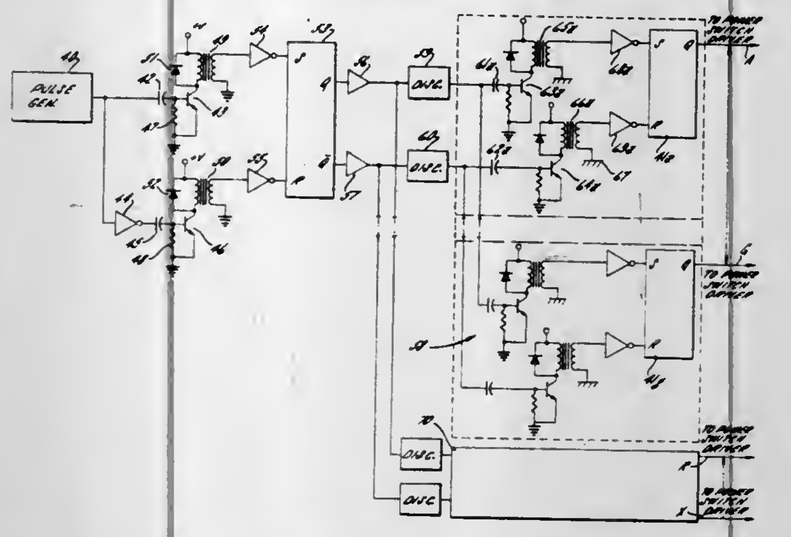
4. A method of maintaining the charge on a storage node of a MOS circuit whose input is connected to an internal storage node, said circuit being of the type having first and second inverter circuits connected in series each of which utilizes a depletion mode transistor as a load device situated between a voltage source and the storage node thereof, the method comprising the steps of charging the storage node of the first inverter to a given voltage level if a data input of a given polarity is present, reverse biasing the substrate to isolate the storage nodes respectively, permitting the charge on the storage node of the first inverter to decay if same was originally charged, and removing the reverse bias to render the depletion mode transistors conductive while some residual charge still remains on said storage node and thereby effective to recharge the storage node of the first inverter if the input signal is still present, said residual charge being effective to prevent charging of the storage node of the second inverter.

3,870,902
BUFFER CIRCUIT FOR PULSE TRANSMISSION

Eiichi Takarada, 1423 Vassar Rd., Rockford, Ill. 61103

Filed Nov. 6, 1973, Ser. No. 413,213
Int. Cl. H03k *17/00*
U.S. Cl. 307—247 **4 Claims**

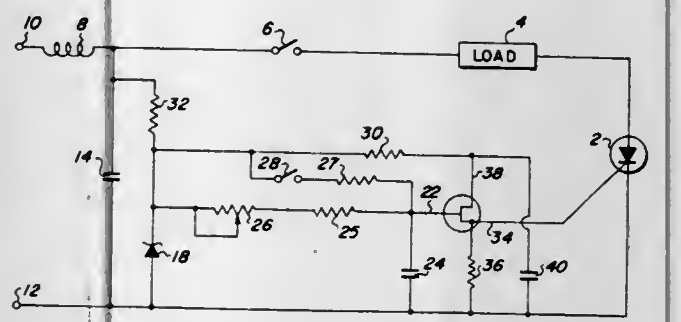
1. In an EDM power supply having a pulse generator and a power switch driver, a buffer circuit comprising in combination a pair of pulse transformers each having a primary and a secondary for coupling signals between the pulse generator circuit and the power switch driver circuit while maintaining their electrical isolation, a pair of electronic switches each having a control circuit and a load circuit, one of the transformer primaries coupled in the load circuit of each of the electronic switches, the first of said switches having its control circuit coupled to the pulse generator, an inverter coupled between the pulse generator and the control circuit of the second of said switches, a flip-flop having a set input coupled to the secondary of one of the other of the transformers and a reset input coupled to the secondary of the other of the transformers, the flip-flop having an output coupled to the power switch driver, whereby the signal produced by the pulse generator is regenerated by the flip-flop for controlling the electrically isolated power switch drivers.



3,870,903
PHASE CONTROLLED POWER SUPPLY

Leo Ottis Taylor, Alto Loma, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 18, 1973, Ser. No. 361,747
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 N **1 Claim**

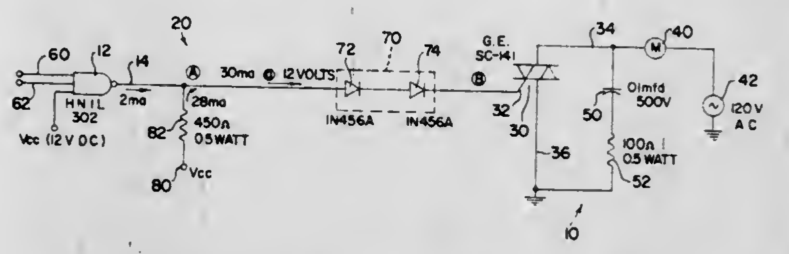


1. A phase controlled power supply circuit comprising a source for supplying an alternating current signal having a desired magnitude to a pair of input terminals, a load device and a silicon controlled rectifier connected in series with said pair of terminals, a gate-signal generating circuit for said silicon controlled rectifier coupled to said terminals and to the gate electrode of said silicon controlled rectifier, said gate-signal generating circuit comprising a unijunction transistor, a resistor, a zener diode coupled across the base electrodes of said unijunction transistor and a firing circuit for said unijunction transistor coupled to the emitter electrode of said unijunction transistor; the base-one electrode of said unijunction transistor is connected directly to said gate electrode of said silicon controlled rectifier and is connected through said resistor to a terminal of said silicon controlled rectifier, a capacitor having a value between 0.1 and 0.5 microfarads connected directly between the base-two electrode of said unijunction transistor and said terminal of said silicon controlled rectifier for varying the firing angle of said silicon controlled rectifier when the magnitude of said alternating current signal varies from said desired magnitude such that substantially the same power is dissipated by said load device even though there are variations in the magnitude of said alternating current signal.

3,870,904
CIRCUIT FOR CONTROLLING A THYRISTOR BY DIRECT CURRENT LOGIC

Delmas A. Schock, Euclid, Ohio, assignor to Mayfran Incorporated, Mayfield Village, Ohio

Filed May 21, 1973, Ser. No. 362,165
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **3 Claims**



1. A direct current circuit for gating a triac used to switch alternating current applied across said triac, said triac having a gate and being in a conductive state when a signal of at least a first voltage and at least a given current is applied to said gate of said triac and a non-conductive condition when a signal of a voltage below a second voltage is applied to said gate, said direct current circuit comprising:

a. a logic gate with an output having a low logic state having a first output voltage above said second voltage and insufficient to positively render said triac non-conductive when said logic gate is shifted to its low logic state and said first output voltage created during the low logic state of said logic gate being less than a third voltage, said logic gate having a high logic state with a second output voltage above said first voltage by at least substantially more than said third voltage to provide a sufficient voltage to render said triac conductive and the output current of said logic gate during said high logic state being less than said given current to provide insufficient current to render said triac conductive;

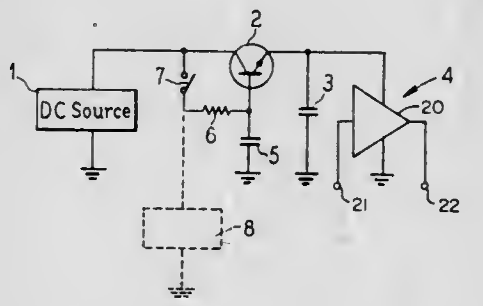
b. circuit means for connecting said logic gate output to said gate of said triac, said circuit means including a voltage drop element connected between said logic gate output and said triac gate and having a maximum voltage drop of approximately said third voltage; and,

c. a current source connected to said logic gate output and between said logic gate output and said voltage drop element for providing additional current to said circuit means, said provided current being added to said output current of said logic gate when in said high state to provide a current summation having a value at least as great as said given current to render said triac conductive when said logic gate is in said high logic state.

3,870,905
SWITCHING CIRCUIT

Hiroyuki Chikazawa, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1972, Ser. No. 297,409
Claims priority, application Japan, Oct. 20, 1971, 46-96840
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **10 Claims**

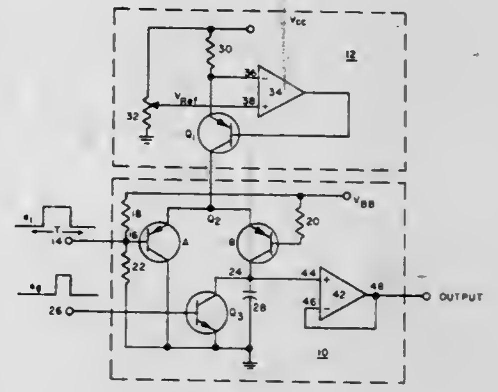


1. In a switching circuit for selectively connecting a d.c. power source to a load, including an electronic amplifier for amplifying an a.c. signal, said circuit having an input terminal adapted to be connected to a first terminal of said d.c. source, an output terminal adapted to be connected to a first terminal of said load, and a common terminal adapted to be connected to a second terminal of said source and to a second terminal of said load, said first terminal, said output terminal and said common terminal all being independent of said a.c. signal, the combination comprising a silicon transistor having base, emitter and collector electrodes, means for connecting said collector electrode to said input terminal, means for connecting said emitter electrode to said output terminal, a series circuit including a resistor and a switch connected between said base electrode and said input terminal, and a capacitor connected between said base electrode and said common terminal.

3,870,906
RAMP/HOLD CIRCUIT

Richard Smith Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1973, Ser. No. 372,443
Int. Cl. H03k *4/50, 5/18, 17/14*
U.S. Cl. 307—261 **2 Claims**



1. An electronic circuit for converting a signal pulse width into a voltage amplitude, comprising:

a differential amplifier including first and second transistors having commonly connected emitters, wherein each transistor provides a current path through said amplifier;

an input coupled to the base of said first transistor for receiving said pulse signal, wherein the current path through said amplifier is responsive to said signal;

a current source coupled to said commonly connected emitters providing a constant value of electrical current to said amplifier, including a third transistor, and an operational amplifier having its output directly connected to the base of said third transistor, wherein the collector of said third transistor is connected to said commonly connected emitters, its emitter and one input of said operational amplifier are coupled in common to a d.c. voltage source, and the operational amplifiers other input is coupled to a controllable reference voltage source;

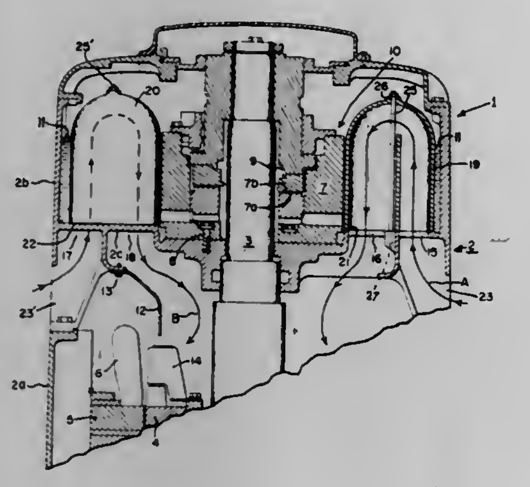
charge storing means coupled to the collector of said second transistor for storing an electrical charge that is dimensionally associated with the signal pulse width received by said input; and

discharging means coupled to said charge storing means for selectively providing a discharge path for said storing means;

wherein the current path of the current from said constant current source is through said second transistor to said charge storing means during the period said pulse signal is received by said input.

3,870,907
LUBRICANT COOLING APPARATUS FOR A VERTICAL ELECTRIC MOTOR

Orville William Hoffman, Los Gatos, Calif., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 11, 1973, Ser. No. 405,563
Int. Cl. H02k *5/18*
U.S. Cl. 310—64 **6 Claims**



1. Lubricant cooling apparatus for a vertical electric motor having a hollow metal housing, a stator rigidly mounted in the housing, a drive shaft rotatably mounted in the housing, a rotor supported on said shaft, a thrust bearing having a first bearing surface mounted in fixed relationship to said housing and a second bearing surface mounted in fixed relationship to said shaft to rotate therewith, said first bearing surface being positioned to support in sliding, rotatable relationship, the second bearing surface when the drive shaft is in its operative position, wall means defining a cup-shaped lubricant-receiving well surrounding said thrust bearing, and a body of liquid lubricant positioned in said well in lubricating and heat absorbing contact with said thrust bearing, said lubricant cooling apparatus comprising means defining a plurality of air passageways in a bottom surface of said wall means, a plurality of hollow, open-ended, generally U-shaped air ducts, both open ends of each of said ducts being mounted in sealing relationship on the bottom surface of the wall means defining said lubricant well, thereby to place the open ends of each of the ducts, respectively, in alignment with one of said air passageways, said ducts being of sufficient length to extend at least to the upper surface of said lubricant when the motor is in its vertical operation position thereby to position a major part of the length of both legs of each of the ducts in heat exchange relationship with the lubricant in said well, air inlet and exhaust means in said housing for moving air into one leg and out of the other leg of each of the respective ducts, and a plurality of gaskets each mounted, respectively, in sealing relationship around one of said air passageways between the open end of one of said ducts and the bottom surface of said wall means.

3,870,908
BELL HOUSINGS FOR MOUNTING ELECTRIC MOTORS

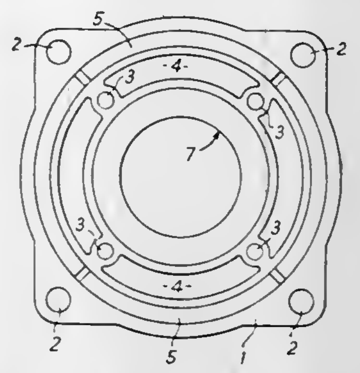
David Button, West Suffolk, and Philip Ward Hopkins, Norfolk, both of England, assignors to U.C.C. International Limited, Thetford, Norfolk, England
Filed Dec. 17, 1973, Ser. No. 425,634
Claims priority, application Great Britain, Jan. 12, 1973, 1725/73
Int. Cl. H02k *5/00*
U.S. Cl. 310—91 **3 Claims**

1. A bell housing, for securing between an electric motor and a structure, comprising an integrally formed one-piece body which includes:

i. an intermediate tubular portion having first and second ends

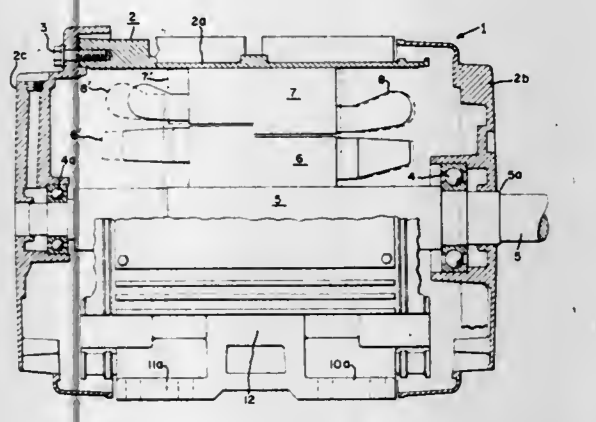
ii. a first coaxial mounting flange portion extending from said first end of said intermediate portion and including a plurality of sets of holes, the holes of each set being arranged at the same radius from the common central axis of the first coaxial mounting flange portion and the intermediate tubular portion, the radius of each set of holes being different from the radius of each other set of holes, thereby to permit the securing to said first coaxial mounting flange portion of electric motors having mounting holes of selectively different corresponding radius

iii. a second coaxial mounting flange portion extending from said second end of said intermediate portion and including a set of holes for mounting said flange to a structure.



3,870,909
MOUNTING MEANS FOR STANDARDIZED DYNAMOELECTRIC MACHINES

William Walrath Pangburn, Pattersonville, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 3, 1973, Ser. No. 385,454
Int. Cl. H02k *5/00*
U.S. Cl. 310—91 **4 Claims**



1. A dynamoelectric machine comprising; a housing having an elongated, hollow center portion and a pair of end caps that are mounted respectively on opposite ends of said center portion, a pair of bearings mounted respectively on said end caps, a drive shaft having a shoulder adjacent one of its ends, said drive shaft being rotatably mounted on said bearings with one end of said shaft extending through one of the end caps and beyond the housing, a rotor element mounted on the drive shaft for rotation therewith, a stator assembly mounted within said housing around the rotor element,

two pairs of feet mounted in spaced apart relation on the housing center portion,

each of said feet being positioned to coincide generally with the respective corners of a rectangular plane tangential to the base of said housing center portion,

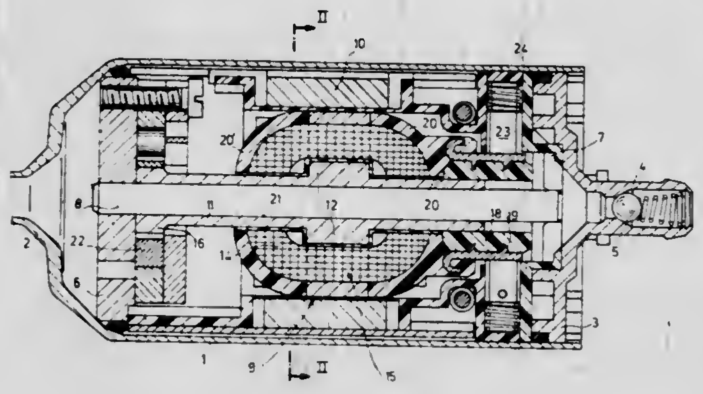
wall means defining two apertures through each of said feet, all of the apertures in the two feet on respectively opposite sides of a plane through the longitudinal axis of said drive shaft being positioned in alignment with one another, with the centers of the four outermost apertures defining the corners of a first rectangle and the centers of the four innermost apertures defining the corners of a second rectangle, and

the improvement wherein the midpoint of a straight line extending between the centers of the two apertures nearest the end of said drive shaft extending through said one end cap is spaced a pre-determined distance BA from the shoulder on said drive shaft and is spaced a fixed distance **2F** from the midpoint of a straight line extending between the centers of the two apertures at the corners of said second rectangle furthest therefrom, and the sides of said first rectangle parallel to the longitudinal axis of the drive shaft are each a pre-determined length **2F′**,

said fixed distance **2F** and said pre-determined length **2F′** being preselected dynamoelectric machine standard dimensions that are both related to different standard frame size designations that correspond to a common standard pre-determined distance BA.

3,870,910
ELECTRIC MOTOR PUMP UNIT

Paul Fussner, Sindelfingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 30, 1973, Ser. No. 420,706
Claims priority, application Germany, Jan. 30, 1973, 2304360
Int. Cl. H02k *7/14*
U.S. Cl. 310—66 **10 Claims**

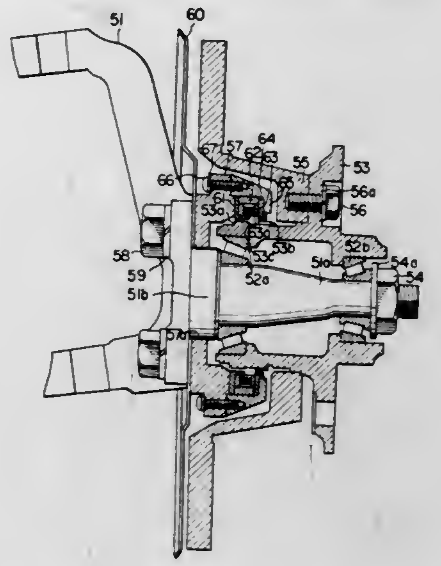


1. In a pump unit, particularly for liquid fuels, a combination comprising a housing; a pump in said housing; an electromotor located in said housing for driving said pump and including a unitary mounting element of sintered material composed of a sleeve-shaped body integrally provided with a plurality of spokes projecting outwardly therefrom, and with a coupling portion which is coupling with said pump for driving the same, a motor armature comprising said spokes and armature windings mounted on said spokes, and a collector mounted on said sleeve-shaped body; and means mounting said sleeve-shaped body and the elements mounted thereon for rotation.

3,870,911
WHEEL SPEED DETECTOR FOR VEHICLES

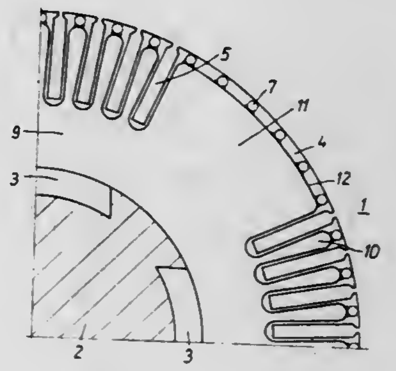
Koichi Toyama, and Koichi Taniguchi, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan
Filed June 19, 1973, Ser. No. 371,499
Claims priority, application Japan, June 21, 1972, 47-73919
Int. Cl. H02k *17/42*
U.S. Cl. 310—155 **1 Claim**

1. A wheel speed detector for vehicles comprising: a nonrotatable axle, a wheel hub coaxially rotatably mounted on said axle through bearings, said wheel hub being made of magnetic material, brake disc means connected to the outer periphery side of said wheel hub in a coaxially rotatable relation to said axle, a stationary plate directly snugly fitted on the outer peripheral surface of said axle in a coaxial relation therewith, electric power generating means secured to said stationary plate and disposed in an enclosure defined by the outer surface of said wheel hub and the inner surface of said brake disc means, said generating means including annular coil means with its turns forming concentric circles with respect to said axle and annular permanent magnet means disposed around the outer periphery of said coil means, and a plurality of serrations disposed in an opposite relation with respect to said generating means and directly provided on the outer peripheral surface of said wheel hub.



3,870,912
SMOOTH-CORE ROTOR FOR A SYNCHRONOUS ELECTRIC MACHINE

Eberhard Kipke, and Erich Losensky, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed May 4, 1973, Ser. No. 357,259
Claims priority, application Germany, May 18, 1972, 22249123
Int. Cl. H02k *3/16*
U.S. Cl. 310—183 **4 Claims**



1. A smooth-core rotor for a synchronous electric machine comprising a plurality of excitation windings; a rotor stack consisting of a stack of rotor laminations, said rotor stack defining respective longitudinal rotor end faces and defining a plurality of radial pole projections for corresponding ones of said excitation windings, said rotor stack further defining a plurality of slots disposed on respective sides of each one of said pole projections for accommodating the turns of the corresponding excitation winding, each two mutually adjacent ones of said slots defining a rotor tooth between them; and a damper arrangement including a plurality of damper bars disposed on said rotor stack, a portion of said damper bars being arranged at the rotor teeth and the remainder of said damper bars being arranged at the pole projections of said rotor stack, and a steel pressure plate disposed at each longitudinal end face of said rotor stack for clamping the stack of rotor laminations together, said steel pressure plates each defining a plane and being configured to have pressure fingers at corresponding ones of the rotor teeth and to have an edge portion at each one of said pole projections, said pressure

fingers and said edge portions being in the plane of said plate and extending into the immediate vicinity of said damper bars, each of said damper bars of said portion thereof being individually welded to corresponding ones of said pressure fingers and each of the damper bars of said remainder thereof being individually welded to the edge portion corresponding to the pole projection whereat the damper bar is arranged whereby said pressure plates short circuit all of said damper bars to each other at each of said end faces.

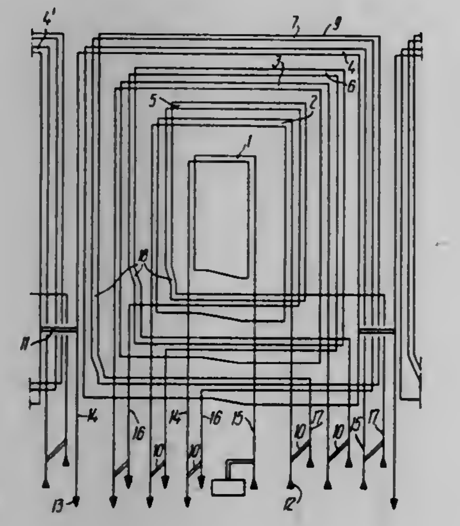
3,870,913
ROTOR WINDING DIRECTLY COOLED BY LIQUID FOR USE IN NON-SALIENT POLE SYNCHRONOUS MACHINE

Aron Beniaminovich Shapiro, Basseinaya ulitsa 53, kv. 70; Vladimir Pavlovich Chernyavsky, Pulkovskaya ulitsa 17, kv. 185, and Ibragim Akhmedovich Kadi-Ogly, ulitsa Chaikovskogo 15, kv. 24, all of Leningrad, U.S.S.R.

Filed May 18, 1973, Ser. No. 361,626

Int. Cl. H02k *3/04*

U.S. Cl. 310—208 **13 Claims**



1. A rotor winding directly cooled by liquid, for use in the slots of a rotor of a non-salient pole synchronous machine, said rotor winding comprising pole windings including one group of concentrically disposed coils wound in one and the same direction of each pole and a second group of concentrically disposed coils wound in one and the same direction of each pole, said second group of coils being disposed in the same slots as said first group of coils, lead-outs for said coils of both groups arranged axially at one side of the rotor and extending beyond the end portions thereof, said coils of one group being disposed in the lower portions of the slots nearest to the rotor axis while said coils of the other group are disposed in the upper portions of the slots nearest to the outer surface of the rotor, the coils of each pole being in electrical series connection by alternately switching-in one coil of each group beginning with the smallest coil in one group and the largest coil in the other group, and means interconnecting the lead-outs of the coils.

3,870,914
CURRENT COLLECTION MEANS FOR ELECTRIC MOTORS

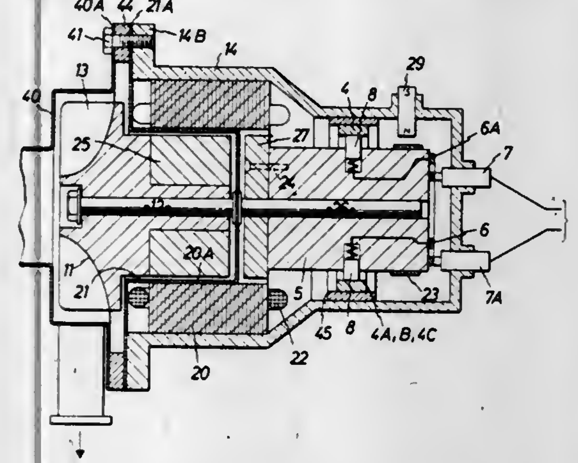
Alan J. Walker, 387 Maidstone Rd., Gillingham, England

Continuation-in-part of Ser. No. 157,576, June 28, 1971, Pat. No. 3,751,698. This application Feb. 26, 1973, Ser. No. 335,469

Int. Cl. H02k *13/10*

U.S. Cl. 310—219 **3 Claims**

1. An electric motor comprising a stator having a plurality of inductive coils for generating a rotating magnetic field, an armature rotatably driven by said magnetic field, commutator means including fixed contacts electrically connected with each inductive coil, rotatable contacts connected to a source of voltage, and rotation means for rotating said rotatable contacts in succession with said fixed contacts whereby said coils of said stator are successively connected to the voltage source: the improvement comprising in that the number of fixed contacts is an integral multiple of the number of coils of said stator; in that each fixed contact comprises an arcuate segment mounted on a common insulating ring; in that each rotatable contact comprises a rotatable brush the polarity of which alternates as it rotates in a circumferential direction; in that said rotation means comprises an auxiliary electric motor having an auxiliary induction rotor mounting said rotatable contacts; in that the stator of the electric motor serves as an auxiliary stator for the auxiliary motor; and, in that the auxiliary induction rotor carries a rotor winding which is electrically connected to the voltage source whereby said auxiliary electric motor uses part of the current supplied to the electric motor such that an increase in current to said rotor winding decreases the rotational speed of the auxiliary rotor and the electric motor.



3,870,915
X-RAY TUBE

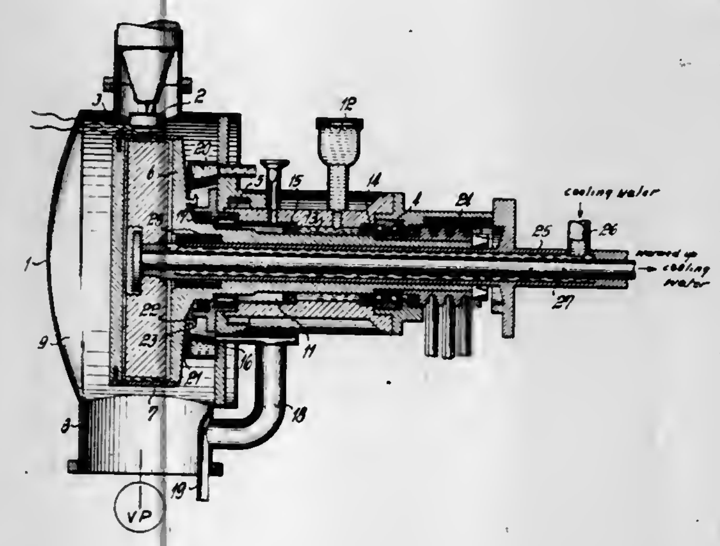
Eckart Kussel, Duren; Heinz-Gunther Haubold, and Peter Wombacher, both of Julich, all of Germany, assignors to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Feb. 20, 1974, Ser. No. 444,255

Claims priority, application Germany, Feb. 21, 1973, 2308508

Int. Cl. H01j *35/10*

U.S. Cl. 313—32 **4 Claims**



1. An x-ray tube which includes: housing means defining first high vacuum chamber means and having a connecting section connectable to a vacuum pump, hollow shaft means extending through said housing means and into said first high vacuum chamber means, means drivingly connected to said shaft means for rotating the same, bearing means rotatably supporting said shaft means, a rotation symmetric anode located in said first high vacuum chamber means and detachably connected to said hollow shaft means for rotation therewith, said hollow shaft means having associated therewith conduit means leading to and from said anode and being connectable to a supply of cooling fluid and a discharge for respectively conveying cooling fluid to and from said anode, said bearing means including a first bearing and a second bearing closer to said anode than said first bearing, a prevacuum chamber surrounding a portion of said hollow shaft means and having said second bearing at least partially arranged therein, second high vacuum chamber means arranged between said prevacuum chamber and said first high vacuum chamber means, first sealing means, and second sealing means, said second high vacuum chamber means being separated from said prevacuum chamber by said first sealing means and being separated from said first high vacuum chamber means by at least a portion of the surface of said rotatable anode and by a wall of said second sealing means which wall is close to and substantially parallel to said anode surface, said second high vacuum chamber means extending partly over said first sealing means, and that wall of said second high vacuum chamber means which is located opposite said first sealing means simultaneously forming a wall of a cooling passage adapted to be connected to a supply of cooling fluid to be passed therethrough.

3,870,916
X-RAY TUBE

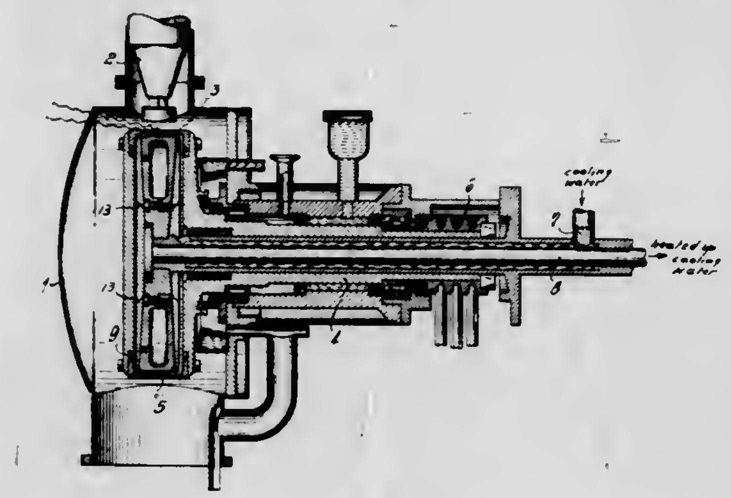
Eckart Kussel, Duren; Heinz-Gunther Haubold, and Peter Wombacher, both of Julich, all of Germany, assignors to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Feb. 20, 1974, Ser. No. 444,256

Claims priority, application Germany, Feb. 21, 1973, 2308509

Int. Cl. H01j *35/10*

U.S. Cl. 313—32 **7 Claims**



1. An X-ray tube which includes: a high vacuum chamber connectable to a vacuum pump, a rotation-symmetric rotatable anode having a hollow space therein and being rotatably arranged in said high vacuum chamber, a rotatable hollow shaft disengageably connected to said anote for rotating the same, conduit means associated with said hollow shaft and communicating with the hollow space of said anode for respectively conveying cooling fluid to and from said anode, a rotatable distributing member arranged within said hollow space of said anode and coaxially therewith and being rotatably connected to said anode including lateral wall means and ring means of a U-shaped cross section the central portion of which forms the peripheral mantle surface of said anode and the legs of which have said lateral wall means detachably connected thereto, sealing means interposed between said legs and said lateral wall means, and a cathode arranged relative to said anode so that said mantle surface of said anode is within the region of the electron beams emitted by said cathode.

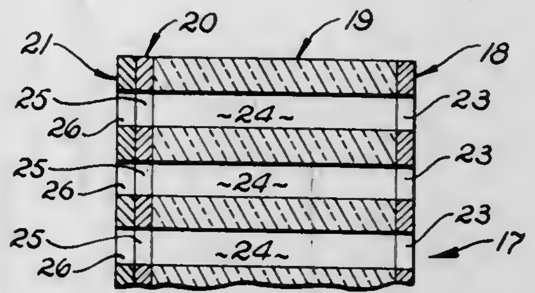
3,870,917
DISCHARGE DEVICE INCLUDING CHANNEL TYPE ELECTRON MULTIPLIER HAVING ION ADSORPTIVE LAYER

John J. Cuny, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 141,850, May 10, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,437

Int. Cl. H01j *43/28, 39/04*

U.S. Cl. 313—105 **1 Claim**



1. An electron tube multiplier device comprising: an evacuated envelope, electrode means positioned within one end of said envelope for emitting primary electrons, a dielectric plate positioned in the path of said primary electrons and having a plurality of holes extending completely therethrough from a first input side thereof to a second output side opposite said first side, said plate holes having secondary electron emissive resistive surfaces emitting secondary electrons in response to impingement of said primary electrons, electrode means positioned at the other end of said envelope spaced from and facing said second output side for receiving said secondary electrons and emitting positive ions in response thereto; a first electrode layer on said first side having a plurality of holes in registration with said holes in said plate, a conductive layer on said second side having a plurality of holes in registration with said holes in said plate, a positive ion adsorption second electrode layer including titanium metal on said conductive layer on said second side, said ion adsorption layer having a plurality of holes extending completely therethrough in registration with said plate holes, and said conductive layer holes said ion adsorption layer receiving and adsorbing said positive ions from said electrode means at said other end, and means for applying potentials between successive electrodes including said electrode means emitting primary electrons and said first and second electrode layers and said electrode at said other end.

3,870,918
IGNITION PLUG WITH AUXILIARY ELECTRODE

Katsuyuki Senda, Toyota, and Mamoru Kobashi, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichen-ken, Japan

Filed Sept. 5, 1973, Ser. No. 394,523

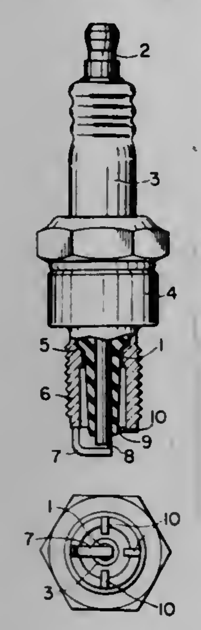
Claims priority, application Japan, Dec. 22, 1972, 47-128262

Int. Cl. H01t *13/02*

U.S. Cl. 313—131 R **8 Claims**

1. An ignition plug, comprising:
a center electrode;
an insulating member surrounding at least a portion of said center electrode;
a mounting member surrounding at least a portion of said insulating member and adapted for mounting said ignition plug in an operating condition;
a ground electrode coupled to said mounting member and disposed adjacent to and spaced from an end portion of said center electrode to form a primary spark gap therewith; and an auxiliary electrode defining a secondary

spark gap between the end portions of said insulating and mounting members adjacent said primary spark gap,



wherein said secondary spark gap is selected to be smaller than said primary spark gap.

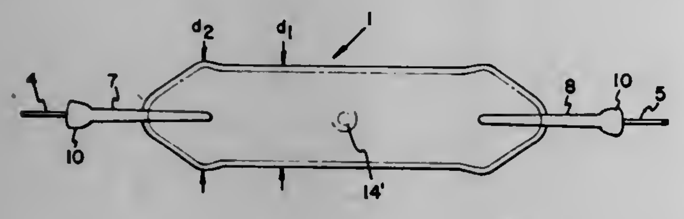
3,870,919
DISCHARGE LAMP HAVING BLOW-MOLDED ARC TUBE ENDS

Wayne R. Hellman, Euclid; Klaus Gottschalk, Solon, and Edward C. De George, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed June 28, 1973, Ser. No. 374,566

Int. Cl. H01j *61/33*

U.S. Cl. 313—220 **4 Claims**



1. A high intensity electric discharge lamp comprising: a filling of mercury which is substantially all vaporized in operation, metal halide in excess of the quantity vaporized and an inert gas;
- a generally cylindrical arc tube formed of a vitreous quartz-like material and being a length of tubing of a given diameter;
- pinched ends on said tube having inleads sealed therethrough supporting electrodes on their distal ends;
- at least one end portion of said arc tube having a length not substantially greater than the diameter of said tubing, being belled and expanded in diameter not over 10% beyond the diameter of said tubing to a constant size in order to achieve uniform characteristics in a line of lamps notwithstanding variations in tubing diameter.

3,870,920
ELECTRIC INCANDESCENT LAMP

Dirk Jules Remi De Fraeye, and Jan Alfons Catharina Mewissen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 390,169

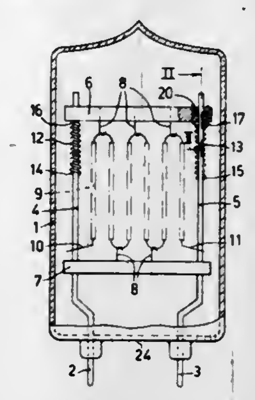
Claims priority, application Netherlands, Sept. 13, 1972, 7212381

Int. Cl. H01j *1/94, 19/48*

U.S. Cl. 313—278 **5 Claims**

1. An incandescent lamp comprising:

two longitudinal supports disposed within said envelope, one transverse support, said transverse support being manufactured from an insulating material and carried on each of the longitudinal supports, a wire helix fixed to said transverse support and a coil spring fixed to said longitudinal support and disposed in coaxial relationship with at least an axial portion thereof engaging at least an axial portion of said coil spring in interspersed relation to prevent axial movement therebetween.



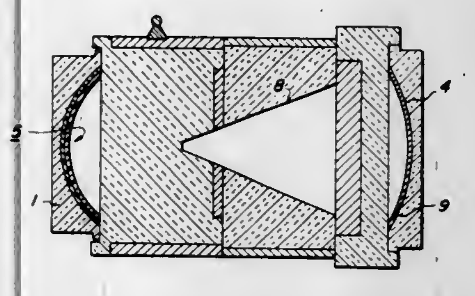
3,870,921
IMAGE INTENSIFIER TUBE WITH IMPROVED PHOTOEMITTER SURFACE

James W. Burns, Altadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 24, 1973, Ser. No. 400,296

Int. Cl. H01j *1/14, 19/06*

U.S. Cl. 313—346 R **8 Claims**



1. In an image intensifier tube having an amorphous optical surface, a photocathode comprising:
- a thin film of a first compound prepared from the elements of Group II and Group VI of the periodic table deposited directly on said amorphous optical surface, and
- a layer of a second compound prepared from the elements of Group III and Group V of the periodic table deposited on said film, said first and second compounds having closely matched crystallographic lattice constants.

3,870,922
GRAPHIC PATTERN GENERATION FOR A TV-LIKE SCANNED-GRAPHIC DISPLAY EQUIPMENT

Masamichi Shutoh, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 27, 1973, Ser. No. 355,284

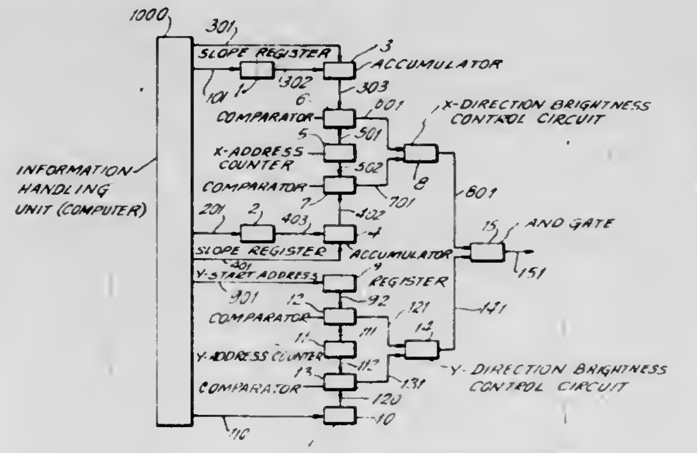
Claims priority, application Japan, May 2, 1972, 47-44319; May 16, 1972, 47-48873

Int. Cl. H01j *29/70*

U.S. Cl. 315—383 **12 Claims**

1. A graphic pattern generator for a TV-like line by line scanned-graphic display equipment capable of displaying a distinct contrasting sharply graphic pattern contrasting sharply with the background, comprising:
- first and second slope registers (**1,2**) for termporarily storing values representing slopes of a pair of line segments defining at least a portion of the graphic pattern to be displayed;
- accumulators (**3,4**) for adding the contents stored in said registers to X-coordinates of starting points of the pair of line segments, respectively, as each scanning line is generated, thereby generating output signals representing the X-coordinates of the two points at which the pair of line segments intersect the scanning line being generated;

- X-address counter means (**5**) for generating a count representing the position in the X-direction in a display surface of each scanning line as the line is being generated, and comparators (**6,7**) for comparing the contents of the X-address counter means with the contents of the accumulators to produce coincidence signals representing said two points of intersection of a scanning line with the line segments;
- means (**8**) for generating an X-direction-brightness-gate signal for each scanning line in response to the coincidence signals, the brightness-gate signal being supplied to display the bright or dark graphic pattern in the dark or bright background, respectively;



- means including registers (**9,10**) for temporarily storing therein maximum and minimum values of Y-coordinates of the pattern to be displayed;
- a Y-address counter (**11**) for generating a count representing the scanning position in the Y-direction in the display surface as the scan progresses scan line by scan line, and comparators (**12,13**) for comparing the content of the Y-address counter with the contents of the registers (**9** and **10**), to develop coincidence signals representing the maximum and minimum values of the Y-coordinates of the pattern to be displayed;
- means (**14**) for generating a Y-direction-brightness-gate signal in response to the coincidence signals obtained from the Y-direction comparators (**12** and **13**); and an AND gate circuit (**15**) for producing an output signal upon simultaneous receipt of the X- and Y-direction-brightness-gate signals.

3,870,923
MAGNETRON WITH AN IMPROVED TUNING MECHANISM

Yves Peyrard, and Jean-Claude Renault, both of Paris, France, assignors to Thomson-CSF, Paris, France

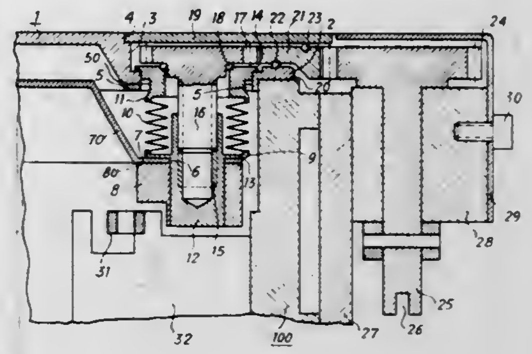
Filed Dec. 26, 1973, Ser. No. 427,500

Claims priority, application France, Dec. 29, 1972, 72.46905

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.55 **4 Claims**

1. A magnetron comprising:
- a cylindrical body;
- N cavities with electrically conductive walls formed in said body;
- two covers, closing off the ends of said body in a vacuum-tight fashion, thus delimiting an enclosure which is maintained under vacuum in operation;
- at least N electrically conductive tuning cores, said tuning cores being attached to a bearer, said bearer being carried by one of said covers;
- means for translating said bearer in a direction substantially parallel to the axis of said body, simultaneously on three points distributed substantially at the periphery of said bearer, said tuning cores thus penetrating into said cavities through a height depending upon the magnitude of the translation of said bearer;



- and sealing means for maintaining the vacuum in the enclosure during said translation.

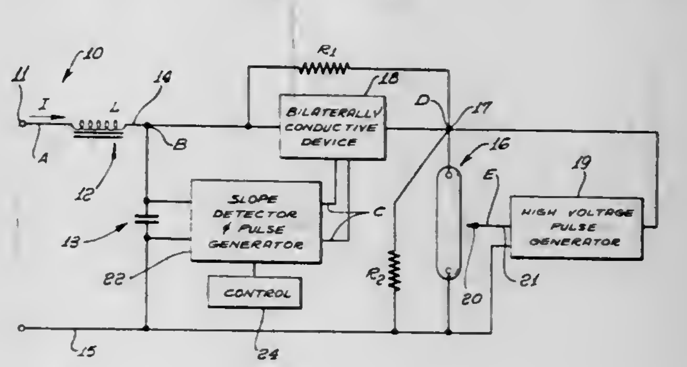
3,870,924
LIGHT SOURCE WITH OPTIMIZED FLASH ENERGY INPUT TO GAS TUBE

James G. Helmuth, Monrovia, Calif., assignor to Chadwick-Helmuth Electronics, Inc., Monrovia, Calif.

Filed June 19, 1973, Ser. No. 371,396

Int. Cl. H05b *37/00*

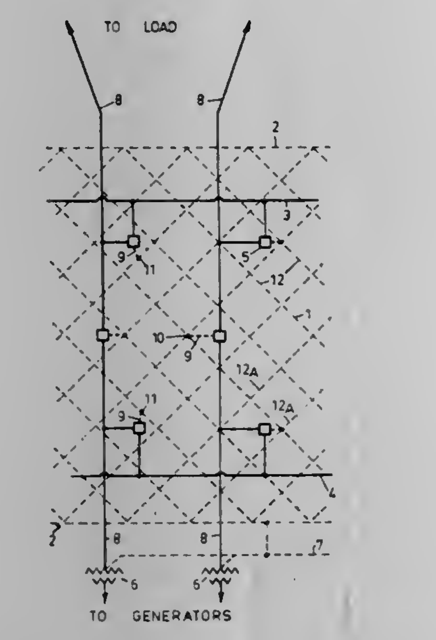
U.S. Cl. 315—200 A **8 Claims**


11
10
14
R1
18
I
L
BILATERALLY CONDUCTIVE DEVICE
D
17
A
B
16
12
19
E
SLOPE DETECTOR & PULSE GENERATOR
C
HIGH VOLTAGE PULSE GENERATOR
13
22
R2
21
CONTROL
20
15
24

1. Flasher circuitry, comprising
- a. an A.C. source and a discharge capacitor electrically connected to the source, via a series inductor,
- b. a gas discharge lamp,
- c. a gate controlled, bilaterally conductive device electrically connected between the capacitor and lamp,
- d. a high voltage pulse generator electrically connected to the output side of said device, and an electrode proximate the lamp and coupled to the generator output to be responsive to high voltage pulse generation to assist in ionizing the lamp gas, and
- e. input control circuitry coupled in voltage sensing relation with the discharge capacitor and in controlling relation with said device to control the conduction timing thereof in relation to occurrence of capacitor peak or near peak voltage to thereby optimize flash energy input from the capacitor to the lamp via said device, said input control circuitry comprising signal processing means including differentiating circuit means coupled to said capacitor to differentiate a signal derived from the capacitor, and means coupled to said processing means to effect production of a pulse in response to decrease of the ouput of the differentiating circuit means to a predetermined low value, said pulse applied in said controlling relation to said device.

3,870,925
EARTH GRID

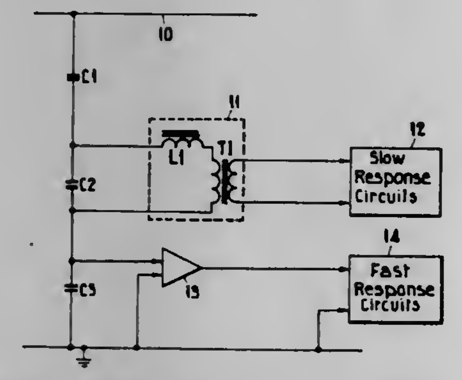
Richard Meredith Huey, Sydney, and Krishna Rajaratnam, Wollongong, both of New South Wales, Australia, assignors to Unisearch Limited, Sidney, New South Wales, Australia
Filed May 1, 1974, Ser. No. 465,930
Claims priority, application Australia, May 4, 1973, 3206/73
Int. Cl. H02b *1/16*
U.S. Cl. 317—9 R **4 Claims**



1. An earth grid, for earthing electrically conductive structures associated with at least one array of parallel bus bars of feeders, or a plurality of such arrays arranged at right angles to each other, said earth grid comprising a horizontal planar substantially regular parallelogrammatic mesh formed by two intersecting and interconnected sets of mutually parallel earth grid conductors and a plurality of electrically conductive earth risers, one or more of said earth risers being connected to each said structure from said mesh and said mesh being electrically connected to a neutral point associated with said bus bars or feeders and/or earth wherein the mutually parallel earth grid conductors of each said set are oriented in a direction forming an angle of between thirty and sixty degrees with the direction of said bus bars or feeders.

3,870,926
CAPACITOR VOLTAGE TRANSFORMER SYSTEM

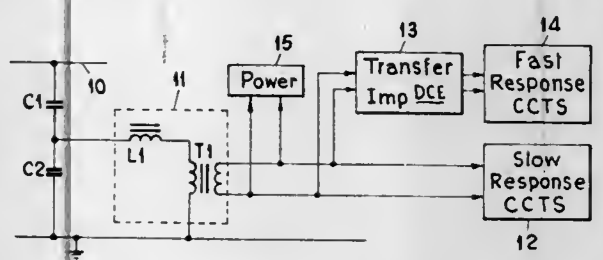
Michael Alan Hughes, Gnosall, England, assignor to The English Electric Company Limited, London, England
Continuation-in-part of Ser. No. 207,039, Dec. 13, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,804
Claims priority, application Great Britain, Dec. 18, 1970, 60147/70
Int. Cl. H02h *7/16*
U.S. Cl. 317—12 B **6 Claims**



1. A high voltage monitoring system comprising a capacitor voltage transformer consisting of capacitor chain for connection across the voltage to be monitored and an electromagnetic transformer connected across a capacitor at the low potential end of the chain, the output produced by said transformer constituing a first output which follows closely the voltage to be monitored under steady state conditions thereof, a slow response circuit connected to said first output to respond to changes in the voltage to be monitored, an additional impedance connected in the capacitor chain, the output produced by the additional impedance constituting a second output which follows closely the voltage to be monitored under both steady state and rapidly changing conditions thereof and a fast response circuit connected across said second output to respond to rapid changes in the voltage to be monitored.

3,870,927
CAPACITOR VOLTAGE TRANSFORMER SYSTEM

Michael Alan Hughes, Gnosall, England, assignor to The English Electric Company Limited, London, England
Continuation-in-part of Ser. No. 260,247, June 6, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,489
Claims priority, application Great Britain, June 8, 1971, 19420/71
Int. Cl. H02h *7/16*
U.S. Cl. 317—12 B **4 Claims**



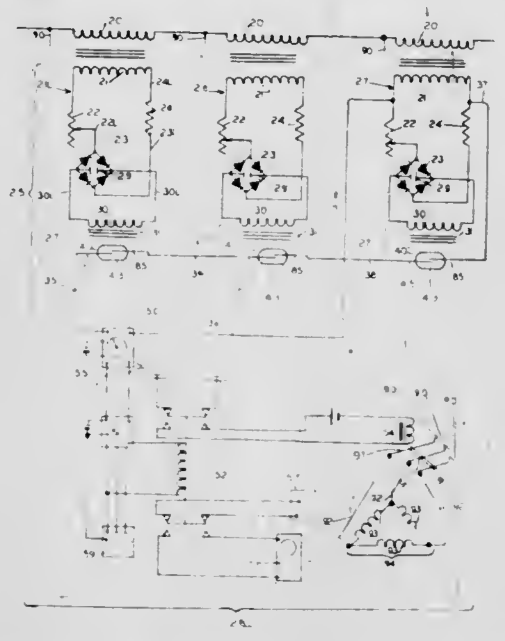
1. A capacitor voltage transformer system comprising:
- a. a capacitor voltage transformer consisting of:
  - 1. a chain of capacitors across which an input voltage is applied; and
  - 2. an electromagnetic transformer having an input connected across the capacitor of said chain and an output at which the output of the capacitor voltage transformer appears;

and
- b. an impedance network having an input connected to the output of said electromagnetic transformer and an output from which an output of the system is derived;
- c. the impedance network having been its input and output a transfer function which is substantially the inverse of the transfer function between the input and the output of the capacitor voltage transformer under operating conditions.

3,870,928
VOLTAGE MONITORING SYSTEM

Melvin O. Allen, 1408 4th Ave., Canyon, Tex. 79015
Division of Ser. No. 346,262, March 30, 1972, Pat. No. 3,815,062, which is a continuation of Ser. No. 171,862, Aug. 16, 1971, abandoned. This application Jan. 31, 1974, Ser. No. 438,199
Int. Cl. H02h *7/09*
U.S. Cl. 317—13 R **13 Claims**

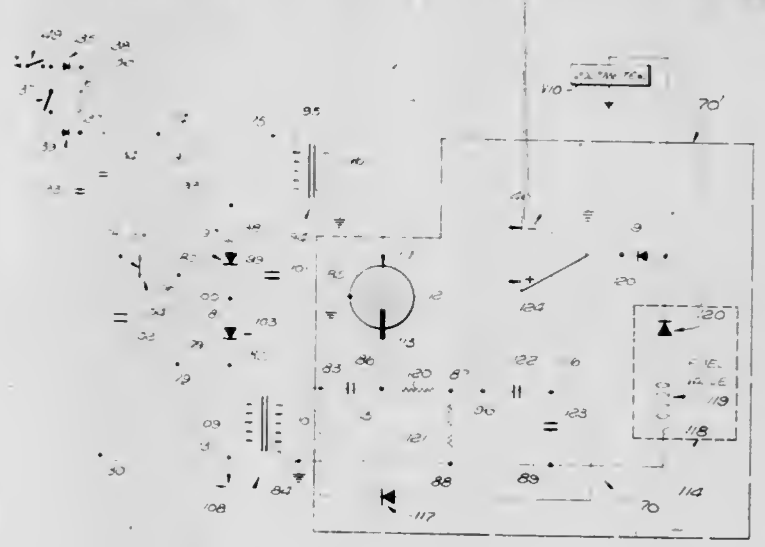
1. Process of monitoring a voltage power source for a motor circuit comprising steps of
- a. passing a fixed portion of the monitored voltage to a solenoid coil surrounding a magnetically permeable core and developing within said core a magnetic field less than the saturation value thereof,
- b. increasing and decreasing the magnetic field intensity in a direction parallel to the direction from the periphery of said core to the axis thereof responsive to changes in current through said coil,
- c. sensing changes in magnetic field of said core at a particular small zone thereof by moving magnetically sensitive free arm ends located across a small gap space responsive to such changes while maintaining the position of the center of said gap between such arms and in said zone unchanged in position and spaced away from the axis of the core and spaced away from the ends of said core during operation of said arms,



- d. opening and closing an electrical circuit through the free ends of said arms in response to changes in current through said coil.
- e. disconnecting power from said motor circuit in response to a changing voltage of said monitored circuit more than a predetermined amount and reconnecting power to said motor circuit in response to a voltage changed less than the predetermined amount.

3,870,929
IGNITION SYSTEM AND COMPONENTS THEREOF

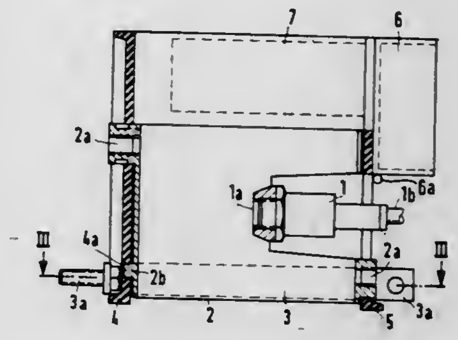
Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 4, 1974, Ser. No. 447,889
Int. Cl. F23q *3/00*
U.S. Cl. 317—96 **4 Claims**



1. A spark ignitor for a combustible fuel, said ignitor comprising: a first junction; a first switch for connection to a conductor having a positive potential to said first junction; first and second inductive means each having first and second leads; a charging resistor connected from said first junction to said first inductive means first lead: a second switch for closure after said first switch is connected in parallel with said charging resistor; a silicon-controlled rectifier (SCR) having an anode, a cathode and a gate, said anode being connected from said first inductive means second lead; a diode having an anode connected from said SCR cathode, and a cathode connected to said second inductive means first lead, said second inductive means second lead being adapted for connection to a conductor of a negative potential; a main capacitor connected from said first inductive means first lead to said diode anode; said diode cathode being connected to said SCR gate; a second junction connected from said first inductive means first lead; starting means and hold off connected from said second junction to said SCR gate to fire said SCR when said second switch is closed; and conductor means connected with said first inductive means to establish an arc when the energy stored in said main capacitor is transferred to said first inductive means.

3,870,930
IMPROVED SEMICONDUCTOR RECTIFIER ASSEMBLY HAVING A PIVOTABLE CONTROL MODULE

Herbert Nitsche, Spardorf, and Johann Hufnagl, Erlangen, both of DT, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 18, 1973, Ser. No. 407,454
Claims priority, application Germany, Oct. 30, 1972, 39821
Int. Cl. H01l *1/06, 1/12*
U.S. Cl. 317—100 **8 Claims**



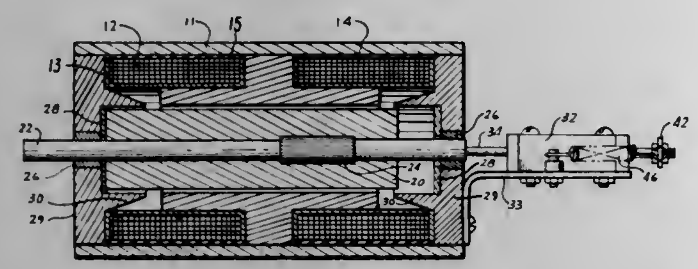
1. In a semiconductor rectifier assembly, wherein a semiconductor rectifier is mounted in a heat sink which is arranged between front and rear insulating plates, there being installed along with the rectifier and heat sink protective circuitry and a control module, and wherein the anode and cathode terminals of the rectifier are led to the front of the assembly through cut-outs in the front insulating plate, an improved arrangement which permits greater compactness of installation and eases wiring comprising:
- a. means coupling the anode of the rectifier to the heat sink;
- b. a cut-out in the rear insulating plate;
- c. a terminal electrically connected to said heat sink protruding through said cut-out in said rear insulating plate; and
- d. a hinge mounting the control module on the front insulating plate so that said control module can be swung away from said plate.

3,870,931
SOLENOID SERVOMECHANISM

John L. Myers, Dayton, Ohio, assignor to Sun Chemical Corporation, New York, N.Y.
Filed Feb. 4, 1974, Ser. No. 439,324
Int. Cl. G05b *11/28*
U.S. Cl. 317—146 **7 Claims**

1. In a solenoid control mechanism, a movably supported armature, bias means urging said armature in a first direction, electromagnetic means energizable to move said armature in opposition to said bias means, said electromagnetic means producing a magnetic field attracting said armature into a region in which the attractive force of said magnetic field does not increase, position sensor means to sense the position of said armature or a condition controlled by said armature and provide a first signal representing present armature position, command means providing a second signal directing an armature position or a condition controlled thereby, comparison means comparing said first and second signals and providing

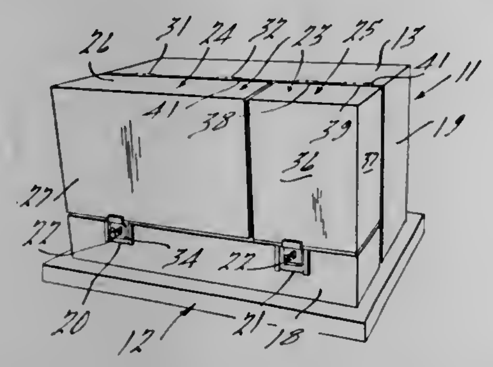
an error signal having a magnitude representing a difference between said first and secon signals, a driver circuit coupled to drive said electromagnetic means, control means coupled to said driver circuit and receiving said error signal, said control means generating a pulse modulated signal applied to said driver circuit, said control means including means controlling the pulse width of said pulse modulated signal in relation to the magnitude of said error signal thus to control the duty cycle of said driver circuit.



3,870,932
TRANSFORMER TERMINAL COMPARTMENT COVER MEANS

Alvin Y. Broverman, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

Filed Oct. 15, 1973, Ser. No. 406,186
Int. Cl. H01f *27/00*
U.S. Cl. 317—157.6 **6 Claims**



1. In combination with a transformer tank having high voltage and low voltage terminals extending from separate portions of a side wall, cover means comprising a high voltage and a low voltage cover alongside each other, each cover having a top, a front and an outside wall, the high voltage cover additionally having a barrier integral therewith between the high voltage and low voltage segments, said low voltage cover additionally having a portion overlapping said high voltage cover when said covers are in a closed position, the top of each cover being independently hinged to the tank top, each cover having means for independently locking the cover when in a closed position, whereby swinging open of the low voltage cover will permit access to the low voltage terminals from the front and one side of the transformer but will not permit access to the high voltage terminals.

3,870,933
SYSTEM FOR CONTROLLING AN ELECTRIC FIELD

Kenneth C. Huber, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 123,229, March 11, 1971, abandoned. This application July 31, 1973, Ser. No. 384,229
Int. Cl. G01r *5/28;* **H05**
U.S. Cl. 317—262 AE **5 Claims**

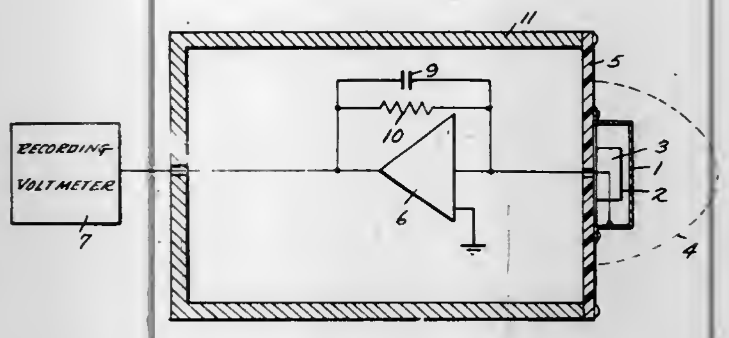
1. A system for controlling an electric field comprising:

an ungrounded metallic electrode exposed to the atmosphere,

a radioactive source associated with said metallic electrode for creating outside said electrode an ion cloud unconstrained in the atmosphere surrounding said metallic electrode to place said electrode in contact with said atmosphere,

a current indicator means electrically connected to said electrode,

an insulator mounted between said electrode and said indicator means and extending past the boundary of said ion cloud,



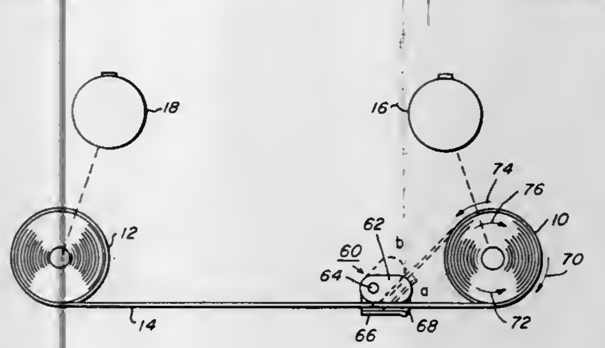
an amplifier disposed between said insulator and said indicator and electrically connected directly to said probe and said indicator, and

means for introducing into said atmosphere ions of such polarity as to neutralize said electric field and control means connected to said indicator means for energizing said neutralizing means when said indicator means produces an output as a function of said output.

3,870,934
WEB TENSION CONTROLLER

Charles H. Blood, 149 Gregory Hill Rd., Rochester, N.Y. 14620

Filed Dec. 14, 1973, Ser. No. 425,053
Int. Cl. H02p *5/46;* **B65h** *77/00*
U.S. Cl. 318—7 **14 Claims**



1. In an apparatus for controlling the tension in a web being transported from a first reel to a second reel, first and second drive motors being coupled to said first and second reels, respectively, and wherein a signal is generated to control the torque produced by said first drive motor to control the torque produced by said first drive motor to control web tension, the improvement comprising:

means for controlling the polarity of said signal whereby said signal is of a first polarity if said web is unwound from said first reel in a first direction and said signal is of a second polarity if said web is unwound from said first reel in a second direction.

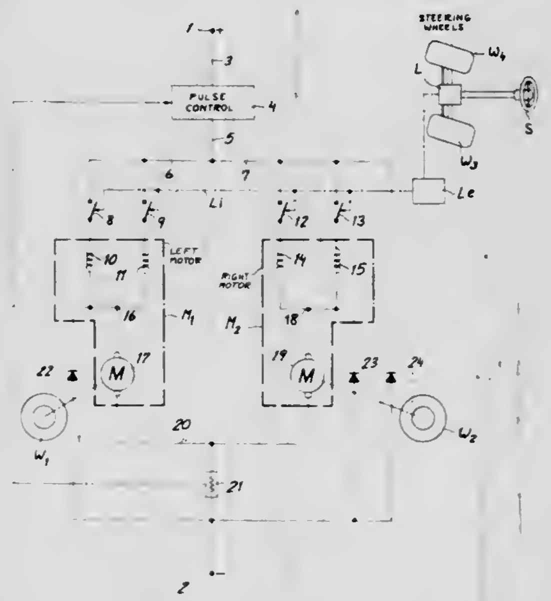
3,870,935
VEHICLE DRIVE WITH TWO ELECTRIC MOTORS

Theodor Abels, Breunsberg, and Siegfried Puschel, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Feb. 13, 1973, Ser. No. 332,226
Int. Cl. H02p *5/46*
U.S. Cl. 318—52 **10 Claims**

1. In an electrically operated vehicle having a pair of driving wheels on opposite sides of the vehicle, a source of electric

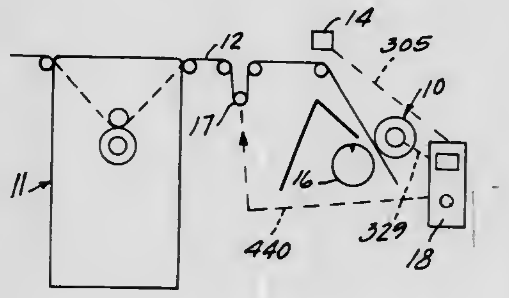
current, and respective motors operatively connected to said wheels, the improvement which comprises a control circuit connected between said source and said motors and including driving-pulse generating means in circuit with said source, respective switches connecting said generating means to said motors in parallel and operable to cut off one of said motors selectively to enable differential rotation of said wheels, each of said motors being a series-wound direct current motor having a field winding and an armature connected in series with one another, each of said switches being connected in series with the field winding and armature of a respective motor at one side thereof, the series network of field winding, switch and armature of both motors being connected together on one side thereof via a common conductor, a sensor provided in circuit with said common conductor and connected in a feedback path to said pulse generating means each of said field windings including a pair of field coils respectively excitable for driving the respective motor in opposite senses, each switch associated with the respective motor including a switch member in series with a coil of the respective pair, a free running diode connected between said common conductor and said pulse generating means across at least one of said motors, and at least one armature diode connected between said common conductor and across at least one of said armatures between said one of said armatures and the respective field winding.



3,870,936
DIGITAL MOTOR CONTROL SYSTEM FOR WEB REGISTRATION

Daniel A. Coberley, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.

Filed May 25, 1972, Ser. No. 256,769
Int. Cl. H02p *5/46*
U.S. Cl. 318—85 **1 Claim**



1. A web control system for maintaining a register condition between successive repeat lengths of a moving web and a cyclically operating work applying means which acts on the web at a work location along the path of movement of the web, so as to tend to cause the work applying means to act on the web at a predetermined work-receiving region of each succesive repeat length of the web,

said web control system comprising an encoder for generating encoder pulses as a function of successive increments of web movement,

an error counter connected with said encoder and operable for counting encoder pulses.

a counter control circuit connectd with said error counter for controlling the counting of encoder pulses thereby, and responsive to a timing error in the arrival of a work-receiving region of the web at the work location in a cycle of operation of the work applying means to cause the error counter to count encoder pulses for the duration of the timing error, thereby to generate an error count in said error counter for such cycle of operation.

a digital to analog converter connected to the error counter and operable for generating a analog error signal in accordance with the error count in said error counter,

a blanking circuit operable for generating a blanking signal during the time that the error counter is counting encoder pulses in each cycle of operation,

an error correcting motor having an armature circuit producing a back voltage as a function of the speed thereof, a regenerative control circuit for the motor including bidirectional thyristor means for responding to the back voltage of the armature and having an alternating current supply for applying energy to the motor armature circuit under the control of said thyristor means,

drive circuit means connected to said digital to analog converter for receiving the analog error signal therefrom and operable to control the turn-on angle of the thyristor means in accordance therewith so as to tend to reduce the timing error and thus to restore the register condition,

said drive circuit means connected with said blanking circuit and being responsive to said blanking signal to prevent operation of said error correcting motor for the duration of said blanking signal, and to enable the drive means at the termination of said blanking signal in each cyle of operation, and

coupling means for coupling to the thyristor alternating current supply for activating said drive circuit means in each cycle at a predetermined point of the supply waveform such that the motor will be operated by said drive circuit means in proportion to the analog error signal while avoiding any error in firing of the thyristor means as the drive circuit means is activated in each cycle of operatin under the control of said blanking circuit, the thyrister means responding to excessive back voltage of the motor to reverse energize said motor.

3,870,937
SYSTEM FOR DRIVING A DIRECT-CURRENT MOTOR IN SYNCHRONISM WITH AN EXTERNAL SIGNAL

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed Aug. 3, 1973, Ser. No. 385,579
Claims priority, application Japan, Aug. 14, 1972, 47-80788
Int. Cl. H02p *5/00*
U.S. Cl. 318—314 **10 Claims**

1. A system for driving a direct-current motor in synchronism with an external synchronizing signal in the form of a train of pulses, said system comprising:

a DC power supply for feeding said motor;

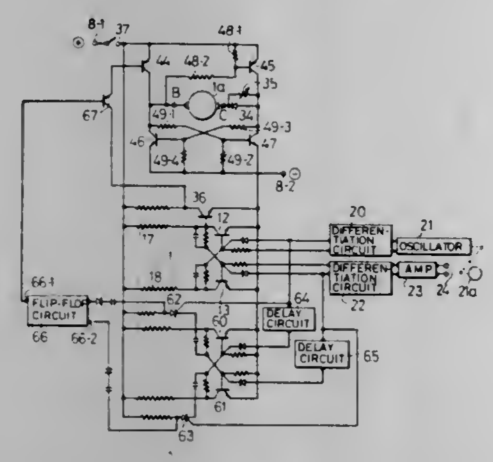
means for producing said synchronizing signal;

means for producing a rotor position signal in phased relationship to the rotation of said motor, said rotor position signal being also in the form of a train of pulses;

a first control circuit for initiating the flow of current from said DC power supply through said motor in a forward direction thereof to cause the latter to produce driving torque when supplied with each pulse of said synchronizing signal, and for initiating the flow of current from said

DC power supply through said motor in a reverse direction to cause the latter to produce retarding torque when supplied with each pulse of said rotor position signal; and a second control circuit for controlling the operation of said first control circuit, said second control circuit including:

a first sensing circuit sensitive to at least two consecutive pulses of said synchronizing signal interposed between the adjacent pulses of said rotor position signal to render said first control circuit inoperative thereby preventing said motor to produce the retarding torque; and



a second sensing circuit sensitive to at least two consecutive pulses of said rotor position signal interposed between the adjacent pulses of said synchronizing signal to permit said first control circuit to return to its normal operative condition.

3,870,938
WAVEFORM GENERATOR AND PHASE SHIFTER

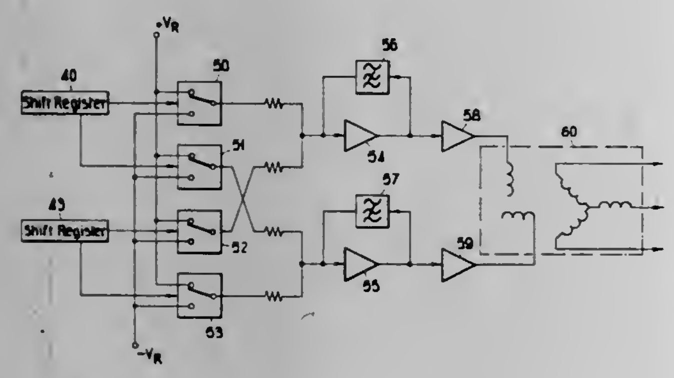
Michael John Tooze, Maidstone, and Peter Michael Knight, Chatham, both of England, assignors to Elliott Brothers (London) Limited, London, England

Filed Apr. 17, 1972, Ser. No. 244,466

Claims priority, application Great Britain, Apr. 20, 1971, 10200/71

Int. Cl. G05b *19/30*

U.S. Cl. 318—605 **8 Claims**



1. A waveform generator which, in response to an input A.C. reference signal having a predetermined frequency and phase angle and an input signal representing a variable angle, develops a sinusoidal output signal which is phase locked to the input reference signal and whose amplitude is a sinusoidal function of said angle represented by the input signal, comprising:

a digital store for storing a digital representation of a sinusoidal waveform;

means for reading out the contents of said store;

a clock generator for producing a clock signal which is synchronised to the reference signal and which controls said read-out means so as to produce two sinusoidal signals of fixed amplitude at the frequency of the reference signal and having phase angles which are respectively advanced and retarded with respect to the phase angle of the reference signal by said variable angle;

and summing means having a pair of input terminals for receiving said sinusoidal signals for summing said sinusoidal signals, whereby said desired sinusoidal output signal is produced.

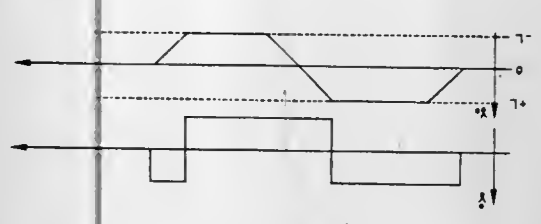
3,870,939
METHOD FOR CONTROLLING ACCELERATION AND DECELERATION OF A TRACTION MOTOR

Michel Robert, Gif sur Yvette, France, assignor to Engins Matra, Yvelines, France

Filed June 22, 1972, Ser. No. 265,161

Int. Cl. G05b *5/01;* **B60l** *15/20*

U.S. Cl. 318—611 **8 Claims**



1. The method of controlling a traction motor, in the operation of a railroad train, rapid tansit train, or like vehicle, comprising the following steps:

A. sensing the actual speed of the vehicle to develop an actual speed signal V_s;

B. developing a speed setting signal V_E;

C. modifying the actual speed signal to advance the phase thereof, thus developing a modified actual speed signal;

D. additively comparing the signals from steps B and C to develop a selector signal ϵ;

E. differentiating the selector signal ϵ within the constraint limits $+a$, 0, $-a$ to develop a derivative of setting acceleration signal γ having values as follows:

$\overset{\circ}{\gamma} = +a$ if $\Delta \geqslant \epsilon_1$

$\overset{\circ}{\gamma} = 0$ if $-\epsilon_1 < \epsilon < +\epsilon_1$

$\overset{\circ}{\gamma} = -a$ if $\epsilon \leqslant \epsilon_1$

wherein ϵ_1 is of a predetermined amplitude;

F. integrating the derivative of setting acceleration signal in accordance with $1/p$ and within acceleration constraint limits $+L$ and $-L$ to develop a setting acceleration signal γe;

G. additively comparing the setting acceleration signal γe with an actual acceleration signal to develop an initial control signal γc;

H. and effectively applying the initial control signal to the traction motor to control motor operation.

3,870,940
APPARATUS FOR COMPENSATING TWO AXES GIMBAL ERROR

David A. Espen, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,001

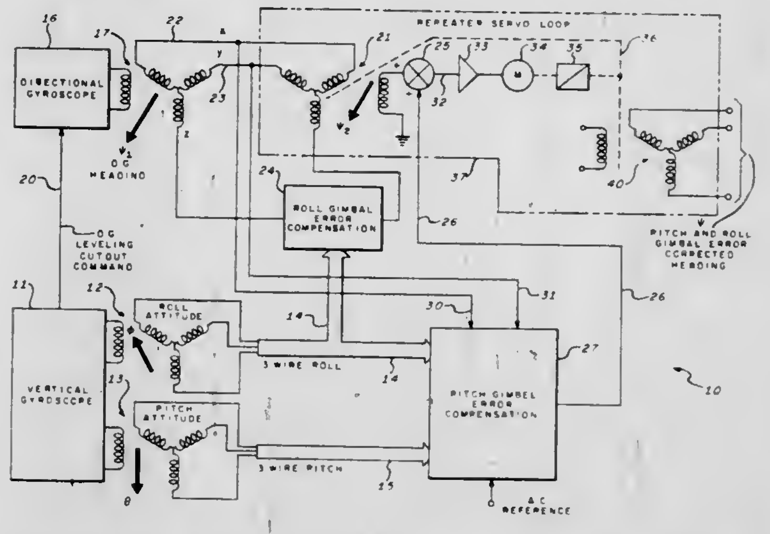
Int. Cl. G05b *11/01;* **G05d** *1/08;* **B64c** *13/18*

U.S. Cl. 318—633 **7 Claims**

1. In a gyroscopic data transmission system including a directional gyroscope having a transmitter connected thereto and a receiver electrically coupled to said transmitter by a multicircuit line and wherein said transmitter and receiver have multiple branches each coupled to a respective branch of said multicircuit line, apparatus for compensating the heading signal of said directional gyroscope for gimbal errors with respect to roll and pitch axes thereby providing a totally compensated heading output signal substantially absent said roll and pitch gimbal errors comprising

means for providing pitch and roll signals representative of the pitch and roll attitudes of said gyroscope respectively,

means coupled in only one branch of said multicircuit line and responsive to only one of said pitch and roll signals for compensating said heading signal only for said gimbal error corresponding to said one signal thereby providing a single axis compensated heading signal at said receiver, the remaining branches of said multicircuit line directly connecting the associated respective branches of said transmitter to the corresponding branches of said receiver,



compensation means responsive to said heading signal of said gyroscope and to said pitch and roll signals for providing a compensation signal in accordance with the product of a function of heading, a function of said pitch attitude and a function of said roll attitude, and

means coupled to the output of said receiver and to said compensation means for combining said compensation signal with said single axis compensated heading signal to provide said totally compensated heading output signal.

3,870,941
METHOD AND CIRCUIT FOR SAMPLING POSITION DATA

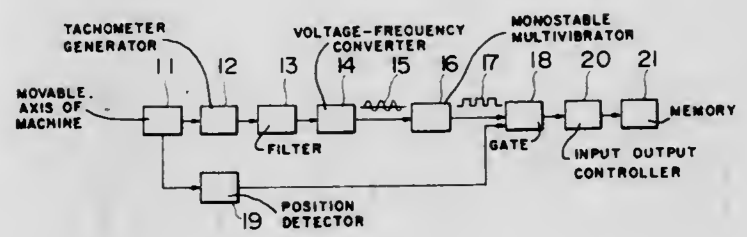
Junichi Ikenga; Shigeru Matsuoka, both of Toyama, and Yoshio Okabe, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama-ken, Japan

Filed June 25, 1973, Ser. No. 373,116

Claims priority, application Japan, June 30, 1972, 47-65610

Int. Cl. G05b *21/02*

U.S. Cl. 318—636 **18 Claims**



1. A method of sampling position data for use in the continuous path control of an industrial robot, said method comprising:

generating a position data representing the position of a drive axis of said industrial robot,

detecting the speed of movement of said drive axis,

generating a sampling pulse signal comprised of a plurality of sampling pulses having a frequency which is a function of the speed of said drive axis, and

sampling said position data in accordance with said sampling pulses at a rate which is a function of said speed of said drive axis.

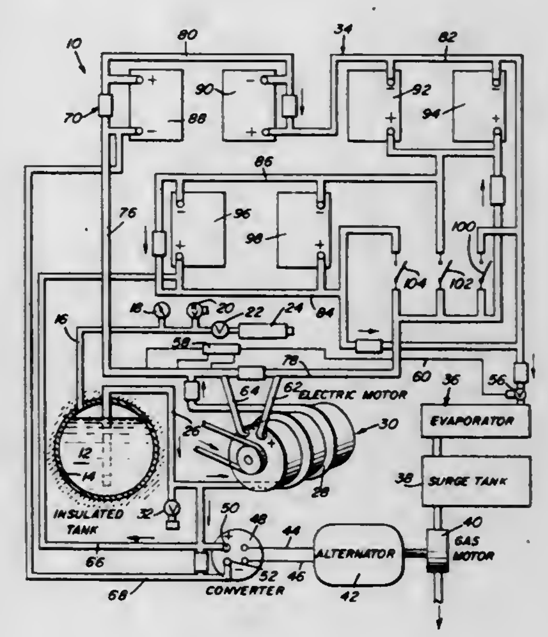
3,870,942
NON-POLLUTION MOTOR WITH GAS TUBE CONDUCTORS

Harold L. Boese, 7020 William Dr., and Thomas R. Hencey, Jr., P.O. 3119, both of Galveston, Tex. 77550

Continuation-in-part of Ser. No. 273,684, Aug. 21, 1972, , which is a continuation-in-part of Ser. No. 106,651, Jan. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 94,814, Dec. 3, 1970, Pat. No. 3,681,609. This application Aug. 27, 1973, Ser. No. 391,544

Int. Cl. F16l *11/12;* **H02j** *7/00*

U.S. Cl. 320—2 **14 Claims**



7. In combination with a battery source of electrical energy and an electrodynamic device, a source of cryogenic fluid, a heat exchanger, conduit means including portions respectively interconnecting the source of fluid with the heat exchanger, the battery source and the source and the electrodynamic device, said portion connecting the battery source to the electrodynamic device; conducting electrical current to the electrodynamic device through the conduit means while the cryogenic fluid is absorbing heat from the battery source.

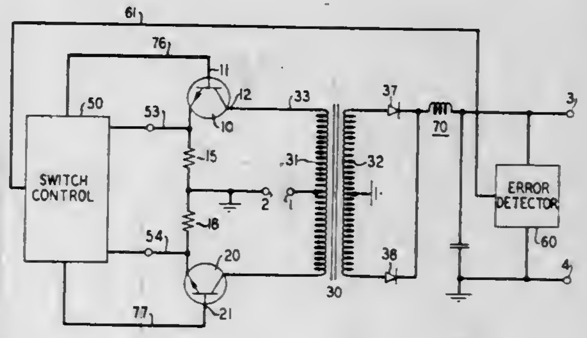
3,870,943
CONVERTER CIRCUIT WITH CORRECTION CIRCUITRY TO MAINTAIN SIGNAL SYMMETRY IN THE SWITCHING DEVICES

Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 281,436, Aug. 17, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,518

Int. Cl. H02m *1/18*

U.S. Cl. 321—2 **9 Claims**



6. Symmetry correction circuitry to balance the signals in alternately switched first and second switching devices comprising,

first and second sensing means in series with each of said first and second switching devices, respectively, to individually monitor the signals in said switching devices, differential amplifier means responsive to said first and second sensing means to generate a difference signal proportional to the difference in signals conducted by the first and second switching devices,

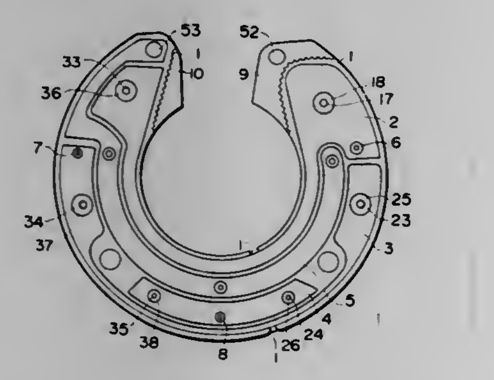
means to generate a first periodic signal,

means to integrate said difference signals and said first periodic signal and means to derive therefrom a second periodic signal wherein the average signal level of said second periodic signal is responsive to said difference signal, and

comparator means coupled to receive said second periodic signal and having an upper and lower threshold, said comparator means responding to said second periodic signal by generating a drive signal when the second periodic signal exceeds said upper and lower thresholds, whereby the drive signal is utilized to control the switching of said first and second switching devices.

3,870,944
SEMICONDUCTOR RECTIFIER APPARATUS

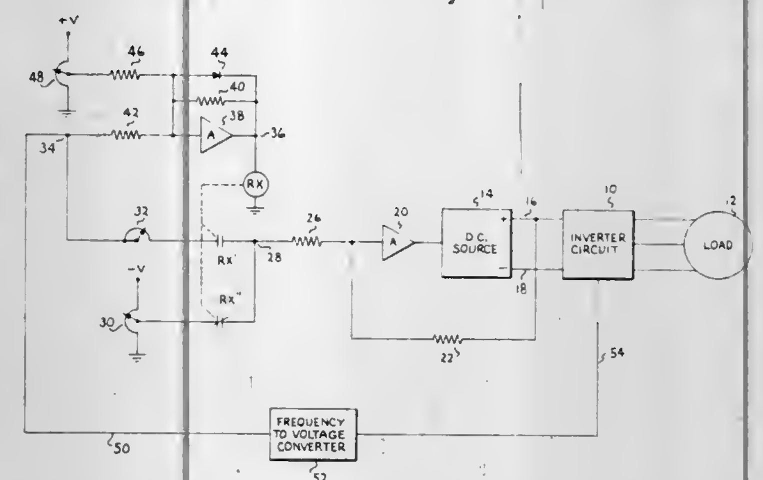
Kazuo Ogawa, Yokohama; Tetsuo Machii, Tokyo; Takahiro Sawano, Kawasaki; Katuhiko Kubota, Yokohama, and Yoshiharu Yotumoto, Kawasaki, all of Japan, assignors to Tokyo-Shibaura Eelctric Co., Ltd., Kawaski-shi, Japan
Filed July 18, 1973, Ser. No. 380,401
Claims priority, application Japan, July 21, 1972, 47-85344[U]
Int. Cl. H02m *7/20*
U.S. Cl. 321—8 R **2 Claims**



1. Semiconductor rectifier apparatus comprising an insulator plate; first, second and third conductive films which are formed on one surface of said insulator plate and are adapted to be connected to receive respective phase currents of a three phase alternator; first and second DC output conductive plates applied onto the other surface of said insulator plate; three pairs of main semiconductor rectifier elements mounted on said insulator plate and connected between said first, second and third conductive films and said first and second conductive plates so as to form a three phase full-wave rectifier, each one of said first and second conductive plates being formed with three circular recesses adapted to contain said three pairs of the main semiconductor rectifier elements, each rectifier element comprising one electrode carried by a metal support soldered to the bottom surface of said circular recess, a resilient lead wire connected to the other electrode extending to the outside through said insulator plate and a predetermined one of said conductive films, a reinforcing ring encircling the projected end of said lead wire, and solder means for securing said reinforcing ring to said predetermined one of said conductive films together with said projected end; a fourth conductive film formed on said one surface of said insulator plate; three solts formed in the predetermined positions of said first and second DC output conductive plates; three auxiliary semiconductor rectifier elements each having first and second lead wires, said semiconductor rectifier elements being inserted in said three solts and mounted on the other surface of said insulator plate, one ends of said lead wires being inserted through said insulator plate and connected between said fourth conductive film and said first, second and third conductive films so as to form a three phase auxiliary full-wave rectifier; the positive and negative main DC output terminals of said full-wave rectifier which are provided for said first and second conductive plates, respectively; and an auxiliary DC ouput terminal of said auxiliary full-wave rectifier which is provided for said fourth conductive film.

3,870,945
INVERTER SYSTEM HAVING SMOOTH SWITCHING BETWEEN OPERATIONAL MODES

Niels P. Pedersen, Waterford, and John M. Shabel, Erie, both of Pa., assignors to General Electric Company, Erie, Pa.
Filed Feb. 28, 1974, Ser. No. 446,645
Int. Cl. H02m *1/08*
U.S. Cl. 321—9 A **16 Claims**



1. In an inverter system including an inverter circuit for converting direct current power from a source to alternating current power of the type operable in both the pulse width modulation and square wave modes, means to maintain a substantially constant voltage-frequency relationship of the system output comprising:

a. means for maintaining the voltage of the direct current power source substantially constant during operation of said inverter circuit in the pulse width modulation mode;
b. means for varying the voltage of the direct current power source proportionally to the desired output frequency of the inverter circuit during operation in the square wave mode;

c. means to determine when a change in operational mode of said inverter circuit is to be made; and,

d. means operative at the time of making a change between the two modes of operation of the inverter circuit to effect a substantially instantaneous incremental change in the value of the direct current source voltage.

3,870,946
QUICK CONNECT MODULAR VOLTAGE MULTIPLIER

Robert E. Sandorf, Richfield, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Dec. 13, 1973, Ser. No. 424,546
Int. Cl. H02m *7/10*
U.S. Cl. 321—15 **12 Claims**

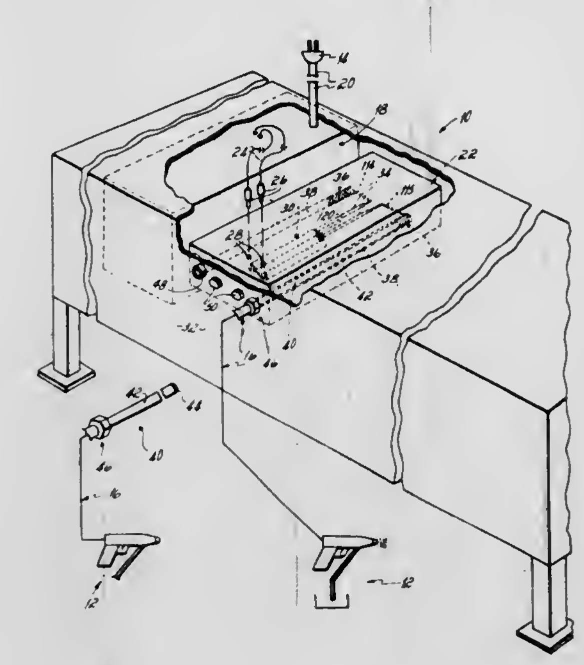
1. A quick connect/disconnect modular voltage multiplier assembly comprising, in combination:

an elongated voltage multiplier with low voltage input terminals disposed at one end thereof and a high voltage output terminal disposed at the opposite end thereof;

at least one elongated female socket with an open end for receiving an elongated plug with a conductive tip, said socket being disposed in substantially parallel relation to said elongated voltage multiplier with said open end being disposed adjacent said input terminals, said socket including a closed end disposed adjacent said high voltage output terminal;

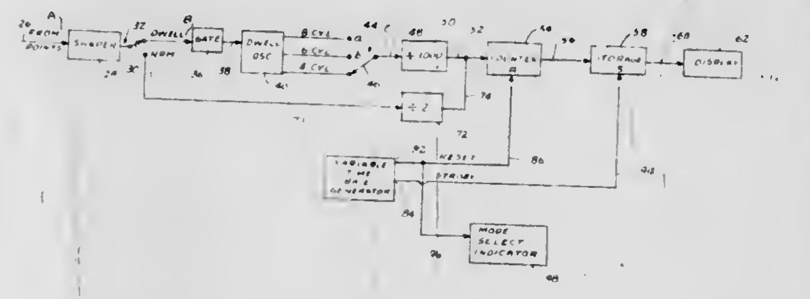
an electrical connection means disposed at said closed end of one said socket for electrically connecting the tip of an elongated plug when inserted into said socket, with said high voltage output terminal, said electrical connection being physically shaped to minimize corona discharge;

an encapsulation having at least first and second differently disposed external faces for completely surrounding and supporting said voltage multiplier, said socket and said electrical connection means, said encapsulation being shaped so that said open end of each said socket and said input terminals are accessible through said first and second faces, respectively, of said encapsulation so that external plugs can quickly connect or disconnect relative thereto, by movement thereof in different directions corresponding to the directions of said differently disposed first and second external faces.



3,870,947
METHOD AND APPARATUS FOR MEASURING THE DWELL AND RPM OF AN ENGINE

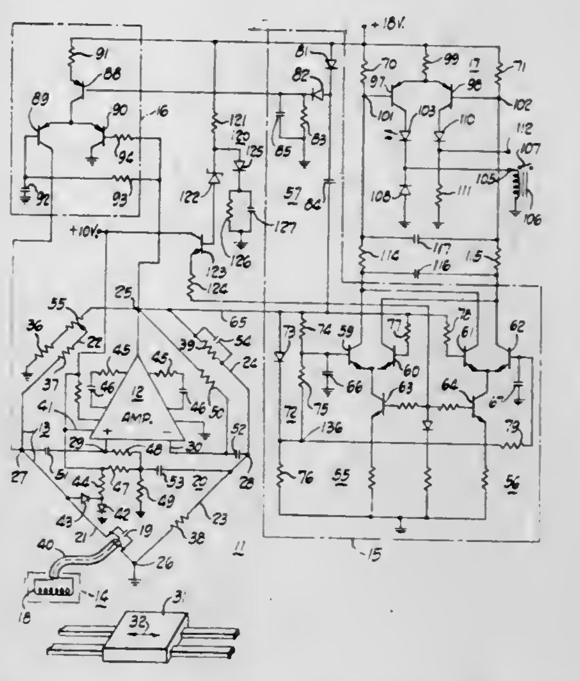
Leslie L. Fields, Rt. 1, Anna, Ill. 62906
Filed Nov. 12, 1973, Ser. No. 414,951
Int. Cl. G01r *29/00*
U.S. Cl. 324—16 R **23 Claims**



1. Apparatus for measuring the dwell of an internal combustion engine having distributor points which oscillate between open and closed positions during engine operation, the apparatus comprising means for generating a first oscillating signal whenever the distributor points are in one condition, the frequency of the first signal being substantially greater than and independent of the point frequency, means for generating second signals representing a count, the count being related to the number of first signal oscillations generated during a selected time interval, and means for generating a display indicative of said count.

3,870,948
PROXIMITY CIRCUIT WITH ACTIVE DEVICE FEEDBACK

Frederick R. Holt, Cleveland, and Noah Flueckiger, Solon, both of Ohio, assignors to Acme-Cleveland Corporation, Cleveland, Ohio
Filed Sept. 5, 1972, Ser. No. 286,277
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 PS **19 Claims**



1. A proximity switch circuit comprising in combination,

a main amplifier having an output and an input,

a proximity probe,

feedback means connecting said amplifier output to said amplifier input,

means connecting said probe as part of said feedback means to produce a signal at said input of said amplifier which is variable in accordance with the distance from said probe to a conductive target,

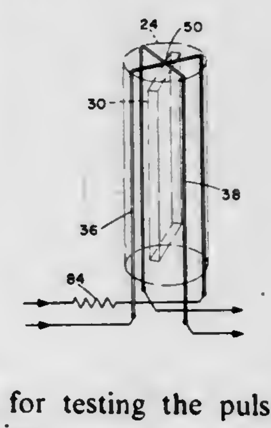
an auxiliary alternating current amplifier,

means connecting said auxiliary amplifier as part of said feedback means to vary said main amplifier alternating current input,

and detector means connected to detect reduced output of said main amplifier and connected to control said auxiliary amplifier to increase the alternating current output of said main amplifier.

3,870,949
METHOD AND APPARATUS FOR TESTING THE PULSE PERMEABILITY OF LAMINAE OF CORE LAMINATIONS

Leonard A. Mayberry, 710 Paul St., Escondido, Calif. 92027
Filed Apr. 19, 1974, Ser. No. 462,337
Int. Cl. G01v *33/12*
U.S. Cl. 324—34 PE **14 Claims**



1. Apparatus for testing the pulse permeability of core laminae comprising,

a transformer having a first winding in a first plane and a second winding in a second plane with said planes and winding loops having a 90° orientation to one another, means for positioning a portion of core laminae in the loops of both of said windings,

means for providing a plurality of electrical pulses to said primary winding,

and means responsive to output pulses in said secondary winding in response to said pulses provided to said primary winding for determining the pulse permeability of said core laminae.

3,870,950
OVERVOLTAGE PROTECTED, BATTERY POWERED ELECTRIC CIRCUIT TESTER

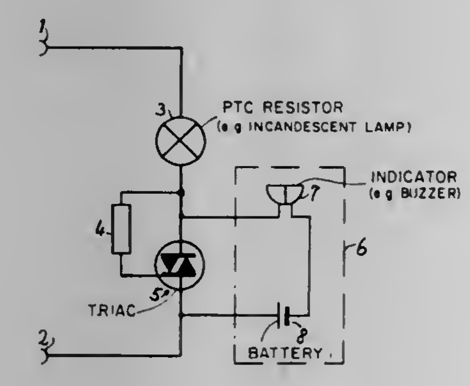
Heinz Laass, Hahn, Germany, assignor to Taco-Tafel GmbH Co., KG, Esslingen, Germany

Filed Dec. 17, 1973, Ser. No. 425,190

Claims priority, application Germany, Jan. 13, 1973, 2301742

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **7 Claims**



1. External Voltage protected electrical continuity tester to test the continuity of normally deenergized, connected electrical lines but which may have voltages applied thereto,

said tester having a pair of input terminals (1, 2);

a protective circuit comprising a positive temperature coefficient (PTC) resistor (3) and a voltage-controllable semiconductor switch (5) connected in series to the PTC resistor (3) the free terminal of the PTC resistor, and of the switch (5) being connected to the respective tester input terminals (1, 2);

and a continuity checking circuit comprising a voltage source (8) and a current flow indicator (7) connected in series to the voltage source (8), the free terminal of the voltage source, and of the indicator being connected, respectively, across the semiconductor switch (5), the voltage source (8) having an output voltage which is below the breakdown voltage of the semiconductor switch to permit connection of the terminals (1, 2) to deenergized connected lines to be tested for continuity and provide a signal from the current indicator (7) due to current flow through the connected lines and the cold-resistance of the PTC resistor upon detection of continuity while, if the lines should be energized by a voltage normally destructive to the current indicator, the voltage-controlled semiconductor switch (5) will become conductive and permit current to flow through the PTC resistor which will self-limit the current upon heating thereof due to said current flow, the voltage drop across the semiconductor switch during conduction of the switch being less than the voltage which would damage at least one of: said voltage source (8); said current indicator (7).

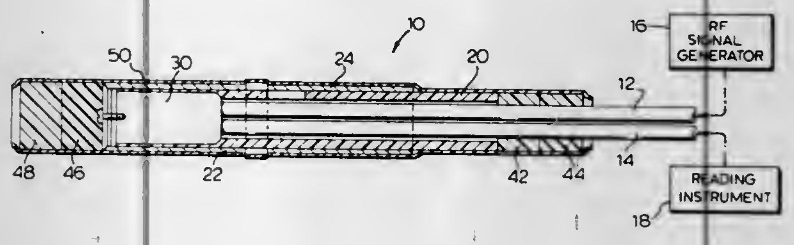
3,870,951
MOISTURE MEASURING PROBE

Earle C. Brown, Oakville, Ontario; Errol J. Byers, and Ghulam A. Kayani, both of Mississauga, Ontario, all of Canada, assignors to Ontario Research Foundation, Sheridan Park, Ontario, Canada.

Filed Mar. 6, 1974, Ser. No. 448,562

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 P **7 Claims**



1. A moisture measuring probe comprising:

an elongate hollow cylindrical element having an exterior surface and an axial bore and constructed of dielectric material,

a pair of cylindrical electrically-conductive elements mounted in longitudinally spaced-apart relation on the exterior surface of said hollow cylindrical element and supported thereby,

said pair of cylindrical conductive elements being capable fo establishing a voltage therebetween only through materials of the environment in which the probe is located,

high frequency detector circuit means positioned within the axial bore of said elongate hollow cylindrical element,

electrical connection means separately connecting elements of said detector circuit means to said pair of cylindrical elements for detecting voltage generated between said cylindrical elements when said probe is located in a moisture-containing environment and providing a direct current signal corresponding to said detected voltage,

first electrical cable means connected to said detector circuit means and extending remote from said probe to convey alternating current high frequency signals to said detector circuit means whereby said generated voltage may be provided,

second electrical cable means connected to said detector circuit means and extending remote from said probe to convey said direct current signal from said probe,

sealing means isolating said axial bore from fluid flow communication with the exterior environment of the probe,

and an outer covering of dielectric material overlying and encapsulating said pair of electrically-conductive elements and said elongate cylindrical element.

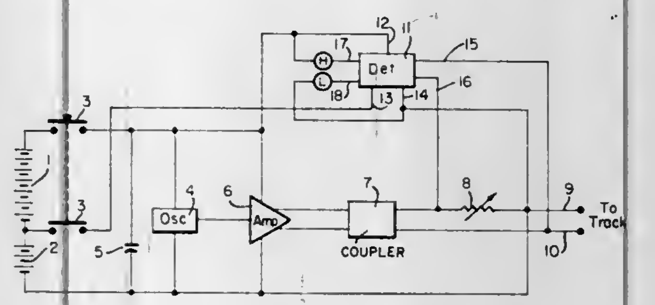
3,870,952
BALLAST RESISTANCE AND TRACK CONTINUITY INDICATING CIRCUIT

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed July 16, 1973, Ser. No. 379,662

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R **5 Claims**



1. A measuring device for measurement of ballast resistance in a section of track comprising,

an oscillator producing a high frequency signal,

coupling means connected to said oscillator,

a variable resistor connecting said coupling means to said track, and

detector means connected to said track and to said variable resistor including further means to indicate, as the variable resistor is varied in value, when the voltage across said resistor is equal to the voltage across said track.

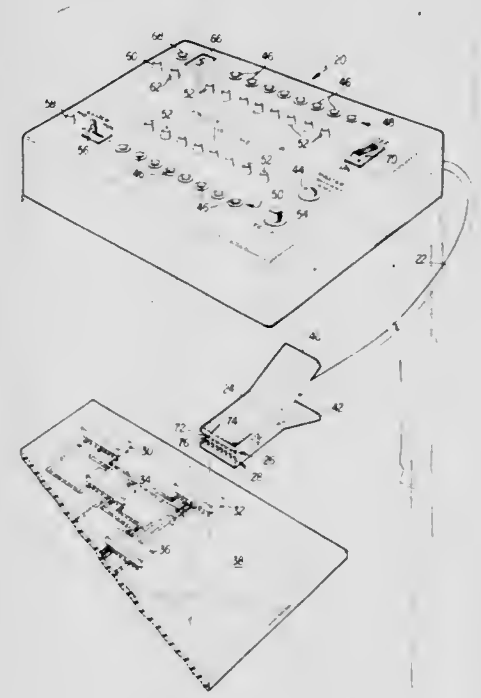
3,870,953
IN CIRCUIT ELECTRONIC COMPONENT TESTER

Roger M. Boatman, Titusville, and Melvin R. Hall, Castleberry, both of Fla., assignors to Roger Boatman & Associates, Inc., Titusville, Fla.

Filed Aug. 1, 1972, Ser. No. 277,085

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **38 Claims**



1. Electrical circuit test apparatus for use with a support base having electrical conductors and a plurality of housings mounted on said support base, each of said housings having a plurality of electrical terminals which serve as electrodes for active circuits contained in said housings with the electrical terminals on one housing being directly connected to electrical terminals on the other housings for transmitting electrical signals therebetween; said apparatus being characterized by having a connector member comprising a plurality of electrical terminals adapted to simultaneously engage the electrical terminals on one of said housings while said housing is on said support base with its terminals connected to said electrical conductors, said member being adapted to be selectively placed on different ones of said housings one at a time in seriatim to thereby test the circuits in the housings individually; and circuit means connected to the individual terminals of said connector member for supplying a signal voltage having an amplitude sufficient to test proper operation of an active circuit during a period of less than about 10μ seconds to be sufficiently short to prevent damage to electrical components not being tested by said signal voltage that are in housings connected to said support base and for producing an indication of the operation of the tested circuit, said indication lasting beyond the end of the test period.

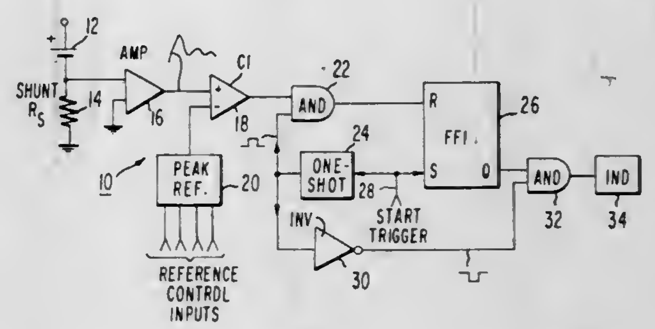
3,870,954
STARTER SYSTEM FAULT DETECTOR

Richard Eric Hanson, Woburn, and Howard Eisen Fineman, Newton Centre, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,800

Int. Cl. G01r *31/00*

U.S. Cl. 324—158 MG **10 Claims**



1. A starter system fault detector for use with an engine having a starter motor and an electrical starter system which supplies starter current to said starter motor during a starting sequence, said fault detector comprising, in combination:

means for detecting the initial starter current waveform peak to provide a first signal indicative thereof;

means for providing a reference signal indicative of a given starter current waveform peak;

means for comparing said first signal to said reference signal to provide an output signal indicative of the relative magnitude difference between said initial waveform peak and said given waveform peak;

means for providing a predetermined time period related to the time period of said initial waveform peak;

means responsive to said output signal for providing a fault signal if the polarity of said relative magnitude difference indicates that the initial starter waveform peak is greater than the reference signal, and the polarity of the relative magnitude difference fails to reverse and indicate a waveform value less than the reference signal during said predetermined time period; and

means responsive to said fault signal for providing a fault indication.

3,870,955
EMERGENCY SWITCHING EQUIPMENT FOR BROADBAND TRANSMISSION

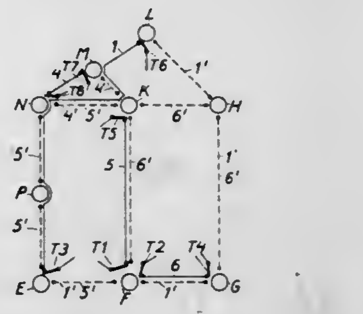
Gunther Ouvrier, Tumba, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed May 21, 1973, Ser. No. 361,986

Claims priority, application Sweden, June 9, 1972, 7606/72

Int. Cl. H04j *3/14*

U.S. Cl. 325—2 **15 Claims**



1. In a telecommunication system having a central control unit and a telecommunication network wherein there are a plurality of stations interconnected by bidirectional primary links used during normal fault-free operation and spare sections used when there is a fault in at least one of the primary links and wherein the central control unit initiates the change-over to selected spare sections upon detection of a fault,

switchover apparatus controlled by the central unit in at least one of the stations wherein at least one of the primary links terminates and the station has the terminal equipment associated with such primary link and at least two spare sections connected from said one station to other stations, said switchover apparatus comprising: a first switching unit having first and second internal terminals (UT1, IN1), incoming signals switching means (M) for connecting either the primary link (5) to the terminal equipment of said first internal terminal to the terminal equipment, and outgoing signals switching means (S) for connecting the primary link to the terminal equipment or to said second internal terminal; a second switching unit having a third internal terminal (IN3) and an output switching means (U) for connecting either said second internal terminal or said third internal terminal to the spare section (5′); a third switching unit having a fourth internal terminal (UT3) and an input switching means (J) for connecting the spare section (5′) to either said third internal terminal or said first internal terminal; and a fourth switching unit having a through connection means (H) for connecting either said fourth internal terminal (UT3) or the other spare section (1′) to said internal terminal.

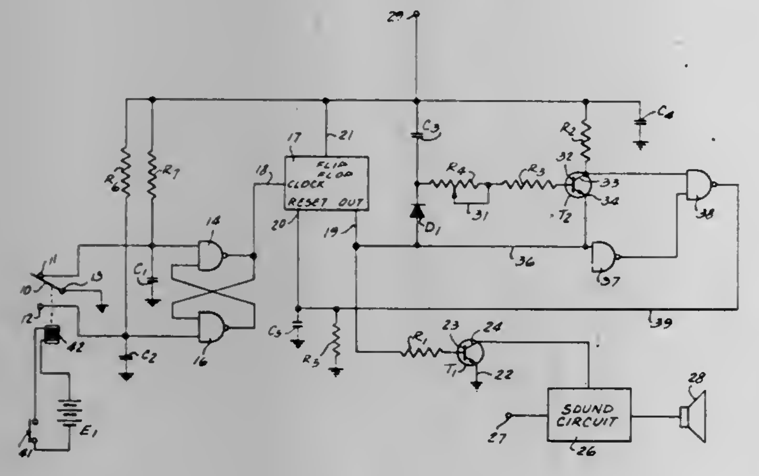
3,870,956
SOUND MUTING CIRCUIT WITH AUTOMATIC SOUND RETURN

Robert A. Wolff, Lombard, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 397,942

Int. Cl. H04b *1/10*

U.S. Cl. 325—478 **10 Claims**



1. An automatic sound muting circuit for disconnecting sound to a speaker for a predetermined time comprising;

- a bi-stable trigger circuit having an input terminal,
- a reset terminal and an output terminal,
- a sound circuit connected to said output terminal, and
- said speaker connected to said sound circuit when said trigger circuit is in a first state and said speaker disconnected to said sound circuit when said trigger circuit is in a second state,
- a first pulse circuit connected to the input terminal of said trigger circuit,
- a timing circuit connected to the output terminal of said trigger circuit, and
- a second pulse circuit connected to said timing circuit and having an output terminal connected to the reset terminal of said trigger circuit.

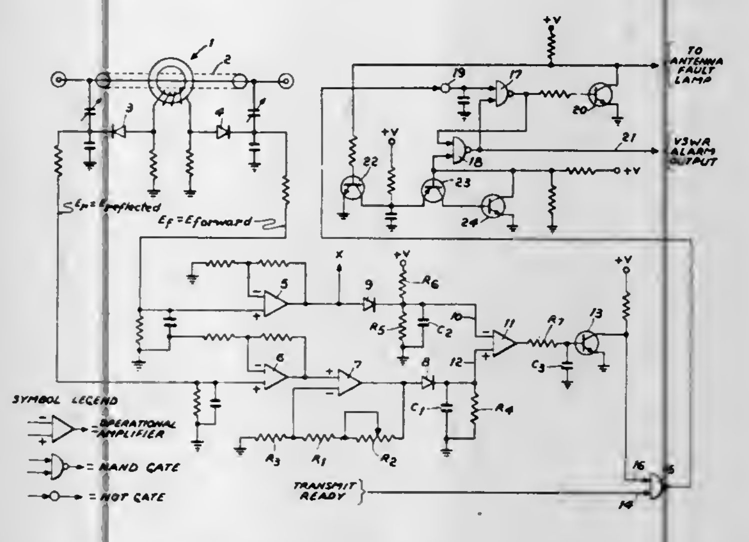
3,870,957
VSWR ALARM SYSTEM

Richard D. Straw, San Francisco, Calif., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 15, 1973, Ser. No. 406,711

Int. Cl. H04b *1/04*

U.S. Cl. 325—150 **13 Claims**



1. A voltage standing wave ratio alarm system comprising: first means to detect a forward voltage and a reflected voltage on a transmission line;

- second means coupled to said first means to amplify said reflected voltage by a given value dependent upon the desired voltage standing wave ratio;
- third means coupled to said first means and said second means to compare the amplitude of said amplified reflected voltage to the amplitude of said forward voltage and to produce an alarm indication when the amplitude of said amplified reflected voltage is greater than the amplitude of said forward voltage;
- a source of transmit ready signal, said transmit ready signal being present at the output of said source only when a transmitter associated with said system is transmitting on said transmission line; and
- fourth means coupled to said third means and said source responding to the simultaneous presence of said transmit ready signal and said alarm indication to produce an alarm.

3,870,958
CIRCUIT FOR APPLYING DATA SIGNALS ACROSS A MICROPHONE INPUT CIRCUIT

Chandos Arthur Rypinski, Tiburon, and Jaime Ernesto Pera, Mill Valley, both of Calif., assignors to RCA Corporation, New York, N.Y.

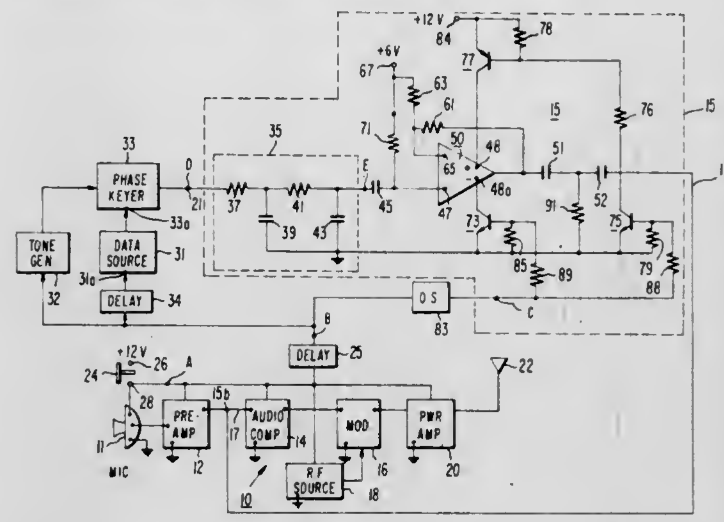
Filed Dec. 11, 1973, Ser. No. 423,688

Int. Cl. H04b *1/02*

U.S. Cl. 325—155 **4 Claims**

1. In a radio transmitter including a microphone connected by a transmission line to the modulation portion of the transmitter, an improved circuit for coupling audio tone data signals from a source across said transmission line in a manner to avoid D.C. transients associated with the coupling and decoupling of the data signals across the input end of said modulating portion of said transmitter comprising:

- an audio amplifier and an A.C. coupling capacitor connected in series between said source and said input end of said modulating portion of said transmitter,
- a resistive load coupled across the output of said amplifier for presenting a high impedance to voice signals from said microphone,
- said amplifier including a negative feedback circuit and D.C. power coupling terminals for activating said amplifier, said amplifier characterized by a low output impedance when activated and a D.C. voltage at the output that remains close to that at the input such that the output voltage across said capacitor does not change materially with activation and deactivation of said amplifier to couple and decouple said data signal whereby said D.C. transient voltages are minimized,



- means coupled to said power coupling terminals for applying power to activate said amplifier and apply said data signals to said transmitter.

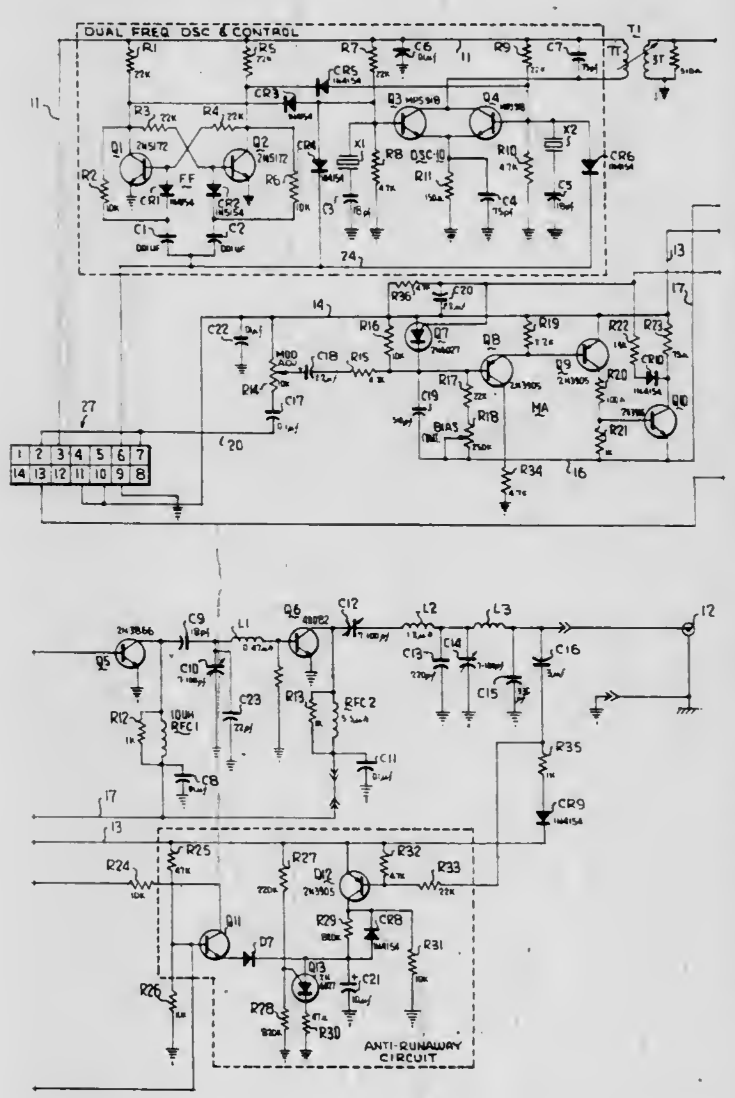
3,870,959
DUAL FREQUENCY TRANSMITTER SYSTEM

Thomas S. Wootton, Mabelvale, Ark., assignor to Baldwin Electronics, Inc., Little Rock, Ark.

Filed Oct. 24, 1972, Ser. No. 300,132

Int. Cl. H04b *1/02*

U.S. Cl. 325—156 **9 Claims**



1. A radio transmitter including two diversely tuned oscillators, a source of sequential on-off control signals, a single lead connecting said source of on-off control signals to both said oscillators concurrently, the on signals conditioning both said oscillators for concurrent oscillation and the off signals inhibiting said oscillation of both said oscillators, bistable flip-flop, means responsive to the alternate states of said bistable flip-flop for alternately inhibiting said oscillations of said oscillators in sequence, means connecting said single lead to said flip-flop for applying said on-off signals to said flip-flop, said flip-flop being responsive to said on-off control signals for alternating the states of said flip-flop.

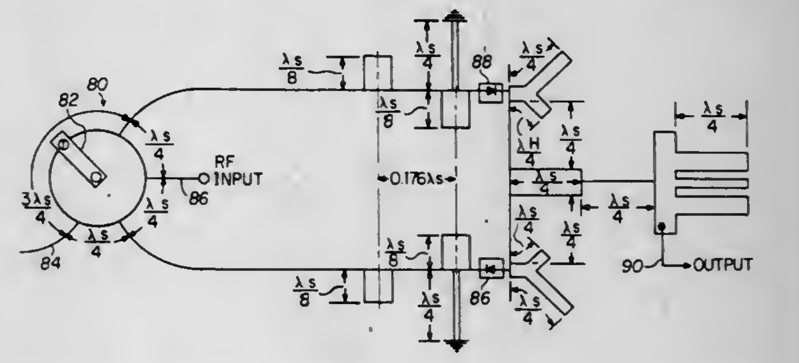
3,870,960
MIXER CARRIER NULL ADJUSTMENT

Ben R. Hallford, Wylie, and Charles H. Wright, Plano, both of Tex., assignors to Rockwell International Corporation, Dallas, Tex.

Filed Oct. 12, 1973, Ser. No. 406,061

Int. Cl. H04b *1/26*

U.S. Cl. 325—446 **6 Claims**



3. In a microstrip microwave rat-race hybrid circuit ring including leads for use in mixing two input signals and outputting resultant signals an improvement comprising, in combination:

- field distortion means juxtaposed said ring and adjustable in nearness to said ring and adjustable in position on the circumference of said ring for adjusting the phase and amplitude of reflected signals to minimize the amplitude of reflected signals to minimize the amplitude of one input signal as it appears at an output lead of said circuit ring.

3,870,961
ACTUATING MEANS FOR AFC DEFEAT SWITCH

Kazuo Suzuki, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed June 27, 1973, Ser. No. 373,997

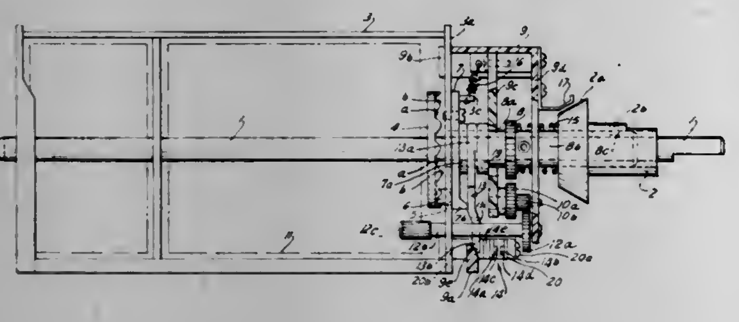
Claims priority, application Japan, July 7, 1972, 47-80524[U]

Int. Cl. H04b *1/06*; H03j *5/02*

U.S. Cl. 325—457 **1 Claim**

1. Apparatus for deactuating the AFC circuit in a tuner or the like of the type having a housing, a channel selector shaft movably mounted on said housing, a detent member having recesses and raised portions thereon, said member being mounted on said channel selector shaft for movement therewith, an element adjacent said detent member and movable thereby between a first position and a second position as it rides into said recesses and over said raised portions respectively, a fine tuning shaft movably mounted on said housing, switch means mounted on said housing, said switch means comprising a pair of switch contacts at least one of which is relatively movable with respect to the other between a first position wherein the contacts engage each other and a second position wherein said contacts are disengaged, said switch means being connected to the AFC circuit to deactuate the AFC circuit when said contacts are in said first position, said apparatus comprising first and second resilient members at least one of which is mounted on said housing, said first resilient member being interposed between said element and said second resilient member, a portion of said second resilient member being adjacent one of said contacts so as to move said contacts between said first and said second positions as said element moves between said second position and said first position respectively, means connected to said fine tuning

shaft and slidably mounted on said housing for movement relative thereto as said fine tuning shaft is moved, said slidable means having a cam surface thereon, said second resilient member having a cam follower surface thereon adjacent said cam surface, said slidable means being movable between a



normal position wherein said cam surface does not cause said second resilient member to move said contacts to the first position and a displaced position wherein said cam surface causes said second resilient member to move said contacts to said first position.

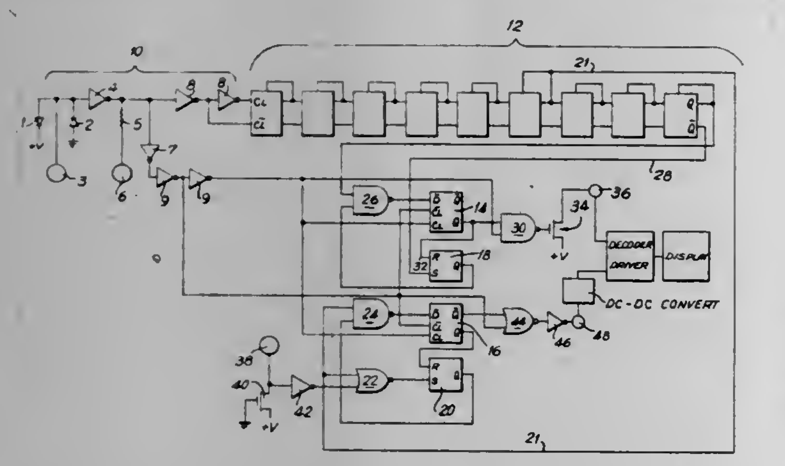
3,870,962
MEANS TO CONTROL PULSE WIDTH AND REPETITION RATE OF BINARY COUNTER MEANS

John J. D'Errico, San Diego, Calif., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,388

Int. Cl. H03k *5/04, 1/10*

U.S. Cl. 328—58 **8 Claims**



1. A means to control pulse width and repetition rate comprising:

a shift register having first and second clock signal inputs and a pulse signal input and two outputs

a latch means connected to one of said two (outputs of said shift register such that a signal from said one of said two outputs of said shift register will reset said latch means, said latch means also having means to receive a signal to set said latch means;

a first gate means connected to said latch means to receive an output signal of said latch said first gate means comparing said output signal of said latch means with another frequency signal for generating a pulse signal, said first gate means being connected to said shift register to deliver said pulse signal to said pulse signal input of said shift register; and

a second gate means having multiple inputs at least one of which receives one of said first and second clock signals and another of which receives said one of said two outputs of said shift register connected to said latch means whereby a pulse of precise width and of a controlled repitition rate is provided at the output of said second gate means.

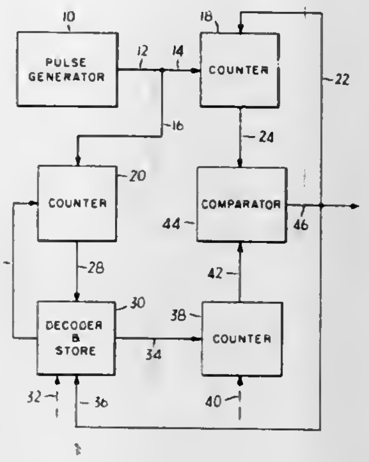
3,870,963
VARIABLE RATE PULSE GENERATING SYSTEM

Raymond Groce, Mamaroneck, and Ernest A. Kussemaul, Sayville, both of N.Y., assignors to The Loveshaw Corporation, Deer Park, L. I., N.Y.

Filed Mar. 26, 1973, Ser. No. 344,996

Int. Cl. H03k *1/16, 3/72*

U.S. Cl. 328—59 **17 Claims**



1. A system for generating pulses at a rate variable with the passage of time, comprising:

a. first circuit means for generating pulses at a constant rate;

b. second circuit means connected to said first circuit means for generating an output signal on each generation by said first circuit means of pulses in number equal to a first preselected constant number; and

c. third circuit means connected to and responsive to said first and said second circuit means for generating an output pulse on each generation by said first circuit means of pulses in number equal to the algebraic sum of a second preselected number and the number of output signals generated by said second circuit means, the third circuit means output pulses constituting the system-generated pulses.

3,870,964
SOUND VOLUME CONTROL CIRCUIT WITH SOUND LEVEL OUTPUT LINEARLY RELATED TO VOLUME CONTROL POTENTIOMETER SETTING

Thomas B. Mills, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed July 16, 1973, Ser. No. 379,747

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 **3 Claims**

1. A sound volume control system comprising:

an attenuator circuit for controlling the level of transmission of an incoming audio signal to an audio signal output, said attenuator circuit comprising:

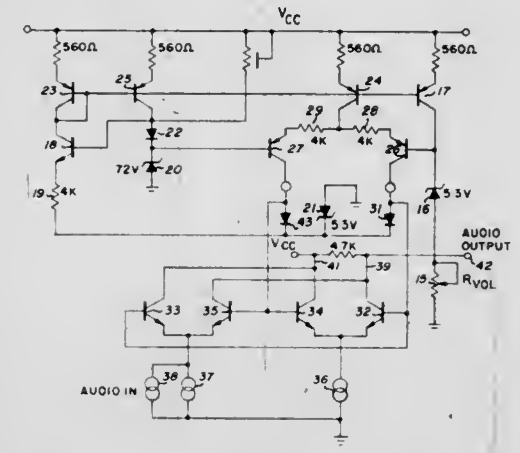
a pair of transistors, the emitter-collector circuits of said transistors being coupled in parallel and being coupled to receive said incoming audio signal, one of said emitter-collector circuits having said audio output coupled thereto,

a potentiometer for producing a linear voltage output change responsive to movement thereof,

first circuit means responsive to said linear voltage change from said potentiometer for producing a current change linearly related to said voltage change, said first circuit means comprising:

a differential amplifier including a pair of transistors, and means for applying a reference voltage to the base of one of said latter transistors, said voltage from said potentiometer being applied to the base of the other of said latter transistors,

second circuit means for converting said linear current change to a log function change, said second circuit means comprising:



diodes in each of the emitter-collector circuits of said differential amplifier transistors, said diodes being coupled to the bases of said transistors in said attenuator circuit, and

third circuit means in said attenuator circuit for converting said log function voltage change to a changing audio signal current flow to said audio output linearly related to said potentiometer voltage change.

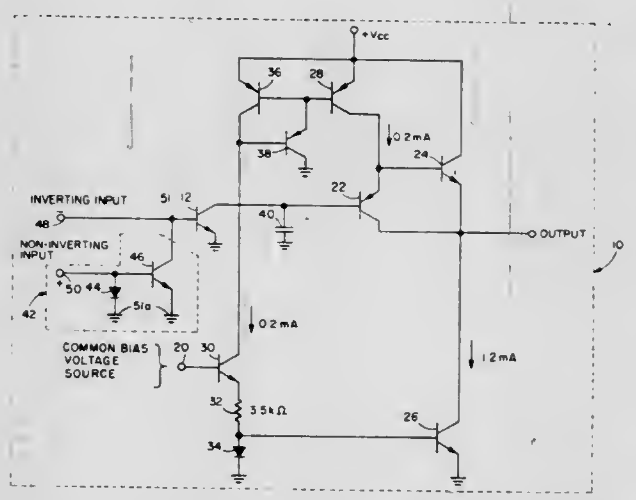
3,870,965
CURRENT MODE OPERATIONAL AMPLIFIER

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 115,190, Feb. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 96,904, Dec. 10, 1970, Pat. No. 3,648,154. This application Jan. 8, 1973, Ser. No. 321,607

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 R **5 Claims**



1. A circuit for generating a difference current value between a pair of current mode input signals comprising:

a first transistor having emitter, collector and base electrodes and said collector electrode being connected to a first source of potential and said emitter electrode being connected to a second source of potential different from said first source of potential;

first input means for supplying a current equivalent of a first input signal to said base electrode of said first transistor;

a second transistor having emitter, collector and base electrodes and said collector electrode being coupled with said base electrode of said first transistor and said emitter electrode being coupled with said second source of potential;

a diode matched to said second transistor connected between said base electrode and said second source of potential and poled to conduct current in the same direction as the base-emitter junction of said second transistor for developing a predetermined driving voltage for said second transistor; and

second input means for supplying a current equivalent of a second input signal to said base electrode of said second transistor whereby, said second transistor under the influence of said predetermined driving voltage pulls current from said base electrode of said first transistor equal to the value of said second input signal for subtracting said second input signal from said first input signal.

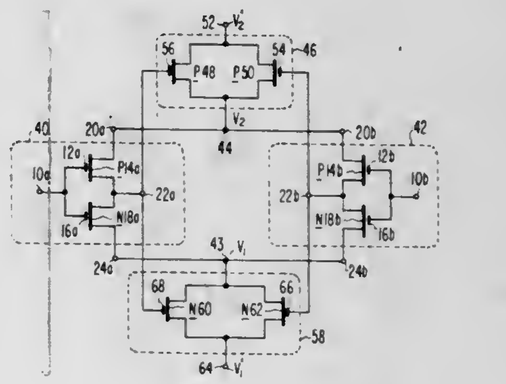
3,870,966
COMPLEMENTARY FIELD EFFECT TRANSISTOR DIFFERENTIAL AMPLIFIER

Andrew Gordon Francis Dingwall, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 365,836

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **17 Claims**



15. The combination recited in claim 14 wherein each amplifier comprises first and second complementary field-effect transistors, each having a conduction path and a gate electrode for controlling the conduction of its path, the conduction paths of said transistors connected in series between said two operating voltage terminals;

the control electrodes of one of said amplifiers connected to one of said input terminals and the control electrodes of the other of said amplifiers connected to the other of said input terminals; and

the connection between the conduction paths of one amplifier connected to one of said output terminals and the corresponding connection of the other amplifier connected to the other output terminal.

3,870,967
METHOD AND APPARATUS FOR ADJUSTMENT OF OFFSET VOLTAGE OF A DIFFERENTIAL AMPLIFIER

Leo L. Wisseman, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 255,764, May 22, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,243

Int. Cl. H03f *3/68*

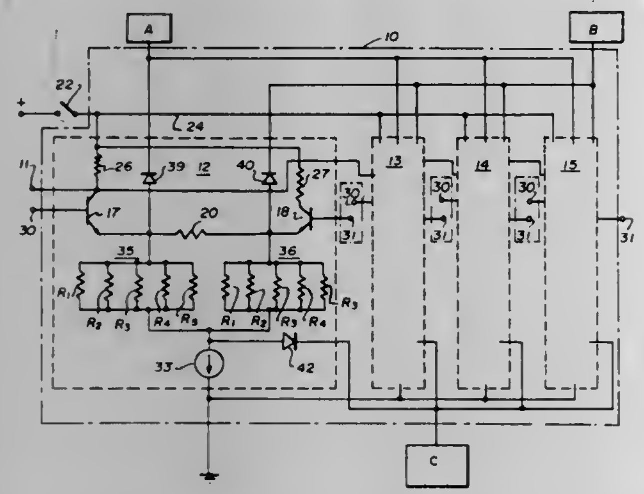
U.S. Cl. 330—30 D **9 Claims**

1. A method for adjusting the input offset voltage of a differential amplifier including first and second transistors, each having at least emitter, base, and collector electrodes and with the emitters thereof interconnected through a resistor and each emitter further connected to a common point through first and second separate pluralities of parallel fusible resistors, respectively, each resistor in each of said first and

second pluralities of resistors having a different fusing voltage, said method including the steps of:

open circuiting the collectors of said first and second transistors; and

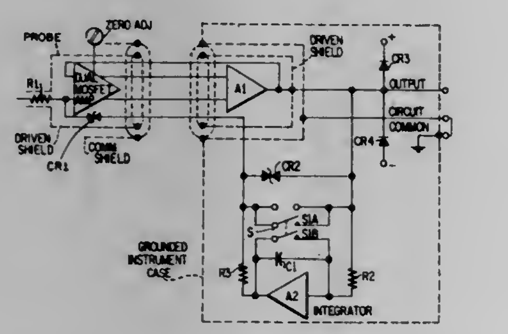
applying a voltage of a predetermined magnitude between the base of said first transistor and said common point, the polarity of such voltage selected to forward bias the base-emitter junction of said first transistor to simultaneously apply a voltage across all of the resistors of said first plurality of resistors connected to the emitter of said first transistor of a magnitude exceeding the fusing voltage of a predetermined number of such fusible resistors of said first plurality of resistors, and simultaneously maintaining the voltage across said second plurality of fusible resistors connected between the emitter of said second transistor and said common point at a value less than the fusing voltage of any resistors of said second plurality to prevent undesired fusing of any resistors of said second plurality of resistors.



3,870,968

ELECTROMETER VOLTAGE FOLLOWER HAVING MOSFET INPUT STAGE

Robert E. Vosteen, Medina, and Bruce Theodore Williams, Lockport, both of N.Y., assignors to Monroe Electronics, Inc., Middleport, N.Y.
Continuation of Ser. No. 106,749, Jan. 15, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,420
Int. Cl. H03f *21/00*
U.S. Cl. 330—207 P **10 Claims**



1. An ultrahigh impedance wide-band voltage follower for use as an amplifier comprising, a differentially connected operational amplifier circuit to operate as a voltage follower having an input stage comprising a dual channel MOSFET, the first channel having a first gate, source and drain, and the second channel having a second gate, source and drain, the first and second channels being connected as an amplifier with the input to the voltage follower being supplied to the first gate, and the output from the input stage being at the first and second drains, an amplifier connected to the output of the MOSFET input stage, the output of the amplifier constituting the output of the voltage follower, feedback means to apply the output of the voltage follower back to the second gate,

a first protective device having zener conduction and breakdown characteristics,

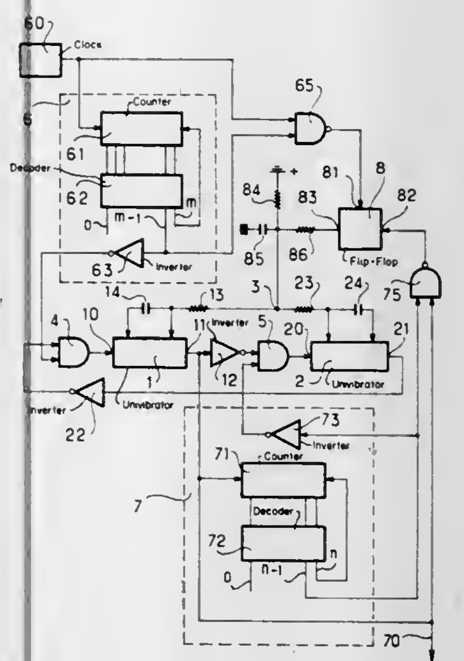
an integrator, and

switch means operable to a first condition to connect the first protective device between the first gate and the output of the voltage follower to protect the MOSFET input stage when subject to an input overload sufficient to cause destruction of the MOSFET, and to a second condition to interpose the integrator between the output of the voltage follower and the first protective device to integrate a voltage present at the output of the voltage follower due to a residual charge at the input to the voltage follower, and inject a neutralizing current to the input of the voltage follower through the first protective device sufficient to neutralize the residual charge.

3,870,969

DIGITAL LOGIC FREQUENCY CONTROL LOOP FOR MULTIVIBRATOR COMPOSED OF TWO MONOSTABLE ELEMENTS

Jean Rabasse, Breuillet, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Nov. 23, 1973, Ser. No. 418,173
Claims priority, application France, Nov. 22, 1972, 72.41470
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **8 Claims**

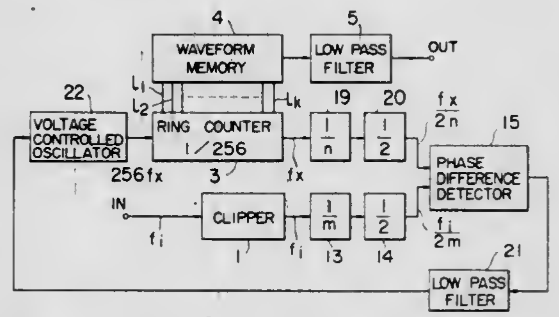


1. A frequency controlled multivibrator comprising a first and a second univibrator of the monostable type, a first logic gate connected between the output of said first univibrator and the input of said second univibrator, a second logic gate connected between the output of said second univibrator and the input of said first univibrator, a clock generating a pilot frequency signal, first digital means connected between the output of said clock and said second logic gate for providing an output pulse for each m clock pulses received, second digital means connected between the output of said first univibrator and said first logic gate for providing an output pulse for each n pulses received from said first univibrator, the time duration of n pulses from said first univibrator being equal to the time duration of m clock pulses, control means responsive to the output pulses of said first and second digital means for generating an error voltage, and adjusting means responsive to said error voltage for adjusting the frequency of said first and second univibrators.

3,870,970

FREQUENCY DIVIDING CIRCUIT

Masanobu Chibana, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Jan. 28, 1974, Ser. No. 437,200
Claims priority, application Japan, Jan. 26, 1973, 48-10276
Int. Cl. H03b *3/04*
U.S. Cl. 331—25 **3 Claims**

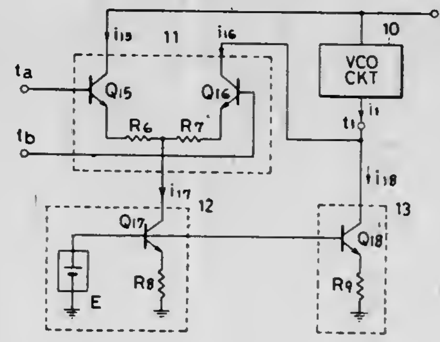


1. A frequency dividing circuit comprising a waveform memory memorizing a waveform, a voltage controlled oscillator, a counter connected to said voltage controlled oscillator to be driven thereby and connected to said waveform memory for reading out the memorized waveform, an input terminal for receiving an input signal, a $1/n$-frequency divider connected to said counter for dividing the frequency of an output from said counter into $1/n$, a $1/m$-frequency divider connected to said input terminal for dividing the frequency of the input signal into $1/m$, and a phase difference delector connected to said both frequency dividers for receiving the both frequency divided signals and connected to said voltage controlled oscillator for delivering an output voltage whenever a phase difference exists between the outputs from said $1/m$ and $1/n$-frequency dividers, the oscillation frequency of said voltage-controlled oscillator being varied in accordance with the output voltage from said phase difference detector until there exists no difference, whereby the waveform memorized in said waveform memory is successively read out at a repetition frequency equal to an n/m times the frequency of the input signal.

3,870,971

CIRCUIT ARRANGEMENT OF VOLTAGE CONTROLLED OSCILLATOR

Nobuaki Takahashi, Yamato, and Masao Kasuga, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama City, Kanagawa-ken, Japan
Filed Mar. 15, 1974, Ser. No. 451,468
Claims priority, application Japan, Mar. 17, 1973, 48-31144; Mar. 23, 1973, 48-35317
Int. Cl. H03k *3/282*
U.S. Cl. 331—108 D **7 Claims**

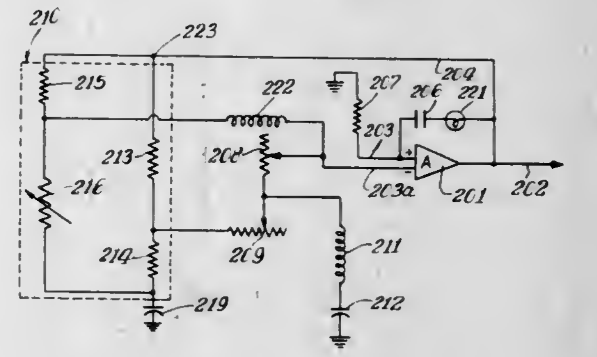


1. A circuit arrangement of voltage controlled oscillator comprising: a voltage controlled oscillator circuit part for generating a signal of a frequency proportional to an input control current; a first constant-current circuit for causing a predetermined constant current to flow; current dividing means for dividing said constant current of the first constant-current circuit in accordance with a control voltage applied from the outside; and a second constant-current circuit for causing a predetermined constant current to flow, the oscillation frequency of said voltage controlled oscillation circuit part being controlled by said input control current equal to the sum of one divided current divided by said current dividing means and the constant current of said second constant-current circuit.

3,870,972

OSCILLATOR AND FLOW MEASURING APPARATUS

Vern C. Vanderbilt, Jr., Hagerstown; Clarence L. Zimmer, Richmond, and William F. Van Ostrand, Hagerstown, all of Ind., assignors to Dynamic Precision Controls Corporation, Hagerstown, Ind.
Division of Ser. No. 43,668, June 5, 1970, Pat. No. 3,691,824. This application July 6, 1972, Ser. No. 269,496
Int. Cl. H03b *5/26*
U.S. Cl. 331—140 **3 Claims**

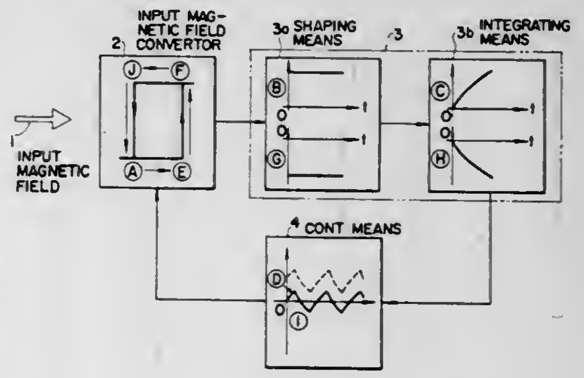


1. A variable frequency oscillator circuit comprising an amplifier including an output connection and positive and negative input connections, means connecting said output connection to said positive input connection to form a positive feedback loop, a resistance bridge including four resistance arms connected to form four bridge corners, at least one of said arms being adjustable, means connecting said output connection to one of said corners and a notch filter including, first and second variable resistors connected in series between said negative input connection and another corner which is adjacent said one corner.

3,870,973

INPUT MAGNETIC FIELD SENSING SYSTEM WITH UTILIZATION OF A HYSTERESIS PHENOMENON

Shinjiro Takeuchi, and Satoshi Ichioka, both of Toda, Japan, assignors to Mishima Kosan Co., Ltd., Kitakyushu City, Fukuoka Prefecture, Japan
Continuation-in-part of Ser. No. 264,521, June 20, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,551
Int. Cl. H03k *7/08, 9/00*
U.S. Cl. 332—12 **2 Claims**



1. An input magnetic field sensing system which utilizes a magnetic hysteresis phenomenon, comprising:

- an input magnetic field converter having hysteresis characteristics for converting an input magnetic field into an electrical signal;
- a shaping means coupled to said converter for shaping the output signal of the converter into a positive or negative constant voltage according to the state of said electric signal;
- an integrating means coupled to said shaping means and having a delay function for integrating the output signal of said shaping means;
- a control means having an input to said integrating means and an output coupled to another input of the input magnetic field converter for controlling the state of the hysteresis characteristics of said converter; and
- an indicating means connected to the output of said control means for indicating the magnitude of the input magnetic field whereby an inverted signal for compensating an input magnetic field according to a signal sensed by the converter is fed back to the converter so as to form a self hysteresis oscillation system, and whereby information concerning the input magnetic field is derived and sensed from the d.c. levels of the inverted signal.

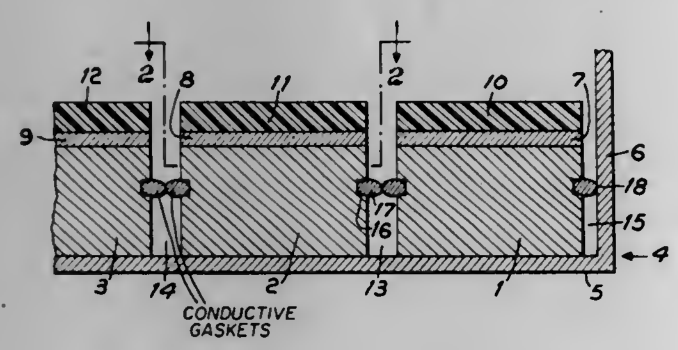
3,870,974
MIC CARRIER GROUNDING ARRANGEMENT

Herbert Ohlstein, Elmwood Park, and Alan H. Gruber, Cedar Grove, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 18, 1973, Ser. No. 398,354

Int. Cl. H04b *15/02*

U.S. Cl. 333—12 **8 Claims**



1. A grounding arrangement for a plurality of microwave integrated circuit carriers comprising:

- a chassis having a bottom wall and at least one side wall extending from and perpendicular to said bottom wall;
- said plurality of carriers being disposed in said chassis on said bottom wall in an operative relationship, at least adjacent ones of said plurality of carriers having first gaps therebetween perpendicular to said bottom wall;
- a groove formed in and completely around the outer surface of each of said plurality of carriers at a given distance above said bottom wall;
- a flexible conductive gasket disposed in each of said grooves, said gaskets of said adjacent ones of said plurality of carriers being disposed in contact with each other under compression to ground said first gaps.

3,870,975
SURFACE WAVE TRANSDUCER WITH REDUCED REFLECTION COEFFICIENT

Carmine F. Vasile, Greenlawn, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

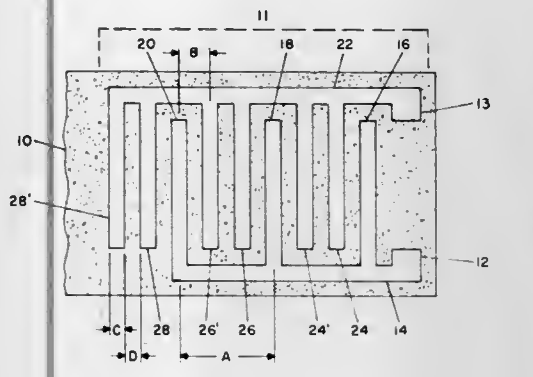
Filed Mar. 22, 1974, Ser. No. 453,617

Int. Cl. H03h *9/02, 9/26, 9/30*

U.S. Cl. 333—30 R **6 Claims**

1. An acoustic surface wave transducer for coupling electrical signals in a selected frequency band to acoustic surface waves on a piezoelectric substrate, comprising:

- a first array of conductive fingers disposed on one surface of said piezoelectric substrate and having a center-to-center spacing between adjacent pairs of conductive fingers of one acoustic wavelength at a selected frequency within said selected frequency band;
- first conductive means for electrically connecting the fingers of said first array;
- a second array of conductive fingers disposed on the same surface of said piezoelectric substrate and interleaved with said first array such that there are two conductive fingers in said second array between each pair of adjacent fingers in said first array;
- and second conductive means for connecting the fingers of said second array;
- whereby, when electrical signals in said selected frequency band are applied across said first and second conductive means, it causes an acoustic surface wave to propagate on said piezoelectric substrate.



3,870,976
INTEGRATED ATTENUATION ELEMENT COMPRISING SEMICONDUCTOR BODY

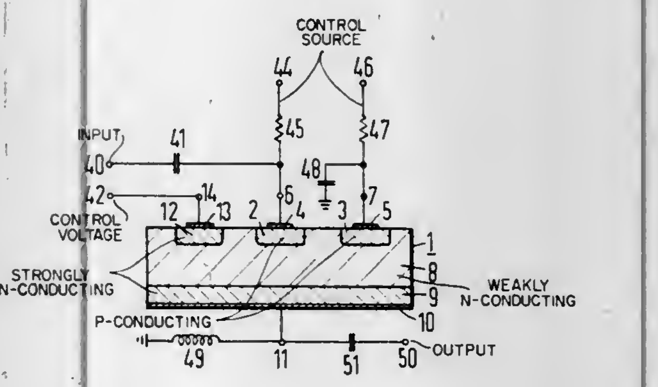
Gerhard Krause, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 4, 1973, Ser. No. 321,031

Claims priority, application Germany, Jan. 24, 1972, 2203209

Int. Cl. H01p *1/22;* **H03h** *7/24*

U.S. Cl. 333—81 R **12 Claims**



1. An integrated attenuation element having a variable attenuation characteristic for high frequency signals, comprising: a semiconductor body of one conductivity type having opposite faces, two zones of the opposite conductivity type arranged in one face of said semiconductor body, a contact electrode carried on the face of said semiconductor body opposite to that containing said two zones, one of said zones operable as an input or output and said contact electrode operable as an output or input respectively for the high frequency signals, and control sources connected to said two zones.

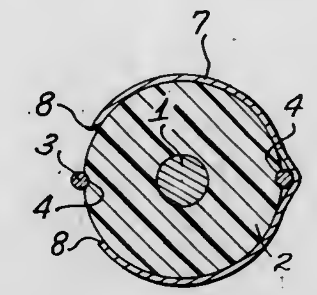
3,870,977
RADIATING COAXIAL CABLE

Dennis Robert Peoples, Madison, and David Ralph Maack, Meriden, both of Conn., assignors to Times Wire and Cable Companay, Wallingford, Conn.

Filed Sept. 25, 1973, Ser. No. 400,532

Int. Cl. H01q *13/22;* **H01p** *3/06*

U.S. Cl. 333—84 R **11 Claims**



1. A radiating high frequency transmitting cable comprising:

- a. at least one center conductor;
- b. a dielectric layer enclosing said conductor;
- c. at least one field perturbing element embedded a predetermined amount in the surface of said dielectric layer, said field perturbing element having different electrical conductivity properties than said dielectric layer, and being disposed so that a major portion of its length is angularly oriented with respect to the center conductor;
- d. an outer apertured conductor and radiation shield element enclosing said dielectric layer and said field perturbing element for at least a portion of the length of the cable, and being in electrically conductive contact with said field perturbing element, the aperture feature of said shield element leaving at least a portion of said field perturbing element and adjacent dielectric layer unshielded in an area of the cable covered by said shield element.

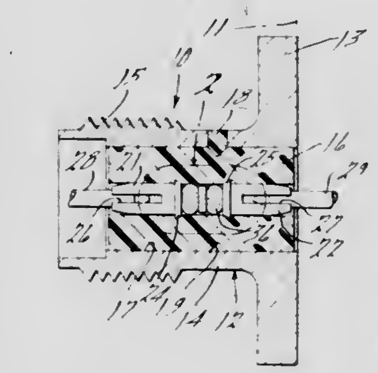
3,870,978
ABUTTING ELECTRICAL CONTACT MEANS USING RESILIENT CONDUCTIVE MATERIAL

Charles W. Dreyer, Plymouth, Mich., assignor to Omni Spectra, Inc., Farmington, Mich.

Filed Sept. 13, 1973, Ser. No. 397,022

Int. Cl. H01p *1/04;* **H01r** *3/00, 13/24*

U.S. Cl. 333—97 R **20 Claims**



1. Abutting electrical contact means comprising first and second aligned elongated conductors of electrically conductive relatively rigid material, tubular dielectric member means within which said conductors are disposed, said conductors having end surfaces in facing relation, the diameters of said conductors being substantially equal to the bore within said dielectric member means, and at least one contact block disposed between said facing surfaces, said contact block being fabricated of resilient conductive material whereby thermal expansion and contraction, shock and vibration of said conductors in an axial direction will be absorbed by said block, said contact block being compressed when in its operative position so that at least a substantial portion thereof is spread outwardly against the inner wall of said dielectric member means.

3,870,979
TUNING ARRANGEMENTS

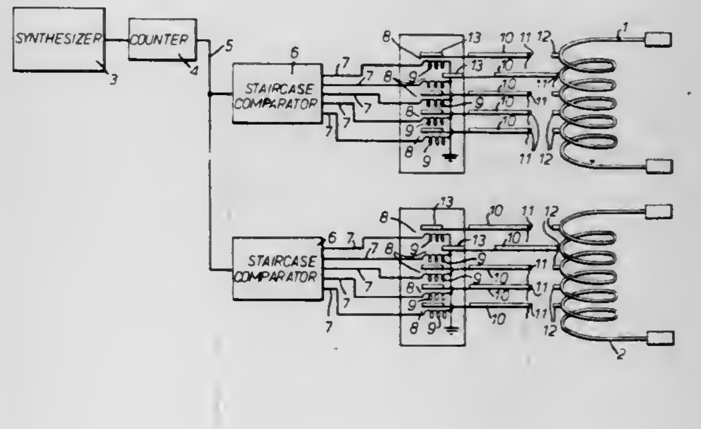
Roderick Carey Baxter, Chelmsford, and Dennis Edward Hart, Maldon, both of England, assignors to The Marconi Company Limited, Chelmsford, Essex, England

Filed Jan. 8, 1974, Ser. No. 431,706

Claims priority, application Great Britain, Jan. 19, 1973, 3018/73

Int. Cl. H03j *5/18, 5/22*

U.S. Cl. 334—14 **6 Claims**



1. An arrangement for tuning simultaneously a plurality of tunable elements comprising means for generating a signal representative of the required tuning frequency and a plurality of comparators each of said comparators associated with a different element to be tuned and arranged to receive as an input signal said representative signal and to provide in dependence upon the desired tuning frequency an output signal on an appropriate one of a plurality of outputs, each output corresponding to a different predetermined tuning adjustment of the associated component, each of said comparators comprising a plurality of detectors each arranged to receive as two input signals said representative signal and a signal of predetermined magnitude which said magnitude corresponds to a predetermined tuning adjustment and is different for each detector and to provide an output when the two input signals are substantially equal in magnitude.

3,870,980
ELECTRICAL CONTACT CARRIER FOR ELECTRICAL CIRCUIT BREAKERS

Fritz Pollmann, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 27, 1973, Ser. No. 401,285

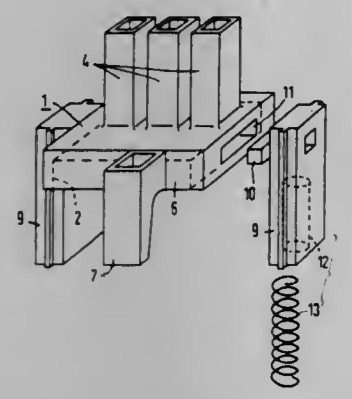
Claims priority, application Germany, Sept. 29, 1972, 2248029

Int. Cl. H01h *50/04*

U.S. Cl. 335—202 **5 Claims**

1. In an electrical circuit breaker, of the type including a movable carrier member for the electrical contacts thereof which is slidably disposed within a circuit breaker housing and includes elongated lateral guide members mounted on opposing sides of the carrier member, and disposed in guide slots provided in the housing, for guiding the carrier member therein, the improvement comprising, an additional guide member, disposed on a side surface of said carrier member

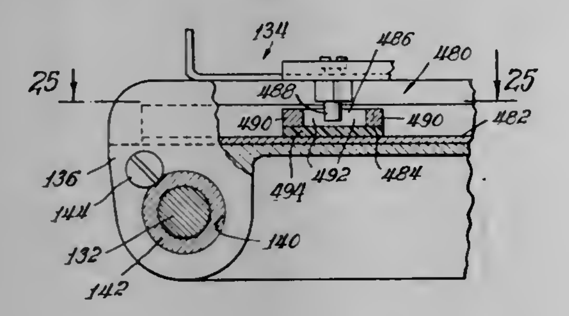
joining said opposing sides between said lateral guide members, said circuit breaker housing including an additional



guide slot for receiving said additional guide member and guiding said carrier member therein.

3,870,981
BRAKE ASSEMBLY

Robert C. Patzke, Prospect Heights, Ill., and Joseph Goebel, Hague, Netherlands, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Aug. 16, 1973, Ser. No. 388,963
Int. Cl. H01f *7/00*
U.S. Cl. 335—296 **12 Claims**

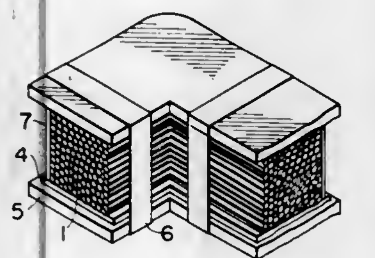


1. A device for controlling the movement of a member movable along a first path of travel comprising
a movable magnetic means engageable by a first portion of said member, said magnetic means being movable by said first portion along a second path of travel substantially parallel to said first path of travel and
means for guiding said magnetic means to restrict the movement of said magnetic means to movement along said second path of travel, said guiding means being magnetically response to said magnetic means to thereby provide a force in opposition to the movement of aaid magnetic means.

3,870,982
IMPREGNATED ELECTROMAGNETIC COIL HAVING A LAYER VOLTAGE APPLIED THERETO

Takashi Shibano, Suita; Koichi Hirakawa, Kawanishi, and Toshimitsu Yonehara, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Apr. 2, 1973, Ser. No. 347,041
Claims priority, application Japan, Mar. 31, 1972, 47-32781
Int. Cl. H01f *3/00*
U.S. Cl. 335—297 **4 Claims**

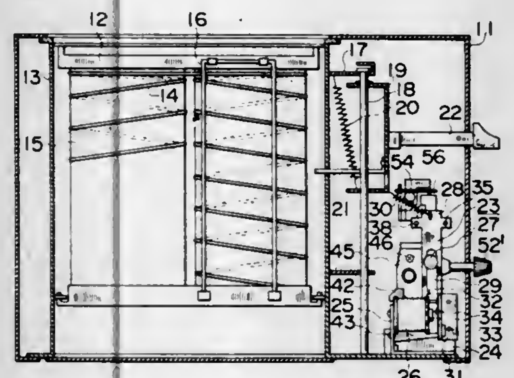
1. An electromagnetic coil comprising an elementary electromagnetic coil composed of a self-bonding electric wire wound in the form of a plurality of layers and having no interlayer insulating paper; impregnable ring-shaped insulating sheets closely fitted to and secured on each side of said elementary coil, to which a layer voltage is applied, to allow said wire at each of said coil sides to be embedded in one of said insulating sheets; and a varnish impregnated and hardened in said elementary coil to make the electromagnetic coil void-



free between said coil sides and said insulating sheets to prevent an arc discharge from being generated between coil layers along a surface of each of said coil sides.

3,870,983
HEAT-SENSITIVE DEVICE

Nobuo Kato, Ikeda; Toshio Nakamura, and Seishi Terakado, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 26, 1972, Ser. No. 318,643
Int. Cl. H01h *61/02*
U.S. Cl. 337—107 **10 Claims**



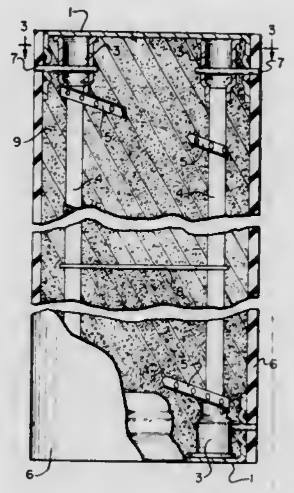
1. A heat sensitive device comprising heat sensitive means comprising an electric heating wire, bimetal means, and metal means having a heat storaging function thermally arranged in series with said wire and bimetal means for controlling the amount of heat to be transmitted from said wire to said bimetal means, said heat being generated by said heating wire; and means for providing an output responsive to heating or cooling of said heat sensitive means.

3,870,984
HIGH-VOLTAGE FUSE WITH PLUGS OF SHEET METAL

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Feb. 20, 1974, Ser. No. 444,095
Int. Cl. H01h *85/02*
U.S. Cl. 337—161 **6 Claims**

1. An electric fuse including
a. a tubular casing of electric insulating material;
b. substantially helically wound fusible element means in ribbon form arranged inside of and in coaxial relation to said casing;
c. a pulverulent arc-quenching filler inside said casing embedding said fusible element means;
d. a plurality of separate angularly displaced rods of electric insulating material arranged parallel to the axis of said casing supporting said fusible element means;
e. a pair of hollow plugs of sheet metal closing the ends of said casing, said pair of plugs having end surfaces and having lateral surfaces engaging the inner surface of said casing and being provided with a sealing-medium-

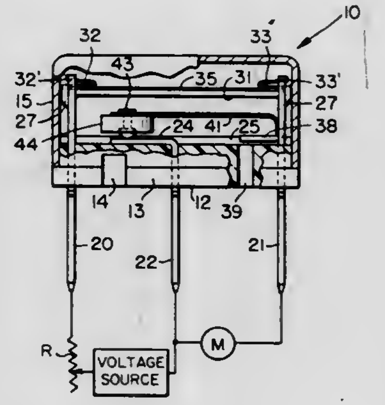
containing groove means; and



f. a plurality of sheet metal supports for said plurality of rods affixed to said end surfaces of said pair of hollow plugs and engaged by the ends of said plurality of rods.

3,870,985
THERMOSTATIC SWITCH WITH SOLID STATE HEATER

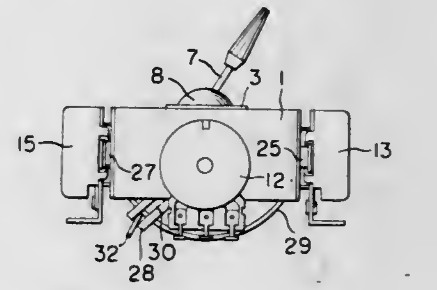
Charles John Hire, Pittsford, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,115
Int. Cl. H01h *37/04, 37/12*
U.S. Cl. 337—381 **10 Claims**



1. A thermostatic switch, comprising
a housing having therein a chamber and a hole connecting the chamber to the exterior of the housing,
three spaced electrically conductive terminals secured to said housing, each having its opposite ends, respectively, projecting into said housing and extending exteriorly of said housing,
an electrically operable heater element mounted in said chamber and connected at opposite ends to two of said terminals,
a metal tab secured to and projecting from one of said two terminals and registering with said hole,
a flexible, bi-metallic switch arm mounted in said housing adjacent said heater element and having a free end overlying the third of said three terminals,
an electrical contact secured on said free end of said arm, and
means securing the opposite end of said arm to said tab for pivotal movement, upon predetermined changes in its ambient temperature, between a position in which the contact on the free end of said arm is in engagement with said third terminal and a position in which said contact is disengaged from said third terminal,
said tab being bendable manually by an instrument insertable through said hole in said housing to vary the tension in said arm.

3,870,986
DEVICE FOR SIMULTANEOUSLY CONTROLLING A PLURALITY OF VARIABLE RESISTORS

Shunzo Oka, Osaka, and Matsuo Nishioka, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka-fu, Japan
Filed Dec. 19, 1972, Ser. No. 316,586
Claims priority, application Japan, Dec. 24, 1971, 47-56|U|; Mar. 17, 1972, 47-32673|U|
Int. Cl. H01c *5/00;* **G05g** *9/02*
U.S. Cl. 338—128 **2 Claims**



1. In a device for simultaneously controlling a plurality of variable resistors of the type in which a pair of molded bearing members each having a bearing surface which is a part of a spherical surface are securely fixed to the top of an electrically conductive casing having four side walls in coaxial relation with a center hole formed in the top of said casing;
a ball member having an operating shaft extending through the center thereof is rotatably supported by said pair of bearing members; variable resistors are fixed on the side walls of said casing in such a manner that their shafts extend through each side wall into said casing; and the end of said operating shaft is slidably fitted into elongated slots formed in bow-shaped elastic connecting members each connecting the opposed shafts of said variable resistors,
a member having a plurality of elastic projections interposed between said ball member and said pair of bearing members so as to contact said ball member and to bias it toward one of said pair of bearing members, and
said pair of bearing members and said ball member being of an electrically conductive material electrically connected to the casing.

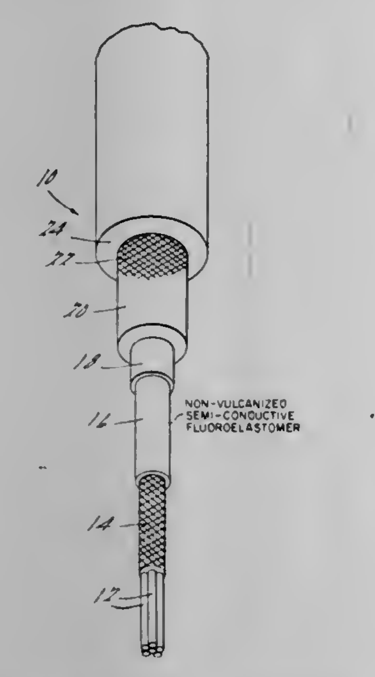
3,870,987
IGNITION CABLE

Robert Emerson Wiley, and James John Coniglio, both of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.
Filed May 29, 1973, Ser. No. 364,751
Int. Cl. H01g *3/00*
U.S. Cl. 338—214 **20 Claims**

1. In an ignition cable for use with vehicle engines having spark ignition, the improved construction comprising:
a flexible resistive conductor means for conducting electrical current to provide ignition,
a flexible coating layer having controlled electrical resistance generally surrounding the resistive conductor means, said layer being comprised of,
about 50 percent to about 90 percent by weight of fluoroelastomer providing the coating with sustained thermal resistance on exposure to temperatures of about 500° F or higher,
about 10 percent to about 50 percent by weight of conductive pigment for providing conductivity to the coat-

ing, and

about 0.05 percent to about 15 percent by weight of flow



control agent for facilitating application usage of the coating.

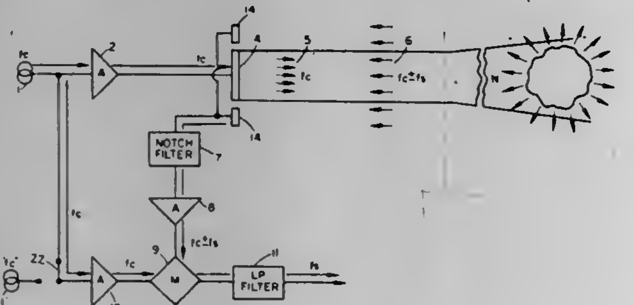
3,870,988
HYBRID CARRIER BEAM SONAR

William R. Turner, Rockville, Md., assignor to Automation Industries, Inc., New York, N.Y.

Filed Jan. 14, 1969, Ser. No. 791,882

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **10 Claims**



1. The method of ultrasonic detection and identification of objects having distinctive sonic signatures in a liquid propagation medium comprising the steps of

a. projecting high frequency ultrasound illumination towards the object;
b. obtaining reflected scatter of the same frequency;
c. cross-modulating the scatter signal with the signature signal of the object within the propagation medium to generate side band frequencies;
d. receiving the side band frequencies and;
e. processing said received side band frequencies to eliminate the initial illuminating frequency and to obtain the signature of the object.

3,870,989
UNDERWATER DIRECTION SIGNAL PROCESSING SYSTEM

Alfred L. Mallet, Pittsfield, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

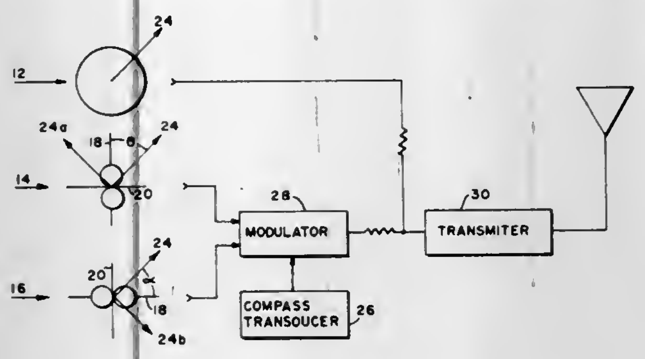
Filed Mar. 16, 1970, Ser. No. 19,979

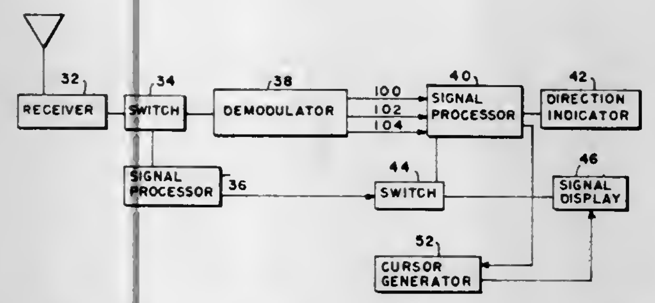
Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **14 Claims**

1. A direction-finding system for ascertaining the bearings of sources of incident acoustical signals in water, said system having a plurality of transducers for converting said acoustical signals into at least a first and second electrical signals with said electrical signals comprising a plurality of frequency components, said transducers each generating an electrical signal that varies as a function of the angle between a sensitive axis of said transducer and the direction of the incoming acoustical signals with the sensitive axis of said transducers being oriented at a predetermined angle with respect to each other and to a known geographical reference; wherein the improvement comprises:

a. frequency separating means adapted to receive first and second electrical signals, said frequency separating means arranged for separating each of said first and second electrical signals according to the frequency components thereof and to select a discrete frequency component in each of said electrical signals for processing;





b. means for converting said selected frequency component of said first and second electrical signals to first and second amplitude related signals, the ratio of said first and second amplitude related signals corresponding to the tan of the bearing of said acoustical signal and the relative polarity of said first and second amplitude related signals being indicative of the quadrant containing the incident acoustical signal as measured from said known geographical reference, and
c. bearing computation means, said computation means being responsive to the polarity and amplitude of said first and second amplitude related signals and arranged to provide an output signal representative of the direction of the source of said incident acoustical signal.

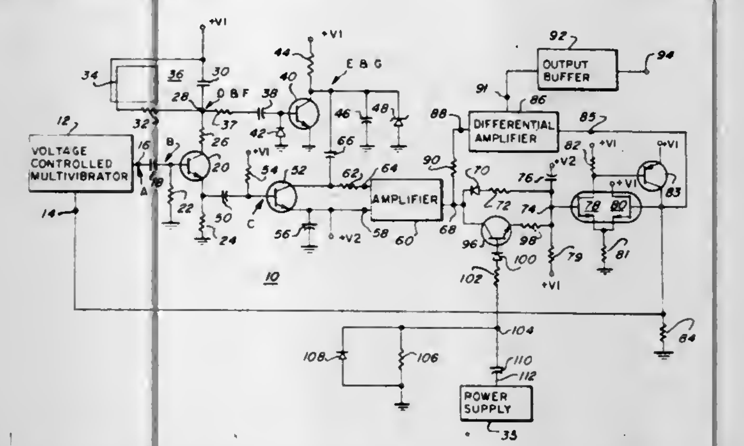
3,870,990
VEHICLE PRESENCE DETECTOR

George H. Fathauer, Decatur, Ill., assignor to Decatur Electronics, Inc., Decatur, Ill.

Filed May 18, 1973, Ser. No. 361,770

Int. Cl. G08g *1/01;* **E01f** *11/00*

U.S. Cl. 340—38 L **11 Claims**



1. A presence detector circuit for operation in conjunction with a detector loop and comprising:

a source of electrical pulses;

circuit means for coupling to said detector loop to form a tuned circuit and producing an output signal in response to said electrical pulses;

clamping means coupled to said source and said circuit means for clamping the portion of said output signal occurring at predetermined times relative to the occurrence of said pulses at a predetermined value;

means for producing an electrical signal representative of an average value of said clamped output signal; and

output means for providing an indication of the presence of an object in response to changes in said electrical signal.

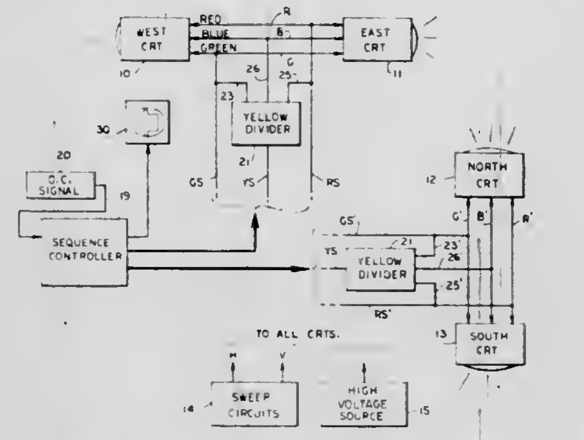
3,870,991
TRAFFIC CONTROL SIGNAL APPARATUS

Royce Hayes, 2785 Shallowford Rd., Chamblee, Ga. 30341

Filed Feb. 11, 1974, Ser. No. 441,638

Int. Cl. G08g *1/095*

U.S. Cl. 340—41 R **8 Claims**



1. Traffic control signal apparatus, comprising:

CRT means positioned in signal display relation to a traffic path and selectively operative to emit a plurality of colors in response to input signals; and

sequence control means operatively connected to supply said CRT means with input signals to provide certain traffic control colors in predetermined repetitive sequence.

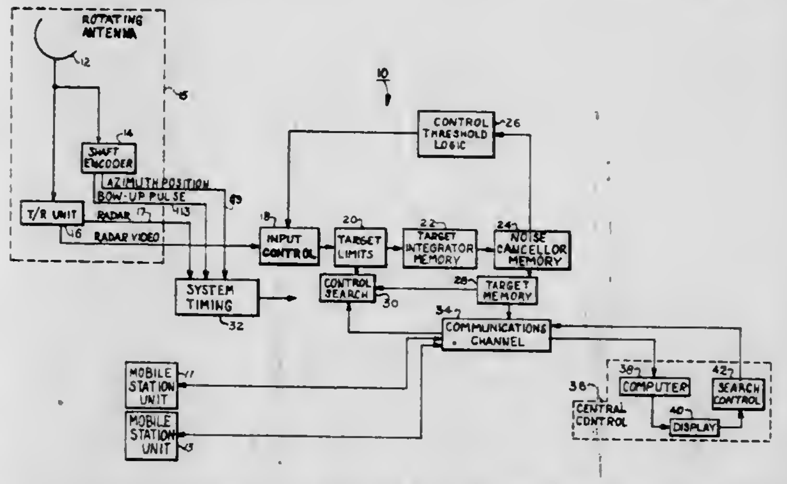
3,870,992
RADAR SYSTEM

Drexel W. Hanna, Jr., Warminster, Pa., assignor to AII Systems, Moorestown, N.J.

Filed Apr. 26, 1972, Ser. No. 247,568

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 DP **3 Claims**



1. In a radar system, a plurality of moving radar stations and a central data processing station, in which each moving station develops target information and transmits the target information to the central data processing station over a time-shared communications channel, and in which each radar station includes a memory device for retaining target data to be transmitted to the central station;

the method of developing target data in high density target areas for each of said moving stations, comprising the steps of:

a. developing said target data during each target frame in moderate density areas and transmitting the developed data to the central station;
b. during each target frame in high density areas, detecting when the target storage device is full of target data, and registering the azimuth at which the memory device becomes full and transmitting the target data from an initial azimuth until the memory-full azimuth;
c. and following thereupon during the next frame, storing target data starting with the memory-full azimuth and continuing on therefrom and storing the target data for transmission to the central station until the memory device becomes full or the frame is completed;

whereby in high density areas target data is fully developed in surrounding regions over a plurality of frames.

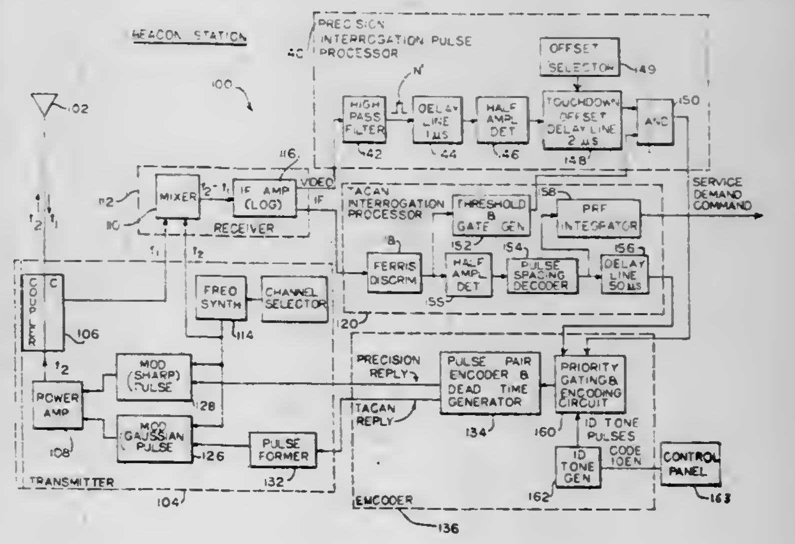
3,870,993
DISTANCE MEASURING EQUIPMENT FOR AIRCRAFT EMPLOYING PRECISION DISTANCE MEASURING MEANS

Alvaro D. Biagi, Huntington Station, and Dimitri Luganski, Huntington, both of N.Y., assignors to Republic Electronics Industries Corporation, Huntington Station, N.Y.

Filed May 21, 1973, Ser. No. 362,441

Int. Cl. G01s *9/56*

U.S. Cl. 343—5.5 R **11 Claims**



1. A system for measuring the distance between an aircraft and a beacon station comprising an airborne measuring equipment, said equipment comprising:

antenna means for radiating wavetrains of a plurality of interrogation pulses from said aircraft to said beacon station and for picking up a plurality of reply pulses therefrom;

distance measuring apparatus in circuit with said antenna means, comprising:
- a transmitting means for generating said interrogation pulses, and
- a first receiving means for receiving said reply pulses and converting the same into data representing the approximate distance between said aircraft and said beacon station; and

a high precision distance measuring apparatus comprising:
- a pulse modulation means in circuit with said transmitting means for imposing a notch on one pulse of each consecutive pair of said interrogation pulses;
- a second receiving means in circuit with said antenna means for receiving from said beacon station a special reply pulse having a fast rise time generated at said beacon station in response to reception there of said notched interrogation pulses; and
- computer means in circuit with said second receiving means for measuring the time interval between the instant of notching the first interrogation pulse and the instant of reception of said special reply pulse having a fast rise time, and for producing data corresponding to said time interval and representative with high preci-

sion of the distance between said aircraft and said beacon station.

3,870,994

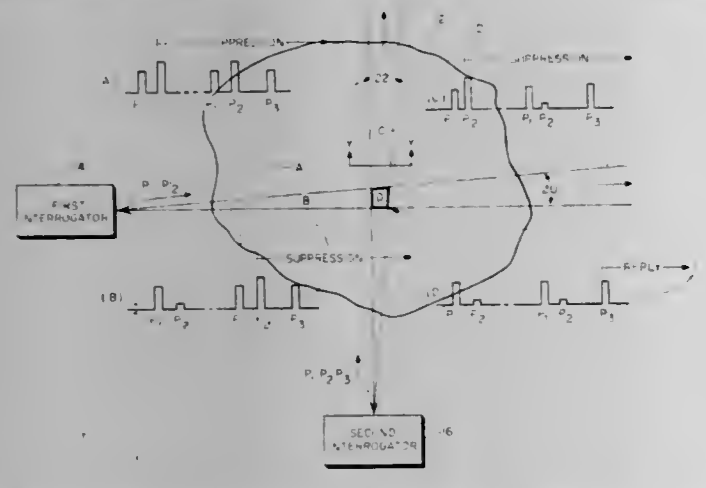
GEOGRAPHIC ADDRESSING BY INTERROGATION FOR CONTROLLING AIRPORT GROUND TRAFFIC

Joseph L. McCormick; Charles G. McMullen, and Phillip J. Woodall, all of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 22, 1972, Ser. No. 317,856

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 R **7 Claims**



6. In a transponder system comprised of a plurality of transponders wherein each transponder characteristically is suppressed for a first predetermined period of time after a first message is received, said first message being comprised of a pulse pair separated by a second predetermined period of time and having a predetermined amplitude relationship, one with the other, and wherein each said transponder characteristically responds to a second received message so long as said transponder is not suppressed,

said second message being comprised of a second pulse pair separated by a third predetermined time period, said third predetermined time period being longer than said second predetermined time period, means for addressing a geographically individual portion of a field of interest comprising:

first means for transmitting said first message over said field of interest except along a first relatively narrow beam;

second means spaced apart from said first means for transmitting a further message over said field of interest, said further message being comprised of a pulse triad, the first and second pulses in said pulse triad being separated by said second predetermined period of time and the first and third pulses of said pulse triad being separated by said third predetermined period of time, said second means for transmitting including means for nulling transmission of said second pulse along a second relatively narrow beam in said field of interest whereby a transponder located in the intersection of said beams will respond and a transponder located outside the intersection of said beams will not respond.

3,870,995

ELECTRONIC COUNTERMEASURES SYSTEM

Robert L. Nielson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

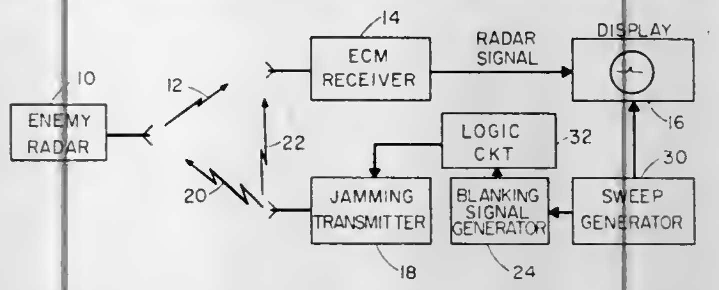
Filed Feb. 25, 1971, Ser. No. 119,032

Int. Cl. H04k *3/00*

U.S. Cl. 343—18 E **4 Claims**

1. In a countermeasures system including an ECM receiver associated with a cathode-ray beam indicating device on the screen of which may be displayed a visual indication representative of the signal received from an enemy radar, and wherein a transmitter is employed to send out a jamming signal on a frequency essentially identical to that of such radar in order to confuse the enemy operator thereof, the improvement which comprises

means for preventing the visual indication on said screen representative of such jamming signal from obscuring the visual indication representative of said radar signal, so as to enable the operator of said ECM receiver to monitor both such indications concurrently, said means including



means for selectively interrupting the operation of said jamming signal transmitter synchronously with the deflection of the cathode-ray beam of said indicating device and in time coincidence therewith,

said interrupting means operating during every Nth deflection of said beam, with N being equal to at least two.

3,870,996

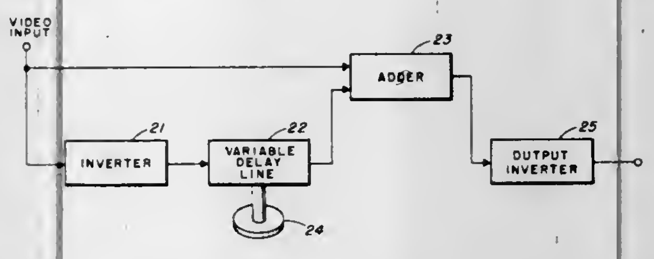
JAMMING CANCELLATION DEVICE

Raymond B. Miller, Glencoe, Ill., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 16, 1963, Ser. No. 309,358

Int. Cl. H04b *1/12;* **H04k** *3/00*

U.S. Cl. 343—18 E **5 Claims**



5. A method of canceling out interfering modulations present in a radar video signal without causing degradation to the desired signal information comprising the steps of:

inverting the polarity of a video signal that has interfering modulations present;

delaying the polarity inverted video signal by manual adjustment equal to or greater than one-half the period of the lowest interfering modulation signal frequency; and

adding the delayed and polarity inverted signal to an undelayed video signal in proper phase relationship with each other to effect complete cancellation of the interfering modulations.

3,870,997

AUTOMATIC GAIN INTEGRATOR CONTROL

John DiPerry, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1965, Ser. No. 431,491

Int. Cl. G01s *7/36*

U.S. Cl. 343—18 E **3 Claims**

1. In a radar counter-countermeasure system, including the combination of a normal radar system and counter-countermeasure circuitry, a radar receiver comprising:

a. an IF amplifier whose signal input is received from the pre IF stage of a normal radar system,

b. an IF limiter to which the output of said IF amplifier is fed,

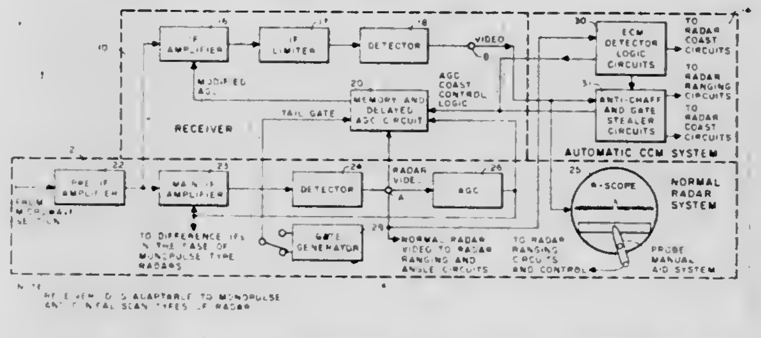
c. a video detector connected to the output of said IF limiter,

d. the video signal output of said detector being fed to counter-countermeasure circuitry and operator range scope of said normal radar system,

e. a memory and delayed AGC circuit means whose output is connected to and controls the gain of said IF amplifier for maintaining the target IF signal at desired operating threshold level,

f. radar video, AGC, and gate signals from the normal radar system being fed to said memory and delayed AGC circuit at respective inputs thereto,

g. said memory and delayed AGC circuit also being connected to the counter-countermeasure circuitry for receiving control signals therefrom,



h. said memory and delayed AGC circuit providing delayed AGC voltage during normal target tracking, and providing AGC memory during periods of interference by storing the last gain setting and coasting at that setting upon receiving said control signals from the counter-countermeasure circuitry,

wherein target video signal level suppression resulting from intentional and unintentional interferences is prevented and target video signal level at the output of said detector is controlled only by AGC action caused by the target itself even in the presence of interference.

3,870,998

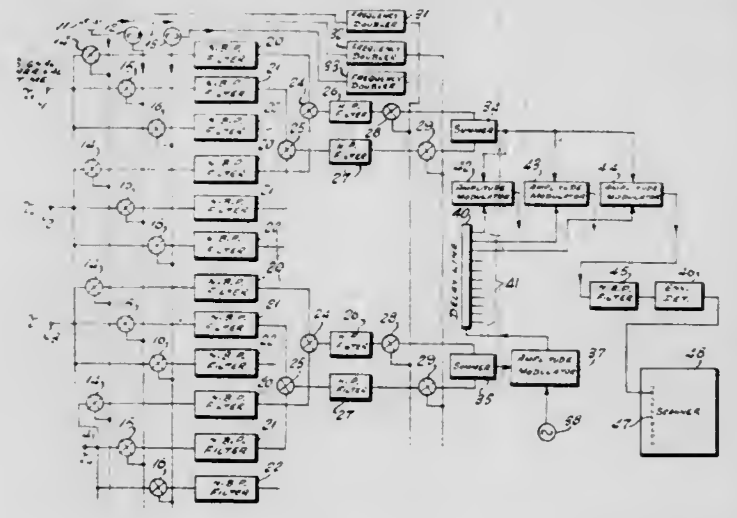
APPARATUS FOR MEASURING AND SUMMING TIME DIFFERENCES

Gordon C. Dewey, New York, N.Y., and James F. Bartram, Darien, Conn., assignors to The Dewey Electronic Corporation, New York, N.Y.

Filed Jan. 22, 1959, Ser. No. 788,462

Int. Cl. G06f *15/34*

U.S. Cl. 343—100 CL **8 Claims**



1. Apparatus for obtaining a linear combination of the time delays of a plurality of continuous wave signals comprising a plurality of input terminals on each of which one of said signals is adapted to be impressed, a plurality of channels connected to each terminal including narrow band pass filters having the same frequency band, frequency transposing means connected to each of said terminals for transposing the various portions of the frequency spectrum of the signals to said frequency band, a plurality of first multiplier circuits each connected to at least one of said filters, a high pass filter connected to the output of each of said multiplier circuits for selecting and passing the sum frequency of the multiplier circuits, frequency translating means for restoring the outputs of the multiplier circuits to their relative positions in the signal spectrum, a first summing circuit connected to the frequency translating means which are connected to selected ones of said terminals, a second summing circuit connected to the frequency translating means which are connected to other selected input terminals, a delay line having a plurality of outlet taps at different delay points therealong, means for impressing the output of the second summing circuit on the input of said delay line, a combining circuit connected to each of the taps, means connecting the first summing circuit to each combining circuit, and means for sensing the outputs of the combining circuits.

3,870,999

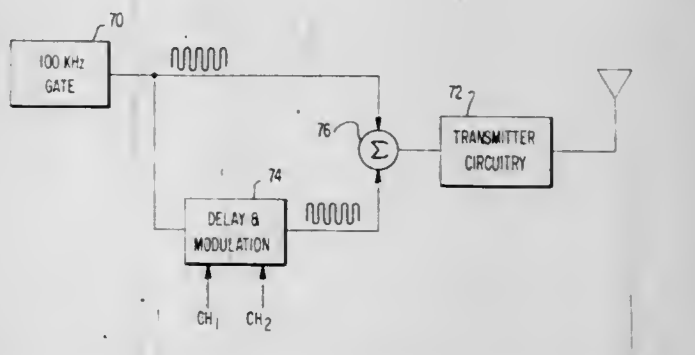
COMMUNICATIONS VIA LORAN NAVIGATION PULSES

Carl S. Mathews, Annandale, and Arnold Swagerty, Vienna, both of Va., assignors to A-T-O Inc., Willoughby, Ohio

Filed June 29, 1973, Ser. No. 375,234

Int. Cl. G01s *1/24*

U.S. Cl. 343—103 **26 Claims**



1. A system for communicating additional information via a Loran pulsed navigation system, said pulsed navigation system being of the type which periodically transmits navigation pulses having a point thereon, time separated from the pulse beginning, which is used for accurate navigation position detection, said system comprising;

a. modulation means responsive to said additional information for phase shifting a portion of the carrier frequency of said pulse an amount dependent upon the content of said information, said portion excluding said navigation point, and

b. means for transmitting said modulated pulse.

3,871,000

WIDE-BAND VERTICALLY POLARIZED OMNIDIRECTIONAL ANTENNA

Gerhard Tymann, Unterhaching, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Hoftung, Munich, Germany

Filed Nov. 30, 1973, Ser. No. 420,581

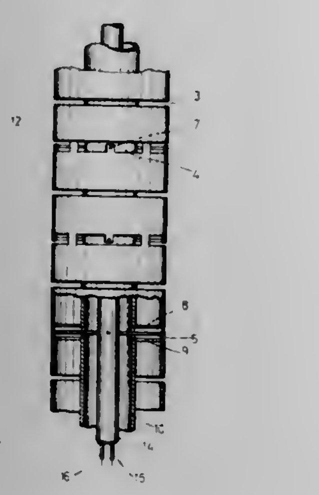
Claims priority, application Germany, Dec. 2, 1972, 2259082

Int. Cl. H01q *13/10*

U.S. Cl. 343—771 **12 Claims**

1. A wide-band vertically polarized omnidirectional antenna comprising a first hollow cylindrically-shaped metal surface divided transversely of its axis by a circumferentially extending slot into at least two hollow cylindrically-shaped rings having an axial length of ¼ or ½ of the wavelength, three-wire lines distributed uniformly over the circumference of said first metal surface for feeding said slots, and a second hollow cylindrically-shaped metal surface arranged within and coaxially with said first metal surface as a support, wherein the improvement comprises that said slot is formed of a plurality of circumferentially extending individual slots uniformly spaced apart in the circumferential direction and forming a circumferentially extending interrupted ring slot, one said three-wire line for feeding each said individual slot, at least one coaxial conductor positioned within said second metal

surface, said second metal surface and said coaxial conductor arranged as a coaxial feeder system, said three-wire line comprising inner wires extending radially inwardly from said first metal surface, said second metal surface having bores therethrough aligned with said inner wires so that said inner wires pass contact-free through said second metal surface and are coupled capacitatively or galvanically with said coaxial conductor.



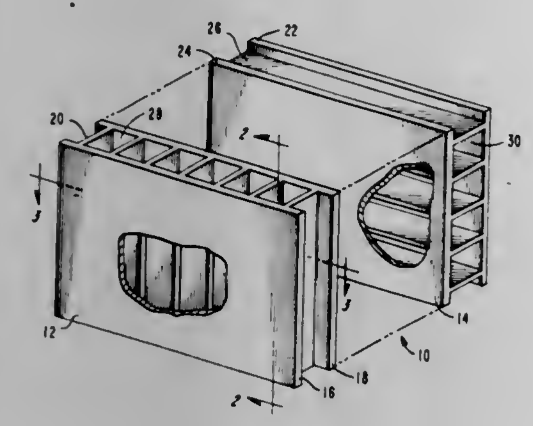
3,871,001
RADOME

Hubert A. Myers, Los Angeles, Calif., assignor to Hitco, Irvine, Calif.

Filed Nov. 15, 1972, Ser. No. 306,884

Int. Cl. H01q *1/42*

U.S. Cl. 343—872 **10 Claims**



1. A radome comprising first and second generally sheet-like elements joined together to form a laminate, each of the sheet-like elements having opposite broad surfaces and a plurality of elongated spaces disposed within the sheet-like element intermediate the opposite broad surfaces and spaced-apart across the sheet-like element to define a plurality of elongated ribs therebetween, the elongated spaces and the ribs formed therebetween extending generally in a common direction, each of the sheet-like elements distorting electromagnetic wave energy which passes therethrough in predictable fashion, the ribs of the first sheet-like element being oriented relative to the ribs of the second sheet-like element so that distortion of electromagnetic wave energy which has passed through the first sheet-like element is substantially balanced by distortion of the electromagnetic wave energy after it has passed through the second sheet-like element.

3,871,002
APPARATUS FOR DEFORMING A THERMOPLASTIC LAYER USING A SHAPED COOLING TEMPLATE

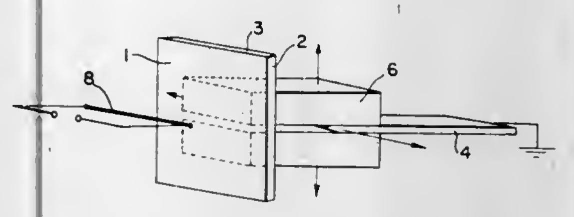
Gunther Schadlich, Wiesbaden, and Roland Moraw, Naurod ub. Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Division of Ser. No. 206,604, Dec. 10, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,685

Claims priority, application Germany, Dec. 14, 1970, 2061417

Int. Cl. G01d *9/00*

U.S. Cl. 346—74 TP **8 Claims**



1. Apparatus for deforming a photoconductive thermoplastic layer of a recording material by forming an electrostatic image thereon and heating it, which comprises mounting means for said recording material, charging station means for charging said material, exposure station means for exposing said material, heating station means for developing said material, and deformation means including a heat source on the side of the thermoplastic layer and shaped cooling template means adapted to contact said material from the side opposite to the thermoplastic layer, whereby said layer is deformed in a selected area in conformity with the area of said template means not in contact with said material.

3,871,003
ELECTROSTATIC RECORDING APPARATUS WITH CORE MATRIX

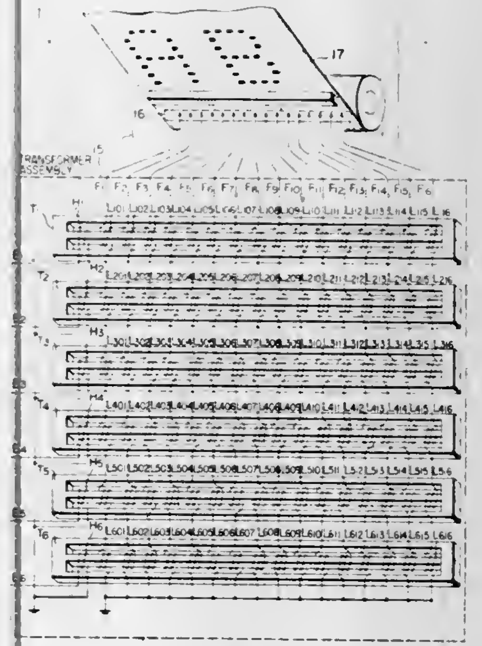
Mamoru Kondo, and Morio Kobayashi, both of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,596

Claims priority, application Japan, Aug. 14, 1972, 47-81258; Sept. 4, 1972, 47-88845

Int. Cl. G01d *15/06*; **H04l** *15/34*

U.S. Cl. 346—74 ES **18 Claims**



1. An electrostatic recording apparatus comprising a transformer assembly comprising

- a plurality of cores equal in number to a length of code words of a predetermined error correcting code,

- a plurality of primary windings wound on said plurality of cores, respectively, and
- a plurality of selecting lines the number of which is equal to the number of the code words of said error correcting code at most and each of which comprises a plurality of series-connected secondary windings wound on said cores, respectively, in accordance with the elements of each of the code words of said error correcting code;
- means for energizing said plurality of primary windings with a set of energizing current for selecting a desired one of said selecting lines, each current that composes said set of energizing currents corresponding to each of the elements of the code word associated with said desired selecting line so that the secondary voltages of a predetermined magnitude may be induced across said secondary windings, thereby inducing a selected output voltage across said selected selecting line while inducing across the remaining selecting lines spurious output voltages, respectively, which are lower than said selected output voltage by a magnitude in proportion to a distance between the code word associated with said selected line and each code word associated with each remaining selecting lines;
- means for generating a set of signals in response to the input information so that the generated set of signals may be amplified to produce said set of energizing currents which may be applied to said primary windings of said transformer assembly to induce said selected output voltage across said selected selecting line; and
- means for forming electrostatic images, impressing said selected output voltage upon a plurality of electrodes connected to said selecting lines, on a recording medium located in contact with said electrodes, the magnitude of said selected output voltage being so chosen that the input information may be recorded upon said electrostatic recording medium by the discharge between said medium and said selected electrode upon which is impressed said selected output voltage while said spurious output voltage may make no recording due to the threshold characteristics of the discharge between said recording medium and the remaining electrodes upon which said spurious output voltages are impressed.

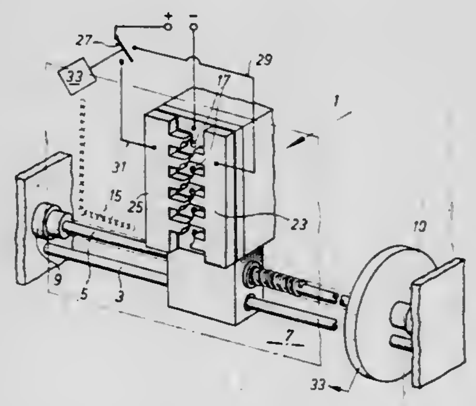
3,871,004
INK DROP WRITING HEAD

Eilt-Heyo Rittberg, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed June 26, 1974, Ser. No. 483,282

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **4 Claims**



1. In a writing head for producing, on a record carrier, a high resolution character formed of drops of a writing fluid the head including a cover member and a plurality of writing fluid drop ejectors each composed of a fluid chamber communicating with a writing fluid reservoir, an ejector nozzle communicating with the chamber and constituted by an opening in the cover member, and an individually excitable pressure pulse generator arranged to apply pressure pulses to the fluid in the chamber for ejecting drops of writing fluid from the nozzle, the plurality of nozzles being aligned in a row and the head being arranged to be positioned with the row of nozzles facing the record carrier so that fluid drops are ejected from the nozzles toward the record carrier the improvement comprising: at least one electrode member disposed adjacent all of said nozzles and mounted between said cover member and the location in which the record carrier writing surface is to be disposed during writing; and means for selectively applying a voltage differential between said cover member and said electrode member for producing an electric field which polarizes charge carriers contained in the electrically neutral writing fluid drops ejected from said nozzles and thus creates an attractive force between each such drop and said electrode member; and wherein said electrode member is configured to constitute means for causing the direction of such field to cause such attractive force to deflect the ejected writing fluid drips in a direction which is transverse to the row in which said nozzles are aligned and which has a component parallel to such row.

3,871,005
AUTOMATIC EXPOSURE CONTROL MEANS FOR A CAMERA

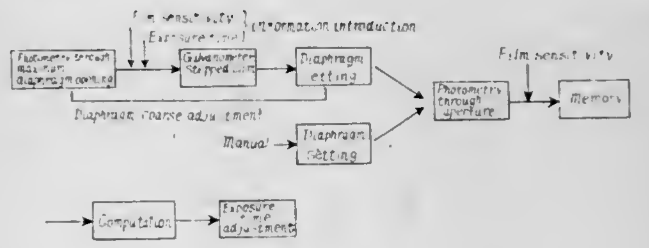
Yasuo Uchida, and Yoshitaka Kuroyanagi, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1972, Ser. No. 306,393

Claims priority, application Japan, Nov. 17, 1971, 46-91479; Feb. 17, 1972, 47-16649

Int. Cl. G03b *7/08*

U.S. Cl. 354—38 **3 Claims**



1. An automatic exposure control means for a camera comprising first exposure adjusting means having a diaphragm which is preset and moved from a full opened state to a reduced state upon camera release operation, said first exposure adjusting means comprising a first light measuring member and means responsive to the output from said first light measuring member for presetting the aperture value, second exposure adjusting means comprising a second light measuring member for receiving light which has passed through the reduced aperture and means for determining an exposure time in response to the output from said second light measuring member.

3,871,006
AUTOMATIC DIAPHRAGM SETTING APPARATUS FOR CAMERA

Hideo Takeuchi, Kozakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Higashiku, Osaka, Japan

Filed Sept. 12, 1973, Ser. No. 396,655

Claims priority, application Japan, Sept. 18, 1972, 47-108890

Int. Cl. G03b *9/04*

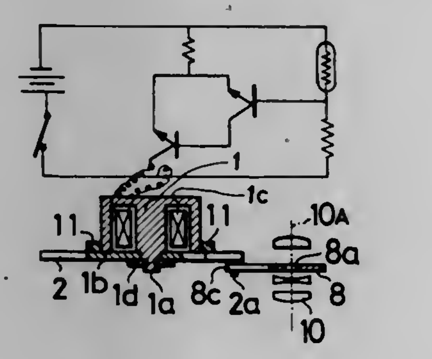
U.S. Cl. 354—40 **2 Claims**

1. An automatic diaphragm setting apparatus in a camera comprising:

- means including an electric circuit having a current source and a photoelectric cell for detecting the brightness of a subject and producing an on or off electric signal;
- an electromagnet including a stationary iron core having a planar attracting face and a stationary coil connected to the electric circuit, said electromagnet being energized in

response to the photoelectric cell of the electric circuit detecting subject brightness below a predetermined value and deenergized in response to the photoelectric cell detecting subject brightness above said predetermined value;

a diaphragm setting member pivoted at the center of the electromagnet and rotatable on the planar attracting face of the electromagnet and spring urged to rotate from a cocked first position to a released second position at the time of the camera shutter release, said diaphragm setting member remaining attracted and retained in the first position when the electromagnet is energized and moving to the second position when the electromagnet is deenergized;

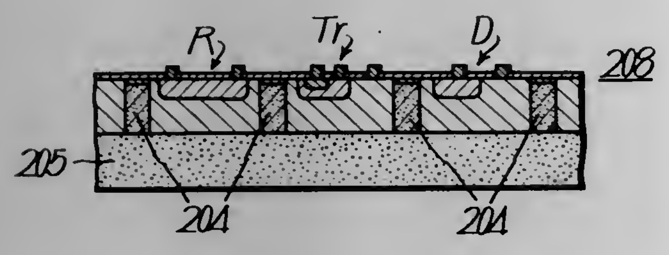


a diaphragm member having a smaller first aperture and a larger second aperture and being movable across an optical axis of an objective lens in relation to the diaphragm setting member, said first aperture being positioned on the optical axis of the objective lens when the diaphragm setting member is in the first position and said second aperture being positioned on the optical axis of the objective lens when the diaphragm setting member is in the second position.

3,871,007
SEMICONDUCTOR INTEGRATED CIRCUIT

Kinji Wakamiya, Tokyo, and Isamu Kobayashi, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,452
Claims priority, application Japan, Dec. 5, 1968, 43-89227
Int. Cl. H01l *19/00*
U.S. Cl. 357—49 **1 Claim**

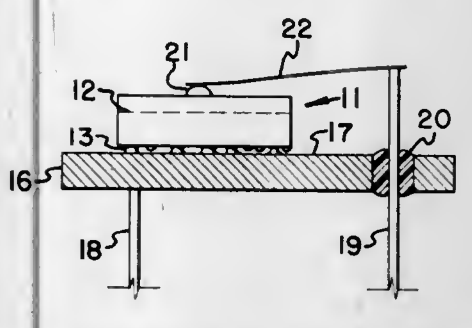


1. An integrated circuit wafer having islands of monocrystalline semiconductor material separated from each other by polycrystalline regions comprising a supporting layer of high resistivity polycrystalline silicon material, a continuous layer of semiconductor material having regions of high resistivity polycrystalline silicon material formed over predetermined areas of said supporting layer, and monocrystalline regions formed over the remaining areas of said supporting layer, said polycrystalline regions and said polycrystalline supporting layer having an impurity concentration of less than 7×10^{17} atoms/cm^3, said polycrystalline supporting layer and said polycrystalline regions of said epitaxial layer being the sole means of electrically isolating said monocrystalline regions from each other.

3,871,008
REFLECTIVE MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS

John R. Debesis, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,935
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—65 **4 Claims**

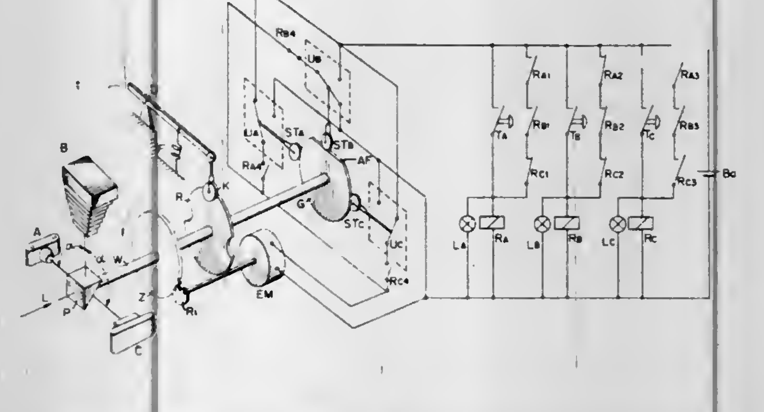


1. A contact construction for attaching a solid state light conversion element to a conductor member, comprising a plurality of individual raised electrical contact areas distributed over and attached to a surface of said light conversion element, said element being positioned with said surface adjacent to a surface of said conductor member, and bonding means attaching the outer tips of at least some of said raised contact areas to said surface of the conductor member and providing electrical connection therebetween, a major portion of said surface of the light conversion element being free from contact with solid matter.

3,871,009
PHOTOMICROGRAPHIC APPARATUS

Alfred Steinbatz, and Gerhard Kappl, both of Vienna, Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria

Filed Mar. 18, 1974, Ser. No. 452,178
Claims priority, application Austria, Mar. 30, 1973, 2803/73
Int. Cl. G03b *27/44*
U.S. Cl. 354—79 **7 Claims**

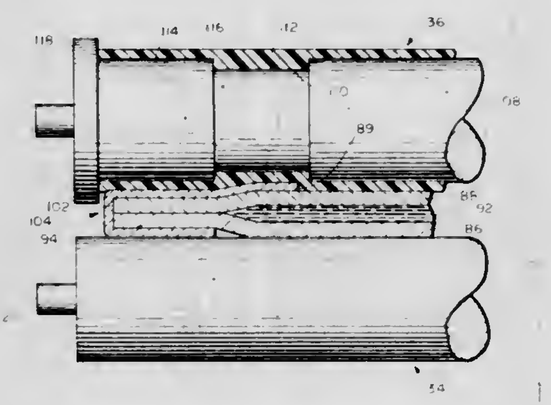


1. Apparatus for selectively diverting an optical path in a microscope attachment to one of a plurality of cameras radially positioned around said path, said apparatus comprising a rotatable light reflector having said plurality of cameras radially positioned therearound, motor means for rotating said reflector, indexing means for accurately positioning said reflector with respect to each of said cameras, each of said cameras having a motor control circuit to rotate said reflector and divert light to a selected one of said cameras, each said motor control circuit including a relay to connect motor operating voltage to said motor means, a manual switch to connect said relay solenoid to relay operating voltage and for concurrently preventing connection of other motor control circuits to said motor operating voltage, and means to short circuit said motor means to rapidly stop rotation of the reflector permitting accurate positioning of the reflector by said indexing means.

3,871,010
SPREAD ROLLER SYSTEM FOR SELF DEVELOPING TYPE PHOTOGRAPHIC APPARATUS

James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,416
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **12 Claims**



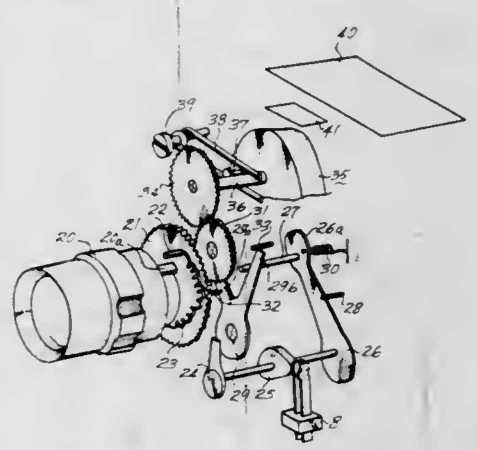
1. Photographic apparatus including means for spreading a processing fluid in a layer between first and second superposed sheet elements, at least one of the elements forming part of an exposed rectangular area of a film unit, the elements secured in superposed relationship by spaced apart longitudinal edge binding means secured to the external surfaces of the sheets and overlapping longitudinal edge of the elements, the binding means extending inwardly from the longitudinal edges of the first element on the external surface thereof to define lateral edges which in part define the exposure area and inwardly from the longitudinal edges of the second element to a distance shorter than the inward extension on the surface of the first element, the elements thus secured having longitudinal margin portions of greater thickness than the portions thereof intermediate the longitudinal edges, said spreading means comprising:

a first member having a first sheet-contacting surface; and a second member mounted in juxtaposed relation to said first member and adapted to define a pressure generating gap therewith through which the sheet elements are adapted to be advanced during spreading of the processing fluid, said second member including a generally rigid support member, means defining a pair of laterally spaced apart recesses in said support member, said recesses being adapted to respectively overlie the longitudinal margin portions of the superposed sheet elements from a lateral point intermediate the longitudinal edge on the surface of the second element and the lateral edge defining the exposure area on the surface of the first element and extending inwardly to a lateral point at least coextensive with the lateral edge defining the exposure area on the surface of the first element as the sheet elements are advanced between said first and second members, and a layer of relatively high-friction resilient material located in overlying relation to said support member, said layer including an external surface defining a second sheet-contacting surface and an interior surface having a configuration similar to that of said support member; said second sheet-contacting surface of said second member being capable of relatively more surface deformation on those portions of the said second surface overlying said recesses whereby the inwardly extending lateral edges of the binding means on the surface of the first element may move toward said recesses during spreading of the processing fluid.

3,871,011
EXPOSURE CORRECTION INDICATOR

Katsuhiko Nomura; Hiroshi Kurei, and Fumio Urano, all of Saitama-ken, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 20, 1974, Ser. No. 452,971
Claims priority, application Japan, Mar. 26, 1973, 48-35422
Int. Cl. G03b *7/00, 17/20*
U.S. Cl. 354—152 **2 Claims**



1. In a single lens reflex camera having a viewfinder, a lens diaphragm ring, and a through-the-lens automatic exposure control system arranged to be operated manually and externally of the camera to memorize at least the electric quantities corresponding to the luminance of a photographic subject and to the diaphragm aperture, the combination comprising

an indicating device viewable through the viewfinder, the indicating device including a rotatable indicator element for rotation from a normal position into a position indicative of a degree of manually selected exposure correction;

biasing means for urging the rotatable element in the direction of rotation toward the normal position;

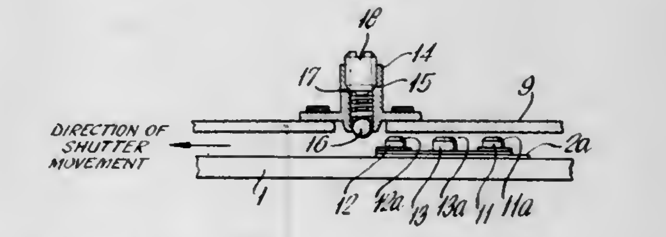
a manual memory operation lever rotatable between a manual memory position and a release position; and

means, including a clutch mechanism, for selectively connecting the diaphragm ring to the rotatable indicator element, the clutch mechanism being operated in response to the manual memory operation lever such that the diaphragm ring and the rotatable indicator element are connected or disconnected in accordance with whether the manual memory operation lever is in the manual memory position or in the released position respectively, and wherein rotation of the diaphragm ring causes rotation of the rotatable indicator element owing to the connection effected therebetween by the clutch mechanism when the manual operation lever is in the manual memory position.

3,871,012
REBOUNDLESS FOCAL PLANE SHUTTER

Keisuke Haraguchi, Kamifukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 14, 1973, Ser. No. 388,294
Claims priority, application Japan, Aug. 30, 1972, 47-100384
Int. Cl. G03b *9/20*
U.S. Cl. 354—246 **8 Claims**



1. A camera shutter comprising a metal blade type shutter member moveable between a charged and discharged position

and a damping means including a click member moveable with said shutter member and having a recess in a face thereof and a detent member located in the path of said click member and resiliently urged into releasable engagement with said recess when said shutter member is in its discharged position to releasably retain said click member in the shutter discharged position, but permitting the movement thereof along said path to opposite sides of said detent member.

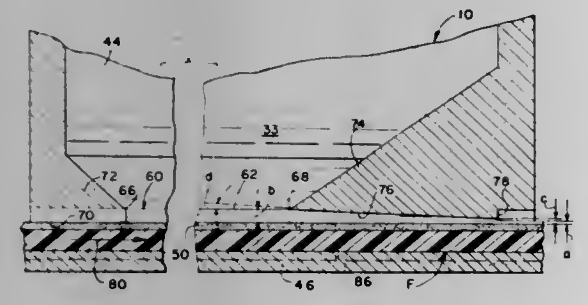
3,871,013
PROCESSOR FOR PHOTOGRAPHIC FILM CASSETTES

Edward F. Burke, Reading, and Douglas B. Holmes, South Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 214,919, Jan. 3, 1972, abandoned. This application May 16, 1973, Ser. No. 360,678

Int. Cl. G03d *3/00*

U.S. Cl. 354—317 **7 Claims**



1. A device for applying processing fluid to the emulsion surface of a photographic film strip having a pair of spaced parallel side rails extending lengthwise along the longitudinal margins of the other surface of such film strip, the device also containing a processor operative to deposit processing fluid on the emulsion surface of a moving run of the film strip after exposure of its emulsion, the improvement comprising:
  means defining a nozzle opening in a given plane;
  means, including a pressure pad located in spaced relation to such nozzle opening, for supporting at least a portion of such film intermediate such rails in a plane substantially parallel to the plane of said nozzle opening; and
  means for providing a positive pressure in such fluid downstream from said nozzle opening in the direction of film travel so as to facilitate uniform distribution of such fluid laterally of such emulsion and to urge such film towards said supporting pressure pad during the application of such fluid.

3,871,014
FLIP CHIP MODULE WITH NON-UNIFORM SOLDER WETTABLE AREAS ON THE SUBSTRATE

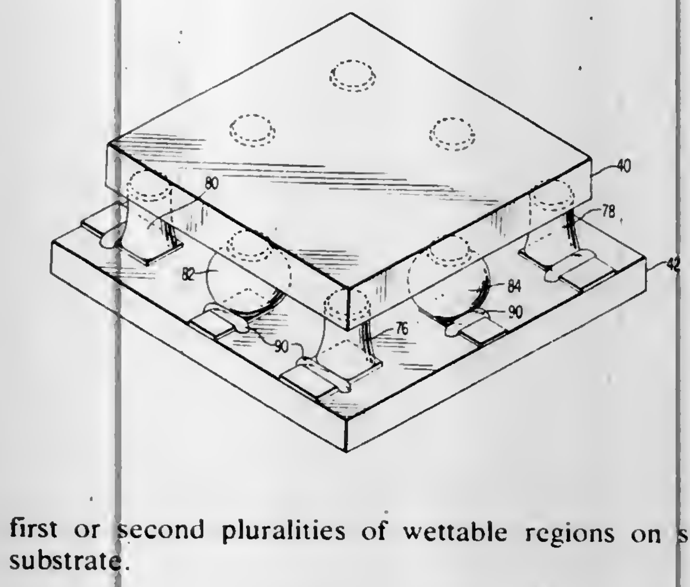
William J. King, Poughkeepsie, and David L. Wilcox, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,093

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—67 **8 Claims**

1. In a semiconductor module formed of a chip mounted to a substrate each having first and second major surfaces the improvement comprising
  a plurality of solder wettable metal regions on the first major face of said chip,
  a first plurality of solder wettable metal regions of a first size on the first major face of said substrate,
  a second plurality of solder wettable metal regions of another size substantially different from the first size on said first major face of said substrate, and
  plural stress resistant solder means for connecting respective ones of the metal regions on said chip and substrate, whereby said connection means have a first stress resistivity or a second stress resistivity different from the first dependent on whether connection is made to one of said first or second pluralities of wettable regions on said substrate.



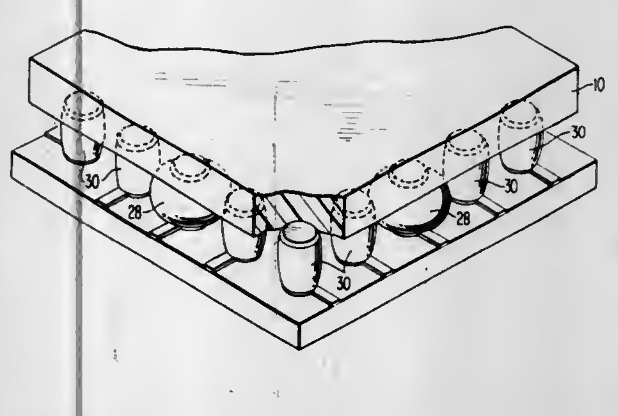
3,871,015
FLIP CHIP MODULE WITH NON-UNIFORM CONNECTOR JOINTS

Paul T. C. Lin, Beacon, N.Y., and Edwin M. Winter, West Los Angeles, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,094

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—67 **20 Claims**



1. A semiconductor module comprising a chip having first and second major surfaces with areas of metal on the first major surface thereof, a substrate having first and second major surfaces with areas of metal on the first major surface thereof, said chip and substrate being positioned so that the first major surfaces are face to face, and interconnecting joints mechanically connecting and spacing said surfaces, each of said joints being formed of an agglomeration of geometrical shape and material substance with at least two of said interconnecting joints having unequal agglomerations, whereby the stress resistivities for said unequal agglomerations are unequal.

3,871,016
REFLECTIVE COATED CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS

John R. Debesis, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

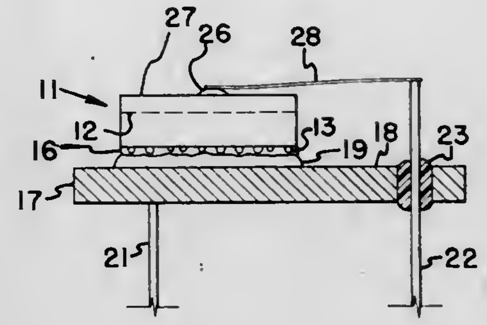
Filed Dec. 26, 1973, Ser. No. 427,936

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—68 **6 Claims**

1. A contact construction for attaching a solid state light conversion element to a conductor member, comprising a plurality of individual electrical contact areas distributed over and attached to a surface of said light conversion element, a

layer of reflective material disposed over and in contact with said surface, and bonding means electrically bonding said reflective layer and any exposed contact areas to a surface of said conductor member.



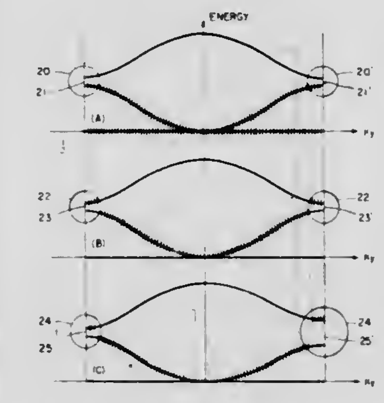
3,871,017
HIGH-FREQUENCY PHONON GENERATING APPARATUS AND METHOD

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 54,459, July 13, 1970, Pat. No. 3,676,795, which is a continuation-in-part of Ser. No. 684,155, Nov. 20, 1967, abandoned. This application June 27, 1972, Ser. No. 266,757

Int. Cl. H01s *4/00*

U.S. Cl. 357—26 **13 Claims**



8. Apparatus for generating phonons, that comprises, a multi-valley semiconductor, that is, a semiconductor whose band extrema are not at $k=0$, where k is vector pseudomomentum, so that degenerate valleys result from symmetry, said semiconductor having a conduction band of electron energy levels and a valence band of electron energy levels, said conduction band including unfilled levels and said valence band including filled levels in a condition of thermal equilibrium, means for establishing an inverted population in the occupation of the electronic energy levels of the valence and conduction bands of the semiconductor by supplying energy to move electrons from filled levels in said valence band to unfilled levels in said conduction band, means for maintaining the lattice temperature of the semiconductor at a value low enough to enable the semiconductor material to sustain at least two separate inverted electron populations in energy level band valleys having different values of vector psuedomomentum k, and means for applying a stress to the semiconductor, the stress being one that lifts the multi-valley degeneracy and of sufficient strength that intervalley electronic transitions combined with the generation of corresponding momentum conserving phonons take place.

3,871,018
CONSTRUCTION OF PACKAGES FOR SEMICONDUCTOR DEVICES

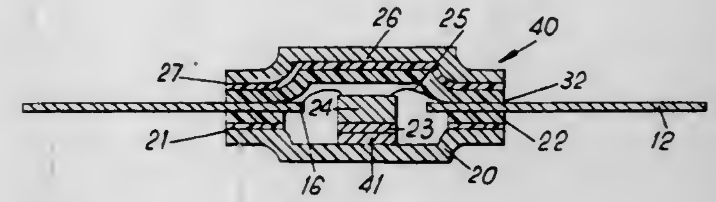
Sydney Jackson, Hayfield, and Joseph Bell Titterington, Burnley, both of England, assignors to Ferranti Limited, Hollinwood, England

Continuation of Ser. No. 236,324, March 20, 1972, abandoned. This application July 9, 1973, Ser. No. 377,177

Claims priority, application Great Britain, Mar. 26, 1971, 8720/71; May 1, 1971, 12599/71

Int. Cl. H01l *1/10*

U.S. Cl. 357—74 **7 Claims**



1. A package construction for a semiconductor device including a sub-assembly unit having a metal support to which the semiconductor device is bonded, conductors initially comprising a lead frame, and selectively on peripheral parts of the support a first composite glass layer having a composite composition comprising a first glass base layer with an affinity for the material of the support, and on said first glass base layer securing said conductors onto said support a first glass coating with a melting point below that of said first glass base layer whereby a minimum thickness of said first glass base layer insulates said conductors from said support, said package construction also including, to seal a semiconductor device bonded to said support within said package, a metal capping member secured to said sub-assembly unit, on said capping member a second composite glass layer having a composite composition comprising a second glass base layer with an affinity for the material of said capping member, and on at least part of said second glass base layer of said second composite layer a second, adhesive coating of glass having a melting point lower than the melting point of said first glass coating of said first composite layer and lower than said second glass base layer of said second composite layer so as to maintain the accurate alignment of said conductors embedded in said first glass coating with respect to said semiconductor device and to prevent damage to said semiconductor device, when so secured said conductors being insulated from said capping member, and said support said capping member and said first composite glass layer on said support having co-efficients of linear expansion substantially the same.

3,871,019
LINE SEQUENTIAL COLOR TELEVISION RECORDING SYSTEM

Joseph Peter Bingham, Birchwood Ct., N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,899

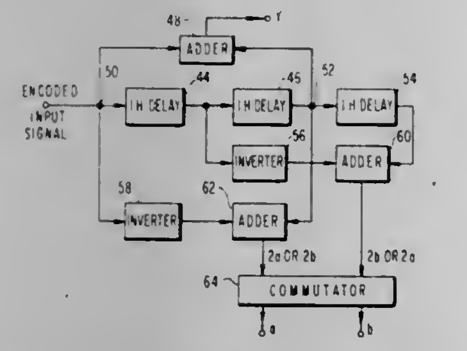
Claims priority, application Great Britain, Apr. 19, 1972, 18155/72

Int. Cl. H04n *9/02*

U.S. Cl. 358—4 **27 Claims**

1. A line sequential encoder for a color television recording system, comprising:
  a. input means supplying a set of color signals representative of a color image scanned in a series of lines;
  b. an encoding matrix coupled to the input means for deriving therefrom a luminance signal comprising components whose frequencies lie primarily at integral multiples of the horizontal line scanning frequency and a plurality of color difference signals comprising components whose frequencies lie primarily at integral multiples of the horizontal line scanning frequency;

c. switching means synchronized with the horizontal line scanning frequency for sequentially coupling each one of the plurality of color difference signals to an output terminal in a cyclic, repetitive manner to develop a chrominance signal at said output terminal comprising components whose frequencies lie primarily at spectral locations intervening integral multiples of the line scanning frequency; and

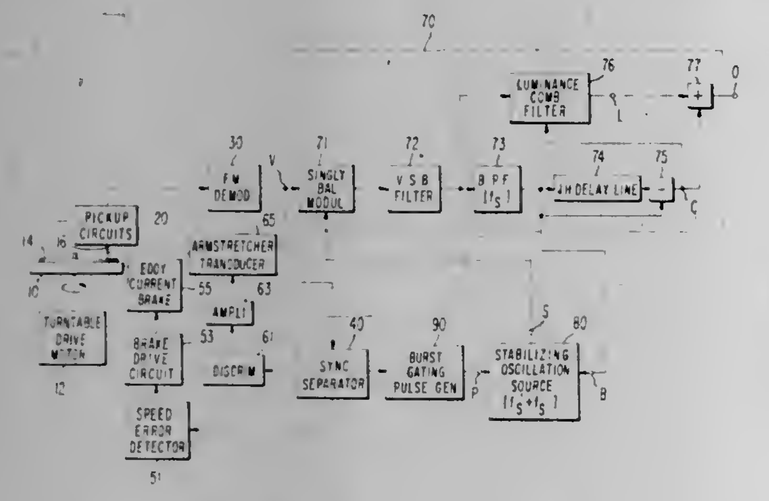


d. adding means, responsive to the luminance signal derived by said matrix and to the chrominance signal developed at said switching means output terminal, for combining said luminance and chrominance signals to provide a composite output signal for recordation.

3,871,020
CHROMINANCE SIGNAL CORRECTION

James Albert Wilber, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,564
Int. Cl. H04n *9/02, 5/76*
U.S. Cl. 358—8 **8 Claims**



1. In a video disc player including (a) video disc playback apparatus for developing a composite color television signal including a chrominance signal component occupying a first band of frequencies and comprising sidebands of a color subcarrier at a nominal frequency of f_s' and an accompanying color synchronizing component comprising recurring bursts of oscillations at said nominal frequency of f_s' said components however being subject to spurious frequency variations; and (b) means for deriving from said developed composite color television signal a chrominance signal component occupying a second band of frequencies, separate from and higher than said first band, and comprising sidebands of a color subcarrier at a nominal frequency of f_s and an accompanying color synchronizing component comprising recurring bursts of oscillations at said nominal frequency of f_s' said deriving means including a modulator responsive to the composite signal developed by said playback apparatus and to additional oscillations; apparatus for rendering the frequencies of said derived signal components substantially independent of said spurious frequency variations, comprising the combination of:

a crystal controlled oscillator operating at the frequency f_s;

a voltage controlled oscillator having a nominal operating frequency appreciably less than either f_s or f_s', but subject to variation within a third frequency band, separate from and lower than said first band, in accordance with a control voltage input;

phase detector means responsive to the output of said crystal controlled oscillator and to the color synchronizing component of said derived signal;

means for deriving said control voltage input from said phase detector means;

means for effectively frequency multiplying the output of said crystal controlled oscillator;

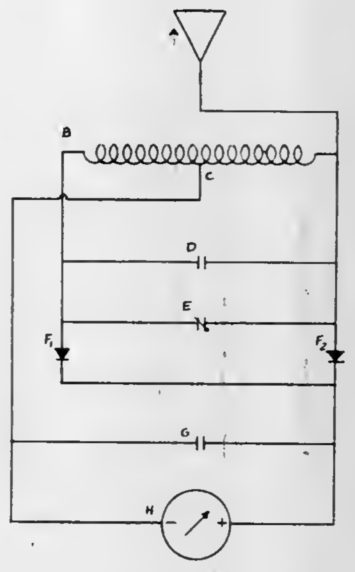
means for heterodyning the output of said frequency multiplying means with the output of said voltage controlled oscillator;

and means for utilizing the output of said heterodyning means as said additional oscillations to which said modulator is responsive.

3,871,021
3.58 MEGACYCLE BANDPASS AND OSCILLATOR DETECTOR FOR A COLOR TELEVISION

Clennie Cecil Brooks, 412 Edgewood Ave., Rome, Ga. 30161

Filed June 15, 1973, Ser. No. 353,309
Int. Cl. H04n *9/62*
U.S. Cl. 358—10 **1 Claim**



1. An apparatus for testing in a color television receiver which apparatus requires no power supply comprising:

a sensing means for radiated waves, a resonant circuit means comprising an inductance means and capacitance means connected to said sensing means, a rectifying means connected to the resonant circuit, a metering means connecting the rectifying means and inductance means, said apparatus senses the operability of a color oscillator in said receiver when said sensing means is closely associated with said oscillator,

said sensing means comprising a loop connected to said resonant circuit.

3,871,022
NOISE AND OVERLOAD PROTECTION CIRCUIT FOR SYNCHRONOUS DEMODULATORS

Milton E. Wilcox, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 421,291
Int. Cl. H04n *9/50*
U.S. Cl. 358—23 **12 Claims**

6. A demodulator circuit suitable for being manufactured in integrated circuit form and for operating at low power supply voltages including in combination:

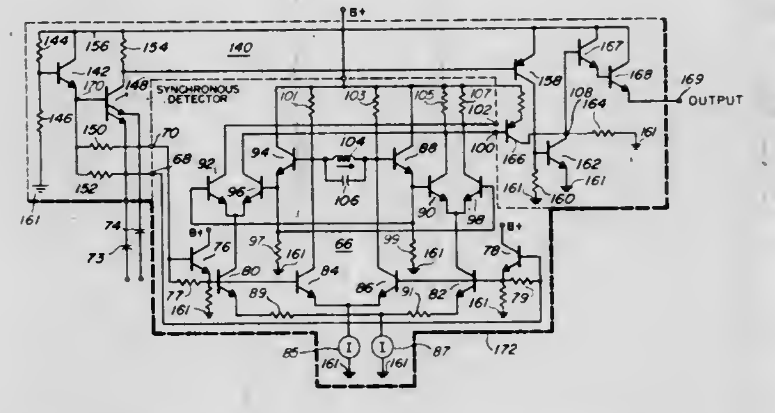
synchronous demodulator means having an input terminal adapted to receive a modulated input signal and an output terminal at which a demodulated output signal is developed, said synchronous demodulator means tending to provide an output signal of undesired magnitude in response to the magnitude of the input signal exceeding a first threshold level;

first conductor means adapted to supply a first power supply voltage of a first magnitude;

second conductor means;

voltage reference supply means connected between said first conductor means and said second conductor means, said voltage reference supply means providing a reference voltage at an output terminal thereof;

first electron control means having a first electrode, a second electrode connected to said output terminal of said voltage reference means and a third electrode;



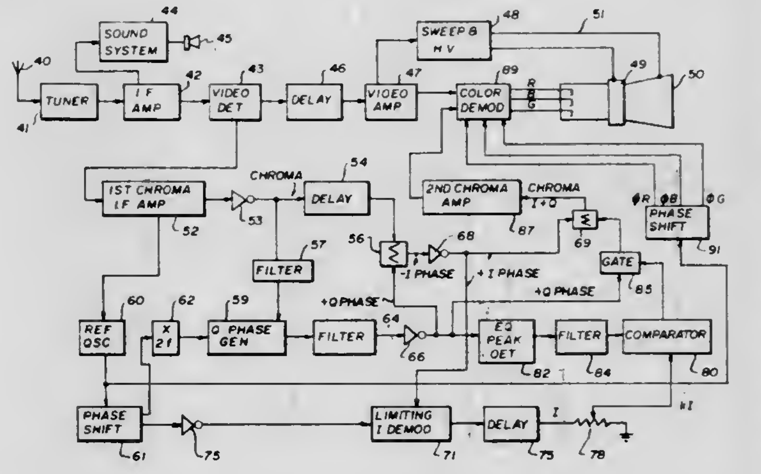
first circuit means connecting said first electrode and said second electrode of said first electron control means to said input terminal of said synchronous demodulator means, said first electron control means being rendered conductive in response to the input signal exceeding a second threshold level which is less than said first threshold level; and

second circuit means coupled between said third electrode of said first electron control means and said output terminal of said synchronous demodulator means, said second circuit means being responsive to said first electron control means being rendered conductive to provide a desired output signal level at the output terminal of said synchronous demodulator means.

3,871,023
LIMITING DETECTOR CIRCUIT AND METHOD OF OPERATING SAME

Gerald L. Caprio, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 248,195, April 27, 1972, abandoned. This application June 20, 1974, Ser. No. 481,297
Int. Cl. H04n *9/535*
U.S. Cl. 358—28 **5 Claims**



1. A product detector having first and second inputs including in combination:

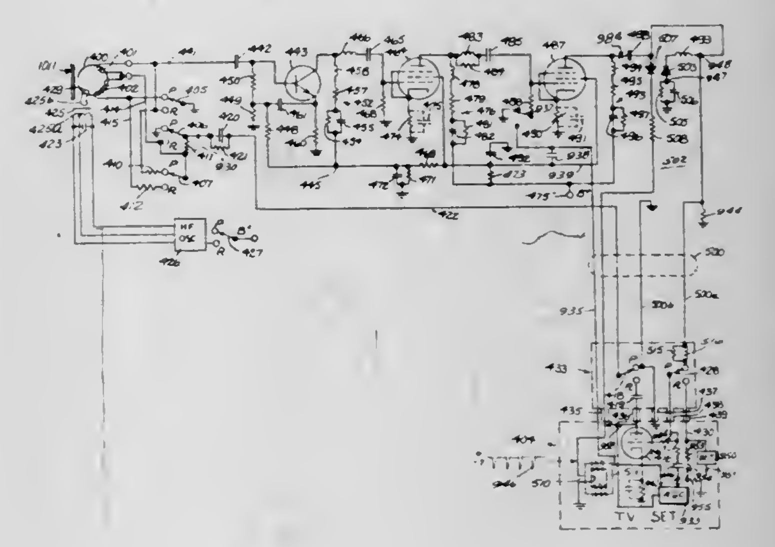
means for supplying an amplitude modulated input signal at a predetermined frequency to the first input of said product detector, the amplitude modulations of said input signal being subject to exceeding a predetermined amplitude; and

means for supplying a reference signal at said predetermined frequency, and having an amplitude less than said predetermined amlitude, to the second input of said product detector.

3,871,024
VIDEO TRANSDUCER SYSTEM WITH MAGNETIC TRANSDUCER HEAD HAVING OUTPUT WINDING MEANS RESONANT AT A MID BAND RESONANCE FREQUENCY

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 165,660, July 23, 1971, abandoned, and a continuation-in-part of Ser. Nos. 344,075, Feb. 11, 1964, and Ser. No. 848,992, Aug. 11, 1969, which is a division of Ser. No. 401,832, Oct. 6, 1964, Pat. No. 3,495,046, which is a continuation-in-part of Ser. No. 389,021, Aug. 12, 1964, Pat. No. 3,469,037. This application June 15, 1973, Ser. No. 370,534
Int. Cl. H04n *5/78;* **G11b** *5/20, 5/44*
U.S. Cl. 360—33 **17 Claims**

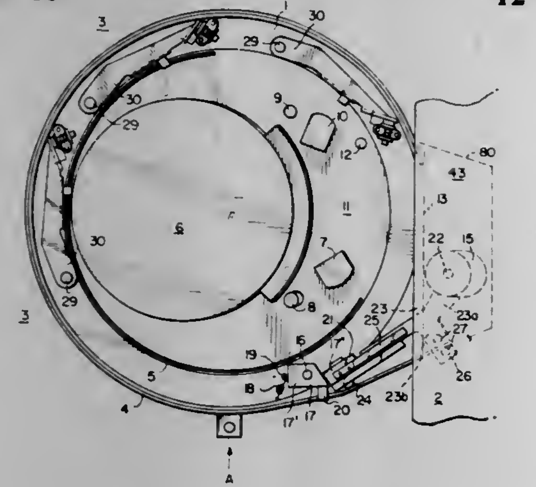


1. A video transducer system for the transmission of video intelligence comprising: a magnetic transducer head having output winding means resonant at a mid band resonance frequency, said head having coupling means for coupling to a magnetic record medium to receive input frequency components both above and below said mid band resonance frequency and producing at the output winding means corresponding output frequency components having a substantial phase error therebetween in comparison to the relative phase of said input frequency components the input frequency components extending frequency component to the highest essential frequency component for transmission of the video intelligence extnding over many octaves, and signal translating means having an input coupled to said output winding means and having an input impedance at said mid band resonance frequency, said signal translating means having an output, and having a compensating circuit interposed between the input and output thereof to substantially equalize the shifts in phase produced between said head coupling means and said output over a substantial range of frequencies including frequency components below said mid band resonance frequency and frequency components above said mid band resonance frequency to essentailly compensate for such phase error over the wide bandwidth of the video intelligence being transmitted.

3,871,025

TAPE LOADING SYSTEM FOR AUTOMATICALLY WITHDRAWING A TAPE FROM A CASSETTE AND ENGAGING THE TAPE WITH A RECORDING AND/OR REPRODUCING HEAD

Soji Nakamoto, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed May 25, 1973, Ser. No. 363,844
Claims priority, application Japan, June 1, 1972, 47-54836
Int. Cl. G11b *15/66, 5/52*
U.S. Cl. 360—85 **12 Claims**



1. An automatic magnetic tape loading system for magnetic recording and/or reproducing apparatus comprising,
   - a. at least one rotating magnetic head;
   - b. cylindrical tape guide means mounted on a base member for guiding a magnetic tape on its surface said cylindrical tape guide means having a circumferential gap along which said at least one rotary magnetic head scans, as said magnetic tape moves along said tape guide means crossing said gap;
   - c. a rotatable loop means surrounding said cylindrical tape guide means in an eccentric relationship therewith;
   - d. means for rotating said loop means;
   - e. pinch roller means rotatably mounted on a first axis means disposed on a first supporting member rotatably carried by a second axis means on a second supporting member mounted on a third axis means mounted on said rotatable loop means whereby said pinch roller means is movable in three dimensions and said pinch roller means engages said tape in a cassette and withdraws said tape therefrom;
   - f. a plurality of guide pin means each mounted on a supporting plate means mounted by a pillow block on said rotatable loop means and each moving independently with respect to said rotatable loop means;
   - g. first guide frame means for guiding said guide pin means such that said pin means guides the magnetic tape along said cylindrical guide means crossing said gap upon rotation of said loop means; and
   - h. second guide frame means for guiding said pinch roller means such that said pinch roller draws the magnetic tape out of the cassette and moves it along said cylindrical guide means upon rotation of said loop means.

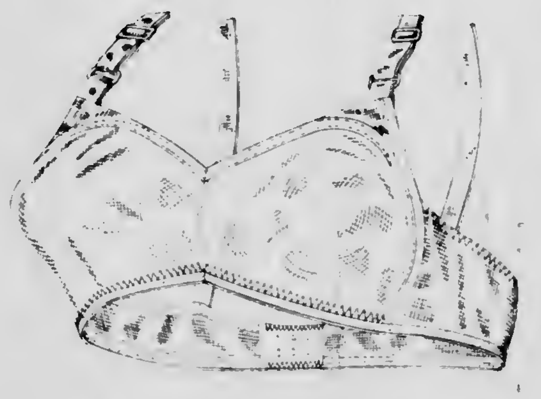
DESIGNS

GRANTED MARCH 11, 1975

234,444

BRASSIERE

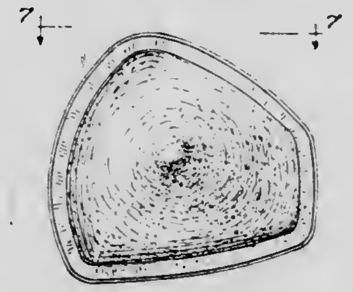
Irwin Greenblatt, Blauvelt, N.Y., and Nicholas A. Marino, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Oct. 31, 1972, Ser. No. 302,592
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

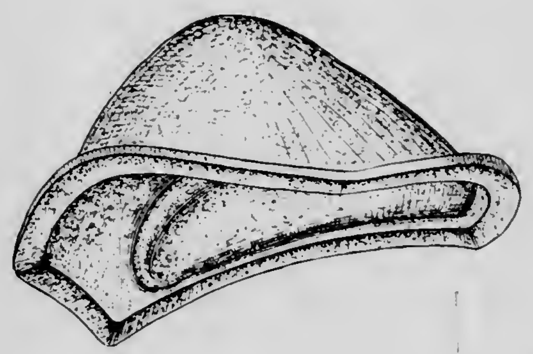


234,445

BRASSIERE PAD

Irwin Greenblatt, Blauvelt, N.Y., and Nicholas A. Marino, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Oct. 31, 1972, Ser. No. 302,593
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

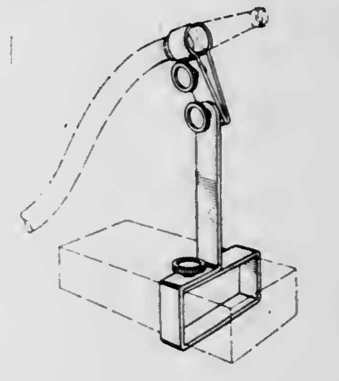




234,446

SUPPORT BRACKET FOR HOSE NOZZLE

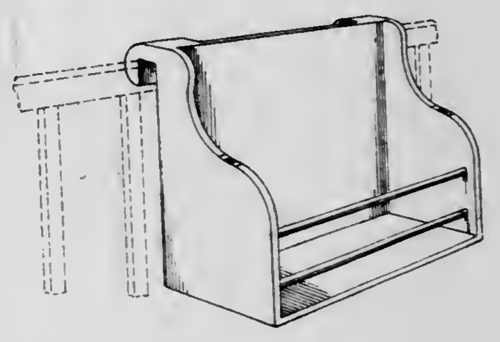
Nelson Severinghaus, Atlanta, Ga. (213 Glenn Circle, Decatur, Ga. 30030)
Filed Feb. 22, 1973, Ser. No. 334,912
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—112



234,447

RACK FOR CRIB ACCESSORIES OR THE LIKE

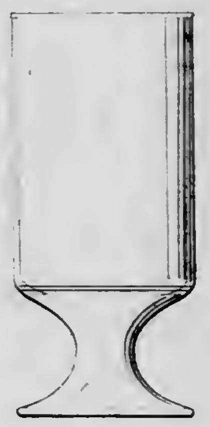
Kenneth E. Johns, 22909 Baltar St., Canoga Park, Calif. 91304
Filed July 30, 1973, Ser. No. 383,585
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113



234,448

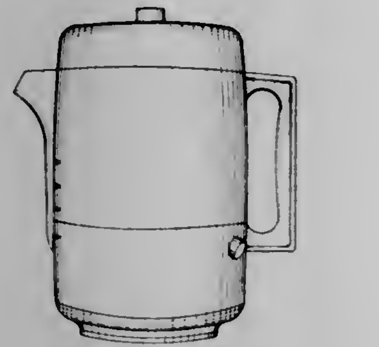
GOBLET OR SIMILAR ARTICLE

Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 9, 1973, Ser. No. 377,595
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13



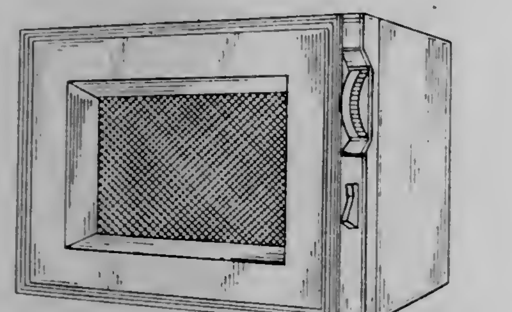
234,449
COFFEEMAKER

Franz Alban Stuetzer, Muhlheim am Main, and Klaus Mayer, Offenbach am Main, Germany, assignors to Rowenta-Werke G.m.b.H., Offenbach am Main, Germany
Filed Aug. 13, 1973, Ser. No. 388,501
Claims priority, application Germany Feb. 16, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



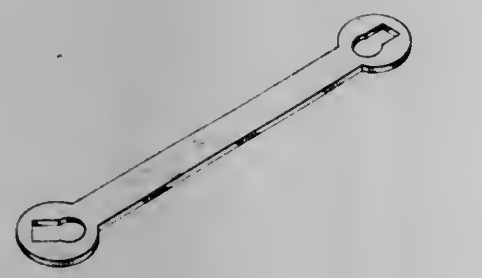
234,450
ELECTRONIC COOKING RANGE

Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed June 20, 1973, Ser. No. 371,774
Claims priority, application Japan Dec. 26, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



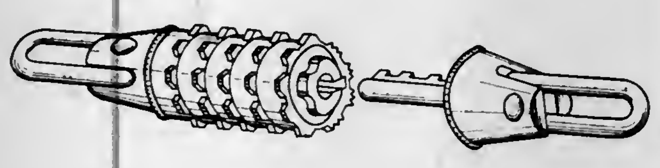
234,451
GAS METER VALVE WRENCH

Joseph C. Bloom, 1815 Guerneville Road, Santa Rosa, Calif. 95406
Filed Sept. 19, 1973, Ser. No. 398,824
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—17



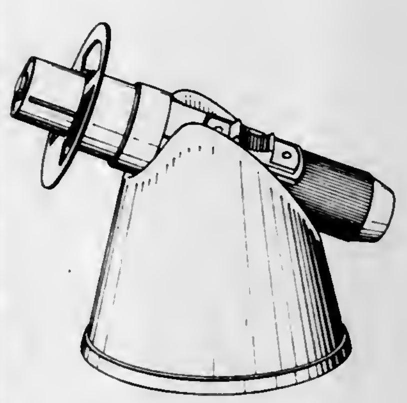
234,452
COMBINATION LOCK FOR BICYCLES OR THE LIKE

Hisashi Saito, Nagoya, Japan, assignor to Kabushiki Kaisha Saikosha Seisakusho, Kasugai, Aichi Perfecture, Japan
Filed Jan. 3, 1973, Ser. No. 320,711
Term of patent 14 years
The term of this patent subsequent to Aug. 10, 1985, has been disclaimed
Int. Cl. D8—*07*
U.S. Cl. D8—114



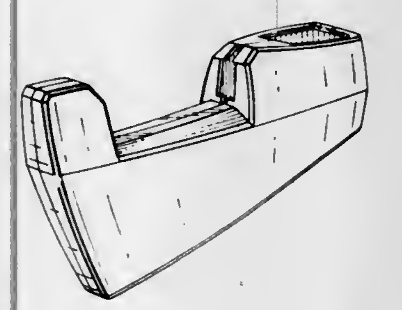
234,453
BATTERY POWERED TAPE WINDER FOR PUNCHED PAPER TAPE AND THE LIKE

Jacob J. Ginsberg, Tewksbury, Mass., assignor to Peripheral Graphics Inc., Andover, Mass.
Filed July 12, 1973, Ser. No. 378,615
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



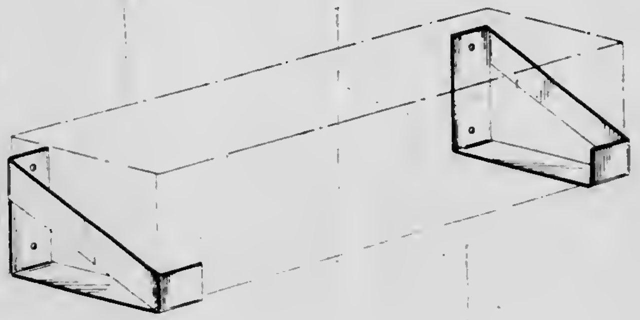
234,454
COVER FOR AUTOMOBILE SEAT BELT LOCK

Ulf Tolfsen, Fredrikstad, Norway, assignor to Loyd's Industri A/S, Fredrikstad, Norway
Filed Oct. 15, 1973, Ser. No. 406,400
Claims priority, application Norway Apr. 13, 1973
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D8—224



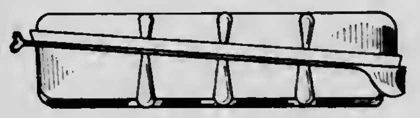
234,455
SET OF BRACKETS FOR PAPER TOWEL PACKAGES OR THE LIKE

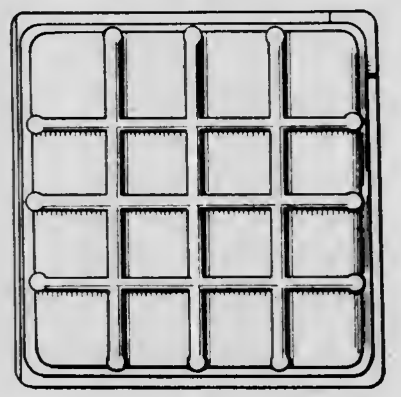
William A. Blake, 8757 NE. Prescott St., Portland, Oreg. 97220
Filed Jan. 28, 1974, Ser. No. 436,992
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



234,456
CONTAINER FOR FOOD PRODUCTS

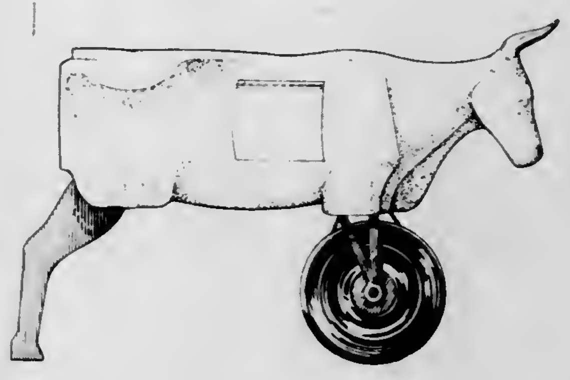
Timothy E. Dearth and Richard H. Guernsey, Indianapolis, and Ronald R. Hydell, Speedway, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 19, 1973, Ser. No. 342,648
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182





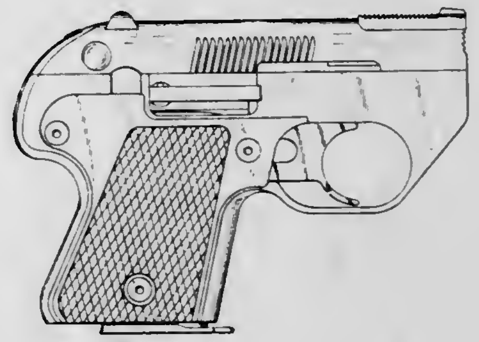
234,457
MECHANICAL ROPING STEER

Ralph Mosa, 3336 Mustang, Las Vegas, Nev. 89108
Filed Dec. 26, 1973, Ser. No. 428,038
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



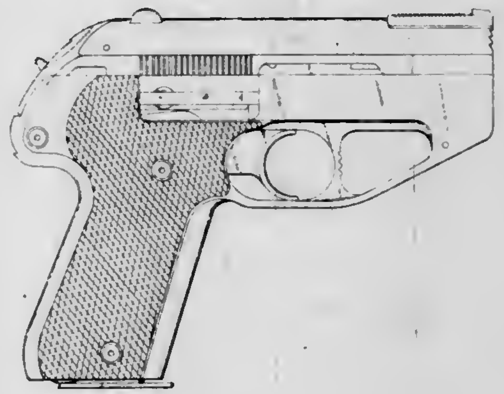
234,458
HAND GUN

Philip R. Lichtman, 35 Lee St., Cambridge, Mass. 02173
Filed Nov. 5, 1973, Ser. No. 412,727
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



234,459
HAND GUN

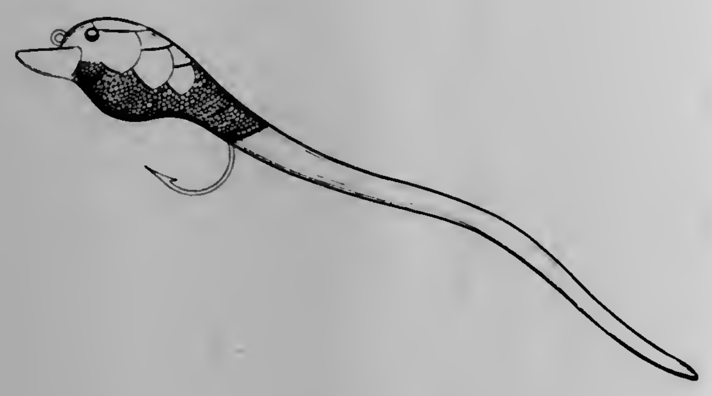
Philip R. Lichtman, 35 Lee St., Cambridge, Mass. 02173
Filed Nov. 12, 1973, Ser. No. 414,902
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



234,460
FISHING LURE

Russell F. Caldwell, 1116 8th Ave., Silvis, Ill. 61282, and Dannie E. Laughead, 1830 31st St., Moline, Ill. 61265

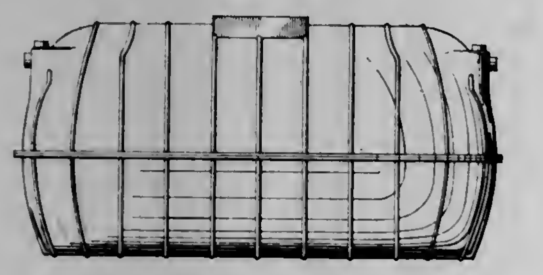
Filed Jan. 28, 1974, Ser. No. 437,178
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

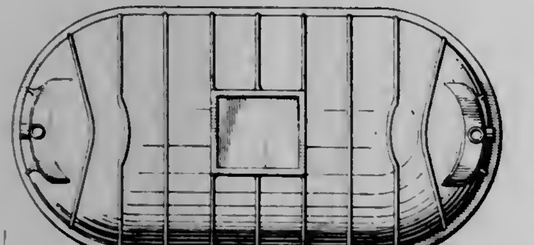


234,461
SEWAGE SEPTIC TANK

Terrell D. Piotrowski, 103 Pamela Drive, Athens, Ga. 30601

Filed Apr. 10, 1973, Ser. No. 349,822
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

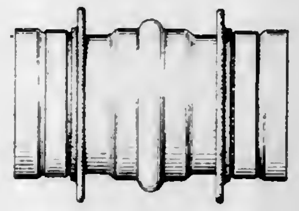


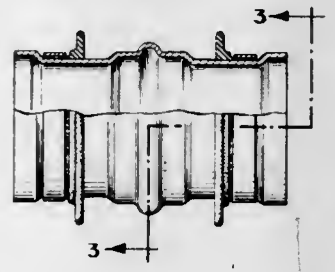


234,462
DUCT COUPLING

Ake Ahlrot, Amiralsgatan 10, S–552 48 Jonkoping, Sweden

Continuation-in-part of design application Ser. No. 279,067, Aug. 9, 1972. This application Nov. 17, 1972, Ser. No. 307,365
Claims priority, application Sweden Feb. 11, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

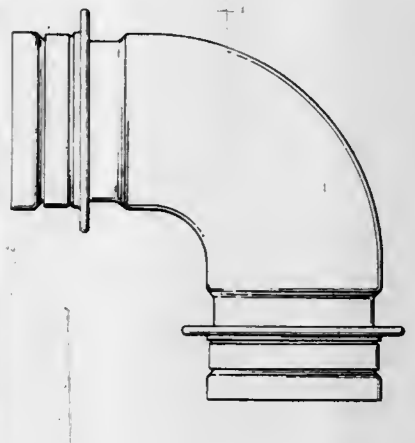




234,463
DUCT COUPLING

Ake Ahlrot, Amiralsgatan 10, S–552 48 Jonkoping, Sweden

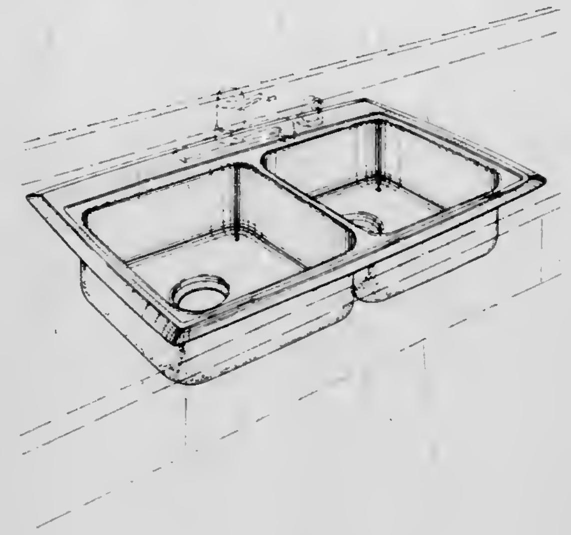
Continuation-in-part of design application Ser. No. 307,365, Nov. 17, 1972, which is a continuation-in-part of abandoned design application Ser. No. 279,067, Aug. 9, 1972. This application Feb. 22, 1974, Ser. No. 444,882
Claims priority, application Sweden Feb. 11, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



234,464
DOUBLE BOWL SINK

Henry M. Stairs, Jr., Somerville, N.J., assignor to American Standard Inc., New York, N.Y.

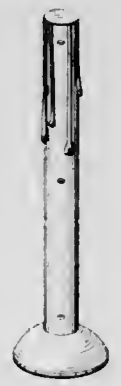
Filed Aug. 2, 1973, Ser. No. 385,116
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62



234,465
INCENSE BURNER

Louis C. Warner, 205 Summit E., Apt. 302, Seattle, Wash. 98102

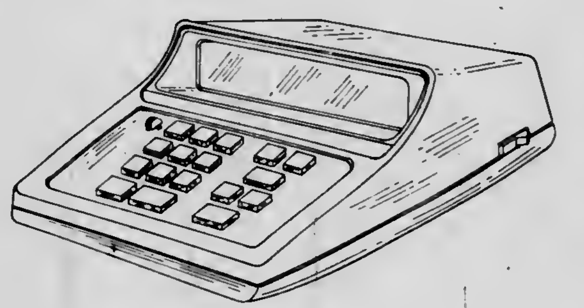
Filed May 13, 1974, Ser. No. 469,379
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D23—78



234,466
ELECTRONIC CALCULATING MACHINE

Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

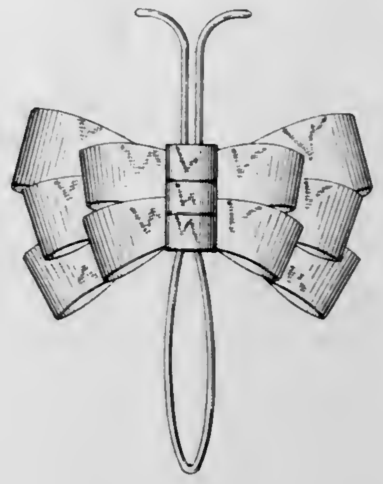
Filed Oct. 26, 1973, Ser. No. 409,871
Claims priority, application Japan Apr. 28, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



234,467
BUTTERFLY BOW DECORATION

Elaine V. Del Grosso, 318 Greenway Drive, Pittsburgh, Pa. 15235

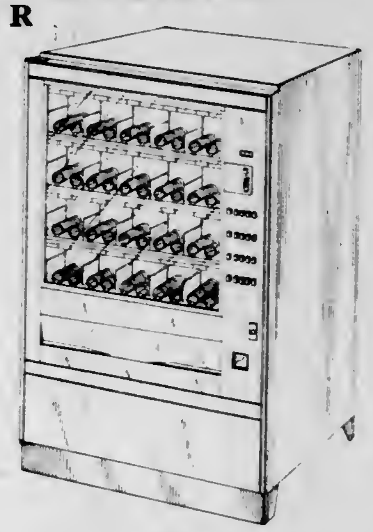
Filed Nov. 17, 1971, Ser. No. 199,831
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D29—1 R



234,468
VENDING MACHINE

Walter L. Koch, Caldwell, and Robert P. Franklin, Jefferson Township, N.J., assignors to Rowe International Inc., Whippany, N.J.

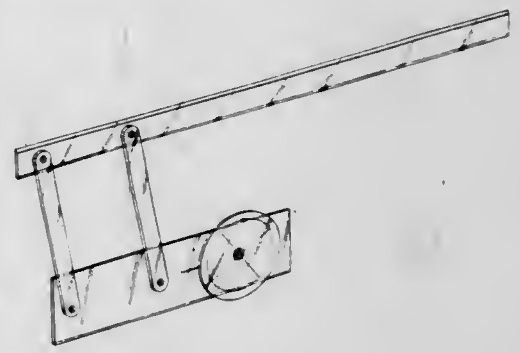
Filed May 3, 1973, Ser. No. 356,766
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



234,469
NAVIGATION INSTRUMENT

John Lindsay, 5050 NE. 178th St., Seattle, Wash. 98155

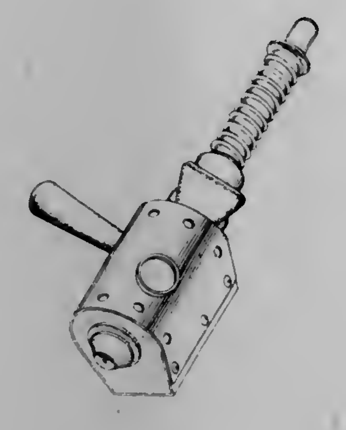
Filed Dec. 4, 1972, Ser. No. 311,794
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—62



234,470

PLASTICS INJECTION MOLDER

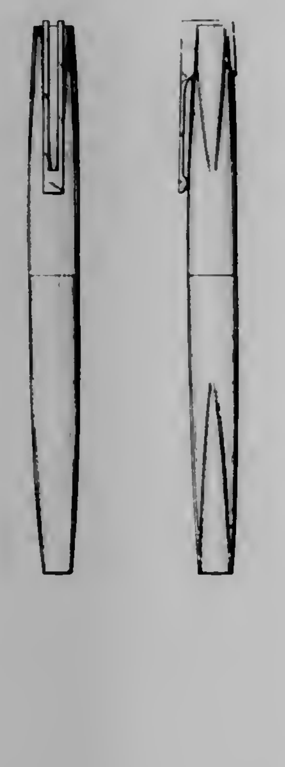
Robert M. Haygeman, Box 11, Canton, S. Dak. 57013
Filed May 3, 1973, Ser. No. 356,744
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 F



234,471

PEN

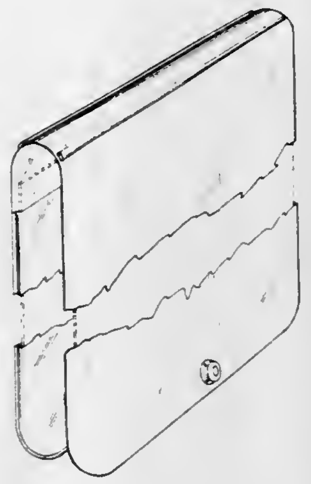
Alain Carre, Paris, France, assignor to
Societe Le Foyer, Paris, France
Continuation-in-part of abandoned design applications Ser. No. 227,323 and 227,325, both Feb. 17, 1972.
This application June 1, 1973, Ser. No. 366,210
Claims priority, application France Aug. 18, 1971
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



234,472

ADVERTISING INSERT HOLDER FOR SUPERMARKET CARTS

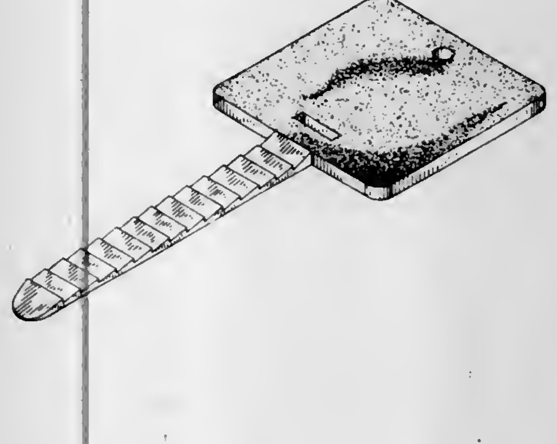
Donald H. Fosher, 352 Diplomat Lane, Chesterfield, Mo. 63017, and Robert J. Brace, 9415 Crestwood Manor Drive, St. Louis, Mo. 63126
Filed May 17, 1973, Ser. No. 361,251
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—3



234,473

IDENTIFICATION TAG

James B. Ringle, Rte. 5, Box 544, Angola, Ind. 46703
Filed Feb. 20, 1974, Ser. No. 444,031
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D19—18



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PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. C. Weber & Co., Inc.: *See—*
  - Shepherd, Don W., 3,870,386.
- A. E. Staley Manufacturing Company: *See—*
  - Hayes, Lester P.; Robinson, John W.; Simms, Ross P.; and Russell, Millard E., 3,870,805.
  - Kryger, Allen C.; Nevin, Charles S.; and Wilhelm, Donald L., 3,870,527.
- A. J. Oster, Co.: *See—*
  - Darnell, Robert S.; and Morrissey, Everett G., 3,870,513.
- A/S Raufoss Ammunisjonsfabrikker: *See—*
  - Kleppe, Byrge; and Torgersen, Ole, 3,870,081.
- A-T-O Inc.: *See—*
  - Mathews, Carl S.; and Swagerty, Arnold, 3,870,999.
- A-1010, by said Erna Plasser, heir: *See—*
  - Plasser, Franz, deceased; Theurer, Josef; and Schubert, Egon, 3,869,907.
- AB Filtrator: *See—*
  - Ritzler, Bo, 3,870,483.
- Abbott Laboratories: *See—*
  - Johnson, Wayne R., 3,870,872.
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  - Wiley, Robert Emerson; and Coniglio, James John, 3,870,987.
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  - Holt, Frederick R.; and Flueckiger, Noah, 3,870,948.
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  - Patrick, Malcolm W.; and Adams, Joseph W., 3,870,052.
- Adamski, Joseph A.; Weiner, Joseph R.; and Lavoie, Girard H. Method and apparatus for growing crystals by annealing the crystal after formation. 3,870,472, Cl. 23-273.0SP.
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  - Goebel, Joseph, 3,870,413.
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  - Toth, Thomas Daniel, 3,869,984.
- Admiral Corporation: *See—*
  - Wolff, Robert A., 3,870,956.
- Aetna Business Credit, Inc.: *See—*
  - Perri, Joseph, 3,870,273.
- Aetna-Standard Engineering Company: *See—*
  - Dolle, David E., 3,869,949.
  - Rau, Robert J., 3,869,948.
- Afanasiev, Viktor Vasilievich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
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  - Jores, Willi; Hoffacker, Franz; and Lehmann, Helmut, 3,870,584.
  - Moisar, Erik; and Klotzer, Sieghart, 3,870,522.
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  - Gayler, Winston D.; and Ahern, James E., 3,870,823.
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  - Hanna, Drexel W., Jr., 3,870,992.
- Air-Industrie: *See—*
  - Lacchia, Adrien, 3,870,232.
- Air Products and Chemicals Inc.: *See—*
  - DeLaMater, George B.; Herrick, Elbert C.; and Milligan, Barton, 3,870,739.
  - Kaplan, Paul N., 3,870,152.
- Air Purification Systems, Inc.: *See—*
  - Dixson, Bruce E.; Hoffman, Marcus I., III; and Walls, Milton A., 3,870,495.
- Aisin Seiki Co. Ltd.: *See—*
  - Miyao, Takayuki; and Maeda, Hiroaki, 3,869,939.
- Aktiebolaget Atomenergi: *See—*
  - Margen, Peter Heinrich Erwin, 3,869,857.
- Aktiebolaget Bofars: *See—*
  - Andersson, John Erik, 3,869,906.
- Aktiebolaget Electrolux: *See—*
  - Eriksson, Bolik Anders Gottfrid; Johansson, Erik Karl Gustav; and Vukotic, Milos, 3,870,486.
- Aktieselskabet Chr. Nielsens Eftf.: *See—*
  - Broe, Max, 3,870,274.
- Albaum, Joseph D.: *See—*
  - Capossela, Anthony C.; McGuire, Michael T.; Smith, Gordon C.; and Albaum, Joseph D., 3,870,806.
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  - Newell, Stephen D., 3,870,235.
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  - Roberts, Robert C; and Alcorn, Edward B., 3,870,825.
- Aldrich, Charles S.: *See—*
  - Canick, Leon N.; and Aldrich, Charles S., 3,870,224.
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- Alexander, John Bert: *See—*
  - Barth, Gerald Dean; and Alexander, John Bert, 3,869,957.
- Alexander, Wayne K.: *See—*
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- Alexandrova, Angelina Nikolaevna: *See—*
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  - Shields, John P., 3,870,847.
- Allen, Cloy L. Mobile home protector. 3,869,836, Cl. 52-23.000.
- Allen, Corey M., to Carton Sales, Inc. Cigarette carton dispensing system. 3,870,135, Cl. 194-4.000.
- Allen, John E., to Ferro-Carb Agglomeration Ltd., Inc. Control of pollution by recycling solid particulate steel mill wastes. 3,870,507, Cl. 75-4.000.
- Allen, John E., to Ferro-Carb Agglomeration Ltd., Inc. Method of disposing of particulate scrap iron. 3,870,509, Cl. 75-44.00S.
- Allen, Marshall T. Apparatus and method for testing engine oil pressure. 3,869,905, Cl. 73-119.00R.
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- Allen, Thomas E., to CMI Corporation. Surface finishing method and apparatus. 3,870,427, Cl. 404-103.000.
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  - Belsky, Stephen Edward; and Bonfield, John Henry, 3,870,716.
  - Guptill, Joel P., 3,870,780.
- Allied Steel & Tractor Products, Incorporated: *See—*
  - Century, Bernard A., 3,870,279.
- Allsop, Ivor J.; Allsop, Jon I.; Allsop, Michael G.; and Allsop, James D. Shoe merchandizing and handling system. 3,870,153, Cl. 211-37.000.
- Allsop, James D.: *See—*
  - Allsop, Ivor J.; Allsop, Jon I.; Allsop, Michael G.; and Allsop, James D., 3,870,153.
- Allsop, Jon I.: *See—*
  - Allsop, Ivor J.; Allsop, Jon I.; Allsop, Michael G.; and Allsop, James D., 3,870,153.

Allsop, Michael G.: *See—*
  Allsop, Ivor J.; Allsop, Jon I.; Allsop, Michael G.; and Allsop, James D., 3,870,153.
Almich, Clarence L.; Polk, Jack D., Jr.; and Aulick, Robert A., to Northrop Corporation. Training module connector. 3,870,839, Cl. 200-5.00A.
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  Johnson, Axel R.; Wolk, Ronald H.; and Alpert, Seymour B., 3,870,623.
Alps Electric Co., Ltd.: *See—*
  Suzuki, Kazuo, 3,870,961.
Altimus, William B. Inboard outboard motor cover. 3,870,875, Cl. 240-2.00R.
Aluminum Company of America: *See—*
  Hawkins, Ronald G., 3,870,815.
  Wentzel, Warren W., Jr.; and Harper, Robert A., Jr., 3,870,374.
Amendola, Warren R. Golf tee holder usable to form a rake. 3,870,300, Cl. 273-32.00B.
American Aero Inc.: *See—*
  Stachowiak, John E.; and Goss, John B., 3,870,439.
American Hospital Supply Corporation: *See—*
  Aulik, Clarence J., 3,870,289.
American Seating Company: *See—*
  Barecki, Chester J., 3,870,363.
Ametek, Inc.: *See—*
  Hardiman, Russell J.; Leiter, Leigh David; and Valle, Howard C., 3,870,263.
Ammann, Ernst, to Siemens Aktiengesellschaft. Device for measuring absorption. 3,870,885, Cl. 250-360.000.
Anaconda American Brass Co.: *See—*
  Bray, Robert S.; and Tapley, Claude D., 3,869,899.
Anchor Hocking Corporation: *See—*
  Brown, William L.; and Shonebarger, Francis J., 3,870,015.
Anderson, Gordon C.: *See—*
  Pray, Lester W.; and Anderson, Gordon C., 3,870,195.
  Savageau, Richard J.; and Anderson, Gordon C., 3,869,759.
Anderson, Harold Elden; and Kruckenberg, Perry Lester, to McCulloch Corporation. Method and apparatus for improving the fuel injection characteristics of internal combustion engines. 3,870,025, Cl. 123-139.0AF.
Anderson, John D.; and Vander Stel, Gerald L., to Avis Products, Inc. Convertible portable folding greenhouse. 3,869,827, Cl. 47-17.000.
Andersson, John Erik, to Aktiebolaget Bofars. Element applicable as or in a transducer (load cell). 3,869,906, Cl. 73-141.00A.
Andrews, Philip S.: *See—*
  Farrissey, William J., Jr.; and Andrews, Philip S., 3,870,677.
Andzhaparidze, Otar Georgievich: *See—*
  Alexeeva, Alexandra Konstantinovna; Yakovleva, Ljudmila Alexandrovna; Vasilieva, Irina Nikolaevna; Andzhaparidze, Otar Georgievich; and Alexandrova, Angelina Nikolaevna, 3,870,598.
Anfruns, Luis Sentis. Method and machine for making toe pieces for socks and stockings. 3,869,881, Cl. 66-64.000.
Angstadt, Howard P., to Sun Ventures, Inc. Complex of 2,6-dimethylnaphthalene and 2-cyano-6-methylnaphthalene. 3,870,745, Cl. 260-465.00R.
Anheuser-Busch, Incorporated: *See—*
  Teng, James; and Stubits, Marcella C., 3,870,701.
Anthamatten, Joseph L. Brake and multi-speed drive for a bicycle. 3,870,134, Cl. 192-6.00A.
Antipin, Vadim Grigorievich: *See—*
  Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
Anzel, Sanford H.: *See—*
  Waugh, Theodore R.; Smith, Richard C.; Anzel, Sanford H.; and Orofino, Caesar F., 3,869,731.
Aoki, Toshio: *See—*
  Suzuki, Tomohide; and Aoki, Toshio, 3,870,820.
Appleman, William S.: *See—*
  Richmond, Albert R.; and Appleman, William S., 3,870,110.
Applied Power Industries, Inc.: *See—*
  Hunnicutt, Wayne E.; and Rossbach, Peter G., 3,869,767.
Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., to USC Incorporated. Sampling slide value. 3,870,078, Cl. 137-625.480.
Aqua Media: *See—*
  Faylor, Terry Lee; and Martin, Roger W., 3,870,033.
Arakawa, Yasuhiro: *See—*
  Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
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Aralt, Per Tybring, to Kristian Gerhard Jebsen. Assembly for preventing the escape of dust particles during a more or less flowing transfer of powdered material. 3,870,168, Cl. 214-17.000.
Arblaster, Dennis. One-piece seamless hollow resuscitation plaque. 3,870,038, Cl. 128-28.000.
Archibald, John Leheup; Boyle, John Terence Arnott; and Saunders, John Christopher, to John Wyeth & Brother Limited. 4-Alkanoylamino isoquinoline diones and 3-alkanoyloxy-4-alkanoylamino isoquinolones. 3,870,721, Cl. 260-281.000.
Ardeleanu, Stefan P.: *See—*
  Teodorescu, Constantin Gh.; and Ardeleanu, Stefan P., 3,870,250.
Arendt, Hans F.: *See—*
  Rotter, Erhard F., 3,869,883.
Arikawa, Yoshijiro: *See—*
  Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, 3,870,603.
Arledter, Hanns F.; and Marek, Josef, to Austria Tabakwerke Aktiengesellschaft vorm. Method of making a laminated tobacco foil. 3,870,054, Cl. 131-140.00C.
Armstrong Cork Company: *See—*
  Witman, Jack H., 3,870,591.
Arndt, Frederick W.; and Gavin, Joseph H., to Dart Industries Inc. Liquid eliminator. 3,870,488, Cl. 55-440.000.
Arnold, Carter H. Load brake. 3,870,129, Cl. 188-134.000.
Arnold, George T.; Hochman, Jack M.; and Pennington, Robert E., to Exxon Research and Engineering Company. Residuum processing. 3,870,621, Cl. 208-8.000.
Arthur D. Little, Inc.: *See—*
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Asadea, Takashi; and Okamoto, Shin, to Tachikawa Research Institute. Process for the preparation of dispersion water for incompletely regenerated cellulose substance. 3,870,596, Cl. 162-157.00C.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  Tanaka, Kyugo; Oshima, Shozo; and Watanabe, Itaru, 3,870,760.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  Haraguchi, Keisuke, 3,871,012.
  Nomura, Katsuhiko; Kurei, Hiroshi; and Urano, Fumio, 3,871,011.
  Takahashi, Yasuo; and Okudaira, Sadao, 3,870,402.
Asaoka, Masayuki: *See—*
  Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
Ashton, William B.; Gonzalez, Luis A.; Nelson, Gerald V.; and Mead, Theodore C., to Texaco Inc. Hydrogenation of a hydrocracked lubricating oil. 3,870,622, Cl. 208-93.000.
Asplund, Alf Ake, to Industrikompaniet. Device for dispensing of a paste product. 3,870,201, Cl. 222-207.000.
Associated Electric Industries: *See—*
  Halliday, John Stephen; and Green, Brian Noel, 3,870,881.
Astafiev, Anatoly Alexandrovich: *See—*
  Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
Atlantic Richfield Company: *See—*
  Loncaric, Rado G., 3,870,350.
Atlas Pacific Engineering Company: *See—*
  Ellis, Robert G., 3,869,974.
Attenborough, Christopher George, to National Research Development Corporation. Bone joint prosthesis. 3,869,729, Cl. 3-1.000.
Attridge, Russell G., Jr., to Ranco Incorporated. Comfort temperature control system for a zone. 3,870,227, Cl. 236-49.000.
Atwater, William M., to Harriss-Conners Chevrolet, Inc. Drill-operated abrading tool. 3,869,832, Cl. 51-170.0PT.
Atwood Vacuum Machine Company: *See—*
  Krause, Herbert, 3,870,361.
August Bilstein, Firma: *See—*
  Willich, Jean Herbert, 3,870,286.
Aulick, Robert A.: *See—*
  Almich, Clarence L.; Polk, Jack D., Jr.; and Aulick, Robert A., 3,870,839.
Aulik, Clarence J., to American Hospital Supply Corporation. Back support mechanism for medical examination table. 3,870,289, Cl. 269-324.000.
Austin, George E.; and Kalyan, Jagdish C., to Compressed Air Products Inc. Air motor. 3,869,962, Cl. 91-46.000.
Austria Tabakwerke Aktiengesellschaft vorm.: *See—*
  Arledter, Hanns F.; and Marek, Josef, 3,870,054.
Automation Industries, Inc.: *See—*
  Turner, William R., 3,870,988.
Automotive Products Company Limited: *See—*
  Firth, Anthony Christopher; and Child, Robin Edward, 3,870,131.
Avakian, Emik; and Laizerovich, David, to said Avakian, by said Laizerovich. Interconnecting systems and devices using conductive elastomer pellets in planar component supporting structures and in electronic circuit connectors. 3,870,385, Cl. 339-48.000.
Avakian, Emik: *See—*
  Avakian, Emik; and Laizerovich, David (assors. to said Avakian, by said Laizerovich), 3,870,385.
Avco Corporation: *See—*
  Bardach, Herbert, 3,870,607.
  Breer, Robert A., 3,869,956.
  Dickey, Thomas A., 3,869,862.
  Mullin, George Cruise; Wetherby, Robert Earle; and Chevalier, Victor Oscar, 3,869,834.

Avis Products, Inc.: *See—*
  Anderson, John D.; and Vander Stel, Gerald L., 3,869,827.
Avoset Food Corporation: *See—*
  Jurasek, Walter R., 3,870,066.
Ayres, William M.: *See—*
  Hills, Marian E.; and Ayres, William M., 3,870,577.
Aza-yunohara: *See—*
  Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.
Azarowicz, Edward N., to Bioteknika International, Inc. Microbial degradation of petroleum. 3,870,599, Cl. 195-2.000.
B. F. Goodrich Company, The: *See—*
  Horvath, James, 3,869,912.
Babaa, Ihsan Mustafa Hasan: *See—*
  Adams, John William; Babaa, Ihsan Mustafa Hasan; and Hester, Donald Larry, 3,870,837.
Back, Gerhard; and Buehler, Arthur, to Ciba-Geigy AG. Heavy metal complexes of azo dyestuffs containing a 2-amino-3-hydroxypyridine as coupling component. 3,870,695, Cl. 260-146.00R.
Backer Rod Mfg. & Supply Co.: *See—*
  Gibb, John F., 3,869,831.
Backus, Christopher W. Decorative flower. 3,870,586, Cl. 161-30.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  Fischer, Adolf, 3,869,826.
  Fischer, Adolf, 3,870,502.
  Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,870,740.
  Koehler, Waldemar; Riedel, Oswald; Scherer, Hertbert; and Schlereth, Georg, 3,869,914.
  Pasedach, Heinrich; and Friederang, Albrecht, 3,870,761.
Baichtal, James R.; and McDonald, John C., to Vidar Corporation. Redundant data transmission system. 3,870,824, Cl. 179-7.00R.
Bailey, Carl W., III: *See—*
  Falkehag, Sten I.; and Bailey, Carl W., III, 3,870,681.
Bailey, Donald W. Sailing vessel. 3,870,004, Cl. 114-39.000.
Baird, Richard W.; and Baird, William G., Jr., to W. R. Grace and Co. Cold plasma treatment of materials. 3,870,610, Cl. 204-165.000.
Baird, William G., Jr.: *See—*
  Baird, Richard W.; and Baird, William G., Jr., 3,870,610.
Baker, Jesse L., to Mead Corporation, The. Apparatus for cleaning the cavities of casting and the like. 3,869,830, Cl. 51-8.00R.
Baker Oil Tools, Inc.: *See—*
  Helmus, Sydney S., 3,870,101.
Balazs, Fulop: *See—*
  Stefan, Mihaly; Hegedus, Zoltan; Balazs, Fulop; and Juhasz, Gyula, 3,870,574.
Baldwin Electronics, Inc.: *See—*
  Wootton, Thomas S., 3,870,959.
Baliski, Stephen: *See—*
  Norman, Harry H., 3,869,900.
Balstad, Edward. Roller skate construction. 3,870,324, Cl. 280-11.280.
Baltes, Josef, to Harburger, Oelwerke, Brinckman & Mergell. Process for manufacture of edible, flowable suspensions or solid glycerides in liquid glycerides or mixtures of liquid and solid glycerides and products obtained thereby. 3,870,807, Cl. 426-194.000.
Ban, Itsuki. System for driving a direct-current motor in synchronism with an external signal. 3,870,937, Cl. 318-314.000.
Banks, Robert L.: *See—*
  Heckelsberg, Louis F.; and Banks, Robert L., 3,870,763.
Bannister, Brian, to Upjohn Company, The. Lincomycin analogs. 3,870,699, Cl. 260-210.00R.
Baranovsky, Leonid Sememovich: *See—*
  Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
Barbarow, Charles E. Mustache styling device. 3,870,055, Cl. 132-10.000.
Barber-Colman Company: *See—*
  Fassell, W. Martin; and Bridges, Donald W., 3,870,631.
Bardach, Herbert, to Avco Corporation. Bearing Manufacture. 3,870,607, Cl. 204-15.000.
Barecki, Chester J., to American Seating Company. Semi-cantilever twin-seat chair. 3,870,363, Cl. 297-232.000.
Barnett, Irvin: *See—*
  Afflerbach, Frank D.; Barnett, Irvin; and Peters, Walter B., 3,870,581.
Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., to Marsan Manufacturing Company, Inc. Fastening apparatus for ostomy appliances. 3,869,762, Cl. 24-81.0AG.
Barth, Gerald Dean; and Alexander, John Bert, to Illinois Tool Works Inc. Self-clinching staple. 3,869,957, Cl. 85-49.000.
Bartlett, Christopher Leslie; and Willis, Peter Charles, to Rolls-Royce (1971) Limited. Measuring apparatus and system. 3,869,800, Cl. 33-174.00L.
Barton, William A.; and Stork, John E., to Speech Technology Corporation. Solid state digital automatic voice response system. 3,870,818, Cl. 179-1.0SM.
Bartram, James F.: *See—*
  Dewey, Gordon C.; and Bartram, James F., 3,870,998.
BASF Aktiengesellschaft: *See—*
  Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.
Bashark, Larry Thomas, to Whirlpool Corporation. Sensor for dishwasher. 3,870,417, Cl. 356-208.000.
Basias, Igor Pavlovich: *See—*
  Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
Battaglia, Larry A.: *See—*
  Graham, Donald E.; and Battaglia, Larry A., 3,870,071.
Battelle Memorial Institute: *See—*
  Charbonnier, Jean-Claude; and Tannenberger, Helmut, 3,870,561.
Baumoel, Joseph. Digital flowmeter. 3,869,915, Cl. 73-194.00A.
Bausch, Gunther; Millauer, Christian; and Paul, Harald, to Werner & Pfleiderer. Continuously operating kneading and mixing screw device for kneading and mixing kneadable and mixable materials. 3,870,285, Cl. 259-191.000.
Baxter, Bobby G.; and Splitt, Theodore B., to Binkley Company, The. Retractable king pin and clamping assembly. 3,870,342, Cl. 280-433.000.
Baxter, Roderick Carey; and Hart, Dennis Edward, to Marconi Company Limited, The. Tuning arrangements. 3,870,979, Cl. 334-14.000.
Bayer Aktiengesellschaft: *See—*
  Diehr, Hans-Joachim; Kraft, Karl-Josef; and Sachs, Hanns Immo, 3,870,665.
  Knipp, Ulrich, 3,870,372.
  Noll, Klaus; Oertel, Gunter; and Schafer, Karl, 3,870,556.
  Scharfe, Gerhard; and Grolig, Johann, 3,870,730.
  Witt, Harro; and Dieterich, Dieter, 3,870,684.
Beach, William A.; and Schlauch, Richard M., to Permutit Company, Inc., The. Settling rate tester. 3,869,903, Cl. 73-61.400.
Bechert, Bertold: *See—*
  Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.
Beck, Walter: *See—*
  Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, 3,870,768.
Becker, Wilhelm, to Reichhold-Albert Chemie Aktiengesellschaft. Curing agent for aqueous epoxide resin dispersions. 3,870,666, Cl. 260-21.000.
Beckers, Heinz, to Paul Forkardt Kommanditgesellschaft. Chuck. 3,870,323, Cl. 279-112.000.
Beckman Instruments, Inc.: *See—*
  Neti, Radhakrishna M., 3,870,468.
Beem, W. Wayne: *See—*
  Shimanckas, William J.; and Beem, W. Wayne, 3,870,258.
Beezer, Earl F., to Stelron Cam Company. Device for transmitting accurate translational and rotary movements. 3,869,924, Cl. 74-24.000.
Begley, Richard J.: *See—*
  Garvey, Glenwood L.; and Begley, Richard J., 3,869,732.
Belanger, James A. Rotary finishing wheel. 3,869,833, Cl. 51-334.000.
Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, to ITT Industries, Inc. Brake pressure modulator. 3,870,377, Cl. 303-21.00F.
Belcher, Jack T. Method of manufacturing of a fiber reinforced structure and method of manufacture. 3,870,580, Cl. 156-181.000.
Bell, Alfred Wharton, to Siebe Gorman & Company Limited. Glove liner and glove comprising such liner. 3,869,726, Cl. 2-164.000.
Bell Telephone Laboratories Incorporated: *See—*
  Adams, John William; Babaa, Ihsan Mustafa Hasan; and Hester, Donald Larry, 3,870,837.
  Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,870,416.
  Carbrey, Robert Lawrence; Moran, John Christian; and Tsao-Wu, Nelson Tsin, 3,870,826.
  Corwin, Walter Leo; Keeler, Robert Emerson; and Rubin, Philip Edward, 3,870,838.
  Dillon, Joseph Francis, Jr.; Madison, Ernst Michael Gyorgy; and Van Uitert, Legrand Gerard, 3,870,397.
  Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,870,943.
Beloit Corporation: *See—*
  DeNoyer, Donald B., 3,870,628.
  Getman, Darryl L.; and Swenson, Marshall G., 3,870,597.
  Gokcen, Cem M., 3,870,451.
  Penrod, William R., 3,870,454.
Belras AG: *See—*
  Gneiding, Albert, 3,869,773.
Belsky, Stephen Edward; and Bonfield, John Henry, to Allied Chemical Corporation. Process for production of alkylene oxide adducts of iris(2-hydroxyalkyl)isocyanurate. 3,870,716, Cl. 260-248.0NS.
Bendix Corporation, The: *See—*
  Carp, Ralph W., 3,870,378.
  McCormick, Joseph L.; McMullen, Charles G.; and Woodall, Phillip J., 3,870,994.
Benmair, Yusuf: *See—*
  Frei, Ephraim H.; Yerushalmi, Shmuel; and Benmair, Yusuf, 3,870,645.

- Benner, Robert I.: *See—*
  - Tice, John D.; and Benner, Robert I., 3,870,624.
- Bennett, Julia A. S. Apparatus for manually raising and lowering bulky packages. 3,870,358, Cl. 294-77.000.
- Bennett, Richard H., to Knight Engineering and Molding Co. Childproof aerosol cap. 3,870,187, Cl. 220-281.000.
- Bennington, William E. Dental floss dispenser. 3,870,059, Cl. 132-92.00A.
- Bennion, Jay B.: *See—*
  - Green, Glen R.; and Bennion, Jay B., 3,870,809.
- Berchielli, Aldo S., to Yardney International Corp. Pyrotechnic device. 3,869,987, Cl. 102-37.400.
- Berg, Raymond: *See—*
  - Greenfield, Walter; and Berg, Raymond, 3,870,146.
- Berg, Roy E., to Interstate Utilities Corporation. Industrial scrubber. 3,870,484, Cl. 55-229.000.
- Bergsman, Robert Paul, to Leonard Lebowitz, a part interest. Locking device. 3,870,842, Cl. 200-44.000.
- Bergum, Bernard C.; and Oppedal, Tor, to ESB Incorporated. Battery having venting passageway outside of or in gas-pervious layers. 3,870,566, Cl. 136-111.000.
- Berth Wikstrom AB: *See—*
  - Edlund, Lars Anders; and Wikstrom, Berth Atle, 3,870,855.
- Bertling, Anton, to Siemens Aktiengesellschaft. Switch arrangement for a magnetic suspension railroad. 3,869,990, Cl. 104-130.000.
- Bertucci, Dominick. Golf practice machine. 3,870,314, Cl. 273-185.00D.
- Besijn, Jan Hendrik. Racking board. 3,870,165, Cl. 214-2.500.
- Besten, Alfred D.: *See—*
  - Wildman, Claude L.; and Hellmer, George A., 3,869,856.
- Betschart, Alois, Jr. Self-releasing ski-binding. 3,870,327, Cl. 280-11.35K.
- Bettcher Manufacturing Corporation: *See—*
  - Patrick, Malcolm W.; and Adams, Joseph W., 3,870,052.
- Bhalla, Sushil K.: *See—*
  - Hall, Richard E.; and Bhalla, Sushil K., 3,870,783.
- Biagi, Alvaro D.; and Luganski, Dimitri, to Republic Electronics Industries Corporation. Distance measuring equipment for aircraft employing precision distance measuring means. 3,870,993, Cl. 343-6.50R.
- Biegler, Hanns; and Wiljes, Juergen, to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Process for the production of alkali metal silicates. 3,870,532, Cl. 106-74.000.
- Biesen, Kurt: *See—*
  - Werner, Udo; Biesen, Kurt; and Sroka, Jurgen, 3,870,269.
- Bilas, Michael. Vehicle suspension. 3,870,336, Cl. 280-124.00F.
- Bingham, Joseph Peter, to RCA Corporation. Line sequential color television recording system. 3,871,019, Cl. 358-4.000.
- Binkley Company, The: *See—*
  - Baxter, Bobby G.; and Splitt, Theodore B., 3,870,342.
- Binks, Sidney David; and Hurton, William, to Davy Instruments Limited. Method and apparatus for measuring mutually perpendicular dimensions. 3,870,890, Cl. 250-560.000.
- Bio-Analytical Laboratories, Inc.: *See—*
  - Fiore, John M., 3,870,036.
- Bioteknika International, Inc.: *See—*
  - Azarowicz, Edward N., 3,870,599.
- Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries, Limited. Phosphates. 3,870,737, Cl. 260-448.00R.
- Biscardi, Charles T., to Merit Metal Products Corp. Deterrent spring clip. 3,870,355, Cl. 292-307.00R.
- Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, to Stepan Chemical Company. Unsaturated amides of oxybis(benzenesulfonic acid) and their use as cross-linking agents. 3,870,768, Cl. 260-857.00G.
- Blake, Edward S., to Monsanto Company. Substituted amides. 3,870,646, Cl. 252-107.000.
- Blanco, Louis A.; and Meade, Hazel W., to Commercial Decal, Inc. Ceramic decalcomania. 3,870,536, Cl. 106-146.000.
- Blazek, Jan: *See—*
  - Rauterkus, Karl Josef; and Blazek, Jan, 3,870,673.
- Blinkilde, Paul J., to Epsex International, Inc. Vehicle gear selector control apparatus. 3,870,120, Cl. 180-82.00C.
- Blood, Charles H. Web tension controller. 3,870,934, Cl. 318-7.000.
- Blumenthal, Warren B., to N. L. Industries, Inc. Pigment and preparation thereof. 3,870,787, Cl. 423-598.000.
- Blumenthal, Warren B., to NL Industries, Inc. Hafnium-titanium-calcium-oxygen product. 3,870,788, Cl. 423-598.000.
- Boatman, Roger M.; and Hall, Melvin R., to Roger Boatman & Associates, Inc. In circuit electronic component tester. 3,870,953, Cl. 324-73.00R.
- Boback, John G. Removable hinge arrangement. 3,869,753, Cl. 16-171.000.
- Bobolev, Vasily Konstantinovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Huleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
- Boeing Company, The: *See—*
  - Cole, James Byron, 3,870,252.
  - Watts, John, 3,870,254.
- Boese, Harold L.; and Hencey, Thomas R., Jr. Non-pollution motor with gas tube conductors. 3,870,942, Cl. 320-2.000.
- Boggs, Roger L., to Caterpillar Tractor Co. Track roller with replaceable and reversible flanges. 3,869,931, Cl. 74-230.300.
- Bollinger, Charles W. Device for regulating positive end expiratory pressure. 3,869,771, Cl. 128-188.000.
- Bolt, Harry Collett; and Bolt, John Anthony. Shower cabinets. 3,869,734, Cl. 4-146.000.
- Bolt, John Anthony: *See—*
  - Bolt, Harry Collett; and Bolt, John Anthony, 3,869,734.
- Bond, Ralph W., to Whirlpool Corporation. Grounding mounting means. 3,870,392, Cl. 339-14.00R.
- Bondarenko, Valentin Grigorievich: *See—*
  - Sarkisov, Rafael Tevosovich; Stepanian, Ernst Arakelovich; and Bondarenko, Valentin Grigorievich, 3,870,244.
- Bonfield, John Henry: *See—*
  - Belsky, Stephen Edward; and Bonfield, John Henry, 3,870,716.
- Bonnemay, Maurice; Bronoel, Guy Rene; Donnet, Jean-Baptiste; Lahaye, Jacques; and Sarradin, Joel Alain. Cathode for the reduction of oxygen and a rechargeable cell comprising said cathode. 3,870,565, Cl. 136-86.00A.
- Booker, Arnold Bryce: *See—*
  - Lee, George W., 3,870,278.
- Borg-Warner Corporation: *See—*
  - Ditzler, John L., 3,869,874.
  - Kuehner, Richard, 3,869,870.
- Borisoglebsky, Alexei Gennadievich: *See—*
  - Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sésar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.
- Borowski, Edward: *See—*
  - Gruszecki, Wojciech; Taszer, Emil; and Borowski, Edward, 3,870,708.
- Borsini, Giancarlo: *See—*
  - Modena, Mario; Ragazzini, Mario; Borsini, Giancarlo; and Valera, Marco, 3,870,689.
- Bost, Pierre-Etienne; Costantini, Michel; and Lartigau, Guy, to Rhone-Poulenc S.A. Process for the epoxidation of olefines. 3,870,729, Cl. 260-348.50L.
- Boucher, Jean Raymond: *See—*
  - Iyengar, Rama; Zuber, Bretislav Paul; and Boucher, Jean Raymond, 3,869,902.
- Bourat, Guy, to Rhone-Poulenc S.A. Apparatus for forced flow electrophoresis. 3,870,617, Cl. 204-301.000.
- Bowman, Gary L., to Harter Corporation. Fully enclosed, adjustable, support column for a pivotal chair. 3,870,271, Cl. 248-406.000.
- Bowman, Rush A. Handwork frame. 3,869,817, Cl. 38-102.400.
- Boyd, Wilton E.; and Rennecker, David B., to Hoover Company, The. Interlocked conversion for a convertible cleaner. 3,869,751, Cl. 15-334.000.
- Boyer, Robert A.; and Middendorf, John E., to Ralston Purina Company. Method of producing a meat simulating textured food product. 3,870,808, Cl. 426-250.000.
- Boyle, John Terence Arnott: *See—*
  - Archibald, John Leheup; Boyle, John Terence Arnott; and Saunders, John Christopher, 3,870,721.
- Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, to Givaudon Corporation. Bicyclic odorants. 3,870,659, Cl. 252-522.000.
- Bozzuto, Carl Richard: *See—*
  - Klein, Herschel Alan; and Bozzuto, Carl Richard, 3,870,781.
- Brackett, Robert D.; and Plasse, Paul A., to Polaroid Corporation. Novel laminating system. 3,870,582, Cl. 156-306.000.
- Bradley, John J., to Paper Converting Machine Company. Method and apparatus for transverse folding of webs. 3,870,292, Cl. 270-68.00R.
- Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, to Bell Telephone Laboratories, Incorporated. Wafer alignment apparatus. 3,870,416, Cl. 356-138.000.
- Brahler, George R. Drive shaft. 3,869,877, Cl. 64-2.00R.
- Brandigi, Carlo; and Fantechi, Guiliano. Method for forming a shaped cover for a flask. 3,869,966, Cl. 93-54.00R.
- Brandstatter, Horst, to geobra Brandstatter GmbH & Co. KG. Toy cash register. 3,870,864, Cl. 235-1.00E.
- Bratton, Myrla: *See—*
  - Klupp, George A., 3,870,311.
- Braun, Dieter, to Fortuna-Werke Maschinenfabrik Aktiengesellschaft. Method and apparatus for manufacturing shoes. 3,869,745, Cl. 12-145.000.
- Bray, Robert S.; and Tapley, Claude D., to Anaconda American Brass Co. Method of forming a strip having substantially differing thicknesses. 3,869,899, Cl. 72-366.000.
- Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, to Dynamit Nobel Aktiengesellschaft. Electronic sensor for triggering safety devices during the crash of vehicles. 3,870,894, Cl. 307-9.000.
- Breer, Robert A., to Avco Corporation. Pin assembly rivet. 3,869,956, Cl. 85-37.000.
- Brems, John Henry. Harmonic trammel drive. 3,869,925, Cl. 74-25.000.
- Bremsky Aktiengesellschaft, Firma: *See—*
  - Werner, Udo; Biesen, Kurt; and Sroka, Jurgen, 3,870,269.
- Brennenstuhl, Hugo. Cable drums. 3,870,133, Cl. 191-12.20R.
- Breuner, Gerald L. Autogyro. 3,870,251, Cl. 244-17.210.

- Bridges, Donald W.: *See—*
  - Fassell, W. Martin; and Bridges, Donald W., 3,870,631.
- Bridgestone Liquefield Gas Company, Ltd.: *See—*
  - Yamamoto, Katsuro, 3,870,588.
- Bridgestone Tire Company Limited: *See—*
  - Iwami, Ichiro; Matsunaga, Tsutomu; and Yoneyama, Ken, 3,870,551.
  - Onishi, Akira; Yukuta, Toshio; Iseda, Yutaka; and Iwami, Kouichi, 3,870,620.
- Briggs, Albert Theodore, to Wean United Inc. Collapsible reel. 3,870,243, Cl. 242-72.100.
- Briggs, Henry P.: *See—*
  - Schneiderhan, Edward M.; Jones, John E.; and Briggs, Henry P., 3,870,865.
- Briggs, Philip Stanley, to National Research Development Corporation. Process for tanning with a multivalent metal and an organic compound. 3,870,464, Cl. 8-94.260.
- Brindley, Giles Skey, to National Research Development Corporation. Urinary control. 3,870,051, Cl. 128-422.000.
- Brinly-Hardy Co., Inc.: *See—*
  - Doering, Charles W., 3,869,923.
- Brisendine, Lynam S. Golf ball putting cup. 3,870,301, Cl. 273-34.00B.
- Brisson, John R., to Lodal Inc. Overflow shield for refuse collection vehicle body hopper opening. 3,870,174, Cl. 214-303.000.
- British Domestic Appliances Limited: *See—*
  - Eagle, John Scott, 3,869,970.
- British Iron and Steel Research Association, The: *See—*
  - Cartwright, John Barry, 3,870,508.
- British Leyland UK Limited: *See—*
  - Herron, Malachy, 3,870,444.
- British Petroleum Company Limited, The: *See—*
  - Desty, Denis Henry; Whyman, Barry Herbert Francis; and Whitehead, David Montagu, 3,870,459.
  - Gegner, Eberhard, 3,870,642.
- Brock, Robert J.; and Hudson, David W., to Kimberly-Clark Corporation. Laminates containing outer plies of continuous filament webs. 3,870,592, Cl. 161-148.000.
- Brodnitz, Michael H.: *See—*
  - Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,870,800.
- Broe, Max, to Aktieselskabet Chr. Nielsens Eftf. Motor driven valve. 3,870,274, Cl. 251-134.000.
- Bronoel, Guy Rene: *See—*
  - Bonnemay, Maurice; Bronoel, Guy Rene; Donnet, Jean-Baptiste; Lahaye, Jacques; and Sarradin, Joel Alain, 3,870,565.
- Brooks, Clennie Cecil. 3.58 Megacycle bandpass and oscillator detector for a color television. 3,871,021, Cl. 358-10.000.
- Broverman, Alvin Y., to Kuhlman Corporation. Transformer terminal compartment cover means. 3,870,932, Cl. 317-157.600.
- Brown-Boveri-Sulzer Turbomaschinen Aktiengesellschaft: *See—*
  - Kappeler, Peter; and Uhlig, Klaus, 3,870,346.
- Brown, Charles C.: *See—*
  - Gemmel, John F.; and Brown, Charles C., 3,870,328.
- Brown, Earle C.; Byers, Errol J.; and Kayani, Ghulam A., to Ontario Research Foundation. Moisture measuring probe. 3,870,951, Cl. 324-61.00P.
- Brown Jug, Inc.: *See—*
  - O'Neill, Edward M., 3,870,156.
- Brown, Marion L., Jr.: *See—*
  - Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., Jr., 3,870,782.
- Brown, Michael A.; and Shade, Steven F. Kayak. 3,869,743, Cl. 9-2.00C.
- Brown, Omar L., to Ermal C. Fraze. Can end with inseparable tear strip. 3,870,001, Cl. 113-121.00C.
- Brown, Terry D.; Delap, Joseph A.; and Nasser, Benny E., Jr., to Phillips Petroleum Company. Preparation of silica-containing compositions. 3,870,656, Cl. 252-451.000.
- Brown, William L.; and Shonebarger, Francis J., to Anchor Hocking Corporation. Method and apparatus for applying plastisol coating of uniform thickness to glass containers. 3,870,015, Cl. 118-63.000.
- Brown & Williamson Tobacco Corporation: *See—*
  - Heitkamp, Norman D.; Merker, Steven L.; and Stungis, George E., 3,870,053.
- Brugger, Hans; and Mallener, Helmut, to Zahnradfabrik Friedrechshafen AG. Process for nitriding unalloyed or low-alloy steel. 3,870,572, Cl. 148-16.500.
- Brunette, Fredrick: *See—*
  - Monet, John E.; and Brunette, Fredrick, 3,870,154.
- Brunkhorst, Lloyd E.: *See—*
  - Dueker, James E.; and Brunkhorst, Lloyd E., 3,870,887.
- Brunner, Heinz, to Mayer & Cie Maschinenfabrik. Adjusting means for adjustable parts in knitting machines. 3,869,879, Cl. 66-19.000.
- BTR Industries Limited: *See—*
  - Davies, Graham Leighton, 3,870,041.
- Bucaro, Russell J., to Sequist Valve Company. Variable spray rate aerosol. 3,870,205, Cl. 222-402.170.
- Buchanan, Donald George: *See—*
  - Smith, Colin Howard Stanwell; Gosling, Alexander Bennett; and Buchanan, Donald George, 3,870,321.
- Buchel, Karl Heinz: *See—*
  - Jager, Gerhard; Plempel, Manfred; and Buchel, Karl Heinz, 3,870,726.
- Buck, James R., to Buck Tool Company. Self-ejecting chuck key. 3,869,943, Cl. 81-90.00A.
- Buck, Robert T., to Corning Glass Works. Liquid and aerosol collecting device. 3,870,014, Cl. 118-52.000.
- Buck Tool Company: *See—*
  - Buck, James R., 3,869,943.
- Buehler, Arthur: *See—*
  - Back, Gerhard; and Buehler, Arthur, 3,870,695.
- Buendia, Jean: *See—*
  - Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,870,710.
  - Martel, Jacques; Buendia, Jean; and Toromanoff, Edmond, 3,870,711.
- Buffett, Thomas Vigus, to International Partners Research Corporation. Tray or crate. 3,870,188, Cl. 220-72.000.
- Building Components Research, Inc.: *See—*
  - Wahlquist, Carl D., 3,869,841.
- Bullock, Norman J., to W. M. Cissell Manufacturing Company. Garment finishing apparatus. 3,869,815, Cl. 38-77.600.
- Bunn, George Edward, to Lucas Aerospace Limited. Combustion chambers for gas turbine engines. 3,869,864, Cl. 60-39.650.
- Burdick, Steve; and Picard, Roger. Transportation cart. 3,870,333, Cl. 280-47.350.
- Burgeson, Oscar Burge, to Stanley Works, The. Hand tool connection and trim collar therefor. 3,870,091, Cl. 145-29.00R.
- Burkard, Edward A.; and Kossuth, Donald A., to National Gypsum Company. Gypsum set accelerator. 3,870,538, Cl. 106-315.000.
- Burke, Edward F.; and Holmes, Douglas B., to Polaroid Corporation. Processor for photographic film cassettes. 3,871,013, Cl. 354-317.000.
- Burke, Frederick: *See—*
  - Schwartz, Robert C.; and Burke, Frederick, 3,870,411.
- Burke, George K.; and Raines, Kenneth, to Burron Medical Products, Inc. Hypodermic syringe body structure. 3,870,044, Cl. 128-220.000.
- Burley, Murray E., to S. Madill Ltd. Mobile spar. 3,870,158, Cl. 212-8.00R.
- Burlington Industries, Inc.: *See—*
  - Huber, Kenneth C., 3,870,933.
  - Swidler, Ronald; Smith, Ray S.; and Miller, Harry A., 3,870,555.
- Burns, James W., to Xerox Corporation. Image intensifier tube with improved photoemitter surface. 3,870,921, Cl. 313-346.00R.
- Burron Medical Products, Inc.: *See—*
  - Burke, George K.; and Raines, Kenneth, 3,870,044.
- Busby, Llewellyn D., to General Electric Company. Steam iron. 3,869,816, Cl. 38-77.830.
- Bush Boake Allen Limited: *See—*
  - Humphrey, Anthony Martin, 3,870,810.
- Butler, Florence P.: *See—*
  - Weisberg, Alfred M.; and Butler, Florence P., 3,870,619.
- Butler, Ralph R., to Hammermill Paper Company. Combination reusable carton and lift-out carry tray for paper and three-way cover. 3,870,222, Cl. 229-44.00R.
- Button, David; and Hopkins, Philip Ward, to U.C.C. International Limited. Bell housings for mounting electric motors. 3,870,908, Cl. 310-91.000.
- Buurman, Herman, to U.S. Philips Corporation. Method of manufacturing hollow glass articles. 3,870,498, Cl. 65-106.000.
- Byers, Errol J.: *See—*
  - Brown, Earle C.; Byers, Errol J.; and Kayani, Ghulam A., 3,870,951.
- C. J. I. Industries, Inc.: *See—*
  - Rozner, Allan, 3,869,880.
- C. J. Patterson Company: *See—*
  - Tenney, Ralph J., 3,870,799.
- C. Reichert Optische Werke AG: *See—*
  - Steinbatz, Alfred; and Kappl, Gerhard, 3,871,009.
- Cadariu, Emil E.; and Macovei, Alexandru A., to Spitalul Coltea. Apparatus for observations, photographs and interventions in the post-rhinal-pharyngeal regions. 3,870,037, Cl. 128-10.000.
- Calgon Corporation: *See—*
  - Erskine, Donald Baldwin, 3,870,632.
- California Cement Shake Co., Inc.: *See—*
  - Jakel, Gus R., 3,870,777.
- California Laboratory Industries, Inc.: *See—*
  - Froman, Seymour; and Chandler, William L., 3,870,602.
- Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,870,686, Cl. 260-79.100.
- Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,870,687, Cl. 260-79.100.
- Camras, Marvin, to IIT Research Institute. Video transducer system with magnetic transducer head having output winding means resonant at a mid band resonance frequency. 3,871,024, Cl. 360-33.000.
- Canadian Cellulose Company, Limited: *See—*
  - Gibney, Kelly B.; Howard, John; and Evans, Russell S., 3,870,703.
- Canick, Leon N.; and Aldrich, Charles S., to Precision Mechanisms Corporation. Tape perforator. 3,870,224, Cl. 234-110.000.
- Canon Kabushiki Kaisha: *See—*
  - Nakamoto, Soichi; and Yanagisawa, Takeshi, 3,870,418.
- Cantaloube, Bernard Andre: *See—*
  - Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; Cantaloube, Bernard Andre; and Caruel, Jacques Emile Jules, 3,869,865.
- Capossela, Anthony C.; McGuire, Michael T.; Smith, Gordon C.; and Albaum, Joseph D., to General Foods Corporation. Method for improving texture of bread/bread crumbs. 3,870,806, Cl. 426-152.000.

Capossela, Anthony C., Jr.: *See*—
  Siems, Ruth M.; Capossela, Anthony C., Jr.; Halligan, John F.; and Wyss, C. Robert, 3,870,803.

Caprio, Gerald L., to Motorola, Inc. Limiting detector circuit and method of operating same. 3,871,023, Cl. 358-28.000.

Carbrey, Robert Lawrence; Moran, John Christian; and Tsao-Wu, Nelson Tsin, to Bell Telephone Laboratories, Incorporated. Tone control system for a time division switching system. 3,870,826, Cl. 179-15.0BY.

Carisey, Camille, to Compagnie Industrielle Des Telecommunications Cit-Alcatel. Cassette-handling system. 3,870,247, Cl. 242-198.000.

Carissimi, Massimo; and Ravenna, Franco. Potassium derivatives of 2-phenyl-6-sulphamyl-7-chloro-1,2,3,4-tetrahydro-4-quinazolinone. 3,870,720, Cl. 260-256.50R.

Carling O'Keefe Limited: *See*—
  Dilanni, Daniel, 3,870,175.

Carlson, Elmer A., to International Telephone and Telegraph Corporation. Ignition system and components thereof. 3,870,929, Cl. 317-96.000.

Carp, Ralph W., to Bendix Corporation, The. Adaptive braking system control wheel selection by coefficient comparison. 3,870,378, Cl. 303-21.0EB.

Carr, George P.; and Mason, James A., Jr., to Xerox Corporation. Rolling process. 3,869,896, Cl. 72-108.000.

Carr, Hugh B.: *See*—
  Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., 3,870,079.

Carter Mfg., Inc.: *See*—
  Horrell, Robert E., 3,870,096.

Carter, Ronald W.; and Nash, Charles D., to UMC Industries, Inc. Paper currency validator. 3,870,629, Cl. 209-111.800.

Carton Sales, Inc.: *See*—
  Allen, Corey M., 3,870,135.

Cartwright, John Barry, to British Iron and Steel Research Association, The. Electroslag refining. 3,870,508, Cl. 75-10.000.

Caruel, Jacques Emile Jules: *See*—
  Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; Cantaloube, Bernard Andre; and Caruel, Jacques Emile Jules, 3,869,865.

Casale, Renato, to Ital Elettronica S.p.A. Scanning device for scintigraphy. 3,870,886, Cl. 250-367.000.

Casco Products Division, Sun Chemical Corporation: *See*—
  Horwitt, Laurence G.; and Mattis, Donald J., 3,870,857.

Case, Cecil L., to Hesston Corporation. Combination hydraulic cylinder and accumulator. 3,869,861, Cl. 60-413.000.

Cassidy, John Edward: *See*—
  Birchall, James Derek; and Cassidy, John Edward, 3,870,737.

Castany Ferre, Jose; and Sanrama Padro, Ramon. Method for the manufacture and pocket's assembling. 3,870,000, Cl. 112-262.000.

Castel, Yvon; and Castela, Andre, to Institut Francais Du Petrole Des Carburants et Lubrifiants. Device for taking samples from loose ground layers. 3,870,112, Cl. 175-93.000.

Castela, Andre: *See*—
  Castel, Yvon; and Castela, Andre, 3,870,112.

Castro, Roger Albert; Orman, Richard John; and Ryan, James Ernest, to Imperial Chemical Industries Limited. Method of making shaped articles. 3,870,775, Cl. 264-53.000.

Caterpillar Tractor Co.: *See*—
  Boggs, Roger L., 3,869,931.

Catherino, Henry A., to General Electric Company. Use of $Ni(OH)_2$ in pressed plate electrodes. 3,870,562, Cl. 136-24.000.

Celanese Corporation: *See*—
  Jones, Rufus S.; and Conciatori, Anthony B., 3,870,685.

Century, Bernard A., to Allied Steel & Tractor Products, Incorporated. Stepper carriage advancement system. 3,870,279, Cl. 254-105.000.

Chacon, Manuel Frank, to Johnson Service Company. Audio-communication system having a plurality of interconnected stations. 3,870,829, Cl. 179-30.000.

Chadha, Rajendra Nath, to Stauffer Chemical Company. Method of curing organic polymers and copolymers. 3,870,766, Cl. 260-825.000.

Chadwick-Helmuth Electronics, Inc.: *See*—
  Helmuth, James G., 3,870,924.

Chandler, William L.: *See*—
  Froman, Seymour; and Chandler, William L., 3,870,602.

Charbonnier, Jean-Claude; and Tannenberger, Helmut, to Battelle Memorial Institute. Electric accumulator. 3,870,561, Cl. 136-6.0LN.

Chase, Bert, to Chase, Virginia; Miller, Dorothy; and Paxton, Ruby, part interest to each. Fryer. 3,869,972, Cl. 99-410.000.

Chase-Shawmut Company, The: *See*—
  Salzer, Erwin, 3,870,984.

Chase, Virginia: *See*—
  Chase, Bert, 3,869,972.

Chernetsky, Tom Pavlovich: *See*—
  Larionov, Igor Naumovich; and Chernetsky, Tom Pavlovich, 3,870,850.

Chernyavsky, Vladimir Pavlovich: *See*—
  Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,870,913.

Chevalier, Victor Oscar: *See*—
  Mullin, George Cruise; Wetherby, Robert Earle; and Chevalier, Victor Oscar, 3,869,834.

Chibana, Masanobu, to Nippon Gakki Seizo Kabushiki Kaisha. Frequency dividing circuit. 3,870,970, Cl. 331-25.000.

Chikazawa, Hiroyuki, to Sony Corporation. Switching circuit. 3,870,905, Cl. 307-254.000.

Child, Robin Edward: *See*—
  Firth, Anthony Christopher; and Child, Robin Edward, 3,870,131.

Chiosso, Thomas E. Teaching aid structure. 3,869,829, Cl. 47-39.000.

Church, James A. Solid state electronic control. 3,869,854, Cl. 58-33.000.

Churchward, Leonard: *See*—
  MacMillan, Donald Stuart; and Churchward, Leonard, 3,869,744.

Ciba-Geigy AG: *See*—
  Back, Gerhard; and Buehler, Arthur, 3,870,695.
  Froehlich, Alfred; and Loeffel, Hansrolf, 3,870,697.
  Piller, Bernhard, 3,870,519.
  Somlo, Tibor, 3,870,707.
  Ulrich, Paul; and Stauble, Max, 3,870,717.

Ciba-Geigy Corporation: *See*—
  Allgeier, Hans; and Gagneux, Andre, 3,870,706.
  Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,870,714.
  Hunger, Alfred; and Janssen, Hans-Jochen, 3,870,796.

Cibie Projecteurs: *See*—
  Puyplat, Olivier, 3,870,876.

Ciments Lafarge S.A.: *See*—
  Marechal, Claude, 3,870,465.

Circle Engineering Co., Inc.: *See*—
  Solomon, Milton, 3,870,371.

Cities Service Oil Company: *See*—
  Kerschner, Paul M.; and Marcellis, Alphonso W., 3,870,643.

Clairion Co., Ltd.: *See*—
  Nara, Hirotoshi; Watanabe, Wataru; Yokota, Tadashi; and Yanagi, Chiak, 3,870,248.

Clark, Burton Parker, to General Electric Company. Accelerator. 3,869,960, Cl. 89-33.0CA.

Clarke-Pounder, Ian J. H., to Improved Machinery Inc. Apparatus for clarifying an influent water. 3,870,635, Cl. 210-221.000.

Clason, Jan Christiaan, to Hazemeijer B.V. Vacuum circuit interrupter with a plurality of interrupting units. 3,870,845, Cl. 200-144.00B.

Claxton, George P.: *See*—
  Grisar, J. Martin; and Claxton, George P., 3,870,723.

Clemens, David H.; and Hamann, Herman C., to Rohm and Haas Company. Porous styrene polyfunctional methacrylate polymers. 3,870,663, Cl. 260-2.50B.

Clouth Gummiwerke AG: *See*—
  Gilles, Martin; and Thiel, Anton, 3,870,337.

CMI Corporation: *See*—
  Allen, Thomas E., 3,870,427.

Cobb, Willard J. Mobile hand truck having a detachable load craddle. 3,870,177, Cl. 214-372.000.

Coberley, Daniel A., to Hurletron Incorporated. Digital motor control system for web registration. 3,870,936, Cl. 318-85.000.

Cohen, Milton J. Twistable bag type dispenser. 3,870,198, Cl. 222-105.000.

Cole, Edward L.: *See*—
  McCoy, Frederic C.; and Cole, Edward L., 3,870,765.

Cole, James Byron, to Boeing Company, The. Variable camber airfoil trailing edge. 3,870,252, Cl. 244-42.0CC.

Cole, Kenneth E. Sidewalk coaster sled. 3,870,334, Cl. 280-87.010.

Cole, Leonard Edward: *See*—
  Plaister, John Edward; and Cole, Leonard Edward, 3,869,893.

Colgate-Palmolive Company: *See*—
  Schaar, Charles H., 3,869,761.

Collins, Robert J., to Upjohn Company, The. Animal feed and process. 3,870,793, Cl. 424-269.000.

Colpitts, Willard E. Spare wheel carrier for logging trucks. 3,870,179, Cl. 214-454.000.

Columbia Broadcasting System, Inc.: *See*—
  Gabor, Dennis, 3,869,904.

Columbia Gas System Service Corporation: *See*—
  Eberle, Arthur; and Spitzer, Nicholas A., 3,870,869.

Combustion Engineering, Inc.: *See*—
  Hurlbut, William Barrett, Sr.; Liebig, Preston Dean; and Maurin, Gerald, 3,870,487.
  Klein, Herschel Alan; and Bozzuto, Carl Richard, 3,870,781.
  Nelson, Hugh Wharton, 3,870,467.

Combustion Unlimited Incorporated: *See*—
  Straitz, John F., III, 3,869,995.

Comet Corporation: *See*—
  Iino, Hideo; and Iizuka, Satoru, 3,870,306.

Commercial Decal, Inc.: *See*—
  Blanco, Louis A.; and Meade, Hazel W., 3,870,536.

Compagnie Industrielle Des Telecommunications Cit-Alcatel: *See*—
  Carisey, Camille, 3,870,247.
  Rabasse, Jean, 3,870,969.

Compressed Air Products Inc.: *See*—
  Austin, George E.; and Kalyan, Jagdish C., 3,869,962.

Conciatori, Anthony B.: *See*—
  Jones, Rufus S.; and Conciatori, Anthony B., 3,870,685.

Concorde Fibers Inc.: *See*—
  Norwood, David W., 3,870,241.

Condon, Nancy J., to Shell Oil Company. Stabilized block copolymer compositions. 3,870,676, Cl. 260-33.6AQ.

Coniglio, James John: *See*—
  Wiley, Robert Emerson; and Coniglio, James John, 3,870,987.

Consiglio, Thomas J.: *See*—
  Dennis, Roderick A.; Consiglio, Thomas J.; and McGowan, Gerald, 3,870,819.

Continental Can Company, Inc.: *See*—
  Frankenberg, Henry E., 3,870,203.

Continental Oil Company: *See*—
  Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., 3,870,373.

Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., Jr., to Mississippi Chemical Corporation. Ammonium nitrate neutralizer. 3,870,782, Cl. 423-396.000.

Cooper, Herbert. Combined motor home and yacht. 3,870,011, Cl. 115-0.50A.

Cooper, Marvin: *See*—
  Koury, Ronald William; and Cooper, Marvin, 3,870,220.

Cope Allman Plastics Limited: *See*—
  Majors, Eric Desmond Thomas; and Davey, John Kenneth, 3,870,448.

Cording, Eldon F., to Heede International, Inc. Joy stick controller for tower crane. 3,870,161, Cl. 212-56.000.

Cordura Corporation: *See*—
  Schroeder, Marvin C., Jr., 3,869,980.

Corning Glass Works: *See*—
  Buck, Robert T., 3,870,014.
  Farrauto, Robert J.; Hoekstra, Karl E.; and Shoup, Robert D., 3,870,658.
  Love, Roy E., 3,870,398.
  Racki, Jerome G.; and Thiel, Frank L., 3,870,396.
  Randall, Lyman J.; and Seward, Thomas P., III, 3,870,399.
  Wectall, Howard H., 3,870,543.

Cornsweet, Tom N., to Acuity Systems, Incorporated. Method and means for measuring the refractive properties of an optical system. 3,870,415, Cl. 356-124.000.

Cortina O., Ignacio. Reclinable chairs and seats. 3,870,364, Cl. 297-294.000.

Corwin, Walter Leo; Keeler, Robert Emerson; and Rubin, Philip Edward, to Bell Telephone Laboratories, Incorporated. Means and apparatus for fault locating pulse regenerators. 3,870,838, Cl. 179-175.31R.

Costantini, Michel: *See*—
  Bost, Pierre-Etienne; Costantini, Michel; and Lartigau, Guy, 3,870,729.

Coulon, Andre, to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM). Component parts of welded rotors. 3,869,777, Cl. 29-183.000.

Cowling, Ronald; and Greenshields, James Nairn, to Imperial Chemical Industries Limited. Paper treatment. 3,870,559, Cl. 117-201.000.

Crompton & Knowles Corporation: *See*—
  Feeman, James F., 3,870,696.

Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., to Wallace Murray Corporation. Engine supercharging air cooling method. 3,870,029, Cl. 123-119.0CD.

Crook, Peter John; and Riley, Stephen Philip, to Pilkington Brothers Limited. Foamed reaction product of a resole with a sulfonated novolac. 3,870,661, Cl. 260-2.50F.

Cryderman, Gordon R. Snowmobile ski anti-skid assembly. 3,870,331, Cl. 280-28.000.

Csepeli Femmu: *See*—
  Stefan, Mihaly; Hegedus, Zoltan; Balazs, Fulop; and Juhasz, Gyula, 3,870,574.

Cubberley, Mitchell H., to Cubco, Inc. Releasable ski binding with regulatable toe release mechanism. 3,870,326, Cl. 280-11.35T.

Cubco, Inc.: *See*—
  Cubberley, Mitchell H., 3,870,326.

Cummins-Allison Corp.: *See*—
  Schneiderhan, Edward M.; Jones, John E.; and Briggs, Henry P., 3,870,865.

Cuny, John J., to International Telephone and Telegraph Corporation. Discharge device including channel type electron multiplier having ion adsorptive layer. 3,870,917, Cl. 313-105.000.

Cutler, Ivan B., to University of Utah. Method of creating a foamed glass product from waste glass. 3,870,496, Cl. 65-22.000.

Cutler, John F., Jr.: *See*—
  Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., 3,870,029.

Cutting Room Appliances Corp.: *See*—
  Paterson, Stephen, 3,870,290.

Cyborg Corporation: *See*—
  James, J. Michael, 3,870,034.

Czaja, Robert F.: *See*—
  Tull, Roger J.; Czaja, Robert F.; Shuman, Richard F.; and Pines, Seemon H., 3,870,753.

Daams, Jasper: *See*—
  Van Daalen, Jan Johannes; and Daams, Jasper, 3,870,504.

Dacmont, Inc.: *See*—
  Graznak, Charles, 3,870,076.

Dahl, Hilbert D.: *See*—
  Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., 3,870,373.

Daido Metal Company, Ltd.: *See*—
  Morisaki, Nobukazu, 3,870,383.

Daikin Kogyo Co. Ltd.: *See*—
  Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.

Daimei Tsushin Sangyo Kabushiki Kaisha: *See*—
  Kusama, Mikio, 3,870,836.

Dainippon Pharmaceutical Co. Ltd.: *See*—
  Uno, Hitoshi; and Irie, Akira, 3,870,724.

D'Amato, Nicholas J. Shower door saddle. 3,869,735, Cl. 4-146.000.

Damy, Sergio R. Railroad track construction. 3,870,230, Cl. 238-26.000.

Danesh, Andre. Preparation of salts and complexes of substituted oxyacetate. 3,870,749, Cl. 260-484.00P.

Dannenmann, Paul; and Kratz, Gunter, to G. Bauknecht Gesellschaft mit beschrankter Haftung Electrotechnische Fabriken. Pump. 3,870,438, Cl. 417-356.000.

Darces, Jean-Francois: *See*—
  Merigoux, Henri; Darces, Jean-Francois; and Exertier, Jean-Yves, 3,870,880.

Darnell, Robert S.; and Morrissey, Everett G., to A. J. Oster, Co. White metal casting alloy and method of making same. 3,870,513, Cl. 75-175.00A.

Darrah, John W., III; and Williams, Dick W., to Monsanto Company. Lightweight plastic container case-packing method and apparatus. 3,869,843, Cl. 53-26.000.

Darre, Allan; and Springstubbe, Wolf, to Siemens Aktiengesellschaft. Digital time-division multiplex switching method. 3,870,827, Cl. 179-15.0AP.

Dart Industries Inc.: *See*—
  Arndt, Frederick W.; and Gavin, Joseph H., 3,870,488.
  Ihlenfeld, Russell E., 3,869,968.

Davey, John Kenneth: *See*—
  Majors, Eric Desmond Thomas; and Davey, John Kenneth, 3,870,448.

Davidson, Harley R.: *See*—
  Davis, Austin L.; and Davidson, Harley R., 3,869,982.

Davies, Graham Leighton, to BTR Industries Limited. Surgical dressings. 3,870,041, Cl. 128-156.000.

Davies, John Hazlewood; Palmer, Bertram Joseph; and Fisher, Leslie George, to GKN Transmissions Limited. Universal joints. 3,869,878, Cl. 64-8.000.

Davis, Austin L.; and Davidson, Harley R., to Howe Richardson Scale Company. Weighing and printing apparatus. 3,869,982, Cl. 101-96.000.

Davis, Edgar H. Combined ski boot and binding. 3,870,325, Cl. 280-11.35N.

Davis, Ernest D., to Norfin, Inc. High speed marking device. 3,869,981, Cl. 101-91.000.

Davy Instruments Limited: *See*—
  Binks, Sidney David; and Hurton, William, 3,870,890.

Deadman, Vernon E. Torque arm assembly for nip rollers. 3,869,884, Cl. 68-258.000.

Deardurff, Lawrence R.: *See*—
  Workman, Gerald B.; and Deardurff, Lawrence R., 3,870,547.

Debesis, John R., to General Electric Company. Reflective multiple contact for semiconductor light conversion elements. 3,871,008, Cl. 357-65.000.

Debesis, John R., to General Electric Company. Reflective coated contact for semiconductor light conversion elements. 3,871,016, Cl. 357-68.000.

DeBrocke, Ben H. Golf club swing training device. 3,870,316, Cl. 273-186.00E.

de Bucs, Eugen Szabo: *See*—
  Oesterhelt, Gerhard; Winkler, Josef; Falkenberg, Dieter; and de Bucs, Eugen Szabo, 3,870,568.

DeCaro, Charles J., to Textron Inc. Driving tool. 3,869,942, Cl. 81-54.000.

Decatur Electronics, Inc.: *See*—
  Fathauer, George H., 3,870,990.

Decca Limited: *See*—
  Smith, Colin Howard Stanwell; Gosling, Alexander Bennett; and Buchanan, Donald George, 3,870,321.

Deere & Company: *See*—
  Ahrens, Barry Louis, 3,869,937.
  Hanser, Paul Edmund; and Snyder, William Lee, 3,870,074.
  Lee, Robert Stormo, 3,870,512.

Deering Milliken Research Corporation: *See*—
  McCullough, Robert W., 3,869,770.

Deffenbaugh, James F.; Williams, Arthur L.; and Ellis, Robert S., to Wean United, Inc. Welding machines. 3,870,851, Cl. 219-97.000.

De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, to U.S. Philips Corporation. Electric incandescent lamp. 3,870,920, Cl. 313-278.000.

De Frees, Joseph H. Vapor proof junction box in combination with electrical float switch adjustable for height. 3,870,844, Cl. 200-84.00R.

De George, Edward C.: *See*—
  Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,870,919.

Del Mar Engineering Laboratories: *See*—
  Elder, Boyd B., 3,870,297.

Delalande S.A.: *See*—
  Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,870,728.

DeLaMater, George B.; Herrick, Elbert C.; and Milligan, Barton, to Air Products and Chemicals Inc. Isocyanates from urethanes. 3,870,739, Cl. 260-453.00P.

Delap, Joseph A.: *See*—
  Brown, Terry D.; Delap, Joseph A.; and Nasser, Benny E., Jr., 3,870,656.

Demag Aktiengesellschaft: *See*—
  Kreuz, Otto; and Raab, Stephan, 3,870,097.

- Dempsey, Russell M.; Nolan, Mary E.; La Conti, Anthony B.; and Torkildsen, Robert A., to General Electric Company. Current controlled regulation of gas evolution in a solid polymer electrolyte electrolysis unit. 3,870,616, Cl. 204-230.000.
- DenBleyker, John R. Slide projector. 3,870,412, Cl. 353-109.000.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
  - Yoshida, Shuji; and Iguchi, Tateo, 3,870,769.
- Dennis, Roderick A.; Consiglio, Thomas J.; and McGowan, Gerald. Conference call apparatus for use with key telephone system equipment. 3,870,819, Cl. 179-1.0CN.
- DeNoyer, Donald B., to Beloit Corporation. Parts separator. 3,870,628, Cl. 209-90.000.
- Dentsply Research and Development Corporation: *See*—
  - Gonser, Donald I., 3,870,047.
- D'Errico, John J., to Solitron Devices, Inc. Means to control pulse width and repetition rate of binary counter means. 3,870,962, Cl. 328-58.000.
- Derrien, Michel: *See*—
  - Torck, Bernard; Derrien, Michel; and Franck, Jean-Pierre, 3,870,653.
- Desty, Denis Henry; Whyman, Barry Herbert Francis; and Whitehead, David Montagu, to British Petroleum Company Limited, The. Burner for use with fluid fuels. 3,870,459, Cl. 431-328.000.
- Detiker, Hans. Open clamp with means for closing the band ends. 3,869,944, Cl. 81-9.300.
- Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler: *See*—
  - Biegler, Hanns; and Wiljes, Juergen, 3,870,532.
  - Krzyminski, Harald, 3,870,569.
  - Lussling, Theodor; Schreyer, Gerd; Theissen, Ferdinand; and Weigert, Wolfgang, 3,870,746.
- Dewey Electronic Corporation, The: *See*—
  - Dewey, Gordon C.; and Bartram, James F., 3,870,998.
- Dewey, Gordon C.; and Bartram, James F., to Dewey Electronic Corporation, The. Apparatus for measuring and summing time differences. 3,870,998, Cl. 343-100.0CL.
- Diamond Electric Mfg. Co., Ltd.: *See*—
  - Ishida, Yoshio, 3,870,028.
- Diaz, Jose A. Safety lock. 3,869,886, Cl. 70-93.000.
- Dickey, Thomas A., to Avco Corporation. Fuel conservation system for multi-engine powered vehicle. 3,869,862, Cl. 60-39.150.
- DICO Company, Inc.: *See*—
  - Meads, Charles D., 3,870,356.
- Didenko, Nikolai Sidorovich: *See*—
  - Rybalko, Alexei Petrovich; Karpekin, Viktor Vladimirovich; Didenko, Nikolai Sidorovich; and Volokhov, Ivan Ivanovich, 3,869,871.
- Die Evolution S.A.: *See*—
  - Hamel, Edmund, 3,869,852.
- DIEHL: *See*—
  - Korner, Otto, 3,870,380.
- Diehr, Hans-Joachim; Kraft, Karl-Josef; and Sachs, Hanns Immo, to Bayer Aktiengesellschaft. Process for making pressure molded lignocellulose articles comprising isocyanurate group forming mold release agent. 3,870,665, Cl. 260-17.200.
- Dieringer, Andrew M., to Rexnord Inc. Track level indicator. 3,869,805, Cl. 33-338.000.
- Dieterich, Dieter: *See*—
  - Witt, Harro; and Dieterich, Dieter, 3,870,684.
- Dilanni, Daniel, to Carling O'Keefe Limited. Decapping of bottles and decanting the liquid contents thereof. 3,870,175, Cl. 214-304.000.
- Dillon, Joseph Francis, Jr.; Madison, Ernst Michael Gyorgy; and Van Uitert, Legrand Gerard, to Bell Telephone Laboratories, Incorporated. Thin film magneto-optic switch. 3,870,397, Cl. 350-96.0WG.
- Dingwall, Andrew Gordon Francis, to RCA Corporation. Complementary field effect transistor differential amplifier. 3,870,966, Cl. 330-30.00D.
- Dinklage, Horst: *See*—
  - Fink, Herbert; Munzer, Manfred; and Dinklage, Horst, 3,870,557.
- DiPerry, John, to United States of America, Navy. Automatic gain integrator control. 3,870,997, Cl. 343-18.00E.
- Ditzler, John L., to Borg-Warner Corporation. Refrigeration apparatus with defrosting system. 3,869,874, Cl. 62-278.000.
- Dixson, Bruce E.; Hoffman, Marcus I., III; and Walls, Milton A., to Air Purification Systems, Inc. Particulate and/or gas filters and associated filtering equipment to purify air to be breathed by persons in vehicles and/or buildings, and manufacture and installation of these filters. 3,870,495, Cl. 55-489.000.
- Doane, DeWitt H. Grease filter for kitchen ventilators. 3,870,494, Cl. 55-443.000.
- Dr. Ing Rudolf Hell GmbH: *See*—
  - Fels, Werner, 3,870,518.
- Doering, Charles W., to Brinly-Hardy Co., Inc. Debris collecting apparatus. 3,869,923, Cl. 74-13.000.
- Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., to Continental Oil Company. Underground coal slurry concentrating sump. 3,870,373, Cl. 302-14.000.
- Dolle, David E., to Aetna-Standard Engineering Company. Shear apparatus with improved blade holding means. 3,869,949, Cl. 83-320.000.
- Dompke, Ronald F.: *See*—
  - Engler, John R.; and Dompke, Ronald F., 3,870,352.
- Domtar Limited: *See*—
  - Hussey, Edward B., 3,870,553.
  - Shisko, Walter S., 3,870,544.
- Doner, John T., to Whirlpool Corporation. Glass-ceramic cooktop construction. 3,870,862, Cl. 219-464.000.
- Donnelley Mirrors, Inc.: *See*—
  - Wilson, Harold R.; and Kamerling, Marc A., 3,870,404.
- Donner, Sigmar, to Kleindienst & Co. Maschinenfabrik. Apparatus for the extraction of sheets. 3,870,294, Cl. 271-3.100.
- Donnet, Jean-Baptiste: *See*—
  - Bonnemay, Maurice; Bronoel, Guy Rene; Donnet, Jean-Baptiste; Lahaye, Jacques; and Sarradin, Joel Alain, 3,870,565.
- Dorf, Marvin L., to Goodyear Tire & Rubber Company, The. Structures of reinforced elastomeric material. 3,869,933, Cl. 74-234.000.
- Doschko, Werner; Fohlisch, Wolfgang; and Wensch, Alfred, to Imperial Chemical Industries Limited. Friction bush. 3,869,853, Cl. 57-77.400.
- Dosen, Masashi, to Sony Corporation. Fabricating a gallium phosphide device. 3,870,575, Cl. 148-171.000.
- Dover Corporation: *See*—
  - Reece, Thomas L , 3,870,640.
- Dow Chemical Company, The: *See*—
  - Wagner, Eugene R., 3,870,744.
- Dowden, Samuel: *See*—
  - Goff, Jerry J., 3,870,339.
- Dragoco Spezialfabrik konz. Riech-und Aromastoffe Gerberding & Co. GmbH: *See*—
  - Klein, Erich, 3,870,742.
- Dravo Corporation: *See*—
  - Sellars, George L., 3,870,238.
  - Wright, Everald V., 3,870,010.
- Dresser Industries, Inc.: *See*—
  - Winberg, Douglas F.; and Dyer, Norman D., 3,870,368.
  - Winberg, Douglas F.; and Dyer, Norman D., 3,870,370.
- Dreyer, Charles W., to Omni Spectra, Inc. Abutting electrical contact means using resilient conductive material. 3,870,978, Cl. 333-97.00R.
- Driendl, Heinrich. Device for indicating the static deformation of vehicle tires. 3,869,908, Cl. 73-146.200.
- Driggers, Louis A. Tire chain holder and dispenser. 3,870,093, Cl. 152-213.000.
- Driscoll, Robert R., to Pet Incorporated. Apparatus for preparing folded food chips. 3,869,971, Cl. 99-353.000.
- Duckworth, Peter, to Keelavite Hydraulics Limited. Fluid flow control valves. 3,869,860, Cl. 60-371.000.
- Dueker, James E.; and Brunkhorst, Lloyd E., to McDonnell Douglas Corporation. Optical image position indicator means using time and phase delay sensing. 3,870,887, Cl. 250-370.000.
- Duffy, Donald E., to General Electric Company. Method for sensing surface displacement orthogonal to the direction of observation. 3,870,414, Cl. 356-109.000.
- Duffy, James J.: *See*—
  - Golborn, Peter; and Duffy, James J., 3,870,771.
- Dugger, William H.; and Alexander, Wayne K., to International Telephone and Telegraph Corporation. Depositing apparatus. 3,870,199, Cl. 222-189.000.
- Duncan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., to Nordson Corporation. Powder spray system. 3,870,375, Cl. 302-42.000.
- Dunn, Allan R. U-shaped intravenous needle structure. 3,870,043, Cl. 128-214.00R.
- Dunn, R. S. Awning structure, and method of assembly. 3,869,837, Cl. 52-75.000.
- Dutkewych, Oleh Borys; and Hofmann, Lebert Arthur, to Shipley Company, Inc. Apparatus for dry replenishment of electroless plating solutions. 3,870,068, Cl. 137-268.000.
- Dyer, Norman D.: *See*—
  - Winberg, Douglas F.; and Dyer, Norman D., 3,870,368.
  - Winberg, Douglas F.; and Dyer, Norman D., 3,870,370.
- Dynamic Precision Controls Corporation: *See*—
  - Vanderbilt, Vern C., Jr.; Zimmer, Clarence L.; and Van Ostrand, William F., 3,870,972.
- Dynamit Nobel Aktiengesellschaft: *See*—
  - Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, 3,870,894.
- Eagle, John Scott, to British Domestic Appliances Limited. Electric toasters. 3,869,970, Cl. 99-329.00R.
- Eaton, Edward M. Coupling improvements. 3,870,332, Cl. 285-35.000.
- Eberle, Arthur; and Spitzer, Nicholas A., to Columbia Gas System Service Corporation. Digital apparatus for the timing and analysis of internal combustion engines. 3,870,869, Cl. 235-92.0FQ.
- Eberle, Jeannine A.: *See*—
  - Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,870,728.
- Eckerman, Keith F.: *See*—
  - Oltman, Billie G.; Eckerman, Keith F.; Romberg, Gerald P.; and Prepejchal, William, 3,869,918.
- Ecodyne Corporation: *See*—
  - Luzaich, Samuel, 3,870,773.
- Economics Laboratory, Inc.: *See*—
  - Mizuno, William G., 3,870,145.
- Edds, Kenneth E.; Elbert, Donald L.; and Stone, Jerry F., to International Business Machines Corporation. Infrared and visible dual dye jet printer ink. 3,870,528, Cl. 106-22.000.
- Edlund, Lars Anders; and Wikstrom, Berth Atle, to Berth Wikstrom AB. Electric heating and battery charging system for motor vehicle. 3,870,855, Cl. 219-202.000.
- Edlund, Walter W. Self locking shelf table. 3,869,993, Cl. 108-101.000.

- Edouard, Pierre Paul, to Lara S.A. Methods of and devices for continuously packaging articles in thermoshrinkable plastics film. 3,869,844, Cl. 53-30.000.
- Egeland, Ole: *See*—
  - Skretting, Hans; and Egeland, Ole, 3,870,447.
- Ehle, Joachim, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for effecting a close engagement between layers of sheet metal when making laminated pressure containers. 3,870,218, Cl. 228-4.000.
- Eichenauer, Fritz: *See*—
  - Ohnmacht, Helmut, 3,870,863.
- Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See*—
  - Schurle, Werner; and Muller, Anton, 3,870,094.
- Elbert, Donald L.: *See*—
  - Edds, Kenneth E.; Elbert, Donald L.; and Stone, Jerry F., 3,870,528.
- Elder, Boyd B., to Del Mar Engineering Laboratories. Exercise treadmill with inclination controlled chair mounted thereon. 3,870,297, Cl. 272-58.000.
- Electricity Council, The: *See*—
  - Naybour, Robert Douglas; Farrell, Trevor; and Roberts, William Elwyn, 3,870,848.
- Eli Lilly and Company: *See*—
  - Holmes, Richard E., 3,870,712.
- Elkem-Skigerverket A/S: *See*—
  - Skretting, Hans; and Egeland, Ole, 3,870,447.
- Ellen, Harry J. Automobile trunk mounted conveyor for handling heavy objects. 3,870,178, Cl. 214-450.000.
- Elliott Brothers (London) Limited: *See*—
  - Tooze, Michael John; and Knight, Peter Michael, 3,870,938.
- Elliott, Roderick Douglas, to Miles Laboratories, Inc. Insufflator. 3,870,046, Cl. 128-266.000.
- Elliott-Williams Company, Inc.: *See*—
  - Thomas, John M., 3,869,873.
- Ellis, Daniel A.: *See*—
  - Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,870,431.
- Ellis, Joel F., to H. Fishlove & Company. Novelty and amusement device simulating an animal leash. 3,870,296, Cl. 272-8.00N.
- Ellis, Leonard C.; and Kise, Mearl A., to Virginia Chemicals Inc. Process for the manufacture of N,N-diethyl-m-toluamide by aqueous caustic procedure. 3,870,756, Cl. 260-558.00A.
- Ellis, Robert G., to Atlas Pacific Engineering Company. Machine for seed celling apples. 3,869,974, Cl. 99-547.000.
- Ellis, Robert S.: *See*—
  - Deffenbaugh, James F.; Williams, Arthur L.; and Ellis, Robert S., 3,870,851.
- Elton, Robert L.; and Vander Louw, John F., to Minnesota Mining and Manufacturing Company. Stretch-oriented porous films and preparation and use thereof. 3,870,593, Cl. 161-159.000.
- Emerson Electric Co.: *See*—
  - Steiner, Robert E., 3,870,860.
- Emley, Grace S.: *See*—
  - Hutchinson, Ronald R.; Emley, Grace S.; Hallin, Edward R.; and Murray, Nancy J., 3,870,794.
- Endres, Leland S.; Gehlhoff, Leo F.; and Zimmerman, Dallas D., to Minnesota Mining and Manufacturing Company. Aldehyde condensation products of fluoraliphatic phenols. 3,870,682, Cl. 260-49.000.
- Engelhard Minerals & Chemicals Corporation: *See*—
  - Hindin, Saul G., 3,870,455.
- Engineered Devices Company: *See*—
  - Roberts, Robert C; and Alcorn, Edward B., 3,870,825.
- Engins Matra: *See*—
  - Robert, Michel, 3,870,939.
- Engler, John R.; and Dompke, Ronald F. Track grit spreader apparatus. 3,870,352, Cl. 291-15.000.
- English Electric Company Limited, The: *See*—
  - Hughes, Michael Alan, 3,870,926.
  - Hughes, Michael Alan, 3,870,927.
- Epsex International, Inc.: *See*—
  - Blinkilde, Paul J., 3,870,120.
- Erickson, Robert Edward: *See*—
  - Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,870,659.
- Eriksson, Bolik Anders Gottfrid; Johansson, Erik Karl Gustav; and Vukotic, Milos, to Aktiebolaget Electrolux. Floor surface treating apparatus. 3,870,486, Cl. 55-276.000.
- Ermal C. Fraze: *See*—
  - Brown, Omar L., 3,870,001.
- Erskine, Donald Baldwin, to Calgon Corporation. Traveling filter for use with filter medium incineration process. 3,870,632, Cl. 210-67.000.
- Erwin Sick Optik-Elektronik: *See*—
  - Walter, Arthur A. W.; and Langenbach, Erwin, 3,870,878.
- ESB Incorporated: *See*—
  - Bergum, Bernard C.; and Oppedal, Tor, 3,870,566.
- Esec Sales S. A.: *See*—
  - Nicklaus, Karl, 3,869,782.
- Espen, David A., to Sperry Rand Corporation. Apparatus for compensating two axes gimbal error. 3,870,940, Cl. 318-633.000.
- Estey Corporation: *See*—
  - Swart, Gary M., 3,870,260.
- Etablissement Fresa: *See*—
  - Faucheux, Pierre, 3,870,122.
- Ethyl Corporation: *See*—
  - Mitchell, Lawrence C.; and Ter Haar, Gary L., 3,870,679.
- Etter, Berwyne E. Method and means of applying additives to industrial gas. 3,870,069, Cl. 137-209.000.
- Eubanks, Edward F.; and Talley, Lloyd A., to Eubanks Engineering Co., by said Talley. Apparatus for attaching terminals to electric conductors. 3,869,781, Cl. 29-203.0DT.
- Eubanks Engineering Co.: *See*—
  - Eubanks, Edward F.; and Talley, Lloyd A. (said Talley assors. to), 3,869,781.
- Evans, George L.: *See*—
  - Warren, Bert; and Evans, George L., 3,870,601.
- Evans, Russell S.: *See*—
  - Gibney, Kelly B.; Howard, John; and Evans, Russell S., 3,870,703.
- Evequoz, Jean-Yves. Ski-bob. 3,870,329, Cl. 280-16.000.
- Ex-Cell-O Corporation: *See*—
  - Schrader, William A.; and Schmidt, Joe, 3,870,249.
- Exertier, Jean-Yves: *See*—
  - Merigoux, Henri; Darces, Jean-Francois; and Exertier, Jean-Yves, 3,870,880.
- Exxon Research and Engineering Company: *See*—
  - Arnold, George T.; Hochman, Jack M.; and Pennington, Robert E., 3,870,621.
  - Makowski, Henry S.; Lundberg, Robert D.; and Singhal, Gopal H., 3,870,841.
  - Moss, Gerald, 3,870,480.
  - Patton, Tad L., 3,870,692.
- Fa. Kleinewefers Industrie-Companie GmbH: *See*—
  - Schiffer, Gunther, 3,870,215.
- Fajans, Jack; and Nankivell, John E., to Gravicon Corporation. Apparatus for measuring paper stock consistency. 3,869,922, Cl. 73-438.000.
- Falkehag, Sten I.; and Bailey, Carl W., III, to Westvaco Corporation. Mofiefied sulfonated resin surfactants. 3,870,681, Cl. 260-49.000.
- Falkenberg, Dieter: *See*—
  - Oesterhelt, Gerhard; Winkler, Josef; Falkenberg, Dieter; and de Bucs, Eugen Szabo, 3,870,568.
- Fantechi, Guiliano: *See*—
  - Brandigi, Carlo; and Fantechi, Guiliano, 3,869,966.
- Farbenfabriken Bayer Aktiengesellschaft: *See*—
  - Jager, Gerhard; Plempel, Manfred; and Buchel, Karl Heinz, 3,870,726.
- Farha, Floyd E., Jr.: *See*—
  - Gichowski, Robert S.; and Farha, Floyd E., Jr., 3,870,764.
- Farrauto, Robert J.; Hoekstra, Karl E.; and Shoup, Robert D., to Corning Glass Works. Copper chromite-alumina catalysts having high-temperature stability. 3,870,658, Cl. 252-465.000.
- Farrell, Trevor: *See*—
  - Naybour, Robert Douglas; Farrell, Trevor; and Roberts, William Elwyn, 3,870,848.
- Farrissey, William J., Jr.; and Rausch, Karl W., Jr., to Upjohn Company, The. Particulate polyimide compositions containing phenal or dipolar aprotic solvents. 3,870,674, Cl. 260-30.200.
- Farrissey, William J., Jr.; and Andrews, Philip S. Heat resistant reinforced composites of copolyimides. 3,870,677, Cl. 260-37.00N.
- Fasco Industries, Inc.: *See*—
  - Hire, Charles John, 3,870,985.
- Fass, Leonard; and Fatuzzo, Ennio, to Minnesota Mining and Manufacturing Company. System formed by the combination of a solid state image intensifier and a compatible adapted x-ray film. 3,870,892, Cl. 250-483.000.
- Fassell, W. Martin; and Bridges, Donald W., to Barber-Colman Company. Apparatus and method for wet oxidation of organic matter. 3,870,631, Cl. 210-63.000.
- Fathauer, George H., to Decatur Electronics, Inc. Vehicle presence detector. 3,870,990, Cl. 340-38.00L.
- Fatuzzo, Ennio: *See*—
  - Fass, Leonard; and Fatuzzo, Ennio, 3,870,892.
- Faucheux, Pierre, to Etablissement Fresa. Service device. 3,870,122, Cl. 182-36.000.
- Faulkner, Raymond Noel, to Research Corporation. Resinous reaction product of a sucrose partial ester, a cyclic dicarboxylic acid anhydride and a diepoxide. 3,870,664, Cl. 260-9.000.
- Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., to Delalande S.A. Derivatives of 4'-aminomethyl-dibenzo (B,E)-11-oxepine-2'-spiro-1',3'-dioxolane, their method of preparation and their therapeutic application. 3,870,728, Cl. 260-340.900.
- Faylor, Terry Lee; and Martin, Roger W., to Aqua Media. Ultra pure water process and apparatus. 3,870,033, Cl. 126-360.00R.
- Federal-Mogul Corporation: *See*—
  - Ladin, Eli M., 3,870,384.
- Feeman, James F., to Crompton & Knowles Corporation. Benzthiazole-azo-(4-n-sulfopropyl)phenyl compounds. 3,870,696, Cl. 260-158.000.
- Feinberg, Irvin, to Presto Lock Company. Garment hanger frame having a hinged hook. 3,870,206, Cl. 223-88.000.
- Fels, Werner, to Dr. Ing Rudolf Hell GmbH. Method of transferring photographic film between cassette and an exposure drum. 3,870,518, Cl. 96-27.00R.
- Ferguson, William C., to J. Wiss & Sons Co. Latch for hand tool. 3,869,793, Cl. 30-262.000.
- Ferranti Limited: *See*—
  - Jackson, Sydney; and Titterington, Joseph Bell, 3,871,018.
- Ferri, John L.; and Mathers, James E., to GTE Sylvania Incorporated. Europium-activated rare earth oxide phosphors. 3,870,650, Cl. 252-301.40R.

Ferro-Carb Agglomeration Ltd., Inc.: *See—*
Allen, John E., 3,870,507.
Allen, John E., 3,870,509.
Ferro Corporation: *See—*
Roberts, Gordon J., 3,870,530.
Fields, Leslie L. Method and apparatus for measuring the dwell and rpm of an engine. 3,870,947, Cl. 324-16.00R.
Fieser, Arthur H.; and Mobley, Loreley S. Method for conditioning metal slabs. 3,870,570, Cl. 148-9.500.
Filatov, Andrei Dmitrievich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
Filip, Stanislaw F., to I.C.S. Ignition Control Systems Ltd. Cable activated switch. 3,870,846, Cl. 200-161.000.
Filz, William F., to North Pacific Canners & Packers, Inc. Two stage interior-exterior blanching process. 3,870,813, Cl. 426-509.000.
Findeva AG: *See—*
Fink, Willy, 3,870,281.
Fineman, Howard Eisen: *See—*
Hanson, Richard Eric; and Fineman, Howard Eisen, 3,870,954.
Fink, Herbert; Munzer, Manfred; and Dinklage, Horst, to Rohm GmbH. Treatment of porous web structures with aqueous suspensions of a synthetic resin. 3,870,557, Cl. 117-161.00R.
Fink, Werner: *See—*
Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, 3,870,377.
Fink, Willy, to Findeva AG. Compressed air vibrator. 3,870,281, Cl. 259-1.00R.
Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D. Three lever valve with relief port. 3,870,079, Cl. 137-630.140.
Fiore, John M., to Bio-Analytical Laboratories, Inc. Improved speculum barrel member. 3,870,036, Cl. 128-6.000.
Firth, Anthony Christopher; and Child, Robin Edward, to Automotive Products Company Limited. Internal shoe drum brakes. 3,870,131, Cl. 188-325.000.
Firtion, Victor Andrew: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,870,416.
Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Cultivation of plants in greenhouses. 3,869,826, Cl. 47-17.000.
Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,870,502, Cl. 71-92.000.
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted O-(aminosulfonyl)-glycolic anilides. 3,870,740, Cl. 260-456.00A.
Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., to Union Oil Company of California. Low fluid loss additive composition. 3,870,668, Cl. 260-28.50R.
Fisher, Leslie George: *See—*
Davies, John Hazlewood; Palmer, Bertram Joseph; and Fisher, Leslie George, 3,869,878.
Flach, Karl-Egon: *See—*
Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, 3,870,894.
Fletcher, Peter C., to Speed Selector, Inc. Spring biased double acting expansible pulley with increased spring fatigue life. 3,869,932, Cl. 74-230.17R.
Flint, Alan G., to GCA Corporation. Single or multi-track fluid bearing heating apparatus and method. 3,870,460, Cl. 432-11.000.
Flueckiger, Noah: *See—*
Holt, Frederick R.; and Flueckiger, Noah, 3,870,948.
Flygare, Willis H.; and Ware, Bennie R., to University of Illinois Foundation. Analysis for polymer mixtures in solution utilizing electrophoretic light scattering apparatus. 3,870,612, Cl. 204-180.00R.
FMC Corporation: *See—*
Hall, Richard E.; and Bhalla, Sushil K., 3,870,783.
Fohlisch, Wolfgang: *See—*
Doschko, Werner; Fohlisch, Wolfgang; and Wensch, Alfred, 3,869,853.
Fonio, Mario. Clamp device for laying-up machines suitable to keep each layer of fabric during its laying-up. 3,870,291, Cl. 270-31.000.
Forest, Edmond, to Societe Anonyme: Reveils Bayard. Step-by-step device for a ratchet-wheel. 3,869,930, Cl. 74-128.000.
Forest Laboratories, Inc.: *See—*
Lowey, Hans; and Stafford, Herbert Henry, 3,870,790.
Fortuna-Werke Maschinenfabrik Aktiengesellschaft: *See—*
Braun, Dieter, 3,869,745.
Foseco International Limited: *See—*
Hawthorne, Peter Frederick, 3,870,595.
Foster, Edwin E. Bracket for a spring sash counterbalance. 3,869,754, Cl. 16-197.000.
Fougere, Guy L., to Arthur D. Little, Inc. Method and apparatus for coin selection utilizing inductive sensors. 3,870,137, Cl. 194-100.00A.
Foundation for Behavioral Research: *See—*
Hutchinson, Ronald R.; Emley, Grace S.; Hallin, Edward R.; and Murray, Nancy J., 3,870,794.
Franck, Jean-Pierre: *See—*
Torck, Bernard; Derrien, Michel; and Franck, Jean-Pierre, 3,870,653.
Frank, Karl. Apparatus for the production of an article from thermoplastic synthetic plastic, using blowing, injection and blowing or foil blowing process. 3,870,452, Cl. 425-387.00B.
Frankenberg, Henry E., to Continental Can Company, Inc. Aerosol dispensing valve. 3,870,203, Cl. 222-397.000.
Franklin, Harold J. Hot grease guard for cooking utensil. 3,870,191, Cl. 220-370.000.
Frederiksen, Thomas M., to Motorola, Inc. Current mode operational amplifier. 3,870,965, Cl. 330-30.00R.
Fredrickson, John M. Implantable electromagnetic hearing aid. 3,870,832, Cl. 179-107.00E.
Freeman Supply Company, The: *See—*
Rusk, Gerald; and Koch, Robert E., 3,870,092.
Frei, Ephraim H.; Yerushalmi, Shmuel; and Benmair, Yusuf, to Yeda Research & Development Co. Ltd. Ferromagnetic compositions of matter. 3,870,645, Cl. 252-62.560.
Freure, Robert J.; and Moyle, Maurice, to Gulf Oil Canada Limited. Light stable polyurethanes based on dicyclohexyl and diisocyanates. 3,870,683, Cl. 260-75.0NT.
Frid. Krupp Gesellschaft mit Beschrankter Hoftung: *See—*
Schatz, Oskar, 3,870,443.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Ehle, Joachim, 3,870,218.
Muller, Peter, 3,869,851.
Friederang, Albrecht: *See—*
Pasedach, Heinrich; and Friederang, Albrecht, 3,870,761.
Friend, George R. Vehicle frame alignment gage. 3,869,804, Cl. 33-288.000.
Friesen, Dale M.; and Nordeen, Erwin E., to Whirlpool Corporation. Means for removably connecting a dirt collecting receptacle in a vacuum cleaner. 3,870,491, Cl. 55-376.000.
Froehlich, Alfred; and Loeffel, Hansrolf, to Ciba-Geigy AG. Trisazo dyestuffs containing two carboxamide groups. 3,870,697, Cl. 260-173.000.
Froman, Seymour; and Chandler, William L., to California Laboratory Industries, Inc. Gas permeable sterile culture bottle. 3,870,602, Cl. 195-139.000.
Fruchtnicht, Ernst August. Fish growing tank. 3,870,018, Cl. 119-3.000.
Frymaster Corporation, The: *See—*
Price, George M., 3,870,859.
Fuchs, Thomas D.; and Micka, John J., to Owens-Illinois Inc. Easy open metal closure. 3,870,184, Cl. 215-255.000.
Fuji Oil Company, Ltd.: *See—*
Kubota, Hayato; Nakayama, Sadao; and Tateishi, Teizaburo, 3,870,733.
Fuji Photo Film Co., Ltd.: *See—*
Ikenoue, Shinpei; and Masuda, Takao, 3,870,523.
Kubotera, Kikuo; Ikenoue, Shinpei; Mizuki, Eiichi; and Fujiwara, Tadahiro, 3,870,479.
Shimamura, Isao; Shishido, Tadao; Ohi, Reiichi; and Iwano, Haruhiko, 3,870,520.
Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, 3,870,524.
Yamamoto, Nobuo; Kawaguchi, Hideo; and Furukawa, Katsuharu, 3,870,525.
Fujii, Toru: *See—*
Yamashita, Nobuo; and Fujii, Toru, 3,870,400.
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, to Takeda Chemical Industries, Ltd. Peptide synthesis with n-hydroxy-5-norbornene-2,3-dicarboximide. 3,870,694, Cl. 260-112.500.
Fujiwara, Tadahiro: *See—*
Kubotera, Kikuo; Ikenoue, Shinpei; Mizuki, Eiichi; and Fujiwara, Tadahiro, 3,870,479.
Fukuda, Tsunehiko: *See—*
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,870,694.
Fukui, Shoshin: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
Fukuroi, Takeo, to Yoshida Kogyo Kabushiki Kaisha. Bridge top stop for slide fasteners. 3,869,765, Cl. 24-205.11F.
Fulmini, Sergio: *See—*
Siclari, Francesco; Maderno, Cesano; Magnoni, Franco; and Fulmini, Sergio, 3,870,475.
Fumitake Yoshida: *See—*
Yoshida, Fumitake; and Ohshima, Norio, 3,870,470.
Furuichi, Eiichi: *See—*
Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
Furukawa, Katsuharu: *See—*
Yamamoto, Nobuo; Kawaguchi, Hideo; and Furukawa, Katsuharu, 3,870,525.
Fussner, Paul, to Robert Bosch GmbH. Electric motor pump unit. 3,870,910, Cl. 310-66.000.
G. Bauknecht Gesellschaft mit beschrankter Haftung Electrotechnische Fabriken: *See—*
Dannenmann, Paul; and Kratz, Gunter, 3,870,438.
G. S. Blakeslee Co.: *See—*
Janiszewski, Casimer, 3,870,067.
Gabor, Andrew, to Potter Instrument Company, Inc. Decoder for high density decoding system. 3,870,870, Cl. 235-92.0MB.

Gabor, Dennis, to Columbia Broadcasting System, Inc. Ultrasonic cameras. 3,869,904, Cl. 73-67.50H.
Gabriel of Canada Limited: *See—*
Miller, Gerald R., 3,870,130.
GAF Corporation: *See—*
Grifo, Richard Anthony, 3,870,648.
Mackey, E. Scudder; Pechmann, Karl; and Tritten, Donald E., 3,870,521.
Peterson, William R.; and Johnson, Walter N., 3,870,770.
Randall, David I.; and Wynn, Robert W., 3,870,772.
Ruygrok, Albertus Pieter, 3,870,549.
Gagneux, Andre; Heckendorn, Roland; and Meier, Renc, to Ciba-Geigy Corporation. Certain 6-phenyl-4h-s-triazolo[1,5-a][1,4]benzodiazepine-2-carboxamides. 3,870,714, Cl. 260-247.5EP.
Gagneux, Andre: *See—*
Allgeier, Hans; and Gagneux, Andre, 3,870,706.
Gakken Co. Ltd.: *See—*
Hatano, Fukuji; and Kobayashi, Yukio, 3,870,330.
Gale, William F.; and Thompson, James Douglas, to said James Douglas Thompson to said William F. Gale. Ladder and mounting for small boats. 3,869,742, Cl. 9-1.00R.
Gallant, James O.; Staples, Robert E.; and Knapp, George P., to Mount Hope Machine Company, Incorporated. Fluid bearing table roll. 3,869,774, Cl. 29-116.0AD.
Galloway, John D. Storage rack for wine bottles. 3,870,155, Cl. 211-74.000.
Gallus, Julius P.: *See—*
Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., 3,870,668.
Garber, John L.: *See—*
Garber, John R.; and Garber, John L., 3,869,983.
Garber, John R.; and Garber, John L. Variable repeat-length web printing press. 3,869,983, Cl. 101-137.000.
Gardent, Maurice; Michalak, Wadislaw; and Prost, Roger, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Apparatus for tempering glass. 3,869,876, Cl. 62-376.000.
Garvey, Glenwood L.; and Begley, Richard J., to Self-Cleaning Environments. Self-cleaning restroom. 3,869,732, Cl. 4-1.000.
Gassmann, Horst: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.
Gates Rubber Company, The: *See—*
Rohlfing, Raymond A., 3,870,478.
Gavin, Joseph H.: *See—*
Arndt, Frederick W.; and Gavin, Joseph H., 3,870,488.
Gawlick, Heinz: *See—*
Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, 3,870,894.
Gayler, Winston D.; and Ahern, James E., to Vidar Corporation. Telephone exchange metering system. 3,870,823, Cl. 179-7.0MM.
GCA Corporation: *See—*
Flint, Alan G., 3,870,460.
Larson, Paul E., 3,870,882.
Gebr. Cramer, Firma: *See—*
Kruper, Aloys, 3,870,031.
Gebruder Seidel KG: *See—*
Reinhard, Willy, 3,870,186.
Gedwill, Michael A.; and Grisaffe, Salvatore J., to United States of America, National Aeronautics and Space Administration. Duplex aluminized coatings. 3,869,779, Cl. 29-194.000.
Gegner, Eberhard, to British Petroleum Company Limited, The. Grease thickened with oxygen-linked polyureas. 3,870,642, Cl. 252-51.50A.
Gehlhoff, Leo F.: *See—*
Endres, Leland S.; Gehlhoff, Leo F.; and Zimmerman, Dallas D., 3,870,682.
Gelsomino, Fred J., to National Gypsum Company. Asbestos-cement product and process. 3,870,546, Cl. 117-72.000.
Gemmel, John F.; and Brown, Charles C. Practice weight for ice skates. 3,870,328, Cl. 280-11.37E.
General Electric Company: *See—*
Busby, Llewellyn D., 3,869,816.
Catherino, Henry A., 3,870,562.
Clark, Burton Parker, 3,869,960.
Debesis, John R., 3,871,008.
Debesis, John R., 3,871,016.
Dempsey, Russell M.; Nolan, Mary E.; La Conti, Anthony B.; and Torkildsen, Robert A., 3,870,616.
Duffy, Donald E., 3,870,414.
Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,870,919.
Hill, Robert L.; and Ringeman, Othmar E., 3,870,393.
Hoffman, Orville William, 3,870,907.
Pangburn, William Walrath, 3,870,909.
Paulson, Elmir Edward, 3,870,434.
Pedersen, Niels P.; and Shabel, John M., 3,870,945.
Schimke, Thomas O., 3,870,858.
Zuercher, Edward A., Jr., 3,870,440.
General Foods Corporation: *See—*
Capossela, Anthony C.; McGuire, Michael T.; Smith, Gordon C.; and Albaum, Joseph D., 3,870,806.
Hayes, John T., Jr.; and Marshall, William E., 3,870,812.
Siems, Ruth M.; Capossela, Anthony C., Jr.; Halligan, John F.; and Wyss, C. Robert, 3,870,803.
General Instrument Corporation: *See—*
Smith, Kent F.; and Huber, Robert J., 3,870,901.
General Motors Corporation: *See—*
Thornburgh, William F., 3,869,859.
General Signal Corporation: *See—*
Sibley, Henry C., 3,870,952.
General Tire & Rubber Company, The: *See—*
Stringfellow, Jerry D., 3,870,449.
geobra Brandstatter GmbH & Co. KG: *See—*
Brandstatter, Horst, 3,870,864.
Georgi, Walter L., to Palspros, Inc. Safety cap for threaded closure. 3,870,182, Cl. 215-220.000.
German, Sidney. Web cutting sewing machine and process. 3,869,997, Cl. 112-121.120.
Gernetzke, David W. Apparatus for removing articles from envelopes. 3,870,176, Cl. 214-308.000.
Gervais-Danone AG: *See—*
Schulz, Max Erich, 3,870,811.
Geschafts-und Industriebau B. Moeller & Co.: *See—*
Moeller, Bonde, 3,870,159.
Getman, Darryl L.; and Swenson, Marshall G., to Beloit Corporation. Drainage foil having a foil blade insert. 3,870,597, Cl. 162-352.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Lobbe, Armin, 3,870,369.
Gezari, Walter A., to International Telephone and Telegraph Corporation. Pipe fitting closure. 3,870,084, Cl. 138-89.000.
Gibb, John F., to Backer Rod Mfg. & Supply Co. Flexible foam material shaper. 3,869,831, Cl. 51-75.000.
Gibney, Kelly B.; Howard, John; and Evans, Russell S., to Canadian Cellulose Company, Limited. Production of cellulose esters. 3,870,703, Cl. 260-229.000.
Gichowski, Robert S.; and Farha, Floyd E., Jr., to Phillips Petroleum Company. Oxidative dehydrogenation process. 3,870,764, Cl. 260-680.00E.
Gidge, Lester, to Terra-Tex Corporation. Pre-formed, mulch carpet and apparatus and method for making same. 3,870,583, Cl. 156-500.000.
Gilles, Martin; and Thiel, Anton, to Clouth Gummiwerke AG. Casing for track-laying and wheel-equipped vehicles. 3,870,337, Cl. 280-154.50R.
Gillette Company, The: *See—*
Pirner, Hans G., 3,869,802.
Ginnow, Oscar H.; and Ginnow, Roger H. Unnailer. 3,869,780, Cl. 29-200.00D.
Ginnow, Roger H.: *See—*
Ginnow, Oscar H.; and Ginnow, Roger H., 3,869,780.
Givaudon Corporation: *See—*
Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,870,659.
GKN Transmission Limited: *See—*
Webb, Oswald; and Pagdin, Brian Colin, 3,869,940.
GKN Transmissions Limited: *See—*
Davies, John Hazlewood; Palmer, Bertram Joseph; and Fisher, Leslie George, 3,869,878.
Glaser, Heinz; and Zlatareff, Vassil, to Societe d'Etudes du Procede Noridem. Temporary printing carriers. 3,870,539, Cl. 117-3.100.
Glass, Marvin I.: *See—*
Meyer, Burton C.; and Glass, Marvin I., 3,870,307.
Gneiding, Albert, to Belras AG. Abrasion disk for soap dispensers. 3,869,773, Cl. 29-78.000.
Goebel, Joseph, to Addressograph Multigraph Corporation. Microfiche drive assembly and transport assembly. 3,870,413, Cl. 355-53.000.
Goebel, Joseph: *See—*
Patzke, Robert C.; and Goebel, Joseph, 3,870,981.
Goff, Jerry J., to Dowden, Samuel, a part interest. Multi-purpose tandem trailer. 3,870,339, Cl. 280-414.00R.
Gokcen, Cem M., to Beloit Corporation. Apparatus for extruding foamed thermoplastic material. 3,870,451, Cl. 425-378.00R.
Golborn, Peter; and Duffy, James J., to Hooker Chemical & Plastics Corporation. Dialkyl alkyl and aromatic sulfonamidomethyl phosphonates. 3,870,771, Cl. 260-944.000.
Goldner, Sandor: *See—*
Lax, Jacob; and Goldner, Sandor, 3,870,895.
Gondek, John T. Planetary gear pump. 3,870,437, Cl. 417-310.000.
Gonsales, Rodriges Sesar: *See—*
Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.
Gonser, Donald I., to Dentsply Research and Development Corporation. Electrosurgical device. 3,870,047, Cl. 128-303.140.
Gonzalez, Luis A.: *See—*
Ashton, William B.; Gonzalez, Luis A.; Nelson, Gerald V.; and Mead, Theodore C., 3,870,622.
Gooch, James Bartley. Decorative fire extinguisher. 3,870,105, Cl. 169-33.000.
Goodrich-Gulf Chemicals, Inc.: *See—*
Harpell, Gary Allan, 3,870,678.
Goodyear Tire & Rubber Company, The: *See—*
Dorf, Marvin L., 3,869,933.
Hutchings, David A., 3,870,731.
Kuhn, George B., 3,870,741.

Gordon, Wolfgang; Rust, Kurt; and Schrott, Erwin, to Hoechst Aktiengesellschaft. Process for the polymerization of alpha-olefins. 3,870,690, Cl. 260-88.20R.

Gorham International Inc.: *See—*
Sawyer, Willard C., 3,869,808.

Gorman-Rupp Company, The: *See—*
Remy, Dennis K., 3,870,436.

Gorski, Walter, to Textron Inc.,. Guide bar oiling system for chain saw. 3,870,125, Cl. 184-15.00R.

Gosling, Alexander Bennett: *See—*
Smith, Colin Howard Stanwell; Gosling, Alexander Bennett; and Buchanan, Donald George, 3,870,321.

Gosling, William Robert Frederick; Wakefield, David John; and Long, Terry. Supporting linkage arrangement for earth working tool. 3,870,106, Cl. 172-239.000.

Goss, John B.: *See—*
Stachowiak, John E.; and Goss, John B., 3,870,439.

Gosse, Francoise, to Societe En Commandite Par Actions: Etablissements M. Caulliez Et Delaoutre. Device for making radially extending motifs of textile fibers. 3,870,207, Cl. 223-46.000.

Goto, Kenji; Mitsui, Ryozo; and Ishikawa, Norikatsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purifying system for motor vehicles. 3,869,858, Cl. 60-290.000.

Goto, Teruo: *See—*
Makimura, Osamu; and Goto, Teruo, 3,870,688.

Gottschalk, Klaus: *See—*
Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,870,919.

Graat, Johannes W., to Smit Nymegen B.V. Burner for the stoichiometric combustion. 3,870,456, Cl. 431-8.000.

Graebe, Robert H. Multicelled structure apparatus for making same. 3,870,450, Cl. 425-269.000.

Graham, Donald E.; and Battaglia, Larry A., to Valve Systems International, Inc. Swing check seal assembly. 3,870,071, Cl. 137-527.000.

Graubremse GmbH: *See—*
Nicolay, Heinz; and Gruner, Hans, 3,870,128.

Gravicon Corporation: *See—*
Fajans, Jack; and Nankivell, John E., 3,869,922.

Gray, Benjamin C. Hydraulic drilling or servicing rig. 3,870,109, Cl. 173-38.000.

Gray, David Antony: *See—*
Robinson, Michael; Wilson, Harry Brian; and Gray, David Antony, 3,870,506.

Graznak, Charles, to Dacmont, Inc. Automatic liquid medicament mixer for treating animals. 3,870,076, Cl. 137-607.000.

Greatbatch, Wilson. Demand pacer. 3,870,050, Cl. 128-419.0PG.

Green, Brian Noel: *See—*
Halliday, John Stephen; and Green, Brian Noel, 3,870,881.

Green, Glen R.; and Bennion, Jay B., to Ore-Ida Foods, Inc. Steaming caustic treated, peeled potatoes to loosen and remove the eyes and defect portions thereof. 3,870,809, Cl. 426-287.000.

Greenfield, Walter; and Berg, Raymond, to Sci-Med Laboratories, Inc. Wright's stain packet. 3,870,146, Cl. 206-84.000.

Greenshields, James Nairn: *See—*
Cowling, Ronald; and Greenshields, James Nairn, 3,870,559.

Grifo, Richard Anthony, to GAF Corporation. Polyelectrolytes as detergent builders. 3,870,648, Cl. 252-135.000.

Grimaud, Edouard; and Tournut, Claude, to Pechiney Ugine Kuhlmann. Method for polymerizing tetrafluoroethylene and the polymers obtained therefrom. 3,870,691, Cl. 260-92.100.

Grimaud, Edouard; and Troussier, Maurice, to Pechiney Ugine Kuhlmann. Oleophobic and hydrophobic polymers containing polymerization product of fluorinated sulfonamideoethylene moieties. 3,870,767, Cl. 260-836.000.

Grisaffe, Salvatore J.: *See—*
Gedwill, Michael A.; and Grisaffe, Salvatore J., 3,869,779.

Grisar, J. Martin; and Claxton, George P., to Richardson-Merrell Inc. 2-Azacycloalkylmethyl substituted benzhydryl ketones and carbinols. 3,870,723, Cl. 260-293.800.

Groce, Raymond; and Kussemaul, Ernest A., to Loveshaw Corporation, The. Variable rate pulse generating system. 3,870,963, Cl. 328-59.000.

Grolig, Johann: *See—*
Scharfe, Gerhard; and Grolig, Johann, 3,870,730.

Gross, Alexander. Chenille production machines. 3,869,850, Cl. 57-24.000.

Gruber, Alan H.: *See—*
Ohlstein, Herbert; and Gruber, Alan H., 3,870,974.

Gruner, Hans: *See—*
Nicolay, Heinz; and Gruner, Hans, 3,870,128.

Grunin, Lev Petrovich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.

Gruszecki, Wojciech; Taszer, Emil; and Borowski, Edward, to Politechnika Gdanska Instytut Chemii i Technologii Organicznej Oraz Zywnosciowej. Amine derivatives of penicillins and the method of their production. 3,870,708, Cl. 260-239.100.

GTE Sylvania Incorporated: *See—*
Ferri, John L.; and Mathers, James E., 3,870,650.
Latassa, Frank M.; Milke, Howard W.; and Sadoski, Tadius T., 3,869,772.

Guenot, Rene, to Regie Nationale Des Usines Renault. Arrangement for the detection, with a rocking feeler, of the presence of a part. 3,870,430, Cl. 408-6.000.

Guild, Lloyd V. Apparatus for collecting samples of contaminants. 3,870,492, Cl. 55-387.000.

Gulf Oil Canada Limited: *See—*
Freure, Robert J.; and Moyle, Maurice, 3,870,683.

Gulf Research & Development Company: *See—*
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,870,734.
Paviak, Stanley C., 3,870,660.
Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,870,626.
Tabacek, Joseph A.; Taylor, Brian W.; and Vogel, Roger F., 3,870,545.

Gulf & Western Industrial Products Company: *See—*
Lose, John G.; and Roth, John F., 3,869,927.

Guptill, Joel P., to Allied Chemical Corporation. Purification of sodium carbonate. 3,870,780, Cl. 423-206.000.

Gussak, Lev Abramovich: *See—*
Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.

H. Fishlove & Company: *See—*
Ellis, Joel F., 3,870,296.

H. W. Hart Mfg. Co.: *See—*
Hart, Harold W., 3,870,022.

Haase, Harold A. Work transfer device. 3,870,164, Cl. 214-1.0BB.

Hackett, Charles F.: *See—*
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 3,870,516.

Hackhel, Robert H. Pressure-sensitive adhesive tape. 3,870,552, Cl. 117-122.0PF.

Haddad, Heskel M.; and Loucas, Spiro P. Solid state ophthalmic medication delivery method. 3,870,791, Cl. 424-22.000.

Hagstrom, Robert G.: *See—*
Whitten, Charles M.; and Hagstrom, Robert G., 3,870,652.

Hale, Richard W.; Tan, Patrick; Stowell, Richard C.; and Ordway, Donald E., to Sage Action Inc. Gas flow visualization system and control apparatus. 3,869,909, Cl. 73-147.000.

Haley, Chester J., to Northwest Molded Products Corp. Self-locking dispenser. 3,870,192, Cl. 221-86.000.

Hall, Melvin R.: *See—*
Boatman, Roger M.; and Hall, Melvin R., 3,870,953.

Hall, Richard E.; and Bhalla, Sushil K., to FMC Corporation. Process of preparing sodium carbonate peroxide. 3,870,783, Cl. 423-415.000.

Hallford, Ben R.; and Wright, Charles H., to Rockwell International Corporation. Mixer carrier null adjustment. 3,870,960, Cl. 325-446.000.

Halliday, John Stephen; and Green, Brian Noel, to Associated Electric Industries. Method of analyzing output signals representing the mass spectrum from a scanning mass spectrometer. 3,870,881, Cl. 250-283.000.

Halligan, John F.: *See—*
Siems, Ruth M.; Capossela, Anthony C., Jr.; Halligan, John F.; and Wyss, C. Robert, 3,870,803.

Hallin, Edward R.: *See—*
Hutchinson, Ronald R.; Emley, Grace S.; Hallin, Edward R.; and Murray, Nancy J., 3,870,794.

Hallsenius, Carlgustaf, administrator: *See—*
Pulk, Elgas, deceased; and Noren, John Paul, 3,870,114.

Halpern, John W. Fee charging system. 3,870,866, Cl. 235-61.70R.

Hamana, Isao: *See—*
Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi, 3,870,637.

Hamanaka, Ernest S., to Pfizer Inc. 6-(Alpha-(ome ga-guanidinoalkanoylamido)acylamido)penicillanic acids. 3,870,709, Cl. 260-239.100.

Hamanaka, Ernest S., to Pfizer Inc. Phosphono substituted alkylcephalosporins. 3,870,713, Cl. 260-243.00C.

Hamann, Herman C.: *See—*
Clemens, David H.; and Hamann, Herman C., 3,870,663.

Hamar, Douglas A. Game. 3,870,312, Cl. 273-135.00F.

Hamel, Edmund, to Die Evolution S.A. Method of and apparatus for twisting yarn. 3,869,852, Cl. 57-59.000.

Hamisch, Paul H., Sr., to Monarch Marking Systems, Inc. Web of record members. 3,870,867, Cl. 235-61.12R.

Hammermill Paper Company: *See—*
Butler, Ralph R., 3,870,222.

Hampel, Uwe: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.

Hamprecht, Gerhard: *See—*
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,870,740.

Hancy, Raymond E. Teaching device for forming intelligence characters. 3,869,813, Cl. 35-37.000.

Hanley, John J., to Lawrence Peska Associates, Inc. Portable travel bag. 3,870,132, Cl. 190-52.000.

Hanna, Drexel W., Jr., to All Systems. Radar system. 3,870,992, Cl. 343-5.0DP.

Hanser, Paul Edmund; and Snyder, William Lee, to Deere & Company. Valve for controlling a reversible, rotary hydraulic motor. 3,870,074, Cl. 137-596.160.

Hansl, Nikolaus R. Substituted amino ethyl meta benzoic acid esters. 3,870,715, Cl. 260-247.20B.

Hanson, Brian D.: *See—*
Wilson, David G.; Hanson, Brian D.; and Malarkey, John M., 3,870,127.

Hanson, Henry Lloyd. Display card and frangibly separable container. 3,870,144, Cl. 206-45.140.

Hanson, Richard Eric; and Fineman, Howard Eisen, to RCA Corporation. Starter system fault detector. 3,870,954, Cl. 324-158.0MG.

Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reboundless focal plane shutter. 3,871,012, Cl. 354-246.000.

Harbor Universal, Inc.: *See—*
Mortashed, Merle H., 3,870,387.

Harburger, Oelwerke, Brinckman & Mergell: *See—*
Baltes, Josef, 3,870,807.

Harclerode, Thomas J. Light ray gun and target including elapsed time counter. 3,870,305, Cl. 273-101.100.

Hardiman, Russell J.; Leiter, Leigh David; and Valle, Howard C., to Ametek, Inc. Self-erecting pod. 3,870,263, Cl. 248-168.000.

Harding Development Company: *See—*
Hawk, Gary D., 3,870,420.

Hargraves, Don, to Laurier Associates, Inc. High yield method of breaking wafer into dice. 3,870,196, Cl. 225-1.000.

Harpell, Gary Allan, to Goodrich-Gulf Chemicals, Inc. Reaction product of an organometallic compound and an organic nitro compound as an antioxidant for conjugated diolefin polymers. 3,870,678, Cl. 260-45.90R.

Harper, Robert A., Jr.: *See—*
Wentzel, Warren W., Jr.; and Harper, Robert A., Jr., 3,870,374.

Harris, Alva F.; and Shapras, Peter, to Monsanto Company. Packaging nitrile containing resins. 3,870,802, Cl. 426-106.000.

Harriss-Conners Chevrolet, Inc.: *See—*
Atwater, William M., 3,869,832.

Hart, Dennis Edward: *See—*
Baxter, Roderick Carey; and Hart, Dennis Edward, 3,870,979.

Hart, Harold W., to H. W. Hart Mfg. Co. Poultry watering device, 3,870,022, Cl. 119-75.000.

Harter Corporation: *See—*
Bowman, Gary L., 3,870,271.
Holtz, Richard L., 3,870,270.

Hartman, John R.; and Summerlin, Dorsey. Foldable hat. 3,869,727, Cl. 2-175.000.

Hartmann, Helmut: *See—*
Stein, Werner; and Hartmann, Helmut, 3,870,735.

Hase, Hideonori, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile exhaust arrangement. 3,870,115, Cl. 180-5.00R.

Hasegawa, Eiichi: *See—*
Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, 3,870,524.

Hasfjord, Morten Birger, to Svenska Industrietablerings AB (Svetab) Swedish Industrial Establishing Corporation. Arrangement in planing machines with feeding mechanism comprising at least two rollers. 3,870,090, Cl. 144-249.00R.

Hashimoto, Masami. Stabilizing device for buoyant body. 3,870,006, Cl. 114-121.000.

Hashitani, Motoyoshi: *See—*
Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.

Hastings, Donald R.: *See—*
Wilhelm, Frederick R.; Hastings, Donald R.; and Lyth, William W., 3,870,233.

Hatano, Fukuji; and Kobayashi, Yukio, to Gakken Co. Ltd. Snow scooters. 3,870,330, Cl. 280-16.000.

Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, to Hitachi, Ltd. Digital circuit. 3,870,897, Cl. 307-208.000.

Haubenestel, Kenneth C. Coupling system relating especially to conduit fittings, electrical boxes or special fittings for other applications. 3,870,347, Cl. 285-156.000.

Haubold, Heinz-Gunther: *See—*
Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,915.
Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,916.

Hauser, Raimund: *See—*
Muszumanski, Trude, 3,870,401.

Hawaiian Sugar Planters Association: *See—*
Nickell, Louis G., 3,870,503.

Hawk, Gary D., to Harding Development Company. Paint tray. 3,870,420, Cl. 401-121.000.

Hawkins, Ronald G., to Aluminum Company of America. Conductor vibration damping device. 3,870,815, Cl. 174-42.000.

Hawkins, Samuel D. Dual sealing junction for gas valve and manifold. 3,870,348, Cl. 285-197.000.

Hawthorne, Peter Frederick, to Foseco International Limited. Protection of turbine casings. 3,870,595, Cl. 161-166.000.

Hayashi, Seiichi: *See—*
Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi, 3,870,637.

Hayashibara Biochemical Laboratories, Incorporated,: *See—*
Hijiya, Hiromi; and Shiosaka, Makoto, 3,870,537.

Hayashibara Company: *See—*
Yoshida, Mikihiko; and Yuen, Shokichi, 3,870,704.

Hayes, John T., Jr.; and Marshall, William E., to General Foods Corporation. Protein gel modification. 3,870,812, Cl. 426-350.000.

Hayes, Lester P.; Robinson, John W.; Simms, Ross P.; and Russell, Millard E., to A. E. Staley Manufacturing Company. Process for preparing texturized protein compositions and the resulting product. 3,870,805, Cl. 426-148.000.

Hayes, Royce. Traffic control signal apparatus. 3,870,991, Cl. 340-41.00R.

Hayward, Donald M., to Rack-More Shelf Co. Combined lineal shelf and clothes bar system. 3,870,157, Cl. 211-90.000.

Hayward, John T. Means of transporting crude oil through a pipeline. 3,870,063, Cl. 137-13.000.

Hazeltine Corporation: *See—*
Vasile, Carmine F., 3,870,975.

Hazemeijer B.V.: *See—*
Clason, Jan Christiaan, 3,870,845.

Heberlein, Harold V. Toy tank. 3,869,825, Cl. 46-219.000.

Heckelsberg, Louis F.; and Banks, Robert L., to Phillips Petroleum Company. Conversion of acyclic polyenes. 3,870,763, Cl. 260-666.00A.

Heckendorn, Roland: *See—*
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,870,714.

Hedges, George D., to Honeywell Inc. Helmet sight visors. 3,870,405, Cl. 350-294.000.

Heede International, Inc.: *See—*
Cording, Eldon F., 3,870,161.

Hegarty, William P. Method for production of synthetic natural gas from crude oil. 3,870,481, Cl. 48-213.000.

Hegedus, Zoltan: *See—*
Stefan, Mihaly; Hegedus, Zoltan; Balazs, Fulop; and Juhasz, Gyula, 3,870,574.

Heinrich Cronau, Building Contractors: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.

Heitkamp, Norman D.; Merker, Steven L.; and Stungis, George E., to Brown & Williamson Tobacco Corporation. Enhancement of flavor and aroma by microwave treatment. 3,870,053, Cl. 131-121.000.

Heller, William C., Jr.; and Shatzkin, Leonard. Book article. 3,870,344, Cl. 281-21.000.

Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., to General Electric Company. Discharge lamp having blow-molded arc tube ends. 3,870,919, Cl. 313-220.000.

Hellmer, George A.: *See—*
Wildman, Claude L.; and Hellmer, George A., 3,869,856.

Helmus, Sydney S., to Baker Oil Tools, Inc. Removable subsea production test valve assembly. 3,870,101, Cl. 166-.500.

Helmuth, James G., to Chadwick-Helmuth Electronics, Inc. Light source with optimized flash energy input to gas tube. 3,870,924, Cl. 315-200.00A.

Hencey, Thomas R., Jr.: *See—*
Boese, Harold L.; and Hencey, Thomas R., Jr., 3,870,942.

Henderson, Eulas W., to Phillips Petroleum Company. Preoxidation and pelleting of carbon black. 3,870,785, Cl. 423-460.000.

Hendrick, Fred W., to Robertshaw Controls Company. Plural rate burner with deflection of high rate flame against flame sensing element. 3,870,458, Cl. 431-80.000.

Henkel & Cie GmbH: *See—*
Stein, Werner; and Hartmann, Helmut, 3,870,735.
Wollmann, Klaus; Ploger, Walter; and Wopms, Karl-Heinz, 3,870,750.

Henniger, Peter Wolfgang; and Smid, Peter Max, to Koninklijke Nederlandsche Gist-En Spiritusfabried N.V. 6-Isocyanatoaminopenicillanic acid derivatives and process for producing them. 3,870,705, Cl. 260-239.100.

Henwood, Charles Frederick. Hand loom. 3,870,087, Cl. 139-33.000.

Herkes, John W. Mechanical screening device for machine-harvested sugar cane. 3,870,627, Cl. 209-3.000.

Herrick, Elbert C.: *See—*
DeLaMater, George B.; Herrick, Elbert C.; and Milligan, Barton, 3,870,739.

Herrmann, Frederick H. Furniture construction. 3,870,390, Cl. 312-263.000.

Herrmann, Walter: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.

Herron, Malachy, to British Leyland UK Limited. Plant for producing wax patterns for use in investment casting. 3,870,444, Cl. 425-143.000.

Herzog, Klaus: *See—*
Neuer, Harald; Szenger, Franz; Herzog, Klaus; and Neumann, Joachim, 3,869,799.

Hesser, Heinz: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.

Hesston Corporation: *See—*
Case, Cecil L., 3,869,861.

Hester, Donald Larry: *See—*
Adams, John William; Babaa, Ihsan Mustafa Hasan; and Hester, Donald Larry, 3,870,837.

Heybourn, Frank; and Hinchcliffe, Dennis, to Molins Limited. Feeding cigarettes. 3,870,143, Cl. 198-280.000.

Higham, John D., to Measurex Corporation. Speed optimizing system for a rolling mill. 3,869,891, Cl. 72-8.000.

Higham, John D.; and McNaught, Colin J., to Measurex Corporation. Feed forward gauge control system for a rolling mill. 3,869,892, Cl. 72-9.000.

Hijiya, Hiromi; and Shiosaka, Makoto, to Hayashibara Biochemical Laboratories, Incorporated,. Shaped solid body of pullulan ether and methods of making and using the same. 3,870,537, Cl. 106-162.000.

Hill, Robert D., Jr.: *See—*

Yungblut, Charles W.; and Hill, Robert D., Jr., 3,869,789.

Hill, Robert L.; and Ringeman, Othmar E., to General Electric Company. Corona-free top cap terminal assembly for electron discharge devices. 3,870,393, Cl. 339-144.00T.

Hills, Marian E.; and Ayres, William M., to United States of America, Navy. Process for making whisker-like crystals of ammonium perchlorate. 3,870,577, Cl. 149-2.000.

Himes, William H., to Leyman Manufacturing Corporation. Cart stop structure for an elevator. 3,870,126, Cl. 187-8.520.

Hinchcliffe, Dennis: *See—*

Heybourn, Frank; and Hinchcliffe, Dennis, 3,870,143.

Hindin, Saul G., to Engelhard Minerals & Chemicals Corporation. Method for catalytically supported thermal combustion. 3,870,455, Cl. 431-7.000.

Hirakawa, Koichi: *See—*

Shibano, Takashi; Hirakawa, Koichi; and Yonehara, Toshimitsu, 3,870,982.

Hire, Charles John, to Fasco Industries, Inc. Thermostatic switch with solid state heater. 3,870,985, Cl. 337-381.000.

Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, to Nippon Soda Company Limited. Benzoxazole as desuckering agents. 3,870,501, Cl. 71-78.000.

Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, to Matsumoto Keishin, Director General of the Agency of Industrial Science and Technology. Method of preventing scale from being deposited in case of producing fresh water from sea water. 3,870,603, Cl. 203-7.000.

Hirschmann, Gunter: *See—*

Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, 3,870,894.

Hisamoto, Iwao: *See—*

Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.

Hitachi, Ltd.: *See—*

Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,870,897.

Nakamura, Ichiro, 3,870,077.

Okumoto, Takeomi; Ueda, Hiroshi; Sakai, Junji; and Shimada, Yogo, 3,870,529.

Hitco: *See—*

Myers, Hubert A., 3,871,001.

Hite, Harold H. Circular saw blade conveyance box. 3,870,148, Cl. 206-372.000.

Hochman, Jack M.: *See—*

Arnold, George T.; Hochman, Jack M.; and Pennington, Robert E., 3,870,621.

Hoechst Aktiengesellschaft: *See—*

Gordon, Wolfgang; Rust, Kurt; and Schrott, Erwin, 3,870,690.

Rauterkus, Karl Josef; and Blazek, Jan, 3,870,673.

Schadlich, Gunther; and Moraw, Roland, 3,871,002.

Hoehn, Wolfgang, to ITT Industries, Inc. Frequency-to-voltage converter. 3,870,898, Cl. 307-233.000.

Hoekstra, Karl E.: *See—*

Farrauto, Robert J.; Hoekstra, Karl E.; and Shoup, Robert D., 3,870,658.

Hoerner Waldorf Corporation: *See—*

Tull, Herbert G., III, 3,870,166.

Hofel, Heinz-Bernard; Kiessling, Hans-Joachim; Lampert, Fred; and Kuhr, Johann, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of dispersions of thermosetting reaction products. 3,870,669, Cl. 260-29.300.

Hofel, Heinz-Bernhard; Kiessling, Hans-Joachim; Lampert, Fred; and Kuhr, Johann, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of dispersions of thermosetting reaction products. 3,870,670, Cl. 260-29.300.

Hoffacker, Franz: *See—*

Jores, Willi; Hoffacker, Franz; and Lehmann, Helmut, 3,870,584.

Hoffman, Marcus I., III: *See—*

Dixson, Bruce E.; Hoffman, Marcus I., III; and Walls, Milton A., 3,870,495.

Hoffman, Orville William, to General Electric Company. Lubricant cooling apparatus for a vertical electric motor. 3,870,907, Cl. 310-64.000.

Hoffmann, Helmut; and Hoffmann, Walter. Door jamb liner. 3,869,840, Cl. 52-211.000.

Hoffmann, Walter: *See—*

Hoffmann, Helmut; and Hoffmann, Walter, 3,869,840.

Hofmann, Lebert Arthur: *See—*

Dutkewych, Oleh Borys; and Hofmann, Lebert Arthur, 3,870,068.

Hokama, Takeo, to Velsicol Chemical Corporation. Mixed salts of aluminum. 3,870,732, Cl. 260-408.000.

Hold, Peter; Notte, Angelo J.; and Rizzi, Marc A., to USM Corporation. Injection molding machine controls. 3,870,445, Cl. 425-144.000.

Holdsworth, Robert S.; O'Neill, Gerald Joseph; and Simons, Charles William, to W. R. Grace & Co., by said Simons. Anesthetic halogenated cyclobutanes. 3,870,797, Cl. 424-352.000.

Holl, Richard Adolf, to Micron Engineering Inc. Venturi-type devices. 3,870,082, Cl. 138-40.000.

Holly, Harry H., to Hollymatic Corporation. Molding apparatus with valved air release. 3,869,757, Cl. 17-32.000.

Hollymatic Corporation: *See—*

Holly, Harry H., 3,869,757.

Wagner, Richard C., 3,870,013.

Holmes, Douglas B.: *See—*

Burke, Edward F.; and Holmes, Douglas B., 3,871,013.

Holmes, Richard E., to Eli Lilly and Company. Cinchoninic acid derivatives. 3,870,712, Cl. 260-240.00A.

Holson, Sheldon. Photographic album page and method of making same. 3,869,820, Cl. 40-159.000.

Holt, Frederick R.; and Flueckiger, Noah, to Acme-Cleveland Corporation. Proximity circuit with active device feedback. 3,870,948, Cl. 324-34.0PS.

Holtz, Richard L., to Harter Corporation. Fully enclosed, adjustable, support column for a pivotal chair. 3,870,270, Cl. 248-406.000.

Holub, Frank W. Dual tricycle kit. 3,870,338, Cl. 280-209.000.

Holub, Jiri, to Vyzkumny ustav tvarecich streju a technologie tvareni. Arrangement for forming solids of rotation by a cross wedge rolling process with three rolls. 3,869,895, Cl. 72-107.000.

Honeywell Inc.: *See—*

Hedges, George D., 3,870,405.

Honeywell Information Systems Inc.: *See—*

Umbaugh, Charles Wayne, 3,869,787.

Hook, Edwin O.: *See—*

Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, 3,870,768.

Hooker Chemical & Plastics Corporation: *See—*

Golborn, Peter; and Duffy, James J., 3,870,771.

Hooker Chemicals & Plastics Corporation: *See—*

Minklei, Alfred O.; and Peterson, John A., 3,870,554.

Hoover Company, The: *See—*

Boyd, Wilton E.; and Rennecker, David B., 3,869,751.

Hopkins, Philip Ward: *See—*

Button, David; and Hopkins, Philip Ward, 3,870,908.

Horrell, Robert E., to Carter Mfg., Inc. Locking device for roll-up awnings. 3,870,096, Cl. 160-305.000.

Horrocks, Raymond G., to Scott & Fetzer Company, The. Tool for removing covering material from a cable. 3,869,791, Cl. 30-90.100.

Horvath, James, to B. F. Goodrich Company, The. Method and apparatus for determining transformation temperatures. 3,869,912, Cl. 73-150.00R.

Horwitt, Laurence G.; and Mattis, Donald J., to Casco Products Division, Sun Chemical Corporation. Cigar lighter igniting unit. 3,870,857, Cl. 219-267.000.

Hosokawa, Kenjiro: *See—*

Ida, Syunya; and Hosokawa, Kenjiro, 3,870,542.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 2-Methyl-3-substituted-4-aryl isoquinolines. 3,870,722, Cl. 260-283.00R.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Substituted phenyl acetic acids. 3,870,751, Cl. 260-515.00R.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Acyl substituted indane carboxylic acids. 3,870,752, Cl. 260-515.00R.

Houston, Reagan. Regenerative incinerator systems for waste gases. 3,870,474, Cl. 23-277.00C.

Houston, William T. Remotely controllable subterranean oil well valve. 3,870,098, Cl. 166-55.100.

Howard, Ivy J. Scaffold ladder structure. 3,870,124, Cl. 182-178.000.

Howard, John: *See—*

Gibney, Kelly B.; Howard, John; and Evans, Russell S., 3,870,703.

Howard, Walter B., to National-Standard Company. Adjustment mechanism for an extruder die. 3,870,453, Cl. 425-465.000.

Howatt, George F., to New England Envelope Manufacturing Co. Envelope machine. 3,869,965, Cl. 93-61.00A.

Howe, James M. Combination golf putting aid and divot repairer. 3,870,299, Cl. 273-32.00B.

Howe Richardson Scale Company: *See—*

Davis, Austin L.; and Davidson, Harley R., 3,869,982.

Hruby, Frank J. Process for producing a livestock feed. 3,870,798, Cl. 426-53.000.

Hubbard, David W., to Pitney-Bowes, Inc. Ink jet postage printing apparatus. 3,869,986, Cl. 101-91.000.

Huber, Kenneth C., to Burlington Industries, Inc. System for controlling an electric field. 3,870,933, Cl. 317-262.0AE.

Huber, Mortimer J. Frame structure for loader. 3,870,172, Cl. 214-140.000.

Huber, Reinhold: *See—*

Koester, Waldemar; and Huber, Reinhold, 3,870,424.

Huber, Robert J.: *See—*

Smith, Kent F.; and Huber, Robert J., 3,870,901.

Hudson, David W.: *See—*

Brock, Robert J.; and Hudson, David W., 3,870,592.

Huey, Richard Meredith; and Rajaratnam, Krishna, to Unisearch Limited. Earth grid. 3,870,925, Cl. 317-9.00R.

Hufnagl, Johann: *See—*

Nitsche, Herbert; and Hufnagl, Johann, 3,870,930.

Hug-Inderbitzin, Marianne: *See—*

Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,870,659.

Hughes Aircraft Company: *See—*

Kyle, Nanse R., 3,870,473.

Hughes, Michael Alan, to English Electric Company Limited, The. Capacitor voltage transformer system. 3,870,926, Cl. 317-12.00B.

Hughes, Michael Alan, to English Electric Company Limited, The. Capacitor voltage transformer system. 3,870,927, Cl. 317-12.00B.

Hughes, Peter Graham; and Verge, John Pomfret, to Lilly Industries Limited. Nitrothiazole derivatives. 3,870,725, Cl. 260-302.00H.

Hughes, Richard Smith, to United States of America, Navy. Ramp/hold circuit. 3,870,906, Cl. 307-261.000.

Hughes Tool Co.: *See—*

Lemont, Harold Edminston, 3,870,255.

Hultquist, John V. Clamp construction. 3,870,359, Cl. 294-118.000.

Hummel, John, to Poly-Version, Inc. Sterile plastic glove and package assembly. 3,870,150, Cl. 206-438.000.

Humphrey, Anthony Martin, to Bush Boake Allen Limited. Inhibiting beer gushing. 3,870,810, Cl. 426-329.000.

Humphrey, David H. Levelling instrument. 3,869,806, Cl. 33-348.000.

Humphrey, Frank. Marine sewage treatment system for water craft. 3,870,634, Cl. 210-220.000.

Hunger, Alfred; and Janssen, Hans-Jochen, to Ciba-Geigy Corporation. Pharmaceutical preparation. 3,870,796, Cl. 424-330.000.

Hunnicutt, Wayne E.; and Rossbach, Peter G., to Applied Power Industries, Inc. Method of reforming and straightening members. 3,869,767, Cl. 24-243.0CC.

Hunt, George R., to Minnesota Mining and Manufacturing Company. System for growing shellfish. 3,870,020, Cl. 119-4.000.

Huot Manufacturing Company: *See—*

Huot, William J., 3,870,149.

Huot, William J., to Huot Manufacturing Company. Drill holding case. 3,870,149, Cl. 206-379.000.

Hurlbut, William Barrett, Sr.; Liebig, Preston Dean; and Maurin, Gerald, to Combustion Engineering, Inc. Module suspension system. 3,870,487, Cl. 55-436.000.

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Coberley, Daniel A., 3,870,936.

Hurst, William Edward, to Mono Pumps (Engineering) Limited. Method and apparatus for mixing a powder with a flowable substance. 3,870,283, Cl. 259-4.000.

Hurton, William: *See—*

Binks, Sidney David; and Hurton, William, 3,870,890.

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Hussey, Edward B., to Domtar Limited. Cellular concrete unit coated with air permeable, water repellent concrete coating. 3,870,553, Cl. 117-123.00A.

Hutchings, Bernard David Francis, to Pye Limited. Crane safe load indicator. 3,870,160, Cl. 212-39.00R.

Hutchings, David A., to Goodyear Tire & Rubber Company, The. Oxidation of phenols and alkyl substituted phenols to their corresponding para-benzoquinone. 3,870,731, Cl. 260-396.00R.

Hutchinson, Ronald R.; Emley, Grace S.; Hallin, Edward R.; and Murray, Nancy J., to Foundation for Behavioral Research. Treatment of certain emotional disorders with nicotine compounds. 3,870,794, Cl. 424-264.000.

Hydril Company: *See—*

Mott, James D., 3,870,102.

Mott, James D., 3,870,104.

Hydrocarbon Research, Inc.: *See—*

Johnson, Axel R.; Wolk, Ronald H.; and Alpert, Seymour B., 3,870,623.

I.C.S. Ignition Control Systems Ltd.: *See—*

Filip, Stanislaw F., 3,870,846.

Ianno, Kazuo: *See—*

Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, 3,870,603.

Ibing, Gunther; and Neubold, Kurt, to Veba-Chemie AG. Preparation of aromatic dinitriles. 3,870,743, Cl. 260-465.00C.

Ichioka, Satoshi: *See—*

Takeuchi, Shinjiro; and Ichioka, Satoshi, 3,870,973.

Ida, Syunya; and Hosokawa, Kenjiro, to Kanegafuchi Boseki Kabushiki Kaisha. Process of treating fibrous articles with microcapsules containing hydrophobic treating agent. 3,870,542, Cl. 117-33.300.

Iguchi, Tateo: *See—*

Yoshida, Shuji; and Iguchi, Tateo, 3,870,769.

Ihasz, Richard, to Sperry Rand Corporation. Hair trimmer. 3,869,790, Cl. 30-90.000.

Ihlenfeld, Russell E., to Dart Industries, Inc. Coffee maker. 3,869,968, Cl. 99-280.000.

Iida, Hiroshi, to Manno Kogyo Kabushiki Kaisha. Apparatus for correcting deformation of a slender metallic products. 3,869,897, Cl. 72-125.000.

Iino, Hideo; and Iizuka, Satoru, to SKB Arms Company; Comet Corporation; and Noguchi, Yoshiaki. Artificial target recovery and delivery equipment for use in new shooting game. 3,870,306, Cl. 273-105.600.

IIT Research Institute: *See—*

Camras, Marvin, 3,871,024.

Iizuka, Satoru: *See—*

Iino, Hideo; and Iizuka, Satoru, 3,870,306.

Ikeda, Kyoichi: *See—*

Miyauchi, Rin-Ichi; Saito, Bunjiro; and Ikeda, Kyoichi, 3,869,920.

Ikenga, Junichi; Matsuoka, Shigeru; and Okabe, Yoshio, to Kabushiki Kaisha Fujikoshi. Method and circuit for sampling position data. 3,870,941, Cl. 318-636.000.

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Ikenoue, Shinpei: *See—*

Kubotera, Kikuo; Ikenoue, Shinpei; Mizuki, Eiichi; and Fujiwara, Tadahiro, 3,870,479.

Ilin, Lev Mikhailovich: *See—*

Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.

Illinois Tool Works Inc.: *See—*

Barth, Gerald Dean; and Alexander, John Bert, 3,869,957.

Murayama, Hiroo, 3,869,958.

Imperial Chemical Industries, Limited: *See—*

Birchall, James Derek; and Cassidy, John Edward, 3,870,737.

Castro, Roger Albert; Orman, Richard John; and Ryan, James Ernest, 3,870,775.

Cowling, Ronald; and Greenshields, James Nairn, 3,870,559.

Doschko, Werner; Fohlisch, Wolfgang; and Wensch, Alfred, 3,869,853.

Stacey, Martyn Hugh; and Tribbeck, Terrence Donald, 3,870,762.

Steel, Margaret Lilian, 3,870,778.

Syson, John William; and Kerridge, John Charles, 3,870,667.

Imperial-Eastman Corporation: *See—*

Strybel, Richard V., 3,870,432.

Improved Machinery Inc.: *See—*

Clarke-Pounder, Ian J. H., 3,870,635.

Inamoto, Yoshiaki; and Nakayama, Hirokazu. 1-Adamantyl alkyl ketones and their preparation. 3,870,759, Cl. 260-586.00G.

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Tangorra, Giorgio, 3,870,095.

Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*

Miller, Harry B., 3,870,240.

Industrikompaniet: *See—*

Asplund, Alf Ake, 3,870,201.

Infra Systems, Inc.: *See—*

Williams, Paul, 3,870,884.

Innovare I Taby Aktiebolag: *See—*

Lofgren, Stig Tore Johannes, 3,870,388.

Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio. Certain dihydrophthalizines for treating hemorrhage and thrombosis. 3,870,792, Cl. 424-250.000.

Institut de Recherches de la Siderurgie Francaise (IRSID): *See—*

Martin, Daniel; and Vayssiere, Pierre, 3,870,510.

Institut Francais Du Petrole Des Carburants et Lubrifiants: *See—*

Castel, Yvon; and Castela, Andre, 3,870,112.

Torck, Bernard; Derrien, Michel; and Franck, Jean-Pierre, 3,870,653.

Institut Jozef Stefan: *See—*

Stupar, Janex, 3,870,234.

Institutul De Cercetare Si proiectare Pentru Industria Electrotechnica: *See—*

Lazaroiu, Dumitru Florian; Sleiher, Sigmund; and Mihaiescu, Gheroghe Mihai, 3,869,788.

Institutul Pentru Creatie Stintifica Si Technica-Increst: *See—*

Teodorescu, Constantin Gh.; and Ardeleanu, Stefan P., 3,870,250.

International Business Machines Corporation: *See—*

Edds, Kenneth E.; Elbert, Donald L.; and Stone, Jerry F., 3,870,528.

King, William J.; and Wilcox, David L., 3,871,014.

Lin, Paul T. C.; and Winter, Edwin M., 3,871,015.

Malaviya, Shashi D., 3,870,900.

International Fastener Establishment: *See—*

Umezu, Hideo, 3,869,764.

International Flavors & Fragrances, Inc.: *See—*

Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,870,800.

International Partners Research Corporation: *See—*

Buffett, Thomas Vigus, 3,870,188.

International Standard Electric Corporation: *See—*

Underwood, John Duckles, 3,870,614.

International Telephone and Telegraph Corporation: *See—*

Carlson, Elmer A., 3,870,929.

Cuny, John J., 3,870,917.

Dugger, William H.; and Alexander, Wayne K., 3,870,199.

Gezari, Walter A., 3,870,084.

Ohlstein, Herbert; and Gruber, Alan H., 3,870,974.

Straw, Richard D., 3,870,957.

Uncapher, Richard Danby, 3,870,579.

Interstate Utilities Corporation: *See—*

Berg, Roy E., 3,870,484.

Irie, Akira: *See—*

Uno, Hitoshi; and Irie, Akira, 3,870,724.

Irsai, Eugene. Retaining wall support device. 3,869,868, Cl. 61-49.000.

Irwin, Malcolm F., to Pro-Tech Inc. Liquid sampling. 3,869,921, Cl. 73-421.00B.

Iseda, Yutaka: *See—*

Onishi, Akira; Yukuta, Toshio; Iseda, Yutaka; and Iwami, Kouichi, 3,870,620.

Ishida, Yoshio, to Diamond Electric Mfg. Co., Ltd. Ignition system for

Janiszewski, Casimer, to G. S. Blakeslee Co. Dish washing machine

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Karkhachev, Jury Georgievich: *See—*

- Ishida, Yoshio, to Diamond Electric Mfg. Co., Ltd. Ignition system for internal combustion engines. 3,870,028, Cl. 123-148.00E.
- Ishii, Akemi; and Suda, Syotaro, to Tokico Ltd. Unidirectional rotation actuator. 3,869,928, Cl. 74-88.000.
- Ishikawa, Makoto: *See—*
  - Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
- Ishikawa, Masayuki: *See—*
  - Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio, 3,870,792.
- Ishikawa, Norikatsu: *See—*
  - Goto, Kenji; Mitsui, Ryozo; and Ishikawa, Norikatsu, 3,869,858.
- Isitovsky, Ilya Leonidovich; and Zelikman, Grigory Avrumovich. Method of making a profiled p-n junction in a plate of semiconductive material. 3,870,576, Cl. 148-188.000.
- Ital Elettronica S.p.A.: *See—*
  - Casale, Renato, 3,870,886.
- Ito, Hisakatu: *See—*
  - Munakata, Katsura; Oda, Takeshi; Mori, Toshito; and Ito, Hisakatu, 3,870,698.
- Ito, Testuo. Stringed instrument. 3,869,954, Cl. 84-291.000.
- Itoh, Kensuke: *See—*
  - Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
- ITT Industries, Inc.: *See—*
  - Adam, Fritz Gunter; and Renz, Albrecht, 3,869,786.
  - Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, 3,870,377.
  - Hoehn, Wolfgang, 3,870,898.
- IV Conversion Systems, Inc.: *See—*
  - Minnick, Leonard John; Smith, Charles L.; and Webster, William C., 3,870,535.
- Ivaschenko, Pavel Andreevich: *See—*
  - Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; and Samoilovsky, Igor Vasilievich, 3,870,433.
- Iwahashi, Masaaki: *See—*
  - Miyamoto, Tadashi; and Iwahashi, Masaaki, 3,869,882.
- Iwami, Ichiro; Matsunaga, Tsutomu; and Yoneyama, Ken, to Bridgestone Tire Company Limited. Method of treating glass fibers using ultrasonic vibration. 3,870,551, Cl. 117-115.000.
- Iwami, Kouichi: *See—*
  - Onishi, Akira; Yukuta, Toshio; Iseda, Yutaka; and Iwami, Kouichi, 3,870,620.
- Iwano, Haruhiko: *See—*
  - Shimamura, Isao; Shishido, Tadao; Ohi, Reiichi; and Iwano, Haruhiko, 3,870,520.
- Iwatani, Akitoshi: *See—*
  - Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
- Iyengar, Rama; Zuber, Bretislav Paul; and Boucher, Jean Raymond, to Northern Electric Company Limited. Smooth tape formation of tubes. 3,869,902, Cl. 72-52.000.
- Izumi, Hitoshi, to Mitsui Shipbuilding and Engineering Co. Ltd. Apparatus for raising and lowering a heavy weight. 3,870,123, Cl. 182-136.000.
- J. Bobst & Fils S.A.: *See—*
  - Meylan, Geroges, 3,870,213.
- J. Bobst & Fils SA: *See—*
  - Wieser, Louis, 3,870,140.
- J. E. Love Company: *See—*
  - May, Donald L., 3,869,847.
- J. S. Staedtler: *See—*
  - Mutschler, Otto, 3,870,421.
- J. W. Microelectronics Corporation: *See—*
  - Arakelian, Hagop; and Wright, Jeffrey L., 3,869,812.
- J. Wiss & Sons Co.: *See—*
  - Ferguson, William C., 3,869,793.
- Jack, Harry Ross Scarlett; Richards, Peter Henry; and Skelding, Kenneth George, to Triplex Safety Glass Company Limited. Apparatus for bending glass sheets. 3,870,500, Cl. 65-273.000.
- Jackman, John A. Bullet mold. 3,870,272, Cl. 249-170.000.
- Jackson, Jeffrey Mack. Securing means for concrete reinforcing basket. 3,870,428, Cl. 404-134.000.
- Jackson, Sydney; and Titterington, Joseph Bell, to Ferranti Limited. Construction of packages for semiconductor devices. 3,871,018, Cl. 357-74.000.
- Jacobs, Christopher A. Capacitive discharge ignition system having protective unidirectional circuit. 3,870,026, Cl. 123-148.00R.
- Jacobs, Christopher A. Capacitive discharge ignition system having variable voltage inverter. 3,870,027, Cl. 123-148.00R.
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- Jahn, Walter, to JENAer Glaswerk Schott & Gen. Optical flint glass with relatively low refractive indices and high dispersion. 3,870,531, Cl. 106-52.000.
- Jakel, Gus R., to California Cement Shake Co., Inc. Cementitious roofing and siding production. 3,870,777, Cl. 264-71.000.
- James, J. Michael, to Cyborg Corporation. Personal galvanic skin response monitoring instrument. 3,870,034, Cl. 128-2.10Z.
- Janiszewski, Casimer, to G. S. Blakeslee Co. Dish washing machine drain unit. 3,870,067, Cl. 137-242.000.
- Janssen, Hans-Jochen: *See—*
  - Hunger, Alfred; and Janssen, Hans-Jochen, 3,870,796.
- Japan Gasoline Co., Ltd.: *See—*
  - Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.
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- Jeffery, Richard. Game board primarily for small children. 3,870,310, Cl. 273-131.0BA.
- JENAer Glaswerk Schott & Gen: *See—*
  - Jahn, Walter, 3,870,531.
- Johansson, Erik Karl Gustav: *See—*
  - Eriksson, Bolik Anders Gottfrid; Johansson, Erik Karl Gustav; and Vukotic, Milos, 3,870,486.
- John Wyeth & Brother Limited: *See—*
  - Archibald, John Leheup; Boyle, John Terence Arnott; and Saunders, John Christopher, 3,870,721.
- Johns-Manville Corporation: *See—*
  - Afflerbach, Frank D.; Barnett, Irvin; and Peters, Walter B., 3,870,581.
  - Kietzman, John Howard; and Tocci, Mario Peter, 3,870,426.
- Johnson, Axel R.; Wolk, Ronald H.; and Alpert, Seymour B., to Hydrocarbon Research, Inc. Hydroconversion process of residuum oils. 3,870,623, Cl. 208-108.000.
- Johnson, Lewis T., to Phillips Petroleum Company. Tray. 3,870,151, Cl. 206-507.000.
- Johnson Service Company: *See—*
  - Chacon, Manuel Frank, 3,870,829.
- Johnson, Waldo O.; and Walters, Rodney P., to Louisiana-Pacific Corporation. Adjustable window seat guide. 3,869,839, Cl. 52-204.000.
- Johnson, Walter N.: *See—*
  - Peterson, William R.; and Johnson, Walter N., 3,870,770.
- Johnson, Wayne R., to Abbott Laboratories. Probability analog function computer. 3,870,872, Cl. 235-197.000.
- Jones, Alan P., to Pennsylvania Research Associates Inc. Control mechanisms for document-handling apparatus. 3,870,868, Cl. 235-92.0SB.
- Jones, John E.: *See—*
  - Schneiderhan, Edward M.; Jones, John E.; and Briggs, Henry P., 3,870,865.
- Jones, Rufus S.; and Conciatori, Anthony B., to Celanese Corporation. Catalytic method for producing aromatic polyamides. 3,870,685, Cl. 260-78.00R.
- Jores, Willi; Hoffacker, Franz; and Lehmann, Helmut, to Agfa-Gevaert Aktiengesellschaft. Automatic double-side adhesive device for bands or webs. 3,870,584, Cl. 156-505.000.
- Jousson, Pierre Jean: *See—*
  - Moret, Michel Antoine Cesar; and Jousson, Pierre Jean, 3,870,039.
- Juge, Mark A. Rotary steam vapor and external combustion engine. 3,869,863, Cl. 60-39.190.
- Juhasz, Gyula: *See—*
  - Stefan, Mihaly; Hegedus, Zoltan; Balazs, Fulop; and Juhasz, Gyula, 3,870,574.
- Jurasek, Walter R., to Avoset Food Corporation. Aseptic vacuum breaker. 3,870,066, Cl. 137-199.000.
- Kabushiki Kaisha Fujikoshi: *See—*
  - Ikenga, Junichi; Matsuoka, Shigeru; and Okabe, Yoshio, 3,870,941.
- Kabushiki Kaisha Ricoh: *See—*
  - Machida, Hazime; and Okuno, Zenjiro, 3,870,644.
  - Yamada, Hiroshi; and Kojima, Kenji, 3,870,246.
- Kadi-Ogly, Ibragim Akhmedovich: *See—*
  - Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,870,913.
- Kalfaian, Meguer V. Phonetic sound recognizer for all voices. 3,870,817, Cl. 179-1.0SA.
- Kall, Horst; and Riedel, Klaus, to L. & C. Steinmuller G.m.b.H. Apparatus for separating liquid from a liquid containing gas flow. 3,870,493, Cl. 55-391.000.
- Kallel, Allen, to Wemac Company. Valve construction. 3,870,275, Cl. 251-252.000.
- Kalyan, Jagdish C.: *See—*
  - Austin, George E.; and Kalyan, Jagdish C., 3,869,962.
- Kamerling, Marc A.: *See—*
  - Wilson, Harold R.; and Kamerling, Marc A., 3,870,404.
- Kamo, Seiichi; Yanai, Noriyoshi; and Osako, Naoto, to Mitsubishi Chemical Industries Limited. Method for manufacturing nitrogen-containing compounds. 3,870,755, Cl. 260-553.00R.
- Kanada, Yoshimi: *See—*
  - Takamura, Isutomu; Kanada, Yoshimi; and Suzuki, Shintari, 3,870,564.
- Kanegafuchi Boseki Kabushiki Kaisha: *See—*
  - Ida, Syunya; and Hosokawa, Kenjiro, 3,870,542.
- Kaplan, Paul N., to Air Products and Chemicals, Inc. Load bearing device. 3,870,152, Cl. 206-523.000.
- Kappeler, Peter; and Uhlig, Klaus, to Brown-Boveri-Sulzer Turbomaschinen Aktiengesellschaft. Conduit elbow. 3,870,346, Cl. 285-47.000.
- Kappl, Gerhard: *See—*
  - Steinbatz, Alfred; and Kappl, Gerhard, 3,871,009.

- Karkhachev, Jury Georgievich: *See—*
  - Karpacheva, Susanna Mikhailovna; Karkhachev, Jury Georgievich; Muratov, Valeryan Matveevich; and Raginsky, Leonid Solomonovich, 3,870,638.
- Karonis, George Peter. Dry soil process. 3,870,425, Cl. 404-76.000.
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- Karpekin, Viktor Vladimirovich: *See—*
  - Rybalko, Alexei Petrovich; Karpekin, Viktor Vladimirovich; Didenko, Nikolai Sidorovich; and Volokhov, Ivan Ivanovich, 3,869,871.
- Kasuga, Masao: *See—*
  - Takahashi, Nobuaki; and Kasuga, Masao, 3,870,971.
- Kato, Nobuo; Nakamura, Toshio; and Terakado, Seishi, to Matsushita Electric Industrial Co., Ltd. Heat-sensitive device. 3,870,983, Cl. 337-107.000.
- Kato, Takahisa: *See—*
  - Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
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- Kaugars, Girts, to Upjohn Company, The. Weed control with substituted phenylhydrazones. 3,870,505, Cl. 71-121.000.
- Kaupp, Norbett H., to Xerox Corporation. Method for electrostatic paper stripping by neutralization of transfer charge. 3,870,515, Cl. 96-1.400.
- Kawagoe, Hiroto: *See—*
  - Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,870,897.
- Kawaguchi, Hideo: *See—*
  - Yamamoto, Nobuo; Kawaguchi, Hideo; and Furukawa, Katsuharu, 3,870,525.
- Kawamura, Takeji. Action spring assembly for forwardly urging the action bar of shotguns. 3,869,961, Cl. 89-191.00A.
- Kayani, Ghulam A.: *See—*
  - Brown, Earle C.; Byers, Errol J.; and Kayani, Ghulam A., 3,870,951.
- Kearns, Tommy Carter; and Stoltenberg, Donald A., to Pureco Systems, Inc. Apparatus and method for evaporative concentration of aqueous solutions and slurries. 3,870,585, Cl. 159-4.00A.
- Keelavite Hydraulics Limited: *See—*
  - Duckworth, Peter, 3,869,860.
- Keeler, Robert Emerson: *See—*
  - Corwin, Walter Leo; Keeler, Robert Emerson; and Rubin, Philip Edward, 3,870,838.
- Keirn, Robert E. Continuous flow grain drying apparatus. 3,869,809, Cl. 34-174.000.
- Keller, Klaus. Device for bending serpentine struts. 3,869,926, Cl. 74-25.000.
- Kelsey-Hayes Company: *See—*
  - Riordan, Hugh E., 3,870,376.
- Kennecott Copper Corporation: *See—*
  - Wright, Craig Nellis; and Richards, Kenneth Julian, 3,870,779.
- Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See—*
  - Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,915.
  - Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,916.
  - Presser, Karl-Heinz; and von der Decken, Claus-Benedict, 3,869,919.
- Kerridge, John Charles: *See—*
  - Syson, John William; and Kerridge, John Charles, 3,870,667.
- Kerschner, Paul M.; and Marcellis, Alphonso W., to Cities Service Oil Company. Petroleum hydrocarbon compositions. 3,870,643, Cl. 252-56.00R.
- Keyworth, Donald A.: *See—*
  - Walker, David G.; Keyworth, Donald A.; and Sudduth, Jerome R., 3,870,482.
- Khanna, Jai K.: *See—*
  - Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., 3,870,029.
- Khazanov, Mikhail Semenovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
- Khodykin, Boris Danilovich: *See—*
  - Rannev, Alexandr Vladimirovich; Reish, Arvid Karlovich; Svirsky, Viktor Alexandrovich; and Khodykin, Boris Danilovich, 3,869,814.
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  - Werner, Edward E., 3,870,167.
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- Klaue, Hermann. Brake arrangement for vehicles. 3,870,118, Cl. 180-75.000.
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  - Schlotterbeck, Heinz; and Staake, Walter, 3,869,938.
- Klotzer, Sieghart: *See—*
  - Moisar, Erik; and Klotzer, Sieghart, 3,870,522.
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  - Korting, Reinhard; and Kluger, Alois, 3,870,100.
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  - Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., 3,869,762.
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  - Bennett, Richard H., 3,870,187.
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- Knipp, Ulrich, to Bayer Aktiengesellschaft. Vehicle wheel. 3,870,372, Cl. 301-63.0PW.
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  - Senda, Katsuyuki; and Kobashi, Mamoru, 3,870,918.
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  - Wakamiya, Kinji; and Kobayashi, Isamu, 3,871,007.
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  - Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, 3,870,524.
- Kobayashi, Morio: *See—*
  - Kondo, Mamoru; and Kobayashi, Morio, 3,871,003.
- Kobayashi, Shigeru: *See—*
  - Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,870,694.
- Kobayashi, Yukio: *See—*
  - Hatano, Fukuji; and Kobayashi, Yukio, 3,870,330.

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  - Koester, Waldemar; and Huber, Reinhold, 3,870,424.
- Koch, Robert E.: *See—*
  - Rusk, Gerald; and Koch, Robert E., 3,870,092.
- Kochs Adler AG: *See—*
  - Scholl, Hans, 3,869,998.
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  - Yamada, Hiroshi; and Kojima, Kenji, 3,870,246.
- Kondo, Mamoru; and Kobayashi, Morio, to Nippon Telegraph and Telephone Public Corporation. Electrostatic recording apparatus with core matrix. 3,871,003, Cl. 346-74.0ES.
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  - Zuideveld, Reinder, 3,870,189.
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  - Henniger, Peter Wolfgang; and Smid, Peter Max, 3,870,705.
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  - Uchida, Yasuo; and Kuroyanagi, Yoshitaka, 3,871,005.
- Korner, Otto, to DIEHL. Track link unit. 3,870,380, Cl. 305-36.000.
- Koroleva, Margarita Borisovna: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
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  - Burkard, Edward A.; and Kossuth, Donald A., 3,870,538.
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  - Steinberg, Richard W.; McClocklin, Samuel B.; and Kostelecky, Clarence L., 3,869,978.
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- Kowa Company Ltd.: *See—*
  - Munakata, Katsura; Oda, Takeshi; Mori, Toshito; and Ito, Hisakatu, 3,870,698.
- Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, to Shinetsu Chemical Company. Cellulose ether compositions useful as enteric coatings. 3,870,702, Cl. 260-226.000.
- Kraft, Gerald A., to Philip Morris Incorporated. Air system control. 3,870,070, Cl. 137-512.000.
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  - Diehr, Hans-Joachim; Kraft, Karl-Josef; and Sachs, Hanns Immo, 3,870,665.
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  - Schettler, Kurt, 3,870,636.
- Kramer, Edward J. Clusterable learning module. 3,869,992, Cl. 108-60.000.
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- Kratcoski, Francis L.; and Willemse, Adrianus H., to Oce-van der Grinten N.V. Photoprint developing apparatus and method. 3,870,017, Cl. 118-637.000.
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  - Dannenmann, Paul; and Kratz, Gunter, 3,870,438.
- Kraus, Theodore C., to Olin Corporation. Catalytic preparation of formanilide. 3,870,758, Cl. 260-562.00R.
- Krause, Gerhard, to Siemens Aktiengesellschaft. Integrated attenuation element comprising semiconductor body. 3,870,976, Cl. 333-81.00R.
- Krause, Herbert, to Atwood Vacuum Machine Company. Hinging system for automobile doors with hinge halves welded to body and door. 3,870,361, Cl. 296-146.000.
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  - Sanders, Ellsworth E.; and Kreeger, Elsmer W., 3,870,185.
- Kreibich, Walter: *See—*
  - Brede, Uwe; Flach, Karl-Egon; Gawlick, Heinz; Hirschmann, Gunter; and Kreibich, Walter, 3,870,894.
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  - Aignesberger, Alois; Kriele, Ulrich; and Michaud, Horst, 3,870,671.
- Krings, Josef. Casing element for excavation casing. 3,869,867, Cl. 61-41.00A.
- Kristian Gerhard Jebsen: *See—*
  - Aralt, Per Tybring, 3,870,168.
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  - Anderson, Harold Elden; and Kruckenberg, Perry Lester, 3,870,025.
- Kruder, George A., to Koehring Company. Extruder screws. 3,870,284, Cl. 259-191.000.
- Kruper, Aloys, to Gebr. Cramer, Firma. Gas heated grill device. 3,870,031, Cl. 126-39.00J.
- Krusche, Kurt. Brush with rotatable brush plate. 3,869,748, Cl. 15-172.000.
- Kryger, Allen C.; Nevin, Charles S.; and Wilhelm, Donald L., to A. E. Staley Manufacturing Company. Granular starch-based gums. 3,870,527, Cl. 106-2.000.
- Krzyminski, Harald, to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Process for boriding refractory metals and their alloys. 3,870,569, Cl. 148-6.000.
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- Kubota, Katuhiko: *See—*
  - Ogawa, Kazuo; Machii, Tetsuo; Sawano, Takahiro; Kubota, Katuhiko; and Yotumoto, Yoshiharu, 3,870,944.
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- Kudo, Shinji, to Yodogawa Steel Works, Limited. Laminated metal-based facing. 3,870,594, Cl. 161-165.000.
- Kuehner, Richard, to Borg-Warner Corporation. Refrigeration system utilizing ice slurries. 3,869,870, Cl. 62-114.000.
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  - Broverman, Alvin Y., 3,870,932.
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  - Polk, Isaac H., 3,870,212.
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- Kuleshov, Roman Stepanovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
- Kummerer, Richard A.: *See—*
  - Wildman, Claude L.; and Hellmer, George A., 3,869,856.
- Kump, Shirl R.: *See—*
  - Lee, George W., 3,870,278.
- Kurei, Hiroshi: *See—*
  - Nomura, Katsuhiko; Kurei, Hiroshi; and Urano, Fumio, 3,871,011.
- Kurohara, Hiroyoshi: *See—*
  - Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.
- Kuroyanagi, Yoshitaka: *See—*
  - Uchida, Yasuo; and Kuroyanagi, Yoshitaka, 3,871,005.
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- Kusayama, Seiji; Ohashi, Koichi; and Takada, Shinzo, to Sumitomo Chemical Company, Limited. Two-component adhesive. 3,870,675, Cl. 260-32.80A.
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- Kussemaul, Ernest A.: *See—*
  - Groce, Raymond; and Kussemaul, Ernest A., 3,870,963.
- Kyle, Nanse R., to Hughes Aircraft Company. Tandem furnace crystal growing device. 3,870,473, Cl. 23-273.0SP.
- L. & C. Steinmuller G.m.b.H.: *See—*
  - Kall, Horst; and Riedel, Klaus, 3,870,493.
- La Salle Machine Tool, Inc.: *See—*
  - Vandenkieboom, John, 3,869,947.
- La Technique Integrale: *See—*
  - Taillardat, Jacques, 3,869,936.
- Laass, Heinz, to Taco-Tafel GmbH Co., KG. Overvoltage protected, battery powered electric circuit tester. 3,870,950, Cl. 324-51.000.

- Labelle, Harold E., Jr., to Tyco Laboratories, Inc. Optical control of crystal growth. 3,870,477, Cl. 23-301.0SP.
- Laboratories Medicoplast: *See—*
  - Viguier, Leon Fernand, 3,870,042.
- Lacchia, Adrien, to Air-Industrie. Nozzle for projecting powdered solid products. 3,870,232, Cl. 239-15.000.
- La Conti, Anthony B.: *See—*
  - Dempsey, Russell M.; Nolan, Mary E.; La Conti, Anthony B.; and Torkildsen, Robert A., 3,870,616.
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- Ladin, Eli M., to Federal-Mogul Corporation. Preloading and sealing system for clutch bearings. 3,870,384, Cl. 308-187.200.
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  - Bonnemay, Maurice; Bronoel, Guy Rene; Donnet, Jean-Baptiste; Lahaye, Jacques; and Sarradin, Joel Alain, 3,870,565.
- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
  - Gardent, Maurice; Michalak, Wadislaw; and Prost, Roger, 3,869,876.
- Laitram Corporation, The: *See—*
  - Lapeyre, James M.; and Lapeyre, Fernand S., 3,870,141.
- Laizerovich, David: *See—*
  - Avakian, Emik; and Laizerovich, David, 3,870,385.
- Lampert, Fred: *See—*
  - Hofel, Heinz-Bernard; Kiessling, Hans-Joachim; Lampert, Fred; and Kuhr, Johann, 3,870,669.
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- Landwehr, Hermann H. Volume and temperature regulating faucet. 3,870,080, Cl. 137-636.400.
- Landy, Jerome J. Filter and seal. 3,870,490, Cl. 55-355.000.
- Langenbach, Erwin: *See—*
  - Walter, Arthur A. W.; and Langenbach, Erwin, 3,870,878.
- Langstroth, Theodore A., to Sterling Drug Inc. Process for comminuting fluorescent whitening agents and compositions obtained thereby. 3,870,649, Cl. 252-301.30W.
- Lapeyre, Fernand S.: *See—*
  - Lapeyre, James M.; and Lapeyre, Fernand S., 3,870,141.
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- Laporte Industries Limited: *See—*
  - Robinson, Michael; Wilson, Harry Brian; and Gray, David Antony, 3,870,506.
- Lapp, Ellsworth W., to Kinroth & Son Mfg. Co. Conduit bender. 3,869,917, Cl. 72-304.000.
- Lara S.A.: *See—*
  - Edouard, Pierre Paul, 3,869,844.
- Large, Richard L., to RVL Industries, Inc. Tray attachment for wheelchairs. 3,870,362, Cl. 297-155.000.
- Larionov, Igor Naumovich; and Chernetsky, Tom Pavlovich. Method of connecting electrically conducting bodies. 3,870,850, Cl. 219-85.000.
- Larkin, Sam. Shoring apparatus. 3,870,268, Cl. 248-354.00P.
- Larsen, Robert T., to Outboard Marine Corporation. Rotary mower having quiet cutter blade. 3,869,848, Cl. 56-295.000.
- Larsen, Robert T., to Outboard Marine Corporation. Snowmobile motor mounting. 3,870,117, Cl. 180-64.00R.
- Larson, Paul E., to GCA Corporation. Esca x-ray source. 3,870,882, Cl. 250-305.000.
- Larson, Raymond George. Self-contained light source device for center mounting of photographic reflector. 3,870,874, Cl. 240-1.300.
- Lartigau, Guy: *See—*
  - Bost, Pierre-Etienne; Costantini, Michel; and Lartigau, Guy, 3,870,729.
- Latassa, Frank M.; Milke, Howard W.; and Sadoski, Tadius T., to GTE Sylvania Incorporated. Method of incorporating amalgam-forming material in a fluorescent lamp. 3,869,772, Cl. 29-25.130.
- Laub, Herman, III. Antidrip volumetric rapid filling machine. 3,870,089, Cl. 141-44.000.
- Laurenti, Italo Marco Levi. Finger grip-contoured molded scissors. 3,869,792, Cl. 30-254.000.
- Laurier Associates, Inc.: *See—*
  - Hargraves, Don, 3,870,196.
- Lautier, Gabriel T. Apparatus for manufacturing composite rovings. 3,869,758, Cl. 19-153.000.
- Lautzenheiser, Robert D.; and Ullman, Howard M., Jr., to Red Cross Manufacturing Corporation, The. Detachable loading device for garden shredder. 3,870,239, Cl. 241-186.00R.
- Lavoie, Girard H.: *See—*
  - Adamski, Joseph A.; Weiner, Joseph R.; and Lavoie, Girard H., 3,870,472.
- Lawlor, Robert E.; Watson, Carlton B., Jr.; and McGill, Michael E. Golf swing training device. 3,870,315, Cl. 273-186.00R.
- Lawrence, James Rogers, to Steadley Company, Incorporated. Bed base for supporting a box spring. 3,869,738, Cl. 5-200.00R.
- Lawrence Peska Associates, Inc.: *See—*
  - Hanley, John J., 3,870,132.
- Lax, Jacob; and Goldner, Sandor. Automotive anti-theft device. 3,870,895, Cl. 307-10.0AT.
- Lazaroiu, Dumitru Florian; Sleiher, Sigmund; and Mihaiescu, Gheroghe Mihai, to Institutul De Cercetare Si proiectare Pentru Industria Electrotechnica. Method of making a disk or cup rotor. 3,869,788, Cl. 29-597.000.
- Lear Siegler Inc.: *See—*
  - Surletta, Zygmunt M., 3,869,740.
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  - Wilson, Fred V.; and Leblanc, Henry J., Sr., 3,870,615.
- Le Cloarec, Albert Y.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,870,728.
- Lednov, Viktor Andreevich: *See—*
  - Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
- Lee, George W., to Booker, Arnold Bryce; and Kump, Shirl R. Telescoping stand jack. 3,870,278, Cl. 254-98.000.
- Lee, Robert Stormo, to Deere & Company. Method of producing spheroidal graphite cast iron. 3,870,512, Cl. 75-130.00R.
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  - Vignaud, Jean-Pierre; and Leguy, Bernard, 3,869,946.
- Lehigh Industries, Inc.: *See—*
  - Senk, Herman W.; and Resnik, Bernard S., 3,869,763.
- Lehmann, Helmut: *See—*
  - Jores, Willi; Hoffacker, Franz; and Lehmann, Helmut, 3,870,584.
- Leidy, William S.; and Scheller, Donald M., to McDonnell Douglas Corporation. Aircraft vectored flight control means. 3,870,253, Cl. 244-46.000.
- Leiter, Leigh David: *See—*
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  - Tombs, Michael Peter, 3,870,801.
- Levitsky, Vladimir Konstantinovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
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  - McGahee, Welbourne D., 3,869,821.
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  - Haddad, Heskel M.; and Loucas, Spiro P., 3,870,791.
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  - Johnson, Waldo O.; and Walters, Rodney P., 3,869,839.
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  - Shumaker, Gary Allen, 3,870,560.
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  - Makowski, Henry S.; Lundberg, Robert D.; and Singhal, Gopal H., 3,870,841.
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  - Wilhelm, Frederick R.; Hastings, Donald R.; and Lyth, William W., 3,870,233.
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  - Seyb, Edgar J., Jr.; and Woehrle, Richard E., 3,870,618.
- Maack, David Ralph: *See—*
  - Peoples, Dennis Robert; and Maack, David Ralph, 3,870,977.
- MacDonald, Paul M., to P.X. Industries, Inc. Self-locking shelf support. 3,870,266, Cl. 248-235.000.
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- Madison, Ernst Michael Gyorgy: *See—*
  - Dillon, Joseph Francis, Jr.; Madison, Ernst Michael Gyorgy; and Van Uitert, Legrand Gerard, 3,870,397.
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  - Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
- Maeda, Hiroaki: *See—*
  - Miyao, Takayuki; and Maeda, Hiroaki, 3,869,939.
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  - Wilson, David G.; Hanson, Brian D.; and Malarkey, John M., 3,870,127.
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  - Brugger, Hans; and Mallener, Helmut, 3,870,572.
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  - Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,870,740.
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  - Monreal, Karl; and Schwitzgobel, Rudolf, 3,870,571.
- Manning, James D., Jr. Swingable, demountable mailbox support. 3,870,262, Cl. 248-145.000.
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  - Iida, Hiroshi, 3,869,897.
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  - Kerschner, Paul M.; and Marcellis, Alphonso W., 3,870,643.
- Marcellus, Richard B. Portable electrically illuminated book. 3,869,818, Cl. 40-31.000.
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  - Baxter, Roderick Carey; and Hart, Dennis Edward, 3,870,979.
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  - Hayes, John T., Jr.; and Marshall, William E., 3,870,812.
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  - Faylor, Terry Lee; and Martin, Roger W., 3,870,033.
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  - Meyer, Burton C.; and Glass, Marvin I., 3,870,307.
- Maschinenfabrik Wifag: *See—*
  - Schmid, Jurg Friedrich, 3,870,214.
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  - Carr, George P.; and Mason, James A., Jr., 3,869,896.
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  - Pratt, George W., Jr., 3,871,017.

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  - Ikenoue, Shinpei; and Masuda, Takao, 3,870,523.
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  - Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, 3,870,603.
- Matsumoto, Mitsuo M. Planter package. 3,869,828, Cl. 47-34.110.
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  - Iwami, Ichiro; Matsunaga, Tsutomu; and Yoneyama, Ken, 3,870,551.
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  - Toyama, Shigetaro; and Matsuo, Yoshio, 3,870,231.
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  - Yamamoto, Kenzo; Matsuoka, Seiichi; and Shioda, Toshio, 3,870,738.
- Matsuoka, Shigeru: *See—*
  - Ikenga, Junichi; Matsuoka, Shigeru; and Okabe, Yoshio, 3,870,941.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Kato, Nobuo; Nakamura, Toshio; and Terakado, Seishi, 3,870,983.
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  - Tuomela, Robert M.; Schroeder, Gustave W.; and Mattila, Robert O., 3,870,111.
- Mattis, Donald J.: *See—*
  - Horwitt, Laurence G.; and Mattis, Donald J., 3,870,857.
- Maurin, Gerald: *See—*
  - Hurlbut, William Barrett, Sr.; Liebig, Preston Dean; and Maurin, Gerald, 3,870,487.
- Maust, Daniel A.: *See—*
  - Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., 3,869,762.
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  - Brunner, Heinz, 3,869,879.
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  - Mazzella, John A.; and Mazzella, Joseph S., 3,870,256.
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  - Mallory, Roy E., 3,870,873.
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  - Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., 3,870,373.
- McCarley, William I. Telephone hold circuit. 3,870,831, Cl. 179-99.000.
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  - Steinberg, Richard W.; McClocklin, Samuel B.; and Kostelecky, Clarence L., 3,869,978.
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  - Anderson, Harold Elden; and Kruckenberg, Perry Lester, 3,870,025.
- McCullough, Robert W., to Deering Milliken Research Corporation. Tight warp detector. 3,869,770, Cl. 28-51.000.
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  - Baichtal, James R.; and McDonald, John C., 3,870,824.
- McDonnell Douglas Corporation: *See—*
  - Dueker, James E.; and Brunkhorst, Lloyd E., 3,870,887.
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  - Lawlor, Robert E.; Watson, Carlton B., Jr.; and McGill, Michael E., 3,870,315.
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  - Dennis, Roderick A.; Consiglio, Thomas J.; and McGowan, Gerald, 3,870,819.
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  - Capossela, Anthony C.; McGuire, Michael T.; Smith, Gordon C.; and Albaum, Joseph D., 3,870,806.
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  - McCormick, Joseph L.; McMullen, Charles G.; and Woodall, Phillip J., 3,870,994.
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  - Higham, John D.; and McNaught, Colin J., 3,869,892.
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  - Baker, Jesse L., 3,869,830.
  - Wyant, Jon Richard, 3,870,223.
- Mead, Theodore C.: *See—*
  - Ashton, William B.; Gonzalez, Luis A.; Nelson, Gerald V.; and Mead, Theodore C., 3,870,622.
- Meade, Hazel W.: *See—*
  - Blanco, Louis A.; and Meade, Hazel W., 3,870,536.
- Meads, Charles D., to DICO Company, Inc. Adjustable material handling fork. 3,870,356, Cl. 294-67.00A.
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  - Higham, John D., 3,869,891.
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  - Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,870,714.
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  - Tull, Roger J.; Czaja, Robert F.; Shuman, Richard F.; and Pines, Seemon H., 3,870,753.
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  - Biscardi, Charles T., 3,870,355.
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  - Tymann, Gerhard, 3,871,000.
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  - McMahon, John F., 3,870,776.
- Metivier, Robert. Pressure drop alarm device. 3,870,012, Cl. 116-70.000.
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  - Abel, Donald J., 3,870,103.
- Mettler Instrumente AG: *See—*
  - Rellstab, Werner; and Steiner, Hans, 3,870,466.
- Mewissen, Jan Alfons Catharina: *See—*
  - De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, 3,870,920.
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  - Gardent, Maurice; Michalak, Wadislaw; and Prost, Roger, 3,869,876.

- Michaud, Horst: *See—*
  - Aignesberger, Alois; Kriele, Ulrich; and Michaud, Horst, 3,870,671.
- Micka, John J.: *See—*
  - Fuchs, Thomas D.; and Micka, John J., 3,870,184.
- Micron Engineering Inc.: *See—*
  - Holl, Richard Adolf, 3,870,082.
- Middendorf, John E.: *See—*
  - Boyer, Robert A.; and Middendorf, John E., 3,870,808.
- Mihaiescu, Gheroghe Mihai: *See—*
  - Lazaroiu, Dumitru Florian; Sleiher, Sigmund; and Mihaiescu, Gheroghe Mihai, 3,869,788.
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  - Verlinden, Jerry M.; and Swinford, Gary D., 3,869,875.
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  - Elliott, Roderick Douglas, 3,870,046.
  - Kotick, Michael Paul; and Polazzi, Joseph Odo, 3,870,700.
- Milke, Howard W.: *See—*
  - Latassa, Frank M.; Milke, Howard W.; and Sadoski, Tadius T., 3,869,772.
- Millauer, Christian: *See—*
  - Bausch, Gunther; Millauer, Christian; and Paul, Harald, 3,870,285.
- Miller, Dorothy: *See—*
  - Chase, Bert, 3,869,972.
- Miller, George A.; and Weiler, Ernest D., to Rohm and Haas Company. Stabilization of solutions of 3-isothiazolones employing certain metal nitrates and nitrites. 3,870,795, Cl. 424-270.000.
- Miller, Gerald R., to Gabriel of Canada Limited. Shock absorber. 3,870,130, Cl. 188-288.000.
- Miller, Harry A.: *See—*
  - Swidler, Ronald; Smith, Ray S.; and Miller, Harry A., 3,870,555.
- Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Yarn cutter for use in yarn winders. 3,870,240, Cl. 242-18.00A.
- Miller, Raymond B., to United States of America, Navy. Jamming cancellation device. 3,870,996, Cl. 343-18.00E.
- Miller, Wesley E. Latches. 3,870,353, Cl. 292-37.000.
- Milligan, Barton: *See—*
  - DeLaMater, George B.; Herrick, Elbert C.; and Milligan, Barton, 3,870,739.
- Mills, Thomas B., to National Semiconductor Corporation. Sound volume control circuit with sound level output linearly related to volume control potentiometer setting. 3,870,964, Cl. 330-29.000.
- Minera, Salvador A. Huller for berries. 3,869,977, Cl. 99-640.000.
- Minklei, Alfred O.; and Peterson, John A., to Hooker Chemicals & Plastics Corporation. Thermal shrinkage resistance of leather. 3,870,554, Cl. 117-138.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Elton, Robert L.; and Vander Louw, John F., 3,870,593.
  - Endres, Leland S.; Gehlhoff, Leo F.; and Zimmerman, Dallas D., 3,870,682.
  - Fass, Leonard; and Fatuzzo, Ennio, 3,870,892.
  - Hunt, George R., 3,870,020.
- Minnick, George D. Inflatable striking member and projectile dispensing receptacle. 3,870,304, Cl. 273-95.00R.
- Minnick, Leonard John; Smith, Charles L.; and Webster, William C., to IV Conversion Systems, Inc. Method of treating coal mining refuse. 3,870,535, Cl. 106-118.000.
- Minns, H. Gordon, Jr. Measuring system. 3,870,065, Cl. 137-93.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Takeuchi, Hideo, 3,871,006.
- Mishima Kosan Co., Ltd.: *See—*
  - Takeuchi, Shinjiro; and Ichioka, Satoshi, 3,870,973.
- Misjurev, Vladimir Ivanovich: *See—*
  - Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.
- Miskin, Richard B., to Miskin Scraper Works, Inc. Bale loader. 3,870,173, Cl. 214-152.000.
- Miskin Scraper Works, Inc.: *See—*
  - Miskin, Richard B., 3,870,173.
- Mississippi Chemical Corporation: *See—*
  - Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., Jr., 3,870,782.
- Misu, Hiroshi: *See—*
  - Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, 3,870,524.
- Mita, Ikuo, to Tokyo Metropolitan Government. Process for coloring aluminum or aluminum alloys by anodizing with imperfectly rectified current. 3,870,608, Cl. 204-58.000.
- Mitchell, Lawrence C.; and Ter Haar, Gary L., to Ethyl Corporation. Smoke retardant vinyl halide polymers. 3,870,679, Cl. 260-45.75N.
- Mitsubishi Chemical Industries Limited: *See—*
  - Kamo, Seiichi; Yanai, Noriyoshi; and Osako, Naoto, 3,870,755.
- Mitsui Mining and Smelting Co., Ltd.: *See—*
  - Kojima, Hiromitsu, 3,870,169.
- Mitsui, Ryozo: *See—*
  - Goto, Kenji; Mitsui, Ryozo; and Ishikawa, Norikatsu, 3,869,858.
- Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
  - Izumi, Hitoshi, 3,870,123.
- Miyamoto, Tadashi; and Iwahashi, Masaaki, to Wakayama Iron Works Ltd. Apparatus for treating fabrics with steam. 3,869,882, Cl. 68-5.00C.
- Miyao, Takayuki; and Maeda, Hiroaki, to Aisin Seiki Co. Ltd. Hydromechanical transmission. 3,869,939, Cl. 74-687.000.
- Miyauchi, Rin-Ichi; Saito, Bunjiro; and Ikeda, Kyoichi, to Yokogawa Electric Works, Ltd. Symmetrically arranged, deflection type differential pressure transmitters for controlling industrial systems and processes. 3,869,920, Cl. 73-398.00R.
- Miyazaki, Koshin: *See—*
  - Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.
- Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi. Apparatus for separating fluids. 3,870,637, Cl. 210-243.000.
- Mizuki, Eiichi: *See—*
  - Kubotera, Kikuo; Ikenoue, Shinpei; Mizuki, Eiichi; and Fujiwara, Tadahiro, 3,870,479.
- Mizuno, William G., to Economics Laboratory, Inc. Treatment of fabrics in machine dryers. 3,870,145, Cl. 206-84.000.
- Mizutani, Shoji: *See—*
  - Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi, 3,870,637.
- Mo, Olav. Storage-vessel. 3,870,003, Cl. 114-.50T.
- Mobley, Loreley S.: *See—*
  - Fieser, Arthur H.; and Mobley, Loreley S., 3,870,570.
- Modena, Mario; Ragazzini, Mario; Borsini, Giancarlo; and Valera, Marco, to Montecatini Edison S.p.A. Crystalline copolymers of ethylene and tetrafluoroethylene having high workability characteristics. 3,870,689, Cl. 260-87.50B.
- Moeller, Bonde, to Geschafts-und Industriebau B. Moeller & Co. Framework for travelling crane. 3,870,159, Cl. 212-13.000.
- Moen, George A. Fastener device. 3,869,959, Cl. 85-83.000.
- Moisar, Erik; and Klotzer, Sieghart, to Agfa-Gevaert Aktiengesellschaft. Fogged, direct-positive emulsion containing heterodisperse and irregular composite silver halide grains. 3,870,522, Cl. 96-107.000.
- Molins Limited: *See—*
  - Heybourn, Frank; and Hinchcliffe, Dennis, 3,870,143.
- Monarch Marking Systems, Inc.: *See—*
  - Hamisch, Paul H., Sr., 3,870,867.
- Monet, John E.; and Brunette, Fredrick, to Monet, John E. Display apparatus. 3,870,154, Cl. 211-74.000.
- Mono Pumps (Engineering) Limited: *See—*
  - Hurst, William Edward, 3,870,283.
- Monreal, Karl; and Schwitzgobel, Rudolf, to Mannesmann Aktiengesellschaft. Method for surface treatment of intermediate products which are being flame scarfed. 3,870,571, Cl. 148-9.500.
- Monroe Electronics, Inc.: *See—*
  - Vosteen, Robert E.; and Williams, Bruce Theodore, 3,870,968.
- Monsanto Company: *See—*
  - Blake, Edward S., 3,870,646.
  - Darrah, John W., III; and Williams, Dick W., 3,869,843.
  - Harris, Alva F.; and Shapras, Peter, 3,870,802.
  - Sincock, Thomas F., 3,870,181.
- Montecatini Edison S.p.A.: *See—*
  - Modena, Mario; Ragazzini, Mario; Borsini, Giancarlo; and Valera, Marco, 3,870,689.
- Moore, Francis C.; and Perkinson, Leon R., to Moore-Perk Corporation. Filtering device. 3,870,639, Cl. 210-359.000.
- Moore-Perk Corporation: *See—*
  - Moore, Francis C.; and Perkinson, Leon R., 3,870,639.
- Moran, John Christian: *See—*
  - Carbrey, Robert Lawrence; Moran, John Christian; and Tsao-Wu, Nelson Tsin, 3,870,826.
- Moraw, Roland: *See—*
  - Schadlich, Gunther; and Moraw, Roland, 3,871,002.
- Moret, Michel Antoine Cesar; and Jousson, Pierre Jean, to Les Produits Associes. Fractionated liquid jet. 3,870,039, Cl. 128-66.000.
- Mori, Toshito: *See—*
  - Munakata, Katsura; Oda, Takeshi; Mori, Toshito; and Ito, Hisakatu, 3,870,698.
- Morisaki, Nobukazu, to Daido Metal Company, Ltd. Cassette-type bearing unit. 3,870,383, Cl. 308-82.000.
- Moroz, Vitaly Iosifovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
- Morrissey, Everett G.: *See—*
  - Darnell, Robert S.; and Morrissey, Everett G., 3,870,513.
- Morse, John F. Rudder control cable system. 3,870,007, Cl. 114-160.000.
- Mortashed, Merle H., to Harbor Universal, Inc. File drawer interlock mechanism. 3,870,387, Cl. 312-218.000.
- Moseley, Charles D., Jr. Water heating system. 3,870,228, Cl. 237-59.000.
- Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Nikolaev, Vyacheslav Pavlovich; and Odnodushny, Viktor Alexeevich. Method of fabricating curved fittings and device for effecting same. 3,869,776, Cl. 29-157.00A.

- Mosler Safe Company, The: *See—*
  - Woods, Thomas H.; and Voss, William M., 3,870,814.
- Moss, Gerald, to Exxon Research and Engineering Company. Process and apparatus for the production of combustible gases. 3,870,480, Cl. 48-71.000.
- Motiva, Ltd.: *See—*
  - Schwartz, Robert C.; and Burke, Frederick, 3,870,411.
- Motomura, Hiroji: *See—*
  - Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
- Motorola, Inc.: *See—*
  - Caprio, Gerald L., 3,871,023.
  - Frederiksen, Thomas M., 3,870,965.
  - Wilcox, Milton E., 3,871,022.
  - Wisseman, Leo L., 3,870,967.
- Mott, James D., to Hydril Company. Subsurface well apparatus and method. 3,870,102, Cl. 166-72.000.
- Mott, James D., to Hydril Company. Subsurface safety valve well tool operable by differential annular pressure. 3,870,104, Cl. 166-224.00A.
- Mount Hope Machine Company, Incorporated: *See—*
  - Gallant, James O.; Staples, Robert E.; and Knapp, George P., 3,869,774.
- Moyle, Maurice: *See—*
  - Freure, Robert J.; and Moyle, Maurice, 3,870,683.
- Mueller Co.: *See—*
  - Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,870,431.
- Muller, Anton: *See—*
  - Schurle, Werner; and Muller, Anton, 3,870,094.
- Muller, Peter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Cleaning of open-end spinning turbines. 3,869,851, Cl. 57-58.890.
- Mullin, George Cruise; Wetherby, Robert Earle; and Chevalier, Victor Oscar, to Avco Corporation. Coated abrasive articles having a surface deposit of fluorocarbon particles. 3,869,834, Cl. 51-295.000.
- Mulvey, Thomas, to National Research Development Corporation, The. Magnetic lenses. 3,870,891, Cl. 250-398.000.
- Munakata, Katsura; Oda, Takeshi; Mori, Toshito; and Ito, Hisakatu, to Kowa Company Ltd. Quintomycin compounds. 3,870,698, Cl. 260-210.0AB.
- Munchbach, George Ernest: *See—*
  - Walton, Richard Rhodes; and Munchbach, George Ernest, 3,869,768.
- Munzer, Manfred: *See—*
  - Fink, Herbert; Munzer, Manfred; and Dinklage, Horst, 3,870,557.
- Murata, Hajime: *See—*
  - Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
- Murata, Yasuzo: *See—*
  - Watanabe, Akio; and Murata, Yasuzo, 3,870,435.
- Muratov, Valeryan Matveevich: *See—*
  - Karpacheva, Susanna Mikhailovna; Karkhachev, Jury Georgievich; Muratov, Valeryan Matveevich; and Raginsky, Leonid Solomonovich, 3,870,638.
- Murayama, Hiroo, to Illinois Tool Works Inc. Screw grommet. 3,869,958, Cl. 85-80.000.
- Murphy, John E. Variable linear graph. 3,870,225, Cl. 235-89.00R.
- Murray, Nancy J.: *See—*
  - Hutchinson, Ronald R.; Emley, Grace S.; Hallin, Edward R.; and Murray, Nancy J., 3,870,794.
- Muszumanski, Trude, to Vockenhuber, Karl; and Hauser, Raimund. Inverted telephoto-type lens. 3,870,401, Cl. 350-214.000.
- Mutschler, Otto, to J. S. Staedtler. Tubular nib-type pen with a screwed-in nib. 3,870,421, Cl. 401-259.000.
- Myakin, Valery Alexandrovich: *See—*
  - Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.
- Myers, Hubert A., to Hitco. Radome. 3,871,001, Cl. 343-872.000.
- Myers, John L., to Sun Chemical Corporation. Solenoid servomechanism. 3,870,931, Cl. 317-146.000.
- Myers-Sherman Company: *See—*
  - Shaddock, Roland E., 3,870,489.
- N. L. Industries, Inc.: *See—*
  - Blumenthal, Warren B., 3,870,787.
- N. V. Behaert S.A.: *See—*
  - Vandenbroucke, Gilbert, 3,870,854.
- Nadelson, Jeffrey: *See—*
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,870,722.
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,870,751.
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,870,752.
- Nagai, Masayuki: *See—*
  - Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.
- Nakajima, Robkuo: *See—*
  - Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Robkuo, 3,870,606.
- Nakajo, Toshihiro, to Unic Corporation. Foldable crane. 3,870,162, Cl. 212-59.00R.
- Nakamoto, Soichi; and Yanagisawa, Takeshi, to Canon Kabushiki Kaisha. Exposure meter. 3,870,418, Cl. 356-226.000.
- Nakamoto, Soji, to Sanyo Electric Co., Ltd. Tape loading system for automatically withdrawing a tape from a cassette and engaging the tape with a recording and/or reproducing head. 3,871,025, Cl. 360-85.000.
- Nakamura, Ichiro, to Hitachi, Ltd. Low-noise valve. 3,870,077, Cl. 137-614.110.
- Nakamura, Toshio: *See—*
  - Kato, Nobuo; Nakamura, Toshio; and Terakado, Seishi, 3,870,983.
- Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, to Snow Brand Milk Products Co., Ltd.; and Tokuyama Soda Kabushiki Kaisha. Process for the removal of mineral salts from milk. 3,870,613, Cl. 204-180.00P.
- Nakayama, Hirokazu: *See—*
  - Inamoto, Yoshiaki; and Nakayama, Hirokazu, 3,870,759.
- Nakayama, Sadao: *See—*
  - Kubota, Hayato; Nakayama, Sadao; and Tateishi, Teizaburo, 3,870,733.
- Nalco Chemical Company: *See—*
  - Walker, Alfred O., 3,870,469.
- Nanba, Yoku; Ono, Tetsuji; and Okuda, Yukio, to Nippon Shokubai Kagaku Kogyod Co., Ltd. Catalyst for the preparation of anthraquinone. 3,870,655, Cl. 252-435.000.
- Nankivell, John E.: *See—*
  - Fajans, Jack; and Nankivell, John E., 3,869,922.
- Nara, Hirotoshi; Watanabe, Wataru; Yokota, Tadashi; and Yanagi, Chiak, to Clairion Co., Ltd. Tape player. 3,870,248, Cl. 242-198.000.
- Nash, Charles D.: *See—*
  - Carter, Ronald W.; and Nash, Charles D., 3,870,629.
- Nasser, Benny E., Jr.: *See—*
  - Brown, Terry D.; Delap, Joseph A.; and Nasser, Benny E., Jr., 3,870,656.
- National Gypsum Company: *See—*
  - Burkard, Edward A.; and Kossuth, Donald A., 3,870,538.
  - Gelsomino, Fred J., 3,870,546.
- National Research Development Corporation: *See—*
  - Attenborough, Christopher George, 3,869,729.
  - Briggs, Philip Stanley, 3,870,464.
  - Brindley, Giles Skey, 3,870,051.
  - Mulvey, Thomas, 3,870,891.
- National Semiconductor Corporation: *See—*
  - Mills, Thomas B., 3,870,964.
- National-Standard Company: *See—*
  - Howard, Walter B., 3,870,453.
- Naybour, Robert Douglas; Farrell, Trevor; and Roberts, William Elwyn, to Electricity Council, The. Making of connections in electrical power distribution systems. 3,870,848, Cl. 219-50.000.
- Nead, Thomas Edward. Vector magnitude summing circuit. 3,870,871, Cl. 235-197.000.
- Neary, Ralph E., to Schlage Lock Company. Screw guide. 3,869,890, Cl. 70-451.000.
- Neary, Ralph E., to Schlage Lock Company. Lock indicator shield. 3,869,901, Cl. 70-432.000.
- Nebbia, Rodolfo, to Robert Bosch Photokino GmbH. Mechanism for moving film into and from engagement with sprockets in motion picture projectors. 3,870,406, Cl. 352-159.000.
- Nederbragt, Frits W., to Ross-Holm, division of Holm Tractor & Equipment Company. Automatic control for milking machine support structure. 3,870,021, Cl. 119-14.130.
- Nelson, Gerald V.: *See—*
  - Ashton, William B.; Gonzalez, Luis A.; Nelson, Gerald V.; and Mead, Theodore C., 3,870,622.
- Nelson, Hugh Wharton, to Combustion Engineering Inc. Monitoring chemical recovery furnace. 3,870,467, Cl. 23-230.00R.
- Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich. Installation for the production of granulated products. 3,869,976, Cl. 99-484.000.
- Nessel, Jiri: *See—*
  - London, Arnold B.; and Nessel, Jiri, 3,869,749.
- Neti, Radhakrishna M., to Beckman Instruments, Inc. Nitrogen dioxide analysis. 3,870,468, Cl. 23-232.00R.
- Neubold, Kurt: *See—*
  - Ibing, Gunther; and Neubold, Kurt, 3,870,743.
- Neuer, Harald; Szenger, Franz; Herzog, Klaus; and Neumann, Joachim, to Zeiss-Stiftung, Carl. Universal multi-coordinate sensor. 3,869,799, Cl. 33-174.00L.
- Neumann, Joachim: *See—*
  - Neuer, Harald; Szenger, Franz; Herzog, Klaus; and Neumann, Joachim, 3,869,799.
- Nevin, Charles S.: *See—*
  - Kryger, Allen C.; Nevin, Charles S.; and Wilhelm, Donald L., 3,870,527.
- New England Envelope Manufacturing Co.: *See—*
  - Howatt, George F., 3,869,965.
- Newell, Stephen D., to Alco Standard Corporation. Portable pedestal mounted tower irrigator. 3,870,235, Cl. 239-177.000.
- Nezat, Jerry W. Back pressure regulator for automotive engines. 3,870,083, Cl. 138-45.000.

Nichols, Charles: *See—*
Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., 3,869,762.

Nichols, Peter L., Jr., to United States of America, Army. Polyurethane propellant. 3,870,578, Cl. 149-19.400.

Nichols, William W. Pickup truck spare tire mount and cover. 3,870,360, Cl. 296-37.00A.

Nickell, Louis G., to Hawaiian Sugar Planters Association. Ripening of sugarcane by use of n-valeric acid. 3,870,503, Cl. 71-106.000.

Nicklaus, Karl, to Esec Sales S. A. Machine for wiring a semiconductor component. 3,869,782, Cl. 29-203.00B.

Nicolay, Heinz; and Gruner, Hans, to Graubremse GmbH. Overrunning brake for trailers. 3,870,128, Cl. 188-112.000.

Nielson, Robert L., to United States of America, Navy. Electronic countermeasures system. 3,870,995, Cl. 343-18.00E.

Nikolaev, Vyacheslav Pavlovich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Nikolaev, Vyacheslav Pavlovich; and Odnodushny, Viktor Alexeevich, 3,869,776.

Nims, Vernon J. Cabinet door structure. 3,870,391, Cl. 312-297.000.

Nippon Electric Company, Limited: *See—*
Ohkubo, Toshio, 3,870,257.
Shutoh, Masamichi, 3,870,922.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Chibana, Masanobu, 3,870,970.
Tatebe, Horoshi, 3,869,953.
Yamaguchi, Mitsuo, 3,869,955.

Nippon Kogaku K.K.: *See—*
Wakahara, Shigeo, 3,870,407.

Nippon Shokubai Kagaku Kogyod Co., Ltd.: *See—*
Nanba, Yoku; Ono, Tetsuji; and Okuda, Yukio, 3,870,655.

Nippon Soda Company Limited: *See—*
Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.

Nippon Telegraph and Telephone Public Corporation: *See—*
Kondo, Mamoru; and Kobayashi, Morio, 3,871,003.

Nippon Zeon Co., Ltd.: *See—*
Ogura, Shunichiro, 3,870,533.

Nippondenso Co., Ltd.: *See—*
Toyama, Koichi; and Taniguchi, Koichi, 3,870,911.

Nishikawa, Seiichi: *See—*
Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.

Nishioka, Matsuo: *See—*
Oka, Shunzo; and Nishioka, Matsuo, 3,870,986.

Niskin, Shale J. Method and apparatus for determining surface wind velocity. 3,869,913, Cl. 73-189.000.

Nitsche, Herbert; and Hufnagl, Johann, to Siemens Aktiengesellschaft. Improved semiconductor rectifier assembly having a pivotable control module. 3,870,930, Cl. 317-100.000.

NL Industries, Inc.: *See—*
Blumenthal, Warren B., 3,870,788.

Noble, Donald E.; and Sanderson, Robert H. Loading ramp for pick-up trucks and the like. 3,870,170, Cl. 214-85.000.

Noguchi, Yoshiaki: *See—*
Iino, Hideo; and Iizuka, Satoru, 3,870,306.

Nolan, Mary E.: *See—*
Dempsey, Russell M.; Nolan, Mary E.; La Conti, Anthony B.; and Torkildsen, Robert A., 3,870,616.

Noll, Klaus; Oertel, Gunter; and Schafer, Karl, to Bayer Aktiengesellschaft. Textile finishing compounds. 3,870,556, Cl. 117-141.000.

Nomiya, Kosei: *See—*
Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,870,897.

Nomura, Katsuhiko; Kurei, Hiroshi; and Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure correction indicator. 3,871,011, Cl. 354-152.000.

Nordeen, Erwin E.: *See—*
Friesen, Dale M.; and Nordeen, Erwin E., 3,870,491.

Nordson Corporation: *See—*
Duncan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., 3,870,375.
Sandorf, Robert E., 3,870,946.
Wilhelm, Frederick R.; Hastings, Donald R.; and Lyth, William W., 3,870,233.

Noren, John Paul: *See—*
Pulk, Elgas, deceased; and Noren, John Paul, 3,870,114.

Norfin, Inc.: *See—*
Davis, Ernest D., 3,869,981.

Norgard, Fred C. Surface texture for fibrous boards. 3,870,540, Cl. 117-16.000.

Norman, Harry H., to Baliski, Stephen, a part interest. Apparatus for bending wire into a sinuous shape. 3,869,900, Cl. 72-384.000.

North Pacific Canners & Packers, Inc.: *See—*
Filz, William F., 3,870,813.

Northern Electric Company Limited: *See—*
Iyengar, Rama; Zuber, Bretislav Paul; and Boucher, Jean Raymond, 3,869,902.

Northrop Corporation: *See—*
Almich, Clarence L.; Polk, Jack D., Jr.; and Aulick, Robert A., 3,870,839.
Merrell, Franklin O., 3,870,587.

Northwest Molded Products Corp.: *See—*
Haley, Chester J., 3,870,192.

Norwood, David W., to Concorde Fibers Inc. Apparatus and method for treating yarn. 3,870,241, Cl. 242-18.00A.

Notte, Angelo J.: *See—*
Hold, Peter; Notte, Angelo J.; and Rizzi, Marc A., 3,870,445.

Oagley, Jack R., to Xerox Corporation. Electrostatic printing machine with self-cleaning coronal generating device. 3,870,883, Cl. 250-324.000.

Oaze-Futsuk-aichi: *See—*
Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.

Obayashi, Mikihiko: *See—*
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,870,694.

O'Brien, John A. Wheelbarrow like vehicle for transporting bulky material such as leaves, trash or the like. 3,870,367, Cl. 298-1.00B.

Oce-van der Grinten N.V.: *See—*
Kratcoski, Francis L.; and Willemse, Adrianus H., 3,870,017.

Oda, Takeshi: *See—*
Munakata, Katsura; Oda, Takeshi; Mori, Toshito; and Ito, Hisakatu, 3,870,698.

Odnodushny, Viktor Alexeevich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Nikolaev, Vyacheslav Pavlovich; and Odnodushny, Viktor Alexeevich, 3,869,776.

Oei, Han Yong: *See—*
Meyer, Norbert; Oei, Han Yong; Rausch, Werner; and Schneider, Horst, 3,869,894.

Oertel, Gunter: *See—*
Noll, Klaus; Oertel, Gunter; and Schafer, Karl, 3,870,556.

Oesterhelt, Gerhard; Winkler, Josef; Falkenberg, Dieter; and de Bucs, Eugen Szabo, to Siemens Aktiengesellschaft. Heat generator. 3,870,568, Cl. 136-212.000.

Oetiker, Hans. Connecting device between a pipe stub and a flexible hose surrounding the stub. 3,870,349, Cl. 285-249.000.

Ogawa, Kazuo; Machii, Tetsuo; Sawano, Takahiro; Kubota, Katuhiko; and Yotumoto, Yoshiharu, to Tokyo-Shibaura Eelctric Co., Ltd. Semiconductor rectifier apparatus. 3,870,944, Cl. 321-8.00R.

Ogawa, Kinya: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, 3,870,702.

Ogino, Hatsuo: *See—*
Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.

Ogura, Masaaki: *See—*
Sato, Yostbumi; and Ogura, Masaaki, 3,870,138.

Ogura, Shunichiro, to Nippon Zeon Co., Ltd. Hydraulic composition. 3,870,533, Cl. 106-90.000.

Ohashi, Koichi: *See—*
Kusayama, Seiji; Ohashi, Koichi; and Takada, Shinzo, 3,870,675.

Ohi, Reiichi: *See—*
Shimamura, Isao; Shishido, Tadao; Ohi, Reiichi; and Iwano, Haruhiko, 3,870,520.

Ohkubo, Toshio, to Nippon Electric Company, Limited. Electrostatic recording using discharge space potential. 3,870,257, Cl. 346-74.0ES.

Ohlstein, Herbert; and Gruber, Alan H., to International Telephone and Telegraph Corporation. MIC carrier grounding arrangement. 3,870,974, Cl. 333-12.000.

Ohnmacht, Helmut, to Eichenauer, Fritz. Electrical heating element for bread toaster or the like. 3,870,863, Cl. 219-532.000.

Ohshima, Norio: *See—*
Yoshida, Fumitake; and Ohshima, Norio, 3,870,470.

Ojima, Yukio. Depth gauge for diver. 3,869,916, Cl. 73-300.000.

Oka, Shunzo; and Nishioka, Matsuo, to Matsushita Electric Industrial Co. Ltd. Device for simultaneously controlling a plurality of variable resistors. 3,870,986, Cl. 338-128.000.

Okabe, Yoshio: *See—*
Ikenga, Junichi; Matsuoka, Shigeru; and Okabe, Yoshio, 3,870,941.

Okajima, Yoshiaki: *See—*
Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, 3,870,603.

Okamoto, Shin: *See—*
Asadea, Takashi; and Okamoto, Shin, 3,870,596.

Okle, Kurt, to Stoba AG. Combined product hanger and label support. 3,870,267, Cl. 248-339.000.

Okuda, Yukio: *See—*
Nanba, Yoku; Ono, Tetsuji; and Okuda, Yukio, 3,870,655.

Okudaira, Sadao: *See—*
Takahashi, Yasuo; and Okudaira, Sadao, 3,870,402.

Okumoto, Takeomi; Ueda, Hiroshi; Sakai, Junji; and Shimada, Yogo, to Hitachi, Ltd. Method of producing casting moulds for precision casting. 3,870,529, Cl. 106-38.300.

Okuno, Zenjiro: *See—*
Machida, Hazime; and Okuno, Zenjiro, 3,870,644.

Olin Corporation: *See—*
Kraus, Theodore C., 3,870,758.
Saeman, Walter C., 3,870,784.
Tepas, Joseph J., Jr.; and Sangster, Arlon G., 3,870,471.

Olson, Fred A.: *See—*
Reinhardt, Paige J.; and Olson, Fred A., 3,870,853.

Oltman, Billie G.; Eckerman, Keith F.; Romberg, Gerald P.; and Prepejchal, William, to United States of America, Atomic Energy Commission. Temperature measurement device. 3,869,918, Cl. 73-339.00R.

Olympia Werke AG: *See—*
Rittberg, Eilt-Heyo, 3,871,004.

Olympus Optical Company Limited: *See—*
Yamashita, Nobuo; and Fujii, Toru, 3,870,400.

Omni Spectra, Inc.: *See—*
Dreyer, Charles W., 3,870,978.

Onda, Yoshiro: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, 3,870,702.

O'Neill, Edward M., to Brown Jug, Inc. Modular wine bottle rack. 3,870,156, Cl. 211-74.000.

O'Neill, Gerald Joseph: *See—*
Holdsworth, Robert S.; O'Neill, Gerald Joseph; and Simons, Charles William, 3,870,797.

Onishi, Akira; Yukuta, Toshio; Iseda, Yutaka; and Iwami, Kouichi, to Bridgestone Tire Company Limited. Photopolymerization process for the manufacture of copolymer of butadiene and acrylonitrile. 3,870,620, Cl. 204-159.230.

Ono, Tetsuji: *See—*
Nanba, Yoku; Ono, Tetsuji; and Okuda, Yukio, 3,870,655.

Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research & Development Company. Production of mixtures of carboxylic acids from mixtures of olefins. 3,870,734, Cl. 260-413.000.

Ontario Research Foundation: *See—*
Brown, Earle C.; Byers, Errol J.; and Kayani, Ghulam A., 3,870,951.

Oppedal, Tor: *See—*
Bergum, Bernard C.; and Oppedal, Tor, 3,870,566.

Ordway, Donald E.: *See—*
Hale, Richard W.; Tan, Patrick; Stowell, Richard C.; and Ordway, Donald E., 3,869,909.

Ore-Ida Foods, Inc.: *See—*
Green, Glen R.; and Bennion, Jay B., 3,870,809.

Orman, Richard John: *See—*
Castro, Roger Albert; Orman, Richard John; and Ryan, James Ernest, 3,870,775.

Orofino, Caesar F.: *See—*
Waugh, Theodore R.; Smith, Richard C.; Anzel, Sanford H.; and Orofino, Caesar F., 3,869,731.

Orth, Gunther, to Wolf-Gerate GmbH. Container for storage and preparation of a plant protective material containing at least two components. 3,870,147, Cl. 206-222.000.

Orthman, Henry, to Orthman Manufacturing, Inc. Seedbed splitter and shaper. 3,870,108, Cl. 172-722.000.

Orthman, Henry K., to Orthman Manufacturing, Inc. Tool bar lift assist wheel. 3,870,107, Cl. 172-413.000.

Orthman Manufacturing, Inc.: *See—*
Orthman, Henry, 3,870,108.
Orthman, Henry K., 3,870,107.

Osako, Naoto: *See—*
Kamo, Seiichi; Yanai, Noriyoshi; and Osako, Naoto, 3,870,755.

Osborne, George H., to R. E. Miller Pty. Limited. Base mounting for instruments and machines to be tilted. 3,870,265, Cl. 248-183.000.

Oshima, Shozo: *See—*
Tanaka, Kyugo; Oshima, Shozo; and Watanabe, Itaru, 3,870,760.

Ota, Isao; and Otsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Color image reproduction sheet employed in photoelectrophoretic imaging. 3,870,517, Cl. 96-1.500.

Otsuka, Tetsuro: *See—*
Ota, Isao; and Otsuka, Tetsuro, 3,870,517.

Ott, Helmut: *See—*
Ruchser, Erich; and Ott, Helmut, 3,870,073.

Otto Durr, Anlagen fur Oberflachentechnik, Firma: *See—*
Schneider, Ing. Udo U., Dr., 3,870,016.

Outboard Marine Corporation: *See—*
Larsen, Robert T., 3,869,848.
Larsen, Robert T., 3,870,117.
Payne, Guy D., 3,870,379.
Shimanckas, William J.; and Beem, W. Wayne, 3,870,258.

Ouvrier, Gunther, to Telefonaktiebolaget L M Ericsson. Emergency switching equipment for broadband transmission. 3,870,955, Cl. 325-2.000.

Ovchinnikov, Gennady Elizarovich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.

Overkott, Franz Josef, to Peddinghaus, Carl Ullrich, Dr. Gland assembly. 3,870,381, Cl. 308-3.500.

Owatonna Tool Company: *See—*
Steinberg, Richard W.; McClocklin, Samuel B.; and Kostelecky, Clarence L., 3,869,978.

Owens-Corning Fiberglas Corporation: *See—*
Workman, Gerald B.; and Deardurff, Lawrence R., 3,870,547.

Owens-Illinois Inc.: *See—*
Fuchs, Thomas D.; and Micka, John J., 3,870,184.

Oxy Metal Finishing Corporation: *See—*
Meyer, Norbert; Oei, Han Yong; Rausch, Werner; and Schneider, Horst, 3,869,894.
Smith, Colin, 3,870,573.

P.X. Industries, Inc.: *See—*
MacDonald, Paul M., 3,870,266.

Packaging Corporation of America: *See—*
Zeitter, Charles R., 3,870,221.

Packautomatic GmbH & Co. K.G., Firma: *See—*
Timmerbeil, Karl-Ernst, 3,869,846.

Pagdin, Brian Colin: *See—*
Webb, Oswald; and Pagdin, Brian Colin, 3,869,940.

Palmer, Bertram Joseph: *See—*
Davies, John Hazlewood; Palmer, Bertram Joseph; and Fisher, Leslie George, 3,869,878.

Palmer, Nigel Innes; and Sugarman, Nathan, to W. R. Grace & Co. Battery separator manufacturing process. 3,870,567, Cl. 136-148.000.

Palspros, Inc.: *See—*
Georgi, Walter L., 3,870,182.

Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich. Method and apparatus for extending life period of furnace roofs. 3,869,996, Cl. 110-99.00R.

Pangburn, William Walrath, to General Electric Company. Mounting means for standardized dynamoelectric machines. 3,870,909, Cl. 310-91.000.

Pao Chen, Paul Chuan. Piling system. 3,869,869, Cl. 61-53.640.

Paper, Calmenson & Co.: *See—*
Reinhardt, Paige J.; and Olson, Fred A., 3,870,853.

Paper Converting Machine Company: *See—*
Bradley, John J., 3,870,292.

Paradyne Corporation: *See—*
Saliga, Thomas V., 3,870,828.

Parker, Robert W.: *See—*
Percival, Eric R.; and Parker, Robert W., 3,870,075.

Pascale, John V.: *See—*
Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,870,800.

Pasedach, Heinrich; and Friederang, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of piperitenone. 3,870,761, Cl. 260-586.00C.

Paterson, Stephen, to Cutting Room Appliances Corp. Phase shifting device for cloth laying carriage. 3,870,290, Cl. 270-30.000.

Patrick, Malcolm W.; and Adams, Joseph W., to Bettcher Manufacturing Corporation. Oil-fired radiant space heater. 3,870,052, Cl. 126-91.00R.

Patterson International Corporation: *See—*
Patterson, Lawrence T., Jr., 3,870,303.

Patterson, Lawrence T., Jr., to Patterson International Corporation. Soccer table with goal and penalty opening. 3,870,303, Cl. 273-85.00D.

Patton, Stuart: *See—*
Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,870,800.

Patton, Tad L., to Exxon Research and Engineering Company. Selective hydroperoxidation of polyolefins in an aqueous slurry. 3,870,692, Cl. 260-93.700.

Patzke, Robert C.; and Goebel, Joseph, to Addressograph-Multigraph Corporation. Brake assembly. 3,870,981, Cl. 335-296.000.

Paul Forkardt Kommanditgesellschaft: *See—*
Beckers, Heinz, 3,870,323.

Paul, Harald: *See—*
Bausch, Gunther; Millauer, Christian; and Paul, Harald, 3,870,285.

Paulson, Elmir Edward, to General Electric Company. Gear arrangement for variable pitch fan. 3,870,434, Cl. 416-160.000.

Paviak, Stanley C., to Gulf Research & Development Company. Method of cleaning hair. 3,870,660, Cl. 252-545.000.

Paxton, Ruby: *See—*
Chase, Bert, 3,869,972.

Payne, Guy D., to Outboard Marine Corporation. Endless traction assembly. 3,870,379, Cl. 305-35.0EB.

Pearlstein, Fred; and Weightman, Robert F., to United States of America, Army. Electroless deposition of copper and copper-tin alloys. 3,870,526, Cl. 106-1.000.

Pechiney Ugine Kuhlmann: *See—*
Grimaud, Edouard; and Tournut, Claude, 3,870,691.
Grimaud, Edouard; and Troussier, Maurice, 3,870,767.

Pechmann, Karl: *See—*
Mackey, E. Scudder; Pechmann, Karl; and Tritten, Donald E., 3,870,521.

Peddinghaus, Carl Ullrich, Dr.: *See—*
Overkott, Franz Josef, 3,870,381.

Pedersen, Niels P.; and Shabel, John M., to General Electric Company. Inverter system having smooth switching between operational modes. 3,870,945, Cl. 321-9.00A.

Peitz, Josef, Jr. Composite stone arrangement for pavements. 3,870,423, Cl. 404-41.000.

Pennington, Robert E.: *See—*
Arnold, George T.; Hochman, Jack M.; and Pennington, Robert E., 3,870,621.

Pennsylvania Research Associates Inc.: *See—*
Jones, Alan P., 3,870,868.

Penrod, William R., to Beloit Corporation. Cooled deckle for die structure. 3,870,454, Cl. 425-466.000.

Peoples, Dennis Robert; and Maack, David Ralph, to Times Wire and Cable Companay. Radiating coaxial cable. 3,870,977, Cl. 333-84.00R.

Pera, Jaime Ernesto: *See—*
Rypinski, Chandos Arthur; and Pera, Jaime Ernesto, 3,870,958.

Percival, Eric R.; and Parker, Robert W., to Reed International Limited. Mixer taps. 3,870,075, Cl. 137-606.000.
Perkinson, Leon R.: *See—*
  Moore, Francis C.; and Perkinson, Leon R., 3,870,639.
Perl, Richard L., to Tappan Company, The. Blue flame gas smooth top range. 3,870,457, Cl. 431-66.000.
Permutit Company, Inc., The: *See—*
  Beach, William A.; and Schlauch, Richard M., 3,869,903.
Perri, Joseph, to Aetna Business Credit, Inc. Self-inverting hot top casing. 3,870,273, Cl. 249-202.000.
Perry, Robert J., to Phillips Petroleum Company. Method for creating inert gas barrier for product feed conduit. 3,869,807, Cl. 34-33.000.
Pesaro, Mario: *See—*
  Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,870,659.
Pet Incorporated: *See—*
  Driscoll, Robert R., 3,869,971.
Peters, Walter B.: *See—*
  Afflerbach, Frank D.; Barnett, Irvin; and Peters, Walter B., 3,870,581.
Peterson, John A.: *See—*
  Minklei, Alfred O.; and Peterson, John A., 3,870,554.
Peterson Machine Tool, Inc.: *See—*
  Vaughan, Merle E., 3,869,803.
Peterson, William R.; and Johnson, Walter N., to GAF Corporation. Graft copolymer of ethylenically unsaturated carboxylic acids onto a substrate of poly-n-vinyl lactams. 3,870,770, Cl. 260-879.000.
Petzetakis, Nicholas George, to Unifoam AG. Production of polymeric foam. 3,870,441, Cl. 425-4.00C.
Peyrard, Yves; and Renault, Jean-Claude, to Thomson-CSF. Magnetron with an improved tuning mechanism. 3,870,923, Cl. 315-39.550.
Pezzino, Carmine. Hair roller. 3,870,057, Cl. 132-39.000.
Pfizer Inc.: *See—*
  Abu El-Haj, Marwan J., 3,870,718.
  Hamanaka, Ernest S., 3,870,709.
  Hamanaka, Ernest S., 3,870,713.
Philip Morris Incorporated: *See—*
  Kraft, Gerald A., 3,870,070.
Phillips, David P., to Wildwood Products, Inc. Stabilizing jack. 3,870,276, Cl. 254-86.00R.
Phillips Petroleum Company: *See—*
  Brown, Terry D.; Delap, Joseph A.; and Nasser, Benny E., Jr., 3,870,656.
  Campbell, Robert W., 3,870,686.
  Campbell, Robert W., 3,870,687.
  Gichowski, Robert S.; and Farha, Floyd E., Jr., 3,870,764.
  Heckelsberg, Louis F.; and Banks, Robert L., 3,870,763.
  Henderson, Eulas W., 3,870,785.
  Johnson, Lewis T., 3,870,151.
  Perry, Robert J., 3,869,807.
  Pitzer, Emory W., 3,870,657.
  Seefluth, Charles L., 3,870,446.
Picard, Roger: *See—*
  Burdick, Steve; and Picard, Roger, 3,870,333.
Pickstone, William Frank, to Redman Fisher Engineering Limited. Conveyor. 3,869,989, Cl. 104-94.000.
Pickarski, Gottfried, to Wacker-Chemie GmbH. Process and catalyst for increasing the molecular weight of low-pressure polyethylene. 3,870,654, Cl. 252-429.00B.
Pierce, Philip F. Belt tensioning tool. 3,869,934, Cl. 74-242.120.
Pierson, Henri Gerhard Willem. Horizontal belt filters. 3,870,641, Cl. 210-400.000.
Pilkington Brothers Limited: *See—*
  Crook, Peter John; and Riley, Stephen Philip, 3,870,661.
Piller, Bernhard, to Ciba-Geigy AG. S-triazine derivatives as ultraviolet protecting agents. 3,870,519, Cl. 96-51.000.
Pilot Man-Nev-Hitsu Kabushiki Kaisha: *See—*
  Watanabe, Akio; and Murata, Yasuzo, 3,870,435.
Pinckney Molded Plastics, Inc.: *See—*
  Sanders, Ellsworth E.; and Kreeger, Elsmer W., 3,870,185.
Pines, Seemon H.: *See—*
  Tull, Roger J.; Czaja, Robert F.; Shuman, Richard F.; and Pines, Seemon H., 3,870,753.
Pingon, Pierre Joseph. Telescopic boom and carriage with shiftable wheels therefor. 3,870,163, Cl. 212-73.000.
Pioneer Electronic Corporation: *See—*
  Kinoshita, Showzo, 3,870,833.
Pipkins, David D., to Valspar Corporation The. Carbonated organic solvent. 3,870,651, Cl. 252-364.000.
Pirner, Hans G., to Gillette Company, The. Gauging apparatus. 3,869,802, Cl. 33-174.00L.
Pitney-Bowes, Inc.: *See—*
  Hubbard, David W., 3,869,986.
  Uthenwoldt, Frederick W., 3,869,885.
Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., to International Flavors & Fragrances, Inc. Foodstuff flavored with 4-(methylthio)butane derivatives. 3,870,800, Cl. 426-65.000.
Pitzer, Emory W., to Phillips Petroleum Company. Alumina-supported catalysts having substantial area in large pores. 3,870,657, Cl. 252-464.000.
Plaister, John Edward; and Cole, Leonard Edward, to Taylor & Challen Limited. Coining press. 3,869,893, Cl. 72-39.000.
Plasse, Paul A.: *See—*
  Brackett, Robert D.; and Plasse, Paul A., 3,870,582.

Plasser, Franz, deceased (A-1010, by said Erna Plasser, heir); Theurer, Josef; and Schubert, Egon. Track surveying apparatus. 3,869,907, Cl. 73-146.000.
Plempel, Manfred: *See—*
  Jager, Gerhard; Plempel, Manfred; and Buchel, Karl Heinz, 3,870,726.
Ploeckl, Johann, to Zellweger AG. Optical scanner mechanism. 3,870,394, Cl. 350-7.000.
Ploger, Walter: *See—*
  Wollmann, Klaus; Ploger, Walter; and Wopms, Karl-Heinz, 3,870,750.
Plum, Hans; and Runggas, Friedrich, to Schering AG. Method for making organotin thioglycollic acid esters. 3,870,736, Cl. 260-429.700.
Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., to Gulf Research & Development Company. Method for reducing the mercaptan content of a middle distillate oil. 3,870,626, Cl. 208-216.000.
Polaroid Corporation: *See—*
  Brackett, Robert D.; and Plasse, Paul A., 3,870,582.
  Burke, Edward F.; and Holmes, Douglas B., 3,871,013.
  Whall, James M., 3,871,010.
Polazzi, Joseph Odo: *See—*
  Kotick, Michael Paul; and Polazzi, Joseph Odo, 3,870,700.
Politechnika Gdanska Instytut Chemii i Technologii Organicznej Oraz Zywnosciowej: *See—*
  Gruszecki, Wojciech; Taszer, Emil; and Borowski, Edward, 3,870,708.
Polk, Isaac H., to Kuhn, Harold C., a part interest. Foil dispenser. 3,870,212, Cl. 225-42.000.
Polk, Jack D., Jr.: *See—*
  Almich, Clarence L.; Polk, Jack D., Jr.; and Aulick, Robert A., 3,870,839.
Pollmann, Fritz, to Siemens Aktiengesellschaft. Electrical contact carrier for electrical circuit breakers. 3,870,980, Cl. 335-202.000.
Poly-Version, Inc.: *See—*
  Hummel, John, 3,870,150.
Polysius AG: *See—*
  Korting, Reinhard; and Kluger, Alois, 3,870,100.
Polyurcon Limited: *See—*
  MacMillan, Donald Stuart; and Churchward, Leonard, 3,869,744.
Pont-A-Mousson S. A.: *See—*
  Vigneron, Pierre, 3,870,064.
Post Office, The: *See—*
  Matthews, Oliver Charles, 3,870,822.
Potter Instrument Company, Inc.: *See—*
  Gabor, Andrew, 3,870,870.
Potts, Bobby K.: *See—*
  Lomax, Harold R.; and Potts, Bobby K., 3,870,429.
Pourrias, Bernard M.: *See—*
  Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,870,728.
Powell, Richard G.; and Smith, Cecil R., Jr., to United States of America, Agriculture. Production of harringtonine and isoharringtonine. 3,870,727, Cl. 260-326.500.
Powers, Donald; and Washechek, Delmar. Bird decoy. 3,869,823, Cl. 43-3.000.
Poynter, Donald B. Remotely actuated sound reproducing device. 3,870,318, Cl. 274-9.00R.
Prahl, Herman. Tumbler mechanism for cylinder lock. 3,869,889, Cl. 70-419.000.
Prahl, Herman. Drop bolt snap latch locking mechanism. 3,870,354, Cl. 292-116.000.
Pratt, George W., Jr., to Massachusetts Institute of Technology. High-frequency phonon generating apparatus and method. 3,871,017, Cl. 357-26.000.
Pray, Lester W.; and Anderson, Gordon C., to Saco-Lowell Corporation. Apparatus for and method of feeding bobbin tubes. 3,870,195, Cl. 221-225.000.
Precision Mechanisms Corporation: *See—*
  Canick, Leon N.; and Aldrich, Charles S., 3,870,224.
Prepejchal, William: *See—*
  Oltman, Billie G.; Eckerman, Keith F.; Romberg, Gerald P.; and Prepejchal, William, 3,869,918.
Presser, Karl-Heinz; and von der Decken, Claus-Benedict, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of determining the temperature of a high-temperature installation and a temperature-indicating body. 3,869,919, Cl. 73-358.000.
Presto Lock Company: *See—*
  Feinberg, Irvin, 3,870,206.
Price, George M., to Frymaster Corporation, The. Control system for frying apparatus. 3,870,859, Cl. 219-437.000.
Privalov, Mikhail Moiseevich: *See—*
  Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
Pro-Tech Inc.: *See—*
  Irwin, Malcolm F., 3,869,921.
Production, Inc.: *See—*
  Schmidt, Gunter, 3,870,889.
Prost, Roger: *See—*
  Gardent, Maurice; Michalak, Wadislaw; and Prost, Roger, 3,869,876.

Pulk, Elgas, deceased (by Hallsenius, Carlgustaf, administrator); and Noren, John Paul, to Stabilator AB. Drilling apparatus especially for ground drilling. 3,870,114, Cl. 175-258.000.
Purcco Systems, Inc.: *See—*
  Kearns, Tommy Carter; and Stoltenberg, Donald A., 3,870,585.
Puschel, Siegfried: *See—*
  Abels, Theodor; and Puschel, Siegfried, 3,870,935.
Puyplat, Olivier, to Cibie Projecteurs. Motor vehicle headlamp. 3,870,876, Cl. 240-41.00R.
Pye, David S.: *See—*
  Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., 3,870,668.
Pye Limited: *See—*
  Hutchings, Bernard David Francis, 3,870,160.
Quehen, Andre, to SECIM. Roll changing device for a mill or a similar machine. 3,869,898, Cl. 72-239.000.
Quillevere, Herve Alain: *See—*
  Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; Cantaloube, Bernard Andre; and Caruel, Jacques Emile Jules, 3,869,865.
Quitman, Myron A. Grill for making sealed toasted sandwiches. 3,869,973, Cl. 99-426.000.
R. E. Miller Pty. Limited: *See—*
  Osborne, George H., 3,870,265.
Raab, Stephan: *See—*
  Kreuz, Otto; and Raab, Stephan, 3,870,097.
Rabasse, Jean, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Digital logic frequency control loop for multivibrator composed of two monostable elements. 3,870,969, Cl. 331-1.00A.
Rack-More Shelf Co.: *See—*
  Hayward, Donald M., 3,870,157.
Racki, Jerome G.; and Thiel, Frank L., to Corning Glass Works. Optical coupler. 3,870,396, Cl. 350-96.0WG.
Radler, Richard W.: *See—*
  Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 3,870,516.
Ragazzini, Mario: *See—*
  Modena, Mario; Ragazzini, Mario; Borsini, Giancarlo; and Valera, Marco, 3,870,689.
Raginsky, Leonid Solomonovich: *See—*
  Karpacheva, Susanna Mikhailovna; Karkhachev, Jury Georgievich; Muratov, Valeryan Matveevich; and Raginsky, Leonid Solomonovich, 3,870,638.
Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; and Samoilovsky, Igor Vasilievich. Worm pump. 3,870,433, Cl. 415-72.000.
Raines, Kenneth: *See—*
  Burke, George K.; and Raines, Kenneth, 3,870,044.
Rajaratnam, Krishna: *See—*
  Huey, Richard Meredith; and Rajaratnam, Krishna, 3,870,925.
Ralston Purina Company: *See—*
  Boyer, Robert A.; and Middendorf, John E., 3,870,808.
Ranco Incorporated: *See—*
  Attridge, Russell G., Jr., 3,870,227.
Randall, David I.; and Wynn, Robert W., to GAF Corporation. 2-Chloroethyl-phosphonothioic esters and thioesters. 3,870,772, Cl. 260-961.000.
Randall, Lyman J.; and Seward, Thomas P., III, to Corning Glass Works. Pseudo-fiber optic devices. 3,870,399, Cl. 350-96.00B.
Rannev, Alexandr Vladimirovich; Reish, Arvid Karlovich; Svirsky, Viktor Alexandrovich; and Khodykin, Boris Danilovich. Excavator with a dragline equipment. 3,869,814, Cl. 37-116.000.
Rau, Robert J., to Aetna-Standard Engineering Company. Shear apparatus. 3,869,948, Cl. 83-286.000.
Rausch, Karl W., Jr.: *See—*
  Farrissey, William J., Jr.; and Rausch, Karl W., Jr., 3,870,674.
Rausch, Werner: *See—*
  Meyer, Norbert; Oei, Han Yong; Rausch, Werner; and Schneider, Horst, 3,869,894.
Rauterkus, Karl Josef; and Blazek, Jan, to Hoechst Aktiengesellschaft. Process for the preparation of polymer dispersions of a vinyl ester-ethylene-an acrylamide being free from emulsifiers. 3,870,673, Cl. 260-29.60A.
Ravenna, Franco: *See—*
  Carissimi, Massimo; and Ravenna, Franco, 3,870,720.
Raymond, A.: *See—*
  Raymond, Alain, 3,869,766.
Raymond, Alain, to Raymond, A. Plastic snap fastener. 3,869,766, Cl. 24-216.000.
Raynaud, Guy M.: *See—*
  Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert Y.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,870,728.
RCA Corporation: *See—*
  Bingham, Joseph Peter, 3,871,019.
  Dingwall, Andrew Gordon Francis, 3,870,966.
  Hanson, Richard Eric; and Fineman, Howard Eisen, 3,870,954.
  Rypinski, Chandos Arthur; and Pera, Jaime Ernesto, 3,870,958.
  Stave, Fredrick Roland, 3,870,835.
  Torrington, Leslie Albert, 3,870,320.
  Wilber, James Albert, 3,871,020.
Readal, Thomas C.: *See—*
  Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,870,626.
Recycle Pallets Inc.: *See—*
  Spencer, Kenneth M., 3,869,783.
Red Cross Manufacturing Corporation, The: *See—*
  Lautzenheiser, Robert D.; and Ullman, Howard M., Jr., 3,870,239.

Redling, Anthony E. Tethered pins bowling game apparatus. 3,870,302, Cl. 273-44.000.
Redman Fisher Engineering Limited: *See—*
  Pickstone, William Frank, 3,869,989.
Reece, Thomas L., to Dover Corporation. Filter with vibration of screen. 3,870,640, Cl. 210-388.000.
Reed International Limited: *See—*
  Percival, Eric R.; and Parker, Robert W., 3,870,075.
Regie Nationale Des Usines Renault: *See—*
  Guenot, Rene, 3,870,430.
  Vignaud, Jean-Pierre; and Leguy, Bernard, 3,869,946.
Reichhold-Albert Chemie Aktiengesellschaft: *See—*
  Becker, Wilhelm, 3,870,666.
  Hofel, Heinz-Bernard; Kiessling, Hans-Joachim; Lampert, Fred; and Kuhr, Johann, 3,870,669.
  Hofel, Heinz-Bernhard; Kiessling, Hans-Joachim; Lampert, Fred; and Kuhr, Johann, 3,870,670.
Reilly, Jerry. Magnetic target and disc surface projectile game apparatus. 3,870,308, Cl. 273-126.00A.
Reinhard, Willy, to Gebruder Seidel KG. Container construction for mascara and like substances. 3,870,186, Cl. 220-212.000.
Reinhardt, Hans: *See—*
  Liljenzin, Jan-Olov; Reinhardt, Hans; and Rydberg, Helge Jan Arnold, 3,870,060.
Reinhardt, Paige J.; and Olson, Fred A., to Paper, Calmenson & Co. Traveling welding machine. 3,870,853, Cl. 219-125.000.
Reinhoudt, Jacobus Pieter, to U. S. Philips Corporation. Axial bearing. 3,870,382, Cl. 308-9.000.
Reish, Arvid Karlovich: *See—*
  Rannev, Alexandr Vladimirovich; Reish, Arvid Karlovich; Svirsky, Viktor Alexandrovich; and Khodykin, Boris Danilovich, 3,869,814.
Reisman, Howard. Tubular carton. 3,870,219, Cl. 229-4.500.
Rellstab, Werner; and Steiner, Hans, to Mettler Instrumente AG. Method and apparatus for automatic titration. 3,870,466, Cl. 23-230.00R.
Remy, Dennis K., to Gorman-Rupp Company, The. Air release valve for self-priming pumps. 3,870,436, Cl. 417-299.000.
Renault, Jean-Claude: *See—*
  Peyrard, Yves; and Renault, Jean-Claude, 3,870,923.
Rennecker, David B.: *See—*
  Boyd, Wilton E.; and Rennecker, David B., 3,869,751.
Renz, Albrecht: *See—*
  Adam, Fritz Gunter; and Renz, Albrecht, 3,869,786.
Republic Electronics Industries Corporation: *See—*
  Biagi, Alvaro D.; and Luganski, Dimitri, 3,870,993.
Research Corporation: *See—*
  Faulkner, Raymond Noel, 3,870,664.
Reserve Mining Company: *See—*
  Tuomela, Robert M.; Schroeder, Gustave W.; and Mattila, Robert O., 3,870,111.
Resnik, Bernard S.: *See—*
  Senk, Herman W.; and Resnik, Bernard S., 3,869,763.
Rexnord Inc.: *See—*
  Dieringer, Andrew M., 3,869,805.
Reynolds, Lester A. Fishing rod holder. 3,870,259, Cl. 248-43.000.
Rheintechnik Weiland & Kaspar OHG: *See—*
  Weiland, Werner, 3,870,049.
Rhone-Poulenc S.A.: *See—*
  Bost, Pierre-Etienne; Costantini, Michel; and Lartigau, Guy, 3,870,729.
  Bourat, Guy, 3,870,617.
Richards, Kenneth Julian: *See—*
  Wright, Craig Nellis; and Richards, Kenneth Julian, 3,870,779.
Richards Manufacturing Company: *See—*
  Treace, Harry T., 3,869,795.
Richards, Peter Henry: *See—*
  Jack, Harry Ross Scarlett; Richards, Peter Henry; and Skelding, Kenneth George, 3,870,500.
Richardson-Merrell Inc.: *See—*
  Grisar, J. Martin; and Claxton, George P., 3,870,723.
Richmond, Albert R.; and Appleman, William S., to Richmond Manufacturing Company, The. Power train for horizontal earth boring machine. 3,870,110, Cl. 173-163.000.
Richmond Manufacturing Company, The: *See—*
  Richmond, Albert R.; and Appleman, William S., 3,870,110.
Richter, Harold L. Motor piston tube cleaner. 3,869,747, Cl. 15-104.10R.
Richter, Herbert. Tape slitting and metering device. 3,869,999, Cl. 112-121.260.
Ricoh Co. Ltd.: *See—*
  Abe, Takeshi, 3,870,409.
  Abe, Takeshi, 3,870,410.
  Sato, Yostbumi; and Ogura, Masaaki, 3,870,138.
Ridgeway, Ralph H. Rocker arm stud support device. 3,870,024, Cl. 123-90.410.
Riedel, Klaus: *See—*
  Kall, Horst; and Riedel, Klaus, 3,870,493.
Riedel, Oswald: *See—*
  Koehler, Waldemar; Riedel, Oswald; Scherer, Hertbert; and Schlereth, Georg, 3,869,914.
Riedy, Charles H.: *See—*
  Duncan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., 3,870,375.
Riley, Stephen Philip: *See—*
  Crook, Peter John; and Riley, Stephen Philip, 3,870,661.

Ringeman, Othmar E.: *See—*
Hill, Robert L.; and Ringeman, Othmar E., 3,870,393.
Riordan, Hugh E., to Kelsey-Hayes Company. Skid control system. 3,870,376, Cl. 303-21.00P.
Rittberg, Eilt-Heyo, to Olympia Werke AG. Ink drop writing head. 3,871,004, Cl. 346-75.000.
Ritzler, Bo, to AB Filtrator. Separating arrangement. 3,870,483, Cl. 55-192.000.
Rivetta, Gianfranco; and Marcotti, Egidio, to Societa Italiana Telecomunicazioni Siemens S.p.A. Switch pushbutton-type digit keyboard switch with leaf spring contract and actuator biasing means on common conductive frame. 3,870,840, Cl. 200-5.00A.
Rizzi, Marc A.: *See—*
Hold, Peter; Notte, Angelo J.; and Rizzi, Marc A., 3,870,445.
Robert Bosch GmbH: *See—*
Fussner, Paul, 3,870,910.
Wurst, Bert, 3,870,119.
Robert Bosch Photokino GmbH: *See—*
Nebbia, Rodolfo, 3,870,406.
Robert, Michel, to Engins Matra. Method for controlling acceleration and deceleration of a traction motor. 3,870,939, Cl. 318-611.000.
Roberts, Gordon J., to Ferro Corporation. Catalytic amorphous glass fibers. 3,870,530, Cl. 106-50.000.
Roberts, Jeffrey A.: *See—*
Klingler, Richard E.; and Roberts, Jeffrey A., 3,870,005.
Roberts, Robert C; and Alcorn, Edward B., to Engineered Devices Company. Time-division multiplex communication system. 3,870,825, Cl. 179-15.0AL.
Roberts, William Elwyn: *See—*
Naybour, Robert Douglas; Farrell, Trevor; and Roberts, William Elwyn, 3,870,848.
Robertshaw Controls Company: *See—*
Hendrick, Fred W., 3,870,458.
Manecke, Siegfried E., 3,870,229.
Robinson, Christopher Thomas. Stowage of vehicles. 3,869,991, Cl. 105-368.00R.
Robinson, John W.: *See—*
Hayes, Lester P.; Robinson, John W.; Simms, Ross P.; and Russell, Millard E., 3,870,805.
Robinson, Michael; Wilson, Harry Brian; and Gray, David Antony, to Laporte Industries Limited. Beneficiation of ores. 3,870,506, Cl. 75-1.000.
Robinson, William I. Stand. 3,870,264, Cl. 248-171.000.
Rock Industries Machinery Corporation: *See—*
Tylinski, Raymond S., 3,870,630.
Rockwell International Corporation: *See—*
Hallford, Ben R.; and Wright, Charles H., 3,870,960.
Stoffer, Cornelis Daniel, 3,870,899.
Rodach, Alexander; and Weber, Hans, to Ungerer, Frau Irma. Upcoiler for coiling a plurality of strips. 3,869,845, Cl. 53-137.000.
Rogalski, Werner: *See—*
Kirchlechner, Richard; Rogalski, Werner; and Seubert, Jurgen, 3,870,757.
Roger Boatman & Associates, Inc.: *See—*
Boatman, Roger M.; and Hall, Melvin R., 3,870,953.
Rogers, Lucious E. Knockdown furniture. 3,870,366, Cl. 297-440.000.
Rogozhin, Sergei Vasilievich: *See—*
Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.
Rohlfing, Raymond A., to Gates Rubber Company, The. Method of preparing a bias fabric. 3,870,478, Cl. 29-2.100.
Rohm GmbH: *See—*
Fink, Herbert; Munzer, Manfred; and Dinklage, Horst, 3,870,557.
Rohm and Haas Company: *See—*
Clemens, David H.; and Hamann, Herman C., 3,870,663.
Hurwitz, Melvin D., 3,870,590.
Miller, George A.; and Weiler, Ernest D., 3,870,795.
Rohr, Wolfgang: *See—*
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,870,740.
Rohrer, Wesley M., Jr.: *See—*
Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,870,078.
Roland Offsetmaschinenfabrik & Schleicher AG.: *See—*
Simeth, Claus, 3,870,293.
Rolls-Royce (1971) Limited: *See—*
Bartlett, Christopher Leslie; and Willis, Peter Charles, 3,869,800.
Romashko, Nikolai Ivanovich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Nikolaev, Vyacheslav Pavlovich; and Odnodushny, Viktor Alexeevich, 3,869,776.
Romberg, Gerald P.: *See—*
Oltman, Billie G.; Eckerman, Keith F.; Romberg, Gerald P.; and Prepejchal, William, 3,869,918.
Ronalds, Hugh C. Teaching machine. 3,869,810, Cl. 35-9.00C.
Rongved, Leif: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,870,416.
Ross-Holm, division of Holm Tractor & Equipment Company: *See—*
Nederbragt, Frits W., 3,870,021.
Rossbach, Peter G.: *See—*
Hunnicutt, Wayne E.; and Rossbach, Peter G., 3,869,767.
Roth, John F.: *See—*
Lose, John G.; and Roth, John F., 3,869,927.
Rotographic Machinery Company, The: *See—*
Steinmetz, Floyd; and Thoms, William F., 3,869,985.
Rotter, Erhard F., to Arendt, Hans F. Continuous washing machine. 3,869,883, Cl. 68-58.000.
Roussel-Uclaf: *See—*
Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,870,710.
Martel, Jacques; Buendia, Jean; and Toromanoff, Edmond, 3,870,711.
Rowe, Horace N. Pickup mount for stringed musical instruments. 3,869,952, Cl. 84-1.160.
Rowman, Philip J. Magnetically indexed rotating disks chance device. 3,870,313, Cl. 273-143.00C.
Rozner, Allan, to C. J. I. Industries, Inc. Integral jack strip for pattern wheel knitting machines. 3,869,880, Cl. 66-50.00A.
Ruben, Samuel. Hermetically sealed storage battery. 3,870,563, Cl. 136-26.000.
Rubin, Philip Edward: *See—*
Corwin, Walter Leo; Keeler, Robert Emerson; and Rubin, Philip Edward, 3,870,838.
Ruchser, Erich; and Ott, Helmut, to Technomatic A.G. Valve assembly for controlling fluid pressure operated apparatus particularly presses. 3,870,073, Cl. 137-596.160.
Rudkov, Gennady Demyanovich: *See—*
Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
Runggas, Friedrich: *See—*
Plum, Hans; and Runggas, Friedrich, 3,870,736.
Rusk, Gerald; and Koch, Robert E., to Freeman Supply Company, The. Guide bushing. 3,870,092, Cl. 151-14.00R.
Russell, Millard E.: *See—*
Hayes, Lester P.; Robinson, John W.; Simms, Ross P.; and Russell, Millard E., 3,870,805.
Rust, Kurt: *See—*
Gordon, Wolfgang; Rust, Kurt; and Schrott, Erwin, 3,870,690.
Rutman, Dmitry Samuilovich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiscevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.
Ruygrok, Albertus Pieter, to GAF Corporation. Ink receiving matte sheet materials overcoated with an alkyl monoester of poly (alkyl vinyl ether-maleic acid). 3,870,549, Cl. 117-73.000.
RVL Industries, Inc.: *See—*
Large, Richard L., 3,870,362.
Ryan, James Ernest: *See—*
Castro, Roger Albert; Orman, Richard John; and Ryan, James Ernest, 3,870,775.
Rybalko, Alexei Petrovich; Karpekin, Viktor Vladimirovich; Didenko, Nikolai Sidorovich; and Volokhov, Ivan Ivanovich. Gas and heat protective garment. 3,869,871, Cl. 62-178.000.
Rydberg, Helge Jan Arnold: *See—*
Liljenzin, Jan-Olov; Reinhardt, Hans; and Rydberg, Helge Jan Arnold, 3,870,060.
Rygiol, Henry V. Multi-arc pipe welding. 3,870,849, Cl. 219-60.00A.
Rypinski, Chandos Arthur; and Pera, Jaime Ernesto, to RCA Corporation. Circuit for applying data signals across a microphone input circuit. 3,870,958, Cl. 325-155.000.
S. Madill Ltd.: *See—*
Burley, Murray E., 3,870,158.
Sachs, Hanns Immo: *See—*
Diehr, Hans-Joachim; Kraft, Karl-Josef; and Sachs, Hanns Immo, 3,870,665.
Saco-Lowell Corporation: *See—*
Pray, Lester W.; and Anderson, Gordon C., 3,870,195.
Savageau, Richard J.; and Anderson, Gordon C., 3,869,759.
Sadoski, Tadius T.: *See—*
Latassa, Frank M.; Milke, Howard W.; and Sadoski, Tadius T., 3,869,772.
Saeman, Walter C., to Olin Corporation. Sodium bicarbonate production. 3,870,784, Cl. 423-422.000.
Sage Action Inc.: *See—*
Hale, Richard W.; Tan, Patrick; Stowell, Richard C.; and Ordway, Donald E., 3,869,909.
Sage, George H. Back scrubber, massager and lotion applicator. 3,870,419, Cl. 401-8.000.
Sahagun-Barragan, Jaime. Dripping irrigation tubing. 3,870,236, Cl. 239-542.000.
Saito, Bunjiro: *See—*
Miyauchi, Rin-Ichi; Saito, Bunjiro; and Ikeda, Kyoichi, 3,869,920.
Sakai, Junji: *See—*
Okumoto, Takeomi; Ueda, Hiroshi; Sakai, Junji; and Shimada, Yogo, 3,870,529.
Sakamoto, Minoru. Combination solar and manual distiller and rain catcher. 3,870,605, Cl. 202-234.000.

Salem Corporation: *See—*
Wilt, Charles R., Jr., 3,870,604.
Saliga, Thomas V., to Paradyne Corporation. Superimposed binary signal. 3,870,828, Cl. 179-15.0BY.
Salzer, Erwin, to Chase-Shawmut Company, The. High-voltage fuse with plugs of sheet metal. 3,870,984, Cl. 337-161.000.
Samoilovsky, Igor Vasilievich: *See—*
Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; and Samoilovsky, Igor Vasilievich, 3,870,433.
Sanders Associates, Inc.: *See—*
Mallet, Alfred L., 3,870,989.
Sanders, Ellsworth E.; and Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Collapsible container. 3,870,185, Cl. 220-6.000.
Sanderson, Robert H.: *See—*
Noble, Donald E.; and Sanderson, Robert H., 3,870,170.
Sandler, Joseph Jacob: *See—*
Wallick, Seymour Dudley; and Sandler, Joseph Jacob, 3,869,750.
Sandorf, Robert E., to Nordson Corporation. Quick connect modular voltage multiplier. 3,870,946, Cl. 321-15.000.
Sandoz-Wander, Inc.: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,870,722.
Houlihan, William J.; and Nadelson, Jeffrey, 3,870,751.
Houlihan, William J.; and Nadelson, Jeffrey, 3,870,752.
Sangster, Arlon G.: *See—*
Tepas, Joseph J., Jr.; and Sangster, Arlon G., 3,870,471.
Sanjo, Sadao: *See—*
Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi, 3,870,637.
Sanrama Padro, Ramon: *See—*
Castany Ferre, Jose; and Sanrama Padro, Ramon, 3,870,000.
Sanyo Electric Co., Ltd.: *See—*
Nakamoto, Soji, 3,871,025.
Sarkisov, Rafael Tevosovich; Stepanian, Ernst Arakelovich; and Bondarenko, Valentin Grigorievich. Metal strip coil changing device. 3,870,244, Cl. 242-80.000.
Sarnoff, Stanley J., to Survival Technology, Inc. Method and apparatus for self-administering pre-hospital phase treatment of coronary prone individuals in the early minutes or hours after the onset of heart attack symptoms. 3,870,035, Cl. 128-2.05T.
Sarradin, Joel Alain: *See—*
Bonnemay, Maurice; Bronoel, Guy Rene; Donnet, Jean-Baptiste; Lahaye, Jacques; and Sarradin, Joel Alain, 3,870,565.
Sato, Akira: *See—*
Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, 3,870,524.
Sato, Masamichi; and Tezuka, Shigeru, to Xerox Corporation. Liquid development for the electronic photography. 3,870,514, Cl. 96-1.0LY.
Sato, Yosthumi; and Ogura, Masaaki, to Ricoh Co., Ltd. Motor control unit for table-type electronic calculator with printer. 3,870,138, Cl. 197-17.000.
Saunders, John Christopher: *See—*
Archibald, John Leheup; Boyle, John Terence Arnott; and Saunders, John Christopher, 3,870,721.
Saunders, Thomas Edward: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,870,416.
Savageau, Richard J.; and Anderson, Gordon C., to Saco-Lowell Corporation. Drive means for textile sliver drafting assembly. 3,869,759, Cl. 19-293.000.
Sawano, Takahiro: *See—*
Ogawa, Kazuo; Machii, Tetsuo; Sawano, Takahiro; Kubota, Katuhiko; and Yotumoto, Yoshiharu, 3,870,944.
Sawyer, Willard C., to Gorham International Inc. Apparatus for mixing air and steam for delivery to a dryer. 3,869,808, Cl. 34-124.000.
Scaletta, Joseph Louis, to Xerox Corporation. Diagnostic test device for developer materials. 3,869,910, Cl. 73-150.00R.
Schaar, Charles H., to Colgate-Palmolive Company. Disposable diaper. 3,869,761, Cl. 24-73.0VA.
Schadlich, Gunther; and Moraw, Roland, to Hoechst Aktiengesellschaft. Apparatus for deforming a thermoplastic layer using a shaped cooling template. 3,871,002, Cl. 346-74.0TP.
Schaefer, Frank W. Apparatus for applying refractory covering to skid rail. 3,870,442, Cl. 425-117.000.
Schafer, Karl: *See—*
Noll, Klaus; Oertel, Gunter; and Schafer, Karl, 3,870,556.
Scharfe, Gerhard; and Grolig, Johann, to Bayer Aktiengesellschaft. Production of anthraquinone from naphthalene. 3,870,730, Cl. 260-369.000.
Schatz, Oskar, to Frid. Krupp Gesellschaft mit Beschrankter Hoftung. Hot-pressing system. 3,870,443, Cl. 425-28.00R.
Scheffel, Walter. Apparatus for withdrawing and storing filling yarn in stationary filling supply weaving machines. 3,870,088, Cl. 139-122.00R.
Scheller, Donald M.: *See—*
Leidy, William S.; and Scheller, Donald M., 3,870,253.
Scherer, Hertbert: *See—*
Koehler, Waldemar; Riedel, Oswald; Scherer, Hertbert; and Schlereth, Georg, 3,869,914.
Schering AG: *See—*
Plum, Hans; and Runggas, Friedrich, 3,870,736.
Schering Corporation: *See—*
Warren, Bert; and Evans, George L., 3,870,601.
Schettler, Kurt, to Kraftwerk Union Aktiengesellschaft. Straight-through filter apparatus. 3,870,636, Cl. 210-236.000.
Schicketanz, Dieter, to Siemens Aktiengesellschaft. Connecting plug for optical glass fibers. 3,870,395, Cl. 350-96.00C.
Schiffer, Gunther, to Fa. Kleinewefers Industrie-Companie GmbH. Suspension loop damper for heavy webs. 3,870,215, Cl. 226-42.000.
Schimke, Thomas O., to General Electric Company. Thermostat mounting. 3,870,858, Cl. 219-328.000.
Schindel, Arnold, to Singer Company, The. Hydraulic actuator having a self-aspirating actuator rod seal. 3,869,963, Cl. 92-86.000.
Schirmer, Henry G., to W. R. Grace & Co. Irradiated insoluble amylose starch. 3,870,609, Cl. 204-160.100.
Schlage Lock Company: *See—*
Neary, Ralph E., 3,869,890.
Neary, Ralph E., 3,869,901.
Schlauch, Richard M.: *See—*
Beach, William A.; and Schlauch, Richard M., 3,869,903.
Schlereth, Georg: *See—*
Koehler, Waldemar; Riedel, Oswald; Scherer, Hertbert; and Schlereth, Georg, 3,869,914.
Schlotterbeck, Heinz; and Staake, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Cam shaft for reciprocable piston internal combustion engines. 3,869,938, Cl. 74-567.000.
Schmid, Jurg Friedrich, to Maschinenfabrik Wifag. Web tensioning device. 3,870,214, Cl. 226-34.000.
Schmidt, Gunter, to Production, Inc. Film sheet cassette. 3,870,889, Cl. 250-480.000.
Schmidt, Joe: *See—*
Schrader, William A.; and Schmidt, Joe, 3,870,249.
Schneider, Horst: *See—*
Meyer, Norbert; Oei, Han Yong; Rausch, Werner; and Schneider, Horst, 3,869,894.
Schneider, Ing. Udo U., Dr., to Otto Durr, Anlagen fur Oberflachentechnik, Firma. Box for powder coating. 3,870,016, Cl. 118-309.000.
Schneider, J. Raymond. Apparatus for heating and dispensing french fried potatoes. 3,870,193, Cl. 221-150.00A.
Schneider, Michael. Expansible plugs for sewer pipes. 3,870,085, Cl. 138-93.000.
Schneider, Ralph W. Air cushion vehicle. 3,870,121, Cl. 180-117.000.
Schneider, Walter: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.
Schneiderhan, Edward M.; Jones, John E.; and Briggs, Henry P., to Cummins-Allison Corp. Method and apparatus for optical reading of recorded data. 3,870,865, Cl. 235-61.11E.
Schock, Delmas A., to Mayfran Incorporated. Circuit for controlling a thyristor by direct current logic. 3,870,904, Cl. 307-252.00B.
Scholl, Hans, to Kochs Adler AG. Sewing device. 3,869,998, Cl. 112-121.150.
Scholz, Norbert: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,869,988.
Schrader, William A.; and Schmidt, Joe, to Ex-Cell-O Corporation. Controlled friction tape roller. 3,870,249, Cl. 242-201.000.
Schreyer, Gerd: *See—*
Lussling, Theodor; Schreyer, Gerd; Theissen, Ferdinand; and Weigert, Wolfgang, 3,870,746.
Schriever, Fred G. Multiple tape dispenser. 3,870,211, Cl. 225-34.000.
Schroeder, Gustave W.: *See—*
Tuomela, Robert M.; Schroeder, Gustave W.; and Mattila, Robert O., 3,870,111.
Schroeder, Marvin C., Jr., to Cordura Corporation. High speed data processor line printer. 3,869,980, Cl. 101-93.210.
Schrott, Erwin: *See—*
Gordon, Wolfgang; Rust, Kurt; and Schrott, Erwin, 3,870,690.
Schubert, Egon: *See—*
Plasser, Franz, deceased; Theurer, Josef; and Schubert, Egon, 3,869,907.
Schudel, Peter: *See—*
Bozzato, Giulinao; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,870,659.
Schulz, Johann G. D.: *See—*
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,870,734.
Schulz, Max Erich, to Gervais-Danone AG. Processes for the production of protein-rich foodstuffs from natural protein-containing foods that are subject to syneresis. 3,870,811, Cl. 426-348.000.
Schulz, Waldemar, to Volkswagenwerk Aktiengesellschaft. Steering arrangement for motor vehicles. 3,870,335, Cl. 280-90.000.
Schurdak, Edward. Copper inhibitors for polyolefins. 3,870,680, Cl. 260-45.85B.
Schurle, Werner; and Muller, Anton, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Chain link for antiskid and tire protective chains. 3,870,094, Cl. 152-243.000.
Schussel, Edward W., to Wesco Industries, Corporation. Yarn retarding device. 3,870,242, Cl. 242-47.010.
Schwartz, Robert C.; and Burke, Frederick, to Motiva, Ltd. Collapsible slide projection theatre. 3,870,411, Cl. 353-73.000.
Schwitzgobel, Rudolf: *See—*
Monreal, Karl; and Schwitzgobel, Rudolf, 3,870,571.
Sci-Med Laboratories, Inc.: *See—*
Greenfield, Walter; and Berg, Raymond, 3,870,146.
Scott & Fetzer Company, The: *See—*
Horrocks, Raymond G., 3,869,791.
SECIM: *See—*
Quehen, Andre, 3,869,898.

Seefluth, Charles L., to Phillips Petroleum Company. Clamping jaws with offset tines for alignment and transfer of parisons. 3,870,446, Cl. 425-174.400.

Seewer AG, Maschinenfabrik: *See—*
Seewer, Ruedi, 3,869,975.

Seewer, Ruedi, to Seewer AG, Maschinenfabrik. Pastry cutter. 3,869,975, Cl. 99-450.200.

Self-Cleaning Environments: *See—*
Garvey, Glenwood L.; and Begley, Richard J., 3,869,732.

Seliber, Joseph. Low pollution and fuel consumption flywheel drive system for motor vehicles. 3,870,116, Cl. 180-54.00R.

Sellars, George L., to Dravo Corporation. Sand fracturing apparatus and method. 3,870,238, Cl. 241-27.000.

Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna. Furnace for direct non-oxidizing heating of material under thermal treatment. 3,870,462, Cl. 432-72.000.

Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft: *See—*
Kogert, Herbert, 3,870,852.

Senda, Katsuyuki; and Kobashi, Mamoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition plug with auxiliary electrode. 3,870,918, Cl. 313-131.00R.

Seneca Chemicals, Inc.: *See—*
Travers, Hal, 3,870,647.

Senk, Herman W.; and Resnik, Bernard S., to Lehigh Industries, Inc. Buckle-strap construction. 3,869,763, Cl. 24-198.000.

Sequist Valve Company: *See—*
Bucaro, Russell J., 3,870,205.

Serra, Arthur Bienvenu Dalla, to Societe Herve & Fils, Papeteries du Sentier (Societe Anonyme). Apparatus for transverse cutting or perforating a continuously advancing web. 3,869,950, Cl. 83-341.000.

Setterstrom, William R. Self-contained tertiary filter plant and chlorination unit. 3,870,633, Cl. 210-136.000.

Seubert, Jurgen: *See—*
Kirchlechner, Richard; Rogalski, Werner; and Seubert, Jurgen, 3,870,757.

Seventrees, Ltd.: *See—*
Theodore, Paris, 3,870,208.

Severov, Mark Alexandrovich: *See—*
Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.

Seward, Thomas P., III: *See—*
Randall, Lyman J.; and Seward, Thomas P., III, 3,870,399.

Seyb, Edgar J., Jr.; and Woehrle, Richard E., to M & F Chemicals Inc. Chromium plating method. 3,870,618, Cl. 204-28.000.

Shabel, John M.: *See—*
Pedersen, Niels P.; and Shabel, John M., 3,870,945.

Shaddock, Roland E., to Myers-Sherman Company. Air filter systems for debris collecting apparatus. 3,870,489, Cl. 55-314.000.

Shade, Steven F.: *See—*
Brown, Michael A.; and Shade, Steven F., 3,869,743.

Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich. Rotor winding directly cooled by liquid for use in non-salient pole synchronous machine. 3,870,913, Cl. 310-208.000.

Shapras, Peter: *See—*
Harris, Alva F.; and Shapras, Peter, 3,870,802.

Sharp, Douglas Cecil William Thomas, to Watermill Engineering Limited. Toasting apparatus. 3,869,969, Cl. 99-327.000.

Shatzkin, Leonard: *See—*
Heller, William C., Jr.; and Shatzkin, Leonard, 3,870,344.

Shell Oil Company: *See—*
Condon, Nancy J., 3,870,676.

Shepherd, Don W., to A. C. Weber & Co., Inc. Retraction mechanism and sewing machine cabinet. 3,870,386, Cl. 312-30.000.

Sherwood, Henry A. Dictating and playback apparatus. 3,870,319, Cl. 274-13.000.

Shibano, Takashi; Hirakawa, Koichi; and Yonehara, Toshimitsu, to Matsushita Electric Industrial Co., Ltd. Impregnated electromagnetic coil having a layer voltage applied thereto. 3,870,982, Cl. 335-297.000.

Shields, John P., to Allegheny Plastics, Inc. Radio frequency heater and control therefor. 3,870,847, Cl. 219-10.770.

Shimada, Yogo: *See—*
Okumoto, Takeomi; Ueda, Hiroshi; Sakai, Junji; and Shimada, Yogo, 3,870,529.

Shimadzu Seisakusho Ltd.: *See—*
Tanno, Naoichiro, 3,869,769.

Shimamoto, Takio: *See—*
Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio, 3,870,792.

Shimamura, Isao; Shishido, Tadao; Ohi, Reiichi; and Iwano, Haruhiko, to Fuji Photo Film Co., Ltd. Photographic processing composition. 3,870,520, Cl. 96-60.00R.

Shimanckas, William J.; and Beem, W. Wayne, to Outboard Marine Corporation. Pulley mounting system for electric outboards. 3,870,258, Cl. 248-4.000.

Shimizu, Kazuo; Yoshida, Okio; Terakawa, Kazuo; and Aihara, Satoshi, to Tokyo Shibouro Electric Co., Ltd. Process for preparing a layer of compounds of groups II and VI. 3,870,558, Cl. 117-201.000.

Shin-Nihon Reiki Co., Ltd.: *See—*
Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.

Shinagawa, Susumu: *See—*
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,870,694.

Shinetsu Chemical Company: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, 3,870,702.

Shinkai, Hiroyuki: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 3,870,748.

Shioda, Toshio: *See—*
Yamamoto, Kenzo; Matsuoka, Seiichi; and Shioda, Toshio, 3,870,738.

Shiosaka, Makoto: *See—*
Hijiya, Hiromi; and Shiosaka, Makoto, 3,870,537.

Shipley Company, Inc.: *See—*
Dutkewych, Oleh Borys; and Hofmann, Lebert Arthur, 3,870,068.

Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, to Japan Gasoline Co., Ltd.; Shin-Nihon Reiki Co., Ltd.; Aza-yunohara; and Oaze-Futsuk-aichi. Cooling tower. 3,870,485, Cl. 55-257.000.

Shishido, Tadao: *See—*
Shimamura, Isao; Shishido, Tadao; Ohi, Reiichi; and Iwano, Haruhiko, 3,870,520.

Shisko, Walter S., to Domtar Limited. Fibrous board products having improved surface. 3,870,544, Cl. 117-60.000.

Shobert, Samuel M. Carbon-fluorocarbon fiber-plastic composite bearing. 3,870,589, Cl. 161-47.000.

Shofu Dental Corporation: *See—*
Thorburn, Fred T., 3,869,796.

Shonebarger, Francis J.: *See—*
Brown, William L.; and Shonebarger, Francis J., 3,870,015.

Shoup, Robert D.: *See—*
Farrauto, Robert J.; Hoekstra, Karl E.; and Shoup, Robert D., 3,870,658.

Shumaker, Gary Allen, to Lubrizol Corporation, The. Silicate-and Hydroxide-containing cleaning compositions, and liquid concentrates for the preparation thereof. 3,870,560, Cl. 134-2.000.

Shuman, Richard F.: *See—*
Tull, Roger J.; Czaja, Robert F.; Shuman, Richard F.; and Pines, Seemon H., 3,870,753.

Shutoh, Masamichi, to Nippon Electric Company, Limited. Graphic pattern generation for a tv-like scanned-graphic display equipment. 3,870,922, Cl. 315-383.000.

Sibley, Henry C., to General Signal Corporation. Ballast resistance and track continuity indicating circuit. 3,870,952, Cl. 324-65.00R.

Siclari, Francesco; Maderno, Cesano; Magnoni, Franco; and Fulmini, Sergio, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Apparatus for the continuous performance of chemical processes, more particulary esterification, and/or transesterification and polycondensation processes. 3,870,475, Cl. 23-285.000.

Siebe Gorman & Company Limited: *See—*
Bell, Alfred Wharton, 3,869,726.

Siemens Aktiengesellschaft: *See—*
Ammann, Ernst, 3,870,885.
Bertling, Anton, 3,869,990.
Darre, Allan; and Springstubbe, Wolf, 3,870,827.
Kipke, Eberhard; and Losensky, Erich, 3,870,912.
Krause, Gerhard, 3,870,976.
Nitsche, Herbert; and Hufnagl, Johann, 3,870,930.
Oesterhelt, Gerhard; Winkler, Josef; Falkenberg, Dieter; and de Bucs, Eugen Szabo, 3,870,568.
Pollmann, Fritz, 3,870,980.
Schicketanz, Dieter, 3,870,395.

Siems, Ruth M.; Capossela, Anthony C., Jr.; Halligan, John F.; and Wyss, C. Robert, to General Foods Corporation. Instant stuffing mix. 3,870,803, Cl. 426-128.000.

Simeth, Claus, to Roland Offsetmaschinenfabrik & Schleicher AG. Device for aligning the sheets on the feed table of sheet-fed machines, particularly offset printing presses. 3,870,293, Cl. 271-231.000.

Simms, Ross P.: *See—*
Hayes, Lester P.; Robinson, John W.; Simms, Ross P.; and Russell, Millard E., 3,870,805.

Simons, Charles William: *See—*
Holdsworth, Robert S.; O'Neill, Gerald Joseph; and Simons, Charles William, 3,870,797.

Simpson, Richard R. Tool for aligning articles. 3,869,784, Cl. 29-272.000.

Sincock, Thomas F., to Monsanto Company. Molecularly oriented bottle. 3,870,181, Cl. 215-1.00C.

Singer Company, The: *See—*
Schindel, Arnold, 3,869,963.

Singhal, Gopal H.: *See—*
Makowski, Henry S.; Lundberg, Robert D.; and Singhal, Gopal H., 3,870,841.

SKB Arms Company: *See—*
Iino, Hideo; and Iizuka, Satoru, 3,870,306.

Skelding, Kenneth George: *See—*
Jack, Harry Ross Scarlett; Richards, Peter Henry; and Skelding, Kenneth George, 3,870,500.

Skibbe, Harold A.; and Skibbe, John H., to Skibbe Manufacturing Co., Inc. Spreader with agitator to break up material bridging. 3,870,202, Cl. 222-226.000.

Skibbe, John H.: *See—*
Skibbe, Harold A.; and Skibbe, John H., 3,870,202.

Skibbe Manufacturing Co., Inc.: *See—*
Skibbe, Harold A.; and Skibbe, John H., 3,870,202.

Skobel, Barry A. Surgically implantable joint prosthesis. 3,869,730, Cl. 3-1.000.

Skretting, Hans; and Egeland, Ole, to Elkem-Skigerverket A/S. Scrapers for pelletizing disks. 3,870,447, Cl. 425-225.000.

Slates, Harry L.: *See—*
Wendler, Norman L.; Taub, David; Slates, Harry L.; and Zelawski, Zbigniew S., 3,870,747.

Slawson, Newell E. Pneumatic drill apparatus. 3,870,113, Cl. 175-96.000.

Sleiher, Sigmund: *See—*
Lazaroiu, Dumitru Florian; Sleiher, Sigmund; and Mihaiescu, Gheroghe Mihai, 3,869,788.

Smid, Peter Max: *See—*
Henniger, Peter Wolfgang; and Smid, Peter Max, 3,870,705.

Smit Nymegen B.V.: *See—*
Graat, Johannes W., 3,870,456.

Smith, Albert C. Liquid propulsion apparatus and method of fabrication. 3,869,775, Cl. 29-156.80R.

Smith, Cecil R., Jr.: *See—*
Powell, Richard G.; and Smith, Cecil R., Jr., 3,870,727.

Smith, Charles L.: *See—*
Minnick, Leonard John; Smith, Charles L.; and Webster, William C., 3,870,535.

Smith, Colin, to Oxy Metal Finishing Corporation. Scale modifier for phosphate solutions. 3,870,573, Cl. 148-22.000.

Smith, Colin Howard Stanwell; Gosling, Alexander Bennett; and Buchanan, Donald George, to Decca Limited. Disc mounting arrangement. 3,870,321, Cl. 274-39.00A.

Smith, Gordon C.: *See—*
Capossela, Anthony C.; McGuire, Michael T.; Smith, Gordon C.; and Albaum, Joseph D., 3,870,806.

Smith, Joseph Leigh. Candle shaping apparatus. 3,869,794, Cl. 30-278.000.

Smith, Kent F.; and Huber, Robert J., to General Instrument Corporation. Method and apparatus for maintaining the charge on a storage node of a mos circuit. 3,870,901, Cl. 307-238.000.

Smith, Michael; Hackett, Charles F.; and Radler, Richard W., to Xerox Corporation. Method of imaging photoconductor in change transport binder. 3,870,516, Cl. 96-1.500.

Smith, Ray S.: *See—*
Swidler, Ronald; Smith, Ray S.; and Miller, Harry A., 3,870,555.

Smith, Richard C.: *See—*
Waugh, Theodore R.; Smith, Richard C.; Anzel, Sanford H.; and Orofino, Caesar F., 3,869,731.

Snelling, Murdock M., Jr., to Taylor Machine Works. Apparatus for connecting a spreader assembly to a vehicle lift. 3,870,180, Cl. 214-621.000.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Siclari, Francesco; Maderno, Cesano; Magnoni, Franco; and Fulmini, Sergio, 3,870,475.

Snook, John Robert: *See—*
Towner, Frank Richard; and Snook, John Robert, 3,870,216.
Towner, Frank Richard; and Snook, John Robert, 3,870,217.

Snow Brand Milk Products Co., Ltd.: *See—*
Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.

Snyder, William Lee: *See—*
Hanser, Paul Edmund; and Snyder, William Lee, 3,870,074.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Rivetta, Gianfranco; and Marcotti, Egidio, 3,870,840.

Societe anonyme dite: Richier: *See—*
Leroy, Maurice, 3,870,226.

Societe Anonyme: Reveils Bayard: *See—*
Forest, Edmond, 3,869,930.

Societe d'Etudes du Procede Noridem: *See—*
Glaser, Heinz; and Zlatareff, Vassil, 3,870,539.

Societe En Commandite Par Actions: Establissements M. Caulliez Et Delaoutre: *See—*
Gosse, Francoise, 3,870,207.

Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM): *See—*
Coulon, Andre, 3,869,777.

Societe Herve & Fils, Papeteries du Sentier (Societe Anonyme): *See—*
Serra, Arthur Bienvenu Dalla, 3,869,950.

Societe National D'Etude et de Construction de Moteurs D'Aviation: *See—*
Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; Cantaloube, Bernard Andre; and Caruel, Jacques Emile Jules, 3,869,865.

Sodler, Walter E., to Timex Corporation. Acoustical sound producer for clocks, especially for wristwatches. 3,869,855, Cl. 58-57.500.

Sola Basic Industries, Inc.: *See—*
Werych, Ewald R., 3,870,463.
Werych, Ewald R., 3,870,861.

Solitron Devices, Inc.: *See—*
D'Errico, John J., 3,870,962.

Sollami, Phillip A. Grinding wheel dresser. 3,870,030, Cl. 125-11.0TP.

Solomon, Milton, to Circle Engineering Co., Inc. Driven plastic small vehicle wheel. 3,870,371, Cl. 301-1.000.

Somlo, Tibor, to Ciba-Geigy AG. Process for the manufacture of N,N-disubstituted carbamic acid halides. 3,870,707, Cl. 260-239.00E.

Sony Corporation: *See—*
Chikazawa, Hiroyuki, 3,870,905.
Dosen, Masashi, 3,870,575.
Wakamiya, Kinji; and Kobayashi, Isamu, 3,871,007.

Spatz Corporation: *See—*
Spatz, Walter B., 3,870,200.

Spatz, Walter B., to Spatz Corporation. Valveless dispenser for fluent masses. 3,870,200, Cl. 222-206.000.

Spector, George: *See—*
Ward, John H.; and Spector, George, 3,870,403.

Spectrol Electronics Corporation: *See—*
Yungblut, Charles W.; and Hill, Robert D., Jr., 3,869,789.

Speech Technology Corporation: *See—*
Barton, William A.; and Stork, John E., 3,870,818.

Speed Selector, Inc.: *See—*
Fletcher, Peter C., 3,869,932.

Spencer, Benjamin F., to Spencer Industries, Inc. Waistband construction. 3,869,728, Cl. 2-221.000.

Spencer Industries, Inc.: *See—*
Spencer, Benjamin F., 3,869,728.

Spencer, Kenneth M., to Recycle Pallets Inc. Machine for stripping planks from frames. 3,869,783, Cl. 29-244.000.

Sperry Rand Corporation: *See—*
Espen, David A., 3,870,940.
Ihasz, Richard, 3,869,790.

Sperry Rand Limited: *See—*
Marshall, John Stephen, 3,870,322.
Towner, Frank Richard; and Snook, John Robert, 3,870,216.
Towner, Frank Richard; and Snook, John Robert, 3,870,217.

Spiessens, Raymond Francois, to U.S. Philips Corporation. Method eliminating discontinuities in a quartz article. 3,870,497, Cl. 65-32.000.

Spindler & Sauppe, Inc.: *See—*
Kirr, Frederick M., 3,870,408.

Spitalul Coltea: *See—*
Cadariu, Emil E.; and Macovei, Alexandru A., 3,870,037.

Spitzer, Nicholas A.: *See—*
Eberle, Arthur; and Spitzer, Nicholas A., 3,870,869.

Splitt, Theodore B.: *See—*
Baxter, Bobby G.; and Splitt, Theodore B., 3,870,342.

Springstubbe, Wolf: *See—*
Darre, Allan; and Springstubbe, Wolf, 3,870,827.

Sroka, Jurgen: *See—*
Werner, Udo; Biesen, Kurt; and Sroka, Jurgen, 3,870,269.

Staake, Walter: *See—*
Schlotterbeck, Heinz; and Staake, Walter, 3,869,938.

Staba, Edward A. Apparatus for the automatic charging of primer mix. 3,870,204, Cl. 222-262.000.

Stabilator AB: *See—*
Pulk, Elgas, deceased; and Noren, John Paul, 3,870,114.

Stacey, Martyn Hugh; and Tribbeck, Terrence Donald, to Imperial Chemical Industries Limited. Dehydrochlorination process. 3,870,762, Cl. 260-654.00D.

Stachowiak, John E.; and Goss, John B., to American Aero Inc. High pressure pump fluid end. 3,870,439, Cl. 417-454.000.

Stafford, Herbert Henry: *See—*
Lowey, Hans; and Stafford, Herbert Henry, 3,870,790.

Standard Brass and Manufacturing Company: *See—*
Wilson, Fred V.; and Leblanc, Henry J., Sr., 3,870,615.

Stanley Works, The: *See—*
Burgeson, Oscar Burge, 3,870,091.

Staples, Robert E.: *See—*
Gallant, James O.; Staples, Robert E.; and Knapp, George P., 3,869,774.

Stark, Martin H. Tube construction. 3,870,086, Cl. 138-172.000.

Starline, Inc.: *See—*
Ulrich, James K., 3,869,849.

Stauble, Max: *See—*
Ulrich, Paul; and Stauble, Max, 3,870,717.

Stauffer Chemical Company: *See—*
Chadha, Rajendra Nath, 3,870,766.
Stevenson, Joseph Eugene, 3,870,548.

Stauft, Daniel B. Method and apparatus for tenderizing meat. 3,869,755, Cl. 17-25.000.

Stave, Fredrick Roland, to RCA Corporation. Stylus control apparatus for a video disc record player. 3,870,835, Cl. 179-100.40R.

Steadley Company, Incorporated: *See—*
Lawrence, James Rogers, 3,869,738.

Steel, Margaret Lilian, to Imperial Chemical Industries Limited. Process for pigmenting a pile surfaced product. 3,870,778, Cl. 264-164.000.

Stefan, Mihaly; Hegedus, Zoltan; Balazs, Fulop; and Juhasz, Gyula, to Csepeli Femmu. Two stage heat treatment process for the production of unalloyed, cold-rolled electrical steel. 3,870,574, Cl. 148-122.000.

Stehl, Otto. Apparatus for manufacturing solid double layer sheet glass. 3,870,499, Cl. 65-156.000.

Stein, Werner; and Hartmann, Helmut, to Henkel & Cie GmbH. Continuous process for the separation of mixtures of fatty substances of different melting points. 3,870,735, Cl. 260-419.000.

Steinbatz, Alfred; and Kappl, Gerhard, to C. Reichert Optische Werke AG. Photomicrographic apparatus. 3,871,009, Cl. 354-79.000.

Steinberg, Richard W.; McClocklin, Samuel B.; and Kostelecky, Clarence L., to Owatonna Tool Company. Waste compactor. 3,869,978, Cl. 100-53.000.

Steiner, Hans: *See—*
Rellstab, Werner; and Steiner, Hans, 3,870,466.

Steiner, Robert E., to Emerson Electric Co. Floor drop-in forced circulation electric space heater. 3,870,860, Cl. 219-370.000.

Steinmetz, Floyd; and Thoms, William F., to Rotographic Machinery Company, The. Clamping and tensioning a sheet on a cylinder. 3,869,985, Cl. 101-415.100.

Stelron Cam Company: *See—*
Beezer, Earl F., 3,869,924.

Stemme, Walter. Hair detangling device. 3,870,056, Cl. 132-11.00A.

Stepan Chemical Company: *See—*
Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, 3,870,768.

Stepanian, Ernst Arakelovich: *See—*
Sarkisov, Rafael Tevosovich; Stepanian, Ernst Arakelovich; and Bondarenko, Valentin Grigorievich, 3,870,244.

Sterling Drug Inc.: *See—*
Langstroth, Theodore A., 3,870,649.

Steury, Donald P. Pushbutton telephone printer/recorder. 3,870,821, Cl. 179-2.0DP.

Stevenson, Joseph Eugene, to Stauffer Chemical Company. Primer composition for heat curable silicone. 3,870,548, Cl. 117-72.000.

Stevenson, Robert L. Toilet stool air deodorizer structure. 3,869,737, Cl. 4-213.000.

Stoba AG: *See—*
Okle, Kurt, 3,870,267.

Stoffer, Cornelis Daniel, to Rockwell International Corporation. Receiver protection circuit apparatus. 3,870,899, Cl. 307-235.000.

Stoltenberg, Donald A.: *See—*
Kearns, Tommy Carter; and Stoltenberg, Donald A., 3,870,585.

Stone, Jerry F.: *See—*
Edds, Kenneth E.; Elbert, Donald L.; and Stone, Jerry F., 3,870,528.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Liljenzin, Jan-Olov; Reinhardt, Hans; and Rydberg, Helge Jan Arnold, 3,870,060.

Stork, John E.: *See—*
Barton, William A.; and Stork, John E., 3,870,818.

Stowell, Richard C.: *See—*
Hale, Richard W.; Tan, Patrick; Stowell, Richard C.; and Ordway, Donald E., 3,869,909.

Straitz, John F., III, to Combustion Unlimited Incorporated. Incinerator. 3,869,995, Cl. 110-18.00C.

Straw, Richard D., to International Telephone and Telegraph Corporation. VSWR alarm system. 3,870,957, Cl. 325-150.000.

Stringfellow, Jerry D., to General Tire & Rubber Company, The. Permanent flashpad for transfer molding. 3,870,449, Cl. 425-251.000.

Strom, James R.: *See—*
Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,870,626.

Strybel, Richard V., to Imperial-Eastman Corporation. Tube working tool. 3,870,432, Cl. 408-191.000.

Stubits, Marcella C.: *See—*
Teng, James; and Stubits, Marcella C., 3,870,701.

Stungis, George E.: *See—*
Heitkamp, Norman D.; Merker, Steven L.; and Stungis, George E., 3,870,053.

Stupar, Janex, to Institut Jozef Stefan. Laminar flame separate aerosol burner for use in atomic absorption spectroscopy. 3,870,234, Cl. 239-132.300.

Subsea Equipment Associates Limited: *See—*
Liautaud, Jean Alphonse Eugene, 3,870,345.

Suda, Syotaro: *See—*
Ishii, Akemi; and Suda, Syotaro, 3,869,928.

Suddeutsche Kalkstickstoff-Werke AG: *See—*
Aignesberger, Alois; Kriele, Ulrich; and Michaud, Horst, 3,870,671.

Sudduth, Jerome R.: *See—*
Walker, David G.; Keyworth, Donald A.; and Sudduth, Jerome R., 3,870,482.

Sugarman, Nathan: *See—*
Palmer, Nigel Innes; and Sugarman, Nathan, 3,870,567.

Sulcek, Charles E., to Whirlpool Corporation. Refuse compactor receptacle. 3,869,979, Cl. 100-218.000.

Sumitomo Chemical Company, Limited: *See—*
Kusayama, Seiji; Ohashi, Koichi; and Takada, Shinzo, 3,870,675.

Sumitomo Metal Industries Limited: *See—*
Matsuki, Norio, 3,870,351.

Summerlin, Dorsey: *See—*
Hartman, John R.; and Summerlin, Dorsey, 3,869,727.

Sun Chemical Corporation: *See—*
Myers, John L., 3,870,931.

Sun Oil Company: *See—*
Tice, John D.; and Benner, Robert I., 3,870,624.

Sun Ventures, Inc.: *See—*
Angstadt, Howard P., 3,870,745.

Surletta, Zygmunt M., to Lear Siegler Inc. Spring assembly. 3,869,740, Cl. 5-354.000.

Survival Technology, Inc.: *See—*
Sarnoff, Stanley J., 3,870,035.

Suzuki, Kazuo, to Alps Electric Co., Ltd. Actuating means for AFC defeat switch. 3,870,961, Cl. 325-457.000.

Suzuki, Shintari: *See—*
Takamura, Isutomu; Kanada, Yoshimi; and Suzuki, Shintari, 3,870,564.

Suzuki, Tomohide; and Aoki, Toshio, to Victor Company of Japan, Limited. Microphone with different directional modes. 3,870,820, Cl. 179-1.0DM.

Svenska Industrietablerings AB (Svetab) Swedish Industrial Establishing Corporation: *See—*
Hasfjord, Morten Birger, 3,870,090.

Svirsky, Viktor Alexandrovich: *See—*
Rannev, Alexandr Vladimirovich; Reish, Arvid Karlovich; Svirsky, Viktor Alexandrovich; and Khodykin, Boris Danilovich, 3,869,814.

Swagerty, Arnold: *See—*
Mathews, Carl S.; and Swagerty, Arnold, 3,870,999.

Swart, Gary M., to Estey Corporation. Shiftable cable support. 3,870,260, Cl. 248-49.000.

Swenson, Marshall G.: *See—*
Getman, Darryl L.; and Swenson, Marshall G., 3,870,597.

Swidler, Ronald; Smith, Ray S.; and Miller, Harry A., to Burlington Industries, Inc. Aryl stearic acid treated textiles. 3,870,555, Cl. 117-138.80F.

Swinford, Gary D.: *See—*
Verlinden, Jerry M.; and Swinford, Gary D., 3,869,875.

Syracuse University Research Corp.: *See—*
Aldrich, Robert G., 3,870,237.

Syson, John William; and Kerridge, John Charles, to Imperial Chemical Industries Limited. Surface coating compositions which comprise alkyd resin and non-aromatic petroleum resin. 3,870,667, Cl. 260-22.0CB.

Szekely, Andrew Geza, to Union Carbide Corporation. Process for refining molten aluminum. 3,870,511, Cl. 75-68.00R.

Szenger, Franz: *See—*
Neuer, Harald; Szenger, Franz; Herzog, Klaus; and Neumann, Joachim, 3,869,799.

Tabacek, Joseph A.; Taylor, Brian W.; and Vogel, Roger F., to Gulf Research & Development Company. Process for coating a catalyst support. 3,870,545, Cl. 117-71.00R.

Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Robkuo. Process for preparing heavy water from sea water. 3,870,606, Cl. 203-5.000.

Tabata, Norimasa: *See—*
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Robkuo, 3,870,606.

Tachikawa Research Institute: *See—*
Asadea, Takashi; and Okamoto, Shin, 3,870,596.

Taco-Tafel GmbH Co., KG: *See—*
Laass, Heinz, 3,870,950.

Taillardat, Jacques, to La Technique Integrale. Mechanism for converting a movement of translation into a rotational movement, and vice versa. 3,869,936, Cl. 74-459.000.

Takada, Shinzo: *See—*
Kusayama, Seiji; Ohashi, Koichi; and Takada, Shinzo, 3,870,675.

Takahashi, Nobuaki; and Kasuga, Masao, to Victor Company of Japan, Ltd. Circuit arrangement of voltage controlled oscillator. 3,870,971, Cl. 331-108.00D.

Takahashi, Yasuo; and Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide, angle, high aperture ratio, long back focus lens system. 3,870,402, Cl. 350-214.000.

Takamura, Isutomu; Kanada, Yoshimi; and Suzuki, Shintari, to Tokyo Shibaura Electric Co., Ltd. Alkaline cell. 3,870,564, Cl. 136-30.000.

Takarada, Eiichi. Buffer circuit for pulse transmission. 3,870,902, Cl. 307-247.000.

Takata, Yoshinori: *See—*
Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Ianno, Kazuo; and Okajima, Yoshiaki, 3,870,603.

Takeda Chemical Industries, Ltd.: *See—*
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,870,694.

Takenaka, Senji: *See—*
Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.

Takenaka, Toshisuke: *See—*
Miyoshi, Isao; Sanjo, Sadao; Takenaka, Toshisuke; Mizutani, Shoji; Hamana, Isao; and Hayashi, Seiichi, 3,870,637.

Takeuchi, Hideo, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm setting apparatus for camera. 3,871,006, Cl. 354-40.000.

Takeuchi, Shinjiro; and Ichioka, Satoshi, to Mishima Kosan Co., Ltd. Input magnetic field sensing system with utilization of a hysteresis phenomenon. 3,870,973, Cl. 332-12.000.

Talley, Lloyd A.: *See—*
Eubanks, Edward F.; and Talley, Lloyd A., 3,869,781.

Tamny, Simon Z.: *See—*
Duncan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., 3,870,375.

Tan, Patrick: *See—*
Hale, Richard W.; Tan, Patrick; Stowell, Richard C.; and Ordway, Donald E., 3,869,909.

Tanaka, Kyugo; Oshima, Shozo; and Watanabe, Itaru, to Asahi Kasei Kogyo Kabushiki Kaisha. Preparation of oxidation products of cycloalkanes. 3,870,760, Cl. 260-586.00P.

Taneya, Shinichi: *See—*
Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.

Tangorra, Giorgio, to Industrie Pirelli S.p.A. Pneumatic tire for vehicle wheels with inwardly directed sidewall convexity. 3,870,095, Cl. 152-353.00C.

Taniguchi, Hideo, to Toyo Electronics Industry Corporation. Thermal printing head. 3,870,856, Cl. 219-216.000.

Taniguchi, Koichi: *See—*
Toyama, Koichi; and Taniguchi, Koichi, 3,870,911.

Tannenberger, Helmut: *See—*
Charbonnier, Jean-Claude; and Tannenberger, Helmut, 3,870,561.

Tanno, Naoichiro, to Shimadzu Seisakusho Ltd. Method and apparatus for lacing a skein of yarn. 3,869,769, Cl. 28-21.000.

Tapiei, Fa-Kuei Liu. Automatic telephone dialer. 3,870,830, Cl. 179-90.0CS.

Tapley, Claude D.: *See—*
Bray, Robert S.; and Tapley, Claude D., 3,869,899.

Tappan Company, The: *See—*
Perl, Richard L., 3,870,457.

Taszer, Emil: *See—*
Gruszecki, Wojciech; Taszer, Emil; and Borowski, Edward, 3,870,708.

Tatėbe, Horoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning pin for piano. 3,869,953, Cl. 84-201.000.

Tateishi, Teizaburo: *See—*
Kubota, Hayato; Nakayama, Sadao; and Tateishi, Teizaburo, 3,870,733.

Taub, David: *See—*
Wendler, Norman L.; Taub, David; Slates, Harry L.; and Zelawski, Zbigniew S., 3,870,747.

Taunton-Rigby, Alison: *See—*
Knott, Roger L.; and Taunton-Rigby, Alison, 3,870,719.

Taylor, Brian W.: *See—*
Tabacek, Joseph A.; Taylor, Brian W.; and Vogel, Roger F., 3,870,545.

Taylor & Challen Limited: *See—*
Plaister, John Edward; and Cole, Leonard Edward, 3,869,893.

Taylor, Clarence. Apparatus for orienting and feeding articles. 3,870,194, Cl. 221-160.000.

Taylor, Leo Ottis, to Xerox Corporation. Phase controlled power supply. 3,870,903, Cl. 307-252.00N.

Taylor Machine Works: *See—*
Snelling, Murdock M., Jr., 3,870,180.

Technic Inc.: *See—*
Weisberg, Alfred M.; and Butler, Florence P., 3,870,619.

Technomatic A.G.: *See—*
Ruchser, Erich; and Ott, Helmut, 3,870,073.

Tectonics Research Ireland Limited: *See—*
Timoney, Seamus G., 3,869,866.

Tedesh, George E. Window awning. 3,869,838, Cl. 52-76.000.

Teijin Limited: *See—*
Yamashita, Gentaro; and Yamamoto, Kiyoshi, 3,870,754.

Telefonaktiebolaget L M Ericsson: *See—*
Ouvrier, Gunther, 3,870,955.

Teng, James; and Stubits, Marcella C., to Anheuser-Busch, Incorporated. Benzyl hydroxypropyl cellulose acetate and process. 3,870,701, Cl. 260-226.000.

Tenneco Chemicals, Inc.: *See—*
Walker, David G.; Keyworth, Donald A.; and Sudduth, Jerome R., 3,870,482.

Tenney, Ralph J., to C. J. Patterson Company. Dough conditioning composition and method. 3,870,799, Cl. 426-62.000.

Tension Envelope Corporation: *See—*
Kranz, Richard, 3,869,964.

Teodorescu, Constantin Gh.; and Ardeleanu, Stefan P., to Institutul Pentru Creatie Stintifica Si Technica-Increst. Process and plant for pneumatic transport. 3,870,250, Cl. 243-6.000.

Tepas, Joseph J., Jr.; and Sangster, Arlon G., to Olin Corporation. Dissolving apparatus. 3,870,471, Cl. 23-267.00E.

Terakado, Seishi: *See—*
Kato, Nobuo; Nakamura, Toshio; and Terakado, Seishi, 3,870,983.

Terakawa, Kazuo: *See—*
Shimizu, Kazuo; Yoshida, Okio; Terakawa, Kazuo; and Aihara, Satoshi, 3,870,558.

Ter Haar, Gary L.: *See—*
Mitchell, Lawrence C.; and Ter Haar, Gary L., 3,870,679.

Terra-Tex Corporation: *See—*
Gidge, Lester, 3,870,583.

Tessier, Joseph Donatien Leo. Sliding game piece having friction reduction air cushion. 3,870,309, Cl. 273-128.0CS.

Tetsudo Kizai Kogyo Company Limited: *See—*
Toyama, Shigetaro; and Matsuo, Yoshio, 3,870,231.

Texaco Exploration Canada Ltd.: *See—*
McKay, Alexander S., 3,870,879.

Texaco Inc.: *See—*
Ashton, William B.; Gonzalez, Luis A.; Nelson, Gerald V.; and Mead, Theodore C., 3,870,622.
McCoy, Frederic C.; and Cole, Edward L., 3,870,765.

Textron Inc.: *See—*
DeCaro, Charles J., 3,869,942.
Gorski, Walter, 3,870,125.

Tezuka, Shigeru: *See—*
Sato, Masamichi; and Tezuka, Shigeru, 3,870,514.

Theissen, Ferdinand: *See—*
Lussling, Theodor; Schreyer, Gerd; Theissen, Ferdinand; and Weigert, Wolfgang, 3,870,746.

Theodore, Paris, to Seventrees, Ltd. Handcuff case. 3,870,208, Cl. 224-2.00F.

Thermo-Rite Mfg. Co., The: *See—*
Lydle, John E.; and Yakubik, Charles F., 3,870,032.

Theurer, Josef: *See—*
Plasser, Franz, deceased; Theurer, Josef; and Schubert, Egon, 3,869,907.

Thiel, Anton: *See—*
Gilles, Martin; and Thiel, Anton, 3,870,337.

Thiel, Frank L.: *See—*
Racki, Jerome G.; and Thiel, Frank L., 3,870,396.

Thomas, John M., to Elliott-Williams Company, Inc. Door structure for large freezer. 3,869,873, Cl. 62-275.000.

Thompson, James Douglas: *See—*
Gale, William F.; and Thompson, James Douglas, 3,869,742.

Thoms, William F.: *See—*
Steinmetz, Floyd; and Thoms, William F., 3,869,985.

Thomson-CSF: *See—*
Mathieu, Raymond, 3,869,935.
Peyrard, Yves; and Renault, Jean-Claude, 3,870,923.

Thorburn, Fred T., to Shofu Dental Corporation. Slotted chuck for tool holder. 3,869,796, Cl. 32-26.000.

Thornburgh, William F., to General Motors Corporation. Engine and valve cover therefor having integral air gallery. 3,869,859, Cl. 60-305.000.

Tibbals, Edward Camp, Jr. Container. 3,870,190, Cl. 220-338.000.

Tice, John D.; and Benner, Robert I., to Sun Oil Company. Hydrogenation catalyst activation. 3,870,624, Cl. 208-143.000.

Tieman, Lloyd E. Fishhook extractor. 3,869,822, Cl. 43-53.500.

Tile, German Tomasovich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.

Times Wire and Cable Companay: *See—*
Peoples, Dennis Robert; and Maack, David Ralph, 3,870,977.

Timex Corporation: *See—*
Sodler, Walter E., 3,869,855.

Timmerbeil, Karl-Ernst, to Packautomatic GmbH & Co. K.G., Firma. Folding device for packaging machines. 3,869,846, Cl. 53-182.000.

Timoney, Seamus G., to Tectonics Research Ireland Limited. Internal combustion engine turbocharger drives and controls. 3,869,866, Cl. 60-607.000.

Titterington, Joseph Bell: *See—*
Jackson, Sydney; and Titterington, Joseph Bell, 3,871,018.

Tjurin, Valery Fedorovich: *See—*
Panferov, Viktor Mikhailovich; Grunin, Lev Petrovich; Ilin, Lev Mikhailovich; Privalov, Mikhail Moiseevich; Filatov, Andrei Dmitrievich; Ovchinnikov, Gennady Elizarovich; Antipin, Vadim Grigorievich; Lednov, Viktor Andreevich; Tjurin, Valery Fedorovich; Rutman, Dmitry Samuilovich; Basias, Igor Pavlovich; and Tile, German Tomasovich, 3,869,996.

Tocci, Mario Peter: *See—*
Kietzman, John Howard; and Tocci, Mario Peter, 3,870,426.

Tokico Ltd.: *See—*
Ishii, Akemi; and Suda, Syotaro, 3,869,928.

Tokuyama Soda Kabushiki Kaisha: *See—*
Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.

Tokyo Metropolitan Government: *See—*
Mita, Ikuo, 3,870,608.

Tokyo-Shibaura Eelctric Co., Ltd.: *See—*
Ogawa, Kazuo; Machii, Tetsuo; Sawano, Takahiro; Kubota, Katuhiko; and Yotumoto, Yoshiharu, 3,870,944.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Takamura, Isutomu; Kanada, Yoshimi; and Suzuki, Shintari, 3,870,564.

Tokyo Shibouro Electric Co., Ltd.: *See—*
Shimizu, Kazuo; Yoshida, Okio; Terakawa, Kazuo; and Aihara, Satoshi, 3,870,558.

Tolbird, Paul D. Static switching control. 3,870,877, Cl. 250-209.000.

Tolson, Ray C., Jr.: *See—*
Tolson, Ray C., Sr.; and Tolson, Ray C., Jr., 3,870,804.

Tolson, Ray C., Sr.; and Tolson, Ray C., Jr. Preparation of fried parboiled rice and the resulting product. 3,870,804, Cl. 426-141.000.

Tombs, Michael Peter, to Lever Brothers Company. Fluid aqueous protein compositions and food products prepared therefrom. 3,870,801, Cl. 426-92.000.

- Tomita, Shinjiro: *See—*
  - Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.
- Tomokawa, Hisao: *See—*
  - Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.
- Tonichi Manufacturing Co., Ltd.: *See—*
  - Tsuji, Hiroshi, 3,869,941.
- Tooze, Michael John; and Knight, Peter Michael, to Elliott Brothers (London) Limited. Waveform generator and phase shifter. 3,870,938, Cl. 318-605.000.
- Torck, Bernard; Derrien, Michel; and Franck, Jean-Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Modified halogenated alumina catalyst for isomerizing saturated hydrocarbons. 3,870,653, Cl. 252-429.00R.
- Torgersen, Ole: *See—*
  - Kleppe, Byrge; and Torgersen, Ole, 3,870,081.
- Torkildsen, Robert A.: *See—*
  - Dempsey, Russell M.; Nolan, Mary E.; La Conti, Anthony B.; and Torkildsen, Robert A., 3,870,616.
- Toromanoff, Edmond: *See—*
  - Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,870,710.
  - Martel, Jacques; Buendia, Jean; and Toromanoff, Edmond, 3,870,711.
- Torrington, Leslie Albert, to RCA Corporation. Pickup arm control for video disc player. 3,870,320, Cl. 274-23.00A.
- Tosi, Arduino. Kinematic transmission devices. 3,869,929, Cl. 74-112.000.
- Toth, Thomas Daniel, to Addressograph-Multigraph Corporation. Fluid film thickness sensor and control system for utilizing same. 3,869,984, Cl. 101-349.000.
- Tournut, Claude: *See—*
  - Grimaud, Edouard; and Tournut, Claude, 3,870,691.
- Towner, Frank Richard; and Snook, John Robert, to Sperry Rand Limited. Data recorders. 3,870,216, Cl. 226-181.000.
- Towner, Frank Richard; and Snook, John Robert, to Sperry Rand Limited. Data recorders. 3,870,217, Cl. 226-188.000.
- Toyama, Koichi; and Taniguchi, Koichi, to Nippondenso Co., Ltd. Wheel speed detector for vehicles. 3,870,911, Cl. 310-155.000.
- Toyama, Shigetaro; and Matsuo, Yoshio, to Tetsudo Kizai Kogyo Company Limited. Rail fastening device. 3,870,231, Cl. 238-324.000.
- Toyo Electronics Industry Corporation: *See—*
  - Taniguchi, Hideo, 3,870,856.
- Toyoboseki Kabushiki Kaisha: *See—*
  - Makimura, Osamu; and Goto, Teruo, 3,870,688.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Goto, Kenji; Mitsui, Ryozo; and Ishikawa, Norikatsu, 3,869,858.
  - Senda, Katsuyuki; and Kobashi, Mamoru, 3,870,918.
- Trammell, Earl M., Jr. Container unit for an automobile. 3,870,210, Cl. 224-42.45R.
- Travers, Hal, to Seneca Chemicals, Inc. Liquid cleaning agent. 3,870,647, Cl. 252-118.000.
- Treace, Harry T., to Richards Manufacturing Company. Cutting blade for use with an oscillating cast cutter. 3,869,795, Cl. 30-388.000.
- Tribbeck, Terrence Donald: *See—*
  - Stacey, Martyn Hugh; and Tribbeck, Terrence Donald, 3,870,762.
- Triplex Safety Glass Company Limited: *See—*
  - Jack, Harry Ross Scarlett; Richards, Peter Henry; and Skelding, Kenneth George, 3,870,500.
- Tritten, Donald E.: *See—*
  - Mackey, E. Scudder; Pechmann, Karl; and Tritten, Donald E., 3,870,521.
- Troussier, Maurice: *See—*
  - Grimaud, Edouard; and Troussier, Maurice, 3,870,767.
- Tsao-Wu, Nelson Tsin: *See—*
  - Carbrey, Robert Lawrence; Moran, John Christian; and Tsao-Wu, Nelson Tsin, 3,870,826.
- Tsuchiya, Takashi: *See—*
  - Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio, 3,870,792.
- Tsuji, Hiroshi, to Tonichi Manufacturing Co., Ltd. Torque wrench. 3,869,941, Cl. 81-52.500.
- Tucker, Gerald L.: *See—*
  - Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., Jr., 3,870,782.
- Tull, Herbert G., III, to Hoerner Waldorf Corporation. Stacking and transferring unit. 3,870,166, Cl. 214-6.0BA.
- Tull, Roger J.; Czaja, Robert F.; Shuman, Richard F.; and Pines, Seemon H., to Merck & Co., Inc. Process for preparing indenyl acetic acids. 3,870,753, Cl. 260-515.00A.
- Tums, Valdis M., to Union Carbide Corporation. Shirred casing stick with reverse helical fold pattern. 3,869,756, Cl. 17-49.000.
- Tuomela, Robert M.; Schroeder, Gustave W.; and Mattila, Robert O., to Reserve Mining Company. Feed rate control for jet piercer. 3,870,111, Cl. 175-11.000.
- Turner, William R., to Automation Industries, Inc. Hybrid carrier beam sonar. 3,870,988, Cl. 340-3.00R.
- Tyco Laboratories, Inc.: *See—*
  - Labelle, Harold E., Jr., 3,870,477.
- Tylinski, Raymond S., to Rock Industries Machinery Corporation. Screen tensioning device. 3,870,630, Cl. 209-403.000.
- Tymann, Gerhard, to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Hoftung. Wide-band vertically polarized omnidirectional antenna. 3,871,000, Cl. 343-771.000.
- U.C.C. International Limited: *See—*
  - Button, David; and Hopkins, Philip Ward, 3,870,908.
- Uchida, Yasuo; and Kuroyanagi, Yoshitaka, to Konishiroku Photo Industry Co., Ltd. Automatic exposure control means for a camera. 3,871,005, Cl. 354-38.000.
- Ueda, Hiroshi: *See—*
  - Okumoto, Takeomi; Ueda, Hiroshi; Sakai, Junji; and Shimada, Yogo, 3,870,529.
- Uhlig, Klaus: *See—*
  - Kappeler, Peter; and Uhlig, Klaus, 3,870,346.
- Ullman, Howard M., Jr.: *See—*
  - Lautzenheiser, Robert D.; and Ullman, Howard M., Jr., 3,870,239.
- Ulrich, James K., to Starline, Inc. Ground engaging hay bale rolling apparatus. 3,869,849, Cl. 56-343.000.
- Ulrich, Paul; and Stauble, Max, to Ciba-Geigy AG. New vat dyestuffs, their manufacture and use. 3,870,717, Cl. 260-249.000.
- Umbaugh, Charles Wayne, to Honeywell Information Systems Inc. Method for precisely aligning circuit devices coarsely positioned on a substrate. 3,869,787, Cl. 29-577.000.
- UMC Industries, Inc.: *See—*
  - Carter, Ronald W.; and Nash, Charles D., 3,870,629.
  - Woltjen, Duane W., 3,870,142.
- Umezu, Hideo, to International Fastener Establishment. Press-on and split-off type fastener and manufacturing device therefor. 3,869,764, Cl. 24-204.000.
- Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, to BASF Aktiengesellschaft; and Heinrich Cronau, Building Contractors. Consolidating ballast. 3,869,988, Cl. 104-11.000.
- Uncapher, Richard Danby, to International Telephone and Telegraph Corporation. Method of making a perforate wafer from filamentary material. 3,870,579, Cl. 156-174.000.
- Underwood, John Duckles, to International Standard Electric Corporation. Selenium deposition. 3,870,614, Cl. 204-181.000.
- Ungerer, Frau Irma: *See—*
  - Rodach, Alexander; and Weber, Hans, 3,869,845.
- Unic Corporation: *See—*
  - Nakajo, Toshihiro, 3,870,162.
- Unifoam AG: *See—*
  - Petzetakis, Nicholas George, 3,870,441.
- Union Carbide Corporation: *See—*
  - Szekely, Andrew Geza, 3,870,511.
  - Tums, Valdis M., 3,869,756.
- Union Oil Company of California: *See—*
  - Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., 3,870,668.
- Unisearch Limited: *See—*
  - Huey, Richard Meredith; and Rajaratnam, Krishna, 3,870,925.
- United States of America
  - Agriculture: *See—*
    - Powell, Richard G.; and Smith, Cecil R., Jr., 3,870,727.
  - Army: *See—*
    - Nichols, Peter L., Jr., 3,870,578.
    - Pearlstein, Fred; and Weightman, Robert F., 3,870,526.
  - Atomic Energy Commission: *See—*
    - Oltman, Billie G.; Eckerman, Keith F.; Romberg, Gerald P.; and Prepejchal, William, 3,869,918.
    - Wolowodiuk, Walter, 3,870,099.
  - Health Education and Welfare: *See—*
    - Knott, Roger L.; and Taunton-Rigby, Alison, 3,870,719.
  - National Aeronautics and Space Administration: *See—*
    - Gedwill, Michael A.; and Grisaffe, Salvatore J., 3,869,779.
  - Navy: *See—*
    - DiPerry, John, 3,870,997.
    - Hills, Marian E.; and Ayres, William M., 3,870,577.
    - Hughes, Richard Smith, 3,870,906.
    - Miller, Raymond B., 3,870,996.
    - Nielson, Robert L., 3,870,995.
- U.S. Philips Corporation: *See—*
  - Buurman, Herman, 3,870,498.
  - De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, 3,870,920.
  - Reinhoudt, Jacobus Pieter, 3,870,382.
  - Spiessens, Raymond Francois, 3,870,497.
  - Van Daalen, Jan Johannes; and Daams, Jasper, 3,870,504.
- U.S. Phillips Corporation: *See—*
  - Van Roosmalen, Johannes H. T., 3,870,002.
- University of California, The Regents of the: *See—*
  - Waugh, Theodore R.; Smith, Richard C.; Anzel, Sanford H.; and Orofino, Caesar F., 3,869,731.
- University of Illinois Foundation: *See—*
  - Flygare, Willis H.; and Ware, Bennie R., 3,870,612.
- University of Utah: *See—*
  - Cutler, Ivan B., 3,870,496.
- Uno, Hitoshi; and Irie, Akira, to Dainippon Pharmaceutical Co. Ltd. Process for preparing pyridoxal-5'-monophosphate. 3,870,724, Cl. 260-297.00V.
- Unxov, Evgeny Pavlovich: *See—*
  - Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.

- Upjohn Company, The: *See—*
  - Bannister, Brian, 3,870,699.
  - Collins, Robert J., 3,870,793.
  - Farrissey, William J., Jr.; and Rausch, Karl W., Jr., 3,870,674.
  - Kaugars, Girts, 3,870,505.
- Urano, Fumio: *See—*
  - Nomura, Katsuhiko; Kurei, Hiroshi; and Urano, Fumio, 3,871,011.
- USC Incorporated: *See—*
  - Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,870,078.
- USM Corporation: *See—*
  - Hold, Peter; Notte, Angelo J.; and Rizzi, Marc A., 3,870,445.
- USM Corporation of Flemington, New Jersey: *See—*.
  - Meyer, Engelbert A., 3,869,760.
- Uthenwoldt, Frederick W., to Pitney-Bowes, Inc. Locking system. 3,869,885, Cl. 70-315.000.
- Valentine, Charles G., to Xerox Corporation. Educational device for learning the oscilloscope. 3,869,811, Cl. 35-19.00A.
- Valera, Marco: *See—*
  - Modena, Mario; Ragazzini, Mario; Borsini, Giancarlo; and Valera, Marco, 3,870,689.
- Valle, Howard C.: *See—*
  - Hardiman, Russell J.; Leiter, Leigh David; and Valle, Howard C., 3,870,263.
- Valmar Swimming Pools Ltd.: *See—*
  - Valois, Marcel; and Valois, Kenneth, 3,869,736.
- Valois, Kenneth: *See—*
  - Valois, Marcel; and Valois, Kenneth, 3,869,736.
- Valois, Marcel; and Valois, Kenneth, to Valmar Swimming Pools Ltd. Collapsible swimming pool. 3,869,736, Cl. 4-172.190.
- Valspar Corporation, The: *See—*
  - Pipkins, David D., 3,870,651.
- Valve Systems International, Inc.: *See—*
  - Graham, Donald E.; and Battaglia, Larry A., 3,870,071.
- Van Dyk Research Corporation: *See—*
  - Landrith, James Edward, 3,870,197.
- Van Daalen, Jan Johannes; and Daams, Jasper, to U.S. Philips Corporation. Cycloalkylphenyl ureas as herbicides. 3,870,504, Cl. 71-120.000.
- Vandenbroucke, Gilbert, to N. V. Behaert S.A. Arc welding electrode. 3,870,854, Cl. 219-145.000.
- Vandenkieboom, John, to La Salle Machine Tool, Inc. Piston turning machine. 3,869,947, Cl. 82-19.000.
- Vanderbilt, Vern C., Jr.; Zimmer, Clarence L.; and Van Ostrand, William F., to Dynamic Precision Controls Corporation. Oscillator and flow measuring apparatus. 3,870,972, Cl. 331-140.000.
- Vander Louw, John F.: *See—*
  - Elton, Robert L.; and Vander Louw, John F., 3,870,593.
- Vander Stel, Gerald L.: *See—*
  - Anderson, John D.; and Vander Stel, Gerald L., 3,869,827.
- Van Dornick, Edward M. Maintenance of high heat exchange transfer rates and improved alkali desublimation conditions in portland cement production. 3,870,534, Cl. 106-100.000.
- Van Ostrand, William F.: *See—*
  - Vanderbilt, Vern C., Jr.; Zimmer, Clarence L.; and Van Ostrand, William F., 3,870,972.
- Van Roosmalen, Johannes H. T., to U.S. Phillips Corporation. Television camera tube with three electrode focusing lens. 3,870,002, Cl. 313-389.000.
- Van Uitert, Legrand Gerard: *See—*
  - Dillon, Joseph Francis, Jr.; Madison, Ernst Michael Gyorgy; and Van Uitert, Legrand Gerard, 3,870,397.
- Varga, Zoltan. Balloon balancing toy. 3,870,298, Cl. 273-1.00R.
- Vasile, Carmine F., to Hazeltine Corporation. Surface wave transducer with reduced reflection coefficient. 3,870,975, Cl. 333-30.00R.
- Vasilieva, Irina Nikolaevna: *See—*
  - Alexeeva, Alexandra Konstantinovna; Yakovleva, Ljudmila Alexandrovna; Vasilieva, Irina Nikolaevna; Andzhaparidze, Otar Georgievich; and Alexandrova, Angelina Nikolaevna, 3,870,598.
- Vaughan, Curtis M. Multipurpose hygienic kit. 3,870,045, Cl. 128-229.000.
- Vaughan, Merle E., to Peterson Machine Tool, Inc. Drill guide for enlarging engine valve stem guides. 3,869,803, Cl. 33-181.0AT.
- Vaughn Corporation: *See—*
  - West, Roland J., 3,870,277.
- Vayssiere, Pierre: *See—*
  - Martin, Daniel; and Vayssiere, Pierre, 3,870,510.
- Veba-Chemie AG: *See—*
  - Ibing, Gunther; and Neubold, Kurt, 3,870,743.
- Velsicol Chemical Corporation: *See—*
  - Hokama, Takeo, 3,870,732.
- Verbeke, Henry. Bag sealing apparatus and method of use. 3,869,842, Cl. 53-14.000.
- Verge, John Pomfret: *See—*
  - Hughes, Peter Graham; and Verge, John Pomfret, 3,870,725.
- Verlinden, Jerry M.; and Swinford, Gary D., to Mile High Equipment Company. Ice chip or flake producing machine. 3,869,875, Cl. 62-354.000.
- Vestal, George W. Processing of coal to produce liquid and vaporous hydrocarbons. 3,870,611, Cl. 204-168.000.
- Viceroy Manufacturing Company Limited: *See—*
  - Luczkiw, John, 3,870,183.
- Victor Company of Japan, Limited: *See—*
  - Suzuki, Tomohide; and Aoki, Toshio, 3,870,820.
  - Takahashi, Nobuaki; and Kasuga, Masao, 3,870,971.
- Victor, Leslie E. High line towing device. 3,870,280, Cl. 254-134.30R.
- Victory, Thomas J. Method of converting one type of brake band to another type. 3,869,785, Cl. 29-401.000.
- Vidar Corporation: *See—*
  - Baichtal, James R.; and McDonald, John C., 3,870,824.
  - Gayler, Winston D.; and Ahern, James E., 3,870,823.
- Vignaud, Jean-Pierre; and Leguy, Bernard, to Regie Nationale des Usines Renault. Reproduction lathe. 3,869,946, Cl. 82-14.00R.
- Vigneron, Pierre, to Pont-A-Mousson S. A. Method for making a branch connection under pressure to a pipe and a screwthreaded branch connection for carrying out said method. 3,870,064, Cl. 137-15.000.
- Viguier, Leon Fernand, to Laboratories Medicoplast. Apparatus for separating and injecting blood component. 3,870,042, Cl. 128-214.00D.
- Virginia Chemicals Inc.: *See—*
  - Ellis, Leonard C.; and Kise, Mearl A., 3,870,756.
- Vockenhuber, Karl: *See—*
  - Muszumanski, Trude, 3,870,401.
- Voegeli, Henry Carl. Coin-operated latch mechanism with coin return means. 3,870,136, Cl. 194-54.000.
- Vogel, Roger F.: *See—*
  - Tabacek, Joseph A.; Taylor, Brian W.; and Vogel, Roger F., 3,870,545.
- Volkswagenwerk Aktiengesellschaft: *See—*
  - Schulz, Waldemar, 3,870,335.
- Volokhov, Ivan Ivanovich: *See—*
  - Rybalko, Alexei Petrovich; Karpekin, Viktor Vladimirovich; Didenko, Nikolai Sidorovich; and Volokhov, Ivan Ivanovich, 3,869,871.
- Von Berlichingen, Max. Air supply for pit type refuse incinerator. 3,869,994, Cl. 110-8.00R.
- von der Decken, Claus-Benedict: *See—*
  - Presser, Karl-Heinz; and von der Decken, Claus-Benedict, 3,869,919.
- Von Grunberg, Hubertus: *See—*
  - Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, 3,870,377.
- Voss, William M.: *See—*
  - Woods, Thomas H.; and Voss, William M., 3,870,814.
- Vosteen, Robert E.; and Williams, Bruce Theodore, to Monroe Electronics, Inc. Electrometer voltage follower having MOSFET input stage. 3,870,968, Cl. 330-207.00P.
- Vukotic, Milos: *See—*
  - Eriksson, Bolik Anders Gottfrid; Johansson, Erik Karl Gustav; and Vukotic, Milos, 3,870,486.
- Vyzkumny ustav tvarecich streju a technologie tvareni: *See—*
  - Holub, Jiri, 3,869,895.
- W. M. Cissell Manufacturing Company: *See—*
  - Bullock, Norman J., 3,869,815.
- W. R. Grace and Co.: *See—*
  - Baird, Richard W.; and Baird, William G., Jr., 3,870,610.
  - Holdsworth, Robert S.; O'Neill, Gerald Joseph; and Simons, Charles William (said Simons assors. to), 3,870,797.
  - Palmer, Nigel Innes; and Sugarman, Nathan, 3,870,567.
  - Schirmer, Henry G., 3,870,609.
- Wachter, William J.: *See—*
  - Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,870,078.
- Wacker-Chemie GmbH: *See—*
  - Piekarski, Gottfried, 3,870,654.
- Wadensten, Theodore S. Noiseless air-actuated turbine-type vibrator. 3,870,282, Cl. 259-1.000.
- Wagner, Eugene R., to Dow Chemical Company, The. Process for oxygen-alkylation of sterically hindered phenols. 3,870,744, Cl. 360-465.00F.
- Wagner, Richard C., to Hollymatic Corporation. Apparatus for depositing flowable material. 3,870,013, Cl. 118-24.000.
- Wagner, Richard C. Shingling apparatus for food items. 3,870,139, Cl. 198-34.000.
- Wahlquist, Carl D., to Building Components Research, Inc. Building construction and method. 3,869,841, Cl. 52-745.000.
- Wakahara, Shigeo, to Nippon Kogaku K.K. Film speed change-over device in a motion picture projector. 3,870,407, Cl. 352-194.000.
- Wakamiya, Kinji; and Kobayashi, Isamu, to Sony Corporation. Semiconductor integrated circuit. 3,871,007, Cl. 357-49.000.
- Wakayama Iron Works Ltd.: *See—*
  - Miyamoto, Tadashi; and Iwahashi, Masaaki, 3,869,882.
- Wakefield, David John: *See—*
  - Gosling, William Robert Frederick; Wakefield, David John; and Long, Terry, 3,870,106.
- Walker, Alan J. Current collection means for electric motors. 3,870,914, Cl. 310-219.000.
- Walker, Alfred O., to Nalco Chemical Company. Apparatus and method for monitoring the presence of volatile organic lead compounds. 3,870,469, Cl. 23-232.00E.
- Walker, David G.; Keyworth, Donald A.; and Sudduth, Jerome R., to Tenneco Chemicals, Inc. Process for the separation of c_4 acetylenic hydrocarbons from gas streams. 3,870,482, Cl. 55-62.000.
- Wallace Murray Corporation: *See—*
  - Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., 3,870,029.

Wallick, Seymour Dudley; and Sandler, Joseph Jacob, to Wis-King, Inc. Wall brush. 3,869,750, Cl. 15-322.000.
Walls, Milton A.: *See—*
Dixson, Bruce E.; Hoffman, Marcus I., III; and Walls, Milton A., 3,870,495.
Walter, Arthur A. W.; and Langenbach, Erwin, to Erwin Sick Optik-Elektronik. Light barrier apparatus. 3,870,878, Cl. 250-239.000.
Walters, Rodney P.: *See—*
Johnson, Waldo O.; and Walters, Rodney P., 3,869,839.
Walton, Richard Rhodes; and Munchbach, George Ernest, to said Walton by said Munchbach. Methods of compressively treating flexible sheet materials. 3,869,768, Cl. 26-18.600.
Waltz, Dale M.: *See—*
Klay, William F., 3,869,752.
Ward, John H.; and Spector, George. Adjustable density anti-glare visor for vehicles. 3,870,403, Cl. 350-276.000.
Ware, Bennie R.: *See—*
Flygare, Willis H.; and Ware, Bennie R., 3,870,612.
Warren, Bert; and Evans, George L., to Schering Corporation. Novel diagnostic system for differentiation of enterobacteriaceae. 3,870,601, Cl. 195-103.50R.
Washechek, Delmar: *See—*
Powers, Donald; and Washechek, Delmar, 3,869,823.
Watanabe, Akio; and Murata, Yasuzo, to Pilot Man-Nev-Hitsu Kabushiki Kaisha. Visual recording method and means. 3,870,435, Cl. 117-36.200.
Watanabe, Itaru: *See—*
Tanaka, Kyugo; Oshima, Shozo; and Watanabe, Itaru, 3,870,760.
Watanabe, Masaru; Kobayashi, Kesanao; Misu, Hiroshi; Sato, Akira; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 3,870,524, Cl. 96-115.00P.
Watanabe, Wataru: *See—*
Nara, Hirotoshi; Watanabe, Wataru; Yokota, Tadashi; and Yanagi, Chiak, 3,870,248.
Watermill Engineering Limited: *See—*
Sharp, Douglas Cecil William Thomas, 3,869,969.
Watson, Carlton B., Jr.: *See—*
Lawlor, Robert E.; Watson, Carlton B., Jr.; and McGill, Michael E., 3,870,315.
Watson, Donald W., to Xerox Corporation. Selective transfer of an electrostatic toner image. 3,870,541, Cl. 117-17.500.
Watts, John, to Boeing Company, The. Landing gear and locking apparatus therefor. 3,870,254, Cl. 244-102.0SL.
Waugh, Theodore R.; Smith, Richard C.; Anzel, Sanford H.; and Orofino, Caesar F., to University of California, The Regents of the. Articulated two-part prosthesis replacing the knee joint. 3,869,731, Cl. 3-1.000.
Wean United Inc.: *See—*
Briggs, Albert Theodore, 3,870,243.
Deffenbaugh, James F.; Williams, Arthur L.; and Ellis, Robert S., 3,870,851.
Webb, Oswald; and Pagdin, Brian Colin, to GKN Transmission Limited. Vehicle with differential assembly. 3,869,940, Cl. 74-711.000.
Webber, Robert C. Expansion valve sensor bulb. 3,869,872, Cl. 62-225.000.
Weber, Hans: *See—*
Rodach, Alexander; and Weber, Hans, 3,869,845.
Webster, William C.: *See—*
Minnick, Leonard John; Smith, Charles L.; and Webster, William C., 3,870,535.
Weetall, Howard H., to Corning Glass Works. Method of bonding hydroxyquinoline to an inorganic material. 3,870,543, Cl. 117-54.000.
Weggeland, John H. Picture viewer. 3,869,819, Cl. 40-64.00A.
Weigert, Wolfgang: *See—*
Lussling, Theodor; Schreyer, Gerd; Theissen, Ferdinand; and Weigert, Wolfgang, 3,870,746.
Weightman, Robert F.: *See—*
Pearlstein, Fred; and Weightman, Robert F., 3,870,526.
Weiland, Werner, to Rheintechnik Weiland & Kaspar OHG. Obstetric device for animals. 3,870,049, Cl. 128-353.000.
Weiler, Ernest D.: *See—*
Miller, George A.; and Weiler, Ernest D., 3,870,795.
Weiner, Joseph R.: *See—*
Adamski, Joseph A.; Weiner, Joseph R.; and Lavoie, Girard H., 3,870,472.
Weisberg, Alfred M.; and Butler, Florence P., to Technic Inc. Process for producing bright electrodeposits of gold and its alloys. 3,870,619, Cl. 204-43.00G.
Weischedel, Herbert Rudolf; and Westerman, George Raymond, to Bell Telephone Laboratories, Incorporated. Converter circuit with correction circuitry to maintain signal symmetry in the switching devices. 3,870,943, Cl. 321-2.000.
Wemac Company: *See—*
Kallel, Allen, 3,870,275.
Wendler, Norman L.; Taub, David; Slates, Harry L.; and Zelawski, Zbigniew S., to Merck & Co., Inc. Intermediates and process for prostaglandin synthesis. 3,870,747, Cl. 260-468.00G.
Wensch, Alfred: *See—*
Doschko, Werner; Fohlisch, Wolfgang; and Wensch, Alfred, 3,869,853.
Wentzel, Warren W., Jr.; and Harper, Robert A., Jr., to Aluminum Company of America. Integral in-line discharge air gravity conveyor. 3,870,374, Cl. 302-28.000.
Werner, Edward E., to Kimberly-Clark Corporation. Sheet pulp separator and feeder for baled pulp. 3,870,167, Cl. 214-8.5SS.
Werner & Pfleiderer: *See—*
Bausch, Gunther; Millauer, Christian; and Paul, Harald, 3,870,285.
Werner, Udo; Biesen, Kurt; and Sroka, Jurgen, to Bremsky Aktiengesellschaft, Firma. Seat, particularly for automotive vehicles. 3,870,269, Cl. 248-394.000.
Wernsing, Kenneth L. Self-locking winch line hook. 3,870,357, Cl. 294-74.000.
Werych, Ewald R., to Sola Basic Industries, Inc. In-situ molded reinforced furnace panels. 3,870,463, Cl. 432-247.000.
Werych, Ewald R., to Sola Basic Industries, Inc. Electric hot plate heating unit with a ceramic cover. 3,870,861, Cl. 219-459.000.
Wesco Industries, Corporation: *See—*
Schussel, Edward W., 3,870,242.
West, Roland J., to Vaughn Corporation. Ramp for vehicles. 3,870,277, Cl. 254-88.000.
Westerman, George Raymond: *See—*
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,870,943.
Westvaco Corporation: *See—*
Falkehag, Sten I.; and Bailey, Carl W., III, 3,870,681.
Wetherby, Robert Earle: *See—*
Mullin, George Cruise; Wetherby, Robert Earle; and Chevalier, Victor Oscar, 3,869,834.
Whalen, Kenneth R.: *See—*
Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., 3,869,762.
Whall, James M., to Polaroid Corporation. Spread roller system for self developing type photographic apparatus. 3,871,010, Cl. 354-86.000.
Whirlpool Corporation: *See—*
Bashark, Larry Thomas, 3,870,417.
Bond, Ralph W., 3,870,392.
Doner, John T., 3,870,862.
Friesen, Dale M.; and Nordeen, Erwin E., 3,870,491.
Sulcek, Charles E., 3,869,979.
White, Chester A. Multi level holding tank discharge system. 3,869,733, Cl. 4-67.00A.
Whitehead, David Montagu: *See—*
Desty, Denis Henry; Whyman, Barry Herbert Francis; and Whitehead, David Montagu, 3,870,459.
Whitten, Charles M.; and Hagstrom, Robert G. Production of activated char using a moving grate stoker furnace. 3,870,652, Cl. 252-421.000.
Whyman, Barry Herbert Francis: *See—*
Desty, Denis Henry; Whyman, Barry Herbert Francis; and Whitehead, David Montagu, 3,870,459.
Wickum, Jay A.: *See—*
Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Maust, Daniel A., 3,869,762.
Wielezynski, Leck Godfryd. Process and equipment for the deasphalting of residues from vacuum distillation of petroleum; and application to the remaining of lubricant oil. 3,870,625, Cl. 208-180.000.
Wieser, Louis, to J. Bobst & Fils SA. Feeding device for a carton forming machine. 3,870,140, Cl. 198-190.000.
Wikstrom, Berth Atle: *See—*
Edlund, Lars Anders; and Wikstrom, Berth Atle, 3,870,855.
Wilber, James Albert, to RCA Corporation. Chrominance signal correction. 3,871,020, Cl. 358-8.000.
Wilcox, David L.: *See—*
King, William J.; and Wilcox, David L., 3,871,014.
Wilcox, Milton E., to Motorola, Inc. Noise and overload protection circuit for synchronous demodulators. 3,871,022, Cl. 358-23.000.
Wildman, Claude L.; and Hellmer, George A., to Kummerer, Richard A.; and Besten, Alfred D., part interest to each. Method of making a chain link. 3,869,856, Cl. 59-8.000.
Wildwood Products, Inc.: *See—*
Phillips, David P., 3,870,276.
Wiley, Robert Emerson; and Coniglio, James John, to Acheson Industries, Inc. Ignition cable. 3,870,987, Cl. 338-214.000.
Wilhelm, Donald L.: *See—*
Kryger, Allen C.; Nevin, Charles S.; and Wilhelm, Donald L., 3,870,527.
Wilhelm, Frederick R.; Hastings, Donald R.; and Lyth, William W., to Nordson Corporation. Color change of electrostatic spray apparatus. 3,870,233, Cl. 239-15.000.
Wiljes, Juergen: *See—*
Biegler, Hanns; and Wiljes, Juergen, 3,870,532.
Wilkerson, Edward D. Quick-check aligner. 3,869,798, Cl. 33-264.000.
Wilkerson, Edward D. Engine ventilation of boat bilges. 3,870,008, Cl. 114-211.000.
Willemse, Adrianus H.: *See—*
Kratcoski, Francis L.; and Willemse, Adrianus H., 3,870,017.
Williams, Arthur L.: *See—*
Deffenbaugh, James F.; Williams, Arthur L.; and Ellis, Robert S., 3,870,851.
Williams, Bruce Theodore: *See—*
Vosteen, Robert E.; and Williams, Bruce Theodore, 3,870,968.
Williams, Dick W.: *See—*
Darrah, John W., III; and Williams, Dick W., 3,869,843.
Williams, Paul, to Infra Systems, Inc. Apparatus for negating effect of scattered signals upon accuracy of dual-beam infrared measurements. 3,870,884, Cl. 250-339.000.

Willich, Jean Herbert, to August Bilstein, Firma. Fluid springs, particularly for vehicles. 3,870,286, Cl. 267-64.00R.
Willis, Peter Charles: *See—*
Bartlett, Christopher Leslie; and Willis, Peter Charles, 3,869,800.
Wilson, Bradford W. Body guide for athletic club swinging training. 3,870,317, Cl. 273-188.00R.
Wilson, Carl D.: *See—*
Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., 3,870,079.
Wilson, David G.; Hanson, Brian D.; and Malarkey, John M. Variable-leverage brakes for bicycles and the like. 3,870,127, Cl. 188-24.000.
Wilson, Fred V.; and Leblanc, Henry J., Sr., to Standard Brass and Manufacturing Company. Sacrificial anode. 3,870,615, Cl. 204-197.000.
Wilson, Harold R.; and Kamerling, Marc A., to Donnelley Mirrors, Inc. Mirror actuator and support means therefor. 3,870,404, Cl. 350-281.000.
Wilson, Harry Brian: *See—*
Robinson, Michael; Wilson, Harry Brian; and Gray, David Antony, 3,870,506.
Wilson, Rolland E. Insecticide applicator for livestock. 3,870,023, Cl. 119-159.000.
Wilt, Charles R., Jr., to Salem Corporation. Mobile rotary type continuous coke quencher. 3,870,604, Cl. 202-227.000.
Winberg, Douglas F.; and Dyer, Norman D., to Dresser Industries, Inc. Tunneling shield. 3,870,368, Cl. 299-31.000.
Winberg, Douglas F.; and Dyer, Norman D., to Dresser Industries, Inc. Universal saddle mounting for fixed and rolling cutters. 3,870,370, Cl. 299-91.000.
Winkler, Josef: *See—*
Oesterhelt, Gerhard; Winkler, Josef; Falkenberg, Dieter; and de Bucs, Eugen Szabo, 3,870,568.
Winter, Charles M. Tow hitch for fifth wheel type trailer. 3,870,340, Cl. 280-415.00B.
Winter, Edwin M.: *See—*
Lin, Paul T. C.; and Winter, Edwin M., 3,871,015.
Wis-King, Inc.: *See—*
Wallick, Seymour Dudley; and Sandler, Joseph Jacob, 3,869,750.
Wise, Walter G. Flame treating of paperboard and method therefor. 3,870,461, Cl. 432-11.000.
Wisseman, Leo L., to Motorola, Inc. Method and apparatus for adjustment of offset voltage of a differential amplifier. 3,870,967, Cl. 330-30.00D.
Wisseroth, Karl. Homopolymerization or copolymerization of ethylene. 3,870,693, Cl. 260-94.90D.
Witman, Jack H., to Armstrong Cork Company. Dimensionally stable, flexible plastic surface coverings. 3,870,591, Cl. 161-119.000.
Witt, Harro; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Preparation of cross-linked particles of polyurethane or polyurea containing ionic groups. 3,870,684, Cl. 260-75.0NH.
Witte, Waldemar. Electrical appliance with housing of plastic foam material. 3,870,843, Cl. 200-302.000.
Witteborg, E. F., Jr. Fishing spool. 3,870,245, Cl. 242-167.000.
Woehrle, Richard E.: *See—*
Seyh, Edgar J., Jr.; and Woehrle, Richard E., 3,870,618.
Wolf-Gerate GmbH: *See—*
Orth, Gunther, 3,870,147.
Wolff, Robert A., to Admiral Corporation. Sound muting circuit with automatic sound return. 3,870,956, Cl. 325-478.000.
Wolk, Ronald H.: *See—*
Johnson, Axel R.; Wolk, Ronald H.; and Alpert, Seymour B., 3,870,623.
Wollmann, Klaus; Ploger, Walter; and Wopms, Karl-Heinz, to Henkel & Cie GmbH. Process for the production of aminomethane-diphosphonic acid and its salts. 3,870,750, Cl. 260-502.500.
Wolowodiuk, Walter, to United States of America, Atomic Energy Commission. Seal assembly. 3,870,099, Cl. 165-82.000.
Woltjen, Duane W., to UMC Industries, Inc. Flexible belt carrier mechanism. 3,870,142, Cl. 198-193.000.
Wombacher, Peter: *See—*
Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,915.
Kussel, Eckart; Haubold, Heinz-Gunther; and Wombacher, Peter, 3,870,916.
Woodall, Phillip J.: *See—*
McCormick, Joseph L.; McMullen, Charles G.; and Woodall, Phillip J., 3,870,994.
Woods, Thomas H.; and Voss, William M., to Mosler Safe Company, The. Image positioning apparatus and method. 3,870,814, Cl. 178-7.200.
Wootton, Thomas S., to Baldwin Electronics, Inc. Dual frequency transmitter system. 3,870,959, Cl. 325-156.000.
Wopms, Karl-Heinz: *See—*
Wollmann, Klaus; Ploger, Walter; and Wopms, Karl-Heinz, 3,870,750.
Workman, Gerald B.; and Deardurff, Lawrence R., to Owens-Corning Fiberglas Corporation. Starch coated fibers for embedding in resin matrix forming materials and composites so formed. 3,870,547, Cl. 117-72.000.
Wright, Charles H.: *See—*
Hallford, Ben R.; and Wright, Charles H., 3,870,960.
Wright, Craig Nellis; and Richards, Kenneth Julian, to Kennecott Copper Corporation. Process of recovering rhenium values from complex industrial solutions. 3,870,779, Cl. 423-50.000.
Wright, Everald V., to Dravo Corporation. Mooring system for floating structures. 3,870,010, Cl. 114-230.000.
Wright, Jeffrey L.: *See—*
Arakelian, Hagop; and Wright, Jeffrey L., 3,869,812.
Wurst, Bert, to Robert Bosch GmbH. Auxiliary brake control for automotive vehicles particularly having automatic transmissions. 3,870,119, Cl. 180-77.00R.
Wyant, Jon Richard, to Mead Corporation, The. Double wing pocket portfolio and file folder. 3,870,223, Cl. 229-72.000.
Wynn, Robert W.: *See—*
Randall, David I.; and Wynn, Robert W., 3,870,772.
Wyss, C. Robert: *See—*
Siems, Ruth M.; Capossela, Anthony C., Jr.; Halligan, John F.; and Wyss, C. Robert, 3,870,803.
Xerox Corporation: *See—*
Burns, James W., 3,870,921.
Carr, George P.; and Mason, James A., Jr., 3,869,896.
Kaupp, Norbett H., 3,870,515.
Kukucka, William P., 3,870,295.
Mason, Peter John, 3,870,816.
Oagley, Jack R., 3,870,883.
Sato, Masamichi; and Tezuka, Shigeru, 3,870,514.
Scaletta, Joseph Louis, 3,869,910.
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 3,870,516.
Taylor, Leo Ottis, 3,870,903.
Valentine, Charles G., 3,869,811.
Watson, Donald W., 3,870,541.
Yagihara, Tomio: *See—*
Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.
Yakovlev, Vladimir Vasilievich: *See—*
Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
Yakovleva, Ljudmila Alexandrovna: *See—*
Alexeeva, Alexandra Konstantinovna; Yakovleva, Ljudmila Alexandrovna; Vasilieva, Irina Nikolaevna; Andzhaparidze, Otar Georgievich; and Alexandrova, Angelina Nikolaevna, 3,870,598.
Yakubik, Charles F.: *See—*
Lydle, John E.; and Yakubik, Charles F., 3,870,032.
Yakushev, Dmitry Petrovich: *See—*
Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.
Yakushiji, Masatoshi: *See—*
Hirono, Yoshihiko; Ogino, Hatsuo; Nishikawa, Seiichi; Miyazaki, Koshin; Yakushiji, Masatoshi; and Yagihara, Tomio, 3,870,501.
Yamada, Hiroshi; and Kojima, Kenji, to Kabushiki Kaisha Ricoh. Automatic cartridge tape draw-out device. 3,870,246, Cl. 242-192.000.
Yamada, Nobuo: *See—*
Shiraishi, Hiroo; Kurohara, Hiroyoshi; Tomita, Shinjiro; Takenaka, Senji; Yamada, Nobuo; and Hashitani, Motoyoshi, 3,870,485.
Yamaguchi, Mitsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Recorder. 3,869,955, Cl. 84-380.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Hase, Hideonori, 3,870,115.
Yamamoto, Akira: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, 3,870,702.
Yamamoto, Katsuro, to Bridgestone Liquefield Gas Company, Ltd. Method of constructing a heat insulating wall of foamed sulfur. 3,870,588, Cl. 264-42.000.
Yamamoto, Kenzo; Matsuoka, Seiichi; and Shioda, Toshio, to Japan Gasoline Co., Ltd. Process for manufacturing gases rich in methane. 3,870,738, Cl. 260-449.00S.
Yamamoto, Kiyoshi: *See—*
Yamashita, Gentaro; and Yamamoto, Kiyoshi, 3,870,754.
Yamamoto, Nobuo; Kawaguchi, Hideo; and Furukawa, Katsuharu, to Fuji Photo Film Co., Ltd. Process for producing photographic film having a magnetizable layer thereon and such a photographic film. 3,870,525, Cl. 96-39.000.
Yamashita, Gentaro; and Yamamoto, Kiyoshi, to Teijin Limited. Process for the preparation of 2,6-naphthalenedicarboxylic acid. 3,870,754, Cl. 260-524.00R.
Yamashita, Nobuo; and Fujii, Toru, to Olympus Optical Company Limited. Wide-angle lens system with movable lens for correcting short distance photographic faculty arranged near diaphragm. 3,870,400, Cl. 350-214.000.
Yanagi, Chiak: *See—*
Nara, Hirotoshi; Watanabe, Wataru; Yokota, Tadashi; and Yanagi, Chiak, 3,870,248.
Yanagisawa, Takeshi: *See—*
Nakamoto, Soichi; and Yanagisawa, Takeshi, 3,870,418.

Yanai, Noriyoshi: *See—*
  Kamo, Seiichi; Yanai, Noriyoshi; and Osako, Naoto, 3,870,755.

Yancey, Raymond W. Article of manufacture with twisted web. 3,869,778, Cl. 29-191.000.

Yardney International Corp.: *See—*
  Berchielli, Aldo S., 3,869,987.

Yaroshenko, Jury Feodosievich: *See—*
  Nesmeyanov, Alexandr Nikolaevich; Rogozhin, Sergei Vasilievich; Misjurev, Vladimir Ivanovich; Borisoglebsky, Alexei Gennadievich; Yaroshenko, Jury Feodosievich; Gonsales, Rodriges Sesar; Kovalev, Petr Vasilievich; and Myakin, Valery Alexandrovich, 3,869,976.

Yeaple Corporation: *See—*
  Yeaple, Ronald N., 3,870,834.

Yeaple, Ronald N., to Yeaple Corporation. Personal stereophonic speaker system. 3,870,834, Cl. 179-146.00H.

Yeda Research & Development Co. Ltd.: *See—*
  Frei, Ephraim H.; Yerushalmi, Shmuel; and Benmair, Yusuf, 3,870,645.

Yerushalmi, Shmuel: *See—*
  Frei, Ephraim H.; Yerushalmi, Shmuel; and Benmair, Yusuf, 3,870,645.

Yodogawa Steel Works, Limited: *See—*
  Kudo, Shinji, 3,870,594.

Yokogawa Electric Works, Ltd.: *See—*
  Miyauchi, Rin-Ichi; Saito, Bunjiro; and Ikeda, Kyoichi, 3,869,920.

Yokota, Tadashi: *See—*
  Nara, Hirotoshi; Watanabe, Wataru; Yokota, Tadashi; and Yanagi, Chiak, 3,870,248.

Yonehara, Toshimitsu: *See—*
  Shibano, Takashi; Hirakawa, Koichi; and Yonehara, Toshimitsu, 3,870,982.

Yoneyama, Ken: *See—*
  Iwami, Ichiro; Matsunaga, Tsutomu; and Yoneyama, Ken, 3,870,551.

Yoon, In Bae. Device for sterilizing the human female or male by ligation. 3,870,048, Cl. 128-326.000.

Yoshida, Fumitake; and Ohshima, Norio, to Fumitake Yoshida. Bubble-type blood oxygenator with baffles. 3,870,470, Cl. 23-258.500.

Yoshida Kogyo Kabushiki Kaisha: *See—*
  Fukuroi, Takeo, 3,869,765.

Yoshida, Mikihiko; and Yuen, Shokichi, to Hayashibara Company. Nitrogen containing amylose derivatives. 3,870,704, Cl. 260-233.30R.

Yoshida, Okio: *See—*
  Shimizu, Kazuo; Yoshida, Okio; Terakawa, Kazuo; and Aihara, Satoshi, 3,870,558.

Yoshida, Shuji; and Iguchi, Tateo, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin-graft-polyblend compositions. 3,870,769, Cl. 260-876.00R.

Yoshimoto, Katsutoshi: *See—*
  Nakamura, Tsutomu; Itoh, Kensuke; Murata, Hajime; Ishikawa, Makoto; Furuichi, Eiichi; Arakawa, Yasuhiro; Taneya, Shinichi; Motomura, Hiroji; Yoshimoto, Katsutoshi; and Tomokawa, Hisao, 3,870,613.

Yoshizawa, Kenzo. Lock. 3,869,888, Cl. 70-355.000.

Yotumoto, Yoshiharu: *See—*
  Ogawa, Kazuo; Machii, Tetsuo; Sawano, Takahiro; Kubota, Katuhiko; and Yotumoto, Yoshiharu, 3,870,944.

Younger, Dwen R. Straddle trailer hitch. 3,870,341, Cl. 280-423.00R.

Youssef, Kamal Abdou. Selective and enrichment medium for the isolation identification and propagation of yeasts and fungi. 3,870,600, Cl. 195-81.000.

Yuen, Shokichi: *See—*
  Yoshida, Mikihiko; and Yuen, Shokichi, 3,870,704.

Yukuta, Toshio: *See—*
  Onishi, Akira; Yukuta, Toshio; Iseda, Yutaka; and Iwami, Kouichi, 3,870,620.

Yungblut, Charles W.; and Hill, Robert D., Jr., to Spectrol Electronics Corporation. Method of manufacturing variable resistance device. 3,869,789, Cl. 29-610.000.

Zahnradfabrik Friedrechshafen AG.: *See—*
  Brugger, Hans; and Mallener, Helmut, 3,870,572.

Zeiss-Stiftung, Carl: *See—*
  Neuer, Harald; Szenger, Franz; Herzog, Klaus; and Neumann, Joachim, 3,869,799.

Zeit, Harry. Surface mounted lock unit for sliding doors. 3,869,887, Cl. 70-100.000.

Zeitter, Charles R., to Packaging Corporation of America. Folding carton. 3,870,221, Cl. 229-16.00D.

Zelawski, Zbigniew S.: *See—*
  Wendler, Norman L.; Taub, David; Slates, Harry L.; and Zelawski, Zbigniew S., 3,870,747.

Zelikman, Grigory Avrumovich: *See—*
  Isitovsky, Ilya Leonidovich; and Zelikman, Grigory Avrumovich, 3,870,576.

Zellweger AG: *See—*
  Ploeckl, Johann, 3,870,394.

Zerver, Hermann Jochen. Socket wrench head for spark plugs. 3,869,945, Cl. 81-125.000.

Zimmer, Clarence L.: *See—*
  Vanderbilt, Vern C., Jr.; Zimmer, Clarence L.; and Van Ostrand, William F., 3,870,972.

Zimmerman, Dallas D.: *See—*
  Endres, Leland S.; Gehlhoff, Leo F.; and Zimmerman, Dallas D., 3,870,682.

Zimmerman, Emil F. Lifting mechanism for front end loader. 3,870,171, Cl. 214-131.00R.

Zlatareff, Vassil: *See—*
  Glaser, Heinz; and Zlatareff, Vassil, 3,870,539.

Zuber, Bretislav Paul: *See—*
  Iyengar, Rama; Zuber, Bretislav Paul; and Boucher, Jean Raymond, 3,869,902.

Zubov, Ivan Petrovich: *See—*
  Semenov, Nikolai Nikolaevich; Gussak, Lev Abramovich; Bobolev, Vasily Konstantinovich; Unxov, Evgeny Pavlovich; Astafiev, Anatoly Alexandrovich; Khazanov, Mikhail Semenovich; Moroz, Vitaly Iosifovich; Severov, Mark Alexandrovich; Kuleshov, Roman Stepanovich; Levitsky, Vladimir Konstantinovich; Yakushev, Dmitry Petrovich; Rudkov, Gennady Demyanovich; Zubov, Ivan Petrovich; Afanasiev, Viktor Vasilievich; Yakovlev, Vladimir Vasilievich; Baranovsky, Leonid Sememovich; and Koroleva, Margarita Borisovna, 3,870,462.

Zuercher, Edward A., Jr., to General Electric Company. Hermetically sealed compressor suction tube assembly. 3,870,440, Cl. 418-248.000.

Zuideveld, Reinder, to Koninklijke Emballage Industrie Van Leer B.V. Container with a frangible lid and a tool for opening said container. 3,870,189, Cl. 220-277.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Asche, Henning, to Ciba-Geigy AG. Toothpaste. Re. 28,363, 3–11–75, Cl. 424—57.

Calvin, John N., to Combustion Engineering, Inc. Flow deflector for nuclear fuel element assemblies. Re. 28,362, 3–11–75, Cl. 176—78.

Ciba-Geigy AG: *See—*
  Asche, Henning. Re. 28,363.

Combustion Engineering, Inc.: *See—*
  Calvin, John N. Re. 28,362.

Cosden Oil & Chemical Co.: *See—*
  Hahn, Granville J. Re. 28,361.

Hahn, Granville J., to Cosden Oil & Chemical Co. Polymer pigmentation. Re. 28,361, 3–11–75, Cl. 117—16.

LIST OF PLANT PATENTEES

Cobia, B. L., Inc.: *See—*
  Cobia, Barnell L. 3,688.
  Cobia, Barnell L. 3.689.
  Cobia, Barnell L. 3,690.

Cobia, Barnell L., to B. L. Cobia, Inc. Cactaceae plant. 3,688, 3–11–75, Cl. 88.

Cobia, Barnell L., to B. L. Cobia, Inc. Bromeliaceae plant-cryptanthus bivittatus minor (cv) pink starlight. 3,689, 3–11–75, Cl. 88.

Cobia, Barnell L., to B. L. Cobia, Inc. Cactaceae plant. 3,690, 3–11–75, Cl. 88.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Goblet or similar article. 234,448, 3–11–75, Cl. D7—13.

Ahlrot, Ake. Duct coupling. 234,462, 3–11–75, Cl. D23—43.

Ahlrot, Ake. Duct coupling. 234,463, 3–11–75, Cl. D23—43.

American Standard Inc.: *See—*
  Stairs, Henry M., Jr. 234,464.

Blake, William A. Set of brackets for paper towel packages or the like. 234,455, 3–11–75, Cl. D8—233.

Bloom, Joseph C. Gas meter valve wrench. 234,451, 3–11–75, Cl. D8—17.

Brace, Robert J.: *See—*
  Fosher, Donald H., and Brace. 234,472.

Caldwell, Russell F., and D. E. Laughead. Fishing lure. 234,460, 3–11–75, Cl. D22—27.

Carre, Alain, to Societe le Foyer. Pen. 234,471, 3–11–75, Cl. D74—17.

Dearth, Timothy E., R. H. Guernsey, and R. R. Hydell, to Eli Lilly & Co. Container for food products. 234,456, 3–11–75, Cl. D9—182.

Delgrosso, Elaine V. Butterfly bow decoration. 234,467, 3–11–75, Cl. D29—1.

Fosher, Donald H., and R. J. Brace. Advertising insert holder for supermarket carts. 234,472, 3–11–75, Cl. D96—3.

Franklin, Robert P.: *See—*
  Koch, Walter L., and Franklin. 234,468.

Ginsberg, Jacob J., to Peripheral Graphics Inc. Battery powered tape winder and punched paper tape and the like. 234,453, 3–11–75, Cl. D8—220.

Greenblatt, Irwin, and N. A. Marino, to Sears, Roebuck & Co. Brassiere. 234,444, 3–11–75, Cl. D2—24.

Greenblatt, Irwin, and N. A. Marino, to Sears, Roebuck & Co. Brassiere pad. 234,445, 3–11–75, Cl. D2—24.

Guernsey, Richard H.: *See—*
  Dearth, Timothy E., Guernsey, and Hydell. 234,456.

Haygeman, Robert M. Plastics injection molder. 234,470, 3–11–75, Cl. D55—1.

Hydell, Ronald R.: *See—*
  Dearth, Timothy E., Guernsey, and Hydell. 234,456.

Johns, Kenneth E. Crib rack for accessories or the like. 234,447, 3–11–75, Cl. D6—113.

Kabushiki Kaisha Saikosha Seisakusho: *See—*
  Saito, Hisashi. 234,452.

Kitai, Isao, to Sharp Kabushiki Kaisha. Electronic calculating machine. 234,466, 3–11–75, Cl. D26—5.

Koch, Walter L., and R. P. Franklin, to Rowe International Inc. Vending machine. 234,468, 3–11–75, Cl. D52—3.

Laughead, Dannie E.: *See—*
  Caldwell, Russell F., and Laughead. 234,460.

Lichtman, Philip R. Hand gun. 234,458, 3–11–75, Cl. D22—1.

Lichtman, Philip R. Hand gun. 234,459, 3–11–75, Cl. D22—1.

Lilly, Eli, & Co.: *See—*
  Dearth, Timothy E., Guernsey, and Hydell. 234,456.

Lindsay, John. Navigation instrument. 234,469, 3–11–75, Cl. D52—6.

Loyd's Industri A/S: *See—*
  Tolfsen, Ulf. 234,454.

Marino, Nicholas A.: *See—*
  Greenblatt, Irwin, and Marino. 234,444.
  Greenblatt, Irwin, and Marino. 234,445.

Mayer, Klaus: *See—*
  Stuetzer, Franz, and Mayer. 234,449.

Miyake, Takao: *See—*
  Suganoya, Yoshio, and Miyake. 234,450.

Mosa, Ralph. Mechanical roping steer. 234,457, 3–11–75, Cl. D19—59.

Owens-Illinois, Inc.: *See—*
  Achenbach, Walter B. 234,448.

Peripheral Graphics Inc.: *See—*
  Ginsberg, Jacob J. 234,453.

Piotrowski, Terrell D. Sewage septi tank. 234,461, 3–11–75, Cl. D23—2.

Ringle, James B. Identification tag. 234,473, 3–11–75, Cl. D96—13.

Rowe International Inc.: *See—*
  Koch, Walter L., and Franklin. 234,468.

Rowenta-Werke GmbH: *See—*
  Stuetzer, Franz, and Mayer. 234,449.

Saito, Hisashi, to Kabushiki Kaisha Saikosha Seisakusho. Combination lock for bicycles or the like. 234,452, 3–11–75, Cl. D8—114.

Sears, Roebuck & Co.: *See—*
  Greenblatt, Irwin, and Marino. 234,444.
  Greenblatt, Irwin, and Marino. 234,445.

Severinghaus, Nelson. Support bracket for hose nozzle. 234,446, 3–11–75, Cl. D6—112.

Sharp Kabushiki Kaisha: *See—*
  Kitai, Isao. 234,466.
  Suganoya, Yoshio, and Miyake. 234,450.

Societe le Foyer: *See—*
  Carre, Alain. 234,471.

Stairs, Henry M., Jr., to American Standard Inc. Double bowl sink. 234,464, 3–11–74, Cl. D23—62.

Stuetzer, Franz A., and K. Mayer, to Rowenta-Werke GmbH. Coffeemaker. 234,449, 3–11–75, Cl. D7—62.

Suganoya, Yoshio and T. Miyake, to Sharp Kabushiki Kaisha. Electronic cooking range. 234,450, 3–11–75, Cl. D7—128.

Tolfsen, Ulf, to Loyd's Industri A/S. Cover for automobile seat belt lock. 234,454, 3–11–75, Cl. D8—224.

Warner, Louis C. Incense burner. 234,465. 3–11–75, Cl. D23—78.

CLASSIFICATION OF PATENTS

ISSUED MARCH 11, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
164	3,869,726
175	3,869,727
221	3,869,728
CLASS 3	
1	3,869,729
	3,869,730
	3,869,731
CLASS 4	
	3,869,732
67A	3,869,733
146	3,869,734
	3,869,735
172.19	3,869,736
213	3,869,737
CLASS 5	
200R	3,869,738
353	3,869,739
354	3,869,740
CLASS 7	
17	3,869,741
CLASS 8	
94.26	3,870,464
CLASS 9	
1R	3,869,742
2C	3,869,743
340	3,869,744
CLASS 12	
145	3,869,745
CLASS 15	
29	3,869,746
104.1R	3,869,747
172	3,869,748
302	3,869,749
322	3,869,750
334	3,869,751
CLASS 16	
128	3,869,752
171	3,869,753
197	3,869,754
CLASS 17	
25	3,869,755
32	3,869,757
49	3,869,756
CLASS 19	
153	3,869,758
293	3,869,759
CLASS 23	
230A	3,870,465
230R	3,870,466
	3,870,467
232E	3,870,469
232R	3,870,468
258.5	3,870,470
267E	3,870,471
273SP	3,870,472
	3,870,473
277C	3,870,474
285	3,870,475
289	3,870,476
301SP	3,870,477
CLASS 24	
73VA	3,869,761
73	3,869,760
81AG	3,869,762
198	3,869,763
204	3,869,764
205.11F	3,869,765
216	3,869,766
243CC	3,869,767
CLASS 26	
18.6	3,869,768
CLASS 28	
21	3,869,769
51	3,869,770
CLASS 29	
2.1	3,870,478
25.13	3,869,772
78	3,869,773
116AD	3,869,774
156.8R	3,869,775
157A	3,869,776
183	3,869,777
191	3,869,778
194	3,869,779
200D	3,869,780
203DT	3,869,781
203B	3,869,782
244	3,869,783
272	3,869,784
401	3,869,785
571	3,869,786
577	3,869,787
597	3,869,788
610	3,869,789
CLASS 30	
90	3,869,790
90.1	3,869,791
254	3,869,792
262	3,869,793
278	3,869,794
388	3,869,795
CLASS 32	
26	3,869,796
40R	3,869,797
CLASS 33	
174L	3,869,799
	3,869,800
	3,869,802
174R	3,869,801
181AT	3,869,803
264	3,869,798
288	3,869,804
338	3,869,805
348	3,869,806
CLASS 34	
33	3,869,807
124	3,869,808
174	3,869,809
CLASS 35	
9C	3,869,810
19A	3,869,811
22R	3,869,812
37	3,869,813
CLASS 37	
116	3,869,814
CLASS 38	
77.6	3,869,815
77.83	3,869,816
102.4	3,869,817
CLASS 40	
31	3,869,818
64A	3,869,819
159	3,869,820
CLASS 43	
3	3,869,823
42.49	3,869,821
53.5	3,869,822
CLASS 46	
17	3,869,824
219	3,869,825
CLASS 47	
17	3,869,826
	3,869,827
34.11	3,869,828
39	3,869,829
CLASS 48	
71	3,870,480
213	3,870,481
CLASS 51	
8R	3,869,830
75	3,869,831
170PT	3,869,832
295	3,869,834
334	3,869,833
CLASS 52	
9	3,869,835
23	3,869,836
75	3,869,837
76	3,869,838
204	3,869,839
211	3,869,840
745	3,869,841
CLASS 53	
14	3,869,842
26	3,869,843
30	3,869,844
137	3,869,845
182	3,869,846
CLASS 55	
62	3,870,482
192	3,870,483
229	3,870,484
257	3,870,485
276	3,870,486
314	3,870,489
355	3,870,490
376	3,870,491
387	3,870,492
391	3,870,493
436	3,870,487
440	3,870,488
443	3,870,494
489	3,870,495
CLASS 56	
220	3,869,847
295	3,869,848
343	3,869,849
CLASS 57	
24	3,869,850
58.89	3,869,851
59	3,869,852
77.4	3,869,853
CLASS 58	
33	3,869,854
57.5	3,869,855
CLASS 59	
8	3,869,856
CLASS 60	
39.15	3,869,862
39.18R	3,869,857
39.19	3,869,863
39.65	3,869,864
39.66	3,869,865
290	3,869,858
305	3,869,859
371	3,869,860
413	3,869,861
607	3,869,866
CLASS 61	
41A	3,869,867
49	3,869,868
53.64	3,869,869
CLASS 62	
114	3,869,870
178	3,869,871
225	3,869,872
275	3,869,873
278	3,869,874
354	3,869,875
376	3,869,876
CLASS 64	
2R	3,869,877
8	3,869,878
CLASS 65	
22	3,870,496
32	3,870,497
106	3,870,498
156	3,870,499
273	3,870,500
CLASS 66	
19	3,869,879
64	3,869,881
CLASS 68	
5C	3,869,882
58	3,869,883
258	3,869,884
CLASS 70	
93	3,869,886
100	3,869,887
315	3,869,885
355	3,869,888
419	3,869,889
432	3,869,901
451	3,869,890
CLASS 71	
78	3,870,501
92	3,870,502
106	3,870,503
120	3,870,504
121	3,870,505
CLASS 72	
8	3,869,891
9	3,869,892
39	3,869,893
42	3,869,894
52	3,869,902
107	3,869,895
108	3,869,896
125	3,869,897
239	3,869,898
304	3,869,917
366	3,869,899
384	3,869,900
CLASS 73	
61.4	3,869,903
67.5H	3,869,904
119R	3,869,905
141A	3,869,906
146	3,869,907
146.2	3,869,908
147	3,869,909
150R	3,869,910
	3,869,912
170A	3,869,911
189	3,869,913
190R	3,869,914
194A	3,869,915
300	3,869,916
339R	3,869,918
358	3,869,919
398R	3,869,920
421B	3,869,921
438	3,869,922
CLASS 74	
13	3,869,923
24	3,869,924
25	3,869,925
	3,869,926
44	3,869,927
88	3,869,928
112	3,869,929
128	3,869,930
230.17R	3,869,932
230.3	3,869,931
234	3,869,933
242.12	3,869,934
322	3,869,935
459	3,869,936
482	3,869,937
567	3,869,938
687	3,869,939
711	3,869,940
CLASS 75	
1	3,870,506
4	3,870,507
10	3,870,508
44S	3,870,509
61	3,870,510
68R	3,870,511
130R	3,870,512
175A	3,870,513
CLASS 81	
9.3	3,869,944
52.5	3,869,941
54	3,869,942
90A	3,869,943
125	3,869,945
CLASS 82	
14R	3,869,946
19	3,869,947
CLASS 83	
286	3,869,948
320	3,869,949
341	3,869,950
745	3,869,951
CLASS 84	
1.16	3,869,952
201	3,869,953
291	3,869,954
380	3,869,955
CLASS 85	
37	3,869,956
49	3,869,957
80	3,869,958
83	3,869,959
CLASS 89	
33CA	3,869,960
191A	3,869,961
CLASS 91	
46	3,869,962
CLASS 92	
86	3,869,963
CLASS 93	
54R	3,869,966
61A	3,869,964
	3,869,965
CLASS 96	
1LY	3,870,514
1.4	3,870,515
1.5	3,870,516
	3,870,517
27R	3,870,518
29L	3,870,479
39	3,870,525
51	3,870,519
60R	3,870,520
67	3,870,521
107	3,870,522
114.1	3,870,523
115P	3,870,524
CLASS 98	
61	3,869,967
CLASS 99	
280	3,869,968
327	3,869,969
329R	3,869,970
353	3,869,971
410	3,869,972
426	3,869,973
450.2	3,869,975
484	3,869,976
547	3,869,974
640	3,869,977
CLASS 100	
53	3,869,978
218	3,869,979
CLASS 101	
91	3,869,981
	3,869,986
93.21	3,869,980
96	3,869,982
137	3,869,983
349	3,869,984
415.1	3,869,985
CLASS 102	
37.4	3,869,987
CLASS 104	
11	3,869,988
94	3,869,989
130	3,869,990
CLASS 105	
368R	3,869,991
CLASS 106	
1	3,870,526
2	3,870,527
22	3,870,528
38.3	3,870,529
50	3,870,530
52	3,870,531
74	3,870,532
90	3,870,533
100	3,870,534
118	3,870,535
146	3,870,536
162	3,870,537
315	3,870,538
CLASS 108	
60	3,869,992
101	3,869,993
CLASS 110	
8R	3,869,994
18C	3,869,995
99R	3,869,996
CLASS 112	
121.12	3,869,997
121.15	3,869,998
121.26	3,869,999
262	3,870,000
CLASS 113	
121C	3,870,001
CLASS 114	
.5T	3,870,003
39	3,870,004
66.5R	3,870,005
121	3,870,006
160	3,870,007
211	3,870,008
222	3,870,009
230	3,870,010
CLASS 115	
.5A	3,870,011
CLASS 116	
70	3,870,012
CLASS 117	
3.1	3,870,539
16	Re.28,361
	3,870,540
17.5	3,870,541
33.3	3,870,542
36.2	3,870,435
54	3,870,543
60	3,870,544
71R	3,870,545
72	3,870,546
	3,870,547
	3,870,548
73	3,870,549
84	3,870,550
115	3,870,551
122PF	3,870,552
123A	3,870,553
138	3,870,554
138.8F	3,870,555
141	3,870,556
161R	3,870,557
201	3,870,558
	3,870,559
CLASS 118	
24	3,870,013
52	3,870,014
63	3,870,015
309	3,870,016
637	3,870,017
CLASS 119	
3	3,870,018
4	3,870,019
	3,870,020
14.13	3,870,021
75	3,870,022
159	3,870,023
CLASS 123	
90.41	3,870,024
119CD	3,870,029
139AF	3,870,025
148E	3,870,028
148R	3,870,026
	3,870,027
CLASS 125	
11TP	3,870,030
CLASS 126	
39J	3,870,031
91R	3,870,052
202	3,870,032
360R	3,870,033
CLASS 128	
2.05T	3,870,035
2.1Z	3,870,034
6	3,870,036
10	3,870,037
28	3,870,038
66	3,870,039
	3,870,040
156	3,870,041
188	3,869,771
214D	3,870,042
214R	3,870,043
220	3,870,044
229	3,870,045
266	3,870,046
303.14	3,870,047
326	3,870,048
353	3,870,049
419PG	3,870,050
422	3,870,051

CLASS 131	
121	3,870,053
140C	3,870,054
CLASS 132	
10	3,870,055
11A	3,870,056
39	3,870,057
73	3,870,058
92A	3,870,059
CLASS 134	
2	3,870,560
3	3,870,060
CLASS 135	
5A	3,870,061
20M	3,870,062
CLASS 136	
6LN	3,870,561
24	3,870,562
26	3,870,563
30	3,870,564
86A	3,870,565
111	3,870,566
148	3,870,567
212	3,870,568
CLASS 137	
13	3,870,063
15	3,870,064
93	3,870,065
199	3,870,066
209	3,870,069
242	3,870,067
268	3,870,068
512	3,870,070
527	3,870,071
557	3,870,072
596.16	3,870,073
	3,870,074
606	3,870,075
607	3,870,076
614.11	3,870,077
625.48	3,870,078
630.14	3,870,079
636.4	3,870,080
CLASS 138	
38	3,870,081
40	3,870,082
45	3,870,083
89	3,870,084
93	3,870,085
172	3,870,086
CLASS 139	
33	3,870,087
122R	3,870,088
CLASS 141	
44	3,870,089
CLASS 144	
249R	3,870,090
CLASS 145	
29R	3,870,091
CLASS 148	
6	3,870,569
9.5	3,870,570
	3,870,571
16.5	3,870,572
22	3,870,573
122	3,870,574
171	3,870,575
188	3,870,576
CLASS 149	
2	3,870,577
19.4	3,870,578
CLASS 151	
14R	3,870,092
CLASS 152	
213	3,870,093
243	3,870,094
353C	3,870,095
CLASS 156	
174	3,870,579
181	3,870,580
192	3,870,581
306	3,870,582
500	3,870,583
505	3,870,584
CLASS 159	
4A	3,870,585
CLASS 160	
305	3,870,096
CLASS 161	
30	3,870,586
37	3,870,587
47	3,870,589
92	3,870,590
119	3,870,591
148	3,870,592
159	3,870,593
165	3,870,594
166	3,870,595
CLASS 162	
157C	3,870,596
352	3,870,597
CLASS 164	
4	3,870,097
CLASS 165	
82	3,870,099
89	3,870,100
CLASS 166	
.5	3,870,101
55.1	3,870,098
72	3,870,102
224A	3,870,104
CLASS 169	
33	3,870,105
CLASS 172	
239	3,870,106
413	3,870,107
722	3,870,108
CLASS 173	
38	3,870,109
100	3,870,103
163	3,870,110
CLASS 174	
42	3,870,815
CLASS 175	
11	3,870,111
93	3,870,112
96	3,870,113
258	3,870,114
CLASS 176	
78	Re.28,362
CLASS 178	
7.2	3,870,814
7.6	3,870,816
CLASS 179	
1CN	3,870,819
1DM	3,870,820
1SA	3,870,817
1SM	3,870,818
2DP	3,870,821
4	3,870,822
7MM	3,870,823
7R	3,870,824
15AL	3,870,825
15AP	3,870,827
15BY	3,870,826
	3,870,828
30	3,870,829
90CS	3,870,830
99	3,870,831
100.4R	3,870,835
107E	3,870,832
115.5VC	3,870,833
146H	3,870,834
175.2B	3,870,837
175.3R	3,870,836
175.31R	3,870,838
CLASS 180	
5R	3,870,115
54R	3,870,116
64R	3,870,117
75	3,870,118
77R	3,870,119
82C	3,870,120
117	3,870,121
CLASS 182	
36	3,870,122
136	3,870,123
178	3,870,124
CLASS 184	
15R	3,870,125
CLASS 187	
8.52	3,870,126
CLASS 188	
24	3,870,127
112	3,870,128
134	3,870,129
288	3,870,130
325	3,870,131
CLASS 190	
52	3,870,132
CLASS 191	
12.2R	3,870,133
CLASS 192	
6A	3,870,134
CLASS 194	
4	3,870,135
54	3,870,136
100A	3,870,137
CLASS 195	
1.5	3,870,598
2	3,870,599
81	3,870,600
103.5R	3,870,601
139	3,870,602
CLASS 197	
17	3,870,138
CLASS 198	
34	3,870,139
190	3,870,140
193	3,870,141
	3,870,142
280	3,870,143
CLASS 200	
5A	3,870,839
	3,870,840
44	3,870,842
84R	3,870,844
144B	3,870,845
161	3,870,846
302	3,870,843
CLASS 202	
227	3,870,604
234	3,870,605
CLASS 203	
5	3,870,606
CLASS 204	
15	3,870,607
28	3,870,618
43G	3,870,619
58	3,870,608
159.23	3,870,620
160.1	3,870,609
165	3,870,610
168	3,870,611
180P	3,870,613
180R	3,870,612
181	3,870,614
197	3,870,615
230	3,870,616
301	3,870,617
CLASS 206	
45.14	3,870,144
84	3,870,145
	3,870,146
222	3,870,147
372	3,870,148
379	3,870,149
438	3,870,150
507	3,870,151
523	3,870,152
CLASS 208	
8	3,870,621
93	3,870,622
108	3,870,623
143	3,870,624
180	3,870,625
216	3,870,626
CLASS 209	
3	3,870,627
90	3,870,628
111.8	3,870,629
403	3,870,630
CLASS 210	
63	3,870,631
67	3,870,632
136	3,870,633
220	3,870,634
221	3,870,635
236	3,870,636
243	3,870,637
333	3,870,638
359	3,870,639
388	3,870,640
400	3,870,641
CLASS 211	
37	3,870,153
74	3,870,154
	3,870,155
	3,870,156
90	3,870,157
CLASS 212	
8R	3,870,158
13	3,870,159
39R	3,870,160
56	3,870,161
59R	3,870,162
73	3,870,163
CLASS 214	
1BB	3,870,164
2.5	3,870,165
6BA	3,870,166
8.5SS	3,870,167
17	3,870,168
41	3,870,169
85	3,870,170
131R	3,870,171
140	3,870,172
152	3,870,173
303	3,870,174
304	3,870,175
308	3,870,176
372	3,870,177
450	3,870,178
454	3,870,179
621	3,870,180
CLASS 215	
1C	3,870,181
220	3,870,182
247	3,870,183
255	3,870,184
CLASS 219	
10.77	3,870,847
50	3,870,848
60A	3,870,849
85	3,870,850
97	3,870,851
121LM	3,870,852
125	3,870,853
145	3,870,854
202	3,870,855
216	3,870,856
267	3,870,857
328	3,870,858
370	3,870,860
437	3,870,859
459	3,870,861
464	3,870,862
532	3,870,863
CLASS 220	
6	3,870,185
72	3,870,188
212	3,870,186
277	3,870,189
281	3,870,187
338	3,870,190
370	3,870,191
CLASS 221	
86	3,870,192
150A	3,870,193
160	3,870,194
225	3,870,195
CLASS 222	
1	3,870,196
52	3,870,197
105	3,870,198
189	3,870,199
206	3,870,200
207	3,870,201
226	3,870,202
262	3,870,204
397	3,870,203
402.17	3,870,205
CLASS 223	
46	3,870,207
88	3,870,206
CLASS 224	
2F	3,870,208
5V	3,870,209
42.45R	3,870,210
CLASS 225	
34	3,870,211
42	3,870,212
100	3,870,213
CLASS 226	
34	3,870,214
42	3,870,215
181	3,870,216
188	3,870,217
CLASS 228	
4	3,870,218
CLASS 229	
1.5C	3,870,220
4.5	3,870,219
16D	3,870,221
44R	3,870,222
72	3,870,223
CLASS 234	
110	3,870,224
CLASS 235	
1E	3,870,864
61.11E	3,870,865
61.12R	3,870,867
61.7R	3,870,866
89R	3,870,225
92FQ	3,870,869
92MB	3,870,870
92SB	3,870,868
151.3	3,870,226
197	3,870,871
	3,870,872
CLASS 236	
49	3,870,227
CLASS 237	
59	3,870,228
CLASS 238	
26	3,870,230
324	3,870,231
CLASS 239	
15	3,870,232
	3,870,233
132.3	3,870,234
177	3,870,235
542	3,870,236
CLASS 240	
1.1	3,870,873
1.3	3,870,874
2R	3,870,875
41R	3,870,876
CLASS 241	
1	3,870,237
27	3,870,238
186R	3,870,239
CLASS 242	
18A	3,870,240
	3,870,241
47.01	3,870,242
72.1	3,870,243
80	3,870,244
167	3,870,245
192	3,870,246
198	3,870,247
	3,870,248
201	3,870,249
CLASS 243	
6	3,870,250
CLASS 244	
17.21	3,870,251
42CC	3,870,252
46	3,870,253
102SL	3,870,254
137	3,870,255
CLASS 245	
8	3,870,256
CLASS 248	
4	3,870,258
43	3,870,259
49	3,870,260
101	3,870,261
145	3,870,262
168	3,870,263
171	3,870,264
183	3,870,265
235	3,870,266
339	3,870,267
354P	3,870,268
394	3,870,269
406	3,870,270
	3,870,271
CLASS 249	
170	3,870,272
202	3,870,273
CLASS 250	
209	3,870,877
239	3,870,878
269	3,870,879
273	3,870,880
283	3,870,881
305	3,870,882
324	3,870,883
339	3,870,884
360	3,870,885
367	3,870,886
370	3,870,887
384	3,870,888
398	3,870,891
480	3,870,889
483	3,870,892
560	3,870,890
CLASS 251	
133	3,870,274
252	3,870,275
CLASS 252	
51.5A	3,870,642
56R	3,870,643
62.1	3,870,644
62.56	3,870,645
107	3,870,646
118	3,870,647
135	3,870,648
301.3W	3,870,649
301.4R	3,870,650
364	3,870,651
421	3,870,652
429B	3,870,654
429R	3,870,653
435	3,870,655
451	3,870,656
464	3,870,657
465	3,870,658
522	3,870,659
545	3,870,660
CLASS 254	
86R	3,870,276
88	3,870,277
98	3,870,278
105	3,870,279
134.3R	3,870,280
CLASS 259	
1R	3,870,281
1	3,870,282
4	3,870,283
191	3,870,284
	3,870,285
CLASS 260	
2.5B	3,870,663
2.5F	3,870,661
2.5R	3,870,662
9	3,870,664
17.2	3,870,665
21	3,870,666
22CB	3,870,667
23.7R	3,870,841
28.5R	3,870,668
29.3	3,870,669
	3,870,670
29.4R	3,870,671
29.6NR	3,870,672
29.6TA	3,870,673
30.2	3,870,674
32.8A	3,870,675
33.6AQ	3,870,676
37N	3,870,677
45.75N	3,870,679
45.85B	3,870,680
45.9R	3,870,678
49	3,870,681
	3,870,682
75NH	3,870,684
75NT	3,870,683
75R	3,870,688
78R	3,870,685
79.1	3,870,686
	3,870,687
87.5B	3,870,689
88.2R	3,870,690
92.1	3,870,691
93.7	3,870,692
94.9D	3,870,693
112.5	3,870,694
146R	3,870,695
158	3,870,696
173	3,870,697
210AB	3,870,698
210R	3,870,699
211.5R	3,870,700
226	3,870,701
	3,870,702
229	3,870,703
233.3R	3,870,704
239E	3,870,707
239.1	3,870,705
	3,870,708
	3,870,709
239.3T	3,870,706
240A	3,870,712
240R	3,870,710
	3,870,711
243C	3,870,713
247.2B	3,870,715
247.5EP	3,870,714
248NS	3,870,716
249	3,870,717
250Q	3,870,718
251.5	3,870,719
256.5R	3,870,720
281	3,870,721
283R	3,870,722
293.8	3,870,723
297V	3,870,724
302H	3,870,725
309	3,870,726
326.5	3,870,727
340.9	3,870,728
348.5L	3,870,729
369	3,870,730
396R	3,870,731
408	3,870,732
410.8	3,870,733
413	3,870,734
419	3,870,735
429.7	3,870,736
448R	3,870,737
449S	3,870,738
453P	3,870,739
456A	3,870,740
464	3,870,742
465C	3,870,743
465F	3,870,744
465R	3,870,745
465.3	3,870,746
468G	3,870,747
475F	3,870,748
484P	3,870,749
502.5	3,870,750
515A	3,870,753
515R	3,870,751
	3,870,752
524R	3,870,754
553R	3,870,755
558A	3,870,756
559R	3,870,757
562R	3,870,758
586C	3,870,761
586G	3,870,759
586P	3,870,760
654D	3,870,762
666A	3,870,763
680E	3,870,764
683.51	3,870,765
825	3,870,766
836	3,870,767
857G	3,870,768
876R	3,870,769
879	3,870,770
944	3,870,771
961	3,870,772

CLASS 261	
111	3,870,773
CLASS 264	
40	3,870,774
42	3,870,588
46.4	3,870,741
53	3,870,775
61	3,870,776
71	3,870,777
164	3,870,778
CLASS 267	
64R	3,870,286
113	3,870,287
CLASS 269	
45	3,870,288
324	3,870,289
CLASS 270	
30	3,870,290
31	3,870,291
68R	3,870,292
CLASS 271	
3.1	3,870,294
173	3,870,295
231	3,870,293
CLASS 272	
8N	3,870,296
58	3,870,297
CLASS 273	
1R	3,870,298
32B	3,870,299
	3,870,300
34B	3,870,301
44	3,870,302
85D	3,870,303
95R	3,870,304
101.1	3,870,305
105.6	3,870,306
121A	3,870,307
126A	3,870,308
128CS	3,870,309
131AB	3,870,311
131BA	3,870,310
135F	3,870,312
143C	3,870,313
185D	3,870,314
186E	3,870,316
186R	3,870,315
188R	3,870,317
CLASS 274	
9R	3,870,318
13R	3,870,319
23A	3,870,320
39A	3,870,321
CLASS 277	
167.5	3,870,322
CLASS 279	
112	3,870,323
CLASS 280	
11.28	3,870,324
11.35K	3,870,327
11.35N	3,870,325
11.35T	3,870,326
11.37E	3,870,328
16	3,870,329
	3,870,330
28	3,870,331
47.35	3,870,333
87.01	3,870,334
90	3,870,335
124F	3,870,336
154.5R	3,870,337
209	3,870,338
414R	3,870,339
415B	3,870,340
423R	3,870,341
433	3,870,342
457	3,870,343
CLASS 281	
21	3,870,344
CLASS 285	
24	3,870,345
35	3,870,332
47	3,870,346
156	3,870,347
197	3,870,348
249	3,870,349
286	3,870,350
334	3,870,351
CLASS 290	
53	3,870,893
CLASS 291	
15	3,870,352
CLASS 292	
37	3,870,353
116	3,870,354
307R	3,870,355
CLASS 294	
67A	3,870,356
74	3,870,357
77	3,870,358
118	3,870,359
CLASS 296	
37A	3,870,360
146	3,870,361
CLASS 297	
155	3,870,362
232	3,870,363
294	3,870,364
320	3,870,365
440	3,870,366
CLASS 298	
1B	3,870,367
CLASS 299	
31	3,870,368
71	3,870,369
91	3,870,370
CLASS 301	
1	3,870,371
63PW	3,870,372
CLASS 302	
14	3,870,373
28	3,870,374
42	3,870,375
CLASS 303	
21EB	3,870,378
21F	3,870,377
21P	3,870,376
CLASS 305	
35EB	3,870,379
36	3,870,380
CLASS 307	
9	3,870,894
10AT	3,870,895
34	3,870,896
208	3,870,897
232	3,870,900
233	3,870,898
235	3,870,899
238	3,870,901
247	3,870,902
252B	3,870,904
252N	3,870,903
254	3,870,905
261	3,870,906
CLASS 308	
3.5	3,870,381
9	3,870,382
82	3,870,383
187.2	3,870,384
CLASS 310	
64	3,870,907
66	3,870,910
91	3,870,908
	3,870,909
155	3,870,911
183	3,870,912
208	3,870,913
219	3,870,914
CLASS 312	
30	3,870,386
218	3,870,387
257A	3,870,388
257R	3,870,389
263	3,870,390
297	3,870,391
CLASS 313	
32	3,870,915
	3,870,916
105	3,870,917
131R	3,870,918
220	3,870,919
278	3,870,920
346R	3,870,921
389	3,870,002
CLASS 315	
39.55	3,870,923
200A	3,870,924
383	3,870,922
CLASS 317	
9R	3,870,925
12B	3,870,926
	3,870,927
13R	3,870,928
96	3,870,929
100	3,870,930
146	3,870,931
157.6	3,870,932
262AE	3,870,933
CLASS 318	
7	3,870,934
52	3,870,935
85	3,870,936
314	3,870,937
605	3,870,938
611	3,870,939
633	3,870,940
636	3,870,941
CLASS 320	
2	3,870,942
CLASS 321	
	3,870,943
8R	3,870,944
9A	3,870,945
15	3,870,946
CLASS 324	
16R	3,870,947
34PE	3,870,949
34PS	3,870,948
51	3,870,950
61P	3,870,951
65R	3,870,952
73R	3,870,953
158MG	3,870,954
CLASS 325	
2	3,870,955
150	3,870,957
155	3,870,958
156	3,870,959
446	3,870,960
457	3,870,961
478	3,870,956
CLASS 328	
58	3,870,962
59	3,870,963
CLASS 330	
29	3,870,964
30D	3,870,966
	3,870,967
30R	3,870,965
207P	3,870,968
CLASS 331	
1A	3,870,969
25	3,870,970
108D	3,870,971
140	3,870,972
CLASS 332	
12	3,870,973
CLASS 333	
	3,870,974
30R	3,870,975
81R	3,870,976
84R	3,870,977
97R	3,870,978
CLASS 334	
14	3,870,979
CLASS 335	
202	3,870,980
296	3,870,981
297	3,870,982
CLASS 337	
57	3,870,229
107	3,870,983
161	3,870,984
381	3,870,985
CLASS 338	
128	3,870,986
214	3,870,987
CLASS 339	
14R	3,870,392
48	3,870,385
144T	3,870,393
CLASS 340	
3R	3,870,988
6R	3,870,989
38L	3,870,990
41R	3,870,991
CLASS 343	
5DP	3,870,992
6.5R	3,870,993
	3,870,994
18E	3,870,995
	3,870,996
	3,870,997
100CL	3,870,998
103	3,870,999
771	3,871,000
872	3,871,001
CLASS 346	
74ES	3,870,257
	3,871,003
74TP	3,871,002
75	3,871,004
CLASS 350	
7	3,870,394
96WG	3,870,396
	3,870,397
96B	3,870,399
96C	3,870,395
	3,870,398
214	3,870,400
	3,870,401
	3,870,402
276	3,870,403
281	3,870,404
294	3,870,405
CLASS 352	
159	3,870,406
194	3,870,407
CLASS 353	
26	3,870,410
27	3,870,409
73	3,870,411
109	3,870,412
120	3,870,408
CLASS 354	
38	3,871,005
40	3,871,006
79	3,871,009
86	3,871,010
152	3,871,011
246	3,871,012
317	3,871,013
CLASS 355	
53	3,870,413
CLASS 356	
109	3,870,414
124	3,870,415
138	3,870,416
208	3,870,417
226	3,870,418
CLASS 357	
26	3,871,017
49	3,871,007
65	3,871,008
67	3,871,014
	3,871,015
68	3,871,016
74	3,871,018
CLASS 358	
4	3,871,019
8	3,871,020
10	3,871,021
23	3,871,022
28	3,871,023
CLASS 360	
33	3,871,024
85	3,871,025
CLASS 401	
8	3,870,419
121	3,870,420
259	3,870,421
CLASS 404	
31	3,870,422
41	3,870,423
67	3,870,424
76	3,870,425
82	3,870,426
103	3,870,427
134	3,870,428
CLASS 408	
1	3,870,429
6	3,870,430
111	3,870,431
191	3,870,432
CLASS 415	
72	3,870,433
CLASS 416	
160	3,870,434
CLASS 417	
299	3,870,436
310	3,870,437
356	3,870,438
454	3,870,439
CLASS 418	
248	3,870,440
CLASS 423	
50	3,870,779
206	3,870,780
242	3,870,781
396	3,870,782
415	3,870,783
422	3,870,784
460	3,870,785
484	3,870,786
598	3,870,787
	3,870,788
CLASS 424	
3	3,870,789
19	3,870,790
22	3,870,791
57	Re.28,363
250	3,870,792
264	3,870,794
269	3,870,793
270	3,870,795
330	3,870,796
352	3,870,797
CLASS 425	
4C	3,870,441
28R	3,870,443
117	3,870,442
143	3,870,444
144	3,870,445
174.4	3,870,446
225	3,870,447
242B	3,870,448
251	3,870,449
269	3,870,450
378R	3,870,451
387B	3,870,452
465	3,870,453
466	3,870,454
CLASS 426	
53	3,870,798
62	3,870,799
65	3,870,800
92	3,870,801
106	3,870,802
128	3,870,803
141	3,870,804
148	3,870,805
152	3,870,806
194	3,870,807
250	3,870,808
287	3,870,809
329	3,870,810
348	3,870,811
350	3,870,812
509	3,870,813
CLASS 431	
7	3,870,455
8	3,870,456
66	3,870,457
80	3,870,458
328	3,870,459
CLASS 432	
11	3,870,460
	3,870,461
72	3,870,462
247	3,870,463

CLASSIFICATION OF DESIGNS

D2—	24	234,444
		234,445
D6—	112	234,446
	113	234,447
D7—	13	234,448
	62	234,449
	128	234,450
D8—	17	234,451
	114	234,452
	220	234,453
	224	234,454
	233	234,455
D9—	182	234,456
D10—	62	234,469
		234,469
D19—	18	234,473
	51	234,471
	59	234,457
D22—	1	234,458
		234,459
	27	234,460
D23—	2	234,461
	43	234,462
		234,463
	62	234,464
	78	234,465
D26—	5C	234,466
D29—	1R	234,467
D52—	3	234,468
D55—	1F	234,470
D96—	3	234,472

CLASSIFICATION OF PLANTS

P. —	88	3,688
P. —		3,689
P. —		3,690

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,870,191
3,870,403
2 : 3,869,959
3,870,156
3 : 3,870,993
4 : 3,869,787
3,869,905
3,870,062
3,870,178
3,870,301
3,870,333
3,870,940
3,870,965
3,870,967
3,871,022
5 : 3,870,261
3,870,449
3,870,629
3,870,959
6 : 3,869,731
3,869,732
3,869,739
3,869,749
3,869,752
3,869,753
3,869,775
3,869,781
3,869,789
3,869,804
3,869,816
3,869,829
3,869,835
3,869,837
3,869,841
3,869,863
3,869,890
3,869,891
3,869,892
3,869,900
3,869,901
3,869,971
3,869,974
3,869,977
3,869,980
3,870,009
3,870,021
3,870,022
3,870,025
3,870,026
3,870,027
3,870,033
3,870,038
3,870,066
3,870,071
3,870,089
3,870,096
3,870,098
3,870,129
3,870,176
3,870,200
3,870,209
3,870,212
3,870,249
3,870,251
3,870,255
3,870,275
3,870,280
3,870,297
3,870,315
3,870,317
3,870,332
3,870,338
3,870,341
3,870,353
3,870,359
3,870,387
3,870,408
3,870,458
3,870,460
3,870,468
3,870,473
3,870,534
3,870,555
3,870,577
3,870,578
3,870,579
3,870,587
3,870,602
3,870,631
3,870,668
3,870,672
3,870,676
3,870,715
3,870,764
3,870,773
3,870,777
3,870,786
3,870,804
3,870,817
3,870,818
3,870,821
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8 : 3,869,831
3,869,875
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3,870,278
3,870,426
3,870,478
3,870,495
3,870,819
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9 : Re.28,362
3,869,780
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3,869,811
3,869,820
3,869,843
3,869,862
3,869,885
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3,869,951
3,869,986
3,870,084
3,870,091
3,870,164
3,870,181
3,870,204
3,870,445
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3,870,471
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3,870,713
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3,870,781
3,870,784
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10 : 3,870,037
3,870,624
3,870,709
11 : 3,870,415
12 : 3,869,727
3,869,747
3,869,819
3,869,821
3,869,887
3,869,911
3,869,913
3,869,972
3,870,043
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3,870,136
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13 : 3,870,223
3,870,991
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15 : 3,869,828
3,870,259
3,870,302
3,870,503
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16 : 3,870,173
17 : 3,869,741
3,869,756
3,869,757
3,869,761
3,869,762
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3,869,856
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3,870,013
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3,870,067
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3,870,080
3,870,116
3,870,139
3,870,161
3,870,182
3,870,187
3,870,192
3,870,205
3,870,258
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3,870,307
3,870,334
3,870,352
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3,870,371
3,870,386
3,870,431
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3,870,489
3,870,494
3,870,507
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18 : 3,869,809
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19 : 3,869,849
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22 : 3,870,141
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25 : 3,869,768
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28 : 3,869,784
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3,869,822
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3,870,134
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3,870,253
3,870,701
3,870,799
3,870,808
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3,870,887
30 : 3,870,311
3,870,875
31 : 3,870,107
3,870,108
3,870,362
32 : 3,870,580
33 : 3,870,272
3,870,313
3,870,472
3,870,583
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34 : 3,869,730
3,869,750
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3,870,197
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35 : 3,869,733
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36 : 3,869,728
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37 : 3,869,832
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38 : 3,870,171
39 : 3,869,743
3,869,751
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3,869,797
3,869,813
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3,870,427
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41 : 3,870,083
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3,870,179
3,870,210
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42 : 3,869,742
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3,869,810
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3,870,945
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43 : 3,869,806
3,870,627
44 : 3,869,987
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45 : 3,869,759
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46 : 3,869,823
47 : 3,869,795
3,869,817
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3,870,276
3,870,652
3,870,770
48 : Re.28,361
3,869,754
3,869,807
3,869,836
3,869,854
3,870,102
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3,870,350
3,870,360
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3,870,439
3,870,469
3,870,482
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3,870,928
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49 : 3,870,101
3,870,496
3,870,779
3,870,873
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50 : 3,869,960
3,869,982
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51 : 3,869,735
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3,870,070
3,870,166
3,870,228
3,870,378
3,870,599
3,870,756
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53 : 3,869,771
3,869,847
3,869,962
3,869,981
3,869,992
3,870,093
3,870,153
3,870,252
3,870,254
3,870,368
3,870,370
54 : 3,870,065
3,870,633
55 : 3,869,767
3,869,805
3,869,848
3,869,968
3,869,994
3,870,117
3,870,167
3,870,289
3,870,292
3,870,298
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3,870,324
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3,870,463
3,870,566
3,870,592
3,870,630
3,870,829
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56 : 3,869,825
3,870,780

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13 : 234,446
234,461
17 : 234,460
18 : 234,456
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25 : 234,453
234,458
234,459
29 : 234,472
32 : 234,457
34 : 234,464
234,468
36 : 234,444
234,445
39 : 234,448
41 : 234,455
42 : 234,467
46 : 234,470
53 : 234,465
234,469
234,469

PLANT PATENTS

12 : 3,688
3,689
3,690

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Frederick B. Dent, *Secretary*

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, Commissioner

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PATENTS

March 18, 1975

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March 18, 1975 Volume 932 Number 3

CONTENTS

Page

Patent and Trademark Notices
- Final Rejection—First Action Practice 760
- Registration to Practice 760
- Patent Suits 760

Patent Notices
- Certificates of Correction for the Week of March 18, 1975 762

Condition of Patent Applications 763

Reissue Patents Granted (28,364) 765

Plant Patents Granted (3,691) 767

Patents Granted
- General and Mechanical (3,871,026) 769
- Chemical (3,871,817) 1027
- Electrical (3,872,231) 1133

Design Patents Granted (234,474) 1227

Index of Patentees . . . . PI 1

Indices of Reissues, Plants and Designs . . . . PI 46

Classification of
- Patents (Including Reissues) . . . . PI 49
- Designs and Plants . . . . PI 52

Geographical Index of Residence of Inventors
- Patents (Including Reissues) . . . . PI 53
- Designs and Plants . . . . PI 55

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PATENT AND TRADEMARK OFFICE NOTICES

Final Rejection—First Action Practice

This notice revises M.P.E.P. section 706.07(b) and supersedes the notice of March 20, 1969, appearing at 861 O.G. 1011.

The claims of a new application may be finally rejected in the first Office action in those situations where (1) the new application is a continuing application of, or a substitute for, an earlier application, and (2) all claims of the new application (*a*) are drawn to the same invention claimed in the earlier application, and (*b*) would have been properly finally rejected on the grounds or art of record in the next Office action if they had been entered in the earlier application.

However, it would not be proper to make final a first Office action in a continuing or substitute application where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry for one of the following reasons:

(1) New issues were raised that required further consideration and/or search, or

(2) The issue of new matter was raised.

Further, it would not be proper to make final a first Office action in a continuation-in-part application where any claim includes subject matter not present in the earlier application.

A request for an interview prior to first action on a continuing or substitute application should ordinarily be granted.

Feb. 20, 1975.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before April 11, 1975.

Day, Jseph A., 330 University Ave., Toronto, Ontario, Canada
Garrett, Kenneth M., 214 King St. W., Toronto, Ontario, Canada
Geissler, Bernhard H., 1321 Hampden Road, Bartlesville, Okla. 74003
Jay, Mark H., 232 Garden St., Hartford, Conn. 06105
Perlin, Meyer, 10617 Vale Road, Oakton, Va. 22124

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,879,383, T. W. Powell, SIGNAL MONITORING APPARATUS; **3,358,235**, same, CODED SIGNAL ALERTING DEVICE, **filed** Oct. 11, 1974, D.C., M.D. Fla. (Tampa), Doc. 74–602–C *Truman W. Powell, also known as Joe Powell* v. *Rollins Protective Service.*

3,106,640, W. H. Oldendorf, RADIANT ENERGY APPARATUS INVESTIGATING SELECTED AREAS OF THE INTERIOR OF OBJECTS OBSCURTD BY DENSE MATERIAL, **filed** July 8, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1882, *EMI Limited* v. *William H. Oldendorf.* Filed stipulation for dismissal with prejudice, entered Oct. 10, 1974.

3,112,018, C. S. Gebrie, VALANCE, **filed** Dec. 18, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3187, *Presto Lock Company* v. *Stebco Products Corporation.* Enter judgment that the complaint against Stebco Products be dismissed without prejudice, that defendant Tremco Mfg. and Engineering, Inc. be enjoined, Oct. 18, 1974.

3,126,841, E. R. Nay, APPARATUS FOR MANUFACTURING SNOW CONES, **filed** Oct. 17, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–2963–RF, *Eugene R. Nay* v. *Clarence R. Wilhelmi.*

3,213,553, R. Foy, HYDRAULICALLY ADJUSTABLE DOZER BLADE, **filed** Nov. 1, 1974, D.C., N.D. Ohio (Cleveland), Doc. C74–998, *Richard Foy and Ruth Pickering Weil* v. *J. I. Case Company.*

3,227,273, Syverson and Syverson, PACKAGE; **3,289,385**, same, METHOD OF PACKAGING, **filed** Dec. 21, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3212, *Compack Industries Inc.* v. *M.B. Packing Co. and Martin Smoler.* Stipulated dismissal of action, pursuant to the provision of Rule 41(a)(1)(ii), parties agree to the dismissal without prejudice of Counts I, II and III but with prejudice of Count IV, Oct. 15, 1974.

3,267,934, W. E. Thornton, ELECTROCARDIAC COMPUTER, **filed** Oct. 21, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–3008–AAH, *Del Mar Engineering Laboratories* v. *Physio-Tronics, Inc.*

3,289,385. (See 3,227,273.)

3,289,568, R. L. Ronning, PRODUCT PELLETING AND COOLING APPARATUS; **3,429,349**, same, PULL-THROUGH HAMMER MILL; **3,643,404**, Same, METHOD AND APPARATUS FOR ENHANCING THE SEPARATION OF PARTICULATE MATERIAL FROM AN EFFLUENT STREAM, **filed** May 13, 1974, D.C., N.D. Ohio (Toledo), Doc. C–74–181, *Richard L. Ronning* v. *Verhoff Alfalfa Mills.* Plaintiff is owner of all right, title and interest. Patent is valid and infringed by defendant. Defendant is enjoined from further infringements, May 14, 1974.

3,289,767, Seward and Myers, WELL CENTERING AND CEMENTING DEVICE, **filed** Oct. 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–3072, *B & W Incorporated* v. *Chromally American Corporation.*

3,358,235. (See 2,897,383.)

3,402,436, H. Oetiker, CLAMP CONSTRUCTION, **filed** Oct. 8, 1974, D.C. Del. (Wilmington), Doc. 74–201, *Hans Oetiker* v. *Chrysler Corporation.*

3,403,868, W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM, **filed** Oct. 17, 1974, D.C. Ariz. (Phoenix), Doc. C–74–673 Phx, *The Gates Rubber Company* v. *Data Packaging Corporation et al.*

3,404,622, R. L. Flanagan, MOBILE VEHICLE PRESS; **Re. 27,194**, same, **filed** Oct. 25, 1974, D.C. Oreg. (Portland), Doc. C–74–832, *Mobile Auto Crushers Corporation of America* v. *Merlin W. Fjarli.*

3,419,876, Edwards and Winterstein, STREAMLINED ANTENNA AND METHOD OF MAKING THE SAME, **filed** May 25, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–534, *Sterling Manufacturing Co., doing business as Tenatronics, Ltd.* v. *Radio Shack, a division of Tandy Corp.* Court dismissed plaintiff's action on the ground it had failed to prove ownership of the patent in the plaintiff's corporation, or that the plaintiff was the proper party to institute the action, Oct. 25, 1974.

3,423,505, Crawley and Abelseth, RABIES VACCINE AND PROCESS FOR PREPARATION THEREOF, **filed** Sept. 27, 1974, D.C., S.D.N.Y., Doc. 74–C–4243, *Philips Roxanne, Inc.* v. *Richardson-Merrell, Inc. and Connaught Laboratories Ltd.*

3,429,349. (See 3,289,568.)

3,459,558, Farmer and Chandler, COFFEE PELLET PROCESS, **filed** June 21, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–819, *Farmer Bros. Co.* v. *Coca-Cola Company, Inc.* Filed final judgment and order that said patent is invalid, void and unenforceable and plaintiff's complaint is dismissed with prejudice, entered Oct. 30, 1974.

3,502,908, A. O. Christensen, TRANSISTOR INVERTER CIRCUIT, **filed** Oct. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3104, *Teletype Corp.* v. *Shell Oil Co.*

3,546,921, Bourke, Harris and Muff, METHOD OF PRODUCING AN INITIAL THERMAL ARREST IN THE COOLING CURVE OF HYPEREUTECTIC CAST IRON; **Re. 26,409**, R. J. Hance, EXPENDABLE PHASE CHANGE DETECTOR DEVICE, **filed** Dec. 23, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71–3056, *Leeds & Northrup Company and Foundry Engineers, Incorporated* v. *Electro-Nite Co.* Consent judgment, patent is valid and owned by plaintiffs. Plaintiffs waive their claim for an injunction and the complaint and counterclaim are hereby dismissed with prejudice, July 30, 1974.

3,570,393, F. R. Schy, TACO SHELL FORMING AND COOKING APPARATUS, **filed** Oct. 25, 1974, D.C., C.D. Utah (Salt Lake City), Doc. C–74–335, *Khyber Food Products, Inc. and Mexican Food Machinery and Manufacturer, Inc.* v. *Clover Club Foods Company, Inc.*

3,629,931, J. M. Stanley, METHOD AND APPARATUS FOR NAILING A STRUCTURAL FRAME, **filed** June 3, 1974, D.C., N.D. Ga. (Atlanta), Doc. C74–1078A, *Multi-Systems, Inc.* v. *Staple Fastener Company et al.* Consent judgment enjoining defendants and dismissing the complaint with prejudice, Oct. 30, 1974.

3,643,404. (See 3,289,568.)

3,665,477, Budrow and Reed, ELEVATABLE AND FOLDABLE ANTENNA, **filed** Aug. 15, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–174, *Barker Manufacturing Company, Inc.* v. *Cobra Industries, Inc.*

3,672,256, W. B. Kosmowski, CENTRIFUGAL CHUCK DEVICE; **3,687,467**, same, COLLET; **3,795,455**, same, MACHINE TOOL HAVING CENTRIFUGALLY ACTUATED COLLET, **filed** Mar. 26, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–787–R, *Digital Systems, Inc.* v. *Advanced Controls Corp. et al.* Filed defendant's notice of dismissal with prejudice, Oct. 21, 1974.

3,687,467. (See 3,672,256.)

3,711,920, R. L. Simmons, Jr., PIPE PULLER AND ALIGNMENT CLAMP, **filed** Oct. 24, 1974, D.C., E.D.N.C. (Wilmington), Doc. 74–37–C–7, *Richard L. Simmons* v. *Brown & Root, Inc.*

3,719,389, Burton and Kiger, THERMO PLASTIC TUBING FURNITURE, **filed** July 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1964–F, *Terra Furniture* v. *Grant Electrio Company.* Filed Consent Judgment and order thereon that defendants are permanently enjoined from infringing plaintiff's patent, entered Oct. 22, 1974.

3,784,084, C. C. Pearl, BAG WITH BAIL HANDLE, **filed** Oct. 9, 1974, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 74–2625, *APL Corporation* v. *S. Walter Packaging Corporation.*

3,795,455. (See 3,672,256.)

3,807,110, C. J. Kaminski, MULTIPURPOSE ROOF PENETRATING CURB, **filed** Oct. 25, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3092, *The Pate Company* v. *RPS Corporation and R. Resech, individually.*

3,815,604, O'Malley and Heintz, Sr., APPARATUS FOR INTRAOCULAR SURGERY, **filed** Oct. 22, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–2263, *David Kopf Systems* v. *Berkeley Bio-Engineering Inc.*

Re. 26,409. (See 3,546,921.)

Re. 26,724, R. L. Paquin, REFRIGERATED TUMBLER, **filed** July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1583, *Glacier Ware, Inc.* v. *Jet-X Corp. and Goldblatt Bros.* Motion of Jet X Corporation for leave to intervene as a defendant in the patent infringement count in this action to be bound by the final judgment is granted. Joint motion of the parties for the entry of final judgment in this cause is granted, Nov. 1, 1974.

Re. 27,194. (See 3,404,622.)

Certificates of Correction for the Week of Mar. 18, 1975

3,501,998
3,560,902
3,632,428
3,679,368
3,688,141
3,753,855
3,755,172
3,769,328
3,784,570
3,784,576
3,787,576
3,792,403
3,795,813
3,798,165
3,798,227
3,799,398
3,800,593
3,800,606
3,801,669
3,803,313
3,804,871
3,808,274
3,810,942
3,810,983
3,812,177
3,814,729
3,819,523
3,819,671
3,821,395
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3,823,782
3,825,825
3,825,882
3,829,570
3,831,092
3,832,409
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3,859,157
3,859,310
3,859,340
3,859,526
3,859,805
3,859,854
3,859,968
3,859,996
3,860,109
3,860,335
3,860,647
3,860,741
3,861,188
3,861,647
3,861,739
3,861,792

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 15, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-11-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-6-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-13-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-1-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-22-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-22-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-27-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-13-74

Expiration of patents: The patents within the range of numbers indicated below expire during March 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,825,064 to 2,828,486, inclusive
Plant Patents	Numbers 1,686 to 1,693, inclusive

REISSUE PATENTS

GRANTED MARCH 18, 1975

ERRATA

For CLASS	See PATENT NO.
264-051	28,364
200-086	28,365
239-333	28,366
052-079	28,367
241-088.4	28,368

REISSUES

MARCH 18, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,364

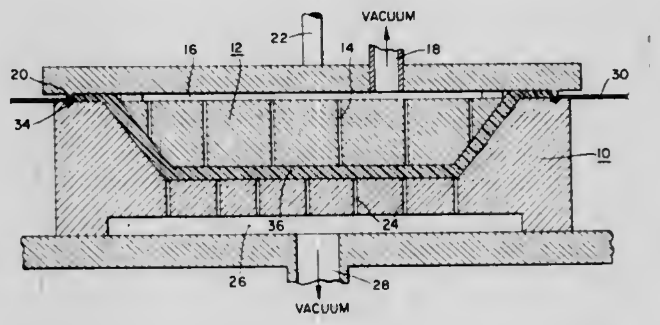
METHOD FOR FORMING FOAM ARTICLES

Marshall L. Corazza, Glen Mills, Pa., by Scott Paper Co., Philadelphia, Pa., assignee

Original No. 3,484,510, dated Dec. 16, 1969, Ser. No. 470,776, July 9, 1965. Application for reissue June 13, 1973, Ser. No. 369,487

Int. Cl. B29d *27/00*

U.S. Cl. 264—51 **5 Claims**



7. A process for forming a solidified body from a sheet of thermoplastic, closed cell, foam material having opposed faces, said method comprising the steps of:

- *(1) heating said thermoplastic sheet to render the same deformable without destroying the cellular character thereof;*
- *(2) positioning said sheet between opposed male and female members, said members, when brought into final forming position, defining a cavity therebetween which includes a bottom region and a side region;*
- *(3) relatively moving said mold members into final forming position for engaging the sheet while said sheet is in a heated condition, and stretching said heated sheet into a configuration generally assuming the configuration of said cavity, but incompletely filling the cavity in the bottom and side regions thereof; and*
- *(4) simultaneously applying vacuum to opposed faces of said stretched sheet in said bottom and side regions of the cavity for causing said sheet to expand into close conformity with said mold members in said bottom and side regions for forming an article having a lower density, greater thickness and greater flexure strength than the heated sheet prior to stretching.*

28,365

PRESSURE-OPERATED LAYERED ELECTRICAL SWITCH AND SWITCH ARRAY

Charles E. Braue, Bronx, N.Y., assignor to Data Appliance Corporation

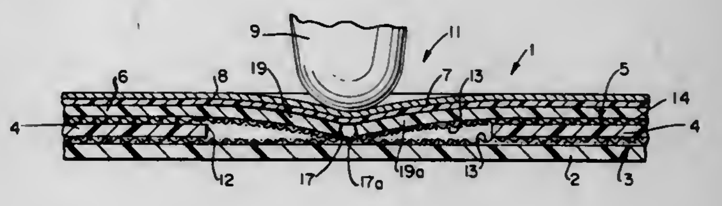
Original No. 3,617,666, dated Nov. 2, 1971, Ser. No. 33,367, Apr. 30, 1970. Application for reissue June 27, 1973, Ser. No. 374,091

Int. Cl. H01h *43/08*

U.S. Cl. 200—86 **29 Claims**

1. An electrical switch which is closed by the application of pressure against an area of the switch and is opened when the pressure is removed comprising

- a. an electrically nonconductive base;
- b. a first electrically conductive layer positioned against such base;
- c. a nonconductive separator means placed against the side of the conductive layer opposite the base, said separator means having an opening therein;
- d. a second electrically conductive layer placed against the side of the separator means opposite the first conductive layer;
- e. a layer of nonconductive noncompressible material placed against the side of the second electrically conductive layer opposite the nonconductive layer means,



said noncompressible layer having an elongated opening positioned adjacent the opening in the separator means; and

- f. a pressure-responsive deflectable portion of the noncompressible layer positioned adjacent the opening capable of being deflected down into said opening

whereby the application of pressure transmitted to and against the pressure-responsive deflectable portion causes said portion to move a portion of the second conductive layer against the first conductive layer to close the switch.

28,366

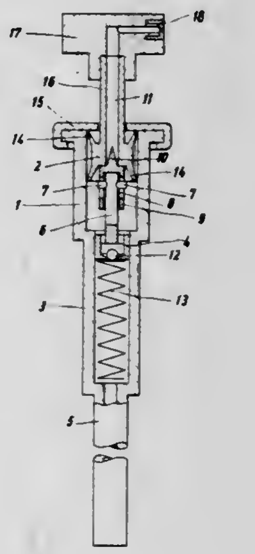
ATOMIZING PUMP

Fred Pechstein, Berlin, Germany, assignor to Firma Rudolf Albert, Hemer, Germany

Original No. 3,399,836, dated Sept. 3, 1968, Ser. No. 595,761, Nov. 21, 1966. Application for reissue July 30, 1973, Ser. No. 383,504

Int. Cl. B05b *1/00*

U.S. Cl. 239—333 **13 Claims**



1. A pump assembly for conveying liquids to be atomized and comprising, in combination:

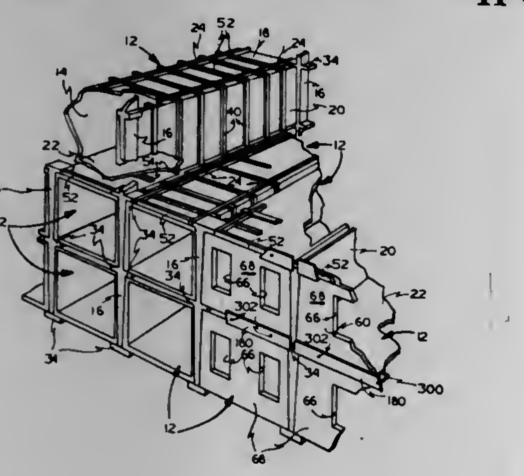
- (a) first means defining a first variable volume space and a fluid flow passage in communication with said first space;
- (b) second means defining a second variable volume space in communication with said first space;

(c) first valve means associated with said first means and disposed for isolating said passage from said first space;
(d) connecting means connecting said second means to said first valve means for controlling the opening and closing of said valve means and for providing a limited degree of relative movement between said first valve means and said second means; [and]
(e) biasing means associated with said second means for urging it into a condition corresponding to the minimum volume of said second space[.] *;*
(f) and further valve means for preventing back flow of fluid from said first variable volume space to said second variable volume space.

28,367

BUILDING

Frank D. Rich, Jr., Darien, and Alexander D. McDonald, Stamford, Conn., assignors to F. D. Rich Housing Corporation, Stamford, Conn.
Original No. 3,750,366, dated Aug. 7, 1973, Ser. No. 163,274, July 16, 1971, which is a continuation-in-part of abandoned application Ser. No. 4,156, Jan. 19, 1970. Application for reissue June 6, 1974, Ser. No. 476,948
Int. Cl. E04h *1/12, 9/06*
U.S. Cl. 52—79 **11 Claims**

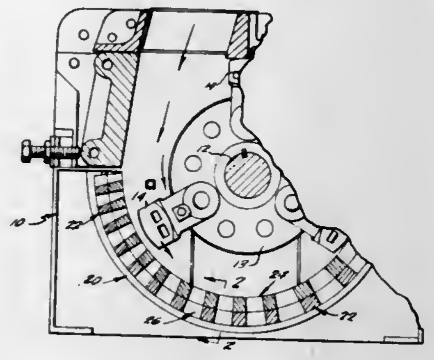


1. A multi-story building of modular construction including
a plurality of modular box beams of substantially similar structural strength, each said beam enclosing at least one room of the interior space of said building,
said box beams being in spaced horizontal layers and in spaced vertical alignment,
a plurality of vertical columns for supporting the weight of said box beams,
said columns being cast-in-situ in laterally and longitudinally spaced apart relation and being positioned between said horizontally spaced box beams adjacent the ends thereof
box beam support members on said columns to receive and support the box beams of the story thereabove,
said box beams being rigidly bonded to said support members, and
said box beams above the ground floor being supported substantially entirely upon said support members and having strength enough to span the space between said support members without support from box beams therebelow,
whereby said box beams have substantially their entire weight carried by said vertical columns.

28,368

GRATE BAR ASSEMBLY FOR A ROCK CRUSHER

Joseph F. Bonarrigo, Jr., Sykesville, Md. 21784
Original No. 3,617,007, dated Nov. 2, 1971, Ser. No. 863,428, Oct. 3, 1969. Application for reissue Nov. 1, 1973, Ser. No. 411,642
Int. Cl. B02c *13/13, 13/284*
U.S. Cl. 241—88.4 **5 Claims**



4. A grate bar assembly for a rock crusher comprising:
at least one lower grate element having bars spaced by openings extending from the upper face to the lower face thereof,
and at least one upper grate element having bars spaced by openings extending from the upper to the lower face thereof,
said upper grate element being supported on said lower grate element for ready removal and replacement when worn,
the openings in said upper grate element being of a size to permit passage therethrough of crushed material of a desired diameter,
the openings in said lower grate element being of size at least equal to the size of the openings in said upper grate element so as to not impede passage therethrough of such material passed through the openings in said upper grate element,
the openings in said upper and lower grate elements being in registry,
said upper grate element being formed of high abrasion resistant metal,
said lower grate element being formed of metal of high strength.

28,369

RING A UNSATURATED - 20 - OXO-11,17-BIS-OXYGENATED 16-METHYL STEROIDS OF THE PREGNANE SERIES

Glen E. Arth, Cranford, David Johnston, Warren, and Lewis H. Sarett, Skillman, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Original No. 3,375,261, dated Mar. 26, 1968, Ser. No. 563,658, July 8, 1966, which is a continuation-in-part of abandoned applications Ser. No. 642,655, Feb. 27, 1957, and Ser. No. 752,180, July 31, 1958. Application for reissue Sept. 10, 1974, Ser. No. 504,832
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 **20 Claims**

6. [A 17-oxygenated-pregnane as defined in claim 1, which has the chemical name] 16α-methyl-1,4-pregnadiene-11β,17α,21-triol-3,20-dione.

PLANT PATENTS

GRANTED MARCH 18, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,691

CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, Chichester, England, assignor to Framptons Nurseries Limited, Worthing, England
Filed July 23, 1973, Ser. No. 381,665
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as shown and described, characterized particularly as to novelty by the unique combination of a yellow color; small, hard and crisp pompon-like flowers, the production of a flowering shoot from a majority of the leaf axils above the compost level following a pinch; and good, uniform flowering regardless of whether the apical flower on each shoot is disbudded.

3,692

CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, Chichester, England, assignor to Framptons Nurseries Limited, Worthing, England
Filed July 23, 1973, Ser. No. 381,666
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as shown and described, characterized particularly as to novelty by the unique combination of a yellow color, short internode length, and uniform response in poor winter light conditions.

3,693

CACTACEAE PLANT FAMILY

Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.
Filed Jan. 17, 1974, Ser. No. 434,025
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct hybrid plant variety of the Cactaceae family as described and illustrated and which is primarily distinguished by growth habit that combines the following characteristics:

1. A faster growth rate than its parents.
2. A more upright and compact appearance than its parents,
3. Generally broader and thicker cladophylls than its parents,
4. A hardier growth habit with greater resistance to nutrient deficiences and fungus diseases than its parents,
5. Greater resistance to flower bud abscission than its maternal parent, and
6. A generally larger flower than its maternal parent and which has
   (a) a bloom life from about 5 to about 8 days,
   (b) broader tepel blades than its parents, and
   (c) perianth tube laminating and forming tepals with generally less recurve tendencies than its parents, and with marginal blade areas that in color are dominated by pink, red and/or reddish orange hues.

PATENTS

GRANTED MARCH 18, 1975

ERRATA

For CLASS	See PATENT NO.
056-328	3,871,040
117-368	3,871,065
029-252	3,871,053
029-267	3,871,054
029-267	3,871,055
029-283	3,871,056
029-427	3,871,057
029-403	3,871,058
029-427	3,871,059
029-428	3,871,060
029-431	3,871,061
029-470	3,871,062
029-470.5	3,871,063
029-475	3,871,064
029-560	3,871,066
029-571	3,871,067
029-590	3,871,068
029-596	3,871,069
029-598	3,871,070
029-628	3,871,071
029-628	3,871,072
029-034.2	3,871,073
030-040.1	3,871,074
030-040.1	3,871,075
030-060.5	3,871,076
030-063	3,871,077
030-090.1	3,871,078
030-294	3,871,079
030-346.51	3,871,080
034-092	3,871,107
042-001	3,871,120
072-020	3,871,221
072-238	3,871,222
072-402	3,871,223
072-413	3,871,224
072-452	3,871,225
072-456	3,871,226
072-476	3,871,227
084-001.16	3,871,247
118-412	3,871,280
105-008	3,871,276
105-031	3,871,277

PATENTS

GRANTED MARCH 18, 1975

ERRATA—Continued

For CLASS	See PATENT NO.
105-378	3,871,278
105-410	3,871,279
109-029	3,871,281
109-031	3,871,282
109-056	3,871,283
109-059	3,871,284
110-008	3,871,285
110-008	3,871,286
110-008	3,871,287
137-231	3,871,422
175-016	3,871,485
175-100	3,871,486
175-248	3,871,487
175-406	3,871,488
177-001	3,871,489
177-010	3,871,490
177-045	3,871,491
187-095	3,871,494
273-026	3,871,647
215-223	3,871,662
424-340	3,872,104
423-371	3,872,136
178-007.6	3,872,248
260-307	3,872,298
312-290	3,872,342
357-004	3,872,359
317-003	3,872,370
325-042	3,872,381
333-070	3,872,399
240-052.1	3,872,428

PATENTS

GRANTED MARCH 18, 1975

GENERAL AND MECHANICAL

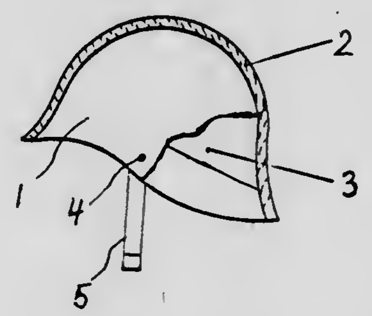
3,871,026
CERAMIC REINFORCED HELMET

Erhard Dorre, Plochingen, Germany, assignor to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Dusseldorf, Germany

Filed Dec. 15, 1972, Ser. No. 315,423

Int. Cl. F41h *1/06*

U.S. Cl. 2—6 **7 Claims**



1. A helmet comprising a laminar shell of substantially uniform thickness and of arcuate section in three planes perpendicular to each other, said shell including a metallic base layer having an outer, substantially convex face and an inner, substantially concave face, and an outer layer of ceramic material on said convex face, said outer layer essentially consisting of crystalline, non-metallic particles having a hardness value of at least 8 on the Mohs scale and being integrally thermally bonded to each other and to said base layer.

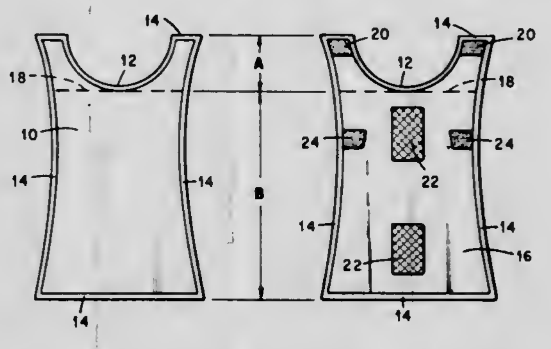
3,871,027
COMBINATION BURP PAD AND BIB

Byron Reid Orr, Oliver Springs, Tenn., assignor to Herman L. Holsopple, Oak Ridge, Tenn., a part interest

Filed Jan. 22, 1974, Ser. No. 435,535

Int. Cl. A41b *13/10*

U.S. Cl. 2—49 R **1 Claim**



1. A disposable baby bib and burp pad which comprises in combination:
- a. a rectangularly-shaped absorptive pad having a neck cutout adjacent to the upper end thereof;
- b. a layer of relatively impervious material on one surface of said pad overlain by a coextensive layer of liquid-absorbing material on a second surface thereof;
- c. pressure-sensitive adhesive tabs bonded to the upper end of the pad between said neck cutout and the sides of said pad;
- d. a crease line located below said neck cutout whereby material enclosing said neck cutout is folded back upon itself thereby forming a burp pad; and
- e. at least one pressure-sensitive adhesive tab bonded along the center line of said impervious material whereby said pad is removeably attached to the clothing of the wearer.

3,871,028
METHOD OF ASSEMBLING NECK ACCESSORIES TO CLOTHING ARTICLES AND ARTICLES THUS OBTAINED

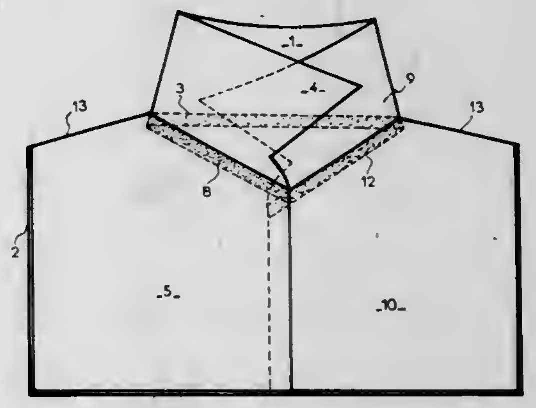
Claude Raymond Pierron, Epinal; Jean Paul Joseph Jenny, Decines, and Robert Zuccaro, Epinal, all of France, assignors to Plymatic, Darnieulles, France

Filed Aug. 2, 1973, Ser. No. 384,956

Claims priority, application France, Aug. 31, 1972, 72.30971

Int. Cl. A41b *3/04*

U.S. Cl. 2—143 **8 Claims**



1. Method of manufacturing garments provided along neck lines with neck accessories such as collars, hoods, masks, neck reinforcements, said method comprising the steps of forming separately said neck accessories from at least one auxiliary band of supple material, moving at least one main web of supple material along a continuous assembly line and subjecting it to a series of automatic fashioning steps including the steps of laying secondary layers of supple material on said main web, cutting and fixing said secondary layers to said web to form said garments, wherein the improvements consist in that said steps of laying, fixing and cutting said secondary layers and the steps of laying and fixing said neck accessories are performed sequentially in a sequence such that the said secondary layers and the said neck accessories are superposed when the finished garments reach the end of the assembly line.

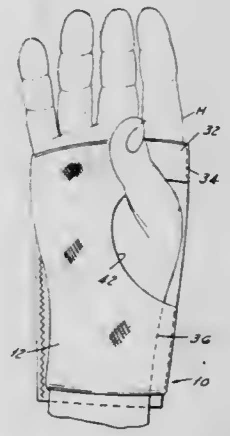
3,871,029
BOWLING GLOVE

George A. Hollman, 7127 Proctor Ave., Detroit, Mich. 48210

Filed Aug. 5, 1974, Ser. No. 494,502

Int. Cl. A63b *71/14;* **A41d** *19/00*

U.S. Cl. 2—161 A **9 Claims**

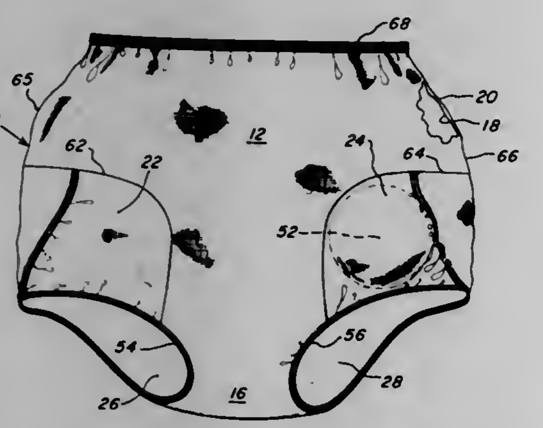


1. A glove open at its ends to permit it to be inserted over the fingers and hand of a bowler or the like and adapted to

extend along the hand and wrist for preventing the wrist from bending comprising a generally rectangular elongated relatively stiff pad engageable with the back side of the hand and wrist to keep the wrist and hand straight and an elastic band secured at one longitudinal edge thereof to one longitudinal edge of said pad, said pad including a pair of layers of sheet material having interposed therebetween a relatively flat stiffening element, the mating edges of said layers being secured together to enclose said stiffening element, the front portion of said band along the other longitudinal edge thereof being secured to said pad, the rear portion of said band having means for removably securing the band over the hand and wrist to said pad, the portion of said pad along said other longitudinal edge between said front and rear portions defining with said pad an opening through which the thumb of the hand extends when the glove is applied to the hand and wrist.

3,871,030
TENNIS PANTY

Ralph W. Green, Minneapolis, Minn., assignor to Milaca Mills, Inc., Minneapolis, Minn.
Filed Mar. 4, 1974, Ser. No. 447,780
Int. Cl. A41d *1/22*
U.S. Cl. 2—238 **2 Claims**

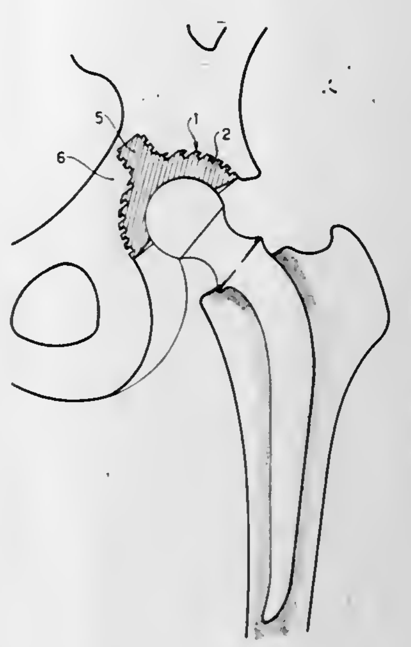


1. A tennis panty comprising a unitary garment composed of a front panel, a back panel, and a crotch portion connecting said front and back panels, said front panel converging along the lower edge thereof toward said crotch portion, means joining two side edges of said front panel with two side edges of said back panel to form a body encircling garment having a waist opening, a pocket formed to hold a tennis ball composed of a major panel and a minor panel overlying the major panel, said minor panel having its perimeter secured to the major panel except for a portion of the perimeter forming the pocket entrance, and means for joining the perimeter of the major panel to the crotch portion and to the front panel along the lower edge thereof to depend from said front panel and complete the formation of a leg encircling opening for the garment.

3,871,031
TOTAL HIP PROSTHETIC APPARATUS MADE OF NON-POROUS ALUMINA

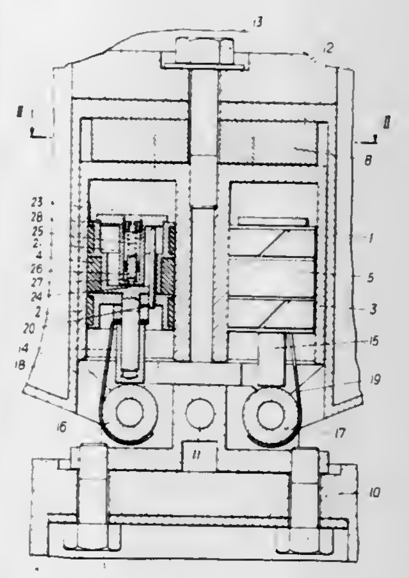
Pierre Boutin, Pau, France, assignor to Ceraver, Paris, France
Filed Dec. 12, 1972, Ser. No. 314,461
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **6 Claims**

1. A prosthetic apparatus designed to replace a natural articulation between two bones, comprising a first hemispherical piece consisting of non-porous alumina to be attached to a first bone by reossification, a second elongated piece to be attached to a second bone, cooperating surfaces on said first and second pieces being formed from non-porous smoothed and ground alumina, the second piece consisting of two portions, one portion of which is a metallic rod and the other portion of which is a head consisting of non-porous alumina secured to the metallic rod, said head providing the cooperating surface of said second piece, the outer convex portion of said hemispherical first piece which is to come into contact with an osseous part of the bone to which it must be secured by reossification including a plurality of anfractuosities of a size sufficient to permit ingrowth of osseous cells, and means for anchoring said first piece to said first bone including a first anchoring projection extending from said outer convex portion along the axis of symmetry of said first piece and a second anchoring projection extending along an axis different from and parallel to the axis of symmetry of said first piece, so that the second anchoring projection will extend into an area of the bone to which it is to be attached which is thicker than the area through which the axis of said first anchoring projection extends.



3,871,032
ARTIFICIAL HYDRAULIC ANKLE JOINT

Wolfgang Karas, Vienna, Austria, assignor to Forschungsinstitut fur Orthopadie-Technik, Vienna, Austria
Filed Apr. 4, 1974, Ser. No. 458,049
Claims priority, application Austria, Mar. 8, 1974, 1928/74
Int. Cl. A61f *1/00, 1/04, 1/08*
U.S. Cl. 3—1.2 **5 Claims**

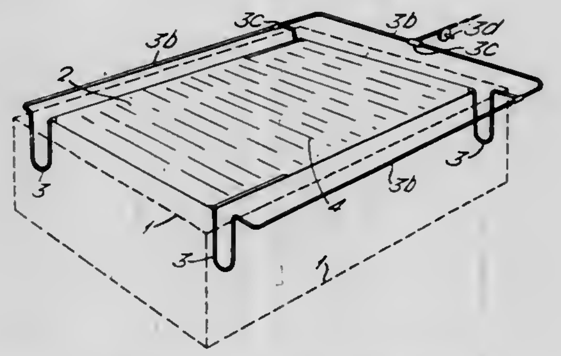


1. An artificial ankle joint comprising a foot part and a lower leg part, an articulate connection arranged therebetween and a damping device hinged, on the one hand to the foot part and, on the other hand to the lower leg part, which damping device comprises

at least two hydraulic cylinders with pressure chambers
connection conduits connecting the hydraulic cylinders
hollow pistons having a bottom part and an upper end and hollow chambers filled with storage oil
pressure-balancing channels in contact with the surrounding atmosphere and guided as far as the upper end of the hollow chambers
a spring-loaded snifting valve arranged between the pressure chamber of each hydraulic cylinder and the hollow chamber of each piston.

3,871,033
SWIMMING POOL COVERS

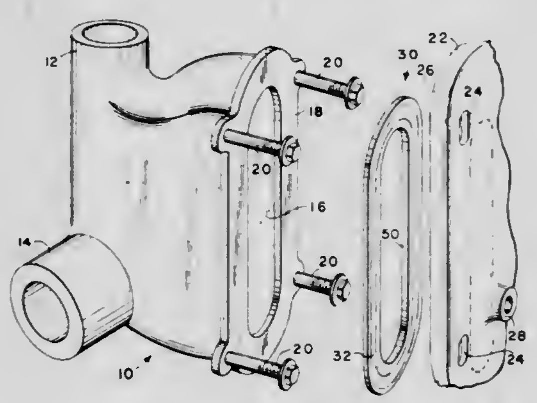
Sidney Charles Leddra Bartlett, Lower Buckley, Sidbury, Devon Ex10 ORY, England
Filed Feb. 26, 1973, Ser. No. 335,958
Claims priority, application United Kingdom, Feb. 26, 1972, 8983/72
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.13 **2 Claims**



1. A cover for a swimming pool comprising:
i. a flexible imperforate membrane weighted and shaped such that it will rest submerged on the bottom of the pool,
ii. loading means on a single line joining opposite edges of the cover to define a weighted line across said membrane,
iii. means defining air pockets carried by said membrane which when filled with air cause the membrane to float freely and evenly on the surface of the water in the pool and,
iv. means for emptying said pockets of air to cause the membrane to sink firstly along said line weighted and the remainder of the membrane to bend upwards to allow water to by-pass the membrane.

3,871,034
FACE PLATE GASKET

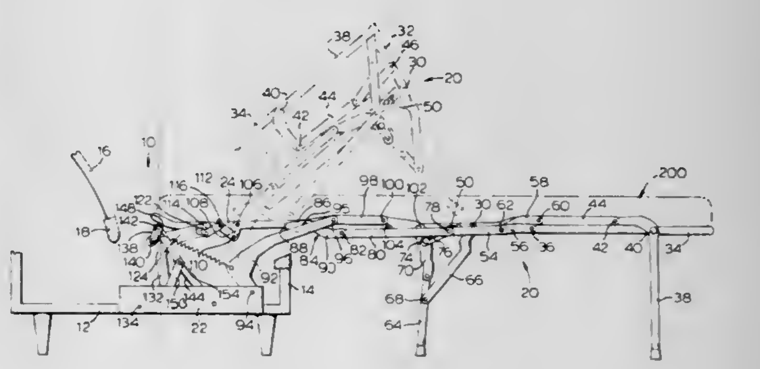
Hugo K. Weigel, Sea Girt, N.J., assignor to Jay R. Smith Mfg. Co., Piscataway, N.J.
Filed Jan. 15, 1973, Ser. No. 323,468
Int. Cl. F16l *21/02*
U.S. Cl. 4—252 R **2 Claims**



1. In combination, a plumbing fitting having a substantially horizontal conduit terminating in a substantially vertical peripheral face transverse to said conduit, and a face-plate gasket of pliable resilient material for sealing a joint between said face of said fitting and a face plate to be positioned in adjacent communicating relationship with said fitting, said gasket comprising a peripherally extending radially relatively wide and axially thin flange generally parallel to said peripheral face of said fitting and adjacent thereto, said flange having spaced inner and outter margins having opposed sealing faces between them, with one said sealing face being adjacent said substantially vertical peripheral face of the fitting and said other face being adapted to be engaged by a face plate, a plurality of radially spaced apart, endless, peripherally extending beads extending from one said flange face, and generally horizontally extending support means integral with and extending transversely of said flange at said inner margin thereof, said integral support means comprising a peripherally extending lip having inner and outer surfaces, a bead on the outer surface of said lip remote from said flange, said bead engaging said conduit and distorting said lip from an initial position prior to insertion in which said lip extends generally perpendicularly to the plane of said flange of a second inserted position in which said lip is squeezed inwardly by said conduit to thereby produce a reactive force against the conduit wall, whereby said gasket is supported with the flange in a substantially vertical plane by said integral lip.

3,871,035
CHESTERFIELD BED MECHANISM

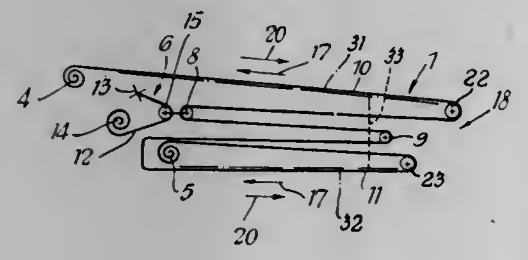
William Valentine Gerth, 451 Phillip St., Waterloo, Ontario, Canada
Filed Dec. 14, 1973, Ser. No. 425,173
Int. Cl. A47c *17/14*
U.S. Cl. 5—13 **5 Claims**



1. In a chesterfield bed frame having a back support and a side with a seat recess extending under and behind said back support, a mechanism foldable into said recess, said mechanism in its bed position providing a mattress supporting member forward of said back support, said support member being divided into a rear section and forward section pivotably connected, said mechanism having a main lever pivotably connected at one end to said frame, said main lever in the bed position extending upwardly and forwardly with respect to said back support, an upwardly extending rear lever pivotably connected at its lower end to said frame at a position rearward of said main lever; a swing lever medially pivoted to the upper end of said rear lever, said swing lever in the bed position extending forwardly for pivotal connection to said rear section, main link means rearwardly pivotably connected to said rear section and forwardly pivotably connected to said forward section, said main link means being medially pivotable on the upper end of said main lever to lower the rear end of said main link means and rotate said swing lever downwardly and rearwardly through the vertical about said rear lever thereby pivoting said rear section under said back support and linkage means operable with said rear lever to further rotate said swing lever upwardly behind said back support to store said rear section.

3,871,036
INVALID TRANSFER DEVICE

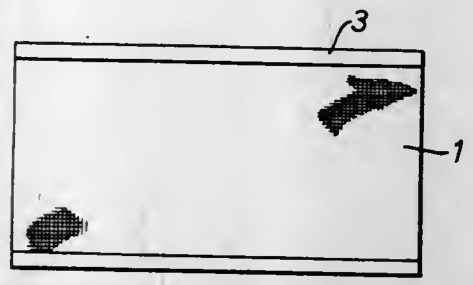
David J. Attenburrow, Bridlington, England, assignor to Reed International Limited, London, England
Filed July 6, 1973, Ser. No. 377,008
Claims priority, application United Kingdom, July 10, 1972, 32148/72
Int. Cl. B66f *11/00*
U.S. Cl. 5—81 R **6 Claims**



1. A patient transfer device comprising in combination
- a. an elongated belt which is wide enough to support a patient,
- b. a first take-up and let-out reel connected to one end of said belt,
- c. a second take-up and let-out reel connected to the other end of said belt,
- d. a plurality of supporting and guiding means,
- e. said belt being disposed around said plurality of supporting and guiding means in a back and forth manner so as to provide an upper patient supporting portion and a lower ground engaging portion,
- f. driving means associated with said first take-up and let-out reel,
- g. driving means associated with said second take-up and let-out reel,
- h. a third take-up and let-out device that engages said belt at a point between its upper patient supporting portion and its lower ground engaging portion,
- i. first locking means for selectively locking said third take-up and let-out device,
- j. second locking means for selectively locking said first take-up and let-out reel, whereby:
  1. in a first mode of operation said first reel is driven so that it takes up the belt and the second reel lets out the belt,
  2. in a second mode of operation the belt is taken up by the second reel and let out by the first reel,
  3. the course of the belt over the supporting and guiding means being such that in each of the first and second modes the belt is moving in the same direction over its upper patient supporting portion and its lower ground engaging portion,
  4. said third take-up and let-out device being locked by said first locking means during said first and second modes,
  5. in a third mode of operation locking said second locking means and unlocking said first locking means so that when said third take-up and let-out device is actuated the belt will be let out by the second reel and the resulting slack taken up by said third take-up and let-out device, and
  6. in a fourth mode of operation said second reel is driven to take up the belt and the third take-up and let-out device lets out the belt slack that it has taken up during the second mode of operation.

3,871,037
INCONTINENCE PADS

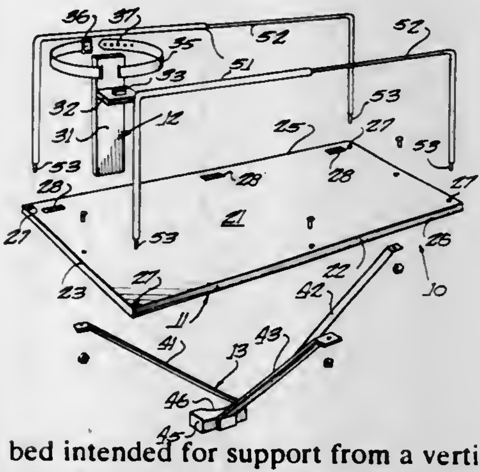
Frederick Lane Willington, Plas-y-Felin, Cefnpennar, Mountain Ash, Glamorgan, England
Filed Jan. 4, 1974, Ser. No. 430,654
Int. Cl. A61g *7/02;* **G61g** *9/00*
U.S. Cl. 5—91 **13 Claims**



1. An incontinence pad comprising a permeable membrane, normally uppermost, an upper absorbent layer, an upper impervious layer, but with a window formed therein, the upper absorbent layer leaving said window exposed, a lower absorbent layer to which fluid has access through said window, a complete impervious layer, normally lowermost, and means sealing the edges of the pad the window being of lesser area than said absorbent layers.

3,871,038
PORTABLE BED

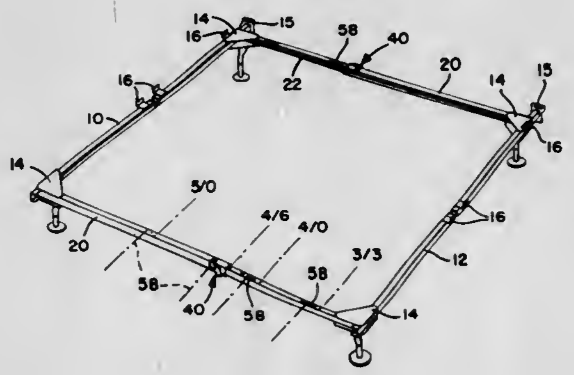
Junior Albert Trivett, 130 3rd Ave. Northeast, Conover, N.C. 28601
Filed Sept. 3, 1974, Ser. No. 502,965
Int. Cl. A45f *3/22;* **A47c** *9/10*
U.S. Cl. 5—121 **5 Claims**



1. A compact bed intended for support from a vertical tree trunk, a horizontal railing of a fence, and the like, comprising: a flat horizontal platform having a top surface, a bottom surface, opposed end edges, a back side edge, and a front side edge;
- a plurality of identical longitudinally aligned spaced apart openings disposed adjacent the back edge and including one opening centrally of the back edge with at least one opening near each back edge corner of the platform;
- a vertical support bracket having a horizontal flange projecting outwardly therefrom normal thereto and intermediate the ends thereof;
- a boss member projecting upwardly from the top surface of the flange member to engage the central opening of the platform to removably mount the platform to the support bracket;
- a pair of vertically extending spaced apart slots disposed in the support bracket above the flange member;
- a flexible strap passing through the slot and having connecting means associated with the ends thereof for securing the ends of the strap together about a tree trunk and the like to removably retain the support bracket thereto extending vertically along a side surface thereof;
- brace means associated with the bottom of the platform and extending downwardly and inwardly therefrom;
- a support member associated with the projecting ends of the brace means and adapted to engage a portion of the supporting tree trunk vertically beneath the supporting bracket; and
- a roof and side wall assembly removably associated with the platform to define a roof cover and side walls and closing the area immediately above the platform to protect an individual sleeping on the platform from the elements of the weather.

3,871,039
BED FRAME

David S. Garceau, and Silas J. Knoke, both of Seymour, Ind., assignors to Lear Siegler, Inc., Seymour, Ind.
Filed May 9, 1974, Ser. No. 468,506
Int. Cl. A47c *19/04*
U.S. Cl. 5—181 **4 Claims**

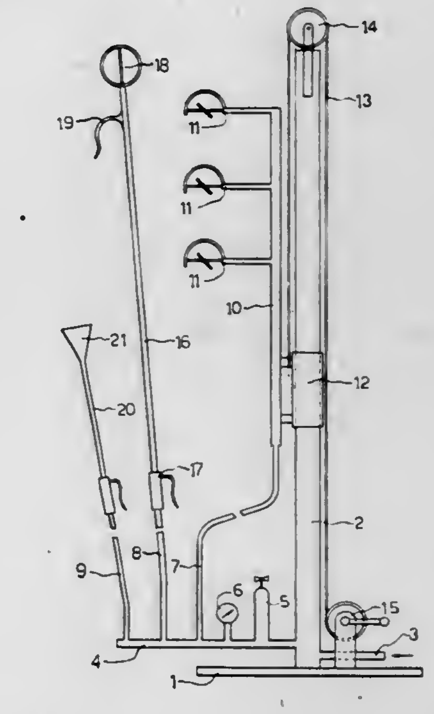


1. An adjustable bed frame in which a pair of end rails are adjustably interfitted to support varying widths of bedding thereon, and in which said rail pairs comprise interfitted channel-shaped rail sections each having a back wall and a pair of side walls, the improvement in a fastenerless latch mechanism for retaining each of said pairs of rails in pre-determined relation, comprising a double-ended latch member having a generally flat body portion rotatably mounted adjacent the outside surface of the back wall of said outer rail section, said latch member having opposite transversely turned arms positioned in generally overlying relation to the side walls of said outer rail, each of said arms having an arcuately-formed, inwardly extended finger, means in said outer rail side walls defining clearance openings through which said fingers simultaneously move as said latch member is rotated to a locking position, means in said side walls of said inner rail defining a plurality of pairs of openings selectively alignable with said clearance openings to define pre-determined adjusted position in response to telescopic movement of said end rail sections, said opening pairs being positioned to receive said fingers therethrough upon rotation of said latch member to lock said rail sections at a selected said adjusted position, said fingers in said locking position presenting camming surfaces to the side walls of said inner rail sections so that forces tending to move said rail sections telescopically in either direction will present the side walls of the inner section against a camming finger surface thus tending to hold said latch member in its locking position.

3,871,040
APPARATUS FOR HARVESTING FRUIT FROM TREES

Carmelo Marasco, Lecce, Italy, assignor to Ernesto Lendaro, Udine, Italy
Filed May 16, 1974, Ser. No. 470,652
Claims priority, application Italy, May 16, 1973, 17104/73
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **8 Claims**

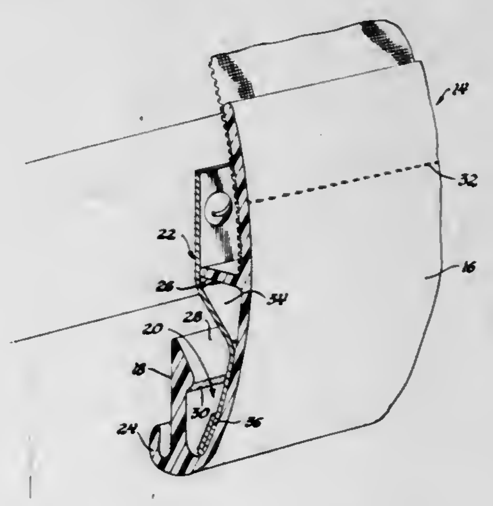
1. Apparatus for harvesting fruit from trees by means of intermittent jets of compressed air, which comprises:
- a. a vertically positioned guide member;
- b. a blower unit supported by said guide member and slidably attached thereto for vertical displacement therealong;
- c. at least one nozzle positioned at the upper extremity of said blower unit for delivering compressed air pulsatingly against the foliage of the tree;
- d. means for raising and lowering said blower unit along said guide member;
- e. means for holding compressed air delivered by a compressor source;



- f. means for controlling the flow of compressed air to said blower unit;
- g. means connecting said holding means with said blower unit for fluid communication therebetween; and
- h. means for supporting said guide member in vertical position.

3,871,041
UPHOLSTERY ATTACHMENT HARDWARE

Robert W. Plume, Sterling Heights, Mich., assignor to Travel Products, Inc., Washington, Mich.
Filed Oct. 4, 1973, Ser. No. 403,686
Int. Cl. A47c *23/00*
U.S. Cl. 5—353.1 **6 Claims**

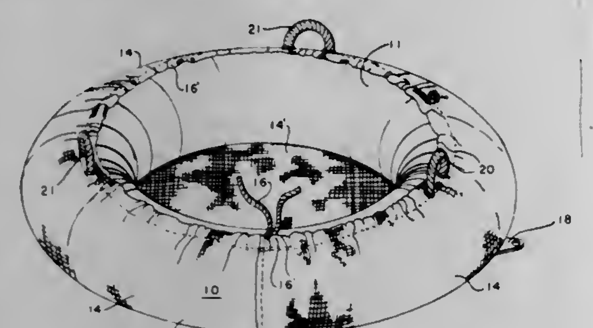


1. Upholstery attachment hardware for mating engagement with a keeper strip attached to the article to which upholstery is to be applied comprising: a front molding; an interlock finger formed integral with said front molding, said interlock finger and said front molding forming an interlock groove adapted to receive said keeper strip attached to the article to which the upholstery is to be applied; and a locating finger disposed in a confronting relation with said interlock finger on the side of said interlock finger opposite said front molding, said locating finger being adapted to engage the article to which the upholstery is to be applied to provide a predeter-

mined spacing of said front molding relative to the article to which the upholstery is to be applied.

3,871,042
INFLATABLE VEHICLE CONSTRUCTION

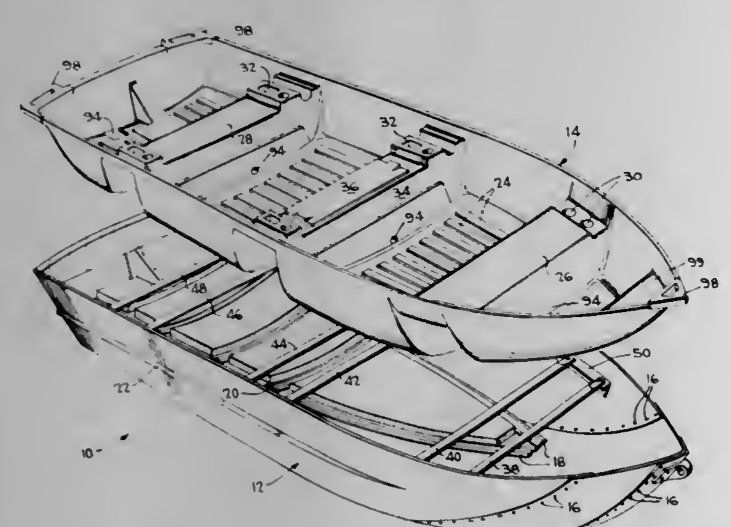
Gary W. Farmer, 310 W. Ash, Caldwell, Idaho 83605
Continuation-in-part of Ser. No. 310,741, Nov. 30, 1972, abandoned. This application Jan. 20, 1974, Ser. No. 437,279
Int. Cl. B63c *9/04*
U.S. Cl. 9—1 A **5 Claims**



1. In combination with inflatable annular ring, an inflatable vehicle construction comprising a cuff fabricated to conform about the circumference of said ring over a portion of the outside periphery of said ring distally interior of the upper and lower apexes of said ring, a drawcord slidably carried in a suitable cord-carrying means disposed about the upper terminal edge of said cuff, a flexible bottom fastened about the lower terminal edge on the ring-contacting side of said cuff, a tow ring disposed distally from the lower edge of said cuff, and a tie ring secured centrally in the upper side of said bottom engageable with the two rope section which provides means for deforming said ring covered by said vehicle construction into a bow-like configuration and for securing said construction into said configuration.

3,871,043
BOAT STRUCTURE

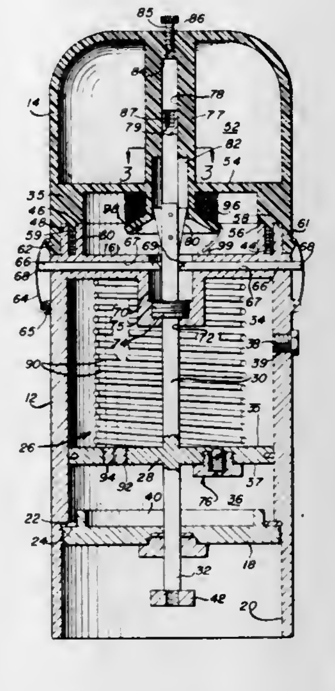
Samuel L. Davidson; William C. Heidenreich, and Phillip Hunter, all of Monroe, La., assignors to Delhi Manufacturing Company, Delhi, La.
Filed Dec. 5, 1973, Ser. No. 422,157
Int. Cl. B63b *3/09, 3/16*
U.S. Cl. 9—6 **12 Claims**



1. A boat construction comprising, in combination, a hull and a liner therefore each of which has upstanding side wall portions, said liner being smaller than, and having at least a major portion of its side walls fitting within said side walls of said hull, said hull and said liner being formed primarily of materials having different coefficients of thermal expansion, bracing means carried by said side walls of said hull and spanning said hull and supporting at least portions of said liner intermediate said side walls of said liner while permitting said liner to move relative to said hull in response to differences in expansion and contraction resulting from temperature differentials, and connecting means securing portions of said side walls of said liner and said hull, said connecting means also permitting said hull and said liner to move relative to each other in response to differences in expansion and contraction resulting from temperature differentials.

3,871,044
UNDERWATER TIMER AND RELEASE DEVICE

Edwin J. Wedrall, 1170 N. Puente St., Brea, Calif. 92611
Filed Dec. 5, 1973, Ser. No. 421,856
Int. Cl. B63c *7/26*
U.S. Cl. 9—9 **4 Claims**

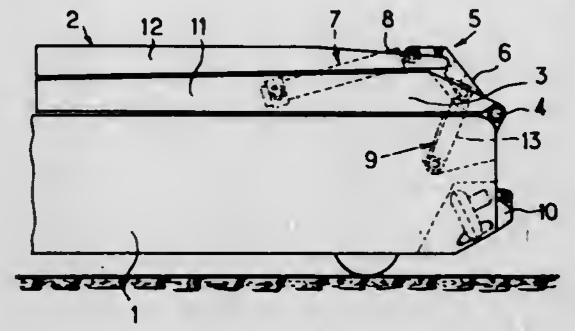


1. A combination timing-and-float-marking device, comprising:

a cylindrical housing having an upper wall and a removable lower end wall, wherein there is defined an enlarged compartment;
a buoyant mass releasably attached to one end of said housing;
means for releasably securing said mass to said housing, wherein said means is disposed therebetween;
a piston means slidably disposed within said compartment, whereby the movement thereof operates said releasably securing means, said piston means comprising:
a piston head having a rod secured thereto, one end thereof extending upwardly through said upper wall and downwardly through said lower end wall,
a valve means disposed in said piston head to permit flow of fluid in one direction therethrough,
a fluid-flow-regulating means disposed in said piston, whereby fluid flow is metered therethrough for controlled movement of said piston, and
a biasing means operably disposed within said compartment between said upper wall and said piston head, thereby biasing said piston head in a direction whereby fluid is forced to flow through said regulating means; and
wherein said compartment includes:
a primary chamber formed in said compartment between said upper wall and said piston head, and
a secondary chamber formed in said compartment between said lower end wall and said piston, and wherein said valve means comprises a one-way check valve so arranged within said piston head as to permit fluid flow from said primary chamber to said secondary chamber, and wherein said fluid-flow-regulating means permits fluid to flow into said primary chamber from said secondary chamber at a predetermined rate.

3,871,045
LAUNCHER FOR EXTENDIBLE AND RETRACTABLE BRIDGE STRUCTURE

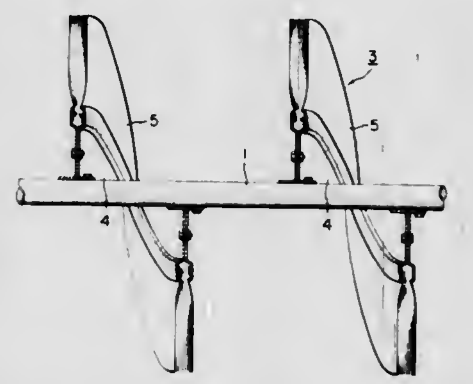
Claude Bouvet, and Michel Eugene Terrien, both of Angers, France, assignors to DPAGA-Bureau des Brevets & Inventions Republic of France, represented by the Minister of State for National Defense, Delegation Ministerielle Pour l'Armement, Paris, France
Filed Aug. 31, 1973, Ser. No. 393,610
Claims priority, application France, Sept. 29, 1972, 72.34301
Int. Cl. E01d *15/14*
U.S. Cl. 14—1 **17 Claims**



1. In combination, a bridge launcher, a bridge structure articulated at one of its ends on a shaft located on the bridge launcher for movement between a retracted position wherein the bridge structure rests on the bridge launcher and an operative extended position wherein the bridge structure is adapted to bridge a span, a crossbeam articulated on the said shaft and having at least one arm extending away from said shaft, a positioning means including a positioning extendible element interconnecting a first point on the said arm which is spaced away from the shaft to a point on the bridge structure near the end thereof which is articulated on the shaft, said positioning extendible element forming a supporting brace for the bridge structure in the extended position thereof, and a drive means including at least one drive extendible element for operatively interconnecting the bridge launcher and second point on the said arm between the shaft and the said first point thereon, whereby said drive means is operable, when extended, to move the crossbeam and hence also the bridge structure via said positioning extendible element from said retracted position at least to a partially extended position.

3,871,046
POLISHING DEVICE FOR A VEHICLE

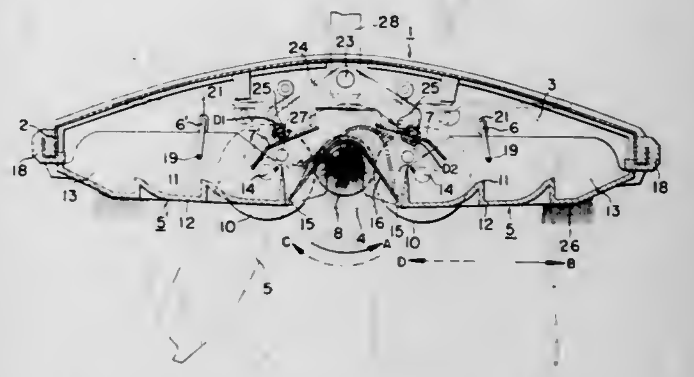
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan
Filed May 14, 1973, Ser. No. 360,170
Claims priority, application Japan, July 13, 1972, 47-82801
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **1 Claim**



1. A polishing device for a vehicle comprising a rotating shaft, a spiral buff body surroundingly attached to said shaft by means of spiral attaching means radially expanding from the circumferential surface of said shaft, and a pair of swing arms rotatably supporting said shaft between said swing arms, said spiral attaching means comprising a pair of spiral plates both radially expanding from the circumferential surface of said shaft in side-to-side abutting relationship, said plates forming a spiral concave opening outwards along their outer edges for clamping the root side edge of said spiral buff body.

3,871,047
FLOOR CLEANER

Yasuo Kaburaki, and Kiyoshi Kobayashi, both of Nagareyama, Japan, assignors to Hiroshi Hukuba, Nagareyama-shi, Chiba-ken, Japan
Filed Dec. 22, 1972, Ser. No. 317,833
Int. Cl. A47l *11/33*
U.S. Cl. 15—42 **5 Claims**



1. A floor cleaner, comprising:

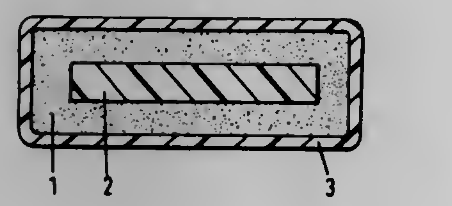
housing means defining a downwardly opening compartment;
roller means rotatably supported on said housing means and adapted for rolling engagement with a support surface, such as a floor, for movably supporting said housing means thereon;
brush means disposed within said compartment and rotatable in response to rotation of said roller means for sweeping the dust off of said support surface, said brush means including an elongated brush rotatably supported on said housing means and extending transversely across said compartment in a direction substantially perpendicular to the direction in which said housing means is moved during a cleaning operation, said rotating brush having a rotational axis which is substantially parallel to the rotational axes of said roller means;
first and second dust receiver means mounted on said housing means and positioned for receiving therein the dust swept off of said surface by said rotating brush, said first and second dust receiver means each having an edge thereof positioned closely adjacent the periphery of said rotating brush, and said first and second dust receiver means being positioned on substantially diametrically opposite sides of said brush so that dust will be deposited into either said first or second dust receiver means depending on the rotational direction of said brush;
each of said dust receiver means comprising an upwardly opening boxlike tray mounted on said housing means, said tray having one sidewall thereof positioned closely adjacent the periphery of said brush, and one-way means associated with each said dust receiver means for permitting the dust deposited within said receiver means to move in a direction away from said brush in response to inertia caused by the back-and-forth movement of said housing means on said surface, said one-way means tending to prevent the dust within said receiver means from moving back towards said brush;
said one-way means including a sloped wall portion formed on the bottom of said tray and extending upwardly in a direction away from said brush, said sloped wall terminating in a substantially vertical wall which projects downwardly to form an abutment which tends to prevent the dust from moving backwardly towards the brush after the

dust has passed over said sloped wall, said vertical wall being located between said one sidewall and the middle of said tray as measured between the front and rear ends thereof; and

hindering means associated with each of said dust receiver means for preventing the dust deposited therein from moving backwardly out of said dust receiver means so as to again contact said rotating brush, said hindering means including a hindering member positioned over each tray and disposed above said sloped wall in the vicinity of said vertical wall, said hindering member having a plurality of projections which extend downwardly toward the bottom of said tray but are spaced upwardly therefrom to prevent the dust collected within said tray from moving back towards said brush, said projections being spaced from one another in a direction extending transversely across said compartment, the spacing between said projections enabling dust to move therebetween when deposited into said tray by said brush, whereupon the dust as deposited into said tray then contacts the dust previously collected within said tray to form a larger mass which is of substantial transverse width so that said larger mass of dust is prevented by said projections from moving backwardly toward the brush.

3,871,048
BRUSH

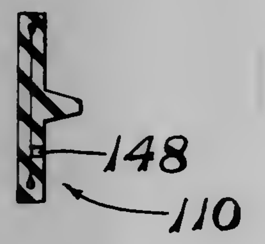
Monty Leigh, Boreham Wood, England, assignor to Leng-Armac Limited, Boreham Wood, Hertfordshire, England
Filed Aug. 16, 1973, Ser. No. 388,917
Claims priority, application United Kingdom, Aug. 18, 1972, 38757/72; Oct. 13, 1972, 47412/72; June 11, 1973, 27645/73
Int. Cl. A46b *3/06, 9/00;* **A46d** *1/08*
U.S. Cl. 15—159 A **18 Claims**



1. A brush head formed by an extruded plastic sheath, a bundle of straight parallel extruded plastic filaments which project from one end portion of said extruded plastics sheath, and a wedge, the portion of the bundle within the sheath completely surrounding said wedge.

3,871,049
WINDOW WIPER ASSEMBLY

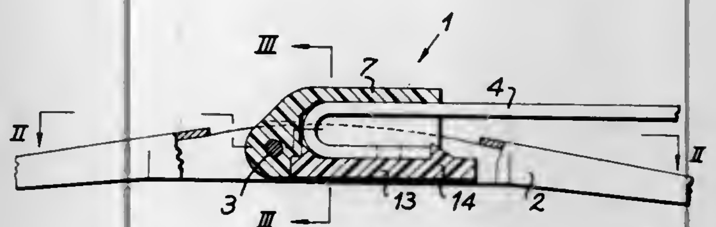
Robert E. Workman, Westlake, Ohio, assignor to The B. F. Goodrich Co., New York, N.Y.
Continuation of Ser. No. 9,584, Feb. 9, 1970, abandoned. This application May 17, 1971, Ser. No. 144,245
Int. Cl. B60s *1/46*
U.S. Cl. 15—250.04 **3 Claims**



1. A window cleaning unit for a window movable into and out of a window well, comprising: a single elongated inflatable member, a squeegee carried on said inflatable member, a fluid dispensing passageway extending longitudinally through said inflatable member, said inflatable member having a plurality of longitudinally spaced spray apertures along the length thereof communicating directly with said passageway, a retainer supporting said inflatable member for projecting outwardly said squeegee upon inflation of said passageway in said inflatable member, and pressurizing means connected to said passageway operative to inflate said inflatable member to project the squeegee from noncontacting engagement into contacting engagement with the window surface to be wetted and cleaned.

3,871,050
AUTO WINDSCREEN-WIPER BLADES

Jacques Baut, 213 boulevard du Souverain, 1160 Brussels, Belgium, and Paul Journee, Chateau de Reilly, 60 Reilly (par Chaumont-en-Vexin), France
Filed Mar. 20, 1973, Ser. No. 343,158
Claims priority, application France, Oct. 31, 1972, 72.38531
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **6 Claims**



1. A device for removably connecting a wiper blade to the arm of a windshield wiper wherein the free end of said arm defines a U-shaped end portion having a relatively short reversely bent leg provided with an end surface, said connecting device comprising:

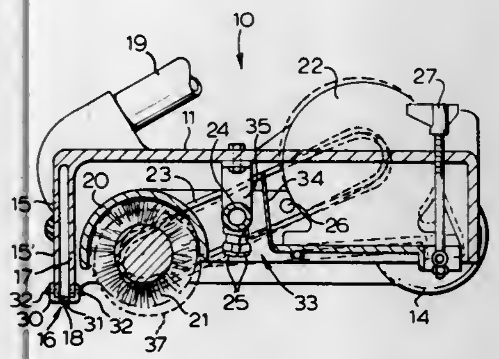
means pivoted to said wiper blade and defining an open-ended socket means of a size to receive said U-shaped end portion;

that side of said socket engaging said reversely bent leg being resilient and provided with an abutment adjacent the open end of said socket engaging said end surface to releasably retain said arm in said socket; and

the other sides of said socket being relatively stiff and inflexible.

3,871,051
MACHINE FOR CLEANING CARPETS AND THE LIKE

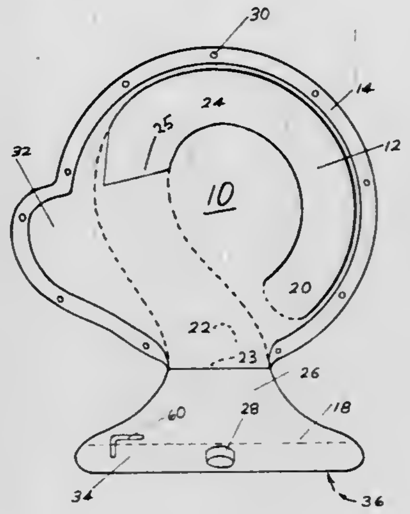
Sidney Wellington Collier, Norval, Ontario, Canada, assignor to Syd W. Collier Co. Ltd., Mississauga, Ontario, Canada
Filed Sept. 12, 1973, Ser. No. 396,547
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **8 Claims**



4. A machine for cleaning rugs and the like comprising means for applying cleaning fluid to a rug, means for brushing said rug immediately after application of said cleaning fluid, and means for applying vacuum to said rug immediately after said brushing; said means for brushing the rug comprising a motor and a brush which are mounted on an adjustable platform in spaced relation, the distance between said motor and said brush being constant at all times, irrespective of brush adjustment; said brush being adjustable to the thickness of said rug, while the distance between said means for applying cleaning fluid and the rug surface remains constant, said platform being mounted on said machine to rotate about a horizontal axis, means for rotating said platform a limited distance about said horizontal axis to effect height adjustment of said brush relative to the rug surface and means for securing the platform in the adjusted position.

3,871,052
POWER LAWN MOWER VACUUM ATTACHMENT

Robert C. Luckcuck, 2008 Verdugo Pl., Fullerton, Calif. 92633
Filed Sept. 7, 1973, Ser. No. 395,003
Int. Cl. A47l *9/00*
U.S. Cl. 15—328 **1 Claim**



1. A vacuum attachment for a power lawn mower, comprising:

a. a cover member adapted to be mounted on the underside of said lawn mower, forming a vacuumed area therebetween;

b. an air-intake member comprising a spout member having a forwardly-protruding nozzle and an inwardly-extending throat portion integrally connected to said cover, whereby air is drawn therethrough into said vacuumed area; and

c. an air passage element comprising a trough portion integrally formed within said cover and disposed between said throat portion and said vacuumed area to provide air-flow communication between said air-intake member and said vacuumed area.

3,871,053
EQUALIZER BEAM BUSHING PRESS

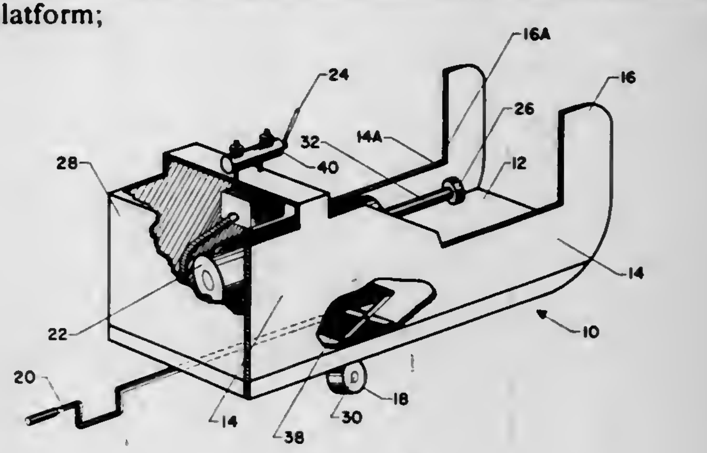
Ed Thornsbury, 3308 S.W. 59th Terrace, Fort Lauderdale, Fla. 33314
Filed June 18, 1973, Ser. No. 371,037
Int. Cl. B23p *19/02*
U.S. Cl. 29—252 **3 Claims**

1. A machine for inserting and removing tandem axle equalizing beam bushings comprising:

a horizontally disposed rigid planar platform;

a pair of parallely disposed rigid vertical planar sides, each planar side connected along an opposite edge of said rigid planar platform and rising thereabove, each side having an upper beam supporting edge, each edge having a vertical portion and a horizontal portion adapted to receive a tandem axle beam substantially at the junction of said vertical edge portion and said horizontal edge portion;

a beam bushing pressing means mounted on said horizontal platform;

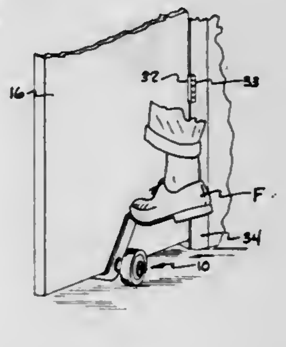


horizontal platform supporting means;

means connected to said platform and said platform supporting means for raising and lowering said horizontal planar platform.

3,871,054
DOLLY AND METHOD OF USING IT TO HANG A DOOR

Theodore S. Schaefer, 3022 W. Scott Ave., McHenry, Ill. 60050
Filed Mar. 11, 1974, Ser. No. 450,094
Int. Cl. B66f *3/00*
U.S. Cl. 29—267 **6 Claims**



6. A method of hanging a door including the steps of:

supporting the door on a dolly having a U-shaped frame with a bight portion underlying the door bottom, and having a lever arm extending outwardly from at least one side of the frame;

wheeling the door to a position adjacent the door frame;

stepping on the lever arm and causing the U-shaped frame to pivot about the axis of the wheels, thereby raising the bight portion and lifting the door vertically; and

adjusting the position of the lever arm until the hinge portions on the door align with the hinge portions on the door frame.

3,871,055
FOOT ACTUATED PRESS

Elwood C. Dail, 328 Snowden St., Tarboro, N.C. 27885
Filed Mar. 20, 1974, Ser. No. 452,983
Int. Cl. B23p *19/04*
U.S. Cl. 29—267 **8 Claims**

1. A foot actuated press assembly adapted to engage a work piece and to exert a pressing force thereagainst, said foot actuated press comprising: a frame structure including an upright cylindrical tube having a bottom horizontal floor plate adapted to be secured to a floor and to support said cylindrical tube in an upright fashion; means associated with said frame structure for supporting said work piece, said means for supporting said work piece extending across said cylindrical tube and including an opening therein, said work piece supporting means further including an extension extending from said upright cylindrical tube and including a cutout therein for receiving a work piece having a shaft extending therefrom

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such that when supported the shaft of said work piece extends

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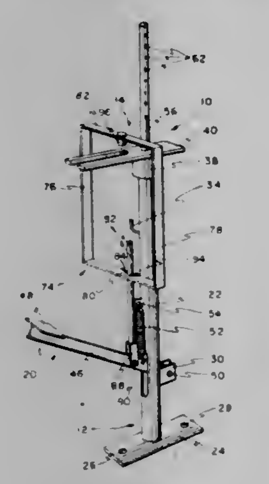
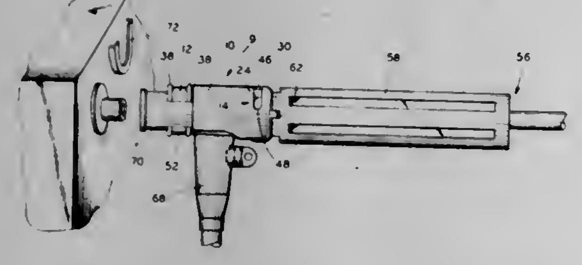
3,871,058

predetermined article length, the rearmost extent of said such that when supported the shaft of said work piece extends downwardly through said cutout; a foot actuated pedal means movably mounted to said frame structure; intermediate connecting means movably responsive to the actuation of said foot actuated pedal means for movement relative to said frame structure and including a plunger rod operatively connected to said foot actuated pedal means and disposed interiorly of said cylindrical tube, said plunger rod extending through said opening in said means for supporting said work piece; a work piece engager means associated with said intermediate connecting means for engaging the work piece and exerting a pressing action thereagainst in response to the actuation of said foot actuated pedal means; and a secondary connecting structure means for interconnecting said foot actuated pedal means with said work piece engager means when the work piece is of the type having a shaft extending therefrom and the work piece is supported on said extension of said work piece support means, said secondary connecting structure means including an open rectangular frame having a pair of laterally spaced vertical members connected by lower and upper transverse members, said lower transverse members being operatively connected to said foot actuated pedal means by an interconnecting link and said upper transverse member having means for receiving said work piece engager means about the underside thereof.



3,871,056
ELBOW CONNECTOR PULLER

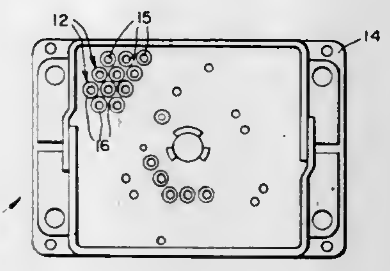
Ellis E. Lyons, Birmingham, Ala., and William F. Turner, Carol Stream, Ill., assignors to Anderson Electric Corporation, Leeds, Ala.
Continuation of Ser. No. 320,029, Jan. 2, 1973, abandoned. This application June 10, 1974, Ser. No. 477,559
Int. Cl. B25b *27/02*
U.S. Cl. 29—283 **10 Claims**



8. An electrical elbow connector puller comprising inner and outer telescoped cylindrical sleeves which are relatively rotatable about a common axis of the sleeves between two relative positions, the sleeves having respective rear end walls, the end wall of the outer sleeve having a central opening, the sleeves having respective axially directed cutaway portions extending inwardly from respective adjacent and forward ends thereof, which cutaway portions, when the sleeves are in one of said relative positions, are in radial alignment and define a slot open at the forward end of the sleeves and having generally parallel side edges extending rearwardly of the sleeves to a rearward edge of the slot whereat the rearward end of the cutaway portions are fully coincident so that the lead end of an elbow connector can be received in the slot and positioned against the rearward edge of the slot while the sleeves remain in said one of said relative positions, one of the sleeves including a single transverse cutaway portion extending substantially normal to and intersecting its axially directed cutaway portion and defining an adjacent wall portion between the transverse cutaway portion and the forward end of said one sleeve, the wall portion providing an interfering barrier at the open forward end of the cutaway portion of the other sleeve when the sleeves are rotated to the other of said relative positions, means for restricting relative longitudinal movement of the sleeves and limiting relative rotation of the sleeves between the two positions, and means for connecting the puller to a pulling rod including an attachment means secured to, and extending axially rearwardly from, the rear wall of the inner sleeve through the central opening at the rearward end of the outer sleeve.

3,871,057
TOOL AND METHOD FOR INSERTION AND REMOVAL OF ELECTRICAL CONNECTOR INTERFACE SEALS

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed May 25, 1973, Ser. No. 363,902
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **11 Claims**



1. A tool for inserting an individual tubular interface seal on and removing the seal from an electrical pin contact and a bore in a connector body comprising:

a shaft having a body portion of first diameter terminated at each end by a seal insertion end and a seal removal end, said seal insertion end comprising a tubular terminating portion of diameter less than the first diameter for frictional engagement with an internal bore in the seal, and first bore means extending through said first tubular terminating portion into said shaft body, said first bore means having a depth sufficient to limit axial insertion of the pin contact therein,

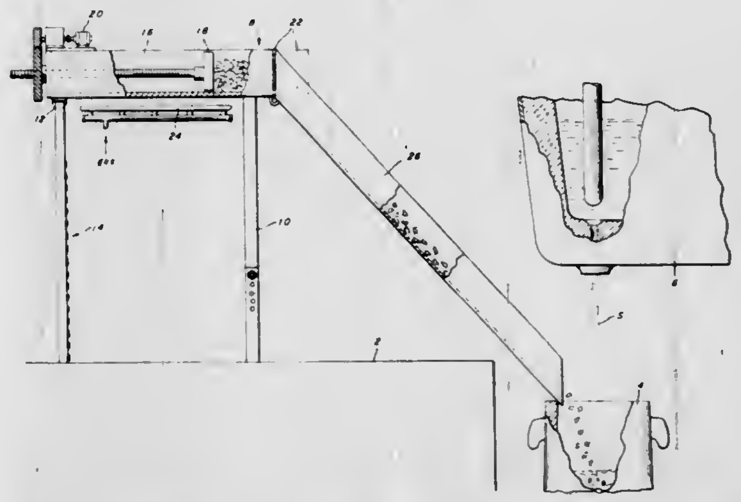
said seal removal end comprising a tubular terminating portion of diameter less than the first diameter and terminating in a nipple of diameter substantially equal to the first diameter for enabling a latching engagement with the internal bore in the seal, and second bore means extending through said nipple and said second tubular terminating portion into said shaft body, said second bore means having a depth sufficient to limit axial insertion of the pin contact therein, and

said body portion having a shank of diameter less than the first diameter; and

a tube slidably disposed over said shaft and movable towards and away from said seal removal end in covering and uncovering relationship with respect to said nipple for maintaining the seal latching engagement in the covering relationship, said tube having an inturned flange for containment solely within said body portion shank and for preventing disengagement of said tube from said shaft.

3,871,058
ROLLED STEEL PRODUCTS AND A METHOD OF MAKING THE SAME

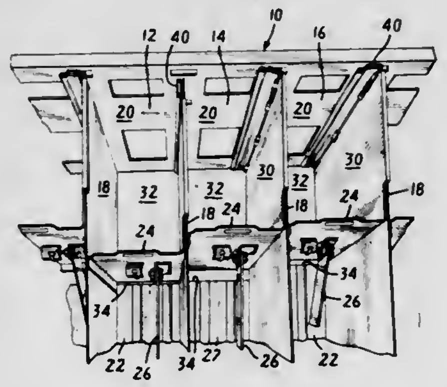
Henry J. Wallace, 570 Squaw Run Road, Fox Chapel Borough, Pa. 15238
Filed Oct. 5, 1973, Ser. No. 403,842
Int. Cl. B23p *17/04*
U.S. Cl. 29—403 **8 Claims**



1. The method of making a rolled metal product which comprises providing molten metal of a known analysis in a container, providing scrap metal of an analysis approaching that of the molten metal, cleaning said scrap, heating said scrap to a temperature sufficient to remove all moisture therefrom, simultaneously charging all the scrap and molten metal by pouring said molten metal into an ingot mold while simultaneously feeding said scrap in small pieces at a controlled rate into said mold in such an amount that the majority thereof will not melt, permitting said mixture of scrap and molten metal to solidify in said mold into an ingot, heating said ingot to a rolling temperature, and then rolling said ingot to substantially reduce its cross section.

3,871,059
CONVERSION OF CIGARETTE VENDING MACHINES TO HOLD OUTSIZED CIGARETTE PACKAGES

John E. Goldenstein, Gretna, Nebr., assignor to Philip Morris Incorporated, New York, N.Y.
Filed June 21, 1974, Ser. No. 481,743
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **4 Claims**



1. In a method for modifying a cigarette vending machine column designed for holding cigarette packages of a first predetermined length in vertical stacked superposition to adapt said column for holding and dispensing cigarettes packages of a second greater predetermined length, said vending machine column being defined by spaced apart vertical side walls, a front vertical wall extending between said side walls, a bottom wall having an opening extending rearwardly from said front wall through which opening the packages must pass for dispensing of same from said machine, the length of said bottom wall opening being substantially equal to said first predetermined article length, the rearmost extent of said opening being defined by an edge on said bottom wall disposed transversely of said side walls, there being a normally forwardly biased vertical rear wall extending between said side walls and slidable on said bottom wall,

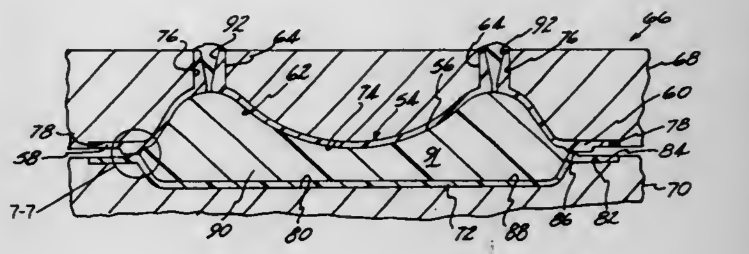
comprising removing a section of the bottom wall along a predetermined removal course rearwardly from said edge to elongate said bottom wall opening to a length substantially equal to said second predetermined package length, an applying stopping force to said rear wall to prevent biased travel of said rear wall forwardly of the rearmost extent of said elongated bottom wall opening, the improvement wherein

said section is removed from said bottom wall by positioning a punch at one side of said bottom wall, and a complemental die element at the other side of said wall in full bearing contact with said bottom wall at least at portions thereof lying adjacent said removal course, and

progressively shearing said wall along said removal course by drawing said punch therethrough to remove said section.

3,871,060
METHOD OF CONSTRUCTING MOLD FOR FORMING PLASTIC FOAM PARTS

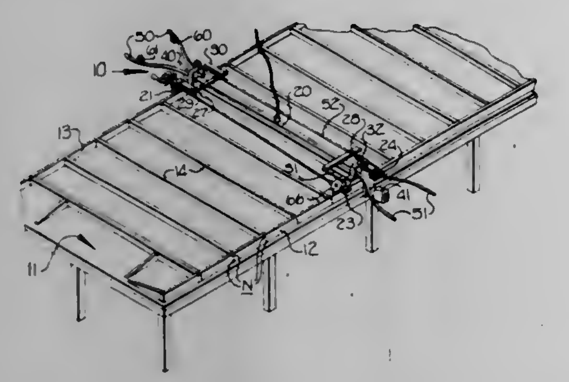
Michael Ladney, Jr., 18125 E. Ten Mile Rd., Grosse Pointe Shores, Mich. 48236
Continuation of Ser. No. 213,244, Dec. 29, 1971, abandoned. This application Jan. 30, 1974, Ser. No. 437,792
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 **3 Claims**



1. A method of constructing a mold having a cavity in which a plastic foam part is adapted to be molded, said mold including a pair of separable mold sections, each of which is adapted to receive an injection molded cavity-forming liner which, when the mold sections are closed with one another, cooperate to define said mold cavity, comprising the steps of: forming two pair of metal dies, each pair having molding surfaces which correspond with a half section of the exterior surfaces of the foam part to be molded; utilizing each pair of said metal dies to form an injection molding cavity defined by the respective molding surfaces of said two metal dies; subjecting a thermoplastic synthetic resin material to sufficient heat and pressure to plasticize the same and injection molding said material in said injection molding cavity of each pair of said metal dies to form a pair of injection molded thermoplastic liners for said foam mold sections each having an exterior surface contour formed by the molding surface of its respective pair of metal dies which is the reverse of the external surface contour of the two opposite sides of the plastic foam part to be molded; removing said injection molded liners from said pairs of metal dies; and inserting the two injection molded liners in opposed relation, one in each of said separable mold sections such that when the mold sections are closed said exterior surface contours of the two liners cooperate to define a foam molding cavity which corresponds in size, shape and contour to the size, shape and contour of the foam part to be molded therein.

3,871,061
WALL FRAME CONSTRUCTION METHOD

William D. Abernathy, Route 2, Vale, N.C. 28168
Division of Ser. No. 115,463, Feb. 16, 1971, Pat. No. 3,734,376. This application Mar. 12, 1973, Ser. No. 340,368
Int. Cl. B23p *19/00*
U.S. Cl. 29—431 **4 Claims**



1. In the construction of rough wall frames for buildings in which a plurality of studs are arranged in horizontal, parallel spaced relation and an elongate plate and an elongate sole are arranged in horizontal, parallel spaced relation perpendicular to the studs and extending adjacent the opposite ends of the studs, a method comprising the steps of providing spaced clamping means and spaced nailer means movable together on the plate and the sole; engaging with said clamping means oppositely directed outer faces of the plate and sole in areas generally aligned with a particular stud to be nailed for restraining the plate, sole and stud in the arranged positions during nailing; driving nails with said nailer means through the plate and sole into the ends of the particular stud for securing the plate, sole and stud together into a wall frame; progressively moving the areas of engagement of said clamping means with the plate and sole outer faces along the plate and sole and into general alignment with another stud to be nailed and while maintaining engagement with the plate and sole; and repeating the steps of driving nails with said nailer means and progressively moving the areas of engagement until all of the arranged studs have been secured into the wall frame.

3,871,062
METHOD FOR TRAVERSING A WORKPIECE WITH A WORKING HEAD

Motoharu Adachi; Shunichi Nishizawa; Michiyasu Ishida; Takashi Kaneko, all of Kyoto, and Tasushi Yonenaga, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1974, Ser. No. 431,722
Claims priority, application Japan, Feb. 2, 1973, 48-12856
Int. Cl. B23k *29/00*
U.S. Cl. 29—470 **1 Claim**

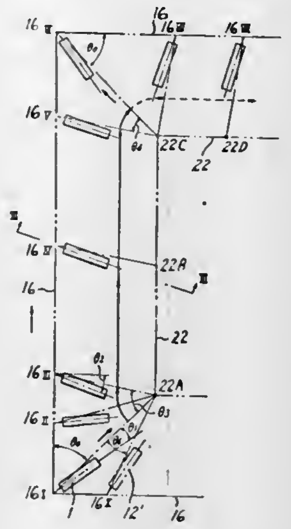
1. A process for performing a task with a work head on a workpiece along a line which proceeds through a corner, comprising:
- aiming the work head at a predetermined angle toward said line at a point upstream of the corner and mounting the work head for movement along a path laterally spaced from the line by a fixed distance, said path having a corner equating to the corner of said line;

translating the work head along the path toward the corner of the line, maintaining the aim of the work head at continuously successive points along the line until the corner of the path is reached; then

simultaneously:

a. rotating the work head about said corner of the path so as to bear a like relation to said line downstream of said corner of the line as said work head bore to said line upstream of said corner of the line, and

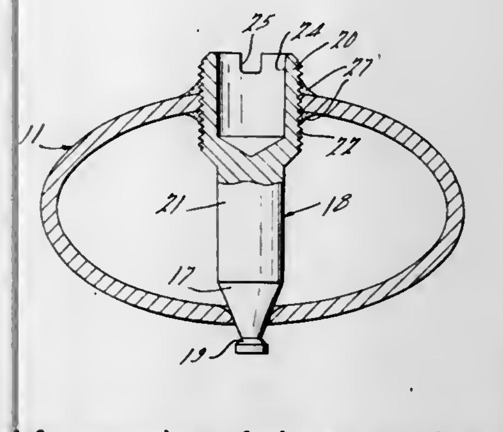
b. indexing the work head radially with respect to said corner of the path to maintain constant the distance between the work head and the workpiece along said line while passing through the corner; and



translating the work head along the path downstream of the corner of the path, maintaining the aim of the work head at continuously successive points along the line.

3,871,063
METHOD OF JOINING A FUEL SPRAY NOZZLE TO A FUEL MANIFOLD

Robert M. Halvorsen, Birmingham, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Division of Ser. No. 363,055, May 23, 1973, Pat. No. 3,827,638. This application Jan. 18, 1974, Ser. No. 434,427
Int. Cl. B23k *31/02*
U.S. Cl. 29—470.5 **2 Claims**



1. A method for mounting a fuel spray nozzle pintle in a manifold of the type having an elliptical cross section with an orifice in one wide wall thereof, comprising the steps of threadably mounting one end of said pintle directly into the opposite wall of the manifold, rotatably preadjusting the pintle and brazing it to the manifold.

3,871,064
MOIRE FRINGE PATTERN WITH THERMAL MATCHING TO ALUMINUM OR OTHER MATERIALS

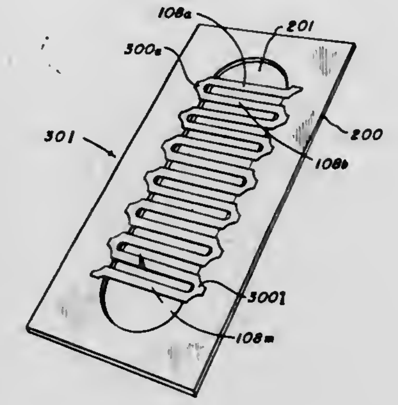
George Frederick Schrader, Lakewood, Calif., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Mar. 25, 1974, Ser. No. 454,351
Int. Cl. G02b *27/00*
U.S. Cl. 29—475 **5 Claims**

1. A method for forming an optical grating having the thermal expansion characteristics of a preselected material, comprising the steps of

a. forming a plate of the preselected material having a flat surface with a slot having first and second sides piercing the plate;

b. forming a thin flat sheet of a material suitable for forming the bars of the grating;

c. forming slits creating therebetween in the thin flat sheet bars which form the desired grating and which are longer than the distance between the first and seconds sides of the slot but do not extend to the edge of the sheet;

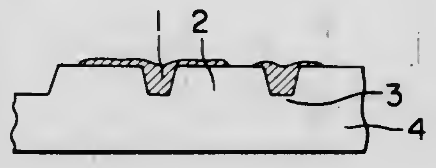


d. bonding the sheet to the plate in a position causing each slit in the sheet to extend past the first and second sides of the slot in the plate; and

e. removing portions of the sheet connections each end of each bar from an end of at least one adjacent bar.

3,871,065
THERMAL PRINTING PROCESS

Yoshimichi Iomiyama, Osaka; Takashi Yamahata, Yamatokohriyama, and Tomoya Yasuda, Kyoto, all of Japan, assignors to General Company Limited, Osaka-shi, Japan
Filed Aug. 2, 1972, Ser. No. 277,476
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **3 Claims**



1. In a thermal printing process for forming an image on a heat-sensitive recording sheet composed of a support having superposed thereon a heat-sensitive layer which is composed of a heat-sensitive composition dispersed in a binder therefor, said process comprising contacting a thermally-heated print head with the surface of the heat-sensitive layer to form a printed image thereon, the improvement comprising eliminating exfoliation of the heat-sensitive layer from the support by employing, as the binder, a member selected from the group consisting of methyl cellulose and acetylcellulose having a melting point of not lower than 180℃.

3,871,066
COMBINED CUTTER AND GRINDER ATTACHMENT FOR LATHE

Wallace F. Mitchell, Mettawa, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.
Filed Feb. 7, 1974, Ser. No. 440,587
Int. Cl. B23p *23/00;* **B23b** *25/00, 5/02*
U.S. Cl. 29—560 **7 Claims**

1. A cutter and grinder attachment for a lathe having

a base and a workpiece supporting spindle rotatably mounted to said base, the combination comprising

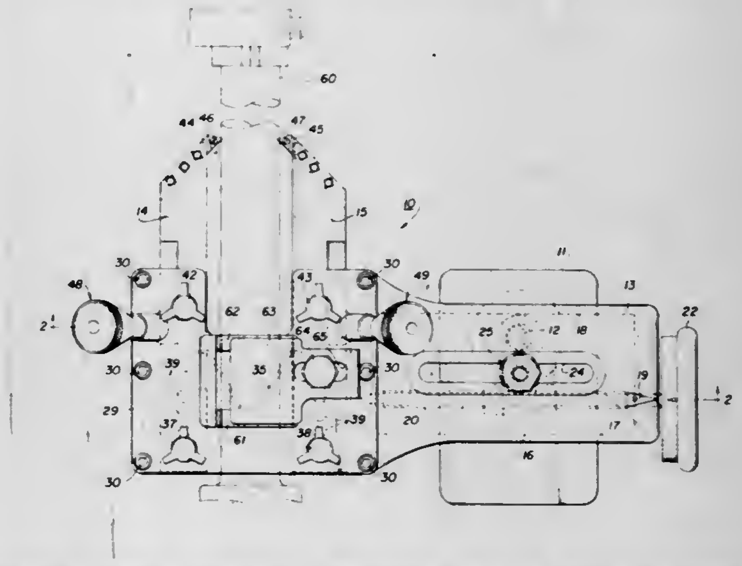
a base member adapted to be mounted to the base of said lathe for controlled movement toward and away from said spindle,

a tool holding carriage slidably mounted to said base member for rectilinear movement in a direction parallel to the axis of said spindle,

a pair of tool bars each having means thereon for receiving a cutting tool,

said carriage having coplanar upper surfaces on which planar surfaces of said tool bars are supported,

first and second adjustable pivot means depending from said fixture into respective recesses in the tops of said tool bars disposed on said planar surfaces of said fixture,



spring means interposed between said tool bars for biasing said cutting tools in opposite directions away from a workpiece carried by said spindle,

depth of cut adjustment means carried by said carriage for respectively pivoting said tool bars against the force of said spring,

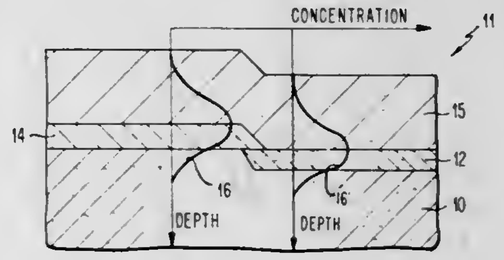
a saddle on said carriage positioned above and between said coplanar surfaces,

a saddle clamp on said carriage positioned above said saddle for clamping the quill of a grinder in said saddle, and

a lead screw threadedly connected between said carriage and said base member for controllably moving said fixture parallel to said spindle.

3,871,067
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

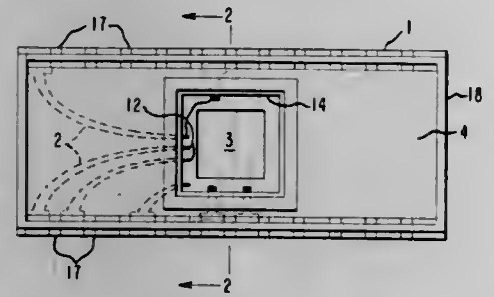
E. Hal Bogardus, Poughkeepsie; Peter P. Peressini, Wappingers Falls, and Timothy M. Reith, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1973, Ser. No. 375,278
Int. Cl. H01l *7/00*
U.S. Cl. 29—571 **14 Claims**



1. A method of manufacturing a semiconductor device having a substrate of a semiconductor material with an insulating layer thereon and a metal film overlying the insulating layer and in contact with at least one portion of the substrate to form an electrode layer including the steps of implanting ions of the semiconductor material into the metal film to form a concentration profile of the implanted ions having a peak, selecting the maximum temperature to which the metal film is

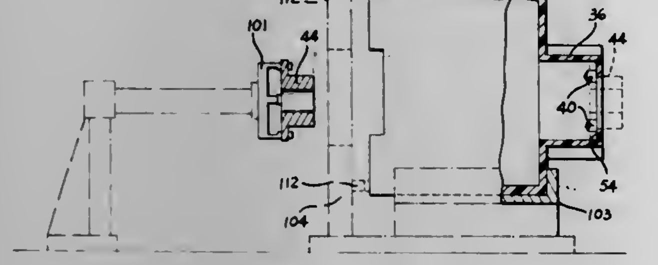
to be subjected during further processing, selecting the dosage of the ions to produce a per cent by weight of the semiconductor material in one material of the metal film that is greater than the per cent by weight of solid solubility of the semiconductor material in the one material of the metal film at the maximum temperature to which the metal film is to be subjected during further processing to prevent the one material of the metal film from diffusing into the semiconductor material during further processing at a temperature no greater than the maximum temperature, and controlling the energy level of the ions to position the peak of the profile of the implanted ions no deeper than the interfaces of the metal film with the insulating layer and the metal film with the substrate.

3,871,068
PROCESS FOR PACKAGING A SEMICONDUCTOR CHIP
Charles Lawrence Booth, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 354,129, April 24, 1973, Pat. No. 3,820,152. This application Feb. 4, 1974, Ser. No. 439,642
Int. Cl. B01j *17/00*
U.S. Cl. 29—590 **3 Claims**



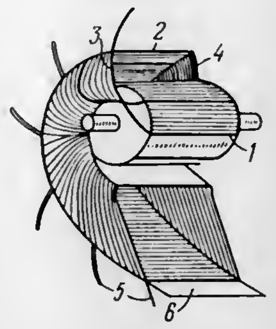
1. In a process for packaging a semiconductor chip in a package comprising a substrate having conductor patterns thereon and conductor pads connected to said conductor pattern, the improvement comprising the steps of applying a fugitive shorting bar or strip to said substrate and overlaying said conductor pads, inserting said semiconductor chip in said package and connecting said chip to said conductor pattern, and removing said shorting bar by solder leaching while soldering leads to said pads.

3,871,069
METHOD OF ASSEMBLING AN ELECTRIC MOTOR DEVICE AND HEAT SINK
Dale Christian Grieb, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 27, 1973, Ser. No. 391,530
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **5 Claims**



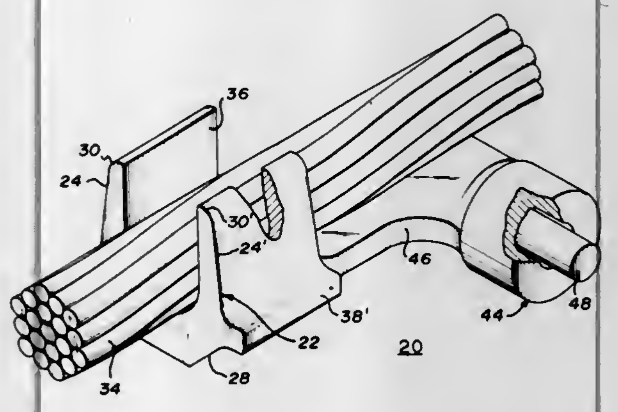
1. The method of producing an assembled metal bearing support and heat sink, and electric motor housing, comprising the steps of: selecting an electric motor housing constructed at least in part of a thermoplastic material and having deformable means formed integral therewith, placing said bearing support and heat sink on said deformable means, deforming said deformable means into retaining engagement with said bearing support and heat sink, accurately locating said assembled motor housing and bearing support and heat sink by means engageable with said motor housing, and machining a bearing bore in said bearing support and heat sink in accurate relation to said motor housing.

3,871,070
METHOD FOR MAKING WINDING OF SMOOTH-CORE ARMATURE
Vasily Mikhailovich Kazansky, prospekt Karla Marxa 35, kv. 37; Alexei Grigorievich Epifantsev, ulitsa Moskovskaya 85, both of Novosibirsk; Vladimir Lavrentievich Roschektaev, Mikroraion 6, kv. 10, Berdsk Novosibirskoi oblast, and Jury Adamovich Kramer, prospekt Dzerzhinskogo, 23, kv. 54, Novosibirsk, all of U.S.S.R.
Filed Sept. 14, 1973, Ser. No. 397,382
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 **4 Claims**



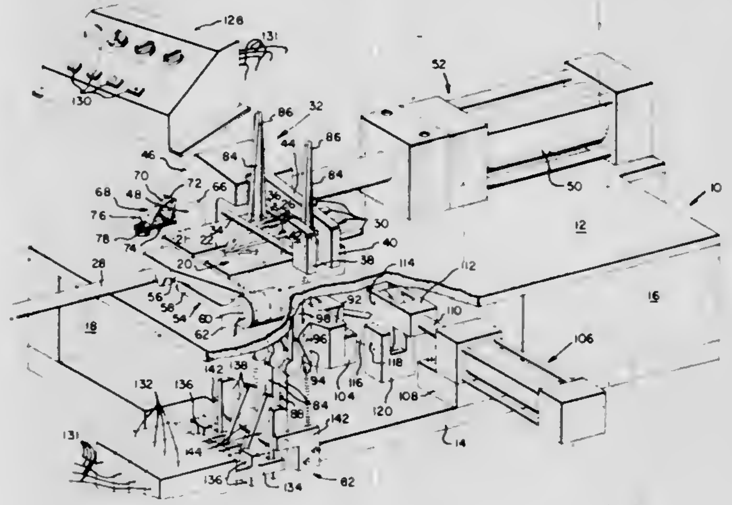
1. A method of making a winding for a smooth-core armature for fractional horse-power commutator machines; comprising winding a continuous length of a conductor on a former to form a winding blank having active and inactive conductor portions while simultaneously tapping said winding blank; partitioning said winding blank length on said former into four parts of respectively two active and two inactive conductor portions by attaching two equally wide strips of an adhesive insulating material to said blank so as to longitudinally extend along said winding blank on said former; removing said winding blank from the former; and arranging said winding blank on a cylindrical frame by winding one of said strips about the cylindrical surface thereof while shifting the conductor portion attached to the other strip relative to the conductor portion attached to the first mentioned strip by one winding pitch to thereby form an armature winding and to also shape the ends of the winding for fixing the latter on said frame.

3,871,071
METHOD OF FORMING AN ELECTRICAL CONNECTION
Albert Michael Luongo, Edison, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Sept. 24, 1973, Ser. No. 400,223
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **4 Claims**



1. A method of forming an electrical connection comprising the steps of: providing a connector having a conductor engaging body member formed of malleable metallic material and having an inner surface, an outer surface, a conductor receiving cavity defined by said inner surface and extending longitudinally through said body member, and a pair of symmetrically formed rib portions lying in a common plane extending lengthwise on opposite sides of said body member along said outer surface thereof; placing a selective length of a conductor within said conductor receiving cavity; providing a die set reciprocatingly operable along axis and having complementary die cavities selectively shaped to impart a predetermined external contour to said body member and mating recessed portions disposed outside of the perimeter of said die cavities and selectively sized to provide clearance about said rib portions; orienting said body member in a first position within said die set so that said rib portions are disposed in a plane generally normal to the operating axis of said die set and are aligned generally coincident with said recesses; then operating said die set to radially compress said body member about said conductor along a given axis oriented generally normal to the plane of said rib portions while providing a clearance about said rib portions; then selectively angularly rotating said body member about its longitudinal axis to a second position within said die set so that said rib portions are out of coincidence with said die set recessed portions and engagable by said die cavities; and then operating said die set to further compress said body member about said conductor and compact said rib portions into the remaining material of said body member.

3,871,072
METHOD AND APPARATUS FOR VARYING THE RELATIVE LENGTH OF A PLURALITY OF LEADS BY FORMING BIGHTS IN SELECTED LEADS
Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 12, 1973, Ser. No. 424,133
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **18 Claims**



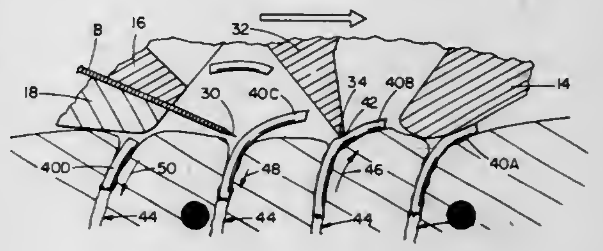
1. A method of varying the lengths of a plurality of leads having sections which extend away from a portion of the leads which are held in fixed relationship to each other, comprising the steps of:

providing an apparatus including a template having a plurality of grooves having spaced apart first and second portions;

positioning said sections of said plurality of leads in said plurality of grooves with the sections extending between said first and second portions and with the held portion of said leads being disposed adjacent to the second portion of said grooves; and

varying the overall length of said sections of selected leads by engaging an intermediate portion of said sections of said selected leads and forming a bight in said intermediate portion between the first and second portions of the grooves while maintaining the sections in said first portions of the grooves.

3,871,073
SHAVING SYSTEM WITH A FIXED EDGE BETWEEN THE BLADE EDGE AND THE GUARD
Warren I. Nissen, Topsfield, and Roger L. Perry, Lynnfield Center, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Nov. 17, 1972, Ser. No. 307,457
Int. Cl. B26b *21/06, 21/22*
U.S. Cl. 30—34.2 **14 Claims**



1. A shaving system comprising:

molded plastic structure for supporting a cutting edge member that has a cutting edge,

structure for positioning the cutting edge member so that its cutting edge is disposed along a predetermined line,

molded plastic skin engaging structure positioned forwardly of and extending generally parallel to said predetermined line, and

supplemental molded plastic structure integral with said supporting structure and said skin engaging structure fixed in position between said skin engaging structure and said predetermined line; and spaced from both said supporting structure and said skin engaging structure so that an open slot is provided on either side of said supplemental structure; said supplemental structure having a hair engaging edge portion disposed parallel to said predetermined line, said hair engaging edge portion having an effective radius in the range of 2–50 microns such that in the course of a normal shaving stroke said edge portion engages hair elements and produces localized distortion in those engaged hair elements to exert a grasping effect on the individual engaged hair elements which pulls them outwardly from their hair follicles as the shaving system is moved over the skin surface in a shaving stroke.

11. A shaving system comprising:

first and second blade members, each said blade member having a cutting edge;

structure for supporting said first and second blade members in symmetrical, opposed relation so that each cutting edge is disposed along a predetermined line;

supplemental structure integral with said supporting structure, fixed in position between said cutting edges and spaced from said supporting structure so that an open slot is provided on either side of said supplemental structure; said supplemental structure having first and second hair engaging edge portions disposed parallel to said cutting edges, each said hair engaging edge portion having an effective dimension relative to the dimension of hair elements to be shaved such that in the course of a normal shaving stroke said edge portion engages hair elements and produces localized distortion in those engaged hair elements to exert a grasping effect on the individual engaged hair elements which pulls them outwardly from their hair follicles as the shaving system is moved over the skin surface in a shaving stroke,

each said cutting edge and the hair engaging edge portion further from that cutting edge defining a plane,

the hair engaging edge portion nearer that cutting being located in the range of −20 to +50 microns perpendicular distance from said plane, and each said blade member being disposed at an angle in the range of 20°–32° to the plane defined by it and the further hair engaging edge portion.

3,871,074
PLURAL BLADE STRIP MAGAZINE WITH BLADE STRIP TENSIONING MECHANISM

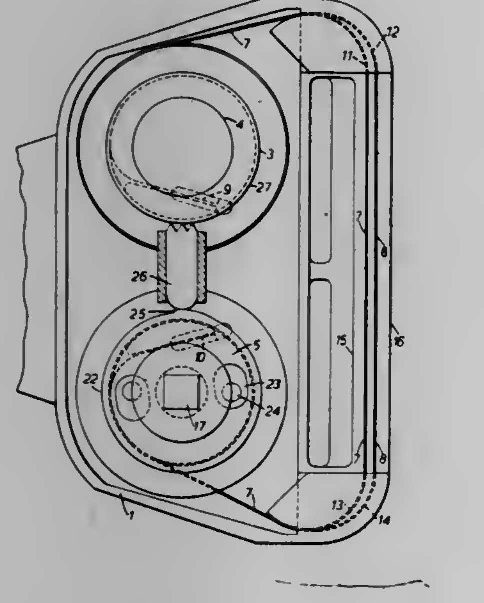
Edward E. Pomfret, Newbury, and Norman C. Welsh, Bradfield, both of England, assignors to The Gillette Company, Boston, Mass.

Filed Oct. 29, 1973, Ser. No. 410,394

Claims priority, application United Kingdom, Oct. 30, 1972, 50002/72

Int. Cl. B26b *21/26*

U.S. Cl. 30—40.1 **5 Claims**



1. A safety razor blade magazine comprising two elongated blade strips, each having the portion adjacent one end thereof wound upon itself to form a storage coil, rotatable take-up means to which the other end of each blade strip is secured and upon which it can be wound to form a take-up coil, means defining a path of travel for the strips from the storage coil to the take-up coil, said path including a section along which a length of each blade strip is exposed for shaving use, the lengths of the respective blade strips which are exposed for use lying parallel to one another in such relationship that when used for shaving their cutting edges will follow one another over the surface to be shaved, said path-defining means being such that the said length of the blade strip is supported at its ends only, the intermediate portion thereof being left otherwise free and unsupported, means for holding the said lengths of the blade strips under longitudinal tension sufficient to give it the degree of rigidity required for use in shaving, and common means for rotating the take-up means of both blade strips.

3,871,075
SAFETY RAZOR WITH A PLURAL STRIP BLADE MAGAZINE

Harry Pentney, Spencer's Wood near Reading, England, assignor to The Gillette Company, Boston, Mass.

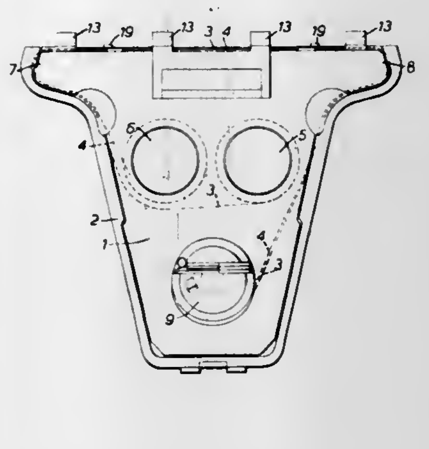
Filed Dec. 7, 1973, Ser. No. 422,730

Claims priority, application United Kingdom, Dec. 12, 1972, 52749/72

Int. Cl. B26b *21/26, 21/22*

U.S. Cl. 30—40.1 **10 Claims**

1. A safety razor blade magazine comprising two elongated blade strips, each strip having the portion adjacent one end thereof wound upon itself to form a storage coil, rotatable take-up means to which the other ends of the two blade strips are secured and upon which they can be wound up, means defining paths of travel for the two strips from the respective storage coils to the take-up means, each of said paths including a section along which a length of the respective blade strip is exposed for shaving use, said path-defining means being such that the said lengths of the two blade strips are disposed in parallel planes with their respective cutting edges parallel and in staggered relationship to one another, so that the cutting edges of the two blade strips can both engage the skin to be shaved and will follow one another in tandem relationship during the shaving operation.



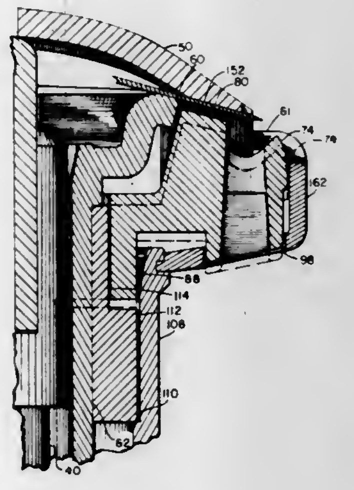
3,871,076
RAZOR HAVING A STATIONARY GUARD AND AN AXIALLY SHIFTABLE GUARD

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 19, 1973, Ser. No. 417,468

Int. Cl. B26b *21/32*

U.S. Cl. 30—60.5 **15 Claims**



1. A safety razor comprising a tubular handle, blade support means to position a razor blade in shaving position, adjustable guard means positioned below said blade support means, the axial position of said adjustable guard means defining a shaving geometry, fixed guard means lateral to and below said adjustable guard means, said fixed guard means held in fixed relation to said handle, adjustment receiver means housed in said handle, said receiver means rigidly connected to said adjustable guard means, a rotatable actuating member housed in said handle, said actuating member mating with said receiver means to move said receiver means when said actuating member is rotated and thereby adjust the axial position of said adjustable guard means, said tubular handle having a side wall, an opening in said side wall extending around less than the full perimeter of said handle, and a control grip for rotating said actuating member, said control grip extending outwardly from said handle through said opening.

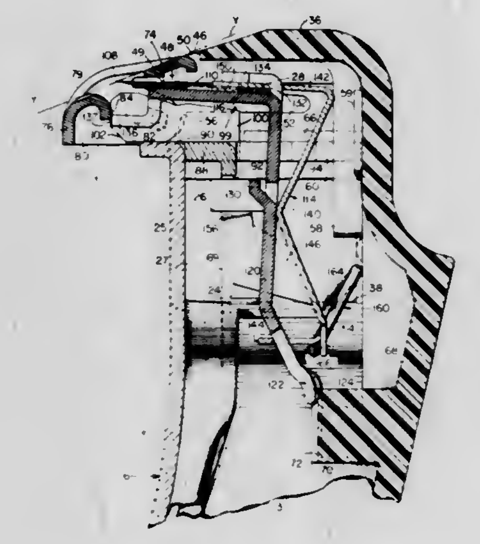
3,871,077
RAZOR WITH MOVABLE GUARD AND CONCURRENTLY MOVABLE BLADE PLATFORM

Warren I. Nissen, Topsfield, and Roger L. Perry, Lynnfield, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Apr. 30, 1973, Ser. No. 355,307

Int. Cl. B26b *21/24*

U.S. Cl. 30—63 **18 Claims**



10. A safety razor comprising body structure,
blade support structure disposed in said body structure including a surface adapted to support a blade and being movable as a unit relative to said body structure,
biasing means in engagement with said body structure and exerting a force on said support structure, and
guard structure, said guard structure being movable relative to said blade support structure to change the blade tangent angle of the shaving geometry and concurrently moving said blade support structure against the force of said biasing means to maintain substantially constant cutting edge exposure.

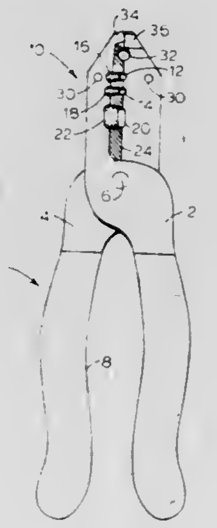
3,871,078
WIRE INSULATION STRIPPER

Robert Ogle, 27221 Calle Del Cid, Mission Viejo, Calif. 92675

Filed Mar. 12, 1973, Ser. No. 340,024

Int. Cl. H02g *1/12*

U.S. Cl. 30—90.1 **6 Claims**



1. A wire stripper hand tool apparatus comprising a first integrally connected flat jaw and handle element and a second integrally connected flat jaw and handle element of substantially uniform thickness and pin means joining the two elements at complementary points between the jaw and handles in a scissors-like arrangement, the jaws closely overlapping in side-by-side arrangement as in the form of scissors, each jaw having an inward facing and complementary elongated concave depression with curved ends and a straight central portion in opposed surfaces of the jaw, and the jaw further having paired opposed semicircular complementary depressions, at least one of the jaws has a sloping surface extending outward from the elongated depressions and the semi-circular depressions, thereby forming sharp edges at the elongated concave depression and the semicircular depressions, and further comprising complementary oppositely inward bent abutment means on the jaws remote from the pin means for preventing overtravel of the jaws when overlapping, thereby preventing closing of the openings in the jaws, whereby the jaws cut and strip an outer sheath and subsequently cut and strip paired insulated wires within the sheath simultaneously.

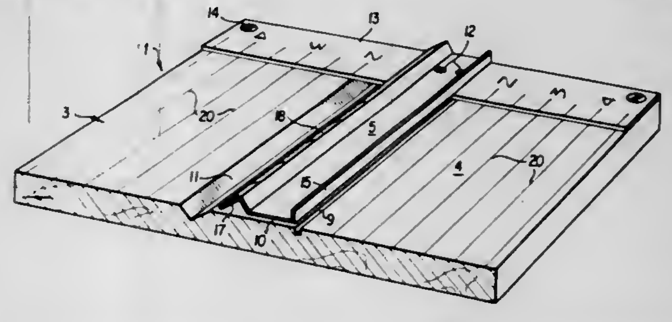
3,871,079
CUTTING GUIDE AND BOARD ASSEMBLY

Robert L. Magee, 401 W. Lake Rd., Hammondsport, N.Y. 14840

Filed Aug. 13, 1973, Ser. No. 387,659

Int. Cl. B26b *29/00;* **B26d** *7/02*

U.S. Cl. 30—294 **7 Claims**



1. A cutting guide and board assembly comprising a grooved board and a straight guide element, said element being secured to opposite sides of said board and extending across the upper surface of smae, said board having a vertical groove and a beveled groove in the upper surface of said board, said grooves extending parallel to one another in spaced apart relationship, said guide element being an elongated angled flexible bar of single-piece construction having a beveled edge and a straight edge on the opposite longitudinal sides of said bar and in registered alignment with said beveled groove and said vertical groove respectively, said straight edge being an upwardly bent portion having an upright vertical surface that extends normal to the upper surface of said board, said beveled edge including an angular projection that comprises an upwardly bent angled portion followed by a downwardly bent angled portion that extends upwardly with respect to said board, said downwardly bent angled portion providing an angled side that affords a guide for a cutting member, squaring means at each of said opposite sides of the board and said guide bar being secured to the opposite, sides to bridge said upper surface leaving a space between said surface and the bottom of said bar, whereby sheet and board material can be inserted in said space below said bar and manually cut using said grooves and the edges of said longitudinal sides as cooperating guides.

3,871,080
CUTTER FOILS FOR DRY SHAVING APPARATUS

Gerhard Heyek, Graz, Austria, assignor to Famulus Elektrogerate Gesellschaft m.b.H., Graz, Austria

Filed Feb. 26, 1973, Ser. No. 335,869

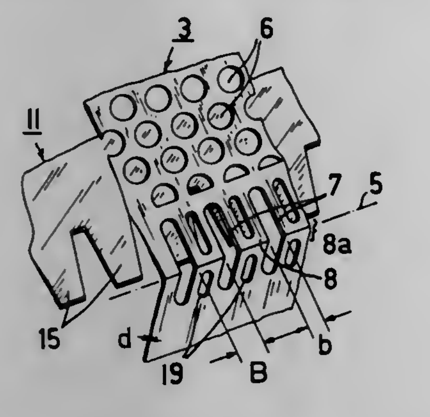
Claims priority, application Austria, Feb. 28, 1972, 1605/72

Int. Cl. B26b *19/04*

U.S. Cl. 30—346.51 **4 Claims**

1. A cutter foil for dry shaving apparatus, produced by electro-deposition, and comprising a main portion in which is an area of perforation and an edge zone joined to the main portion by a fold defining an apex extending longitudinally of the foil, a plurality of slots extending across the apex, a cutter

comb constituted by bars extending across the apex and each defined by a respective portion of the foil extending between adjacent slots, the breadths of the bars being greater than the breadths of the slots, and the bars containing perforations located primarily in the area extending between the slots,



which area is bounded by the upper and lower extents of the slots, said perforations serving to enhance the thickness of the foil produced by electro-deposition in the region of the bars, the perforations in the bars being clear of a zone adjacent to the apex, whereby in each bar the foil is continuous across the width of the bar adjacent to the apex.

3,871,081
CLEANING EQUIPMENT FOR ELECTROPHOTOGRAPHY

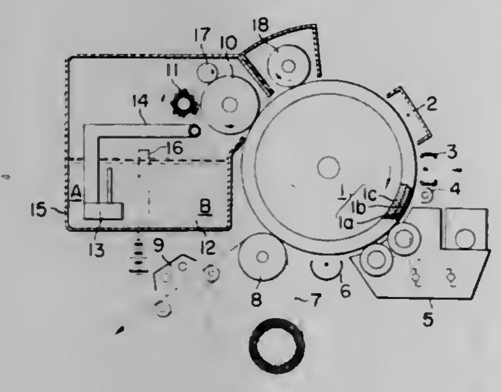
Shozo Inoue, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1970, Ser. No. 52,926

Claims priority, application Japan, July 14, 1969, 44-67249[U]; July 14, 1969, 44-67251[U]; July 14, 1969, 44-67252[U]; July 14, 1969, 44-67253[U]

Int. Cl. A46b *15/00*

U.S. Cl. 15—256.51 **6 Claims**



1. Cleaning equipment for use in an electrophotographic apparatus of the transferring type wherein an electrostatic latent image is formed on a photosensitive member and developed and then the developed image is transferred to a transferring material and, thereafter, the residual toner on the surface of the photosensitive member is cleaned off the repetitive use, said equipment comprising means for supplying a cleaning solution and means for cleaning a photosensitive member by rubbing which is positioned between a transferred process and a charging process to effect said cleaning prior to charging, said means for cleaning a photosensitive member by rubbing comprising a roller and an auxiliary cleaning member which is contacted with said roller so as to eliminate the toner adhering thereto, and said means for supplying a cleaning solution being positioned to apply the cleaning solution in the proximity of the contact between said roller and said auxiliary cleaning member.

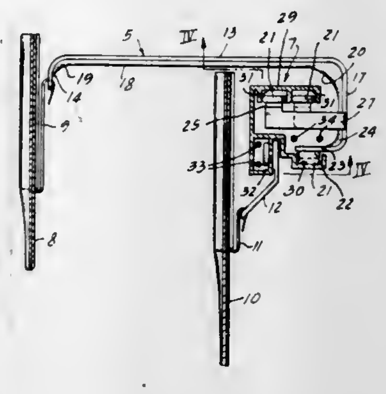
3,871,082
COMBINATION DRAPERY SUPPORT

August S. Pflum, 5111 S. Rockwell, Chicago, Ill. 60632

Filed July 5, 1972, Ser. No. 269,163

Int. Cl. E05d *13/02*

U.S. Cl. 16—87.2 **7 Claims**



7. An assembly for supporting an over drape in front of an under drape, comprising:

- a drapery bar having along a rear side thereof vertically spaced track means comprising downwardly opening upper track means and upwardly opening lower track means;
- both of said upper and lower track means having spaced front and rear vertical side walls defining grooves therebetween;
- a slide having an elongated arm closely overlying said bar and including a front end portion for supporting an over drape and a rear end portion having a flange depending at the rear side of the bar and provided with forwardly extending projection means between said track grooves;
- first antifriction slide means carried by said forwardly extending projection means engaging in running relation with said downwardly opening upper track means;
- second antifriction slide means carried by said projection means and engaging in running relation with said upwardly opening lower track means;
- all of said antifriction slide means riding between and being engageable with the respective vertical groove walls of said track means in running therealong;
- said first slide means engaging in said downwardly opening upper track means at substantially spaced respective opposite sides of the longitudinal axis of said arm; and
- said upwardly opening lower track means having an upwardly facing rail surface between the groove walls thereof for engagement by said second slide means;

whereby the slide means support the arm in stabilized running spaced relation over the top of said bar with the front end portion of the arm extending forwardly from the bar to support the over drape.

3,871,083
FOLDING DOOR HARDWARE

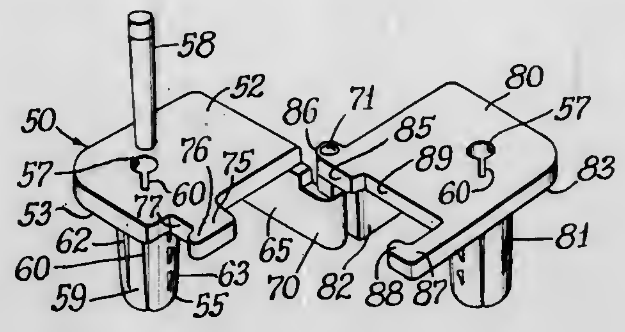
Lester L. Smith, 230 W. Monroe St., Suites 2040, Tucson, Ariz. 60606

Filed Dec. 6, 1973, Ser. No. 422,321

Int. Cl. E05d *5/02*

U.S. Cl. 16—159 **13 Claims**

1. For use in guiding and hingedly interconnecting adjacent panels in folding door installation and the like, a hardware assembly comprising: a pair of molded members adapted to be cooperatingly mounted on adjacent panels, each said member having a body portion formed with a planar guide surface engagable with a planar surface of a said panel on which its associated said member is mounted, a genrally culindrical radially flexible plug portion formed integrally with said body portion and extending perpendicularly outward of said guide surface thereon, said plug portion having externally projecting barbs and a central axial opening extending therethrough and said body portion; said plug portion being insertable into a cylindrical mounting socket formed inwardly of said planar surface of said panel, and tapered pin means insertable through said body portion into said axial opening for radially



expanding said plug portion in said socket thereby to securely set said barbs and anchor its said associated member to said panel.

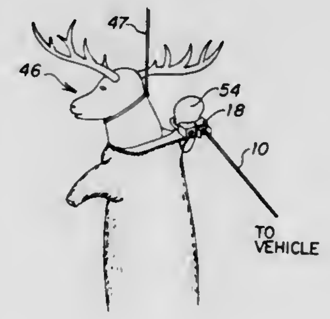
3,871,084
DEER SKINNING APPARATUS AND METHOD OF USING SAME

Henry A. Carrington, 415 Gettysburg Rd., San Antonia, Tex. 78228, and Robert O. Kruse, 8111 Glenscot, Houston, Tex. 77017

Filed Oct. 12, 1973, Ser. No. 405,885

Int. Cl. A22b *5/16*

U.S. Cl. 17—21 **6 Claims**



1. An apparatus for removing the skin from an animal comprising:

- an elongate flexible member;
- a rigid anchor block having rounded edges has such shape and dimensions that a pouch may be formed from the skin of an animal by folding over said block;
- a rigid loop support member having first and second aperatures spaced apart by a curved cradle surface a first end portion of said flexible member extending through said apertures to enable a loop of said flexible member to be formed of such a size and shape for initially being disposed over the pouch of skin formed around said block and then tightened such that said block may not pass through the loop, whereby a force may be exerted on the second end of said flexible member to pull the skin from the animal; and
- means for coupling said anchor block to said loop support member.

3,871,085
HIGH SPEED FOOD MEASURING AND/OR FORMING MACHINE

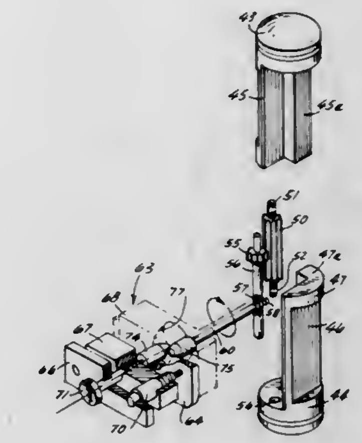
Russell J. Hahn, 2333 N. 37th St., Milwaukee, Wis. 53210

Filed May 14, 1973, Ser. No. 360,191

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **12 Claims**

1. An apparatus for measuring and forming food products comprising a cylindrical housing, a drum member rotatably disposed in said cylindrical housing, oppositely spaced cylinders carried by said drum member and opening to the outside of said drum member, piston members including two piston heads slidably engaging said cylinders and interengaged so that movement of one piston head effects a corresponding movement of the other and in the same direction, means to incrementally adjust the distance between said piston heads



and means to rotate said drum member whereby a food product introduced under force into one cylinder in said drum in one position ejects similarly introduced food product from the opposite cylinder as the drum rotates and adjustment of the amount of the food product introduced may be readily varied.

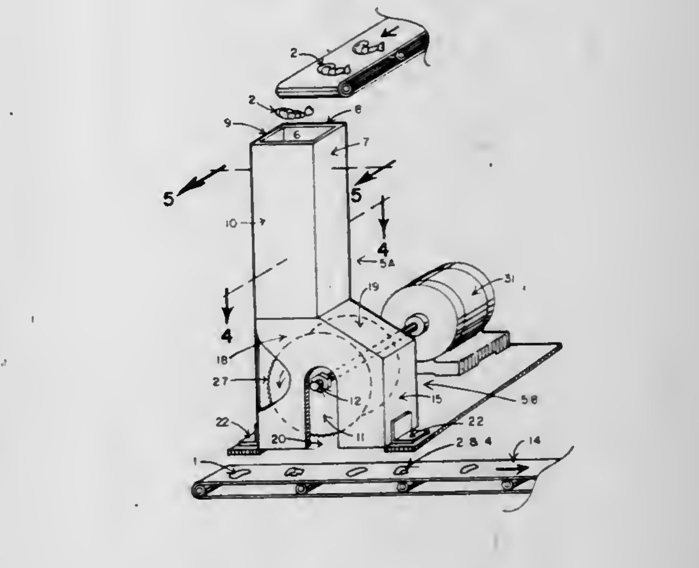
3,871,086
APPARATUS FOR DE-SHELLING CRUSTACEANS

James E. Rutledge, 13543 Honey, Baton Rouge, La. 70808

Filed Sept. 5, 1973, Ser. No. 394,535

Int. Cl. A22c *29/00*

U.S. Cl. 17—73 **3 Claims**



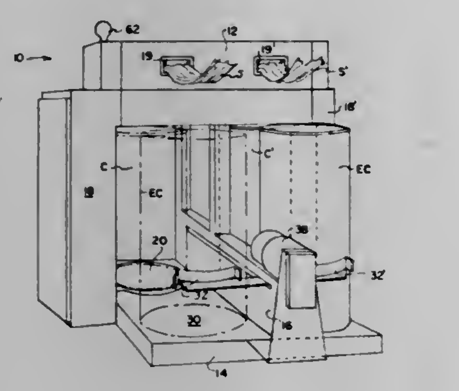
1. A de-headed hard shelled crustacean de-shelling apparatus which comprises:

a. concentric parallel cutting blades, having serrated edges, mounted to a drive means, said blades spaced apart a distance less than the width of said crustacean, and

b. guiding means for guiding crustaceans, said guide means including a vertically extending hollow means for guiding crustaceans between cutting blades so as to permit crustaceans to fall by gravity to a position only between said spaced cutting blades.

3,871,087
CAN CHANGING APPARATUS FOR A TEXTILE SLIVER COILER

Richard J. Savageau, and Paul B. West, both of Clemson, S.C., assignors to Saco-Lowell Corporation, Easley, S.C.
Filed Oct. 16, 1973, Ser. No. 406,882
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 A **15 Claims**



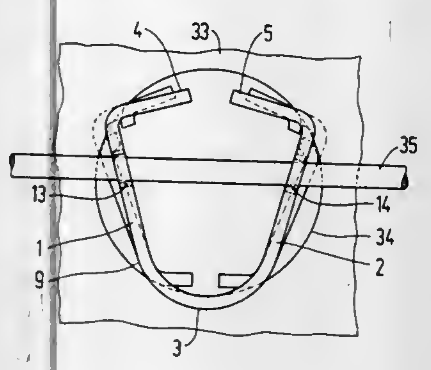
1. In combination with a textile sliver coiler adapted to fill cans with sliver, said coiler including an empty can station, can supporting means for supporting a can in a predetermined upright position thereon during filling of said can and for then reciprocatorily moving said can laterally along a linear path of travel, said can supporting means being located distal from said empty can station and reciprocatorily movable relative thereto in a substantially horizonal plane, the improvement comprising:

- can changing means for, during can doffing of said coiler, moving an empty can from said empty can station onto said can supporting means, and into said predetermined position thereon, irrespective of the reciprocatory position then occupied by said supporting means; said can changing means including
- can transporting means for engaging and transporting said empty can;
- means mounting said can transporting means for guiding said can transporting means along a path of travel extending from said empty can station toward said supporting means and generally parallel to said linear path of travel; and means for, during each doffing of said coiler, moving said can transporting means a distance along said path of travel thereof correlated to and variable in accordance with the particular reciprocatory position then occupied by said can supporting means.

3,871,088
CLAMP OF RESILIENT MATERIAL ROTATABLE IN A CIRCULAR HOLE

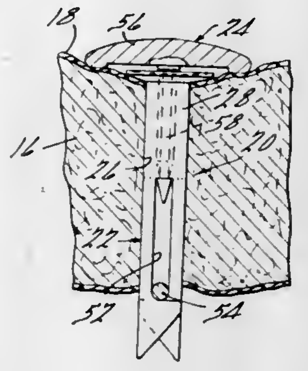
Kajetan Leitner, am Winacker 18, 817 Bad Tolz, Germany
Filed Oct. 25, 1973, Ser. No. 409,473
Claims priority, application Germany, Oct. 27, 1972, 2221075
Int. Cl. A44b *21/00;* **F16l** *3/00*
U.S. Cl. 24—81 B **9 Claims**

1. A clamp of spring or resilient material rotatable in a circular hole, preferably for securing, rod type structures, such as Bowden cables, rods or the like, to sheet or panel type components, characterized in that the clamp is substantially of V-section with two arms (1,2) and a crosspiece or crossbar (10) connecting these, the arms (1,2) each forming two clips (8,9), of which one clip (8, the component clip) corresponding to the thickness of the component (33), has slots (19,20,21) extending transversely to the clamp for accommodating the component (33), and the arms (1,2) of the other clip (9, rod clip) are provided with perforations (13,15,17; 14,16,18) for pushing through the rod type structure (35) and in which the said rod type structure (35) is clamped.



3,871,089
UPHOLSTERY ELEMENT

John W. Kunz, 128 Elm Park Ridge, Pleasant Ridge, Mich. 48069
Continuation of Ser. No. 291,976, Sept. 25, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,667
Int. Cl. A44b *1/26*
U.S. Cl. 24—90 B **2 Claims**

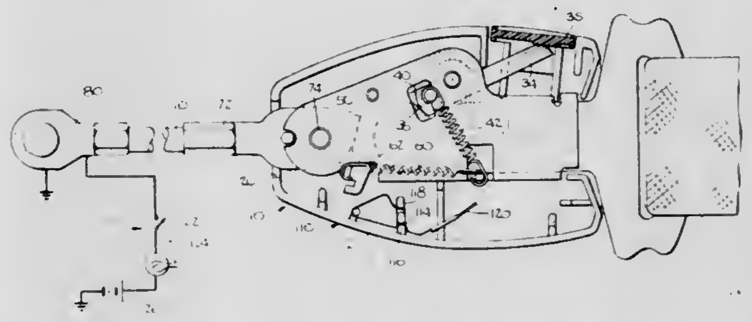


1. A two-piece upholstery device for a cushion having upholstery material along one side thereof and at least one wire-like member extending generally parallel to said side and spaced a predetermined distance from said upholstery material, said device including a molded retaining element fabricated of plastic material and having an upper body portion having a central bore formed therein with the lower end of said bore terminating in a generally outwardly radial surface, said retaining member also including a plurality of downwardly extending legs defining a cavity therebetween and formed integrally of said body, said legs being flexible independently of one another and being formed with a retaining shoulder on the lower end thereof, each of said retaining shoulders including a downwardly inclined camming surface and a generally flat upper surface, with said legs being normally orientated such that said camming surfaces thereof define a V-shaped recess which is engageable with said member to cause the lower ends of said legs to flex away from one another to permit said member to pass into said cavity upon downward movement of said retaining element, whereby said flat surfaces of said shoulders will engage the underside of said member to lockingly secure said retaining element to said cushion, with said retaining element being secured in a manner to compress the upholstered material when extending thereinto, said device also including a facing element including head and shaft portions the former of which overlies the upper end of said retaining element when said shaft portion is inserted into said bore, the lower end of said shaft portion including a locking part defining an enlarged shoulder spaced from said head the approximate distance of the length of said bore and received in the upper end of said cavity and engaging

said radial surface at said lower end of said body portion to lockingly secure said facing element to said retaining element.

3,871,090
SAFETY BELT BUCKLE

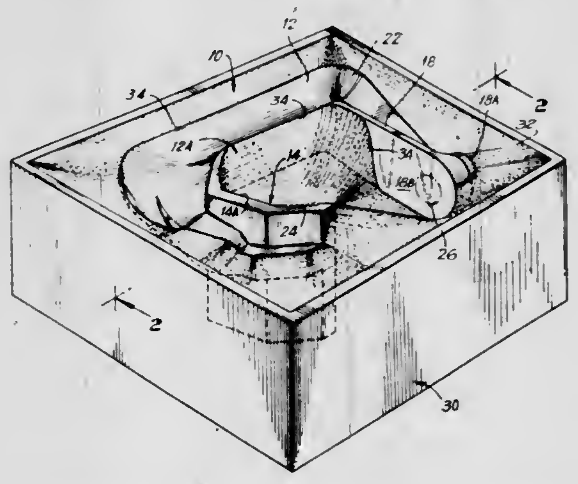
Louis Romanzi, Jr., Milford, and James A. Gavagan, Centerline, both of Mich., assignors to Irwin Industries, Inc., Greenwich, Conn.
Filed Aug. 24, 1973, Ser. No. 391,345
Int. Cl. A44b *11/26;* **G60q** *1/00*
U.S. Cl. 24—230 AV **6 Claims**



1. A vehicle safety belt buckle comprising a receptacle having a first opening and a passageway to receive a tongue having a recess therein; mounting means for attaching said buckle to a vehicle; a lock lever pivotally supported between the ends thereof, said receptacle having a second opening through which a first portion of said lock lever is accessible, first resilient means biasing said lock lever toward a position wherein a second portion of said lock lever resides within said passageway, an ejection lever pivotally mounted and extending within said receptacle, said ejection lever being movable between a first position wherein said ejection lever is within said passageway and spaced from said first opening less than the length of said tongue and a second position which is further from said first opening than said first position; second resilient means biasing said ejection lever toward said first position, an electrical switch within said buckle, said ejection lever being in contact with said switch when in said first position, said switch being connected to a signal circuit to indicate when said ejection lever is in said first position.

3,871,091
CLAMPING DEVICE

Robert A. Phillbert, Burlington, and Frank L. Browne, Bristol, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,632
Int. Cl. A44b *21/00;* **B22c** *9/02;* **F16l** *3/24*
U.S. Cl. 24—243 R **8 Claims**

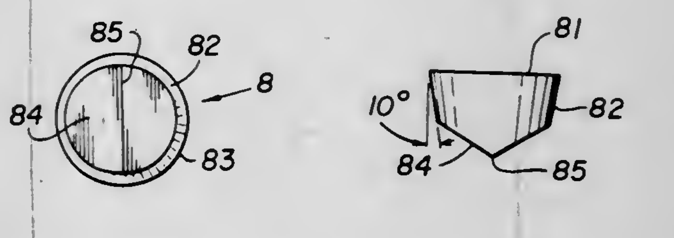


1. A clamping device fastening a conduit or the like to a structural beam and comprising:

- a body having a straight web portion extending between upper and lower ends of said body, said web portion having a convex inner surface adapted to be adjacent to said conduit;
- a flange projecting outwardly from said web portion;
- an arm extending from the upper end of the web portion at a substantially right angle therewith;
- a cradle extending from the lower end of the web portion, said cradle being offset or canted with respect to said arm;
- said clamping device being produced by forming the mold halves which define the clamping device such that at least part of the parting line extends substantially along the axis of symmetry of said web of said clamping device and such that the upper surface of the arm of the device is defined by one of the mold halves, said parting line continuing therefrom in such manner that the lower surface of the arm is defined by the other half of the mold, whereby at least said upper and lower surfaces of the arm adjacent to a hole to be formed therein are parallel.

3,871,092
CUTTING TOOL

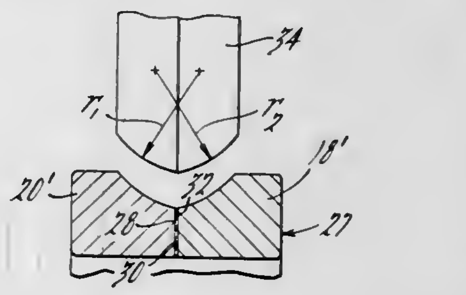
Erhard Anschutz, Plochingen, and Walter Gotz, Wernau, both of Germany, assignors to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Dusseldorf-Oberkassel, Germany
Filed Nov. 27, 1973, Ser. No. 419,404
Claims priority, application Germany, Dec. 8, 1972, 2260097
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 R **6 Claims**



1. A tool bit having a flat top face of convexly arcuate circumference about an axis transverse to said face, an axial face tapering in a direction away from said top face, said circumference and said axial face jointly defining an annular cutting edge, and two flat seating faces converging from said axial face in a direction away from said cutting edge toward a line of intersection transverse to said axis, said top face, said axial face, and said seating faces jointly constituting the entire surface of said tool bit.

3,871,093
PROCESS FOR MAKING SPLIT-RING BALL BEARINGS

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Feb. 20, 1974, Ser. No. 444,120
Int. Cl. B23p *11/00, 17/00;* **B21h** *1/12*
U.S. Cl. 29—148.4 A **10 Claims**

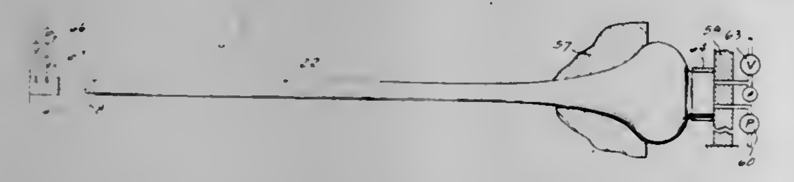


1. In a process for fabricating a split-ring bearing assembly of the type comprising a pair of ring members at least one of

which is of a sectionalized construction and which are formed with raceways within which a plurality of antifriction elements are retained, the steps of forming a plurality of ring sections having a shape and size such that the assembly thereof substantially defines said sectionalized ring member, adhesively securing said ring sections together into a bonded ring assembly, finish machining the surfaces of said bonded ring assembly to the desired final dimensions and surface finish, and thereafter cleaving said bonded ring assembly and separating the mated final machined said ring sections preparatory to assembly thereof with the other ring member and antifriction elements into a bearing.

3,871,094
METHOD OF MAKING SEAMLESS TUBULAR BELL SECTION

William Lee Nichols, Brea, Calif., assignor to Norlin Music, Inc., Lincolnwood, Ill.
Filed Apr. 26, 1974, Ser. No. 464,305
Int. Cl. B29d *17/00*
U.S. Cl. 29—169.5 **16 Claims**



1. A method for making a seamless tubular bell section of a musical instrument of sollid brass, comprising:
  a. providing a blank of brass, tubing of uniform wall thickness and diameter;
  b. drawing the blank to progressively taper its wall thickness along its length while maintaining the uniformity of its outside diameter;
  c. by drawing, enlarging the end portion of the blank having the greater wall thickness;
  d. by drawing, progressively reducing the diameter of the non-enlarged portion of the blank to provide ultimately a taper in the inside diameter which merges with the enlarged end portion;
  e. while externally supporting the blank along its portion of tapered diameter, by means of hydraulic pressure, expanding the unsupported enlarged end portion; and
  f. trimming and finishing the blank as a bell section.

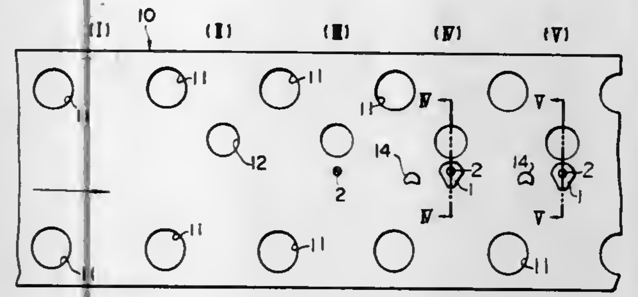
16. A method for making a seamless tubular bell section of a musical instrument of solid brass, comprising:
  a. forming a blank of solid tubular brass to provide an elongated portion of lesser diameter and a shorter portion of larger diameter, interconnected by an intermediate portion of tapered diameter;
  b. while externally supporting the blank along its portion of tapered diameter, by means of hydraulic pressure, expanding the unsupported enlarged end portion; and
  c. trimming and finishing the blank as a bell section.

3,871,095
PROCESS FOR THE MANUFACTURE OF HAIR SPRING COLLET

Konoe Miyamoto, Sayama, and Atsushi Ohsuga, Tokorozawa, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Continuation of Ser. No. 283,758, Aug. 25, 1972, abandoned.
This application Mar. 7, 1974, Ser. No. 449,102
Claims priority, application Japan, Aug. 26, 1971, 46-64763
Int. Cl. B23p *13/00*
U.S. Cl. 29—178 **6 Claims**

1. A process for the manufacture of a series of spiral spring collets, each having parallel front and rear surfaces, a central bore for attachment to a balance wheel arbor and at least one radial projection having a spiral surface for attachment of an inner end portion of a hair spring comprising the steps of

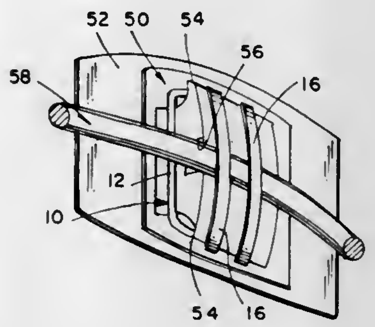
1. continuously feeding a sheet stock at a constant speed,
2. punching a series of pilot holes longitudinally along each side edge of the sheet stock at regular pitches and at a small distance from said edges,
3. punching-roughly a series of smaller central bores in the sheet stock,



4. punching half-way through the sheet stock a series of outlines of collets,
5. forming a spring guide groove on each of said halfway punched-out collets,
6. punching-finishingly through the rough-punched central bores in succession, and
7. punching through the collets in succession.

3,871,096
ORTHODONTIC SPRING CLIP

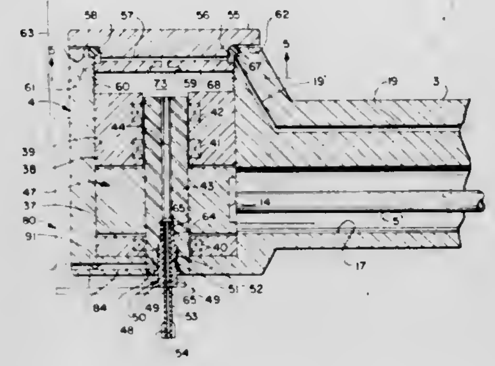
Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214
Filed Nov. 8, 1972, Ser. No. 304,731
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **19 Claims**



1. An orthodontic appliance for use with an orthodontic arch wire, comprising an orthodontic bracket having a front portion and a rear portion of reduced cross-sectional area connectable to an orthodontic band, whereby said bracket forms with the band at least one channel extending along the latter, the arch wire extending proximate said bracket; a resilient collar configurated in the shape of an open and substantially planar loop having a pair of opposing free end portions proixmate to one another and normally spaced from one another a distance smaller than the transverse dimensions of said rear portion, said loop having dimensions corresponding to the external dimensions of said rear portion and being made of a resilient material to permit separation of said free end portions to increase the size of said loop to thereby permit the same to be releasably snapped onto said rear portion and at least partially received within said channel; and elongated finger means in the form of a biassing finger extending from said loop and having a biassing portion spaced to one side of said loop and being at least partially and resiliently movable in directions generally transverse to the plane defined by said loop and arranged to apply forces to the arch wire relative to said bracket, whereby said biassing finger is placed in a biassing condition when said free end portions are separated and said loop snapped onto said bracket.

3,871,097
COOLING SYSTEM FOR A DENTAL HANDPIECE

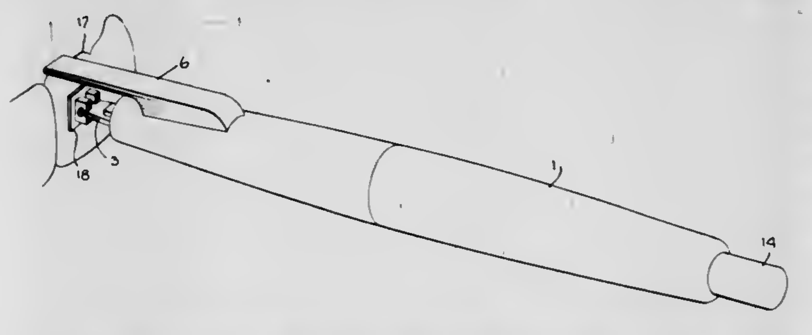
Chris R. Melde, 7007 3rd Avenue, Scottsdale, Ariz. 85251
Continuation-in-part of Ser. No. 272,202, July 17, 1972, Pat. No. 3,778,904. This application Nov. 5, 1973, Ser. No. 412,759
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **13 Claims**



1. In a dental handpiece having a handle, a shank, a head including a cylindrical cavity therein, an air operated turbine assembly disposed within the cavity, the turbine assembly including a hollow rotor in communication with one end of the turbine assembly and a hollow burr engaged to the one end of the hollow rotor and extending from one end of the head, the improvement comprising in combination:
  a. conveying means for transporting a flow of air to the head;
  b. a cap secured to the other end of the head for sealing one end of the cylindrical cavity;
  c. a collection chamber disposed within the cylindrical cavity, said collection chamber being defined by the cylindrical wall of the cylindrical cavity, said cap and said one end of the turbine assembly; and
  d. transmission means for transmitting a flow of air from said conveying means to said collection chamber; whereby, the air transmitted to said collection chamber establishes an air pressure buildup within said collection chamber to force a flow of air into the hollow rotor and through the hollow burr to cool the working section of the hollow burr and the workpiece.

3,871,098
BRACKET PLACER

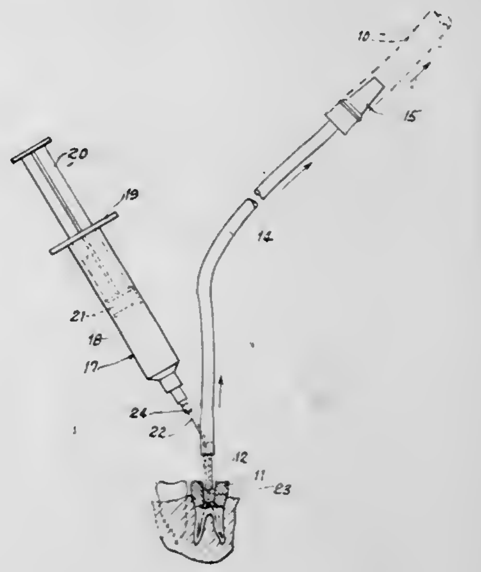
J. Thomas Dean, 205 Haverhill Cir., Easley, S.C. 29640
Continuation-in-part of Ser. No. 277,554, Aug. 3, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,276
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **7 Claims**



1. A positioning device for placing orthodontic brackets on the labial surface of a tooth which comprises:
  a. an elongated body portion;
  b. holding means adapted to engage the bracket being placed on the surface of the tooth, said holding means being disposed at the forward end of said elongated body and fixedly held with respect thereto;
  c. guide means mounted to said forward end of said elongated body and adapted to engage the incisal edge of the tooth, said guide means being disposed a predetermined distance from said holding means so that the bracket may be accurately positioned on the labial surface of the tooth by appropriate positioning of said guide means, and
  d. means slidably mounted with respect to said elongated body and adapted to move parallel to the longitudinal axis thereof, said slidable means being movable with respect to said holding means so as to allow the bracket being positioned to be moved forwardly into engagement with the surface of the tooth and away from said holding means.

3,871,099
METHOD FOR CLEANING CAVITIES WITH A COMBINED FLUID DELIVERING AND ASPIRATING INSTRUMENT

Henry Kahn, Highland Park, Ill., assignor to KG Company, Chicago, Ill.
Continuation of Ser. No. 183,973, Sept. 27, 1971, abandoned.
This application Dec. 28, 1973, Ser. No. 429,079
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **8 Claims**



1. A method particularly useful in dental and surgical procedures for cleansing a cavity by aspirating fluids and other materials from a cavity and delivering fluids such as medicaments into said cavity comprising inserting into the cavity the working end portion of a plastic suction tube of a self-sealing composition having memory when penetrated, the working end portion having the working end portion of a hypodermic needle which has been inserted through the wall of said tube portion in fluid-sealing relationship interiorly positioned in substantially coaxial relationship with the interior of said tube portion, the working end portion of the needle having been bent at an acute angle to the needle axis so that the portion of the needle remaining outside the tube for the attachment of a hypodermic syringe is at an angle to said suction tube, attaching a hypodermic syringe filled with the selected liquid to said needle, connecting the distal end of said suction tube to a vacuum source and simultaneously, or in selected independent sequence, delivering the liquid from the syringe into the cavity and withdraw liquid and other matter from said cavity through said suction tube.

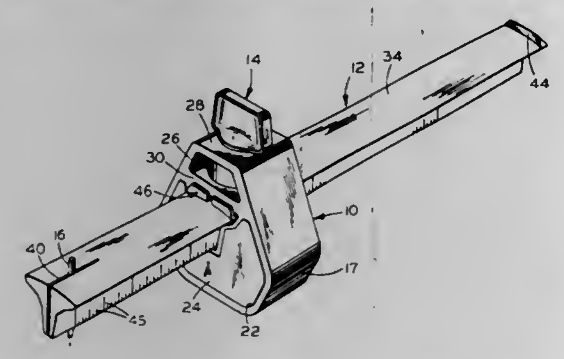
3,871,100
MARKING GAUGE

William J. Hildebrandt, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed June 28, 1973, Ser. No. 374,644
Int. Cl. B43l *13/02*
U.S. Cl. 33—42 **9 Claims**

1. A marking gauge comprising:
  A. a body member having an aperture extending therethrough of generally T-shaped configuration providing a

transverse top portion and a stem portion of lesser width with the wall defining said aperture including a pair of shoulder faces adjacent said top portion and diverging from said stem portion of said aperture towards said top portion, said should faces extending in opposed spaced relationship on opposite sides of and parallel to the longitudinal axis of said aperture;

B. an elongated rule member of generally T-shaped configuration complementary to said aperture of said body member and slidably seated in said aperture, said rule member having a top portion and a stem portion of lesser width with a pair of shoulder faces diverging from said stem portion towards said top portion and extending in parallel relationship to the shoulder faces of said body member along at least a substantial portion of the length of said rule member, the shoulder faces of said rule member cooperating with the shoulder faces of said body member for stable seating of said rule member thereon and for sliding of said rule member along its length thereupon, said rule member being cooperatively dimensioned and configured with respect to said body member aperture to provide spacing therebetween except along said cooperating shoulder faces, wherein a portion of the rule member which normally may be engaged with a work surface and collect foreign matter is not used in said seating function; and

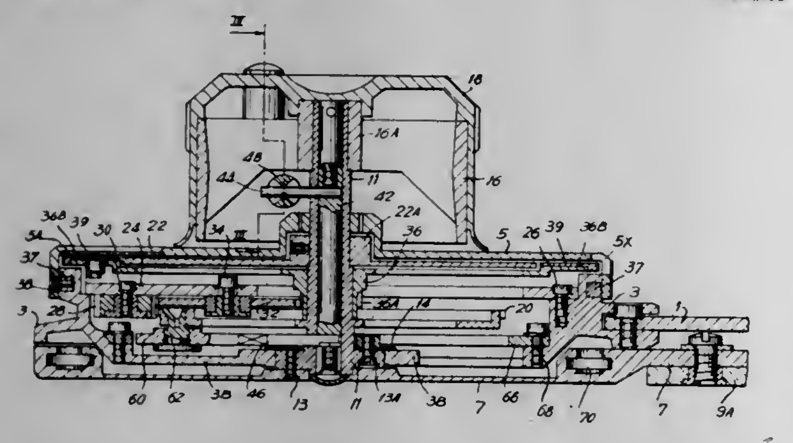


C. means on said body member engaging the upper surface of said top portion of said rule member for locking said rule member in fixed position within said aperture of said body member with said shoulder faces in firm surface contact.

3,871,101
ARRANGEMENT IN A DRAFTING MACHINE FOR PRECISE MEASUREMENT OF ANGLES

Anglolo Becattini, via del Cantone 5, and Pietro Angelo Sassi, S. Casciano Val DI (FI) - La Romola, both of Florence, Italy

Filed July 18, 1973, Ser. No. 380,167
Claims priority, application Italy, July 19, 1972, 9594/72
Int. Cl. B43l *13/02*
U.S. Cl. 33—79 R **7 Claims**

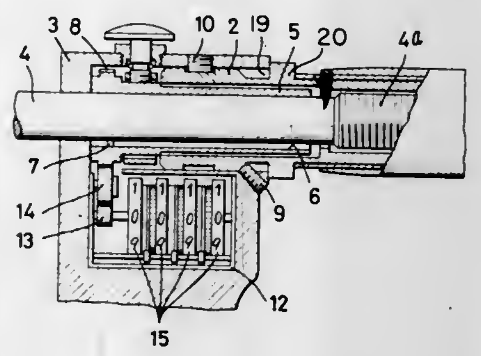


1. An arrangement in a drafting machine for precise measurement of angles comprising, in combination, a support moveable parallel to a predetermined direction; an angularly moveable element carried by said support and having a positioning grip; a goniometer including two coaxial scales, a coarse and a fine scale, rotatable relative to each other according to a given ratio, wherein said scales can be read through a window on a cover of the instrument and provided with a reference line; and a transparent disk mounted on said cover under said window, having a second reference line usable in connection with said first-named line on the window; said disk being in turn angularly adjustable relative to said cover; the whole assembly being angularly adjustable to allow, in conjunction with said disk, to shift the readings of origins of angles to be measured; said support including a central, hollow shaft forming the rotational axis of said scales and containing in addition in its inner portion elements of a mechanical transmission, allowing a locking device of a mobile part to be controlled from said grip to assume given angular positions; said goniometer providing instant angle readings in degrees and minutes, directly and without a vernicr being needed; and said goniometer being provided for attachment to any type of universal drafting device by means of a suitable connector.

3,871,102
MICROMETER

Ichiro Miura, Sumoto, and Hiroshi Suzuki, Shuizuki, Hyogo-ken, both of Japan, assignors to Nihon Sokutei Kogu Kabushiki Kaisha, Shuizuki, Hyogo-ken, Japan

Filed Sept. 26, 1973, Ser. No. 400,817
Claims priority, application Japan, Oct. 6, 1972, 47–117526
Int. Cl. G01b *3/18*
U.S. Cl. 33—166 **2 Claims**

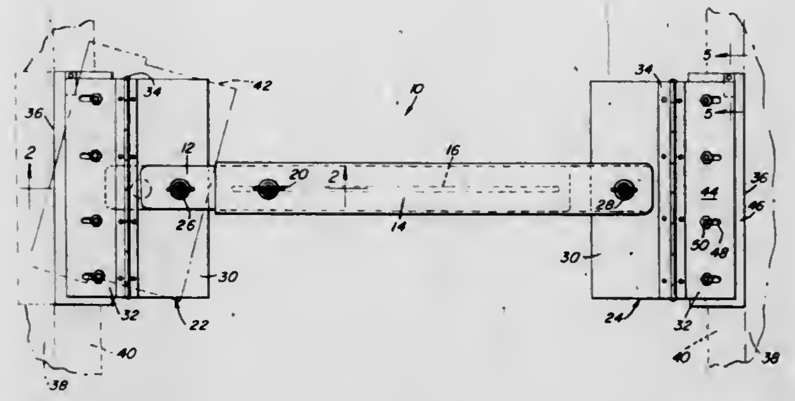


1. A micrometer, comprising:
a substantially U-shaped frame;
a hollow cylindrical member formed on one side of said frame;
a first sleeve having a first portion rotatably positioned within said cylindrical member and a second portion extending therefrom;
a spindle positioned in said first sleeve and said cylindrical member and extending through and projecting from said cylindrical member toward the other end of said U-shaped frame, said spindle being threaded in the region thereof corresponding to the portion of said first sleeve extending from said cylindrical member, said first sleeve being correspondingly threaded;
a second sleeve slidably mounted on said spindle within said cylindrical member and interposed between said spindle and said first sleeve, said second sleeve having an axial groove in the periphery thereof and having a gear formed about the periphery thereof;
a pin fixed to the outer periphery of said first spindle and slidably engaged in said axial groove of said second sleeve;
a counter means having a gear meshing with said gear of said second sleeve; and
a setting screw extending through the periphery of said cylindrical member and adapted to contact said first sleeve for locking said first sleeve, said setting screw adapted to be rotated from a position externally of said cylindrical member for separating said setting screw from said sleeve for releasing said first sleeve, whereby adjustment may be readily accomplished.

3,871,103
POWER SAW PRECISION STAIN GAUGE

Harold W. Simmons, 1545 S.W. 192nd St., Aloha, Oreg. 97006

Filed July 9, 1973, Ser. No. 377,232
Int. Cl. E04f *21/26*; **G01b** *5/14*
U.S. Cl. 33—174 R **5 Claims**



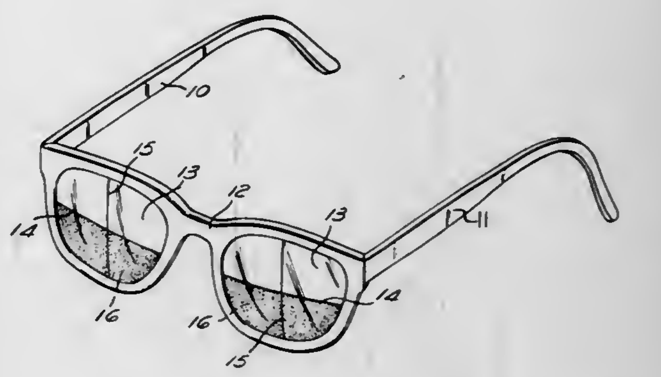
1. A stair tread and riser gauge for use with a portable power saw of the type having a slide shoe with a guide edge spaced from and paralleling a cutting edge, said gauge including an elongated framework having opposite end portions and means for adjustably varying the effective length of said framework between said opposite end portions, a pair of generally co-planar plate-like sizing assemblies mounted on opposite end portions of said framework, at least one of said assemblies including a first base plate portion including an outer edge portion generally transverse to the longitudinal extent of said framework, said base plate portion being pivotally supported from the corresponding framework end portion for adjustable angular positioning relative to said corresponding framework end portion about an axis extending transverse to the longitudinal extent of said framework and disposed substantially normal to said sizing assemblies, said sizing assemblies including remote gauge edge portions disposed transverse to said axis and the longitudinal extent of said framework, a shiftable plate portion including opposite edge portions generally paralleling each other, one of said opposite edge portions of said shiftable plate portion being hingedly supported from said outer edge portion for angular displacement of said shiftable plate portion relative to said base plate portion about an axis generally paralleling said outer edge portion between an inactive position overlying said base plate portion and retracted above said outer edge portion and an active position with said shiftable plate forming an outward generally co-planar extension of said first base plate portion, the gauge edge portion of said one assembly being supported from said shiftable plate portion on the side thereof opposite from said one opposite edge portion, said gauge edge portion and said outer edge portion of said one assembly, when said one assembly is in its active position, being spaced apart a distance corresponding to the spacing between the guide edge of the slide shoe and the cutting edge of the saw.

3,871,104
ALIGNMENT SIGHTING DEVICE

John V. Underhill, II., 721 N.W. 37th St., Ft. Lauderdale, Fla. 33309

Filed Dec. 5, 1973, Ser. No. 421,842
Int. Cl. G01c *9/26, 15/00*
U.S. Cl. 33—262 **4 Claims**

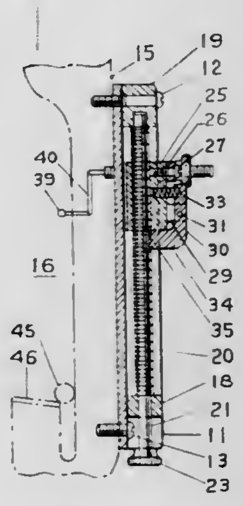
1. An eyeglasses-type alignment sighting device comprising: an eyeglasses frame;
a pair of laterally spaced lenses in said frame for the wearer's left and right eyes, respectively; each of said lenses having a hollow interior and having a horizontal sighting line extending laterally across it;
and a non-transparent liquid filling the hollow interior of each lens to the level of the horizontal sighting line thereon so that the top of the liquid registers with said horizontal sighting line when the latter is precisely horizontal.



3,871,105
ADJUSTABLE SIGHTING DEVICE FOR ARCHERY BOW

George D. Brougham, P.O. Box 37, R.D. No. 2, Gillett, Pa. 16925

Continuation-in-part of Ser. No. 381,252, July 20, 1973, Pat. No. 3,849,894. This application Feb. 14, 1974, Ser. No. 442,381
Int. Cl. F41g *1/46*
U.S. Cl. 33—265 **2 Claims**

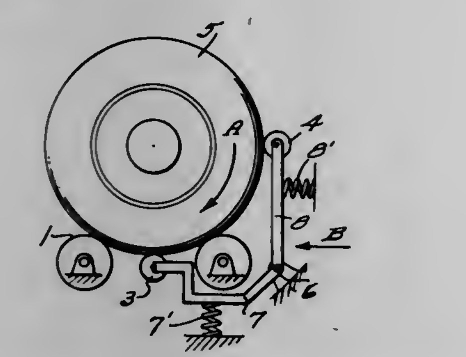


1. An archery bow sight adapted to be mounted on the side of a bow, comprising:
a. an elongated channel housing having a U-shaped cross section defined by a bottom wall and side walls;
b. mounting means for attaching the housing to the bow;
c. an elongated lead screw disposed longitudinally within the housing having a shaft extending therefrom;
d. a knob affixed to said shaft;
e. bearings mounted on the respective end portions of said housing for rotatably supporting said lead screw;
f. a carrier block having an opening therethrough for slideably mounting said carrier block on said screw, and being dimensional to cooperate with said channel housing to prevent rotation of said carrier block with respect to said lead screw;
g. a support bar mounted on said block transversely disposed with respect to said housing, said bar carrying a sighting bead at each end;
h. an L-shaped locking lever mounted on said block and pivotally supported thereon;
i. said lever having at one end a threaded face portion engaging said lead screw and, at the other end, a shank in contact with a biasing spring, tending to maintain said face portion in engagement with said screw, whereby, upon manually depressing said shank, said face portion becomes disengaged from said lead screw, allowing the free movement of said carrier block over said screw for

coarse adjustment of the height of said bar and, upon releasing the pressure from said shank, engagement thereof is effected, permitting fine adjustment of the height of said bar by the turning of said knob.

3,871,106
METHODS AND APPARATUSES FOR DYNAMIC AXLE ANGLE MEASUREMENT ON MOTOR VEHICLES

Horst Hegenbart, Bensheim/Schwanheim, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany
Filed June 12, 1973, Ser. No. 369,392
Claims priority, application Germany, June 14, 1972, 2228988
Int. Cl. G01b *5/255, 7/315*
U.S. Cl. 33—203.13 **8 Claims**



1. A method of dynamic axle angle measurement in a motor vehicle, comprising:

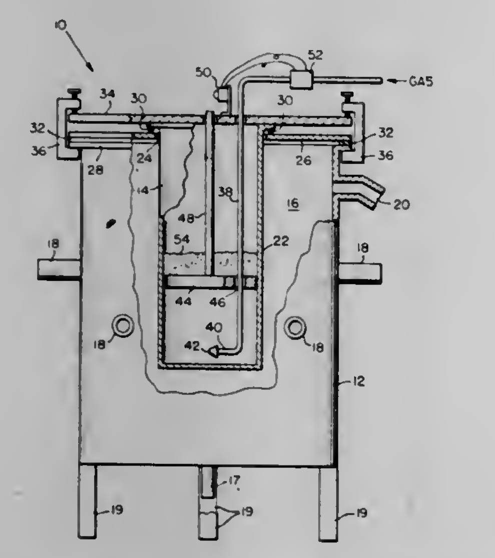
rotating a wheel with tire to be measured;

applying first and second sensing rollers to the tread surface with one of the sensing rollers engaging the tread surface adjacent to a horizontal plane containing the wheel axis with the sensing rollers being maintained parallel to each other so that the camber angle of the wheel causes displacement of said other sensing roller along its axis and said track alignment angle cause simultaneous displacement of said one roller to displaced positions in which the sensing rollers lie parallel to the wheel rotational axis; and

determining camber angle and/or track alignment angle from the displaced positions of the sensing rollers.

3,871,107
LABORATORY FREEZE DRYER

Samuel M. Broadwin, 60 East 8th St., New York, N.Y. 10003
Filed Apr. 2, 1974, Ser. No. 457,240
Int. Cl. F26b *13/30;* **F25d** *3/12*
U.S. Cl. 34—92 **9 Claims**



1. Vacuum trap apparatus useful as a laboratory freeze dryer comprising:

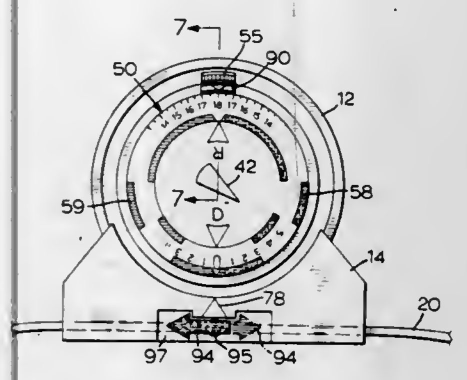
a. inner and outer shells forming a closed spaced therebetween which can be evacuated, said inner shell being metallic and providing a condensing surface on which vapors from the goods being freeze dried are condensed;

b. valved means for introducing a gas under pressure into said inner shell adjacent the bottom thereof, said gas expanding in said inner shell to form a snow for cooling the walls of said inner shell, and

c. control means acting to open and close said valve means responsive to the level of snow in said inner shell respectively falling below and reaching a predetermined level for controlling the introduction of said gas into said inner shell and maintaining the level of snow at substantially said predetermined level.

3,871,108
DIRECTIONAL DEVICE

Henri Beaudout, 11970 Langelier, Apt. 201, Montreal, Quebec, Canada
Continuation-in-part of Ser. No. 133,314, April 12, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,038
Int. Cl. G01c *17/04*
U.S. Cl. 33—349 **12 Claims**



1. A directional device for use in overland travel, comprising:

a frame:

a pair of concentric planar circular dials each mounted on said frame for rotation relative to said frame and to each other about their common axis;

one of said dials having at least one first reference indicium; the other of said dials being divided about its circumference into two individually distinguishable semi-circular arcs with a second reference indicium marking at least one of the two junctions between said arcs;

means for releasably clamping the pair of dials together for mutual rotation about their common axis relative to the frame;

means for releasably securing said one dial on the frame against rotation relative thereto;

index means on the frame with which the first reference indicium on said one dial may be registered on rotation of said one dial;

a magnetic compass needle mounted for free pivotal movement about said common axis relative to the other dial being registrable with the needle on rotation with respect to said other dial of said other dial; and

memory indicator means having further index means thereon, said indicator means being mounted on said frame adjacent said other dial and rotatable concentrically therewith, and means to inhibit the indicator means against free rotation.

3,871,109
LEVEL VIAL

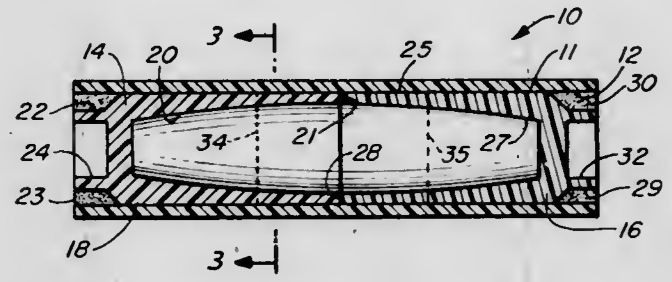
Peter P. Vaida, 17 Fairview Ave., Clinton, N.J. 08809
Filed Mar. 12, 1973, Ser. No. 340,522
Int. Cl. G01c *9/34*
U.S. Cl. 33—379 **19 Claims**

1. A spirit level vial comprising:

a generally cylindrical transparent outer body having a longitudinal axis and a longitudinally extending generally cylindrical outer surface;

a longitudinal bore formed in said outer body and extending through at least a portion of said outer body, said longitudinal bore defining a generally cylindrical inner surface on said outer body;

at least a pair of insert means rigidly received within said longitudinal bore of said outer body, each said insert means including a cylindrical outer surface and a longitudinal bore defining a curved inner surface, said curved inner surface of each insert means cooperating to define a bubble chamber;



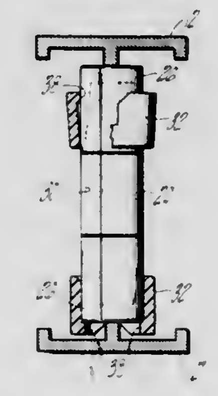
said outer surface of each said insert means being substantially equal in diameter to said generally cylindrical inner surface of said outer body;

reference means on said vial for permitting a determination of the position of said longitudinal axis of said spirit level vial with respect to the horizontal; and

means for precluding the passage of fluid between said outer surface of said insert means and said inner surface of said outer body.

3,871,110
LEVEL VIAL ASSEMBLY

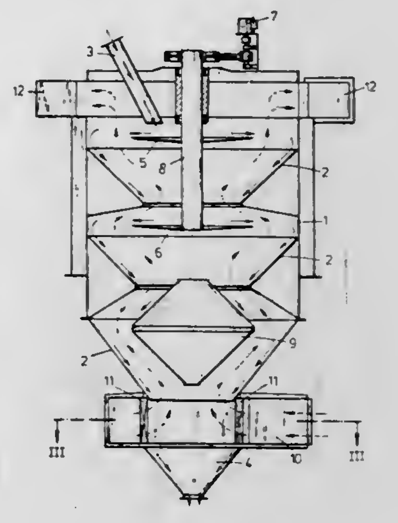
Antoni Pawel Gutowski, New Britian, and Maarten Cornelis De Jong, Canton, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 10, 1973, Ser. No. 422,981
Int. Cl. G01c *9/28*
U.S. Cl. 33—379 **3 Claims**



1. A level comprising a frame provided with parallel working surfaces and an interconnecting web, said web providing a pair of oppositely directed notches, an elongated vial positioned with its ends precision fitted in said pair of notches for mounting the vial at a preselected relationship relative to the working surfaces with the longitudinal axis of the vial generally parallel with the plane of the web, and a pair of generally cylindrical sleeves telescopically received over the ends of the vial, an inwardly directed shoulder at one end of each of said sleeves restricting the opening of said sleeves to a diameter less than the diameter of said vial, said one end of said sleeves being slotted to accommodate the expansion of said one end of said sleeves so that the sleeves may expand to a position where the shoulders surround the vial to permit the removal and assembly of the vial on the web, the slots in said one end of said sleeves being further dimensioned to closely receive the web, said slots of the sleeves and said shoulders of the sleeves being so related that when the sleeves are moved into a latching position the slots of the sleeves closely receive the web and the shoulders of the sleeves snap into locking engagement with the ends of the vial.

3,871,111
DEVICE FOR DRYING MOIST MATERIAL TO BE GROUND

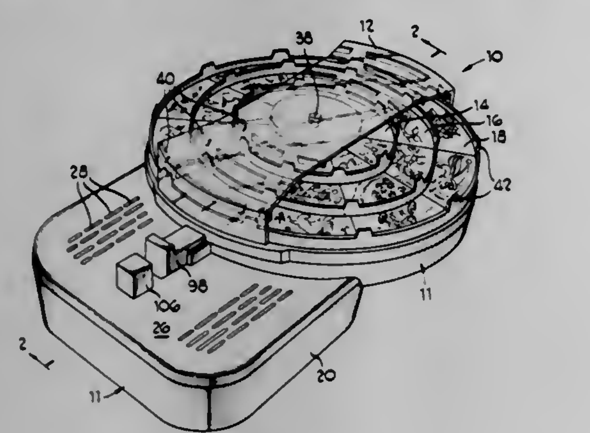
Karl-Heinz Porr, Ostenfelde, Germany, assignor to Gebruder Hischmann Maschinenfabrik, Ennigerloh/Westf., Germany
Filed Aug. 9, 1973, Ser. No. 387,105
Claims priority, application Germany, Aug. 9, 1972, 2239098
Int. Cl. F26b *19/00*
U.S. Cl. 34—173 **6 Claims**



1. A device for drying moist material to be ground, especially pit moist lime and clay, which includes a housing having an upper portion with inlet means for conveying material to be dried into the interior of said housing and also having a lower portion with central outlet means for discharging dried material from said housing, twist ring means including a helical guiding path and arranged adjacent said outlet means for introducing hot air into said housing in countercurrent flow to the flow of material to be dried, rotatable stray dish means arranged within said housing for receiving and distributing the material to be dried with a twist opposite to the twist of the hot air flow, said rotatable stray dish means including means for driving connection with a motor, hot air discharge means arranged at the upper portion of said housing for discharging hot air from said housing, and funnel-shaped downwardly tapering guiding surface means arranged in the interior of said housing for guiding the material to be dried from the upper portion of said housing through the latter and for conveying hot air in countercurrent flow to the flow of material to be dried to said hot air discharge means, said housing below every said funnel-shaped guiding surface means having configuration which widens again to largest diameter of said housing and subsequently narrows again toward said outlet means, a double cone arranged in a range of the lowermost guiding surface means within said widening and narrowing guiding surface means in spaced relation thereto to define therewith a path for hot air and for dried material, said funnel-shaped guiding surface means including a plurality of serially arranged downwardly tapering conical guiding surfaces and at least two stray dishes arranged in vertical direction one below the other and located within the region of the largest diameter of said housing, and at least one motor driving means driving said stray dishes upon the uppermost of which material to be dried is given off, said twist ring means including one portion thereof arranged above said outlet means for entry of hot air which streams through said housing from below to the top with a twist counter to twist of said stray dishes through which material is directed.

3,871,112
COORDINATED VISUAL AND AUDIO REPRODUCING APPARATUS

Gunars Licitis, Lombard, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Continuation-in-part of Ser. No. 282,377, Aug. 21, 1972, Pat. No. 3,801,110. This application Oct. 1, 1973, Ser. No. 402,093
Int. Cl. G09b *1/00*
U.S. Cl. 35—8 A **18 Claims**

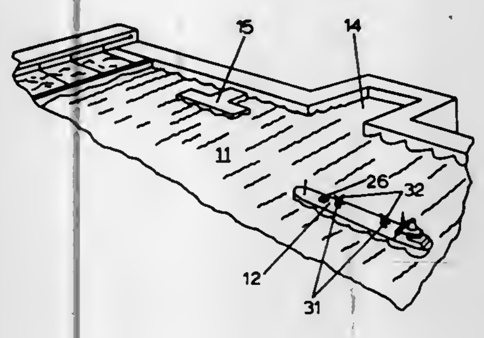


1. A multiple message reproducing apparatus with coordinated visual images, comprising:
- a housing;
- a sound record movably mounted on said housing and having a plurality of relatively movable parts with sound track portions on each part, one of the parts having at least one sound track portion in position for registry with any one of a plurality of the sound track portions on another record part to provide a sound track extending over both record parts, thereby providing for selective changing of the sound track in response to selective adjustment of the record parts to provide selectable multiple audio messages;
- a visual image assembly mounted on said housing and having a plurality of relatively movable parts with visual images on each part, the visual images being correlated with the sound track portions on said record parts, one of the parts of the visual image assembly having at least one visual image in position for registry with any one of a plurality of visual images on another part to provide an aligned series of visual images extending over both parts, thereby providing for selective changing of the visual image series in response to selective adjustment of the parts; and
- means for coupling said sound record parts and said parts of said visual image assembly for conjoint adjustment so that said visual images when in a selected registrable series are correlated to the particular audio message provided by the sound track of said sound record.

3,871,113
NAVIGATION TRAINING SIMULATORS

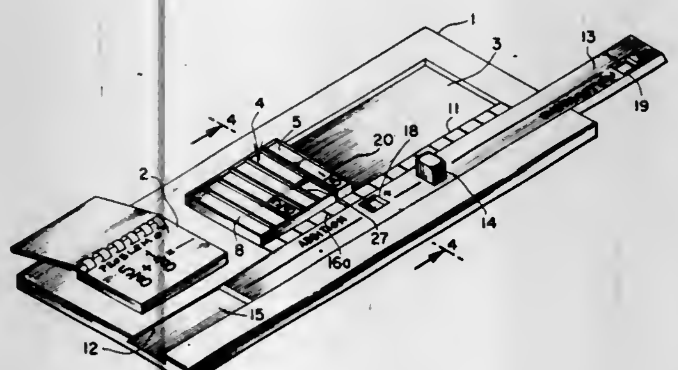
William Arthur Crago, and Derek Martin Emmerson, both of Isle of Wight, England, assignors to British Hovercraft Corporation Limited, Yeovil, Somerset, England
Filed June 6, 1973, Ser. No. 367,418
Claims priority, application United Kingdom, June 7, 1972, 26532/72; Aug. 14, 1972, 37784/72
Int. Cl. G09b *9/08*
U.S. Cl. 35—10.2 **9 Claims**

1. A ship navigation training simulator comprising a dynamic model representative of a full scale ship and comprising a radio controlled model ship, a control station separated from said model and representative of a portion of the bridge of the full scale ship, means on the model responsive to inputs from the control station for moving and controlling the model when the model operates in an environment representative of the environment in which the full scale ship operates, means on the model for viewing and transmitting to the control station the visual appearance of objects external thereto, and means at the control station for visual display of the transmission from the model, said viewing means on the model comprising a pivotally mounted television camera responsive to the action of an operator at the control station in scanning to either side of straight ahead relative to the model so that this view is represented at the control station, said simulator further comprising means, responsive to the swivelling movement of a chair for a student at the control station, for generating a signal which causes corresponding movement of the television camera.



3,871,114
DEVICE FOR TEACHING THE ADDITION OF FRACTIONS

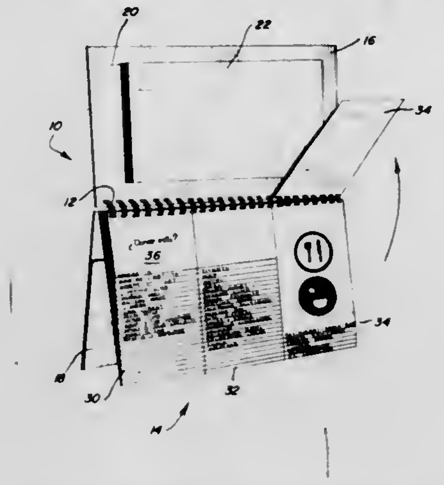
Joseph Honig, 3 Warthburg Place, Valhalla, N.Y. 10595
Filed May 17, 1974, Ser. No. 470,773
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 D **10 Claims**



1. A device for teaching addition and subtraction, respectively, comprising:
- a board having a longitudinal insert recess;
- a plurality of bars having the same width and a plurality of blocks, said blocks having a width exactly equal to integral numbers times the width of said bars;
- said bars and blocks being insertable in said insert recess and are complementary at least in part thereto in a manner such that the widths of said bars and blocks are aligned in the longitudinal direction of said insert recess; a slide rule displaceably mounted on said board longitudinally with respect to said insert recess;
- said board having at least one numerical fractional scale of fractional numbers corresponding to a division of said insert recess in said longitudinal direction of said insert recess in units of the width of said bars; and
- said slide rule being formed with indicator means cooperating with one of said fractional numbers for indicating the answer to the solution of an addition problem and subtraction problem, respectively, corresponding to the blocks and bars positioned in said insert recess.

3,871,115
LANGUAGE COMMUNICATOR

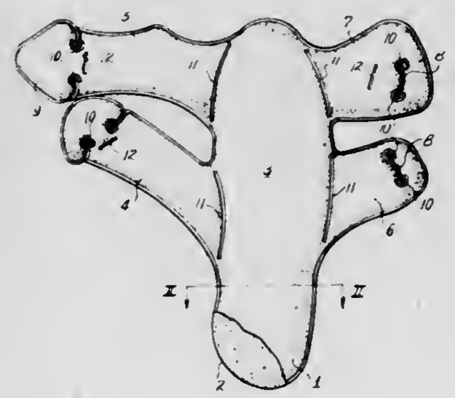
Earl J. Glass, 225 Westmoreland, Wilmette, Ill. 60091, and Gerald S. Geren, 79 E. Greenbriar Dr., Deerfield, Ill. 60015
Filed Apr. 30, 1973, Ser. No. 356,061
Int. Cl. G09b *19/08*
U.S. Cl. 35—35 E **6 Claims**



1. A foreign language communicator for permitting the user to communicate with one who understands little, if any, of the user's language, the improvement which comprises said communicator including a plurality of adjacent flip-chart means arranged in cooperative viewing relationship, each of said flip-chart means including a plurality of individual sheets, one of said flip-chart means having in written form on each of a plurality of sheets thereof, at least the predicate of a sentence in said foreign language and a second flip-chart means having on each of a plurality of sheets thereof at least one readily identifiable pictogram, for use in association and combination with said predicate so that when a sheet from said first chart and a sheet from said second chart are viewed together a basic level of communication is established and so as to provide for the selection of a plurality of combinations of said predicates and said pictograms.

3,871,116
ASEPTIC DISPOSABLE MULE OR SLIPPER

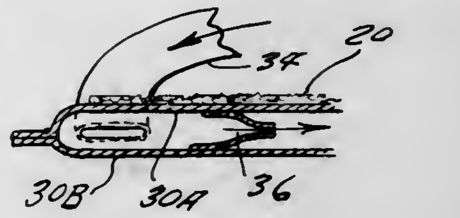
Pierre Vanderlinden, 25 Rue Vandervelde, B-7000 Mons, Belgium
Filed Mar. 5, 1974, Ser. No. 448,181
Claims priority, application Belgium, Nov. 23, 1973, 138119
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **5 Claims**



1. A mule or similar slipper made up in one piece providing a sole and a vamp formed by hooking tongues in slits provided at the end of flaps extending on either side of the said sole, these items being comprised of a celluar resilient material, wherein the cellular resilient material, the outside face of which has been smoothed, is in the form of two sheets confining a volume of air in between them because of the fact that the free edges of the item providing the sole and vamp are welded together.

3,871,117
FLUID FILLED INSOLES

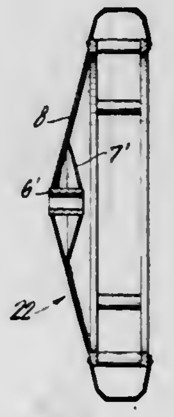
Rex E. Richmond, and George Spector, both 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Apr. 17, 1973, Ser. No. 351,867
Int. Cl. A43b *13/38*
U.S. Cl. 36—43 **5 Claims**



1. A hollow fluid filled insole with toe and heel portions formed from resilient material having spaced upper and lower surfaces peripherally sealed in combination with a duct extending externally from the insole connecting the toe and heel portions including a valve extending transversely across the interior of the insole connecting between opposing portions of the peripheral seal, said valve permitting flow only in one direction responsive to pressure in said insole generated by the user's foot.

3,871,118
EXCAVATING WHEEL CONSTRUCTION

Heinz Brech, Lubeck, Germany, assignor to Orenstein & Koppel AG, Lubeck, Germany
Filed June 14, 1973, Ser. No. 369,991
Claims priority, application Germany, June 28, 1972, 7224073
Int. Cl. E02f *3/24*
U.S. Cl. 37—189 **4 Claims**



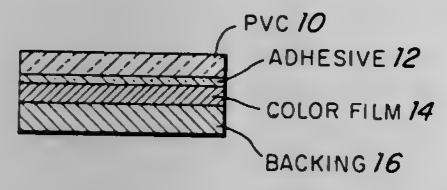
1. An excavating or earth moving device comprising a rotatable wheel having a hub portion for rotatably supporting said wheel and a plurality of circumferentially spaced material removing blades projecting outwardly from the periphery of said wheel, said wheel comprising only a single conical disc extending the complete distance between said hub portion and said blades, said conical disc being secured to said hub adjacent one end of said disc and sloping from said hub toward the opposite end of said disc, and including a short conical member extending between the opposite end of said hub and said conical disc and being secured to said conical disc.

3,871,119
LAMINATED IDENTIFICATION CARD

Simon E. Mayer, Levington, Mass., assignor to Avant Incorporated, Lincoln, Mass.
Filed Feb. 28, 1972, Ser. No. 229,699
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 **9 Claims**

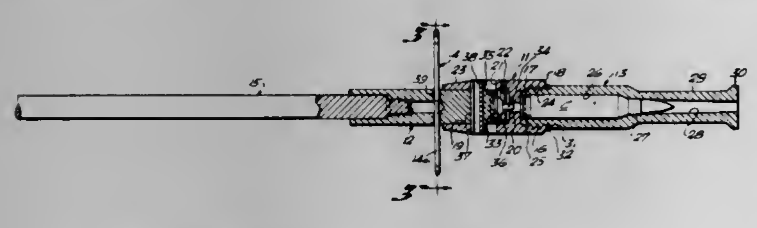
1. A permanent identification card comprising a photographic print having identifying indicia thereon and an optically-transparent, plastic sheet bonded to said photographic

print by a heat-activatable, medium molecular weight, linear, saturated polyester adhesive composition containing from about 0.2% to about 2% by weight of an organic peroxide bonding promoter, and about 2% to about 25% by weight of a copolymer formed from vinyl pyrrolidone and a comonomer substantially compatible with said polyester adhesive, said weight percent being based on the total of the polyester adhesive and vinyl pyrrolidone copolymer said polyester adhesive composition also being optically-transparent when cured.



3,871,120
GUN BARREL AND FIRING MECHANISM FOR IMPACT-ACTUATED UNDERWATER GUNS

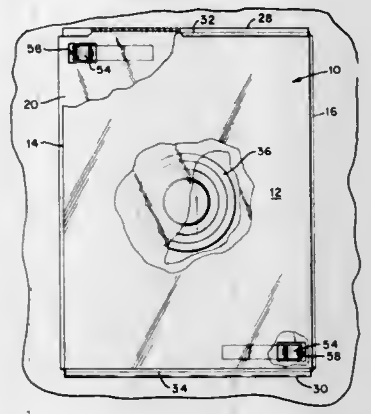
Bruce A. Mounier, 9321 S.W. 80th Ter., Miami, Fla. 33143
Filed Oct. 9, 1973, Ser. No. 404,499
Int. Cl. F41c *27/00;* **F42b** *13/54*
U.S. Cl. 42—1 L **3 Claims**



1. A gun barrel and firing mechanism for impact-actuated underwater guns comprising, in combination, a breech member, an axial bore in one end of said breech member, a cylindrical detonating plunger one end of which is slidingly received in said axial breech member bore, means constraining the relative sliding of said detonating plunger with respect to said breech member to movement between inner and outer limit positions, means resiliently constraining said detonating plunger at said outermost limit position with respect to said breech member, the inner end of said detonating plunger having an outwardly extending, reduced-diameter firing pin, the other end of said breech member providing at its other end an anvil surface for seating the firing end of a cartridge having a peripheral flange, a tubular gun barrel having a through bore, means for removably attaching one end of said barrel coaxially with respect to said other end of said breech member, a coaxial firing pin opening communicating between the inner end of said axial breech member bore and said anvil surface, said through bore opening at said one end of said barrel being such as to slidingly receive a cartridge to be fired, said firing pin being of such size as to be receivable through said firing pin opening, the length of said firing pin with respect to the length of said firing pin opening being such that upon said detonating plunger reaching its innermost limit position with respect to said breech member said firing pin will move into detonating position with respect to a cartridge seated on said anvil surface, removable safety lock means for locking said detonating plunger at said outermost limit position with respect to said breech member to prevent accidental detonating of a cartridge seated on said anvil surface, said means constraining the relative sliding of said detonating plunger with respect to said breech member to movement between said inner and outer limit positions comprising a transverse, diametrically extending through bore near said one end of said breech member and intersecting said axial breech member bore, a transverse, diametrically extending bore in said detonating plunger near the inner end thereof, and a resilient sleeve pin friction fitted in said transverse detonating plunger bore and having outer end portions extending through opposite ends of said transverse breech member bore, said breech member bore being of substantially greater diameter than that of said transverse detonating plunger bore.

3,871,121
PICTURE FRAME

Charles B. Tornell, 46 Bradbury, Rd., New Castle, Del. 19720
Filed Aug. 9, 1973, Ser. No. 386,964
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **10 Claims**

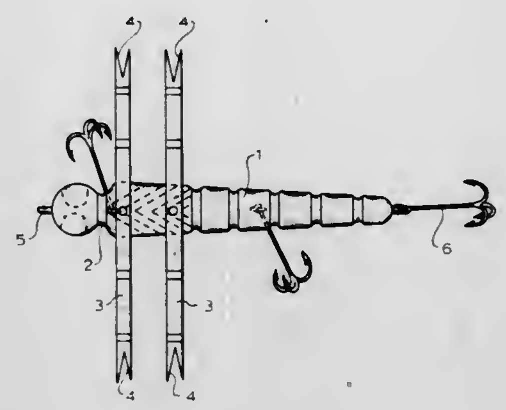


1. A picture frame or the like adapted to be hung either horizontally or vertically comprising in combination a substantially flat, transparent and rigid front member having a pair of oppositely disposed mutually parallel edges, a back member including a substantially flat portion having a front surface positioned in closely spaced parallelism with a surface of said front member thereby to hold a displayed object between said surfaces and having a pair of opposite disposed parallel edges provided with integrally formed inturned terminal flanges adapted to cooperate in slideable engagement with a pair of front member edges, said back member further including a centrally located circular ring shaped hanging means having an inwardly projecting flange, said hanging means being affixed to a rear surface of said back member and spring means fixed to said rear surface and extending through an opening provided in said back member to exert holding pressure on said displayed object and said front member surface, and a circular shaped retaining means having an outwardly directed flange for matingly cooperating with said inwardly projecting flange of said hanging support means to permit relative rotation between said hanging means and said retaining means and an aperture in said retaining means adapted to receive a means for affixing said retaining means to a vertical surface.

3,871,122
FISH LURE

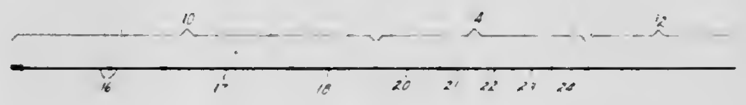
Dennis Y. Jacobs, 5536 25th St. W. Bradenton, Fla. 33507
Filed Jan. 15, 1973, Ser. No. 323,694
Int. Cl. A01k *83/06*
U.S. Cl. 43—42.27 **1 Claim**

1. A fishing lure constructed to simulate the body of a dragon fly, said body constructed of floatable material, such as wood and having a forward annular groove cut therein to simulate the head of a dragon fly, said body continuing in a straight line from its front head portion to its rear portion extending in a straight axial line thereby being free from motion creating curvatures, a pair of flat strips flexible tough rubber attached to the upper surface of the body intermediate their ends and extending laterally to each side of the body and in parallel relation to each other rearwardly of the head simulating groove, said rubber strips being free of any curvatures whereby when the lure is drawn over the surface of the water the lure will be prevented from rising from or skipping above the surface of the water, said strips spaced sufficient distance apart whereby the positions of the flat strips on either side of the body are capable of independent movement relative to each other and the body to cause unrelated movement of the portions of the strips on opposite sides of the body to create agitation in the water while the lure is being drawn through the water and simulate a dragon fly in distress, and one or more gang hooks attached axially to the body and depending therefrom and so located as to counter-balance the action of the flexible wing forming strips while the lure is either in flight or in action through the water.



3,871,123
SHOCK-ABSORBING FLY LEADER

Craig W. Olson, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 1, 1974, Ser. No. 465,735
Int. Cl. A01k *91/00*
U.S. Cl. 43—42.72 **4 Claims**

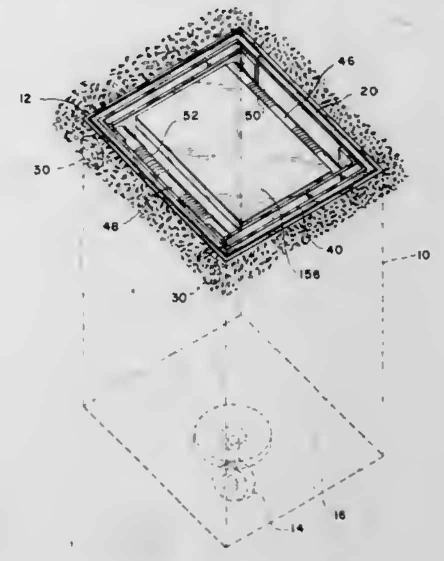


1. A fly leader for use at the end of a fishing line for fly fishing, said leader comprising:
a butt section,
a tippet section, and
an elastic shock-absorbing section between said butt and tippet sections, said elastic section having the same stiffness to diameter ratio as said butt and tippet sections, an elastic limit less than the knotted break strength of said tippet section and a length and modulus of elasticity to provide a predetermined elongation within its elastic limit,
said leader being tapered from the free end of said butt section to the free end of said tippet section.

3,871,124
ANIMAL TRAP

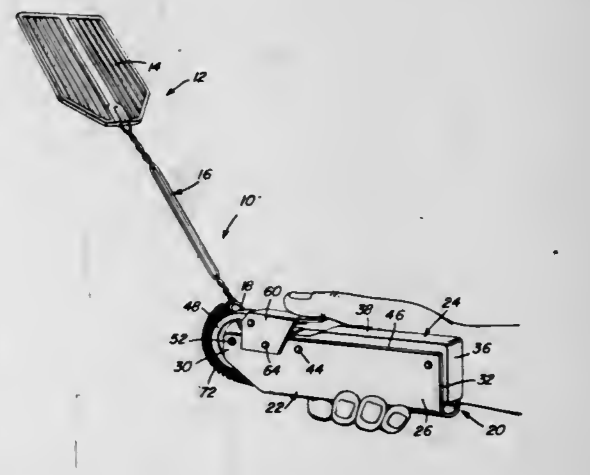
Rodney G. Cook, P.O. Box 342, Camden, Ark. 71701
Filed Sept. 7, 1973, Ser. No. 395,053
Int. Cl. A01m *23/26*
U.S. Cl. 43—88 **14 Claims**

1. An animal trap comprising:
a. housing means,
b. resiliently biased closeable jaw means mounted on said housing means for grasping a portion of an animal,
c. selectively activatable first trigger means associated with said jaw means for permitting said jaw means to close,
d. resiliently biased release means mounted in said housing means for activating said first trigger means to permit said jaw means to close,
e. pressure activated second trigger means for activating said release means to activate said first trigger means,
f. said second trigger means including a pressure operated trip element mounted for vertical rectilinear movement,
g. said second trigger means further including means for frictionally supporting said trip element in a raised position prior to the activation of said second trigger means.



3,871,125
MECHANICAL FLY SWATTER

Johnnie Wilson, and Robert F. Christensen, both of P.O. Box 846, Miles City, Mont. 59301
Filed Mar. 27, 1974, Ser. No. 455,325
Int. Cl. A01m *3/02*
U.S. Cl. 43—135 **19 Claims**



1. In combination with a swatter having a swat pad and a swatter arm extending therefrom and terminating in a pair of handle rods, a swatter operating mechanism comprising an elongated frame having a forward end portion, an anchor block enclosed by the frame in spaced relation to said forward end portion and secured to the frame, a pivot wheel rotatably mounted in said forward end portion of the frame and to which the swatter arm is connected, an actuating spring entrained about the pivot wheel having opposite ends respectively connected to the swatter arm and the anchor block, latch means engageable with the pivot wheel in a loaded position for holding the same under bias of the spring, and trigger means extending rearwardly from the forward portion of the frame in overlying relation to the anchor block for release of the latch means to permit rotation of the pivot wheel to an unload position under said bias of the spring.

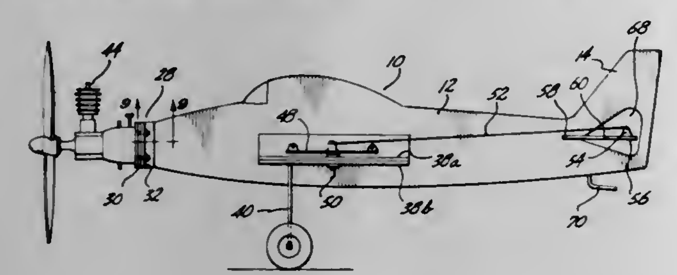
3,871,126
MODEL AIRPLANES AND METHOD OF MAKING SAME

Edward A. Miller, 17807 S.E. 7th Pl., Kent, Wash. 98031
Filed June 22, 1973, Ser. No. 372,862
Int. Cl. A63h *27/00*
U.S. Cl. 46—78 **25 Claims**

1. A powered model airplane having an engine, fuselage,

wings, landing gear, rudder, elevator and elevator controls wherein the improvement comprises:

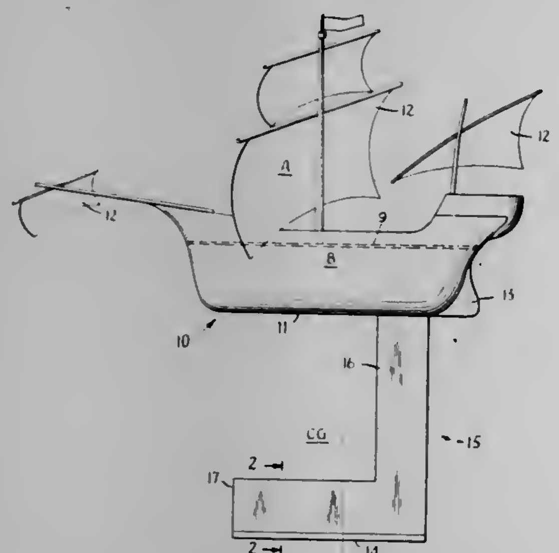
a. a wing made up of at least one layer of a corrugated material, having a corrugated core and a tightly adherent face sheet on either side,



b. an angular relationship between the engine and the wings wherein the wings are tilted backward about 0 to 2°, and
c. an essentially flat silhouette type fuselage and integral rudder made up of a double layer of corrugated material wherein the corrugations in each layer extend at an angle to each other.

3,871,127
MODEL SAILING SHIP

Desmond Heath, 1230 Park Ave., New York, N.Y. 10028
Filed Jan. 4, 1973, Ser. No. 320,986
Int. Cl. A63h *23/02*
U.S. Cl. 46—93 **4 Claims**



1. A model sailing ship comprising a hull, at least one sail and a keel, the ship having a water center of pressure and a wind center of pressure, the hull having a deck, the keel being substantially L-shaped with a downwardly extending section attached to the rear of the bottom of the hull and a horizontally extending section attached to the bottom of the downwardly extending section and extending forward toward the bow of the ship, the wind center of pressure being positioned forward of the water center of pressure and the bottom of the keel being substantially the same distance below the deck as the top of the sail is above the deck, whereby increased stability is afforded for the model ship.

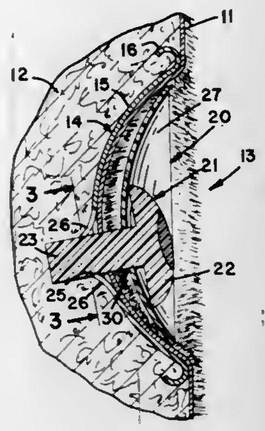
3,871,128
EYE CONSTRUCTION FOR SOFT STUFFED TOYS

George V. Grooms, Wayzata, Minn., assignor to Animal Fair, Inc., Minneapolis, Minn.
Filed Apr. 12, 1974, Ser. No. 460,305
Int. Cl. A63h *3/38*
U.S. Cl. 46—165 **7 Claims**

1. An eye structure for a stuffed figure having a fabric covering comprising:

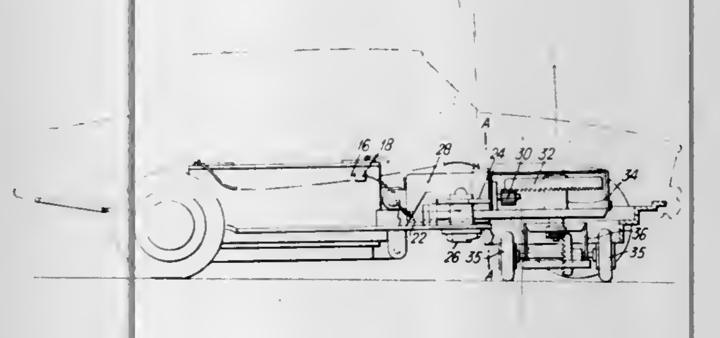
an eye simulation comprising a stud member having an enlarged head outside said covering and an inwardly extending stem passing through said covering;

and an eye socket simulation within said covering, comprising an outwardly concave cup member sized, relative to said head of said eye simulation, in the proportion of an eye socket to an eye, said socket simulation comprising an outwardly concave cup member having means in the bottom thereof for receiving and securing the stem of said eye simulation after it is passed inwardly through said covering so that said enlarged head engages the outside of said covering to draw the latter into said cup member, whereby to give the appearance of an eye naturally located in a recessed socket.



3,871,129
TOY CAR WITH AUXILIARY DRIVE WHEELS

Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong
Filed Jan. 26, 1973, Ser. No. 326,770
Claims priority, application Great Britain, Feb. 17, 1972, 07482/72
Int. Cl. A63h *17/36, 33/26*
U.S. Cl. 46—244 R **15 Claims**



1. A battery operated toy vehicle comprising:
a body;
at least three wheels freely rotatably mounted on the body;
a retractable undercarriage secured to said body and selectively movable between an operative and an inoperative position;
at least one driving wheel mounted on the undercarriage for movement therewith,
a motor mounted in the body and drivingly coupled to said at least one driving wheel;
a switch for connecting said motor to said battery; and
means moving said undercarriage to its operative position and concurrently closing said switch and to its inoperative position and concurrently opening said switch.

3,871,130
PLANT HUSBANDRY

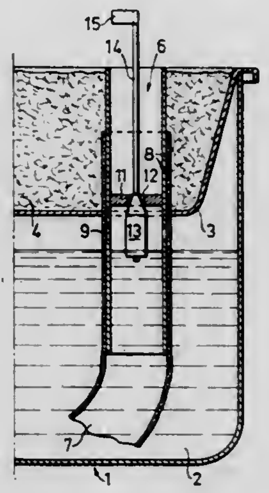
Harry F. Lavo, Stamford, Conn., and Charles J. Cante, Bayside, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Continuation of Ser. No. 298,752, Oct. 18, 1972, abandoned, which is a division of Ser. No. 134,865, April 16, 1971, Pat. No. 3,713,404. This application Dec. 14, 1973, Ser. No. 425,024
Int. Cl. A01n *17/06*
U.S. Cl. 47—9 **4 Claims**

1. In the application of plant agents to planted areas utilizing a garden hose coupled to a residential water supply providing a stream of water at a static pressure of about 15 to about 70 psig. the improvements comprising

introducing said stream of water to a foam generation zone;
educting into said stream by a venturi arrangement from a separate source a foam concentrate containing at least one foaming agent and at least one plant agent;
mechanically agitating the mixture and controlling the proportion of water and foam concentrate to maintain a dilution ranging from about 15 to about 90 parts by volume of water to each part of concentrate; and
thereafter directing the thus formed foam-providing solution against a foraminous barrier through which a current of air is simultaneously and unidirectionally forced,
whereupon the solution is spumed for application into a deformable foam.

3,871,131
SELF-WATERING PLANT POTS OR RECEPTACLES

Jan Berglund, Mullsjo, Sweden, assignor to AB Husqvarna Borstfabrik, Husqvarna, Sweden
Filed Dec. 26, 1973, Ser. No. 427,859
Claims priority, application Sweden, Jan. 4, 1973, 73001059
Int. Cl. A01g *27/00*
U.S. Cl. 47—38.1 **6 Claims**



1. In a so called self-watering plant pot or receptacle, a reservoir for a nutrient liquid, such as water, a container for soil and plants therein which is located substantially entirely above the liquid surface in the reservoir, at least one tube which extends through the soil in direct engagement therewith and has its lower end projecting down into the reservoir for the supply of liquid to the reservoir and a liquid absorbent and transporting hose or sock, which is drawn upon the outside of the liquid supply tube for transferring liquid from the reservoir to the soil in the container.

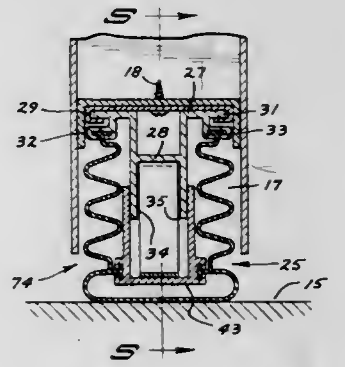
3,871,132
SEED TABLET

Edwin H. Brink, deceased, late of Joliet, Ill., (by Robert R. Brink, Administrator), assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 20, 1973, Ser. No. 389,761
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 **1 Claim**

1. A high strength seed tablet comprising one or more seeds encased in a mixture of dextrin binder with a pH value of about 3, vermiculite and water, the water content being at least about 12% by weight in the wet mixture, the ratio of vermiculite to binder being approximately 20:1, and the mixture being compressed about the said seed so that the original compressed mixture is reduced in volume by a factor of no more than 3 1/2-1.

3,871,133
DOOR BOTTOM WEATHER SEALING STRUCTURE

Chester W. Ellingson, Jr., 13909 Frontier La., Burnsville, Minn. 55337
Filed Jan. 14, 1974, Ser. No. 433,400
Int. Cl. E06b *7/20*
U.S. Cl. 49—308 **7 Claims**



1. A door bottom weather sealing structure in connection with a door, having in combination:

door mounting means,
a first channel member carried by said door mounting means,
a second channel member interfitting with said first channel member,
means operatively connecting said first and second channel members for an extension and retraction of the same relative to one another,
a flexible accordian-like gasket overlying the side walls of said channel members,
a lower portion of said gasket enclosing the bottom of said second channel member,
an upper portion of said gasket having sealing engagement with said first mentioned channel member, and
said gasket being extensible and retractable responsive to extension and retraction of said channel members relative to one another.

3,871,134
TRANSLATING GATE LATCH

George O. Lening, Rowland Heights, Calif., assignor to Master Fence Fittings Inc., La Habra, Calif.
Division of Ser. No. 156,320, June 24, 1971, Pat. No. 3,751,084. This application Mar. 16, 1973, Ser. No. 341,893
Int. Cl. E05d *13/02*
U.S. Cl. 49—425 **1 Claim**

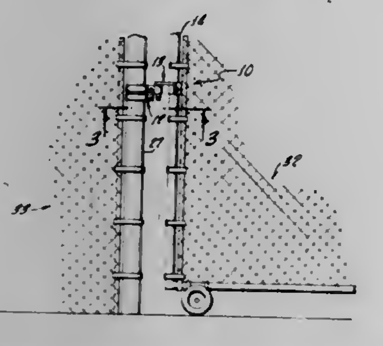
1. A fence having an opening and being erected above a horizontal surface, said fence comprising:

a. a first vertical member positioned adjacent one extremity of said opening in said fence;

b. a gate capable of blocking said opening by being translated across said opening, said gate including a second vertical member at one extremity of said gate;

c. a wheel mounted on said gate adjacent the lower end of said second vertical member, said wheel in rolling contact with said surface in said opening during said translation of said gate, said wheel being the sole support of said gate adjacent said second vertical member, said gate being susceptible to lateral misalignment from said extremity of said opening in said fence when said gate has been rolled across said surface on said wheel to a closed position; and

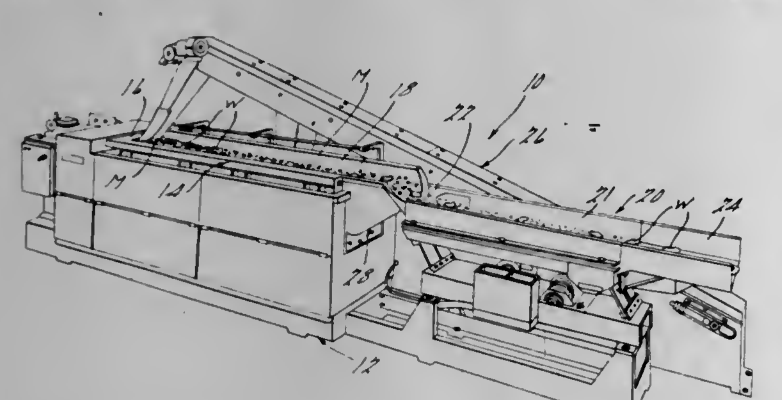
d. a latch for use in securing said translating gate in a closed position to block said opening in said fence by coupling said first vertical member at said extremity of



said opening of said fence to said second vertical member at said extremity of said gate, said latch comprising;

1. a latch pin mounted on one of said first and second vertical members;
2. a hollow receiver adapted to interconnect with said latch pin, said hollow receiver mounted on the other of said vertical members;
3. means for mounting one of said latch pin and said hollow receiver for rotation about a vertical axis and for vertical reciprocation so that said gate may be secured when said second vertical member is misaligned laterally from said first vertical member; and
4. means for stationarily mounting the other of said latch pin and said hollow receiver.

3,871,135
DISCHARGE CHUTE FOR VIBRATORY FINISHING MACHINE
Gordon H. Anderson, Albert Lea, Minn., assignor to King-Seely Thermos Co., Ann Arbor, Mich.
Filed Oct. 17, 1972, Ser. No. 298,426
Int. Cl. B24b *31/06, 31/12*
U.S. Cl. 51—163 **14 Claims**



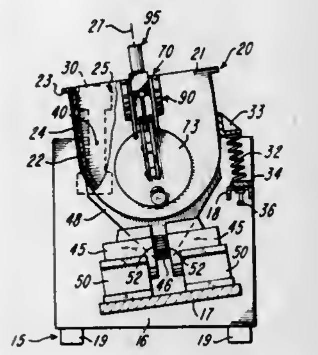
8. A discharge chute for a vibratory finishing machine including a downwardly inclined finishing chamber and vibratory means for imparting movement in a generally elliptical path transverse of the longitudinal axis of the chamber,

said chute comprising a series of longitudinally arranged step-like elements adapted to impart an upwardly directed force on workpieces and finishing media moving into engagement therewith,

each of said elements comprising a generally vertical forward portion facing toward the direction from which said workpieces and media are moving, and a substantially horizontally disposed portion extending in the direction of movement of said workpieces and media from the forward portion of the associated element to the forward portion of the next adjacent element,

said substantially horizontally disposed portion extending slightly downwardly from the forward portion of the associated element toward the next adjacent downstream element.

3,871,136
VIBRATORY APPARATUS WITH IMPROVED MOTOR ACTUATED DOOR MECHANISM FOR CLOSING THE DISCHARGE OUTLET
Max Isaacson, Dayton, Ohio, assignor to Vibrodyne, Inc., Dayton, Ohio
Filed Mar. 14, 1974, Ser. No. 450,975
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 **11 Claims**



1. In vibratory apparatus including a frame, a container defining a chamber adapted to receive a load of media and parts to be vibrated, means mounted on said frame and supporting said container for vibration, power operated means for vibrating said container with sufficient force to effect generally orbital movement of the load within said chamber, and said container having a wall defining an outlet to provide for the discharge of treated parts from said chamber, an improved door system for said outlet, comprising a door member, means supporting said door member for movement between a closed position forming a closure for said outlet and an open position spaced from said outlet, a reversible electric motor drive unit having a rotary output shaft, means for moving said door member between said open and closed positions in response to rotation of said shaft and for holding said door member in said closed position in response to energization of said motor in a stalled condition.

3,871,137
SAFETY HOLDER FOR ELECTRICALLY POWERED HAND GRINDERS
Stephen A. Grammatico, 112 Fairfield St., New Haven, Conn. 06515
Filed July 8, 1974, Ser. No. 486,699
Int. Cl. B24b *41/00*
U.S. Cl. 51—166 R **5 Claims**

1. A safety holder device intended for use with electrically powered hand held grinders for holding the grinders in a fixed stationary position, the holder comprising:

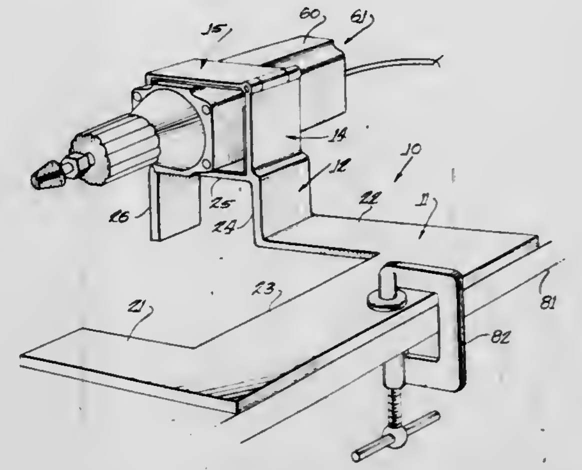
a C-shaped base member formed of flat stock material;

an inverted U-shaped member joined with one leg of the C-shaped base and extending outwardly therefrom;

a U-shaped bracket joined at its base with the bight portion of the inverted U-shaped portion and having side walls projecting normal to the plane of the C-shaped base;

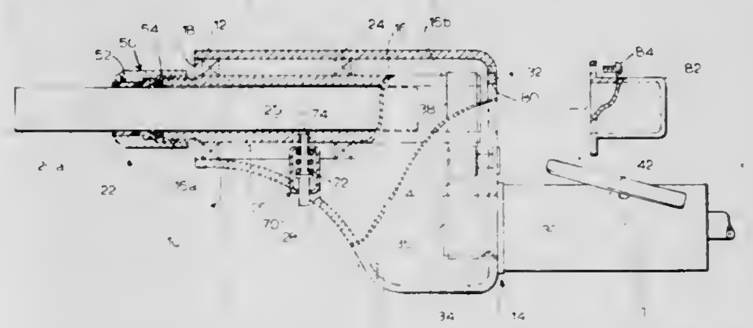
an L-shaped locking plate including an integrally formed leg portion and arm portion, the leg portion being of a length to overlie the terminal ends of the bracket side walls, the arm portion being of a length to overlie a portion of the exterior surface of one of the side walls;

hinge means connecting the terminal end of the leg portion of the L-shaped locking plate to a terminal edge of one of the bracket side walls providing pivotal movement of the locking plate in the plane of the bracket between a position spaced from the opposite side wall and a position engaging the opposite side wall; and



means for detachably securing the locking plate to the opposite side wall when the leg portion bridges the distance between the side walls and when the arm portion overlies one of the side walls.

3,871,138
DIE GRINDER
Walter N. Welsch, Tonawanda, N.Y., assignor to Dynabrade Inc., Tonawanda, N.Y.
Filed Aug. 27, 1973, Ser. No. 391,686
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 PT **11 Claims**



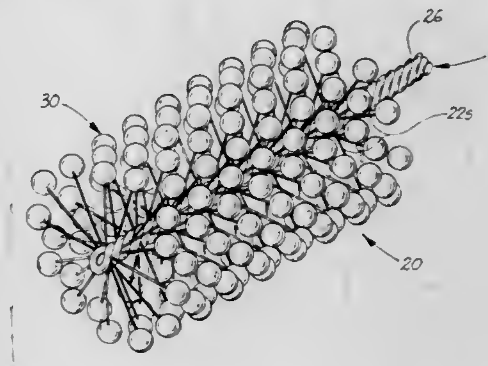
1. In a grinding tool adapted for use with an elongated relatively uniform diameter grinding element having an end adapted to be progressively worn away be engagement with a workpiece during operation of said grinding tool, the combination comprising:

a rotatably supported drive tube, said drive tube being dimensioned to freely accommodate said grinding element therewithin to removably extend through a front end thereof;

means for rotating said drive tube; and

locking means carried by said front end for releasably clamping said grinding element intermediate opposite ends thereof for rotation with said drive tube, whereby said end of said grinding element normally projects forwardly of said front end beyond said locking means during operation of said tool, said locking means including a deformable member formed or a resiliently deformable material and clamping means carried on said front end for resiliently deforming said deformable member into clamping surface engagement with said grinding element whereby to releasably clamp said grinding element for rotation with said drive tube, said clamping means including a cup shaped clamping member having an opening through a base portion thereof and sleeve means slidably receiving said grinding element and being arranged within said clamping member to extend forwardly through said opening, said clamping member having a rim portion threadably attached to said front end of said drive tube for releasably maintaining said sleeve means in deforming engagement with said deformable member, and said sleeve means being formed at least in part of a relatively hard abrasive-resistant plastic material thereby to cushion transversely directed vibratory movements of said end of said grinding element relative to said base portion of said clamping member forwardly of the point at which said grinding element is clampingly engaged by said deformable member.

3,871,139
MULTIPLE-COMPLIANT-BRISTLE, SELF-CENTERING SELF-SIZING ROTARY ABRASIVE HONE
Steve A. Rands, 4353 E. Floral Dr., Los Angeles, Calif. 90022
Filed May 10, 1974, Ser. No. 468,940
Int. Cl. B24d *13/10*
U.S. Cl. 51—334 **14 Claims**



1. A multiple-compliant-bristle, self-centering rotary abrasive brush means having enlarged, abrasively coated, outer bristle tip ends of multi-phase material, comprising: a plurality of outwardly directed, flexible, plastic inwardly effectively compressible, elastically bendable bristles mounted in a substantially radially and cylindrically arranged array thereof and provided with and carried by a bristle-mounting base means, each of said bristles being formed of flexible, resiliently elastically bendable, compliant non-metallic plastic material having corresponding exteriorly completely uncoated, flexible, compliant shaft portions made of said plastic material and having a free outer end of said plastic material positioned with respect to the corresponding outer ends of the other bristles in a substantially cylindrically oriented array thereof and there being provided with and being coated with outer coating means effectively defining an enlarged abrasive globule carried thereby and effectively forming an outer terminus of composite multi-phase material comprising the bristle tip end and said enlarged abrasive globule, said enlarged abrasive globule comprising a particulate abrasive material and a wear-attritionable, hardenable and curable plastic resin bonding material for effectively bonding the particulate abrasive material into a globule-like assembled formation of a non-flaking, wear-attritionable nature, the outer tip end of each of said bristles carrying a corresponding one of said enlarged abrasive globules being effectively provided on its plastic outer surface and inwardly of said wear-attritionable plastic resin bonding material in an effectively intervening position therebetween with a junction-facilitating, effective bonding surface means having a great junction affinity for the exterior surface of said outer tip end of each such bristle and having a great junction affinity for the inner surface of said wear-attritionable bonding material and thereby functioning as an effective intervening joining bridge means between the surface of the outer tip end of each such bristle and the inner surface of the corresponding wear-attritionable bonding material and of greater junction strength than either of the plastic materials effectively joined together in a bridging manner by said junction-facilitating, effective bonding surface means whereby to positively prevent flaking away of pieces of substantial size of the abrasive globule during hard honing, abrading usage thereof against a workpiece surface, comprising an inner surface of substantially

cylindrical configuration, which is harder than said wear-attritionable bonding material and softer than said particulate abrasive material; said effective bonding surface means comprising a junction-adhesive material having strongly adhesive junction characteristics insofar as the outer bristle tip ends formed of said flexible resilient plastic material are concerned and having strongly adhesive junction characteristics insofar as said wear-attritionable plastic resin bonding material is concerned; each of said enlarged abrasive globules being carried by the radially, substantially cylindrically arranged array of bristles so as to position the plurality of abrasive globules in an annularly cylindrically arranged array thereof with each inner portion of each bristle inwardly of the outer abrasive globule means comprising a major portion of the length of said bristle being substantially entirely free of said outer coating means comprising said abrasive material and said bonding material and also being substantially entirely free of said junction-facilitating, effective bonding surface means whereby to have substantially unaltered, free flexibility and compliance characteristics forming an inwardly deflectable and, thus, effectively self-sizing and self-centering, multiple-compliant-bristle rotary abrasive flexible hone for effectively honing a substantially cylindrical workpiece surface.

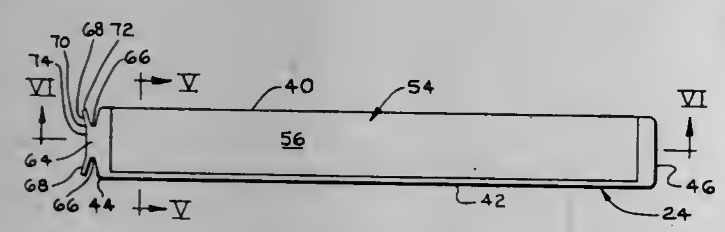
3,871,140
PLASTIC HONE STONE RETAINER

Carl H. Kramm, Pinckney, and Roger E. Lee, Brighton, both of Mich., assignors to RLK Research Inc., Brighton, Mich.

Filed May 16, 1973, Ser. No. 360,620

Int. Cl. B24b *33/08*

U.S. Cl. 51—338 **10 Claims**



1. A hone stone and head assembly comprising, in combination, an elongated homing honing having a longitudinal axis defining an axis of head rotation during honing, a hollow center, an annular wall and an exterior surface, at least one radially extending elongated rectangular opening defined in said head annular wall intersecting said hollow center and said exterior surface, said opening including first and second radially extending end faces transversely disposed to the length of said opening, an abrasive stone assembly of elongated configuration mounted within said opening for radial displacement therein, said stone assembly including a synthetic plastic body having a bottom inner surface, first and second lateral sides, a top outer surface and first and second ends, a cavity defined in said body intersecting said top outer surface, an abrasive stone firmly mounted within said cavity, an elongated deflectible spring element defined on said body first end resiliently engaging said head opening first end face and deflected toward said stone in the direction of the length of said stone assembly thereby producing a biasing force on said stone assembly generally parallel to the length of said assembly, said deflectible spring element comprising an elongated cantilevered lip having an elongated free outer edge and an elongated fixed edge attached to said body first end, said lip edges extending in a longitudinal direction substantially radially disposed with respect to said head axis and substantially parallel to the direction of stone assembly movement through said opening, said spring element producing frictional engagement between said element and said first end face and said body second end and said second end face slidably retaining said stone assembly within said head opening, and stone assembly actuating means within said head hollow center engaging said assembly bottom inner surface for radially moving said stone assembly outwardly through said opening.

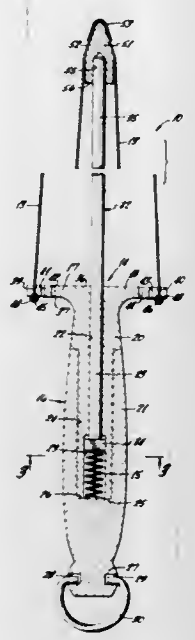
3,871,141
KNIFE SHARPENER AND EDGE STRAIGHTENER

Mario J. Bonapace, 4329 Miriam Pl., La Mesa, Calif. 92041

Filed May 14, 1973, Ser. No. 360,330

Int. Cl. B24d *17/00, 15/00*

U.S. Cl. 51—358 **8 Claims**



1. A knife sharpener and edge straightener comprising:
a partially hollow handle having a pair of ears extending laterally from opposite sides thereof;
an elongate rod, one end of said rod extending into said handle and being movable relative thereto;
means for applying an axial force to said one end of said rod;
an elongate flexible band having a fine grain abrasive surface on one side thereof, the opposite ends of said band being connectable to said ears on said handle; and
guide means connected to the other end of said rod for conducting the center of said band around said other end of said rod, with said one side facing outward, thereby compressing said force applying means and placing said band under tension, said force applying means permitting axial movement of said other end of said rod toward said handle in the presence of additional tension applied to said band.

3,871,142
DEVICE FOR HOLDING DOWN MOBILE HOMES

Donald W. Abbott, Des Moines, Iowa, assignor to Windtie Corporation, Des Moines, Iowa

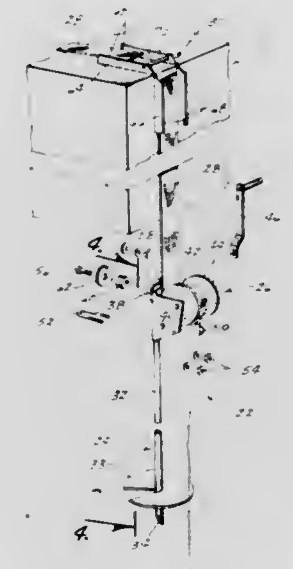
Filed June 18, 1973, Ser. No. 371,263

Int. Cl. E04h *9/14*

U.S. Cl. 52—23 **2 Claims**

1. A hold-down device for anchoring a mobile home to the ground, said mobile homes having a top, opposite walls extending downwardly from the lateral edges of said top, and opposite ends, said hold-down device comprising:
a single elongated flexible strap extending over said top of said mobile home and having opposite ends extending vertically downwardly along said sidewalls of said mobile home,
said strap being of polyester material,
corner brackets being mounted at the corners of said mobile home where said sidewalls meet the edges of said top wall,
each of said corner brackets being L-shaped and having a horizontal leg positioned on said top of said mobile home and a vertical leg forming a corner juncture with said horizontal leg and extending downwardly therefrom in engagement with one of said walls of said mobile home,

each of said horizontal and vertical legs of said brackets having lateral flanges,
each of said brackets having a roller extending between the flanges of said horizontal leg and being positioned adjacent said corner juncture,
said strap being slidably received between the flanges of said horizontal and vertical legs of said brackets and extending over said roller whereby said flanges maintain said strap in alignment over said bracket and said roller so that said strap is prevented from engaging the corners of said mobile home and so that tension in said strap may be easily transferred to the opposite ends thereof,



a pair of anchor elements anchored in the ground adjacent said opposite ends of said straps, said anchor elements comprising an elongated rod having helical blade means on the lower end thereof, said blade means being buried in the ground,
strap gripping means mounted on the upper end of each of said rods for securing said opposite ends of said straps to said rods,
at least one of said gripping means comprising a winch, said strap being wound around said winch, said winch having a handle for turning said winch to adjust the tension in said strap.

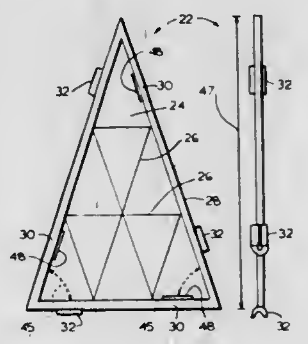
3,871,143
BUILDING ELEMENT FOR BEACH AND PLAY STRUCTURES

Elwyn B. Quick, Sudbury, Mass., assignor to Walter J. Kreske, Newton, Mass., a part interest

Filed June 27, 1973, Ser. No. 374,042

Int. Cl. E04c *1/10, 1/30*

U.S. Cl. 52—309 **12 Claims**



1. A building element for beach and play structures comprising in combination, a membrane having three sides and corners in the form of an isosceles triangle, a rod-like stiffener fixed to and completely circumscribing said sides and corners to form a rigid frame about said membrane and with said membrane a rigid unitary panel, said rod-like stiffener having on each of said sides two spaced apart configurations for spring clip type fastening and adjusting over a wide angular range to corresponding configurations on a rod-like stiffener of a like adjacent building element and thereby make possible rapid assembly and dissassembly of like building elements and a wide variety of said structures.

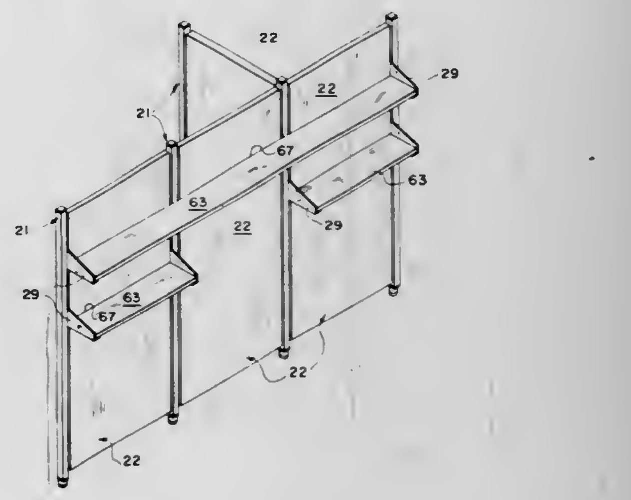
3,871,144
MODULAR ENVIRONMENT STRUCTURING APPARATUS

Melvin Rudin, Los Altos, Calif., assignor to Form/Space Corporation, San Francisco, Calif.

Filed Sept. 28, 1973, Ser. No. 401,862

Int. Cl. E04b *2/82*

U.S. Cl. 52—36 **6 Claims**



1. In a modular environment structuring apparatus including a tubular metallic post, panel means and connector means formed to secure said post to said panel means, the improvement comprising:
a. a plurality of rigid, high strength, metallic keyways formed in said post;
b. a plurality of rigid, high strength, metallic connector portions extending outwardly from a common metallic strip forming said connector means, said metallic strip being carried by said panel means;
c. said connector portions and said keyways being positioned in aligned and registered relation and formed for relative movement into and out of interengagement and being cooperatively formed to secure said connector portions in said keyways against removal therefrom under normal loading forces; and
d. said connector portions being further provided with spacer and load bearing means formed to engage said post means and said panel means and to hold the same in spaced apart relation adjacent said connector portions, said spacer and load bearing means being further formed for support of loading forces applied by a bracket inserted between said post means and said panel means adjacent said connector portion and for transfer of said loading forces to said high strength metallic keyways and the remainder of said connector means.

3,871,145
FLASHING FOR PITCH POCKET

James W. Hatmaker, 6400 Little River Tnpk., Alexandria, Va. 22313

Filed Apr. 5, 1973, Ser. No. 348,125

Int. Cl. E04d *1/36*

U.S. Cl. 52—60 **5 Claims**

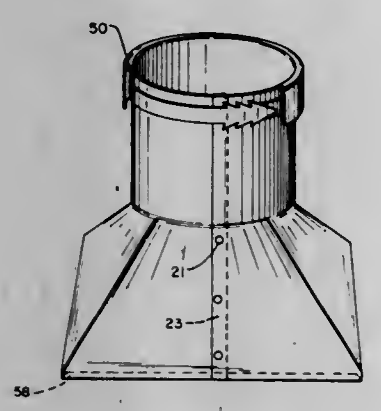
1. A flashing unit for a pitch box comprising:
a sheet of shapable material having a collar portion adapted to be fitted so as to encircle structure support legs of varying circumferences which project upwardly from said pitch box,

ported by said beams; and baffle means mounted between said

said collar portion including an integral, circumferentially extending exterior pocket having a substantially inverted U-shaped cross-sectional configuration,

an elongate fastening element encircling said collar portion and having one end thereof secure to said collar portion at a position whereby said element is housed under and within said U-shaped pocket and including means disposed upon the other end thereof for cooperating with said pocket for adjusting the effective circumferential extent of said fastening element and said collar portion whereby said collar portion may be tightly secured about one of said support legs, and

a flaring section attached to said collar portion and being adapted to engage the sides of said pitch box and including a lower portion which is adapted to be bent so as to fixedly secure said flaring section upon an upper rim portion of the pitch box.



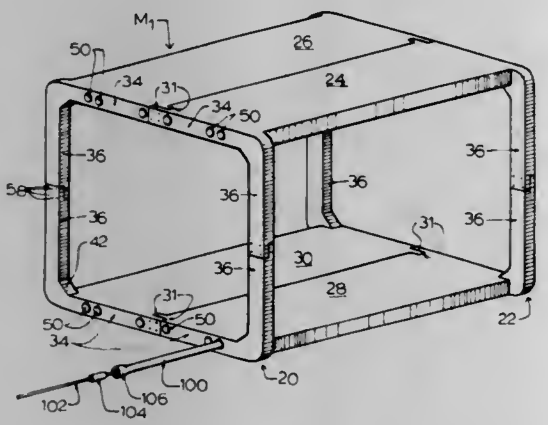
3,871,146
CONSTANT MODULE SYSTEM

Norbert Hamy, Beaconsfield, Quebec, Canada, assignor to Trebron Holdings Ltd., Regina, Saskatchewan, Canada

Continuation of Ser. No. 276,163, July 28, 1972, which is a continuation-in-part of Ser. No. 44,012, June 8, 1970, abandoned. This application Mar. 13, 1974, Ser. No. 450,745

Int. Cl. E04b *1/348;* **E04f** *17/08*

U.S. Cl. 52—79 **16 Claims**



1. A hollow generally rectangular modular construction unit constructed with a plurality of generally similar end frames which are joined together to form the generally rectangular modular construction unit, said modular construction unit comprising:

- a. a first pair of opposed spaced-apart generally parallel end frame segments,
- b. a second pair of opposed spaced-apart generally parallel end frame segments,
- c. each of the end frame segments in said first pair of segments being substantially identical in construction to the end frame segments in said second pair of end frame segments,
- d. each of said end frame segments comprising;
  - 1. a first limb,
    - a. said first limb having a pair of spaced-apart plates,
    - b. extension means connecting said plates together in said spaced-apart relationship,
    - c. means forming an elongated slot at one end of said first limb between said plate,
    - d. one of said spaced-apart plates having an outwardly presented first connecting end wall,
    - e. the other of said second-apart plates having an outwardly presented second end wall,
  - 2. a second limb at a mutually angled relationship with respect to said first limb,
    - a. said second limb having a plurality of angularly located side walls forming a hollow tubular member,
    - b. projection means extending outwardly from the plane of one of said side walls and being sized for snug fitting disposition within the slot in said first limb,
- e. said first pair of said end frame segments being capable of being joined together to form a first end frame,
- f. first connecting means for connecting the first pair of end frame segments together to form the first end frame,
- g. said second pair of end frame segments being capable of being joined together to form a second end frame,
- h. second connecting means for connecting the second pair of end frame segments together to form the second end frame,
- i. said first and second end frames capable of being joined together to form a generally rectangular modular unit,
- j. third connecting means for connecting the first end frame to the second end frame to thereby form said generally rectangular modular unit,
- k. a first generally rectangular base member for use with said first end frame,
- l. a second generally rectangular base member for use with said second end frame,
- m. each of said base members being substantially identical in construction and
  - 1. each said base member having first and second pairs opposed and generally side margins,
  - 2. each said base member also having a first generally planar major surface,
  - 3. each said base member further having a second generally planar major surface opposed to said first major surface,
- n. first securement means for connecting each of the first pair of side margins of the first base member to the respective connecting end walls of the first pair of end frame segments in the first end frame,
- o. second securement means for connecting each of the first pair of margins of the second base member to the respective connecting end walls of the second pair of end frame segments in the second end frame,
- p. the connecting walls of the end frame segments in each said pair of end frames being located in abutting engagement with each of the respective first pair of side margins of the associated base members,
- q. the end frame segments in each of said pair of end frames extending outwardly and in generally perpendicular relationship to the opposed planar major surfaces of the associated base members,
- r. said first and second base members each having one of their margins in the second pair of parallel side margins in juxtaposed abutting engagement when the first and second end frames are connected together, and
- s. the first generally planar surface of each of said first and second base members are coplanar and generally coextensive when the first and second end frames are connected together.

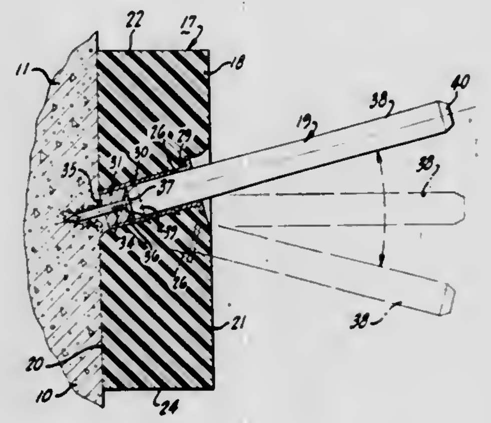
3,871,147
REUSABLE LEDGER BOARD WITH A NAIL-LOOSENING MEANS

William J. Stegmeier, 1021 C Shary Cir., Concord, Calif. 94520

Filed Jan. 29, 1973, Ser. No. 327,671

Int. Cl. E04g *19/00, 21/00*

U.S. Cl. 52—127 **10 Claims**



1. A reusable ledger board adapted to be removably secured to a concrete wall and the like, comprising: an elongated block of elastomeric material having an upper surface defining a planar reference surface, and transversely spaced inner and outer surfaces the first of which is adapted to be disposed in contiguous juxtaposition with such wall; said block having a plurality of longitudinally spaced and transversely oriented openings therein extending essentially between said faces; and fastener mechanism including guide structure mounted within each of said openings having an axially extending guide passage open at its outer end adjacent the outer surface of said block adapted to slidably receive an anvil therein and an aperture adjacent its inner end to pass the shank of a nail therethrough as it is driven into such wall by impact force transmitted through an anvil received within said passage, said guide structure being laterally rockable against the resilience of said block to loosen such nail from the concrete wall and thereby release said ledger board therefrom.

3,871,148
GRAIN HOPPER STRUCTURE

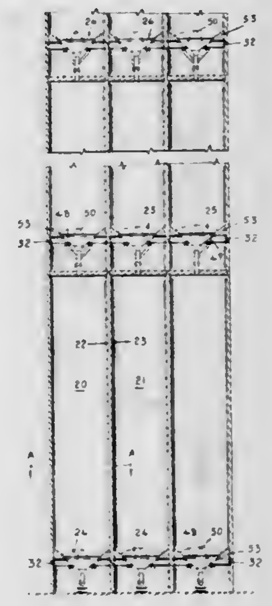
Robert George Watson, 95 Glengowan Rd., Toronto, Ontario, Canada

Filed Jan. 30, 1974, Ser. No. 437,856

Int. Cl. E04h *7/22*

U.S. Cl. 52—197 **7 Claims**

1. A rigid bin structure for use in storing grain and the like which comprises: a base; a substantially continuous load-bearing wall extending upward from said base to define a hollow cylinder; a first series of spaced apart horizontal beams extending transversely in parallel across said cylinder and secured in opposed portions of said cylinder wall; a second series of spaced apart horizontal beams extending horizontally and normally to said first series of beams and secured to adjacent outer ones thereof; a ring beam extending around the inner periphery of said cylinder to circumferentially secure said first and second beams, hopper means dependingly supported by said beams; and baffle means mounted between said individual hoppers to guide the flow of said grain thereto; said beams, baffle and hopper means being in substantially zero hoop-tension relationship with said wall.



3,871,149
STIFFENING MEANS FOR STRUCTURAL ELEMENTS

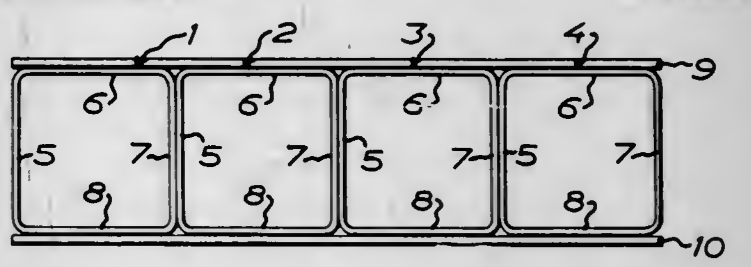
Hans Christer Georgii, Stockholm, Sweden, assignor to Gorghild Georgii, Geneva, Switzerland

Filed Oct. 3, 1973, Ser. No. 402,963

Claims priority, application Sweden, Oct. 4, 1972, 12777/72

Int. Cl. E04c *3/08, 5/06*

U.S. Cl. 52—404 **14 Claims**



1. Stiffening means for structural elements, said means being formed by helically wound wires, wherein the wires are wound in several different paths with several wires in each path, each path following the contour of a section having straight sides and the wire portions in said sides constituting straight braces, and wherein the sections having the straight sides are arranged in such an adjacent relationship that adjoining sides will engage each other, the straight wires in adjoining sides being interconnected at coincident points.

3,871,150
REMODELING CEILING CLIP

Jay P. Murray, Columbia, and Kenneth L. Wasson, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

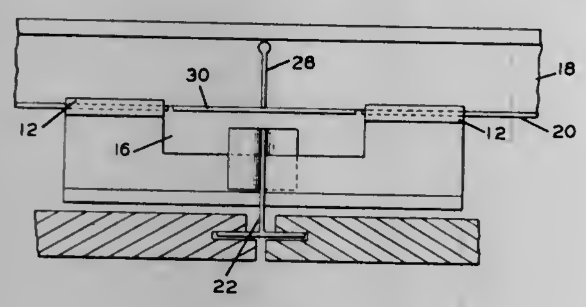
Division of Ser. No. 317,668, Dec. 22, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,000

Int. Cl. E04b *5/55*

U.S. Cl. 52—498 **2 Claims**

1. A clip structure adapted to be fastened to an existing ceiling suspension system comprising a vertical web structure and a lower horizontal flange structure, on the end of the web structure which is spaced from the flange structure there being positioned means for engaging a flange of an existing ceiling suspension system to hold the clip structure relative to the flange of the existing ceiling suspension system, a new ceiling suspension member being then fastened to the lower horizon-

tal flange of the clip structure whereby a horizontal flange of the new ceiling suspension member may serve as a resting point for the boards of a new suspended ceiling system which is disposed directly underneath of the existing ceiling suspension system.



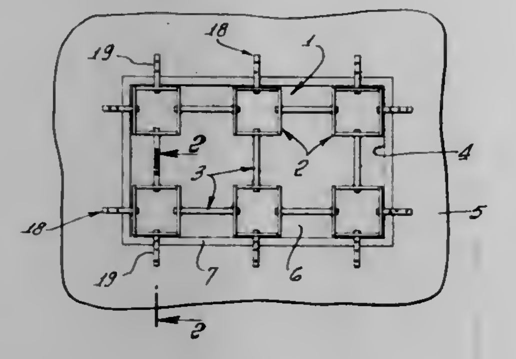
3,871,151
WINDOW OPENING PROTECTIVE GRILL

Estephan Der Estephanian, 2452 Boulder Rd., Altadena, Calif. 91001

Continuation of Ser. No. 181,843, Sept. 20, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 396,900

Int. Cl. E04c *2/40*

U.S. Cl. 52—507 **7 Claims**



1. In combination:

A building wall having a window opening; and protective grillwork structure comprising a vertically and horizontally extended alternating succession of generally rectangular open frame modules having opposed relatively small apertures in opposite side walls and generally straight elongated, rigid frame link modules interconnected therewith, said frame link modules having opposed terminal portions each comprising a laterally projecting shoulder inserted endwise into said frame apertures when said modules are in a relatively angularly disposed planes and engaged therewith, and stop means inwardly of said shoulder limiting shoulder insertion into said apertures, said shoulder and stop means being arranged relatively engaged with the frame side wall on opposite sides thereof in self-locking interengagement against movement in any direction when said frame modules and frame link module are in a common plane, said grillwork structure being dimensioned to overlie the window opening, and wall connection means securing the grillwork structure at said frame module aperture to the building wall at the window opening perimeter.

3,871,152
SPRING FASTENER

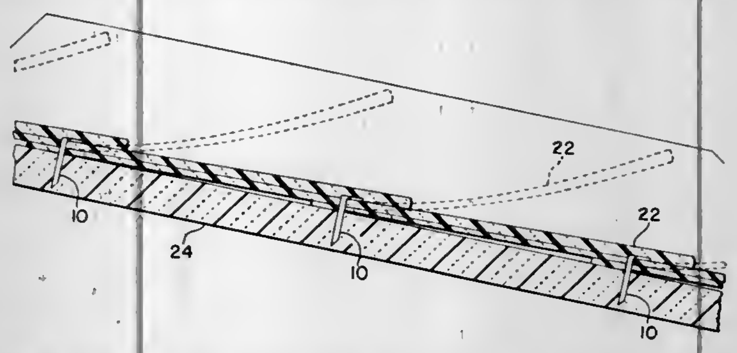
Richard Jay Lindeman, Elmwood Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 29, 1971, Ser. No. 193,763

Int. Cl. F16b *15/00*

U.S. Cl. 52—543 **6 Claims**

1. A staple fastener in combination with flexible shingle and a gypsum-like support surface including a head portion on the staple which includes a generally U-shaped cantilever-type spring means and a pair of legs having penetrating points connected thereto, the cantilever spring means engaging and holding one end of the resilient shingle in such a manner as to allow the free end to flex, the cantilever spring means thereby resiliently absorbing forces tending to pull out the staple as well as forces tending to rip the shingle from under the staple, the leg portions being of a relatively thin planar cross-sectional configuration to facilitate entry in the gypsum-like support surface without deteriorating the structure of the gypsum-like support surface.



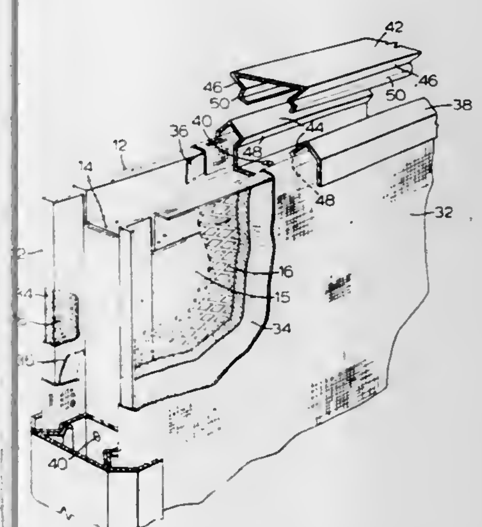
3,871,153
PARTITION DEVICE

Herbert L. Birum, Jr., Pleasant Valley, Titusville, N.J. 08650

Division of Ser. No. 188,290, Oct. 12, 1971, Pat. No. 3,768,222. This application June 18, 1973, Ser. No. 371,145

Int. Cl. A47g *5/00*

U.S. Cl. 52—624 **5 Claims**



1. A privacy screen comprising a screen panel having a perimeter edge surface between opposed facia surfaces; perimeter moulding extending longitudinally of said edge surface and having rigid side walls in face-to-face relation; said side walls each having a longitudinally extending seat and a locking shoulder underlying said seat, a decorative moulding between said side walls of said perimeter moulding for at least a portion of the extent of said perimeter moulding, said decorative moulding having downwardly depending sides, said downwardly depending sides each having a longitudinally extending seating surface in one of said seats of said perimeter moulding and a locking flange extending from said seating surface in juxtaposed relation to one of said locking shoulders of said perimeter moulding; said dependent sides being flexible laterally of each other whereby said decorative moulding can be projected between said side walls of said perimeter moulding, said screen panel comprising perimeter frame members having a channel cross-section with an outwardly directed flange at each side, a panel board contained by said outwardly directed flanges, a facia fabric extending over said panel board, the marginal portions of said facia fabric extending over said outwardly directed flanges and on to said perimeter frame members, said perimeter moulding being mounted in said channel.

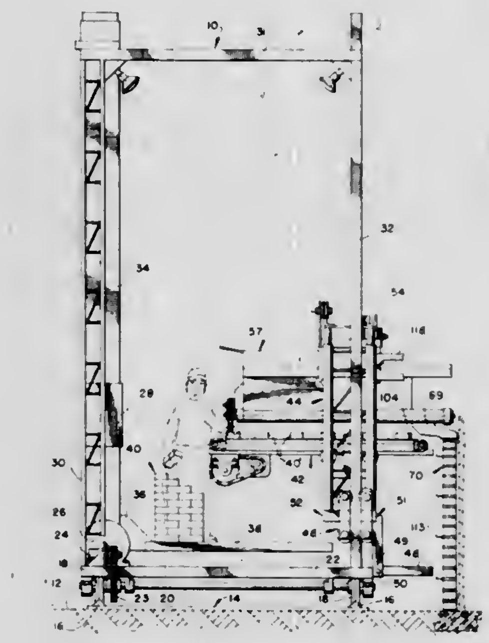
3,871,154
AUTOMATIC SCAFFOLDING FOR LAYING BRICK

Hilary H. Iglehart, and Richard C. Lassiter, both of Odessa, Tex., assignors to Trojan Automatic Scaffold, Inc., Odessa, Tex.

Filed June 26, 1973, Ser. No. 373,645

Int. Cl. E04g *21/00*

U.S. Cl. 52—749 **9 Claims**



1. Automatic scaffolding for laying brick comprising a ground supported main framework having spaced vertical support mans; means by which said scaffolding can be moved longitudinally of a wall being built of the brick; elevator means supported for vertical movement within said main framework for transporting brick placed thereon; means for moving said elevator means in a vertical direction;

carrier means slidably affixed to said vertical support means and supported for vertical movement thereon;

a longitudinally extending support beam attached to said carrier means; means releasably affixing said carrier means to said vertical support means in captured relationship therewith; means by which said elevator means can move independently of said carrier means and to a position above and to a position below said carrier means; means by which said carrier means can be selectively engaged and moved by said elevator means;

a work platform located externally of said main framework; spaced arms affixed to said longitudinally extending support beam and to said work platform for supporting said platform from said carrier means;

so that said work platform can be vertically adjusted by engaging said carrier means with said elevator means, releasing said carrier means from said vertical support means, moving said elevator which moves said carrier means which moves said platform, and thereafter affixing said carrier means to said vertical support means and disengaging said carrier means from said elevator means.

3,871,155
APPARATUS AND METHOD FOR WRAPPING CONFECTIONERY ARTICLES

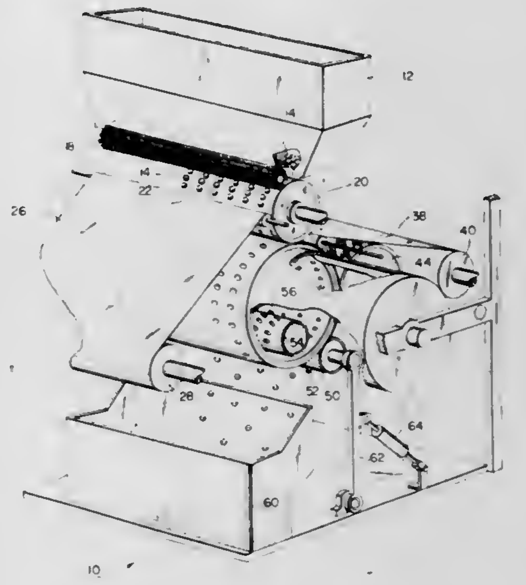
Alfred Blaser, Hergiswil, Switzerland, assignor to W. R. Grace & Co., New York, N.Y.

Filed July 11, 1973, Ser. No. 378,300

Int. Cl. B65b *9/02*

U.S. Cl. 53—28 **7 Claims**

1. A method for wrapping articles of confectionery, said method comprising supplying articles of confectionery to a cylindrical article segregator from a supply, directing a continuous first sheet of heat sealable wrapping material over one side of the segregated articles while on said cylindrical segregator, passing said articles from the segregator while in continued contact with the first sheet to a receptacle drum having confectionery article receiving receptacles disposed therein, said first sheet being layered onto the receptacle drum, passing a second sheet of heat sealable wrapping material over the opposite side of the confectionery articles to that of said first sheet, heat sealing the wrapping sheets about the article along a periphery thereof, subsequently severing the encased articles from the wrapping sheets and thereafter remaining wrapped articles from the receptacle drum.



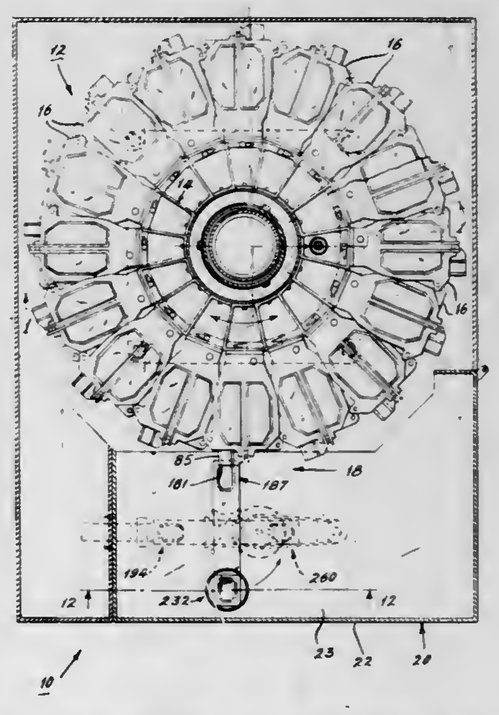
3,871,156
PELLETIZED MEDICAMENT DISPENSING SYSTEM

Elmer A. Koenig, Kirkwood, Mo.; Robert M. Conklin, Chappaqua, N.Y.; Walter L. Bessinger, Grand Haven, Mich., and Jack A. Russell, Libertyville, Ill., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Apr. 3, 1974, Ser. No. 457,676

Int. Cl. B65b *57/20*

U.S. Cl. 53—59 R **14 Claims**

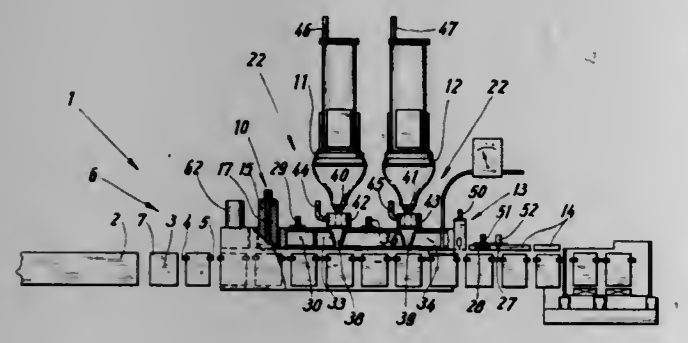


1. A dispensing system for dispensing a predetermined number of designated medicament pellets comprising a plurality of movable medicament pellet storage units each adapted to contain different types of medicament pellets, means for moving said storage units to position a selected one of said units containing said designated pellets at a packaging station, each of said units including a bowl having an outlet for discharging pellets therefrom, means for positioning an open

container adjacent said outlet for receiving pellets from the bowl, means located at the packaging station for effecting discharge of the pellets through the outlet and into the container, means for counting the discharged pellets, means for terminating the discharge of pellets when said predetermined number is discharged, and means for closing the container.

3,871,157
BAG PACKAGING APPARATUS WITH PROTECTIVE ATMOSPHERE

Klaus Domke, Hirschlanden; Peter Lau, Asperg, and Willi Glas, Renningen, all of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany
Filed Sept. 4, 1973, Ser. No. 394,064
Claims priority, application Germany, Sept. 1, 1972, 2243074
Int. Cl. B65b *31/04*
U.S. Cl. 53—110 **4 Claims**

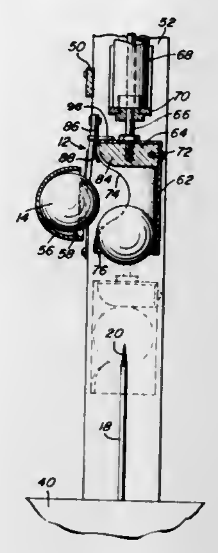


1. Packaging apparatus having work stations for filling, measuring, and closing packaging containers, including flat form bags, in a protective atmosphere, comprising:
- hood means extending over a plurality of work stations and including a plurality of regions with each region being adapted to receive independently of the other regions a controlled flow of protective gas;
- said hood means further including a plurality of gas distributing chambers with each thereof being located in one or more of said regions;
- a separate protective gas supply conduit connecting to each said region;
- protective gas storage means connected to the conduits;
- gas flow control means between each individual conduit and said storage means whereby the quantitative flow of gas to a plurality of regions can be controlled;
- a manifold or main gas line between said gas storage means and said individual conduits;
- said main and secondary gas flow control means interposed between said manifold and said storage means, said main and secondary gas flow means both being responsive to a slowdown or temporary shut down of said apparatus whereupon said secondary gas flow means causes to act as a gas bypass to supply gas at reduced pressure to said regions.

3,871,158
AUTOMATIC SATIN BALL MACHINE

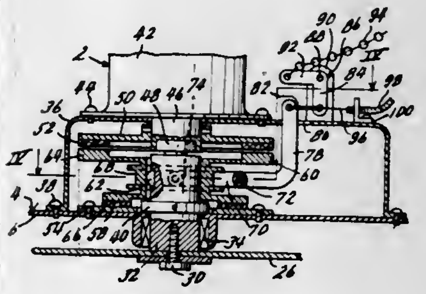
Salvatore J. Puleo, 435 Division St., Watchung, N.J. 07201
Filed Jan. 25, 1974, Ser. No. 436,685
Int. Cl. B65b *11/04*
U.S. Cl. 53—214 **10 Claims**

1. An apparatus for applying strand material to the external surface of a ball-shaped member comprising feed means providing a supply of ball-shaped members, a spindle having a free end onto which the ball-shaped members are inserted, means moving single ball-shaped members onto the spindle from the feed means, and flyer means oriented laterally of the spindle to apply strand material to the external surface of the ball-shaped member during rotation thereof.



3,871,159
SAFETY DEVICE FOR LAWNMOWERS

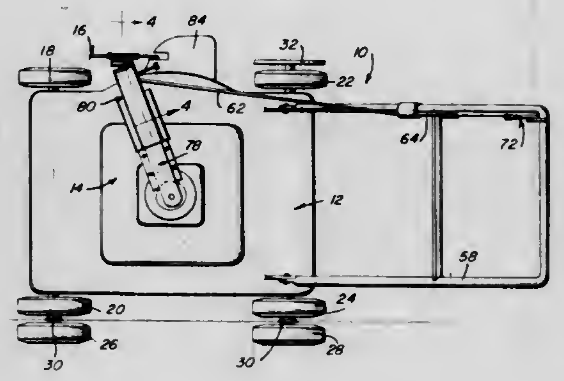
Charles R. Shriver, 2828 N. 67th St., Kansas City, Kans. 66104
Filed Aug. 17, 1973, Ser. No. 389,252
Int. Cl. A01d *55/18*
U.S. Cl. 56—11.3 **4 Claims**



1. In a lawnmower including a base housing, a prime mover mounted on said housing and including a rotatably driven drive shaft, a blade operable to be driven by said prime mover, said blade being carried by a blade shaft mounted rotatably in said housing, coaxially with and below said drive shaft, and propelling means including a handlebar connected to said housing and having a hand grip adapted to be grasped by the operator, safety means comprising:
- a. a first clutch disc fixed on said drive shaft concentrically therewith,
- b. a first brake disc fixed in said housing concentrically with said shafts and spaced below said first clutch disc,
- c. a spool member mounted on said blade shaft between said first clutch and brake discs, said spool member being axially slidable on said blade shaft but restrained against rotation relative thereto, and including at its upper end a second clutch disc engageable with said first clutch disc, and at its lower end a second brake disc engageable with said first brake disc, the spacing between the operative faces of said second clutch and brake discs being less than the spacing between the operative faces of said first clutch and brake discs,
- d. resilient biasing means operable to urge said spool member downwardly whereby said brake discs are engaged and said clutch discs are disengaged, and
- e. manually operable means operable to elevate said spool member against said resilient means whereby said brake discs are disengaged and said clutch discs are engaged, said manually operable means including a grip lever pivotally mounted on said handlebar adjacent said hand grip, said lever being adapted to be engaged and pivoted by the operator with the hand he uses to grasp said hand grip, whereby the lever is released, and the spool member is moved downwardly, whenever the operator releases said hand grip.

3,871,160
COMBINATION LAWN MOWER AND EDGER

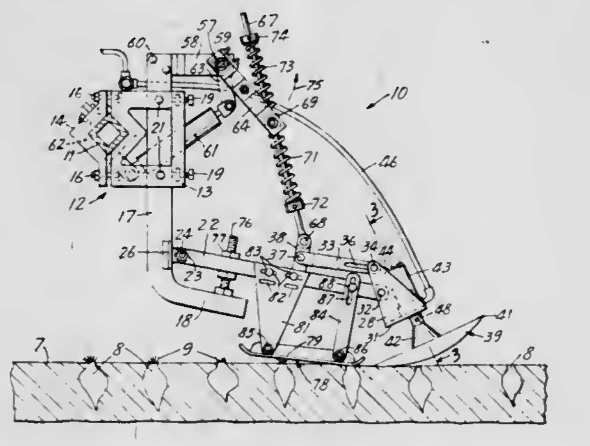
Roy L. Hooper, 8 Highland Dr., Chickasha, Okla. 73018
Filed Sept. 20, 1973, Ser. No. 399,195
Int. Cl. A01d *35/12*
U.S. Cl. 56—16.9 **6 Claims**



1. In combination with a powered lawn mower having a frame and a power source, an edger assembly, comprising, in combination:
- a. a blade;
- b. means for adjustably, rotatably mounting the blade on the mower frame, the means for adjustably, rotatably mounting the blade including a sleeve affixed on the frame, a holder provided on the sleeve, an adjustment bracket adjustably arranged on the holder, a drive element connected to the adjustment bracket, the drive element is a pulley rotatably mounted on the adjustment bracket, and the blade connected to the drive element for rotation thereby; and
- c. means connected to the blade and mower power source for rotating the blade, the means for rotating the blade including a stem adjustably mounted on the sleeve, a pair of idler pulleys rotatably mounted on the stem, and a belt arranged engaging the pulleys and with a pulley associated with the power source for transmitting torque from the power source to the pulley forming the drive element.

3,871,161
SCALPER UNIT

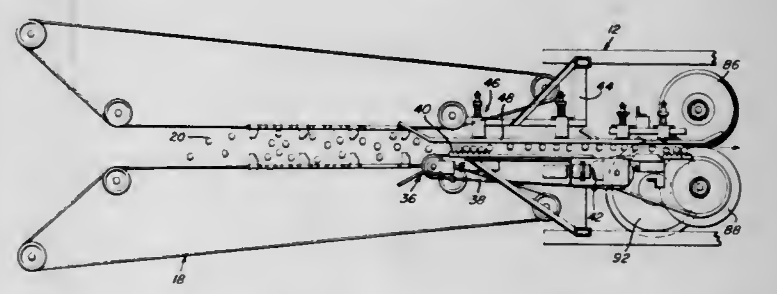
Fred W. Eisenhardt, c/o Alloway Manufacturing, 610 University, Fargo, N. Dak. 58102
Filed May 3, 1973, Ser. No. 356,842
Int. Cl. A01d *23/02*
U.S. Cl. 56—121.46 **29 Claims**



10. A scalper assembly for removing the top portion of a root crop in the ground comprising: a standard adapted to be attached to a beam; an elongated arm; means pivotally connecting the arm to said standard for movement toward and away from the surface of the ground; a support; means pivotally connecting the support to the arm; means to adjust and hold the pivotal position of the support relative to the arm; hydraulic motor means mounted on the support; and disc means connected to said hydraulic motor means whereby operation of said hydraulic motor means rotates the disc means to cut the top portion of the root crop as the disc means moves over the root crop.

3,871,162
SUGAR CANE HARVESTER

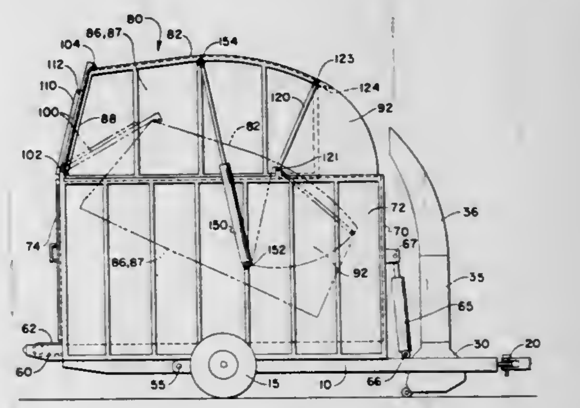
Isby L. Schexnayder, Jr., Jeanerette, and John W. Angers, New Iberia, both of La., assignors to J & L Engineering Company, Inc., Jeanerette, La.
Filed June 18, 1973, Ser. No. 370,644
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.3 **6 Claims**



1. In a harvesting machine having a mobile frame adapted to be propelled in a forward direction along rows of crop stalks in the ground, means mounted on the frame in substantially fixed spaced relation to the ground for holding the stalks erect, cutter means for cutting the stalks adjacent the ground while held erect, means mounted in overlapping relation to the stalk holding means for rearwardly displacing the stalks severed by the cutter means, sectioning means for cutting the severed stalks into vertical sections as they are rearwardly displaced, support means on the frame operatively mounting the cutter means, the rearward displacing means and the sectioning means for simultaneous vertical adjustment relative to the stalk holding means, and flipper means rotatably mounted by said support means below the sectioning means for rewardly displacing severed stalk sections above the cutter means.

3,871,163
STACK FORMER AND COMPACTING STRUCTURE

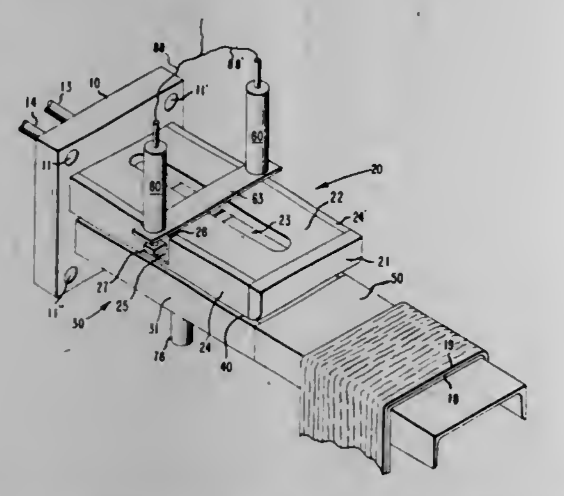
Glenn G. Kanengieter, Blooming Prairie, and Daniel E. Peterson, Northfield, both of Minn., assignors to Owatonna Manufacturing Company, Inc., North Owatonna, Minn.
Filed Oct. 19, 1973, Ser. No. 407,906
Int. Cl. A01d *85/00*
U.S. Cl. 56—344 **12 Claims**



1. A stack forming and compacting structure comprising, a vehicle, a crop receiving container mounted on the vehicle, a

pick up means supported by the vehicle, a movable roof for the container having downwardly projecting side portions integral therewith, links means pivotally mounting the movable roof at four points thereon and to the upstanding sides of the container remote from the roof to move the roof through an arc in a direction having a horizontal and vertical component of a movement toward the confines of the container, said roof structure with the side portions formed integral therewith having a pivoted rear door and an open front face for introduction of material beneath the roof into the container.

3,871,164
SPLICING APPARATUS
Gary Franklin Nunn, Lugoff, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 25, 1974, Ser. No. 454,419
Int. Cl. D01h *15/00*
U.S. Cl. 57—22 **4 Claims**



1. In an apparatus for splicing overlapped fiber tows wherein said overlapped tows are passed between opposed jet streams issuing from spaced jets facing each other, the improvement comprising: a support; upper and lower sub-assemblies cantilevered from said support defining a uniform slot there between; means for slidably mounting said spaced jets in said upper and lower sub-assemblies on either side of said slot for movement in unison toward and away from said support; and means adjacent each edge of the slot for releasably clamping the overlapping tows after they are inserted into and extended beyond each edge of the slot.

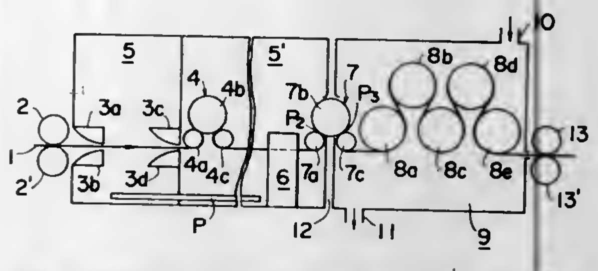
3,871,165
APPARATUS FOR CONTINUOUSLY SETTING WOOL SLIVER
Kazutomo Ishizawa, 3-80, Tomobuchico, 1-chome; Yasunori Nagata, 235, Nishishigino 3-chome, both of Osaka; Hirotaka Ito, 13-1, Shinmachi, Daito; Toyotaka Ishida, 13-11, Senrioka Higashi 1-chome, Settsu; Tohru Koide, 81, Fukae Kaguracho, Honjo-cho, Kobe, and Akio Sato, 13-1-72, Shiromachi 2-chome, Hikone, all of Japan
Division of Ser. No. 272,746, July 18, 1972, Pat. No. 3,803,826. This application Sept. 6, 1973, Ser. No. 394,932
Claims priority, application Japan, July 19, 1971, 46-53791; Feb. 22, 1972, 47-18749
Int. Cl. D02g *1/00, 1/02*
U.S. Cl. 57—34 HS **4 Claims**

1. An apparatus for continuously seting wool sliver, comprising a series combination of:

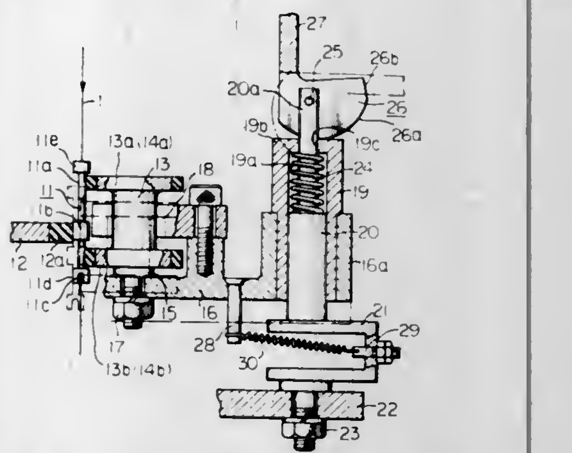
a steaming chamber having an inlet and an outlet of a wool sliver and having a steam supply pipe within this chamber;

a heating and false twisting chamber coupled to the outlet side of the steaming chamber and having a set of nipping rollers at the sliver-receiving side and at the sliver-delivery side of this chamber and having a false twister positioned intermediary of this chamber and having a steam supply pipe in this chamber, and

a drying chamber coupled to the sliver-delivery side of the heating and false twisting chamber and having a dry gas inlet and an outlet for exhausting this gas from this drying chamber and having cylindrical drying roller means in this chamber.



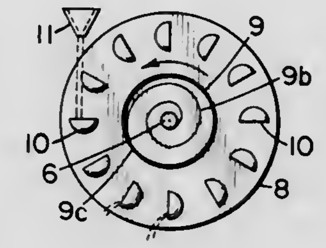
3,871,166
DEVICE FOR IMPARTING FALSE TWISTS ON A FILAMENTARY YARN
Shiro Murakami; Kenzi Kanda; Jiro Nakajyo, all of Matsuyama, and Makoto Yamasaki, Iwakuni, all of Japan, assignors to Teijin Limited and Teijin Seiki Co., Ltd., both of Osaka, Japan
Filed Mar. 12, 1974, Ser. No. 450,316
Claims priority, application Japan, Mar. 26, 1973, 48-36915; Nov. 20, 1973, 48-133240
Int. Cl. D02g *1/04;* **D01h** *7/92*
U.S. Cl. 57—77.45 **13 Claims**



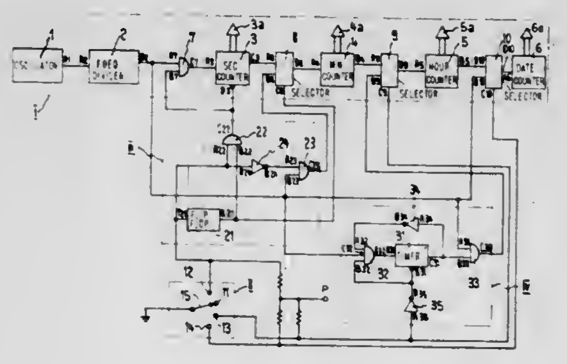
1. In a device for imparting false twists on a filamentary yarn, provided with a false twisting spindle provided with a spindle head and a holding means which holds said spindle in rotatable condition and comprises a pair of holding rollers rotatably supported by a bracket in closely facing condition and attraction means for positioning said spindle in a wedge shaped space formed between said holding rollers in such a condition that said spindle is attracted toward said attraction means, said bracket is turnably mounted on a pivot shaft secured to a machine frame, an improvement comprising a driving system related to said false twisting spindle, a frictional driving means being capable of frictionally contacting at least two different portions of said driving system at predetermined different ratios of rotation, means for selectively changing said frictional contact of either one of said portions of said driving system with said frictional driving means under a pressure so that said driving system is driven at said predetermined ratio defined to said portion, means for urging said portion of said driving system to said frictional driving means by turning said bracket about said pivot shaft.

3,871,167
TURBINE CLOCKS
Gossem Hekmat Afshar, One Wellyn Rd., Bronxville, N.Y. 10708
Filed May 22, 1973, Ser. No. 363,174
Int. Cl. G04b *45/00, 21/08*
U.S. Cl. 58—14 **6 Claims**

1. The turbine powered pendulum clock comprising, a turbine wheel, a source of liquid turning said turbine wheel, a hairspring means, a shaft fixedly attached to one end of said hairspring, a drum means rigidly attached to said wheel and housing said hairspring; the other end of said hairspring being in frictional contact with the inside of said drum but free to slip therein; a rod means having two ends and a member having at least two parallel members thereon; said parallel members engaging said shaft means to be driven thereby; clock hands, gear means for moving the said clock hands; a pawl means pivotally attached at a suitable point on the said rod means for transmitting motion from said rod means to the gear means for moving said hands, whereby said shaft is driven in circular motion by said liquid and said circular motion of said shaft means is transformed into oscillatory motion of said rod means via engagement of said shaft means with said two parallel members.

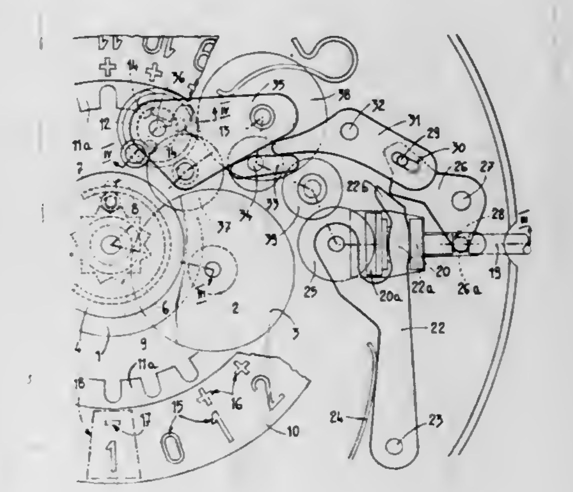


3,871,168
ELECTRONIC CIRCUIT FOR CORRECTION OF THE TIME DISPLAY ON AN ELECTRONIC TIMEPIECE
Pierre-Andre Maire, and Hubert Portmann, both of Saint-Imier, Switzerland, assignors to Compagnie des Montres Longines Francillon S.A., Saint-Imier, Switzerland
Filed July 31, 1972, Ser. No. 276,317
Claims priority, application Switzerland, Aug. 27, 1971, 12584/71
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 R **9 Claims**



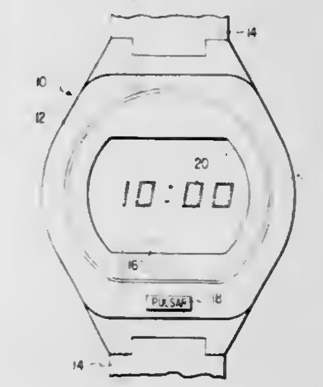
1. An electronically driven watch comprising a counting chain having an oscillator as a time-base connected to a divider for providing seconds pulses to drive a series of counters in sequence, setting means including a single commutator having an arm movable to a normal position contact and a plurality of setting position contacts, circuit means connected with said counters, said divider, and said setting position contacts of said commutator for applying the seconds pulses of said divider to selected ones of said counters in response to movement of said arm from said normal position contact to respective ones of said setting position contacts for individually changing the setting of corresponding ones of said counters, and delay means interposed between at least one of said setting position contacts and said circuit means for delaying the changing of the counter associated with said one position contact upon movement of said commutator arm past said one position contact.

3,871,169
TIMEPIECE
Edouard Schwaar, Bienne, and Andre Paroz, Brugg, both of Switzerland, assignors to Tavre Marc & Co. S.A., Bienne, Switzerland
Filed Nov. 12, 1973, Ser. No. 414,859
Claims priority, application Switzerland, Nov. 17, 1972, 16757/72
Int. Cl. G04b *19/22, 19/27*
U.S. Cl. 58—42.5 **3 Claims**



1. A time piece comprising, at least an hours indicator adapted to be moved step by step by a manually operable control mechanism, an indicator of the rank of a time-zone with respect to a reference time-zone, the rank indicator also being controlled by said control mechanism such that the displacements of the rank indicator are synchronized with those of the hours indicator when the hours indicator is operated manually by means of said mechanism, the control mechanism including a control stem moveable between several axis positions, in one of said positions the stem is adapted to operate the hours indicator and the rank indicator, whereby the rank indicator permanently indicates the difference between the time indicated by the hours indicator and the time of the reference time-zone.

3,871,170
SOLID STATE WATCH DISPLAY SWITCH
John M. Bergey, 1807 Mayflower Cir., Lancaster, Pa. 17603
Division of Ser. No. 354,192, April 25, 1973, Pat. No. 3,823,550, which is a continuation-in-part of Ser. No. 217,765, Jan. 14, 1972, Pat. No. 3,742,699, which is a continuation-in-part of Ser. No. 138,557, April 29, 1971, Pat. No. 3,782,102. This application Feb. 20, 1974, Ser. No. 444,146
Int. Cl. G04b *19/30;* **G04c** *17/02*
U.S. Cl. 58—50 R **6 Claims**



1. A wristwatch comprising a frequency standard for producing substantially constant frequency electrical signals, a frequency converter coupled to said frequency standard for producing corresponding electrical signals of lower frequency than said frequency standard, an electro-optical time display

for displaying time in decimal numbers, a display acuator coupling said frequency converter to said electro-optical time display, an electrical power supply terminal for energizing said time display from a power supply, and an arm responsive switch coupling said power supply terminal to said display whereby said display is energized upon a predetermined movement of a wearer's arm upon which said wristwatch is mounted, said arm responsive switch being responsive to variations in resistance.

3,871,171
MECHANISM FOR DRIVING A ROTATING JUMPING MEMBER IN A TIMEPIECE

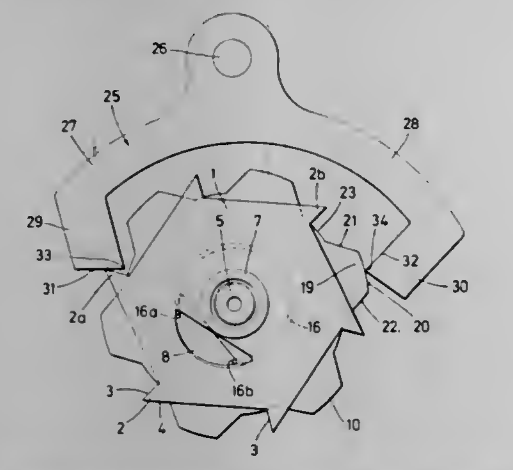
Adrien Maurice Charbonney, deceased, late of Saint Blaise, Switzerland (by Jean-Jacques Thorens, legal representative); Norbert Perucchi, Neuchatel; Michel Belot, Boudry, and Urs Giger, Solothurn, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Aug. 19, 1974, Ser. No. 498,428

Claims priority, application Switzerland, Aug. 20, 1973, 11958/73

Int. Cl. G04b *15/00, 19/02, 19/24*

U.S. Cl. 58—116 R **13 Claims**



1. A mechanism for driving a rotating jumping member in a timepiece, comprising a driving member rotating at a constant speed and coupled to said jumping member by a spring, a pallet pivoting about a fixed axis parallel to the common axis of said members, and a cam integral with said driving member and having a profile formed of lugs distributed at a uniform pitch about said common axis, said jumping member having teeth which are successively blocked and then released by said pallet in the course of the rotation of said jumping member, wherein said pallet comprises two beaks, each provided with a locking-plane and a tip, each locking-plane cooperating with said teeth and each tip cooperating with said profile, and wherein said locking planes are so oriented that the pressure of said teeth upon each of said planes subjects said pallet to a torque which causes it to pivot and to press against said profile.

3,871,172
PROCESS WITH FLUIDIZED COMBUSTOR AND FLUIDIZED HEAT EXCHANGER FOR AIR

John F. Villiers-Fisher, Kendall Park, N.J., and Edward T. Coles, Brooklyn, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,543

Int. Cl. F02c *7/02;* **F02g** *5/00*

U.S. Cl. 60—39.02 **10 Claims**

1. A process for producing electrical power by the combustion of a carbonaceous fuel which comprises

a. introducing said carbonaceous fuel into an elevated pressure fluidized combustion zone, said fluidized combustion zone containing at least one bed of fluidized ash particles,
b. passing a first compressed air stream into said combustion zone, whereby said bed is fluidized and said fuel is burned in said fluidized bed to produce a substantially solids-free hot gas containing combustion products, and whereby ash from fuel combustion is agglomerated and added to said bed,
c. withdrawing said hot gas from said combustion zone,
d. passing hot solids from said fluidized combustion zone to a fluidized heat exchange zone,
e. passing a second compressed air stream into said fluidized heat exchange zone, whereby said second air stream is heated and said hot solids are cooled,
f. recycling the cooled solids produced by step (e) to said combustion zone,
g. expanding the heated second air stream through mechanical power recovery means, said mechanical power recovery means being connected with and driving an electrical generator, and
h. withdrawing electrical power from said electrical generator.

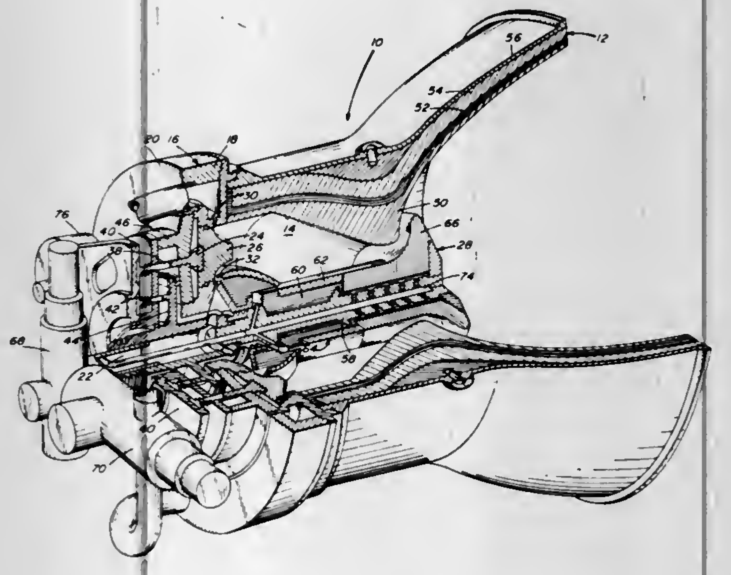
3,871,173
CONSTANT CHAMBER PRESSURE THROTTLING INJECTOR

Ronald F. McKenna, Rockford, Ill., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1970, Ser. No. 24,897

Int. Cl. F02k *9/02*

U.S. Cl. 60—258 **7 Claims**



1. A bipropellant rocket engine comprising an injector assembly and thrust chamber:

said injector assembly including an axially moveable annular deflector plate having two annular concave deflector surfaces in the thrust chamber over which propellants flow and are formed into circumferential sheets, and a central pintle coaxially arranged in said thrust chamber and being formed partially of pyrolytic graphite in order to withstand the high temperatures and pressures of combustion;
said thrust chamber including a combustion chamber and an exhaust nozzle; and
means to actuate said deflector plate and said pintle to vary the thrust of the rocket engine by simultaneously varying the propellant flow rate and the throat area of said exhaust nozzle in order to maintain the pressure in the combustion chamber constant for all degrees of throttling.

3,871,174
JET ENGINES

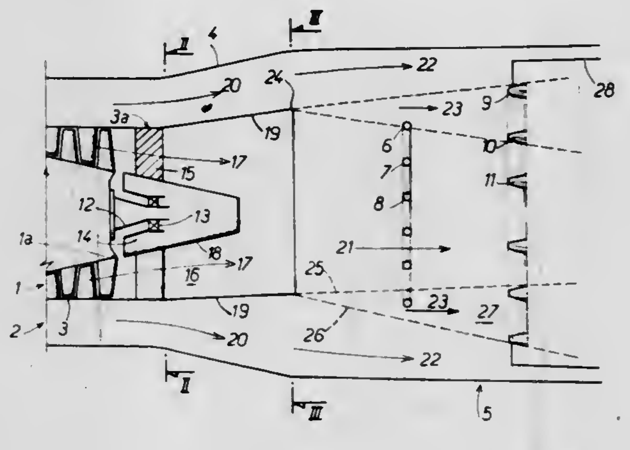
Marc Francois Bernard Buisson, Le Mee-Sur-Seine, and Herve Alain Quillevere, Issy-Les-Moulineaux, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d', Paris, France

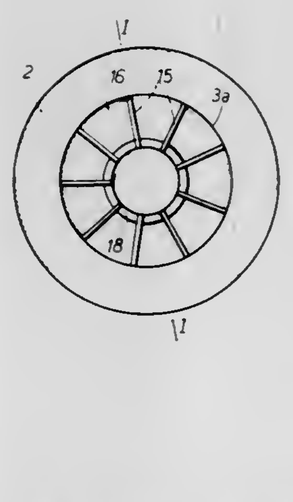
Filed Apr. 24, 1973, Ser. No. 354,093

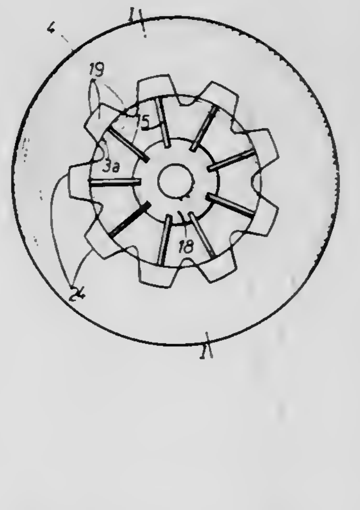
Claims priority, application France, Apr. 25, 1972, 72.14684

Int. Cl. F02k *3/10*

U.S. Cl. 60—261 **11 Claims**







1. A jet engine comprising:

a. coaxial inner and outer casings bounding coaxial inner and outer duct means for an inner flow of hot gas and an outer flow of air flowing in said inner and outer duct means, respectively, at a given ratio of the velocity of the inner flow to the velocity of the outer flow;
b. disturbance generating means in at least one of said inner and outer duct means, which are effective to reduce said given velocity ratio in at least one first sector area of said at least one duct means, and to increase said given velocity ratio in at least one second sector area of at least one duct means adjoining said first sector area;
c. a confluence wall extending the inner casing beyond a downstream edge thereof to separate the outer flow from the inner flow;
d. means forming an afterburner duct downstream of the confluence wall for receiving both said inner and outer flows flowing coaxially, including annular flame-holder means in the afterburner duct; and
e. corrugations in the confluence wall, extending from said downstream edge of the inner casing to a corrugated outlet edge of the confluence wall having an increased radius downstream of said first sector area, and a reduced radius downstream of said second sector area.

3,871,175
SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

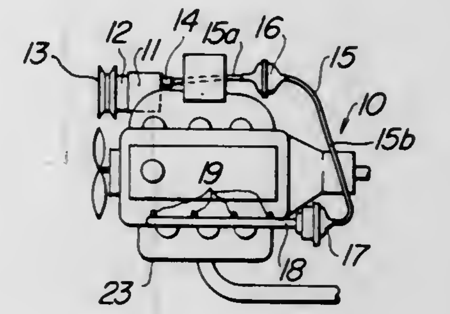
Yushi Yamamoto, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed July 19, 1973, Ser. No. 380,677

Claims priority, application Japan, July 28, 1972, 47-89688; July 28, 1972, 47-89697

Int. Cl. F01n *3/10;* **F16k** *15/02*

U.S. Cl. 60—307 **5 Claims**



1. A secondary air supply system for use with an internal combustion engine having an exhaust system with means for purifying the engine exhaust gas comprising:

an intermittently operated air pump,
an air conduit interconnecting said air pump and exhaust purifying means,
a first check valve having a high blocking performance provided in said conduit adjacent said pump including a first valve member of elastic material, a first valve seat with portions of said first valve member opposing the valve seat and a first biasing means normally urging said first valve member into sealing engagement with said first valve seat, the air flow from said air pump deforming said first valve member against said biasing means to permit flow and back flow of exhaust gas deforming said valve member into sealing relation with said valve seat,
a second check valve having a high heat resistance provided in said conduit adjacent said purifying means including a second valve member made of heat-resistant and corrosion-resistant metal, a second valve seat made of heat-resistant and corrosion-resistant material and a second biasing means normally urging said second valve member and sealing engagement with said second valve seat said second valve member and second valve seat having a higher heat resistance and a lower blocking performance than said first valve member and first valve seat, respectively.

3,871,176
LARGE SODIUM VALVE ACTUATOR

Glen Elwin Schukei, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 8, 1973, Ser. No. 339,256

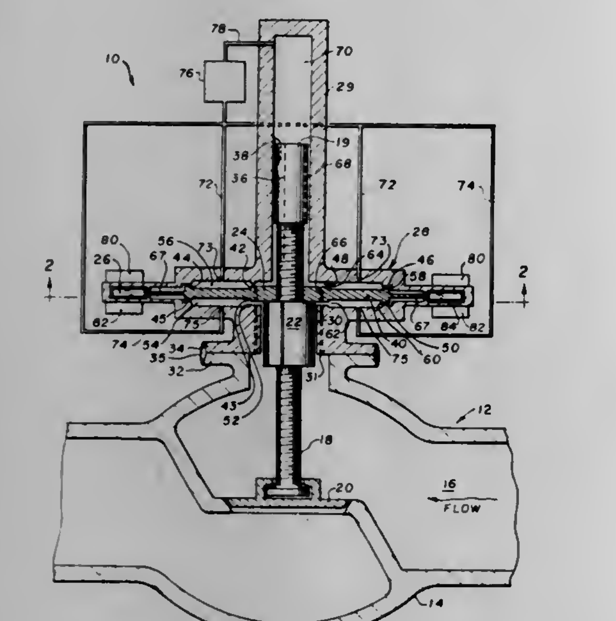
Int. Cl. F16k *31/12*

U.S. Cl. 60—326 **6 Claims**

1. A valve actuator assembly driven by an electrically conducting working fluid for an electrically conducting fluid handling system, comprising:

a. a housing;
b. a vane assembly adapted to rotate within said housing;
c. means suspending said vane assembly within said housing for allowing low friction rotation of said vane assembly;
d. power delivery means operably coupled to said vane assembly for utilizing said rotation;
e. a passage in said housing adapted to permit utilization of said rotation;
f. a passage in said housing adapted to permit the interchange of said electrically conducting fluid within said housing with said electrically conducting fluid of said fluid handling system; and

g. electromagnetic pumping means operating on said electrically conducting liquid surrounding said vanes for

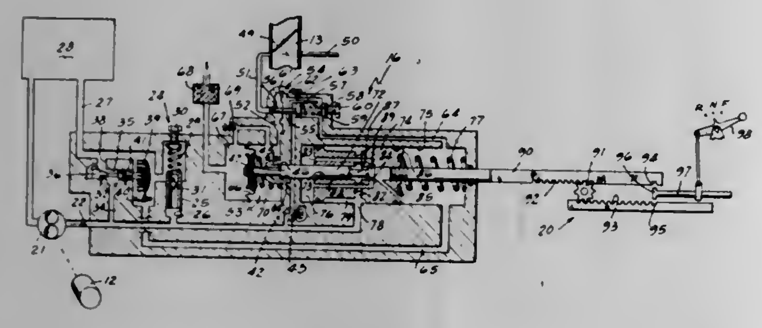


imparting a rotary motion to said liquid and thereby impelling said vane assembly into rotation.

3,871,177

CONTROL DEVICE FOR A HYDROSTATIC TRANSMISSION

Charles W. Ridlen, 1261 Bon Air Ct., Decatur, Ill. 62521
Filed Feb. 7, 1974, Ser. No. 440,493
Int. Cl. F15b *11/02*
U.S. Cl. 60—431 **20 Claims**

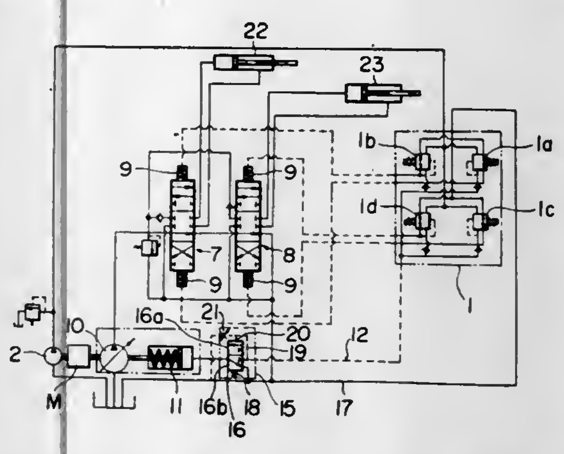


1. A control device for a transmission having a variable displacement pump driven by a prime mover having a power curve and a hydraulic motor comprising: first means sensing the load applied on the prime mover; second means for sensing the speed of the prime mover including pump means driven by the prime mover for developing a hydraulic pressure proportional to the speed of the prime mover, and compensating means for correcting for change in hydraulic pressure from the pump means in response to speed changes of the prime mover to follow a pressure-speed curve which is substantially similar to the power curve of the prime mover up to a maximum horsepower of the prime mover; a servo device having a housing containing a cylinder, a servo piston disposed in the cylinder and a pilot spool for controlling the application of fluid pressure to the servo piston; linkage means connecting the servo piston with the hydrostatic transmission to vary the ratio of the transmission in response to movement of the servo piston; and means for combining the output of the first and second sensing means for applying a control signal to the pilot spool whereby the ratio of the hydrostatic transmission is varied in response to changes in both the load and speed of the prime mover.

3,871,178

VARIABLE OUTPUT PUMP CONTROL CIRCUIT USING A REMOTE CONTROL

Hiroyoshi Tominaga, Osaka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Sept. 6, 1973, Ser. No. 394,664
Claims priority, application Japan, Oct. 31, 1972, 47-108463
Int. Cl. F16h *39/46*
U.S. Cl. 60—443 **2 Claims**

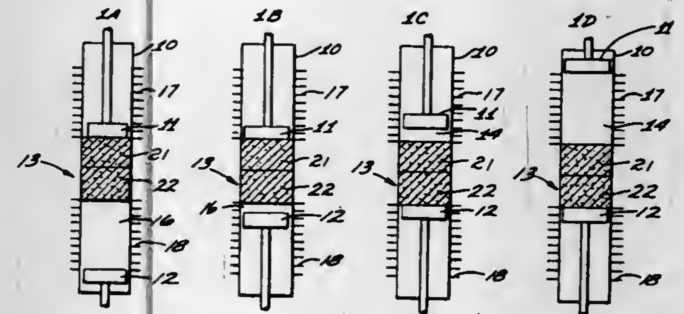


1. A variable output pump control circuit using a remote control valve for switching two control valves which control the operation of hydraulic actuators and also for switching a servo motor of a variable output pump, comprising control circuit means in a pilot circuit of said variable output pump for connecting said remote control valve with said servo motor, said control circuit means including: switching a control valve, having a first section for connecting the pilot circuit with said servo motor, a second section for blocking the pilot circuit and for connecting said servo motor with a drain circuit, and a spring means disposed at one end of the spool of the switching control valve to urge the spool to connect said second section with said drain circuit; a control passage means connected to said pilot circuit; and a throttle valve at the drain circuit side of the control passage for throttling flow to or from the other end of the switching control valve.

3,871,179

STIRLING CYCLE ENGINE WITH CATALYTIC REGENERATOR

Reginald B. Bland, deceased, late of Solvang, Calif. (by Maria A. Bland, administratrix)
Filed Mar. 13, 1974, Ser. No. 450,829
Int. Cl. F03g *7/03;* **F25b** *9/00;* **H02p** *9/00*
U.S. Cl. 60—526 **12 Claims**



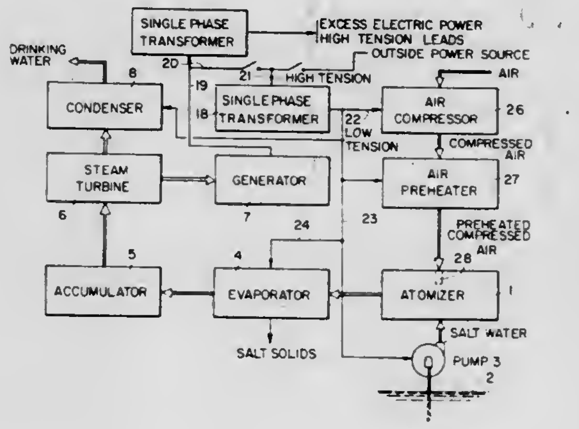
1. In a Stirling engine having an expansion space; a compression space; a working fluid in said spaces; means for periodically transferring working fluid between the expansion space and the compression space; a heat source for adding heat to the working fluid adjacent the expansion space; a heat sink for removing heat from the working fluid adjacent the compression space; and a regenerator in the fluid flow path between the expansion space and the compression space, the improvement comprising:

a working fluid having components susceptible to reversible chemical reaction under the temperature and pressure conditions in the engine, said reaction having a greater number of moles of fluid when the reaction proceeds in its higher temperature direction than when it proceeds in its lower temperature direction; and
a catalyst in the regenerator for enhancing the rate of the chemical reaction.

3,871,180

WATER DESALINIZATION SYSTEM

Joe B. Swanson, Inglewood, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 29, 1973, Ser. No. 419,958
Int. Cl. F01k *3/08, 15/00*
U.S. Cl. 60—648 **2 Claims**



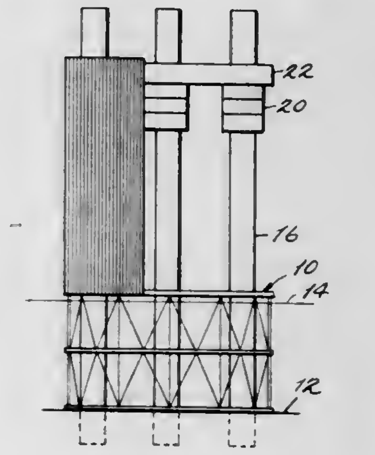
1. A water desalinization system, comprising
atomizer means for atomizing salt water;
evaporator means for evaporating the atomized salt water to provide steam with a residue of solid salts;
accumulator means for accumulating the steam;
steam turbine means driven by the steam;
electrical generator means coupled to and driven by the steam turbine means for producing electric power, the atomizer means comprising air compressor means electrically connected to the electrical generator means for compressing air, preheating means for heating the compressed air and directing means for directing the preheated compressed air at right angles to the flow of salt water, the evaporator means comprising a vessel of substantially circular cross-section having a plurality of equiangularly spaced electrodes therein positioned substantially radially and spark producing means including high voltage transformer means electrically connected between the electrical generator means and the electrodes for producing high heat sparking between the electrodes in the vessel; and
condenser means for converting the steam to pure water after it drives the turbine means.

3,871,181

METHOD OF FORMING AN ENCLOSURE IN A BODY OF WATER

Leon B. DeLong, New York, N.Y., assignor to DeLong Corporation, New York, N.Y.
Filed Feb. 15, 1974, Ser. No. 443,156
Int. Cl. E02d *23/08;* **E02b** *1/00;* **E02d** *23/16*
U.S. Cl. 61—34 **6 Claims**

1. A method of forming an enclosure in a natural body of water having a marine floor, comprising the steps of:
positioning a bottom template member having a plurality of spaced caisson guide positioning openings, at an appropriate location in said body of water and resting on said marine floor;
setting caissons in each of said plurality of openings;
driving the lower end portions of each of said caissons into said marine floor so as to have a substantial portion of said caissons extending above the surface of said body of water;
positioning lifting means in an operatively supported manner above said bottom template;
positioning a top template member having a plurality of spaced guide openings corresponding to said guide openings in said bottom template, on said caissons so as to be slidably disposed thereon and supported by said lifting means;
lifting said top template upwards on said caissons by means of said lifting means, an adequate height to permit a plurality of rigid sheet pile cells to be suspendably supportably secured at their upper portions to said top template while keeping the bottom portions of said piles out of contact with the surface of said body of water;

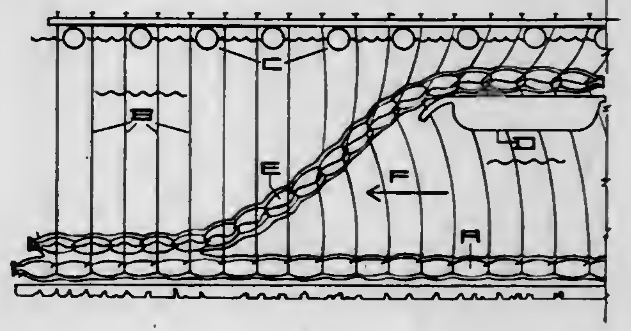


attaching said sheet pile cells to said top template so as to form a vertical walled enclosure;
lowering said enclosure and said top template so that the bottom of said enclosure rests on said marine floor, by means of said lifting means lowering said top template;
detaching said sheet pile cells from said top template and removeing said top template from said caissons;
driving the lower portion of said sheet pile cells into said marine floor;
removing said lifting means and said bottom template from said caissons; and
removing said caissons.

3,871,182

METHOD OF PROTECTION FOR SLOPES AND CRESTS OF RIVERS, CHANNELS, AND THE LIKE

Jose Estruco, Blas Parera 691, Rosario, Argentina
Filed Nov. 5, 1973, Ser. No. 412,825
Claims priority, application Argentina, Nov. 9, 1972, 245070
Int. Cl. E02b *3/12*
U.S. Cl. 61—38 **1 Claim**



1. A method for the protection of slopes and crests of rivers, channels, and the like by guided mooring of flexible and permeable tubular casings of great length, filled with fresh concrete, said method comprising the steps of filling a first tubular casing with fresh concrete, mooring it by gravity to the desired position, simultaneously as it is being filled, by means of a series of ropes attached thereto leaving the ends of said ropes free subject to a floating element on the surface of the water, using said ropes as guides for other casings similar to said first

casing which are also moored by gravity while simultaneously being filled with fresh concrete, holding subsequently filled tubular casings to the first, the basis for alignment of said subsequently placed casings being ropes held by said first casing and said floating element on the surface of the water, whereby each of said tubular casings may be placed in the desired position.

3,871,183
ARCUATE TUNNEL LINING SEGMENTS

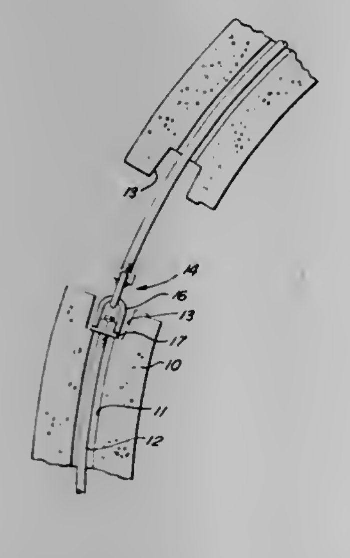
William Thomas Cardwell, Laleham; Francis Murray Hawke, Ashford, and Peter Gordon Gibson, Camberley, all of England, assignors to Charcon Tunnels Limited, Derby, England

Filed Aug. 10, 1973, Ser. No. 387,376

Claims priority, application United Kingdom, Aug. 15, 1972, 38071/72

Int. Cl. E01g *5/02*

U.S. Cl. 61—45 R **6 Claims**



1. An arcuate tunnel lining segment having at least one tie member extending circumferentially through and enclosed within the segment, at least one end of the tie member having an articulated coupling device for securing said end to a tie member of a further segment, which coupling device comprises a nut screwed on to said one end of the tie member, a first rigid U-shaped element the ends of which are secured to the nut on either side thereof and a second rigid U-shaped element interlinked with the first element and having a further nut secured between the ends thereof for screwing on to an end of a further tie member.

3,871,184
POSITION AND ANCHORING SYSTEM FOR OFF-SHORE DRILLING PLATFORM

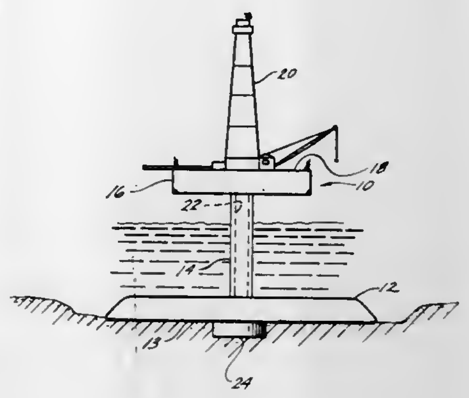
Joseph F. Schirtzinger, Pasadena, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Filed Apr. 8, 1974, Ser. No. 459,030

Int. Cl. E02b *17/00;* **E02d** *27/04*

U.S. Cl. 61—46.5 **4 Claims**

1. A drilling structure for drilling into the ocean floor from above the ocean surface, comprising a cellar having a bottom wall and sidewalls, the cellar being imbedded in the ocean floor and open at the top, a monopod drilling platform including a lower hull submerged below the surface, the lower hull having a flat bottom surface slidably engaging the top of the cellar sidewalls, a drilling platform positioned above the surface, a column supporting the platform on the submerged hull, and casing means extending from the bottom of the hull up through the column to the drilling platform, the casing means forming an open vertical passage extending from the drilling deck to the cellar, the passage being substantially smaller in cross-section than the bottom of the cellar, and means including a winch mounted adjacent the top of the column and a cable extending from the winch down through the passage and laterally from the bottom of the passage to the sidewalls of the cellar for moving the hull relative to the cellar by tension applied to the cable by the winch.



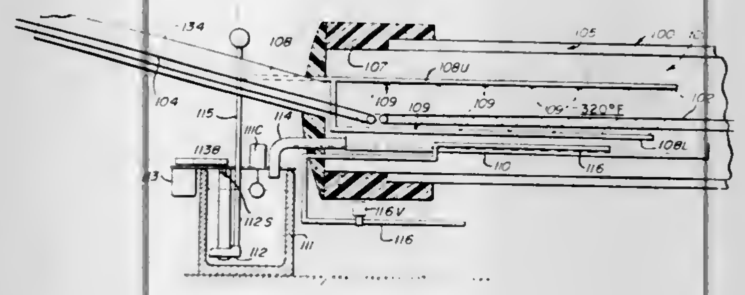
3,871,185
METHOD AND APPARATUS FOR FLASH FREEZING VARIOUS PRODUCTS

John D. Harper, Elgin; Frederick Breyer, Highland Park, and Richard C. Wagner, Clarenoon Hills, all of Ill., assignors to Integral Process Systems, Inc., Park Forest, Ill.

Division of Ser. No. 487,446, Sept. 15, 1965, Pat. No. 3,277,657. This application Dec. 27, 1965, Ser. No. 516,505

Int. Cl. F25d *3/10*

U.S. Cl. 62—63 **14 Claims**



1. Apparatus for flash freezing of articles comprising housing means defining a substantially thermally isolated process chamber, means including a conveyor operating in said chamber for transporting articles in succession along a process path leading into, through and out of said chamber, means including spray nozzle mechanism mounted within said chamber for directing a spray discharge of liquid nitrogen against each article at a certain region along said process path to flash at least partially to gas for freshly generating gaseous nitrogen within said chamber, pumping means operable concurrently with the spray discharge means and having a suction inlet and a discharge outlet communicating with generally transversely spaced lengthwise distributed locations flanking another region along said process path to develop high velocity stream flow traveling a generally transverse recirculation flow path distributed lengthwise through said chamber to impinge upon each article moving thereby, said stream flow being comprised partly of recirculated gaseous nitrogen and partly of freshly generated gaseous nitrogen, and means for withdrawing gaseous nitrogen from the apparatus at a rate for maintaining atmospheric pressure substantially throughout the remainder of said chamber.

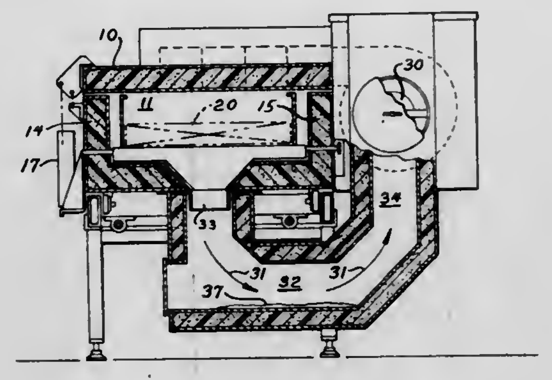
3,871,186
APPARATUS AND METHOD FOR REFRIGERATING ARTICLES

Richard C. Wagner, Darien, Ill., assignor to Integral Process Systems, Inc., Park Forest, Ill.

Filed Aug. 23, 1973, Ser. No. 390,755

Int. Cl. F25d *17/02*

U.S. Cl. 62—64 **14 Claims**



1. Apparatus for refrigerating articles, comprising: means defining an insulated chamber having an entrance and an exit for said articles; conveyor means for moving said articles in the chamber in a path from the entrance to the exit; liquid flow means for introducing a liquid cryogen into said chamber for contact with said articles at an introduction area spaced from said entrance with resulting generation of cryogen gas; means between said introduction area and entrance for recirculating cryogen gas from said chamber in a recirculation path including a path portion located externally of the chamber; and means for collecting any remaining liquid cryogen from said chamber in said external path portion for contact with the recirculated cryogen gas passing therethrough.

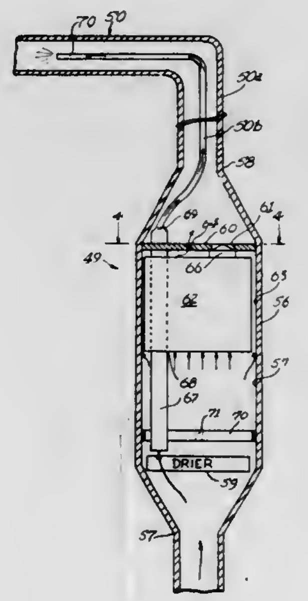
3,871,187
REFRIGERATION SYSTEM AND FLOW CONTROL DEVICE THEREFOR

John Skvarenina, 2639 W. Augusta, Chicago, Ill. 60622

Filed June 11, 1973, Ser. No. 369,055

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **12 Claims**



1. In a refrigerating apparatus of the type having a refrigerant capable of boiling under relatively low pressure to absorb heat and condensing under relatively high pressure to expel heat, the combination including: a compressor having a high pressure outlet port and a low pressure inlet port, a condenser having an inlet port in fluid communication with said high pressure outlet port of said compressor and further having a high pressure liquid refrigerant outlet port, an evaporator having an inlet port in fluid communication with said high pressure liquid refrigerant outlet port of said high pressure liquid refrigerant outlet port of said condenser and having an outlet port in fluid communication with said inlet port of said compressor, and a flow control device connected in the fluid line between the outlet port of said condenser and the inlet port of said evaporator, said fluid control device having first flow passage means for supplying a restricted fluid flow of refrigerant to said evaporator when said compressor is running and producing a high pressure at the outlet port thereof during a refrigerating cycle, said fluid control device further having second flow passage means independent of said first flow passage for supplying an unrestricted fluid flow of refrigerant to said evaporator when said compressor is stopped, said first flow passage means of said fluid control device includes a capillary tube having a terminating end extending into said evaporator whereat the high pressure liquid refrigerant is converted to low pressure gas refrigerant during the refrigerating cycle, said second flow passage means of said flow control device including a conduit connected between the outlet port of said condenser and the inlet port of said evaporator, said second flow passage means including fluid flow limiting means which directs the refrigerant within the system primarily through said capillary tube during the normal refrigerating cycle, and which directs the refrigerant within the system primarily through said conduit at the termination of said refrigeration cycle, whereby the inherent residual high pressure liquid at the outlet port of said condenser will flow substantially unrestricted into said evaporator to provide an automatic defrosting cycle and rapidly to provide a pressure balance within the refrigerating apparatus.

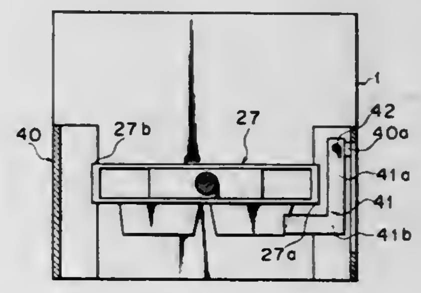
3,871,188
DEMOUNTABLE TRANSPORTATION REFRIGERATION UNIT

Ingebret Hadland Vold, Bloomington, and David Hutton Taylor, Minneapolis, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Sept. 7, 1973, Ser. No. 395,314

Int. Cl. F25d *19/00*

U.S. Cl. 62—298 **2 Claims**



1. A transportable refrigeration unit to be removably secured to the exterior of an enclosed storage compartment to be refrigerated comprising, an evaporator coil, evaporator coil fan means, an evaporator compartment having a circulated air intake opening, an evaporator associated discharge duct, said discharge duct having dimensions which are less than that of the intake opening and arranged to extend within said air intake opening in relatively concentric relationship therewith and through an aperture of said storage compartment when

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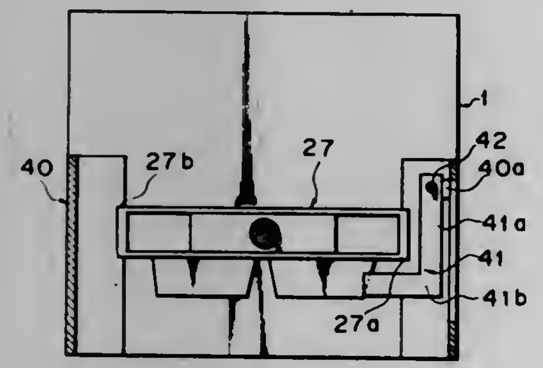
the refrigeration unit is removably attached thereto, a condenser, a compressor, a main frame, said main frame having means adapted to support said evaporator compartment and discharge duct, said condenser, and said compressor in a substantially vertical alignment with respect to one another and including a subframe removably secured to said main frame and adapted to support only said evaporator coil, evaporator fan means, evaporator compartment, and evaporator associated discharge duct, whereby circulated air passing through the evaporator coil may be circulated from the air intake opening through the evaporator coil and discharge duct and the subframe may be removed without disturbing the contents of the storage compartment or the main frame of the refrigeration unit should repair or replacement of the subframe components become necessary.

3,871,189
ICE MAKING DEVICE

Toshiyuki Ohnishi, Osaka, Japan, assignor to Tokyo Shibaura Electric Co., Ltd.
Filed Oct. 1, 1973, Ser. No. 402,279
Claims priority, application Japan, Oct. 2, 1972, 47-114320
Int. Cl. F25c *1/10*
U.S. Cl. 62—353 **5 Claims**



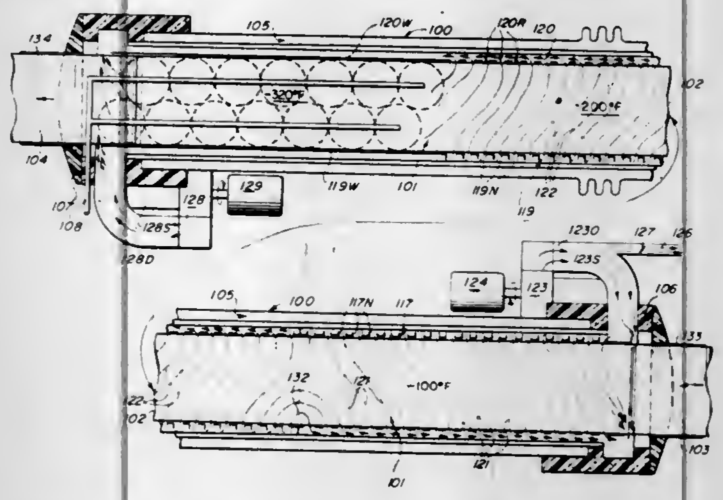
1. An ice making device comprising a body, a driving mechanism provided within the body, a shaft rotatable in one direction by the driving mechanism, a flexible ice tray having one end mounted to the shaft and adapted to be rotatable within the body and an actuator provided at one side of the tray near to the other end of the tray, the actuator having a base section rotatably supported on the body and an engaging section which when the tray is rotated through the shaft in one direction is temporarily engaged with said one side of the tray to cause the rotation of the tray to be restricted at said one side of the tray to permit the tray to be twisted, and thereafter rotated to be disengaged from it by the rotational force of the tray.

3,871,190
METHOD AND APPARATUS FOR FLASH FREEZING VARIOUS PRODUCTS

John D. Harper, Elgin, Ill.; Frederick Breyer, Boca Raton, Fla., and Richard Wagner, Darien, Ill., assignors to Integral Process Systems, Inc., Park Forest, Ill.
Division of Ser. No. 516,505, Dec. 27, 1965, which is a division of Ser. No. 487,446, Sept. 15, 1965, Pat. No. 3,277,657. This application May 10, 1974, Ser. No. 468,816
Int. Cl. F25b *19/00*
U.S. Cl. 62—380 **1 Claim**

1. A cryogenic freezer for ultra-fast freezing of products with a cryogenic liquid comprising:

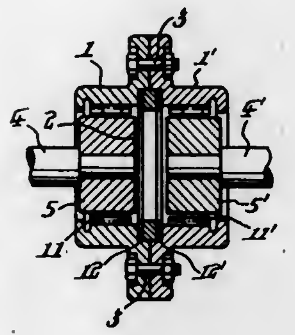
a. insulated wall means forming an elongated, horizontally extending tunnel having an inlet and an outlet;
b. conveyor means having at least one reach extending through the interior of said tunnel for conveying a product to be frozen through said tunnel from said inlet to said outlet;
c. means forming a liquid-product contact zone in said tunnel, said means including conduit means for introducing a cryogenic liquid refrigerant into said tunnel in contact with said product on said conveyor for freezing said product and vaporizing said liquid to form a refrigerant gas;
d. passage means forming a plurality of distinct, substantially closed, recirculation paths for independently recirculating said refigerant gas in each of said paths, said recirculation paths being adjacent each other in series along the length of said conveyor for successively contacting the product on the conveyor with the gas recirculating in each path, all of said recirculation paths being positioned between said tunnel inlet and said liquid-product contact zone;



e. passage means for conducting newly generated refrigerant gas from said liquid-product contact zone into the recirculation path adjacent thereto;
f. passage means for conducting portions of the refrigerant gas from each recirculation path to the next recirculation path closer to said tunnel inlet such that the average temperature of the gas in each path increases in the direction of the tunnel inlet;
g. passage means for exhausting a portion of the refrigerant gas from the recirculation path closest to said tunnel inlet; and
h. gas flow producing means for recirculating the refrigerant gas in each of said recirculation paths at a velocity sufficient to produce turbulent flow of the refrigerant gas in contact with the product.

3,871,191
GEARED TYPE SHAFT COUPLING

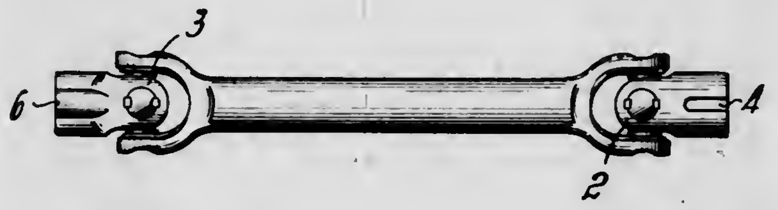
Kuniyoshi Sugimoto, Yokohama, Japan, assignor to Kabushiki Kaisha Hasegawa Haguruma, Tokyo, Japan
Filed July 5, 1973, Ser. No. 376,440
Claims priority, application Japan, July 7, 1972, 47-79671
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **3 Claims**



1. A geared type shaft coupling comprising two interior hubs secured to respective shafts and each having external gear teeth, a sleeve transversely split into two sections of identical configuration having internal gear teeth for meshing engagement with said respective interior hubs, means for securing said two sleeve sections together in axially abutting relation to each other, said sleeve sections being counterbored at the abutting ends thereof to the same axial depth and diameter jointly to define an annular groove of rectangular cross section around the inner periphery of said sleeve midway of its axial length, and a ring member closely fitted in said annular groove and comprised of a flat annular disc of hard material having an external diameter substantially equal to the diameter of said annular groove, and a pair of annular flat gaskets bonded to the opposite sides of said annular disc, each of said gaskets made of an elastic material, each said gasket having an inner and an outer diameter substantially equal to the inner and outer diameter of the discs, said ring member having a total thickness slightly larger than twice the axial depth of the counterbore in each of said sleeve sections, and said annular gaskets are each beveled on its outer edge.

3,871,192
FORKED UNIVERSAL JOINT MEMBER

Heinrich Muhr, Duesseldorf; Wolfgang Sprenger, Mettmann; Franz-Dieter Schnitzler, Dusseldorf-Oberkassel; Adolf Degenkolbe, Meerbusch; Hans Willemsen, Neuss-Reuschenberg; Horst Bruss, Solingen; Willy Blumberg, Dusseldorf-Oberkassel, and Manfred Belsdorf, Meerbusch; all of Germany, assignors to A. Ehrenreich & Cie., Dusseldorf, Germany
Filed Nov. 7, 1973, Ser. No. 413,446
Claims priority, application Germany, Nov. 18, 1972, 2256726
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 R **2 Claims**



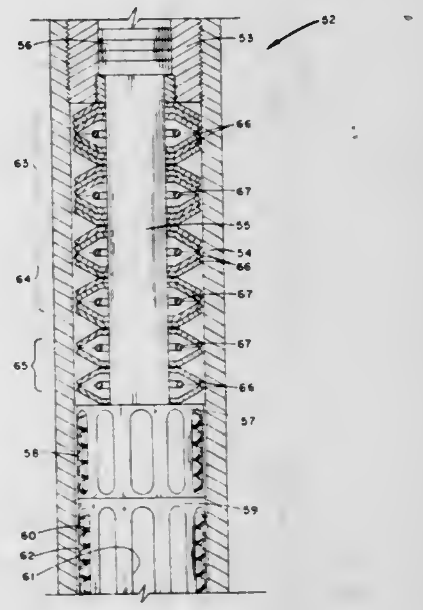
1. A forked member, for use in a universal joint and permitting detachable connection to a shaft,

comprising, in combination,
- a deformed pipe, having first and second end portions and defining near said first end portion a forked part including prongs adapted to be engaged in a universal joint;
- said pipe further defining near said second end portion a clamp-like member adapted to clamp detachably the shaft in proper alignment with said forked part while resisting deformation thereof, said clamp-like member comprising:
- a longitudinal fold extending from said second end toward said first end;
- said pipe further defining a longitudinal slot extending from said second end toward said first end and being open at said second end; and
- said ovally deformed pipe further defining a multiplicity of bore holes adapted to permit an attachment element in transversal direction to said slot.

3,871,193
SPRING LOAD SYSTEM FOR DRILL STRING SHOCK ABSORBERS

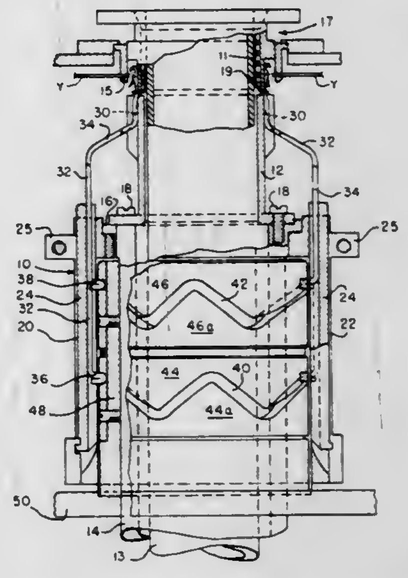
James Whitehurst Young, Irving, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Dec. 12, 1973, Ser. No. 423,964
Int. Cl. E21b *17/04*
U.S. Cl. 64—23 **10 Claims**

1. A shock absorbing torque transmitting well tool, comprising:
- an outer member;
- an inner member, said outer member and said inner member being telescopically arranged;
- spline means between said outer member and said inner member for transmitting torque; and
- spring means connected to said outer member and connected to said inner member, said spring means including a first spring unit with a first spring constant and a second spring unit with a second and different spring constant said first spring unit and said second spring unit including a multiplicity of disc springs positioned between said inner and outer members.



3,871,194
CIRCULAR KNITTING MACHINE

John Greczin, 7312 School Ln., Melrose Park, Pa. 19126, and Roy D. Faigenbaum, deceased, late of 4072 Mountain Rd., Melrose Park, Pa. (by Sylvia Faigenbaum, executrix)
Filed Dec. 27, 1972, Ser. No. 316,878
Int. Cl. D04b *9/44, 15/14*
U.S. Cl. 66—9 A **4 Claims**



1. In a circular knitting machine having at least one yarn feed and including a needle cylinder, a pair of spaced lower slots in said cylinder, a pair of first and second latch needles individually disposed each in one of said lower slots, each of said needles being lengthwise movable in its slot to and between its latch-clearing and cast-off positions, the combination of

A. actuating means for moving the pair of needles in unison between their latch-clearing and cast-off positions,
   i. said actuating means including a pair of cams,
   ii. one said cam actuating said first latch needle and the other said cam actuating the second latch needle,

B. a needle stem positioned above the needle cylinder and terminating upwardly in an upper edge portion,

- i. said needle stem including a pair of spaced upper slots,
  - ii. each said upper slot being in vertical alignment above one said lower slot,
- iii. each said upper slot being defined from a base and having sidewalls extending outwardly from the base,
  - a. the said needle stem having an outer periphery and the slot sidewalls extending outwardly from the base to the outer periphery,
- C. spacer means separating the said spaced slots to knit said yarn feed into stitches, the width of which is a function of the course-wise distance between the first and second latch needles,
  - i. said spacer means separating the pair of upper slots a distance sufficient to accommodate the width of at least three conventional latch needles, and
- D. an undercut portion fabricated in said needle stem at its upper portion,
  - i. said undercut portion extending laterally between the pair of upper slots to provide a forecut common to the pair of slots and within which the stitches formed by the needles which are disposed in the slots may extend,
  - ii. said undercut portion extending downwardly within the upper edge portion a distance at least sufficient to correspond to the length of travel of the needles between their latch clearing and cast-off positions and within which the stitches formed by the needles which are disposed in the upper slots may extend.

3,871,195
APPARATUS FOR USE IN DYEING TEXTILE MATERIALS

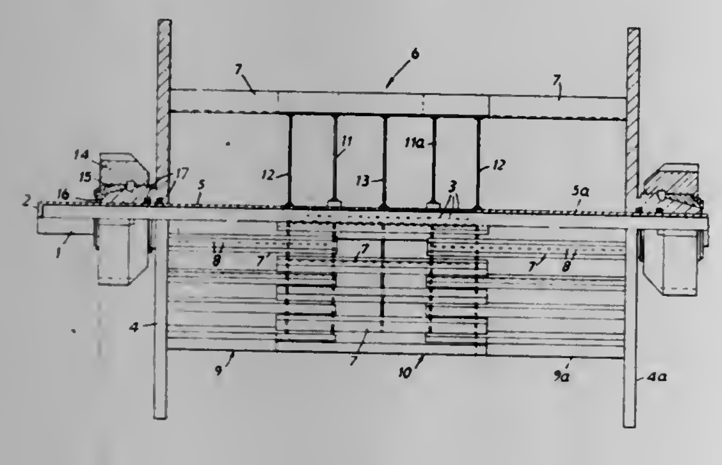
James Donald MacKay Gibson, Ilkley, England, assignor to I.W.S. Nominee Company Limited, London, England

Filed Apr. 18, 1973, Ser. No. 352,444

Claims priority, application United Kingdom, Apr. 18, 1972, 17922/72

Int. Cl. B65h *75/20;* **B05c** *8/02*

U.S. Cl. 68—198 **4 Claims**



1. A dye beam of adjustable width comprising:
- a hollow shaft formed with perforations in its centre portion to permit the passage of treatment liquor therethrough;
- two end plates mounted in spaced relationship on said shaft, at least one of said end plates being movable along said shaft; and
- a telescopic framework mounted in parallel spaced relation to the said shaft and cooperating with the end plates for supporting a textile fabric, the width of the framework being adjustable by movement of the at least one of said end plates, wherein the framework comprises a plurality of elements of generally U-shaped section extending parallel to the axis of the hollow shaft and supported thereon, the U-section elements being disposed in at least two groups displaced from one another in the said axial direction, the elements of each group being substantially uniformly spaced around the hollow shaft and having the open end of their U-section facing radially outwards.

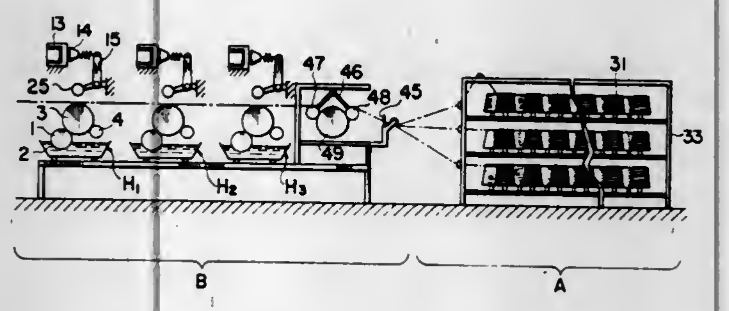
3,871,196
APPARATUS FOR CONTINUOUSLY PRINTING YARNS WITH SPLASHED PATTERN OF RANDOM PITCHES

Hirotsugu Matsunaga, Kyoto, Japan, assignor to Hanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 213,006, Dec. 28, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,529

Int. Cl. B05c *1/08*

U.S. Cl. 68—203 **5 Claims**



2. An apparatus for continuously printing yarns with splashed pattern of random pitches, comprising:
- yarn running means causing the yarns to run in their longitudinal direction at a given speed;
- a plurality of yarn printing means provided at different positions along the running yarns, each printing means including a dye carrying surface for holding dye thereon and being positioned adjacent to and a little apart from said running yarns, each printing means also including a yarn pressing member opposing the respective dye carrying surface to keep the running yarns between said dye carrying surface and said yarn pressing member and being actuated toward and away from the respective dye carrying surface in response to a control signal applied thereto; and
- a corresponding plurality of pattern signal generating means respectively associated with respective ones of said yarn printing means, each of said pattern signal generating means including a rotary drum rotating at a speed different from that of the rotary drum included in each other pattern signal generating means, each drum having a plurality of spaced projecting ridges formed circumferentially thereof and defining a given pattern program, each pattern signal generating means also including switch means actuated by being contacted by the projecting ridges of the respective drum for delivering said control signal to be applied to the corresponding yarn pressing member;
- shaft means for supporting the drums associated with said plurality of pattern signal generating means in axial alignment with one another for permitting each drum to rotate at a speed different from that of the rotary drum associated with each other pattern signal generating means;
- drive means for rotating each drum at a speed which is different from the rotation speed of the other drums, said drive means including a plurality of driving mechanism each associated with one of said drums; and
- control means associated with said switch means for permitting delivery of only a single control signal even though more than one of said switch means are simultaneously actuated, whereby said control means prevents overlap in the printing of the yarns.

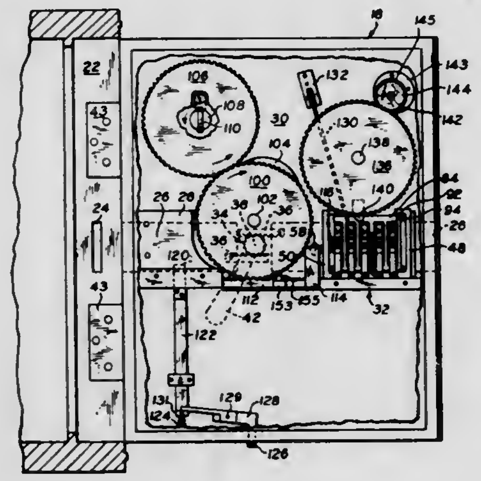
3,871,197
COMBINATION SAFE

Martin A. Waxgiser, 125-10 Queens Blvd., Kew Gardens, N.Y. 11415, and Leonard Foreman, 2407 Joel Dr., North Bellmore, N)Y) 11710

Filed Feb. 5, 1974, Ser. No. 439,960

Int. Cl. E05b *37/02*

U.S. Cl. 70—63 **33 Claims**



1. In combination with a closeable door; a door frame for receiving said door; movable latch means including complementary parts on said door and door frames for latching said door in the position in which it is received by said door frame; and means for locking said latching means in latching position comprising said door; a combination lock of the type having a plurality of side-by-side coding wheels, a rotatable cam associated with each coding wheel, means for releasably engaging each of said coding wheels with its associated cam for concomitant rotation, cam follower means operatively engageable with said latching means for preventing movement thereof out of its latching position, said cam follower means being movable by each of said cams to and from said latch movement preventing position and from and to a second position out of operative engagement with said latching means, whereby all of said cams must be in predetermined positions to move said cam follower means out of said latch movement preventing position; the improvement comprising: a key lock including a key receiving member movable between a key receiving position, a second position and a position intermediate said other two positions;
- means for actuating said means for releasably engaging said cams with said coding wheels to release said cams from said coding wheels when said key receiving means is in said intermediate position, said last mentioned actuating means being ineffective when said key receiving member is in said key receiving position and in said second position; and
- means for preventing said key receiving member from being moved to said key receiving position unless said coding wheels are each in a preselected position.

3,871,198
DOOR LOCK MEANS

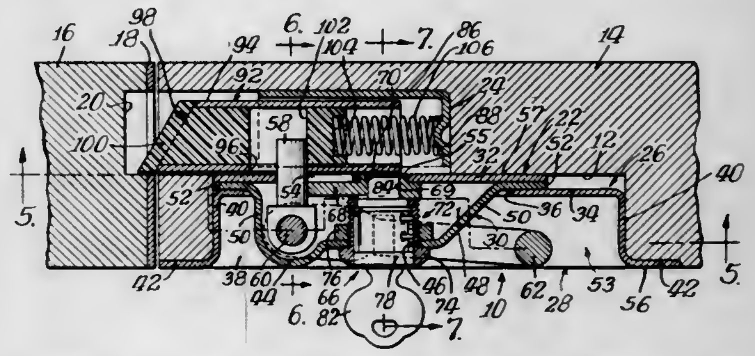
Kenneth J. Miller, Gurnee, Ill., assignor to A. L. Hansen Mfg. Co., Gurnee, Ill.

Filed Nov. 9, 1973, Ser. No. 414,228

Int. Cl. E05b *5/00*

U.S. Cl. 70—146 **6 Claims**

1. A lock bolt operating handle assembly comprising a pan-shaped housing unit presenting front and back face portions in spaced-apart planes and a closed exposed front surface, a lock bolt engaging and operating member located rearwardly of said exposed front surface and projecting through the plane of said back face portion, arm means pivotally mounting said operating member in said housing unit on an axis intermediate of the planes of said front and back face portions and projecting through said exposed front surface, and a handle normally lying intermediate of the planes of said front and back face portions and secured to said arm means forwardly of said exposed front surface for effecting pivotal movement of said arm means and said operating member.



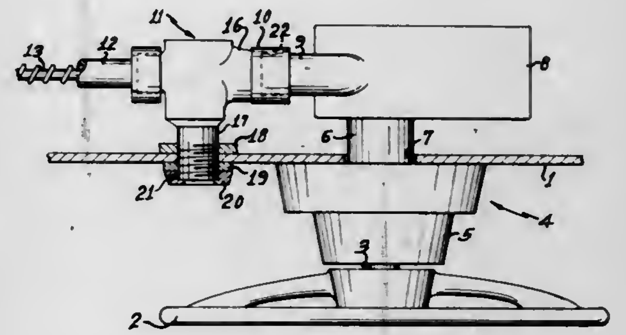
3,871,199
BOAT LOCK

Karl Lennart Perldal, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Feb. 7, 1974, Ser. No. 440,324

Int. Cl. B60r *25/02*

U.S. Cl. 70—252 **10 Claims**



1. An anti-theft lock for boats having wheel steering, in which the steering wheel movement is transmitted to a rudder by means of a steering cable formed with a cogged surface driven by a cogwheel which is coupled to the steering wheel, said lock comprising a housing through which the steering cable moveably extends, a locking bolt in said housing which is moveable therein towards and away from said steering cable, said locking bolt including a portion provided with teeth moveable with said locking bolt into and out of meshing engagement with the cogs of said cable, means for moving said locking bolt, and means operative to lock the locking bolt in cable locking position with said teeth engaged with the cogs of the steering cable.

3,871,200
METHOD AND APPARATUS FOR PRODUCING SINTERED METAL PRODUCT

Mineo Onoda, Takarazuka, and Takahiko Kimura, Nagoya, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed July 2, 1973, Ser. No. 376,061

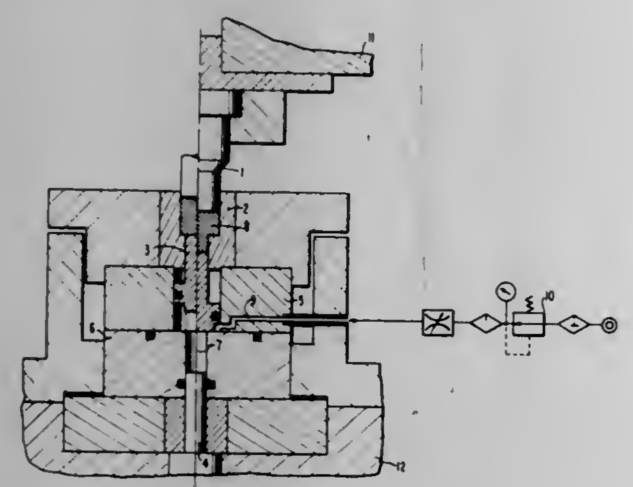
Claims priority, application Japan, Feb. 6, 1973, 48-14964

Int. Cl. B21c *23/32;* **B22f** *3/24*

U.S. Cl. 72—41 **3 Claims**

1. In a method for producing a sintered metal product, including the steps of:
- lubricant cooling the surface of a sintered metal pre-form billet of low to medium density, and
- extruding said billet under pressure through a die in one direction while maintaining it at a temperature ranging from room temperature to 750℃.,
- the improvement comprising:
  - the step of simultaneously applying a back pressure to said billet during extrusion in a direction opposite to that of extrusion with said back pressure being at least

twenty per cent of extrusion pressure;



whereby, the sintered metal product thus obtained has a higher, more uniform density and is free from surface and inner crack with its inner pores not enlarged.

3,871,201
CONTINUOUS HYDROSTATIC EXTRUSION-DRAWING APPARATUS

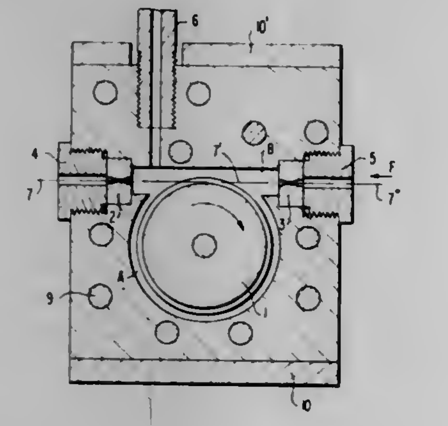
Makoto Hayashi, and Masanori Hinata, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1973, Ser. No. 425,650

Claims priority, application Japan, Dec. 16, 1972, 47-126590

Int. Cl. B21c *33/00*

U.S. Cl. 72—60 **3 Claims**



1. A continuous hydrostatic extrusion-drawing apparatus comprising:
- a main body housing defining therein a wire passage, in which a working fluid under pressure is confined and through which a wire to be extruded and drawn is made to pass;
- a first die disposed at the inlet of said wire passage and formed with a bore having an effective diameter which is smaller than that of a fed wire;
- a second die disposed at the outlet of said wire passage and formed with a bore having an effective diameter which is smaller than that of the first-named die;
- pulling means disposed within said working fluid midway of said wire passage and directly frictionally gripping said wire for continuously pulling the fed wire through the first-named die to such an extent as to overcome the back tension which is exerted on the passing wire due to the difference in the effective diameter between the first- and second-named dies; and
- take-up means disposed outside of said main body housing for continuously pulling the once-pulled wire through the second-named die in synchronism with said pulling means and acting to such an extent as to afford a predetermined front tension to said once-pulled wire and for concurrently taking up the twice-pulled wire thereon.

3,871,202
FORGING PRESS

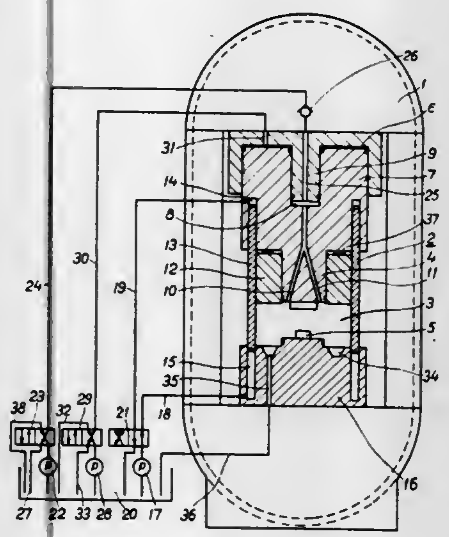
Harry Claesson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 22, 1974, Ser. No. 463,039

Claims priority, application Sweden, May 3, 1973, 7306177

Int. Cl. B21j *9/02*

U.S. Cl. 72—60 **9 Claims**



1. Forging press comprising a forging chamber (3), a forging piston (4) sealingly insertable into the forging chamber (3) for forging billets (5) arranged in the forging chamber (3), a main cylinder (6) and a main piston (7) arranged in the main cylinder (6) for imparting movement to said forging piston (4), means for filling said forging chamber (3) with oil which is compressed when the forging piston (4) forces its way into the forging chamber (3), a pressure-equalizing chamber (8), means connecting the forging chamber (3) with the pressure-equalizing chamber (8), a back-pressure piston (9) with a smaller piston area than the forging piston (4) sealingly insertable into the pressure-equalizing chamber (8) and the main piston (7) being operatively connected to the forging piston (4) to effect a change in the volume of the forging chamber (3) and the pressure-equalizing chamber (8), respectively, the volume of the pressure-equalizing chamber (8) thereby increasing when that of the forging chamber (3) decreases.

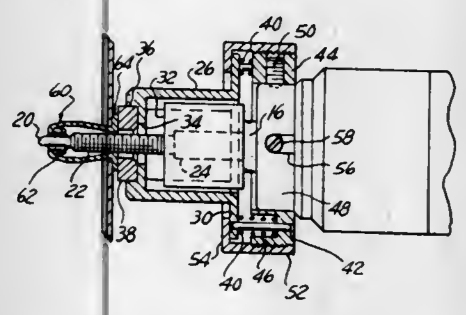
3,871,203
TUBULAR FASTENER SETTING POWER TOOL

Martin Wellin, Oak Park, Mich., assignor to U.S. Industrial Tool & Supply Co., Detroit, Mich.

Filed Mar. 25, 1974, Ser. No. 454,080

Int. Cl. B21j *15/34*

U.S. Cl. 72—114 **5 Claims**



5. An attachment for a manually supported tool having a reversible rotatable spindle to adapt the tool for setting tubular fasteners having a flange at one end and an internally threaded section at the other end which is collapsible toward the flange to set the fastener, comprising: an elongated bit having one end adapted to be supported in the spindle of the tool, having a pilot section with cross-sectional dimensions allowing it to pass through the internal thread on the fastener on the other end, and having a threaded section adapted to engage the internal thread on the fastener formed adjacent to the pilot section: an annular pressure ring for engaging and supporting the flange of the fastener: means for supporting said ring on the nonrotary section of the tool so that it surrounds the bit and is slidable axially with respect to the bit; and means for biasing said pressure ring toward its axial position wherein it is displaced from the stationary section of the tool.

3,871,204
MACHINES FOR MANUFACTURING BEARING RACES BY ROLLING

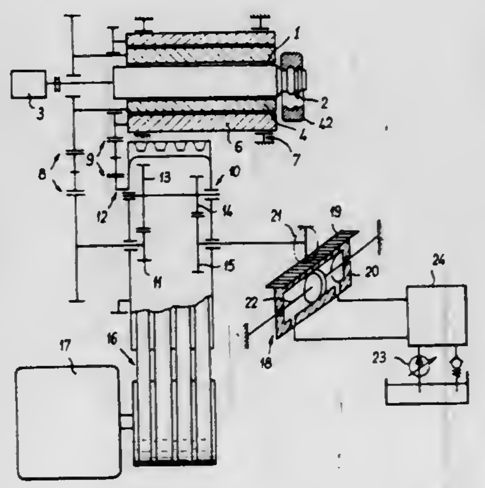
Jean Gerat, and Georges Gerbet, both of Annecy, France, assignors to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France

Filed July 13, 1973, Ser. No. 378,815

Claims priority, application France, Aug. 9, 1972, 72.28788

Int. Cl. B21d *17/04*

U.S. Cl. 72—117 **15 Claims**



1. In a machine for rolling annular workpieces in an external die with a rolling tool roller operating in overhanging relationship in a blank of the workpiece to be rolled, said machine comprising:
- a frame structure,
- first and second sleeves, said first sleeve being disposed eccentrically in said second sleeve,
- a spindle fitted eccentrically in said first sleeve,
- said tool roller being rigidly connected to one end of said spindle,
- said second sleeve being rotatably mounted in said frame structure,
- drive means for rotating said sleeves at the same speed,
- means for angularly displacing said sleeves relative to each other for controlling the feed movement of the tool roller, a motor for rotatably driving said spindle and said tool roller at such speed that the relative speed of the tool roller at a peripheral point thereof approaching a blank to be rolled is substantially zero,
- said drive means comprising an epicyclic gear train operatively connected through two rotating members of said gear train to said sleeves, said rotating members being coactable with a third member of said gear train,
- said third member being responsive to said angularly displacing means and constituting a reaction member, the angular setting of which is controlled by said angularly displacing means as a function of the desired rate of feed movement of the tool roller.

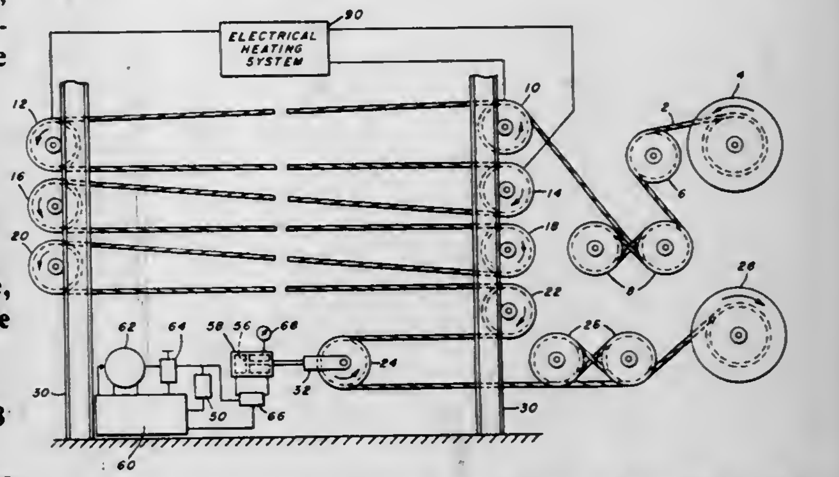
3,871,205
APPARATUS FOR LENGTH STABILIZATION OF A CABLE

G. Donald Fenton, Paxton, Mass., assignor to United States Steel Corporation, Pittsburg, Pa.

Continuation of Ser. No. 168,935, Aug. 4, 1971,. This application May 21, 1973, Ser. No. 362,611

Int. Cl. B21f *9/00*

U.S. Cl. 72—128 **6 Claims**



1. In an apparatus for length stabilizing a length of cable which apparatus comprises a pair of hold-back sheaves for providing a braking effect, a pair of pulling sheaves, means for driving said pulling sheaves, a series of intermediate sheaves between said hold-back sheaves and said pulling sheaves, said sheaves defining a path through which a cable may travel through the apparatus and one of said intermediate sheaves being mounted for applying tension to the cable between the hold-back sheaves and the pulling sheaves, the combination therewith of means connected to said hold-back sheaves for alternately increasing and decreasing the braking effect of said hold-back sheaves between a maximum level and a minimum level in timed cycles and means connected to one of said intermediate sheaves for applying tension and responsive to said change in braking effect for tensioning said cable between maximum and minimum levels whereby each increment of cable length is tensioned through a multiplicity of cycles.

3,871,206
CONTINUOUS ROTARY PRESS

Ichizo Otoda, Hyogo; Akio Nakamura, Kyoto; Takashi Kanehisa, Kyoto; Yasuo Taki, Kyoto; Makoto Yokozeki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 29, 1973, Ser. No. 392,465

Claims priority, application Japan, Aug. 29, 1973, 48-86926; Aug. 4, 1973, 48-87828; Aug. 16, 1973, 48-921181; Aug. 16, 1973, 48-921182; Aug. 16, 1973, 48-921183; Aug. 16, 1973, 48-921184; Aug. 16, 1973, 48-921186; Aug. 16, 1973, 48-921187

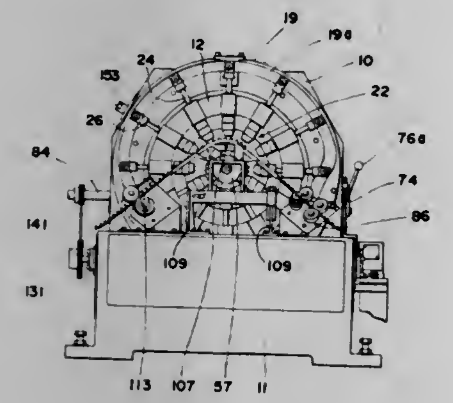
Int. Cl. B21d *22/08*

U.S. Cl. 72—190 **24 Claims**

1. A continuous rotary press which comprises in combination:
- a rotary turret;
- a plurality of first tool units radially arranged with respect to the axis of rotation of said turret and slidably supported by said turret;
- second tool units corresponding in number to said first tool units, each mounted in cooperative relation with the corresponding one of said first tool units for performing a definite press work, said second tool units being radially arranged with respect to the axis of rotation of said turret in alignment with said respective first tool units and slidably supported by said turret around and adjacent to the axis of rotation of said turret;
- means operatively positioned for rotating said rotary turret in one direction while carrying said first and second tool units;

first means stationarily held by a non-movable portion of the machine body for successively causing said first tool units to alternately move close to and away from the corresponding second tool units during each rotation of said turret;

second means stationarily held by a non-movable portion of the machine body for successively causing said second tool units to alternately move close to and away from the corresponding first tool units during each rotation of said turret, said definite press work being performed as said first tool units and said second tool units undergo relative movement close to each other while said first and second tool units carried by said turret travel around the axis of rotation of said turret;



means operatively positioned for guiding a strip material, which is to be subjected to said definite press work, so as to feed said strip material between said first and second tool units, said strip material being successively held in position between said first and second tool units during the performance of said definite press work with no substantial interruption in the advance thereof; and

stripper means stationarily carried around the axis of rotation of said turret for rotation together therewith, said stripper means having a flat surface, the plane of said flat surface intersecting the direction of movement of any of the corresponding first and second tool units of one pair, said strip material being adapted to be wound around said stripper means so as to be fed therearound substantially without accompanying lengthwise and widthwise displacements.

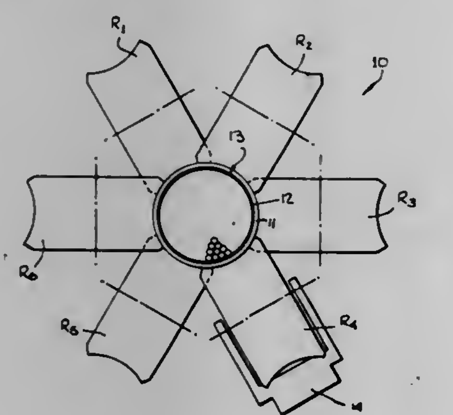
3,871,207
APPARATUS FOR PRODUCING CORRUGATIONS ON SCREENS OF FULLY-FILLED CABLES

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed May 1, 1974, Ser. No. 465,828

Int. Cl. B21d *15/06*

U.S. Cl. 72—194 **14 Claims**



1. In apparatus for producing circumferential sealing corrugations on the screen of a fully-filled cylindrical cable having a core with said screen therearound, a plurality of rotatable, similar rollers, even in number and at least six in number, means supporting said rollers side-by-side and as a crown around a circle having a diameter equal to the maximum diameter of the screen to be corrugated and with the planes of rotation thereof perpendicular to the plane of said circle, each of said rollers having radially extending side faces with a peripheral groove therebetween and having at least one ridge extending transversely of said groove and from one said side face to the other, said ridge having an arcuate, concave, radially outward face which is radially outward of said groove, said rollers being mounted with each ridge of one roller overlapping at its end portions the end portions of the ridges on rollers at opposite sides of said one roller, whereby ridges of alternate rollers lie substantially in a plane substantially parallel to said plane of said circle, and means interconnecting said rollers for restricting said rollers to rotation in synchronism with each other.

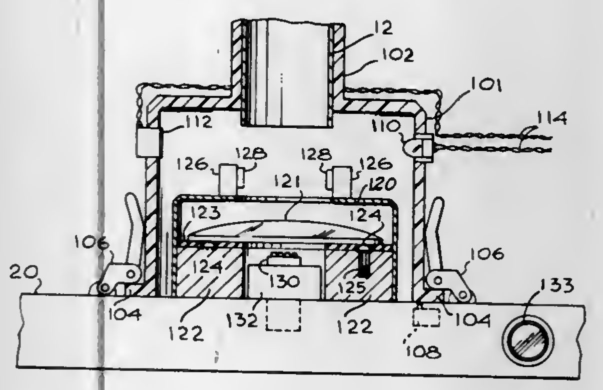
3,871,208
VALIDATED DROP TEST APPARATUS

Joseph E. Berg, Los Angeles, Calif., assignor to Precision Thin Film Corporation, Los Angeles, Calif.

Filed Feb. 20, 1973, Ser. No. 333,756

Int. Cl. G01n *3/30*

U.S. Cl. 73—12 **9 Claims**



1. Drop test apparatus for validating optical lenses comprising:

a. a light-shielded channel;
b. a drop ball for testing a particularly positioned optical lens by impact thereon;
c. drop ball release means releasably holding the drop ball in light-sealing engagement in said channel above the lower end thereof;
d. a drop ball detector positioned at a point adjacent the channel below the release means for detecting the passage of the drop ball past said point; and
e. solenoid activated indicia marking means responsive to a signal from the drop ball detector for marking a successfully tested lens and imprinting corresponding indicia on an associated record form identifying said lens.

3,871,209
METHOD OF EXTERNALLY TESTING CONNECTIONS BETWEEN TUBULAR MEMBERS

Malvern M. Hasha, 111 Acacia St., Lafayette, La.

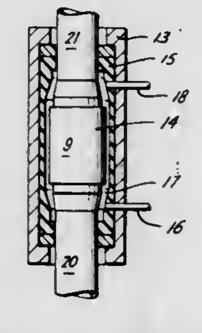
Filed Mar. 25, 1971, Ser. No. 127,949

Int. Cl. G01m *3/28*

U.S. Cl. 73—49.1 **23 Claims**

1. A method of testing a substantially full made up connection between tubular members comprising the steps of:

a. surrounding the connection externally to seal it off;
b. applying an external pressure to the surrrounded connection within the range of approximately 60 percent to approximately 90 percent of the collapse pressure rating of the tubular bodies; and
c. while maintaining such pressure, determining any pressure decay as an indication of the integrity of the connection between the tubular bodies.



3,871,210
VIBRATION TESTING APPARATUS WITH PRELOAD CONTROL

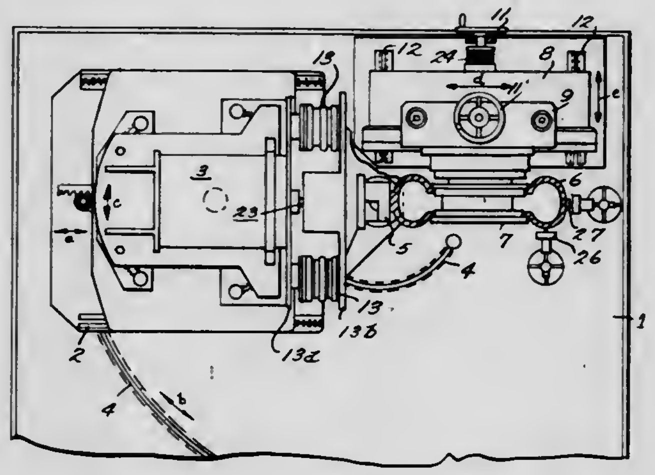
Gunther Himmler, Darmstadt; Klaus-Peter Ohms, Da-Eberstadt, and Peter-Max Gruber, Pfungstadt, all of Germany, assignors to Gebr. Hofmann KG, Darmstadt, Germany

Filed Nov. 3, 1972, Ser. No. 303,390

Claims priority, application Germany, Nov. 12, 1971, 2156369

Int. Cl. G01h *1/00*

U.S. Cl. 73—67 **7 Claims**



1. In an apparatus for carrying out structural tests of rotors having an oscillator having a coordinated exciter head, a preload control means for setting a preload force, and means for detecting the response of a rotor to said oscillation of the body to be tested under the action of the oscillator and the preload force including at least one vibration pick-up, the improvement comprising means for mounting said oscillator in regard of its direction of oscillation for pivotal movement over a certain angular range of 90° particularly, in relation to the body under test, and means for applying the exciting force by said oscillator independently of and separately from the force applied by said preload control means and means for swivelling said preload control means together with the oscillator and said coordinated exciter head for exciting the rotor.

3,871,211
TENSIOMETER

Aharon Tal, 131 Hanassi St., Herzliya, Israel

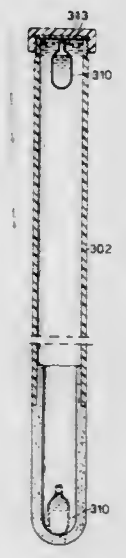
Filed Sept. 21, 1973, Ser. No. 399,509

Claims priority, application Israel, Apr. 27, 1973, 42132

Int. Cl. G01n *7/10*

U.S. Cl. 73—73 **2 Claims**

1. A tensiometer for measuring soil-moisture tension, comprising: a tensiometer tube hermetically sealed at the top and closed at the bottom by a water-permeable member and adapted to be completely filled with water which is permeable through said member into and out of the ground in accordance with the soil-moisture tension of the ground in which it is inserted; and an indicating device disposed within the tensiometer tube and including a member defining an expansible chamber containing a liquid and a captive gas-bubble therein; said expansible-chamber-defining member being freely movable in the tensiometer tube from a position at the top of the tube indicating the soil is dry and should be watered, to a lower position indicating the soil is sufficiently moist and no watering is necessary; the top of the tensiometer tube being transparent to permit viewing the position of the indicating device.



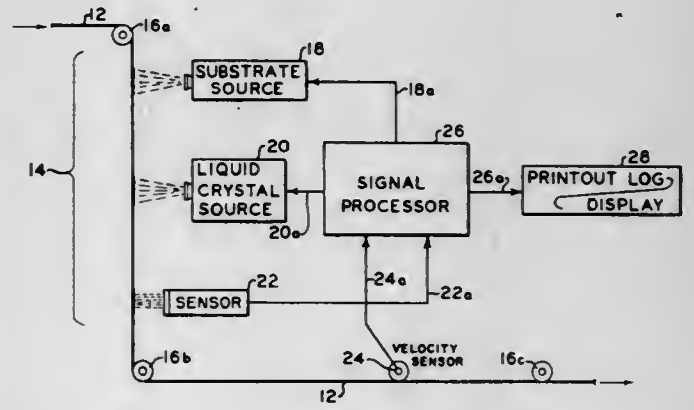
3,871,212
SYSTEM AND METHOD FOR MONITORING QUALITY CHARACTERISTICS OF A MOVING WEB

Ernest J. Neugroschl, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 4, 1973, Ser. No. 357,291

Int. Cl. G01b *11/16*

U.S. Cl. 73—88 A **14 Claims**



1. A system for monitoring the quality characteristics of a moving web comprising:

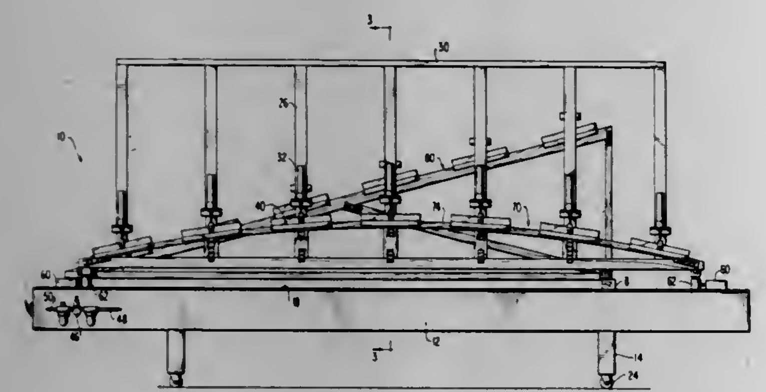
A. a source of liquid crystals compounded to reflect radiant energy in response to stress;
B. means to apply the liquid crystals to the surface of the web;
C. sensor means responsive to the reflected radiant energy from the liquid crystals on the web to provide signals indicative of the stress in the web as exhibited by the wavelength of the reflected energy;
D. a velocity sensor positioned relative to the web to provide an output signal indicative of the web speed; and
E. a signal processor operatively connected to the velocity sensor, the means applying the liquid crystals, and the sensor means, to provide control signals in response to the web velocity such that the liquid crystals may be selectively applied at intervals along the length of the web

and to receive the output of the sensor means to provide signals indicative of the web stress profile.

3,871,213
TEST STAND FOR TRUSSES

John Calvin Jureit, 8901 Arvida Ln., Coral Gables, Fla. 33156; Adolfo Castillo, 7761 S.W. 18th Ter., Miami, Fla. 33155, and Carlos Rionda, 11120 S.W. 50th Ter., Miami, Fla. 33165

Filed Jan. 7, 1974, Ser. No. 431,068
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 9 Claims



1. A test stand for a truss comprising: an elongated, generally horizontally extending base, means carried by said base for supporting first and second generally vertically disposed trusses, a plurality of fluid actuated cylinders carried by said test stand including first and second sets thereof generally overlying said base at longitudinally spaced positions therealong, each said set thereof lying in a generally vertical plane extending parallel to said base with said sets lying adjacent opposite sides of said test stand, each of the cylinders of said first set thereof having a head engageable with the upper chord of the first truss supported by said base and at longitudinally spaced positions therealong, means for supplying fluid under pressure to the cylinders of said first set thereof for loading the first truss, each of the cylinders of the second set thereof having a head engageable with the upper chord of the second truss supported by said base and at longitudinally spaced positions therealong, and means for supplying fluid under pressure to the second set of cylinders for loading the second truss.

3,871,214
ELECTRONIC ENGINE INTAKE AIR FLOW MEASURING DEVICE

Kenji Masaki, and Shuya Nambu, both of Yokohama, Japan assignors to Nissan Motor Company, Limited, Yokohama, Japan

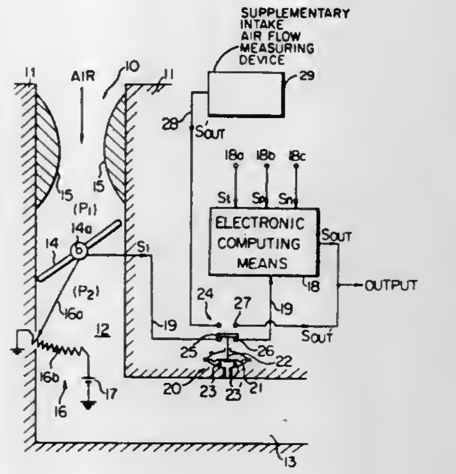
Filed Oct. 5, 1973, Ser. No. 405,623
Claims priority, application Japan, Oct. 6, 1972, 47-100495
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 4 Claims

1. An intake air flow measuring device for an engine having an air intake system with a throttle valve, comprising;

a throttle opening sensor operative to produce an electrical throttle opening signal analogous to the degree of opening of the throttle valve;

electronic computing means responsive to said throttle opening signal and operative to produce an electrical flow rate signal analogous to the intake air flow rate corresponding to the degree of throttle opening; and

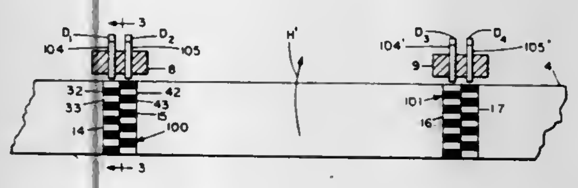
switching means responsive to the pressure at a point downstream of the throttle valve, and operative to connect said throttle opening sensor to said electronic computing means when the ratio of said pressure to atmospheric pressure is below a predetermined value.



3,871,215
OPTO-ELECTRONIC APPARATUS TO GENERATE A PULSE-MODULATED SIGNAL INDICATIVE OF THE MECHANICAL STATE OF A SYSTEM

George W. Pratt, Jr., Wayland, and Paul G. McMullin, Malden, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 141,486, May 10, 1971,. This application June 19, 1972, Ser. No. 264,121
Int. Cl. G01l *3/08*
U.S. Cl. 73—136 A 45 Claims

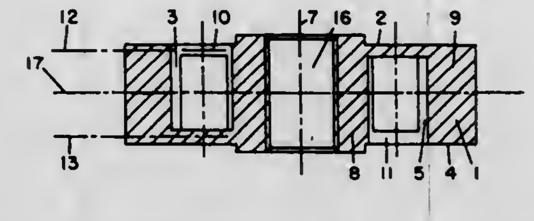


9. Apparatus for measuring torque transmitted by a rotating shaft, that comprises: a pair of axially spaced regions along the shaft at which are located elements carrying two contiguous areas of different optical characteristics having a sharply defined boundary therebetween, optical means at each region for detecting the passage of at least one said boundary at each region and generating primary electric signals which bear a fixed relation in time to the passage of the boundary, electrical circuit means for processing the primary electric signals from the optical means in a way that produces electrical pulses of fixed amplitude but of width determined by the time interval between the passage of a boundary at one region past the optical means at that region and passage of a boundary at the other region past the optical means at said other region, said optical means comprising a solid-state radiation detector whose effective light sensitive zone is small in cross dimension in the direction of travel of said areas therepast and whose light-to-electrical-energy time constants are fast compared to the time of passage of the areas past the detector.

3,871,216
DYNAMOMETER APPARATUS

Heinz Eder, Krefeld, Germany, assignor to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany

Filed June 23, 1972, Ser. No. 265,620
Claims priority, application Germany, June 28, 1971, 2132012
Int. Cl. G01l *1/22*
U.S. Cl. 73—141 A 9 Claims

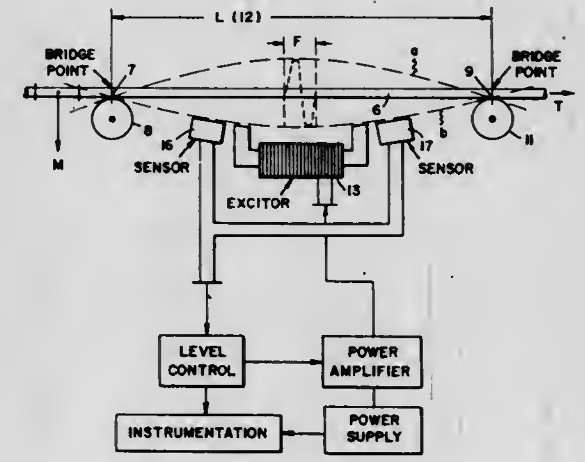


1. A dynamometer apparatus of the load cell type comprising a substantially cylindrical plate forming an elastic deformation body having a central axis, said plate having a first outer surface and a second outer surface, a central hub in said plate and a circumferential rim in said plate, a plurality of first blind holes extending from said first outer surface into said plate, said first blind holes being spaced from each other between said hub and rim, said first blind holes forming first ribs extending substantially radially and connecting said hub to said rim adjacent to said first outer surface, a plurality of second blind holes extending from said second outer surface into said plate but staggered relative to said first blind holes, said second blind holes also being spaced from each other between said hub and rim to form further ribs extending substantially radially and connecting said hub to said rim adjacent to said second outer surface, and strain sensing means secured to selected ones of said ribs.

3,871,217
CONTINUOUS CABLE TENSION MONITOR

David C. Miley, Los Altos, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Apr. 25, 1973, Ser. No. 354,390
Int. Cl. G01l *5/10*
U.S. Cl. 73—143 11 Claims

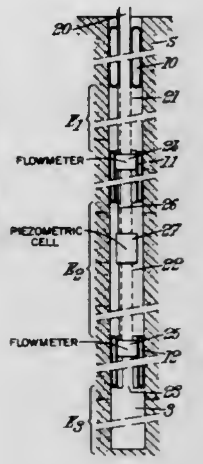


1. A cable tension monitor comprising an electromagnet having a pole adapted to be disposed adjacent a cable and having a magnet coil, a first electrical circuit including said magnet coil, means for periodically energizing said first circuit to establish a magnetic field adjacent said cable, a pair of pick-up devices disposed in said field spaced from opposite ends of said pole and effective to furnish repeated signals in accordance with perturbations in said field, an indicating device, means including a second electrical circuit and responsive to said repeated signals from said pick-up devices for controlling the frequency of energizing said first circuit, and means in said second electrical circuit for actuating said indicating device.

3,871,218
METHOD AND APPARATUS FOR DETERMINING THE PERMEABILITY CHARACTERISTICS OF A POROUS OR FISSURED MEDIUM

Claude Camille Louis, Saint Cyr en Val, France, assignor to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

Filed Aug. 25, 1972, Ser. No. 283,634
Int. Cl. E21b *47/10*
U.S. Cl. 73—155 7 Claims



1. Method for determining the permeability characteristics of a porous or fissured medium, comprising forming a borehole in situ in the medium, dividing said borehole along its axis into three adjacent cavities, separated from one another and comprising two protecting end cavities enclosing an intermediate measuring cavity, producing a flow of a liquid in each of the cavities and in the corresponding regions of corresponding medium, the direction of flow with respect to the medium being the same for each cavity, and effecting measurement of the flow-rate of liquid flowing in the intermediate cavity and measurements of the liquid pressure in said intermediate cavity and in the corresponding region of the medium, at known distances from the axis of the borehole and determining the permeability characteristics from said flow-rate and said liquid pressure measurements.

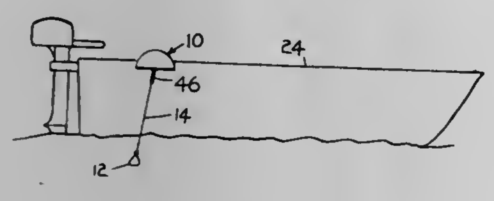
3,871,219
TROLLING SPEED INDICATOR

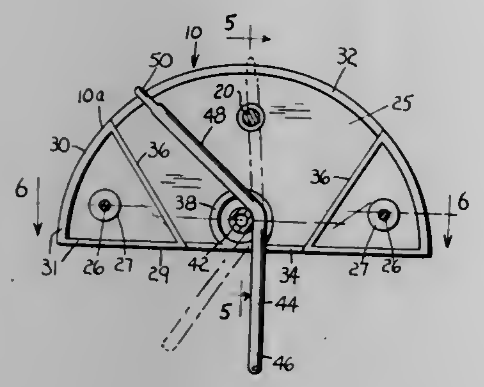
Jerry L. Quick, Ogallala, Nebr., and James D. Maxwell, Vancouver, Wash., assignors to Maxwell Manufacturing Co., Vancouver, Wash.

Filed Aug. 13, 1973, Ser. No. 387,767
Int. Cl. G01p *5/02*
U.S. Cl. 73—184 2 Claims

1. A trolling speed indicator for a boat comprising
a. a housing having an interior portion defined by side walls, end walls, and top and bottom walls,
b. said top wall being rounded,
c. means on said housing arranged to support it over the edge of a boat,
d. means defining a longitudinal slot in both the top and bottom walls of said housing,
e. an arm pivotally supported intermediate its ends in said housing,
f. said arm having a lower end portion projecting through the slot in the bottom wall of said housing and having an upper end portion projecting through the slot in the top wall of said housing,
g. reference means on the rounded top wall of said housing adjacent to said slot and having reference points extending through the length of the slot designating various relative speeds of the boat and water in order that the operator can achieve similar trolling speeds from one time to the next,
h. the upper end portion of said arm extending angularly relative to the lower end portion thereof so as to be dis-

posed at one end of said reference means when said lower end portion extends substantially straight downwardly,

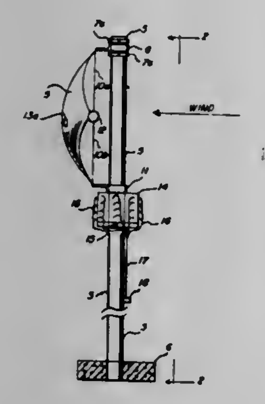




i. and drag means connected to the lower end of said arm arranged to engage the water whereby the arm is positioned at different positions with relation to said reference means depending upon the relative speed of the boat and water.

3,871,220
WIND VELOCITY AND DIRECTION APPARATUS

Edwin K. Hillman, 907 W. Desert Cove, Phoeniz, Ariz. 85029
Filed Jan. 2, 1974, Ser. No. 429,492
Int. Cl. G01w *1/02*
U.S. Cl. 73—189 9 Claims

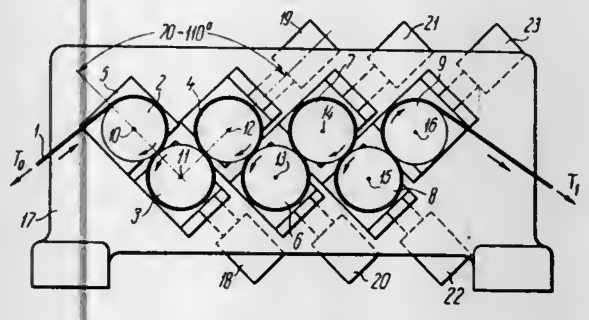


1. Mast mounted apparatus for determining the strength and direction of the wind, said apparatus comprising:

a. a fabric body rotatably secured to the mast and rotatable to a downwind position from the mast in response to the wind, said fabric body varying in shape in response to the force of the wind;
b. an electrical contactor for determining the rotational position of said fabric body and reflective of the direction of the wind;
c. a ferrite core surrounded by a movable coil, said coil including means for transmitting an alternating current through said coil;
d. means responsive to the change in shape of said fabric body for repositioning said coil with respect to said ferrite core to vary the reactance of said ferrite core commensurate with the change in shape of said fabric body; whereby, both the force of the wind and the direction of the wind is determinable.

3,871,221
CONTINUOUS STRIP ROLLING MILL

Vladimir Nikolaevich Vydrin, ulitsa Svobody, 139, kv. 7; Leonid Matveevich Ageev, ploschad Mopra, 2, kv. 33, and Vladimir Alexandrovich Gustov, prospekt Pobedy, 298, kv. 56, all of Chelyabinsk, U.S.S.R.
Filed Dec. 27, 1972, Ser. No. 319,054
Int. Cl. B21b *39/08*, *1/22*
U.S. Cl. 72—205 3 Claims



1. A continuous strip rolling mill comprising: a stand comprising at least three rolls encompassed by a sheet metal strip being processed, the axes of rotation of adjacent cooperating parts of said rolls being located in a common plane, one of said rolls being mounted in stationary chocks; drive means for rotating adjacent rolls in opposite directions with peripheral speeds progressively increasing in the direction of movement of the strip through the mill according to a process flowsheet in such a manner that the peripheral speed of each of the subsequent rolls exceeds the peripheral speed of each of the preceding rolls by the thickness of said metal sheet encompassing a preceding roll exceeds the thickness of said metal sheet encompassing a subsequent roll; first means for tensioning the leading end of said sheet metal strip, located behind said stand, as viewed in the direction of movement of said sheet strip being processed; second means for tensioning the trailing end of said sheet metal strip, located in front of said stand, as viewed in the direction of movement of said sheet being processed; and screw-down means reacting in the plane in which the axes of rotation are located for fixedly adjusting the distance between the axes of rotation of said adjacent rolls, and applying a fixed force sufficient for successive plastic deformation of the strip as it passes through successive pairs of rolls.

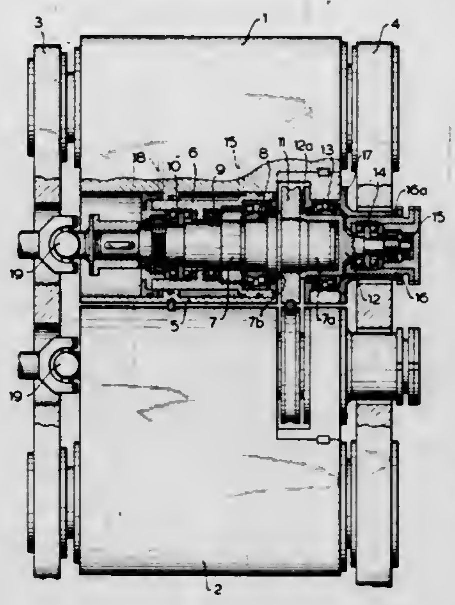
3,871,222
METAL ROLLING APPARATUS WITH EXCHANGEABLE ROLLS

Horst Lorenz, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany
Filed May 7, 1974, Ser. No. 467,632
Claims priority, application Germany, May 11, 1973, 2323768
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 4 Claims

1. In a metal working machine having a roll stand and exchangeably arranged rolls, comprising:

a hollow double acting piston within the stand;
a drive shaft in part rotatably carried within and by said piston;
a roll having a central aperture receiving said shaft therethrough;
abutting means formed on said shaft and bearing against one axial face of said roll,
a rotatably supported journal housing within said roll stand

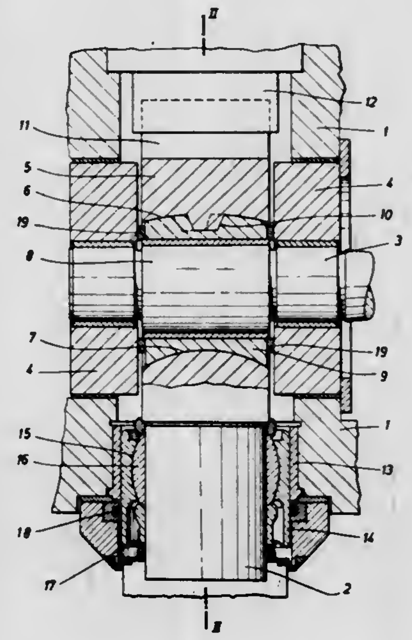
formed with abutting means bearing against the opposite axial face of said roll;



said shaft having a journal portion protruding into said journal housing and being supported thereby.

3,871,223
SWAGING MACHINE

Bruno Kralowetz, and Gottfried Blaimschein, both of Steyr, Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria
Filed Dec. 28, 1973, Ser. No. 429,687
Claims priority, application Austria, Jan. 10, 1973, 175/73
Int. Cl. B21d *43/02*; B21j *7/14*, *7/20*
U.S. Cl. 72—402 5 Claims

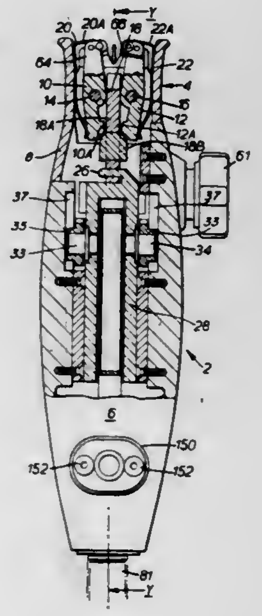


1. A swaging machine for a continuous swaging of elongated workpieces moving along a predetermined path, which comprises

a machine housing surrounding said path,
a plurality of hammers, which are similar to connecting rods and mounted in said housing,
a plurality of eccentrics, each of which is operatively connected to one of said hammers and rotatable to impart to said hammers a reciprocating motion toward and away from said path in a direction which is radial to said path, and an oscillating motion, and
a plurality of slide bearings associated with respective ones of said hammers and permitting of said reciprocating and oscillating motions of said hammers relative to said housing, each of said slide bearings comprising
a sliding member forming a bearing shell,
guide means mounted in said housing and adapted to guide said sliding member in its longitudinal direction toward and away from said path, and
a bearing member which is rigid with the associated hammer and has a curved bearing surface extending in and in bearing contact with said bearing shell to permit of said oscillating motion of said hammer relative to said sliding member.

3,871,224
EXCHANGEABLE CRIMPING JAW UNIT

John Leslie Hilton, Ringwood, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland
Filed Nov. 6, 1973, Ser. No. 413,414
Claims priority, application United Kingdom, Nov. 14, 1972, 52421/72
Int. Cl. B21d *37/06*
U.S. Cl. 72—413 6 Claims



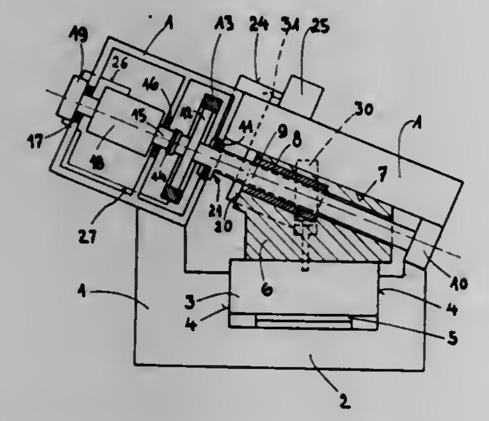
1. An exchangeable crimping jaw unit for a crimping machine body, said unit comprising in combination a pair of movable crimping jaws and a ram which moves backwards between said jaws to cause said jaws to open and close in a plane at right angles to the direction of movement of said ram, said ram being constructed and adapted to be attached to a ram driving member which is positioned in said crimping machine body and which continues to drive said ram towards said jaws after they have been closed thereby to effect a compressive action in the direction of travel of said ram, and said ram opening and shutting said jaws by means of a cam so arranged in an aperture in the ram that the cam is free to move laterally.

3,871,225
SCREW FORGING PRESS

Horst Bachmann, Rodental Ortsteil Einberg, and Hans Joachim Kossler, Kaarst, both of Germany, assignors to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany
Filed May 28, 1974, Ser. No. 474,102
Claims priority, application Germany, June 1, 1973, 2327843
Int. Cl. B21j *9/18*
U.S. Cl. 72—452 3 Claims

1. A screw forging press comprising: a press frame; a ram movable relative to the press frame; a wedge for acting on the ram to cause the ram to execute a forging stroke; a screw nut associated with the wedge for movement therewith; a screw engaged with the screw nut, rotation of the screw in one sense

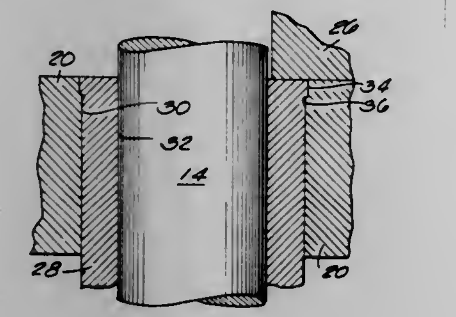
causing movement of the nut along the screw in one direction to effect a forward stroke of the wedge for causing the ram to execute a forging stroke and rotation of the screw in the opposite sense causing movement of the screw nut along the screw in the opposite direction to effect a return stroke of the wedge; a flywheel to which the screw is firmly connected; a reversible pole-changeable asynchronous motor for rotating the flywheel; a brake for braking the motor; means for controlling the sense of rotation of the motor to thereby control the direction of movement of the wedge; and resilient cushioning means for restraining movement of the wedge during at least part of its return stroke and for assisting movement of the wedge during at least part of its forward stroke.



3,871,226
DIE SET BUSHING RETAINER

Kasimir Janiszewski, 11908 W. Loomis Rd., Franklin, Wis. 53132

Filed Oct. 24, 1973, Ser. No. 409,230
Int. Cl. B21d *37/10;* **B21j** *13/04*
U.S. Cl. 72—456 **7 Claims**

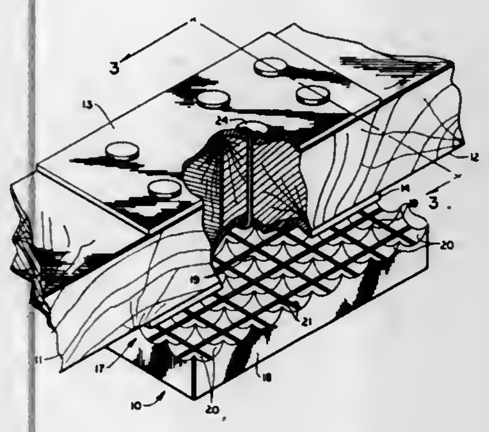


1. An improved die set comprising a die shoe for receiving and supporting a die, a punch holder mounted for reciprocal motion toward and away from said die shoe, a plurality of leader pins each attached at one end to said die shoe and extending therefrom toward said punch holder, a plurality of bushing sleeves each seated in a corresponding bore in said punch holder for slideably receiving a corresponding leader pin to guide said punch holder in its reciprocal motion toward and away from said die shoe, the outside diameter of each bushing sleeve being of such size as to permit the bushing sleeve to be axially reciprocated within the corresponding bore, an enlarged collar on one end of each bushing sleeve, each collar being dimensioned to secure the corresponding bushing sleeve within said bore and each collar being seated within the corresponding bore each of said bushing sleeves having an annular groove at the boundary between said sleeve and said enlarged collar, and the portion of each bushing sleeve adjacent to said collar being distortable under pressure to permit the collar to be bent or broken off in the event that the corresponding leader pin freezes within said bushing sleeve, thereby permitting the frozen bushing sleeve to reciprocate within the corresponding bore to prevent damage to a die attached to said die shoe.

3,871,227
NAIL TURNING APPARATUS

Carl E. Tidwell, Jr., 5800 Riverview Rd., Mableton, Ga. 30059

Filed Nov. 26, 1973, Ser. No. 419,219
Int. Cl. B21c *3/16*
U.S. Cl. 72—476 **2 Claims**

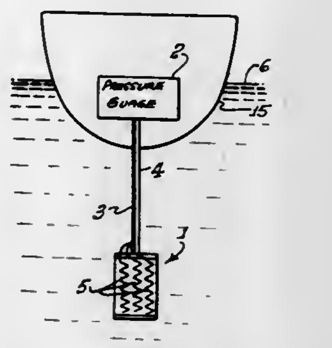


1. A nail turning plate comprising:
a nail impenetrable engaging member having a plurality of elevated regions which define peaks; and
each of said peaks being universally surrounded by arcuate surfaces which descend from the peak to a relatively lower position in contiguous relation to the lower position of an arcuate surface which ascends to an adjacent one of said peaks.

3,871,228
PERMEABLE MEMBRANE GAS SATUROMETER

Ray Franklin Weiss, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1973, Ser. No. 360,249
Int. Cl. G01n *7/10*
U.S. Cl. 73—19 **6 Claims**



1. Apparatus for measuring in situ the total pressure of gas components present in a large body of water comprising:
a thin-walled gas-permeable membrane sensor formed as an elongate flexible tube having a relatively small internal volumetric area and a relatively large external surface area,
a pressure gauge,
conduit means coupling said internal area to said gauge for conducting internal area gas pressures to the gauge,

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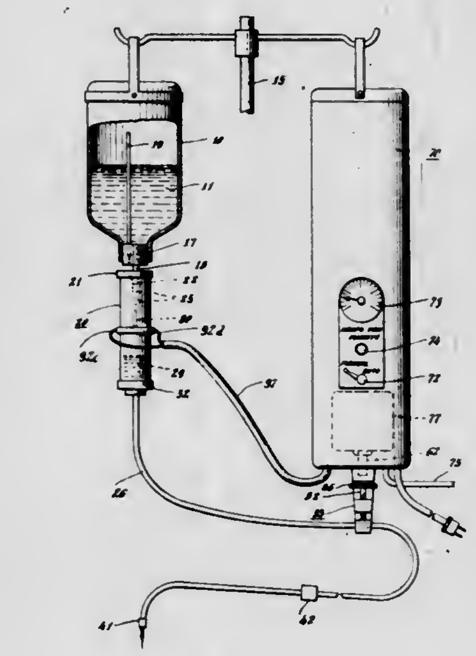
3,871,229
DROP SENSING APPARATUS

John H. Fletcher, Stamford, Conn., assignor to Data Service of America, Inc., Norwalk, Conn.

Filed Jan. 2, 1974, Ser. No. 429,788
Int. Cl. G01f *1/00;* **A61m** *5/16*
U.S. Cl. 73—204 **6 Claims**

1. Apparatus for sensing the passage of liquid drops successively falling along a predetermined vertical path, said apparatus comprising:

A. an enclosure including means for establishing a vertical drop path; and
B. a probe mounted within the enclosure and having a portion positioned directly in the drop path, said probe comprising
1. an electrically conductive element located in that portion of the probe which is positioned in the drop path, the conductivity of the element being significantly variable with its temperature,



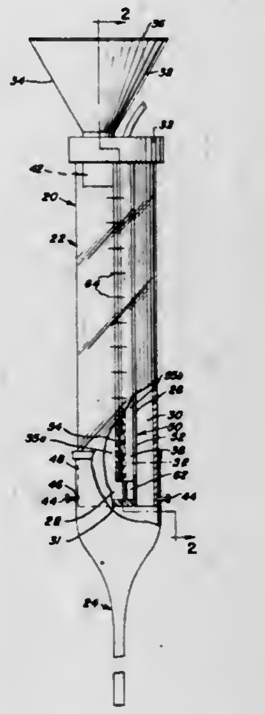
2. a pair of leads connected with the conductive element and having terminals outside the enclosure for conducting current to and from the conductive element, and
3. insulating material enclosing both the conductive element and the portion of the leads within the said enclosure and electrically isolating them from falling drops, such material being, however, of such thinness in the vicinity of the conductive element as not significantly to isolate the element from thermal gradients created by drops falling successively on that portion of the probe which is positioned in the drop path.

3,871,230
FLOW MEASURING APPARATUS

John F. Dye; William J. Binard, both of Barrington, and Leonard R. Anglada, Arlington Heights, all of Ill., assignors to The Kendall Company, Walpole, Mass.

Filed May 14, 1973, Ser. No. 360,214
Int. Cl. G01f *1/00*
U.S. Cl. 73—215 **23 Claims**

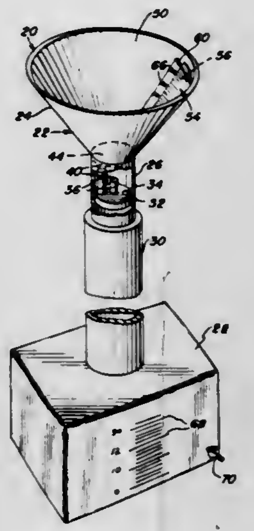
1. An apparatus for measuring the approximate peak flow rate of a liquid discharge comprising, a hollow receptacle having an inlet port adjacent the upper end of the receptacle to receive the liquid discharge, a compartment below the inlet port to receive the discharge passing through the inlet port, a channel adjacent said compartment, and an upright wall in the receptacle separating the compartment from the channel, said wall having vertically disposed opening means communicating between the compartment and channel to permit passage of liquid from the compartment to the channel as the liquid collects in the compartment, wettable means for indicating the maximum height of liquid collected in the compartment during the discharge to determine the approximate peak flow rate of the liquid discharge, and means for preventing the incoming liquid discharge from directly contacting a substantial portion of the indicating means.



3,871,231
FLOW MEASURING DEVICE

Anthony J. Ciarico, Waukegan, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed May 14, 1973, Ser. No. 360,217
Int. Cl. G01f *1/00*
U.S. Cl. 73—215 **11 Claims**



1. A device for measuring the approximate peak flow rate of a liquid discharge, comprising:
a body member having an inlet opening adjacent the top of the member to receive the liquid discharge, and a cavity extending from said inlet opening through the member;
a plate extending across the body member in said cavity below the inlet opening, said plate having aperture means extending through the plate for passage of liquid;
a plurality of tubes extending upwardly from the plate toward said inlet opening, each of said tubes having different lengths and communicating with the remote side of the plate relative said inlet opening for passing liquid in the tubes through the plate;
means intermediate the inlet opening and said plate wettable for indicating the maximum height of liquid reached in the body member during the liquid discharge to determine the approximate peak flow rate of the discharge into the body member; and

means for preventing the incoming liquid discharge from directly a substantial portion of the indicating means.

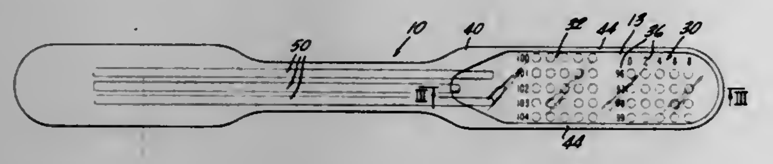
3,871,232
THERMOMETER CONSTRUCTION

Charles G. Pickett, Andover, and Ghazi Khattab, Parsippany, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 300,868, Oct. 25, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,146

Int. Cl. G01k *11/12, 11/08*

U.S. Cl. 73—356 **4 Claims**



1. In an elongated oral thermometer having
- a handle end and a measuring end, the measuring end including a heat conducting carrier in which a plurality of cavities are defined with solid solutions of the same two organic compounds in various composition ratios deposited in the cavities, the solid solutions having an essentially linear melting point-to-composition relationship over the composition range represented by the plurality of solutions,
- an indicator associated with each cavity to visually signal the melting of solid solution in that cavity, the cavities and associated indicators being spaced in a series of rows parallel to the longitudinal axis of the thermometer in a grid arrangement with each indicator corresponding to a point on the grid, and
- such temperature indicia associated with the indicators that each row indicates a different temperature range and all points in a row denote a regular progression of like temperature increments within that range,
- the improvement comprising the disposition of the highest temperature indicia for any given row being towards the measuring end of the thermometer and the lowest temperature indicia for the same row towards the handle end of the thermometer the various composition ratios for the solid solutions being such that the difference in the melting points of solid solutions in any two adjacent cavities in the same row is greater than the temperature increment shown by the indicia associated with those two adjacent cavities.

3,871,233
FLUID PRESSURE MONITORING DEVICE

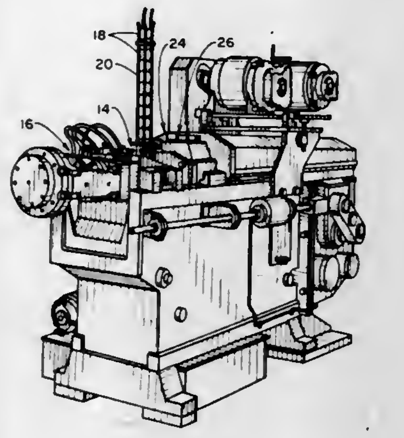
Elpidifor Paramonoff, Los Angeles, and Frederick C. Olsen, Huntington Beach, both of Calif., assignors to Standun, Inc., Compton, Calif.

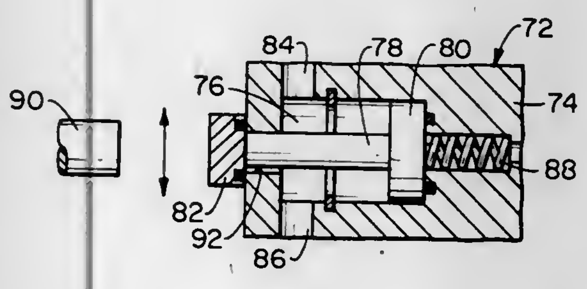
Filed Sept. 17, 1973, Ser. No. 397,613

Int. Cl. G01l *7/16*

U.S. Cl. 73—389 **8 Claims**

1. In a fluid pressure monitoring device for a machine and the like, the combination of: a machine moving part movable in a preset path of movement; a machine stationary part aligned adjacent said preset path of movement; a housing; a main fluid chamber formed in said housing; a plunger in said main fluid chamber reciprocal between first and second positions; operating fluid supply means communicating into said main fluid chamber and directing operating fluid against said plunger tending to urge said plunger toward said first position, said operating fluid normally being under a pressure above a predetermined minimum operating pressure exerting at least a part of a minimum total pressure force against said plunger retaining said plunger in said first position; monitoring pressure means operably connected to said plunger exerting a monitoring total pressure force against said plunger slightly less than said minimum total pressure force tending to urge said plunger toward said second position, said monitoring pressure means moving said plunger toward and into said second position when said pressure of said operating fluid drops below said predetermined minimum operating pressure; sensing means for sensing said plunger movement from said first toward said second position when said sensing means and said housing are generally adjacent, said sensing means including proximity sensor means spaced at all times from said plunger, said proximity sensor means being in a first condition when said plunger is in said first position and converting to a second condition during and after movement of said plunger from said first position into said second position upon said proximity sensor means and said housing becoming generally adjacent; said housing and said proximity sensor means being mounted one on said machine moving part moving in said preset path of movement with said machine moving part and one on said machine stationary part aligned adjacent said preset path of movement of said machine moving part, said proximity sensor means sensing said plunger movement into said second position and converting into said second condition when said housing and said proximity sensor means are generally adjacent in said movable machine part movement.





3,871,234
DYNAMIC BALANCING MACHINE

Christian Langlois, Castres, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

Filed Sept. 11, 1973, Ser. No. 396,142

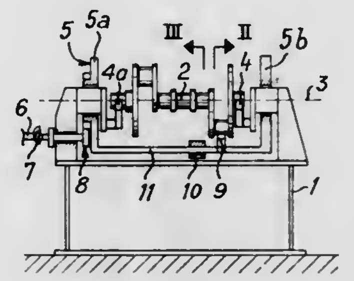
Claims priority, application France, Dec. 10, 1972, 72.36177

Int. Cl. G01m *1/16, 1/20*

U.S. Cl. 73—460 **7 Claims**

1. A balancing machine comprising:
- means for supporting a part to be balanced for rotation about an axis and lateral movement in a plane called the clearance plane;
- drive means for rotating the part to be balanced;
- two components for generating imbalance, each of said components comprising a mass to orbit about an axis which is stationary with respect to the supporting means, each of said masses having a plane defined by its centre of gravity and its axis of rotation,
- means mounting said masses for rotation about parallel axes while in antiphase relation at least when said planes are parallel,

- means driving said masses synchronously with the part to be balanced; and
- means mounting at least one of said components for movement relative to the supporting means.



3,871,235
DISTANCE OR SPEED MEASURING APPARATUS FOR LAND-VEHICLES

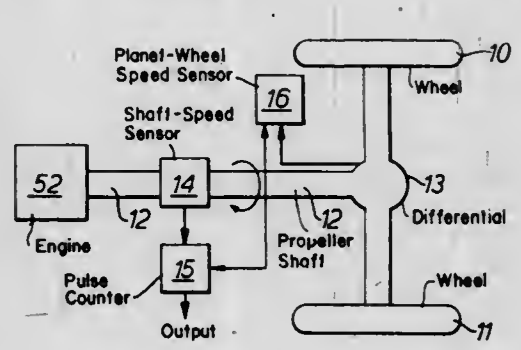
Edward William Anderson, Cheltenham, England, assignor to Smiths Industries Limited, London, England

Continuation of Ser. No. 49,136, June 23, 1970, abandoned. This application June 12, 1972, Ser. No. 261,755

Claims priority, application Great Britain, June 27, 1969, 32505/69

Int. Cl. G01p *3/04, 3/56*

U.S. Cl. 73—510 **7 Claims**



7. Apparatus for providing a manifestation representative of movement of a land-vehicle of the type having two traction members comprising, a source of motive power for driving both said traction members, and a differential for conveying drive from said source to said traction members, said differential including an input shaft coupled to said source, two output shafts that are coupled respectively to said traction members, and means rotatable in accordance with any difference between the speeds of rotation of said two output shafts, the apparatus further including:
- a first speed sensor responsive to the speed of rotation of said input shaft of the differential to provide a first manifestation in accordance with said speed,
- a second speed sensor responsive to rotation of said rotatable means of the differential to provide a second manifestation dependent upon the difference in speed between the two output shafts arising from slip of either of said traction members, and
- output means for providing a representation of movement of the vehicle in accordance with the speed of the slower of the two traction members in the presence of said slip, said output means being responsive to said first manifestation to provide said representation and being also responsive to said second manifestation to effect a reduction on said representation in accordance with said difference so as thereby to relate said representation to the slower-speed traction member.

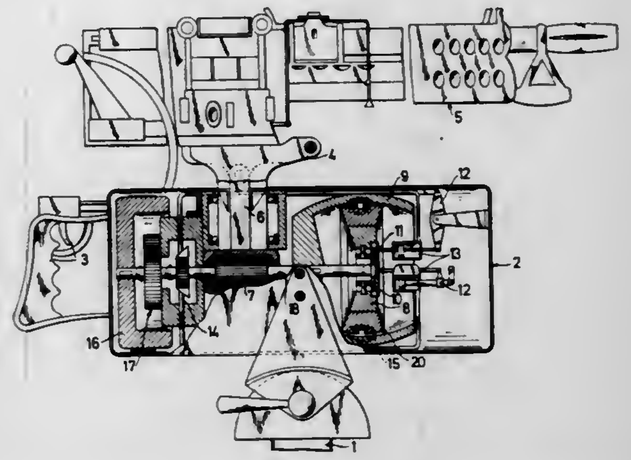
3,871,236
DEVICE FOR THE MECHANICAL STABILIZATION OF THE ALIGNMENT OF INSTRUMENTS

Juan J. de la Cierva, Apolonio Morales 21, Madrid, Spain

Filed Apr. 5, 1973, Ser. No. 348,171

Int. Cl. G01c *19/46*

U.S. Cl. 74—5.22 **7 Claims**



1. A system for mechanically stabilizing the alignment of instruments with line of sight comprising a vertical support having an upper extremity, a stabilizer means mounted on said upper extremity for movement in vertical and horizontal directions, for maintaining the line of sight of an instrument mounted thereon in constant alignment with a target with interference-free transmission to said instrument of aiming movements communicated by an operator to the stabilizer device, while preventing the stabilized instrument from undergoing sudden movements to which said vertical support and said stabilizer device may be subjected when mounted in a moving vehicle of any kind; said stabilizer means including a housing, an actuating motor, mounted in said housing and having a projecting shaft extending from opposite side thereof and defining first and second shaft end portions, a partly spherical drum rigidly secured to said first end of the shaft of the actuating motor for rotation therewith, a gyroscope rotatably mounted on said shaft within said partly spherical drum; means for mounting said gyroscope on said shaft for rotation therewith, said mounting means including a universal joint, a reaction flywheel mounted on said second end of said shaft and driven by said motor for counteracting the couples originating in the rigid components of the motor and of the partly spherical drum when said stabilizer means is subjected to a sudden displacement; and means for transmitting the relative displacement of the gyroscope in relation to the partly spherical drum to the instrument to be stabilized including hydraulic transmission means and a disc concentrically mounted in said gyroscope to remain in the same plane therewith; said hydraulic transmission means being operatively connected between said disc and said instrument to transmit to the instrument the position of said gyroscope, whereby the line of sight of said stabilized instrument will be maintained in alignment with the target, independently of sudden movements of the support system.

3,871,237
TUNER DRIVE ASSEMBLY WITH INERTIAL FINE TUNE STABILIZER

Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

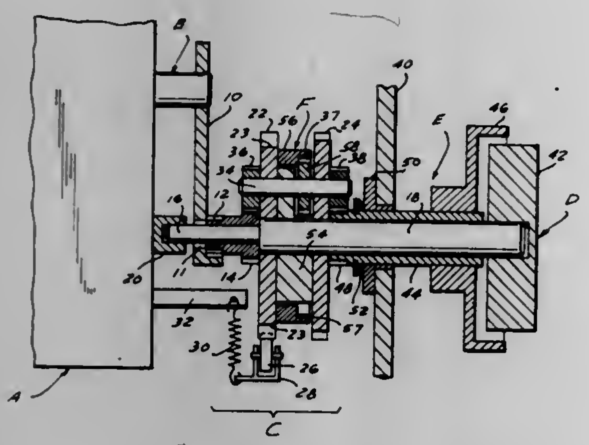
Filed Mar. 4, 1974, Ser. No. 447,975

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.54 **8 Claims**

1. A tuner drive assembly for use with a tuning element conditionable to select a particular frequency by the movement of an input member comprising movable coarse tuning means, movable fine tuning means adapted to move when said coarse tuning means is moved, drive means operably connected to said coarse tuning means, said fine tuning

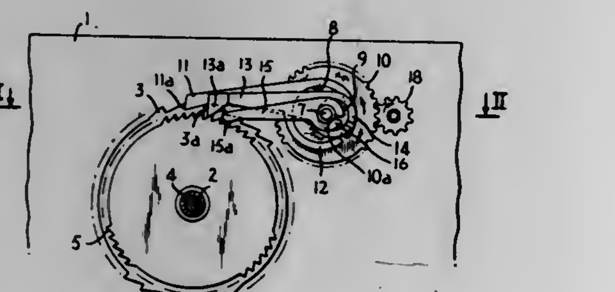
means and said input member and adapted to drive said input member in accordance with the movements of said coarse tuning means and said fine tuning means respectively, said fine tuning means having a given inertial effect on said drive means during the movement of said coarse tuning means, and inertia



means operably connected to said drive means and said fine tuning means and movable relative to the latter during movement thereof, said inertia means having an inertial effect on said drive means during meovement of said coarse tuning means substantially equal to but in an opposite sense from said given inertial effect.

3,871,238
INTERMITTENT MOTION MECHANISM

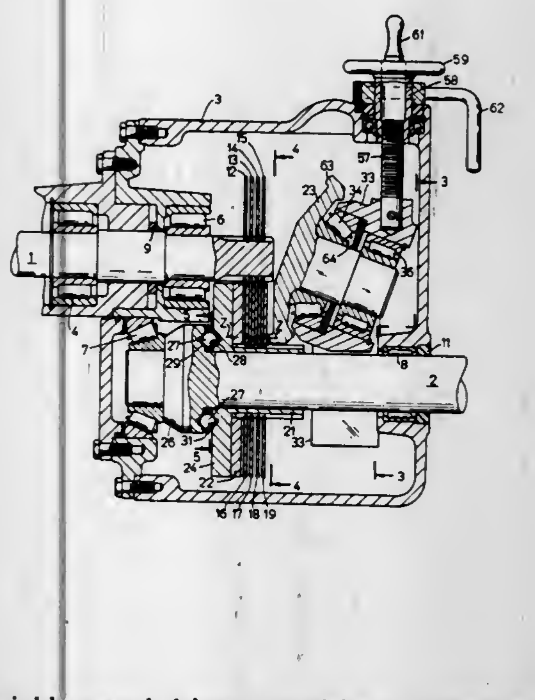
Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed June 11, 1973, Ser. No. 368,530
Claims priority, application Japan, June 9, 1972, 47-57440
Int. Cl. F16h *27/00*
U.S. Cl. 74—112 **1 Claim**



1. An intermittent motion mechanism comprising: a first rotary ratchet wheel having disposed therearound a first set of ratchet teeth and having an intervening tooth space between each two successive ratchet teeth; a second rotary ratchet wheel having disposed therearound a second set of ratchet teeth and having an intervening tooth space between each two successive ratchet teeth, at least one of said tooth spaces being deeper than the remaining tooth spaces; means mounting said first and second ratchet wheels in side-by-side relationship for rotational movement independently of each other and mounting said first and second ratchet wheels in mutually relative positions so that said second ratchet wheel may be cyclically moved into an actuating position wherein the deeper tooth space is in alignment with one of the tooth spaces between successive ratchet teeth of said first ratchet wheel; means reciprocable into engagement with said second set of ratchet teeth to effect intermittent angular movement of said second ratchet wheel through a plurality of angular increments to cyclically advance same to said actuating position and reciprocable into concurrent engagement with both said first and second sets of ratchet teeth when said second ratchet wheel is in said actuating position to effect intermittent angular movement of both ratchet wheels through one angular increment; whereby said first and second ratchet wheels are intermittently rotated in a stepwise manner at different rates, and said last-mentioned means comprising a pair of feeding pawls one of which engages only with said first set of ratchet teeth and the other of which engages with both said first and second sets of ratchet teeth.

3,871,239
VARIABLE SPEED DRIVE

Horst G. Steinhagen, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Aug. 2, 1973, Ser. No. 385,062
Int. Cl. F16h *15/08*
U.S. Cl. 74—199 **5 Claims**



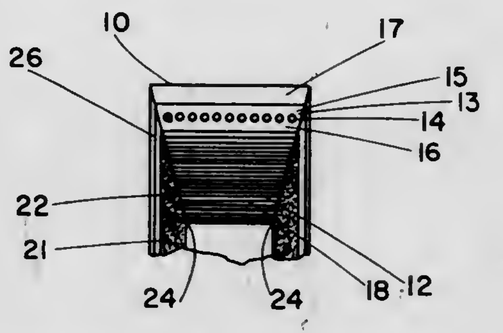
1. A variable speed drive comprising a transmission housing; a power input shaft and a power output shaft rotatably mounted in said housing on parallel, transversely spaced axes; first stacks of relatively rotatable radially interleaved axially flexible torque transmitting laminations operatively connected, respectively, with said shafts; second stacks of relatively rotatable radially interleaved axially flexible torque transmitting laminations operatively connected, respectively, with said shafts in axially spaced relation to said first stacks; annular race members respectively surrounding said shafts in the space between said first and second stacks of interleaved laminations; a carrier frame for said race members mounted within said housing for back and forth adjustment transversely of said shafts; said race members being rotatably mounted in said carrier frame in cooperable, axial thrust transmitting relation, respectively, with said first and second lamination stacks; abutment discs at the axially outer sides, respectively, of said first and second lamination stacks; and pressure means operable to compress said first lamination stacks between the adjacent abutment disc and one of said race members, and to simultaneously compress said second lamination stacks between the adjacent abutment disc and the other of said race members.

3,871,240
POWER TRANSMISSION BELTS

Werner D. Schnackenberg, Englewood, and James M. Lane, III, Aurora, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed Mar. 11, 1971, Ser. No. 123,275
Int. Cl. F16g *5/00;* **B29h** *7/22;* **B36b** *27/40*
U.S. Cl. 74—234 **28 Claims**

1. A unitary molded power transmission belt comprising:
a polymer body having a compression section, a neutral axis and a tension section;

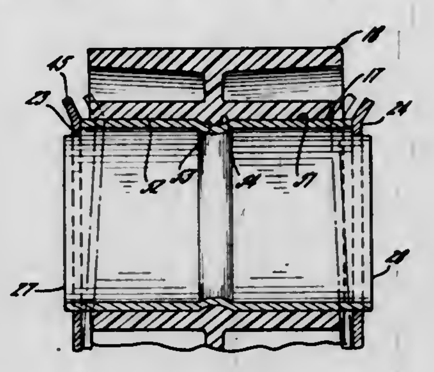
discrete protrusions of fiber extending beyond the lateral edge surface of the body portion of said belt, and said



fiber protrusions being substantially free from inclusion of body polymer.

3,871,241
TAKE-UP PULLEY

John August Pestka, Park Ridge, and Richard Jay Lindeman, Elmwood Park, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 23, 1974, Ser. No. 435,794
Int. Cl. F16h *7/12, 55/36, 55/48*
U.S. Cl. 74—242.11 R **12 Claims**

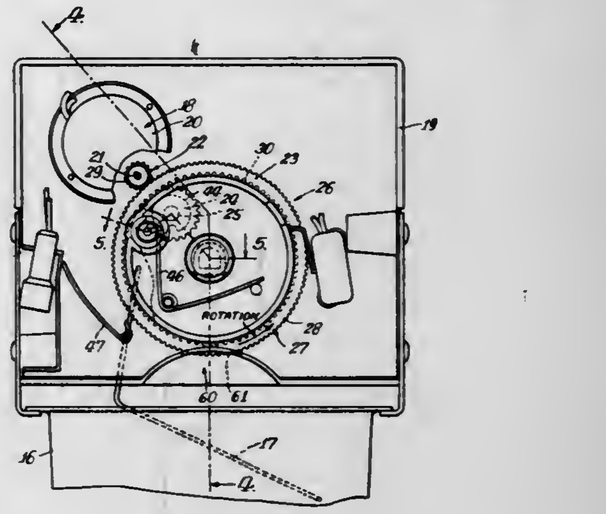


1. An idler take-up pulley comprising a bearing support fork, a bearing and a pulley wheel, the bearing support fork being adapted for attachment to a frame and including biasing means for urging the pulley wheel toward a maximum slack take-up position against the action of a belt member passing over the pulley, the bi-ended, one-piece, cylindrical bearing being carried between the fork tines, each bearing end including at least one finger for engaging a slot in an abutting fork tine to mount the bearing on the fork and to immobilize the bearing from rotational motion relative to the fork tine, and at least one recessed surface for abutting the fork tine to immobilize the bearing from axial motion relative to the fork tine, and a groove medially disposed around the bearing surface, the pulley wheel having an annular radially inwardly extending ring mating with the bearing groove to axially locate the pulley on the bearing.

3,871,242
SIMPLIFIED DRIVE MECHANISM FOR ICE MAKER

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 16, 1974, Ser. No. 433,918
Int. Cl. F16h *1/20*
U.S. Cl. 74—421 A **12 Claims**

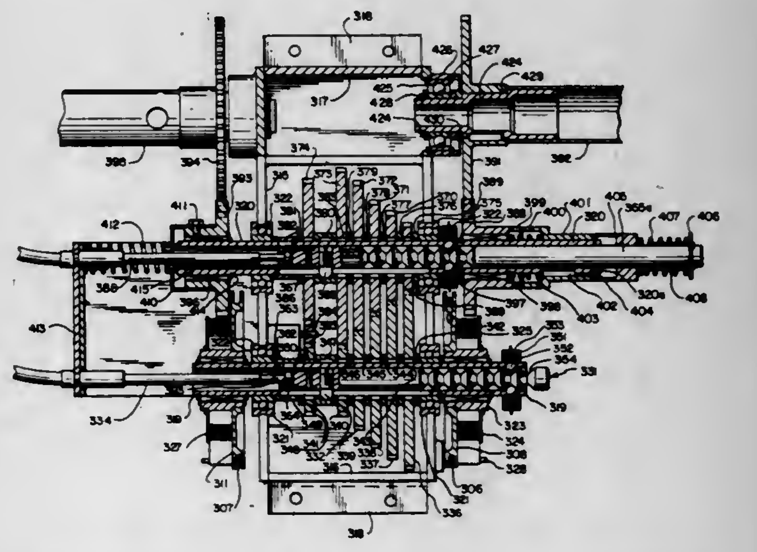
1. In an ice maker having a drivable ice body tray mechanism, a control mechanism for controlling cyclical operation of the ice maker, and a motor drive, means for maintaining synchronization of said tray and control mechanism comprising:
drive means for driving said tray mechanism;
timing means driven by said drive means for timing said control mechanism; said timing means locked in driven association with said drive means;
means for releasably connecting said motor drive in driving association with said drive means whereby said timing



means is maintained synchronized with said drive means when said motor drive is disconnected from said drive means.

3,871,243
TRANSMISSION FOR OCCUPANT-PROPELLED VEHICLES

Robert L. Bundschuh, and Lionel C. Martin, both of West Simsbury, Conn., assignors to Pedicar Corporation, Windsor, Conn.
Filed Mar. 6, 1973, Ser. No. 338,644
Int. Cl. F16h *3/80*
U.S. Cl. 74—357 **6 Claims**

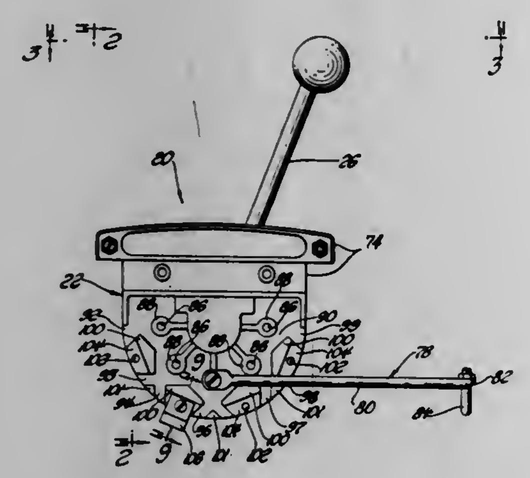


1. In a transmission of the type described, the combination of
an input shaft;
an output shaft;
two driven shafts;
housing means,
  said input shaft and said output shaft being mutually parallel and mounted on said housing means for rotation about their respective axes;
a plurality of input gears carried by said input shaft and normally free to rotate thereon;
a plurality of output gears carried by said output shaft and normally free to rotate thereon,
  the input gears each being meshed with a corresponding one of said output gears;
a first device operatively associated with said input shaft to secure any selected one of said input gears to said input shaft to rotate therewith;
a second device operatively associated with said output shaft to secure any selected one of said output gears to said output shaft to rotate therewith;

control means for actuating said first and second devices simultaneously whereby, in response to operation of said control means, only a selected input gear and the output gear meshed therewith will be secured to their respective shafts, the remaining input and output gears then being free of their respective shafts;
two additional gears;
two overrunning clutches each mounting a different one of said additional gears on said output shaft,
said clutches being oriented to drive said additional gears only when said output shaft rotates in a predetermined direction;
said two driven shafts being mutually coaxial and extending parallel to said output shaft,
the mutually adjacent end portions of said driven shafts being spaced apart and located each in overlapping relation to a different end portion of said output shaft;
two driven gears each fixed to said end portion of a different one of said driven shafts;
two bearings each rotatably supporting a different one of said end portions of said driven shafts; and
support means mounting said bearings in positions such that said two driven gears are meshed respectively with said two additional gears.

3,871,244
LEVER CONTROL ASSEMBLY

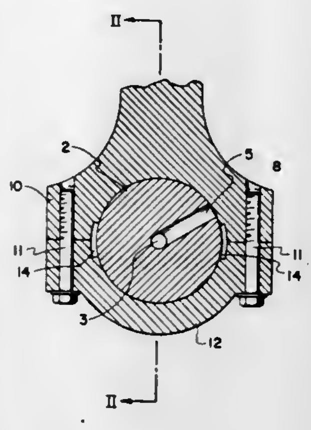
Charles F. Gressard, Kent, and Charles M. Schiff, Mentor, both of Ohio, assignors to Teleflex Incorporated, North Wales, Pa.
Filed Sept. 18, 1973, Ser. No. 398,407
Int. Cl. G05g *1/04, 7/00, 9/00*
U.S. Cl. 74—491 **58 Claims**



1. A lever control assembly comprising; housing means adapted for attachment to a support structure, actuator means movably supported by said housing means, bearing means interconnecting each of opposite sides of said actuator means and said housing means, said actuator means having a compartment therein between said bearing means, lever means disposed in said compartment and extending from said actuator means for moving said actuator means relative to said housing means, each of said bearing means including a circular shaft integral with and extending from one of said housing means and said actuator means and a circular cavity in the other for receiving said shaft, and a seal comprising an annular projection extending about each shaft and movably disposed in a mating annular groove.

3,871,245
CONNECTION ROD BEARING FOR INTERNAL COMBUSTION ENGINES

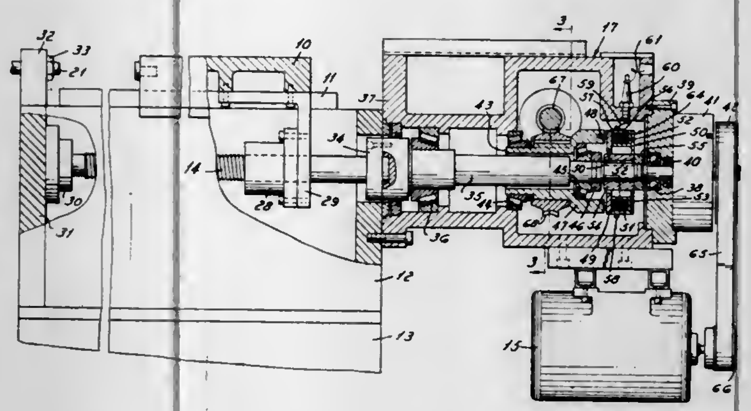
Delbert R. McKindree, 309 Ridge Ave., Butler, Pa. 16001
Filed Mar. 25, 1974, Ser. No. 454,569
Int. Cl. F16c *7/02*
U.S. Cl. 74—579 E **4 Claims**



1. A connecting rod for use with a reciprocating piston type of internal combustion engine in which the cranks have an axial lubricant passage therethrough with a radial discharge port designed to discharge lubricant at the periphery of the crank, said connecting rod having a crank engaging terminal comprising a yoke-like integral end of the connecting rod together with a complementary cap member fixed to the yoke-like connecting rod end, the yoke and cap defining an opening in which the crank with which the rod is used is received, the opening having an integral bearing quadrant therein on the yoke-like end and another such quadrant diametrically opposite the first one and integral with the cap, said two quadrants providing a working fit around the crank when it is received in said opening, the two quadrants being spaced from each other by diametrically opposite open-ended cross grooves, the lubricant discharge port in a crank so received in the connecting rod opening being positioned to be closed by the bearing quadrants during the rotation of the crank in the connecting rod but free to momentarily discharge lubricant into said cross grooves at those angles in the rotation of the crank where the port is exposed to one of the grooves.

3,871,246
MACHINE TOOLS

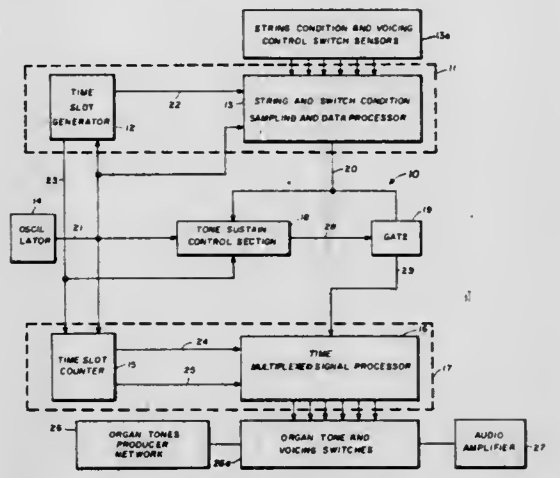
Donald R. Craven, Rockford, Ill., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Nov. 1, 1973, Ser. No. 411,658
Int. Cl. F16h *37/06*
U.S. Cl. 74—665 GD **6 Claims**



1. In a machine tool, the combination comprising
the base,
a support movable on the base,
a fixed stop on the base,
a lead screw on said base for moving the support on the base toward and away from the stop,
first drive means operable to drive the lead screw at a first speed,
second drive means operable to drive the lead screw at a second speed less than the first speed,
first clutch means energizable to provide a driving connection between said second drive means and said lead screw,
second clutch means provided between said second drive means and said first clutch means and being normally operable to provide a driving connection between said second drive means and said first clutch means,
said second clutch means being operable upon engagement of the support with the stop with a predetermined force to disengage the drive between said second drive means and said first clutch means,
said second clutch means comprising a worm,
bearing means mounting said worm for unlimited rotation and limited axial movement,
a worm wheel meshing with said worm and with said lead screw,
and a clutch providing a driving connection between said second driving means and said worm,
the helix angle of the worm and the worm wheel being such as to preclude driving of the worm by the worm wheel,
said last-mentioned clutch comprising a first clutch member connected to said second driving means
a second clutch member connected to said worm,
said first and second clutch members being engaged and disengaged by axial motion of said worm,
spring means urging the worm axially to engage said first and second clutch members and to maintain the clutch members in engagement when the load on the worm wheel does not exceed a predetermined maximum,
said spring being adapted to permit disengagement of the clutch member when the worm wheel stops due to excess torsion load thereby causing the worm to move axially relative to the worm wheel and causing the moment of inertia of the worm and associated parts to overrun the worm such as to disengage the clutch members.

3,871,247
MUSICAL INSTRUMENT EMPLOYING TIME DIVISION MULTIPLEXING TECHNIQUES TO CONTROL A SECOND MUSICAL INSTRUMENT

Arthur R. Bonham, 5614 Lejeune Dr., Orlando, Fla. 32808
Filed Dec. 12, 1973, Ser. No. 423,935
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.16 **5 Claims**


STRING CONDITION AND VOICING CONTROL SWITCH SENSORS
TIME SLOT GENERATOR
STRING AND SWITCH CONDITION SAMPLING AND DATA PROCESSOR
OSCIL LATOR
TONE SUSTAIN CONTROL SECTION
GATE
TIME SLOT COUNTER
TIME MULTIPLEXED SIGNAL PROCESSOR
ORGAN TONES PRODUCER NETWORK
ORGAN TONE AND VOICING SWITCHES
AUDIO AMPLIFIER
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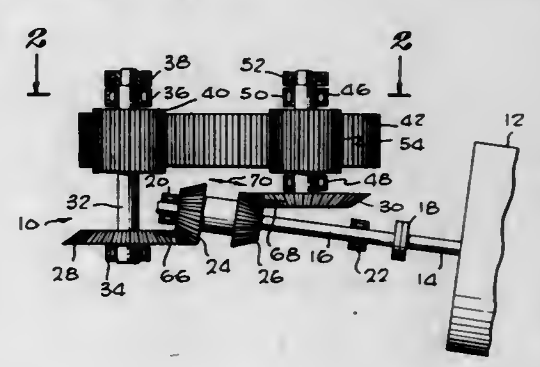
1. In a combination comprising a guitar having strings with musical tones that are manually and selectably playable thereon, a second musical instrument having means for producing audible tones which are harmonically related to said musical tones, and a system for controlling the operation of the tones producing means in accord with the selected play of said musical tones on said strings, the improved control system comprising encoding means for detecting the play of said musical tones on said strings during each of successively occurring time frames and for generating a series of time multiplexed signals during each of said time frames, each of said time frames having a plurality of time slots, each of said musical tones being assigned to a respective one of said time slots, and each of said signals being generated in response to the detected play of a respective one of said musical tones on a string of the guitar and during the occurrence of the time slot assignment of said one tone; decoding means for decoding the time multiplexed signals and controlling the audible tones producing means to produce audible tones harmonically related to the musical tones assigned to the time slot occurrences of said time multiplexed signals, means for transmitting said time multiplexed signals from said encoding means to said decoding means, and manually controllable means for sustaining the production of audible tones during subsequent time frames which are harmonically related to the musical tones assigned to the time slot occurrences of the multiplexed signals generated during a time frame preceding said subsequent time frames.

3,871,248
TWO-POWER-PATH BEVEL GEARING FOR HIGH LOADS AND HIGH SPEEDS

Thomas Barish, 5411 Tyrone Ave., Van Nuys, Calif. 91401
Filed Aug. 13, 1974, Ser. No. 496,922
Int. Cl. F16h *37/06, 57/00, 1/14*
U.S. Cl. 74—665 P **15 Claims**



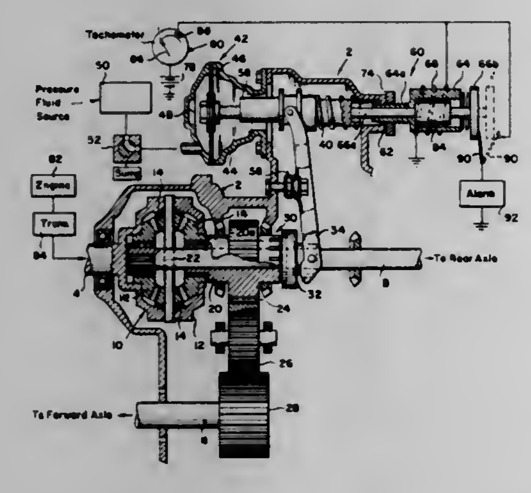
1. A plural power path bevel gear train comprising:
a radially supported and axially free bevel pinion shaft for rotation by a prime mover;
first and second bevel pinions fixed to said bevel pinion shaft in opposed relationship for initiating first and second power paths in said gear train; and
first and second bevel gears respectively in said first and second power paths, said first and second bevel gears being respectively in tooth engagement with said first and second bevel pinions, said tooth engagement being such that the division of torque through said first and second power paths is a function of axial position of said pinion shaft and said first and second pinions thereon with respect to said first and second bevel gears, and the axial position of said pinion shaft is automatically controlled by the balance of axial thrust forces on said bevel pinions by said bevel gears produced by torque transmitted from said bevel pinions to said bevel gears.

3,871,249
LOCK-UP DIFFERENTIAL INCLUDING SPEED-RESPONSIVE INHIBITING MEANS

Ellis E. Jeffers, Farmington, Mich., assignor to Aspro, Incorporated, Westport, Conn.
Filed Mar. 1, 1974, Ser. No. 447,325
Int. Cl. F16h *1/44;* **B62d** *61/00;* **F16d** *23/00*
U.S. Cl. 74—711 **11 Claims**

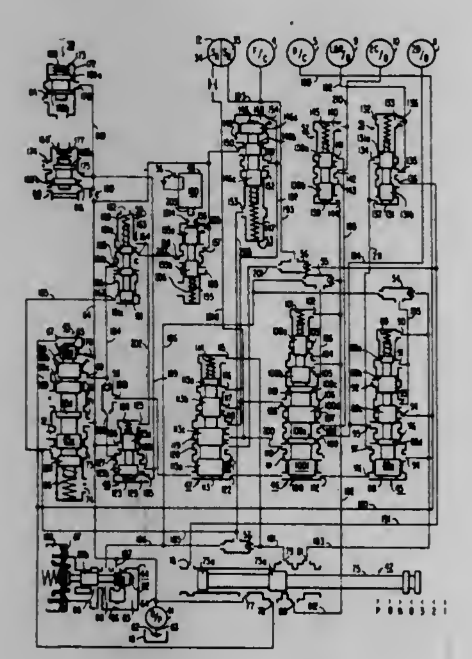
1. In a differential mechanism of the lock-up type driven by an engine shaft and including a housing, an input shaft rotatably connected with said housing, differential means driven by

said input shaft, said differential means including first and second differential shafts, and lock-up means operable alternately between disengaged and engaged conditions to disconnect and connect said second differential shaft with said first differential shaft, thereby to release and to lock-up the differential means, respectively; the improvement which comprises inhibiting means for preventing said lock-up means from connecting said second differential shaft with said first differential shaft when the speed of one of said engine and input shafts exceeds a given value, whereby damage to said lock-up means at high shaft speeds is avoided.



3,871,250
HYDRAULIC CONTROL CIRCUIT FOR VEHICLE AUTOMATIC TRANSMISSION

Toshiyuki Miyauchi, and Kunio Ohtsuka, both of Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama City, Japan
Filed Oct. 19, 1973, Ser. No. 408,014
Claims priority, application Japan, Oct. 28, 1972, 47-108369
Int. Cl. B60k *21/02;* **F16h** *3/74*
U.S. Cl. 74—869 4 Claims

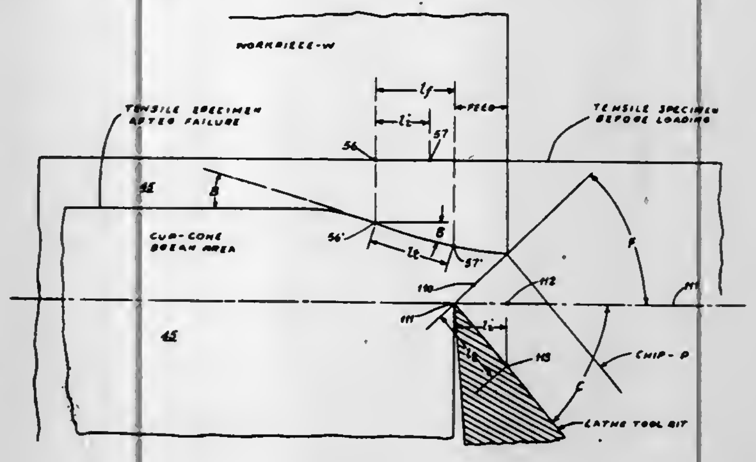


1. In a hydraulic control circuit for a vehicle automatic transmission of the type wherein a plurality of shift control valves selectively deliver hydraulic fluid to a plurality of frictional elements to cause engagement and disengagement of said frictional elements having a first pressure-regulating means and a throttle valve responsive to the vehicle engine load interposed between a main supply pump and the shift control valves, the improvements comprising:

a. a second pressure regulating means having an inlet connected to an outlet of said first pressure regulating means, and an outlet,
b. a third pressure regulating means having inlets connected to said second pressure regulating means outlet and said throttle valve, and an outlet connected to an inlet of said first pressure regulating means,
c. means to control said second pressure regulating means in response to the position of the vehicle accelerator pedal such that when the pedal is in an idle position or returning to an idle position, said second pressure regulating means transmits hydraulic fluid through said third pressure regulating means to said first pressure regulating means to cause said first pressure regulating means to lower the pressure of the hydraulic fluid supplied to said shift control valves, and
d. means to control said third pressure regulating means.

3,871,251
CUTTING TOOL FOR THE CONTINUOUS MACHINING OF METALS AND THE METHOD OF MAKING SAME

William L. Mundy, St. Louis, Mo., assignor to O'Fallon Investment Company, Maryland Heights, Mo.
Division of Ser. No. 304,771, Nov. 8, 1972, which is a continuation-in-part of Ser. No. 45,357, June 11, 1970, abandoned. This application June 24, 1974, Ser. No. 482,608
Int. Cl. B21k *21/00;* **B26d** *1/00;* **B23b** *3/00*
U.S. Cl. 76—101 A 2 Claims


WORKPIECE-W
TENSILE SPECIMEN AFTER FAILURE
TENSILE SPECIMEN BEFORE LOADING
FEED
CUP-CONE BREAK AREA
CHIP-P
LATHE TOOL BIT
45
56
57

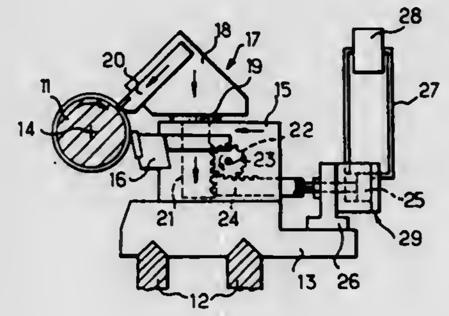
1. A method of forming a cutting tool for machining a selected metal comprising the steps of subjecting a sample of metal to be cut to tensile loading until the sample fails, determining the magnitude of the neck down angle at the failure area of the sample, determining the magnitude of elongation of the sample in the failure area, establishing the effective rake angle of the tool as a function of the magnitude of the neck down angle and elongation, establishing a side land surface having a relief angle of substantially zero degrees, establishing a side relief surface having a selected side relief angle, using the tool to machine the metal, and selectively changing the width of the side land surface and the magnitude of the side relief angle as needed such that the width of the side land surface becomes substantially constant as the tool is used for machining the metal.

3,871,252
SCREW THREAD CUTTING MACHINE

Erwin S. Nann, Esslingen, Germany, assignor to Cri-Dan, Paris, France
Filed Aug. 10, 1973, Ser. No. 387,275
Claims priority, application Germany, Aug. 12, 1972, 2239856
Int. Cl. B23b *21/00*
U.S. Cl. 82—25 11 Claims

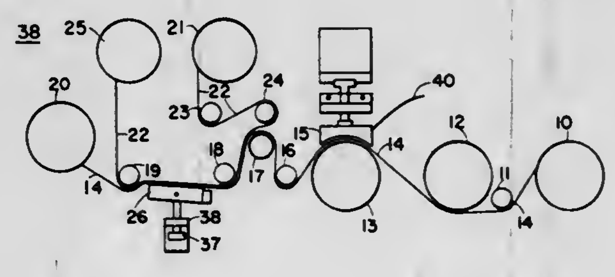
1. In a screw-thread cutting machine, comprising a frame in which a workpiece can be mounted for rotation about an axis,

a fixed first guide means on the frame, a longitudinal slide mounted on the first guide means for guided movement in a first direction parallel to said axis, a cross-slide mounted on the longitudinal slide for guided movement relative thereto in a second direction normal with respect to said axis, a first tool holder mounted on the cross-slide, a second tool holder mounted on the cross-slide and movable relative to the cross-slide in a third direction normal to said first and second directions, and means for automatically moving the second tool holder in said third direction in response to movement of the cross-slide relative to the longitudinal slide, the second tool holder being adapted to support a cutting tool at an angle to a cutting tool carried by the first tool holder.



3,871,253
SLITTING OF AN ELECTRICALLY CHARGED TAPE

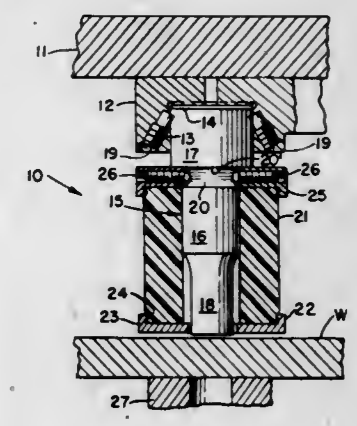
William Pryce, Amherst, Nova Scotia, and Eric Foster, London, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Division of Ser. No. 299,637, Oct. 20, 1972, Pat. No. 3,808,919. This application Feb. 19, 1974, Ser. No. 443,362
Int. Cl. B26d *3/08*
U.S. Cl. 83—8 2 Claims



1. Apparatus for slitting an electrically charged tape, comprising:
a slitter having two cutting blades spaced a predetermined distance apart,
means for passing an electrically charged metallized tape in slitting relationship with said slitter;
means for feeding a metallized support tape into contact with the charged tape, prior to slitting, whereby the two tapes will be in contact during slitting;
means for separating the tapes after slitting, the tapes when in contact arranged so that the metallized layers are separated by the backing layer of a tape; and
means for adjusting the slitter to control the degree of penetration of the cutter blades into said further metallized tape, the charged tape completely slit through and the support tape partially slit through.

3,871,254
MEANS FOR PIERCING AND STRIPPING THICK MATERIAL

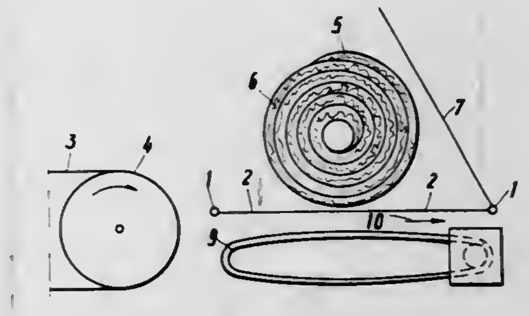
Lawrence V. Whistler, Jr., 251 Doncaster Rd.; Lawrence V. Whistler, III, 368 Argonne Dr., both of Kenmore, N.Y. 14217, and Harold J. Whistler, 22 Highland Dr., Williamsville, N.Y. 14221
Filed Apr. 13, 1973, Ser. No. 350,789
Int. Cl. B21d *45/00;* **B26f** *1/02*
U.S. Cl. 83—139 9 Claims



1. A punch for punching holes in material, comprising:
punch retaining means,
a punch having a head end and a piercing end,
punch securing means engaged with the head end of the punch securing the punch to the punch retaining means, axially downwardly facing shoulder means on the punch adjacent the head end thereof axially spaced from the punch retaining means, and
resiliently yieldable stripper means disposed in substantially coaxial relation with the punch, said stripper means including a cap means secured to the punch in coaxial relation therewith in engagement with said shoulder means and axially spaced from the punch retaining means, said yieldable stripper means engaged at one end against said cap means and having its other end substantially coplanar with the piercing end of the punch, so that when said punch is forced through a piece of material to pierce the material the stripper means engages between the piece of material and the cap means and thus acts as a shock absorber absorbing forces resulting from piercing the piece of material and effecting stripping of the pierced piece of material from the punch, with stripping loads imposed on the stripper means transmitted to the shoulder means on said punch to thus protect the punch securing means supporting said punch in said punch retaining means.

3,871,255
DEVICE FOR CUTTING PEAT BAND ROLLS

Pentti Samuel Nisula, Hamevaara, Finland, assignor to Lannen Sokeri Oy, Lansi-Sakyla, Finland
Filed May 30, 1973, Ser. No. 365,184
Int. Cl. B26d *7/06, 4/76, 1/46*
U.S. Cl. 83—155 6 Claims

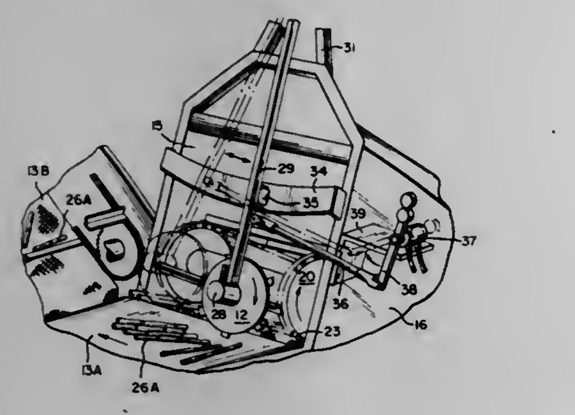


1. A device for cutting peat band rolls or the like, said device having a frame comprising: a chain saw mounted on the

frame of the device, said chain saw being substantially horizontal and the cutting plane of the saw being vertical, a pair of supporting elements each being pivotally mounted at one end thereon above said chain saw, said supporting elements having their pivot axes substantially perpendicular to the vertical plane of said chain saw, said supporting elements supporting the item to be cut above said chain saw and having free ends adjacent each other, said free ends being located substantially midway between the ends of said chain saw, and means for pivoting said supporting elements towards said chain saw to move the said free ends away from each other and to lower the item to be cut against the chain saw, said support plates supporting the peat band roll during the cutting operation.

3,871,256
SUGAR CANE CONVEYOR AND CUTTER FOR CUT WINDROWED CANE

Harold A. Willett, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.
Filed May 30, 1972, Ser. No. 258,123
Int. Cl. A01d *55/18*
U.S. Cl. 83—355 **7 Claims**



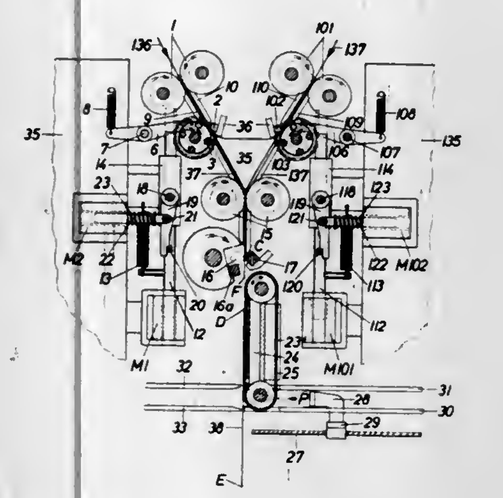
1. An apparatus for picking up windrowed cane and cutting the stalks into shorter units comprising longitudinal inclined conveyor means for moving previously harvested cane stalks along their major axis, pendulously mounted cane stalk incising means positioned at the upper end of said inclined conveyor means to cut the cane stalks received at the top of said inclined conveyor into smaller units while said stalks are being moved axially along the conveyor, and transverse conveyor means positioned to receive the smaller cut stalks and convey same transversely of the apparatus.

3,871,257
WEB CUTTING DEVICE

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany
Filed Oct. 26, 1973, Ser. No. 410,157
Claims priority, application United Kingdom, Oct. 31, 1972, 50096/72
Int. Cl. B23d *25/16;* **B26d** *1/56*
U.S. Cl. 83—285 **5 Claims**

1. A supplementary device mountable on a packaging machine for wrapping block-like articles in wrappers of material cut from webs, the device comprising, in combination:

mounting means adapted to mount said device on such packaging machine;
first guide means to define a first web feed path for a first web to such packaging machine;
second guide means to define a second web feed path for a second web to such packaging machine;
first web feeder means selectably operable to feed a first web along said first feed path;
second web feeder means selectably operable to feed a second web along said second feed path;
first cutter means disposed in said first path;
second cutter means disposed in said second path;
said first and said second cutter means each comprising a generally disc-shaped member rotatably displaceable relatively to a second member to bring mutually co-operable knife elements of said first and said second members into co-operative action, said generally disc-shaped member of each said cutter means having a plurality of individual ones of said knife elements spaced around the periphery thereof;
means to urge said rotatable member into an orientation relative to said member in which each said knife element of said rotatable member is spaced from the associated one of said feed paths, said urging means comprising a respective polygonal plate member connected to each said rotatable member and having a plurality of flat sides each in correspondence with a respective one of said knife elements on the associated one of said rotatable members, said urging means additionally comprising a respective indexing member resiliently urged against the periphery of said polygonal plate member;



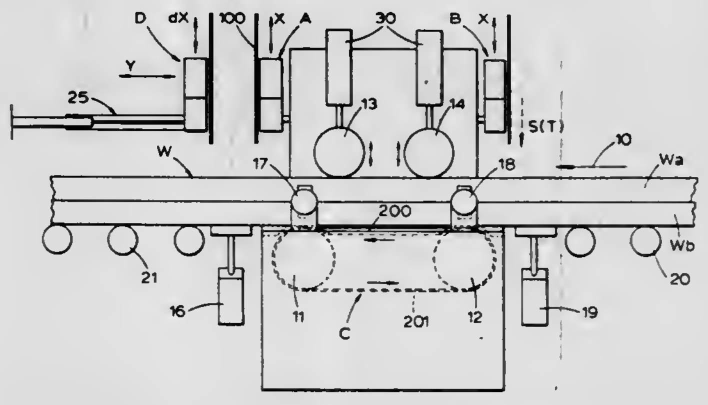
actuator means operatively associated with each said cutter means to cause the respective one of said cutter means to perform a single web cutting operation on each actuation by said associated actuator means, said actuating means comprising means to counteract said urging means thereby to cause said rotatable member to be rotatably displaced such that a respective single one of said knife elements co-operates with said second member to make an incision through said web, and interaction between said polygonal plate member, on being rotatably displaced, and said respective indexing member causing the latter to be displaced and permitting said respective indexing member to be resiliently urged against the next succeeding flat side of said polygonal plate member after each incision through said web has been made; and
control means to cause actuation of a selected one of said first and said second feeder means and to cause deactuation of the respective other one of said feeder means.

3,871,258
WOOD WORKING APPARATUS

James Hurn, Rowley, England, assignor to Hurn Brothers Engineering Limited, Bath, Somerset, England
Filed Feb. 5, 1974, Ser. No. 439,935
Claims priority, application United Kingdom, July 2, 1973, 6085/73; July 2, 1973, 6086/73
Int. Cl. B26d *5/20*
U.S. Cl. 83—255 **9 Claims**

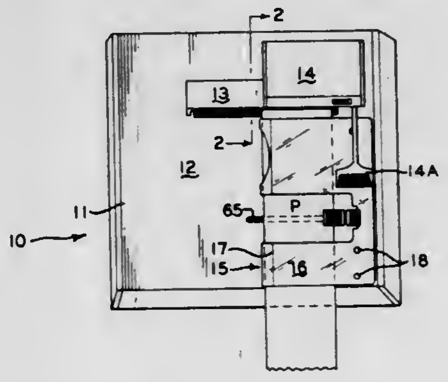
1. Apparatus for cutting elongate timber workpieces accurately to length, which includes a conveying and clamping device comprising an endless conveyor belt running in toothed engagement over two spaced apart drive rollers which are driven in synchronism through a succession of rotary movements, each of predetermined amount, at least some of said amounts being different, the upper run of said belt being

substantially horizontal and being disposed above a fixed metal platen, a plurality of idler pressure rollers arranged at predetermined times and for predetermined durations to press downwardly towards said upper run of said belt where it passes over said platen, said conveying and clamping device being adapted and arranged to transport a workpiece resting on the upper run of said belt irreversibly but intermittently in a single conveying direction from an infeed side to an outfeed side of the conveying and clamping device, and including at each of the infeed and outfeed sides of said conveying and clamping device a tool station which includes at least one cross-cut saw.



3,871,259
PAPER TRIMMER APPARATUS

Harry L. Hosterman, Akron, Ohio, assignor to Portage Newspaper Supply Co., Akron, Ohio
Filed Sept. 28, 1973, Ser. No. 401,852
Int. Cl. B23d *19/04*
U.S. Cl. 83—429 **7 Claims**



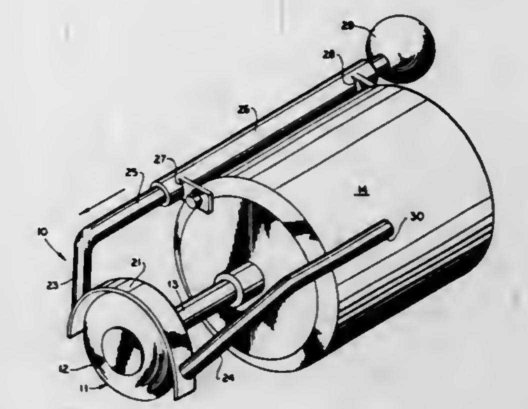
1. A paper trimmer apparatus, comprising, a table surface, a guide and feed roll, a pressure roll engaging said feed roller, a tension guide roller located rearwardly of said feed roller, a pinch roll mounted on a first shaft engaging said tension guide roll, said tension guide roll intermediate of the ends having a first cutting means for shearing, a second cutting means for shearing mounted on a second shaft, said second cutting means located juxtaposition to and bearing against said first cutting means of said tension guide roller.

3,871,260
APPARATUS FOR SELECTIVELY GUARDING A ROTARY BLADE

J. Samuel Rees, Rt. 1, Box 4, Preston, Ga. 31824
Division of Ser. No. 291,734, Sept. 25, 1972,. This application Oct. 5, 1973, Ser. No. 404,364
Int. Cl. B23d *33/00, 19/00*
U.S. Cl. 83—478 **3 Claims**

1. Apparatus for preventing unwanted contact with the peripheral edge of a rotary cutting blade mounted on a rotary shaft extending from a drive motor, comprising:

a blade guard member having a peripheral portion extending in spaced apart annular relation to at least part of the peripheral extent of the peripheral cutting edge;
support means connected to said blade guard member to maintain said blade guard member in predetermined relation with said cutting blade;
movement guide means mounting said support means for limited movement between a first position placing said peripheral portion of the blade guard member in spaced apart radial confronting position surrounding and preventing contact with said partial peripheral extent of the peripheral cutting edge, and a second position withdrawing said peripheral portion to a position axially spaced from the cutting blade and removed from said surrounding position;
said movement guide means comprises a guide passageway mounted alongside the drive motor;



said support means comprising a first support rod reciprocally received in said guide passageway and extending to a first end attached to said blade guard member and a second end located remotely of said blade guard member; knob means secured to said second end of said first support rod to impart reciprocal movement of said first support rod in said guide passageway;
a second support rod having a first end attached to said blade guard member and a portion extending alongside the drive motor for reciprocal movement in response to sliding movement imparted to said blade guard member by said first support rod; and
said first and second rod members being mounted for an extent of reciprocal movement necessary to move said blade guard member to either of said first and second positions.

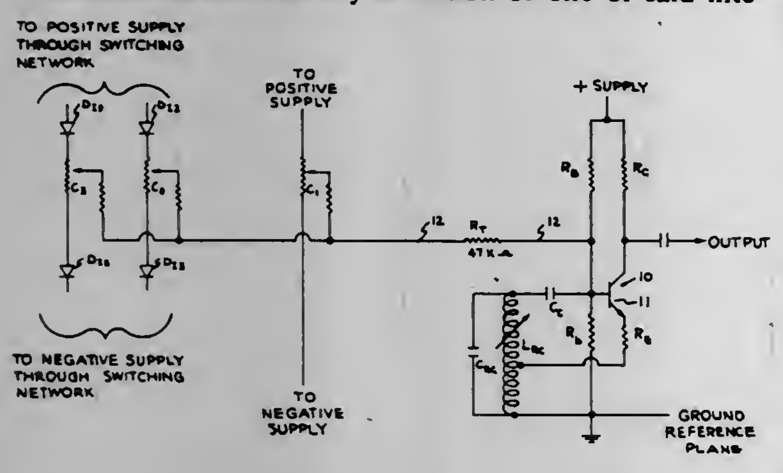
3,871,261
METHOD OF TUNING AN ELECTRONIC KEYBOARD INSTRUMENT IN PURE SCALE AND APPARATUS THEREFOR

Ronald K. Wells, Spartanburg, and Charles W. Allen, Greenville, both of S.C., assignors to Ronald K. Wells, Spartensburg, S.C.
Filed Dec. 11, 1972, Ser. No. 314,016
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **6 Claims**

1. Apparatus for enabling an electronic keyboard instrument to play in various keys comprising:

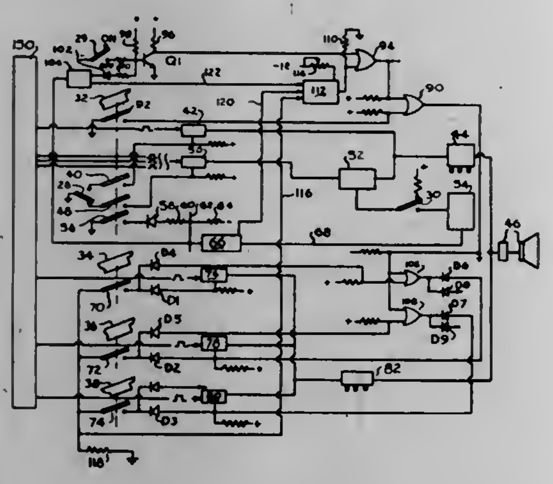
a. a plurality of tone generators, said tone generators being electrically associated with digits across said keyboard, each generator being associated with only one digit per octave; and
b. a plurality of frequency modifier means associated with each tone generator, each said modifier means being adjustable according to predetermined intervals to cause the generator to emit a sound of a particular pitch, said modifier means being grouped according to a particular musical scale, and electronic switching means associated with said modifier means to activate certain modifier means only in each key, said switching means comprising a plurality of individual actuator means, each actuator means having an integrated circuit coupled thereto, said integrated circuits containing RTL NOR gates and power

switching transistors coupled thereto, each said power switching transistor being further coupled to one group of modifier means whereby actuation of one of said integrated circuits actuates only the group of modifier means to which the power switching transistor for said acutated integrated circuit is coupled.


TO POSITIVE SUPPLY THROUGH SWITCHING NETWORK
TO POSITIVE SUPPLY
+ SUPPLY
OUTPUT
TO NEGATIVE SUPPLY THROUGH SWITCHING NETWORK
TO NEGATIVE SUPPLY
GROUND REFERENCE PLANE
47 K
12
10
11

3,871,262
ELECTRONIC ORGAN HAVING DELAYED FILL IN

John W. Robinson, and Stephen L. Howell, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.
Filed Dec. 14, 1973, Ser. No. 424,731
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.17 **26 Claims**

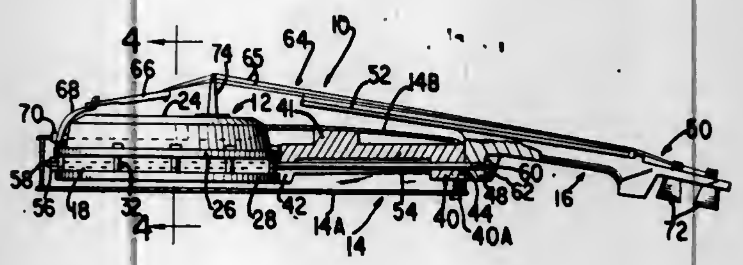


1. That method of operating an electronic organ in which at least one fill note sounds in the treble portion of a composition when a key of each of the solo and accompaniment keyboards of the organ are jointly depressed, said fill note comprising a note within an octave range below the note which corresponds to the depressed solo key and harmonically related to the notes corresponding to the depressed solo and accompaniment keys, said method comprising delaying the sounding of the said fill note for a predetermined and audibly discernable time interval after the sounding of the notes corresponding to the depressed keys.

3,871,263
STRINGED MUSICAL INSTRUMENT

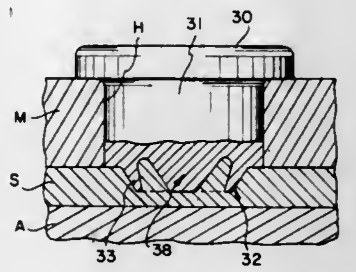
Donald W. Telesco, 39 W. Hill Rd., Stamford, Conn. 06902
Filed Apr. 1, 1974, Ser. No. 456,683
Int. Cl. G10d *3/00*
U.S. Cl. 84—271 **9 Claims**

9. A stringed musical instrument capable of easy disassembly comprising a generally circular drum, a sounding member circumscribing said drum, spacer means between said drum at a first circumferential location and extending toward the inner wall of said sounding member, said spacer means extending radially outwardly from said drum toward a neck which extends radially outwardly from said spacer means and relative thereto, rod means for removably securing said drum, said spacer means and said neck in assembled relation, said rod means extending through said spacer with a first end removably secured to said drum at a second circumferential location diametrically opposed to said first circumferential location and a second end removably secured to said neck, and string means having a first end removably secured to said drum at said second circumferential location and a second end secured to said second end of said neck.



3,871,264
DRIVEN FASTENER FOR LIMITED PENETRATION OF METAL

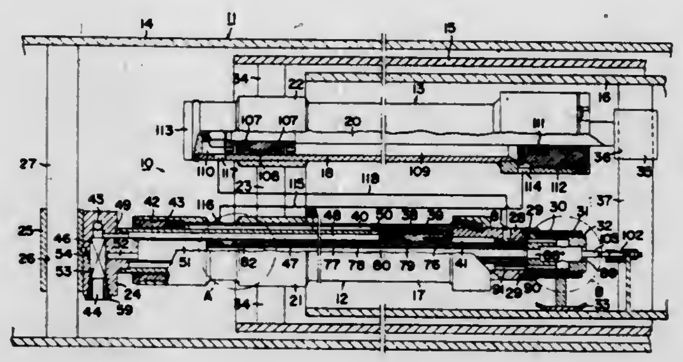
Robert L. Hallock, 7136 N.E. 8th Dr., Boca Raton, Fla. 33432
Continuation-in-part of Ser. No. 172,381, Aug. 17, 1971, abandoned. This application Nov. 27, 1972, Ser. No. 309,851
Int. Cl. F16b *15/00*
U.S. Cl. 85—30 **6 Claims**



1. A fastener for limited penetration into metal comprising a smooth generally cylindrical shank with an enlarged head at one end and a rigid substantially non-deformable penetrating portion at the other end, said head being engageable by an impact force which is applied generally axially of said shank, said penetrating portion having a generally circumferentially continuous frusto-conical exterior wall tapering inwardly towards the axis of said shank in a direction away from the head and terminating in a penetrating end, said penetrating portion having a recess defined by an inner wall extending from said penetrating end to an abutment wall spaced axially inwardly therefrom, at least portions of said abutment wall extending laterally outwardly of the iinner periphery of said penetrating end, at least portions of said inner wall being inclined outwardly at an angle of substantially 10° from said penetrating end to said portions of said abutment wall to provide significant undercut portions, and said penetrating portion being hardened so that it is harder than the metal into which it is to be driven, whereby when said fastener is driven substantially axially into metal by impact, the driving force causes said penetrating portion to penetrate the metal until the metal engages said abutment wall and is diverted outwardly into said undercut portions to secure the fastener to the metal and resist withdrawal of the fastener from the metal.

3,871,265
HYDRAULIC CYLINDER ASSEMBLY FOR TELESCOPIC BOOM

Ryosuke Koga, Hiromi and Kazuhiro Nonome, Dota, both of Gifu-ken, Japan, assignors to Kayabakogyokabushikikaisha, Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,785
Claims priority, application Japan, Mar. 2, 1972, 47-25883
Int. Cl. F15b *13/07*
U.S. Cl. 91—189 **3 Claims**



1. A hydraulic cylinder assembly for a telescopic boom of the type in which a plurality of telescopic boom members including a middle and an inner boom member are sequentially extended or retracted, comprising

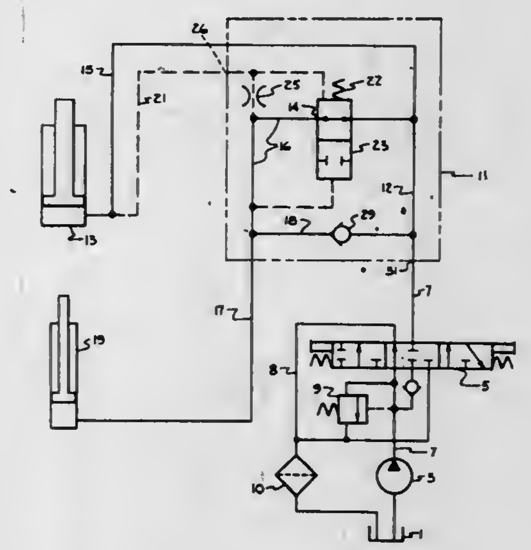
a first and a second hydraulic cylinder unit, respectively coupled with said middle and said inner boom members and being mounted for movement between a fully upwardly extended and a fully downwardly retracted position;
a first passage provided in said first unit and having an inlet for pressurized hydraulic fluid, and a second passage connecting said first passage with an inlet of said second unit;
a normally closed first valve in said first passage and operative to open under the pressure of fluid entering through said inlet thereof, so that said first unit becomes extended;
a normally closed second valve in said second passage and operative to open when fluid pressure in said second unit exceeds a predetermined value;
a normally closed third valve in said inlet passage;
first abutment means operative to open a third valve in automatic response to said second unit reaching fully retracted position; and
second abutment means operative to open said second valve in automatic response to said first unit reaching fully extended position.

3,871,266
HYDRAULIC CYLINDER PHASING SYSTEM

Delmar G. Schwab, Milwaukee, and James I. Ott, Portland, both of Oreg., assignors to Hyster Company, Portland, Oreg.
Filed July 16, 1973, Ser. No. 379,754
Int. Cl. F15b *11/20*
U.S. Cl. 91—412 **3 Claims**

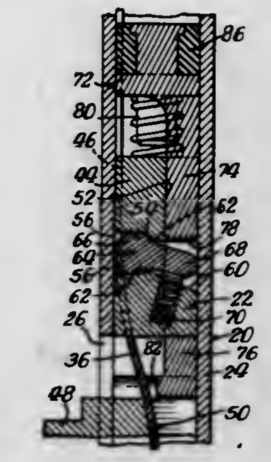
1. A hydraulic control system for regulating the extension and retraction of a plurality of hydraulic motors, said system comprising:

a first and second separate hydraulic motors;
a pump operatively connected to said motors;
said hydraulic control system including a hydraulic control circuit supplied with pressure fluid by said pump and including a pressure fluid reservoir;
valve means within said circuit including means for sensing viscous flow losses and for sensing pressure loss within that portion of said circuit which supplies said first hydraulic motor; and means within said valve means reactive to said pressure loss and viscous flow loss to restrict pressure oil to said second hydraulic motor.



3,871,267
FLUID OPERATED PISTON AND CYLINDER MEANS

Kenneth J. Miller, Gurnee, Ill., assignor to A. L. Hansen Mfg. Co., Gurnee, Ill.
Filed Jan. 18, 1974, Ser. No. 434,650
Int. Cl. F15b *15/26*
U.S. Cl. 92—24 **4 Claims**



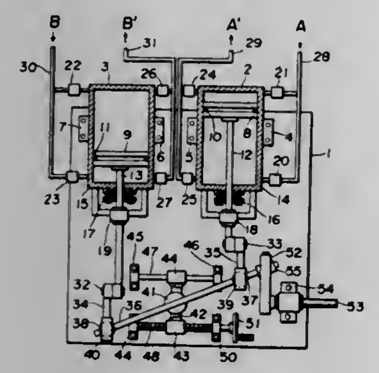
1. For use in a cylinder, a fluid actuated piston assembly comprising a primary piston section, at least one transverse clutch member pivotally mounted in said primary piston section and being engageable with the cylinder wall, spring means interposed between said primary piston section and one side of said clutch member and normally acting to pivot the latter into wedging engagement with the cylinder wall whereby to prevent travel of said piston assembly in the cylinder in one direction, and a secondary piston section engageable with the other side of said clutch member for pivoting the same out of wedging engagement with the cylinder wall against the force of said spring means when actuating fluid pressure in the cylinder moves said secondary piston section relative to said primary piston section whereby to permit travel of said piston assembly in the cylinder in said one direction.

3,871,268
COMBINATION PUMPING APPARATUS

Yusi Misima, Tokyo, Japan, assignor to Shimazaki Mixing Equipment Co., Ltd., Tokyo, Japan
Filed July 16, 1973, Ser. No. 379,561
Claims priority, application Japan, Dec. 30, 1972, 48-000139; Feb. 5, 1973, 48-014431
Int. Cl. F15b *15/24*
U.S. Cl. 92—13.3 **6 Claims**

1. In a combination pumping apparatus including:

I. at least two unit pumps each including a piston rod fixedly arranged parallel with one another to a base;
II. a supporting point shiftable perpendicularly with respect to the reciprocation directions of said piston rods of said unit pumps;
III. a conically movable rod supported on said supporting point, and connected to each of said piston rods of said unit pumps at each ends thereof; said shiftable supporting point comprising a screw-threaded shaft arranged perpendicular with respect to the reciprocating directions of said piston rods of said unit pumps, a pair of bearings each supporting each of the ends of said screw-threaded shaft, a tapped boss of a hemispherical bearing engaging



with said screw-threaded shaft, and a spherical bush supported on said hemispherical bearing; the strokes of said rods of said unit pumps being varied according to the shift of said support point caused by rotating said screw-threaded shaft the improvement characterized in that a disc-shaped crank arm is mounted on one end of an input shaft supported by a bearing secured to said base, and another crank arm is mounted so as to be opposite to said disc-shaped crank arm on a supporting shaft supported by a bearing which is oppositely disposed to said base bearing at a given interval therebetween, and each of said crank arms is connected to a respective end of said conically movable rod.

3,871,269
BAG SEVERING MACHINE

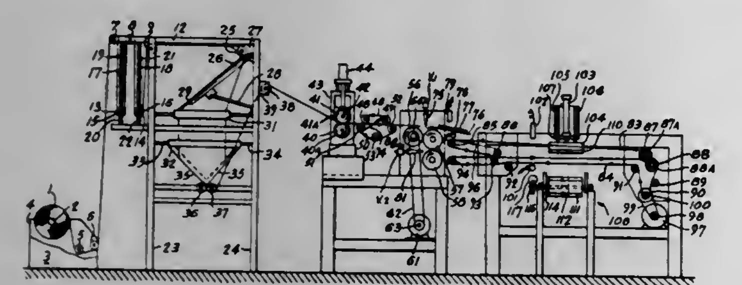
Elwyn David Jones, Beloeil, and Derek Edgar Scuffell, Brownsburg both of Quebec, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Division of Ser. No. 207,306, Dec. 13, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,937

Claims priority, application Canada, Sept. 13, 1973, 181033; Dec. 22, 1970, 101336

Int. Cl. B31b *21/00, 1/14*

U.S. Cl. 93—13 **5 Claims**



1. A machine for concurrently severing individual bags from a length of bags joined by perforated junctures and folding the severed bags comprising first and second sets of double coacting rollers, each set of rollers being adapted to grasp the length of bags between the two rollers of the set, and positioned intermediate said first and second sets of rollers a support means comprising a lower endless conveyor belt and in contact therewith a cooperating upper endless conveyor belt, said cooperating conveyor belts being adapted to support the length of bags between their contacting surfaces as it passes from the first set of rollers to the second set of rollers, and means for driving the two sets of rollers and intermediate conveyor belts so that the surface speed of the second set of rollers is greater than the speed of the conveyor belts and the speed of the conveyor belts is greater than the surface speed of the first set of rollers, thus extending the length of bags as it passes from the first set of rollers to the second set of rollers so as to sever the individual bags at the perforated junctures, wherein the conveyor belts and second set of rollers are positioned so that the end of the length of bags issues from between the conveyor belts and passes over the bite of the second set of rollers, and there is provided a nozzle directed into the bite of the second set of rollers, said nozzle being adapted in response to passage of the end of the length of bags across the second set of rollers to send a momentary blast of air against the length of bags forcing the end bag of the length into the bite of the rollers, thus concurrently severing the bag and folding it.

3,871,270
BAG-MAKING MACHINERY

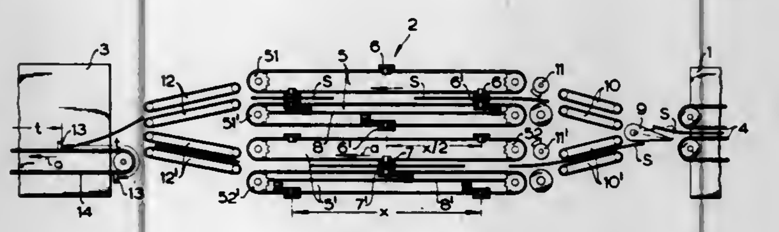
Gustav Kuckhermann, Goethestrasse 24; Richard Feldkamper, Wielandstrasse 5; Walter Paul, Bahnhofstrasse 101, and Friedrich Franz Brockmuller, Diersmannsweg 54, all of 454 Lengerich i, Westphalia, Germany

Filed Sept. 6, 1973, Ser. No. 394,816

Claims priority, application Germany, Sept. 11, 1972, 2244561

Int. Cl. B31b *1/08*

U.S. Cl. 93—27 **3 Claims**



1. An apparatus for making bags with cross-bottom folds comprising a tube-forming means for making tube sections having at least one ply from flat sheet material selected from the group consisting of paper and plastic film and discharging the tube sections longitudinally, rotating means positioned downstream of the tube-forming means for rotating the discharged tube sections 90° while maintaining the tube sections in substantially the same plane, said rotation positioning the tube sections for subsequent feeding in a direction transversely of their length, and folding means including a conveyor positioned downstream of the rotating means for forming said cross-bottom folds at at least one end of each of the transversely-fed tube sections, said rotating means including a jaw rotator comprising two superposed rotating devices, deflecting means positioned upstream of said rotating devices for directing the tube sections alternately to each device, and a pair of conveyors positioned downstream of the devices for transferring the transversely-fed tube sections in a row onto the conveyor of said folding means.

3,871,271
METHOD OF MANUFACTURING COMPACTER BAGS

Donald V. Long, Dallas, Tex., assignor to The Dalpak Corporation, Dallas, Tex.

Division of Ser. No. 226,087, Feb. 14, 1972, Pat. No. 3,822,037. This application Feb. 25, 1974, Ser. No. 445,255

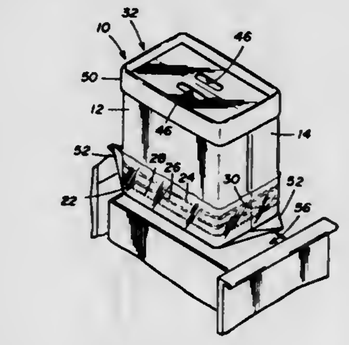
Int. Cl. B31b *39/60*

U.S. Cl. 93—35 VL **11 Claims**

1. A method of making compactor bags including the steps of:

joining a pair of sheets along opposed edges and at one end to form a bag having a predetermined length;

forming a liquid impervious casing having a length less than that of the bag; and



securing the liquid impervious casing around the outside of the joined sheets with the casing surrounding said one end.

3,871,272
INTENSIVE WINE-MAKING PROCESS AND THE RELATIVE PLANT FOR CARRYING IT OUT

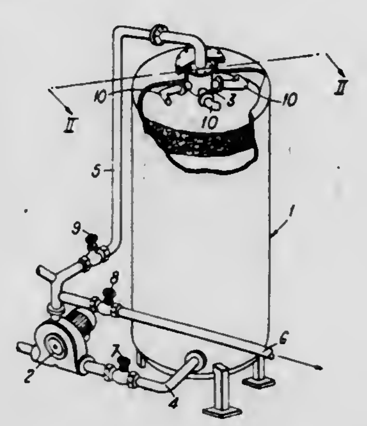
Rino Melandri, Lugo, Italy, assignor to Diemme S.N.C., Lugo, Italy

Filed Nov. 6, 1972, Ser. No. 303,924

Claims priority, application Italy, Nov. 30, 1971, 46927; Italy, July 27, 1972, 46899

Int. Cl. C12b *1/02;* **C12g** *1/06*

U.S. Cl. 99—276 **7 Claims**



1. A wine-making plant comprising at least one vat, a torque flow pump connected to a feed pipe leading to said vat; a sprayer with discrete arms, rotating by reaction, situated in the top part of the vat and comprising a plurality of L shaped tubes of various lengths connected, by means of a locating flange to a central cylindrical body, an upper closing flange carried by said body which rotatably rests on a centering and thrust bearing carried by said feed pipe; a further ring of elastic material situated in the lower zone of contact between the cylindrical body and the end of the feed pipe; a suction pipe, provided with a valve which connects the base of the vat to the pump inlet; and a pipe provided with a valve which connects the pump outlet to the inlet of a trickle pressing plant.

3,871,273
BEVERAGE MAKING APPARATUS

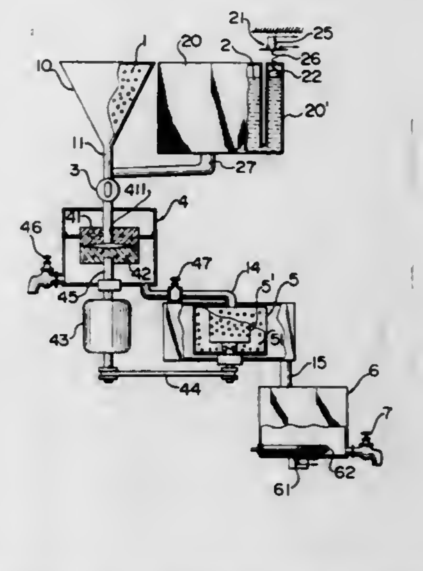
Chin-Yuan Hsieh, No. 35, Hsia Tan De, Pei Lei, Chia I, Taiwan, China

Filed Aug. 14, 1973, Ser. No. 388,277

Int. Cl. A47j *31/42*

U.S. Cl. 99—286 **10 Claims**

1. Apparatus for making a beverage in a single operation comprising a solid food feeding means, a liquid feeding means, a grinding means arranged in sequence with a separating means and a heating means, an electric motor connected to drive said grinding means and said separating means, means for supplying a mixture of solid and liquid food from said feeding means into said grinding means, means for conveying the resultant slurry from the grinding means to the separating means where the beverage is extracted, means for conveying the extracted beverage into said heating means, an electrical circuit containing said motor and an actuator for said mixture supply, and control means in said circuit responsive to the presence of a predetermined amount of liquid in said liquid feeding means for energizing said motor and operating said



actuator to supply the mixture to the grinding means, said control means being further responsive in the absence of a predetermined amount of liquid in the liquid feeding means to deenergize said motor and operate said actuator to arrest supply of said mixture.

3,871,274
FILLING CAKES

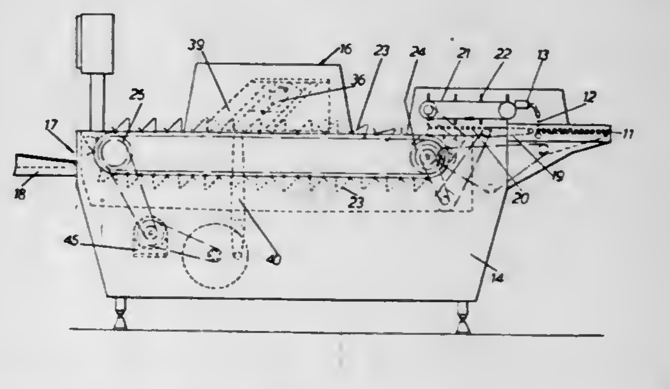
John Alfred Hornby, Cambridge, England, assignor to John (Huntingdon) Limited, Huntingdon, England

Filed Sept. 7, 1973, Ser. No. 395,190

Claims priority, application United Kingdom, July 23, 1973, 34990/73

Int. Cl. A21c *9/06*

U.S. Cl. 99—450.8 **11 Claims**

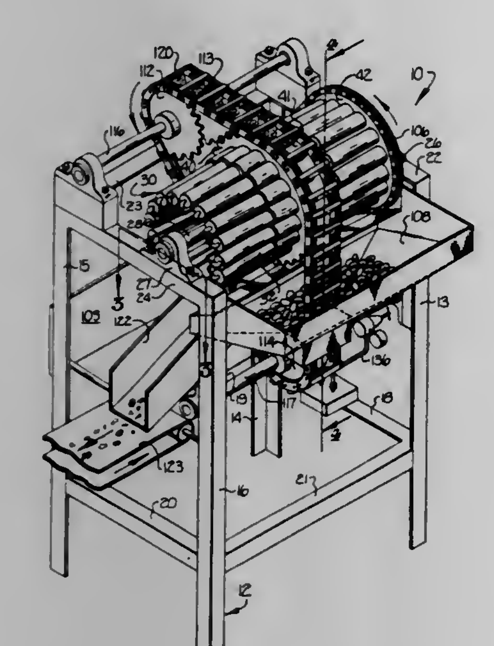


1. Apparatus for injecting filling material into cakes, such as doughnuts, which apparatus comprises a conveyor comprising a plurality of cake holders arranged to convey successive transverse rows of cakes along a horizontal conveying path, the cake holders providing a plurality of cake positions side by side in each transverse row so that a plurality of cakes are conveyed along parallel paths, filling means located adjacent the conveyor and including a plurality of injecting nozzles extending across the conveying path with at least one nozzle adjacent each cake position, means for tilting the cake holders when adjacent the filling means so that the base of each cake in the row adjacent the filling means is inclined to the horizontal and thereby exposes an edge region of the cake, and means for effecting relative reciprocating movement between the injection nozzles and the row of cakes adjacent the filling means to inject the nozzles into the exposed edge regions of the cakes, whereby filling materials may be injected into the cakes, and then withdraw the nozzles from the cakes.

3,871,275
HIGH PRODUCTION NUTCRACKING APPARATUS

James Bland Quantz, 3912 Kenilworth Rd., Columbia, S.C. 29205

Filed May 29, 1973, Ser. No. 365,039
Int. Cl. A23n *5/02*
U.S. Cl. 99—571 **30 Claims**

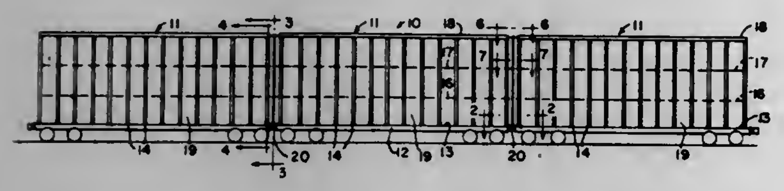


1. A high production nutcracking apparatus comprising
- a tubular member including a centrally located opening adapted to receive a nut therein,
- an anvil positioned within said tubular member adjacent one side of said opening,
- a cracking hammer mounted within said tubular member adjacent the other side of said opening for limited axial movement forwardly toward said opening and rearwardly away from said opening,
- port means communicating with said tubular member rearwardly of said cracking hammer,
- means for sequentially injecting pressurized air through said port means such that said cracking hammer is thrust forwardly to thereby crack a nut positioned in said opening between said anvil and cracking hammer, and
- means for rearwardly withdrawing said cracking hammer when said means for sequentially injecting pressurized air through said port means is non-operative and such that a nut to be cracked may be received in said opening and the cracking operation may be repeated.

3,871,276
CONNECTION DIAPHRAGMS BETWEEN ARTICULATED CARS

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Aug. 17, 1973, Ser. No. 389,339
Int. Cl. B61d *17/20*
U.S. Cl. 105—8 R **4 Claims**

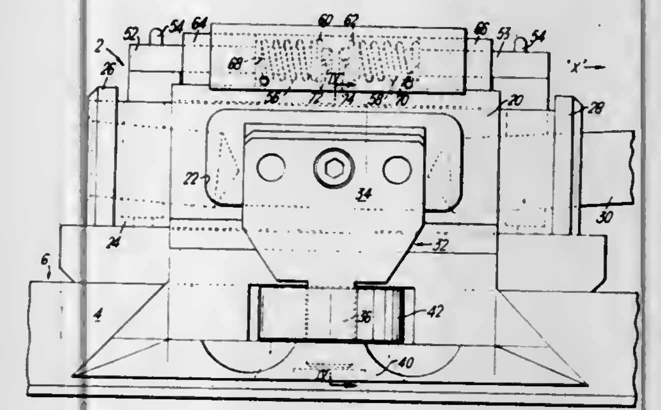


1. A railway vehicle comprising a pair of connected car sections, said sections each having a floor and a roof, connecting means for spanning the space between said sections, said connecting means comprising rectangular frames mounted on the adjacent ends of said sections, pivot pin means located intermediate the sides of said respective car sections on the longitudinal axes thereof, means mounting said rectangular frames for free turning movement about the longitudinal axes of said vehicle sections, slot means in said frames accommodating said pivot pin means for permitting lengthwise movement of said frames relative to said pivot means, and biasing means mounted on said respective sections engageable with the sides of said rectangular frames for normally positioning said frames in end-to-end relationship and permitting said frames to telescope and pivot relative to each other and to an associated section.

3,871,277
TRACKED WALKING GEAR

Robert Benjamin Bolton, 14 Middle Dr., Northumberland, England

Filed Feb. 25, 1974, Ser. No. 445,477
Int. Cl. B61c *13/00*
U.S. Cl. 105—31 **7 Claims**



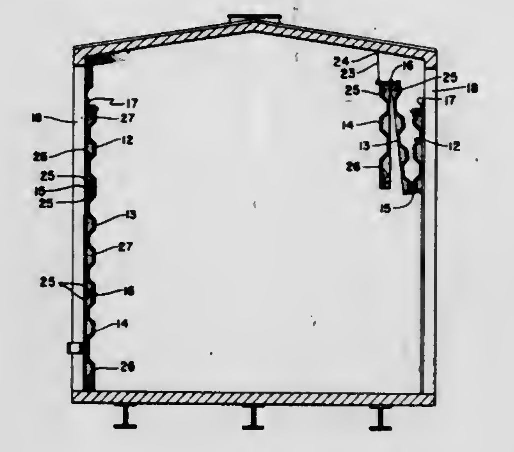
1. For a machine to be driven along a track or rail having a pair of opposed side faces, said machine including a reciprocable drive rod, walking gear comprising a holding mechanism including a trapping member for slidably engaging a rail or track, a jamming member pivotally mounted on the trapping member, a receiving portion and, slidably mounted in, to be movable relative to, said receiving portion, a shuttle member adapted to be connected to the drive rod of the machine, a pin member being dependent from said shuttle member and cooperating with the jamming member in such a manner that, in use, movement of the drive rod in one direction results in movement of said pin in one direction to pivot the jamming member from its rest position in which it is out of pressurized contact with the rail or track into an operative position forcing it onto the rail or track, whereby the rail or track is gripped between a trapping surface of the trapping member and the jamming member, the holding mechanism thereby being locked in position relative to said rail or track, subsequent movement of the drive rod in the other direction resulting in movement of said pin in the other direction to pivot the jamming member back towards its rest position to release said member from the rail or track so that the holding mechanism is free to slide along said rail or track.

3,871,278
RAILROAD GRAIN DOOR

Kent P. Shoemaker, 4914 Arden, Edina, Minn. 55434

Filed Oct. 31, 1973, Ser. No. 411,312
Int. Cl. B61d *19/00;* **B60j** *5/06*
U.S. Cl. 105—378 **10 Claims**

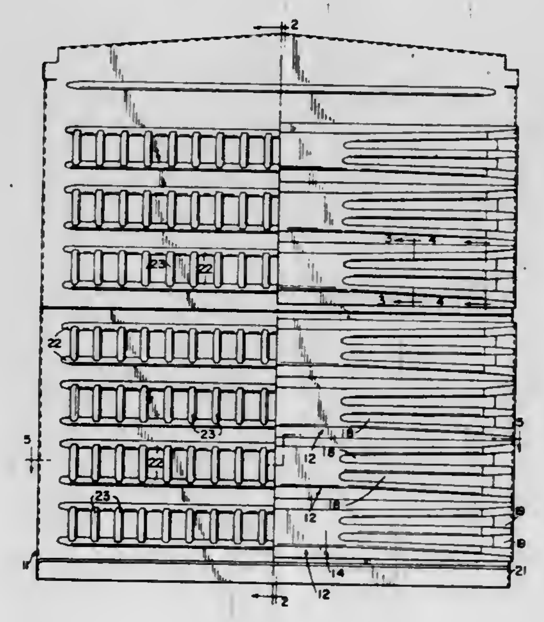
10. In combination a railroad box car having side opening doorways and a grain door, said grain door comprising a plurality of panel members of a leength to span said doorways, said panels being consecutively joined by hinge means intermediate adjacent panels at the long edges of said panels to form a panel assembly, the total width of said panels being the major portion of the height of said doorway, means joining the remote ends of the topmost panel to inner side of the doorposts of said doorway below the top of said opening so that the balance of said panels are supported in position adjacent said doorposts solely from said top panel with the lowermost panel in contact with the floor of said box car, the bottom panel of said panel assembly including movable cover means for exposing said openings.



3,871,279
BOX CAR END AND LINER

John W. Allen, 1241 Douglas, Flossmoor, Ill. 60422

Continuation-in-part of Ser. No. 249,100, May 1, 1972, abandoned. This application June 18, 1973, Ser. No. 371,034
Int. Cl. B61d *17/06*
U.S. Cl. 105—410 **15 Claims**



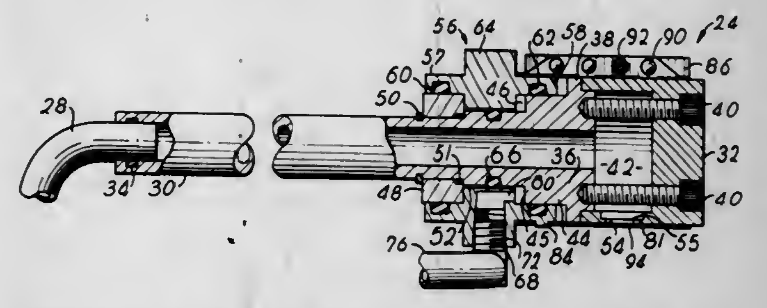
1. A railway vehicle end comprising a liner sheet terminating along each of the side edges in flanges projecting at a substantially right angle to the plane of said sheet, a plurality of horizontal stiffeners welded to said sheet, said stiffeners being of substantially hat shaped cross section and tapering toward each of the side edges so that the ends of said stiffeners are substantially flat and are bent in face-to-face overlying relation to said right angular flange of said liner sheet.

3,871,280
GLUE APPLYING ASSEMBLY FOR MULTIPLE WEB-FED PAPER HANDLING APPARATUS

Donald A. Glaser, Emporia, Kans., assignor to Didde-Glaser, Inc., Emporia, Kans.

Filed Sept. 7, 1973, Ser. No. 395,136
Int. Cl. B05c *5/02*
U.S. Cl. 118—412 **5 Claims**

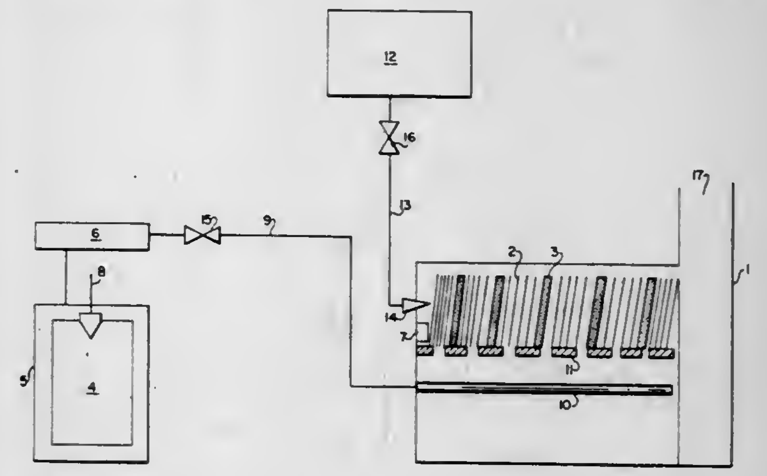
1. An applicator adapted to be interconnected to a supply of fluid substance for applying a strip of the latter to a moving web, said applicator comprising:
- an elongated applicator head adapted to be positioned proximal to said web and having a forward fluid substance applying section adjacent said web and a rearward section presenting a bearing surface,
- said forward section including a hollow chamber defined in part by a wall having an orifice therethrough of relatively small diameter for the application of said fluid substance; slidable means positioned on said bearing surface and axially shiftable therealong;
- relatively thin, apertured means in covering disposition to said fluid substance applying section and axially shiftable between a first operative position wherein said aperture is registered with said orifice, and a second flow-preventing position where said orifice is covered to preclude fluid flow therefrom;
- means coupling said apertured means and slidable means for axial movement thereof in unision, said coupling means precluding significant rotational movement of the apertured means relative to said forward section; and
- means for selectively shifting said slidable means, including: first fluid pressure means coupled to said slidable means for axially shifting said apertured means to said first position when fluid pressure is applied thereto; and
- second fluid pressure means coupled to said slidable means for axially shifting said apertured means to said second position when fluid pressure is applied thereto.



3,871,281
USE OF THE CHLORATE CANDLE AS A SOURCE OF OXYGEN FOR THE EMERGENCY DESTRUCTION OF CLASSIFIED MATERIAL

Joseph T. Leonard, Falls Church, and Donald E. Field, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,408
Int. Cl. E05g *3/00*
U.S. Cl. 109—29 **2 Claims**

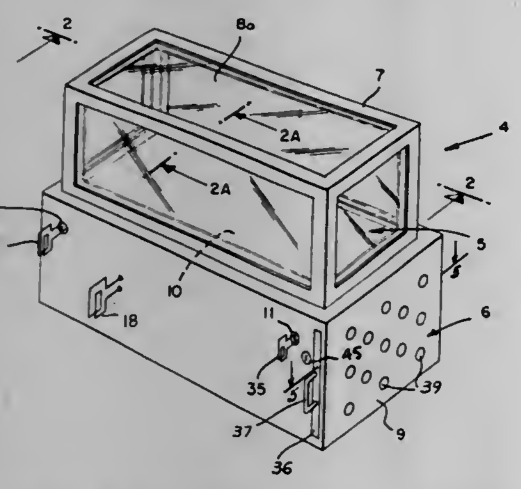


1. A system for destruction of combustable materials comprising:
- a container for enclosing said materials;
- means disposed within said container for igniting said materials;
- at least one chlorate candle disposed external and proximate to said container;
- means for enclosing said candle;

means for igniting said candle;
conduit means joining said enclosure means and said container for introducing into said container oxygen generated by said chlorate candle, said conduit means disposed so as to release oxygen below said material.

3,871,282
METHOD AND DEVICE FOR ANTI-THEFT SECURING OF A SPACE

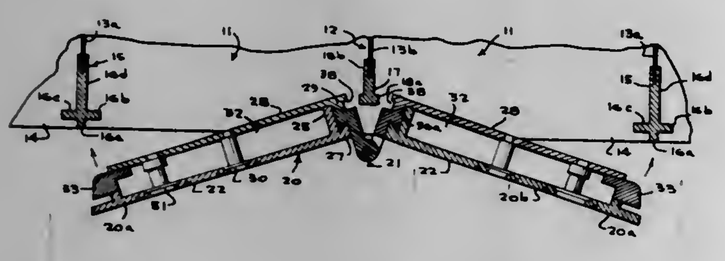
Morton Jessup Rose, 61-15 98th St., New York, N.Y. 11374
Filed Apr. 23, 1973, Ser. No. 353,526
Int. Cl. F05g *3/00*
U.S. Cl. 109—31 **14 Claims**



1. A display security-space device for deterring entry into a security exhibiting display space by unauthorized personnel, comprising in combination: a structure including at least in part a double-walled enclosable vessel having double walls of spaced-apart substantially parallel transparent panels enclosing a confined display security space defined by an inner one of the panels of the double walls of the double-walled enclosable vessel, the spaced-apart parallel transparent panels defining therebetween a jacket-space, said structure circumscribing said jacket-space such that said jacket-space is totally enclosable and pressurizable of gas therewithin, locking means for alternately providing for and denying access to said jacket-space from an outer exterior of the structure and the jacket-space thereof, said structure further defining a gas-enclosing metal encasing-structure defining free-space within and defining vents therefrom in communication with said jacket-space and an outlet valve means for releasing gas from the gas-enclosing metal encasing-structure, there being gas of predetermined high pressure within the gas-enclosing metal encasing-structure, and access closable-opening means for access into each of said security space and said free-space when said locking means is in an unlocked state, and pressurized gas of predetermined pressure enclosed within said jacket-space.

3,871,283
DOOR AND DOOR MOUNTING STRUCTURE FOR MOUNTING WITHOUT FASTENERS

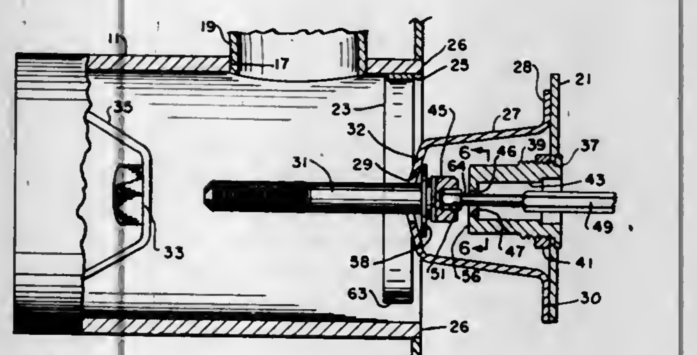
Frederick W. John, 837 3rd St. Apt. 302, Pacific Palisades, Calif. 90272
Filed July 31, 1973, Ser. No. 384,202
Int. Cl. E05g *1/00*
U.S. Cl. 109—56 **10 Claims**



1. A door and door mounting construction for safe deposit box installations for mounting companion pairs of hinged doors in respective pairs of laterally alined safe deposit storage compartments flanking a vertical divider wall between them, comprising wall means including said divider wall defining frames surrounding said compartments defining a pair of access openings to each pair of compartments, said divider wall having a pair of tongue formations projecting oppositely outwardly from said divider wall, a pair of laterally spaced doors conforming substantially to the configuration of the access openings to close the same and having confronting adjacent edge portions and mutually remote free edges, a hinge structure interconnecting said adjacent edge portions of the pair of doors for swinging movement about a common hinge axis between a closed coplanar position and an open outwardly diverging angular position, the adjacent edge portions of said doors defining mounting edges having confronting groove formations facing inwardly toward said common plane and collectively conforming to the cross-sectional configuration of said tongue formations for receiving the tongue formations therein when said doors are swung to said closed position with said mounting edges embracing said tongue formations for coupling the doors to the support member, means at the free edges of the doors for releasably restraining each door in closed position in its access opening to coact with the groove formation of such closed door and the associated tongue formation received therein in supporting the companion door hinged thereto when such companion door is swung to open position, the mounting edges of each of said doors also having a groove of dovetail horizontal cross section substantially spanning the height of the associated door opening through the top or bottom edge of the door and opening through said mounting edges in confronting relation to the groove of the companion door, said hinge structure comprising a pair of vertically spaced hinge knuckle formations for each door projecting forwardly integrally from a vertically elongated dovetail cross section base inserted through the groove opening in the top or bottom edge and interfitted and frictionally held in the dovetail groove of the associated door, and vertical hinge pins coupling together in paired relation a knuckle formation of one door with a respective knuckle formation of the companion door forwardly of the front surfaces of the companion doors.

3,871,284
COIN BOX AND LOCK MECHANISM

George W. Krise, 1770 Trolley Rd., York, Pa. 17404
Filed July 30, 1973, Ser. No. 383,703
Int. Cl. E05g *1/04*
U.S. Cl. 109—59 **5 Claims**

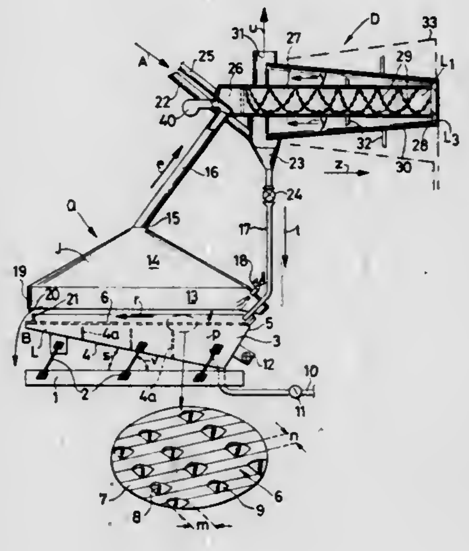


1. A coin box construction comprising a cylinder having a closed and an open end, a circular cover snugly receivable in said open end, stop means within said cylinder and positioning said cover in flush relation with the adjacent end surface of said cylinder, a bolt operatively engageable with said cover and spaced inwardly therefrom and threadedly receivable in nut means fixed to said cylinder, said bolt having a wrench receiving head, said cover having an aperture in general alignment with said bolt and permitting access to said wrench receiving head by a wrench from outside said cover, means on said cover adjacent said aperture forming an obstruction to

free removal of said bolt through said aperture, lock means including a body fixed to said cover and a portion removably securable thereto and covering said bolt, said bolt head having a portion engaging said obstruction when said bolt is being unthreaded from said nut means and serving to jack said cover out of said cylinder.

3,871,285
INCINERATOR DEVICE AND A METHOD OF PROCESSING RESIDUALS IN WASTE WATER, LIQUEFIED SEWAGE AND SLUDGE

Wendel Bastgen, Betzdorf near Siegen, Germany, assignor to Albert Klein KG, Nieder-Fishbach, Germany
Filed Oct. 19, 1973, Ser. No. 408,116
Claims priority, application Germany, Oct. 19, 1972, 2251211; June 9, 1973, 2329626
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **31 Claims**

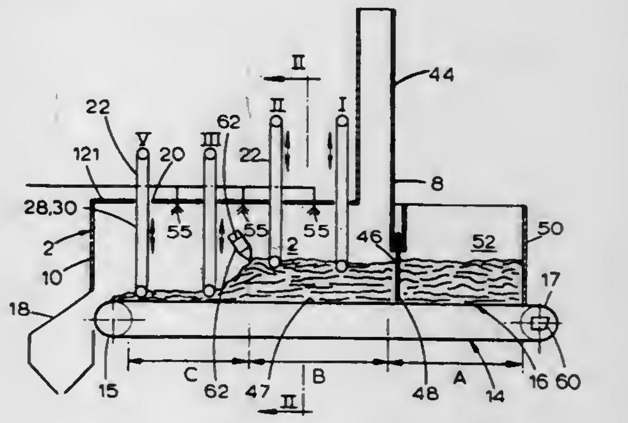


1. A device for incinerating granulated combustible material, said device comprising in combination:
- at least one sieve-type grate for feeding combustible material thereupon, said grate being in the form of a rigid plate-shaped member having spaced apart perforations, the peripheral outline of each of said perforations being small in relation to the total area of said plate-shaped member;
- support means mounting said grate for imparting swinging movements to the same, said support means including a generally trough-shaped structure disposed underneath said grate and mounting the same;
- at least one swingable member supporting said structure for imparting swinging movements to the structure and the grate;
- exciter means coupled to said swingable member for imparting swinging movements to the same; and
- air supply means connected to the trough-shaped structure for continuously feeding air into said structure to form an air cushion therein thereby continuously cooling the grate.

21. A method of processing residuals in waste water, sewage or sludge, said method comprising the steps of providing an incinerator installation including at least one sieve-type grate in the form of a perforated plate and supply means for continuously feeding air to the grate from below thereby cooling the same, preliminarily drying the residuals by appling pressure thereto, granulating the predried residuals, continuously maintaining a bed of hot air above said grate, then continuously guiding the granulate in the form of a layer along said hot air bed, and imparting swinging movements to said layer causing the granulate to dip intermittently into the hot air bed as it passes over the same.

3,871,286
INCINERATOR

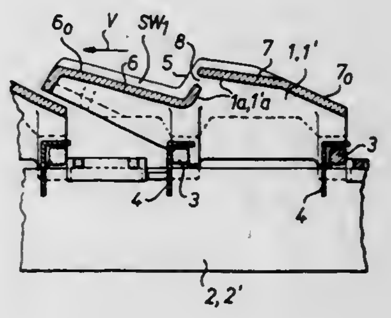
Norolf Henriksen, Rugdeveien 9, 3670, Notodden, Norway
Filed Jan. 15, 1973, Ser. No. 323,711
Int. Cl. F23g *5/04*
U.S. Cl. 110—8 R **3 Claims**



1. An incinerator for burning refuse, garbage and the like material, said incinerator comprising:
- a furnace having end walls, side walls and a ceiling;
- a fire grate conveyor means extending horizontally within said furnace for moving material to be burned from one end wall of said furnace to the other end wall thereof;
- said side walls, end walls, ceiling and fire grate conveyor means defining a furnace chamber;
- at least one air blower unit means mounted within said furnace chamber for blowing combustion air against said material to be burned when positioned on said fire grate conveyor means, each of said blower unit means including perforated blower heads and mounting means extending across said furnace chamber in a direction transverse to the direction of movement of said fire grate conveyor means for providing pivotal movement of each of said blower unit means about an axis extending in said transverse direction.

3,871,287
COMBUSTION GRATE STRUCTURE

Kurt Spillman, Stafa, and Georg Von Arx, Kloten, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland
Filed Dec. 14, 1972, Ser. No. 314,915
Claims priority, application Switzerland, Dec. 22, 1971, 18731/71
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **9 Claims**



1. In a combustion grate structure having spaced grate plates (6, 7) on which the substance to be burned is adapted to be positioned, grate beams (2, 2′) located beneath the grate plates, grate support blocks located between the grate beams and the grate plates (6, 7) to removably support the grate plates on the beams and space the plates from the beams;
- means supporting said grate beams;
- selected grate beams (2′ - FIG. 4) being movable along the direction of feed of said substance and other grate beams

(2 - FIG. 3) being stationary on said support means, said movable (2′) and stationary (2) beams being located adjacent each other,

the improvement wherein

the grate plates (1*a*, 1′*a*; 6, 7) and the support blocks on the movable as well as on the stationary beams are identical, single, integral castings (1, 1′) so that the plates and the blocks form plate portions (1*a*, 1′*a*) and block portions of said castings, said castings being placed on the respective movable and stationary grate beams (2, 2′) to be retained thereon by gravity, the upper surface of the movable as well as the stationary beams and the lower surface of the block portions of said castings being formed with interlocking, shaped matching seats, said matching seats comprising ribs (3) formed on each of the block sections (1*a*, 1′*a*) and extending transversely to the grate beam, and abutment rails (4) formed on the grate beams (2, 2′) extending transversely to the grate beams thereby permitting random placement of any plate-block casting on any seat on any beam, and retention of said plate-block castings on the beam, by gravity and by the interlocking seat.

3,871,288

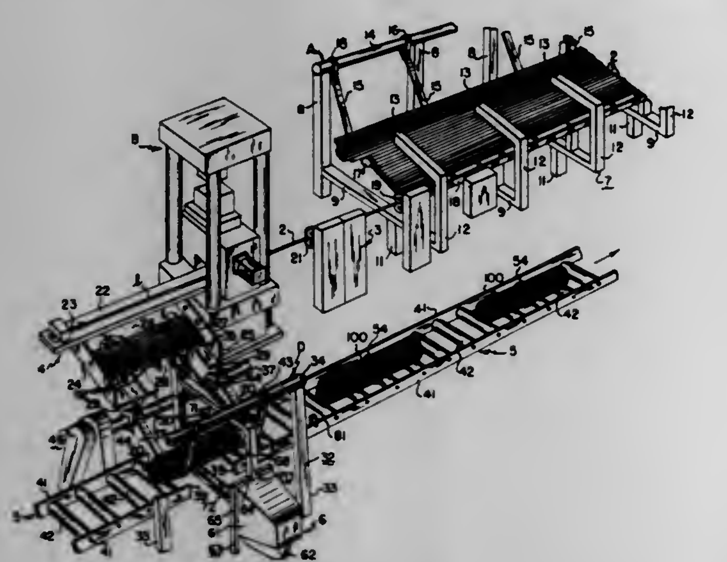
AUTOMATIC BAR HANDLING SYSTEM

Frank F. White, Mentor, Ohio, assignor to Automation Development Corporation, Mentor, Ohio

Filed Nov. 23, 1973, Ser. No. 418,279

Int. Cl. B65b *13/04*

U.S. Cl. 100—2 24 Claims



1. A process for handling long hollow or solid bars (2) comprising supporting a bundle of said bars on spaced slings (15) of a bundle unscrambler (A), causing said slings (15) to move over longitudinally-aligned sling supports (17) located near the end of a storage ramp inclined downwardly from said sling supports while supporting the ends (16) of the slings remote from said storage ramp at an elevation greater than that of said sling supports to provide festoons extending under the bundle to support the same, repeatedly raising the bars and slings by moving the slings up over said sling supports (17) to cause some of the bars (2) to move laterally over the sling supports to said ramp and to form a row of parallel bars on said ramp, repeatedly feeding the bars from the ramp to a conveying means (18,19) generally parallel to the bars in said row, repeatedly causing each bar on said conveying means to move to a metalworking machine (B) which acts on the bar, continually discharging bars from said machine to a downwardly inclined discharge ramp (4), supporting the bars (*b*) discharged from said ramp on spaced slings (20) of a bundle banding apparatus (D), causing said last-named slings to move over longitudinally aligned sling supports (44) located near the end of said discharge ramp (4) while supporting the ends (43) of the slings remote from said discharge ramp to provide festoons extending under the bars (*b*) to support the same, transferring a small number of bars (*b*) from said discharge ramp (4) to said last-named slings (20) while the slings are in elevated positions, gradually lowering the slings (20) while transferring more bars (*b*) to the slings to form a bundle supported on the slings, providing a strapping machine (6) with a strapping head (61) and a strap guide (70) extending around the bundle, said strap guide having an open portion to permit lateral feed of the bars (*b*) from said discharge ramp (4) to said bundle and having guide means (76,77, 78*a*,78*b*) to direct a strapping tape (54) from said head (61) around the bundle and back to said head, whereby said head (61) can tighten the tape (54) around the bundle (100) and thereafter sever the tape to complete one cycle, counting the number of bars discharged from the ramp (4) to the slings (20), stopping the movement of bars from the ramp (4) to the bundle when a predetermined number of bars have been accumulated in the bundle, causing operation of the strapping machine while such movement is stopped and while the bars are forced together on the slings to form a strapped bundle (100) while bars continue to be fed to said discharge ramp, removing the strapped bundle (100) from said slings, raising the slings (20) and thereafter restarting the feed of bars (*b*) from said discharge ramp (4) to said last-named slings (20) to repeat the cycle.

3,871,289

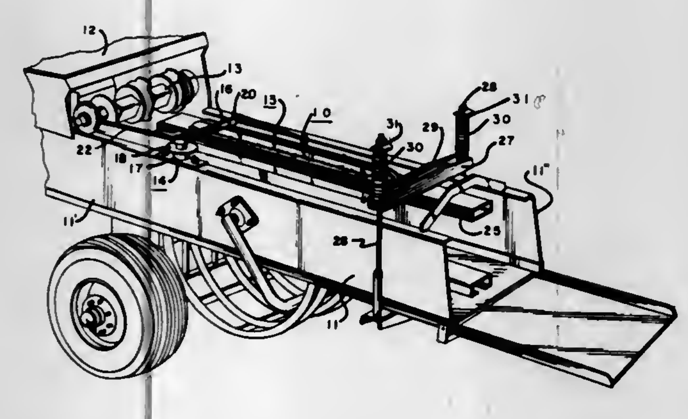
BALE MEASURING DEVICE

George W. Wilhite, Rt. 1, Kuna, Idaho 83634

Filed Nov. 23, 1973, Ser. No. 418,481

Int. Cl. B65b *13/02, 13/06*

U.S. Cl. 100—4 2 Claims



1. In combination with a commonly known baler having a bale cutoff mechanism and a discharge chute, a bale measuring device, comprising:
- an actuator assembly having a cam arm disposed horizontally substantially transversely of the uppermost terminal edge of said discharge chute on a mounting plate bearing at the uppermost edge of one sidewall of said chute, a web being fastened to said bearing and pivotly to a connecting link on a eccentrically disposed pivot, said connecting link being mechanically associated with said cutoff mechanism, said cam arm including urging means to return said cam arm to a substantially transverse position and said actuator arm to a position wherein the connecting link is in its feed position; and
- a metering chain mounted on a carrying arm which is disposed rectilinearly in said discharge chute wherein said carrier arm is pivotly mounted on an axle which is fastened transversely to the uppermost terminal edge of said chute distally forward of said actuator assembly, and being mounted on a floating bracket at the end opposite axle to permit said meter chain to follow the uppermost terminal side of a bale regardless of variations in said bale, a pair of sprockets suitably journally mounted in said carrier arm, a roller chain disposed about said sprockets in circuit metering studs which project at predetermined intervals from said roller chain to cam said cam arm.

3,871,290

METHOD FOR TREATING PAPER

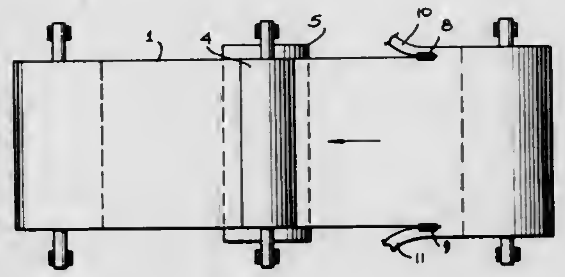
Hermann Verboom, Hagelkreuz, Germany, assignor to Eduard Kuesters Maschinenfabrik, Krefeld, Germany

Filed Dec. 1, 1971, Ser. No. 203,695

Claims priority, application Germany, Dec. 3, 1970, 2059533

Int. Cl. B30b *13/00, 3/00, 3/04*

U.S. Cl. 100—39 6 Claims



1. A method of pressure treating a paper web between a pair of rolls positioned adjacent one another, at least one of which has a work-engaging surface of plastic material, comprising the step of passing a paper web of a width no less than the width of the plastic-surfaced roll between the pair of rolls, whereby the paper web prevents any direct contact between the plasticsurfaced roll and the other roll of the pair of rolls.

3,871,291

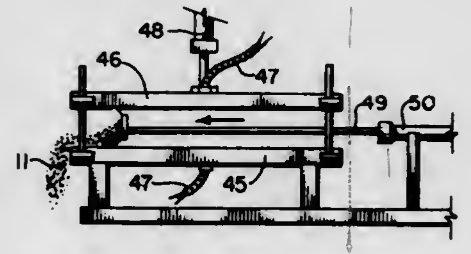
APPARATUS FOR PROCESSING GARBAGE

Rush E. Lassiter, Hammond, La., assignor to Floyd Rush Corporation, Baton Rouge, La.

Division of Ser. No. 213,378, Dec. 29, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,616

Int. Cl. B02c *11/08;* **B30b** *9/00, 13/00*

U.S. Cl. 100—93 P 19 Claims



1. An apparatus for drying and compressing garbage, comprising:
- lower hot platen means,
- upper hot platen means, means for moving said upper and lower hot platen means toward and away from one another,
- feed means for placing garbage on said lower hot platen, and
- scraper means for scraping garbage from said lower hot plate means and said upper hot platen means.

3,871,292

PLATEN PRESS STRUCTURE

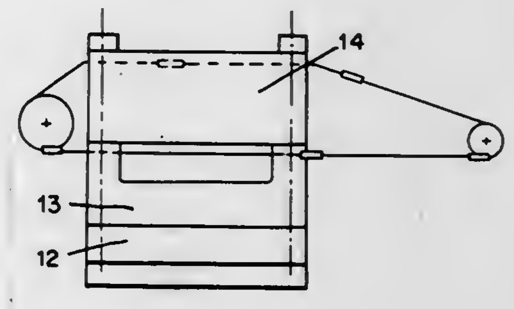
Edwin Bolliger, Morges, Switzerland, assignor to J. Bobst & Fils S.A., Switzerland

Filed Mar. 6, 1973, Ser. No. 338,634

Claims priority, application Switzerland, Mar. 7, 1972, 3344/72

Int. Cl. B21j *13/04;* **B30b** *15/30*

U.S. Cl. 100—215 6 Claims



1. A platen press having a support member, an upper platen, a pair of cross pieces, said cross pieces being placed on opposite sides of said upper platen between the upper platen and said support member, and means tightly urging said cross pieces against the upper platen to pre-stress the upper platen.

3.871.293

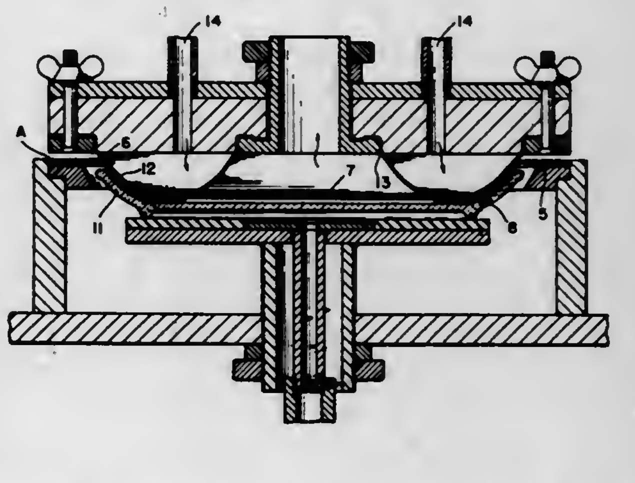
APPARATUS FOR PRINTING ON CERAMIC TABLEWARE

Jose Valiela, New York, N.Y., assignor to Interpace Corporation, Parsippany, N.J.

Division of Ser. No. 255,738, May 22, 1972, Pat. No. 3,756,165, which is a continuation-in-part of Ser. No. 43,044, June 3, 1970, abandoned. This application Mar. 21, 1973, Ser. No. 343,374

Int. Cl. B41f *17/00*

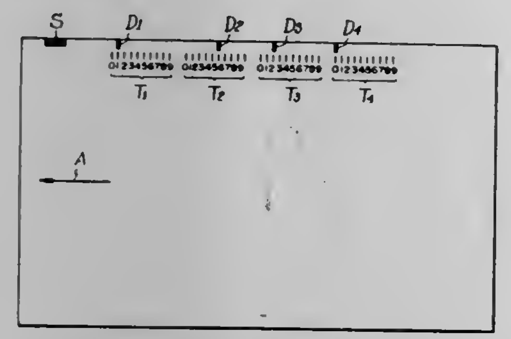
U.S. Cl. 101—41 2 Claims



1. apparatus for applying a decorative colorant to an item of ceramic tableware including in combination:
- a rigid flat base ring having a central opening,
- an elastic open-mesh net secured to the ring and covering the opening,
- the net provided with a transfer member having a total release transfer surface thereon within the area of the central opening of the base ring,
- colorant printed on at least one area of the transfer surface, the net being displaceable out and returnable to the plane of the base ring whereby to permit the colorant on the transfer surface to be moved into contact with the tableware and printed thereon,
- a gas inflatable and vacuum deflatable balloon operable against the net for displacing same in a direction to move the transfer surface into the quickly out of contact with the tableware.

3,871,294
DUPLICATOR MASTER FEED USING DECIMAL CODE TO SET COPY COUNT

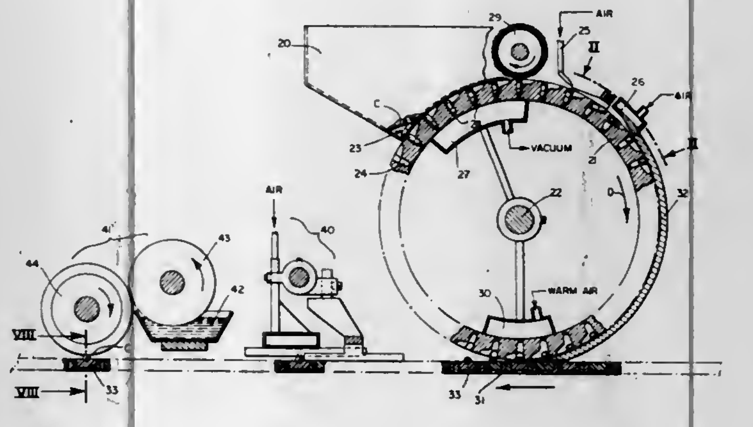
Yoshiharu Kagari, and Koichi Hirokawa, both of Tokyo, Japan, assignors to Kabushiki Kalsha Ricoh, Tokyo, Japan
Continuation-in-part of Ser. No. 882,648, Dec. 5, 1969, abandoned. This application July 10, 1972, Ser. No. 270,561
Claims priority, application Japan, Dec. 30, 1968, 43-96546
Int. Cl. B41l *11/08, 11/14*
U.S. Cl. 101—132.5 **3 Claims**



1. An automatic duplicating machine, of the offset lithographic type, using substantially rectangular masters having a leading edge and a trailing edge interconnected by a pair of longitudinal side edges, said machine comprising, in combination, a master cylinder having gripping means operable to grip the leading edge of a master fed thereto; an automatic master feed device operable, responsive to actuation of a start control, to initiate feeding of a master to said master cylinder; the masters fed by said automatic master feed device having impressed thereon markings indicating the respective number of duplicates to be made from each master; the markings impressed on each master including a first row of timing marks extending longitudinally of one of said side edges thereof and impressed on the master in separated decades with each decade representing a respective column position of a multicolumn decimal number, and each timing mark in each of said decades representing a respective decimal digit from 0 to 9; and a second row of longitudinally spaced data marks extending parallel to and spaced laterally from said first row and including one respective single said data mark impressed on the master adjacent each decade of timing marks; each data mark being aligned laterally with that timing mark, of its associated decade, representing the respective decimal digit, in column position, of the decimal number represented by all the data marks and which decimal number represents the number of duplicates to be made from the respective master; a master blanket cylinder engageable with a master on said master cylinder to have impressed, on its peripheral surface, an ink image of the master then mounted on said master cylinder; an impression cylinder adjacent and movable toward said blanket cylinder to press copy sheets against the peripheral surface of said blanket cylinder to provide duplicates of the master; an etching solution applicator operable to apply an ink-repellent etching solution to the master then mounted on said master cylinder; an inking device operable to apply ink to the master; means operable, responsive to completion of the etching solution application, to activate said inking device to initiate application of the ink to the master; means manually operable to preset a preliminary inking time for applying a quantity of ink sufficient to start duplication of the master; a copy sheet feed device; means operable, upon termination of the preliminary inking time, to activate said copy sheet feed device to initiate and continue feeding of copy sheets between said blanket and impression cylinders; a read-out device operable to scan separately the timing marks and the data marks on each master fed to said master cylinder and, responsive to simultaneous scanning, in each column position, of said data mark and its respective laterally aligned timing mark, providing an output signal representing the decimal digit, in the respective column position of the scanned data mark, whereby to provide decimal output signals indicative of the respective number of duplicates to be made; memory means and a data register connected to said read-out device to receive said output signals and to store and register the indicted number of duplicates; counting means operable to count the number of duplicates produced from each master; signal generating means; coincidence circuit means connected to said memory means; said data register, said counting means and said signal generating means, operable, responsive to coincidence between the stored numbers of duplicates and the counted number of duplicates, to activate said signal generating means to issue a command terminating operation of said copy sheet feed device; master removing means activated, responsive to such command, to remove the master from said master cylinder; and a cleaning device operable automatically, upon completion of duplication of a master, to clean said blanket cylinder.

3,871,295
CAPSULE ORIENTING APPARATUS AND METHOD OF SPIN PRINTING

Edward M. Ackley, Stone Harbor, N.J., assignor to R. W. Hartnett Company, Philadelphia, Pa.
Filed Sept. 4, 1973, Ser. No. 393,939
Int. Cl. B41f *17/36;* **B65g** *47/24*
U.S. Cl. 101—426 **11 Claims**



1. In a capsule orienting and turning apparatus, the combination which comprises:

a continuously movable capsule transporting apparatus having a plurality of spaced-apart pockets for the capsules,

means moving said transporting apparatus to move said pockets from positions facing open upwardly to positions facing open downwardly,

means for feeding a plurality of capsules for reception in said pockets while said pockets are open upwardly,

each said pocket having an elongated pocket portion for receiving said capsule therein with the capsule axis substantially perpendicular to the direction of capsule movement, referred to in this claim as position "A",

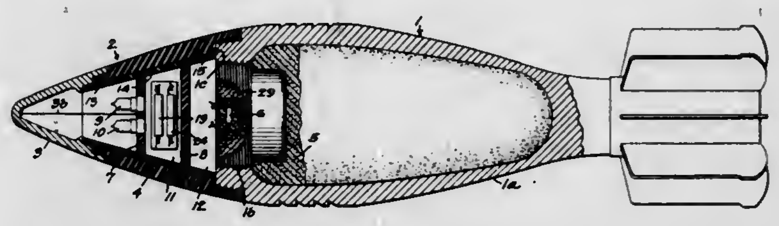
each said pocket also having a longitudinal pocket portion arranged to carry the capsule with the capsule axis extending in approximately the direction of its movement, referred to in this claim as position "B",

and each said pocket having a laterally extending pocket portion arranged to carry the capsule arranged crosswise of position "A" and also crosswise of the direction of of its movement, referred to in this claim as position "C",

and shifting means, operative while the capsule pockets and capsules are moving, to shift capsules from position "A" to position "B" and then to position "C"; with all the cap portions in rectified orientation.

3,871,296
ELECTROSTATIC PROXIMITY FUSE

Laurence B. Heilprin; George Nordquist, and Philip Krupen, all of Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 26, 1951, Ser. No. 217,652
Int. Cl. F42c *13/00*
U.S. Cl. 102—70.2 P **1 Claim**



1. In combination with an explosive missile, an electrostatic fuse comprising: a conical casing mounted at the nose end of said missile, said casing having a metal cap at its narrow end and an insulating skirt between said cap and the body of said missile whereby a capacitance C exists between said cap and said body, said cap and said body having a charge placed thereon during missile launching; a resistance R connected between said cap and said body, said resistance R thereby being in parallel with the capacitance C, the value of said resistance R being such that the time constant RC is long compared to the time the missile is within proximity of a target, but short compared to the time of flight of the missile; a pentode mounted within said missile at its nose end, said pentode having an anode, a cathode, and three grids, the number 2 grid of said pentode being connected to said cap, and the number 1 and number 3 grids of said pentode being connected to said cathode, said cathode being connected to the body of said missile, said number 2 grid thereby being shielded from both said anode and said cathode; a positive voltage source within said missile; a resistor connected between the anode of said pentode and said source; a firing circuit having a thyratron, a charged capacitor, and a detonator, said thyratron having an anode, a cathode, and a grid, said charged capacitor and detonator being connected in the anode circuit of said thyratron; and a coupling network connected between the anode of said pentode and the grid of said thyratron; the greater increase in the capacitance of said cap than that of said body upon approach of said missile to a target causing a change in the voltage across said parallel capacitance C and resistance R, this voltage change being amplified by said pentode and transferred by said coupling network to the grid of said thyratron, whereupon said thyratron conducts causing said charged capacitor to pass a current through said detonator causing functioning thereof.

3,871,297
PERCUSSION FUSES WITH A TILTING ROTOR FOR GYRATORY PROJECTILES

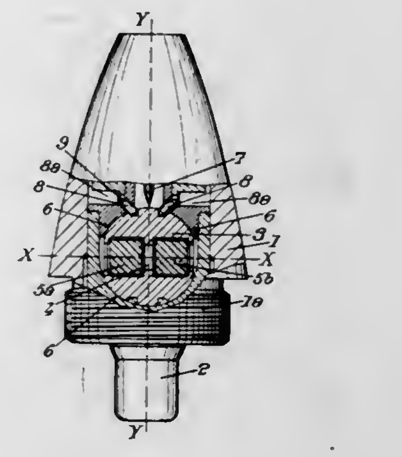
Jean Claude Bayard; Louis Fournet; Jean Jacob, all of Bourges; Bernard Pierre, Lyon, and Marcel Roux, Bourges, all of France, assignors to Etat Francais, Paris, France
Filed Oct. 11, 1973, Ser. No. 405,301
Claims priority, application France, Oct. 13, 1972, 72.36251
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 **10 Claims**

1. A gyratory percussion fuse comprising:

a fuse body having a longitudinal axis of gyration and adapted for movement along that said axis, and including an upstream percussion element sensitive to impact, a downstream element of the pyrotechnic chain of the fuse, and a tilting rotor arranged, longitudinally, between said percussion element and said downstream element,

said tilting rotor having a passageway extending therethrough from side to side, and a pyrotechnic charge in said passageway, said tilting rotor being entirely symmetrical with respect to a middle transverse plane through the center of said passageway, said rotor further having an axis of inertia, and the weight of said rotor including the pyrotechnic charge being equally balanced,

holding means including a locking device releasable in response to forces generated by a shot for holding the tilting rotor in a rest position with respect to the fuse body prior to a shot, at which rest position said passageway is out of alignment with said percussion element and said downstream element so that the rotor blocks inadvertent movement of the percussion element toward the downstream element, and wherein at said rest position the said axis of inertia of the tilting rotor is at an angle of 90° to the said longitudinal axis of gyration of the fuse body, and said fuse body including means for mounting the tilting rotor so as to permit the tilting rotor to move in either direction from said rest position through a 90° angle to align the passageway with the percussion element and downstream element and hence align the axis of inertia with the longitudinal axis of the fuse body to arm the fuse in response the action of a restoring force operating on the tilting rotor as the rotor is released by said holding means.



3,871,298
DETACHED LEVER TIMING MOVEMENT FOR MECHANICAL TIME FUZE

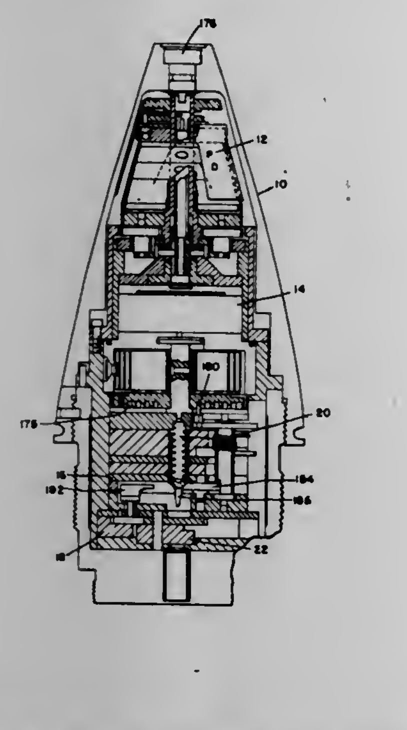
Dragolyoub Popovitch, Denville, N.J.; Roy B. Nystrom, East Northport, N.Y.; Melvin Eneman, New York, N.Y.; Carl Biro, Yonkers, N.Y., and Selwyn Alpert, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 6, 1968, Ser. No. 774,231
Int. Cl. F42c *9/04*
U.S. Cl. 102—84 **8 Claims**

1. A timing mechanism for a fuze of the type wherein a lever member operatively engaging a balance wheel assembly, an escape wheel assembly and reciprocating means operatively engaging said escape wheel assembly and adapted to actuate a time delay element of said fuze, the improvement which comprises:

a folded lever member positioned on one side of a common escapement axis operatively engaging said balance wheel assembly and said escape wheel assembly,

a round hairspring operatively engaging said balance wheel assembly and said escape wheel assembly and coaxial with the longitudinal axis of a rotating projectile, permitting said balance wheel oscillation of ± 90° to ± 180° while withstanding a force of 30,000 g's and 30,000 revo-

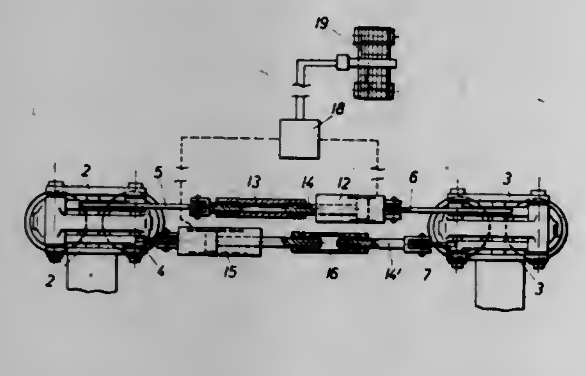
lutions per minute, and
pivot means operatively engaging said escape wheel assem-



bly, said balance wheel assembly, said folded lever and said hairspring.

3,871,299
METHOD AND APPARATUS FOR LINING AND LEVELING TRACK

Franz Plasser, deceased, late of Johannesgasse 3, Vienna, Austria (A-1010, by said Erna Plasser, heir), and Josef Theurer, Johannesgasse 3, Vienna, Austria (A-1010)
Filed Oct. 26, 1973, Ser. No. 410,292
Claims priority, application Austria, Nov. 2, 1972, 9300/72
Int. Cl. E01b *29/26*
U.S. Cl. 104—7 B **5 Claims**

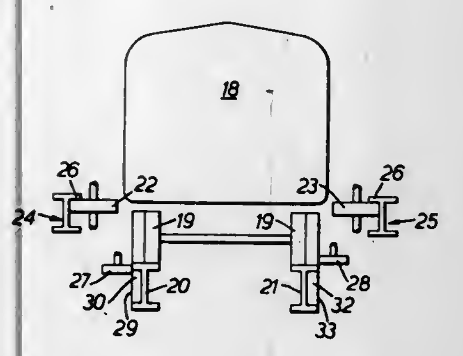


3. In a mobile apparatus for lining and leveling a track, which comprises a frame mounted for mobility on the track, two pairs of rollers mounted on the frame, each pair of the rollers including an outer roller for rolling engagement with an outer lateral face of a respective one of the rails and an inner roller for rolling engagement with an inner lateral face of the respective rail, the rollers of each pair being arranged for clamping the respective rail therebetween, and hydraulically operable lever system for actuating the rollers into and out of clamping engagement with the rails, the improvement of

1. a tension linkage interconnecting the outer rollers of the two pairs and pressing them against the outer lateral faces of the rails,
2. a pressure linkage interconnecting the inner rollers of the two pairs and pressing them against the inner lateral faces of the rails,
3. turnbuckle for adjusting the length of each of the linkages, and
4. a hydraulic piston-and-cylinder drive mounted in each of the linkages.

3,871,300
TRANSPORTATION MEANS

Francis Cyril Perrott, The Manor House, South Cerney, Cirencester, Gloucestershire, England
Division of Ser. No. 190,627, Oct. 19, 1971, Pat. No. 3,777,667, which is a continuation of Ser. No. 779,977, Nov. 29, 1968, abandoned. This application Oct. 30, 1973, Ser. No. 411,060
Claims priority, application United Kingdom, Aug. 21, 1968, 39883/68
Int. Cl. B61b *13/08*
U.S. Cl. 104—130 **2 Claims**



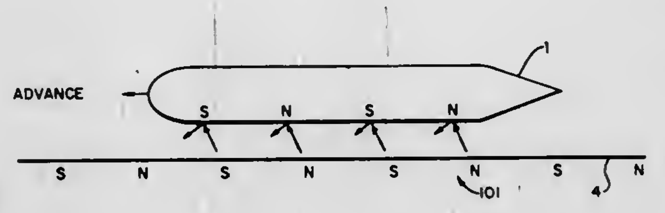
1. Means of transportation comprising:
a. a vehicle,
b. a track having a selective branching zone and at least two alternative branching routes,
c. two alternative guidance means for the vehicle,
d. each said guidance means comprising a stationary guide surface extending substantially continuously along the track through the branching zone and parallel respectively to one of said branching routes,
e. one of said guidance means comprising an inwardly facing surface above the level of the track and the other of said guidance means comprising an outwardly facing guide surface,
f. a vehicle-mounted primary follower associated with and engageable with said inwardly facing guide surface,
g. a vehicle-mounted secondary follower optionally engageable from above with and associated with said outwardly facing guide surface whereby said vehicle can be caused to select and follow that side of the branch corresponding to said outwardly facing guide surface and thereby to disengage said primary follower from said inwardly facing guide surface,
h. said disengagement then taking place solely as a result of transverse movement of the vehicle away from said inwardly facing guide surface, and
i. alternative means by which said secondary follower can be moved clear of the outwardly facing guide surface thereby to cause the vehicle to select and follow that side of the branch corresponding to said inwardly facing guide surface.

3,871,301
STABILIZATION AND RIDE CONTROL OF SUSPENDED VEHICLES PROPELLED BY A LINEAR MOTOR

Henry H. Kolm, Wayland, and Richard D. Thornton, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 259,518, June 5, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 398,116
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 SS **17 Claims**

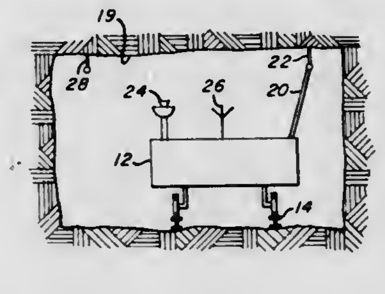
1. Apparatus to provide stabilization and active oscillation damping of a suspended vehicle that comprises, in combination: means on the vehicle for creating a d-c magnetic field, active guideway means adapted to receive the vehicle and containing current loops which, when energized, create a linearly traveling magnetic propulsion field to provide at least one of synchronous acceleration, deceleration and cruise

forces upon the vehicle, electric power source means connected to energize the currents loops, means for effecting momentary adjustment of the amplitude of the propulsion field and its frequency, the latter to change the linear spatial position of the propulsion field relative to that of the vehicle field, sensor means on the vehicle to sense vehicle motion in at least one degree of freedom for the purpose of controlling vehicle behavior by actively damping unwanted motion, and communication means operable to transmit a signal from the sensor means to the power source to effect changes therein, thereby to adjust at least one of the amplitude and the frequency of the propulsion field so as to provide stabilization and oscillation damping of the vehicle.



3,871,302
TROLLEY CONTROL SYSTEM

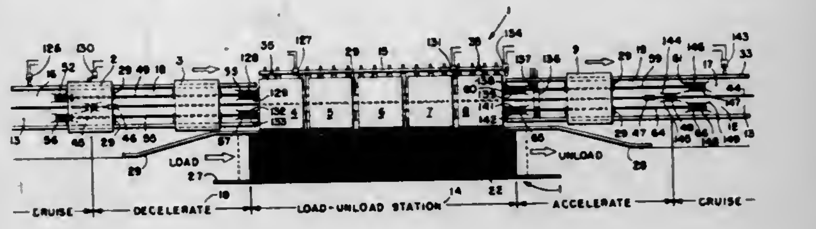
Will B. Jamison, Bethel Park; John F. Burr, Pittsburgh, and Homayoun Hadi, Bethel Park, all of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Sept. 26, 1973, Ser. No. 401,079
Int. Cl. B60m *1/10;* **B61l** *1/10*
U.S. Cl. 104—153 **13 Claims**



1. Apparatus for controlling the supply of electric current to a trolley wire comprising,
- a transmitting means for transmitting a first coded signal,
- receiving means for receiving the first coded signal,
- said receiving means positioned remote of said transmitting means,
- circuit breaking means for controlling the flow of electric current to said trolley wire,
- said circuit breaking means actuated by said receiving means upon receipt of the first coded signal to provide flow of electric current to said trolley wire and thereby energize said trolley wire at a preselected current magnitude,
- said transmitting means operable to transmit a second coded signal to said receiving means, and
- said circuit breaking means actuated by said receiving means upon receipt of the second coded signal to override said first coded signal which is transmitted from another transmitting means in order to interrupt current flow to said trolley wire.

3,871,303
TRANSPORTATION SYSTEM

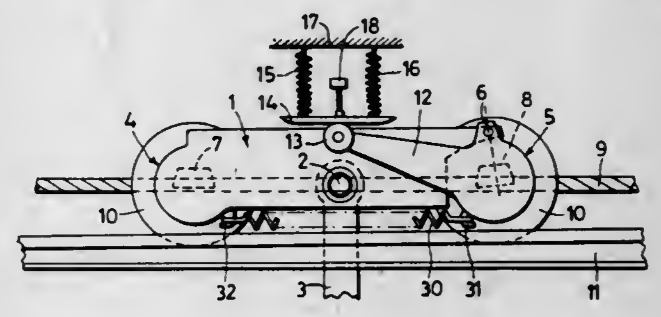
Gerald L. Woodling, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 25, 1974, Ser. No. 445,446
Int. Cl. B61b *9/00*
U.S. Cl. 104—173 **15 Claims**



1. A vehicle drive system comprising a first endless drive member for driving engagement with a first vehicle and a second vehicle along a path in a constant speed section of the system, a second endless drive member for driving engagement with said first vehicle in a variable speed section of the system, a third endless drive member for driving engagement with said second vehicle in said variable speed section of the system, means for gradually changing the speed of said second endless drive member between the speed of said first endless drive member and a different speed in a different speed section of said system whereby the speed of said first vehicle can be gradually changed from said speed of said first endless drive member to said different speed and a second means for gradually changing the speed of said third endless drive member whereby more than one vehicle is driven at gradually changing speeds in said variable speed section at the same time.

3,871,304
SUSPENSION APPARATUS FOR ENDLESS MONOCABLE AND BICABLE AERIAL ROPEWAYS WITH CLAMP CONTROL

Giorgio Dettoni, Turin, Italy, assignor to Officine Meccaniche Agudio S.p.A., Milan, Italy
Filed Sept. 14, 1973, Ser. No. 397,389
Claims priority, application Italy, Sept. 21, 1972, 29480/72
Int. Cl. B61b *7/20*
U.S. Cl. 104—178 **5 Claims**



1. A suspension device for clamping a transport vehicle to the haulage rope of an aerial ropeway and controlling the clamping hold on the rope, said device comprising in combination:
- a support structure guided for movement along and parallel to the haulage rope;
- a pair of clamping means supported on said support structure lengthwise spaced apart, one of said clamping means being stationarily mounted on the support structure and the other clamping means being slidable relative to said one clamping means, spring means biasing said clamping means toward a relative position in which the clamping means produce a predetermined holding force, at least one of said clamping means including a clamping member clampingly engageable with the haulage rope and a control member said clamping member, said control member being pivotal about an axis eccentric relative to the loca-

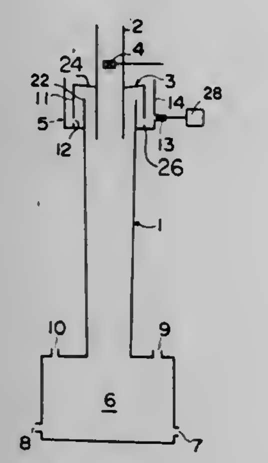
tion of the clamping member on the control member, the angular position of the control member and thus of the clamping member controlling the clamping force exerted by said clamping member; and

control means for controlling release or stoppage of the transport vehicle as a function of the clamping force exerted by said clamping means, said control means including sensing means effecting release and stoppage respectively of the vehicle, actuating means coactingwith said sensing means for activating the same, elastic means supporting said activating means, and linkage means secured to said control member mounting the clamping member for pivoting in unison therewith, said linkage means coacting with said actuating means for displacing said actuating means against the action of the elastic means into a position causing the sensing means to effect release of the vehicle in response to a pivotal position of the control member indicative to a predetermined minimum clamping pressure and also permitting movement of the actuating means by the action of the elastic means into a position in which the sensing means are inactive thereby effecting stoppage of the vehicle.

3,871,305
APPARATUS FOR USE IN QUENCHING AND ABSORBING GAS EMANATING FROM A WASTE INCINERATOR

Tetsuya Watanabe, and Noboru Suzuki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 20, 1973, Ser. No. 371,607
Claims priority, application Japan, June 22, 1972, 47-73045; May 9, 1973, 48-50651
Int. Cl. F23j *15/00;* **B01d** *47/00*
U.S. Cl. 110—119 **12 Claims**

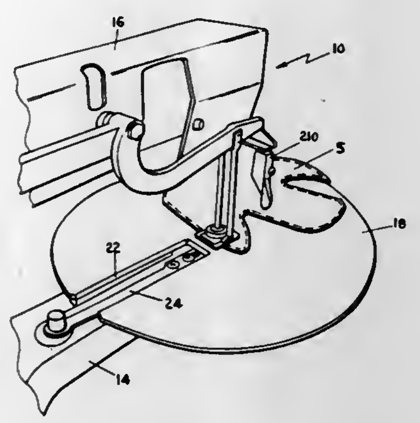


1. An apparatus for use in quenching and absorbing gas emanating from a waste incinerator, said apparatus comprising a pipe connected to said waste incinerator for receiving said gas, fluid spray means disposed in said pipe, a quenching tower having an open, upper end portion, said pipe having an end portion of a diameter smaller than the diameter of said quenching tower and telescoped within said open end portion of said tower to define an annular space between said telescoping portion, a cover extending from a non-telescoping portion of said pipe and over said open end portion of said tower, a water sink supported by said tower, said sink enclosing said cover and having a portion extending above said cover, means to introduce a fluid into said sink to flow into said annular space, and means for adjusting the flow rate of said fluid into said sink whereby said fluid flows over the interior surface of said tower and submerges said cover to form a fluid seal between said cover and said pipe.

3,871,306
FEED CONTROL

Robert B. Egtvedt, Comstock Park; John R. Den Bleyker, Holland, and Theodore C. Zwiep, Grand Rapids, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Mar. 12, 1973, Ser. No. 339,776
Int. Cl. D05b *23/00, 27/06*
U.S. Cl. 112—121.11 **8 Claims**



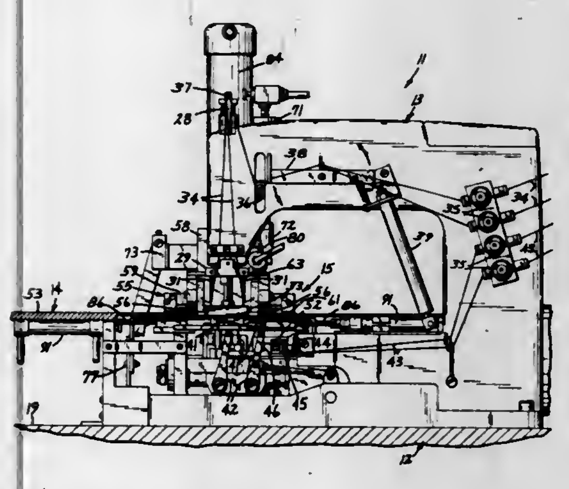
1. Stock feed apparatus for controllably feeding stock to a functional tool comprising:

stock feed means shiftable repeatedly toward and away from a tool zone and being adapted to alternately secure and release stock for incremental feed thereof relative to said tool zone; means for repeatedly shifting said stock feed means toward and away from the tool zone; said stock feed means including an upper pressure element and a cooperative lower platform for securing the stock, each of which is pivotable, for rotatably shifting the secured stock about said tool zone simultaneously while feeding the stock toward said tool zone; and sensing and responsive means on said pivotable stock feed means to detect a predetermined feature of the stock and control the pivoting of said stock feed means accordingly.

3,871,307
PLACKET FORMING MACHINE

Rollo L. Scott, Minneapolis, and Robert F. Overby, Bloomington, both of Minn., assignors to Munsingwear, Inc., Minneapolis, Minn.

Filed Apr. 5, 1973, Ser. No. 348,267
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **7 Claims**



1. In sewing apparatus comprising a sewing machine having a first and second widely spaced needles, first and second thread carrying loopers arranged for cooperation severally with the first and second needles to comprise first and second needle and looper pairs, an independent tensioned supply of thread for each of the needles and loopers, and drive means energizable to cause coordinated sewing movement of said needles and loopers and effective when deenergized to return said needles and loopers to predetermined positions, combined with means for holding a multi-layer work piece and automatically drawing the work piece past the needles in a direction normal to the plane of the needles to produce a pair of widely spaced two-thread chain stitches along the work piece, the improvement which comprises:

means interrupting the energization of the sewing machine drive means at the end of a predetermined travel of the work piece while causing the work piece to creep slightly further whereby to ensure that the needle and looper threads beneath the work piece are taut and in predetermined locations;

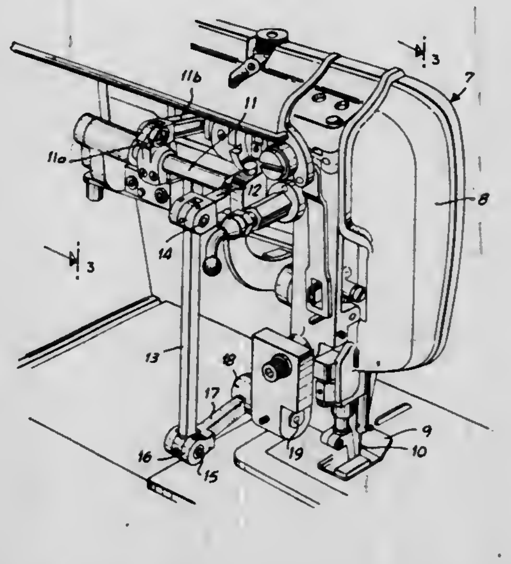
a first cutter cooperating with a first needle and looper pair and a second cutter cooperating with the other needle and looper pair, each cutter comprising a movable knife member having a pointed end of reduced thickness and having a hooked recess along one edge thereof at a location spaced from the point, means reciprocating the knife member between a first, extended position and second, retracted position, and means cooperating with the knife member for shearing threads carried in said recess during retraction of the knife member;

and means mounting the cutters adjacent the loopers so that upon extension the point of each knife member moves close to the adjacent looper whereby the needle and looper threads from the stitch last made enter the recess in the knife, and upon retraction the threads are carried to the cooperating means for severing.

3,871,308
SEWING MACHINE FABRIC-CUTTING DEVICE

William Galya, Rte. 2, Merriden Dr., Brewster, N.Y. 10509, and Jack E. Shuffield, 29 Carpenter Ave., Norwood, N.J. 07648

Filed Dec. 10, 1973, Ser. No. 423,235
Int. Cl. D05b *37/06*
U.S. Cl. 112—122 **3 Claims**

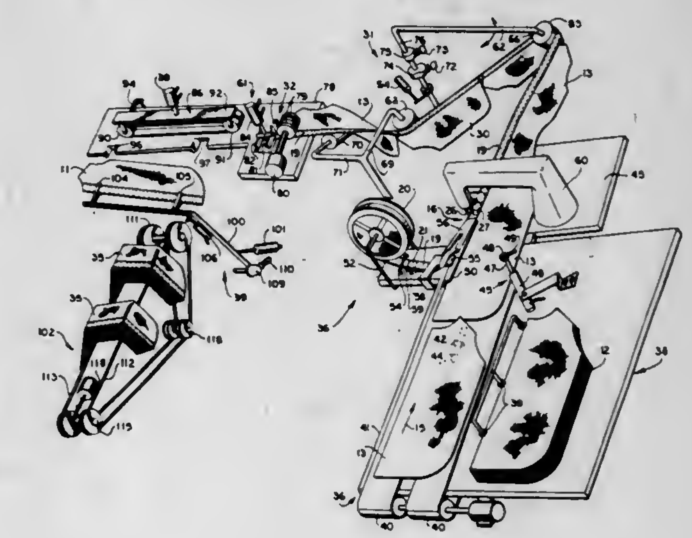


1. A sewing machine device comprising in combination: a cutter blade means including a first lower cutting edge and an upper mounting structure, an upright guide means for guiding the blade means' lower cutting edge and upper mounting structure upwardly and downwardly reciprocatably, means slidably mounting the upper mounting structure on the upright guide means with the lower cutting edge extending fore-to-aft in direction, a sewing machine foot and needle sewing means positioned in juxtaposition and lateral to the cutter blade means and to said fore-to-aft direction, and drive means operatively connected to the upper mounting structure for reciprocating the upper mounting structure in to and fro motion along the upright guide means, the upright guide means including at least two uprightly extending guide tracks in which the upper mounting structure is slidably mounted, the drive means including a power-driven eccentric shaft, and a lever means including a plurality of interconnected levers extending operatively between and connected to each of the eccentric shaft and the upper mounting structure for translating rotary motion of the eccentric shaft into to and fro reciprocating motion of the upper mounting structure, the lever means including lever-mounting structure mounting the levers at locations above the lower cutting edge.

3,871,309
SHIRT FRONT ASSEMBLY, METHOD AND APPARATUS

Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.

Division of Ser. No. 243,753, April 13, 1972, Pat. No. 3,780,682, which is a continuation-in-part of Ser. No. 79,031, Oct. 8, 1970, Pat. No. 3,675,604. This application Aug. 27, 1973, Ser. No. 391,645
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.29 **3 Claims**



1. Apparatus for forming shirt front assemblies or the like comprising a fabric connecting means, first feeding means for feeding a connected series of center plait pattern parts or the like to said fabric connecting means, second feeding means for feeding a series of shirt front pattern parts or the like to said fabric connecting means whereby said fabric connecting means connects together the connected series of center plait pattern parts and the series of shirt front pattern parts and forms a connected series of shirt front assemblies, and conveying means for guiding the connected series of center plait pattern parts of the shirt front assemblies away from said fabric connecting means toward a subsequent work station, said conveying means comprising first roller means adjacent said fabric connecting means for guiding the center plait pattern parts in an approximately horizontal attitude, a second roller means for receiving the center plait pattern parts from the first roller means and turning the center plait pattern parts to an inclined attitude with the shirt front pattern parts hanging freely from the center plait pattern parts, and third roller means adjacent the subsequent work station for receiving the center plait pattern parts from the second roller means and turning the center plait pattern parts back to an approximately horizontal attitude, said second roller means being biased out of alignment from between said first and second roller means to exert tension on the connected series of center plait pattern parts and to accumulate varying lengths of shirt front assemblies as the center plait pattern parts are moved away from the fabric connecting means toward the subsequent work station, whereby the center plait pattern parts function as a conveyor tape for the shirt front assemblies.

3,871,310

ZIG-ZAG SEWING MACHINE

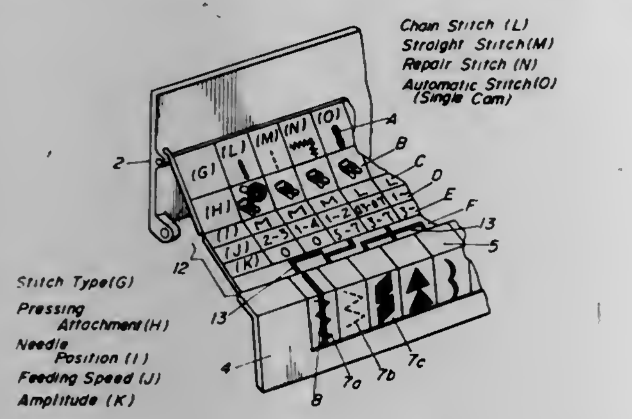
Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Tokyo, Japan

Filed Jan. 9, 1973, Ser. No. 431,560

Claims priority, application Japan, Jan. 7, 1974, 48-4926

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 F **10 Claims**



1. In a zig-zag sewing machine having pattern cams and a pattern cam selecting mechanism, a combination comprising a pattern cam selector dial provided with a plurality of first indicia each representative of a stitching pattern which can be produced by selecting one of said pattern cams; an index movable with reference to said dial to indicate respective ones of said first indicia, and being connected with said pattern cam selecting mechanism so as to select during such movement the pattern cam which is associated with the respective first indicium; a table adjacent said dial and provided with second indicia some of which are indicative of machine adjustments to be carried out when a respective pattern cam has been selected; and indicating means extending between said first and second indicia to indicate which second indicia are associated with which first indicia.

3,871,311

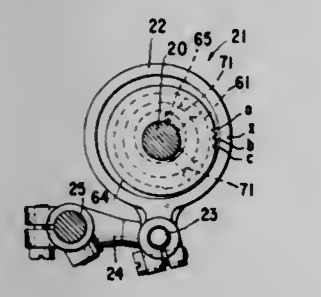
ADJUSTABLE ECCENTRIC FOR SEWING MACHINES

Heinrich Ciecior, Blankenloch, and Rolf Emil Kessler, Karlsruhe, both of Germany, assignors to The Singer Company, New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,145

Int. Cl. D05b *57/02*

U.S. Cl. 112—200 **1 Claim**



1. In a sewing machine having a rotary drive shaft, an oscillatory stitch forming mechanism, an adjustable throw eccentric carried on said drive shaft, and a pitman embracing said adjustable throw eccentric and operatively connected to said stitch forming instrumentality, said adjustable throw eccentric comprising telescopically arranged inner and outer eccentric members each formed with a radial flange, the flanges extending one on each side of said pitman, fastening means carried by the radial flange of said outer eccentric member and engageable with said drive shaft to lock said adjustable eccentric members in selected position on said shaft, indicia carried on said pitman and on the radial flange of said inner eccentric member denoting the eccentricity of said adjustable eccentric, and cooperating indicia carried on said pitman and on the radial flange of said outer eccentric member denoting the timing of said adjustable eccentric.

3,871,312

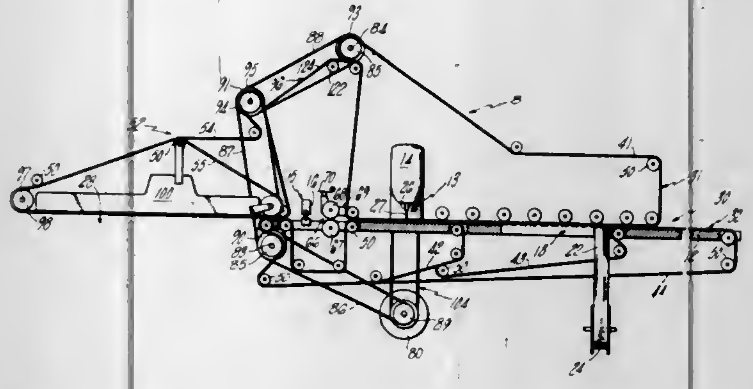
SEWING MACHINE MATERIAL FEED MECHANISM

John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Jetsew, Inc., Barneveld, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,904

Int. Cl. D05b *19/00, 27/00*

U.S. Cl. 112—203 **17 Claims**



1. In a sewing machine installation having material conveyance means for conveying material forwardly along a predetermined material path through material handling, stitching and cutting stations to a material stacking station, a sewing machine head for stitching the material at the stitching station, a cutting device for cutting the stitched material at the cutting station, and material handling apparatus for handling the material in a predetermined was as it is conveyed forwardly along the material path through the material handling station, the improvement wherein the material conveyance means comprises an entry conveyor system for conveying the material forwardly along the material path through the material handling and stitching stations to the cutting station, an exit conveyor system for conveying the material forwardly along the material path from the cutting station to the stacking station, and drive means for driving the entry and exit conveyor systems together and with the exit conveyor system driven to provide a slightly higher material rate of conveyance to place the material under slight tension as it is conveyed forwardly from the cutting station by the exit conveyor system.

3,871,313

METHOD FOR INCREASING THE STRENGTH OF A MULTIPLE-LAYER SHELL TYPE CYLINDRICAL PRESSSURE VESSEL

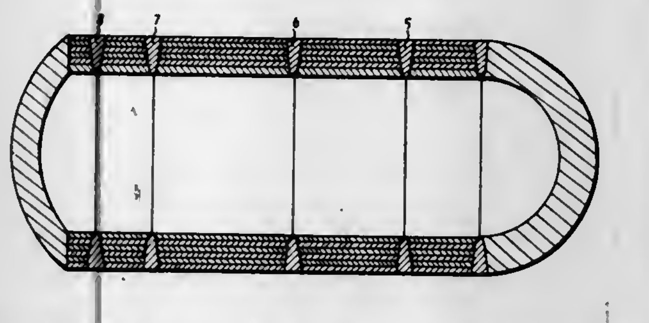
Takeshi Yamauchi, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Aug. 17, 1973, Ser. No. 389,262

Claims priority, application Japan, Aug. 17, 1972, 47-82395

Int. Cl. B21d *51/00*

U.S. Cl. 113—120 S **3 Claims**



1. A method for increasing the strength of a multiple-layer shell type cylindrical pressure vessel having head plates, the shell of which, when inner pressure is applied to the vessel, tends to present a sine-curve like bending behavior with a transition point at the neutral axis at each curvature, the method comprising:

constructing said shell of more than one section wherein at least one of said sections is constructed of more than one layer,

providing a circumferential weld between one of said head plates and one of said sections, and

providing a circumferential weld extending throughout the wall thickness of said shell at a position coinciding with a first of said transition points with respect to the bending direction as viewed from said circumferential weld between said one of said head plates and said one of said sections.

3,871,314

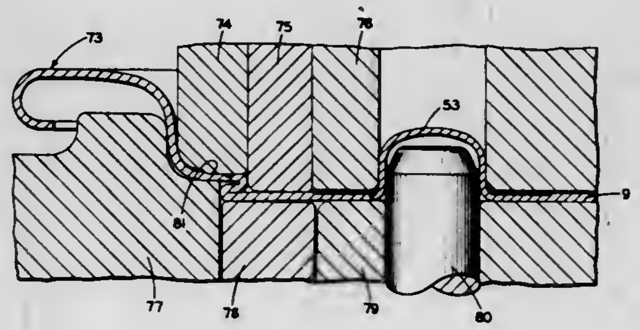
METHOD OF MAKING FOLDED CAN ENDS AND FOLDED CAN END PRODUCT

Donald E. Stargell, North Canton, Ohio, assignor to Van Dorn Company, Cleveland, Ohio

Filed Oct. 20, 1972, Ser. No. 299,447

Int. Cl. B21d *51/40*

U.S. Cl. 113—121 C **22 Claims**



1. In a method of cold working a sheet metal blank to form a can end member having a recessed end panel extending from a recessed corner and connected with the corner by an annularly scored protective metal triple fold by a series of successive drawing, redrawing, resizing, scoring and folding operations in which said successive operations include forming an annular fold panel extending directly between an upper concavely curved corner formed in an axially extending side wall of a cup drawn from a metal blank and a lower curved corner connected with the cup bottom wall; forming an annular upwardly convex shoulder in the fold panel between the upper and lower corners; successively bulging the cup wall portion circumferentially outward between the shoulder and lower corner; successively decreasing the depth of the cup bottom wall below the shoulder; and successively decreasing the radius of curvature of the lower corner in preparation for folding the metal between the shoulder and lower corner to form an annular triple fold-S-shaped in cross section between the shoulder and lower corner.

3,871,315

DEVICE FOR SALVAGING METAL OBJECTS AND SALVAGING METHOD

Leonard Morgansen Andersen, 46 Alexander Ave., Yonkers, N.Y. 10704

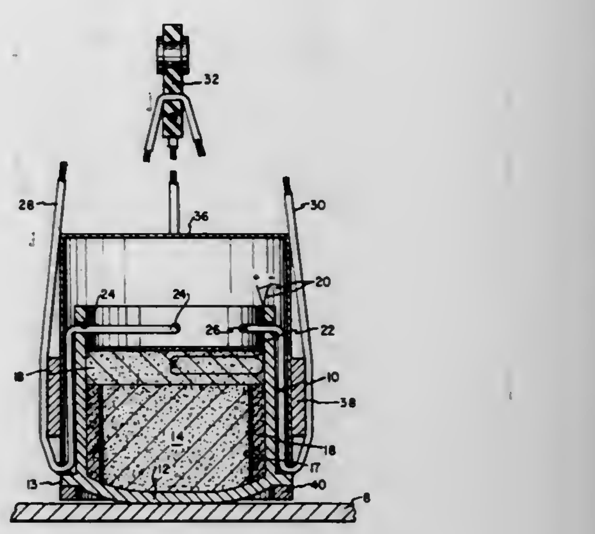
Filed June 20, 1973, Ser. No. 371,875

Int. Cl. B63c *7/04*

U.S. Cl. 114—51 **6 Claims**

1. A submersible device for use in salvaging metal objects from a body of water, comprising

- a housing having an opening at one end;
- a compressed thermit mixture within said housing, said thermit mixture being enveloped by a flux material;
- a metal container enveloping said housing to form an insulating air space between the interior surface of said container and said housing, with means forming a watertight seal between said container and said housing;
- an igniting powder above the thermit mixture within said housing, said igniting powder being of the type which does not emit gases upon ignition;
- means for igniting said igniting powder;
- means for sealing the open end of said housing;
- means enveloping the closed end of said housing for directing the flow of molten metal after said thermit mixture has been ignited toward a confined area of an object to be salvaged; and
- lifting means connected to said housing for enabling said housing to be pulled toward the surface of the water after it has been welded to a metal object by ignition of said thermit.



3,871,316

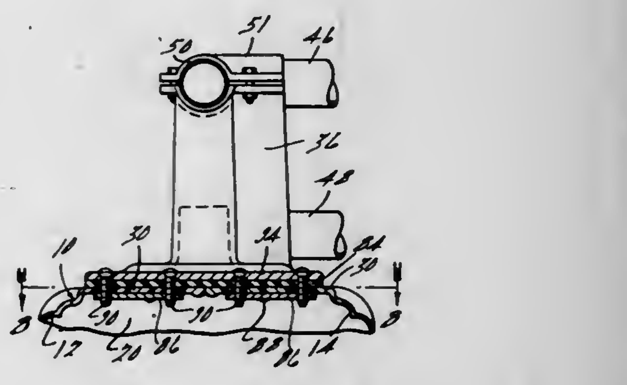
CATAMARAN

Kenneth H. Woodrich, Rochester, Mich., assignor to Woodall Industries Inc., Detroit, Mich.

Division of Ser. No. 182,743, Sept. 22, 1971, Pat. No. 3,796,175. This application Sept. 6, 1973, Ser. No. 394,639

Int. Cl. B63b *9/00;* **B63h** *9/04;* **B63b** *1/10*

U.S. Cl. 114—61 **4 Claims**



1. A catamaran comprising a pair of hollow plastic hulls each having a mounting portion provided with an opening therein, a stanchion mounted on each of said mounting portions over the opening thereof, mounting plate means disposed against the interior of each of said hulls in generally surrounding relation to said opening, said mounting plate means being insertable into said hulls through said openings, and fastening means extending between said stanchions and said mounting plate means in locations spaced around said opening to secure said stanchions to said mounting portions, said stanchions being operable to close said openings and being in sealed relation to said mounting portions around the openings thereof.

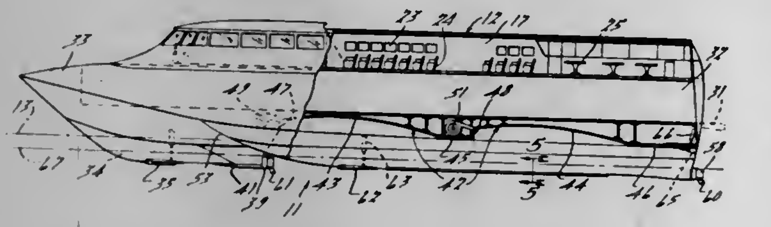
3,871,317
WATERCRAFT

Jack J. Szpytman, 910 N. Brys Dr., Grosse Pointe Woods, Mich. 48236

Filed July 16, 1973, Ser. No. 379,333

Int. Cl. B63b *1/30*

U.S. Cl. 114—66.5 R **13 Claims**



1. A watercraft comprising an elongated hull, an undersurface on said hull having a concavely curved aerodynamic lifting shape configured to provide an upwardly acting force applied to said craft in response to flow of air therealong, stabilizing fin means carried by laterally spaced portions of said hull below said aerodynamic lifting surface, each of said last-mentioned hull portions carrying said stabilizing fin means at its lower end, each of said stabilizing fin means having a generally flat horizontal lateral configuration in cross section with exposed downwardly facing and upwardly facing surfaces extending laterally outwardly on opposite sides of said lower end, and propulsion means carried by said hull, said aerodynamic lifting surfaces comprising two concave surfaces in tandem, each surface comprising an upwardly and aftwardly extending forward portion, a substantially horizontal intermediate portion, and a downwardly and aftwardly extending rearward portion, a flat surface being provided on the underside of the hull between said two aerodynamic sections.

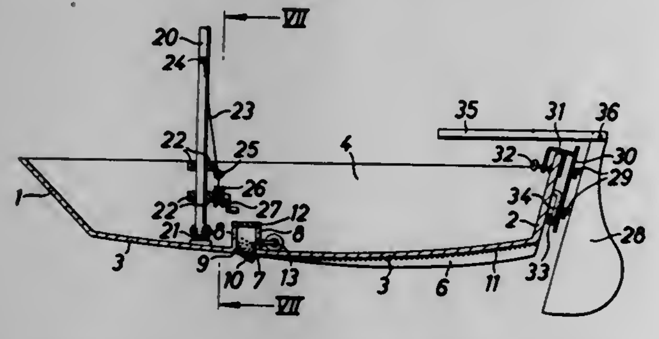
3,871,318
ANTIFRICTION DEVICE FOR BOAT HULLS

Ernest Joscelyn Clerk, 18 South Ave., Rest Pen, Kingston 10, British W. Indies

Division of Ser. No. 262,214, June 13, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,569

Int. Cl. B63b *1/38*

U.S. Cl. 114—67 A **7 Claims**



1. A sailing boat including a hull having a flat bottom, rudder means mounted to said hull, the bottom of the hull having a slot extending transversely thereof and communicating with ambient air, a partition wall extending upwardly from and along each transverse edge of the slot within the hull, a flap extending transversely across the bottom of the hull and on the exterior thereof, the flap being disposed with the leading edge thereof extending along the leading edge of the slot and to which it is hingedly connected by a hinge coupling and means operable from inside the hull for effecting hinged movement of the flap, said flap being of a length such that it extends across the space between the leading edge of the slot and the trailing edge thereof and the flap is adjustably movable from a position where it contacts the trailing edge of the slot and closes the slot to selected hinged positions opening the slot to a varying extent to direct air flow rearward from said slot against said hull bottom, thereby reducing wetted areas of said hull bottom when said boat is being wind-propelled, and means for holding said flap in said selected positions.

3,871,319
BUOYANT VESSELS

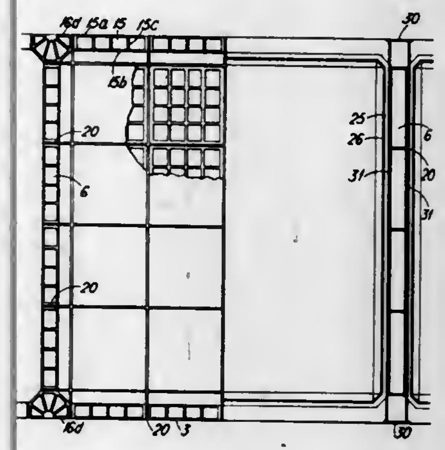
Frederick Henry Turner, Crestline, Cullesden Rd., Kenly, Surrey, England

Filed Nov. 30, 1971, Ser. No. 203,212

Claims priority, application United Kingdom, Dec. 4, 1970, 57645/70; Mar. 24, 1971, 7680/71; June 21, 1971, 28906/71; June 21, 1971, 28907/71; June 21, 1971, 28909/71

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 A **2 Claims**



1. A buoyant vessel in which cryogenic liquid may be contained comprising outer walls and at least one bulkhead that divides the space defined by the outer walls into compartments, said walls and bulkhead being formed from prestressed concrete providing boundary layers between which struts exist, insulating material internally lining each said compartment and heating means by which said bulkhead may be heated positioned on opposite sides of said bulkhead in said insulating material.

3,871,320
APPARATUS FOR COUNTERACTING A TILTING OF A SHIPS'S HULL DURING LOADING AND UNLOADING

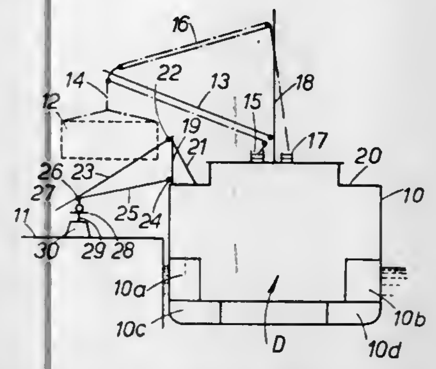
Leif Berg, Risskov, Denmark, and Ragnar Jonas Nes, Minde, Norway, assignors to Ingeniorene Lund, Mohr & Glaever-Enger, Bergen, Norway

Division of Ser. No. 112,667, Feb. 4, 1971, Pat. No. 3,716,154. This application Jan. 17, 1973, Ser. No. 324,389

Claims priority, application Norway, Feb. 6, 1970, 414/70

Int. Cl. B63b *39/00*

U.S. Cl. 114—121 **8 Claims**



1. An apparatus for counteracting a tilting of a ship's hull during loading and unloading comprising
  a supporting leg mechanism;
  means for pivotally mounting said supporting leg mechanism on a ship for pivoting from an inoperative position on board the ship to a position over a supporting surface adjacent the ship at a level above the waterline of the ship;
  means including a pressure medium cylinder connected to said supporting leg mechanism for maneuvering said supporting leg mechanism to a position to engage said supporting surface adjacent the ship and to apply an initial load through said supporting leg mechanism on said supporting surface; and
  a manometer connected to said pressure medium cylinder to indicate the pressure of a pressure medium therein.

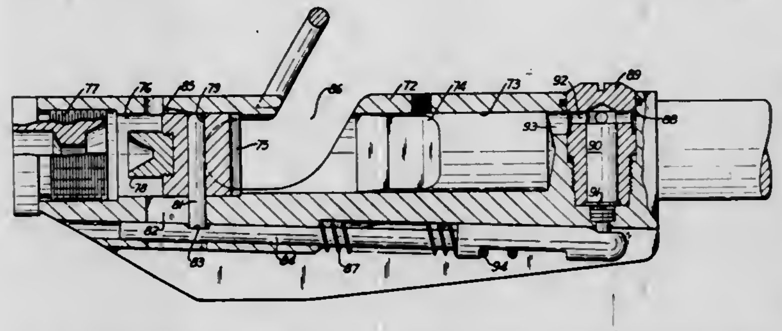
3,871,321
SELF-COCKING EXPLOSIVELY ACTUATED CABLE CUTTER

Joseph L. Giebel, Pittsburgh, and Ernest E. Temple, Murrysville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 163,949, July 19, 1971, Pat. No. 3,780,689. This application Sept. 10, 1973, Ser. No. 395,577

Int. Cl. B63b *9/00*

U.S. Cl. 114—221 A **4 Claims**



1. An explosively actuated cable cutter comprising a frame having a rear end and provided near its front end with a laterally opening recess for receiving a cable, an anvil member mounted in the frame between its front end and said recess and slidable lengthwise of the frame, the anvil member being in a position to be moved forward by a cable entering the recess, a chisel slidably mounted in the frame behind the recess and having a front cutting end, a firing pin in the frame behind the chisel for detonating an explosive charge to drive the chisel forward in order to sever a cable against the anvil member, a plunger for actuating the firing pin carried by the frame beside said anvil member and chisel and slidable lengthwise of the frame, the plunger being provided with a lateral notch adjacent the anvil member, said anvil member having a passage therethrough normally aligned with said notch, a trigger pin slidably disposed in said passage and having one end normally projecting into said plunger notch for moving the plunger forward with the trigger pin and anvil member, the frame having an inner surface engageable by the end of the trigger pin opposite said one end and sloping forward and away from the anvil member, the front end of said notch sloping in the same direction as said sloping frame surface, whereby when the anvil member is moved forward by a cable in the recess the pin will move along said sloping surfaces and lengthwise of said passage until the pin leaves said plunger notch, and a spring between the frame and plunger adapted to be compressed by the forwardly moving plunger until the trigger pin leaves said notch and releases the plunger, whereupon the spring will drive the plunger rearwardly to actuate the firing pin.

3,871,322
SNUBBER FOR THE DAGGER BOARD OF A SAILBOAT

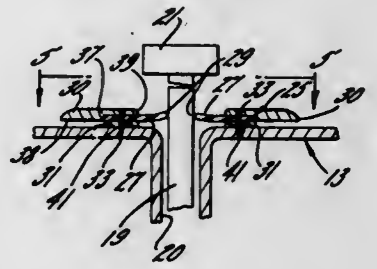
Marlow W. Dodge, 6312 Park Ridge Rd., Rockford, Ill. 61111

Filed July 5, 1973, Ser. No. 376,693

Int. Cl. B63b *41/00*

U.S. Cl. 114—127 **4 Claims**

1. A snubber mountable on a sailboat adjacent the dagger board slot and adapted to grip against the sides of a dagger board of predetermined thickness to support the board in a raised position, said snubber including first and second flat fins formed of a resiliently yieldable material, a first bracket for securing said first fin to the boat along one side of the slot with the first fin having one side margin secured to the boat and having an opposite side margin extending partially over the slot, a second bracket for securing said second fin along the opposite side of the slot with said second fin extending partially over the slot toward the other fin, the side edges of said fins being spaced from each other a distance less than the thickness of said dagger board so as to grip frictionally against the sides of the dagger board to support the latter in said raised position.



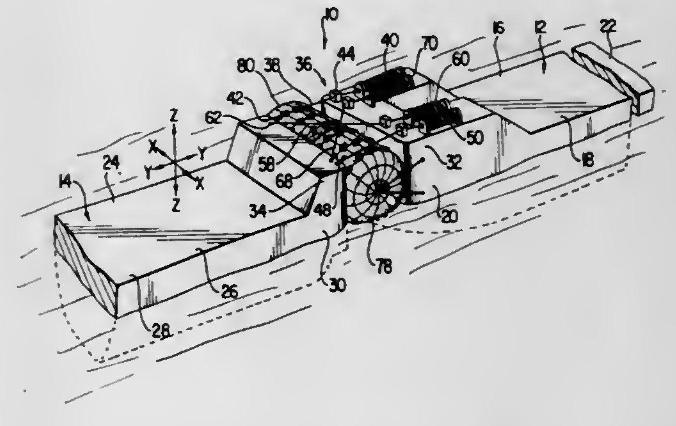
3,871,323
CLOSE-COUPLED TOWING LINKAGE

Donald P. Roseman, Rockville; Milton Martin, Silver Spring, and Eugene R. Miller, Annapolis, all of Md., assignors to Hydronautics, Incorporated, Laurel, Md.

Filed Aug. 31, 1973, Ser. No. 393,479

Int. Cl. B63b *21/00*

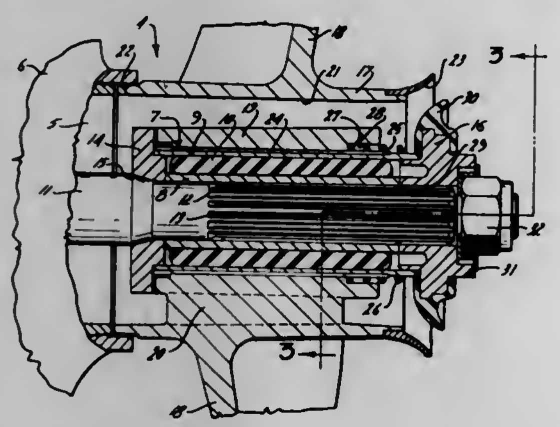
U.S. Cl. 114—235 A **8 Claims**



1. A towing linkage of connecting a first vessel to a second vessel and permitting relative yaw, surge and sway while limiting the amount of these motions comprising in combination:
a. a first main resilient towing link for resiliently connecting the two vessels at their port sides;
  b. a second main resilient towing link for resiliently connecting the two vessels at their starboard sides, said main resilient towing links permitting surge between the vessels while providing surge restraint;
  c. a first transverse resilient link for connecting the port side of the first vessel of the starboard side of the second vessel;
  d. a second transverse resilient link for connecting the port side of the second vessel to the starboard side of the first vessel, said transverse links permitting relative sway between the vessels while providing sway restraint; and
  e. pneumatic fender means between the first and second vessels to provide surge and yaw restraints.

3,871,324
OUTBOARD PROPULSION UNIT EXHAUST DISCHARGE SYSTEM

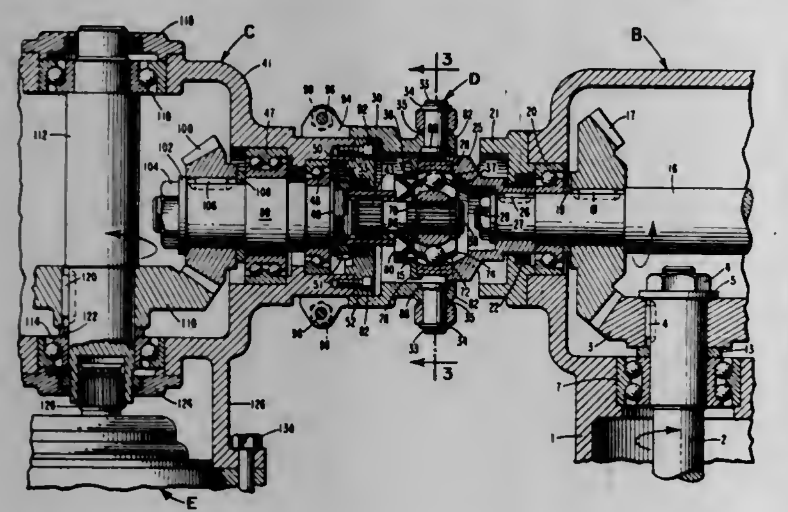
Richard H. Snyder, Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.
Filed Jan. 31, 1969, Ser. No. 795,434
Int. Cl. B63h *1/20*
U.S. Cl. 115—17 **27 Claims**



24. In a marine propulsion device comprising a lower unit including an exhaust gas discharge passageway terminating in an exhaust gas discharge port, a rotatably mounted porpeller shaft extending through said port, a clutch mechanism selectively connecting said propeller shaft in forward drive and in rearward drive and a propeller mounted on said propeller shaft for rotation therewith and including a blade having a rear face and an exhaust gas passageway having an inlet communicating with said exhaust gas discharge port and an outlet rearwardly of said blade, the improvement in combination therewith comprising means for affording underwater exhaust gas discharge through said port and into the water around said lower unit forwardly of the rear face of said propeller blade when said device is in reverse drive.

3,871,325
MARINE DRIVE SYSTEM

Sidney W. Raulerson, P. O. Box 2307, Miami, Fla. 33012
Filed Jan. 11, 1973, Ser. No. 322,744
Int. Cl. B63h *5/08*
U.S. Cl. 115—34 R **9 Claims**

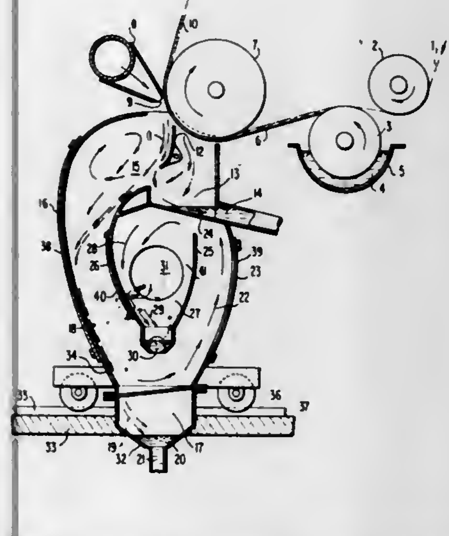


1. A marine drive system for drivingly connecting a single marine engine to a plurality of marine propeller shafts comprising:

- a power distribution unit operably connectable to a marine engine;
- a plurality of articulated power transmitting means connected to said power distribution unit, each of said transmitting means including, a first housing section, a first shaft rotatably mounted in said first housing section and drivingly connected to said power distribution means, a second housing section, a second shaft positioned in said second housing section, a universal joint drivingly connecting said first shaft to second shaft, a gimbal element positioned about a portion of said first housing section and a portion of said second housing section, said first housing section being pivotally connected to said gimbal element for relative rotation therebetween about a first axis, said second housing section also being pivotally connected to said gimbal element for relative rotation therebetween about a second axis perpendicular to said first axis, said first and second axes intersecting at substantially the pivot center of said universal joint, a third housing section, said second and third housing sections being adjustably engaged for relative axial movement therebetween and being provided with clamping means for fixing the axial adjustment between said second and third housing sections, and a third shaft rotatably mounted in said third housing section, said second shaft being drivingly connected to said third shaft, said second and third shafts also being adjustably engaged for relative axial movement therebetween, whereby said third shaft is angularly and axially movable with respect to said first shaft; and
- a plurality of independently operable reversible transmission means operably connected to said respective third shafts, each of said transmission means being drivingly connectable to a marine propeller shaft.

3,871,326
COATING MATERIAL RECOVERING DEVICE FOR AIR KNIFE TYPE COATING APPARATUS

Masao Kanda, and Akio Watanabe, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed June 20, 1973, Ser. No. 371,796
Claims priority, application Japan, June 20, 1972, 47-061480
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **4 Claims**

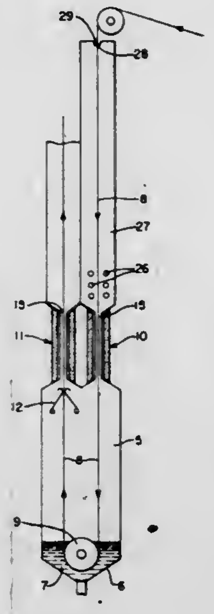


1. In a coating apparatus, means for removing and recovering excess coating material from a web coated in an air knife coating apparatus, said removing and recovering apparatus comprising:

- a. means for applying a flowing gas stream tangentially to the web for removing excess coating material from the web which is entrained in the flowing gas stream;
- b. a separating plate adjacent said web extending transversely to the flow path of the flowing gas stream containing the excess coating material downstream of the contact area of the flowing gas stream with the web for separating excess coating material from the flowing gas stream;
- c. a drip pan underlying said separating plate to catch liquid material flowing downwardly on the separating plate under gravity influence;
- d. means including said drip pan forming a first chamber for recovery of said excess coating material, the improvement wherein:
- e. said first chamber includes chamber wall means to the side of said separating plate opposite the means applying the flowing gas stream, spaced from said plate and extending from said drip pan to the vicinity of said web to form with said drip pan and said separating plate a volume in which separated air moves slowly downwardly behind the separating plate to cause the fine coating material component thereof to gravity deposit into said underlying drip pan; and wherein
- f. said separating plate is positioned with respect to said gas stream, said web and said drip pan such that the flowing gas stream does not directly enter said first chamber and re-entrain substantial amounts of already separated coating material during gravity deposit from said separating plate into said drip pan.

3,871,327
DIP TANK WITH VAPOR CONDENSING CONTAINING SEAL

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 25, 1974, Ser. No. 464,016
Int. Cl. B05c *3/12*
U.S. Cl. 118—69 **3 Claims**

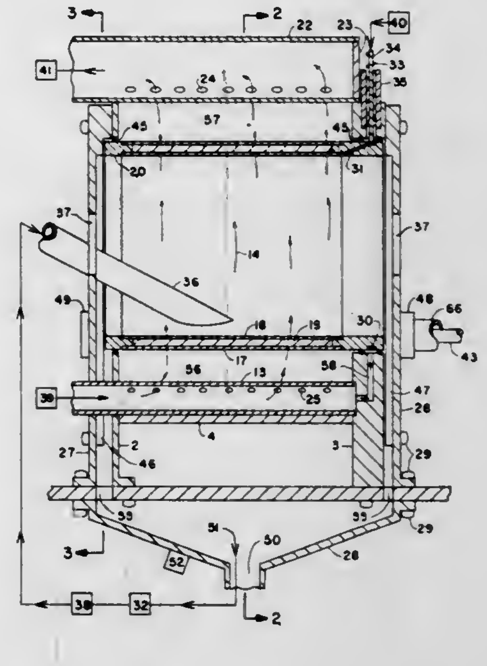


1. An apparatus for treating tire cord fabric, comprising in combination;

- a. a chamber sealed from the ambient atmosphere, the chamber including entrance and exit openings disposed in the chamber in spaced relation, each of the openings including an elongated, restricted throat smaller than the chamber;
- b. a dip tank disposed in the chamber in spaced vertical relation below the openings in the chamber, the tank containing a liquid coating comprising a mixture of an agent for promoting the bond between tire cords of the fabric and rubber material used in the production of tires, and a vaporizable solvent which is a carrier of the agent;
- c. means for guiding the fabric into the liquid coating in the dip tank and through the openings in the chamber;
- d. a seal for each of the openings in the chamber, the seals designed to keep vapor of the solvent from passing through the openings, each of the seals comprising:
  - 1. a pair of condensers disposed in each of the throats adjacent opposing sides thereof, the condensers of each pair of condensers being spaced from about 1¼ inches to about 3 inches apart such as to be in close proximity to fabric passing therebetween, each condenser including a plate coil comprising serpentine mounds extending towards the fabric moving between the condensers, the mounds including fluid passageways through which coolant is circulated; and
  - 2. means for circulating a cooling fluid through the fluid passageways of each of the condensers.

3,871,328
COATING CHAMBER

William P. English, 17 Strong Ct., Plainville, Conn. 06062
Filed Apr. 13, 1972, Ser. No. 219,222
Int. Cl. B05c *5/02*
U.S. Cl. 118—629 **5 Claims**

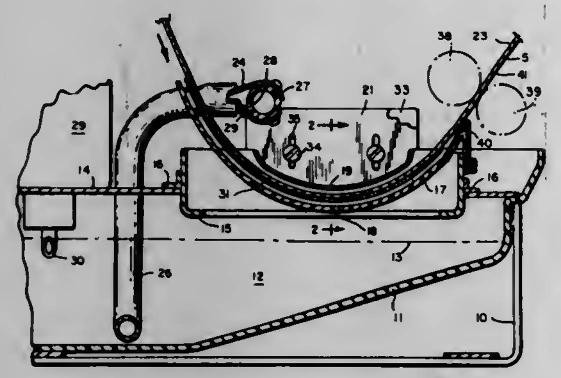


1. In a chamber for coating articles with powder, a rotatable cylinder having a porous circumferential wall, end rings attached to said wall, spacers separating said end rings and supporting said circumferential wall, a chamber for pressurized fluid external to and exposed to a sector of said wall, a chamber for suction of fluid external to and exposed to a sector of said wall, sealing means between said chambers for pressurized and suction fluids, and said end rings means to provide pressurized fluid to said chamber for pressurized fluid and means to provide suction to said chamber for suction of fluid, means for feeding powder into said cylinder, means for removing excess powder from said cylinder, means for conditioning excess powder and recirculating it back into said cylinder, walls enclosing said cylinder and chambers, said walls having openings for means to convey articles being coated into and out of said cylinder, and means for rotating said cylinder.

3,871,329
DEVELOPMENT ELECTRODE

John M. Anemaet, Millis, Mass., assignor to Dennison Manufacturing Co., Framingham, Mass.
Filed Oct. 16, 1972, Ser. No. 297,779
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **14 Claims**

1. Apparatus for developing electrostatic images on sheet material comprising a developer station, means for moving said sheet material through said developer station, an upper electrode at said developer station, a lower electrode at said developer station positioned opposite said upper electrode, said sheet material being conveyed between the electrodes, said upper electrode and said lower electrode being of perforated material and being equipotential members, said lower electrode being in contact with said moving sheet material,



and the spacing between the electrodes being less than about ¼ inch.

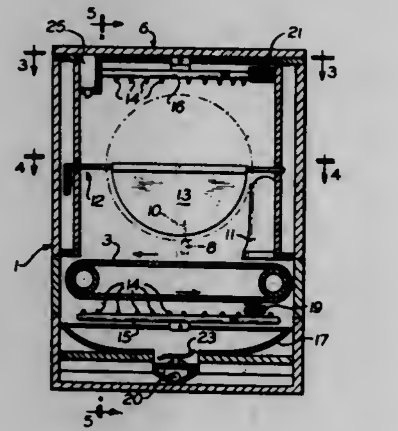
3,871,330
PROCESS AND APPARATUS FOR THE IMMOBILIZING AND STUDY OF GROWTH ORGANISMS, INCLUDING DROSOPHILA MELANOGASTER

H. Damon Swanson, and Glenda A. Swanson, both of 88 West St., Concord, N.H. 03301
Filed Oct. 17, 1973, Ser. No. 407,175
Int. Cl. A01k *1/00*
U.S. Cl. 119—1 **3 Claims**

1. A process for the immobilized manipulation and study of the growth of organisms such as Drosophila Melanogaster and the like, that comprises, disposing a growth medium for the organisms in the base of a flat-lid covered chamber, inserting the organisms within the chamber, inverting the chamber, placing the inverted chamber with the outer surface of its flat lid in contact with a refrigerated surface, maintaining said surface contact until the organisms within the medium and chamber have become cold-immobilized and have fallen under the influence of gravity upon the inner surface of the inverted flat lid, removing the medium-containing base to expose the immobilized organisms on the flat lid inner surface to the exterior environment to enable manipulation and study, and continuing to maintain the organisms immobilized by continuing said contact with the refrigerated surface for the desired period of such manipulation and study.

3,871,331
ANIMAL LITTER DISPOSAL UNIT

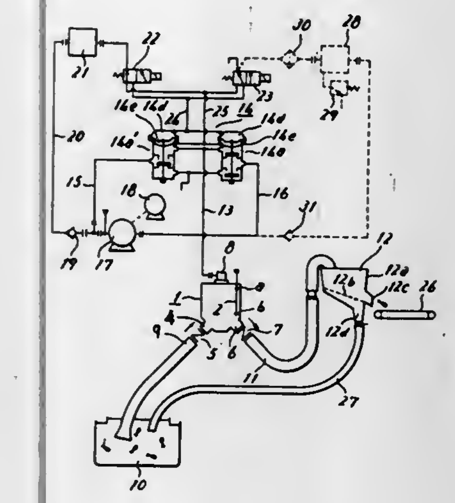
George Breau, RFD 1, Rumford, Maine 04276
Filed Feb. 1, 1974, Ser. No. 438,947
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **3 Claims**



1. An animal litter disposal unit comprising in combination:
- a. a housing;
- b. means for ingress and egress for an animal;
- c. support means comprising an endless belt positioned in a substantially horizontal manner at the lower portion of said housing for use by said animal during a period when said animal litters;
- d. means for cleansing at least a portion of said support means and at least a portion of said housing;
- e. means for activating said cleansing means when said animal exits from said unit;
- f. means for removal of said litter and cleansing material from said unit; and
- g. said removal means including means for segmenting said litter into substantially small particles of waste.

3,871,332
APPARATUS FOR SUCKING UP AND TRANSFERRING FISHES

Takeshi Hayashi, Naruto, Japan, assignor to Kyoei Zoki Kabushiki Kaisha, Naruto, Tokushima Pref., Japan
Filed Oct. 19, 1973, Ser. No. 407,821
Claims priority, application Japan, Oct. 28, 1972, 47-108253; Oct. 28, 1972, 47-108254; May 9, 1973, 48-52014
Int. Cl. A01k *63/02*
U.S. Cl. 119—3 **10 Claims**

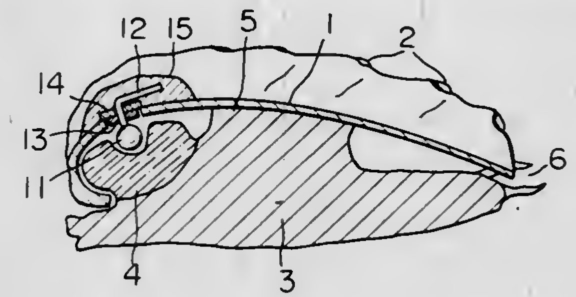


1. An apparatus for sucking up and transferring fishes comprising a hermetically closed tank provided at its upper portion with air opening means for extracting air therefrom and supplying air thereto and provided at its lower portion with a fish water suction opening connected to a fish water suction pipe and fish transfer and water delivery opening means connected to fish transfer and water delivery pipe means, and an air supplying means connected to said air opening means, a fish water separator for separating the fish water sucked up into the closed tank into fishes and water, control means for alternately changing over the air extracting means and the air supplying means and starting and stopping these means, and a control valve means for (1) communicating the fish water suction pipe with the closed tank and closing the fish transfer pipe means during the air extracting step and (2) closing the fish water suction pipe and communicating the fish transfer pipe means with the closed tank during the air supplying step.

3,871,333
CULTURING OF PEARLS

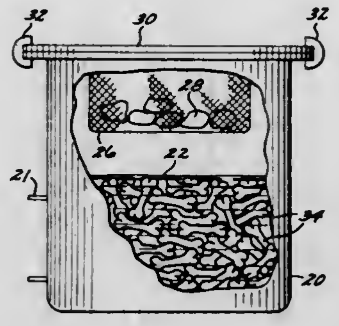
Hideyuki Gotoh, 405, Shioya 1, Otaru-shi, Japan
Filed Apr. 15, 1974, Ser. No. 460,697
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **8 Claims**

1. A method of culturing pearls in abalones, comprising the steps of: perforating a round hole through the shell of an abalone at its portion corresponding to the location of the reproductive organ of the abalone, inserting through said hole of the shell and depositing on the prescribed position on or within said reproductive organ a pearl nucleus, closing the hole of the shell and fixing the location of said pearl nucleus, raising the thus treated abalone for a sufficient period of time to let the nacreous concretion formed about the nucleus sufficiently grow within the body of the abalone, and taking out the nucleus coated with the nacreous substance from the abalone.



3,871,334
PET TOY

Herbert R. Axelrod, 211 W. Sylvania Ave., Neptune, N.J. 07753
Filed Dec. 3, 1973, Ser. No. 421,260
Int. Cl. A01k *29/00*
U.S. Cl. 119—29.5 **9 Claims**

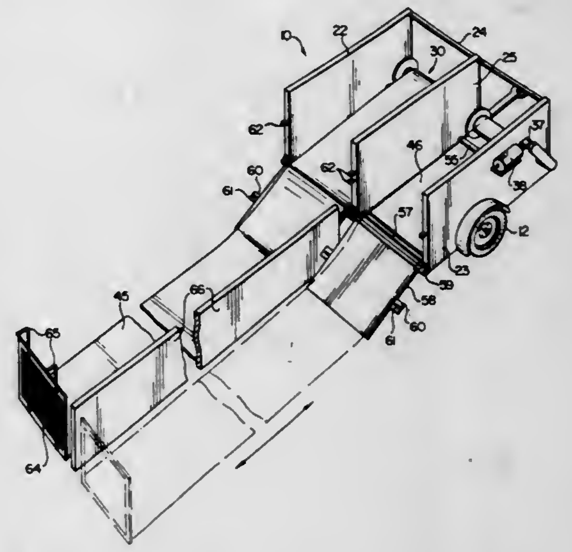


1. A method for the manufacture of a chewing toy and the like for animal pets which comprises:
- a. forming a toy item in the shape of a bone and the like from a Nylon molding resin having a water absorbency from 0.5 to about 5 weight percent.
- b. dissolving meat odors and flavors in an aqueous impregnating solution while maintaining said solution free of suspended solid and fat materials by subjecting meat or animal by-products to steam at a temperature from 210° to about 280° F. and autogenous pressure for a period from 3 to about 20 hours while in the presence of, but out of contact with, water; and
- c. immersing said toy item in said aqueous impregnating solution and maintaining it therein for a period of time from 3 to about 20 hours at a temperature from 210° to about 280° F. autogenous pressure.

3,871,335
PORTABLE APPARATUS FOR REMOVING POULTRY FROM A POULTRY HOUSE

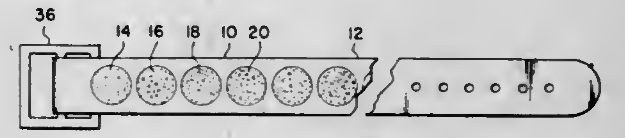
Ambrose G. Johnston, Rt. 2, Box 247-A; Guy W. Howard, P.O. Box 12, and William W. Bradshaw, Jr., P.O. Box 45, all of Rose Hill, N.C. 28458
Filed June 7, 1974, Ser. No. 477,225
Int. Cl. A01k *29/00*
U.S. Cl. 119—82 **7 Claims**

1. A portable apparatus for removing live poultry from a poultry house having a floor comprising a vehicle having a frame, at least two upright side walls mounted on said frame and extending longitudinally thereof, a drive shaft rotatably mounted on said vehicle, means for driving said shaft, at least one reel freely rotatably mounted on said shaft between said walls, conveyor belt means normally carried by said reel but capable of being partially pulled therefrom and extended into the poultry house, said conveyor belt means resting on the floor of the poultry house when extended, clutch means selectively connecting said reel to said drive shaft to drive said reel in one direction, a floor movably mounted on said frame, and resilient cushioning means engaging said floor to urge said floor upwardly and maintain the floor substantially in tangential alignment with the upper portion of said reel under normal load conditions, whereby when said conveyor belt is extended into a poultry house, poultry are herded onto the belt means and thereafter the clutch means is operated to cause the reel to rotate and wind the conveyor belt means thereon while discharging poultry from the vehicle.



3,871,336
REFLECTIVE ANIMAL COLLAR AND LEASH

Samuel Bergman, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Apr. 1, 1974, Ser. No. 456,967
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **5 Claims**



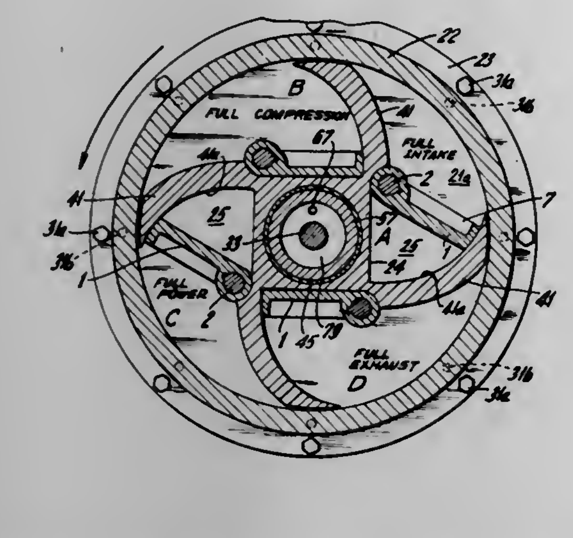
1. A reflective animal collar and leash, comprising, in combination, a collar-encircling, flexible, base member, releasable fastener means at the ends of said member; a plurality of shaped, light-reflective elements of different colors secured to said member; a clear laminate mounted over said elements and said member; a leash attached to said member and consisting of a plurality of interconnected, light-reflective links.

3,871,337
ROTATING CYLINDER INTERNAL COMBUSTION ENGINE

Edward Howard Green, and Edward Howard Green, Jr., both of 57 Interstate Rd., Addison, Ill. 60101
Filed Sept. 5, 1972, Ser. No. 286,294
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.47 **12 Claims**

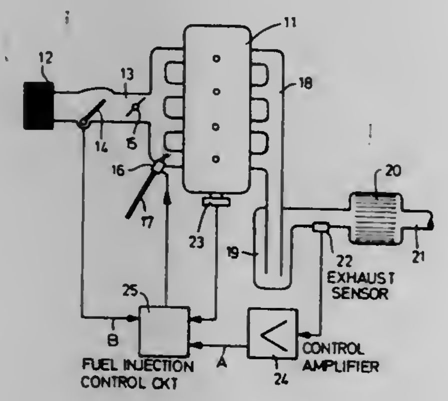
1. A rotary internal combustion engine comprising, a stationary engine body having a fixed end wall, a rotary engine body supported by the stationary engine body and including an inner wall surface, at least one combustion chamber within one of the engine bodies, the inner wall surface of the rotary engine body and the fixed end wall of the stationary engine body defining walls of the combustion chamber, oscillating means movable in said combustion chamber, a shaft fixedly connected to said oscillating means and operably connected to said rotary engine body, planetary gear means, and linking means interconnecting said planetary gear means and said shaft to transmit through said shaft, during the combustion power cycle, the oscillatory motion of said oscillating means

and to convert said oscillatory motion to rotary motion of the planetary gear means, both the planetary gear means and the linking means being disposed adjacent only one side of the combustion chamber.



3,871,338
METHOD AND APPARATUS TO REDUCE NOXIOUS COMPONENTS IN THE EXHAUST EMISSIONS OF INTERNAL COMBUSTION ENGINES

Peter Schmidt; Harald Kizler, both of Schwieberdingen, and Gerhard Hartmann, Hofingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 20, 1973, Ser. No. 390,013
Claims priority, application Germany, Sept. 28, 1972, 2247656
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **10 Claims**

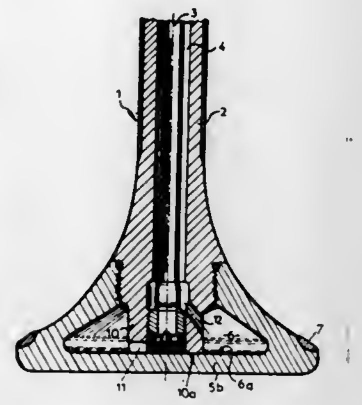


1. Method to reduce the noxious components in the exhaust emission of internal combustion engines having an air-fuel proportion adjustment means, and including an integrating controller carrying out the step of regulating the mass-ratio of air and fuel being applied to the internal combustion engine, utilizing the steps of

sensing the composition of exhaust emission and deriving a sensing signal;
integrating the sensing signal and deriving a fuel-air ratio control signal;
sensing an operating parameter, or condition of the engine; and wherein the improvement comprises the steps of
changing the control range of the control of air-fuel proportion as a function of change of the sensed operating parameter beyond a predetermined limit.

3,871,339
METHOD OF MAKING A COOLED VALVE FOR HEAT ENGINE AND VALVE OBTAINED THEREBY

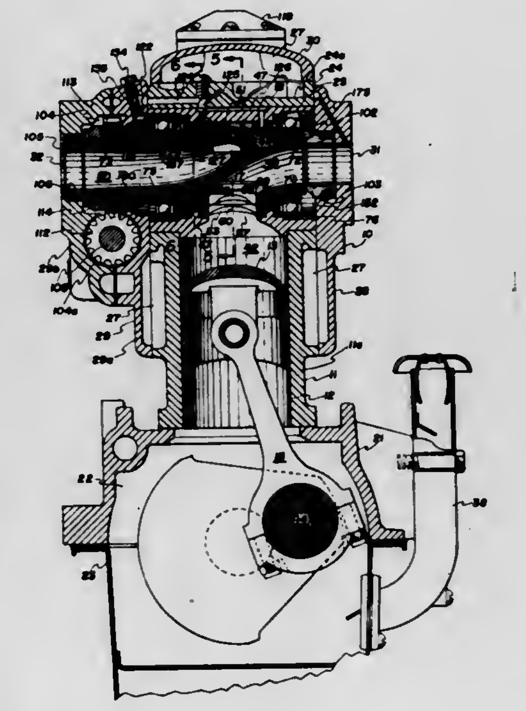
Karl Walter Kuhn, Saint-Germain-En-Laye, France, assignor to Societe d'Etudes de Machines Thermiques, Saint-Denis, France
Filed Sept. 20, 1972, Ser. No. 290,535
Claims priority, application France, Oct. 27, 1971, 71.38596
Int. Cl. F01p *3/14*
U.S. Cl. 123—41.41 **2 Claims**



1. A built-up fluid-cooled poppet valve member construction comprising: a one-piece hollow mushroom head and a stem of substantially round rod-like configuration throughout its length connected in sealing relationship to and projecting endwise from said head; said head including on one side a substantially flat end wall coaxial with and extending substantially transversely of the longitudinal axis of said stem and on the other side a reduced central hub portion coaxial with said stem and terminating in a substantially flat end face parallel to and of smaller extent than said end wall; said head having an inner chamber closed by said end wall and having a threaded bore located opposite to said end wall in coaxial relation with said stem and extending through said hub portion to open into said chamber and to the outside, respectively; said stem having near one end thereof towards said head a peripheral, annular, radially outward projecting flange-like shoulder and an adjacent intermediate threaded section extending from said shoulder towards said one end over a length corresponding substantially to the axial length of said threaded bore; said stem terminating at said one end in a substantially flat transverse end face and also having a coaxial longitudinal bore extending at said one end to and being open at said transverse end face, a tubular pipe element of smaller diameter than said bore and enclosed therein, said element being substantially co-extensive with and disposed in radially spaced relationship with respect to said longitudinal bore thereby defining a pair of cooling fluid conveying concentric ducts, one of which is annular, said pipe element ending recessed axially from adjacent to and being secured directly in sealing relationship to said one end of said longitudinal bore to close off the annular one of said concentric ducts while opening endwise into said one end of said longitudinal bore; said stem extending in screw-threaded engaging relationship through said threaded bore of said hub portion to project bodily into said chamber with said one end abutting endwise with its said flat end face with axially directed thrust pressure contact against said end wall of said head for supporting and backing the latter, and thereby defining an annular cavity within said chamber, said shoulder then bearing against said end face of said hub portion; said stem having adjacent said one end thereof a first port-like passageway providing communication between said chamber and said annular duct and having a second port-like passageway providing direct communication between said chamber and said tubular pipe element via the open end of said longitudinal bore, thereby respectively defining a fluid feed duct and a fluid return duct; at least one of said head and stem having groove means adjacent to said shoulder and the corresponding end of said threaded bore; brazing solder material tightly locking said head and stem together, said brazing-solder material filling all the interstices of junctions between said head and stem and in particular in said groove means and any clearance gaps left between the intermeshing threads of said head and stem, thereby bonding the latter to each other and sealing off the connections therebetween.

3,871,340
ROTARY VALVE INTERNAL COMBUSTION ENGINE

Merritt A. Zimmerman, Cleveland, Ohio, assignor to Tetrahedron Associates, Incorporated, San Diego, Calif.
Filed Oct. 3, 1972, Ser. No. 294,573
Int. Cl. F01l *7/16*
U.S. Cl. 123—80 BA **28 Claims**



1. In a internal combustion engine:

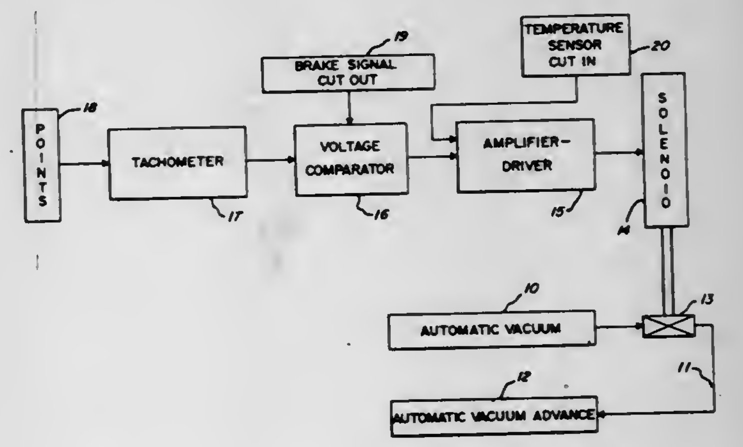
an engine body having a cylinder and valve casing means providing a valve bore extending transversely of the cylinder and connected with one end of the latter;
a piston operable in said cylinder;
antifriction bearings mounted in said casing means and spaced apart axially thereof;
sleeve means disposed in said casing means and extending axially thereof between said bearings;
port means in the walls of said casing means and sleeve means and connected with said cylinder;
a rotary valve supported by said bearings for operation in said sleeve means and controlling the communication with said cylinder through said port means;
said sleeve means being flexible and having beveled end portions; and
contracting means engaging said end portions for contracting said sleeve means around said valve.

3,871,341
SPEED CONTROLLED IGNITION RETARDER

Thomas A. Kalogerson, Bloomington, Minn., and Joseph E. Dandois, Montoursville, Pa., assignors to Optimizer Control Corporation, Edina, Minn.
Continuation of Ser. No. 100,081, Dec. 21, 1970, abandoned. This application Mar. 3, 1972, Ser. No. 231,766
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 R **5 Claims**

1. An ignition retarding device for ready attachment to and modification of an automotive vehicle having a multicylinder internal combustion engine for propelling the vehicle, in which the internal combustion engine has an ignition device for each cylinder, a battery, voltage pulse producing means connected to said battery and including a distributor and distributor points driven by the engine and effective to cause opening and closing of said distributor points by operation of said engine to produce high voltage igntion pulses of a frequency dependent upon the speed of said engine, said distributor being effective to apply the high voltage pulses to the ignition devices for the cylinders in a timed relation to the engine cycle, said distributor being adjustable to vary the ignition timing, means including a fluid motor for adjusting the ignition timing, and means including a conduit between said fluid motor and the intake manifold of the engine for normally causing said motor to adjust the distributor to advance the timing as the vacuum in said intake manifold increases; said ignition retarding device comprising:

an electrically operated valve having coupling members of a size and type for quick coupling with said conduit so as to facilitate insertion of the valve into the conduit conection between the motor and the intake manifold of the engine to prevent advance of the timing from an increase in the vacuum in the intake manifold when the valve is closed;
electronic speed responsive means having input terminals for electrical connection to said points and effective when so connected to produce at its output an electrical effect dependent upon the frequency of such high voltage ignition pulses and hence upon the speed of the engine;
control means for said electrically operated valve connected to the output of the speed responsive means independently of the load on the engine and effective when the engine speed drops below a predetermined value as sensed by said speed responsive means and independently of the engine load to affect the energization of said electrically operated valve to cause closure of the same to interrupt the connection between the fluid motor and the intake manifold to prevent advance of the timing from an increase in the vacuum in the intake manifold as long as said speed remains below said predetermined value, unless the engine temperature rises above a predetermined undesirable value;
further means connected to said control means for controlling the same and for causing the same to affect the energization of said valve to cause opening of the same to restore the connection between the fluid motor and the intake manifold regardless of the speed of the engine whenever the engine temperature rises above a predetermined value;
and means for connection to the battery of the automotive vehicle for deriving from said battery a source of power for energizing said speed control means and said control means for said valve, the electronic components of the electronic speed responsive device being semiconductors requiring the application thereto of voltages no greater than that of the battery of the automotive vehicle so that the source of power derived from the connection to the battery employs no voltage increasing means.



3,871,342
ELECTRONIC IGNITION TIMING CONTROL CIRCUIT FOR INTERNAL COMBUSTION ENGINE

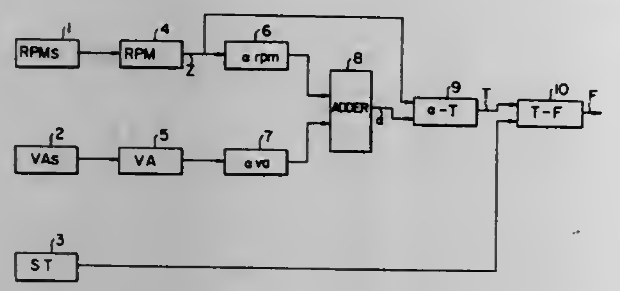
Hiroshi Fujinami, Okazaki, and Katuyuki Takagi, Ichinomiya, both of Japan, assignors to Nippon Soken, Inc., Nishio-shi, Aichi-ken, Japan

Filed Feb. 26, 1974, Ser. No. 445,902

Claims priority, application Japan, Feb. 27, 1973, 23916/73

Int. Cl. F02p *5/08*

U.S. Cl. 123—117 R **4 Claims**



1. An electronic ignition timing control system for an internal combustion engine comprising:

engine operating condition detecting means including at least revolution detecting means for detecting the number of revolutions of the engine and producing an electrical output signal which varies as a function of speed of revolution;

ignition timing selection means for reading out from a predetermined ignition timing characteristic program an ignition timing characteristic corresponding to the output signal of said detecting means as a retard angle from a reference angular position of an engine crankshaft;

an angle-time conversion circuit connected to said revolution detecting means for receiving said electrical signal and said ignition timing selection means for dividing the output signal of said ignition timing selection means by the output signal of said revolution detecting means to convert said retard angle into a period of time corresponding to the speed of revolution at the moment of the detection of the engine revolutions by said detecting means;

reference angular position detecting means for detecting said reference angular position of said engine crankshaft; and

timer means connected to said angle-time conversion circuit and said reference angular position detecting means for generating an ignition signal when said crankshaft has rotated from said reference angular position for the duration of said time period obtained from said angle-time conversion means.

3,871,343
RECYCLE ENGINE APPARATUS

Masashi Nagai; Kazuhito Miwa; Masakazu Tsunetsugu, and Tadamaro Fujiwara, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 347,885, April 4, 1973,. This application July 17, 1974, Ser. No. 489,094

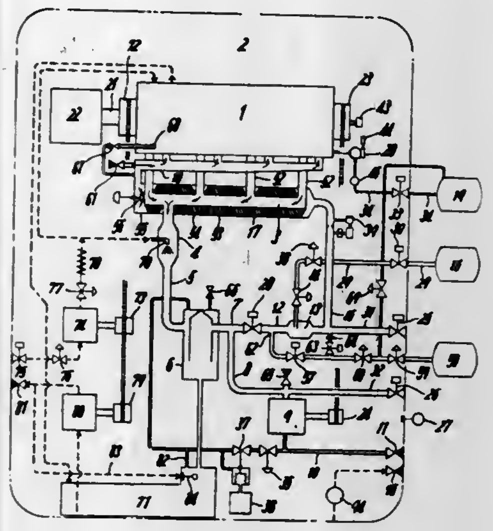
Claims priority, application Japan, Apr: 14, 1972, 47-37592; Apr. 14, 1972, 47-37593; Aug. 21, 1972, 47-83502; Aug. 21, 1972, 47-83503; Aug. 21, 1972, 47-83505

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **17 Claims**

1. Apparatus for operating an engine having a gas intake, an exhaust gas outlet and a working gas recycling system connected between said intake and said outlet, said apparatus comprising:

means for controlling the volume of exhaust gas recycled to the engine intake in said recycling system including a compressor having an inlet connected to said recycling system and an outlet, the compressor being capable of compressing exhaust gas at a rate in excess of the full load exhaust volume less the full load intake volume of the engine, a return connection from the compressor outlet to the recycling system, and means including a control valve in the return connection for returning a portion of the compressed exhaust gas to the recycling system to maintain the working gas pressure at a constant value and for discharging the remainder of the compressed exhaust gas from the apparatus;



oxygen supply means communicating with the recycling system and including an oxygen supply flow control valve, an oxygen concentation detector, an oxygen concentration presetter, and, an oxygen volume control means for producing an output signal to regulate the oxygen supply flow control valve in response to output signals from the oxygen concentration detector and presetter.

3,871,344
DEVICE FOR LIMITING THE DELIVERY PER REVOLUTION OF AN INJECTION PUMP

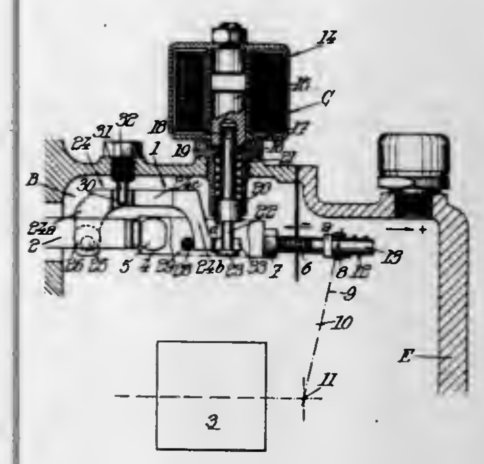
Jean Pigeroulet, Villeurbanne, and Andre Brunel, Oullins, both of France, assignors to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Venissieux, France

Filed July 16, 1973, Ser. No. 379,227

Claims priority, application France, July 26, 1972, 72.26891

Int. Cl. F02m *59/42*

U.S. Cl. 123—139 ST **5 Claims**



1. In a fuel injection pump for an internal combustion engine, in which pump there is provided an adjusting rack member for adjusting the delivery per revolution, controlled by a regulator which is driven by the engine supplied by the pump, a device for limiting the delivery of the pump per revolution comprising: retractable stop means for selectively limiting the stroke of said adjusting rack member so that the delivery per revolution does not exceed a full load value, said retractable stop means comprising an articulated member pivotably movable between limiting and nonlimiting positions, said articulated member having two ends, one of these ends being pivotally mounted on an articulation, means for adjusting the position of said articulation along the direction of said rack member, said articulated member having a portion forming a stop abutment for the rack member when the articulated member is in its limiting position; automatic control means for the selective retraction of said stop means to the nonlimiting position on the starting of the engine, to enable the delivery per revolution to assume values greater than that of full load, said control means having an axis situated substantially in the plane of movement of the articulated member; said control means including a linking means between a movable element of said control means and a portion of said articulated member, said linking means allowing a limited degree of free angular movement of the articulated member relative to the movable element; and guiding means to keep the articulated member in a plane parallel to the axis of the control means and to the axis of the rack member.

3,871,345
FUEL INJECTION PUMP WITH IMPROVED RETURN FLOW CONDUIT

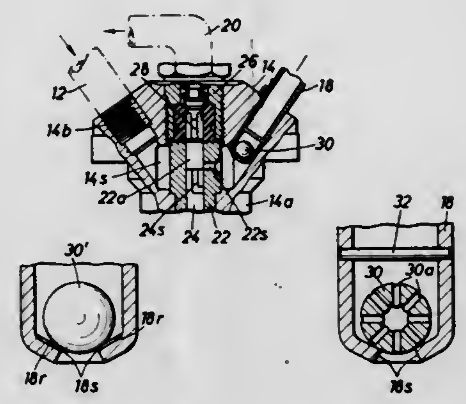
Ernst Hatz, and Erhard Oertel, both of Ruhstorf, Germany, assignors to Motorenfabrik Hatz KG, Ruhstorf, Germany

Filed Aug. 7, 1973, Ser. No. 386,283

Claims priority, application Germany, Aug. 16, 1972, 2240123; Apr. 4, 1973, 2316687

Int. Cl. F02m *59/44*

U.S. Cl. 123—139 AF **10 Claims**



1. In an injection internal combustion engine with at least one fuel injection pump, wherein the fuel passes by gravity flow from a supply container through an admission conduit to a suction chamber of the injection pump, the improvement comprising at least one return flow conduit separate from the admission conduit for superfluous fuel which has not been injected, said return flow conduit leading from the suction chamber of the injection pump to the supply container, and valve means for controlling flow through said return flow conduit to the supply container, said valve means allowing even in its seated position a small flow of fuel such that at least a small flow of fuel is feasible between the return flow conduit and the suction chamber of the injection pump in each operational stage of the injection pump.

3,871,346
DEVICE FOR CONTROLLING THE DELIVERY PER REVOLUTION OF AN INTERNAL COMBUSTION ENGINE INJECTION PUMP

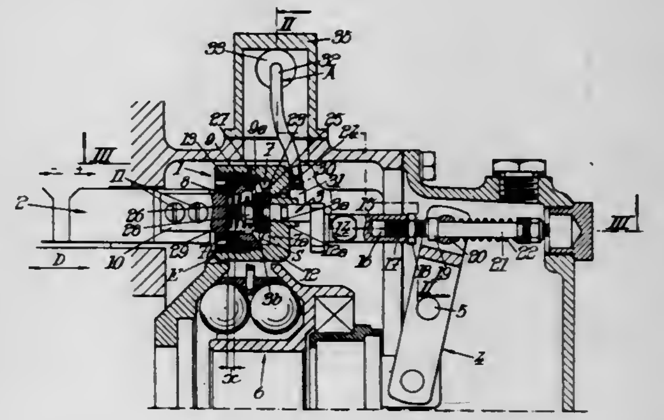
Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale de Mechanique Appliquee S.I.G.M.A., Venissieux, France

Filed Aug. 21, 1972, Ser. No. 282,146

Claims priority, application France, Aug. 30, 1971, 71.31349

Int. Cl. F02d *1/04, 1/06*

U.S. Cl. 123—140 FG **4 Claims**



1. A device for controlling the delivery per revolution of an internal combustion engine injection pump, including:

a regulating member operatively connected to the pump to adjust the delivery per revolution thereof;

a control member movable to indicate required adjustments of the delivery of the pump;

connecting means operatively connecting said regulating member to said control member;

envelope means in said connecting means, said envelope means being connected to one of said regulating and control members and defining a chamber which extends in the direction of movement of said regulating member; closure means in said connecting means movable relative to said envelope means, said closure means being connected to the other of said regulating and control members and extending transversely of the direction of movement of said regulating member;

admission means connected to said envelope means to apply a fluid at a variable pressure to the chamber of the envelope means;

wherein the improvement comprises:

said closure means being arranged to separate the chamber of said envelope means into two chamber parts which are isolated from one another in fluid-tight manner;

said admission means being in communication with one of the chamber parts of the envelope means;

resilient return means disposed in the other of the chamber parts of said envelope means between said closure means and said envelope means and acting against the fluid pressure in the one chamber part of the envelope means; and

the one of said envelope and closure means connected to the regulating member providing guidance of the control member and of the other of said envelope and closure means connected to the control member,

said closure means comprising a flexible diaphragm,

the central part of said diaphragm being rigidly connected to said other of said regulating and control member, and

the periphery of said diaphragm being secured to said envelope means,
said regulating member comprising a rod arranged to slide in its longitudinal direction and having said envelope means mounted at one end thereof;
said envelope means comprising a cover presenting a guide bore, a screwthreaded element screwed into the cover, a cap mounted on said one end of said rod and having its periphery clamped between said cover and said screwthreaded element, and confronting concave faces on said cover and said cap to define the chamber of said envelope means;
said flexible diaphragm being clamped at its periphery between said cap and said cover; and
said control member comprising a lug which extends through said diaphragm and to which the central part of said diaphragm is secured, said lug extending slidably in fluid-tight manner through the guide bore provided in said cover.

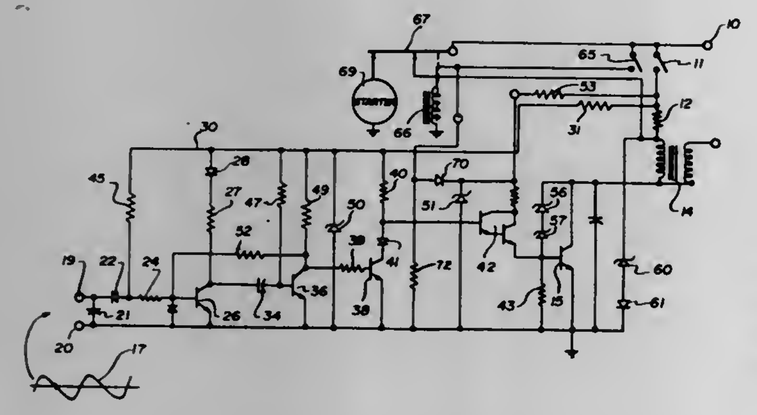
3,871,347
CONSTANT DWELL IGNITION SYSTEM

Howard F. Weber, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 20, 1972, Ser. No. 308,125

Int. Cl. F02p *1/00, 5/04*

U.S. Cl. 123—148 E **4 Claims**



1. An electronic ignition system for alternately charging and collapsing the field in an ignition coil to produce a spark for firing an internal combustion engine, including in combination, first switching circuit means having an input and an output and operable between an on and an off condition, with the output thereof coupled with the ignition coil for alternately charging and collapsing the field in the ignition coil, second switching circuit means having an input and an output and operable between an on and an off condition, control means connected to the input of said second switching circuit means and controlling the same between the on and off condition in direct relation to engine RPM, a capacitor having a first terminal connected with the output of said second switching circuit means and a second terminal connected with the input of said first switching circuit means, a first direct current source connected to one of said first and second terminals of said capacitor, a second direct current source connected to the other of said first and second terminals of said capacitor, said second switching circuit means being operated to one of said on and off conditions by said control means to charge said capacitor through said first direct current source to operate said first switching circuit means to one of said on and off conditions to charge the ignition coil, said second switching circuit means being further operated to the other one of said on and off conditions by said control means to discharge said capacitor through said second direct current source to operate said first switching circuit means to the other one of said on and off conditions to collapse the field in the ignition coil to cause an ignition spark, resistive means coupled from said first switching circuit means to said second switching circuit means to hold said second switching circuit means in said other one of the on and off conditions thereof with said first switching circuit means in said other one of the on and off conditions thereof, and the ratio of current passing through said first direct current source to the current passing through said second direct current source at engine rpm above cranking speed is such that said capacitor charges to an amount less than the total capacity thereof prior to the discharge of the same thereby providing charging of the ignition coil for a constant percent of the total period between ignition sparks, whereas at engine cranking speed, the frequency of operation of said second switching circuit means permits said capacitor to completely charge through said first direct current source to provide a constant off time of the current through the ignition coil at such cranking speed.

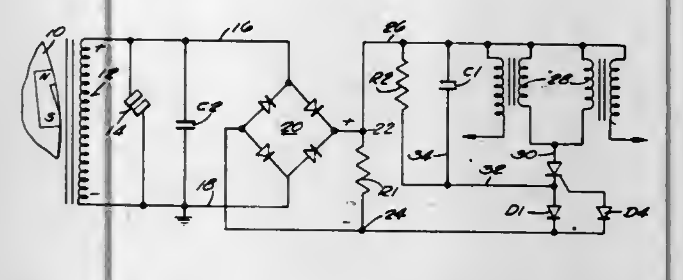
3,871,348
CAPACITIVE DISCHARGE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1973, Ser. No. 330,443

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **6 Claims**



1. A capacitive discharge ignition system for internal combustion engines, said system comprising a coil, means for storing energy in said coil, a charge capacitor in circuit with said coil to be charged thereby, breaker points connected across said coil and operative when opened to cause the energy stored in said coil to charge said capacitor, an ignition primary winding in circuit with said charge capacitor, switch means in circuit with said primary winding and said charge capacitor and including a control terminal operative to turn said switch means on so as to discharge said charge capacitor in response to a predetermined trigger voltage, a circuit shunting said charge capacitor and including a resistance and a second capacitor, whereby the charge buildup on said second capacitor lags the buildup on said charge capacitor by the time constant of said shunt circuit, the voltage on said second capacitor being applied to said control terminal and the values of said resistance and of said second capacitor being selected so that said trigger voltage is applied to said control terminal at approximately the time of maximum charge on said charge capacitor.

3. A capacitive discharge ignition system in accordance with claim 1 wherein the values of said resistance and of said second capacitor being selected so that the breakdown voltage of said control terminal occurs when the voltage on said second capacitor is less than the voltage on said charge capacitor.

3,871,349
RFI SUPPRESSION SPARK PLUG

James R. Hager, both of Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

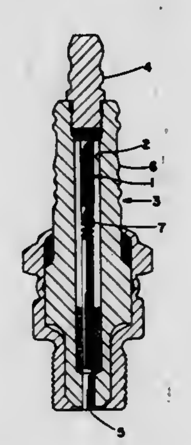
Filed Jan. 12, 1973, Ser. No. 323,089

Int. Cl. F02p *1/00*

U.S. Cl. 123—169 EL **10 Claims**

1. A spark plug for suppressing radio frequency interference and having particular application utility in an ignition system of the capacitor-discharge type, said spark plug comprising; an outer body, an insulator attached to said body and a center electrode assembly disposed within said insulator, said center

electrode assembly including in electrical series therewith an inductor element having a minimum resistance, said inductor element being of wound wire having relatively high electrical conductivity and substantially enclosed within said insulator.



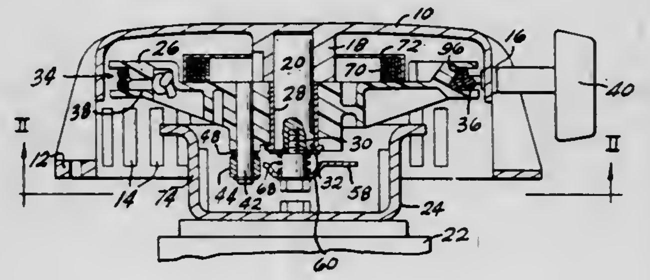
3,871,350
RECOIL STARTER

Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.

Division of Ser. No. 167,216, July 29, 1971, Pat. No. 3,782,355. This application Aug. 2, 1973, Ser. No. 385,318

Int. Cl. F02n *1/00*

U.S. Cl. 123—185 A **3 Claims**



1. A recoil starter for internal combustion engines comprising, in combination, a housing, pulley bearing means mounted upon said housing, a starter rope pulley rotatably mounted on said bearing means, said pulley having a starter rope receiving groove defined therein, said groove being defined by first and second radially extending sides and a base surface, recoil spring means operatively interposed between said housing and said pulley adapted to rotate said pulley in a rope recoiling direction, an opening defined in said pulley intersecting said groove adjacent said base surface, a starter rope adapted to be coiled in said pulley groove having an inner end inserted through said opening and attached to said pulley and an outer end, said groove having an axial width as defined by said first and second sides substantially twice the diameter of said starter rope, an annular shoulder defined in said groove adjacent one of said sides and radially spaced outwardly from said base surface and of an axial width substantially corresponding to the rope diameter, the difference in radii between said shoulder and said base surface being less than the diameter of said rope, whereby the first coil of rope rewound on said pulley, the pulley side adjacent said shoulder and said shoulder define an annular recess for receiving the second coil of rope wound on said pulley, a rope bushing mounted in said housing having a guide bore, a handle affixed to said rope outer end exteriorly located with respect to said housing, clutch means mounted on said pulley selectively engageable with engine drive means, and rope guiding means defined on said groove base surface adjacent said opening and ahead of said opening with respect to the rotation of said pulley in a rope recoiling direction deflecting the rope during recoiling away from said opening and rope inner end extending therein into said annular recess to prevent the second coil of rope received within said groove during recoiling from laying upon the first rope coil recoiled in said groove.

3,871,351
CYLINDER ARRANGEMENT HAVING A COMBUSTION AND A PRECOMBUSTION CHAMBER THEREIN AND A SEPARATE FUEL SUPPLY OR DOSING MEANS THEREFOR

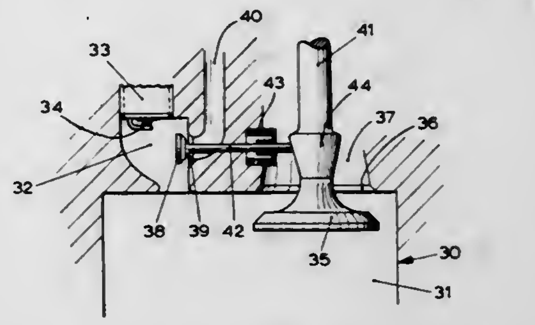
Istvan Geiger, and Gerd Decker, Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Division of Ser. No. 161,629, July 12, 1971,. This application July 9, 1973, Ser. No. 377,403

Claims priority, application Germany, July 31, 1970, 2038097

Int. Cl. F02b *19/00*

U.S. Cl. 123—32 SP **3 Claims**



1. In a combustion engine for motor vehicles, a cylinder arrangement comprising a combustion chamber, a precombustion chamber in communication with said combustion chamber, spark-plug means having electrodes in communication with said precombustion chamber, a first fuel supply or dosing means associated with said combustion chamber and a second fuel supply or dosing means associated with said precombustion chamber, said first fuel supply or dosing means comprising a member having a stem operable for assuming different predetermined axial positions representative of the operating states of the first fuel supply or dosing means, said stem including a portion having cross sectional profiling formed as a cam, and operating means associated with both said member and said second fuel supply or dosing means, said operating means comprising a spring means and an operating bar slidably mounted against the force of said spring means transversely with respect to said stem, said cam being operatively coupled to said bar, said bar being operatively coupled to said second fuel supply or dosing means.

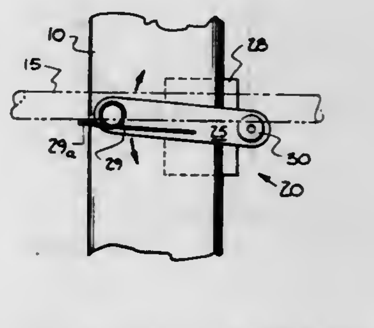
3,871,352
ARROW REST ACCESSORY FOR ARCHERY BOW

Melvern B. Stanislawski, 7135 S.E. Cora, Portland, Oreg. 97206, and Daniel F. McKinney, 1427 Coquette St., Medford, Oreg. 97501

Filed Feb. 4, 1974, Ser. No. 439,028

Int. Cl. F41b *5/00*

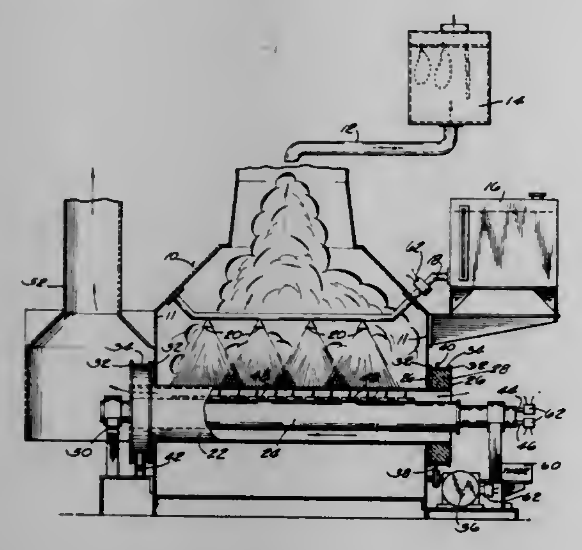
U.S. Cl. 124—41 A **3 Claims**



1. An arrow rest accessory, adapted for mounting on a handle riser portion of an archery bow for absorbing the shock

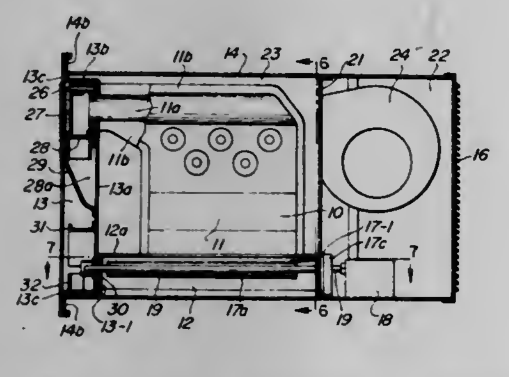
imparted to a bow following release of an arrow, comprising:
a. mounting means adapted to releasably secure said accessory to a handle riser portion of a bow;
  b. a cantilevered resilient arm member secured at its fixed end to said mounting means; and
  c. a helically wound resilient spring member affixed at one end to the free end of said cantilevered arm member and projecting substantially horizontally from a handle riser portion of a bow and in a direction transverse to that of an in-place arrow, the end of said spring member being substantially straight and providing vertical support of an arrow and the coiled portion of the spring member provides a lateral support for an arrow.

3,871,353
SMOKE GENERATOR USING LIQUID SMOKE
Thomas J. Haug, 2214 Franklin St., Manitowoc, Wis. 54220
Filed Nov. 15, 1973, Ser. No. 416,299
Int. Cl. A23b *1/04;* **A01g** *13/06;* **A47j** *36/38;* **B01d** *50/00*
U.S. Cl. 126—59.5 **12 Claims**



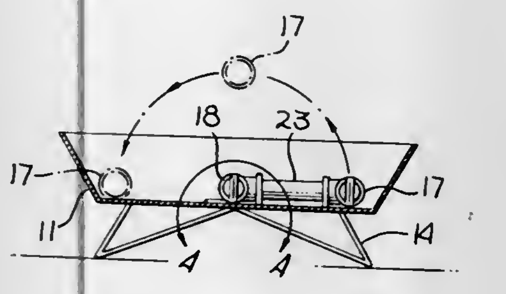
1. In a smoke generator for producing gaseous smoke from liquid smoke concentrate, the improvement comprising: a drum having a metallic surface supported for rotation on an axis, means for supplying liquid smoke concentrate to a restricted portion of said metallic surface, means for rotating said surface, and stationary heating means for heating said surface, whereby to convert said liquid smoke to gaseous smoke and to reduce accumulation of residues on said surface.

3,871,354
SEALED COMBUSTION CHAMBER NATURAL DRAFT, OUTSIDE WALL FURNACE
George W. Jackson, Salt Lake City; Dennis N. Dacey, Riverton, and Paul W. Jackson, Granger, all of Utah, assignors to Hydro Flame Corporation, Salt Lake City, Utah
Filed Jan. 7, 1974, Ser. No. 431,474
Int. Cl. F24h *3/00;* **F23j** *11/00*
U.S. Cl. 126—110 R **10 Claims**



1. A fluid-fuel furnace for mounting through an exterior wall of an enclosure to be heated, comprising a housing having a vented end adapted for exposure to the atmosphere; wall means internally of said housing providing a vent chamber at said vented end and a heated exchange compartment next to the vent chamber and closed off from air flow communication therewith; heat exchange structure within the heat exchange compartment and defining internally thereof one or more lower combustion chambers opening into one or more upper exhaust flues for gaseous products of combustion, said flues opening into the upper part of the vent chamber through said wall means; additional wall means below the heat exchange structure and defining a burner chamber opening into said one or more combustion chambers and having a draft-opening through the first-named wall means into the vent chamber; a fluid-fuel burner within the burner chamber; baffle means within the vent chamber comprising a downwardly and inwardly sloping air scoop baffle plate positioned between the flue openings in the vent chamber and said draft opening; a face plate providing said vented end of the housing, said face plate having exhaust vents formed through an upper section thereof above said baffle plate, and additionally having ports formed through a lower section thereof that is spaced below said upper section, to provide outside draft air for said burner; means for supplying said burner with a fluid fuel; and means for flowing air from within said enclosure into, through, and out of said heat exchange compartment.

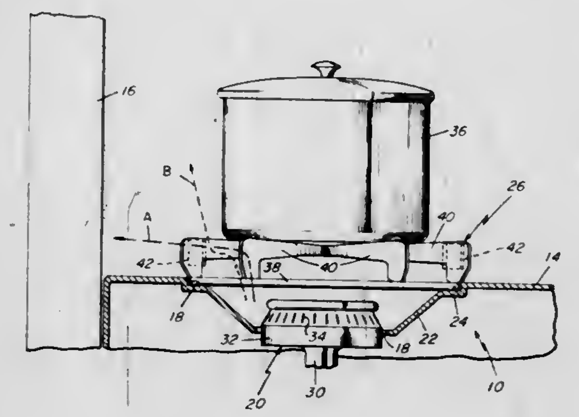
3,871,355
GAS DISTRIBUTION APPARATUS FOR ARTIFICIAL LOGS
Donald L. Henry, 12208 Park Ave., Santa Fe Springs, Calif. 90670
Filed Mar. 23, 1973, Ser. No. 344,355
Int. Cl. F24c *3/04;* **F24b** *1/18*
U.S. Cl. 126—127 **1 Claim**



1. A natural gas or propane distribution apparatus for use in connection with producing flames about an arrangement of artificial logs resting in a firebed above the distribution apparatus, the combination comprising:
- a pan having a bottom and a continuous sidewall extending about the peripheral edge of said bottom so as to define a firebed area between the opposing inner wall surfaces; a gas distribution assembly disposed in said firebed area having one end thereof supported on said bottom and its opposite end supported on said sidewall so that gas distribution assembly is raised above said bottom;
- said gas distribution assembly including at least a pair of tubes closed at their ends supported on said bottom and arranged in parallel, fixed spaced apart relationship to produce an irregular, asymmetrical flame pattern and operably coupled at their opposite ends to a source of pressurized natural gas or propane, each of said tubes having at least one row of holes formed therein along the side portion of each tube providing gas discharge jets directed at an opposing surface of said sidewall;
- means for anchoring a selected one of said pair of tubes to said pan bottom;
- the row of said holes associated with one of said tubes are arranged in an array facing the rear of said pan while the other rows of said holes associated with said other tube faces the front of said pan;

- said selected one of said pair of tubes lies along the central longitudinal axis of said pan;
- the other tube of said pair than said selected one is joined to said gas supply source and said selected tube by a swivel connection so as to rotate from one side of said selected tube to the other side thereof;
- said tubes are closed at their respective cantilevered ends; said sidewall extends outwardly and slopes upwardly; and said other tube is coupled to said swivel connection by an elbow joint and a linear conduit.

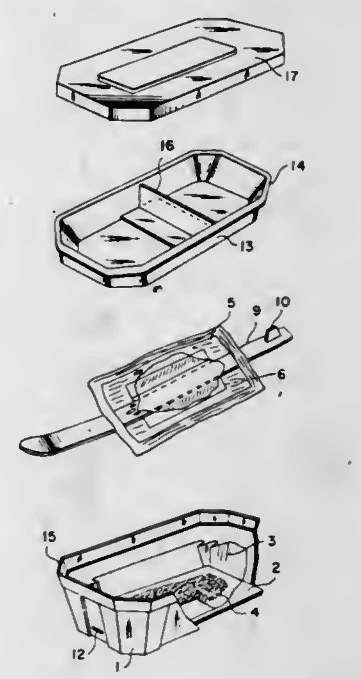
3,871,356
GAS RANGE GRATE
Domenick Saponara, Macungie, Pa., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 3, 1973, Ser. No. 421,012
Int. Cl. F24c *15/10*
U.S. Cl. 126—215 **8 Claims**



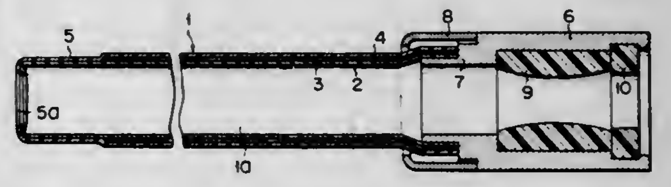
1. A gas cooking range having a maintop, at least one burner opening in said maintop adjacent one edge thereof, a burner located within said opening and, having flame ports therein at which flames are normally produced which flames normally create combustion products directed generally laterally in the direction of said edge and onto adjacent structure located adjacent said edge, a grate mounted in said opening over the burner, and comprising a pair of radially extending members, and means carried by said grate at a level above said ports for deflecting said combustion products in a generally upward direction to avoid overheating of said adjacent structure, said means comprising a deflector connected between said members adjacent the outer ends thereof.

3,871,357
SELF-WARMING CONTAINER FOR PRECOOKED FOODS
Vincenzo Grosso, 31 Via Felice Casati, and Attilio Grosso, 1 Via Appiani, both of Milan, Italy
Filed Oct. 10, 1973, Ser. No. 404,928
Claims priority, application Italy, Aug. 3, 1973, 27508/73
Int. Cl. F24j *1/02;* **B65b** *25/22*
U.S. Cl. 126—263 **5 Claims**

1. A self-warming container for precooked foods of the kind operating by means of an exothermic reaction between a chemical reactant and water disposed within the container comprising a closed envelope within the container containing the water, an exothermic hydratable chemical reactant located within the container for contact with the water when the envelope is opened and in an amount sufficient to heat the food when contacted with the water, a cutting blade adapted to open the envelope, a sliding control strip inside the container supporting said cutting blade, a guide for said control strip to move said cutting blade over said envelope, a tongue on said control strip extending outside the container, said guide for the control strip being a sheet adhesively secured to the envelope along two lateral zones leaving an unadhered central zone between the envelope and the guide, said control strip being situated in said central zone to be held in contact with the envelope whereby said control strip may be engaged by its tongue and pulled to move the strip in the central zone and cause the cutting blade to open the envelope to free the water for contact with the calcium oxide within the container.



3,871,358
GUIDING TUBE FOR THE INSERTION OF AN ADMISSIBLE MEDICAL IMPLEMENT INTO A HUMAN BODY
Noboru Fukuda, and Yutaka Otani, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed July 31, 1973, Ser. No. 384,193
Claims priority, application Japan, Aug. 4, 1972, 47-91216; Aug. 4, 1972, 47-91217
Int. Cl. A61b *1/00*
U.S. Cl. 128—2 M **7 Claims**

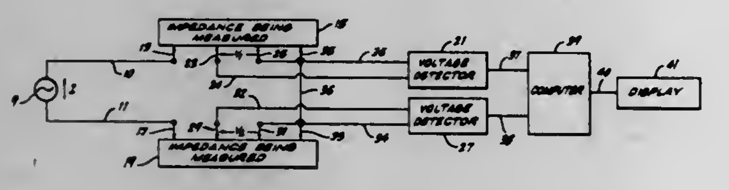


1. A guiding tube for the insertion of an admissible medical implement into a human body which comprises a tube member consisting of an innermost tube unit having a passageway formed therein through which to conduct an admissible medical implement, a flexible core tube unit concentrically surrounding the innermost tube unit in close contact, an outermost tube unit concentrically surrounding the flexible core tube unit and a pliable forward end portion open at the forward end; and an inlet member fitted to the inlet of the tube member.

3,871,359
IMPEDANCE MEASURING SYSTEM
Allan F. Pacela, Diamond Bar, Calif., assignor to Interscience Technology Corporation, City of Industry, Calif.
Filed June 25, 1973, Ser. No. 373,435
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z **7 Claims**

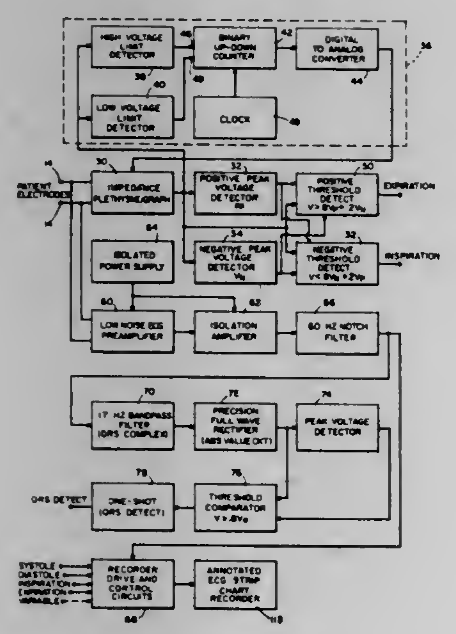
1. Impedance measuring apparatus for measuring first and second electrical impedances, comprising:
- current source means for producing an alternating current of constant magnitude;
- first and second voltage detector means for measuring voltages;

first electrode pair means attached to said current source means and adapted to be connected between the first and second electrical impedances;
second electrode pair means electrically connected together and adapted to be connected between said first and second electrical impedances to complete an electrical circuit comprising said current source means connected to the series combination of said first and second electrical impedances;
third electrode pair means connected to the first voltage detector means and adapted to be connected across the first electrical impedance for measuring the voltage thereacross in response to said alternating current of said current source means;



fourth electrode pair means connected to the second voltage detector means and adapted to be connected across said second electrical impedance for measuring the voltage thereacross in response to said alternating current of said current source;
computer means connected to said first and second voltage detector means for computing the ratios of changes in the electrical impedance of said first and second electrical impedances to the steady-state value thereof, respectively; and
display means for displaying said ratios computed by said computer means.

3,871,360
TIMING BIOLOGICAL IMAGING, MEASURING, AND THERAPEUTIC TIMING SYSTEMS
Joseph M. Van Horn, Cambridge; Paul Epstein, Brookline, and Patrick G. Phillipps, Newton, all of Mass., assignors to Brattle Instrument Corporation, Cambridge, Mass.
Filed July 30, 1973, Ser. No. 383,707
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **29 Claims**


HIGH VOLTAGE LIMIT DETECTOR
BINARY UP-DOWN COUNTER
DIGITAL TO ANALOG CONVERTER
LOW VOLTAGE LIMIT DETECTOR
CLOCK
PATIENT ELECTRODES
IMPEDANCE PLETHYSMOGRAPH
POSITIVE PEAK VOLTAGE DETECTOR
POSITIVE THRESHOLD DETECT
EXPIRATION
ISOLATED POWER SUPPLY
NEGATIVE PEAK VOLTAGE DETECTOR
NEGATIVE THRESHOLD DETECT
INSPIRATION
LOW NOISE ECG PREAMPLIFIER
ISOLATION AMPLIFIER
60 HZ NOTCH FILTER
17 HZ BANDPASS FILTER (QRS COMPLEX)
PRECISION FULL WAVE RECTIFIER (ABS VALUE CKT)
PEAK VOLTAGE DETECTOR
QRS DETECT
ONE-SHOT (QRS DETECT)
THRESHOLD COMPARATOR
SYSTOLE
DIASTOLE
INSPIRATION
EXPIRATION
VARIABLE
RECORDER DRIVE AND CONTROL CIRCUITS
ANNOTATED ECG STRIP CHART RECORDER
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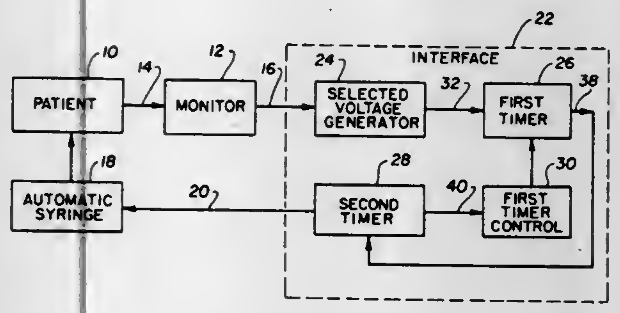
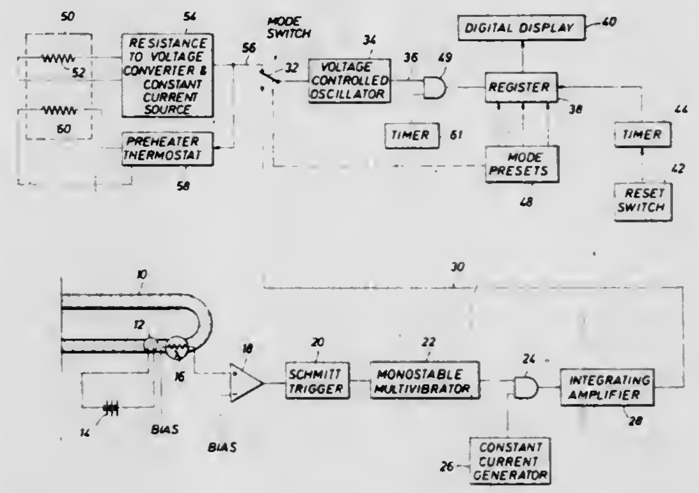
28. A system for timing biological imaging, measuring or therapeutic apparatus in accordance with selected physiological states of a subject, comprising
input circuitry means for providing electrical signals representative of a physiological cycle of said subject,
output circuitry means effectively connected to said input circuitry means for providing a succession of timing signals at selected portions of said physiological cycles, and digital offset correction circuitry means effectively connected to said input circuitry means for automatically causing said electrical signals representative of physiological cycles to be within a predetermined range, said correction circuitry means including limit detection means effectively connected to said input circuitry for providing a signal when the physiological signal is outside said range, digital means effectively connected to said detection means for providing digital pulses in the presence of a signal from said detection means, a counter effectively connected to said digital means for counting said pulses, said detection means including upper and lower limit detectors for respectively incrementing and decrementing said counter when the physiological signal is above and below said range, and offset generator means effectively connected to said input circuitry means for generating an offset voltage dependent upon the count in said counter, and
means for effectively connecting said system to said apparatus to be controlled.

3,871,361
CONTROL DEVICE FOR A MONITOR SUPERVISING A PATIENT
Dean L. Kamen, 99 Bulson Rd., Rockville Centre, N.Y. 11570
Filed Mar. 11, 1974, Ser. No. 449,622
Int. Cl. A61b *05/02;* **A61m** *05/00*
U.S. Cl. 128—2.05 R **8 Claims**



1. In a system including a monitor operatively arranged to supervise the blood pressure and like conditions of a patient and in response to changes in said supervised conditions to operate a medication-administering device for said patient, a control device for said monitor comprising means for generating a selected voltage signal in response to a signl input thereto from said monitor, a first timer electrically connected to continuously receive said selected voltage signal as an input thereto for a time interval necessary to charge a capacitor to the value of said selected voltage, means operated by said first timer when said capacitor thereof achieves said voltage charge to start the operation of said medication-administering device, and a second timer operated simultaneously with said medication-administering device for a selected time interval and effective to prevent any successive operation of said first timer until completion of said selected time interval, whereby an initial medication dosage is delivered to said patient by said medication-administering device only after the lapse of said time interval of said first timer so as to minimize any false indication of an emergency situation and a succeeding dosage is delivered only after the lapse of said time interval of said second timer which is selected in relation to the refractory period for the medication involved.

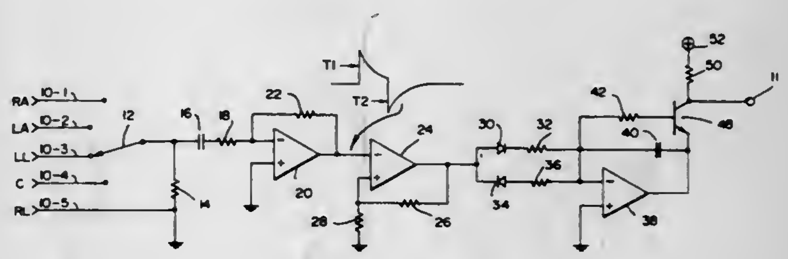
3,871,362
BODY TEMPERATURE AND HEAT RATE MEASUREMENT SYSTEM
Gerald W. Dunegan, 611 Montclair Blvd., Sugurland, Tex. 77478
Filed Nov. 27, 1973, Ser. No. 419,263
Int. Cl. A61b *5/00*
U.S. Cl. 128—2.06F **4 Claims**



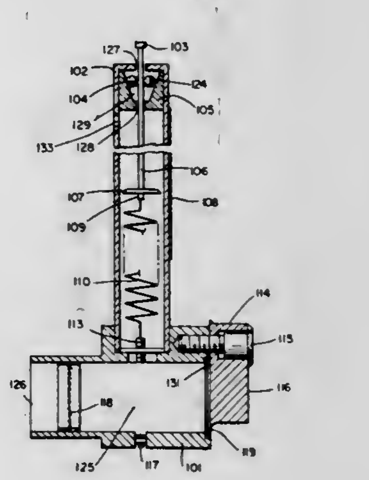
1. A physiological indicating system comprising:
transducer means for engaging a finger of a patient to form optically created pulse signals and
wherein said transducer means includes
  a lamp means for transilluminating a finger and
  light responsive means for observing a change in the finger on a heart beat;
circuit means for converting the pulse signals into a voltage analogous to the pulse rate, said means comprising
  an amplifier connected to said transducer means;
  level responsive circuit means connected to said amplifier for forming a pulse on a pulse of the finger so observed;
    means for making the pulse so formed uniform in length;
  means for summing said pulses so said circuit means can form a voltage analogous to the pulse rate;
a voltage dependent oscillator connected to said circuit means for forming output pulses at least partly proportional to the voltage level;
register means for storing the number of pulses input thereto from said oscillator;
pre-set circuit means connected to said register for providing a pre-set number therein serving as a scale factor so that the number of pulses stored in said register is scaled to the measure of interest;
timing means which gates said register on for a specified interval; and;
digital display means connected to said register means for providing a digital indication.

3,871,363
PACER DIAGNOSTIC INSTRUMENT
Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 19, 1973, Ser. No. 426,407
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **7 Claims**

1. A device interconnected between the source of an EKG signal and an instrument for permanently recording an EKG signal, the device serving to operate upon pacer pulses contained in the EKG signal for converting said pulses to a form suitable for recording by said recording instrument, comprising means for receiving said EKG signal and said pacer pulses, means for substantially attenuating said EKG signal and not said pacer pulses, means for detecting the leading and trailing edges of a pacer pulse, trigger means operative in response to said detector means for providing a rectangular pulse equal in width to said pacer pulse, integrator means operative in response to said trigger means for integrating said rectangular pulse, said integrator means including means for generating both a ramp signal in one direction from the time that said leading edge of said pacer pulse is detected until the time that said trailing edge of said pacer pulse is detected and a second ramp signal in the opposite direction following the detection of said trailing edge, means responsive to said integrator means for generating a wide pulse whose width is a greater-than-unity predetermined multiple of the time interval between said leading edge and said trailing edge, means for controlling the rate of said second ramp signal to be substantially slower than the rate of said first ramp signal by a predetermined factor, means for governing the duration of said wide pulse to be co-extensive with the duration of both of said ramp signals, and means for transmitting said EKG signal and said wide pulse mutually exclusively to said instrument.



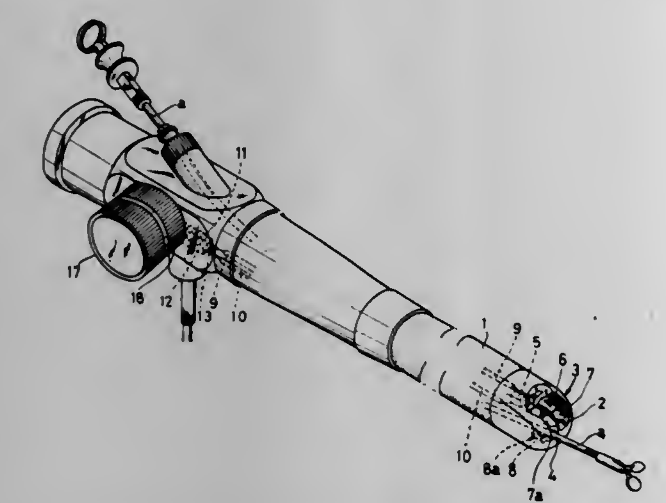
3,871,364
PEAK FLOW METER-EXPIRATORY FLOW RATE
John Randall Boehringer, 427 Parkview Dr., Wynnewood, Pa. 19096
Filed Sept. 24, 1973, Ser. No. 399,816
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **7 Claims**



1. Apparatus for measuring peak air flow comprising:
housing means defining first and second cavities which communicate with one another, said first cavity having an input port and at least one output port and said second cavity having an output port;
mobile piston means located in said second cavity and separating said first and second cavities, said piston means and the walls of the second cavity having a predetermined clearance therebetween, the output port of the second cavity being exclusively on one side of said piston means.
spring means for restricting the motion of said piston means;
  indicating means for registering the peak excursion of said piston means, said indicating means including shaft means mobile with said piston means;
and means for locking said shaft means in position of said peak excursion.

3,871,365
ENDOSCOPE

Toshio Chikama, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan
Filed June 6, 1973, Ser. No. 367,401
Claims priority, application Japan, June 19, 1972, 47-60436
Int. Cl. A61b *1/00*
U.S. Cl. 128—5 **6 Claims**

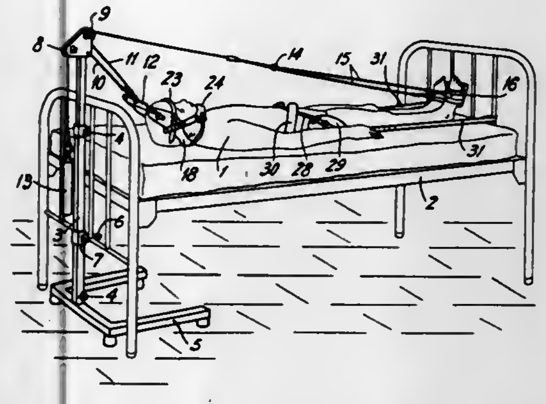


1. An endoscope comprising a front portion with an observation window, an image-receiving optical system including a turnable member facing said window to view different portions of a visable field outside said window, a forceps projecting through said window, support means guidably supporting said forceps for pivotable meovement, and an operating means coupled to said support means for the forceps and to said turnable member of the optical system selectively to (a) couple said support means and turnable member so that the forceps and turnable member move conjointly and (b) to enable the support means and turnable member to be individually operated to alter the relative position of the forceps and the turnable member of the optical system, said operating means comprising a first operation member for said support means, a second separate operation member for said turnable member of the optical system, two adjacent, coaxial, rotatable control knobs each coupled to a respective operation member, means normally coupling the knobs for common rotation movement but capable of being rendered inoperative to allow separate rotation of the knobs, said means coupling the knobs comprises respective shafts supporting the knobs, and means separably connecting the knobs, said knobs being axially displaceable relative to one another on said shafts to disconnect the knobs.

3,871,366
DEVICE FOR PULLING THE RACHIS

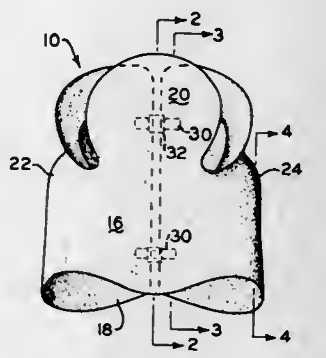
Yves Paul Charles Cotrel, 9, rue Perrochaud-F, Berck-Plage, France
Filed Nov. 6, 1973, Ser. No. 413,267
Claims priority, application France, Nov. 8, 1972, 72.39480
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **1 Claim**

1. Device for pulling the rachis of a patient, which comprises a horizontal support adapted to hold said patient in a lying position, removable attaching means adapted to engage on the one hand the pelvic area of said patient and on the other hand one end of said horizontal support to prevent said patient from moving away from said one end, means adapted to engage the occipital area of said patient, and traction means bearing on the other end of said horizontal support and connected to said means adapted to engage the occipital area to pull same towards said other end along an upwards direction with an angle lying between 30° and 60° to the horizontal, said traction means comprising a removable bracket adapted to be attached to said other end of said horizontal support, a pulley mounted on the upper portion of said bracket over which is trained a strap connecting said means adapted to engage the occipital area of said patient to a counter-weight, and another pulley mounted on the upper portion of said bracket over which is trained another strap connecting said means adapted to engage the occipital area of said patient to pedals adapted to be operated by the patient's feet, the length of said other strap being such that the patient will exert a pull on the last said means when the patient's legs are stretched.



3,871,367
PELVIC BRACE

Marion E. Miller, 5918 Camelback, Camelback Ct., Indianapolis, Ind. 46250
Filed Jan. 22, 1974, Ser. No. 435,460
Int. Cl. A61f *5/02*
U.S. Cl. 128—78 **8 Claims**



1. A pelvic girdle shaped to engage a person at his pelvis and comprising an outer layer of a hard substantially rigid layer of a plastic material and an inner layer of a soft compressible plastic material bonded to said outer layer, which inner layer has localized areas of varied thickness,

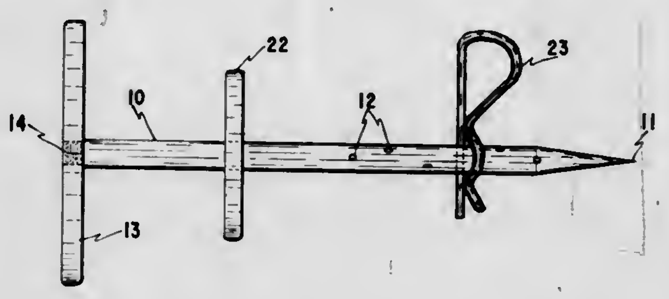
the girdle including anterior and posterior portions and being vertically split in its posterior portion and including releasable fastening means secured to the adjacent posterior portions, the girdle also having a center anterior upper portion adapted to extend up to about the base of the sternum of the wearer and curved outwardly of the girdle, which upper portion is separated at its lateral margins from other anterior portions of the pelvic girdle and is free to flex slightly, the girdle having upper side portions connecting the anterior and posterior portions and including inwardly curved sections adapted to engage the iliac crests and having appreciably thicker compressible inner layers on such sections.

3,871,368
DEVICE FOR FIXATION OF PREPARTURIENT VAGINAL PROLAPSE

Thomas P. Johnson, 605 E. St., Sidney, Iowa 51652, and Wilmer T. van Berkum, 109 W. 10th St., Spencer, Iowa 51301
Filed Oct. 10, 1973, Ser. No. 405,065
Int. Cl. A61f *5/46*
U.S. Cl. 128—127 **5 Claims**

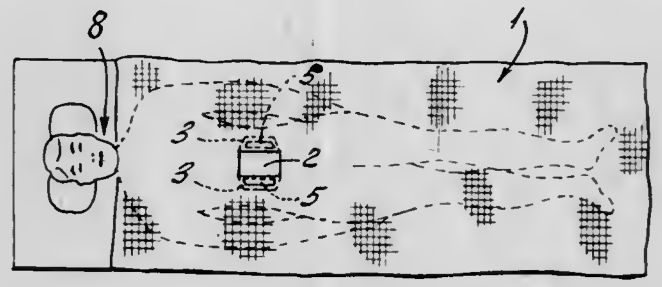
1. A device for fixation of preparturient vaginal prolapse in large animals comprising a pointed body member for insertion

from the interior of the vagina through the walls thereof and tissues exterior thereof, said body member being formed to provide one sharp pointed end, button head means on said body member at the end opposite said pointed end adapted to support said vaginal walls, said body member being formed to provide a plurality of transverse holes therethrough adjacent said pointed end, washer means removably supported on said body member adapted to engage said exterior tissues, and pin means insertable in one of said holes to hold said washer means in place on said body member between said button head means and said one hole.



3,871,369
SELF-ADHESIVE SURGICAL APPAREL AND METHOD

Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Aug. 2, 1973, Ser. No. 384,843
Int. Cl. A61t *13/00*
U.S. Cl. 128—132 D **6 Claims**

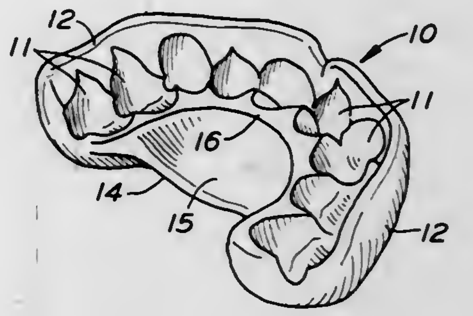


1. A self-adhesive surgical drape having a top side adapted to lie facing away from the body of a patient and a bottom side adapted to lie adjacent the body of a patient, said drape having a fenestration opening spaced inwardly from the outer periphery thereof, an interior edge defining said fenestration opening, a foldable flap integral with a portion of said interior edge, and pressure sensitive adhesive on at least part of a surface of said flap and a releasable cover sheet covering said adhesive, said adhesive surface being adapted to lie facing away from the patient during draping and to be folded over to lie adjacent the patient when the fenestration portion of the drape is properly positioned on the patient, whereby to facilitate rapid and sterile draping of a patient.

3,871,370
TONGUE-THRUST CORRECTION APPLIANCE

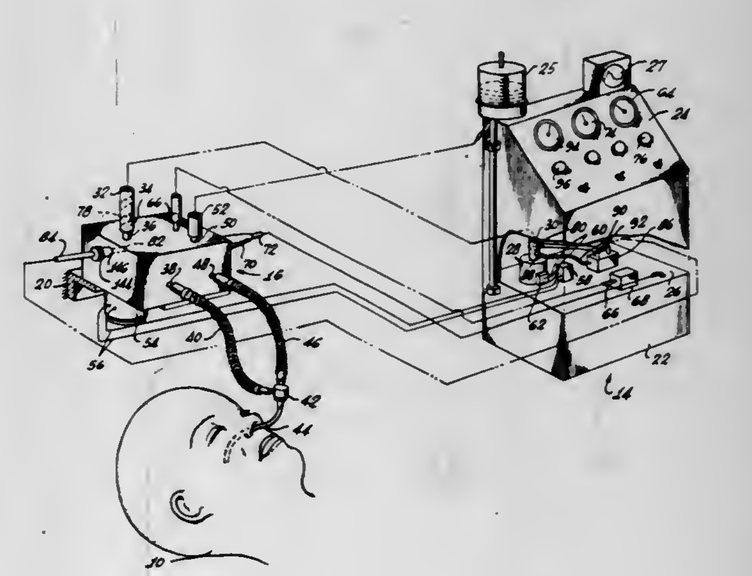
Lee E. McDonald, 1800 Zollinger Rd., Columbus, Ohio 43221
Filed July 5, 1973, Ser. No. 376,558
Int. Cl. A61c *11/00*
U.S. Cl. 128—136 **6 Claims**

1. A tongue-thrust correction appliance comprising a body of molded material having at least two laterally spaced elements, each element therof having an upper surface conformation of elongated, channel-form adapted to interfit with corresponding upper jaw portions in retained relationship therewith and a lower surface adapted to be contactingly engaged by lower jaw teeth, and an integrally formed, thin web extending transversely between said spaced elements, said web having an upper surface which is vertically disposed relative to said spaced elements to be in vertically spaced relationship to the roof of the mouth when the appliance is positioned therein and a transverse rear edge which terminates no further rearwardly relative to said spaced elements than a line extending transversely thereacross at a point coincident with the position of the second bicuspid teeth when the appliance is positioned in the mouth whereby the tongue may be positioned in overlying relationship to the upper surface of said web.



3,871,371
RESPIRATION SUPPLY AND CONTROL

James Weigl, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.
Filed Dec. 11, 1972, Ser. No. 313,978
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **5 Claims**

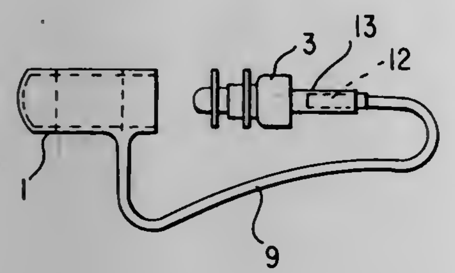


1. A respiration supply and control system comprising:
a console provided with a volume generator to supply a desired respiration gas mixture at a selected cycle rate for use by a patient located at a substantial distance from the console;
a transfer unit to receive the gas and transmit it to the patient;
an elongate, large volume, gas supply hose interconnecting the volume generator and the transfer unit;
a relatively short, small volume, delivery hose extending from the transfer unit and adapted to be placed in flow communication with the patient;
valve means in the transfer unit to control the flow of gas therefrom to the patient;
an actuator on the transfer unit for the valve means;
and control means on the console and connected to the actuator to control its operation.

3,871,372

COMBINATION EAR PLUG AND EAR PLUG RETAINER

Jim Bivins, 1906 N. Fourth St., Longview, Tex. 75601
Filed Feb. 19, 1974, Ser. No. 443,909
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **5 Claims**

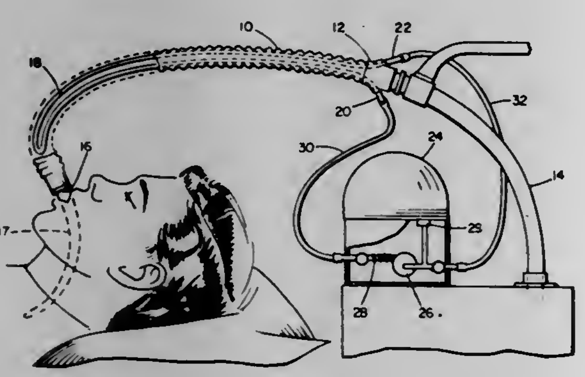


1. An article of manufacture comprising an ear plug, a housing for said ear plug, template receiving elastic means integral with said housing for receiving a template of a pair of eyeglasses, said means including a passage through which can be inserted a template of a pair of eyeglasses for frictional engagement therewith, and flexible means for connecting said ear plug to said housing.

3,871,373

HUMIDIFYING GAS

Richard R. Jackson, Eight Trinity Rd., Marblehead, Mass. 01947
Filed Oct. 30, 1972, Ser. No. 301,773
Int. Cl. A61m *15/00, 15/08*
U.S. Cl. 128—193 **15 Claims**

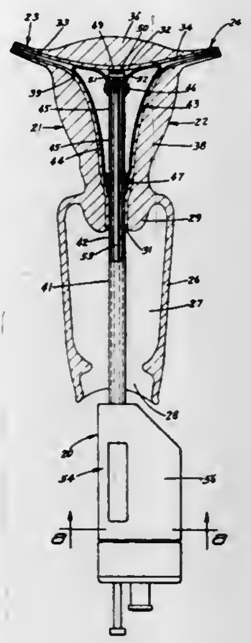


1. Apparatus for humidifying a gas and delivering it to be breathed, comprising
- a gas conduit having an inlet for communicating with a source of said gas, and an outlet, for enabling flow of gas along said conduit,
- a water chamber coextensive over a zone with a portion of said gas conduit,
- said chamber or said conduit having a wall permeable to water vapor at said zone,
- means for causing liquid water to flow along said wall in intimate contact with one side thereof at said zone at a vapor pressure sufficient to cause passage of water vapor through said wall and into said conduit to humidify gas therein, said water flow being co-current with said flow of gas along at least a portion of said wall, and
- means for delivering the humidified gas to a patient.

3,871,374

DISPENSING INSTRUMENT

Lee R. Bolduc, Minneapolis, and Eugene A. Dickhudt, St. Paul, both of Minn., assignors to Population Research Incorporated, Minneapolis, Minn.
Filed Sept. 6, 1973, Ser. No. 394,727
Int. Cl. A61m *1/00*
U.S. Cl. 128—235 **22 Claims**

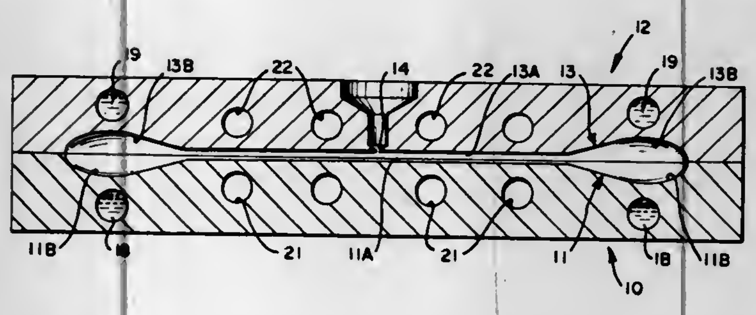


16. An instrument for placing material in both canals of Fallopian tubes open to the uterine cavity comprising: a balloon assembly having an expandable sleeve member, first means operable to expand the sleeve member into engagement with the inside walls of the uterus to fully displace the uterine cavity and then partially contract the sleeve member, second means for discharging material into the uterine cavity between the partially contracted sleeve member and the inside top wall of the uterus, said first means being operable to re-expand the sleeve member to fully displace the uterine cavity whereby the material in the uterine cavity is forced into the canals of the Fallopian tubes by the re-expanding sleeve member.

3,871,375

UNITARY MOLDED SWABS

Robert A. Bennett, Sturbridge Rd., Easton, Conn. 06425
Filed Aug. 30, 1973, Ser. No. 393,074
Int. Cl. 464 *54;* **A61m** *35/00*
U.S. Cl. 128—269 **3 Claims**

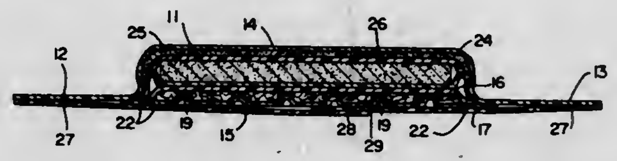


1. A unitary molded polymer foam article formed in the shape of a swab having an elongated dense shaft holding means portion of fine-celled porosity and an enlarged working tip portion of coarse-celled porosity less dense and more deformably resilient than said shaft portion.

3,871,376

COMBINATION ABSORBENT DRESSING AND FLEXIBLE COOLING DEVICE

Theodore F. Kozak, Peekskill, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 13, 1974, Ser. No. 450,580
Int. Cl. A61f *5/44*
U.S. Cl. 128—275.1 **18 Claims**

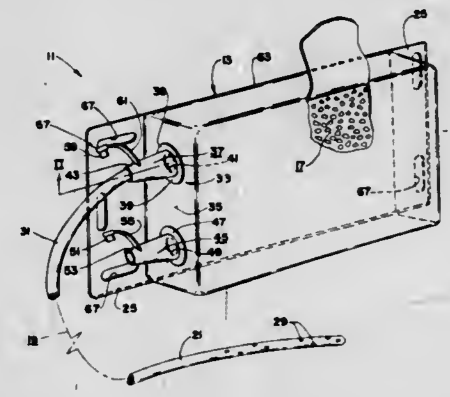


1. A combination absorbent dressing and flexible cooling device comprising:
- a. a dressing composite comprising in combination, a hydrophobic topsheet for placement adjacent to the body and having a plurality of valvular openings therein, a substantially liquid impermeable backing sheet, and an absorbent material disposed between said topsheet and backing sheet and being characterized by its ability to absorb liquid passed through said openings, and a system of dimples disposed on said topsheet;
- b. a cooling device associated with said dressing composite comprising a flexible packaging material encompassing and sealing an insoluble hydrophilic gel; and
- c. an insulating material covering said cooling device and said dressing composite.

3,871,377

EVACUATOR APPARATUS

Harry T. Treace, Germantown, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.
Filed Sept. 25, 1968, Ser. No. 762,502
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **15 Claims**

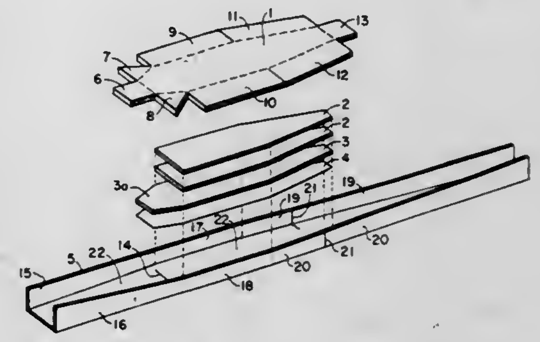


1. Evacuator apparatus useful particularly for evacuating body fluids from a closed wound comprising a body including envelope means defined by wall structure, at least a substantial area of said wall structure being substantially thin and flexible, at least one suction tube having a portion adapted for engagement with the wound of a patient and for conducting body fluids from the wound into the tube interior, connecting means physically sealingly connecting said tube to said wall structure of said envelope means and communicating the suction tube interior with the interior of said envelope means, and resilient means in the interior of said envelope means engaging at least a portion of said thin and flexible area of said wall structure and manually compressible from an uncompressed disposition to a compressed disposition for subsequent movement from said compressed disposition to said uncompressed disposition, said resilient means consisting of yieldable open cellular mass structure means of substantial elastic recovery capacity and also of substantial fluid retaining capacity in the interior thereof in communication through said suction tube with said wound engaging portion of said suction tube for evacuating body fluids from a wound and storing the evacuated body fluids in the interior of said mass structure means when said resilient means moves from said compressed disposition towards said uncompressed disposition.

3,871,378

ABSORBENT BANDAGE

Robert C. Duncan, Wyoming, and Grace L. Smith, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 22, 1973, Ser. No. 343,774
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **18 Claims**

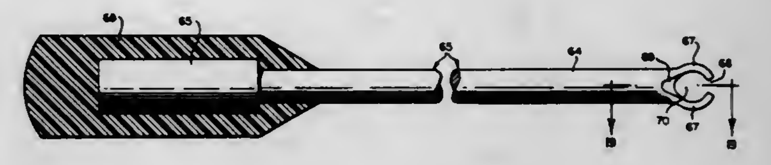


1. An absorbent bandage, comprising:
- a. a hydrophilic absorbent core of compressed absorbent material having a density throughout of from about 0.15 to about 0.30 gm. per cubic centimeter as measured under a load of 50 gm. per square inch, a 0.05 – 0.06 in. thick by 1.50 in. wide specimen of said absorbent core material having a Taber softness between about 1.2 and about 8.7 gram-centimeters;
- b. a hydrophobic topsheet having a density substantially less than that of said absorbent core secured in superposed relation to said absorbent core, said absorbent core and said topsheet comprising an absorbent pad for rapidly absorbing and retaining body exudate; and
- c. a bottom sheet underlying and secured to said absorbent pad for supporting said absorbent pad in-use.

3,871,379

LAPAROSCOPY INSTRUMENTS AND METHOD FOR SUTURING AND LIGATION

Henry C. N. Clarke, 100 High St., Buffalo, N.Y. 14203
Division of Ser. No. 175,163, Aug. 26, 1971, Pat. No. 3,763,860. This application July 12, 1973, Ser. No. 378,582
Int. Cl. A61b *17/12*
U.S. Cl. 128—326 **1 Claim**

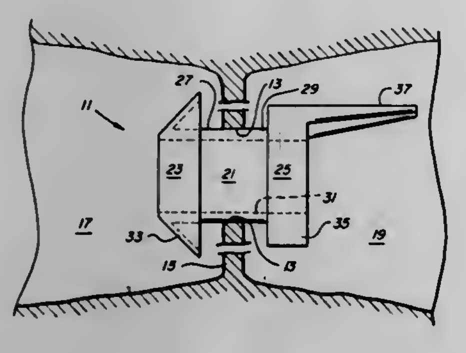


1. A ligator comprising an elongated stem and suture guiding means at one end of said stem, said suture guiding means being of substantially the same cross sectional dimension as said stem and comprising a pair of spaced arms convexly outwardly curved about an axis extending transversely of said stem and converging toward each other at their tip ends remote from said stem and jointly with the end of said stem defining a generally circular opening for guiding a suture, said tip ends of said arms being spaced from each other to provide a suture entrance to said opening, and means for gently and firmly holding said suture comprising a blunt end on said stem opposite from said entrance, said end being convexly rounded

to provide complimentarially grooved recessed portions at the bases of said arms on opposite sides of said stem between said arms.

3,871,380
MYRINGOTOMY DRAIN TUBE

Ricardo J. Heros, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.
Filed Dec. 3, 1973, Ser. No. 421,144
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **9 Claims**



1. A drain tube for inserting into a myringotomy opening in a patient's tympanic membrane to allow drainage of the patient's middle ear through his external auditory canal, said drain tube comprising:

a. a hollow body having an unobstructed passageway of substantially uniform diameter therethrough for extending between the middle ear and the external auditory canal through the myringotomy opening to allow the middle ear to drain therethough; and

b. head means fixedly attached to the forward end of said body for insertion through the myringotomy opening to prevent accidental extraction of said drain tube from the middle ear, said head means including a normally rearwardly directed conical-shaped flange portion being so constructed as to be collapsible to a low profile position for allowing easy insertion thereof through the myringotomy opening without enlarging the myringotomy opening; and having substantial elastic recovery for returning to a high profile position after insertion through the myringotomy opening to prevent accidential extraction therefrom and being reversible to a forwardly directed position when extracted through the myringotomy opening for allowing easy extraction therethrough.

3,871,381
COLD COMPRESS DEVICE

Donald J. Roslonski, 38 Fairview Ave., Bricktown, N.J. 08723
Continuation-in-part of Ser. No. 213,978, Dec. 30, 1971, abandoned. This application May 10, 1973, Ser. No. 358,899
Int. Cl. A61f *7/00*
U.S. Cl. 128—400 **28 Claims**

1. A device for treating mammals comprising:

a flexible, inflatable compress adapted to be placed adjacent a body area to be treated;

said compress comprising a surrounding wall and an inflatable interior cavity formed by said wall;

said compress further comprising an enclosed channel formed in a portion of the compress wall adapted to conduct a fluid refrigerant over said compress wall portion;

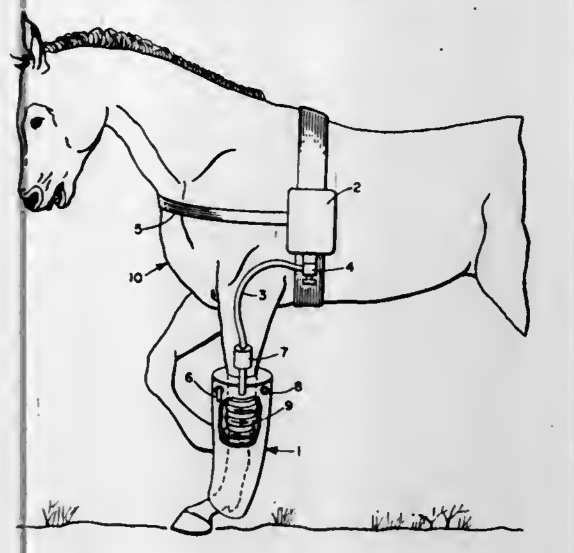
said channel opening into the inflatable interior cavity of said compress and being connected to an external source of compressed refrigerant whereby refrigerant from said source is constrained to pass over said compress wall portion by traversing said channel before entering the inflatable interior cavity of said compress;

means interposed between said source and said channel for controlling the rate of flow of refrigerant from the source into the compress whereby the rate of cooling of said compress can be controlled; and

pressure relief means connected to said compress and communicating between the inflatable interior cavity of the compress and the ambient atmosphere for regulating the maximum pressure in the compress whereby the pressure applied to the body area being treated can be controlled.

24. A flexible, inflatable compress adapted to be placed adjacent a body area of a mammal to be treated;

said compress comprising a surrounding wall and an inflatable interior cavity formed by said wall;



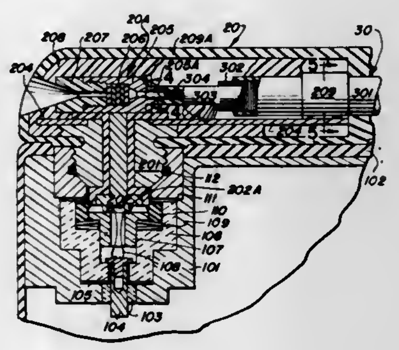
a portion of said wall comprising two layers of flexible thermoplastic material joined to each other by a pattern of heat seals;

said pattern of heat seals forming an elongated fluid conducting channel extending over said wall portion between said layers; and

one end of said channel opening into the inflatable interior cavity of said compress, and the other end of said channel being adapted to be connected to an external source of compressed refrigerant.

3,871,382
HEART STIMULATOR SYSTEM FOR RAPID IMPLANTATION AND REMOVAL WITH IMPROVED INTEGRITY

Alfred E. Mann, Los Angeles, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.
Filed Feb. 15, 1973, Ser. No. 332,610
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **10 Claims**



1. Heart stimulator system adapted to be implanted within a human body, comprising:

a sealed assembly including a sealed enclosure and pulse generating means housed therewithin, said enclosure defining an open cavity;

a catheter having distal and proximal ends and adapted to be coupled to a human heart adjacent said distal end, with at least one electrode for carrying signals between said pulse generating means and said heart, said catheter defining an axially extending interior space;

elongated catheter support means defining a transverse passageway coaxial with said catheter interior space and communicating therewith at one end while being open at the other end, said support means being joined to said catheter adjacent said proximal end;

pierceable self-sealing means for sealing said other open passageway end of said catheter support means;

quick connect-disconnect means for sealingly and simultaneously coupling mechanically and electrically said assembly to said catheter and support transversely to said passageway into a sealed unit, including

a male threaded connector secured to said catheter support means adjacent one end thereof, said connector including a conductive portion therewithin insulated from the remainder of said connector, extending to the leading end thereof, and electrically connected to said one electrode, said catheter and said catheter support means forming an integral elongated lever arm for said threaded connector;

a female threaded connector adapted to receive said male connector therethrough and secured within said cavity at the entrance thereof, said male and female connectors defining an axis upon being united which is transverse to that of said catheter passageway and interior space;

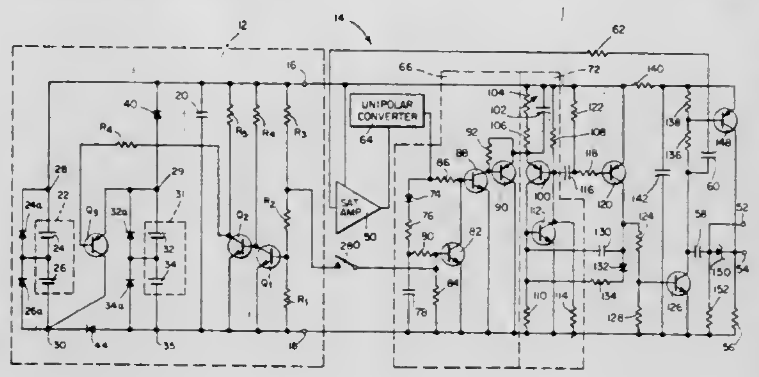
a contact member mounted within said cavity and spaced inwardly from said female connector, said contact member being electrically connected to said pulse generating means,

resilient means positioned in said cavity inwardly from said female connector, and responsive to the passage of said male connector through said female connector for sealing said cavity;

said male connector conductive portion thereupon engaging said contact member, effecting electrical as well as mechanical connection with the sealing of said cavity simultaneously, said connection being tensioned with said lever arm to complete a sealed stimulator system which may be equally quickly disassembled and whose catheter may be stylet-positioned without disturbing said connection.

3,871,383
POWER SUPPLY

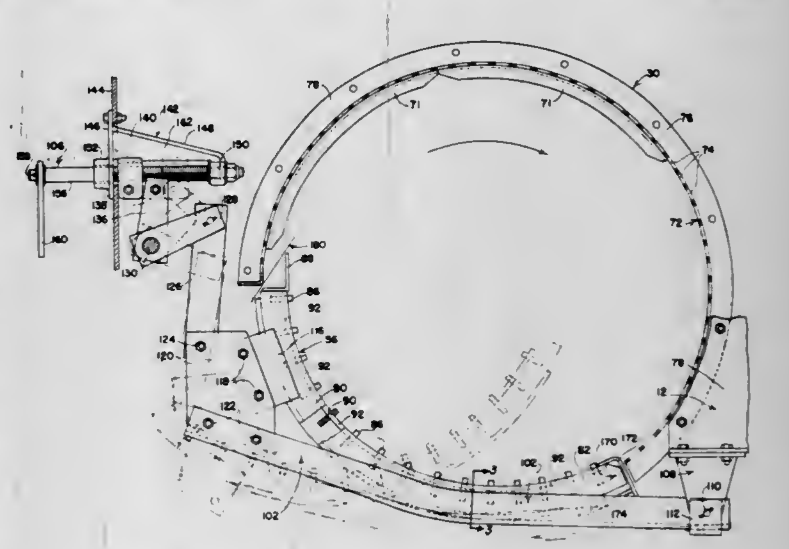
Jin W. Lee, North Miami, Fla., assignor to Medcor Inc.
Filed Sept. 25, 1973, Ser. No. 400,503
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 PS **7 Claims**



1. In a power supply having a pair of power output terminals, the power supply being connectable to the power input terminals of a body organ stimulating device, the power supply further comprising at least two voltage sources connected in parallel, each voltage source being connected to the power output terminals and having substantially the same initial terminal voltage whereby initially the power output terminals of the power supply are supplied with a voltage substantially equal to the terminal voltage appearing across each voltage source of the power supply, the improvement comprising: voltage regulating means operatively connected to the power output terminals of the power supply and to each voltage source thereof and being responsive to the voltage appearing across the output terminals of the power supply falling to a predetermined value less than the initial terminal voltage of the voltage sources for automatically serially interconnecting each of the voltage sources and the power output terminals of the power supply, and for maintaining the voltage across the power output terminals of the power supply substantially equal to the predetermined value.

3,871,384
REMOVABLE CONCAVE FOR AN AXIAL FLOW-TYPE COMBINE AND ADJUSTING MEANS THEREFOR

Richard A. Depauw, and Robert W. Hawkins, both of East Moline, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed June 29, 1973, Ser. No. 375,250
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 T **7 Claims**



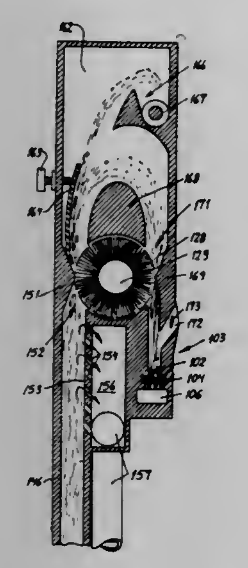
1. An axial flow combine having a chassis, an elongated longitudinally extending medially disposed cylindrical rotor casing supported on said chassis and embodying an arcuate section in the lower region thereof in the form of a perforate concave which defines an axially extending threshing region, a rotor designed for threshing cooperation with the concave the rotatable about the longitudinal axis of the casing, means for unidirectionally driving said rotor, said concave being movable bodily toward and away from the rotor through small increments of movement to vary the cooperating threshing characterisitics of the rotor and concave, a carrier projecting transversely across said chassis beneath the concave and having its proximate end pivoted to the chassis at one side thereof for swinging movement about a horizontal axis, means fixedly securing said concave to the carrier for movement bodily in unison therewith, and adjustable means effective between the distal end of the carrier and the chassis on the other side of the latter for raising and lowering the carrier.

3,871,385
APPARATUS FOR BUILDING A TOBACCO STREAM

Harry David, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany
Filed Jan. 9, 1973, Ser. No. 322,198
Claims priority, application Germany, Jan. 26, 1972, 2203454; July 5, 1972, 2232856
Int. Cl. A24c *05/39*
U.S. Cl. 131—84 B **15 Claims**

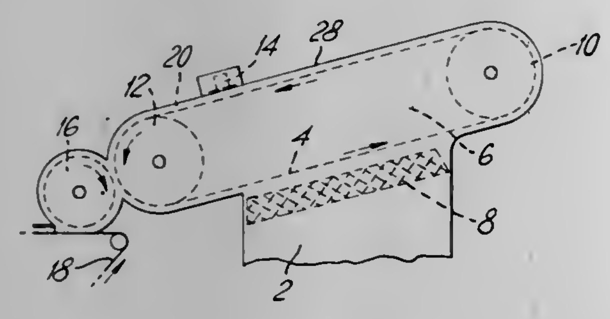
1. In a machine for the making of tobacco filler rods, apparatus for building a tobacco stream comprising a source of comminuted tobacco; a tobacco feeding unit arranged to draw tobacco from said source and including a first conveyor operable at a plurality of speeds to transport the withdrawn tobacco along a first portion of a predetermined path; a tobacco stream transporting second conveyor adjacent to means defining a relatively narrow second portion of said path; an accelerating device comprising a rotary conveyor and wall means

defining with said rotary conveyor a funnel which receives tobacco supplied by said first conveyor, said accelerating device being disposed between said conveyors and operative to mechanically accelerate comminuted tobacco for transfer into and densification in said narrow second portion of said path wherein the accelerated tobacco forms a narrow growing stream which is transported by said second conveyor; and means for operating said accelerating device independently of at least one of said conveyors.



3,871,386
CIGARETTE MAKING MACHINES

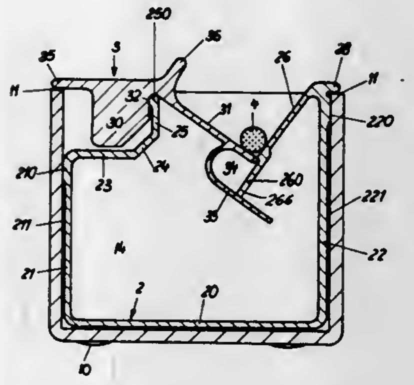
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Molins Limited, London, England
Filed July 27, 1972, Ser. No. 275,636
Claims priority, application United Kingdom, July 28, 1971, 35512/71
Int. Cl. A24c *5/18*
U.S. Cl. 131—84 B **8 Claims**



1. In a cigarette making machine, a filler stream conveying arrangement comprising a first air pervious conveyor, a second air pervious conveyor having a region which lies close to and is angularly disposed with respect to a region of said first conveyor, means for producing a reduced air pressure with respect to atmosphere on one side of said first conveyor to carry the filler stream thereon by means of suction, means forming an air space adjacent one of said conveyors on the side thereof remote from the other conveyor, the one conveyor being arranged to move past said air space to allow air to pass through said one of said conveyors in the region where it lies close to, but is angularly disposed with respect to, the filler stream being carried by said first conveyor, so as to allow air to enter the filler stream after passing through said one conveyor and in a direction transverse thereto.

3,871,387
ASHTRAY

Rido Busse, Napoleonweg 6-8, 7911 Oberelchingen, Germany
Filed Jan. 22, 1973, Ser. No. 325,643
Claims priority, application Germany, Jan. 31, 1972, 2204319; Sept. 27, 1972, 2247223
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R **7 Claims**

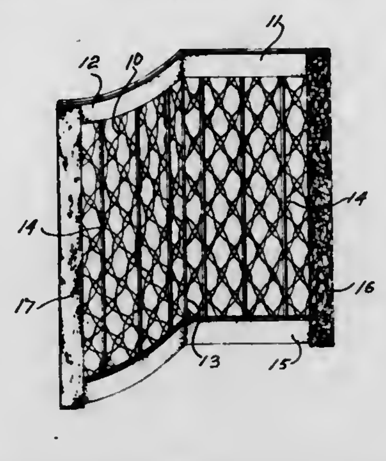


1. An ashtray for receiving and extinguishing cigarette butts and ashes,
comprising in combination:
a housing,
an insert having upper parts defining a gap therebetween,
said insert being removably inserted in said housing,
fulcrum means connected to said insert and forming a fulcrum,
one of said upper parts spaced apart from said fulcrum sloping downwardly and having a downwardly directed abutment portion;
a movable cover for said insert having two sections and being tiltably and removably supported on said fulcrum, one section of said cover being tiltable in said gap about said fulcrum between a gap closing position in which it abuts from below against said abutment portion thereby closing said gap, and, respectively, a gap opening position away from said abutment portion, and
the other section of said cover including a counterbalancing weight sufficient for urging said one section into said gap closing position,
said one section defining with said abutment portion in said gap closing position an extinguishing chamber sufficiently air tight to extinguish a burning cigarette when disposed in said chamber.

3,871,388
HAIRDRESSING DEVICE

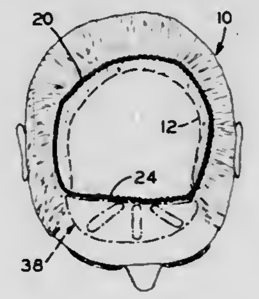
Rosa Leoci, 3255 De La Pepiniere, Apt. 1, Montreal, Quebec, Canada
Filed Nov. 8, 1973, Ser. No. 444,082
Claims priority, application Great Britain, Feb. 5, 1973, 5579/73
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **19 Claims**

1. A finishing device for setting strands of hair comprising an essentially flat planar flexible pad, an essentially flat planar flexible cover, means for securing the pad and the cover together into an essentially flat device with the cover overlying the pad such that the strands of hair may be retained therebetween, openings in the pad and the cover adapted to permit air to the strands of hair, and a plurality of malleable members in one plane of the pad and the cover, said mallable members comprising means for deforming the pad and cover, when secured together, in the one plane and for retaining that deformation.



3,871,389
HAIR PIECE AND METHOD OF FORMING AND ATTACHING

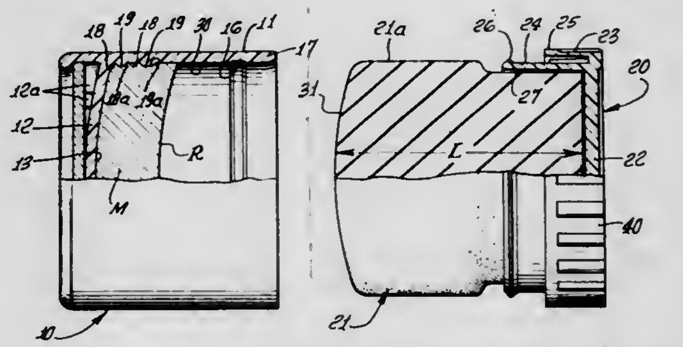
Gail Ann Bauer, 16045 Cleveland Rd., Granger, Ind. 46530
Filed Jan. 22, 1973, Ser. No. 325,399
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **15 Claims**



1. The method of mounting a hair piece on a head which comprises: securing a base ring to live hairs around the hair line surrounding that portion of the head intended to be covered, securing the margin of a flexible textile-like support member to said base ring, attaching first wefts of hair-like material to the base ring, and attaching second wefts of hair-like material to said support member in distributed relation thereon.

3,871,390
COSMETIC APPLICATOR

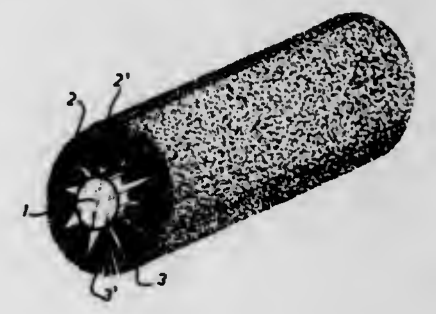
Walter B. Spatz, Pacific Palisades, Calif., assignor to Spatz Corporation, Venice, Los Angeles County, Calif.
Filed Sept. 26, 1973, Ser. No. 401,035
Int. Cl. A45d *33/00*
U.S. Cl. 132—83 R **6 Claims**



1. An applicator, comprising a container having a transverse wall and a longitudinal wall extending from said transverse wall to an open end of said container, said container being adapted to contain a cosmetic mass adjacent said transverse wall with the mass terminating substantially inwardly of said open end of said container, a carrier adapted to substantially close said open end, means releasably securing said carrier to said container, a compressible and inherently expandable elastomeric applicator member secured to said carrier and disposed within said longitudinal wall to bear against the cosmetic mass, said applicator member having a forward portion slidable longitudinally along said longitudinal wall during insertion of said applicator member into said longitudinal wall and removal of said applicator member from said longitudinal wall, said applicator member having a normal length when disposed out of said container corresponding substantially to the distance between said carrier and transverse wall when said carrier is secured to said container, whereby insertion of said applicator member in said container compresses said applicator member between said carrier and cosmetic mass, and removal of said applicator member from said container enables said applicator member to expand inherently and return to its normal length.

3,871,391
ROLLER FOR SETTING AND TREATING THE HAIR

Pierre B. Boudal, Thiers, France, assignor to Ets. Lardenois S.A., Hermes (Oise), France
Filed Mar. 20, 1973, Ser. No. 343,093
Claims priority, application France, Oct. 16, 1972, 72.36511
Int. Cl. A45d *44/18*
U.S. Cl. 132—85 **4 Claims**



1. A hair roller comprising a brush structure consisting of a central elongated support and a plurality of tufts of bristles radially extending from said central support, said tufts being mounted on said central support in a regular distribution and said bristles extending freely from said central support to a length at least corresponding to the diameter of the central support so that the brush structure has an outer periphery only of said bristles for enabling said bristles to freely penetrate hair to separate strands of the hair in a spread-out manner from the surface of the central support to the outer periphery of the brush structure.

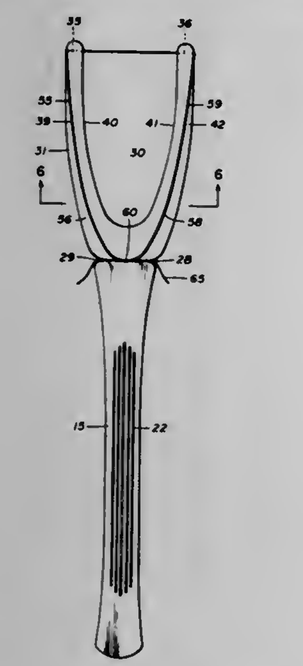
3,871,392
DENTAL FLOSS HOLDER

William Burnie Thomas, Carrollton, Tex., assignor to John H. Sparling, Texarkana, Tex., a part interest
Continuation of Ser. No. 206,652, Dec. 10, 1971, abandoned. This application July 19, 1973, Ser. No. 380,561
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **9 Claims**

1. A dental floss holder comprising:
an elongate handle member having a shank portion at one end;
a holder member joined to said handle member at said shank portion thereby forming a unitary structure, said holder member having two laterally spaced apart arms extending therefrom, said arms being provided with slots at their outer ends and adapted to permit dental floss to be strung therebetween;
oppositely opposed groove means positioned in said shank portion subjacent each of said arms to receive and fric-

tionally engage and securely anchor said dental floss as said dental floss is pulled into said groove means and wrapped around said groove means; and

continuous guide channels extending along each of said arms from immediately adjacent the associated slot to a point immediately adjacent the associated groove means where said channels join whereby a predetermined length of dental floss can be strung between said arms by securing one end of said length in one of said oppositely opposed groove means, passing the free end of said length up through the opposite guide channel and through the slot associated therewith, across to the other said slot and downwardly through the other said guide channel and into the other of said oppositely opposed groove means where said free end of said length of dental floss is anchored by tightly pulling said free end and wrapping said free end around said oppositely opposed groove means.



3,871,393

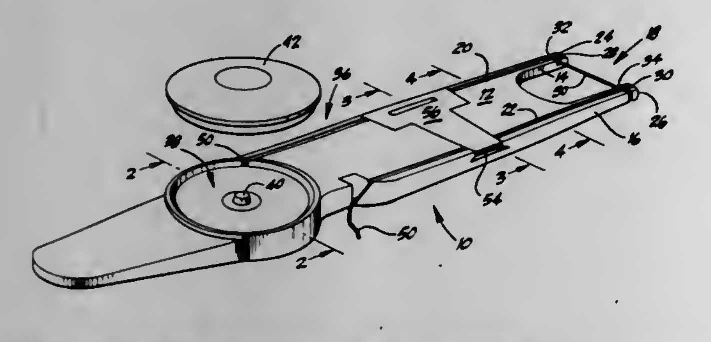
DENTAL FLOSS APPLICATOR

Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501

Filed Nov. 19, 1973, Ser. No. 416,946

Int. Cl. A61c *15/00*

U.S. Cl. 132—92 A **7 Claims**



I. A dental floss applicator which comprises:

a. A fork member including a base section and spaced first and second prong sections extending therefrom the base and prongs defining a generally U-shaped recess between the prongs, each prong being provided with a longitudinal channel extending longitudinally therealong, a first longitudinal channel on the first prong and a second longitudinal channel on the second prong, the channel along the first prong decreasing in depth towards the free end of the prong and the channel along the second prong increasing in depth towards the free end of the second prong, each channel terminating at the free end of the prong in a notch, each prong also being provided with a transverse channel adjacent the free end thereof at right angles to its longitudinal channel, the transverse channels being in axial alignment, the transverse channel on the first prong being deeper at the point of intersection with the longitudinal channel than the longitudinal channel and the transverse channel on the second prong being shallower at the point of intersection with the longitudinal channel than the longitudinal channel,

b. A handle attached to the base, a reservoir for floss being provided in the handle in communication with the longitudinal channel in the first prong section.

3,871,394

DEVICE FOR TREATING ARTICLES ARRANGED IN CONTAINERS WITH ORGANIC SOLVENTS

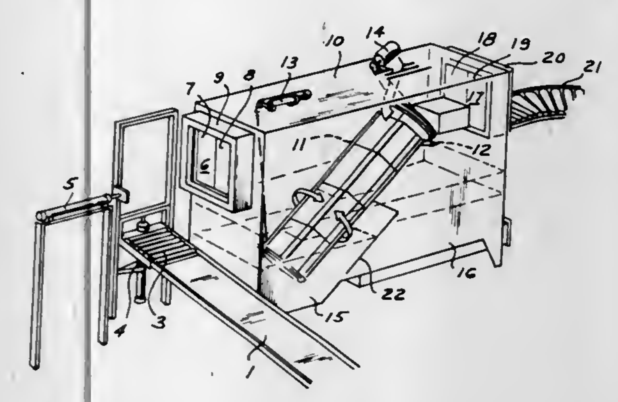
Stig Rune Thegerstrom, Molkom, Sweden, assignor to Thegerstroms Rostfria AB, Molkom, Sweden

Filed May 24, 1973, Ser. No. 363,645

Claims priority, application Sweden, June 6, 1972, 7378/72

Int. Cl. B08b *3/06*

U.S. Cl. 134—46 **9 Claims**



1. A device for treating solid articles with a fluid organic solvent in continuous operation, said device comprising in combination:

a housing having an inlet opening and an outlet opening at opposite ends, the bottom part of said housing constituting a receptacle for treatment fluid;

closure means for selectively closing and opening the inlet and outlet openings;

a container for articles to be treated, said container including wall openings for ingress and egress of treatment fluid; an elongate holder for accommodating the container therein, said holder having openings for passage of treatment fluid and container inlet and outlet openings at its ends, said holder being disposed within the housing;

first mounting means supporting the end of the holder adjacent to the outlet opening of the housing pivotal about an axis transverse of the length of the holder, and second mounting means supporting the holder rotatable about its lengthwise axis; and

drive means for selectively pivoting the holder between a horizontal position and a downwardly slanted position, the holder in its horizontal position being in alignment with the inlet and outlet openings of the housing for feeding containers into the holder and discharging the same therefrom and in its lowered position dipping part of its length into the bath in the housing.

3,871,395

ULTRASONIC/CHEMICAL CLEANER FOR CONTACT LENSES

Edward J. Murry, Palos Park, Ill., assignor to Fibra-Sonics, Inc., Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 335,822

Int. Cl. B08b *3/10, 11/02*

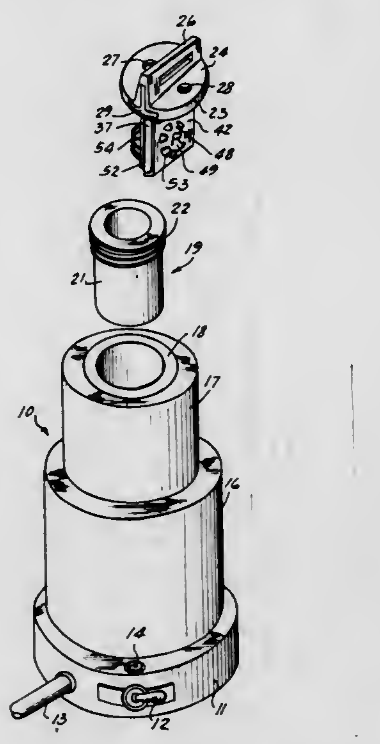
U.S. Cl. 134—107 **13 Claims**

1. An ultrasonic lens cleaner comprising:

a cylindrical shaped lens holding cup in which lens to be cleaned and cleaning fluid are contained,

a heat-resistant cylindrical shaped pot holder including heating means into which said lens holding cup is received with intimate wall contact to raise the temperature of said cleaning fluid to the range of 170° to 200° F,

a cylindrical shaped ultrasonic crystal means intimately surrounding said heating means and adapted to produce radially polarized vibrations in said cleaning fluid at an intensity level in said cleaning fluid on said lens of tensor more watts per square centimeter, and an ultrasonic generator connected to said crystal means to excite it with ultrasonic energy in the frequency range between 20 to 100 kHz.



3,871,396

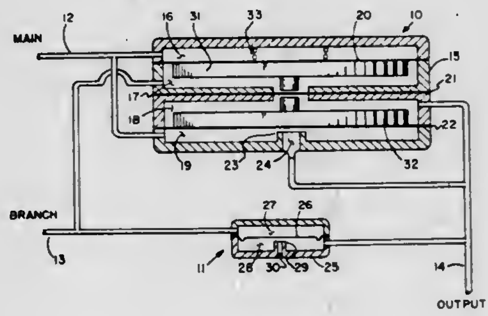
AIR FLOW AMPLIFIER

Louis J. Bentsen, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 23, 1972, Ser. No. 265,901

Int. Cl. F15c *3/04;* **G05d** *16/00*

U.S. Cl. 137—85 **4 Claims**



1. An air-flow amplifier having a main pressure inlet, a branch pressure inlet, and a pressure outlet, comprising:

valve means including a valve seat and valve closure means, said valve closure means including

first, second and third diaphragm means,

first and second cooperable pressure plates associated with the first and third diaphragm means respectively;

a housing containing said valve means, said housing having first, second, third, fourth and fifth pressure chambers, said first diaphragm separating said first chamber from said second chamber, said second diaphragm separating said second chamber from said third chamber and said third diaphragm separating said third chamber from said fourth chamber, the valve seat being disposed in the fourth pressure chamber and being arranged to sealably cooperate with the valve closure means to define said fifth chamber pressure;

first connecting means connecting said main pressure to said fourth pressure chamber;

second connecting means connecting said main pressure to said first pressure chamber;

third connecting means connecting said branch chamber to said second pressure chamber;

fourth connecting means connecting said output pressure to said third pressure chamber;

fifth connecting means connecting said output pressure to said fifth pressure chamber; and,

exhaust means connected between the branch pressure inlet and the pressure outlet,

wherein the actions exerted on said valve closure means by said main pressure tend to cancel one another and further wherein said air-flow amplifier tends to maintain said outlet pressure equal to said branch pressure.

3,871,397

VALVE COMBINATION FOR AN OIL BURNER INSTALLATION

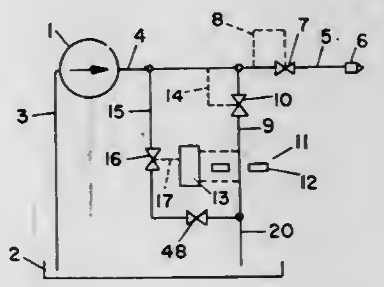
Peder Larsen, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 6, 1973, Ser. No. 385,892

Claims priority, application Germany, Aug. 22, 1972, 2241177

Int. Cl. G05d *7/01*

U.S. Cl. 137—115 **7 Claims**



1. An oil burner fuel pump assembly comprising a casing having an inlet port and an outlet port, a nozzle, a fluid pressure operated spring biased main valve cooperable with said nozzle, exhaust port means in said casing cooperable with said main valve to regulate the pressure at said nozzle, fluid pressure operated spring biased restrictor valve means downstream from said exhaust port means cooperable with said casing to increasingly restrict the flow of fluid emanating from said exhaust port means in response to the pressure of the fluid in said exhaust port means, and bypass valve means responsive to the pressure difference on opposite side of said restrictor valve means to cause bypassing of pressurized fluid from said inlet port to said outlet port when said pressure difference drops to a predetermined minimum value to present dribbling of said nozzle.

3,871,398

LIQUID-BARRIER GAS VENT

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corp., Beresford, S. Dak.

Filed Feb. 7, 1974, Ser. No. 440,396

Int. Cl. F16k *9/00*

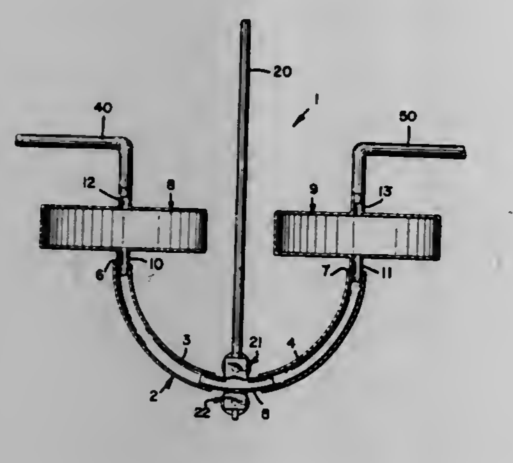
U.S. Cl. 137—253 **5 Claims**

1. A gas vent of the liquid-barrier type, comprising:

a. a sealing chamber having a single inlet and a single outlet, the inlet of which communicates through a first overflow reservoir to a system to be sealed and the outlet of said sealing chamber communicating through a second overflow reservoir to a discharge means;

b. means for filling at least a portion of said sealing chamber with a sealing liquid to thereby provide a liquid seal to restrain the passage of gas through said chamber, said liquid moveable through said chamber in response to a pressure imbalance between said inlet and outlet caused by venting gas;

c. the volume of each of said overflow reservoirs being sufficient to retain all said sealing liquid that can be displaced from the sealing chamber by venting gas; and



d. each of said reservoirs being elevated relative to the liquid seal portion of said sealing chamber and each permitting gravity return of displaced sealing liquid to said sealing chamber when the pressure imbalance between said inlet and outlet is removed.

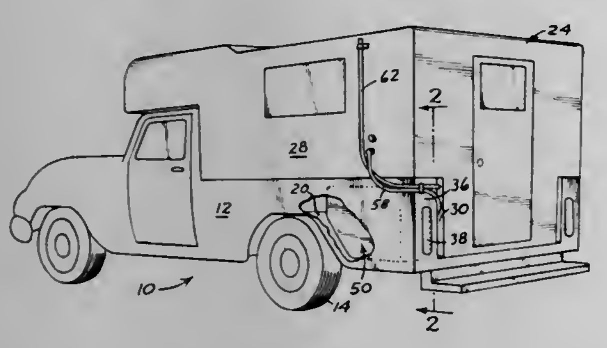
3,871,399
HOLDING TANK FOR CAMPERS

Clarence V. Watson, 4715 Rivercrest Dr., North, Salem, Oreg. 97303

Filed Mar. 26, 1973, Ser. No. 345,229

Int. Cl. B62d *33/04*; B05b *15/06*

U.S. Cl. 137—344 **8 Claims**



1. In combination with a pickup truck having a rear pickup box with wheel well covers projecting into the box and positioned between the ends of said box, and a camper with plumbing therein mounted in said box with an external lower side wall of the camper extending substantially the length of the box, disposed inwardly of a wheel well cover, and spaced from an adjacent side of said box,

a holding tank positioned between said camper's lower side wall and said adjacent side of said box and disposed toward an end of said box from said wheel well cover,

a drain conduit for draining said plumbing and means detachably connecting said drain conduit to the plumbing of the camper, said drain conduit communicating with the interior of said tank adjacent the base of the tank, said drain conduit with release of said means detachably connecting the drain conduit to said plumbing being adjustable to provide for drain flow under gravity from said tank, and

vent conduit means connecting with said tank extending upwardly along the outside of said camper.

3,871,400
STOP VALVES

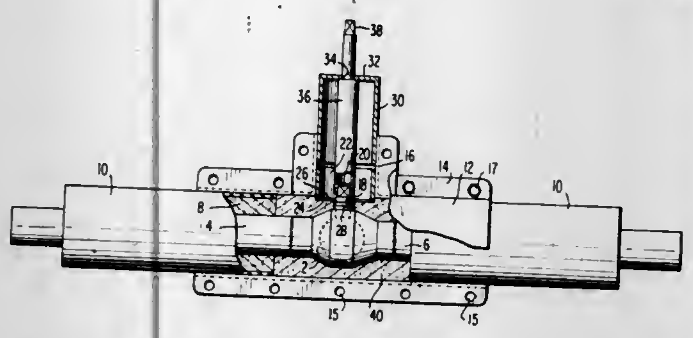
Ove Thastrup, Fredericia, Denmark, assignor to A/SE Ramussen, Fredericia, Denmark

Continuation-in-part of Ser. No. 223,676, Feb. 4, 1972, , which is a continuation of Ser. No. 21,027, March 19, 1970, abandoned. This application Feb. 22, 1973, Ser. No. 334,713

Claims priority, application United Kingdom, Feb. 22, 1972, 8120/72

Int. Cl. F16l *59/16*

U.S. Cl. 137—363 **16 Claims**



1. A stop valve unit comprising a valve housing with two connection tube studs and an upwardly projecting valve spindle and adapted to be mounted in a heat insulated pipe system in humid surroundings, such as in subterranean district heating pipe system, characterized in that the valve is provided with relatively long connection tube studs which are each surrounded by a heat insulating material except for the outermost end portion thereof, said insulating material again being surrounded by protective tubes these protective tubes having their respective inner ends situated at either side of the spindle, said spindle being surrounded by a spindle tube which adjacent its lower end is closed tightly against the housing of the valve, said inner ends of the protective tubes and lower end of the spindle tube being enclosed within a T-shaped tube casing engaging the respective tube surfaces in a watertight manner, and characterized in that the spindle tube adjacent its lower end is provided with a bowl bottom having a hole for receiving a portion of the spindle projecting from the valve housing, and that sealing means are provided around said portion of the spindle between the underside of the bowl bottom of the spindle tube and the top side of the valve housing.

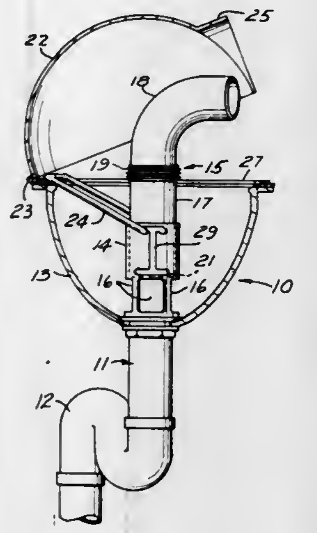
3,871,401
SEWER CONNECTION

Leo J. Lyons, 2526 Lincoln Dr., San Bernardino, Calif. 92405

Filed June 29, 1973, Ser. No. 375,173

Int. Cl. E03f *5/14*

U.S. Cl. 137—381 **3 Claims**



1. In a sewage disposal unit permanently connected to an underground sewer line in an area where a vehicle containing a sewage discharge hose will be parked, said unit being connectable to said discharge hose to connect the same with said sewer line, the improvement comprising:

a bowl sunk into the ground with its top edge substantially flush with the ground;

an outlet pipe having one end connected to the bottom of said bowl at the lowest point thereof, the other end of said outlet pipe being connected to the underground sewer line;

a tubular sleeve projecting upwardly from the top end of said outlet pipe, said sleeve having large apertures formed in the walls thereof closely adjacent the bottom of said bowl;

a coupling pipe telescopically disposed within said tubular sleeve and slidable therein between upper and lower positions, said coupling pipe projecting above the top end of said sleeve and having an elbow bend forming a laterally projecting, open-ended nozzle to receive the end of the sewage discharge hose on the vehicle, said coupling pipe being normally positioned at said lower position with the bottom end of the coupling pipe covering said apertures in said sleeve when the unit is in operation and is receiving sewage from the vehicle; and

means for elevating and locking said coupling member in said upper position when said discharge hose is to be disconnected from said nozzle, whereby said apertures are opened to allow any sewage spilled into said bowl during the disconnect operation to be hosed down through the apertures into the sewer line.

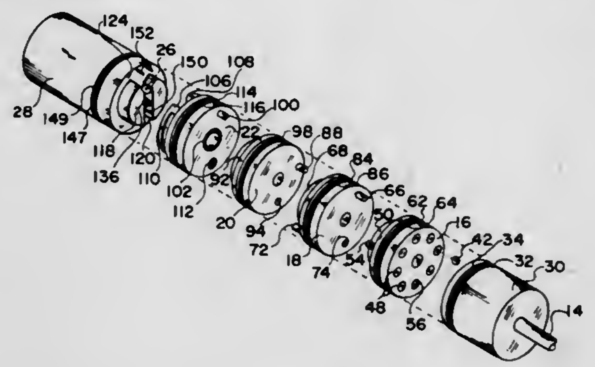
3,871,402
AUTOMATIC TRANSMISSION FLUID CONTROL APPARATUS

William G. Hunt, P.O. Box 545, Laurinburg, N.C. 28352

Continuation-in-part of Ser. No. 344,041, March 22, 1973, abandoned. This application Jan. 8, 1974, Ser. No. 431,742

Int. Cl. F16k *35/00*

U.S. Cl. 137—383 **14 Claims**



1. A device for preventing unauthorized operation of a motive power transmission which uses pressurized fluid flowing in a line, the device comprising:

a gating means having an open position and a closed position, said gating means having a fluid passageway therethrough when in said open position;

a fluid obstructing means associated with said gating means and having a blocking position obstructing the flow of fluid through said passageway and a non-blocking position permitting flow of fluid through said passageway, and means for moving said fluid obstructing means from said non-blocking position to said blocking position responsive to the cessation of fluid flow through said line.

3,871,403
FUEL CONTROL VALVE

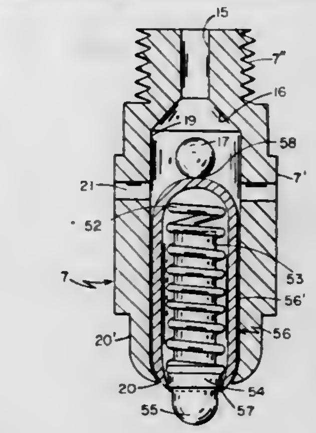
Ansel B. Grose, 8 Mount Vernon St., Stoneham, Mass. 02180

Filed Aug. 30, 1973, Ser. No. 393,038

Int. Cl. F16k *31/26*

U.S. Cl. 137—436 **4 Claims**

1. A fuel control valve comprising a main body portion, an upper passageway in the main body portion, a generally conical passageway in the main body portion having a small end and a large end, and having its small end merging with the upper passageway, an enlarged passage merging with the large end of the conical passageway and extending downwardly through the main body portion, a plunger in said enlarged passage, said body portion having an inwardly turned portion at its lower end positioned to engage the plunger for limiting its outward movement, said plunger comprising an elongated housing open at the lower end and closed at the upper end, a turned-in portion of reduced diameter at the lower open end,



a plunger part within the housing having a flange adjacent one end, providing a shoulder portion on the upper flange portion and abutment portion on the lower flange portion, a stem extending upwardly from the shoulder portion, a spring surrounding the stem and engaging the upper shoulder portion of the flange at one end and the closed upper end of the housing at the other end, the turned-in portion of the housing being arranged to engage the lower abutment portion of the plunger flange to limit the outward movement thereof.

3,871,404
FLUID-TIGHT AND SEPARABLE COUPLING, LIQUID-FILLING DEVICES FOR RESERVOIRS

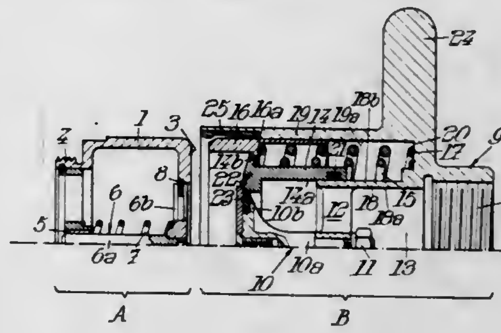
Jacques Courant, Epinay-Sur-Seine, France, assignor to Societe Zenith-Aviation, Levallois Perret, France

Filed Jan. 15, 1974, Ser. No. 433,476

Claims priority, application France, Feb. 2, 1973, 73.03799

Int. Cl. F16k *1/00*

U.S. Cl. 137—614.03 **8 Claims**

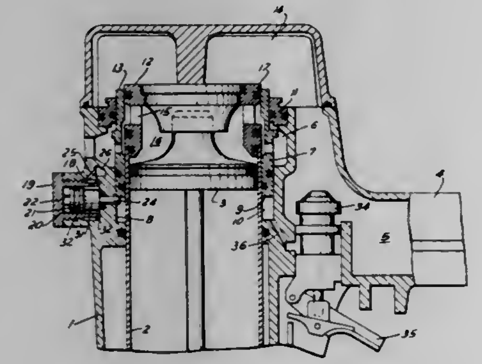


1. Fluid-tight and separable coupling, liquid filling device for reservoirs, constituted by two elements suitable for adaptation respectively to an orifice of the reservoir and to the end of an inlet pipe for the liquid, the first element comprising a rigid nozzle provided with a fixed annular seat and with a transverse support surface and a central movable valve member guided axially on this nozzle and capable of being pushed, against the effect of first elastic means, away from said seat and towards the inside of the reservoir, and the second element comprising a rigid tubular body carrying a fixed valve member rigidly fixed, arranged to push the movable valve member of the first element on coupling of the two elements and on which is coaxially guided a movable annular seat, cooperating with the fixed valve member of the second element and urged by second elastic means which tend to thrust against this fixed valve member by outward movement, the movable annular seat being guided on the body with the interposition of sealing means and possessing other sealing means adapted to cooperate with the transverse surface of the rigid

nozzle, and arranged to cooperate by abutment with said transverse surface, said device comprising an annular pusher provided in the second element, third elastic means guiding said annular pusher coaxially to the seat and urging it outwardly, said annular pusher being also adapted to cooperate by abutment with said transverse surface, so that, when an operator brings the second element axially towards the first by exerting sufficient thrust to overcome the force of the third elastic means, it causes successively, by direct contact of said transverse surface of the rigid nozzle with the annular pusher, the withdrawal of the latter then, by an additional movement, the withdrawal of the movable annular seat (opening of the inlet pipe) accompanied by the driving-in of the movable valve member (opening of the reservoir) by contact with the fixed valve member, the interruption of said thrust causing automatically movements in the reverse direction under the effect of the assembly of above-mentioned elastic means, that is to say the closing of the two seats by their respective valve members and the enforced separation of the two elements.

3,871,405
SPRING-LESS CONTROL VALVE FOR A PERCUSSION MACHINE DRIVEN BY PRESSURE FLUID

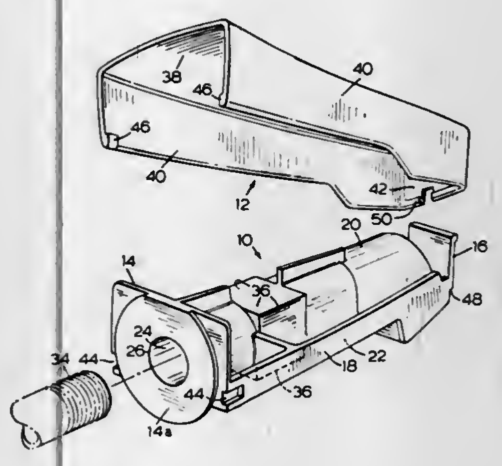
Heinz Schwarz, Zizishausen, Germany, assignor to Karl M. Reich Maschinenfabrik, Nuertingen, Germany
Filed Aug. 22, 1973, Ser. No. 390,617
Int. Cl. F15b *31/01*
U.S. Cl. 137—624.27 **6 Claims**



1. In a pneumatic nailing machine which is actuated by pressurized air from a source of compressed air, an improved spring-less control valve for controlling the flow of the pressurized air, said control valve having a valve body formed as a differential piston and having opposite reactor surface areas which is reciprocably slidably mounted in said machine to move between an open and closed position, and arranged to be urged closed by pressure applied to both reactor surface areas, means communicating at least one of the reactor surface areas directly with said source of compressed air, a blocking piston reciprocably slidable in said machine adjacent to said valve body so as to move between a first blocking position and a second retracted position relative to said valve body, said blocking piston moving into said first blocking position when not acted on by said pressurized air and into said second retracted position when acted on by said pressurized air, means for venting the larger reactor surface to effect opening of the control valve when not blocked by the blocking piston, the improvement comprising conduit means which directly communicate said source of compressed air with said blocking piston.

3,871,406
WATER SPOUT

Leslie T. Anderson, London, Ontario, Canada, assignor to EMCO Limited, London, Ontario, Canada
Filed Oct. 29, 1973, Ser. No. 410,438
Claims priority, application Canada, Dec. 11, 1972, 159040
Int. Cl. E03c *1/04*
U.S. Cl. 137—801 **12 Claims**

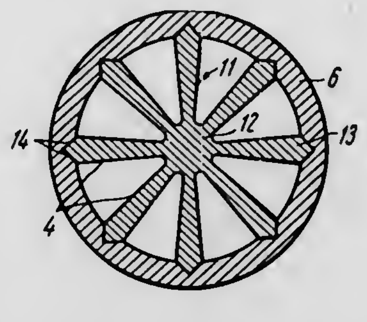


1. A spout comprising a base and a removable cover both moulded from a plastics material,
- said base being elongated and having integrally formed therewith a back wall, a front wall, side walls, a top and a bottom, and said cover for said base having a top, side walls and a front wall,
- said base having a water way therethrough; the input opening of said water way of said base terminating on said back wall, the output end of said water way terminating in said bottom of said base adjacent to said front wall and being a discharge opening,
- said front wall and said side walls of said cover being spaced to embrace said front wall and said side walls of said base and, when in embracing relationship therewith, to dispose said top of said cover in overlying relation resting on the top of said back wall and said front wall of said base, and said front walls of said cover and base being formed for interlocking relationship with each other,
- the lower marginal portions of said side walls of said base and said cover including detent and lug means formed for interlocking relationship with each other,
- said side walls of said cover being flexible laterally with respect to each other whereby to enter into and out of said interlocking relationship with said base.

3,871,407
HEAT EXCHANGE APPARATUS

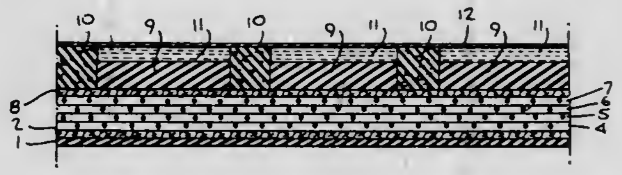
Alexandr Vasilievich Bykov, ulitsa Dimitrova 19, kv. 106; Igor Martynovich Kalnin, ulitsa Kropotkinskaya 26, kv. 13; Vladimir Nikolaevich Krotkov, ulitsa Chkalova 24/32, kv. 132; Fedor Nikolaevich Dyachkov, ulitsa Chkalova 7, kv. 16, all of Moscow; Viktor Ivanovich Plokhov, ulitsa Stroitelei 20, kv. 75, Kuibyshev; Mikhail Fedotovich Golovinov, ulitsa Pugachevskaya 59, kv. 16, Kuibyshev; Veniamin Kuzmich Erokhov, ulitsa Svobody 230, kv. 62, Kuibyshev, and Jury Stepanovich Starostin, ulitsa Krasnykh Kommunarov, 6, kv. 36, Kuibyshev, all of U.S.S.R.
Filed June 20, 1973, Ser. No. 371,843
Int. Cl. F15d *1/00*
U.S. Cl. 138—38 **2 Claims**

1. A heat-exchange apparatus comprising: at least one heat-exchange tube; a centrally disposed, longitudinally extending core accommodated in said tube; at least three radially extending ribs on each core, the outer ends of said ribs being shaped as wedges having pointed ends directed radially away from the center of said core, and said ribs being press-fitted with said ends into the inner wall of said tube to a depth equal to the height of said wedges, thereby raising the contact pressure between said outer rib ends and said inner tube wall, with concomitant increased contact heat-exchange characteristics.



3,871,408
OIL SUCTION AND DISCHARGE HOSE

James Wood, 65 Silverknowes Gardens, and George Sunnett, 15 Viewforth Square, both of Edinburgh, Scotland
Filed Aug. 10, 1973, Ser. No. 387,555
Claims priority, application United Kingdom, Aug. 4, 1972, 36519/72
Int. Cl. F16l *11/12*
U.S. Cl. 138—137 **40 Claims**



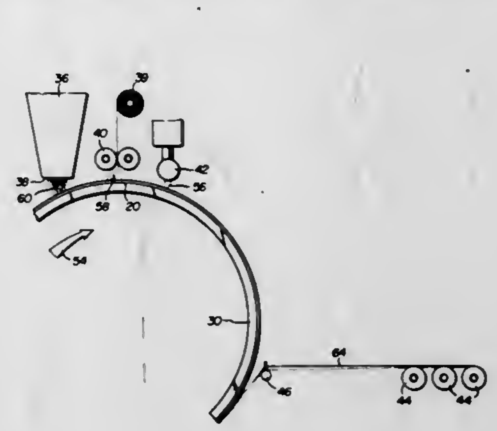
1. A flexible suction and discharge hose comprising:
- a tubular substrate including a plurality of plies of reinforcing cords, the cords in each ply extending parallel to one another at a pre-selected bias angle relative to the axis of the tubular substrate and being crossed with respect to the cords of each next adjacent ply;
- a plurality of axially alternating sections of a first material and of a second material circumferentially surrounding said substrate, the second material being more flexible then the first material,
- a fibre reinforcement layer overlying the sections of the first material only, said fibres having a tensile modulus greater than 50 grams per denier; and
- an outer cover circumferentially surrounding said fibre reinforcement layer and said sections of said second material.

21. A flexible suction and discharge hose comprising:
- a tubular substrate;
- a plurality of axially alternating sections of a first material and of a second material circumferentially surrounding said substrate, the second material being more flexible than the first material, and
- a fibre reinforcment layer overlying the sections of the first material only, said fibres having a tensile modulus greater than fifty grams per denier.

3,871,409
REINFORCED SYNTHETIC PIPE WALL CONSTRUCTION

Agnar Gilbu, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed May 21, 1973, Ser. No. 361,936
Int. Cl. F16l *9/12*
U.S. Cl. 138—174 **13 Claims**

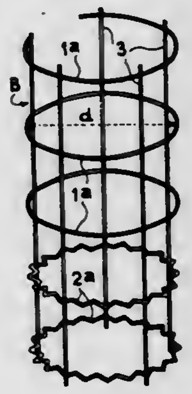
1. In a wall for underground installation and the like and seving to confine a liquid, a wall structure comprising:
- a. a thermosetting resin matrix cured and comprising from about 30 to 40 percent by weight of said wall,
- b. chopped glass fibers randomly oriented and substantially uniformly distributed through said resin matrix, comprising from about 10 to 20 percent by weight of said wall;
- c. a pulverulent filler uniformly distributed in said resin matrix comprising about 15 to 60 percent of said wall, and



- d. filament wound, substantially continuous glass fibers within said resin matrix concentrated at the opposed exterior and interior portions of said wall, comprising about 5 to 30 percent by weight of said wall.

3,871,410
LATTICE FOR THE REINFORCEMENT OF TUBULAR CONCRETE ELEMENTS

Maurice Francois, Saint Dizier, France, assignor to Trefilunion, Paris, France
Continuation of Ser. No. 109,424, Jan. 25, 1971, abandoned, which is a division of Ser. No. 808,252, March 18, 1969, Pat. No. 3,578,036. This application Oct. 17, 1972, Ser. No. 298,321
Int. Cl. F16l *9/08*
U.S. Cl. 138—175 **1 Claim**



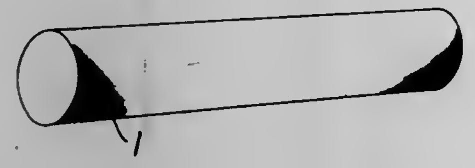
1. A hollow tubular or like shape one-piece reinforcing lattice of welded metal wire-like members for use as a reinforcement in a concrete pipe, said lattice comprising warp members and weft members, and having a body portion of one diameter and a socket portion of a larger diameter, the warp members which define the body portion being work-hardened and of high strength, other warp members at one end of said lattice which define said socket portion being formed of a material which is ductile, said ductile members being elongatable and stretchable to provide said larger diameter socket portion.

3,871,411
SEAMLESS SCREEN PIPES

Takayuki Sato; Hideo Ota; Jiro Yokoyama, all of Osaka, and Takashi Nakamura, Nara, all of Japan, assignors to Satosen Company Limited, Osaka-shi, Japan
Filed Sept. 7, 1972, Ser. No. 287,017
Int. Cl. F16l *9/00*
U.S. Cl. 138—178 **3 Claims**

1. A seamless screen pipe particularly suitable for screen printing of textiles comprising a seamless tubular screen con-

sisting of essentially organic fibers arranged in a reticular configuration having between about 100–300 mesh per inch, said fibers being spaced apart a distance (H) on one side of said reticular configuration, and a metal film formed on the surface of the constituent fibers of said tubular screen with the



meshes thereof retained, said constituent fibers of said tubular screen being selected from the group consisting of polyester, polyamide and silk filament yarn, with said metal film having a thickness of between about ⅓to 1/10 the distance (H) by which said fibers are spaced apart on one side of said reticular configuration.

3,871,412
REVERSIBLE VERDOL JACQUARDS

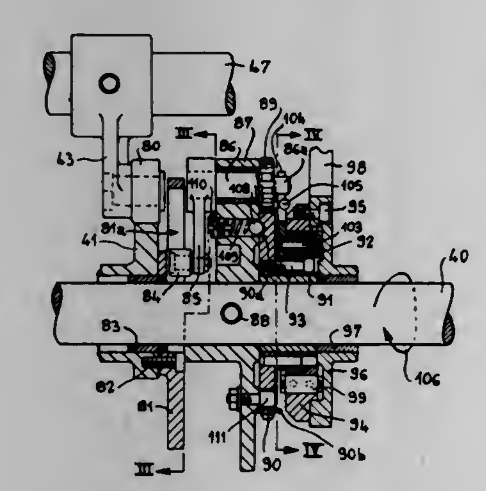
Gabriel Servillat, Rhone, France, assignor to Verdol S.A., Caluire, France

Filed Sept. 7, 1973, Ser. No. 395,147

Claims priority, application France, Oct. 16, 1972, 72.37167

Int. Cl. D03c *3/32*

U.S. Cl. 139—1 E **10 Claims**



10. In a Verdol jacquard comprising at least one cam adapted to actuate the pusher grid horizontally, the said cam being rotatably carried by a reversible driving shaft on which it is angularly displaceable with respect to said shaft between a first fixed position which it occupies during forward operation of the jacquard and a second fixed position which it occupies during backward operation thereof, the improvement comprising: a support member fixed to the shaft adjacent to said cam; connecting means interposed between said cam and said support member and including lever means displaceable selectively into either of two opposed orientations, one orientation maintaining the cam in said first fixed position and the other orientation maintaining the cam in said second fixed position; and means carried by the shaft responsive to reversals in its direction of rotation and coupled to said connecting means and operative when the shaft reverses from forward to backward rotation to displace said lever means and move said cam into the second position, and operative when the shaft reverses from backward to forward rotation to displace said lever means and move the cam into the first position.

3,871,413
SHUTTLE ARRANGEMENT FOR A CIRCULAR LOOM FOR A TAPE YARN

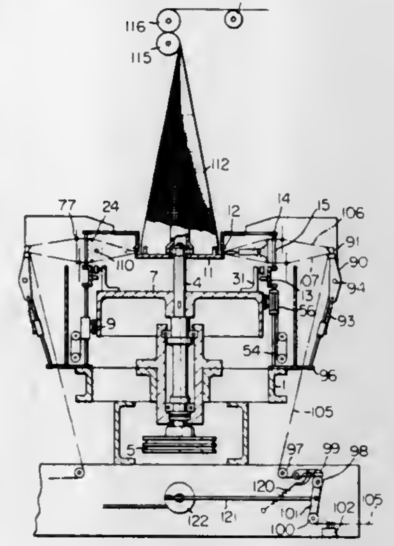
Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

Filed Mar. 29, 1974, Ser. No. 456,059

Claims priority, application Japan, Dec. 19, 1973, 48-146695; Oct. 12, 1973, 48-115043

Int. Cl. D03d *37/00*

U.S. Cl. 139—13 **7 Claims**



1. A shuttle arrangement for a circular loom for tape yarn, comprising:

an inner guide ring, which guides the lower warp yarn sheet, and also guides the woven tubular fabric;

an upper guide ring which defines a V shaped area together with said inner guide ring, within which area a weft yarn is inserted into the shed defined by the upper and lower warp yarn sheets, and also which guides the upper warp yarn sheet;

a shuttle race, provided with a top shuttle race and a bottom shuttle race, and a plurality of shuttle guide rods, and between said rods a warp yarn can freely pass, and the diameter of said shuttle race is larger than the inner or upper guide rings, and this shuttle race and said inner and upper guide rings are arranged concentrically, so that the shuttle can be horizontally held between this shuttle race and said pair of the guide rings;

a shuttle provided with a weft yarn package arranged horizontally and the inner portion of said shuttle can be inserted into the space defined by said inner guide ring and upper guide ring, while the outer portion of the shuttle is guided by said shuttle race and, furthermore, said shuttle is provided with a roller by which a pushing force is applied to the shuttle so that the shuttle can travel along its circular path;

a shuttle driving apparatus, which is mounted on a rotating cam disc provided with a curved projection so as to induce the shedding motion of the heald frame, and which is provided with a pushing roller for pushing said roller on the shuttle, and a driving roller for positively driving said pushing roller.

3,871,414
DEVICE FOR PRODUCING A FALSE SELVEDGE ON A FABRIC AS WELL AS WEAVING LOOMS PROVIDED WITH SUCH A DEVICE

Jacques Palencher, Troyes (Aube), France, assignor to Lebocey Industrie, Troyes (Aube), France

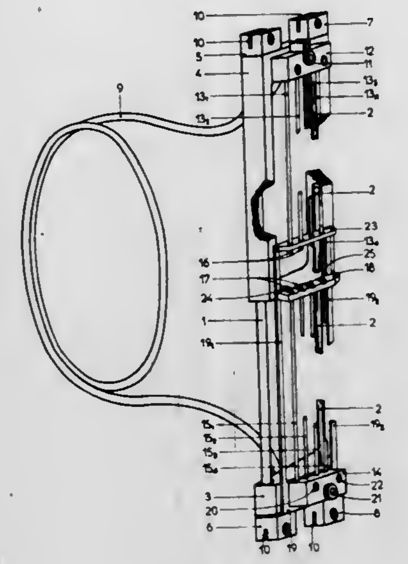
Filed July 12, 1973, Ser. No. 379,014

Int. Cl. D03c *11/00*

U.S. Cl. 139—54 **11 Claims**

1. A device for producing a false selvedge on a fabric, comprising two rods together slidingly receiving a first block

and a second block, each block supporting thread guides, said rods being provided at their ends with abutments for said blocks, spring means located between said blocks tending constantly to separate one block from the other, means for displacing the thread guides laterally during oscillation of the



blocks with respect to one another, said device being characterized by the thread guides of the second block being mounted pivotally on said second block, a linking member being mounted pivotally on said first block, and said linking member having orifice means for slidingly receiving during oscillation the thread guides of said second block.

3,871,415
JACQUARD MECHANISM

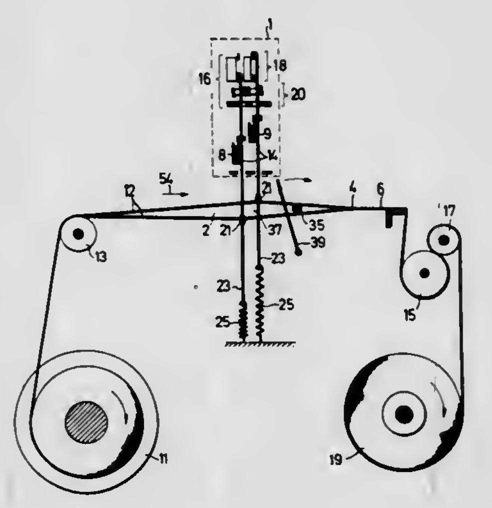
Brenner Wolfgang; Feier Gunter, and Vinnemann Antonius, all of Stuttgart, Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 17, 1973, Ser. No. 361,036

Claims priority, application Switzerland, May 19, 1972, 7465/72

Int. Cl. D03c *3/20*

U.S. Cl. 139—59 **21 Claims**



1. In a jacquard machine having lifting hooks, a pair of draw knives and means for selectively displacing said lifting hooks into coupling engagement with a respective knife, said means including a bendable spring connected to a respective one of said lifting hooks, said spring being bendable between a first position with said one lifting hook coupled to a respective draw knife and a second position with said one lifting hook uncoupled from said respective draw knife and coupled to the other of said draw knifes.

3,871,416
ARRANGEMENT FOR WEAVING WITH A HALF-CLOSED SHED IN A LOOM

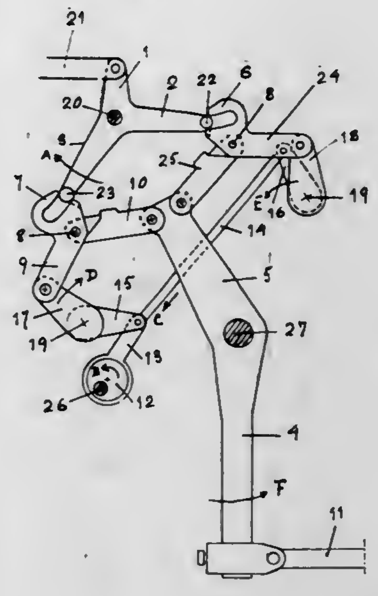
Sven Nyman, Malilla, Sweden, assignor to Almhults Bruk AB, Almhult, Sweden

Filed Aug. 31, 1973, Ser. No. 393,407

Claims priority, application Sweden, Oct. 3, 1972, 12726/72

Int. Cl. D03c *1/06*

U.S. Cl. 139—72 **3 Claims**



1. An arrangement for weaving with a half-closed shed in a loom in which a harness change is controlled by a harness machine programme of a programming device, whereby the warp threads, which are made to cross over during a harness change, are if there is to be no harness change, brought by the harness close to each other without reaching the plane of cloth in the loom, said arrangement comprising at least one pair of two-armed levers mounted on a common shaft, one arm of each of said levers being adapted to control the movement of the harness through an independent push rod and each two-armed lever having associated therewith

a. a pair of toggle linkages with one link of each linkage being pivotably connected to the other arm of each of said two-armed levers;

b. a pair of arms attached to separate rotatable shafts adapted to rotate with each shuttle movement of the loom in mutually opposite directions between two end positions, each arm of said pair of arms being privotably connected to the other link of each of said toggle linkages;

c. and transmission means adapted, under the action of the harness machine programme, alternatively to straighten one of said pair of toggle linkages while folding the other one of said toggle linkages so that if there is a harness change, a change will take place between said pair of linkages, but there will be no such change between the linkages if there is no harness change.

3,871,417
FORK LINK FOR USE IN THE HEDDLE FRAME LINKAGE OF A WEAVING MACHINE

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Establissement Wanderfield & Co., Schaan, Liechtenstein

Filed July 17, 1973, Ser. No. 380,062

Claims priority, application Austria, July 27, 1972, 6456/72

Int. Cl. D03c *13/00*

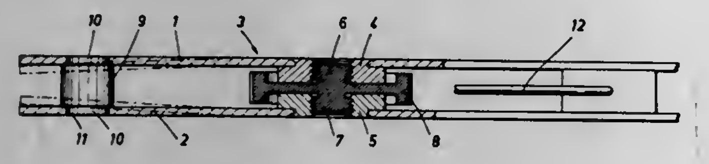
U.S. Cl. 139—88 **5 Claims**

1. A heddle frame linkage comprising

1. a pivotal connecting means, and

2. a forked link having two prongs each of which has a bearing eye receiving the pivotal connecting means,

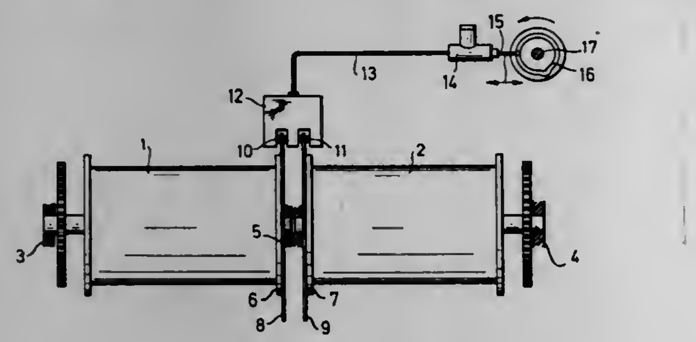
a. the bearing eyes being coaxially aligned and
b. the prongs being adapted to be spread apart and moved towards each other in the direction of the axis of the bearing eyes, and



c. a screw drive disposed between, and operatively connected to, the prongs, the screw drive being operable to spread the prongs apart and move them towards each other.

3,871,418
WEAVING MACHINE HAVING COMPONENT WARP BEAMS

Otto Hintsch, Wallisellen/CH, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Aug. 28, 1973, Ser. No. 392,184
Claims priority, application Switzerland, Oct. 3, 1972, 014421/72
Int. Cl. D03d *49/06*
U.S. Cl. 139—100 **6 Claims**

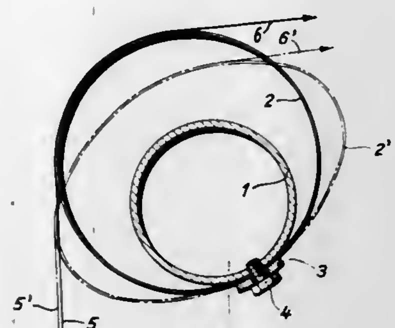


1. In a weaving machine having at least two coaxially mounted component warp beams, said beams being disposed in adjacent relation to sub-divide the machine width and a main drive shaft;
a blocking means for selectively blocking rotation of each warp beam during a predetermined portion of a cycle of said machine; and
control means for activating said blocking means in synchronism with the rotation of said drive shaft whereby during beat-up said warp beams are locked in place.

3,871,419
DEFLECTING BEAM FOR WARP THREADS IN A WEAVING MACHINE

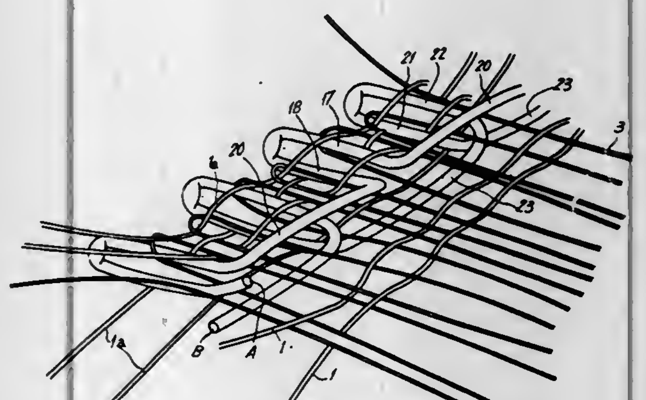
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Dec. 11, 1972, Ser. No. 314,102
Claims priority, application Switzerland, Dec. 10, 1971, 18030/71
Int. Cl. D03d *49/12, 39/22*
U.S. Cl. 139—114 **12 Claims**

1. A deflecting beam for warp threads in a terry cloth loom comprising an elongated rigid non-rotatable support for disposition across the path of the warp threads and an elastically yieldable guide member secured to said support, said guide member having two longitudinal edges secured to said support and an elongated curved surface extending between said edges and across the path of the warp threads for sliding of the threads thereon, said surface being curved similarly to a cylindrical surface to at least partly surround said support, said guide member being made of leaf-spring like material for resiliently deforming under the influence of a variable tension in the threads in a direction away from said path coinciding with the angle bisector between the planes of an incoming group of the warp threads and an outgoing of the warp threads.



3,871,420
METHOD AND APPARATUS FOR MANUFACTURING SLIDE FASTENER ELEMENTS

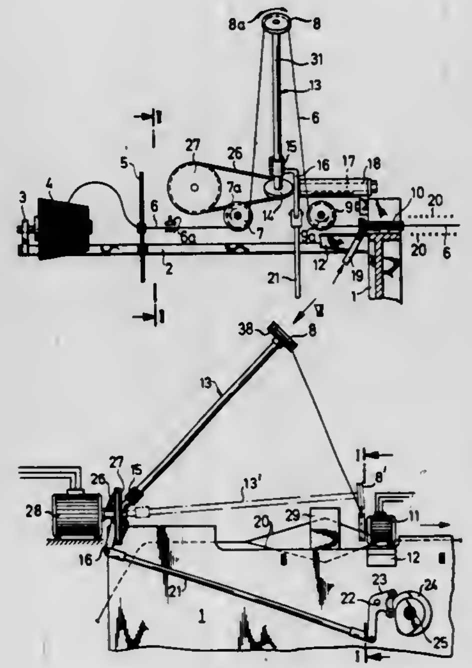
Horst Jakob, Choisy-le-Roi, France, assignor to Prestil, Choisy-le-Roi, France
Continuation-in-part of Ser. No. 295,019, Oct. 4, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,819
Claims priority, application France, Oct. 13, 1971, 71.36698
Int. Cl. D03d *35/00*
U.S. Cl. 139—116 **6 Claims**



1. Method of manufacturing a slide fastener by incorporating a continuous filament between the warp and weft yarns of a tape, in order to form with said filament transverse loops constituting coupling members along one edge of said tape, this method being characterised in that during the tape weaving operation there are inserted into said tape two separate filaments adapted to form the coupling members by engaging by turns said filaments between said warp yarns at spaced intervals, in order to form at each point of insertion a transverse loop formed by winding said filaments in opposite directions, by turns, while disposing said filaments in the longitudinal direction on the side opposite to the coupling members proper, whereby said filament form two variable-pitch helices of which the loops wound in opposite directions are imbricated, every other loop belonging to the same helix.

3,871,421
WEAVING MACHINE HAVING A VARIABLE WEFT YARN PATH

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Sept. 27, 1973, Ser. No. 401,275
Claims priority, application Switzerland, Oct. 9, 1972, 14746/72
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 R **10 Claims**

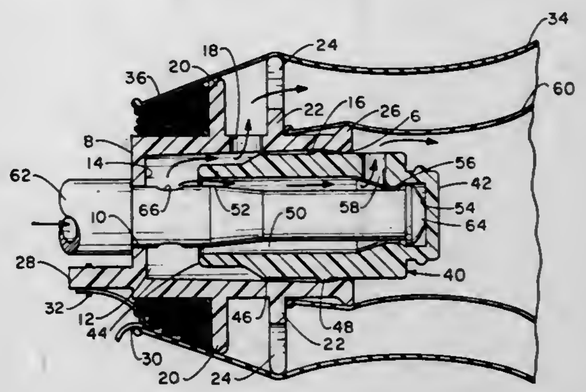


1. In a weaving machine having first means for forming a shed, second means for mounting a weft yarn supply bobbin outside said shed, and a plurality of guide elements between said shed and said second means for guiding a weft yarn to be picked into said shed, said guide elements including a pair of stationary elements, at least one of said guide elements being movable to vary the yarn path and form a loop of weft yarn between said stationary elements; a guide roller mounted on said movable guide element for passage of the weft yarn thereover and being rotatably mounted about a longitudinal axis and a drive means for rotating said roller about said axis in the direction of movement of the weft yarn to be picked.

3,871,422
DUAL BALLOON VALVE

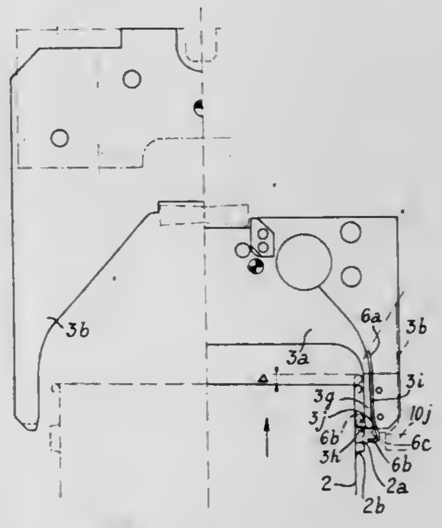
Edward E. Elson, Anaheim, and Aaron Goldsmith, Northridge, both of Calif., assignors to Automatic Helium Balloon Systems, Inc., Beverly Hills, Calif.
Filed Feb. 14, 1973, Ser. No. 332,369
Int. Cl. F16k *15/20*
U.S. Cl. 137—231 **15 Claims**

1. A valve for at least two inflatable articles such as balloons comprising the combination: an open-ended tubular valve body member having spaced first and second peripheral flanges and a third terminal flange; an aperture in the wall of said body member intermediate said first and second flanges, at least one of said first and second flanges being adapted for gas tight association and engagement with a first inflatable article, said third terminal flange being adapted for gas tight association and engagement with a second inflatable article within said first inflatable article, said second flange having at least one discontinuous wall section; a tubular valve slide member longitudinally movable within said body member and said second inflatable article between an advanced open position and a retracted closed position and being in substantially gas tight sliding engagement with a longitudinally extending peripheral sealing area due to the coaction with the inside of said body member, said slide member being closed at its front end and open at its rear end and having at least one port formed therein between the ends thereof which communicates with a point forwardly of said sealing area when said slide member is in its open position; means for restricting relative movement between said body and slide member; and means for obtaining relative movement therebetween.



3,871,423
MACHINE FOR ASSEMBLING A PIVOTABLE HANDLE WITH A PACKAGE

Yves J. Lhermet, Cabries, France, assignor to Societe Anonyme Sabatier S.A., Vitrolles, France
Filed Jan. 22, 1974, Ser. No. 435,218
Claims priority, application France, Jan. 26, 1974, 74.04017
Int. Cl. B21f *45/00*
U.S. Cl. 140—93 B **7 Claims**



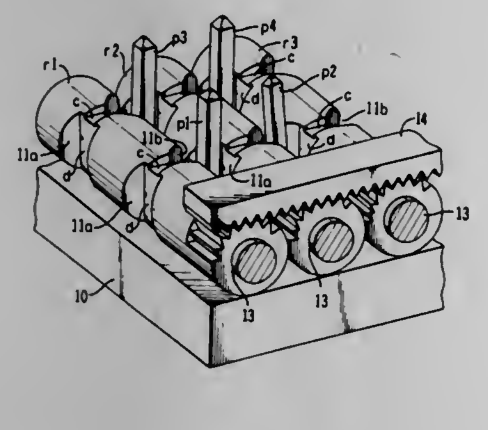
1. In a machine for assembling a U-shaped handle having free ends with a package having a pair of outwardly opening cavities respectively at opposite sides of said package, said handle being bent inwardly at its free ends to provide a pair of opposite, facing, free end portions which extend inwardly and at a substantial angle with respect to the remainder of the handle, said machine having supporting means for said package which permits movement thereof in a direction transverse to a line extending through both said cavities and having means for positioning said handle with respect to a package on said supporting means so that said free end portions are respectively on opposite sides of said package and adjacent and aligned with said cavities, the combination therewith of a pair of spaced stop means respectively disposed to be received between said so-positioned handle and opposite sides of said package for engaging a first portion of said handle adjacent but spaced from one of said free end portions and a second portion adjacent but spaced from the other of said free end

portions and for restraining said first and second portions against movement toward said package, and a pair of spaced bending means respectively disposed to receive said free end portions therebetween and movable inwardly toward said package, said bending means being engageable with said handle at portions thereof adjacent to said free end portions thereof for bending said handle intermediate said first and second portions and said free end portions around said stop means and thereby moving said free end portions into said cavities and laterally of said line.

3,871,424
APPARATUS FOR REALIGNING ELECTRICAL CONNECTOR TERMINAL PINS

Matthew Francis Slana, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 6, 1974, Ser. No. 448,677
Int. Cl. B21f *1/02*
U.S. Cl. 140—147 **11 Claims**



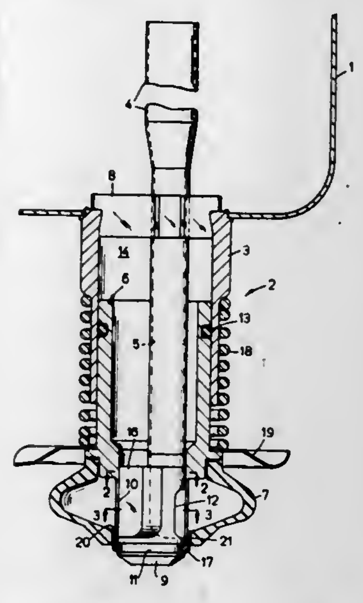
1. Apparatus for aligning an electrical connector terminal pin comprising cam means adapted for positioning adjacent said pin, said cam means comprising a lobe face for urging said pin a first direction as said cam means is rotated when said pin is bent from a proper alignment in a direction opposite to said first direction, said cam means also comprising tapered flanges on said lobe face adapted for slidably engaging said pin for also urging said pin in a second direction at substantially right angles to said first direction as said cam means is rotated when said pin is bent from a proper alignment in a direction opposite to said second direction.

3,871,425
BOTTLING METHOD AND APPARATUS

David C. Fee, Elm Groove, and William F. Hammernik, Milwaukee, both of Wis., assignors to Federal Mfg. Co., Milwaukee, Wis.

Filed Oct. 10, 1973, Ser. No. 405,095
Int. Cl. B65b *3/04*
U.S. Cl. 141—5 **18 Claims**

1. The method of filling a resiliently deformable bottle with liquid which comprises:
- a. placing the empty bottle into communication with separate supply, vent and suction passages;
- b. feeding liquid into the bottle through said supply passage while maintaining said vent and suction passages separately in communication with said bottle;
- c. closing said supply and vent passages after liquid has passed through the filled bottle into said vent passage;
- d. temporarily applying suction to said suction passage while said supply and vent passages are closed, until part of the bottle content has been withdrawn through said suction passage; and

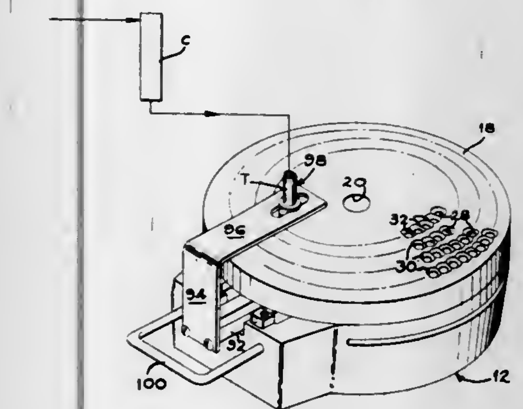


- e. removing the bottle from the closed supply, vent and suction passages.

3,871,426
FRACTION COLLECTING APPARATUS

Robert M. McNeill, Sunnyvale, Calif., assignor to Eldex Laboratories, Incorporated, Menlo Park, Calif.

Filed Oct. 15, 1973, Ser. No. 406,316
Int. Cl. B65b *43/50*
U.S. Cl. 141—130 **4 Claims**



1. In a fraction collector the combination comprising a body having a lower planar surface and a plurality of equi-size liquid receiving chambers having upward openings, said chambers being disposed in uniform spaced relation along a spiral path about a central point on said body, a base having means for mounting said body for rotation about said central point, a carriage and means on said base for constraining said carriage for movement on a radial path below said lower surface, a drive wheel mounted in said carriage for rotation about a radially disposed axis, said drive wheel having a periphery in contact with said lower body surface for establishing a frictional driving connection therebetween, means mounted in said carriage for rotatively driving said drive wheel at a substantially constant speed so as to impart to the portion of said body in contact with said drive wheel a correspondingly constant tangential speed, an arm having a first end fixed to said carriage and a second end overlying said upper surface in substantial vertical alignment with said drive wheel, means for moving said carriage along said radial path in a first radial direction in response to said drive wheel rotatively driving said body so that the second end of said arm traverses the spiral path of the chambers, and means for resiliently biasing said carriage along said radial path in a second direction opposite said first direction so that on disengagement of said lower body surface from said drive wheel periphery, said biasing means moves said carriage in said second direction.

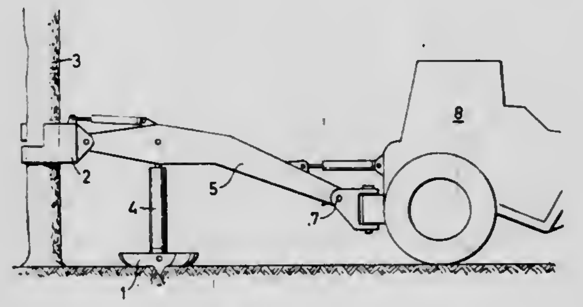
3,871,427
DEVICE FOR FELLING TIMBER

Lars Harald Widegren, Arent Frapegatan 31, Kiruna, and Tage Oskar Keskitalo, Knavagen 9, Tuolluvaara, both of Sweden

Continuation-in-part of Ser. No. 73,251, Sept. 16, 1970, Pat. No. 3,802,663, which is a division of Ser. No. 807,775, March 17, 1969, Pat. No. 3,643,900. This application Oct. 29, 1973, Ser. No. 410,571

Claims priority, application Sweden, June 28, 1968, 8943/68

Int. Cl. A01g *23/08*
U.S. Cl. 144—34 E **5 Claims**

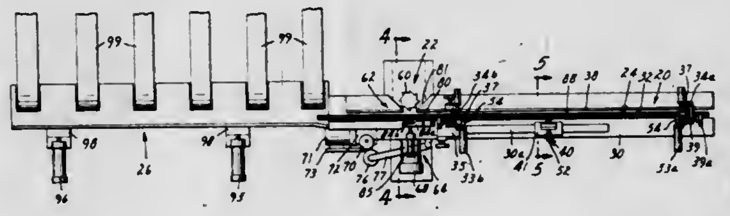


1. An apparatus for felling timber by pulling up trees with their roots, comprising:
- a. at least one ground support member,
- b. at least one lever arm pivotally mounted to the ground support member at one end,
- c. a lifting device bearing upon the lever arm,
- d. at least one hydraulically operated gripping device coupled to the lever arm for gripping the tree trunk from the side,
- e. drive means coupled to the lifting and gripping devices,
- f. a driving source feeding said drive means,
- g. a plurality of cutting blades disposed in a plane perpendicular to the longitudinal axis of the tree, and movable to cut the tree from opposite sides thereof, and
- h. hydraulic means to move the blades to sever the roots from the tree.

3,871,428
METHOD FOR REDUCING THE OCCURRENCE OF BOWING IN WOODEN WINDOW RAILS

Kenneth L. Peterson, Bayport, Minn., assignor to Andersen Corporation, Bayport, Minn.

Division of Ser. No. 301,130, Oct. 26, 1972, Pat. No. 3,825,046. This application Mar. 12, 1974, Ser. No. 450,366
Int. Cl. B27c *1/02*
U.S. Cl. 144—323 **2 Claims**

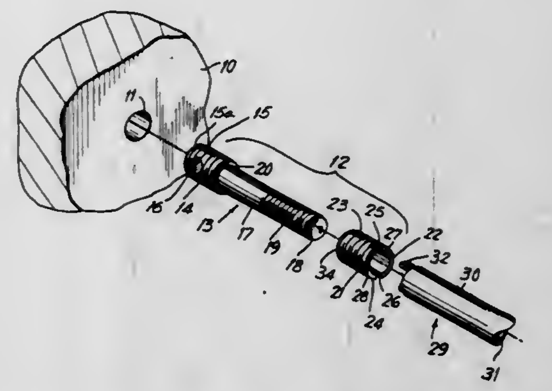


1. A method for reducing the occurrence of bowing in wooden window sash rail members which are milled along one surface to form a groove for receiving a pane of glass, said method comprising the step of cutting a concave curvature along a surface of the rail member opposite the surface milled so as to receive the glass pane, said curvature being sufficiently concave to overcome the natural tendency of the rail member to bow subsequent to the milling operation.

3,871,429
LOCKING SELF-TAPPING THREADED STUD INSERT ASSEMBLY AND METHOD

Robert W. Bosse, Englewood Cliffs, N.J., assignor to Groov-Pin Corporation, Ridgefield, N.J.

Filed Feb. 28, 1973, Ser. No. 336,872
Int. Cl. F16b *39/00*
U.S. Cl. 151—14 R **3 Claims**

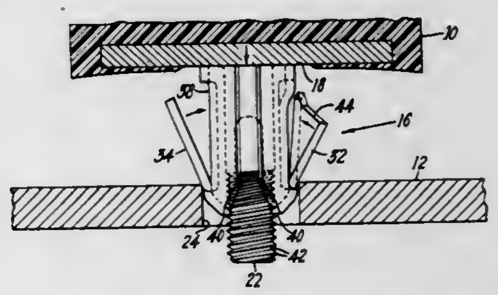


1. For use in conjunction with a cylindrical bore formed in a body, a self-tapping threaded stud insert assembly for installation in the cylindrical bore, the material of the body being relatively softer than the material of said insert assembly, said assembly comprising an elongated shank including an enlarged cylindrical inner end portion of a length less than the depth of the bore and a reduced diameter cylindrical outer end portion forming a continuation of said inner end portion, said inner and outer end portions being disposed in coaxial alignment, an outwardly facing annular shoulder formed at the junction of said inner and outer end portions, a self-tapping cutting thread portion beginning at said inner end and extending helically about the circumference of said inner end portion for the self-tapping of threads within the bore to a greater depth than the length of the inner end, a retaining thread portion beginning at said outer end and extending helically about the circumference of said outer end portion, and an elongated tubular locking sleeve having an internal bore slidable over said outer end portion, a locking shoulder at the lead end of said sleeve adapted to engage said annular shoulder, drive means formed in the trailing end of said sleeve, the outer circumference of said sleeve being formed with a helical thread matching the thread of said inner end portion of said shank for substantially full engagement with the threads tapped in the bore by the inner end.

3,871,430
RETAINER CLIP

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.

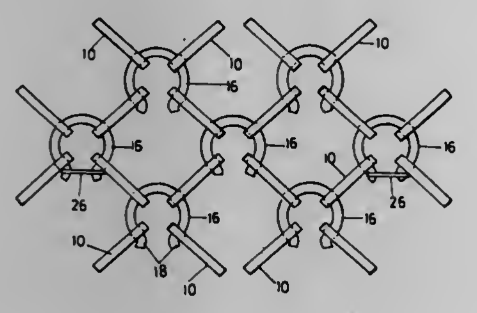
Filed Oct. 26, 1973, Ser. No. 410,037
Int. Cl. F16b *21/00*
U.S. Cl. 151—41.75 **2 Claims**



1. A one-piece push-on type clip for securing a nonrotatable threaded stud in axial relation to a workpiece having an elongated hole for receiving the stud endwise, the clip comprising a hollow non-circular body of sheet metal partly open at one end and wholly open at the other end and having oppositely disposed resilient side portions laterally extending

between said ends, said side portions being spaced apart by slightly less than the lesser dimension of said hole, each of said side portions being coined with a generally straight edge to cooperatively grip a locality of the threads of the stud, and each of the side portions when unstressed having an outwardly inclined resilient wing portion divergent substantially from the thread engaging locality, free ends of the wing portions being spaced apart more than the lesser dimension of said hole, one of the wing portions being arranged to be cammed inwardly by a side wall of the hole and the other of said portions being formed with a combination axial and radial take-up and locking shoulder arranged to be urged into partly overlapping abutment with the workpiece adjacent to another side of the hole by radial pressure exerted by said one wing portion in reaction to its engagement with said side wall of the hole.

3,871,431
PROTECTIVE CHAINS
Hans Otto Dohmeier, Johannesburg, South Africa, assignor to Dome Inventions Limited, Johannesburg, South Africa
Filed Nov. 10, 1972, Ser. No. 305,281
Claims priority, application South Africa, Nov. 25, 1971, 71/7933
Int. Cl. B60c *11/00*
U.S. Cl. 152—243 **1 Claim**



1. A tire chain consisting of a reticulation of elongate, end-perforated links, and connector links onto which the links are threaded, characterized in that:

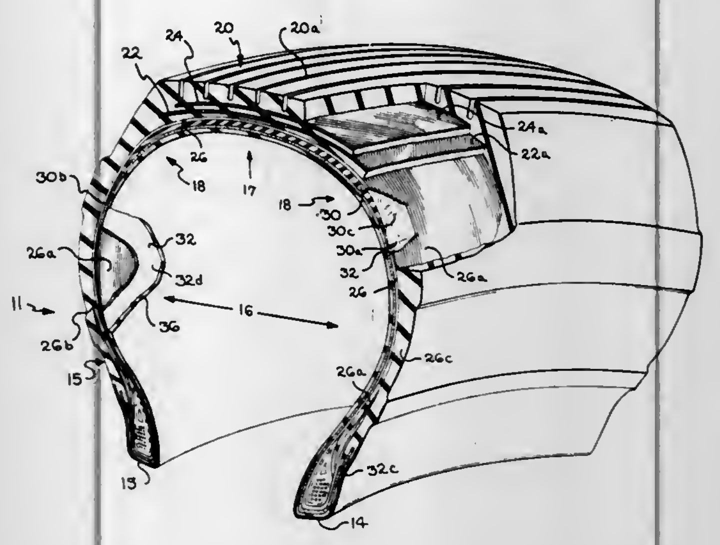
each connector link is an omega-shaped open loop, gapped to allow links to be threaded onto it, and shaped for a link to be threadable onto and be separable from it only by movement of the connector link and the link relative to each other along an arc and in which there are four links on each of a plurality of loops.

3,871,432
ALL GLASS REINFORCED TIRE CONSTRUCTION
Frank J. Lachut, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 235,228, March 16, 1972, abandoned. This application May 7, 1973, Ser. No. 357,731
Int. Cl. B60c *9/12*
U.S. Cl. 152—354 **21 Claims**

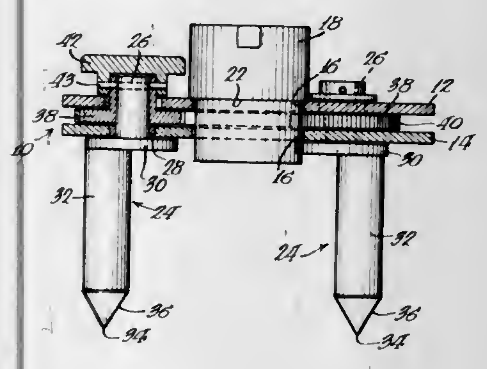
9. In a tire construction composed of (1) a pair of spaced beads, (2) a connecting carcass of generally radially disposed cords, embedded in an elastomeric matrix layer, extending toroidally from bead to bead and at least partially encircling said beads, (3) a ground contacting tread carried at the crown of said carcass and (4) at least two tread reinforcing belts located between said carcass and said tread and extending circumferentially about said tire, said belts each including a plurality of mutually parallel vitreous cords, said tire including shoulder regions on either side of the tread; the improvement which includes:

a first layer of elastomeric stock on the inner side of said carcass, said layer including a plurality of short lengths of glass, and

a second layer of elastomeric stock on the inner side of said first layer and said carcass, said second layer extending toroidally from bead to bead, said second layer containing a plurality of short lengths of glass.



3,871,433
ADAPTOR FOR TIRE CHANGING STANDS
David M. Carpenter, Nashville, Tenn., assignor to The Coats Company, Inc., La Vergne, Tenn.
Filed Sept. 11, 1973, Ser. No. 396,186
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **5 Claims**



1. An adaptor for use with a tire changing stand, comprising: a base having a central opening for receipt of a spindle of a tire changing stand; a plurality of at least three fingers extending generally perpendicularly from said base, each having a free end remote and projecting away from said base adapted to engage a tire rim mounted on a tire changing stand; means, including an eccentric connection, pivotally mounting each of said fingers, at spaced locations, on said base and about said central opening; a motion transmitting mechanism interconnecting each of said fingers whereby when one is rotated, the others will be rotated and each will move in a circular path such that the spacing between each and the radial distance to the center of said central opening may be selectively adjusted so that said finger free ends may be properly located to engage rims of different sizes.

3,871,434
SECURITY SCREEN FOR WINDOW
Allen P. Hance, 1857 E. Gray, Mesa, Ariz. 85203
Filed Jan. 24, 1974, Ser. No. 436,064
Int. Cl. E06b *9/01*
U.S. Cl. 160—91 **3 Claims**

1. A window-screen frame combination for mounting in an opening of a wall or door comprising:

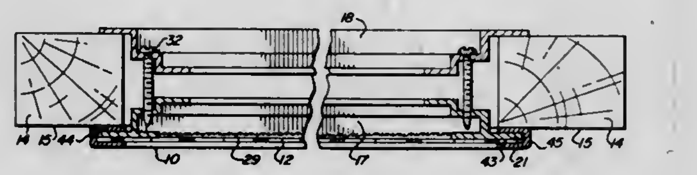
a screen frame for insertion into the opening from one side thereof,

said screen frame defining a flange extending laterally of the opening parallel with and over its peripheral edges,

said screen frame further defining a surface extending laterally of said flange of said screen inwardly of and around the peripheral edges of the opening and then inwardly of the opening and parallel with said flange of said screen, a window frame for insertion into the opening from the other side thereof,

said window frame defining a flange extending laterally of the opening parallel with and over its peripheral edges,

said window frame further defining a surface extending laterally of said flange of said window inwardly of and around the peripheral edge of the opening and then inwardly of the opening and parallel with said flange of said window,



a security screen for fastening to said screen frame,

said security screen comprising a metallic frame defining an opening,

a metallic screen mounted on said frame and covering its opening,

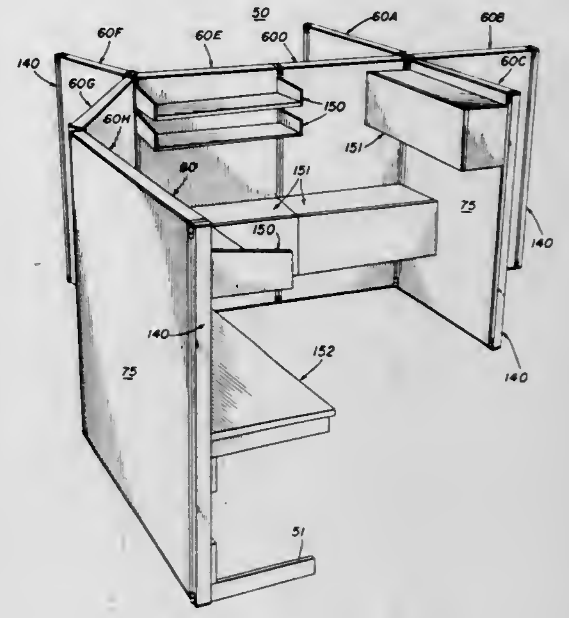
the outer edges of at least three sides of said security frame being bent over on itself to form channels between the frame and its bent over edges,

said channels receiving a pair of outer parallel edges of the flange of the screen frame upon said metallic frame being slid over the outer edges of said frame from one end thereof,

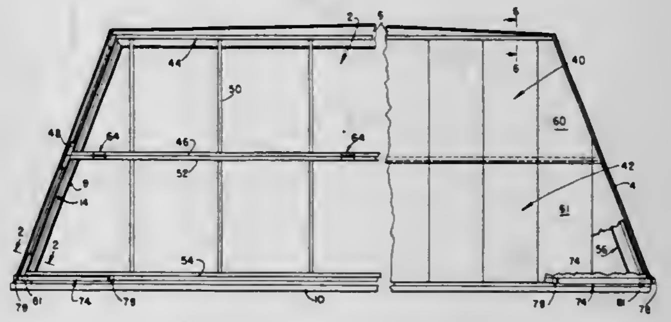
and means extending through said window frame and into threaded engagement with apertures in said screen frame for tightly securing said security frame to the peripheral edge of the opening between said flanges on said screen frame and the periphery of the wall or door opening.

3,871,435
MODULAR ROOM DIVIDER
Dale R. Lopatka, Hawthorn Woods, Ill., assignor to Reflector Hardware Corporation, Melrose Park, Ill.
Continuation of Ser. No. 130,227, April 1, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,273
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 **13 Claims**

1. A modular room divider comprising a plurality of interconnected divider modules, each of said divider modules includint an upstanding panel and two sets of hinge members, one of said two sets of hinge members being respectively fixedly mounted on said panel adjacent to each opposite side edge thereof, each of said sets of hinge members including two vertically spaced pairs of hinge elements, one of said vertically spaced pairs being female elements and the other of said pairs being male elements, the female elements at one side edge being horizontally aligned with the male elements at the other side edge and being located near the top of said panel, the others of said pairs of hinge elements being horizontally aligned and being located near the bottom of said panel, each of the vertically spaced pairs comprising a horizontally spaced pair of hinge elements respectively fixedly disposed adjacent to the two spaced-apart front and back surfaces of said panel, whereby one of said sets of hinge members is constructed and arranged complementary to the other of said sets of hinge members for coupling engagement to provide a pivotal coupling between adjacent modules, whereby each divider module may be simultaneously pivotally coupled at said two vertically spaced elevations to as many as two other divider modules at each side edge to form said room divider and to accommodate arrangement thereof in numerous different configurations.



3,871,436
TRAPEZOIDAL DOOR FOR CLOSING THE TRAPEZOIDAL OPENING OF A BUILDING STRUCTURE
Verne L. Gile, Harvard, Ill., assignor to Erect-A-Tabe. Inc., Harvard, Ill.
Filed Oct. 3, 1973, Ser. No. 403,216
Int. Cl. E04f *15/00*
U.S. Cl. 160—188 **9 Claims**



1. A door for use in connection with a building structure having a trapezoidal-shaped door opening, said door comprising a plurality of sections hingedly or pivotally connected to each other, said sections when the door is in fully closed position having a trapezoidal shape to conform to the trapezoidal opening of the building structure to close said opening, means for moving said sections relative to each other and for lifting said door to open position to uncover said opening of said building structure, means connecting at least one of said door sections to said building structure adjacent said door opening so that the upward and downward movement of said door as it folds and unfolds in moving to open and closed positions is held adjacent and in close proximity to the building structure, said last mentioned connecting means comprising a horizontally positioned member adjacent the bottom of the lower section of the door supporting an axially movable member thereon which is connected to the building structure and moves upwardly and inwardly at an inclined angle as the door moves to open position and downwardly and outwardly at an inclined angle as the door moves to a closed position.

3,871,437
MACHINE GUARDS

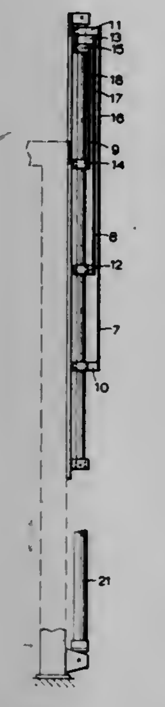
William Leslie Jones, Tipton, England, assignor to A.H.M. Machines Limited, Birmingham, England

Filed Aug. 6, 1973, Ser. No. 385,811

Claims priority, application Great Britain, Aug. 12, 1972, 37697/72

Int. Cl. E05d *15/16*

U.S. Cl. 160—202 **6 Claims**



1. In combination with a machine, a guard comprising a fixed portal structure defining an access opening and a plurality of frames movably mounted on said structure, said plurality of frames including a first frame in a first position slidably mounted on guide means on said structure for relative movement to a second position, a second frame in a first position slidably mounted on said guide means for relative movement to a second position, a guard panel carried on said second frame, a guard panel carried on said first frame underlying said first mentioned guard panel so that said access opening is unobstructed by said guard panels, driving means mounted on said portal structure and connected to at least said first frame for moving said first and second frames to said second respective positions wherein said guard panels extend adjacent to each other to close said access opening, the arrangement of said frames being such that said first frame rests within said second frame with the length of said first frame in the direction of movement being substantially less than the length of said second frame in the direction of movement, said first and said second frames each having first end abutments abutting in said first position, and said first and second frames each having second end abutments opposed to said first end abutments with said second end abutments abutting when said guard is in said second position, said driving means being connected to said first frame, movement of said first frame from said second position to said first position being transmitted through said first end abutments.

3,871,438
PROCESS FOR REGENERATING RESIN-BONDED FOUNDRY SAND

Bastiaan Vissers, Heemstede, Nr. Glipperdreef, and Willem Teunissen, Amstelveen, Nr. Buyschenstein, both of Netherlands

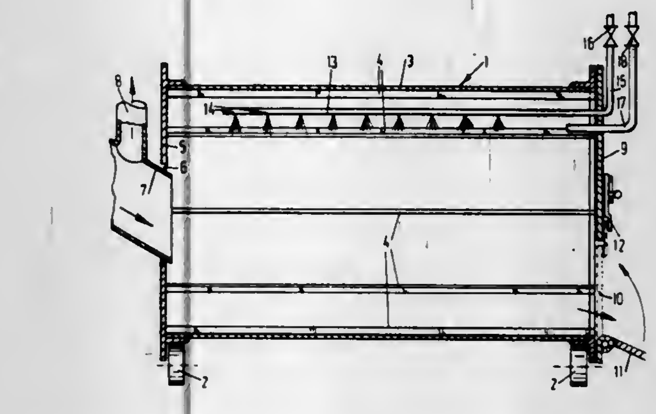
Filed Feb. 16, 1973, Ser. No. 333,409

Claims priority, application Netherlands, Feb. 16, 1972, 7201998

Int. Cl. B22d *29/00*

U.S. Cl. 164—5 **11 Claims**

1. A process of regenerating foundry sand bonded with a thermo-setting synthetic resin and forming part of a mould and cores that have been used for manufacturing castings, comprising the steps of depositing said whole sand mould together with its hot castings and any sand cores into a rotating vessel and tumbling such materials in that vessel during a time period sufficient to ensure that the sand mould and cores through contact with said hot castings are heated to such a temperature that the synthetic resin is removed from the sand by spontaneous inflammation and combustion and the sand mould and cores are completely broken down to discrete sand particles.



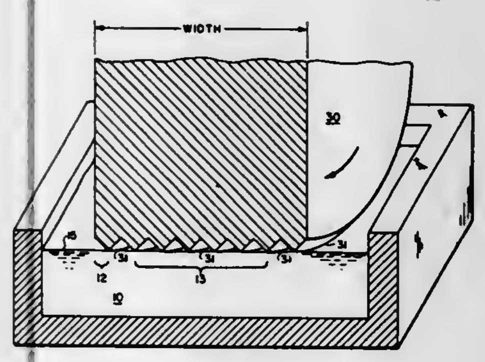
3,871,439
METHOD OF MAKING FILAMENT OF SMALL CROSS SECTION

Robert E. Maringer, Worthington, and Carroll E. Mobley, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 292,280, Sept. 26, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 456,649

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **11 Claims**



1. A method of making a plurality of filaments having an effective diameter less than 1,500 microns comprising: contacting the free surface of a pool of molten material with the circumferential extremities of a plurality of tapering machine screw threads on the outer radial surface of a cylindrical heat-extracting member rotating at a rate yielding a linear speed at said circumferential extremities in excess of 3 ft/sec, the contacting being to a depth no greater than the root depth of said threads and providing a plurality of narrow elongated contacts with the molten material.

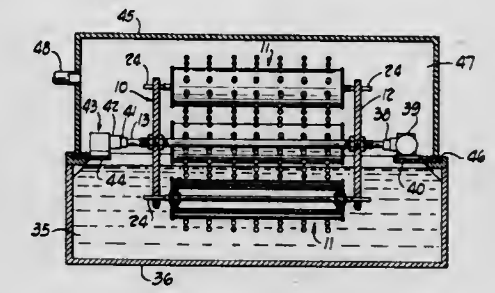
3,871,440
APPARATUS FOR FORMING CERAMIC SHELL MOLDS

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Division of Ser. No. 172,035, Aug. 16, 1971, abandoned. This application June 22, 1973, Ser. No. 372,586

Int. Cl. B22c *13/08*

U.S. Cl. 164—165 **3 Claims**



1. An assembly for use in producing refractory molds comprising:

a. support means,

b. shaft means fixed to and extending from said support means so that said assembly can be mounted for rotation,

c. a plurality of pattern set-ups supported by said support means, said pattern set-ups being arranged about said shaft means and radially spaced therefrom,

d. each of said set-ups including sprue means,

e. rod means fixed to said sprue means and extending beyond the ends of said pattern set-ups, said sprue means being secured to said rod means for movement therewith, and

f. means for releasably securing said rod means to said support means so that said pattern set-ups are fixed against rotation about their longitudinal axes and so that said pattern set-ups can be removed and replaced.

3,871,441
DUMMY BAR FOR CONTINUOUS CASTING

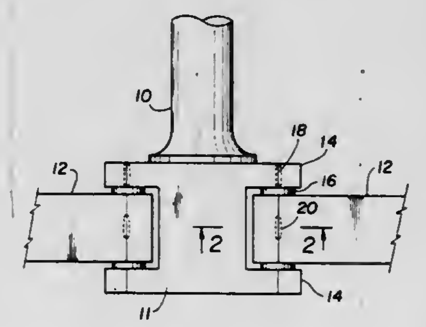
Joseph Pietryka, Paris, France, assignor to Fives Lille-Cail, Paris, France

Filed Mar. 26, 1973, Ser. No. 344,648

Claims priority, application France, Mar. 29, 1972, 72.10950

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **3 Claims**



1. A dummy bar for use in a continuous casting operation and comprised of a series of parts linked together, a joint interconnecting each two adjacent ones of the dummy bar parts for enabling the parts to pivot about an axis, and the pivoting axes of all joints being substantially parallel to each other, each of the joints including an end of one of the adjacent parts and a pivoting axle fast with the end of the other adjacent part and extending in a respective one of the axes, the pivoting axle passing through a bore in the one adjacent part and mounting the one adjacent part pivotally on the other adjacent part, a peg affixed to the pivoting axle and received in a keyway in the bore extending in an axial direction, the width of the keyway exceeding that of the peg with sufficient play to permit only a selected angular movement between the parts transversely of the pivoting axis, and means for closing the ends of the keyway from the outside.

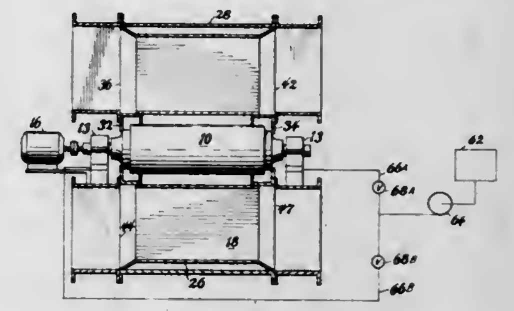
3,871,442
LIFTING ARRANGEMENT

Harlan E. Finnemore, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,244

Int. Cl. F28d *19/00*

U.S. Cl. 165—8 **5 Claims**



1. In rotary regenerative heat exchange apparatus having a horizontal rotor post, a mass of heat absorbent material carried concentrically around the rotor post to comprise an annular rotor, housing means surrounding the rotor having end plates with openings for a heating fluid and a fluid to be heated, bearing means supporting the rotor post for rotation about its axis, means for rotating the rotor about its axis to align the heat abosrbent material alternately with the heating fluid and the fluid to be heated, means for raising the rotor post from the bearing means comprising a yoke subjacent the rotor post, an elastomeric bladder expansible against said yoke, a source of hydraulic fluid, and means for inflating said elastomeric bladder with the hydraulic fluid to force the yoke against the rotor post to support the rotor post on said yoke independent from the bearing.

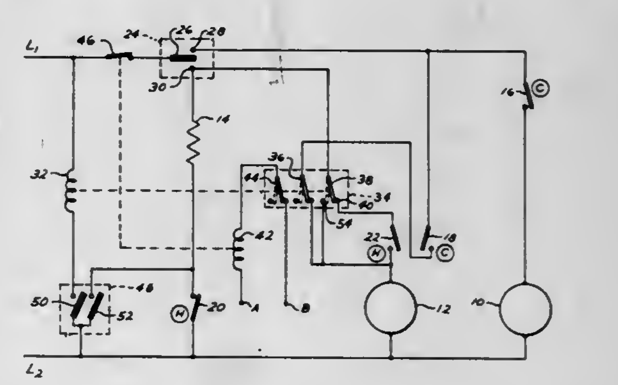
3,871,443
SAFETY CONTROL FOR A REMOTE CONTROL SYSTEM

Allen G. Jones, Baltimore, Md., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 17, 1974, Ser. No. 461,535

Int. Cl. F24f *13/00*

U.S. Cl. 165—11 **8 Claims**



1. Safety control apparatus for a remotely controlled zone unit having heating and cooling system including a fan for circulating enclosure air comprising:

mode control means including switch means for placing said zone system in condition to operate either in a normal heating or cooling operating mode or in a safety heating mode;

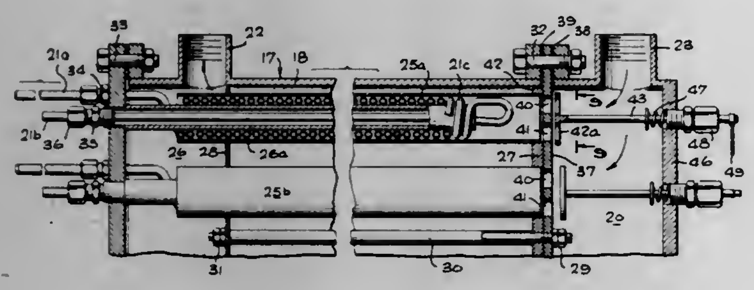
remote control input means responsive to a remote control source for turning said zone unit on and off; and

safety thermostat switch means responsive to a predetermined temperature for simultaneously conditioning said mode control means to operate said system in the safety heat mode and to override the operation of the remote control input means and said normal operating mode to automatically energize said heating system.

3,871,444
WATER QUALITY ANALYSIS SYSTEM WITH MULTICIRCUIT SINGLE SHELL HEAT EXCHANGER

Edwin A. Houser, Fullerton, and Bernell W. Schwindt, Walnut, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 2, 1971, Ser. No. 168,096
Int. Cl. F28f *27/02*
U.S. Cl. 165—101 **8 Claims**



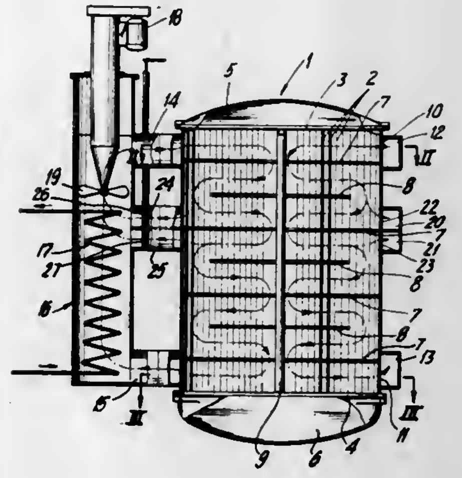
1. A single closed shell multicircuit heat exchanger wherein each of said separate heat exchange circuits affords an individually adjustable rate of flow of coolant for a sample to be cooled therein, said heat exchanger comprising;

- a. an elongated heat exchanger shell, said shell having a first closure plate at a first end thereof and a second closure plate positioned inwardly from the second end thereof;
- b. a first plenum chamber detachably mounted on said first end of said heat exchanger shell, said first plenum chamber having cooling water inlet means connected thereto;
- c. an end plate detachably connected to said shell at said second end thereof to form with said second closure plate a second plenum chamber in said second end of said shell, said second plenum chamber having cooling water outlet means connected thereto;
- d. a plurality of apertures in each of said closure plates;
- e. a plurality of hollow cylindrical baffle spools extending between said closure plates inside said heat exchanger shell and detachably secured to said first and second closure plates, each spool surrounding one aperture in each of said plates so that each spool defines the outer limits of a separate coolant flow path between said plenum chambers;
- f. means on said end plate to detachably mount a plurality of coils of sample tubing, each coil extending into one of said spools, each of said coils having a sample inlet tube and a sample outlet tube continuous therewith and both extending out of its associated spool, through said second plenum chamber and said end plate and out of said heat exchanger;
- g. each of said coils being separately and individually removable from said heat exchanger by removing said first plenum chamber and said heat exchanger shell from said end plate, sliding said spool off of the coil to be removed, and disconnecting said coil from said end plate; and
- h. separate means operatively associated with each of said spools to regulate the rate of flow of cooling water through that individual spool independently of the rate of flow of cooling water through any other spool.

3,871,445
REACTION APPARATUS FOR CARRYING OUT EXOTHERMIC AND ENDOTHERMIC CHEMICAL PROCESSES WITH RADIAL FLOW OF A HEAT EXCHANGE MEDIUM

Oskar Wanka, Deggendorf, Donau; Friedrich Gutlhuber, Metten, and Hermann Graf, Hengersberg, all of Germany, assignors to Deggendorfer Werft und Eisenbau GmbH, Deggendorf, Donau, Germany

Filed Jan. 12, 1973, Ser. No. 323,224
Claims priority, application Germany, Jan. 13, 1972, 2201528
Int. Cl. F28d *15/00;* **B01j** *9/00*
U.S. Cl. 165—107 **11 Claims**



1. In a reaction apparatus for carrying out exothermic and endothermic chemical reactions, of the type having an annular nest of contact tubes in a reaction tank and over which a heat exchange medium, circulated by forced flow producing means through an external heat exchanger and supplied and discharged through respective axially spaced annular supply and discharge conduits connected to the heat exchanger, is directed to flow, the improvement comprising, in combination, baffle means arranged in said tank to extend transversely of the length of said tubes to direct the heat exchange medium to flow alternately in opposed radial directions over said tubes between said supply and discharge conduits; and at least one additional annular conduit, at at least one point of said tank intermediate said supply and discharge conduits, connected to said heat exchanger and said tank and supplying and discharging a regulable partial amount of the heat exchange medium.

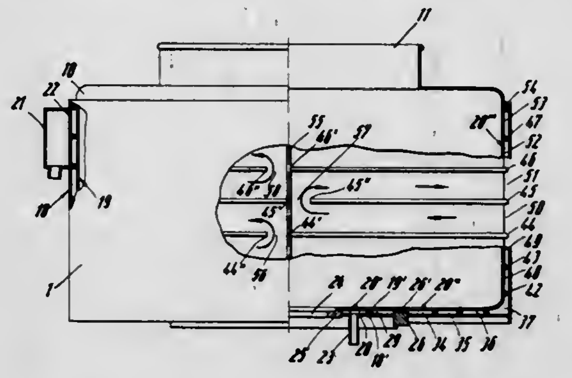
3,871,446
MIXER COOLER

Hartmut Langenberg, Buer, Germany, assignor to Dierks & Sohne, Osnabruck, Germany

Filed Sept. 7, 1972, Ser. No. 286,949
Claims priority, application Germany, Sept. 17, 1971, 2146611
Int. Cl. F28f *13/12*
U.S. Cl. 165—109 **10 Claims**

1. A mixer-cooler, comprising a mixing vessel into which a substance to be mixed may be introduced, a mixing tool arranged therein and designed to rotate about a vertical axis, the mixing vessel having internal and external walls defining between them a cavity through which a coolant flows, the mixing tool being configured to propel the substance radially outwardly along the base of the vessel and thereafter up the internal wall of the vessel, a coolant inlet in the base of the vessel and a coolant discharge near the upper rim of the vessel, guide elements in said space to guide the coolant on its passage between the coolant inlet and the coolant discharge in a direction generally corresponding to the direction of propulsion of the substance, the guide elements subdividing the cavity of the double wall into a coolant duct extending in labyrinthine fashion from the coolant inlet to the coolant discharge in at least the radially outer zone of the base-side

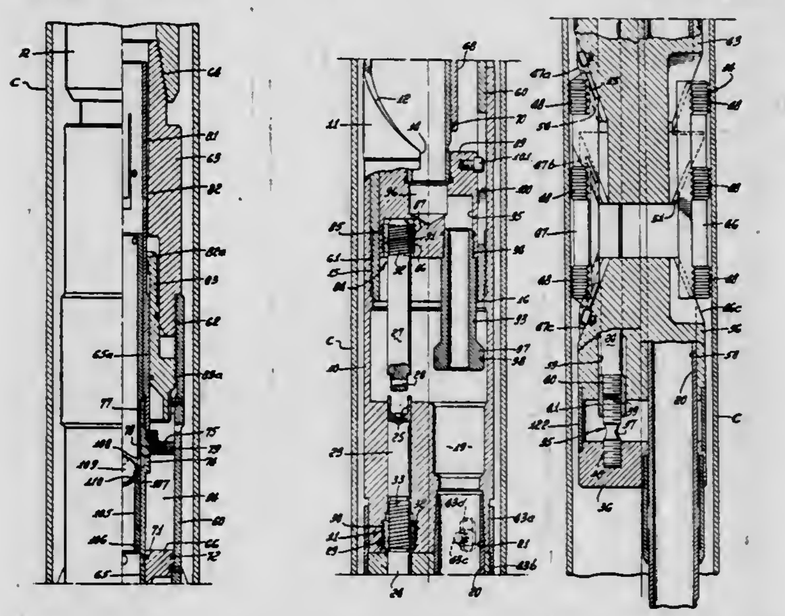
cavity of the double wall, the flow duct consisting of concentric duct sections formed by guide baffles extending substantially concentrically to the vessel axis each of which duct sections extends over a centrally subtended angle of around 360° and communicates through a radial transfer orifice with the particular adjacent, radially outer duct section in a series disposition, the flow duct in the side wall zone of the double wall being made up of duct sections defined by guide baffles arranged coaxially, at intervals, parallel one above the other in the cavity, each of said duct sections extending over a centrally subtended angle of 360° and communicating through an axial transfer orifice with the particular adjacent, axially upper duct section in a series disposition.



3,871,447
TUBING HANGER SETTING TOOL

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 275,911, July 28, 1972, Pat. No. 3,830,295, which is a division of Ser. No. 243,806, April 13, 1972, Pat. No. 3,771,603. This application June 8, 1974, Ser. No. 475,384
Int. Cl. E21b *23/00*
U.S. Cl. 166—120 **12 Claims**

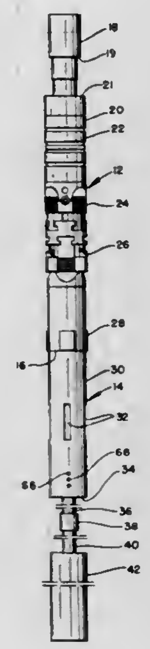


1. In a setting tool for a tubing hanger anchorable in a well casing and having a receptacle for the setting tool, said setting tool comprising: an elongated outer tubular body having means at its upper end for connection with a running pipe string, an elongated inner body longitudinally shiftably disposed in said outer body, piston means carried by said bodies and forming a pressure chamber therebetween, said inner body having a fluid passage extending longitudinally therein and a port leading between said passage and said pressure chamber, valve means normally closing said port to admit pressure fluid to said pressure chamber from said passage, connector means on said outer body for connection with one part of the tubing hanger, connector means on said inner body for connection with another relatively movable part of the tubing hanger, whereby pressure fluid applied to said pressure chamber to effect relative longitudinal shifting of said bodies will effect corresponding shifting of the tubing hanger parts, and a plurality of flow tubes carried by said inner body and projecting downwardly therefrom, said flow tubes having passages communicating with said passage in said inner body.

3,871,448
PACKER ACTUATED VENT ASSEMBLY

Roy R. Vann, Artesia, and Flint R. George, Hobbs, both of N. Mex., assignors to Vann Tool Company, Inc., Artesia, N. Mex.

Filed July 26, 1973, Ser. No. 382,958
Int. Cl. E21b *33/12*
U.S. Cl. 166—128 **11 Claims**



6. A packer actuated vent assembly comprising a packer device having a body, a packer element, a hollow mandrel, and means by which the packer device can be anchored downhole in a well bore, said mandrel being movable relative to the packer body for setting the packer element which precludes fluid flow across the packer device;

- a barrel attached to and extending from the body, a mandrel extension attached to and extending from said hollow mandrel in series flow relationship therewith, aperture means in said mandrel extension forming a flow path from the interior to the exterior thereof; a valve means connected to said mandrel extension for causing a fluid flow path to be formed from without to within said mandrel extension when said valve means is moved from a flow preventing to a flow permitting position;
- and means responsive to relative movement between said barrel and said mandrel extension for moving said valve means from said flow preventing to said flow permitting position.

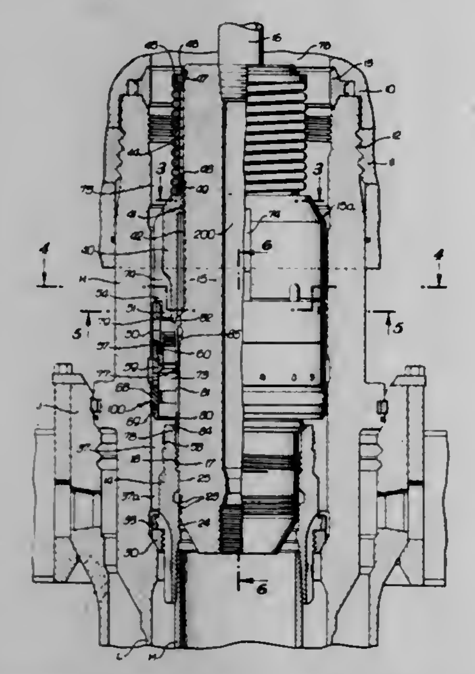
3,871,449
CASING HANGER AND PACKOFF APPARATUS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Mar. 4, 1974, Ser. No. 447,506
Int. Cl. E21b *33/128*
U.S. Cl. 166—183 **15 Claims**

1. Hanger apparatus for supporting a tubular string extending into a well bore from a surrounding wellhead: comprising a hanger body adapted to be located in the wellhead and having a sealing surface; a running tool connectible to a running string; means releasably connecting said hanger body to said running tool to enable said hanger body to be lowered into the wellhead; packing means; means for supporting said packing means from said hanger body and above said sealing

surface while said hanger body is connected to said running tool; means for releasing said supporting means upon release of said releasable connecting means to discontinue support of said packing means from said hanger body and allow said



packing means to move downwardly of said hanger body towards said sealing surface; and means for actuating said packing means to effect its sealing engagement with said sealing surface.

3,871,450

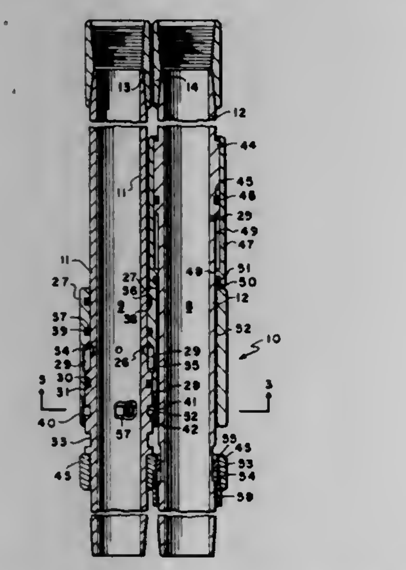
DUAL STRING CIRCULATING VALVE

Marion B. Jett, Seagoville, and Dennis M. Spriggs, Dallas, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 17, 1974, Ser. No. 461,684

Int. Cl. E21b *41/00, 43/14*

U.S. Cl. 166—224 R **20 Claims**



1. A well valve assembly for use in dual production strings, said assembly comprising:

a tubular elongated primary mandrel having connection means at each end thereof for interconnection with other tubular sections;

a tubular elongated secondary mandrel in generally parallel orientation with said primary mandrel; both of said mandrells having port means through the walls thereof;

a body member encircling both said mandrels in relatively snug slidable relationship, said body member having port means through one side thereof;

first pressure responsive means between said primary mandrel and said body member and communicating with said port means in said primary mandrel; said pressure responsive means arranged to move said body member axially on said primary mandrel upon application of fluid pressure through said primary mandrel port means to said first pressure responsive means, whereby said body member ports are placed in communication with said primary mandrel ports; and

second pressure responsive means on said secondary mandrel in communication with said secondary mandrel ports and arranged to move said body member in response to fluid pressure applications to said secondary mandrel, whereby said body member is moved to block fluid communication from said primary mandrel port means to said body member port means.

3,871,451

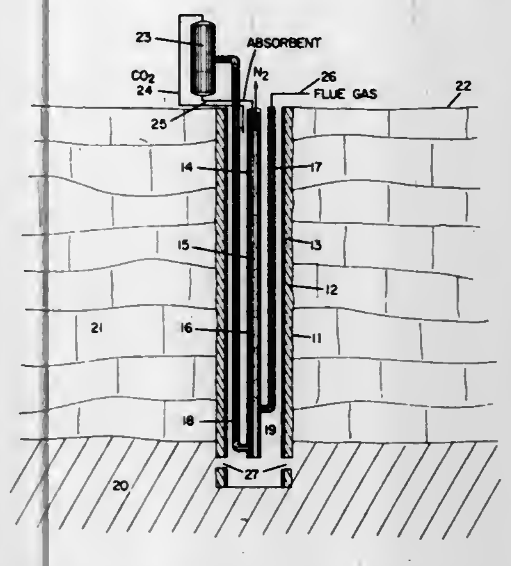
PRODUCTION OF CRUDE OIL FACILITATED BY INJECTION OF CARBON DIOXIDE

Larry P. Brown, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed May 3, 1974, Ser. No. 466,668

Int. Cl. E21b *43/00*

U.S. Cl. 166—267 **15 Claims**



1. In a process for recovering crude oil from a hydrocarbon bearing formation wherein carbon dioxide is introduced into said formation for dissolving in the crude oil therein, the improvement which comprises:

a. injecting an absorbent for carbon dioxide into a tubing string of a well, said absorbent being an organic compound in the form of a liquid when injected into the tubing string,

b. introducing a flue gas which contains carbon dioxide and nitrogen into the tubing string containing the absorbent, the flue gas being introduced into said tubing string at a depth where the carbon dioxide dissolves in the absorbent whereas the nitrogen passes through it, thus separating and removing the nitrogen from the presence of the carbon dioxide,

c. subsequently reducing the pressure on the absorbent and separating carbon dioxide which vaporizes and thus leaves the absorbent,

d. injecting the separated carbon dioxide into a hydrocarbon bearing formation.

3,871,452

MOBILITY CONTROLLED CAUSTIC FLOODING PROCESS FOR RESERVOIRS CONTAINING DISSOLVED DIVALENT METAL CATIONS

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 284,345, Aug. 28, 1972, Pat. No. 3,805,893. This application Mar. 26, 1974, Ser. No. 454,866

Int. Cl. E21b *43/22*

U.S. Cl. 166—270 **18 Claims**

1. A process for recovering petroleum from subterranean reservoirs having connate water containing dissolved divalent

metal cations and penetrated by one or more injection wells and at least one production well spaced apart in the reservoir, which comprises injecting through at least one of said injection wells and into said reservoir small slugs of (1) aqueous alkali metal hydroxide solution, (2) a dilute aqueous solution of an alkaline alkali metal silicate having a molar ratio of M_2O/SiO_2 of 1 or above wherein M is an alkali metal atom, (3) water, (4) a dilute aqueous solution of a water-soluble material that reacts with the alkaline alkali metal silicate to form a precipitate, and (5) water; repeating steps 1 through 5 a plurality of times; and recovering petroleum from said production well.

3,871,453

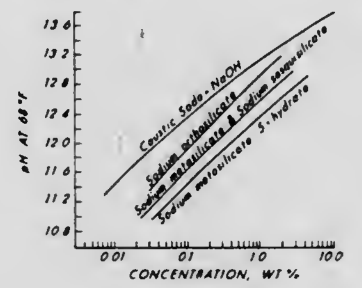
MOBILITY CONTROLLED CAUSTIC FLOODING PROCESS FOR HIGHLY HETEROGENEOUS RESERVOIRS

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 284,345, Aug. 28, 1972, Pat. No. 3,805,893. This application Mar. 1, 1974, Ser. No. 447,299

Int. Cl. E21b *43/22*

U.S. Cl. 166—270 **15 Claims**



1. A process for recovering petroleum from a subterranean reservoir penetrated by one or more injection wells and at least one production well spaced apart in the reservoir, which comprises injecting through at least one of said injection wells and into said reservoir an oil-in-water emulsion of a crude petroleum and a dilute aqueous solution of alkaline alkali metal silicate having a molar ratio of M_2O/SiO_2 of 1 or above wherein M is an alkali metal atom, and thereafter injecting a series of small slugs of (1) a dilute aqueous solution of said alkaline alkali metal silicate, (2) water, (3) a dilute aqueous solution of a water-soluble material that reacts with the alkaline alkali metal silicate to form a precipitate, and (4) water; repeating steps 1 through 4 a plurality of times; and recovering petroleum from said production well.

3,871,454

WATER FLOOD PROCESS IN CLAY-BEARING SUBSURFACE FORMATIONS

William M. Harrison, 364 Chevy Chase, Houston, Tex. 77478

Continuation-in-part of Ser. No. 100,363, Dec. 21, 1970, abandoned. This application May 3, 1973, Ser. No. 356,829

Int. Cl. E21b *43/22*

U.S. Cl. 166—275 **5 Claims**

1. In the method for improving the production of oil from an oil-producing formation containing bentonitic clays by injecting water flood materials into a bore hole connecting the oil-bearing formation with the surface of the earth, the improvement which comprises, injecting the water flood material containing an effective amount to prevent swelling and disintegration of clay in the formation but not more than about 0.1 percent by volume, with respect to water in the water flood material, of a sulfonated carbohydrate.

3,871,455

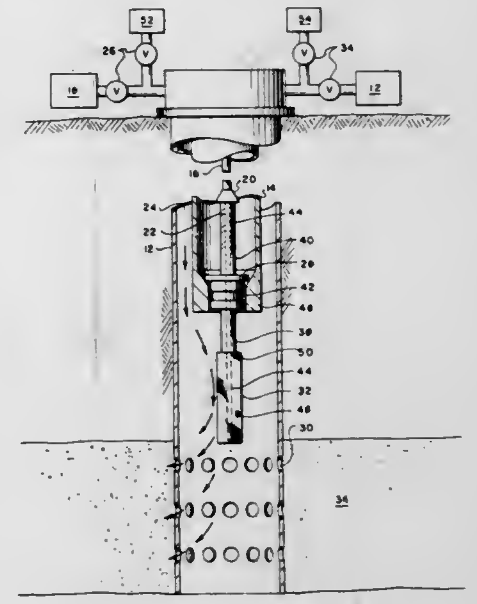
METHOD OF FORMATION CONSOLIDATION

William C. Hardy, Richardson; Edward F. Schultze, Dallas, and John C. Shepard, Richardson, all of Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Division of Ser. No. 189,854, Oct. 18, 1971, Pat. No. 3,812,913. This application Oct. 25, 1973, Ser. No. 409,488

Int. Cl. E21b *33/138, 43/24*

U.S. Cl. 166—288 **5 Claims**



1. In a formation comprising unconsolidated material penetrated by a wellbore and well pipe therein, the process of consolidating such material to prevent its encroachment into the wellbore comprising:

a. locating adjacent to the formation to be consolidated a catalytic heater having a fluid flow channel therein wherein a hydrocarbon containing fuel gas is flowed down the well pipe into contact with the fluid flow channel of the catalytic heater and an amount of oxidizing gas containing an amount of oxygen essentially greater than that needed to react with said fuel gas is flowed down an annulus between the well pipe and the wellbore whereupon the fuel gas and a portion of the oxygen in said oxidizing gas react thereby providing heat,

b. flowing the excess portion of said oxygen containing gas past said heat source and into said formation to initiate combustion of the formation fluids in situ continuing as long as the oxygen supply is continued,

c. ceasing the flow of said oxygen containing gas,

d. withdrawing said heat source,

e. bonding said heated formation with a substance which acts as a bonding agent when subjected to heat in said formation,

f. relocating said heat source adjacent to said formation

g. contact heating a non-oxidizing gas with said heat source and injecting it into said formation at a rate sufficient to insure permeability of said formation and to enhance the curing of said bonding agent.

3,871,456

METHODS OF TREATING WELLS

Phillip S. Sizer, Dallas, and Carter R. Young, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

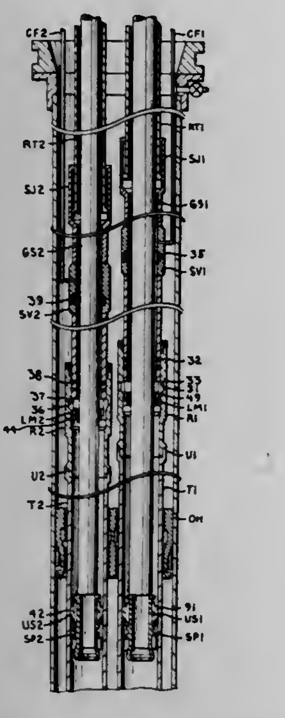
Division of Ser. No. 210,727, Dec. 22, 1971,. This application Mar. 23, 1973, Ser. No. 344,363

Int. Cl. E21b *23/00, 29/00, 43/00*

U.S. Cl. 166—298 **31 Claims**

1. A method of treating a well having a producing flow conductor in place therein to provide a surface controlled subsurface safety valve in said flow conductor for controlling flow through said conductor which includes: plugging the

producing flow conductor at a predetermined point below the surface to close off flow from the well therethrough; selecting a desired location in the flow conductor below the surface for parting the flow conductor; parting the flow conductor at such location; removing the parted upper portion of the conductor from the well; inserting a replacement upper flow conductor portion having a surface controlled normally closed subsurface safety valve therein in the well in flow communication



with the portion of the original flow conductor left in place in the well below the point of parting for controlling flow through said original flow conductor and through said replacement portion; unplugging the flow conductor below the safety valve; and controlling operation of said surface controlled subsurface safety valve from the surface in response to predetermined undesired conditions in the well or at the surface to close off flow through the flow conductor.

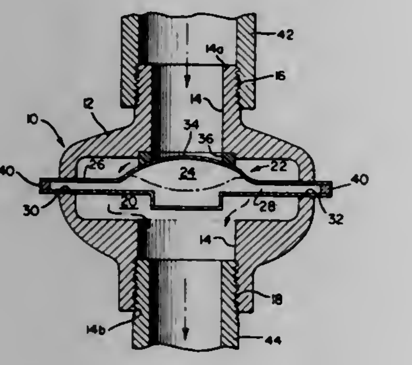
3,871,457
FLUID CONTROL DEVICE AND A FIRE PROTECTION SYSTEM INCORPORATING SAID DEVICE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Mar. 4, 1974, Ser. No. 447,673

Int. Cl. A62c *37/06*

U.S. Cl. 169—20 **4 Claims**



1. A fluid control device comprising a body having a passage therethrough between an inlet adapted to be connected to a source of fluid under pressure and an outlet adapted to be connected to a head for discharging said fluid; a movable member normally blocking said passage and having one side exposed to fluid pressure in said passage; means including said movable member for defining a closed chamber for containing a pressurized fluid, said pressurized fluid normally forcing said movable member into said passage blocking position, said movable member adapted to move from said passage blocking position in response to the fluid pressure in said passage exceeding a predetermined value sufficient to overcome the force of said fluid in said chamber, to permit the fluid in said passage to flow to said head for discharge; and means responsive to the presence of a predetermined temperature in the vicinity of said body member to permit the escape of said fluid from said chamber and permit said movable member to be forced from said passage blocking position by the fluid in said passage, regardless of the pressure of said latter fluid.

3,871,458
DEVICE FOR SUPPRESSING THE IGNITION OR EXPLOSION OF ESCAPING COMBUSTIBLE GASES UNDER HIGH PRESSURE

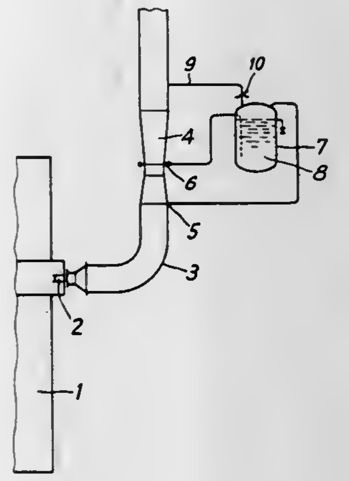
Eugene Dumazet, Ste Catherine-les-Arras, France, assignor to Societe Ethylene Plastique, Courbevoie, France

Filed Dec. 8, 1972, Ser. No. 313,420

Claims priority, application France, Dec. 14, 1971, 71.4490

Int. Cl. A62c *3/00*

U.S. Cl. 169—45 **5 Claims**



1. A device for suppressing the ignition or explosion of a combustible gas escaping under pressure from a high pressure ethylene polymerization reactor, which comprises a pressure-relief valve for venting combustible gas under pressure from said reactor, a duct connected to said pressure-relief valve to receive said combustible gas, a venturi in said duct, a reservoir for a combustion-suppressing fluid, and conduit means for connecting the venturi to the said duct both upstream of and at the divergent section of said venturi, in relation of the gas flow, in such a way that the pressure differential produced by the passage of the gas through the venturi forces fluid out of the said reservoir into the path of the said gas in the said duct.

3,871,459
METHOD AND A DEVICE FOR COMBATING SODIUM FIRES

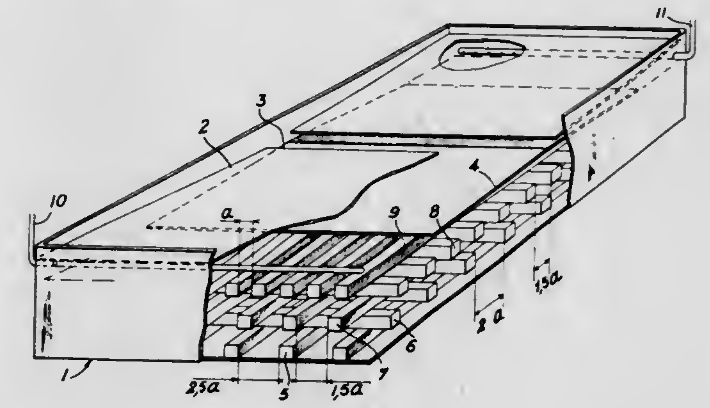
Michel Falgayrettes, 6 Les Sarments, 04 100 Manosque; Robert Pontier, Bellver, Traverse Malakoff, and Michel Sauvage, Parc Laurana, Traverse Malakoff, both of 13 100 Aix-en-Provence, all of France

Filed May 9, 1973, Ser. No. 358,820

Claims priority, application France, May 18, 1972, 72.17908

Int. Cl. A62c *3/00*

U.S. Cl. 169—49 **13 Claims**



1. A method of combating sodium fires, wherein the burning sodium is subjected simultaneously to confinement within an enclosure which reduces the oxygen supply and to powerful cooling by contacting the sodium within said enclosure with a heat sink which absorbs a large quantity of heat.

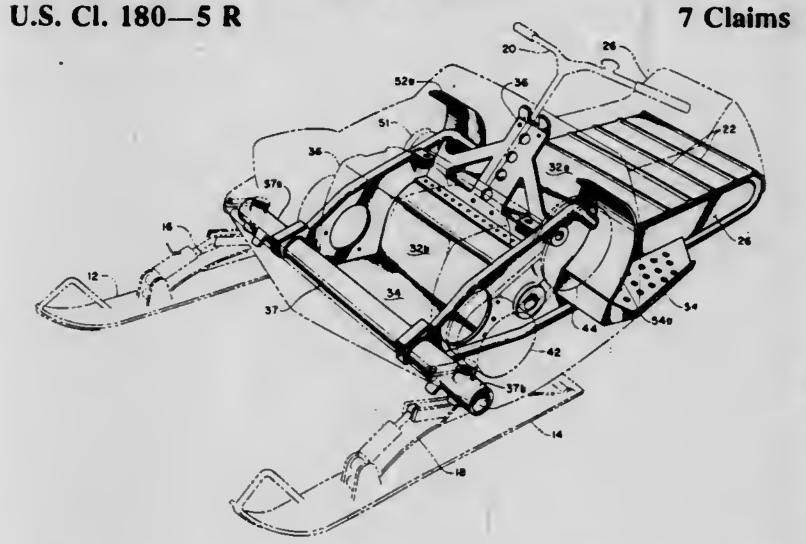
3,871,460
SNOWMOBILE FRAME

Douglas K. Dehnert, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.

Filed Oct. 23, 1973, Ser. No. 408,470

Int. Cl. B62d *27/02*

U.S. Cl. 180—5 R **7 Claims**



1. In a snowmobile having a forward portion substantially supported by steerable ski means attached to said forward portion, a rear portion having a seat and being supported by a suspension system including a ground-engaging endless drive tread and a forwardly located engine compartment, an improvement in a body frame comprising:

a pair of spaced-apart elongated side panels, each side panel extending longitudinally in a single plane along the rear portion of said snowmobile and along the forward portion thereof to a point approximately in line with the attachment of said ski means to said forward portion, each of said side panels including a stiffening member around the periphery thereof, a transverse panel extending laterally between said side panels, said transverse panel having a rearward portion disposed between rear portions of said side panels for supporting said seat and having a forward portion for separating said engine compartment from said drive tread area while forming the bottom of said engine compartment, and a drive clutch assembly operatively mounted directly on one of said side panels.

3,871,461
STEERING DRIVE MECHANISMS

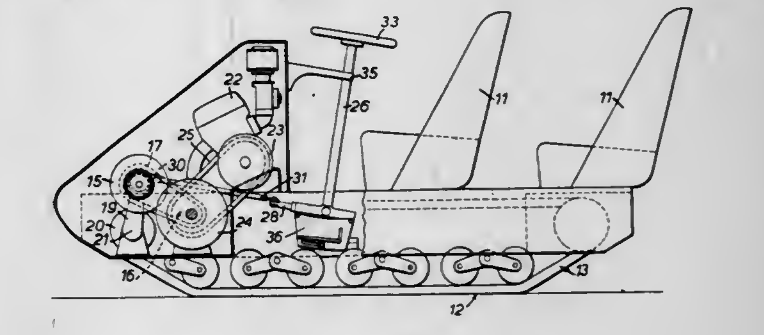
Josef Ehrlich, Bridgewater House, Ashridge near Berkhamstead, Hertfordshire, England

Filed Feb. 23, 1973, Ser. No. 335,334

Claims priority, application United Kingdom, Feb. 25, 1972, 8831/72

Int. Cl. B62d *11/06*

U.S. Cl. 180—6.2 **11 Claims**



1. A drive mechanism comprising:
- a drive input;
- left and right drive output wheels;
- a first belt and pulley drive for said left drive output wheel; a second belt and pulley drive for said right drive output wheel;
- each of said first and second belt and pulley drives having a drive pulley coupled to said drive input, a driven pulley, a belt connecting said drive pulley and said driven pulley and drive coupling means for coupling said driven pulley to its respective output wheel;
- each of said driven pulleys being mounted on an arm radial of its respective output wheel;
- means for infinitely varying the drive ratio of at least one of said first and second belt and pulley drives; and
- steering control means for operation by a user to operate said infinitely variable ratio drive means by varying the distance of the driven pulley from the driving pulley in said at least one of said first and second belt and pulley drives, by a turning movement of said radial arm about the axis of the respective output wheel.

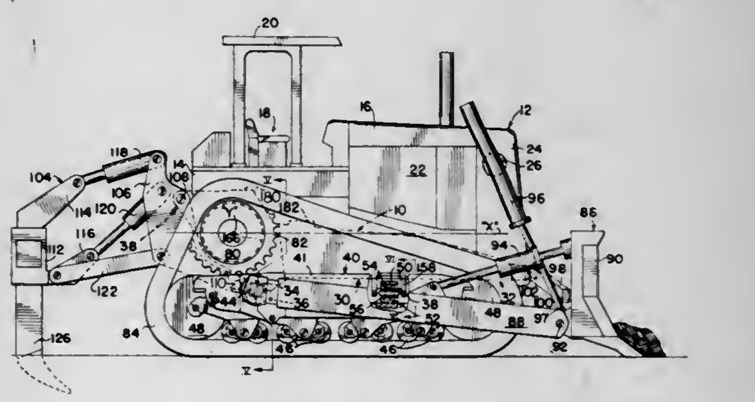
3,871,462
VEHICLE MAIN FRAME

Ronald L. Krolak, Metamora; Albert Gianessi, East Peoria, and George F. Alexander, Pekin, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 5, 1973, Ser. No. 338,314

Int. Cl. B62d *55/02*

U.S. Cl. 180—9.5 **14 Claims**



1. A vehicle main frame having a longitudinal axis subjected to relatively high loads in a pair of spaced essentially vertical

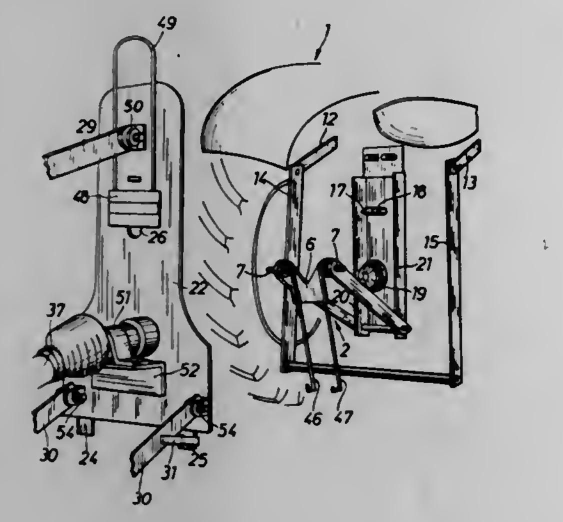
planes disposed substantially parallel to such a frame axis and supported by ground-engaging means through pivot support bearing means, comprising;

housing means having an axis oriented transversely of said frame axis and having outwardly disposed opposite ends; and

a pair of elongated sidewalls disposed in laterally spaced substantially parallel relation individually rigidly secured in completely marginally contacting fully embracing relation to said opposite ends of said housing means and having extended portions spaced outwardly from said housing means within said planes to provide a mounting for such pivot support bearing means about which the frame is permitted to pivot relative to the ground-engaging means during vehicle travel and for substantially directly transmitting said high loads to such ground-engaging means in generally load-bypassing relation to said housing means to minimize distortion thereof.

3,871,463
DEVICE FOR CONNECTING A TRACTOR WITH AN AGRICULTURAL IMPLEMENT

Hubert Geisthoff, Lohmar, Germany, assignor to Jean Walterscheid GmbH, Siegburg-Lohmar, Germany
Filed Aug. 21, 1973, Ser. No. 390,198
Claims priority, application Germany, Aug. 23, 1972, 2241434
Int. Cl. B60d *1/08*
U.S. Cl. 180—14 B **18 Claims**

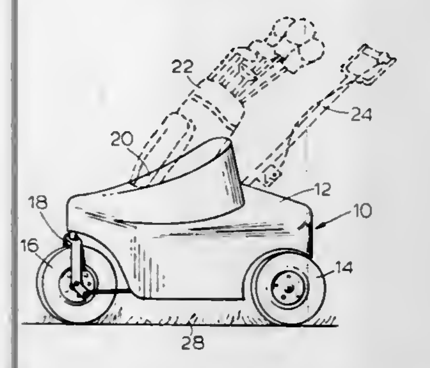


1. In a device for connecting an agricultural implement to a tractor, the combination of a mounting plate on the implement, catch arm means on said tractor for engaging such implement mounting plate, vertical and horizontal alignment means on said catch arm means, said mounting plate having alignment means thereon engagable with said catch arm alignment means for aligning said implement mounting plate with respect to said tractor, and means on said tractor and mounting plate for coupling said mounting plate to said tractor.

3,871,464
SELF-PROPELLED GOLF BAG CART

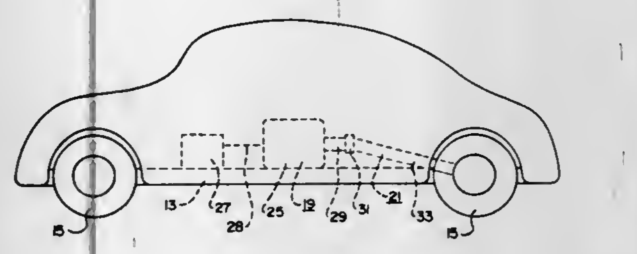
John W. Eden, 1101 Farquhar Dr., York, Pa. 17403
Filed Sept. 12, 1973, Ser. No. 396,347
Int. Cl. B62d *51/06*
U.S. Cl. 180—19 S **7 Claims**

1. A power driven cart to carry a golf bag and steered manually by a person walking rearwardly of said cart, said cart comprising in combination, a frame having means to support a golf bag, a pair of wheels rotatably connected to the rear portion of the frame at opposite sides thereof, power means carried by said frame and interconnected to said wheels to drive the same uni-directionally, yoke means supported by the forward end of said frame within a substantially vertical bearing, a steering wheel supported by said yoke, a steering arm pivotally supported by said frame adjacent the rearward end thereof and having a manually engageable handle extending rearwardly therefrom; linkage means connected between said yoke and said steering arm to effect turning of said front wheel by movement of said rearwardly extending steering arm; and steering control means connected to said steering arm and comprising a centering arm extending outwardly relative to the pivot for said steering arm, and spring means connected to said frame and engaging said centering arm to bias the same in a direction to direct said steering wheel in a forward direction when said manually engageable handle is released, said spring means being placed under increased tension when said steering wheel is turned from a forward direction, whereby said increased tension causes said spring to move said centering arm and steering wheel as aforesaid.



3,871,465
VEHICLE WITH VERTICALLY MOVABLE POWER WHEELS

Frank R. Nichols, deceased, late of 162 N. Holmes, Memphis, Tenn. 38111 (by Pauline Harris Nichols, executrix)
Filed Nov. 10, 1972, Ser. No. 305,490
Int. Cl. B62d *61/12*
U.S. Cl. 180—24.02 **3 Claims**

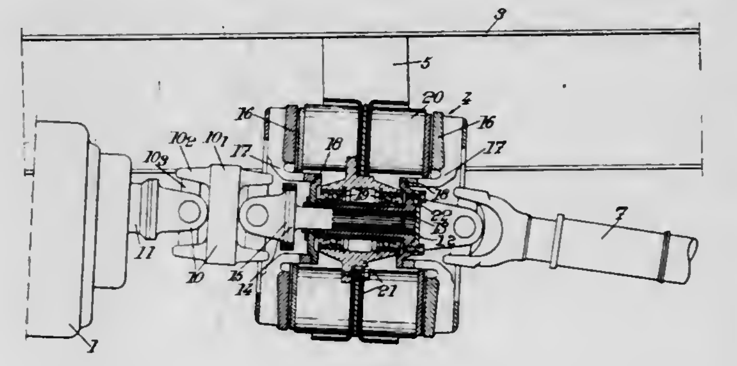


1. A vehicle for travel over a roadway, said vehicle comprising: a chassis, support wheels rotatably mounted on said chassis for supporting said vehicle on the roadway, at least a pair of power wheels adjustably mounted from said chassis for substantially vertical movement relative to said chassis to allow variable frictional engagement with the roadway, a motor means mounted on said chassis, coupling means between said motor means and said power wheel for transmitting power from said motor means to said power wheels, and means for variably forcing said power wheels into frictional engagement with the roadway to provide the needed traction to move said vehicle while said vehicle is substantially supported by said support wheels thereby reducing the power needed to move said vehicle to a minimum; said coupling means comprising a universal joint attached to the output shaft of said motor means for allowing relative movement between said motor means and said pair of power wheels, a drive shaft attached to said universal joint opposite the output shaft of said motor means, differential means attached to said drive shaft opposite said universal joint, and axle means attached to said differential means and to said pair of power wheels; said means for variably forcing said pair of power wheels into frictional engagement with the roadway comprising arm means pivotally attached to said chassis and to said

axle means, means for applying a force against said arm means, and means for activating said means for applying a force against said arm means; said means for applying a force against said arm means comprising a fluid piston means.

3,871,466
TRANSMISSIONS OF VEHICLES EQUIPPED WITH A RETARDER

Pierre Etienne Bessiere, Golf Saint-nom-la-Breteche, France, assignor to Labavia S.G.E., Paris, France
Filed Dec. 4, 1972, Ser. No. 311,559
Claims priority, application France, Dec. 8, 1971, 71.44110
Int. Cl. B60k *33/00*
U.S. Cl. 180—70 P **8 Claims**

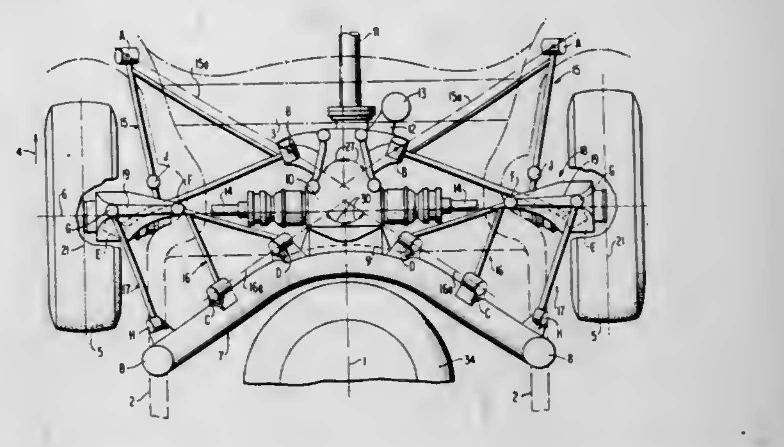


1. Vehicle transmission equipped with a retarder interposed between the gear box and the axle of this vehicle, in which the stator of the retarder is suspended from the chassis of the vehicle independently of the gear box and of the axle and in which the rotor of the retarder is coupled respectively to the output shaft of the gear box and to the input shaft of the axle through two homokinetic coupling assemblies, the rotor of the retarder comprising a cylindrical internally grooved sleeve open in the direction of the gear box and mounted inside bearings borne by said stator and bearing respectively at its two axial ends two plates each bearing an induction disc through a crown of fins fixed at the periphery of the plate, the plate arranged on the side of the axle being bolted to a plate which forms part of the homokinetic coupling assembly arranged between the retarder and the axle, the homokinetic coupling assembly being situated between the gear box and the retarder and having a very small and invariable axial size, and an externally grooved stub shaft axially slidably engaged in said sleeve terminating said homokinetic coupling assembly on the side of the retarder.

3,871,467
INDEPENDENT WHEEL SUSPENSION FOR NON-STEERED WHEELS OF MOTOR VEHICLES

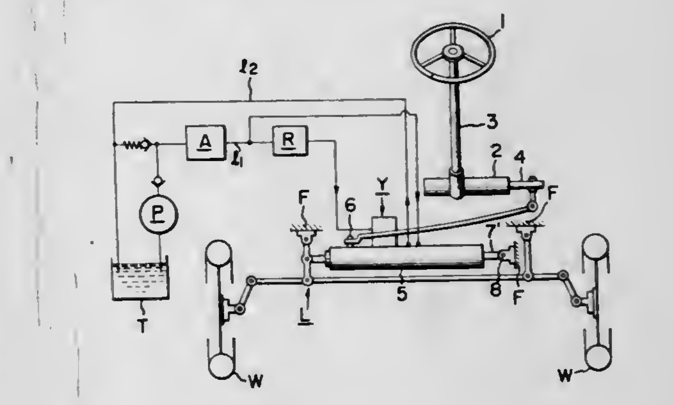
Ernst Senft, Moglingen, and Manfred Von der Ohe, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Apr. 23, 1973, Ser. No. 353,644
Claims priority, application Germany, Apr. 24, 1972, 2220034
Int. Cl. B60g *3/18*
U.S. Cl. 180—73 C **60 Claims**

1. An independent wheel suspension for motor vehicles which includes guide means and wheel carrier means guided as couplers by said guide means, track link steering lever means connected with the wheel carrier means and extending substantially in a vehicle vertical transverse plane, and track rod means pivotally connected with the track link steering lever means in a point of pivotal connection that extends in a plane approximately parallel to the plane of a respective one of said guide means, characterized in that the track rod means with its point of pivotal connection at the track link steering lever means is located at least at approximately the same height as the point of pivotal connection of said one guide means at the wheel carrier means, and in that the track rod means is pivotally connected with its point of pivotal connection opposite the track link steering lever means within the area of the axis of rotation of said one guide means.



3,871,468
COURSE CONTROLLING DEVICE FOR A VEHICLE

Kimio Miura, Sakado-Machi, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 11, 1973, Ser. No. 405,655
Int. Cl. B62d *5/08, 5/10*
U.S. Cl. 180—79.2 R **2 Claims**



1. A course controlling device for a vehicle having steerable road-engaging wheels, comprising hydraulic actuator means operable to turn the steerable wheels of the vehicle, said hydraulic actuator means including an oil hydraulic cylinder having an oil hydraulic chamber therein, a piston slidably accommodated in said chamber and defining therein a pair of left and right spaces; a source of pressure oil; oil lines communicating between said source of pressure oil and said left and right spaces of said chamber; a course change detector means for detecting any change in course of the vehicle; control valve means comprising a spool valve, said spool valve being disposed in said oil lines between said source of pressure oil and said left and right spaces for selectively placing the former in communication with either of the latter; a first pressure receiving region including a piston formed integrally with said spool valve and a pair of left and right fluid spaces defined by said last-mentioned piston on opposite sides thereof, said fluid spaces being disposed on the output side of said course change detector means so as to receive pressure oil from the latter in respective amounts varying with the detected course change of the vehicle; a second pressure receiving region including a thrust element formed integrally with said spool valve, and a steering force transmitting member operably connecting said thrust element with the steering wheel of the vehicle so as to transmit a steering force from the steering wheel to said thrust element, said oil hydraulic cylinder incorporating therein said control valve and said first and second pressure receiving regions each in coaxial relation therewith, whereby said control valve means is operable under a pressure differential produced between said first and second pressure receiving regions to control said hydraulic actuator means.

3,871,469
STEERING MECHANISMS

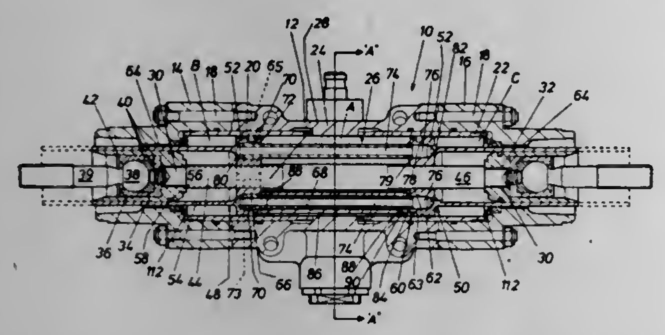
Barry J. Millard, and Leslie R. Jenvey, both of Reading, England, assignors to Adwest Engineering Limited, Reading, England

Filed Nov. 6, 1973, Ser. No. 413,396

Claims priority, application United Kingdom, Oct. 20, 1972, 48407/72

Int. Cl. B62d *3/12, 5/10*

U.S. Cl. 180—79.2 R **5 Claims**



1. In a rack-and-pinion steering mechanism suitable for steering one set of steerable road wheels of a motor vehicle having two such sets, an elongate housing, a pinion rotatably mounted in the housing and connectable with the steering control of a motor vehicle for rotation thereby, a link member extending longitudinally of the housing, the link member being movable longitudinally relative to the housing and the opposite ends of the link member being connectable to a set of steerable road wheels for imparting steering thereto, a toothed rack in constant mesh with said pinion and mounted for longitudinal sliding movement in said housing, and selectively operable means for selectively connecting the toothed rack to said link member so that longitudinal movement imparted to the toothed rack by rotation of said pinion will be transmitted to the link member or locking the link member in a centralized position and freeing the toothed rack for longitudinal movement relative to the link member while maintaining meshing engagement between the rack and the pinion.

3,871,470
SAFETY BELT TENSIONING DEVICE

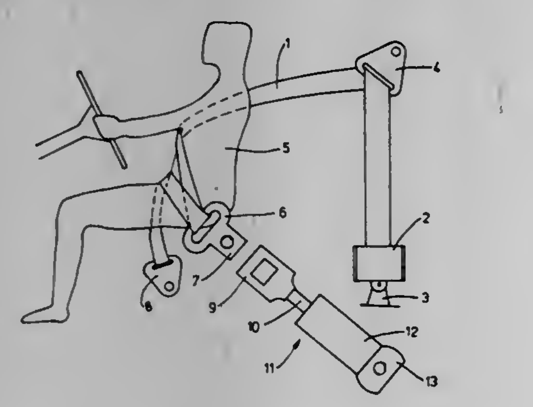
Wilfried Schwanz; Ernst Fiala, both of Braunschweig; Rolf Warnecke, Ribbesbuttel, and Peter Buchholz, Braunschweig, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 24, 1972, Ser. No. 299,783

Claims priority, application Germany, May 12, 1972, 2223061

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **3 Claims**



1. Apparatus for tensioning a restraining device when actuated, comprising, in combination:

a. piston means;

b. cylinder means, surrounding said piston means, for applying a force to cause said piston means to move therein upon actuation, said cylinder means including a propellant charge for applying said force when released, said cylinder means being further provided with at least one discharge opening for controlling the velocity of said piston means;

c. actuatable sensor means for releasing said propellant charge when actuated;

d. intermediate means including a piston connecting rod, connecting said piston means to the restraining device, for tensioning the restraining device upon movement of said piston; and

e. return stop means acting directly on said piston means for maintaining tension in the restraining device after tensioning by said intermediate means, said return stop means including:

1. at least two gripping jaws surrounding said connecting rod, the outer diameter of said gripping jaws being conically tapered such that said outer diameter is reduced in the direction of locking, and
2. jaw closing means surrounding said gripping jaws, the inner diameter of said jaw closing means being adapted to the contour of said outer diamter of said gripping jaws.

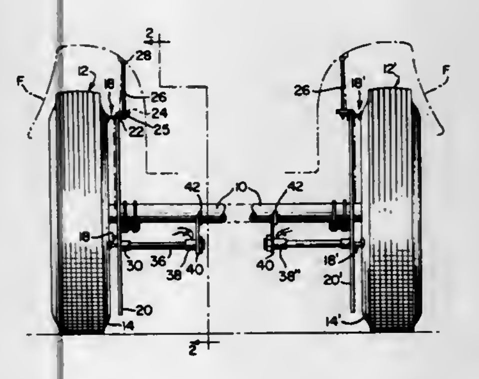
3,871,471
AUXILIARY SYSTEM FOR DECELERATING VEHICLE

Walter C. Wong, 1104 Pensacola St., Honolulu, Hawaii 96814

Filed Mar. 9, 1973, Ser. No. 339,575

Int. Cl. B60t *1/04*

U.S. Cl. 180—82 R **12 Claims**



1. An auxiliary system for decelerating a motor vehicle in imminent danger of collision, said system being operable to supplement the braking effect of the vehicle's brakes, said system comprising one or more wheels having a pneumatic tire equipped with laterally inwardly extending valve means on the inner sidewall thereof, deflating means movably supported on said vehicle laterally inwardly of said valve means, shifting means normally restraining said deflating means out of engagement with said valve means and upon being actuated urging said deflating means into engagement with said valve means to reduce pressure of said tire upon actuation of said shifting means by command means by the operator of the vehicle, said valve means comprising two or more circumferentially spaced valves each having a laterally inwardly directed valve stem and a tubular housing around said stem and terminating short of the free end of said stem, said deflating means comprising an annular plate member supported for movement laterally of the vehicle into and out of engagement with said valves, and upper support means for said annular plate member including an L-shaped bracket fixedly secured to said plate member and formed with a laterally extending guide slot through which extends a rod in supporting relationship with said bracket.

3,871,472
ACTUATOR OF MOTOR VEHICLE SAFETY DEVICE

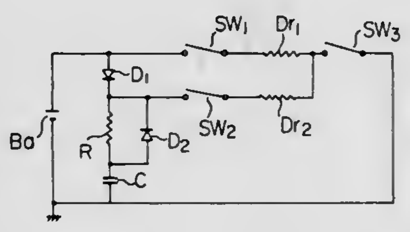
Akio Hosaka, and Shunji Matsui, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Feb. 22, 1973, Ser. No. 334,623

Claims priority, application Japan, Feb. 23, 1972, 47-21616

Int. Cl. B60r *21/10*

U.S. Cl. 180—103 **2 Claims**



1. An actuator of safety devices for a motor vehicle comprising:

a main DC power source;

a first series circuit connected across said power source and formed by an instant impact responsive collision sensor which is connected to a first electrically actuable detonating means;

a second series circuit connected in parallel with said first series circuit and formed by a delayed-action impact responsive collision sensor which is connected to a second electrically actuable detonating means; and

an auxiliary power source for actuating said second detonating means and comprising a first diode connected between one terminal of said main power source and said second series circuit, a series connection formed by a resistor having one terminal connected to a junction between said one terminal of said main power source and said first diode and a capacitor connected between the other terminal of said resistor and the other terminal of said main power source, and a second diode having one terminal connected to the other terminal of said resistor and with the other terminal of said second diode being connected to a junction between said first diode and said delayed-action impact responsive collision sensor.

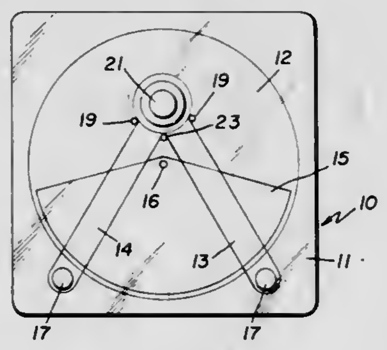
3,871,473
SWITCH

Leon H. Castonguay, Wheelright, Mass., assignor to Astratronics, Inc., Wheelwright, Mass.

Filed May 1, 1972, Ser. No. 249,060

Int. Cl. B06k *27/08*

U.S. Cl. 180—104 **4 Claims**



1. A vehicle safety system, comprising:

a. a vehicle,

b. a motor having an electrical system, said motor being adapted to drive said vehicle,

c. an attitude-sensitive switch located in said electrical system rigidly mounted in the vehicle, and residing in a first state when the switch is positioned in a usual attitude with respect to a horizontal reference plane, but being transferred to a second state when the attitude of the switch assumes a predetermined deviation from said usual attitude, said second state involving an interuption of said electrical system to shut off said motor

d. holding means adapted to retain the switch in said second state regardless of the subsequent attitude of the switch,

e. releasing means adapted to inactivate for a time the ability of the holding means to retain said switch in said second state, and

f. retaining means adapted to allow the switch to move from its first state only if the switch assumes said deviation, wherein a channel is provided with a first and a second end, wherein a contactor is provided movable in the channel, and wherein the retaining means includes a pendulum which can swing into the channel and thereby restrict movement of the contactor.

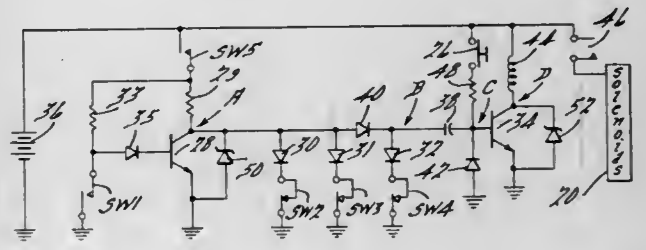
3,871,474
ELECTRIC AUTOMATIC DOOR LOCKING SYSTEM

Patrick W. Tomlinson, Warren, Mich.; James P. Chandler, Huntsville, Ala., and Mark W. Scott, Sterling Heights, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed June 6, 1973, Ser. No. 367,604

Int. Cl. B60r *21/02*

U.S. Cl. 180—112 **5 Claims**



1. In a motor vehicle having a plurality of doors with each door being provided with door latching and locking mechanism, an electric automotive door locking system comprising:

a source of power;

a solenoid control unit operatively connected to the door locking mechanism at each door of the vehicle, said solenoid control unit being responsive to an electrical signal for actuating the door locking mechanism;

an AND circuit formed by a first switch responsive to weight on a vehicle seat corresponding to the driver's position, a second switch responsive to engagement of the vehicle transmission into a drive position, a third switch responsive to running of the vehicle engine and a fourth switch responsive to closing of the vehicle doors, each of said first, second, third and fourth switches being operative to supply a ground voltage signal;

a logical control unit electrically responsive to said AND circuit for generating said electrical signal applied to each of said solenoid control units; and

an override control for electrically actuating the door lock mechanism regardless of the state of said AND circuit;

said logical control unit comprising:

a first transistor having its emitter-collector circuit electrically connected with said AND circuit so as to be capable of coupling said AND circuit with said source of power;

a second transistor electrically connected with said solenoid control unit so as to be capable of connecting said source of power to said solenoid control unit; and

a capacitor having one side thereof connected with said first transistor and its other side connected with said second transistor, said capacitor being responsive to a voltage level change from ground for causing said second transistor to energize said solenoid control unit.

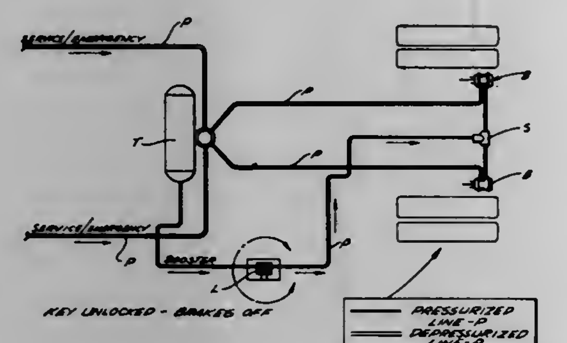
3,871,475
MOTOR VEHICLE SECURITY SYSTEM AND SECURITY METHOD

Billy E. Stevenson, Huntington Beach, and Thomas R. Rumsey, Inglewood, both of Calif., assignors to Royal Industries, Inc., Pasadena, Calif.

Division of Ser. No. 181,673, Sept. 20, 1971, Pat. No. 3,770,324. This application July 19, 1973, Ser. No. 380,588

Int. Cl. B60k *27/00*

U.S. Cl. 180—113 **8 Claims**



1. A motor vehicle security system comprising
- a vehicle having a plurality of wheels and at least one door, a source of pressurized air, controllable braking means coupled to the source of pressurized air, said braking means including mechanically powered alternate brake setting means coupled to the source of pressurized air and maintained in a deactuated brake setting condition in response to the application of pressurized air thereto and effective to automatically set the braking means upon failure of the pressurized air, said mechanically powered braking means including means for preventing the unauthorized operation of the braking means at said braking means,
- controllable locking means arranged on the motor vehicle and connected to control the locking and unlocking of at least the single door for the motor vehicle,
- lockable valve means coupled to said source of pressurized air and being manually operable to a locked condition for setting the mechanically powered brake setting means and locking same in the set position,
- said door locking means being coupled to the source of pressurized air through the lockable valve means to be placed in a locked and unlocked position by the corresponding operation of the lockable valve means, and
- control means accessible within the motor vehicle and coupled between said source of pressurized air and the locking means for controlling the application of the source of pressurized air to said locking means.

3,871,476
SKIRT FOR AIR CUSHION VEHICLE

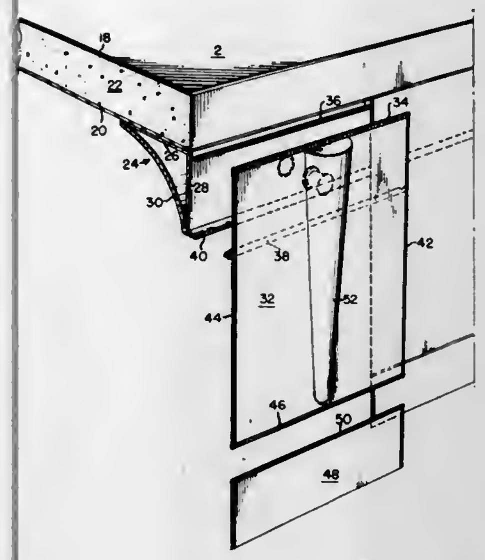
Walter A. Crowley, Rt. 1, Box 3352, Oak Harbor, Wash. 98277

Filed Oct. 2, 1972, Ser. No. 294,334

Int. Cl. B60v *1/02, 1/16*

U.S. Cl. 180—127 **5 Claims**

1. A skirt for use in an air-cushion vehicle having a main body portion comprising:
- a plurality of flexible, depending segments secured around the periphery of the main body of the vehicle and thus serving as the sides of the plenum,
- means for removably securing the segments together to form a continuous closed skirt,
- means for removably, individually securing each segment to the periphery of the main body portion, and
- means on each segment of the skirt and in fluid communication with the source of air under pressure to selectively rigidify each segment while still allowing sufficient flexibility to allow the vehicle to pass over upwardly projecting objects without damage.



3. A skirt as in claim 1 wherein the means for removably securing the segments together comprises respective zippers extending substantially the full length of the contiguous edges of adjacent segments.

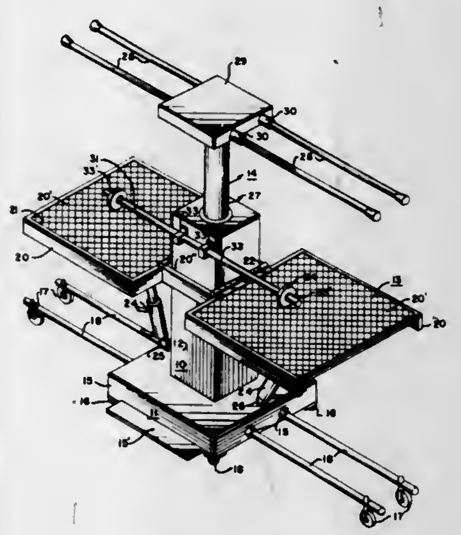
3,871,477
SHEETROCK LIFT AND SCAFFOLD

Johnnie Kuest, P.O. Box 1254, Twin Falls, Idaho 83301

Filed Feb. 7, 1974, Ser. No. 440,424

Int. Cl. B66f *9/12;* **E04g** *1/18*

U.S. Cl. 182—63 **6 Claims**



1. A combination scaffold and lift comprising:
- a truck provided with suitable casters and balance arms being in contact with the floor to stabilize said truck;
- a pedestal issuing upwardly from said truck;
- a platform issuing from opposing sides of said pedestal over said balance arms, said platform being freely slidable along said pedestal and being provided with means for raising and lowering said platform with respect to said pedestal;
- and a lift assembly including a lift column carried in said pedestal and including means for raising and lowering said lift column with respect to said pedestal, and having lift arms issuing from opposing sides of a bracket at the uppermost terminal end of said lift column.

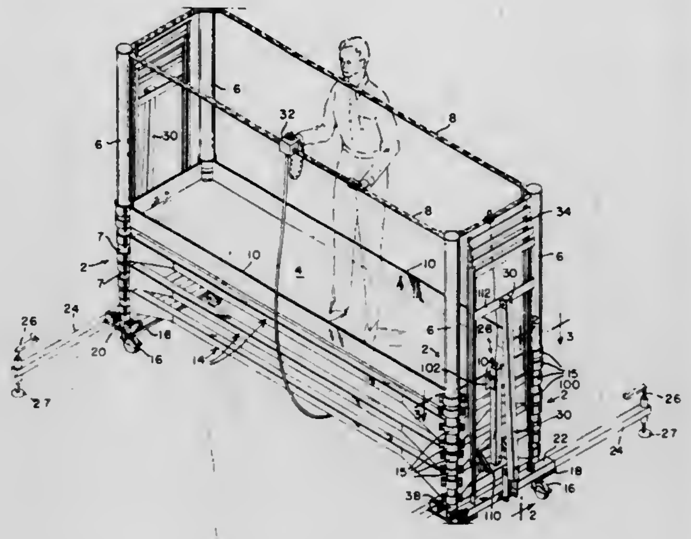
3,871,478
EXTENDIBLE STABLE WORKING PLATFORM

Sherman W. Bushnell, Jr., 2924 Western Ave., Seattle, Wash. 98121

Continuation-in-part of Ser. No. 190,052, Oct. 18, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,474

Int. Cl. E04g *1/22*

U.S. Cl. 182—63 **46 Claims**



1. An elongated rectangular working platform secured to four extendible telescoping cylinders, one at each corner, having an inherently stable base, said base comprising;
- framework rigidly interconnecting two of the lower cylinders,
- a vertical rigid upright member parallel to the cylinders secured to the framework,
- extendible bracing means pivotally secured to the upright member adapted to be extended to contact the floor at an angle to the cylinders providing a rigid base, and
- means rigidly interconnecting the lower section of the bracing means with the framework, pivotally mounted to both the framework and the bracing means whereby the interconnecting means may be pivoted upwardly, collapsing the bracing means against the framework, and
- telescoping outrigger means mounted for horizontal extension in the same direction as the axis of the framework to provide a broader, more stable base.

3,871,479
TELESCOPING STAIRWAY

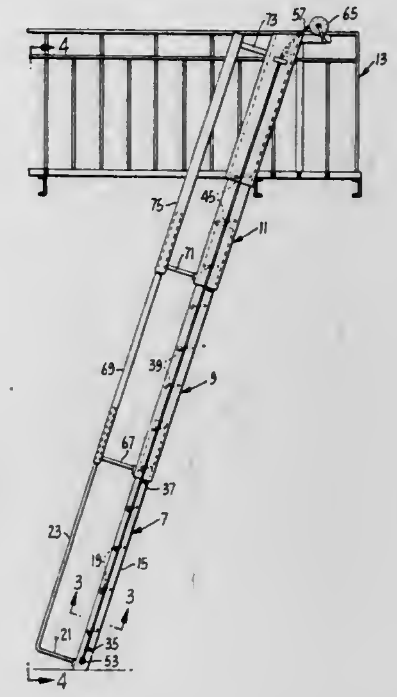
Clarence H. Pelto, 80 Duboce Ave., San Francisco, Calif. 94103

Filed July 13, 1973, Ser. No. 379,092

Int. Cl. E06c *1/38*

U.S. Cl. 182—86 **3 Claims**

1. A compact and rugged telescoping stairway comprising in combination:
- a. A first, elongate bottom stairway section comprising a pair of substantially parallel, spaced apart U-shaped channel members with their open sides facing each other and having a plurality of treads in fixed relationship between said channel members,
- b. a second section mounted above said first section, said second section including a pair of spaced apart, substantially parallel U-shaped channel members of slightly larger size than the channel members of the first section, whereby the channel members of the first section can telescope within the second section,
- c. the channel members of the second section each consisting of a center web section with front and rear flanges attached thereto,
- d. a plurality of tread members mounted between said second channel members, the ends of said tread members extending between said flanges, pivot means on each of said tread members pivoting said tread member at a point adjacent the front flanges and the rear of the tread member being free, whereby each of said tread members can lie in a first position parallel to and closely adjacent to the front flanges and can rotate to a second position wherein the tread member rests directly at an end portion thereof on the rear flanges and is directly supported thereby, whereby,



- e. said first section can telescope into said second section pushing the tread members of the second section from the second position wherein the rear surfaces of the tread members are supported directly by the rear flanges to the first position wherein the tread members lie parallel to the front flanges.

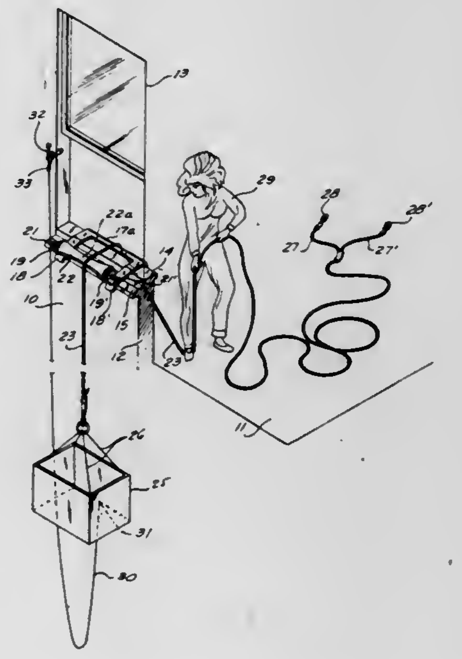
3,871,480
SAFETY AND ESCAPE MECHANISM

Richard Sauri, 85-18 118th St., Kew Gardens, N.Y. 11415

Filed Apr. 17, 1974, Ser. No. 461,524

Int. Cl. A62b *1/02*

U.S. Cl. 182—100 **14 Claims**



1. A safety mechanism for escape from buildings via above ground windows comprising in combination a guide roller having bracket means for securing the same parallel to a windowsill in a manner to protrude outwardly therefrom, and a rope substantially longer than the windowsill to ground dimension, basket means at one end of said rope of a size to

receive infants and small children in lying or seated position and larger individuals in a kneeling or standing position whereby an able-bodied operator within the building can quickly lower one or more individuals to ground level by controlling feed of said rope over the windowsill and roller, the other end of said rope terminating in a pair of integral rope extensions having loops at the extremities thereof, and said roller having axial extensions at opposed ends thereof adapted to be engaged by said loops with said engagement being enhanced by the application of tension to said rope, thereby providing a safe sliding escape means for said operator and other able-bodied individuals.

3,871,481

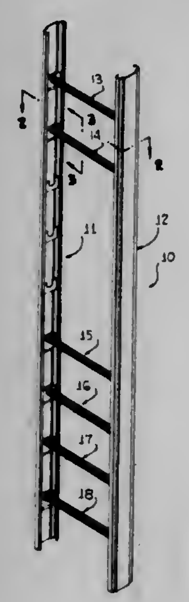
KNOCKDOWN LADDER WITH REMOVABLE RUNGS

William Ballek, 2995 Woodhaven Rd., Macon, Ga. 31204

Filed Dec. 26, 1973, Ser. No. 427,628

Int. Cl. E06c *1/38, 7/50*

U.S. Cl. 182—151 **5 Claims**



1. A knockdown ladder particularly adapted for use with a different number of rungs depending upon the particular height to which a person desires to climb comprising a pair of elongated side rails adapted when in use to be disposed in an upright position, a plurality of plates secured to opposing inboard sides of each side rail, the plurality of plates being disposed in transversely aligned pairs along the length of said side rails with each pair being adapted to couplingly support therebetween a ladder rung, each plate having an upwardly opening notch and with its associated side rail defining an upwardly opening slot, a plurality of ladder rungs, a plate secured to each ladder rung at opposite ends thereof, and said rung and rung plates being contoured to the general shape of said notches and slots respectively whereby downward movement of each ladder rung relative to the side rails and any transversely opposite side rail plates results in the reception of said rung plates into the associated slots and the reception of said ladder rung into the associated notches.

3,871,482

TREE STAND

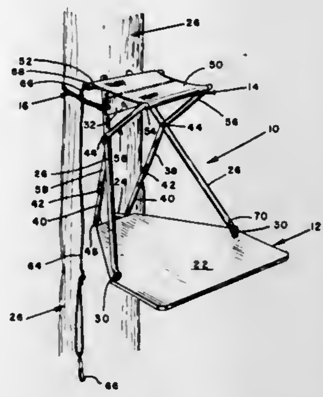
Benny S. Southard, Rt. 1, Box 711, Summerfield, N.C. 27358

Filed June 26, 1973, Ser. No. 373,689

Int. Cl. A47c *9/10*

U.S. Cl. 182—187 **9 Claims**

1. A portable, foldable tree stand upon which a hunter may stand or be seated comprising, a rigid base support means adapted to be positioned substantially horizontally in abutting relationship with the side of a tree, said base support means including a rigid platform, seat means pivotably mounted upon said base support means and located above said base support means when said tree stand is supported upon a tree and adapted to be collapsed against said base support means when transporting said tree stand, and elongated means adapted to be looped around said tree and adjustably secured to said seat means for supporting said tree stand upon said tree, said seat means including a pair of spaced rigid brace means and a pair of articulated brace means, said rigid and said articulated brace means being interconnected and pivotably mounted and securely fastened upon and cooperatively displaceable relative to said rigid base support means and a seat member foldable relative to said brace means and said rigid base means from a position supporting a seated hunter to a position for exposing substantially the entire rigid platform and supporting a hunter in a standing position.



3,871,483

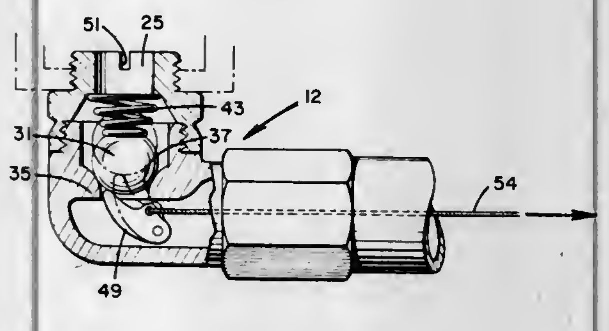
VEHICULAR DRAINAGE SYSTEM

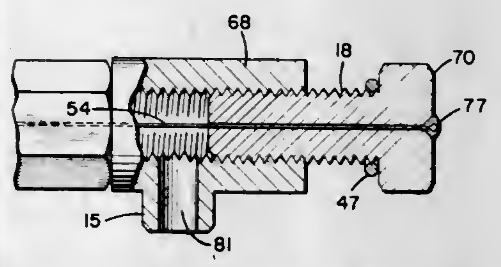
Rene J. Espinosa, and Dominador Espinosa, both of 21 S. Stone Ave., La Grange, Ill. 60525

Continuation of Ser. No. 133,138, April 12, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,434

Int. Cl. F01m *11/04*

U.S. Cl. 184—1.5 **5 Claims**





1. A drainage system comprising a check or coupling valve attachable to a vehicular sump, said valve seated on a valve seat, a length of tubing attached at one end to the outlet side of the valve seat, a rotatable drain plug movably secured to the other end of said tubing, said other end of said tubing defining a drain hole, and a cable interconnecting said valve and plug through said tube, said plug closing said drain hole in the tubing when inactivated and simultaneously uncovering the drain hole and opening the valve when activated.

3,871,484

OIL MIST LUBRICATION AND OIL IMMERSION SYSTEM

Henry A. Thomas, 423 Castle Kirk Ave., Baton Rouge, La. 70808

Filed Aug. 2, 1973, Ser. No. 384,971

Int. Cl. F16n *31/00*

U.S. Cl. 184—6.26 **10 Claims**

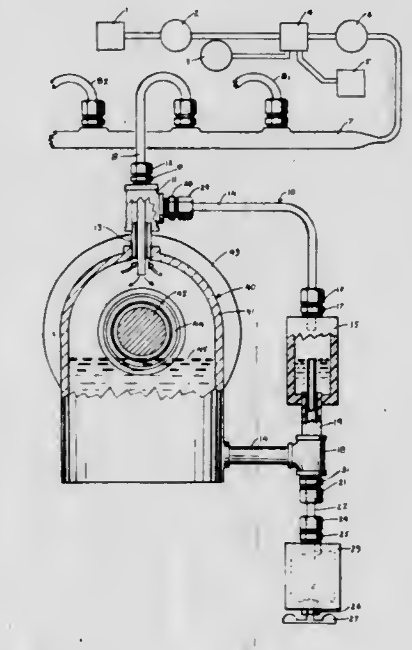
1. Apparatus for use with an oil mist lubrication system for the lubrication of machine elements and the like wherein an oil aerosol at above atmospheric pressure is conveyed via an aerosol supply conduit from said oil mist lubrication system, the combination which comprises:

a sealed housing, formed by an enclosing wall, within the confines of which there is mounted an end of a rotatable shaft which carries machine elements that are to be lubricated, a reservoir within the bottom of which an oil pool can be maintained at level sufficient that the lower portions of the machine elements can be partially immersed therein, and within which sealed housing an aerosol supply conduit is connected and in communication therewith for supply of oil aerosol at above atmospheric pressure to the housing,

a sealed closed loop conduit, one terminal end of which is connected to and in communication with the lower portion of the sealed housing below said oil level for supply of oil thereto, an intermediate portion at sufficient height above the bottom of the housing to permit an oil level to be maintained therein, and the opposite terminal end of which is connected to and in communication with an upper portion of the housing above the oil level,

oil collection means in open communication with, and in sealed relationship with said closed loop conduit,

whereby, oil aerosol supplied under above atmospheric pressure can enter into the upper portion of the closed sealed housing and into the vapor space of the housing via the aerosol supply conduit and into the upper portion of the closed loop conduit, and oil is provided ingress and egress to and from the oil pool at the bottom of the housing, lower portion of the closed loop conduit and intermediate portion of said closed loop such that an above atmospheric equilibrium pressure can be maintained upon the oil level in both the housing, closed loop circuit and oil collection means, this preventing fluctuating oil levels and differential pressures between the said housing and closed loop circuit.



3,871,485

LASER BEAM DRILL

Bernard J. Keenan, Jr., West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 2, 1973, Ser. No. 412,240

Int. Cl. E21b *7/00*

U.S. Cl. 175—16 **5 Claims**

1. A method for recovering liquid reserves from a subterranean formation through a borehole containing a drill string comprising

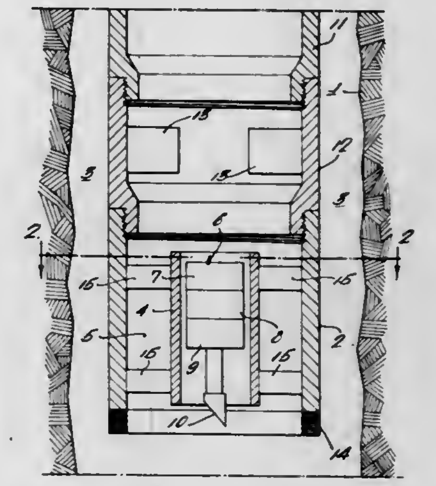
a. attaching a laser beam housing to the lower most section of the drill string,

b. positioning in said laser beam housing a self-contained and removable laser beam drill positioner,

c. positioning within said laser beam drill positioner a voltage generator and a laser beam generator electrically connected to and deriving its power from said voltage generator,

d. activating said voltage generator by drilling fluid passing through the drill pipe and

e. positioning a rotating beam reflecting crystal within the laser beam drill positioner whereby a beam projected from the laser beam generator is reflected across the face of the formation being drilled.



3,871,486

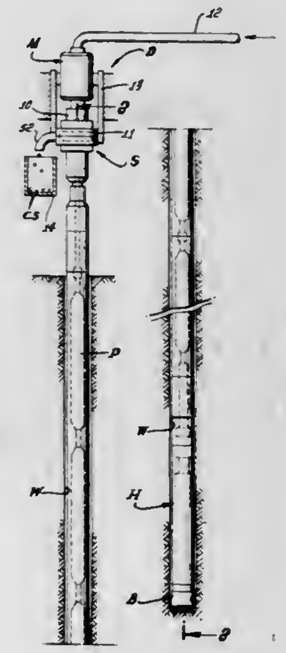
CONTINUOUS CORING SYSTEM AND APPARATUS

Alfred R. Curington, and Theodore J. Roscoe, Jr., both of Houston, Tex., assignors to Bakerdrill, Inc., Spartanburg, S.C.

Filed Aug. 29, 1973, Ser. No. 392,628

Int. Cl. E21b *1/06, 3/08, 5/00*

U.S. Cl. 175—100 **20 Claims**



1. In a system for continuously taking core samples from the bottom of a well bore while drilling the well bore: a dual drill pipe string extending into the well bore, an airhammer and percussion bit at the bottom of the drill pipe string, a swivel at the top of the drill pipe string connectable to a source of air under pressure, and means for rotating the drill string, said drill pipe string having one pipe for conducting air from the swivel to said airhammer and another pipe for conducting core samples from said percussion bit to said swivel, said swivel having means for conducting air to said one pipe and receiving said core samples from said another pipe, said air-

hammer having air operated hammer piston means and control means for reciprocating said hammer piston means, said percussion bit having an anvil engageable by said piston means upon reciprocation of the latter, cutting elements on said bit for drilling into the formation at the bottom of the well bore, including core cutting means at the center of the bit, and means for directing a major portion of the air supplied to said airhammer to actuate said piston means and thence exhaust to the well bore for flushing cuttings therefrom and a minor portion of the air supplied to said airhammer to said another pipe to carry core samples to said swivel.

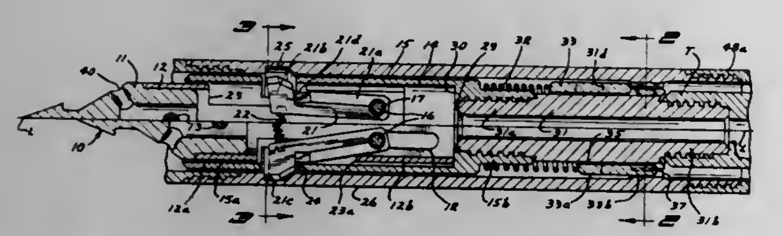
3,871,487
WIRE LINE SOIL SAMPLER APPARATUS

Jamshed Rustom Cooper, Minneapolis, and Walter W. Svendsen, New Brighton, both of Minn., assignors to Longyear Company, Minneapolis, Minn.

Filed Feb. 25, 1974, Ser. No. 445,643

Int. Cl. E21b *9/20, 25/00*

U.S. Cl. 175—248 **22 Claims**



8. For use in a drill stem having an axially outer end, an axially inner bit end and a latch seat adjacent the bit end that has an axially inwardly facing shoulder, wire line soil sampling apparatus comprising an axially elongated latch body having a tubular axially outer end portion, said latch body outer end portion having a latch slot opening transversely therethrough, a latch release member having a tubular portion axially slidably extendable into the latch body tubular portion, said latch release tubular portion having a latch retracting slot and opposed, axially elongated pivot member slots, a transverse pivot member mounted by the latch body and slidably extended through the pivot member slots to limit the axial movement of the latch release member relative to the latch body, and a latch pivotally mounted on the pivot member for movement between a latch seat engaging position extending through the latch body slot and the latch retracting slot, and a latch retracted position.

3,871,488
ROCK DRILLING

Daniel R. Sabre, c/o The Industrial Automation Co., 1520 N. Palethorpe St., Philadelphia, Pa. 19122

Continuation of Ser. No. 442,181, Feb. 13, 1974, abandoned. This application Apr. 4, 1974, Ser. No. 457,793

Int. Cl. E21b *9/22*

U.S. Cl. 175—406 **10 Claims**

1. In an earth cutting bit, the combination of:

a vertically aligned shaft portion;

a drilling head portion;

a vertical cylindrical portion in said drilling head;

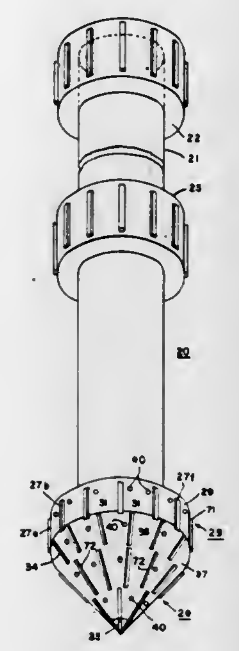
a plurality of cutting members secured to said cylindrical portion to provide knife-like cutting edges having a generally vertical direction, the arcual distances between cutting members being greater than 5 millimeters, said distances being adapted to minimize the likelihood of malign vibration during rotation of the bit, said cutting members having relatively hard composition;

vertically aligned debris channels between the cutting members on the cylindrical portion, said debris channels accommodating the flow upwardly of a stream of fluid containing entrained debris removed in drilling the hole, there being an effluent zone from the debris channels at the upper portion of said cylindrical portion each cross section of a debris channel comprising two sidewalls and a connecting surface;

a conical portion beneath said vertical cylindrical portion in said drilling head the tip of such conical portion being bottommost and coaxial with the entire bit, the maximum diameter of the conical portion being integral with the bottommost portion of the cylindrical portion;

cutting members on the conical portion, said cutting members having knife-life cutting edges, there being fewer cutting members near the conical tip than near the cylindrical portion of the bit, the rotation of said conical portion enhancing the propensities of said bit to drill a vertical hole notwithstanding variations in the formations penetrated by the bit, the arcual spacing between the cutting members being greater than 5 millimeters, the distances between cutting members being adapted to decrease the likelihood of malign vibration and the zones between cutting members being conically aligned debris channels, there being more debris channels at the upper portion of the conical portion than at the tip, the upper portion of the system of conically disposed debris channels feeding streams of fluid containing entrained debris to the system of debris channels on the cylindrical portion;

a plurality of ports within the debris channels, said ports being adapted to direct jets of fluid for urging debris generally upward toward the effluent zone from the debris channels, said flow of fluid having effectiveness in scouring the hole being drilled, whereby a significant portion of the cutting edges act upon surfaces previously scoured to substantially debris free condition, the fluid from said ports effectively cooling the cutting edges of the cutting members by reason of the controlled directional flow of the fluid, and whereby the debris-containing fluid is directed through the debris channels by relatively low resistance pressure routes toward the effluent zone and whereby the debris does not clog the zone adjacent a channel sidewall helping to form a knife-like cutting edge and whereby troublesome deposits of debris do not accumulate on a connecting surface of a debris channel and whereby significant scouring power and fluid pressure can be applied without troublesome uplifting propensities upon the rotating bit.



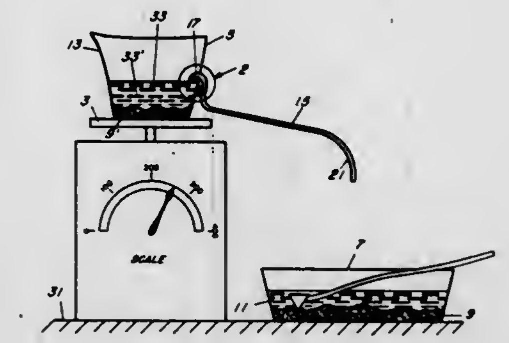
3,871,489
METHOD OF WEIGHING SOLID MATERIAL WETTED BY A NON-REACTIVE LIQUID

Edward N. Patigalia, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,479

Int. Cl. G01g *5/02;* **G01n** *9/02*

U.S. Cl. 177—1 **6 Claims**



1. A method of accurately determining the dry weight or dry density of a quantity of a solid material of known dry density or dry weight, respectively, wet by a film of a non-reactive liquid of known density, comprising the following steps:

filling a cup-shaped vessel, having an overflow means which determines a constant maximum volume, with the same kind of liquid to the level determined by said overflow means;

weighing the vessel with its liquid filling;

placing said solid material with its liquid film in said liquid-filled vessel, thereby displacing part of the liquid from the vessel;

weighing the vessel with the solid material and the remaining liquid; and

calculating the dry weight S or the dry density D_S of the solid material, using the known dry density or dry weight, respectively, of the solid material, the known density D_L of the liquid, the two measured weights, and the formula $S = D_S(B - A/D_S - D_L)$

where B is the measured weight of the vessel filled with solid and liquid, and A is the measured weight of the vessel filled with liquid alone.

3,871,490
WEIGHING AND PRINTING APPARATUS

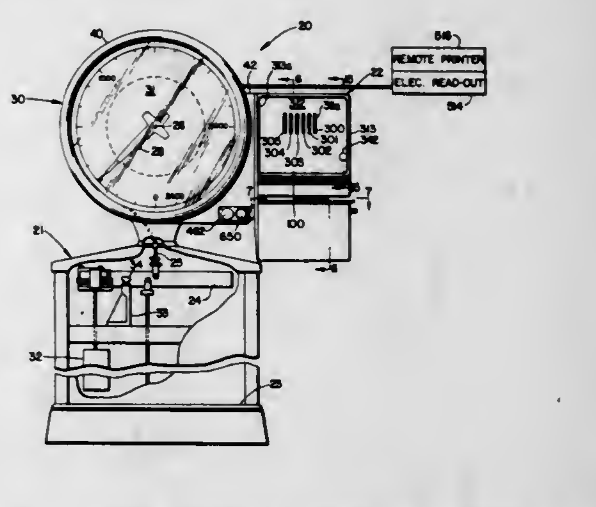
Austin L. Davis, Brandon, and Harley R. Davidson, Rutland, both of Vt.

Division of Ser. No. 309,879, Nov. 27, 1972,. This application Feb. 27, 1974, Ser. No. 446,404

Int. Cl. G01g *23/38*

U.S. Cl. 177—10 **10 Claims**

1. In an apparatus for weighing a load and for printing the weight of the weighed load, a scale mechanism for weighing the load, a printer having a plurality of rotatably mounted carriers, a lock member mounted for displacement between a locking position where it directly engages said carriers to lock said carriers against rotation and an unlocking position where it releases said carriers to allow rotation thereof, a rotatably mounted shaft forming a part of said scale mechanism, means forming a part of said scale mechanism for rotating said shaft through an angular distance that is proportional to the weight of the load being weighed, cam means mounted on said shaft, means operatively connected to said carriers and including elements that are cooperatively engageable with said cam means for rotating said carriers to positions for printing the weight of the weighed load, and selectively operated means for sequentially engaging said elements with said cam means to rotate said carriers to positions for printing the weight of the weighed load and for displacing said lock member to its locking position to lock said carriers in the positions to which said carriers have been rotated to print the weight of the weighed load.



3,871,491
AXLE LOAD METER

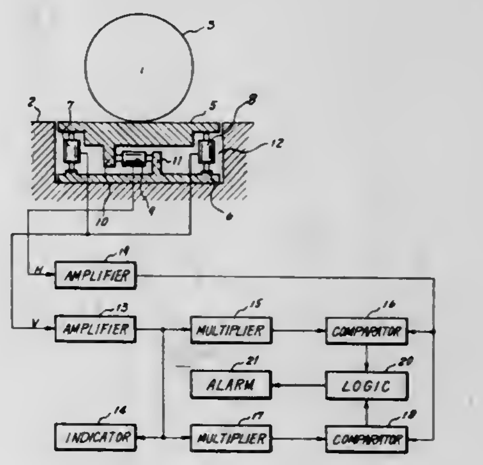
Masami Yamanaka, Miki, and Yasutoshi Masuda, Ashiya, both of Japan, assignors to Yamato Scale Company, Limited, Akashi-shi, Hyogo-ken, Japan

Filed May 28, 1974, Ser. No. 473,361

Claims priority, application Japan, Dec. 13, 1973, 48-140163

Int. Cl. G01g *23/18, 19/02*

U.S. Cl. 177—45 **1 Claim**



1. An axle load meter, comprising a measuring platform on which a vehicle to be weighed runs, means for detecting a vertical load applied to said platform to produce a first output representing said vertical load, means for detecting a horizontal force applied to said platform to produce a second output representing said horizontal force, means for calculating a ratio of said vertical load and said horizontal force from said first and second outputs, means for producing an alarm when said ratio is not within a predetermined range, and means of indicating said vertical load based upon said first output.

3,871,492
VEHICLE CHOCK

Kenneth John Garrett, Chesham, and Ronald Denis Fox, Amersham, both of England, assignors to Humphrey Thompson Enterprises Limited, Middlesex, England

Filed Mar. 14, 1973, Ser. No. 341,090

Claims priority, application Great Britain, Mar. 15, 1972, 12096/72

Int. Cl. B60t *3/00*

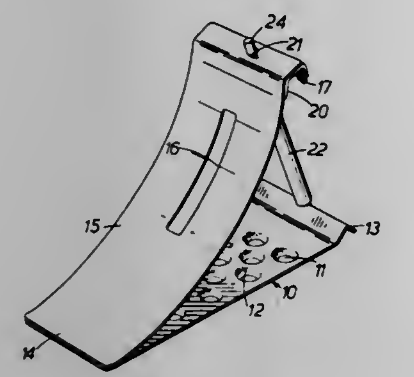
U.S. Cl. 188—32 **8 Claims**

1. A chock for a vehicle wheel comprising, in combination:

a. a first substantially rigid plate engageable with a roadway;

b. a second flexible plate overlying the first plate;

c. first and second ends to each of said plates;
d. means securing said plates together at said first ends;
e. an inverted V-section channel extending transversely of said first plate at the second end thereof;
f. means defining an aperture in said inverted V section channel;

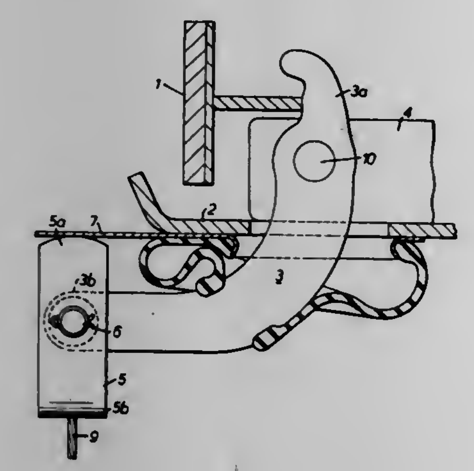


g. a removable pin of a size to pass through the aperture in said inverted V section;
h. a shoulder formed in said pin near the upper end thereof to define a neck portion;
i. means defining an aperture in said second end of said second plate to receive said neck portion.

3,871,493

SHOE DRUM BRAKES

Christopher Neil Mathias, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Oct. 26, 1973, Ser. No. 409,808
Claims priority, application Great Britain, Dec. 21, 1972, 59284/72
Int. Cl. F16d *51/00*
U.S. Cl. 188—78 **6 Claims**

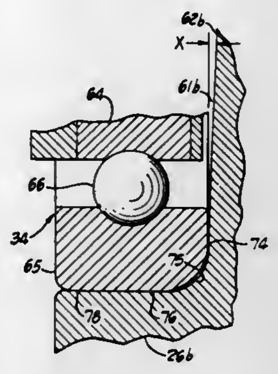


1. In an internal shoe drum brake for a vehicle wheel, comprising a fixed member, a rotatable brake drum, a pair of arcuate brake shoes mounted on the fixed member and having friction linings for engagement with the brake drum, a mechanical actuator comprising an angularly movable lever being pivotable about a point intermediate its ends between a brake applied position and a retracted position wherein the brakes are released and having one end pivotally connected to one of said shoes, and brake applying means pivotally connected to the other end of said lever, the improvement comprising a stop member forming a releasable pivotal connection between said lever and said brake applying means, and an abutment member engaged by said stop member to hold said lever in a first retracted position spaced from a second position of greater retraction.

3,871,494

LIFT TRUCK MAST

Wilfred H. Kelly, Jr., Rt. 1, P.O. Box 295A, Maple Plain, Minn. 55359
Division of Ser. No. 55,064, July 15, 1970,. This application Apr. 12, 1973, Ser. No. 350,621
Int. Cl. B66b *7/02*
U.S. Cl. 187—95 **25 Claims**



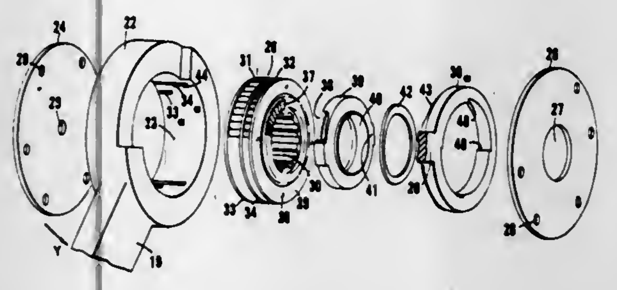
1. A structural member for use in a multi-sectional mast having a stationary and extensible section, one being laterally offset relative to the other and each extending longitudinally parallel to the axis of the mast and said extensible section being longitudinally parallel to the axis of the mast and said extensible section being longitudinally slidable relative to the stationary section forming therewith longitudinally extending trackways, and anti-friction rollers carried on at least one of said sections adapted to roll in said trackways when extending or retracting one section relative to the other, said structural member being adapted to form a portion of said trackways and comprising,

a web portion for defining a longitudinally extending side of said trackways and having a surface inclined to the rollers in said trackways diverging, in cross section, on a line from a point of tangency with said rollers and joining a straight surface at an angle of between 1° and 20° relative thereto, said straight surface extending perpendicularly to the axis of said rollers and said inclined surface and straight surface being laterally spaced from and out of contact with said rollers except at said point of tangency on the inclined surface thereby minimizing any tendency for axial loading of said rollers.

3,871,495

AUTOMATIC SLACK ADJUSTER FOR AIR BRAKES

Lloyd Raymond Devitt, 242 Oakdale Ave., Apt. 103, Saint Catharines, Ontario, Canada
Filed Oct. 24, 1973, Ser. No. 409,262
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 K **4 Claims**

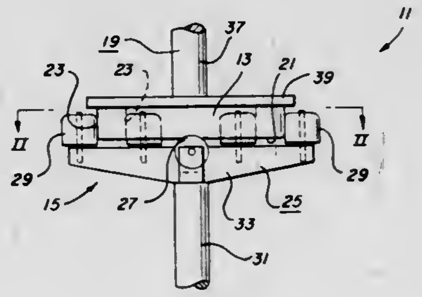


1. A slack adjuster mountable on the brake actuating spline shaft of an automotive brake of the brake issue type and comprising a slack adjuster housing in the form of a body ring having an actuator arm extending rigidly therefrom for connection to a brake rod, said body drive ring having a large central through bore extending between cover plates, one of said cover plates having a central bore adapted slidably to accommodate said actuator shaft therethrough; a driven ring within said body ring, said driven ring having a splined bore meshing with the spline of said actuator shaft and slidable therealong, said driven ring having drive and reverse ratchet means of similar predetermined ratchet step angle thereon; pawl means within said body ring meshing with the ratchet means of said driven ring for transmission of torque from said body ring to said driven ring; a slack ring rotatable within said body ring through a predetermined angle; an anchor arm extending from said slack ring exteriorly of said body ring for connection to a rigid anchorage; an adjuster ring freely rotatable about said actuator shaft and rotatable within said slack ring through a predetermined angle; ratchet means on said adjuster ring meshing with the ratchet means of said driven ring; and a compression spring urging the ratchet means of said adjuster ring and said driven ring into meshing relationship.

3,871,496

RATE CONTROLLING DEVICE

Voorhis F. Wigal, P.O. Box 1542, Jackson, Tenn. 38301
Filed Mar. 2, 1973, Ser. No. 337,730
Int. Cl. F16f *9/30*
U.S. Cl. 188—268 **3 Claims**



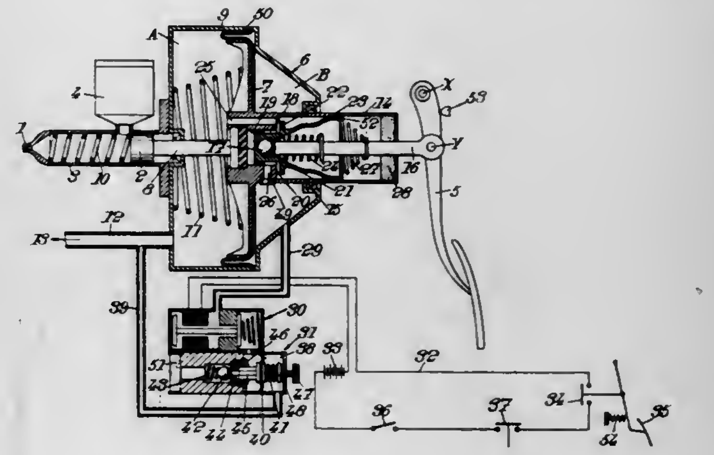
2. A device attached to a moving element for controlling the rate of motion of the moving element, said device comprising: a flexible envelope, said flexible envelope being annular and being positioned on the same axis as the moving element; roller means responsive to the moving element for applying force against said flexible envelope, said roller for applying force against said flexible envelope, said roller means including at least one primary roller for forcefully contacting the face of said flexible envelope causing the face of said flexible envelope to be flattened, said primary roller having its axis perpendicular to the axis of said flexible envelope, said roller means including at least one auxiliary roller for contacting at least one side of said flexible envelope aiding said flexible envelope to return to its original shape after being flattened by said primary roller, said auxiliary roller having its axis parallel to the axis of said flexible envelope; and a non-Newtonian, thixotropic liquid enclosed within said flexible envelope which firmly resists suddenly applied force but not slowly applied force.

3,871,497

VEHICLE BRAKE INSTALLATIONS

Pierre Etienne Bessiere, Golf-St-Nom-La-Breteche, France, assignor to Labavia - S.G.E., Paris, France
Filed Mar. 5, 1973, Ser. No. 337,822
Claims priority, application France, Mar. 10, 1972, 72.08452
Int. Cl. B60k *29/02*
U.S. Cl. 192—3 TR **12 Claims**

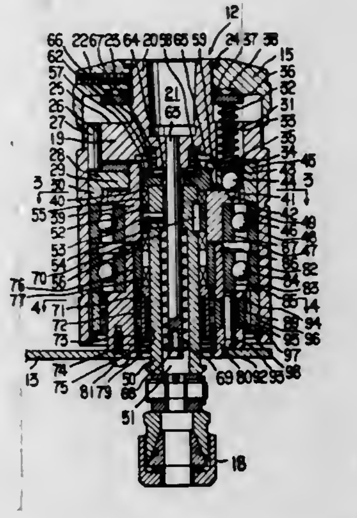
1. Brake installation for a vehicle with an internal combustion engine, comprising brakes actuated by the movements of a piston member in a master cylinder, which movements themselves are controllable by thrust on a brake pedal connected to said piston member by an assistance mechanism of the vacuum "servobrake" type, said mechanism comprising: a fixed casing divided into two compartments A and B by piston means connected to said piston member, pipe means for applying in said compartment A, furthest spaced from the brake pedal, the suction which exists at a suitable point of said engine, first valve means controlled by the brake pedal, first passage means connecting compartment A to said first valve means, second passage means connecting said first valve means to compartment B, third passage means connecting said first valve means to the atmosphere, said first valve means transmitting the same suction in compartment A to compartment B as long as said pedal is released and reducing this sucction automatically when the pedal is relatively depressed, by connecting said compartment B with the atmosphere through said third passage means, said installation including: duct means leading from compartment B to the atmosphere, second valve means comprising a simple stop valve inserted in said duct means and control means other than said brake pedal arranged to regulate the action of said stop valve and including assistance mechanism comprising a further valve mounted on said second passage means, which further valve is adapted to be tranversed by a relatively high air-flow towards compartment B and by a relatively low air-flow towards compartment A.



3,871,498

TAPPING ATTACHMENT

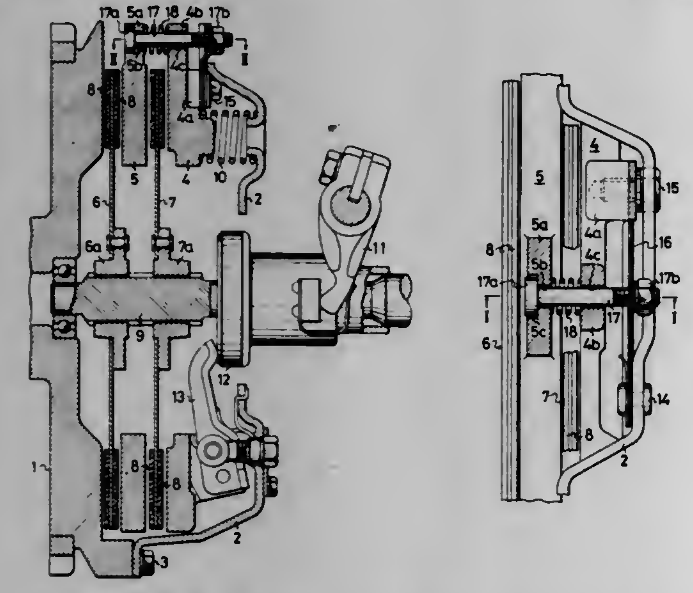
Ryoichi Kitaguchi, Osaka, Japan, assignor to Daishowa Seiki Co., Ltd., Osaka, Japan
Filed July 27, 1973, Ser. No. 383,393
Claims priority, application Japan, July 31, 1972, 47-90712
Int. Cl. F16d *21/04;* **F16h** *5/10*
U.S. Cl. 192—48.91 **3 Claims**



1. A tapping attachment comprising, in combination, a housing (**19**) including a central portion, means for transmitting normal torque from a first rotating member (**11**) to a second rotating member (**16, 50, 52**) by the intermediary of first clutch means (**40** to **42, 44**), a clutch sleeve (**39**) rotatable by means of said first clutch, a direct-drive clutch (**57**) received by said sleeve and axially movable spring means (**67**) of which one end is received in a portion (**66**) of said housing while the other end engages a portion (**62**) of said clutch, at

least one axially projecting first portion (61) on said direct-drive clutch, at least one projecting second portion (55) on said second rotating member, which second portion engages said first projecting portion by the action of second spring means (69) disposed about a spindle (63) mounted axially in said central portion of the housing, a reverse-drive clutch (71) having at least one projecting third portion (78) which engages at least one oppositely projecting fourth portion (56) of said second rotating member by the axial movement of said housing, and third spring means (74) for slight axial movement of said reverse-drive clutch and for resiliently pressing the same to avoid chattering when said reverse-drive clutch comes into engagement with said fourth projecting portion.

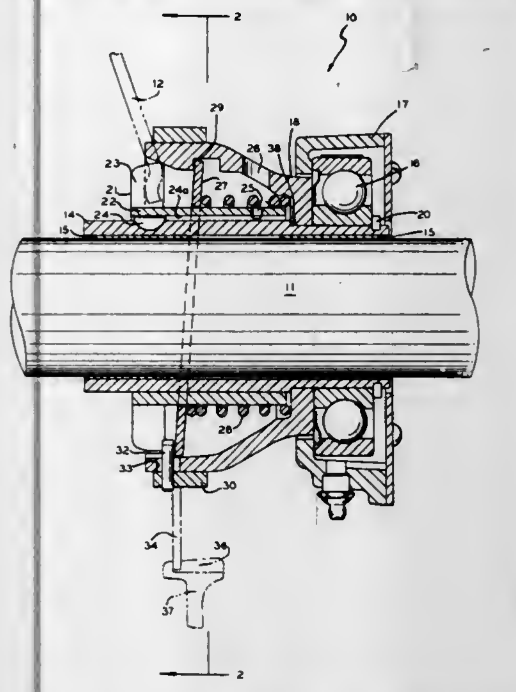
3,871,499
DEVICE FOR PREVENTING IMPROPER DISENGAGEMENT OF MULTIPLE-DISC CLUTCH
Adachi Kazuma, Yao, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Osaka, Japan
Filed Feb. 13, 1973, Ser. No. 332,145
Claims priority, application Japan, Feb. 14, 1972, 47-15398
Int. Cl. F16d *13/69*
U.S. Cl. 192—70.29 **8 Claims**



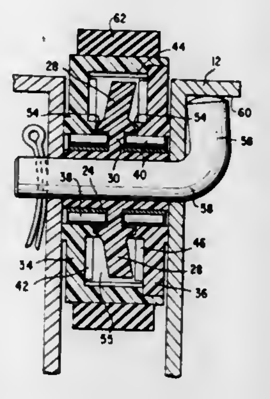
1. A multiple-disc clutch comprising a plurality of clutch discs having friction facings between a flywheel and a pressure plate, an intermediate plate interposed between the friction facings of the clutch discs and rotatable with the flywheel and the pressure plate, a plate spring having one end secured to a clutch cover connected to the flywheel and the other end secured to the pressure plate and a guide member having one end in engagement with an intermediate portion of the length of the plate spring and the other end in engagement with the intermediate plate, the guide member forcing the intermediate plate to follow the movement of the pressure plate for movement at a definite ratio relative to the movement of the pressure plate when the clutch is operated for disengagement.

3,871,500
SELF-ADJUSTING RELEASE MECHANISM FOR FRICTION CLUTCHES
Donald F. Linn, Manlius, and George L. Wishart, N. Syracuse, both of N.Y., assignors to Lipe-Rollway Corporation, Syracuse, N.Y.
Filed Jan. 14, 1974, Ser. No. 433,248
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 A **4 Claims**

1. In a friction clutch for connecting driving and driven shafts, the clutch having means for normally effecting a driving connection between the shafts and release levers actuatable to disengage said driving connection, the improvement comprising an inner sleeve member axially slidable on the driven shaft, an outer sleeve member axially slidable on the inner sleeve member, means on one of the sleeve members engageable with the release levers for actuating same, an annular member dimensioned to loosely fit about the outer sleeve member, means operably connecting a point on the annular member with the inner sleeve, means acting on the annular member so that it is moved from the perpendicular and frictionally grips the outer sleeve member, whereby axial movement of the one sleeve member in one direction operates to correspondingly move the other sleeve member and actuate the release levers, and means to force the annular member towards the perpendicular and thereby release the grip of said member on the outer sleeve, such release means being operable when the wear on the clutch driving connection reaches a particular point to permit relative axial movement between the sleeve members to compensate for the wear.



3,871,501
SILICONE PUTTY RETARDER
Andrew T. Kornylak, 400 Heaton St., Hamilton, Ohio 45011
Continuation-in-part of Ser. No. 176,741, Aug. 31, 1971, abandoned, which is a division of Ser. No. 850,835, Aug. 18, 1969, abandoned. This application Sept. 26, 1973, Ser. No. 400,910
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 A **6 Claims**



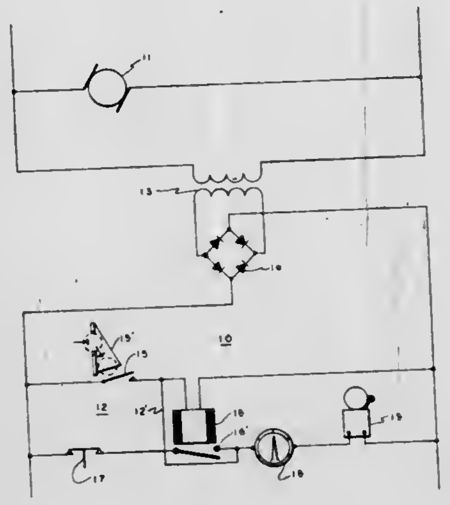
1. A conveyor comprising a pair of laterally spaced rails and a series of rollers extending between said rails for supporting a load,

at least some of said rollers being retarder rollers each of which comprises,

a stator fixed to the rails,

a rotor surrounding the stator and forming an enclosed housing having walls, silicone putty in the housing, and means on the rotor and stator for deforming the material, comprising vanes on the stator and means on all the walls of the housing for holding the putty for rotation therewith, the vanes on the stator comprising members extending radially into the putty, each having a wedge shaped portion presenting a sharp edge opposite to the direction of rotation of the rotor and putty, the edges of consecutive vanes being on opposite sides of a common plane normal to the rotor axis.

3,871,502
COIN-OPERATED CLOCK ALARM
Robert E. Critchfield, Rt. 6, Box 6727, Nampa, Idaho 83651
Filed Feb. 28, 1974, Ser. No. 446,867
Int. Cl. G07f *5/10*
U.S. Cl. 194—9 T **1 Claim**



1. A coin-operated clock comprising:

a synchronous electric motor connected to a remote source of power; and

a control subcircuit being connected to said remote source of power through a transformer and a full-wave rectifier, said control subcircuit having connected in parallel a first series circuit including a coin-operated switch and a relay which has an electrically actuated contactor, a second series circuit including a reverse push button alarm shut-off switch, a timer switch in communication with said clock motor, and an alarm, the contactor of said relay being connected between said alarm shut-off and said timer switch and being inter-connected between the contactor terminal and said coin-operated switch and the coil connection of said relay to be operable, when a coin is present to activate said relay, to connect said timer, said alarm shut-off switch, and said alarm to allow setting.

3,871,503
GASOLINE DISPENSER
Robert C. Greenwood, Cypress, Calif., assignor to Pan-Nova, Inc., Santa Fe Springs, Calif.
Filed Dec. 26, 1973, Ser. No. 427,579
Int. Cl. G07f *15/00*
U.S. Cl. 194—13 **4 Claims**

1. In a fluid dispensing system, the combination of:

a first compartment having therein a fluid inlet line, flow control valve means, a flow meter with output shaft, and a fluid outlet line with nozzle interconnected for fluid flow from the inlet to the outlet line;

a second compartment having electrical computation, control and display units therein;

means for isolating said second compartment from said first compartment;

a light source in said second compartment;

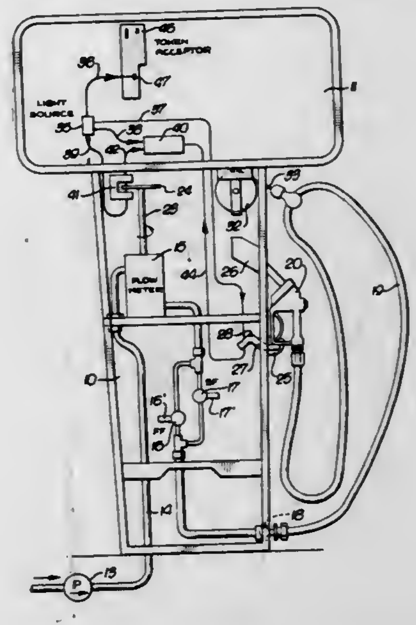
light detector means in said second compartment;

a disk having spaced opaque segments thereon and mounted on said flow meter shaft for rotation;

first fiber optic means defining a first light path through said second compartment from said source to said detector means and including means positioning said disk at said first path for opening and closing said first path as said flow meter shaft rotates;

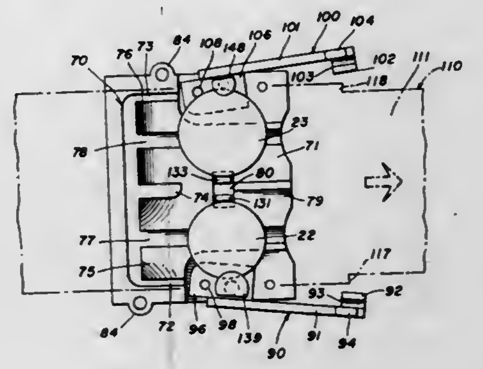
a receptacle for said nozzle having a movable member actuated by inserting and removing the nozzle; and

second fiber optic means defining a second light path through said second compartment from said source to said detector means and including means positioning said member at said second path for opening and closing said second path;



said light detector means including means for producing electrical signals corresponding to light path openings or closings.

3,871,504
COIN CHUTE WITH IMPROVED CALIPERING AND LATCHING MECHANISM
Mario Anesi, Inverness; Salvatore Macri, Chicago, both of Ill., and John P. Wynn, Macon, Ga., assignors to Ansan Tool and Manufacturing Co., Inc., Chicago, Ill.
Filed June 4, 1973, Ser. No. 366,583
Int. Cl. G07f *1/06*
U.S. Cl. 194—55 **25 Claims**



1. A coin chute comprising a housing being substantially rectangular in plan and having a pair of sides, at least one of said sides having an outwardly facing elongated recess therein extending in the direction of said one side, a lever including an elongated arm and an abutment on said arm adjacent to one end thereof and a mounting portion on said arm adjacent to the other end thereof, means pivotally mounting said mounting portion to said housing to enable said arm to swing into and out of said recess, said abutment being movable with said arm between a latching position when said arm is in said recess and an unlatching position when said arm is out of said recess, means attached to said housing and to said lever for urging said abutment to the latching position thereof, a slide reciprocably carried by said housing between said sides thereof and reciprocable between a retracted position and a fully advanced position and having a coin-receiving aperture therein, a keeper on said slide engageable with said abutment in the latching position thereof when said slide is advanced to

a position short of full advancement for latching said slide against further advancement, and first and second laterally aligned elements respectively mounted on said housing and on said lever and arranged to receive therebetween a coin carried by said slide, said elements having an initial spacing therebetween corresponding to a coin of a predetermined denomination, so that such coin carried by said slide will move said second element and cause said lever to carry said abutment to the unlatching position thereof and thereby free said slide to move toward full advancement.

3,871,505
NO-PRINT KEY CONTROL

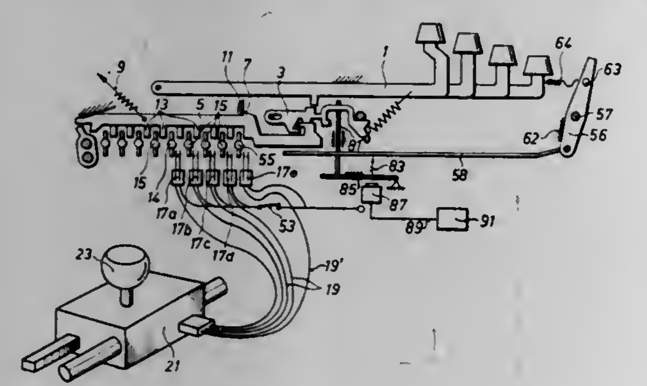
Rolf Theilen, Sande i.O., Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Sept. 7, 1973, Ser. No. 395,259

Claims priority, application Germany, Oct. 13, 1972, 2250269

Int. Cl. B41j *23/02*

U.S. Cl. 197—16 **4 Claims**



1. In a typewriter having a keyboard with a plurality of key means corresponding to the characters to be printed and a plurality of key means corresponding to no-print functions such as spacing and back spacing, and a power driven printer which is controlled by the key means, the printer including a single type carrier with a plurality of characters which is moved with respect to a record carrier for printing, a character setting means, including a plurality of electromagnets which are selectively actuated in response to a selected character key means, for positioning the single type carrier to the character to be printed, and a printing means, including an electromagnet, which is responsive to the selected key means for causing the printing movement of said single type carrier to print the selected character, the improvement comprising a special no-print key means on said keyboard; and control means, including a plurality of electrical switches connected in the current paths of said electromagnets and responsive to the selection of said special no-print key means, for interrupting the flow of current to said electromagnets for preventing the operation of said setting means and of said printing means, said control means being responsive to the selection of one of said no-print function key means for interrupting the flow of current to said electromagnet of said printing means for preventing the operation of said printing means.

3,871,506
EXCHANGEABLE KEYBOARD FOR BALL TYPEWRITERS

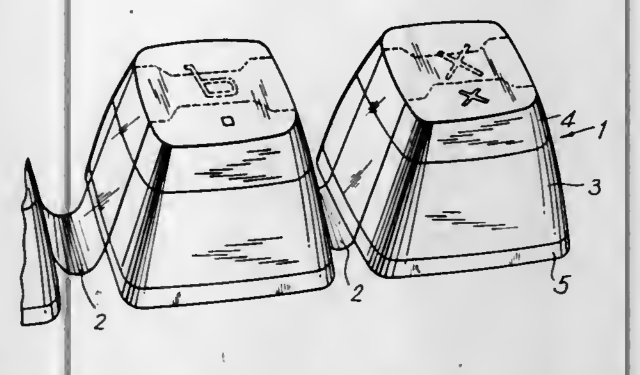
Kirill von Luders, Pohjolankatu 43 A 3, 00610 Helsinki 61, Finland

Filed Aug. 8, 1973, Ser. No. 386,742

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **4 Claims**

1. In an exchangeable keyboard least one ball typewriters, adapted for use upon the type ball of the typewriter being exchanged for another ball having indicia or characters thereon which differ from that of the first-mentioned ball, said keyboard including a plurality of caps adapted to be superimposed on respective of the typewriter keys, and at leastone durable elastic strip extending between adjacent ones of said caps so as to interconnect the latter into a single entity; the improvement comprising said caps each including a cap body portion, and a cover portion mounted on said body portion, said strip continuously extending along each row of keys for substantially the full length of the key row, said strip being fastened to each said cap intermediate the cap body and cover portions, notches formed in said strip, said strip being engaged in a form-fit attachment between each said cap body and cover portions in the region of said notches.



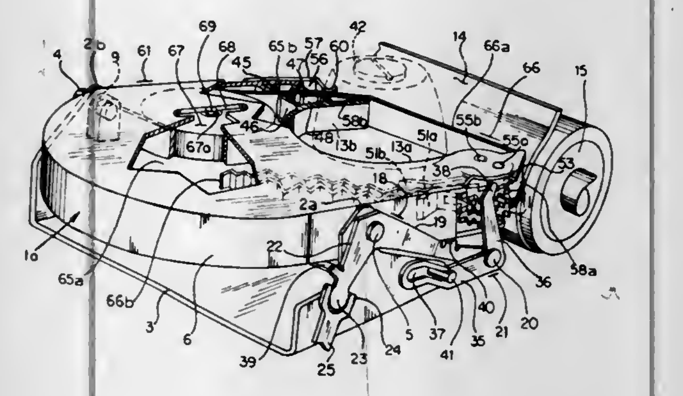
3,871,507
SPOOLLESS RIBBON CARTRIDGE WITH LIFT AND FEED FEATURES COMBINED

Donald S. Perry, 858 Renetta Ct., Los Altos, Calif. 94022; Wyland L. Fowler, R.D. 2, Box 626, Green, N.Y. 13778; Richard E. Shattuck, 3869 Highland Rd., and Hans W. Mueller, 14 Louise Dr., both of Cortland, N.Y. 13045

Filed June 5, 1972, Ser. No. 259,766

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **12 Claims**



1. A spoolless ribbon cartridge for printing machines with at least one print element, comprising

a. a housing having a first chamber with an entrance opening and a second chamber with an exit opening,

b. a roll of carbon ribbon preloaded in said second chamber, said carbon ribbon having an active portion and an inactive portion and said inactive portion being storable in said first chamber,

c. a pair of projecting members associated with said housing and operable to support said active portion of said carbon ribbon in a spanning relationship with respect to said projecting members and external to said first and second chambers in a position accessible for cooperation between said print element and said carbon ribbon, and

d. means for feeding said carbon ribbon mounted in said housing proximate said entrance opening and in direct-contact driving relationship with said carbon ribbon whereby said carbon ribbon may be drawn through said exit opening, over said projecting members and into said entrance opening for forced, random storage of said inactive portion in said first chamber.

3,871,508
TABULAR DEVICE FOR AN OFFICE MACHINE

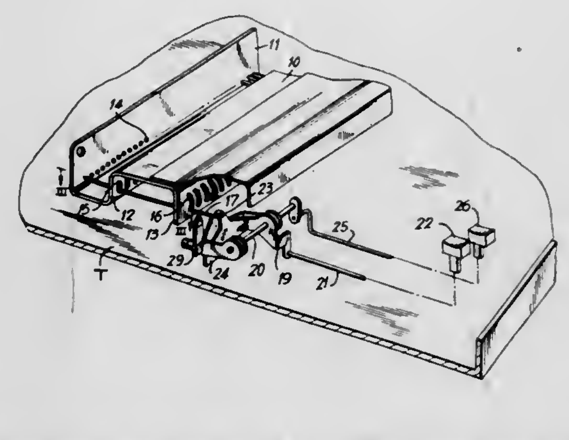
Leif Gunnar Petersson, Svangsta, Sweden, assignor to Facit-Halda Aktiebolag, Svangsta, Sweden

Filed Oct. 1, 1973, Ser. No. 402,154

Claims priority, application Sweden, Mar. 21, 1973, 7303960

Int. Cl. B41j *21/02, 21/04*

U.S. Cl. 197—176 **7 Claims**



1. A tabulator mechanism for an office machine having stop members comprising a tabulator rack provided with a plurality of tabulating stops co-acting with said stop members, said tabulator rack having three spaced structural elements, each being provided with a set of spaced holes extending in separate spaced planes parallel to the longitudinal axis of said tabulator rack, the spacing between each adjacent hole in each set corresponding to one step of travel of the machine, each of the holes in said middle set being offset relative to the corresponding holes in both the interior and exterior structural elements, said tabulating stops being yieldable pins and each being inserted through one hole in each of the three corresponding rows of holes so that the tabulating stop will be under tension in the direction of the longitudinal axis of said tabulator rack, each hole of the exterior set of spaced holes being elongated and arcuate whereby an end of each of the tabulating stop assumes a stable position in a selected end of said elongated and arcuate hole.

3,871,509
DEVICE FOR CONTROLLING THE WORKING SPEED OF BOTTLE TREATING MACHINES, PREFERABLY FILLING MACHINES IN BOTTLE TREATING INSTALLATIONS

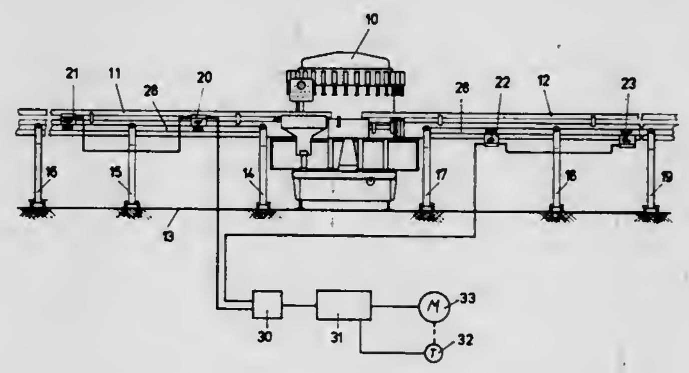
Jurgen Kuster, Bad Munster-Ebernburg, and Hermann Schlosser, Kamp-Bornhofen, both of Germany, assignors to Seitz-Werke GmbH, Bad Kreuznach, Germany

Filed July 5, 1973, Ser. No. 376,609

Claims priority, application Germany, July 10, 1972, 2233791

Int. Cl. B65g *43/08*

U.S. Cl. 198—37 **8 Claims**



1. In a bottle filling machine; a bottle filling station, conveyor means for conveying bottles to and from said station, drive motor means operatively associated connected to said conveyor means and operable to cause bottles to move therealong at a speed conforming to the speed of the motor means, a signal operated speed controller connected to said motor means operable in response to the supply of signals thereto to adjust the speed of said motor means, support means for said conveyor means engaging points therealong spaced in the conveying direction, said conveyor means being vertically resilient between said points of engagement thereof so as to be yieldable under the weight of the bottles thereon, and detector means responsive to vertical movement of said conveyor means between said points for supplying control signals to said speed controller, said conveying means comprising an incoming conveyor for conveying bottles to said filling station and an outgoing conveyor for conveying bottles from said filling station, said support means comprising a plurality of supports for each conveyor engaging a plurality of points along the respective conveyor and spaced in conveying direction, each conveyor being vertically resilient between the said points of support pertaining thereto so as to be vertically yieldable under the weight of bottles therein, said detector means comprising at least one detector for each conveyor disposed along the respective conveyor between a pair of the said supports therefor, a control device connected between said detectors and said speed controller operable to receive signals from said detectors and to supply signals to said speed controller, said control device being operable to cause the speed of said motor means to reduce in response to vertical downward movement of said outgoing conveyor regardless of the vertically deflected condition of said incoming conveyor, and a pair of interconnected detectors for each conveyor, each detector being disposed between the supports of a respective pair thereof for the respective conveyor.

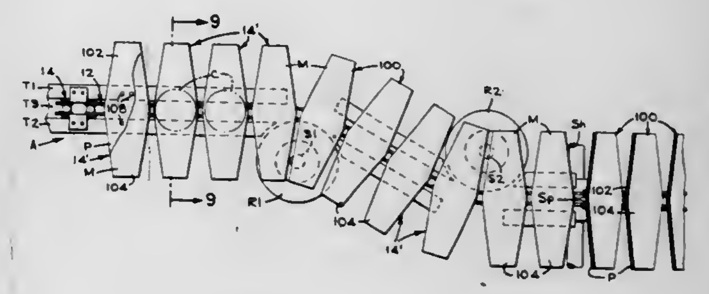
3,871,510
MAGNETIC CONVEYOR STRUCTURE

Ronald F. Homeier, Plainfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 19, 1973, Ser. No. 352,834

Int. Cl. B65g *17/46*

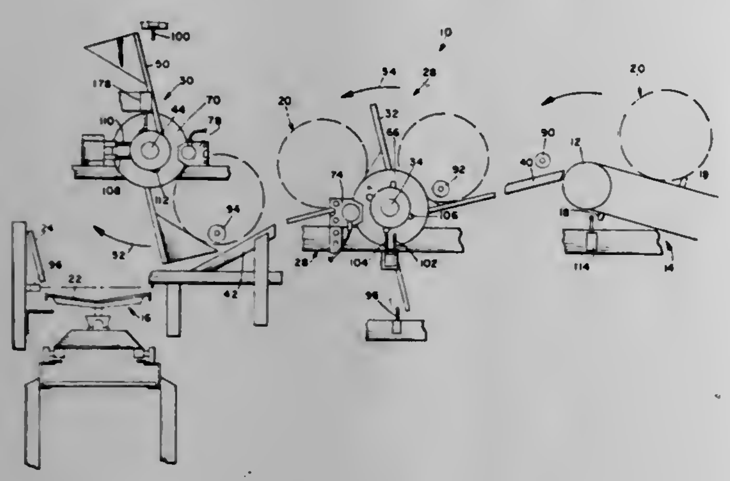
U.S. Cl. 198—41 **3 Claims**



1. A chain conveyor of the type having a flexible chain of articulated segments for curving movement in horizontal and vertical planes and having a plurality of platforms connected, respectively, to said segments, said conveyor having means to guide said flexible chain along a path, said platforms each having a surface to receive metallic articles to be conveyed, each of said surfaces lying in a plane extending in the direction of movement of the segment to which the platform is connected, the improvement comprising a flexible magnet having a substantially planar surface mounted on each of said platforms to attract said metallic articles for conveyance along the path of said chain.

3,871,511
SORTER SYSTEM INDUCTION MEANS

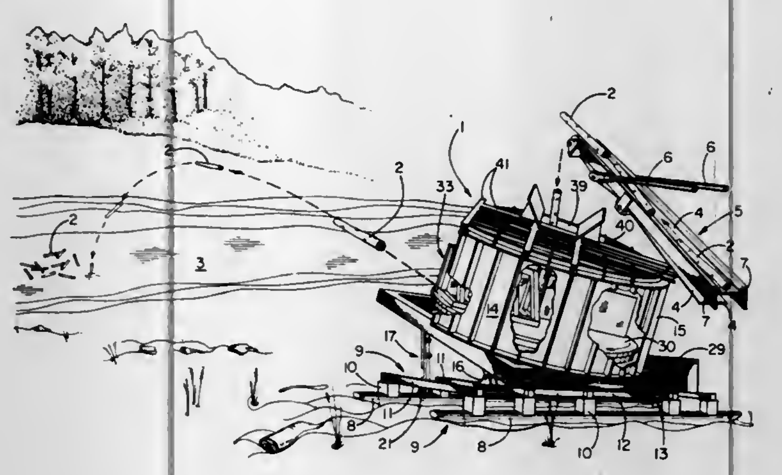
Edward A. Wentz, Gaithersburg, and David M. Shinnick, Frederick, both of Md., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.
Filed Feb. 9, 1973, Ser. No. 331,205
Int. Cl. B65g *37/00*
U.S. Cl. 198—103 **10 Claims**



1. The combination comprising
an input conveyor,
a sorter conveyor having means along the path thereof for discharging articles from the conveyor to predetermined zones along the path of the conveyor,
and means for transferring articles from the input conveyor to the sorter conveyor comprising
first rotor means having four vanes defining article receiving pockets,
means for rotatably mounting said first rotor means between said input conveyor and said sorter conveyor about a generally horizontal axis parallel to a portion of the path of the sorter conveyor,
drive means operatively connected to said rotor means for intermittently rotating said first rotor means in one direction for bringing a pocket successively from a first to a second position, a third position and then the first position,
said first position being such that a vane of each pocket forms an inclined entrance ramp,
said second position being such that the adjacent vane of the same pocket defines an exit ramp,
said drive means driving said rotor means at a rate such that said vane forming an entrance ramp lifts an article being transferred from said first position to said second position and augments the gravitational movement of the article to said second position such that the article moves off of the vane that is acting as an exit ramp,
an inclined receiving ramp onto which the article is delivered at the second position,
gate motor means,
means for rotatably mounting said gate rotor means between said receiving ramp and said sorter conveyor about a generally horizontal axis parallel to a portion of said sorter conveyor and parallel to the axis of said rotor means,
drive means operatively connected to said gate rotor means for intermittently rotating said gate rotor means 180°,
said gate rotor means having two diametrically opposed vanes which successively cooperate with said receiving ramp to define a receiving pocket for an article transferred from said first rotor means.

3,871,512
PULPWOOD EJECTOR

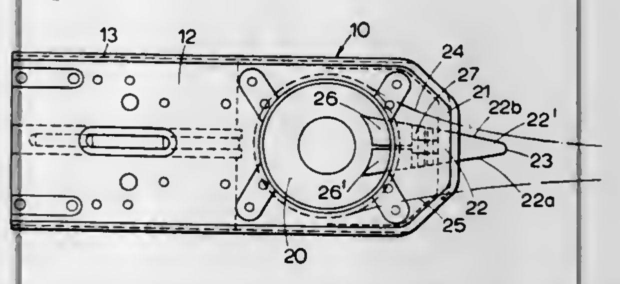
David L. Davidson, Kapuskasing, and Donald K. Romanowich, Virgil, both of Ontario, Canada, assignors to Spruce Falls Power and Paper Company Limited
Filed Mar. 12, 1973, Ser. No. 340,180
Int. Cl. B65g *31/00*
U.S. Cl. 198—128 **1 Claim**



1. A method of transporting pulpwood logs from one location to another which comprises feeding pulpwood logs in sequence to a rotating wheel on which the logs may move about to become oriented in a desired direction, confining logs on the wheel circumferentially while raising the log speed as the logs orient, moving the logs in the rotation of the wheel to a zone of non-confinement circumferentially so that the oriented logs eject from the wheel.

3,871,513
DRIVE STATIONS

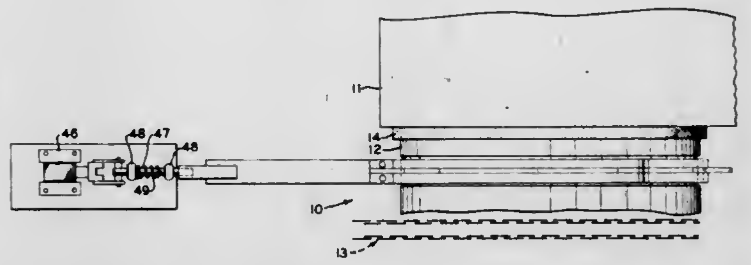
Werner Georg; Heinrich Cwielong, and Wilfried Mertens, all of Altlunen, Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany
Filed July 14, 1972, Ser. No. 271,948
Claims priority, application Germany, July 14, 1971, 2135163
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 **4 Claims**



1. A drive station for use with a scraper chain conveyor in mineral mining comprising a frame with sidewalls adjoined by a substantially horizontal floor wall attachable to one end of the conveyor; an assembly with a housing detachable supported by one of said sidewalls; a drum for driving a scraper chain assembly of the conveyor rotatably supported between said sidewalls in a bearing provided on said one sidewall and accessible from the side of the sidewall nearest the assembly; a detachable cover attached to said one side- wall removable to permit access to said bearing; a chain wheel rotatably supported by said housing which normally adopts a position facing said cover; means for selectively moving the housing in either a direction transverse to or parallel to the longitudinal axis of the conveyor to permit the housing to adopt a position where the cover is accessible; and means for guiding the housing for movement in relation to said sidewall.

3,871,514
SAFETY BRAKE APPARATUS FOR BELT CONVEYOR

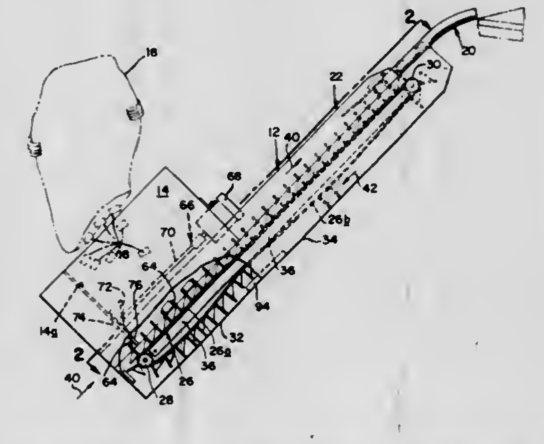
John H. Hewitt, Suffield, and Ernest D. Johnson, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 5, 1973, Ser. No. 376,423
Int. Cl. B65g *43/00*
U.S. Cl. 198—232 **12 Claims**



1. A safety brake apparatus for stopping a conveyor belt upon a drive chain failure, comprising:
a conveyor belt,
at least one drum engaging said conveyor belt;
said drum having an exterior extension located outwardly of said belt;
said exterior extension having a radially outward braking surface;
a ratchet assembly mounted about said exterior extension braking surface;
a brake member attached to the radial inner surface of said ratchet assembly and contacting said exterior extension braking surface with a selective frictional force;
a pawl bar mounted juxtaposition to said ratchet; and
a means for detecting a failure in the drive chain and activating said pawl to contact and stop said ratchet assembly so that said brake member applies a selective frictional force to said exterior extension braking surface to stop said drum, and also to cause said drive chain and said conveyor belt to stop in a relative short period of time.

3,871,515
CONVEYOR DEVICE

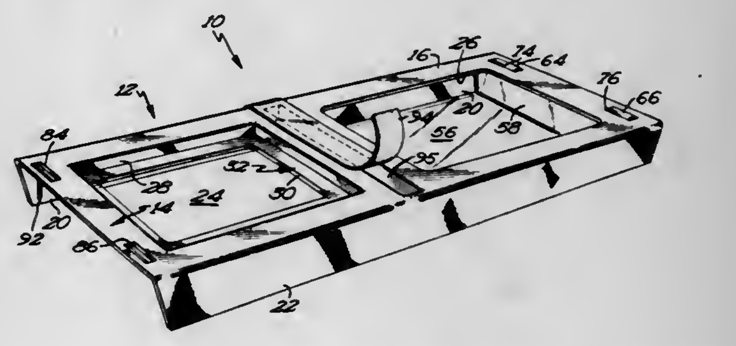
Benjamin F. Randrup, Sebastopol, Calif., assignor to F. Korbel and Brothers, Inc., Guerneville, Calif.
Filed Nov. 12, 1973, Ser. No. 414,815
Int. Cl. B65g *47/24*
U.S. Cl. 198—287 **1 Claim**



1. A conveyor assembly to individually engage and carry work pieces of the type having an identifiable longitudinal shape, such as corks for bottles and the like, in end-to-end alignment in the direction of movement from a source station to a discharge station, wherein said pieces at said source station are randomly disposed therein, said assembly comprising:
a trough having a longitudinal recess therealong and means mounting said trough so as to position one end of said recess proximate said source station and the other end at said discharge station;
chain means mounted beneath said trough to provide a continous and movable stretch of chain immediately adjacent to and along said longitudinal recess from said source station to a terminus proximate said discharge station;
engaging means secured to said stretch of chain and extending through said longitudinal recess to engage said work pieces and transport the latter along the longitudinal recess of said trough;
at least two deflecting means secured to each side of said trough proximate the longitudinal recess thereof to deflect a work piece carried by said engaging means in other than end-to-end alignment in the direction of movement of said stretch of chain, thereby to realign the work piece in end-to-end alignment or dislodge the work piece from said engaging means and prevent delivery of the misaligned piece, said deflecting means comprising a pair of flanges at right angles to each other wherein the profile of the flat surfaces defines a pair of right triangles having one side and an apex in common and secured to the side of the trough with one flange with the apex facing the source station and with the tapered edge of the other flange positioned to contact work pieces that are not in end-to-end alignment;
further final alignment means located on the sides of said trough proximate the input end of said means to receive each of said work pieces to urge the latter into said end-to-end alignment;
means including a conduit shaped to receive each of said work pieces in end-to-end alignment upon arrival at said discharge station and securing said conduit in alignment with said longitudinal recess, and remove said pieces in such alignment and cause delivery thereof to a subsequent work station;
means secured to said conduit at the end thereof wherein said work pieces enter, said means adapted to impinge on a work piece transported therealong when such work piece is misaligned in a vertical direction in respect to end-to-end alignment; and
driving means to cause said stretch of chain to be continuously moved from said source station to said discharge station, and back again.

3,871,516
ANTITHEFT PACKAGING DEVICE

Howard P. Holkestad, Minnetonka, and Raymond G. Ordner, Minneapolis, both of Minn., assignors to J. L. Marsh Incorporated, Minneapolis, Minn.
Filed June 11, 1973, Ser. No. 368,650
Int. Cl. B65d *85/672, 25/10, 25/54*
U.S. Cl. 206—45.31 **27 Claims**

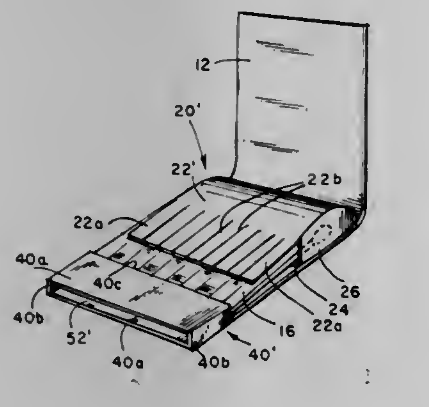


1. Antitheft device for packaging small articles, comprising in combination: an article to be packaged, the article being of fixed dimensions; a hollow, vertically elongated body, including a generally closed front face, the body being divided into a top portion and a bottom portion, with viewing apertures defined in the top and bottom portions of the front face to allow the article to be packaged within the hollow body to be visible and viewed through the front face of the top and bottom portions of the body, the viewing apertures being of a dimension less than the fixed dimensions of the article to be

packaged to prevent passage of the article within the hollow of the body through the viewing apertures, the body further including a hinge member and including a latch member separated from the hinge member by at least a dimension of the article to be packaged; and a retainer member of a dimension to cover at least a part of the top portion or at least a part of the bottom portion of the body including a hinge member and including a latch member separated from the hinge member by a distance arranged to removably cooperate with the body hinge member and body latch member to secure the article to be packaged between the body and the retainer member and yet allow viewing of the article through the viewing aperture and allow removal of the retainer member to remove the article from the body upon sale of the article while retarding theft of the article before sale.

3,871,517
SAFETY BOOK MATCH COVER

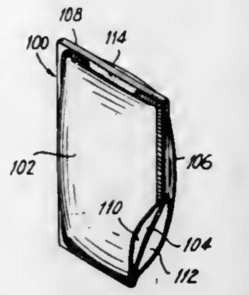
William F. Cioffi, 1817 E. 12th St., Brooklyn, N.Y. 11229
Filed Aug. 3, 1972, Ser. No. 277,673
Int. Cl. A24f *27/12*
U.S. Cl. 206—108 **9 Claims**



1. In a match book having a plurality of removable matches each having an ignitable head and connected to a back panel having a predetermined width, the match book further having a foldably connected front panel movable relative to the back panel between positions to cover and expose the matches and provided at one end of the book with a striking surface, the invention comprising cover means connected only to the back panel for permanently enclosing the ignitable heads of the matches which have not been removed from the book, said cover means comprising a substantially closed container mounted on the back panel and fixed in position relative to the latter, said container having a length substantially equal to said predetermined width and having an elongated slot arranged to pass the ends of the matches bearing the ignitable heads, said cover means further including a portion positioned on the other side of the matches from the back panel which extends along and substantially covers the matches, said portion being provided with a plurality of parallel slits extending from the free edge of the portion toward the match heads to provide a plurality of sections having widths approximately equal to the widths of the matches with each section in overlying registration with a match, whereby only one of said sections must be bent during removal of a match positioned below a respective section, and whereby said container always encloses the ignitable heads to the same extent independently of the position of the front panel relative to the back panel.

3,871,518
HYGIENIC DOUCHE SYSTEM

Jerome L. Murray, 652 First Ave., New York, N.Y. 10016, and Frances R. Gardiner, 43 Park Rd., Sparta, N.J. 07871
Division of Ser. No. 231,336, March 2, 1972, Pat. No. 3,756,236, which is a continuation-in-part of Ser. No. 197,848, Nov. 11, 1971, Pat. No. 3,756,230. This application July 26, 1973, Ser. No. 382,658
Int. Cl. B65d *81/32, 31/12*
U.S. Cl. 206—219 **4 Claims**



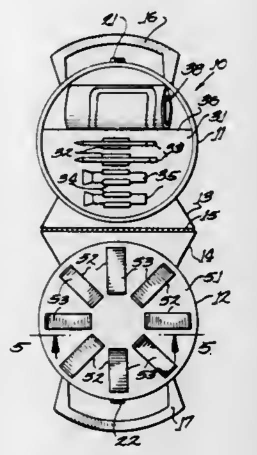
1. A package adapted to hold at least two separate ingredients which react in a liquid to evolve a gas, said package comprising,

a plurality of liquid porous membranes joined along at least a substantial portion of the peripheral extent of the package to form at least a pair of separate ingredient pouches, predetermined quantities of said one ingredient and the other of said ingredients being disposed separately in said respective pouches, and

said package including means separate from the liquid porous property of said membranes to provide for controlled dissolved solutes mixing to cause reaction and forming of gas over a short period of time when said package is submerged in a liquid to insure a complete and rapid reaction between said ingredients and said liquid.

3,871,519
BINGO CARRYING CASE

Jacqueline Groomes, 40 E. Sidney Ave., Mount Vernon, N.Y. 10550
Filed Dec. 26, 1973, Ser. No. 427,588
Int. Cl. B65d *11/02;* **A45c** *11/29*
U.S. Cl. 206—223 **5 Claims**

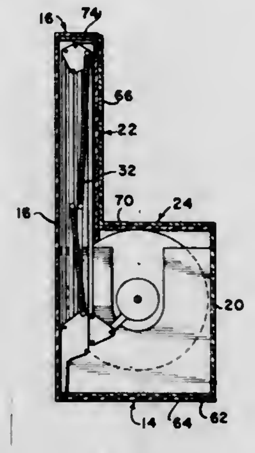


1. A Bingo carrying case adapted for the carrying of the various items required for use in the play of the game of Bingo, the carrying case comprising a housing bisected into two substantially identical sections, each of said sections having a substantially circular body portion with a semi-oblong cross-section, each circular section terminating in a base member at one end and having a handle member at the opposite end, adjacent bottom edges of each of said base members being pivotally attached together to provide swinging movement of said sections relative to each other between a case opened position and a case closed position, latch means disposed

adjacent said handle members on each of said sections and adapted to detachably attach said sections in their respective closed positions, said first section having an astrological sign disposed on the exterior surface thereof, said first section having interiorly thereof a circular platform, means on said platform for retaining a plurality of tandemly disposed Bingo chips thereon, a plurality of Bingo chips each being of a substantially flat circular configuration with each having an astrological sign disposed on at least one face thereof with said sign being the same general sign as disposed on the exterior surface of said section, said second section having disposed interiorly thereof a substantially flat semi-circular platform, a first pair of resilient means disposed on said platform and adapted to resiliently retain a pair of pencils and the like therein, a second pair of resilient means disposed on said platform and adapted to retain a pair of markers and the like therein, said resilient means being disposed along a vertical diametric axis of said platform and extending at right angles thereto along the plane of said platform, said platform having a terminal edge defining with said section a semi-circular pocket type compartment, and a Bingo chip apron rolled up onto itself and received in said pocket with said apron having disposed on the face surface thereof an astrological sign of the same type as found on said Bingo chips and said section member.

3,871,520
CARTON FOR LAMP AND THE COMBINATION THEREOF

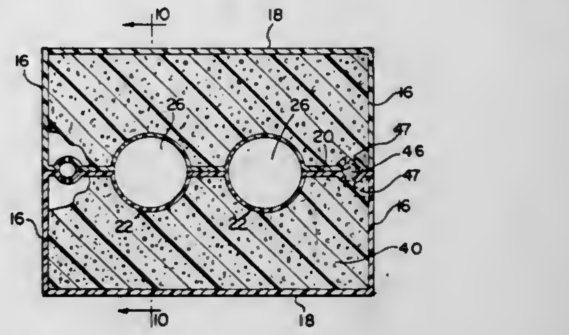
William C. Hand, Wilton, Conn., assignor to Luxo Lamp Corporation, Port Chester, N.Y.
Filed Feb. 13, 1974, Ser. No. 441,935
Int. Cl. B65d *5/50, 5/00, 85/30*
U.S. Cl. 206—320 **7 Claims**



1. A closed carton for a lamp of the type having a flared shade assembly with a small end which is attached to a support arm assembly, said carton having a main cavity which is substantially cubical and within which the shade assembly is positioned and an extension cavity in which a portion of the arm assembly is positioned, said carton having a first vertical wall which is common to said main cavity and said extension cavity, said main cavity having a second vertical wall which is parallel to said first wall and having a right angle extension which forms a top wall for said main cavity and a second vertical wall for said main cavity, third and fourth parallel vertical side walls for said main cavity, a fold-in extension on said fourth vertical wall having a first panel which is positioned at an acute angle with respect to said fourth vertical wall and which is connected to a second panel along a fold, said second panel having its edge opposite said fold portion connected to a third panel at substantiallly the bottom of said main cavity, said third panel being bifurcated to form two extensions which are positioned upon the opposite sides of said shade with a curved edge which engages said shade and provides support therefor, and additional panels to provide a closed carton.

3,871,521
SHOCK-PROOF CONTAINER AND METHOD FOR MAKING SAME

Richard R. Szatkowski, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 237,194, March 22, 1972, abandoned. This application May 15, 1972, Ser. No. 253,371
Int. Cl. B65d *81/02;* **B65b** *23/00*
U.S. Cl. 206—524 **11 Claims**

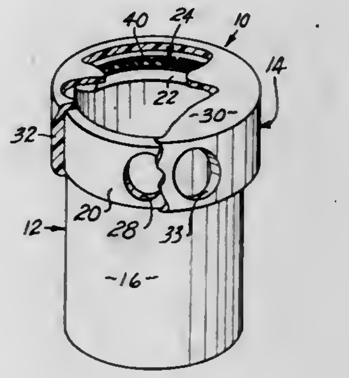


1. An improved container comprising two hollow shells each constructed of one-piece polymeric material, a surface of one shell mating with a surface of the remaining shell, said mating surfaces defining therebetween a container interlocking as well as parting area, said surfaces having apertures therein for permitting communication between the shells, an article containing space between said surfaces, and cellular plastic material filling each of said shells and interlocking said shells together across said area through said apertures to protectively encapsulate an article within said article containing space while permitting said shells to be parted across said parting area for the removal of an article from said article containing space.

10. A process of containerizing an article comprising the steps of providing two hollow one-piece shells having apertured mating surfaces having therebetween a container interlocking as well as parting area, placing an article between said surfaces, and introducing expandable liquefied plastic foams in said shells and positioning said mating surfaces contiguous each other whereby said foams upon expansion will interlock the shells to each other through the aperture thereof.

3,871,522
SELF-CLOSING SAFETY CONTAINER FOR MEDICINAL TABLETS

Marshall H. Feldman, P.O. Box 922, Twenty-Nine Palms, Calif. 92227
Filed Apr. 23, 1973, Ser. No. 353,494
Int. Cl. B65d *83/04*
U.S. Cl. 206—540 **1 Claim**



1. A self-closing, safety container for medicinal tablets or other hazardous articles, comprising:

a container body consisting of a cylindrical side wall, having a closure at the bottom end thereof;

a cup-shaped cap rotatably mounted on the open top end of said container body, said cap having an annular cylindrical skirt projecting down over the top edge of said cylindrical side wall;

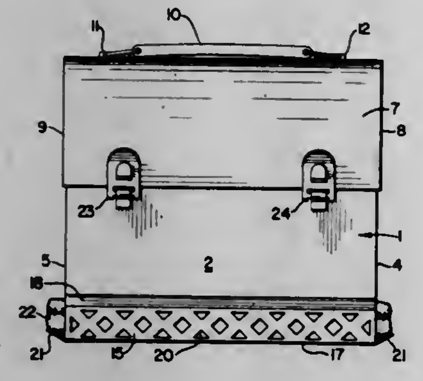
both said cylindrical side wall of said container body and said cylindrical skirt of said cap having apertures provided therein which can be registered with respect to one another to form an exit opening, through which pills can be discharged;

an arcuate shelf-like projection extending laterally inward from the inner surface of said cylindrical side wall of said container body at the top end thereof substantially opposite the aperture in the side wall, said projection having an upwardly opening channel having closed ends;

a helical compression spring lying within said channel, and having one of its ends abutting against the adjacent end of the channel; and

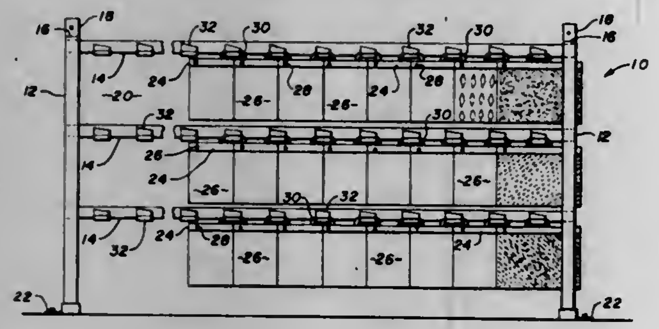
a protuberance projecting downwardly from the underside of said cap into said channel, said protuberance engaging the other end of said compression spring, whereby rotation of said cap to align said apertures causes said compression spring to be compressed by said protuberance, so that when the cap is released, the spring rotates the cap to displace the apertures in the cap from the aperture in the side wall.

3,871,523
AUXILIARY COMPARTMENT FOR A LUNCH BOX
Alvin Lee Bassett, 3414 Renick St., Saint Joseph, Mo. 64507
Filed July 12, 1973, Ser. No. 378,673
Int. Cl. A45c *11/20*
U.S. Cl. 206—542 **7 Claims**



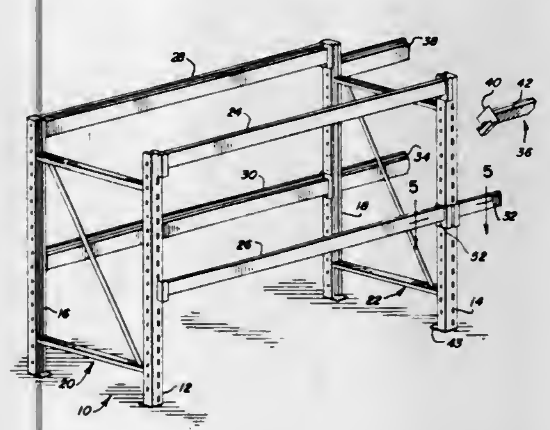
1. In combination, a lunch box comprising an open-ended, substantially rectangular lower box portion having means to attach a top section thereto, said top section having substantially parallel end-walls and converging front and rear walls, wherein said lower box portion of said lunch box has, subjacent thereto and contiguous therewith, a substantially rectangular open-ended compartment extending substantially along the width and length of said lower box portion of said lunch box.

3,871,524
SAMPLE DISPLAY RACK
Larry R. Helf, 110 South Queen St., York, Pa. 17403
Filed June 22, 1973, Ser. No. 372,644
Int. Cl. A47f *7/16*
U.S. Cl. 211—45 **2 Claims**



1. The combination of a display rack for simultaneously supporting a substantial number of elongated supporting members adapted to be connected to one edge of and support a plurality of planar samples of material of similar predetermined areas and shapes but different visual characteristics, said supporting members each having a rectangular bail-like handle provided with a straight bight portion and the ends thereof extending downward and connected to one edge of said supporting members midway of the opposite ends thereof, and said rack comprising a bar having at least one flat vertical surface, means adapted to support said bar substantially horizontally, a series of similar hook-like members formed from rigid sheet material and each having one edge fixedly secured to said flat vertical surface of said bar at evenly spaced locations; each hook-like member having opposite side edges located within substantially parallel vertical planes transverse to said bar, one side edge of each hook-like member being longer than the other, the longer edge extending outward and downward from said flat vertical surface of said bar and said shorter edge extending substantially only downward, the lower edge of said member terminating in an elongated channel which is U-shaped in cross-section and disposed within a horizontal plane parallel to and substantially coincident with the lower surface of said bar and said longer and shorter edges of said member disposing the axes of said channels at similar acute angles to said flat vertical surface of said bar to receive said handles of said supporting members to support the same thereon, the spaces between the medians of said channels of said hook-like members being substantially equal to half the width of said supporting members for said samples to be supported upon said channels of said hook-like members, whereby when a plurality of said similar planar samples are suspended upon said hook-like members, they will be disposed within vertical planes arranged shingle fashion relative to each other and substantially one-half of each sample will be exposed to view to render the entire assortment of samples readily observable for selection and the position of said handles midway of the upper edges of said supporting members insuring horizontal suspension of said upper edges of said samples relative to said hook-like members.

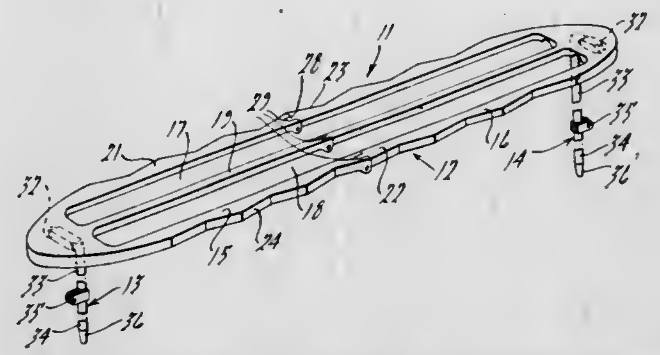
3,871,525
SAFETY CONNECTOR FOR KNOCK-DOWN RACKS
Adam M. Al-Dabbagh, Chicago, and Leonard J. Dudzik, Dolton, both of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.
Filed Apr. 23, 1973, Ser. No. 353,658
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **3 Claims**



1. In a knock-down storage rack which includes apertured, upright posts of generally rectangular cross-section and beam members having ends constructed and adapted for selective connection and disconnection to the posts to provide the storage rack construction, the improvement comprising, in combination, the post providing a front face and a side face transverse to each other, and each provided with a series of spaced apertures, the apertures in the front face each being vertically elongated and having a lower support edge, each end construction of the beam being in the form of a unitary plate shaped to provide a side-engaging portion adapted for

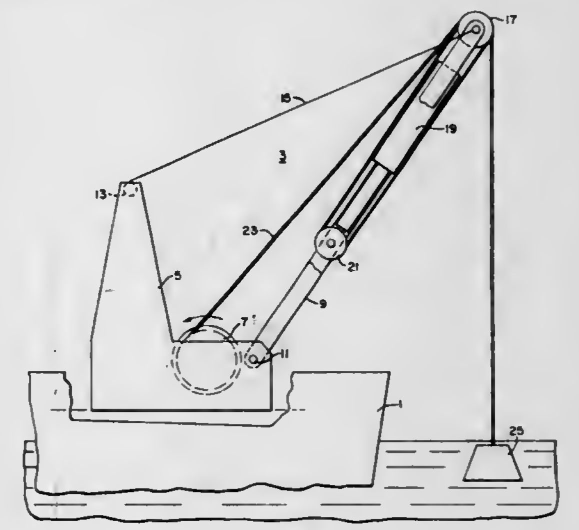
attachment to the cross-beam on one surface thereof and substantial surface abutment against a side face of the post by the other surface thereof, and a hooking flange spaced from but substantially parallel to the side-engaging portion, the side-engaging portion being of greater dimension than the end of a beam and providing an exposed section located outwardly of the beam, safety pin means carried on the exposed section of the side-engaging portion and having a locking head adapted for entry into one of the series of apertures in the post's side when the beam is properly positioned on the post, the hooking flange having an elongated edge for bracing abutment with the face of the post and a plurality of hooks extending outwardly of said bracing edge adapted for entry into a plurality of apertures in the post's front face for simultaneous supporting engagement with the support edges of the apertures, the connector hooks and said pin being positioned on said plate such that when said hooks are seated in the hook-receiving apertures and said pin is positioned in said pin-receiving aperture, said pin is in spaced non-load-bearing relation with the edges of said pin-receiving aperture, said pin-receiving aperture being elongated and having a widened portion through which said locking head of the pin is extendable and said aperture having narrower upper and lower portions behind which the head of said pin is positionable, and the side-engaging portion of said plate being recessed so as to receive the locking head of said pin therein.

3,871,526
TOWEL RACK FOR USE ON BEACHES
Warren S. Marsack, 5075 Nottingham, Detroit, Mich. 48224
Filed July 26, 1973, Ser. No. 382,870
Int. Cl. A47k *10/04*
U.S. Cl. 211—178 **6 Claims**



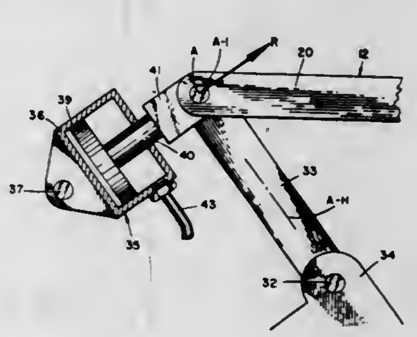
1. A towel rack for use on beaches comprising an elongated body of a proper size to accommodate a towel which may be placed thereon, whereby a midportion of the towel will rest on the body, said body being made up of at least two sections, each section having an integral outer end portion and a plurality of parallel bars extending inwardly therefrom to define towel-receiving slots therebetween, hinge means connecting the bars of said two sections permitting pivotal movement thereof from a horizontally aligned, opened position to a folded, collapsed position, whereby said slots will be continuous along the entire extent of said body when the sections are opened, the axis of said hinge means being horizontal when the body is in its open position whereby one section may be folded under the other to collapse the body, said hinge means including stop means for preventing collapse of the body in the opposite direction beyond its open position when a towel rests thereon, a pair of legs extending from said opposite end portions of said body and of sufficient length to permit them to be stuck into the sand to support the body high enough so that a towel supported thereby will not touch the sand while being dried, means mounting the upper ends of said legs on said outer end portions of said body so as to permit the legs to be moved between extended positions perpendicular to the body and folded positions parallel to the body section, the width of said body being substantially less than the length of said legs, whereby the body will be supported only by said pair of legs when stuck in the sand, and the assembly may be easily carried when the legs are folded.

3,871,527
RAM TENSIONING DEVICE
Werner K. Schimmeyer, Los Altos; Norman J. Wood, San Jose, and Joseph V. McCargar, Los Altos, all of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 4, 1973, Ser. No. 347,980
Int. Cl. B66c *23/52*
U.S. Cl. 212—3 **6 Claims**



1. A boom in combination with a drum and cable for hoisting a load and a ram tensioning device attached to said boom and cooperatively associated with said cable, said ram tensioning device comprising a tubular housing, a first movable abutment slidably disposed within said housing, a second movable abutment slidably disposed within said housing, a rod extending from one of said abutments and extending beyond said housing, said housing having a closed end, a first chamber disposed between said closed end and said first movable abutment, a second chamber disposed between said first and second abutments, means for supplying pressurized gaseous fluid to one of said chambers, and means for supplying hydraulic fluid to the other of said chambers at a pressure greater than the gaseous fluid, whereby during operation the gaseous fluid maintains a generally constant tension on the cable and the hydraulic fluid is utilized to rapidly lift the load.

3,871,528
LOAD CONTROL APPARATUS FOR CRANES
Alvin H. Wilkinson, Post Office Box 3808, Utica Square Station, Talala, Okla. 74152
Division of Ser. No. 846,387, July 31, 1969, Pat. No. 3,612,294. This application May 11, 1971, Ser. No. 142,210
Int. Cl. B66c *13/48*
U.S. Cl. 212—39 R **1 Claim**



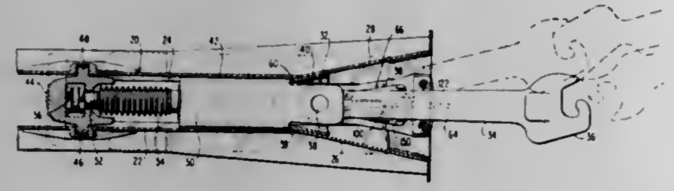
1. In a hoisting apparatus having a superstructure, a boom pivotally supported on said superstructure at a hinge point spaced from the center of gravity of said hoisting apparatus, said boom being movable in a vertical plane about said hinge point, a variable length boom support means connected at one end to the free end of said boom and at its other end to an anchor adjacent said superstructure for moving said boom

into different angular positions in said vertical plane, a rigid beam having a longitudinal center line substantially colinear with the line between said anchor point and said hinge point, said beam being pivotally connected at one end to said superstructure adjacent said anchor point, the other end of said beam extending free from said superstructure and being connected to said other end of said boom support means for constituting said anchoring point, hoisting means connected to free end of said boom for supporting a load therefrom, and sensing means mounted adjacent said anchor point and responsive to the deflection of said beam at the anchor point end thereof for sensing the force on said beam in a direction perpendicular to the line between said anchor point and said hinge point, said sensing means including a hydraulic piston-cylinder unit, one end of said piston-cylinder unit being pivotally connected to the superstructure and the other end thereof being pivotally connected to the anchor point end of the beam and at substantially right angles thereto, whereby increased transverse movement of the anchor point end of the beam increases the fluid pressure within the piston-cylinder unit, and means responsive to an increase in pressure to a predetermined value to render inoperative the hoisting means for preventing further increase in the pitching moment.

3,871,529
INTEGRAL COUPLER CENTERING DEVICE

Darrell D. Dial, Fort Worth, and Robert J. von Bose, Arlington, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 22, 1974, Ser. No. 453,926
Int. Cl. B61g *7/12*
U.S. Cl. 213—21 **18 Claims**



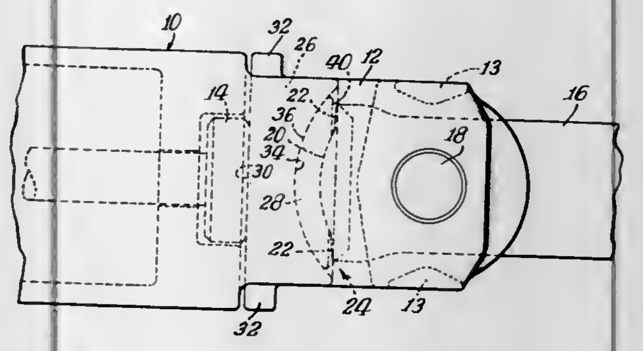
1. An apparatus for centering a railway car coupler bar with respect to a longitudinal center line of the railway car, said coupler bar extending into a car underframe center sill and being pivotally connected to a cushioning mechanism mounted within said center sill for translation and dissipation of at least impact forces imparted to said coupler bar, said apparatus comprising

- coupler carrier means connected at one end to said cushioning mechanism and longitudinally extending along and generally underlying a shank portion of said coupler bar, said coupler carrier terminating at a distal end thereof in operative contact with said shank for supporting said shank in swinging movement with said center sill;
- right hand arm means pivotally connected at one end thereof to said coupler carrier, and including
  - means connected to the other end of said right hand arm means for operably engaging a first lateral surface of said coupler shank;
- left hand arm means pivotally connected at one end thereof to said coupler carrier, and including
  - means connected to the other end of said left hand arm means for operably engaging a second lateral surface of said coupler shank;
- means connected to said right and left hand arm means for biasing said arm means to mutually pivot together at said other ends thereof; and
- means interposed between said other ends of said right and left hand arm means for interfering with free pivotal movement of said right and left hand arm means wherein said means for interfering operably
  - maintains one of said right and left hand arm means stationary when said coupler shank swings in one direction and pivots the other of said arm means away from said one arm means in the direction of coupler swing wherein said means for biasing will exert a restoring force upon said coupler shank through said other of said arm means tending to return said coupler bar to longitudinal alignment with said center sill structure, and further operably
- maintains the other of said right and left hand arm means stationary when said coupler shank swings in the other direction and pivots said one of said arm means away from said other means in the direction of coupler swing wherein said means for biasing will exert a restoring force upon said coupler shank through said one of said arm means tending to return said coupler bar again to longitudinal alignment with said center sill structure.

3,871,530
SWAY FOLLOWER ASSEMBLY FOR RAILWAY CAR COUPLER

Michael W. Ray, Tinley Park, Ill., assignor to Miner Enterprises, Inc., Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 420,777
Int. Cl. B61g *9/00*
U.S. Cl. 213—69 **5 Claims**



1. For use with the butt end of a coupler pivotally connected for lateral swinging movement to a yoke, a sway follower assembly comprising a rear follower member having a forwardly facing vertically oriented concave cylindrical surface, a front follower member having a rearwardly facing convex cylindrical surface engaging said concave surface of said rear follower member, said front follower member having a forwardly facing concave surface engaging and interfitting with the butt end of the coupler, and said front follower member being arcuately movable within said rear follower member to accommodate lateral swinging movement of the coupler relative to said rear follower member.

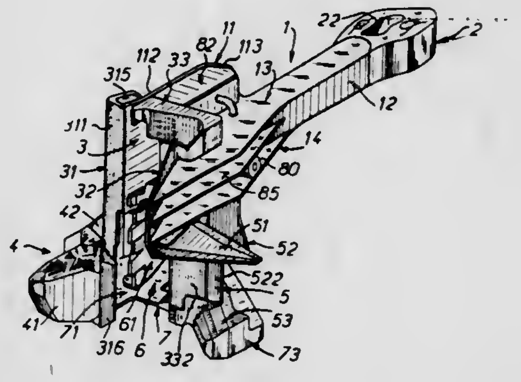
3,871,531
AUTOMATIC CENTRAL BUFFER COUPLINGS FOR RAIL VEHICLES

Georges Paul Dailly, 5, rue G. Bostarron, and Raymond Marcel Lefebvre, 7, rue G. Bostsarron, both of 59590 Raismes (Nord), France

Filed Dec. 13, 1973, Ser. No. 424,452
Claims priority, application France, Dec. 13, 1972, 72.44288; Dec. 4, 1973, 73.43130
Int. Cl. B61g *3/10*
U.S. Cl. 213—100 W **35 Claims**

1. In an automatic central buffer coupling including a coupling arm having a forward end and a rearward end, a buffing jaw and a pulling jaw at the forward end of the arm, a pivot member at the rearward end of the arm, a frontal plate between the buffing and pulling jaws, the frontal plate defining an aperture, latching means in the aperture in the frontal plate, two side walls delimiting below the frontal plate a conduit passageway, and a bottom member closing the bottom of

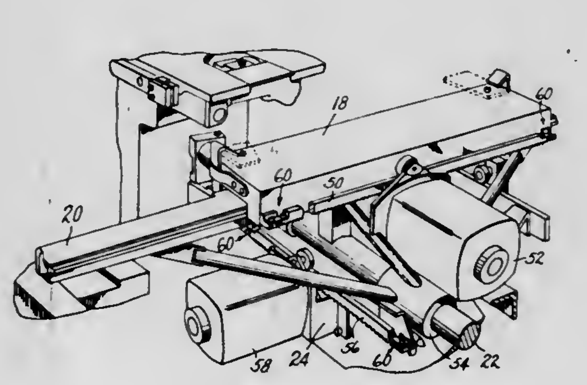
the passageway, the improvement that comprises the assembly by welding of the coupling components about a master member which extends continuously from the buffing jaw to the pivot member.



3,871,532
WORKPIECES MOVING APPARATUS

Adolph S. Dorosz, Beverly; Hans F. Schaefer, Jr., Rockport, and Gordon V. Sprague, Jr., Danvers, all of Mass., assignors to USM Corporation, Boston, Mass.

Division of Ser. No. 192,287, Oct. 26, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,847
Int. Cl. B66c *1/00*
U.S. Cl. 214—1 BB **1 Claim**



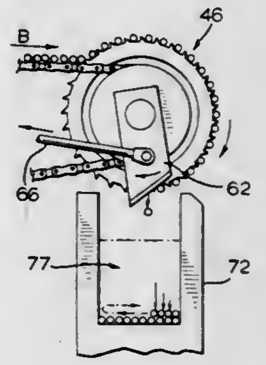
1. A coupling device for resiliently mounting a pinion driven rack to a workpiece support which is mounted for movement with the rack comprising:

A. a toothed rack constructed for engagement with a motor drive pinion;
B. a workpiece support mounted for movement in operative relation through the rack to the motor driven pinion;
C. first mounting surfaces, one at each end of the rack, the plane of said surfaces being parallel to the direction of movement of the rack;
D. second mounting surfaces each of which is constructed on the workpiece support for adjacent alignment with a respective first mounting surface; and
E. a pair of resilient leaf springs secured across the adjoining first and second mounting surfaces at each end of the rack to mount the rack to the workpiece support in a manner which provides for direct, non-resilient transmission of the drive forces from the pinion through the rack to the workpiece support and allows for resilient displacement between the rack and the workpiece support to compensate for other interacting forces.

3,871,533
ROD BUNDLING AND STACKING APPARATUS

Joseph Aloysius Mulcahy, Brooklin, Ontario; Harry Joseph Jones, Bowmanville, Ontario, and Stephen Douglas Batram, Oshawa, Ontario, all of Canada, assignors to Ferrco Engineering Limited, Whitby, Ontario, Canada

Filed Mar. 29, 1973, Ser. No. 345,856
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 FS **3 Claims**



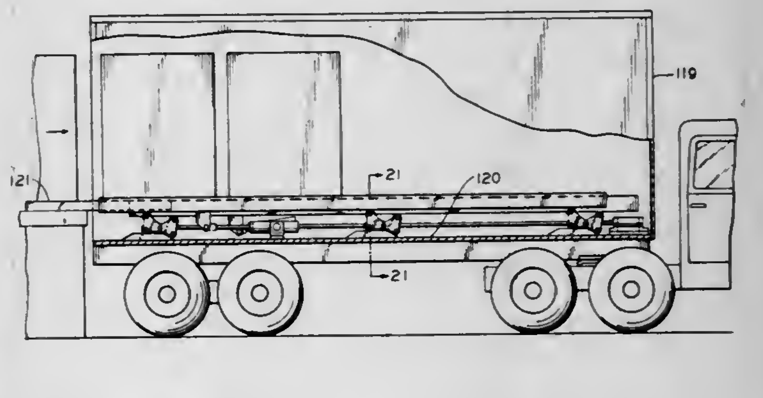
1. Apparatus for stacking metal rods for bundling, comprising:

- conveyor means for moving laterally a plurality of said rods horizontally disposed;
- rotatable magnetic means oriented to pick up said rods from the conveyor means and move the rods in a horizontal cylindrical locus, said magnetic means comprising a plurality of spaced, coaxially aligned wheels rotatable together and each carrying a magnetic rim defining the cylindrical locus;
- peeling means subsequently to separate each moving rod successively from the magnetic means substantially parallel to the axis of the locus and below the horizontal axial plane of the cylindrical locus, each separated rod being oriented substantially parallel to the axis of the cylindrical locus, said peeling means comprising a plurality of members one adjacent each of said wheels, the members each having a free edge intersecting the cylindrical locus and oscillatable together in an arc in said locus, the free edges of the members being aligned; and
- a cradle located beneath the magnetic means to receive each rod dropping successively therefrom.

3,871,534
WALKING BEAM CONVEYOR

Max Hubert Bursk, 30603 Winston Dr., Bay Village, Ohio 44140

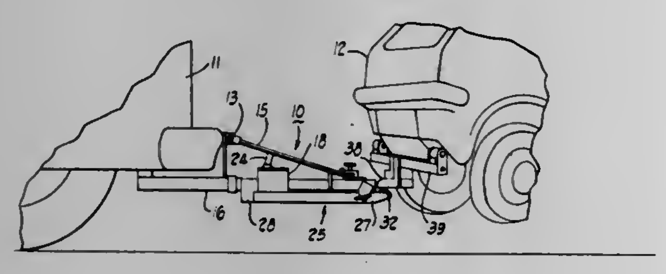
Filed July 28, 1972, Ser. No. 275,954
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.3 **14 Claims**



1. A walking beam conveyor comprising, a base, a plurality of spaced cam plates disposed in line on said base, each cam plate having a top horizontal flat surface including downwardly sloped opposite end portions, interconnected carriages

rollably disposed on the top surface of the cam plates for limited longitudinal reciprocable movement thereon, carriage reciprocating means for reciprocating said carriages on the cam plates, at least two pair of inner and outer elongated walking beams rollably disposed on said carriages in parallel horizontal relationship for limited horizontal movement thereon whereby each pair of beams is supported on the interconnected carriages, and beam reciprocating means for moving said beams horizontally, said interconnected carriages moving the respective pairs of beams vertically when the carriages are moving on the respective downwardly sloped end portions of said cam plate top surface, said first and second-named means operating in preselected timed sequence whereby at least one pair of beams is always in contact with an associated load alternately carried by said beams and moving such load horiziontally at constant speed in one horizontal plane, said carriages including spaced pairs of interconnected triangular end plates having rollers disposed at the apexes of each triangle, each pair of end plates being connected together at a common apex.

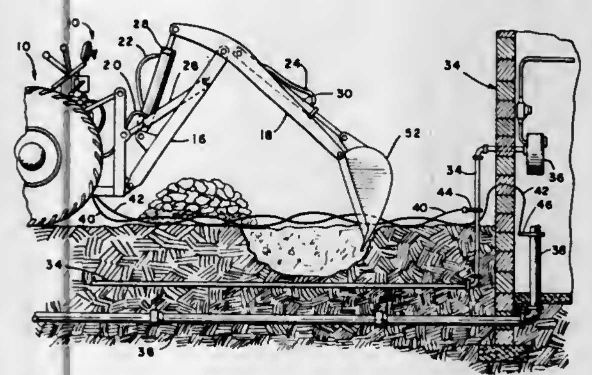
3,871,535
VEHICLE HITCH
Joseph G. Fenske, 5929 W. 149th St., Brook Park, Ohio 44142
Filed Jan. 2, 1974, Ser. No. 430,041
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **2 Claims**



1. A vehicle hitch for connecting a towing vehicle to a vehicle to be towed, comprising in combination:

a. a stationary hollow beam mounted on the rear frame of the towing vehicle, extending rearwardly therefrom in a horizontal plane;
b. a boom swivelly mounted on the underside of the beam for free swinging movement in both vertical and horizontal planes;
c. said boom comprising two telescopically interfitted inner and outer sections;
d. the outer section having a ball adapted to be engaged by a tow cap mounted on the vehicle to be towed;
e. the telescopic boom being of a length such that the ball will be positioned immediately beyond the free end of the beam when the boom is in its fully retracted condition;
f. a cable secured at one end to the beam and at its other end to the boom, proximate the ball; said boom end, supported by the cable, being free to swing in both vertical and horizontal planes relative to the beam;
g. means for increasing the effective length of the cable to permit the boom to be lowered, lengthened and swung in both vertical and horizontal arcs, to allow the boom ball to engage the ball cap on the vehicle to be towed when the towing and towed vehicles are misaligned immediately prior to their joinder; and
h. means for shortening the effective length of the cable to raise and shorten the overall length of the boom and move it into alignment with the beam, against the underside thereof, thereby lifting the rear wheels of the vehicle to be towed off the ground, with the rear axle thereof in exact alignment with the towing vehicle.

3,871,536
UNDERGROUND PIPE WARNING AND IDENTIFICATION SYSTEM
James R. Brown, 875 Richey Rd., Zanesville, Ohio 43701
Continuation-in-part of Ser. No. 298,583, Oct. 18, 1972, Pat. No. 3,817,411. This application Dec. 19, 1973, Ser. No. 425,971
Int. Cl. E02f *9/24*
U.S. Cl. 214—138 R **3 Claims**



1. A warning system for an excavating apparatus having an electrically conductive tool, comprising:

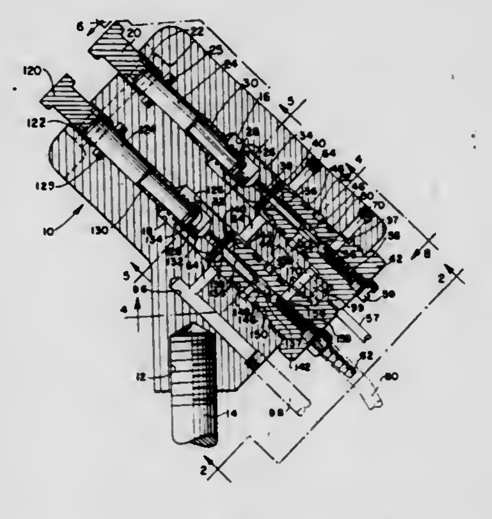
means connecting said conductive tool to a point of reference potential and to one side of a source of operating potential;
input means adapted to be connected with the other side of said source of operating potential;
an alarm circuit connected with said input means and having an input terminal and comprising alarm means, said alarm means being responsive to the receipt of a generating signal on said input terminal to establish a perceptible warning signal;
a plurality of sensor means in said alarm circuit, each adapted to be connected to a respective one of a plurality of underground pipes at points above ground level and to said alarm means;
switch means initially in a position for completing the alarm circuit whenever a particular one of said pipes is contacted by said tool whereby said alarm means is actuated and then being selectively operable to connect only the contacted one of said pipes with its respective sensor means with said alarm means so that the particular underground pipe contacted by said tool may be readily identified;
solenoid means being provided in said alarm circuit and being responsive to the contact of said tool with an underground pipe for automatically disabling the excavating apparatus; and,
by-pass switch means in said alarm circuit with the solenoid means for selectively deactivating said solenoid means while maintaining active the alarm means.

3,871,537
CONTROL FOR MOBILE CONSTRUCTION MACHINE
Gerald W. Bernhoft, Wauwatosa, and David A. Miller, New Berlin, both of Wis., assignors to Koehring Company, Milwaukee, Wis.
Division of Ser. No. 195,581, Nov. 4, 1971, Pat. No. 3,773,084. This application Mar. 26, 1973, Ser. No. 344,773
Int. Cl. E02f *3/28*
U.S. Cl. 214—140 **2 Claims**

1. In a mobile construction machine including: a motor operator tool;

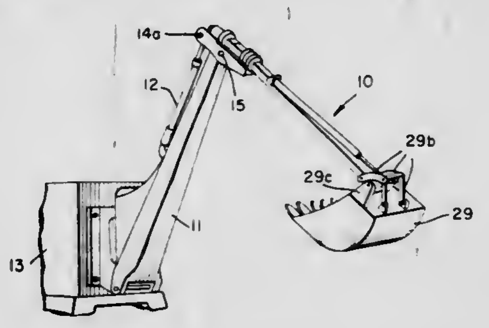
first and second motor means for moving said tool through first and second operational phases;
a manually operable control lever for selectively controlling said first motor means; and
the improvement comprising:

manually operable metering valve means for selectively controlling pressure responsive fluid circuitry including inlet means and
outlet means for controlling said second motor means, said metering valve means mounted on said control lever for metering flow of fluid through said metering valve means for precise control of said second operational phase of said tool, said metering valve means including;
a body including an axial bore extending therethrough, said body also including an inlet port, an exhaust port, and a signal port communicating with said axial bore, said port being connected to the inlet means of said fluid circuitry,
an annular valve seat defined within said body,



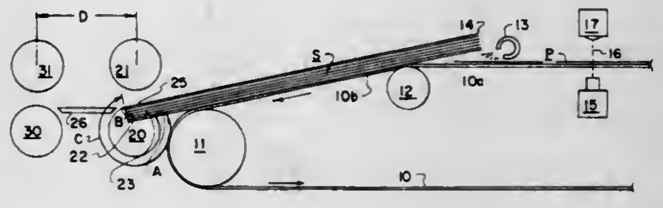
plunger means mounted for axial movement within said axial bore between unactuated and fully actuated positions,
supply means connected to said inlet port for delivering pressurized fluid thereto,
normally opened valve means situated within said axial bore in a posture axially displaced from said plunger means for metering the flow of fluid passing between said inlet port and said exhaust port, said valve means being operatively connected to said axially displaced plunger means for axial movement relative to said valve seat and relative axial movement with respect to said plunger means, and
said plunger means when actuated, operably moving said valve toward said valve seat to produce a modulated pressure signal at said signal port that is fed to the inlet means of said fluid circuitry, said signal being proportional to the extent of movement of said plunger means.

3,871,538
ROTARY EXTENDABLE DIPPERSTICK
Laurence B. Miller, and James D. Crook, both of 354 Tennessee, Redlands, Calif.
Filed Dec. 27, 1971, Ser. No. 211,879
Int. Cl. E02f *3/28*
U.S. Cl. 214—141 **10 Claims**



1. An excavating device adapted to be attached to transport means, said device comprising: a boom member attached at one of its ends to transport means; a support frame connected to the other end of said boom member; motor means attached to said support frame; a non-extendable shaft connected at one of its ends to said motor means; said motor means being adapted to revolve said shaft about its longitudinal axis; a hollow member having one of its ends adapted to slideably and telescopically receive therein the other end of said shaft; said hollow member being entirely supported by said shaft; means comprising a piston and cylinder assembly which is attached at one end to said shaft and at the other end to said hollow member so as to be able to extend or retract the effective combined length of said hollow member and shaft by causing movement of said member along its longitudinal axis relative to said shaft; an excavating tool such as a backhoe bucket connected to the other end of said hollow member; said hollow member and shaft being adapted to cooperate with each other so that when said shaft revolves about its axis, as aforesaid, the said hollow member and tool will likewise revolve about the longitudinal axis of said hollow member; and means carried by said hollow member and adapted to actuate said tool.

3,871,539
PANEL COUNTING, COLLECTING AND GATING METHOD
Willem A. Nikkel, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.
Division of Ser. No. 184,875, Sept. 29, 1971, Pat. No. 3,785,256. This application July 23, 1973, Ser. No. 381,891
Int. Cl. B65g *57/30*
U.S. Cl. 214—152 **3 Claims**

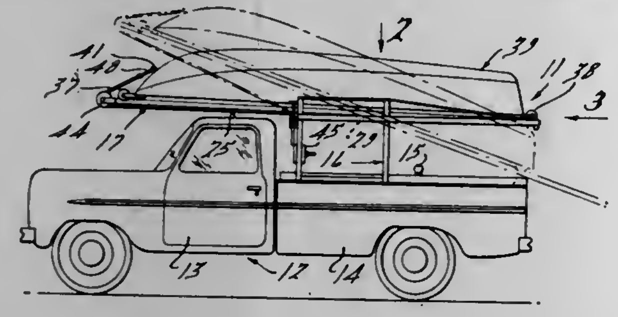


1. A method of assembling panels of thin sheet material into face-to-face stacks comprising a discrete number of said panels, said method comprising the steps of:

a. delivering panels of thin sheet material in a substantially continuous series sequence to a collecting station;
b. counting said panels delivered to said station;
c. accumulating said panels at said station in a face-to-face stack by addition of panels to one face side of said stack;
d. aligning the leading edges of said stacked panels against an abutment element;
e. moving a leading edge portion of said stack upon the accumulation of a predetermined number of said panels in the direction of and substantially perpendicular to the other face side of said stack and into nip engagement between first and second rolls disposed for rotation about axes on opposite face sides of said stack;
f. simultaneous with said leading edge moving step, rotatively withdrawing said abutment element about an axis coaxial of said first nip roll disposed on said one face side of said stack;
g. advancing said stack within said station by a single revolution of said first nip roll;
h. returning said abutment element to said panel edge aligning position simultaneously with the completion of said first nip roll single revolution; and,
i. removing said advancing stack from the proximity of said collecting station.

3,871,540
DEVICE FOR LOADING AND CARRYING BOATS ON PICKUP TRUCKS

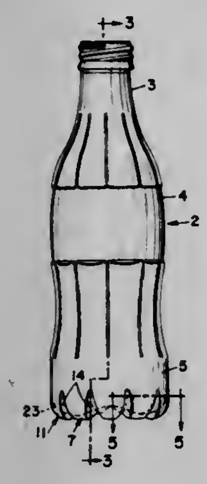
Otto L. Jenkins, Union Lake, Mich., assignor to Smitty's Easy Tow, a part interest
Filed Dec. 12, 1973, Ser. No. 424,043
Int. Cl. B60p *3/10*
U.S. Cl. 214—450 **13 Claims**



1. A device for loading and carrying inverted boats on pickup trucks comprising a fixed frame and a swingable frame, said swingable frame having side portions and being capable of receiving and supporting a boat thereon, means on said fixed frame pivotally supporting an intermediate portion of said swingable frame on a fixed pivot relative to both said fixed and swingable frames above the box of said pickup truck at approximately cab top level, the swingable frame being pivotable but non-slidable with respect to said fixed frame on said fixed pivot between an inclined position in which a boat may be moved upwardly onto the swingable frame, and a generally horizontal carrying position, extension means disposable between said swingable frame and the ground when the swingable frame is in its inclined position to provide a track so that a boat may be shifted along said extension means and completely onto said swingable frame, and means on said fixed frame for engaging and locking said swingable frame to said fixed frame when in said carrying position, said swingable frame having a track intermediate the side portions thereof for supporting rollers on the forward and after portions of said boat when the latter is inverted.

3,871,541
BOTTOM STRUCTURE FOR PLASTIC CONTAINERS

Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 26, 1973, Ser. No. 335,974
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **8 Claims**

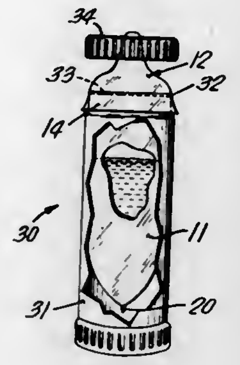


1. A blow molded pressure resistant plastic container having a body comprising a generally cylindrical side wall and a bottom structure, said bottom structure comprising:

- a central dome portion terminating in a circular bottom edge;
- a semi-torus shaped rim portion circumscribing said central portion and convexed downwardly from said container and having an outer marginal edge portion merging into said side wall and having an inner marginal edge portion merging with said dome portion at said circular edge; and
- a plurality of shallow ribs formed in said rim portion of transverse arcuate contour and intervening radially extending leg portions, each rib portion having a relatively thick ridge section and having side sections progressively thinned outwardly and merging into respective leg portions.

3,871,542
DISPOSABLE NURSING CONTAINER

Ilse M. Hammer, 46 Place Kieffer, Dollard des Ormeaux, Quebec, Canada
Filed Sept. 24, 1973, Ser. No. 400,383
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 E **9 Claims**

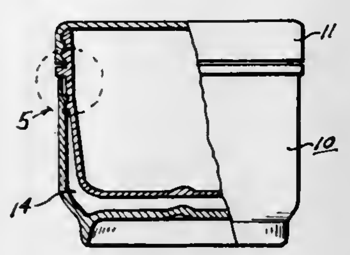


1. A disposable nursing container comprising a body of flexible sheet material having a nipple end formed integral therewith, at least one flexible skirt member of sheet material has an edge thereof secured to said body for engaging said container in a holding device with said nipple end protruding from an end of said holding device, and a sealable open end to permit a liquid to be inserted and sealably retained in said body.

9. A disposable nursing container as claimed in claim 1 in combination with a bottle having at least one open end, an end edge about said open end, a cap having an opening therein and securable about said end edge, said nursing container being retained in said bottle with said at least one skirt overlapping said end edge and retained thereabout by said cap, said nipple extending through said cap opening.

3,871,543
DOUBLE-WALL JAR

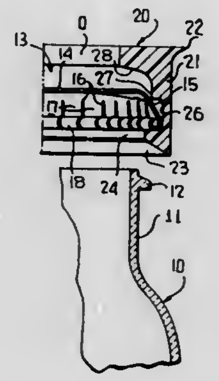
Robert Chadfield, Forest Hills, Minnetonka, Minn., and Frank J. Lang, Lemont, Ill., assignors to Federal Package Corporation, Minneapolis, Minn.
Filed Jan. 2, 1974, Ser. No. 429,784
Int. Cl. A47j *41/00;* **B65d** *11/16*
U.S. Cl. 215—13 R **14 Claims**



1. A double wall jar comprising an inner cup nested within an outer cup, the inner cup having an annular shoulder at the upper end providing an abutment for the upper edge of the outer cup, the outer surface of the inner cup being spaced from the inner surface of the outer cup except at the upper ends of the wall of each cup, a plurality of axially aligned teeth at the upper edge of inner wall of the outer cup and a plurality of axially aligned teeth below the shoulder at upper end of the outer wall of the inner cup, said teeth being in interlocking engagement to prevent relative rotary motion between the two cups, a peripheral inwardly-extending groove in the outer wall of the inner cup directly adjacent the said teeth and a peripheral inwardly-extending rib on the inner wall of the outer cup directly adjacent the said teeth, said rib being snap-fitted into the said groove upon assembly of the two cups and preventing axial displacement between the said cups.

3,871,544
CHILD-PROOF CLOSURE CAP

Harry A. Peyser, Olympia Fields, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,146
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—225 **3 Claims**



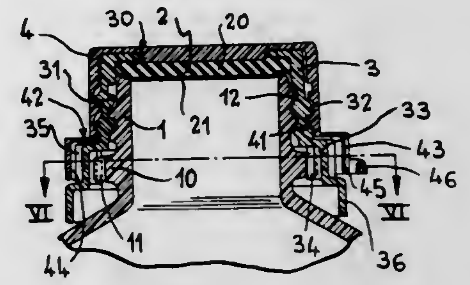
1. A closure comprising an inner-cap defined by an end panel and depending peripheral skirt terminating in means for releasable clamping securement to a container, said peripheral skirt being deflectable between an unlocked position at which the peripheral skirt is of a generally frusto-conical condition enlarging in a direction away from said end panel and a locked position at which the diameter of the peripheral skirt is lessened as compared to its maximum in said frusto-conical condition, means for moving said peripheral skirt from said unlocked to said locked position, said moving means being carried by a annular wall in external telescopic relationship to said peripheral skirt, said annular wall having confining means for entirely confiningly housing said inner-can within the axial length of said annular wall in said unlocked position, said confining means also constituting means for contact with said inner cap to aid positively in the urging of said inner-cap into said unlocked position during the raising of said cap from said container, and said annular wall further including means for retaining said peripheral skirt in said locked position after having been moved thereto by said moving means.

3,871,545
CLOSURE DEVICES FOR CONTAINERS

Andre Berezlat, Ecully, France, assignor to Astra Plastique, Saint Georges de Reneins, France
Filed July 16, 1973, Ser. No. 379,702
Int. Cl. B65d *41/38, 41/50, 41/62*
U.S. Cl. 215—249 **3 Claims**

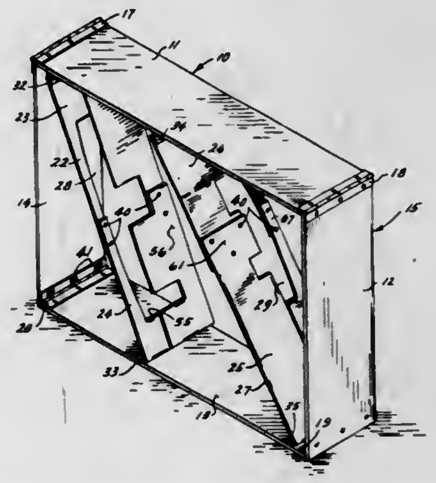
1. A closure device for closing the neck of a container, comprising:

- an outer threaded portion on the container neck adjacent to the edge around the opening of the neck;
- a perforatable closure disc overlying the edge about said opening;
- a retaining member for maintaining said disc in sealed engagement with said edge about said opening, the retaining member having a substantially flat annular end wall overlying the periphery of said disc to press it against said edge and said annular end wall defining a central opening through the end wall exposing a portion of said disc for perforation, and the retaining member having a first annular skirt surrounding said neck and having an internal screw-threaded portion engaging said outer threaded portion to mount the retaining member on said neck, and said first skirt having an external screw-threaded portion therearound;
- a cap covering said retaining member and having a closed end wall overlying the end wall of said retaining member and including an inwardly projecting boss portion entering said central opening and abutting said portion of said disc, and the cap further including a second annular skirt surrounding said first annular skirt and having an internal screw-threaded portion engaging said external threaded portion to secure the cap on said retaining member; and said inner screw-threaded portion of said first skirt and said external screw-threaded portion thereof being of opposite hands.



3,871,546
COLLAPSIBLE BICYCLE CRATE

Neale Thompson, 2717 Hearst St., Elm Grove, Wis. 94709
Filed July 2, 1973, Ser. No. 375,711
Int. Cl. B65d *85/68*
U.S. Cl. 217—38 **7 Claims**



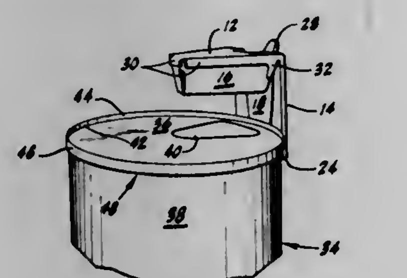
1. A collapsible shipping device for protecting a partially disassembled bicycle comprising: external wall portions defining a frame member, hinge means disposed in said frame member to effect a substantially complete collapse of said frame member, at least one internal wall member extending from one of said external wall portions to another of said external wall portions, at least one opening in said internal wall member to receive portions of said bicycle and means to removably secure said portions of said bicycle within said opening of said internal wall member.

3,871,547
CONTAINER CLOSURE

Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501
Filed May 21, 1973, Ser. No. 362,442
Int. Cl. B65d *45/00*
U.S. Cl. 220—287 **8 Claims**

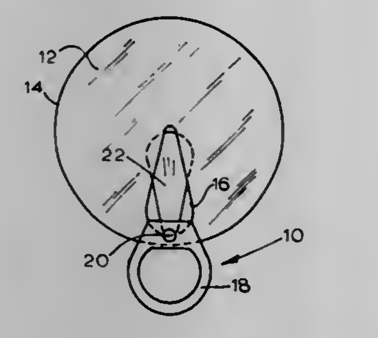
1. A device for sealing an opening in the end wall of a container having at least one end wall and a sidewall wherein

a first upwardly, from the end wall, and then outwardly and downwardly extending rim is peripherally formed at the juncture of the end wall and side wall of the container, which device comprises:
- a. a first plate;
- b. a pad of resilient material attached to one surface of the plate and adapted to sealingly close the opening in the end wall of container;
- c. a second plate attached to the first plate so as to be at substantially right angles thereto in sealing position with the pad on the first plate being on the inside of the angle, the second plate being adapted to extend downwardly along the outside of the sidewall of the container in close proximity thereto when the device is in sealing position;
- d. a tongue extending from adjacent the free end of the second plate toward the attachment of the plates to one another, the tip of the tongue being spaced therefrom sufficiently and biased so as to slide along an extension of a diameter of the container under and bear against the lower surface of the rim of the container in sealing position, whereby the pad of resilient material is caused to sealingly close the opening in the end wall of the container; and
- e. means for moving the tip of the tongue from beneath the rim of the container to release the device therefrom; and
- f. a ridge adapted to extend downwardly along the end wall side of the rim of the container in close proximity thereto so as to co-act with the tongue in securely positioning the pad in sealing position, the ridge being in at least two sections, at least one on each side of the tongue.



3,871,548
METHOD OF RE-ATTACHING CONVENIENCE CLOSURE DEVICE

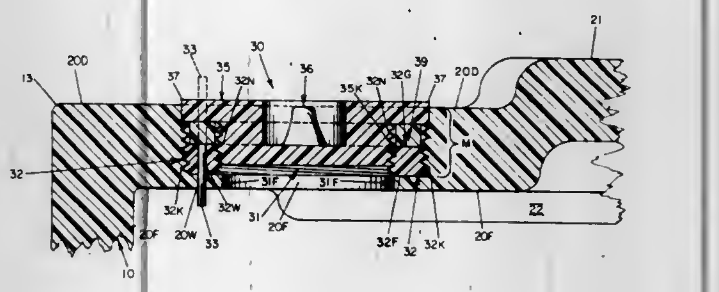
John Tanzer, 2605 St. Charles Ct., Brookfield, Wis. 53005
Filed Aug. 31, 1972, Ser. No. 285,766
Int. Cl. B65d *5/64*
U.S. Cl. 220—243 **4 Claims**



1. The method of re-attaching a tear strip closure having a generally key-hole shaped tear strip section and a finger tab section connected by a rivet portion to the marginal surfaces adjacent a generally key-hole shaped opening formed in a can top after complete removal of the generally key-hole shaped tear strip section from the can top, comprising the steps of:
- inserting the separated year strip section into the generally key-hole shaped opening formed in the can top,
- moving the tear strip section inwardly until the rivet portion is positioned in the reduced neck area of the generally key-hole shaped opening, and
- then rotating the tear strip section by engagement and movement of the rivet portion thereof within the reduced neck area of the generally key-hole shaped opening and causing the finger tab section and/or tear strip section to engage the can top for re-attaching the tear strip closure.

3,871,549
CLOSURE ASSEMBLY FOR HOLLOW DRUM TYPE CONTAINERS

Raymond W. Kerr, 3731 N. 58th St., Lincoln, Nebr. 68529
Filed Nov. 7, 1973, Ser. No. 413,422
Int. Cl. B65d *41/04*
U.S. Cl. 220—288 **4 Claims**

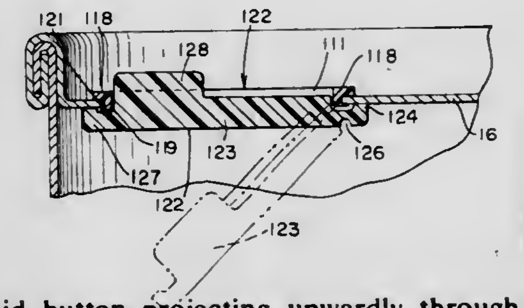


1. A readily re-closeable and re-usuable container of the hollow drum type and stably uprightly surrounding a vertical-axis and comprising:
- A. A floor-panel providing the drum lower end and transversely intersecting the said vertical-axis;
- B. A tubular shell having a lower portion annularly connected to the floor-panel along a floor-annulus and extending uprightly therefrom in surrounding relationship to the said vertical-axis;
- C. A roof-panel that loftily overlies the floor-panel and annularly connected to the upper portion of said tubular shell along a roof-axis that surrounds said vertical-axis; and
- D. Said drum being provided with at least one closeable-opening through the structural material thereof and for charging dischargeable cargo into the drum hollow interior chamber, said closeable-opening comprising:
  - i. A tubular sleeve threadedly engaged at its outer-diameter with a bore in the drum structural material whereby the tubular sleeve abuttably rests upon a bottom-shelf structural extremity of the roof-panel;
  - ii. A plug type closure threadedly engaged with said tubular sleeve inner-diameter; and
  - iii. A retainer-pin means removably passing downwardly through the threaded tubular sleeve into roof-panel bottom-shelf to maintain said sleeve in a non-rotatable relationship to the roof-panel for an extended finite-duration.

3,871,550
PUSH-IN EASY OPENING CONTAINER

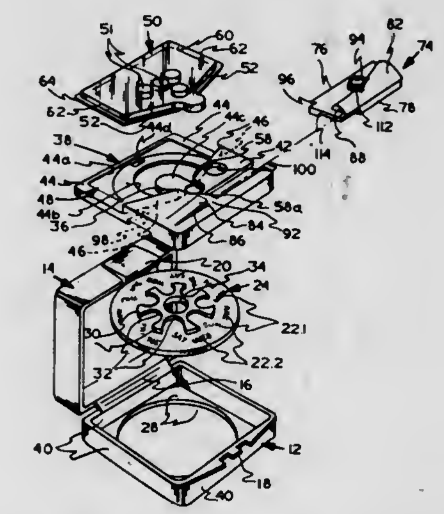
Wayne T. Chiappe, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 29, 1973, Ser. No. 365,004
Int. Cl. B65d *41/00, 43/14, 51/04*
U.S. Cl. 220—339 **2 Claims**

1. An easy opening end closure for a container comprising a metal panel, an opening formed in said panel, a closure made from plastic material underlying said opening and having a closure flap, flexible means providing an attachment band hingedly attached to said flap and permanently bonded to the underside of said panel and marginal edge portions about said flap releasably bonded to the underside of said panel about said opening, and said closure having a relatively inflexible thick button portion at one end and having a relatively thin flexible body portion between the band and button and said button projecting upwardly through the opening above the panel.



3,871,551
PILL DISPENSER WITH PILL ACTUATED TIME INDICATOR

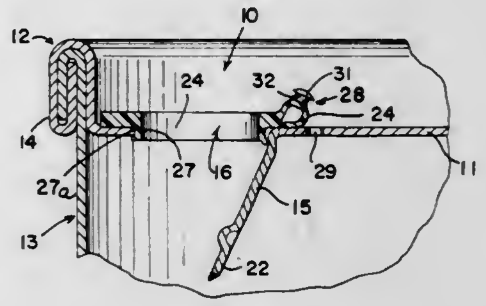
Louis Bender, 4 Heather Ln., Scotch Plains, N.J. 07076
Continuation of Ser. No. 189,647, Oct. 15, 1971, abandoned. This application Jan. 30, 1974, Ser. No. 437,980
Int. Cl. B65d *83/04*
U.S. Cl. 221—8 **32 Claims**



1. A pill dispenser with an advancable time indicator actuated upon removal of a pill from the dispenser comprising
- a pill dispenser housing provided with pill storing means and having a pill discharge port;
- a pill time indicator movably mounted to the pill dispenser housing to advance to successive pill time indicating positions;
- a pill transporter mounted to the pill dispenser housing for relative movement with respect to the pill time indicator towards a successive time indicating position thereof, said pill transporter being movable between a pill receiving position and a pill discharge position in operative registration with the pill discharge port;
- said pill time indicator and the pill transporter being mounted to operate adjacent to each other and being selectively chaped to capture a single pill from the storing means at the pill receiving position for interlocking engagement of said pill time indicator with the pill transporter by the captured pill to enable operative movement of the pill transporter to advance the pill time indicator to a successive pill time indicating position and discharge the interlocking pill from the pill discharge port in the pill dispenser housing upon arrival of the pill transporter at said pill discharge position.

3,871,552
CONTAINER WITH EASY OPENING END UNIT

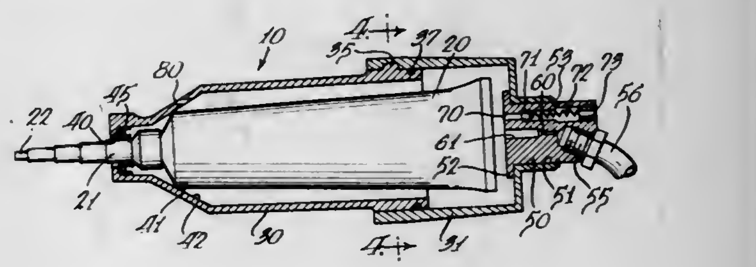
Lewis F. Irland, Palos Hills, and John B. Nicholson, Country Club Hills, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 15, 1973, Ser. No. 370,504
Int. Cl. B67b *7/24;* B65d *51/22*
U.S. Cl. 222—83 **13 Claims**



12. An easy opening container comprising a body with an end panel having a closure flap displaceable into said container to form a pour aperture therein, a tab located at one side of said aperture and having a bendable hinge portion fixedly secured to said panel adjacent to the aperture, said tab having a liftable portion with an opening therein, said liftable portion adapted to be swung 180° with attendant bending of the hinge portion to a position overlying said closure flap and having means for depressing said flap into the container upon pressure being applied to said tab, and vent-forming means connected to said hinge portion operable to form a vent in the end panel attendant to bending of the hinge portion upon lifting of the tab.

3,871,553
DISPENSING GUN FOR SEMI-LIQUID MATERIAL

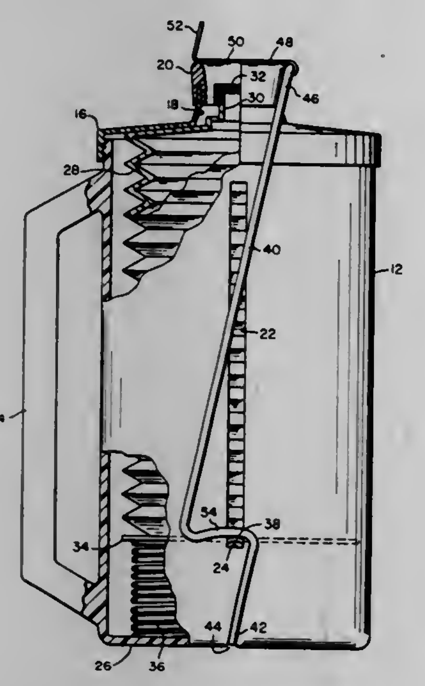
Richard W. Steinberg, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.
Continuation of Ser. No. 341,341, March 15, 1973, abandoned. This application June 13, 1974, Ser. No. 478,878
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 **4 Claims**



1. A dispensing gun for semi-liquid material carried in a collapsible tube and adapted for connection to a compressed air line in an industrial shop or the like comprising, a body defining an interior chamber for the tube, an outlet opening at one end of the body to receive the dispenser tip of the tube, a pressure air inlet orifice adjacent the other end of the body to limit the air flow into the chamber and reduce the pressure thereof, a pair of air outlet orifices from said body both of a size greater than said air inlet orifice, one of said outlet orifices being a pressure relief passage and a ball check valve positioned to close said pressure relief passage, a spring acting on said ball check valve, the other air outlet orifice being selectively closable by a user of the gun whereby closure of the latter orifice establishes a static pressure in the chamber to progressively collapse said tube and cause dispensing of material, and means for adjusting the force of said spring to vary the static pressure in said chamber.

3,871,554
EYE WASH STATION

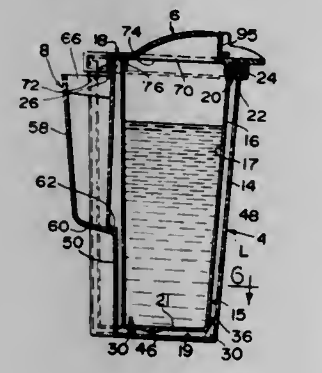
Charles Mason Huck, Oldwick, N.J., assignor to Sybron Corporation, Rochester, N.Y.
Filed Feb. 4, 1974, Ser. No. 439,370
Int. Cl. B65d *35/30*
U.S. Cl. 222—96 **6 Claims**



1. A self-contained eye wash station comprising:
a. a housing having an axial slot formed through the wall thereof;
b. a collapsible container confined in said housing, said container adapted to contain an eye wash liquid and having an open spout portion extending through said housing;
c. bias means between said housing and container, said means capable of exerting a force on said container to collapse the same for expressing the liquid contents thereof through said spout, said means including a flange extending through said slot; and
d. manually operable release means in releasable engagement with said flange restraining said bias means.

3,871,555
CONTAINER DEVICE FOR DISPENSING LIQUIDS

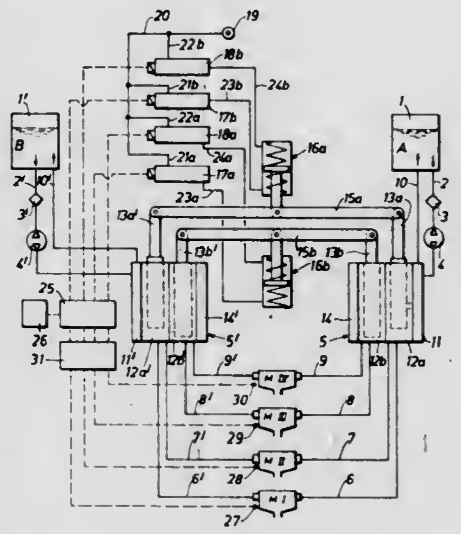
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed Mar. 17, 1972, Ser. No. 232,675
Int. Cl. A47g *19/12*
U.S. Cl. 222—131 **4 Claims**



1. A sanitary container for dispensing liquids therefrom comprising,
a hollow body,
said body being open at the top and closed at the bottom for receiving and discharging a liquid material,
a lid member is detachably connected to and covers the open top of said body,
said lid member includes a cover portion having a discharge opening therein,
said lid member includes an integrally formed spout assembly having another discharge opening connected in fluid communication with said discharge opening in said cover member for discharging liquid from said device,
said body is of a double shell construction including an inner shell and an outer shell,
said body includes centering means between said inner shell and said outer shell for supporting said shell in spaced generally continued relation with respect to one another to insulate said inner shell from the atmospheric environment surrounding said container,
said outer shell and said inner shell each includes a depression therein,
said depression of said inner shell is aligned with and spaced inwardly from depression of said outer shell to enable said inner shell to be fitted internally of said outer shell,
said depressions extend in the lengthwise direction of said shells,
said outer shell is formed with a handle for holding said body,
said handle extends along and in the lengthwise direction of said depression to enable said handle to be positioned closer to the center of mass of the liquid contained in said container,
said cover portion is of a generally planar construction and said spout assembly includes a lip member having a bottom wall which is formed integral with and extends outwardly from said cover portion, being disposed generally in the general plane thereof,
said lip member includes a front edge disposed outwardly of said outer shell and an inner edge disposed inwardly of said inner shell,
said spout assembly including an approach component connecting said discharge opening in said cover portion in fluid communication with said discharge opening in said spout assembly,
said approach component being raised out of the general plane of said cover portion in overlying relation with respect to the discharge opening in said cover portion directing fluids passing through said discharge opening in said cover portion through said discharge opening in said spout assembly onto said lip member for discharge from said device,
said approach component includes a top wall disposed above the general plane of said cover portion and overlying said opening in said cover portion,
said bottom wall of said lip member commences generally vertically below the termination of said top wall of said approach component for defining said discharge opening in said spout assembly,
said discharge opening in said spout assembly defines a plane which extends generally perpendicular to the general plane of said cover portion,
said approach component being further defined by spaced laterally extending side walls which extend outwardly from said cover portion and project beyond the periphery of said cover member to form part of said spout,
said side walls being disposed on opposite sides of said opening in said cover portion,
said top wall being supported on and extending between said side walls as to span and cover said opening in said cover portion, forming a passageway for directing liquid from said discharge openings in said cover portion and said spout assembly and along said bottom wall,
a shield member is disposed in covering relation over said discharge opening in said spout assembly to prevent contaminants from entering said container and
said shield member is pivotally connected to said approach component to enable pivotal movement by gravity between a closed position covering said discharge opening in said spout assembly and an open position upon movement of said container from an upright position to a tilted position, respectively.

3,871,556
MACHINE FOR FILLING MOULDS OR CAVITIES WITH A FREE-FLOWING MIXTURE OF REACTION COMPONENTS

Karl Breer, both of Bergisch-Neukirchen, and Klaus Nadolski, both of Bergisch-Nuekirchen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 12, 1973, Ser. No. 331,460
Claims priority, application Germany, Feb. 26, 1972, 2209169
Int. Cl. B67d *5/60*
U.S. Cl. 222—132 **36 Claims**

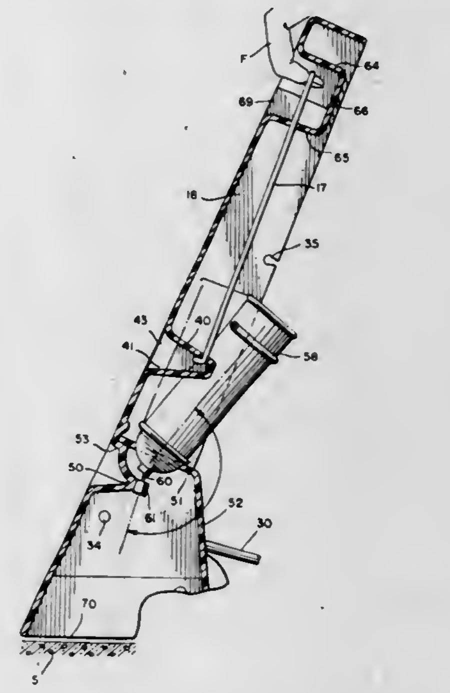


1. A machine for filling moulds or cavities with a free flowing mixture of at least two components maintained separately in storage vessels therefor, the machine comprising:
a. a pair of mixing heads comprising a first and a second mixing head,
b. a pipeline switch for connection to each of the storage vessels and for successively delivering its component to the respective mixing heads,
c. each pipeline switch comprising an inlet for connection to its storage vessel, and a housing member including a cooperating slide, the housing member of each pipeline switch comprising an inlet communicating with the pipeline switch inlet, a first outlet having a pipeline connected to the first mixing head, a second outlet having a pipeline connected to the second mixing head, and a third outlet for receiving the component of the pipeline switch, the slide and housing of each pipeline switch having coordinated constructions so that by selected movement the slide in the housing, the inlet can be exclusively communicated with any one of said outlets,
d. and actuating means coupled with the pipeline switches for operation of the slides thereof for successively delivering the components simultaneously to each mixing head.

3,871,557
SPRAYING APPARATUS

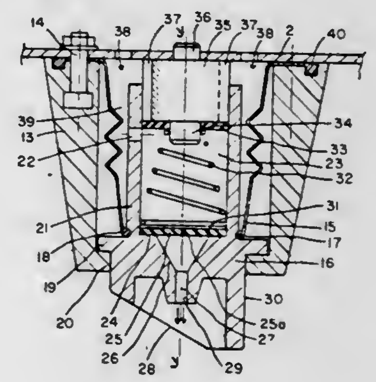
Thomas J. Smrt, 31 W. 300 West Bartlett Rd., Bartlett, Ill. 60103
Filed Aug. 2, 1973, Ser. No. 385,168
Int. Cl. B67d *5/64*
U.S. Cl. 222—162 **2 Claims**

1. A spraying apparatus comprising a valve-equipped aerosol can having contents to be sprayed and an elongated frame having a spraying end and a handle end, holding means on the frame pivotally mounting the can for pivotal movement between an actuated position and a non-actuated position, the holding means including arcuately extending bumper means receiving the can in the non-actuated position and having a pair of side walls, valve abutment means on the frame engaging the valve of the can, the valve being of the type which is opened by lateral movement of the valve relative to the can whereby pivoting movement of the can from the non-actuated position to the actuated position opens the valve, a cord mounted on the frame and extending arcuately around a portion of the periphery of the can between the side walls of the bumper means when the can is in the non-actuated position, the cord extending from the can through each of the side walls to the handle end of the frame, tensioning of the cord at the handle end causing straightening of the cord between the side walls of the bumper means and causing pivoting of the can relative to the valve from the non-actuated position to the actuated position to open the valve, resilient return means mounted on the frame and engaging the can and urging the can into the non-actuated position, a casing portion surrounding the valve abutment means and providing a spraying chamber the casing portion extending adjacent the surface to be sprayed whereby the contents being sprayed are protected from the wind, and wheels mounted on the frame for supporting the casing portion adjacent the surface to be sprayed.



3,871,558
SEMI-AUTOMATIC DISTRIBUTOR OF DOSES OF VISCOUS PRODUCTS

Maurice Paul Gournelle, demeurant 1 rue des Bruyeres 92, Asnieres, France
Filed Oct. 30, 1973, Ser. No. 411,040
Claims priority, application France, Oct. 31, 1972, 72.38618
Int. Cl. B67d *5/42*
U.S. Cl. 222—181 **15 Claims**



5. An apparatus for discharging doses of liquid comprising a receptacle containing the liquid to be distributed, at least one guide member attached to said receptacle and defining a passage for receiving said liquid from said receptacle, a dispensing member movably mounted on said guide member, said members defining a chamber for receiving said liquid

from said passage, means responsive to movement of said dispensing member in one direction relative to said guide member for pressurizing the fluid in said chamber and means responsive to said pressurizing of said fluid for defining an outlet opening through which said liquid discharges, said outlet opening closing upon movement of said dispensing member in a direction opposite said first direction, said dispensing member defining an outlet passage in communication with said outlet opening, the dimensions of the walls of said passage being selected to attract said liquid by capillary action after discharge from said opening and before discharge from said dispensing member.

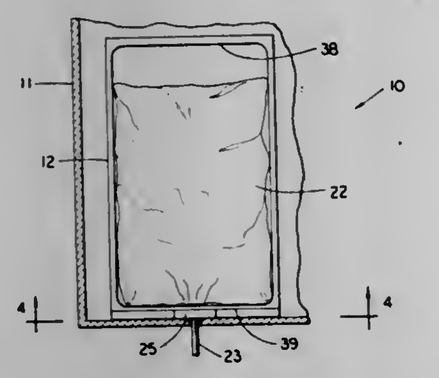
3,871,559
MILK DISPENSER CONTAINER

Gary W. Smith, and George A. Lemcke, both of Indianapolis, Ind., assignors to Parish Manufacturing Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 334,684, Feb. 22, 1973, abandoned. This application Oct. 1, 1973, Ser. No. 402,459

Int. Cl. B67d *5/08*

U.S. Cl. 222—183 **1 Claim**



1. The combination of:
a liquid dispenser cabinet having an inner chamber with a bottom wall and a first aperture positioned thereon;
a container fitted within said dispenser cabinet and having a removably mounted front wall and a bottom slanted wall, said container including a second aperture from which said slanted wall extends upwardly;
said bottom slanted wall including a bridge integrally joined thereto which defines said second aperture;
said container having a pair of vertical sidewalls extending upwardly from said bottom slanted wall with each sidewall having an outwardly extending flange perpendicularly joined thereto;
said flanges becoming gradually narrower at the uppermost vertical end;
said removable wall comprising a sheet of transparent material with depending portions extending lengthwise on opposite sides of said sheet being molded onto said sheet and defining a pair of opposed C-shaped channels slidably receiving said flanges, said channels becoming gradually narrower at the uppermost vertical end securing said front wall to said container;
said container including a back wall parallel to said front wall and a top wall joined by means of molding to said back wall;
said sidewall being molded to said top wall, said slanted bottom wall and said back wall;
said removable front wall having a locking tab member molded thereto, said locking tab member being slidably received by said bridge;
said removable front wall having a wedge-shaped member molded thereto positioned such that when said removable front wall is in place said wedge-shaped member engages said top wall to prevent movement of said front wall; and
a flexible plastic bag of liquid fitted within said container atop said bottom slanted wall and including an outlet tube extending through said first aperture and said second aperture.

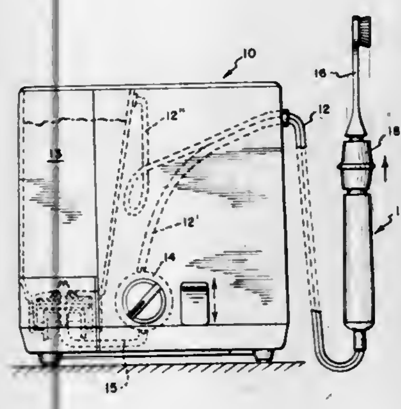
3,871,560
RESERVOIR FOR A LIQUID PUMP INCLUDING MEANS FOR INITIALLY FORCING LIQUID INTO THE PUMP

Jean-Pierre Crippa, Geneva, Switzerland, assignor to Les Produits Associes, SA, Geneva, Switzerland

Filed Aug. 1, 1973, Ser. No. 384,513

Int. Cl. G01f *11/30*

U.S. Cl. 222—325 **6 Claims**



1. Apparatus for supplying liquid to a pump which comprises
- a. a pump inlet fixture for supplying liquid to said pump,
- b. a removable reservoir for supplying liquid to said pump inlet fixture when placed in position thereon,
- c. said reservoir including a chamber at the bottom thereof having an inlet from the portion of the reservoir thereabove and an outlet,
- d. a closure member vertically movable in said chamber between upper and lower positions with respect to the chamber and having vertically spaced inlet and outlet closure sections,
- e. said outlet closure section being constructed and adapted to close said outlet of the chamber in the lower position of the closure member,
- f. said inlet closure section and said inlet to the chamber being constructed and adapted to close the inlet through a range of intermediate positions of the closure member and open the inlet in upper and lower positions of the closure member,
- g. means for resiliently biasing said closure member toward the lower position thereof,
- h. said outlet and said pump inlet fixture being designed and adapted for substantial movement of the fixture into said chamber as the reservoir is placed in position on the fixture,
- i. sealing means for maintaining a water-tight relationship between said outlet and pump inlet fixture as the reservoir is placed in position on the fixture,
- j. and means for moving said closure member from lower to upper positions thereof with respect to the chamber as the reservoir is placed in position on said fixture,
- k. whereby liquid from said chamber is forced into said pump inlet fixture in said range of intermediate positions of the closure member as the reservoir is placed in position on the fixture.

3,871,561
UPRIGHT FOLDING APPARATUS FOR CLOTHING ARTICLES

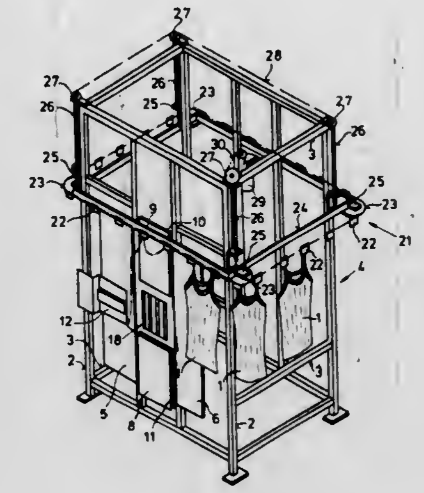
Conrad Arbter, Mittelweg 1 1/10, D8741 Saal an der Saale, Germany

Filed May 15, 1974, Ser. No. 470,199

Claims priority, application Germany, June 15, 1973, 2330400

Int. Cl. A41h *33/00*

U.S. Cl. 223—37 **18 Claims**



1. A folding apparatus for textile goods comprising an upright frame means, a pair of longitudinal side fold blade means for movement in a vertical plane within said frame means towards each other, a longitudinal folding plate means comprising a pair of folding plate members adapted for movement towards each other, a pair of transverse fold blade means adapted for movement in a vertical plane and forming a rest surface for said folding plate members in a predetermined position, said transverse folding blade means each comprising a front edge wherein the respective front edges of the transverse blade means are facing each other, a counter support means adapted for movement transversely and located between said front edges of said transverse fold blade means, a transverse folding plate means cooperating with said transverse fold blade means and adapted for movement in a plane parallel with the plane of the said longitudinal side fold blade means.

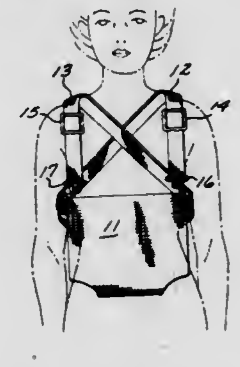
3,871,562
INFANT CARRIER

George D. Grenier, 337 Main Street, Morro Bay, Calif. 93442

Filed Jan. 23, 1974, Ser. No. 435,979

Int. Cl. A47d *13/02*

U.S. Cl. 224—6 **3 Claims**



1. An infant carrier adapted to be attached to the torso of another comprising:
a flexible seat section conformed to be straddled by the infant;
a pair of flexible shoulder straps attached at the respective one ends thereof to one edge of said seat section and conformed in length to a dimension surrounding on a diagonal the torso of said another;
a pair of flexible attaching straps attached at respective one ends thereof proximate an opposed edge of said seat section;
means for selective connection of the other end of said shoulder straps with said attaching straps respectively connected to the other ends thereof;
said seat section includes a first and second flexible layer conformed in planform to a common rectangular shape having the longitudinal edges thereof disposed between said one and opposed edges, said flexible layers having received therebetween the respective one ends of said shoulder and attaching straps secured in such receiving relationship by peripheral stitching along the edges of said seat section;
said shoulder and attaching straps are received within said seat section at angles relative to the longitudinal edges of said section and said shoulder and attaching straps extend within the interior of said seat section to respective coincident geometric alignment, being secured in such position by common stitching with said first and second flexible layers;
said seat section includes a flexible pocket layer disposed in overlaying alignment over the segment of said section receiving the secured ends of said attaching straps;
said attaching straps are dimensionally conformed to align for securing with the distal ends of said shoulder straps between said shoulder straps and the torso of said another having said seat section hung therebetween.

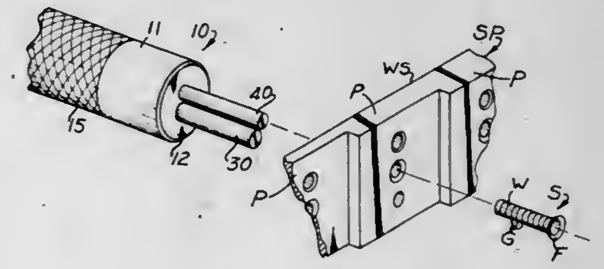
3,871,563
BREAK-OFF TOOL

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 274,613, July 24, 1972, which is a continuation-in-part of Ser. No. 882,126, Dec. 4, 1969, Pat. No. 3,679,109, which is a continuation-in-part of Ser. No. 711,386, March 7, 1968, abandoned. This application July 12, 1973, Ser. No. 378,445

Int. Cl. B26f *3/00*

U.S. Cl. 225—103 **5 Claims**



1. Apparatus for severing thin walled sleeves having at least one circumferentially extending narrow weakened portion therearound including:
an internal support member slidably receivable into the sleeve from one end thereof having an external configuration conforming to the internal configuration of the sleeve, said internal support member defining an operating end surface on the protruding end thereof oriented substantially normal to the central axis of said internal support member;
a support body carrying said internal support member;
positioning means carried by said support body and laterally spaced from said internal support member for selectively locating said internal support member within said sleeves, said positioning means including:
a spacer member carried by said support body having a central axis oriented substantially parallel to the central axis of said internal support member, laterally spaced from said internal support member sufficiently for the side wall of the sleeve to be slidably received therebetween, and defining an abuttment on the protruding end thereof, and

adjustment means for releasably locating said abuttment with said operating end surface of said internal support member; and,

a removal member carried by said support body and protruding therefrom, said removal member comprising a first section conforming in diameter and shape to the outside of the sleeve and a reduced diameter section integral with the protruding end of said first section and located coaxially therewith, said reduced diameter section having an outside diameter conforming to the diameter and shape of the inside of the sleeve, and an abuttment formed between said first section and said reduced diameter section so that when said reduced diameter section lies within the sleeve, said abuttment will engage the end of the sleeve to move the sleeve.

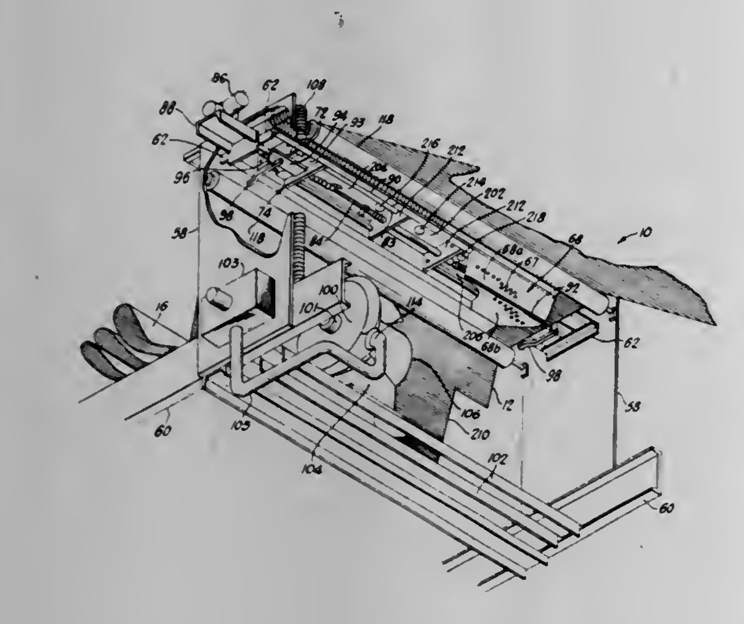
3,871,564
METHOD AND APPARATUS FOR GUIDING AND TENSIONING A WEB DURING CHANGEOVER FROM A WEB OF ONE WIDTH TO A WEB OF ANOTHER WIDTH

David Middleman, Baltimore, Md., assignor to Kappers Company Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 236,067, March 20, 1972, Pat. No. 3,788,515. This application Jan. 11, 1974, Ser. No. 432,454

Int. Cl. B65h *17/44*

U.S. Cl. 226—1 **8 Claims**



5. A method of applying tension to an advancing web during changeover from a web of one width to a web of another with comprising the steps of:

advancing said web of one width along a path of advance; applying subatmospheric pressure to said web of one width substantially across its entire width to cause tension therein;

applying said subatmospheric pressure to a central portion of said web of one width and discontinuing the application of subatmospheric pressure to adjacent lateral portions thereof prior to changing the width of said web, the width of said centermost portion being substantially equal to or narrower than the narrowest web to be advanced; and thereafter

applying subatmospheric pressure substantially across the entire width of said web of another width then being advanced.

3,871,565
CARTRIDGE-FIRED APPARATUS FOR DRIVING FASTENERS AND THE LIKE

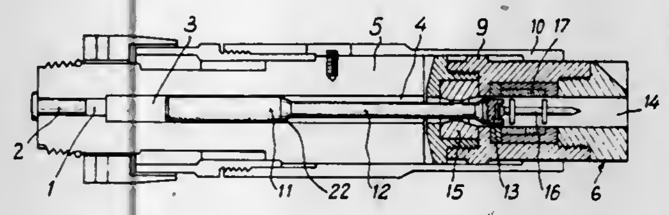
Pierre Termet, 16 Impasse Belloeuf, Lyon 3, France

Filed Feb. 22, 1973, Ser. No. 334,943

Claims priority, application France, Feb. 23, 1972, 72.06100

Int. Cl. B25c *1/14*

U.S. Cl. 227—10 **6 Claims**



1. Cartridge fired apparatus for driving fasteners and the like, said apparatus comprising a housing defining

a cartridge chamber for receiving a cartridge, and

an explosion chamber communicating with said cartridge chamber,

a piston-ram having one end part slidably mounted in said explosion chamber and a central part having a smaller section than either of its end parts,

a stop-defining ring encircling said central part at the end of said explosion chamber remote from said cartridge chamber, and fixed to a guiding tip encircling the other end part of said piston-ram on the side of said ring remote from said explosion chamber, said ring defining an orifice having a section at least equal to, but at most slightly larger than that of the central part of the piston-ram, and smaller than the section of either of said end parts,

and means retaining said housing and guiding tip in axial alignment with each other,

said one end part of said piston-ram defining a shoulder which abuts said ring after an explosion to prevent expulsion of said piston-ram through said guide member, while the other end part of said piston-ram defines a shoulder positioned to abut said ring when said apparatus is in firing position, before explosion of a cartridge.

3,871,566
FASTENER DRIVER TOOLS

Wolfgang Elliesen, Ahrensburg, and Hellmuth Fehrs, Hamburg, both of Germany, assignors to Joh. Friedrich Behrens, Ahrensburg, Germany

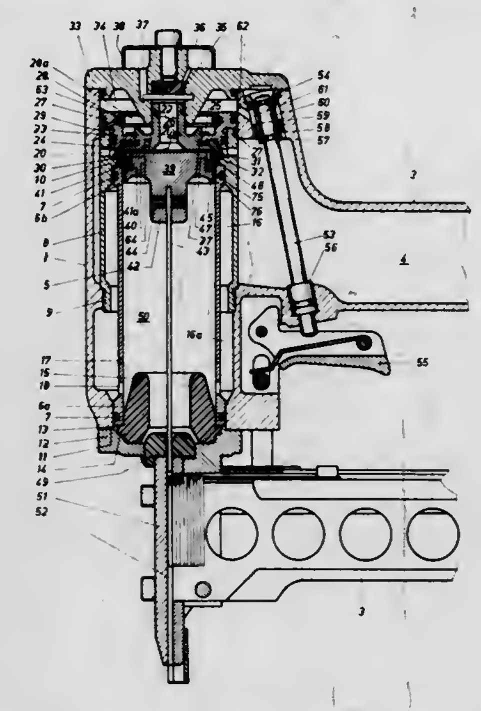
Filed July 2, 1973, Ser. No. 375,700

Claims priority, application Germany, July 25, 1972, 2236352

Int. Cl. B25c *1/04*

U.S. Cl. 227—130 **3 Claims**

1. In a compressed air operated driving tool for fasteners comprising, in combination, a casing having a cylindrical working cylinder, an operating piston reciprocal within said working cylinder movable between a normal retracted position and an extended working position, a control piston within said casing concentrically related to said working cylinder and located adjacent said operating piston when said piston is in said retracted position and having oppositely disposed first and second pressure faces of unequal area, a reservoir in said casing connected to a compressed air supply, a passage in said casing establishing communication between said reservoir and said control piston first face, a control valve on said casing selectively venting said control piston second face to the atmosphere, sealing means on said control piston sealing said working cylinder from said reservoir when said operating piston is in the retracted position, an annular holding surface on said operating piston, and an annular resilient sealing lip on said control piston concentric with said holding surface frictionally engaging said holding surface to maintain said operating piston in the retracted position, actuation of said control valve displacing said control piston axially from said operating piston releasing said operating piston and exposing said operating piston to said compressed air supply in said reservoir whereby said operating piston is moved to said extended position.



3,871,567
APPARATUS FOR TRAVERSING A WORKPIECE WITH A WORKING HEAD

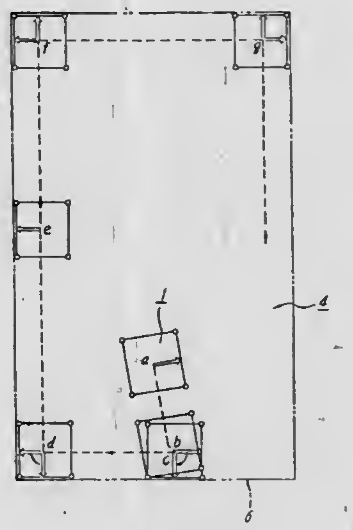
Michiyasu Ishida, Nagaokakyo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1974, Ser. No. 431,720

Claims priority, application Japan, Jan. 8, 1973, 48-5342

Int. Cl. B23k *37/02*

U.S. Cl. 228—32 **7 Claims**



1. Apparatus for applying work to a workpiece which has at least two upstanding walls which meet one another at an inside corner, comprising:

a travelling truck having support means which permit the truck to be supported for lateral relative movement along beside the walls;

a working head for performing a task with respect to the walls;

means mounting the working head on the travelling truck for projection and retraction of the working head with respect to the travelling truck;

turret means mounted on the travelling truck for relative rotation of the truck with respect to the turret about an axis generally vertical relative to the travelling truck;

at least three wall engaging means on the turret means, disposed in a pattern complementing the angularity of the walls with respect to one another, so that the truck may travel along one of the walls with a first and a second of the wall engaging means in moving contact therewith, until, as the inside corner is reached, the second of these two wall engaging means additionally contacts the other of the walls which meets at the corner, and the third of the wall engaging means contacts said other wall, and so that as the truck travels away from the corner along said other wall, the first and second of the wall engaging means are parted from said one wall and the second and third of the wall engaging means remain in contact with said other wall;

mutually engaging cam and follower means mounted on the turret and working head, respectively, the cam being profiled to urge projection and retraction of the working head with respect to the travelling truck, when the three wall engaging means are in contact with said walls, according to a pattern which preserves the juxtaposition of the working head and the respective one of the walls toward and past the corner as the travelling truck is rotated, about said axis relative to the turret, through an angle matching the angle included between the two walls.

3,871,568
CARTON

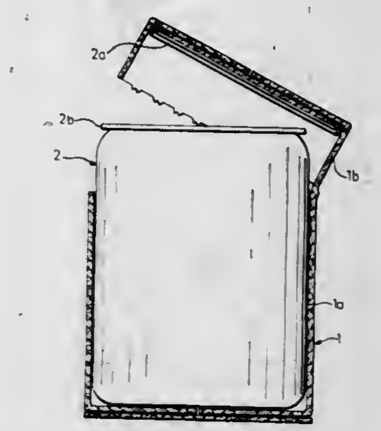
Peter Bahler, Seltisberg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sept. 6, 1973, Ser. No. 394,702

Claims priority, application Switzerland, Sept. 13, 1972, 13453/72

Int. Cl. B65d *5/40, 25/00*

U.S. Cl. 229—14 R **3 Claims**



1. A carton comprising an outer cardboard box having an inner plastics container fitting snugly inside said cardboard box, said cardboard box having a swing lid comprising a side wall and a top of overlapping flaps connected to said side wall, said container having a snap fitting lid with two projecting therefrom, said tabs being clamped between said overlapping flaps thereby coupling said snap fitting lid to said swing lid to remove the former from said container when the swing lid is moved to open the box and to seal the box.

3,871,569
DIVIDER FOR A CONTAINER

Paul B. Wharton, Jr., Deerfield, Ill., assignor to Kinetics Container Corporation, Des Plaines, Ill.

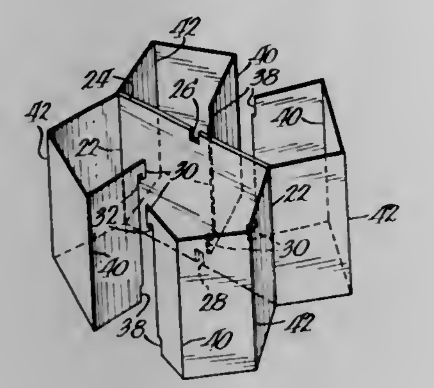
Filed June 7, 1973, Ser. No. 367,776

Int. Cl. B65d *3/00*

U.S. Cl. 229—15 **7 Claims**

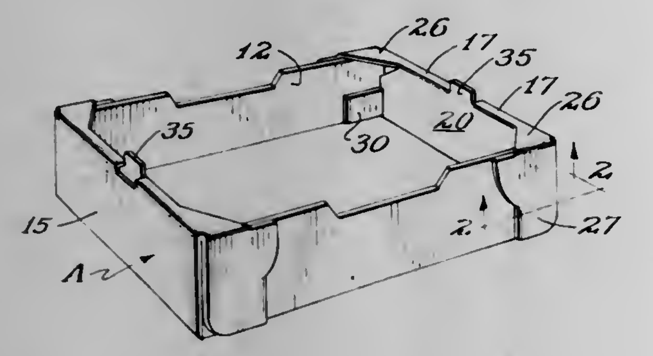
1. A blank for forming a divider in a container comprising: an elongated, generally rectangular sheet of flexible material, said sheet including a central section intermediate its ends, said central section including a line of weakening extending in the direction of elongation of said sheet and located along substantially the midpoint of said sheet, first and second end sections joined to said central section at opposite sides thereof, each of said end sections being divided into two

portions by a slit extending from the associated end of said sheet inwardly to said central section, said slits meeting said line of weakening at respective ends thereof, said central section further including at least three notches, two of said notches being located in the side edges of said sheet in said central section and extending inwardly thereinto, the third of said notches straddling said line of weakening, each portion of each of said end sections including a hook formation directed outwardly from the associated end of said sheet, one of the hooked portions of each end section being located on one portion thereof adjacent the junction of an edge of said sheet and an end of said sheet, the other hooked portion of each end section being located on the other portion adjacent the junction of the end of said sheet and said slit, and a plurality of recesses, one for each hooked portion located on the associated portion of each end section opposite from the location of said hooked portion.



3,871,570
SHIPPING TRAY

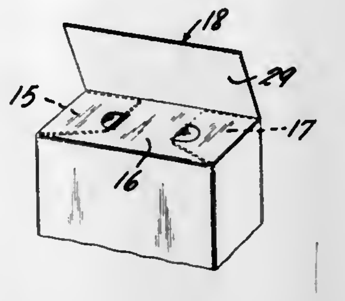
Ivan E. Garmon, Placentia, Calif., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Apr. 2, 1973, Ser. No. 347,068
Int. Cl. B65d *5/24*
U.S. Cl. 229—31 R **8 Claims**



1. A tray including:
a rectangular bottom panel,
side panels foldably connected to opposite sides of said bottom panel,
end panels foldably secured to opposite ends of said bottom panel,
top flanges hingedly connected to said end panels,
end wall liner panels foldably connected to said top flanges,
corner flaps hingedly connected to opposite sides of said top flanges,
locking tongues hingedly connected to said corner flaps,
said side walls including slots through which said locking tongues extend,
said end wall liner panels having locking lugs thereon, and said bottom panel having apertures therein in which said locking lugs are engageable.

3,871,571
CARTON, CARTON BLANK AND METHOD OF ASSEMBLING THE CARTON

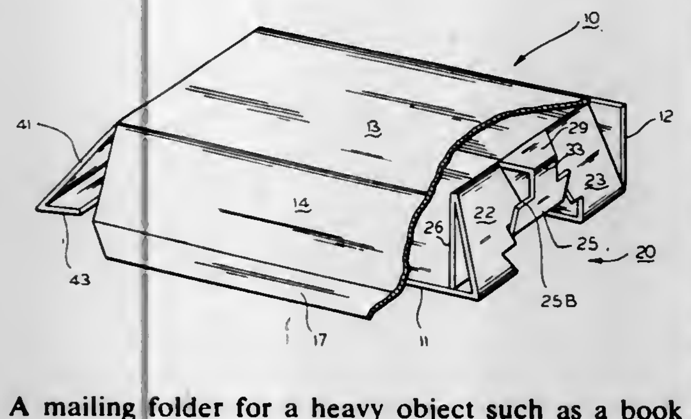
William J. Cupo, 216 York St., Jersey City, N.J. 07302
Filed Oct. 16, 1972, Ser. No. 297,921
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **4 Claims**



1. In a carton having four serially connected rectangular panels and four flaps at one end of the carton with each flap being hinged to a panel along the length of the panel end, a first of said flaps being joined to the first of said panels, a second of said flaps being joined to a second of said panels spaced from said first flap by third and fourth flaps which are joined to third and fourth panels, respectively, said first and second flaps being bent inwardly perpendicular to their respective panels to form inner flaps for the carton end, said third flap lying generally over both the first and second flaps perpendicular to its respective panel and glued to said first and second flaps, and said fourth flap overlying at least a portion of said said third flap to form an outer flap for the carton and perpendicular to its respective panel and being glued to said third flap, wherein the improvement comprises said first and second flaps having a side lying adjacent the hinge line of the third flap and the third panel which tapers generally upwardly and inwardly from said third flap when the first, second and third flaps are in a position which is substantially coplanar with their respective panels, and tab means cut in the surface of the third flap which underlie and hold a portion of said first and second flaps, said tab means comprising two spaced tabs joined to the panel by respective hinge lines which are substantially perpendicular to the hinge lines of said third panel, said tab means underlying that portion of the first and second flaps lying adjacent the edge of the flap which is opposite the hinge line of the first and second flaps with their respective panels, said first and second flaps substantially completely overlying said respective tabs, and said first and second flaps not extending above the top surface of said third flap.

3,871,572
ANGLE LOCK END FOLDER

Boyd T. Skaggs, Ravenna, Ohio, assignor to Container Corporation of America, Chicago, Ill.
Filed Jan. 21, 1974, Ser. No. 434,883
Int. Cl. B65d *5/02, 85/30*
U.S. Cl. 229—40 **1 Claim**



1. A mailing folder for a heavy object such as a book of great thickness, said folder being formed from a cut and scored blank of paper board or the like and folded into position so as to provide opposed and braced end protective cells for opposite ends of said book, said folder comprising:
a. rectangularly shaped main, first side, top and opposite side panel connected along fold lines and folded to define a tube;
b. protective cell forming elements extending from opposed ends of said main panel foldably connected to each other and to said main panel and foldable to position to enclose opposite ends of said book, said elements each comprising:
  i. first and second spaced flanking flap elements foldably connected to said main panel and foldable to an inclined upright position;
  ii. an inner flap element foldably connected to said flanking flap and foldable to a vertical position with the distal edge thereof bearing against said main panel;
  iii. a central reinforcing element extending between said first and second flanking elements and foldably connected at its ends to said main panel and said inner panel;
  iv. said central reinforcing element comprising first and second portions additionally defined by spaced edges in said first and second flanking flap elements and in said main panel;
  v. said central reinforcing element being folded upon folding of said first and second flanking flap elements to an inclined position.
c. closure elements extending from said top panel and foldable to a position over said protective cell forming elements to provide a pair of opposed protective cells.

3,871,573
PROCESS AND AGENTS FOR OPENING PAPER CONSTRUCTIONS

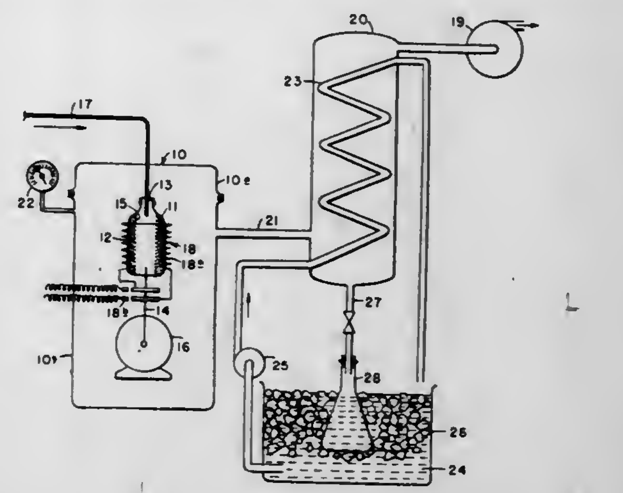
Nelson Whitman, Lincoln, Mass., assignor to Thor Dahl, Inc., New York, N.Y.
Division of Ser. No. 28,051, April 13, 1970, Pat. No. 3,677,460. This application June 16, 1972, Ser. No. 263,647. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.
Int. Cl. B43m *7/00*
U.S. Cl. 229—85 **4 Claims**

1. In a paper envelope of the type having opposed sheets folded relative to each other and connected together at a plurality of edges the improvement of which comprises at least a portion of the envelope adjacent at least one of said edges being impregnated with a chemical sensitizing agent consisting essentially of a higher molecular weight alkyl sodium sulfate, whereby treatment of at least one of said edges with a chemical developing agent subjects the paper of said edge to a controlled chemical degradation to affect the separation of the opposed sheets along said edge.

3,871,574
METHOD AND APPARATUS FOR CONCENTRATING THERMO-LABILE FLUIDS

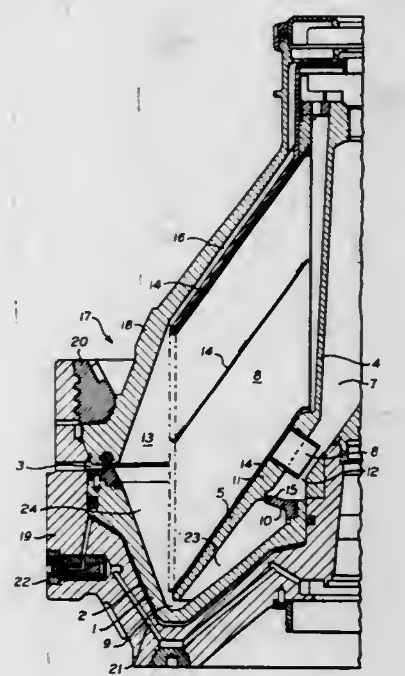
Victor Grifols Lucas, Barcelona, Spain, assignor to Laboratories Grifols S/A, Barcelona, Spain
Filed July 5, 1973, Ser. No. 376,726
Claims priority, application Spain, July 6, 1972, 404902
Int. Cl. B04b *5/10, 15/02*
U.S. Cl. 233—11 **7 Claims**

1. A method for concentrating a thermo-labile liquid having a volatile component, comprising the steps of confining said liquid in a container to provide a substantial liquid-gas interface, centrifuging said liquid by rotating said container about its own axis while simultaneously reducing the gas pressure within said container to cause rapid volatilization of said volatile component at a temperature below the denaturization temperature of said liquid, said centrifuging step being performed at a speed sufficient to substantially eliminate foaming of said liquid, and continuing said simultaneous centrifugation and pressure reduction steps until the concentration of said liquid has been increased a predetermined extent.



3,871,575
CENTRIFUGAL SEPARATOR HAVING VALVE IN PASSAGEWAY BENEATH DISTRIBUTOR FOOT

Heinrich Niemeyer, Oelde, Germany, assignor to Westfalia Separator AG, Oelde-1 Westfalen, Germany
Filed Mar. 15, 1974, Ser. No. 452,243
Claims priority, application Germany, Mar. 20, 1973, 2313669
Int. Cl. B04b *11/06*
U.S. Cl. 233—20 A **5 Claims**



1. In a centrifugal separator comprising:
a. a rotatably mounted drum having an upper end member and a lower end member enclosing a drum chamber for the separation, and having at least one discharge passageway disposed at the radially outward periphery of the drum,
b. a piston valve disposed within the drum defining one side of the drum chamber and movable vertically to open and close the discharge passageway(s),
c. a distributor coaxial within the drum for receiving feed to the separator and conveying the feed along the axis of the separator, the distributor having a distributor foot extending radially outwardly from adjacent the drum axis and over at least a portion of the piston valve and terminating at the radially outwardly disposed end thereof in spaced relation with the piston valve so as to define an annular gap between the piston valve and distributor foot commu-

nicating the radially extending passageway with the drum chamber,

d. at least one opening in the distributor foot adjacent the drum axis for passage of the feed from the distributor to the drum chamber,

the improvement which comprises:

e. a valve plate mounted either on the piston valve or the distributor foot and extending either toward the distributor foot or toward the piston valve for engagement therewith to close the radially extending passageway at a location radially outwardly of said opening(s) in the distributor foot, with the piston valve in the closed position and open the radially extending passageway with the piston valve in the open position.

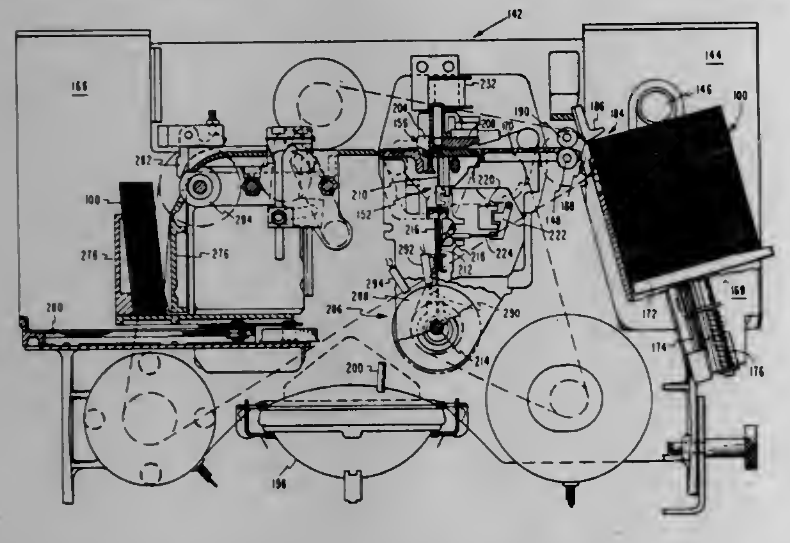
3,871,576
DATA RECORDER AND VERIFIER

Donald E. Bean; James T. Engh; James R. Hammer; John J. Igel, all of Rochester; Myron D. Schettl, Oronoco; Harry J. Tashjian; Richard J. Ullmer, both of Rochester, and John W. Kerr, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 845,817, July 29, 1969, Pat. No. 3,642,197. This application Jan. 28, 1971, Ser. No. 110,584

Int. Cl. G06k *13/10, 13/12*

U.S. Cl. 234—35 **1 Claim**



1. A machine for operating on document cards and adapted to rest on a horizontal surface and having front, back and ends and comprising,

a hopper for holding a supply stack of document cards and positioned at one end of the machine,

a stacker for receiving the document cards and positioned at the other end of the machine,

a flat deck extending between said hopper and stacker,

means including driven feed rolls for moving the document cards along said deck longitudinally of the deck from said hopper to said stacker,

an encoding means positioned at said deck for encoding information on document cards moving along the deck, reading means positioned at said deck and between said encoding means and said stacker for reading encoded information on document cards moving along the deck, printing means positioned at said deck between said reading means and said stacker for printing information on document cards moving along the deck,

said deck being horizontal in its longitudinal direction when the machine rests on said horizontal surface,

said hopper extending below the level of said deck and being inclined at an acute angle with respect to the plane of said deck so that the document cards are fed downwardly from the hopper at this acute angle on to the deck, said stacker extending in substantially the same direction as said deck,

a pick roll for feeding document cards off the top of the stack of document cards in said hopper and on to said deck for subsequent transport on the deck to said encoding means and said reading means and said printing means and ultimately to said stacker, and

means for turning the document cards through right angles as they leave said deck and enter said stacker so that the cards are individually substantially vertically disposed in said stacker and form a stack extending in the same direction as said deck,

said deck being inclined at an acute angle with respect to horizontal from the front to the back of the machine and said hopper and said stacker thus having their sides declining at acute angles with respect to horizontal when the machine rests on said horizontal surface.

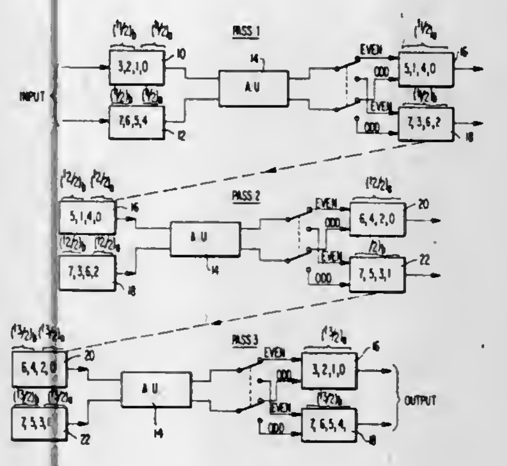
3,871,577
METHOD AND APPARATUS FOR ADDRESSING FFT PROCESSOR

Karl B. Avellar, Ellicott City, and James A. Ross, Aberdeen, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1973, Ser. No. 424,532

Int. Cl. G06f *7/38, 15/34*

U.S. Cl. 235—156 **9 Claims**



4. An FFT processor having calculated complex data points stored and retrieved in an in-place operation, comprising in combination:

an FFT arithmetic unit operable in accordance with an externally applied selected trigonometric coefficient to accept consecutive pairs of complex data points simultaneously inputted thereto in a dual data stream and provide consecutive pairs of intermediate output data points (Fourier coefficients) simultaneously in a dual data stream in successive iterations according to a predetermined FFT algorithm;

input means coupled to said FFT arithmetic unit for supplying consecutive pairs of complex data points as an initial input thereto;

first digital memory means having even and odd numbered memory locations selectively coupled to the output of said FFT arithmetic unit during first alternate iteration periods and including selectively controlled address means for selectively storing simultaneous pairs of intermediate output data points consecutively calculated and being operable during the first half of each of said first alternate iteration periods to consecutively address and store the first half of the data points appearing in one data stream of said dual data stream in a first plurality of even numbered memory locations and to consecutively address and store the first half of the mutually corresponding data points appearing in the other data stream of said dual data stream in a first plurality of odd numbered memory locations, and first means operable at the end of the first half of the respective iteration period to switch the data flow into said memory means from said FFT arithmetic unit and consecutively address and store the second half of the data points appearing in said one data stream in a second plurality of even numbered memory locations and to consecutively address and store the

second half of the data points appearing in said other data stream in a second plurality of odd numbered memory locations, said means being operable at the end of the respective iteration period to switch the data flow back to its original state at the beginning of the next iteration period;

first selectively controlled read-out means coupling said first digital memory means to the input of said arithmetic unit during the immediately succeeding iteration period following each first alternate iteration period and consecutively supplying the pairs of complex data as stored to the FFT arithmetic unit as another input dual data stream;

second digital memory means, having even and odd numbered memory locations selectively coupled to the output of said FFT arithmetic unit during second alternate iteration periods relative to said first alternate iteration periods and including selectively controlled address means for selectively storing simultaneous pairs of intermediate output data points consecutively calculated and being operable during the first half of each of said second alternate iteration periods to consecutively address and store the first half of the data points appearing in said one data stream of said dual data stream in a first plurality of even numbered memory locations and to consecutively address and store the first half of the data points appearing in the other data stream in a first plurality of odd numbered memory locations, and second means operable at the end of the first half of the respective iteration period to switch the data flow into said second memory means from said FFT arithmetic unit and consecutively address and store the second half of the data points appearing in said one data stream in a second plurality of even numbered memory locations and to consecutively address and store the second half of the data points appearing in said other data stream in a second plurality of consecutive odd numbered memory locations, said second means being operable at the end of the respective iteration period to switch the data flow back to its original state at the beginning of the next iteration period;

second selectively controlled read-out means coupling said second digital memory means to the input of said FFT arithmetic unit during the immediately succeeding iteration period following each second alternate iteration period and consecutively supplying the pairs of complex data as stored to the FFT unit as still another input dual data stream;

dual data stream output means selectively coupled to one of said first and second read-out means for providing an output dual data stream as consecutive pairs of complex data as stored after the final iteration period, having a data sequence identical to the sequence of the original input data stream.

3,871,578
DATA PROCESSING SYSTEM FOR MULTIPLYING AND INTERGERIZING FLOATING POINT NUMBERS

Adrianus J. Van De Goor, Wilnes, Netherlands, and Leonard B. Hughes, Stow, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 10, 1972, Ser. No. 296,028

Int. Cl. G06f *7/52*

U.S. Cl. 235—164 **6 Claims**

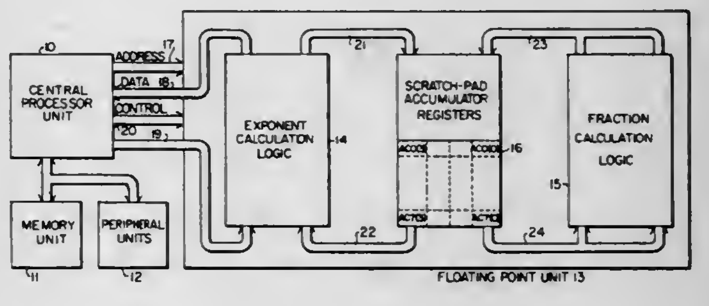
1. A system for multiplying two floating-point numbers each having the same precision and each comprising a mantissa and an exponent, said system comprising:

A. mantissa calculation means including means for multiplying the mantissas of the two numbers,

B. means for storing the product from said multiplying means with a precision greater than the precision of either mantissa being multiplied,

C. means for adding the exponents,

D. means for storing the output from said exponent addition means, and



E. means responsive to the contents of said product storage and the exponent storage means for converting the contents of the product storage means into separate integer and fraction values.

3,871,579
APPARATUS FOR DISPLAYING ISODOSE CURVES OF RADIATION WITH PROGRAM FOR DIGITAL COMPUTER COUPLED THERETO DETERMINED IN RELATION TO SOURCE OF RADIATION

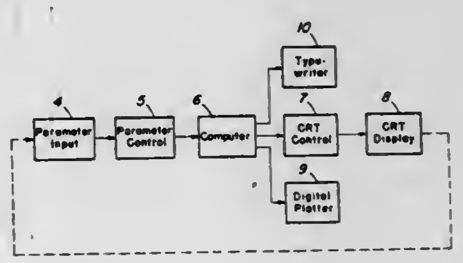
Kiyonari Inamura, c/0 Nippon Electric Co. Limited, 7-15, Shiba Gochome, Tokyo, Japan

Continuation-in-part of Ser. Nos. 157,587, June 28, 1971, abandoned, Ser. No. 877,832, Nov. 18, 1969, abandoned. This application Feb. 2, 1973, Ser. No. 329,192

Claims priority, application Japan, Nov. 20, 1968, 43-84469

Int. Cl. G06f *15/42*

U.S. Cl. 235—198 **10 Claims**



1. Apparatus for displaying a predetermined number of isodose curves representative of respective doses of radiation to be absorbed by an object within an area of a coordinate plane preselected in said object, and for selecting a particular plurality of said parameters for operating a selected radiation source placed at least at one preselected spacial relation relative to said object, said apparatus comprising:

an input device adapted to be set in compliance with a combination of values of such operating parameters and to generate second digital signals representative thereof, an electronic digital computer coupled to the output of said input device and operable in compliance with input signals and a program associated with a preselected radiation source to produce output signals, said output signals being representative of the coordinates of a plurality of quantized points at which said doses are to be absorbed by said object, and said input signals including said second digital signals and first digital signals representative of parameters for calculations including a step size for quantizing the points on said coordinate plane; and

a display output device operatively coupled to said computer and responsive to said output signals for visually displaying said isodose curves,

3,871,580
ELECTROSTATIC SPRAYING

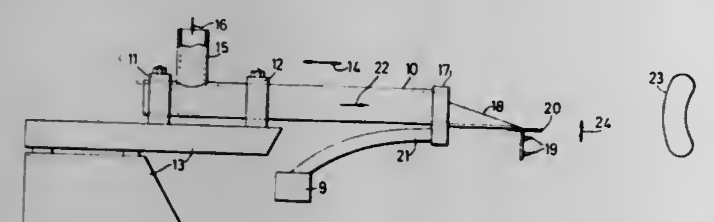
Morris James Legge, Farnham; John Alastair Phipps, Farncombe, and Roger Patrick Corbett, Southampton, all of England, assignors to Plastic Coatings Limited, Surrey, England and University of Southampton, Southampton, England

Filed Aug. 8, 1973, Ser. No. 386,618

Claims priority, application United Kingdom, Aug. 10, 1972, 37306/72

Int. Cl. B05b *5/02*

U.S. Cl. 239—3 **7 Claims**



1. An apparatus for airless electrostatic powder spraying comprising a corona discharge device, a vibratory dielectric hollow elongate means for conveying powder to the corona discharge device, the elongate means having an open end for delivering powder to the corona discharge device and an inlet for receiving powder adjacent its opposite end, means for vibrating the elongate means such that powder fed to the elongate means is caused to flow therealong to the corona discharge device, and a vibratable member for dispersing the powder in a cloud in the vicinity of the corona discharge device.

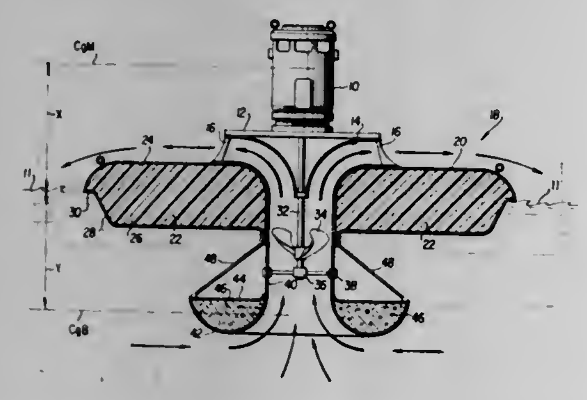
3,871,581
AERATING APPARATUS HAVING BALLAST MEANS THEREFOR

Robert C. Dively, Richmond, Va., assignor to Environmental Products Inc., Richmond, Va.

Continuation of Ser. No. 179,871, Sept. 13, 1971, abandoned. This application Feb. 6, 1974, Ser. No. 440,058

Int. Cl. E03b *9/20*

U.S. Cl. 239—16 **8 Claims**



1. An aerating apparatus comprising:

a. flotation means for supporting said aerating apparatus in a body of water,

b. said aerating apparatus including

  1. a motor mounted above said liquid,
  2. a propeller driven by said motor with said propeller being immersed in said water in order to lift some of said water to be aerated,
  3. and deflector means between said motor and said propeller for deflecting water lifted by said propeller substantially radially of said aerating apparatus,

c. a skirt member surrounding said propeller and extending a substantial distance beneath said flotation means,

  1. said skirt member terminating in an outwardly flaring bottom portion which defines a substantially semicircular concave-upwardly, toroidal, ballast receiving means,

  i. said outwardly flaring skirt member establishing a substantially low loss fluid flow into said propeller and toward said deflector means,

d. and separately added ballast means received in said substantially semicircular concave-upwardly, toroidal, ballast receiving means a substantial distance beneath said flotation means,

  1. said motor having a center of gravity located a given distance above the surface of the water and said ballast means having a center of gravity sufficiently far below the surface of the water to establish an effective center of gravity for the entire aerating apparatus without the use of stabilizing discs below the floating line of said flotation means.

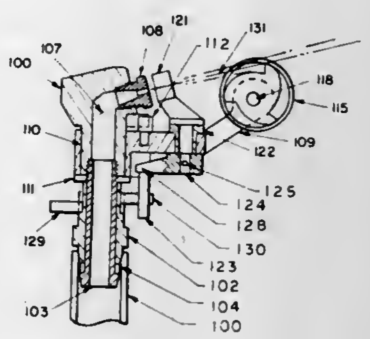
3,871,582
RAIN WHEEL

Milburn Emmett Biddle, 19115 Hartland St., Reseda, Calif. 91335

Filed Sept. 24, 1973, Ser. No. 400,230

Int. Cl. B05b *3/08*

U.S. Cl. 239—233 **3 Claims**



1. A rotary sprinkler head of the character described consisting of a sprinkler head with an inlet port threaded to accomodate a sleeve, said sprinkler head provided with a fluid fluid passage from said inlet port to a nozzle attached to an outlet port, a support fitting with inlet arranged to be connected to a source of liquid under pressure, said support fitting rotatably receiving said sleeve, a washer type combination seal and thrust bearing, two selector tabs angularly adjustable relative to each other and to the support fitting, wherein the improvement comprises a turbine wheel rotating on a horizontal axis and in a vertical plane containing the axis of rotation of said sprinkler head, said turbine wheel provided with a right hand set of turbine blades and a left hand set of turbine wheel blades, said turbine wheel being rotatable on a axle which is located eccentrically relative to said turbine wheel's geometrical center or center of mass, said axle being rotatably journalled in a cradle, means to support said cradle and position said turbine wheel relative to the said liquid jet stream flowing from said nozzle, said sprinkler head housing rotatably receiving said cradle, said cradle's angular rotation relative to said sprinkler head housing being limited by a mechanical means designed to allow said cradle to swing in one of the limiting conditions of rotation so that the jet stream impingement is directed properly to the said right hand set of turbine blades and in the other limiting condition of rotation the said jet stream impingement is directed properly to the said left hand set of turbine blades of said turbine wheel, a shuttle journalled in a bushing which is secured to or is an integral part of said cradle, a selector arm angularly oriented and secured to said shuttle by a means whereby said selector arm and said shuttle booth rotate together as an integral assembly, said cradle being provided with two mechanical stops designed to limit the angular rotation of said selector arm and said shuttle relative to said cradle and said liquid jet stream and said turbine wheel blades.

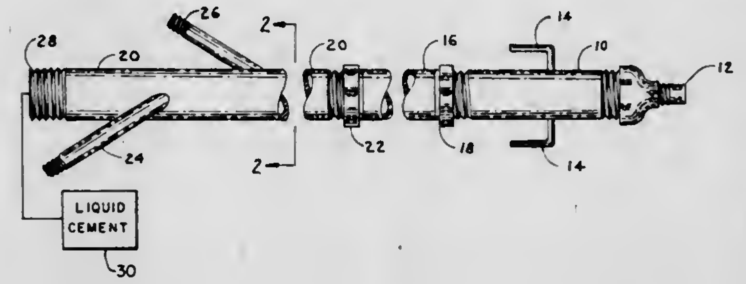
3,871,583
CEMENT SPRAY GUN WITH REMOTE AIR INJECTION

Paul H. Kellert, R.R. 1, Mannford, Okla. 74044

Filed Dec. 29, 1969, Ser. No. 888,620

Int. Cl. B05b *7/26*

U.S. Cl. 239—302 **2 Claims**



1. Apparatus for conveying liquid cement through a conduit from a supply of liquid cement to a discharge nozzle comprising a substantially cylindrical gun having an inlet end and a discharge end, said gun having a nozzle at the discharge end thereof; a cylindrical flexible hose having an inlet end and a discharge end, the discharge end of said hose being connected to the inlet end of said gun; a source of supply of liquid cement; a cylindrical and metallic air injection chamber having one end connected to the inlet end of said hose and having an opposite end connected to said source of supply of liquid cement, said air injection chamber having substantially the same internal diameter as said hose; and an air injection pipe connected at a forwardly directed angle to said air injection chamber for introducing air under pressure into said chamber at a forwardly directed angle, said air injection pipe being also connected tangentially with respect to said chamber so as to introduce said air tangentially with respect to the cross sectional are of said chamber.

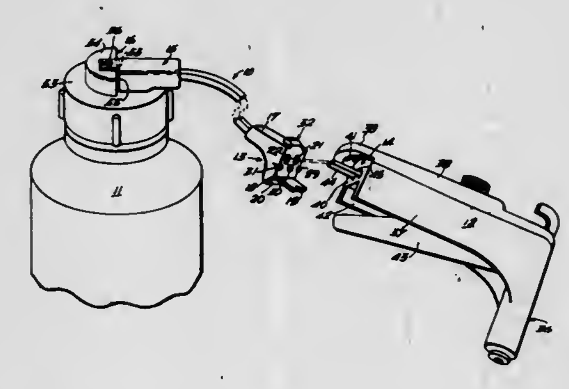
3,871,584
DISCONNECTABLE SUPPLY CONDUIT FOR HAIR SPRAY SYSTEMS

William Wagner, Miami Beach, Fla., assignor to Watsco, Inc.

Filed June 17, 1974, Ser. No. 479,670

Int. Cl. B05b *7/32*

U.S. Cl. 239—307 **8 Claims**



1. In a disconnectable supply conduit for hair spray systems including a fluid and pressurized air supply receptacle, a spray gun, and a flexible supply conduit communicating between the fluid and pressurized air supply receptacle, and the spray gun, the spray gun and the supply receptacle each having a pair of outwardly-projecting, side-by-side connector prongs and mechanism for interhookingly connecting with a connector member, the improvement comprising, a pair of flexible side-by-side conduit members, a molded connector body member at each end of said conduit members, a pair of side-by-side cylindrical through openings in each of said molded connector body members, a tubular receptacle member in one each of said connector body member through openings and communicating at one end with an end portion of one each of the ends of said pair of flexible side-by-side conduit members, and means for swivelingly supporting opposite end portions of each of said tubular receptacle members within their respective through openings, said connector body members each comprising yieldable hook means cooperative with the interhooking mechanism of the spray gun and the supply receptacle, respectively, the connector prong pairs of said spray gun and said supply receptacle being interfittingly receivable within respective pairs, each, of said connector body members.

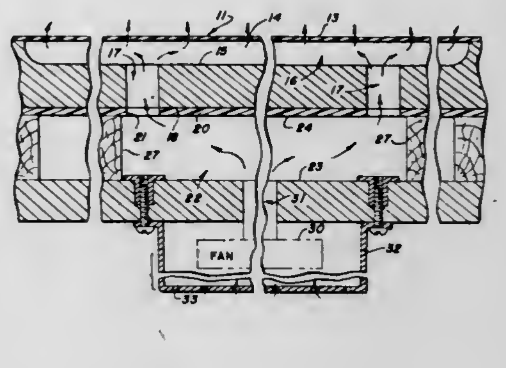
3,871,585
AIR BED

Phillip E. Crossman, Ada; Robert C. Kenrick, Grand Haven, and Robert W. LeMieux, Spring Lake, all of Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 179,659, Sept. 13, 1971, Pat. No. 3,773,325. This application Sept. 17, 1973, Ser. No. 397,700

Int. Cl. B05b *1/14;* **F23d** *13/44*

U.S. Cl. 239—553.3 **4 Claims**



1. An air bed comprising,

a top layer of material having a multiplicity of air jets exhausting upwardly therethrough and arrayed in a substantially uniform pattern over the surface thereof,

means for supporting said top layer of material comprising,

  a second layer of material affixed to the underside of said top layer, said top and second layers of material having a plurality of discrete air supply channels extending therebetween, each of said linear channels communicating with a selected number of said air jets,

said second layer having a plurality of ducts extending through the bottom surface thereof, each of said ducts communicating with at least one of said channels, and

means for forcing air upwardly through said ducts whereby it will flow through said channels and exhaust upwardly through said jets.

3,871,586
APPARATUS AND METHOD FOR FORMING MOLDED FIBER PRODUCTS WITH DECKLE-FREE WINDOWS

Henry A. Lord, Cape Elizabeth, Maine, assignor to Diamond International Corporation, New York, N.Y.

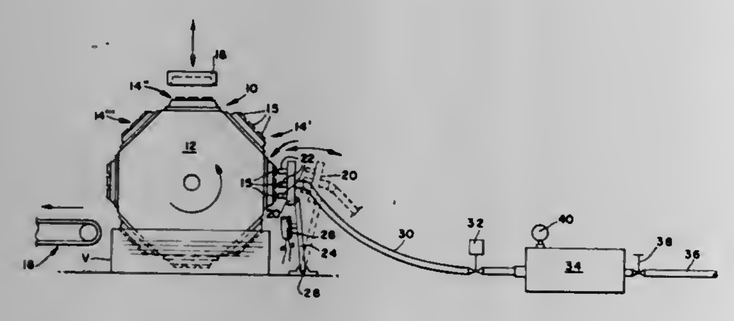
Filed June 19, 1972, Ser. No. 264,190

Int. Cl. B05b *1/30*

U.S. Cl. 239—569 **9 Claims**

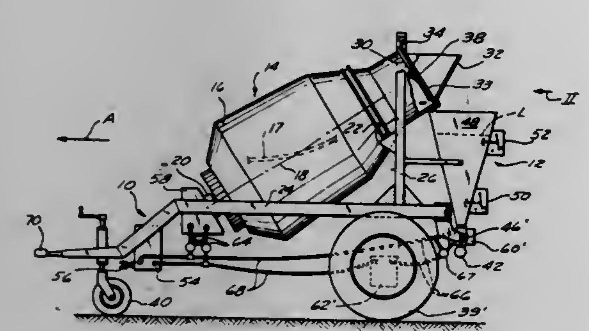
1. Apparatus for use in forming deckle-free windows in molded fiber products comprising in combination a movable mold carrying member and an air distributor manifold box with jet outlet means on one face thereof and conduit means connected thereto whereby high pressure air may be introduced into said manifold box for discharge through said jet outlet means, said conduit means being connected to a high pressure air accumulator and including valve means controlling the flow of air from said accumulator, through said conduit means and to said manifold box, said manifold box being

provided with movable support means whereby said manifold box may be moved to and from a discharging position to which one of a plurality of movable forming molds on said movable mold carrying member is moved into registration therewith and against which high pressure air from said jet outlet means may be directed to thereby blast deckle off the surface on which it is deposited.



3,871,587
METHOD OF AND APPARATUS FOR SPREADING FERTILIZER

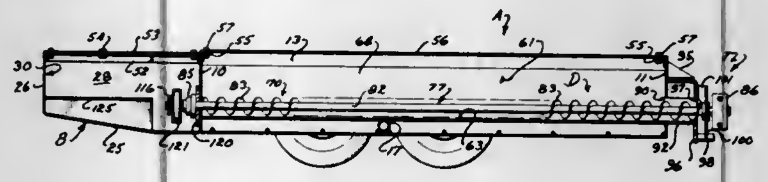
Josef Gall, 8891 Aichach, Unterwittelsbach, Germany
Filed May 30, 1973, Ser. No. 365,076
Claims priority, application Germany, May 31, 1972, 2226605
Int. Cl. A01c *23/00*
U.S. Cl. 239—662 **18 Claims**



1. A fertilizing apparatus comprising:
a chassis displaceable along the ground;
a concrete-mixer type drum on said chassis having an upper end formed with a mouth;
support means on said chassis for rotation of said drum about an axis inclined to the horizontal;
drive means on said chassis for rotating said drum about said axis in one sense for mixing material in said drum and in the opposite sense for displacing the mixed material out of said mouth;
spreader means on said chassis adjacent said mouth and including at least one horizontal member extending transverse to the direction of displacement of said chassis for distributing the material emitting from said mouth on the ground at a multiplicity of spaced locations along said member;
a flat gate hinged on said chassis above said mouth and overlying same, said gate being provided with an upwardly open funnel and being formed at the base of said funnel with a hole ; and
a flap hinged to said gate and normally covering said hole on the face of said gate away from said funnel, and spring means urging said flap into a position covering said hole.

3,871,588
ROCK DUSTER

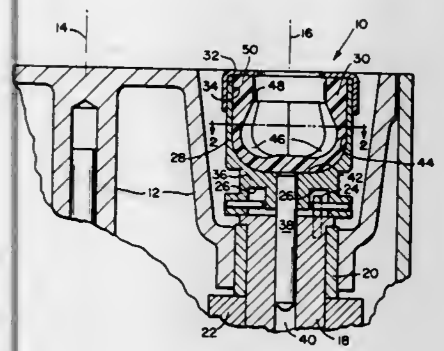
John B. Long, Daniels, W. Va., and John B. Stricklin, Jr., Knoxville, Tenn., assignors to The Marmon Group, Inc., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,425
Int. Cl. E01c *19/20*
U.S. Cl. 239—673 **22 Claims**



1. In a mobile distributor for bulk material such as rock dust and the like, the combination of a frame, hopper means mounted on said frame for receiving bulk material, and bulk material distributor means including conveyor means and spreader means, said conveyor means extending into said hopper means for moving bulk material therethrough to said spreader means, and said spreader means including means for discharging bulk material outwardly of said mobile distributor, said bulk material distributor means including rotatably supported shaft means, drive means for rotating said shaft means, and means for dynamically unbalancing said shaft means in a manner to impart vibratory motion to said hopper means on rotation of said shaft means.

3,871,589
AMALGAM MULLING CONTAINER

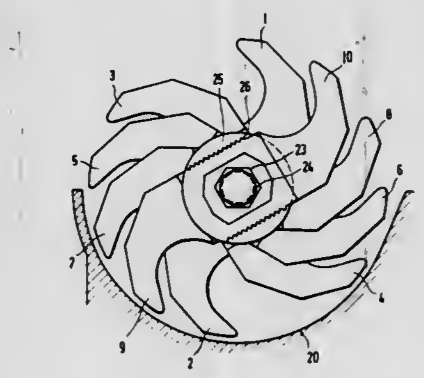
Frank N. Lentine, Taylor, and Harold H. Simpson, Fraser, both of Mich., assignors to Sybron Corporation, Rochester, N.Y.
Filed Jan. 18, 1974, Ser. No. 434,509
Int. Cl. B02c *17/22*
U.S. Cl. 241—102 **7 Claims**



1. In an amalgam producing machine including a rotor member, a cup for reception of the amalgam ingredients comprising:
a. a body portion having an open end and a closed end including means for connecting said body portion to said rotor for rotation in an orbital path about a vertical axis laterally spaced from the axis of rotation of said rotor;
b. a removable cup-shaped insert fitted to said body portion for directly receiving the amalgam ingredients, said insert being of a resilient material so that upon rotation in said orbital path centrifugal force will cause said amalgam ingredients to strike and deform the wall of said insert promoting mulling of said ingredients; and
c. means positionable over said insert and connectable to said body portion for securing said insert in said body portion.

3,871,590
BLADE ARRANGEMENTS FOR MEAT CUTTERS

G. Walter Steffens, Unterholter Strasse 60, 5630 Remscheld, Germany
Filed June 25, 1973, Ser. No. 372,954
Claims priority, application Germany, Mar. 6, 1973, 2310997
Int. Cl. B02c *18/14, 18/18*
U.S. Cl. 241—282.2 **7 Claims**

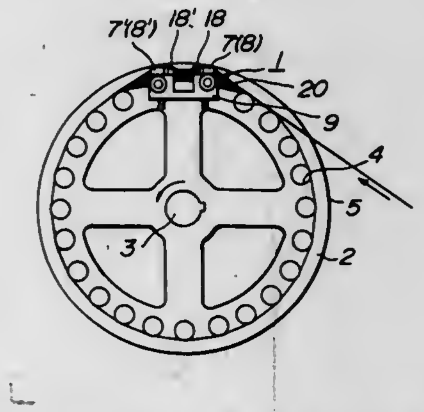


1. In a cutter head for processing meat including a plurality of pairs of meat-cutting blades mounted on a profile shaft, each pair of blades comprising two blades displaced angularly by 180° in relation to one another and disposed in axially succeeding relationship to each other, one axial end of said cutter head defining a meat-insertion end; the improvement comprising:
a first pair of said blades being mounted adjacent the meat-insertion end of the cutter head;
a second pair of said blades being mounted in axially and angularly succeeding relation to said first pair of blades; and
at least third and fourth pairs of said blades being mounted in axially and angularly succeeding relationship to said second pair of blades and to each other;
the angular spacing between said second and third pairs of blades, and between said third and fourth pairs of blades, being substantially equal;
the angular spacing between said first and second pairs of blades being greater than the angular spacing between said second and third, and third and fourth, pairs of blades; and
the angular spacing between said first and second pairs of blades, said second and third pairs of blades, and said third and fourth pairs of blades totals less than the 180° spacing between said first pair of blades.

3,871,591
DEVICE FOR SIMULTANEOUSLY MANUFACTURING A PLURALITY OF FIBER BUNDLES

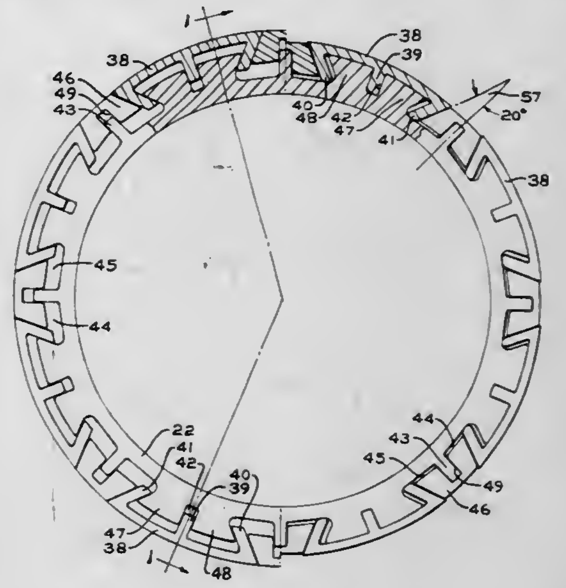
Rikizo Murata, Tokyo, Japan, assignor to Olympus Optical Company, Limited, Tokyo, Japan
Filed Sept. 17, 1973, Ser. No. 397,786
Claims priority, application Japan, Sept. 16, 1972, 47-93091
Int. Cl. B65h *54/00*
U.S. Cl. 242—18 G **4 Claims**

1. A device for manufacturing a plurality of fiber bundles comprising a disk reel rotatably mounted on a rotary shaft; a base plate secured at its one end by a mounting plate to said disk reel and extending perpendicular to said disk reel and having at its each end an end plate; a number of parallel partition plates secured to said base plate and arranged between said end plates in two longitudinal rows and spaced apart one from the other, said two longitudinal rows being spaced apart from each other along the outer periphery of said disk reel; two longitudinal shafts slidably and rotatably supported by said end plates and extending through said parallel partition plates; a number of pairs of slit forming plates, each pair of slit forming plates being detachably mounted on each of said two longitudinal shafts; a spacer detachably sandwiched between said each pair of slit forming plates and having a thickness substantially larger than the diameter of a fiber to be wound; a resilient engaging member comprised of a collar integral with said longitudinal shaft and an elastic member fitted around said longitudinal shaft and in contact with one of each pair of said slit forming plates; a spring inserted between one of said shaft ends and said plate and urging said longitudinal shaft toward the other shaft end; and means for axially moving said shaft against the action of said spring and comprised of a nut secured to said end plate and a knob threadedly engaged with said nut, whereby said each pair of slit forming plates are urged against corresponding partition plates to form a slit with gap substantially larger than the diameter of one fiber and having wound therein fibers in superimposed relation.



3,871,592
APPARATUS FOR WINDING GLASS STRANDS

John Kallenborn, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Aug. 3, 1973, Ser. No. 385,361
Int. Cl. B65h *54/44, 74/24*
U.S. Cl. 242—18 G **2 Claims**

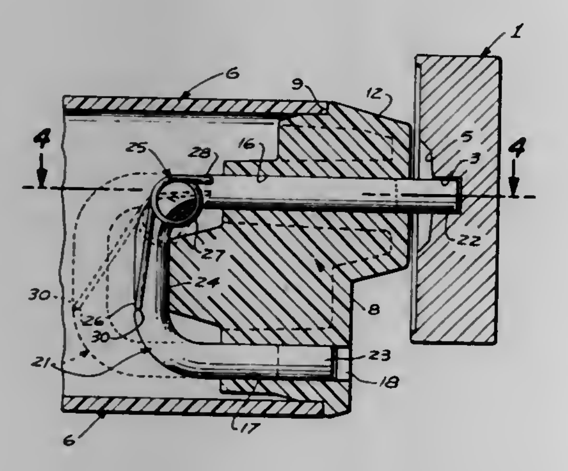


1. An apparatus for winding strand onto a forming package comprising in combination a motor having a centrally disposed statinary shaft; a stator mounted on said shaft; a rotor circumferentially disposed around said stator; a hub member secured to the outer circumference of said rotor and rotatable therewith; a plurality of channels and slots positioned along the long axis of said hub member on the exterior surface thereof; a plurality of longitudinal elongated fingers and wedge members received in said channels each of said fingers being characterized by having sloping side portions and a centrally disposed tongue member slideably engaging a respective one of said slots longitudinal tongue members positioned along the long axis of the hub and engaging a slot in respective wedge members; the side portions of said fingers and the vertical axis of said tongue members on said hub

forming a nonlocking angle between the wedge members and the fingers member associated therewith, said fingers and said wedge members being characterized by being movable in an axial direction when the motor is actuated by centrigugal force until they lock by engagement with the side portions of each to form a smooth unbroken peripheral surface and being freely retractable when at rest by gravitational forces.

3,871,593
TOILET TISSUE DISPENSING MANDREL

William Brinton, Northridge, Calif., assignor to The Bobrick Corporation, North Hollywood, Calif.
Filed Feb. 19, 1974, Ser. No. 443,402
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.2 **7 Claims**

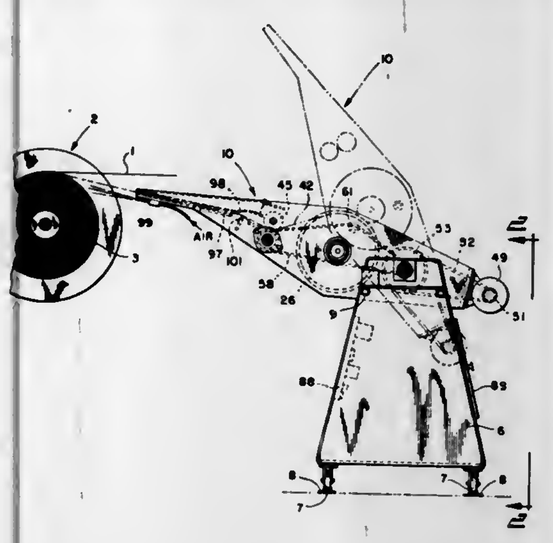


1. The combination with a bracket member having parallel arms and aligned bearing sockets, of a toilet tissue dispensing mandrel, comprising:
- a. a sleeve extending between the bracket arms;
- b. means journalling one end of the sleeve in one of the bearing sockets;
- c. an end fitting for the other end of the sleeve including parallel guide bores, one bore being in axial alignment with the journal means, the other being offset therefrom; d. a slide member including a journal pin and an operating pin, slidable in the guide bores, and means operatively connecting the pins, the journal pin being movable between an extended position for reception in the other bearing socket to define the axis of rotation of the fitting and sleeve, and a retracted position clearing the bearing socket to permit removal and replacement of the mandrel, the operating pin being accessible for end engagement to effect retraction of the journal pin;
- e. and yieldable means for urging the slide member in a direction to extend the journal pin.

3,871,594
RECOILER PAPER STUFFER

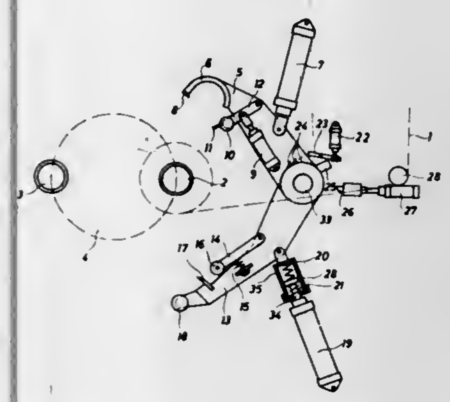
Francis P. O'Neil; Ferd A. Krauss, both of Bay Village; Vincent Sambenedetto, Cleveland, and Christopher C. Cooper, Sheffield Lake, all of Ohio, assignors to The Yoder Company, Cleveland, Ohio
Filed Aug. 1, 1972, Ser. No. 276,978
Int. Cl. B65h *19/04, 35/02, 35/00*
U.S. Cl. 242—56 R **18 Claims**

3. A paper stuffer selectively for positioning cut paper strips between convolutions of a loosely wound strip coil or the like on a driven recoiler comprising paper feed means operative to direct the paper into the nip of the outer convolution of the coil and severing means between the coil and the feed means, means to place the paper between said feed means and coil in tension, and means responsive to a preselected tension of such paper being obtained to cause the severing means to cut the paper.



3,871,595
AUTOMATIC WINDING AND CUTTING APPARATUS FOR WEBS

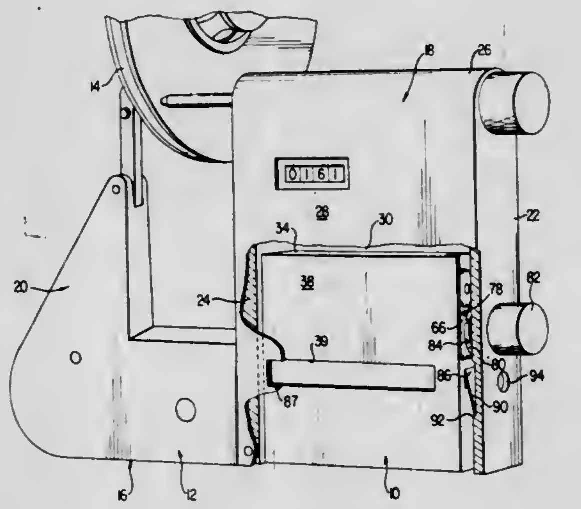
Albert Emiel Smolderen, Aartselaar, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
Filed Dec. 12, 1973, Ser. No. 423,980
Claims priority, application United Kingdom, Dec. 13, 1972, 57450/72
Int. Cl. B65b *i9/20*
U.S. Cl. 242—56 A **12 Claims**



1. A web winding and cutting apparatus for converting a continuously travelling web into rolls, said winding apparatus comprising:
- a. a supply station from which the web to be cut is fed,
- b. a turret for supporting at least two cores, said web being wound up onto one of these cores, with the remainder empty and in stand-by position,
- c. means for rotatably driving the respective cores at a predetermined rotational speed,
- d. cutting means for cutting said web after a predetermined length of said web has been wound onto said core, said cutting means comprising a knife mounted on a first arm, means for biasing said arm to cutting position, releasable detent means restraining the arm from moving to said cutting position and energy storage means between said biasing means and said arm to store the biasing force of said biasinng means until said detent means is released,
- e. guide means for guiding the leading edge of said cut web onto said empty core, said guide means comprising a guide shell for encircling said empty core, at least one idler roller capable of rotating against the web adjacent said knife during cutting and at least one slippingly driven roller downstream of said guide shell for tightening the web against the core after cutting, said slippingly driven roller being driven at a circumferential speed exceeding the circumferintial speed of said empty core and having a coefficient of friction relative to the web greater than the coefficient of friction of said empty core relative to the web, and
- f. means to support said guide means.

3,871,596
MAGAZINE FOR STORING AN INFORMATION TAPE

Paul A. Morgan, Chicago, Ill., assignor to Century Wheels, Inc., Lake Bluff, Ill.
Continuation-in-part of Ser. Nos. 295,225, Oct. 5, 1972, Pat. No. 3,845,564, and Ser. No. 238,340, March 27, 1972, Pat. No. 3,810,310. This application Sept. 18, 1973, Ser. No. 398,461
Int. Cl. G03b *1/04;* **G09f** *11/24*
U.S. Cl. 242—71.2 **32 Claims**

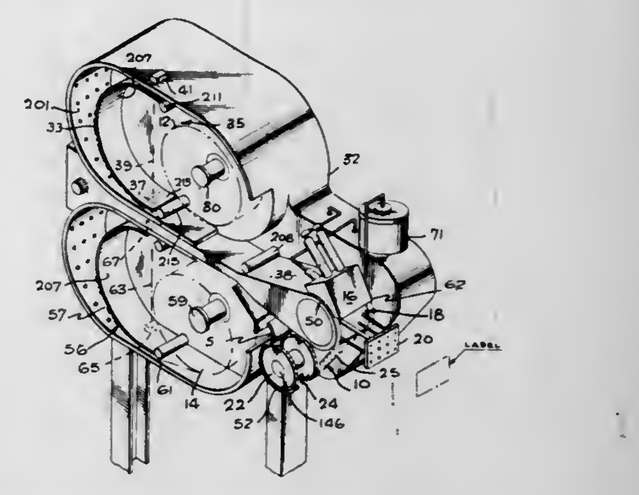


1. A magazine insertable into and removable from a housing comprising: a frame, first and second spaced-apart rotatable spools mounted on said frame, a tape wound on said spools, a first rotatable member attached to one of said spools, a second rotatable member attached to the other of said spools, a connecting means in the form of at least one third rotatable member connecting said first and second rotatable members to transmit rotary motion from said first rotatable member to said second rotatable member and thereby drive said spools, and a locking means in the form of a resilient means secured to the frame of the magazine for locking the magazine in the housing.

3,871,597
LABELING APPARATUS

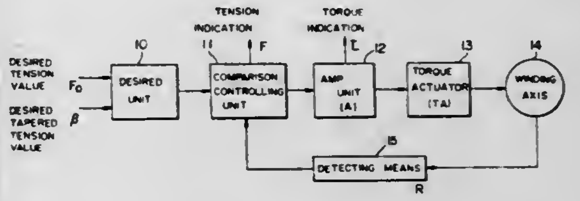
Herbert LaMers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc., Covington, Ky.
Division of Ser. No. 89,492, Nov. 13, 1970, Pat. No. 3,776,801, which is a division of Ser. No. 756,651, Aug. 30, 1968, Pat. No. 3,661,625. This application Apr. 17, 1973, Ser. No. 351,829
Int. Cl. B65h *23/24, 25/32*
U.S. Cl. 242—75.3 **7 Claims**

6. Apparatus for forming a loop in a label supply web including
- a label supply chamber,
- a wound elongated label-carrying web disposed for unwinding rotation within the chamber,
- a flexible curtain having one end attached to the apparatus adjacent said wound web and on one side of said web,
- said curtain disposed so that said web, when unwound, is drawn over one web-engaging side thereof, and said curtain having a free end opposite said attached end, and means for establishing a decreased pressure on said web-engaging side of said curtain to draw said curtain against the web and to form a loop in the web.



3,871,598
WINDING TENSION CONTROL SYSTEM

Hiroshi Kataoka, Iyo-Mishima, Japan, assignor to Kataoka Machine Product Co., Ltd., Iyo-Mishima-shi, Ehime-ken, Japan
Filed July 16, 1973, Ser. No. 379,836
Claims priority, application Japan, July 17, 1972, 47-71419
Int. Cl. B65h *25/04*
U.S. Cl. 242—75.51 **2 Claims**



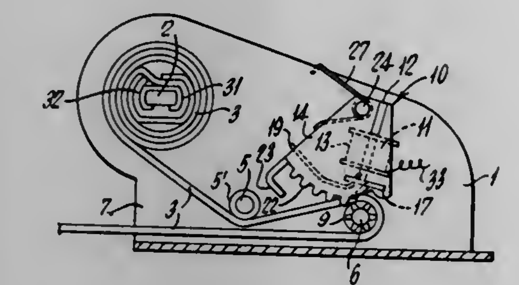
1. A winding tension control system comprising:
- a. a winding shaft for taking up a sheet into a roll state,
- b. detecting means for continually detecting the radius of a winding roll under a winding operation,
- c. an arithmetic circuit which calculates a tensile value at an arbitrary radius of said winding roll on the basis of a theoretical equation,
- d. a comparison control unit which multiplies a winding radius-detecting signal obtained by said detecting means, by said tensile value calculated by said arithmetic circuit and which thus outputs a desired winding torque signal, and
- e. a torque actuator which controls a winding torque of said winding shaft by the output signal from said comparison control unit.

3,871,599
AUTOMATIC LOCKING SAFETY BELT RETRACTION REEL

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan
Filed June 13, 1973, Ser. No. 369,656
Claims priority, application Japan, June 17, 1972, 47-71004
Int. Cl. A62b *35/00;* **B65h** *75/48*
U.S. Cl. 242—107.2 **8 Claims**

1. An automatic locking vehicle safety belt system comprising a belt retractor reel, a belt extending from said retractor reel, spring means urging said reel to rotate in a belt retracting direction, a rotatable drive member engaged and driven by said belt and spaced from said reel, a locking member movable between an advanced position locking said belt against withdrawal and a retracted position, means resiliently urging

said locking member to its retracted position, drive coupling means movable between a disengage position and an engage position drive coupling said locking member to said drive member to advance said locking member with the rotation of said drive member toward its advanced position urging a portion of said belt to said drive member and means for advancing said drive coupling means to said engage position.



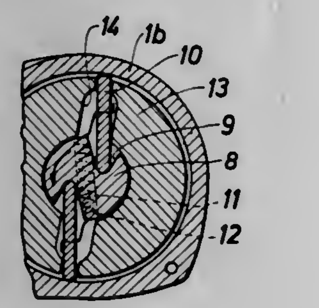
3,871,600
VEHICLE SAFETY BELT WITH INERTIA RESPONSIVE BRAKE

Stig Martin Lindblad, 440 20 Vargarda, Sweden

Filed Oct. 18, 1971, Ser. No. 189,916

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.4 **1 Claim**



1. A winding-up device for a vehicle safety harness comprising a belt, a housing a shaft rotatably mounted in said housing, a roller mounted on said shaft for rotation therewith and having said belt partially wound thereon, said housing having a cavity defined by a cylindrical inner wall into which a portion of said shaft extends, said shaft portion having axially extending grooves each of a V-shaped cross-section, plates each having an end pivotally supported in one of said shaft grooves and extending in a transverse plane to said shaft, at least one spring tending to retain said plates in their respective shaft grooves, said plates each having a length in a direction from its respective shaft groove bottom exceeding the radial distance from its respective shaft groove bottom and said cylindrical inner wall, an inertia element rotatably mounted on said shaft portion and having radially directed openings through which said plates extend whereby said inertia element can engage said plates upon a rapid acceleration of said shaft in the belt winding-off direction of said roller causing said plates to pivot on said shaft groove bottoms into engagement with said cylindrical inner wall preventing further rotation of said roller, said shaft having at least one bore extending between a pair of said grooves, said spring being positioned in said bore and said spring having its ends connected to the plates in said pair of grooves tending to retain said plates against the bottom of their respective groove.

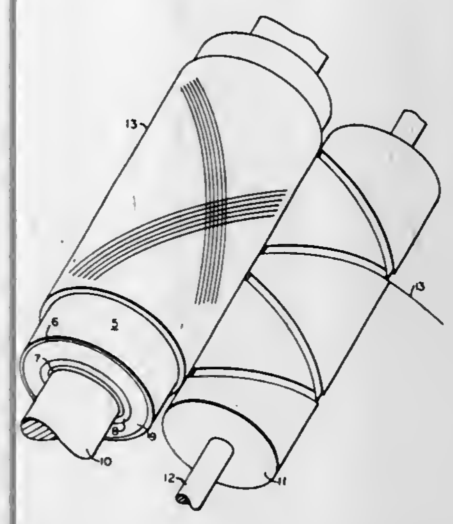
3,871,601
COMPOSITE STRUCTURE AND HIGH SPEED BOBBIN

Thomas G. Crawford, Hampton, and William E. Kearse, Fairfax, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 6, 1972, Ser. No. 260,090

Int. Cl. B65h *75/10*

U.S. Cl. 242—118.32 **15 Claims**



6. A bobbin comprising a cylinder having four layers, the outside external layer of said cylinder being about 1/32 to about ⅛ inch thick and comprising an organic material selected from the group consisting of paper and cloth impregnated with a cured thermosetting resin, the inside external layer being about 6 to about 60 mils thick and comprising an organic material selected from the group consisting of paper and cloth impregnated with a cured phenolic resin, one of the two internal layers (A) being about 3 to about 6 mils thick and comprising an organic material selected from the group consisting of paper and cloth impregnated with a cured phenolic resin, and the other internal layer (B) being a composite structure which comprises about 8 to about 32 sheets of glass cloth, each sheet separated from adjacent sheets by at least one sheet of an organic material selected from the group consisting of paper and cloth, said sheets being impregnated and bonded together with a cured phenolic resin.

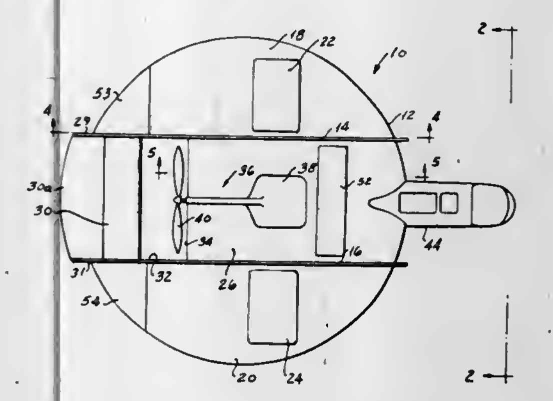
3,871,602
CIRCULAR WING AIRCRAFT

Curtis D. Kissinger, Gloversville, N.Y., assignor to Panaflight Corporation, Albany, N.Y.

Continuation of Ser. No. 198,704, Nov. 15, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,195

Int. Cl. B64c *3/12*

U.S. Cl. 244—13 **6 Claims**



1. An improved aircraft including in combinataion, a main airfoil having a first certain outline configuration when viewed from the top thereof, respective elongated vertical members on opposite sides of and equally spaced from the fore-and-aft centerline of said main airfoil, said vertical members extending generally parallel to said fore-and-aft axis throughout said airfoil from the leading edge thereof to the trailing edge thereof and positioned inboard of the outboard edges of said airfoil to divide said main airfoil into a relatively independent central section between said members, and respective outer sections outboard of said members, said members projecting above the upper surface of said main airfoil and projecting below the under surface of the main airfoil to form tunnel-like spaces for the flow of air from the leading edge to the trailing edge of the airfoil over and under the central section thereof, said outer sections extending rearwardly of said central section to provide outer section inboard edges extending rearwardly from the trailing edge of said central section to the trailing edges of said outer sections, said inboard edges and said central section trailing edge forming a second certain outline configuration, a horizontal stabilizer formed with a leading edge and outer edges in said second outline configuration, and means including upwardly extending portions of said vertical members adjacent to the trailing edges of said outer sections to provide vertical stabilizers for mounting said horizontal stabilizer above said main airfoil and with the leading edge of said horizontal stabilizer spaced rearwardly from said central section trailing edge, said central section being formed with a concave bottom surface and said outer sections being formed with convex bottom surfaces.

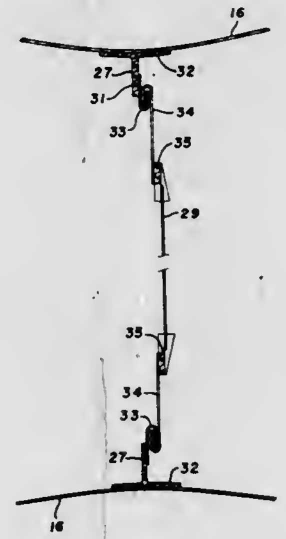
3,871,603
FIN ATTACHMENT FOR TETHERED BALLOON STRUCTURES

James A. Menke, Shakopee, and Robert G. Witherow, Northfield, both of Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed May 30, 1974, Ser. No. 474,592

Int. Cl. B64b *1/42*

U.S. Cl. 244—125 **5 Claims**



1. An inflatable, lighter-than-air aerostat structure having an inflated elongated hull with a central axis, and with a nose assembly and an empennage assembly at opposed ends thereof, said empennage assembly comprising a plurality of stabilizing fins extending outwardly from said hull;

a. said stabilizing fins comprising a generally enclosed structure having opposed spaced apart side walls of flexible film extending from the root to the tip thereof and defining said fin, the inner surfaces of said side walls of said stabilizing fins having catenary lines securing said walls together;

b. a plurality of elongated generally parallelly disposed catenary anchoring web means secured in generally oppositely disposed relationship to opposed inner surfaces of said stabilizing fin side walls and extending generally parallel to the longitudinal axis of the fin from the root to the tip thereof and having body means for anchoring said catenary lines thereto at spaced points along the length of said anchoring web;

c. said catenary lines being arranged in a geometrical pattern wherein said lines extend in coupling relationship to opposed anchoring webs, and wherein each anchoring web has a plurality of spaced anchoring points therealong with each anchoring point having at least one catenary line coupled thereto with a first segment of said catenary line extending from a first anchoring point on a first anchoring web along an axis extending generally normal to the axis of said fin to an opposed anchoring point on an opposed anchoring web and with the next adjacent catenary line segment extending from said opposed anchoring point along an axis extending diagonally outwardly from said first catenary line segment across said fin at substantially equal acute angles to the planar axis of said fin to outwardly spaced anchoring points on said first anchoring web disposed in spaced relationship from said first anchoring point to form a plurality of scalloped ribs along said fin surface.

3,871,604
RETRACTABLE JETTISONING EJECTOR FOR AIRCRAFTS

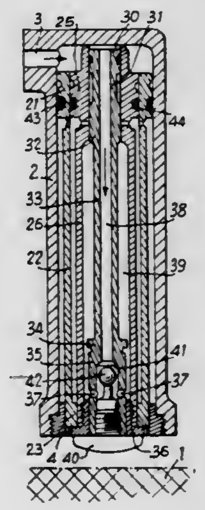
Pierre Fernand Coutin, 117 avenue du General Michel Bizot, 75012 Paris, France

Filed Oct. 26, 1973, Ser. No. 410,231

Claims priority, application France, Nov. 2, 1972, 72.38748

Int. Cl. B64d *1/02, 37/12*

U.S. Cl. 244—137 R **1 Claim**



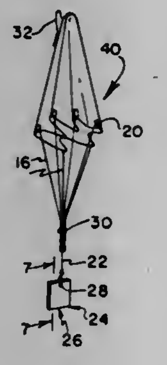
1. A retractable ejector device for jettisoning a load from an aircraft comprising a cylinder having an inlet port at one end and a restricted open end, a two section telescopic piston positioned in and spaced from said cylinder, each section of said piston having a hollow interior open at both ends of said piston, a first section of said piston having a head at its inner end portion, slideable in said cylinder and of a greater diameter than said cylinder restricted open end, a restriction in the hollow interior of said first section, at least one port through the inner end portion of said first section, a second section of said piston having a head at its inner end portion, slideable in said first section and of a greater diameter tham said restricted interior of said first section, a restriction in the hollow interior of said second section and at least one port through the inner end portion of said second section, a tubular distributor positioned in and spaced from said second section hollow interior, having a head at its inner end slideable in said second section, an exterior recess in said tubular distributor head, a flange at its other end portion of greater diameter than said second section restriction, a chamber at the lower portion of said tubular distributor, means closing said chamber at its outer end, a valve seat formed at the upper end of this chamber, a ball in said chamber maintained in the vicinity of said valve seat by said closing means, ports in said chamber disposed under said flange and connecting said chamber to the hollow interior of said second section in a retracted position of said

distrubutor while said ports connect said chamber to the atmosphere in an extended position of said distributor, said ball being removed from said valve seat when gas pressure in said tubular distributor is higher than the gas pressure in said hollow second section, and said ball being forced against said valve seat as soon as the gas pressure in said hollow second section becomes higher than the gas pressure in said hollow distributor.

3,871,605
TOY PARACHUTE

Sam Kupperman, Chicago, and Dennis I. Kupperman, Skokie, both of Ill., assignors to R B Toy Development Co., Skokie, Ill.

Filed Dec. 3, 1973, Ser. No. 420,959
Int. Cl. A63h *27/08*
U.S. Cl. 244—155 R **5 Claims**



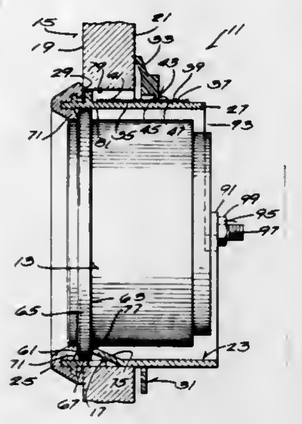
1. A toy parachute formed of a plurality of disassembled parts which are readily assembled by a child to form a complete parachute and comprising, a flexible parachute body having a center, a plurality of separate shroud lines each having one of their ends attached to the flexible body by a pressure sensitive adhesive tape with the balance of the line extending below the flexible body, a hook member having a lower U-shaped end and an upper inverted U-shaped end with the lower U-shaped end attachable to the top of the flexible body by a pressure sensitive adhesive tape, said hook member being attached to the outside surface of the flexible parachute body in a position removed from the center of the flexible parachute body, said upper inverted U-shaped end of said hook member adapted to be hooked to the lower end of a kite line with the opposite end of the kite line secured to a kite adapted to be flown, with the lower end of the line held by the operator, said toy parachute being so constructed that the wind will carry the parachute up the line in the direction of the kite, said parachute adapted to be released from said line for free descent by jerking the line to release the hook member and parachute from the kite line, and a weight member secured to the lower end of said shroud lines.

3,871,606
INSTRUMENT MOUNT

Martin E. Larson, Kenosha, Wis., and Irvin M. White, Rio, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 21, 1973, Ser. No. 343,375
Int. Cl. G12b *9/04*
U.S. Cl. 248—27 **6 Claims**

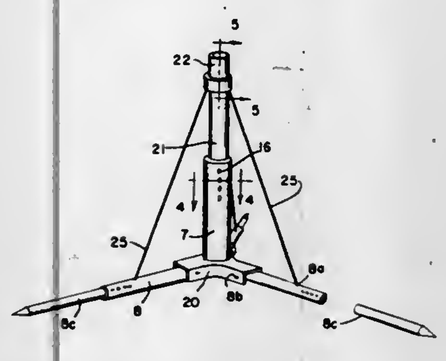
1. An instrument mounting for a dashboard having an opening therein, said mounting comprising a housing including a tubular portion extending through the dashboard opening, means on said margin of the dashboard around the opening to limit housing movement relative to the dashboard in the direction from the front to the rear, a housing retainer member adapted to engage the rear of the dashboard, selectively engageable means on said housing retainer and on said housing for preventing housing movement relative to the dashboard in the direction from the rear to the front, an instrument received in said tubular housing portion, means extending inwardly of said housing for engagement with said instrument to limit forward instrument insertion and to limit rearward instrument withdrawal from said housing, and cooperating means on said instrument and on said housing and on the dashboard for affording predetermined angular orientation of said instrument relative to the dashboard and for preventing relative angular movement of said instrument relative to the dashboard, said cooperating means including a step in the rear edge of said housing and a wing extending radially from said instrument and located in said step in response to instrument insertion into said housing so as thereby to afford predetermined angular orientation between said instrument and said housing and to prevent relative angular movement therebetween.



3,871,607
COLLAPSIBLE TRIPOD SUPPORT

Benjamin D. Pile, Colorado Springs, Colo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 347,533, April 3, 1973, Pat. No. 3,783,262. This application Oct. 2, 1973, Ser. No. 402,667
Int. Cl. F16m *11/38*
U.S. Cl. 248—171 **4 Claims**

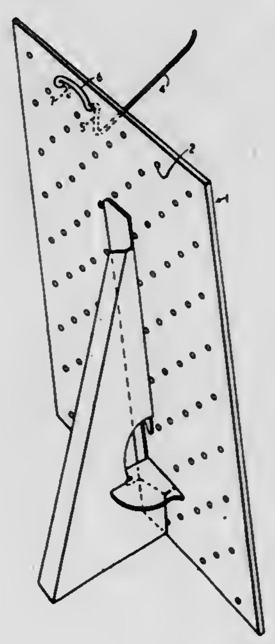


1. A support structure comprising:
a. a member having a central hub, a plurality of radially disposed U-shaped channels extending horizontally from said central hub and a recess located in said central hub, said U-shaped channels opening downwardly in operating condition;
b. an extendible section fitting into said centrally disposed recess;
c. a plurality of flexible cables depending from the upper portion of said extendible section;
d. connecting means fixedly secured to said extendible section fastening said flexible cables to the upper portion of said extendible section, said connecting means having a first internal circular recess with a plurality of vertically disposed slots communicating with a second internal circular recess of greater diameter than said first recess, said slots receiving said cables and said second recess receiving said cable ends, said cable ends being larger in diameter than said cables and said slots; and
e. a plurality of legs, each of said legs fitting into one of said U-shaped channels, means for rotatably securing said legs to said channels and means for connecting said cables to said legs, whereby when said extendible section is extended said cable ends are held in a fixed position against the smaller diameter slots and said cables are placed in tension and draw said legs into a substantially horizontal operating position such that said legs are in contact with the bight of said U-shaped channels, which act as a stop.

3,871,608
DISPLAY BOARD

Bruce Robert Ogden, 7 Rawson Cres., Pymble, New South Wales, Australia

Filed May 15, 1973, Ser. No. 360,465
Claims priority, application Australia, May 22, 1972, 9028/72
Int. Cl. A47g *23/02;* **A47b** *3/00;* **A47f** *5/00*
U.S. Cl. 248—223 **5 Claims**



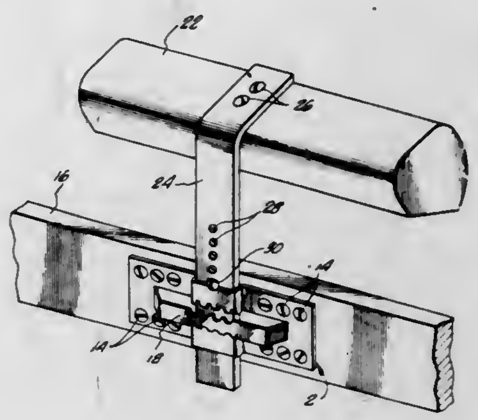
1. A display board assembly comprising a board made from soft, easily tearable sheet material and at least one load supporting bracket means engaged with the board, said board having at least one aperture therethrough, said bracket means being bent from continuous rod and comprising a first portion extending away from one board surface, an elongated second portion angled upwardly relative to the first portion and abutting said one board surface, a third portion angled to said second portion, extending through said aperture and having a length substantially equal to the thickness of said board, a fourth portion angled to said third portion and lying behind and substantially parallel to said second portion and abutting the other surface of said board, said fourth portion being shorter than said second portion, and a fifth portion co-planar with said fourth portion and also abutting said other surface of said board along the entire length of said fifth portion, said fifth portion extending in a direction opposite to the direction of the fourth portion and beyond said aperture, said second, fourth and fifth portions bearing against said board surfaces and providing load distributing abutments thereby preventing the tearing of said board in the vicinity of said aperture when a load is applied to the first portion.

3,871,609
PICTURE AND LAMP HOLDING BRACKET ASSEMBLY

Le Roy Benjamin, 501 N. Highland, Hollywood, Calif. 91604

Filed July 2, 1973, Ser. No. 375,959
Int. Cl. F21v *33/00*
U.S. Cl. 248—496 **10 Claims**

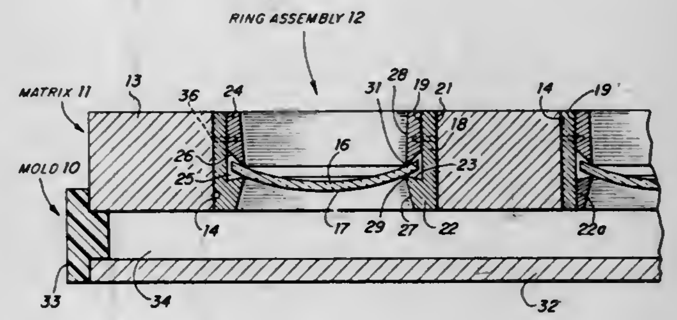
1. A combination adjustable picture mounting and lamp holding bracket assembly adapted to be fastened to a picture frame and hung on a first support member for positioning the picture frame on a wall or the like and for further supporting a second member extending from the picture frame such as a lamp, comprising:
a pair of base members lying in a first plane and adapted to be secured to the picture frame;
at least one cross sectionally U-shaped member interconnecting the base members for supportingly receiving the lamp so that it extends beyond the perimeter of the picture frame; and
a serrated band member connected to each base member and lying substantially in a second plane wherein the U-shaped member is positioned substantially between the first and second plane, the band member extending beyond the U-shaped member for adjustably positioning the base portions and accordingly the picture frame relative to the first support member.



3,871,610
OPTICAL MOLD FORMING MEANS

Philip J. Balsam, Stamford, Conn., assignor to Beattie Development Company, Stamford, Conn.

Filed Sept. 14, 1972, Ser. No. 289,198
Int. Cl. B29c *1/02*
U.S. Cl. 249—102 **14 Claims**



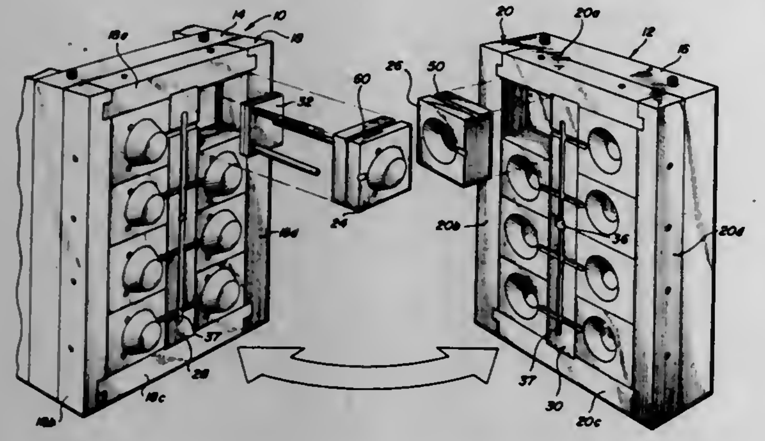
1. A matrix for molding a plastic component comprising:
a. a frame having a plurality of apertures therein;
b. a plurality of ring assemblies positioned within said apertures, each of said ring assemblies comprising:
  1. an annular sleeve having inner and outer walls;
  2. first inner annular support means positioned within said sleeve adjacent said inner wall for defining a first shoulder with respect to said inner wall;
  3. second inner annular support means positioned within said sleeve adjacent said inner wall for defining a second shoulder with respect to said inner wall, said first and second shoulders being positioned in faced relationship and spaced from each other for defining a substantially annular cavity therebetween; and
  4. a mold element having a mold surface against which said plastic component is to be molded supported between said first and second shoulders; and
c. means for removably supporting said plurality of ring assemblies within said plurality of apertures.

3,871,611

MOLD WITH REMOVABLE AND REPLACEABLE CORE AND CAVITY INSERTS

Jun A. Taketa, Glenview, Ill., assignor to Phyllis Taketa, Glenview, Ill.

Filed May 7, 1973, Ser. No. 357,904
Int. Cl. B41b *11/62*
U.S. Cl. 249—102 3 Claims



1. A mold assembly particularly adapted for use in the molding of materials comprising, in combination: a movable mold half and a fixed mold half, each of which includes a mold base having a pocket defined in the front face thereof in which a plurality of blocks are disposed, said blocks within said movable mold half each defining a core and said blocks within said fixed mold half each defining an associated cavity, whereby said blocks provide a plurality of mold cavities when said mold halves are closed, said blocks being precisely dimensioned to nest within said pockets, each of said blocks having at least one groove therein, a plurality of locking means threadedly disposed within the walls defining said pocket in the respective mold halves and positioned to lockingly engage within said groove of an associated one of said blocks to removably and fixedly secure said block within said pocket, said mold bases each have a plurality of piston means movably secured therein, at least one of said piston means being positioned to engage each of the respective ones of said blocks to forcibly urge them out of said pockets, a hydraulic bore in communication with the respective ones of said piston means and containing a medium which when compressed exerts a pressure on said piston means to engage it with said block to forcibly urge it out of said pocket, and a threaded screw associated with each of said hydraulic bores when threadedly manipulated functions to compress the medium within said hydraulic bore to exert a pressure on said piston means.

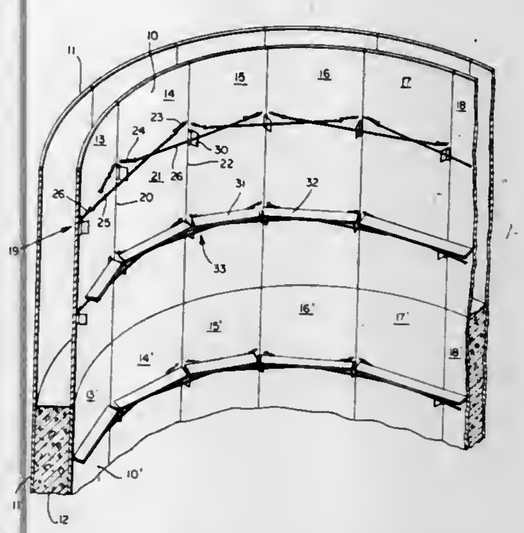
3,871,612

CYLINDRICAL CORE ASSEMBLY FOR SILO CONSTRUCTION

Richard L. Weaver, Rt. 1, Myestown, Pa. 17067

Division of Ser. No. 283,715, Aug. 25, 1972, abandoned. This application June 11, 1974, Ser. No. 478,224
Int. Cl. B28b *7/28*
U.S. Cl. 249—184 2 Claims

1. A generally cylindrical inner mold form of ring-like construction, for use in the construction of poured concrete silos and the like, in which multiple rings of concrete or the like are poured one after the other between inner and outer mold rings without the use of a platform spanning inner rings of the mold form, and without the use of a ground-supported platform, the inner mold ring comprising a plurality of generally rectangular planar members of substantially similar sizes, arranged into a generally circular configuration, with adjacent vertical edges in abuttment, and with each said planar member having a pair of means for connecting tension members thereto, affixed to said planar member along opposite vertical edges thereof, at substantially the same vertical elevation, and including tension members each of a length slightly less than the horizontal width of two adjacent said planar members in abuttment, each said tension member being connected to a connecting means along one vertical edge of one planar member and being connected to a next adjacent planar member along a vertical edge thereof, and spanning the vertical edges of the adjacent planar members that are in abuttment with each other along a mating line, and including a tightening member carried by one of the planar members along the mating line of abuttment, for engaging said tension member, said tightening member being pivotally movable toward and away from the planar member upon which it is mounted, and correspondingly out of and into tightening engagement with said tension member, and wherein each said panel member has two said tension members connected thereto that cross each other substantially along the vertical center line of the planar member, with said connecting means, tension members, and tightening members being at the same general vertical elevation, in order to accommodate planar supports disposed on and carried by tightened said tension members.

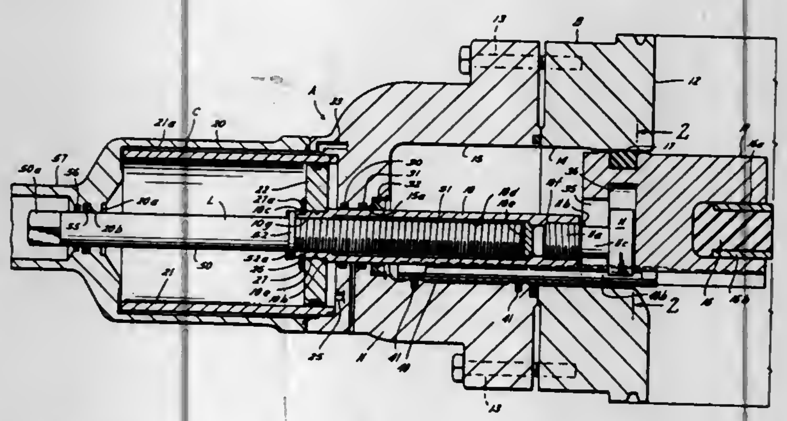


3,871,613

NON-ROTATING RAM ROD LOCKING ASSEMBLY FOR BLOWOUT PREVENTER

Robert K. LeRouax, 2000 C Governor's Cir., Houston, Tex. 77018

Division of Ser. No. 178,713, Sept. 8, 1971, Pat. No. 3,791,616. This application Aug. 20, 1973, Ser. No. 389,705
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 6 Claims



1. A locking assembly for a blowout preventer ram, comprising:

- a blowout preventer body having a lateral opening for movement of a ram therein;
- a blowout preventer ram bonnet having a ram recess therein aligned with said lateral opening in said body;
- a blowout preventer ram adapted to move in and relative to said ram recess and said lateral opening for moving from a retracted position to a sealing position;
- a ram rod having connection with said ram and having a hollow bore;

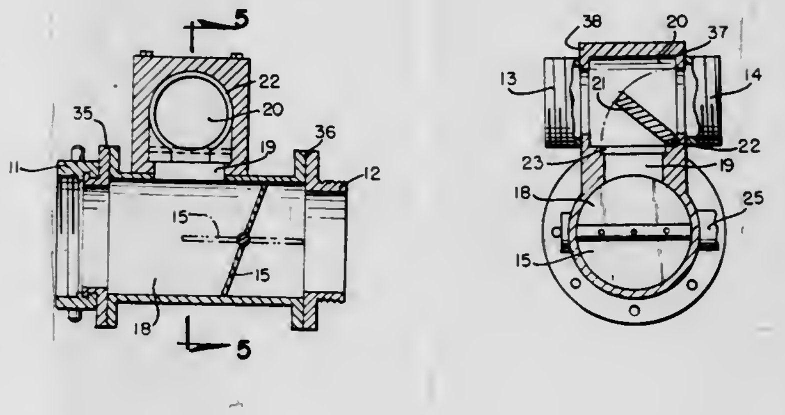
- a piston cylinder mounted with said bonnet;
- a piston disposed in said cylinder and having connection with said ram rod;
- fixed guide means engaging said ram rod for preventing rotation of said ram rod;
- a rotatable locking element mounted on said cylinder and adapted to extend into said cylinder for locking said piston in its inward position for thereby locking said ram in its sealing position;
- said rotatable locking element having a rotatable stem therewith;
- said rotatable stem extending into said cylinder and into the hollow bore of said ram for rotation and longitudinal movement relative thereto; and
- means for rotating said locking element and said stem therewith to move said stem longitudinally and move said locking element from a retracted position to a locking position.

3,871,614

FOUR WAY HYDRANT VALVE

Robert T. Hughes, 10533 Tolling Clock Way, Columbia, Md. 21044, and R. Hurley Matthews, P.O. Box 662, Bel Air, Md. 21014

Filed Nov. 26, 1973, Ser. No. 418,860
Int. Cl. F16k *35/00*
U.S. Cl. 251—104 6 Claims



1. A valve system for controlling flow of water to a fire hose comprising a main valve body having a water inlet adapted to receive water from a fire hydrant and a water outlet adapted to feed water to a fire hose, a butterfly valve means in said body for controlling flow of water from said inlet to said outlet, a conduit having an inlet adapted for connection to a fire hose and an outlet also adapted for connection to a fire hose, the inlet and the outlet of said conduit being substantially coaxial to provide a direct straight path for the flow of water through the conduit whereby to minimize pressure losses, said conduit having an opening intermediate of the inlet and the outlet of said conduit and in communication with said main valve body upstream of the butterfly valve to permit flow of water from said main valve body to said conduit, and valve means at said opening operable in response to higher pressure at the inlet of the conduit than exists in said main valve body for closing the opening that allows water flow from said main valve body to said conduit.

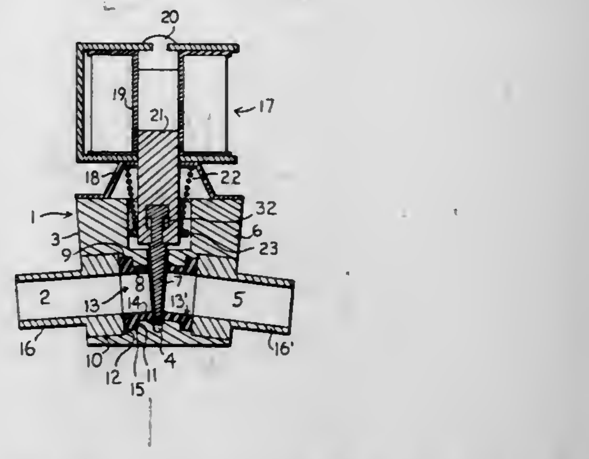
2. A valve system as defined in claim 1 having a handle outside the main valve body for controlling the position of the butterfly valve, the position of the handle being an indication whether the butterfly valve is open or closed.

3,871,615

SOLENOID OPERATED WEDGE GATE VALVE

Verne P. Donner, Palatine, Ill., assignor to Deltrol Corp., Bellwood, Ill.

Filed Feb. 19, 1974, Ser. No. 443,763
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 1 Claim



1. A solenoid operated gate valve including a valve body formed with an inner chamber, an inlet passage extending from one side of the valve body to said chamber, an outlet passage extending from the opposite side of the valve body to said chamber, said passages extending generally toward each other, means whereby said passages are terminated inside the valve body providing a wedge shaped space therebetween, said terminating means including valve seat inserts of soft elastic material, a wedge shaped valve member generally conforming to said wedge shaped space and arranged to engage said valve seat inserts for stopping flow of fluid from the inlet passage to the outlet passage, means including a solenoid having a plunger member for withdrawing said wedge shaped valve member from said seats to allow flow of fluid, lost motion means connecting said plunger and valve member, said lost motion means permitting initial free movement of the plunger member to develop inertia, the plunger member striking the valve member with hammer action when the lost motion is taken up for breaking the valve member loose from its wedging seats, the resiliency of said seats being such as to limit the holding force produced by the wedging action of the valve member and seats to less than can be overcome by the solenoid plunger member, said lost motion means comprising a compound slot in one member having a first portion extending parallel with the direction of movement of said members and extending through the end of its associated member, said slot also having a second portion of greater width than the first portion providing an internal shoulder, both portions of the slot opening through at least one side of said associated member, the other member including a shank portion extending through the first portion of the slot and a head portion providing a shoulder engaging said internal shoulder, said shank and head portions being insertable sideways into the slot.

3,871,616

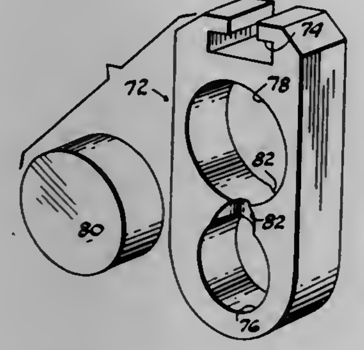
GATE VALVE DISC

Julian S. Taylor, 8300 S.W. 8, Oklahoma City, Okla. 73108

Filed Dec. 10, 1973, Ser. No. 423,596
Int. Cl. F16k *3/02*
U.S. Cl. 251—175 3 Claims

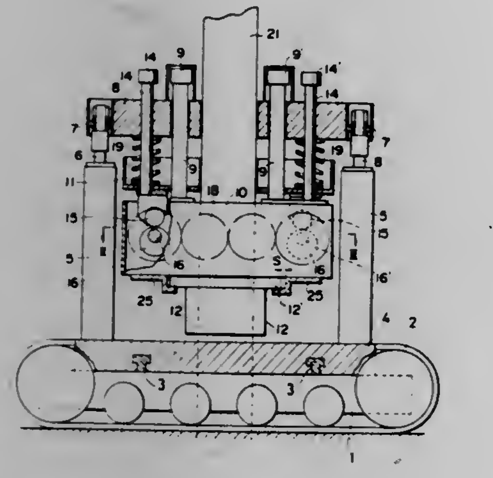
1. In a gate valve having a body provided with a flow passageway and having a disc receiving guide slot transversely intersecting the passageway, a valve stem having one end portion axially movable within the disc slot toward and away from the axis of the passageway and having a pair of disc seat rings formed from material having a Rockwell scale C hardness of at least forty disposed, respectively, on the upstream and downstream sides of the disc slot coaxial with respect to the passageway and defining confronting seat ring surfaces respectively disposed in the planes forming the upstream and downstream sides of the slot, the improvement comprising:

a metallic disc slidable within the disc slot,
  said disc having a head portion removably secured to said one end portion of said valve stem for moving said disc and opening and closing the passageway,
  said disc having a transverse U-shaped opening, at least equal in area to the transverse cross-sectional area of the passageway, in its end portion opposite said disc head portion and having a transverse aperture communicating with the U-shaped opening and coaxial with the passageway when said disc is in valve closed position and being at least diametrically equal to the diameter of the passageway; and,
a plug formed of material having a Rockwell scale C hardness of at least forty freely received by the disc aperture and slidably interposed between said disc seat rings for coaxially registering and sealing with said disc seat ring on the downstream side of the disc slot and closing the passageway when said disc is moved to a valve closed position.



3,871,617
PILE DRIVER

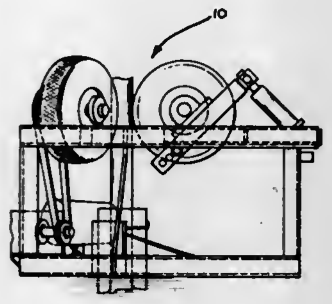
Keiichiro Majima, 1380-2 Nishitoyoi, Kudamatsu, Japan
Filed June 28, 1973, Ser. No. 374,382
Claims priority, application Japan, May 18, 1973, 48-55329
Int. Cl. E02d *7/18;* B06b *1/10*
U.S. Cl. 254—29 R **6 Claims**



1. A pile driver comprising a foundation and hydraulic cylinder means vertically mounted upon the foundation, a top bed connected to the hydraulic cylinder means adapted to move in a vertical direction upon activation of the hydraulic cylinder means, pile-holding chuck means below the top bed and adjustably connected thereto, an oscillating body between the top bed and the chuck means, spring means between the oscillating body and the top bed for deflecting the oscillating body in a downward direction, and rotatable cam means provided on the pile-holding chuck means contacting the oscillating body and sequentially compressing the spring means as the cam means rotates.

3,871,618
PORTABLE WELL PIPE PULLER

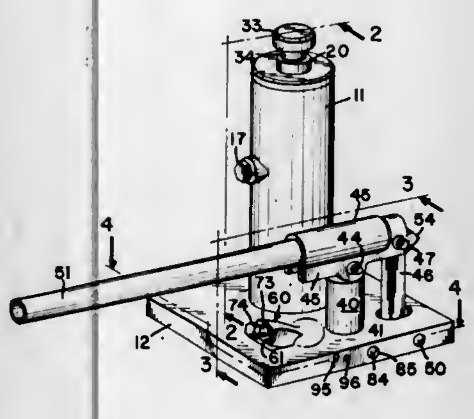
Eldon E. Funk, R.R. No. 2, Newville, Pa. 17241
Filed Nov. 9, 1073, Ser. No. 414,224
Int. Cl. E21b *19/08*
U.S. Cl. 254—30 **6 Claims**



1. A well pipe puller comprising a U-shaped base having opposed legs defining an opening on one side of the base, attachment means on the base for securing the base to a well casing, and a wheel on the base having a well pipe-engaging surface facing said opening and positioned above said attachment means; and a support separable from said base having opposed edges extending along and removably mountable on said legs to close said opening, and a wheel rotatably mounted on said support having a well pipe-engaging surface; locking means for securing said support and base together with the pipe-engaging surface of the wheel on the support above the attachment means on the base; and means for moving one wheel toward the other wheel to confine the pipe between the wheels and drive means for rotating one of said wheels to move the pipe relative to the casing.

3,871,619
HYDRAULIC JACK BASE STRUCTURE

Ernest M. Simon, Golden Valley, Minn., assignor to K-P Manufacturing Co., Inc., Minneapolis, Minn.
Filed Mar. 18, 1974, Ser. No. 451,908
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **2 Claims**

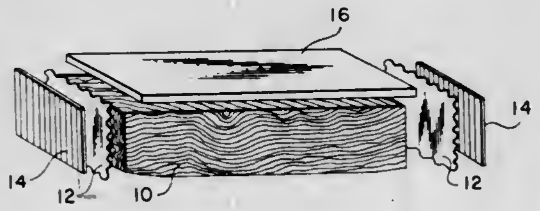


1. In a hydraulic jack having a fluid reservoir, a pressure cylinder, a pump cylinder, a pump inlet checkvalve, and combined valve means including a pump outlet checkvalve and pressure release valve:
  a baseplate having openings arranged for communication with the pump cylinder, the pressure cylinder, and the fluid reservoir;
  first passage means in said base, including the inlet checkvalve, extending between the fluid reservoir opening and the pump cylinder opening;
  second passage means in said base, including the outlet checkvalve, extending between the pump cylinder opening and the pressure cylinder opening;

  third passage means in said base, including the pressure release valve, extending between the pressure cylinder opening and the fluid reservoir opening;
  said base comprising a flat plate having a tongue hydroformed therefrom so as to extend at one end at an acute angle above said plate and so as to be metallurgically unitary with said plate at its other end;
  said second and third passage means extending continuously from said plate into said tongue transversely thereof near said other end thereof;
  and said combined valve means extending longitudinally in said tongue from said one end thereof.

3,871,620
NONSKIDDING BLOCKS

Jack L. Moran, 1013 S. Bernice, Spearman, Tex. 79081
Filed Mar. 30, 1973, Ser. No. 346,327
Int. Cl. B66f *3/00*
U.S. Cl. 254—133 R **9 Claims**

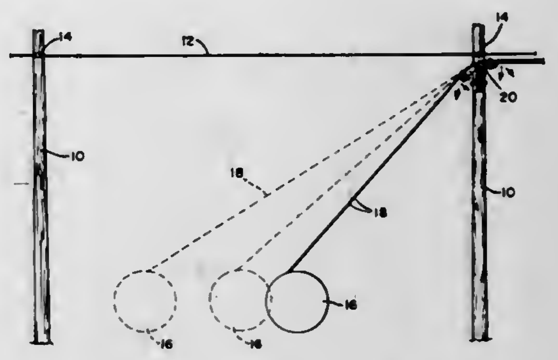


1. A block of rectangular configuration for use in uniformly distributing the forces of a portable hydraulic jack to a metal surface in metal working and making body repairs wherein the improvement comprises a unitary nonskidding block consisting of a block of rectangular configuration of a material having a tensile strength and mechanical properties at least equivalent to those of Canadian white spruce; having butt plate means for reinforcing the strength of the said block and to provide a force-distributing surface to allow hammering of the said block to make minor adjustments of its position with respect to the said metal surface including a butt plate attached to each end of said rectangular block; and means to cling to the said metal surface and prevent the skidding of the said block under the forces of said hydraulic jack on at least the side of the said block to be placed in contact with the said metal surface, said means also serving to increase the tensile strength of said unitary block, whereby the said block may be placed in position on the said metal surface and held by its own forces in position subject to minor hammering adjustments during the placement of the said hydraulic jack to thereafter withstand, apply and uniformly distribute the forces of the said hydraulic jack to the said metal surface being worked on without slipping in the performance of metal working and body repairs.

3,871,621
CABLE CHUTE

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Clayton, Ohio
Filed Sept. 21, 1973, Ser. No. 399,550
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 PA **13 Claims**

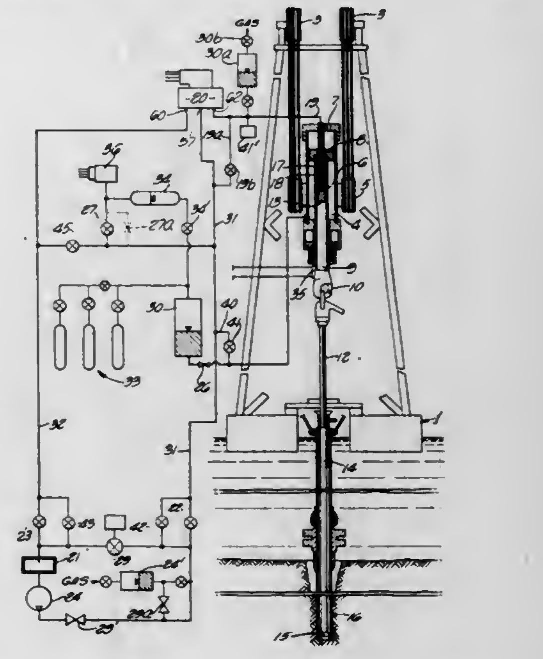
1. A cable chute comprising:
a. a base frame,
b. a supporting rod fixed to and projecting from said base frame,
c. means for mounting said base frame on an existing member with said supporting rod projecting substantially vertically from said base frame,
d. collar means rotatably received on said supporting rod,
  e. a pivot pin projecting substantially perpendicularly from said collar means and capable of rotational movement about an axis coincident with the axis of said supporting rod,
f. a roller frame,
g. means pivotally mounting said roller frame on said pivot pin for pivotal movement about the longitudinal axis of said pivot pin, and



h. a plurality of rollers rotatably mounted on said roller frame with the axes of said rollers extending in substantially parallel relationship to said axis of said pivot pin and the cable engaging surfaces of said rollers defining a generally arcuate path curving about a center extending parallel to said pivot pin.

3,871,622
METHOD AND APPARATUS FOR THE CONTROL OF A WEIGHT SUSPENDED FROM A FLOATING VESSEL

Edward Larralde, and Glen Robinson, both of Santa Barbara, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Continuation-in-part of Ser. No. 373,968, June 27, 1973, which is a continuation-in-part of Ser. No. 274,880, July 25, 1972, Pat. No. 3,841,607. This application July 13, 1973, Ser. No. 378,963
Int. Cl. E21b *15/02*
U.S. Cl. 254—172 **20 Claims**

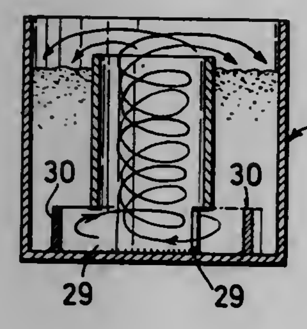


1. In an apparatus adapted to be mounted on a vessel subject to heave due to wave action, which apparatus includes a hydraulic cylinder, a first piston and a first piston rod in said cylinder, means to connect a load to said first piston rod, a second hydraulic cylinder and a second piston in said second hydraulic cylinder; said second piston operatively connected to said first piston, separate pneumatic accumulator systems, one each connected to each one of said cylinders for control of the forces exerted on said piston rod, the improvement which comprises means separately to vary the pressure in a first of said accumulator systems, to modulate the pressure in said first accumulator system to compensate for change in pressure in a second accumulator system on imposition of a

load on said first piston, whereby the forces on said piston rod are maintained substantially constant.

3,871,623
APPARATUS FOR MIXING MATERIALS

Dietmar Boenisch, 45, Morillenhang, Aachen, Germany
Filed July 24, 1972, Ser. No. 274,762
Claims priority, application Germany, July 26, 1971, 2137277
Int. Cl. B01f *5/10*
U.S. Cl. 259—2 **31 Claims**

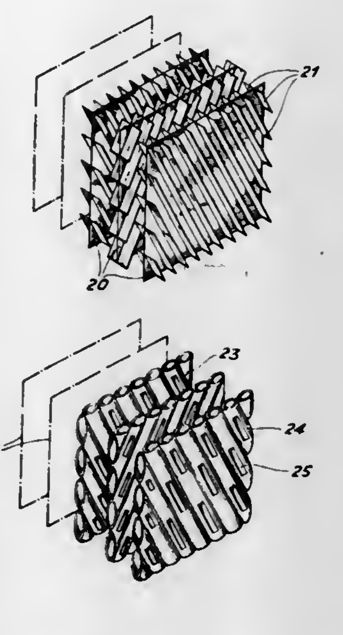


1. A mixing apparatus for mixing fluent materials, particularly foundry molding materials, comprising:
- a mix vessel having a vertical circumferentially enclosing side wall and resiliently mounted by means permitting an orbital oscillation about a vertical axis located within the confines of the vessel;
- driving means imparting to said vessel and orbital oscillation in a horizontal direction thereby imparting a principally horizontally circular main flow to material contained in the vessel;
- mixing means comprising at least one shaft-like element rigidly connected to and extending longitudinally within the vessel in a vertical direction away from the vessel bottom,
- said mixing means having a horizontally concavely curved vertical surface and providing an opening to said surface facing toward the direction from which said main flow approaches, whereby said element intercepts a portion of the main flow through said opening to develop at least over the height of the element a separate flow with a circular motion.

3,871,624
MIXING APPARATUS AND METHOD

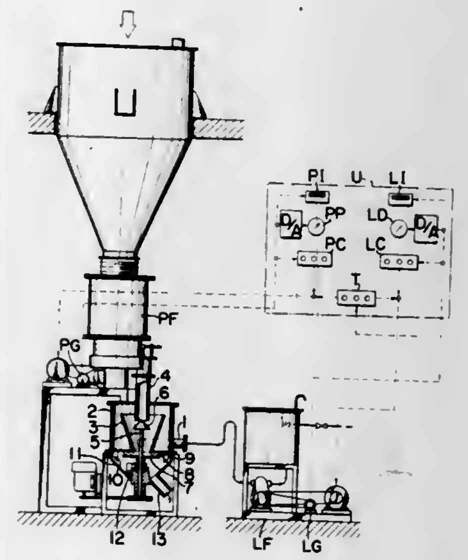
Max Huber, and Gerhard Schutz, both of Winterthur, Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed May 18, 1972, Ser. No. 254,645
Claims priority, application Switzerland, Jan. 24, 1972, 000982/72
Int. Cl. B01f *5/06*
U.S. Cl. 259—4 **16 Claims**

6. A mixing element comprising a plurality of layers, each layer having a spaced apart flat thin plate and a plurality of flat guide elements disposed angularly on at least one side of said plate with adjacent ones of said guide elements being in spaced apart parallel relation to define flow channels therebetween. said guide elements being angularly disposed with respect to said guide elements of an adjacent layer.



3,871,625
CONTINUOUS FLOW JET MIXER

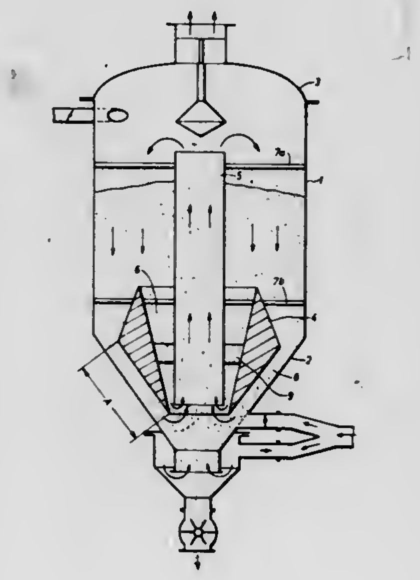
Hiroyuki Iwako, Tokyo, Japan, assignor to Funken Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 262,743, June 14, 1972, abandoned.
This application Aug. 6, 1973, Ser. No. 386,027
Claims priority, application Japan, July 24, 1971, 46-54935
Int. Cl. B01f *5/26, 7/26*
U.S. Cl. 259—8 **17 Claims**



7. A continuous flow mixer comprising:
- a tank having an outer wall and an inlet into said wall;
- an open top overflow vessel disposed within said tank to provide an annular space between the tank wall and the vessel, into which space liquid entering from said inlet can circulate, the overflow vessel having an upper edge, a bottom outlet and an inner surface shaped to form a descending film of liquid which has circulated in said annular space and has risen to and overflown the upper edge of the overflow vessel, wherein the inner surface of the overflow vessel converges in the downward direction;
- material inlet means to admit into said tank and into said overflow vessel a material of a type capable of being dispersed into said liquid; and
- first dispersing means adjacent said material inlet means to disperse and distribute the admitted material into the descending liquid film along the inner surface of the overflow vessel.

3,871,626
VESSEL FOR PNEUMATICALLY MIXING POWDERED OR GRANULAR MATERIAL

Arnon Wohlfarth, Nachlat-Jehuda, Israel, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 5, 1973, Ser. No. 348,419
Claims priority, application Germany, Apr. 20, 1972, 2219397
Int. Cl. B01f *13/02*
U.S. Cl. 259—36 **5 Claims**

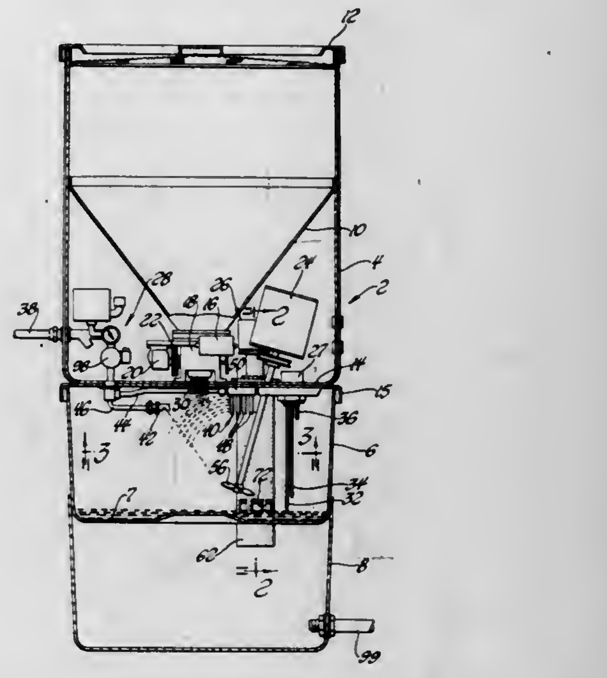


1. A vessel for pneumatically mixing powdered or granular material comprising a conical base with a bottom outlet and a gas inlet situated therein and within which an elevating tube is mounted, which terminates in the upper part of the vessel and which comprises an upper tube and a lower tube, an upper end portion of the lower tube being widened in the upward direction and surrounding the lower end of the upper tube leaving an annular channel therebetween, the lower tube forming a second annular channel with the wall of the vessel, the second annular channel having a cross sectional area such that in use the drop in pressure over the length of the elevating tube is at least substantially the same as the drop in pressure over the length of the second annular channel.

3,871,627
CHEMICAL MIXER

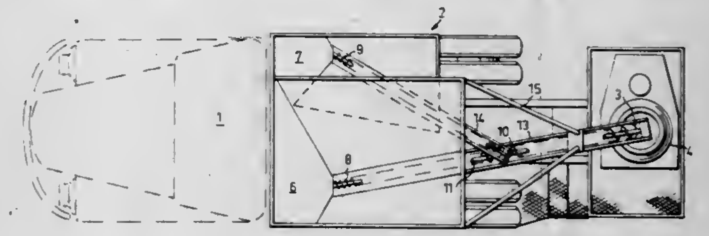
Arthur R. Marshall, Orchard Lake, Mich., assignor to Chemix Corporation, Troy, Mich.
Filed Feb. 26, 1973, Ser. No. 335,990
Int. Cl. B01f *3/12*
U.S. Cl. 259—64 **15 Claims**

1. Apparatus for mixing dry chemical with a liquid comprising: a mixing tank having a feed passage defined above the bottom wall thereof through which dry chemical is fed into the mixing tank and falls toward the bottom of the mixing tank into any liquid contained therein; and prewetting means for prewetting the dry chemical as it falls into the mixing tank from said passage, said prewetting means comprising a plurality of spray heads located on one side of the path of dry chemical falling from said passage and including a plurality of fluid nozzles for spraying liquid generally horizontally into the path of the dry chemical, and a fan nozzle located on the opposite side of the path of dry chemical falling from said passage for spraying liquid in a fan-shaped stream generally downwardly toward said bottom.



3,871,628
CONVEYING AND MIXING ARRANGEMENT, PARTICULARLY FOR POWDERED AND/OR PARTICULATE MASSES

Elgas Pulk, Stockholm, and John Paul Noren, Upplands Vasby, both of Sweden, assignors to Stabilator AB, Bromma, Sweden
Filed Dec. 5, 1972, Ser. No. 312,385
Claims priority, application Sweden, Dec. 10, 1971, 15876/71
Int. Cl. B28c *7/06*
U.S. Cl. 259—165 **7 Claims**



1. An arrangement for conveying and mixing at least two different dry particulate components and including for each such component a container and a conveyor driven by a power source, said conveyors being arranged to bring together from their respective containers such components into a driven mixing screw having a feed-in end and a feed-out end; a first conveyor for a first component being a screw conveyor joined with and changing into the feed-in end of said mixing screw, said first conveyor having a smaller pitch and smaller diameter than said mixing screw;
- said first conveyor and said mixing screw being substantially enclosed by a common casing having a substantially constant inner width;
- said first conveyor and mixing screw having a common shaft of constant diameter;
- a second conveyor for a second component being arranged to discharge and to feed the mixing screw above the feed-in end of the mixing screw,
- the screw surface of the mixing screw being continuous and imperforate between the shaft and a peripheral outer edge at a constant radial distance from the shaft,
- a radius to said screw surface having an angle of inclination relative to a plane perpendicular to the lengthwise direc-

tion of said shaft and inclining away from said plane in a direction towards the feed-out end of the mixing screw, the mixing screw having its diameter, pitch, r.p.m. and angle of inclination relative to a horizontal plane so mutually adapted to the volume of the components brought together that said components only partly fill said mixing screw and are imparted a rolling, tumbling movement on their way towards the feed-out end of the mixing screw, thus causing an effective dry mixing of the components.

3,871,629
MOULDABLE SYNTHETIC RESIN COLOURING MATERIAL AND APPLICATION APPARATUS THEREOF

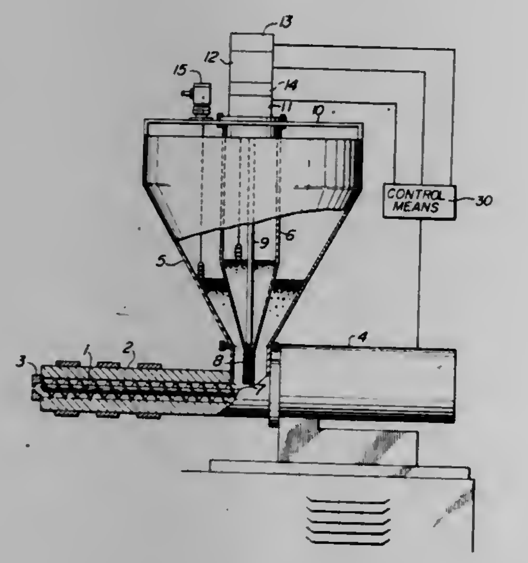
Iwao Hishida, 4-16, Hattoriminamicho-4-chome, Toyonaka, Japan

Filed Apr. 24, 1973, Ser. No. 354,075

Claims priority, application Japan, July 28, 1972, 47-75634; Dec. 28, 1972, 48-3597

Int. Cl. B01f *7/08*

U.S. Cl. 259—191 **5 Claims**



1. An automatic feeder for a resin melting apparatus having main screw means enclosed by a cylinder and heating means surrounding said cylinder for conveying, compressing and melting the resin material fed thereto, comprising first hopper means for feeding a resin material to be melted and second hopper means for feeding a colouring material directly to said main screw means, said second hopper means including a hopper element and a small screw disposed in a colouring material passage formed at the lower end of said hopper element in communication with the cylinder.

3,871,630
APPARATUS FOR SINTERING PRESSED POWDER ELEMENTS CONTAINING HYDROCARBONS

Erwin Wanetzky, and Gerhard Kuklok, both of Gross-Krotzenburg, Germany, assignors to Leybold-Heraeus-Verwaltung GmbH, Cologne-Bayental, Germany

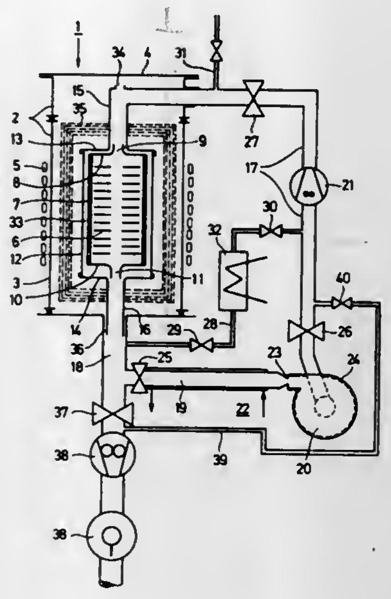
Filed Mar. 12, 1973, Ser. No. 339,976

Claims priority, application Germany, May 5, 1972, 2222050

Int. Cl. F27b *5/04*

U.S. Cl. 266—20 **11 Claims**

1. A vacuum-furnace arrangement for sintering pressed powdered elements containing hydrocarbons under vacuum and elevated temperatures, comprising in combination a vacuum tight furnace housing with heating means; support means within said housing for supporting said elements; first pumping means connected to said housing for producing a vacuum within said housing; separating means for separating said hydrocarbons; cycle of flow interconnecting means between said housing and said separating means; and second pumping means within said cylce of flow interconnecting means for circulating the furnace atmosphere through the said separating means.



3,871,631
BURNING DEVICE FOR BURNING ORE PELLETS AND SIMILAR BODIES

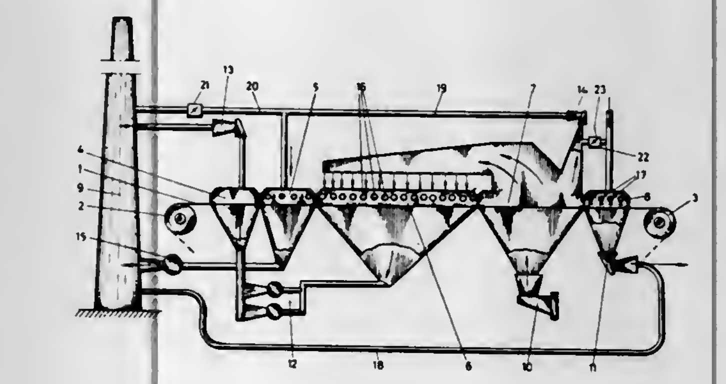
Siewert Gerrit Jan Biewinga, Velsen, Netherlands, assignor to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed Nov. 21, 1972, Ser. No. 308,559

Claims priority, application, Germany, Nov. 24, 1971, 2158317

Int. Cl. F27b *21/00*

U.S. Cl. 266—21 **4 Claims**



1. A burner device for the baking of ore pellets and the like comprising in sequence, one after the other, at least one drying zone, a burning zone, a first cooling zone, a second cooling zone, a movable grid system for supporting a bed of ore pellets to be baked passing through each of said zones in a longitudinal path, said first cooling zone being connected at one end to said burning zone and drying zone by a passageway extending over said movable grid system, the opposite end of said first cooling zone having means to draw cooling air thereinto for passage upwardly through said movable grid system, said second cooling zone having water distributing means at its upper end thereof for supplying cooling water for passage downwardly through said movable grid system, the opposite end of said second cooling zone having means for carrying off said cooling water after passage through the grid system, said water distributing means being positioned above said movable grid system from a point at a distance of about 15 to 30 percent of the length of said second cooling zone from the entrance end thereof up to close to the exit end thereof.

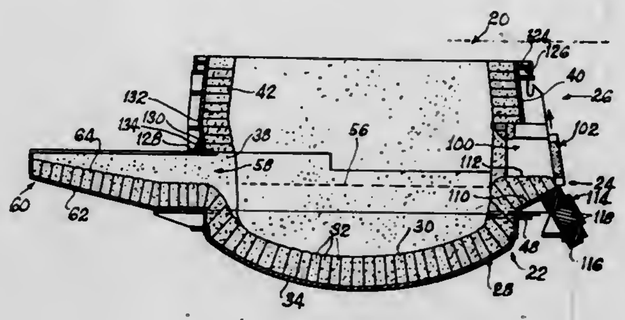
3,871,632
MODULAR DIVISIBLE BARREL-SHAPED SHELL FOR METALLURGICAL FURNACES

Edgar Wunsche, Oshawa, Ontario, Canada, assignor to Engineered Metal Products Company, Inc., Birmingham, Ala.

Filed Aug. 2, 1972, Ser. No. 277,142

Int. Cl. C21c *5/44*

U.S. Cl. 266—35 **12 Claims**



1. A furnace shell for use with molten metal,
comprising a generally dish-shaped bottom section having a metal casing and a refractory lining,
a first generally ring-shaped wall section removably mounted on top of said bottom section and having a metal casing and a refractory lining,
and a second generally ring-shaped wall section removably mounted on top of said first wall section and having a metal casing and a refractory lining,
each of said wall sections having means for supporting the refractory lining thereof when said wall section is dismounted from the furnace shell,
whereby the refractory lining may be installed in each wall section prior to the mounting of the wall section on the furnace shell,
said first wall section having an upper portion with an upward step adjacent one side of said first wall section,
said second wall section having a correspondingly stepped lower portion to mate with the stepped upper portion of said first wall section.

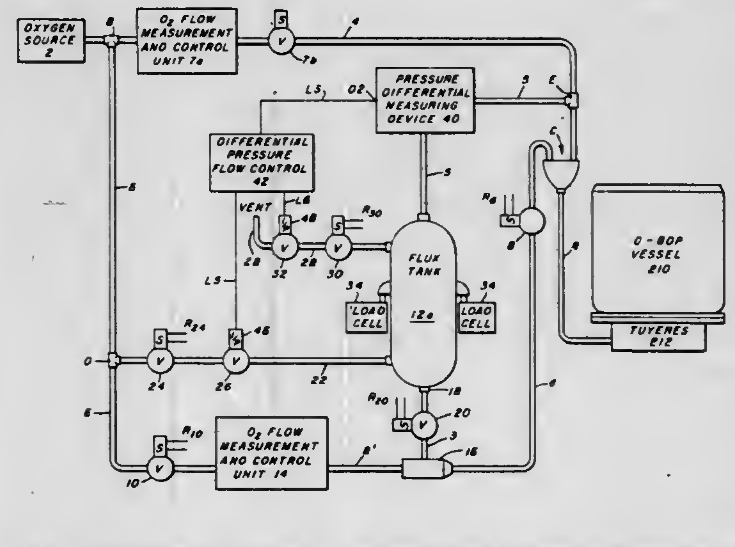
3,871,633
METHOD AND APPARATUS FOR CONTROLLING THE INJECTION OF FLUX INTO A STEELMAKING VESSEL AS A FUNCTION OF PRESSURE DIFFERENTIAL

William A. Kolb, Forest Hills Borough, and Michael J. Papinchak, Plum Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1973, Ser. No. 354,610

Int. Cl. C21c *5/48*

U.S. Cl. 266—35 **27 Claims**


OXYGEN SOURCE 2
O₂ FLOW MEASUREMENT AND CONTROL UNIT 7a
PRESSURE DIFFERENTIAL MEASURING DEVICE 40
DIFFERENTIAL PRESSURE FLOW CONTROL 42
VENT
FLUX TANK 12a
LOAD CELL
LOAD CELL
O-BOP VESSEL 210
TUYERES 212
O₂ FLOW MEASUREMENT AND CONTROL UNIT 14

1. In combination with a steelmaking apparatus having a steelmaking vessel, a source of fluid, and a primary fluid flow conduit coupled to said vessel for supplying fluid from said source to said vessel, the invention comprising:

means for injecting flux into said vessel through said primary conduit, which includes,
- a. a secondary fluid flow conduit having its output coupled to said primary conduit in an additive manner;
- b. a flux-containing tank having its output coupled to said secondary conduit for supplying flux to said secondary conduit;
- c. pressurizing means for pressurizing said tank in a controlled manner;
- d. differential pressure measuring means for measuring the pressure difference between said primary conduit and said tank; and
- e. control means coupled between said pressure measuring means and said pressurizing means for controlling the pressurizing of said tank to thereby control the rate at which flux is supplied to said secondary conduit from said tank as a function of the pressure differential between the pressure in said primary fluid flow conduit and the pressure in said tank.

3,871,634
SPRING ASSEMBLY

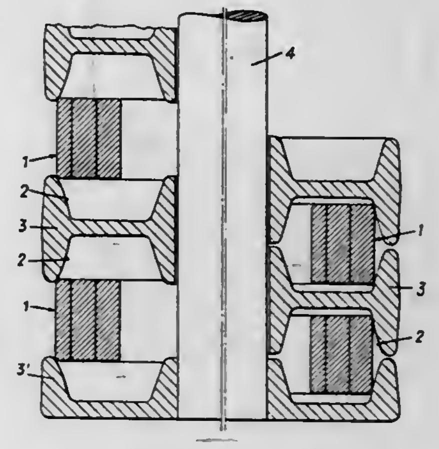
Maximilian Russold; Heribert Sidan, and Gerhard Rogen, all of Judenburg, Austria, assignors to Steirische Guszstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Sept. 19, 1973, Ser. No. 398,821

Claims priority, application Switzerland, Mar. 1, 1973, 3160/73

Int. Cl. F16g *7/08*

U.S. Cl. 267—9 B **18 Claims**



1. A spring assembly which has an axis and is adapted to take up and exert a force in the direction of said axis comprising a plurality of resilient rings which are axially stacked in alternation with rigid rings, each of the said resilient rings being arranged between two of said rigid rings, said rigid rings being formed with peripheral sliding surfaces which have generatrices that are inclined to said axis, said resilient rings bearing on said sliding surfaces and being in line contact with said sliding surfaces, each of said resilient rings being a coiled spring which has at least two convolutions, the neighbouring convolutions being in contact with each other at least in the finally compressed state of the spring assembly.

3,871,635
SUSPENSION HYDRAULIC ROLL STABILIZER WITH LEVELING

Dale H. Unruh, Peoria, Ill., and Jan B. Yates, Reynoldsburg, Ohio, assignors to Caterpillar Tractor Co., Peoria, Ill.

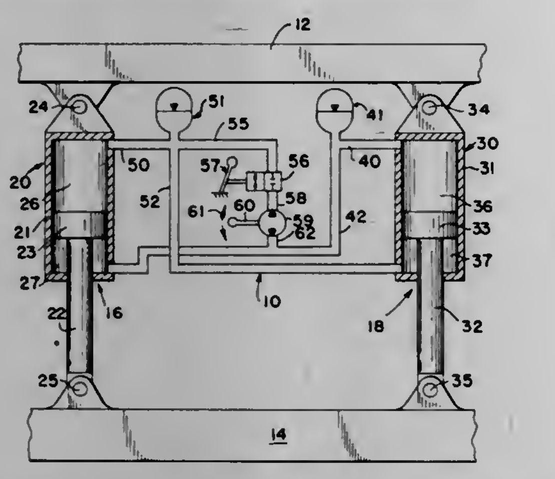
Filed Jan. 23, 1974, Ser. No. 435,761

Int. Cl. B60g *21/00*

U.S. Cl. 267—11 **7 Claims**

1. In a vehicle suspension system having hydraulic struts between a sprung mass and its wheeled supports with hydraulic chambers in the struts cross-connected across the vehicle, means for leveling the sprung mass relative to its wheeled support comprising:

a pair of hydraulic conduits extending across the vehicle and cross-connecting the hydraulic chambers of the struts to provide horizontal stability of the sprung mass upon the wheeled support, each conduit and connected chambers providing a separate hydraulic system,



a controllable conduit communicating only with and connecting said hydraulic systems,

a valve controlling fluid flow through said controllable conduit, and

a pump for moving fluid from one hydraulic conduit to the other selectively.

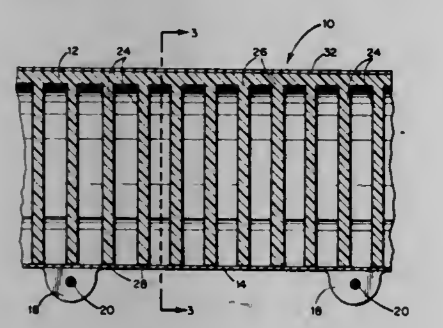
3,871,636
ENERGY ABSORBING DEVICE

Joseph R. Boyle, Rochester, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Aug. 3, 1971, Ser. No. 168,660

Int. Cl. F16f *1/44*

U.S. Cl. 267—140 **9 Claims**



1. Energy absorbing apparatus comprising: a base member extending laterally across the direction along which an impacting object may be expected to travel towards said apparatus; a flexible covering cooperating with said base member to define an interior chamber, said chamber being subdivided by a plurality of resilient laterally spaced and independent rib members extending between said base member and said covering, the rear edge of at least some of said rib members being immediately adjacent to said base member and the remaining edges being joined to said covering such that said rib members are adapted to temporarily buckle independently of one another upon impact of an object against said covering.

3,871,637
STIRRUP ASSEMBLY FOR EXAMINATION TABLE

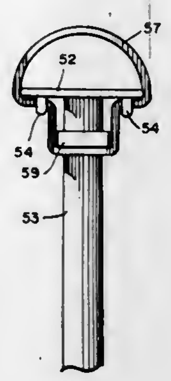
Floyd F. Mueller, Two Rivers; Clarence J. Aulik, and Paul R. Zeman, both of Manitowoc, all of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed July 5, 1973, Ser. No. 376,369

Int. Cl. A61g *13/00*

U.S. Cl. 269—328 **10 Claims**

1. A stirrup assembly for examination tables comprising a foot plate having an upper supporting surface and slot means, means for supporting the plate, retaining strap means extending through the slot means of the foot plate, a portion of the strap means extending below the foot plate, the strap means being movable through the slot means to vary the distance which the strap means extends above the foot-supporting surface of the foot plate, and strap-tightening means slidably mounted on the plate support means below the foot plate for movement toward and away from the foot plate, the strap-tightening means being engageable with the portion of the strap means below the foot plate which extends through the slot means whereby movement of the strap-tightening means away from the foot plate pulls the strap means through the slot means to reduce the distance which the strap means extends above the foot-supporting surface of the foot plate.



3,871,638
APPARATUS FOR DIVIDING A STREAM OF PRINTED NEWSPAPERS INTO PORTIONS

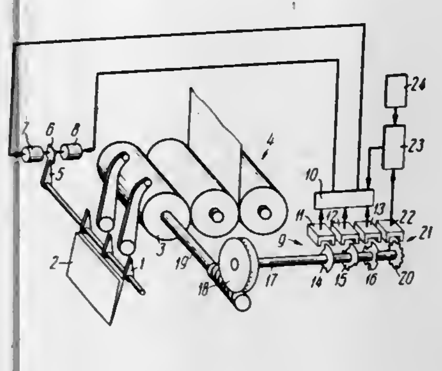
Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181; Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed May 18, 1973, Ser. No. 361,846

Claims priority, application U.S.S.R., Sept. 12, 1972, 1825045

Int. Cl. B41i *43/00*

U.S. Cl. 270—32 **3 Claims**



1. An apparatus for dividing a stream of printed newspapers into portions which are to be subsequently assembled into batches, said apparatus comprising: a folder drum of a rotary printing press; a deflector for selectively varying the path of the printed newspapers, said deflector being disposed beneath said folder drum; drive means for actuating said deflector between selectable positions thereof; a shaft carrying said folder drum; electric pickup means being responsive to the angle of rotation of said folder drum, said pickup means being electrically connected to said drive means of said deflector for controlling the actuation thereof; said electric pickup means having a rotary master disc drivingly connected with said shaft carrying said folder drum; said rotary master disc having elements being angularly spaced such that the number of said elements correspond to the number of said electric pulses sent to said drive means of said deflector and are equal to the number of the batches of the newspapers delivered to be assembled during one full revolution of said master disc of said pickup means.

3,871,639
METHOD OF AUTOMATICALLY PRODUCING A CONTINUOUSLY PROCESSABLE MULTICOPY WRITING SURFACE ASSEMBLY, AND APPARATUS FOR PERFORMANCE THEREOF

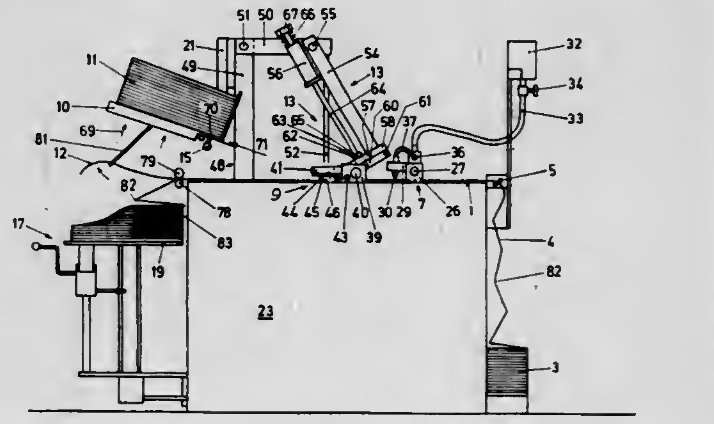
Willi Felix, Strengelbach, Switzerland, assignor to Jos. Hunkeler AG Fabrik Fur Graphische Maschinen, Wikon, Switzerland

Filed Oct. 26, 1972, Ser. No. 301,100

Claims priority, application Switzerland, Nov. 1, 1971, 15912/71

Int. Cl. B65h *39/00*

U.S. Cl. 270—52 **34 Claims**



1. A method of automatically producing a continuously processable assembly including a continuous web and attachments, having a leading edge and a trailing edge, wherein the leading edge of the attachment is connected to the web, comprising:

moving the continuous web in one direction;

moving the leading edge of one of said attachments toward the continuous web from the opposite direction;

accurately stopping the motion of the attachment upon contact with a predetermined portion of the continuous web; and

interconnecting the leading edge of the attachment and the continuous web in an orderly manner.

3,871,640
VARIABLE-MODE ROTARY DUPLICATOR

Gerhard Ritzerfeld, Schorlemer Allee 14, Berlin, Germany

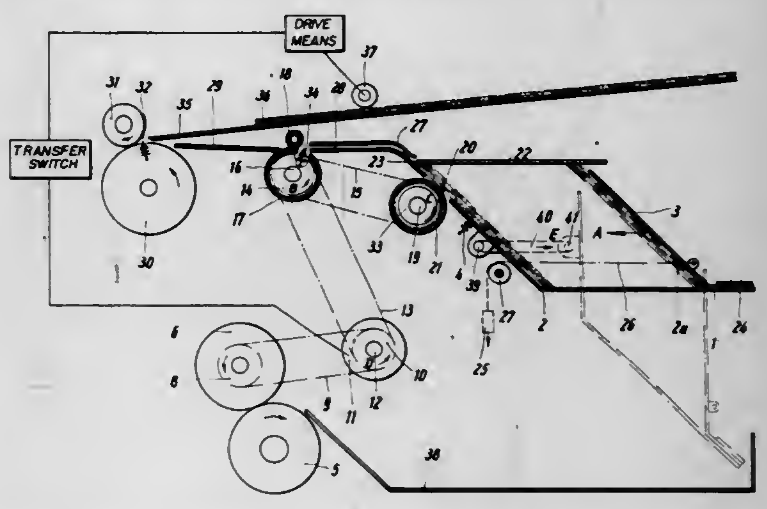
Filed Apr. 12, 1973, Ser. No. 350,465

Claims priority, application Germany, Apr. 20, 1972, 2219939

Int. Cl. B65h *3/44*

U.S. Cl. 271—9 **5 Claims**

1. In a rotary duplicator, a combination comprising a pair of cooperating feeding rollers adapted to receive copy sheets for forwarding of the same to a printing roller; a first supply station for supplying first copy sheets comprising a supply table adapted to contain a stack of said first copy sheets; a second supply station for supplying smaller second copy sheets located below said first supply station comprising a magazine having a first wall provided with an opening and a second wall movable toward said first wall, said magazine being adapted to contain a stack of said second copy sheets standing on edge and inclined into contact with a portion of said first wall so as to overlie said opening therein; first friction roller means located above said first supply station and engaging the uppermost one of said first copy sheets so as to contact and expel from said first supply station said uppermost one of said first copy sheets along a first path to said cooperating feeding rollers; second friction roller means extending through said opening into said magazine so as to contact and expel said second copy sheets consecutively along a second path towards said cooperating feeding rollers; third friction roller means located downstream of said second friction roller means along said second path so as to contact and guide the expelled second copy sheet towards said cooperating feeding rollers; transporting means including first drive means for driving said first friction roller means and second drive means for driving said second and third friction roller means; main control means including main coupling means between said second drive means and said second and third friction roller means and including switch means for actuating said first drive means and said main coupling means alternately so as to deliver to said cooperating feeding rollers first and second copy sheets alternately; and additional control means including additional coupling means between said second drive means and said second friction roller means and a sensor associated with said third friction roller means for sensing the presence or absence of a second copy sheet along said second path in the region of said third friction roller means and operative for intermittently disengaging said additional coupling means subsequent to engagement of a second copy sheet by said second friction roller means but prior to engagement of the same second copy sheet by said feeding rollers.



3,871,641
SHEET FEEDING DEVICE

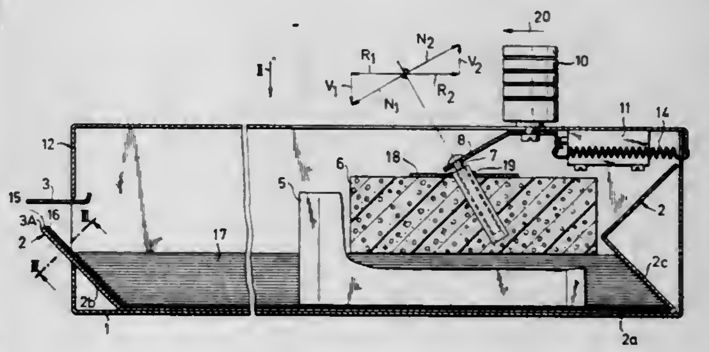
Gerhard Marx, Taunusstein, and Gunter Kramer, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Jan. 16, 1973, Ser. No. 324,234

Claims priority, application Germany, Jan. 17, 1972, 2202024

Int. Cl. B65h *3/02, 3/52*

U.S. Cl. 271—42 **17 Claims**

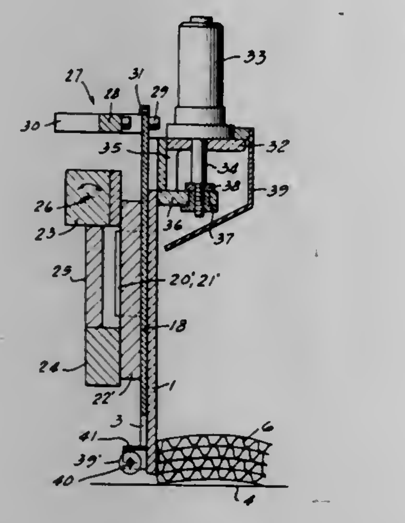


1. An apparatus for feeding individual sheets of a stack to a device on which said sheets are further worked comprising a reciprocating conveyor element for the displacement of the top sheet of the stack and a reciprocating telescopic rod comprising a rod and sheath, said conveyor element having a flat bottom of gripping foam which contacts the top sheet of the stack, said telescopic rod being arranged to extend obliquely downwardly and rearwardly with respect to the sheet-

conveying direction and having its sheath fastened to the conveyor element.

3,871,642
SHEET FEEDING ASSEMBLY

Sady Mariaux, Bournens Roland Golay, Lausanne, both of Switzerland, assignors to J. Bobst & Fils S.A.
Filed Oct. 9, 1973, Ser. No. 404,803
Claims priority, application Switzerland, Oct. 6, 1972, 14678/72
Int. Cl. B65h *3/56*
U.S. Cl. 271—138 **6 Claims**



1. A sheet feeding apparatus for feeding stiff curved sheets one at a time from a vertical stack of such sheets to a line of position in a sheet processing machine comprising: a feed table having a shuttle reciprocably movable in a horizontal plane from a first retracted position to an extended position to carry sheets from said feed table to the feed line of position; an upstanding gauge member initially positionable so as to overlie the plane of said feed table and shuttle a distance greater than the thickness of one sheet to be fed and less than the thickness of two such sheets; said gauge member being located adjacent the leading end of said shuttle and in spaced relation from said line of position; means holding said gauge member in said initial position until said shuttle has carried the leading edge of a sheet beneath said gauge member and thereupon releasing said gauge member for free upward movement above the plane of said shuttle and feed table; whereby said gauge member will ride freely along the upper curved surface of the said sheet being fed to the line of position by said shuttle.

3,871,643
SORTER CONTROL

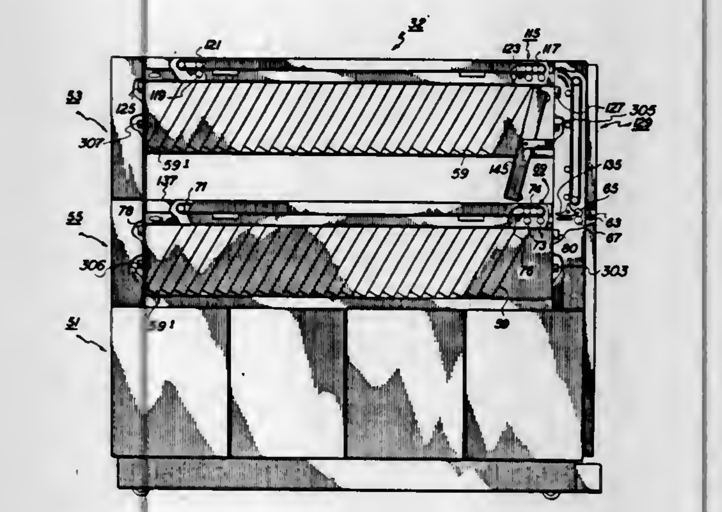
William P. Kukucka, Webster, and Thomas Acquaviva, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 4, 1972, Ser. No. 312,143
Int. Cl. B65h *31/24*
U.S. Cl. 271—173 **3 Claims**

1. In a reproduction system for producing copies of documents and arranging said copies selectively in either stacked or collated relationship, the combination of:

a processor for producing said copies from original documents;

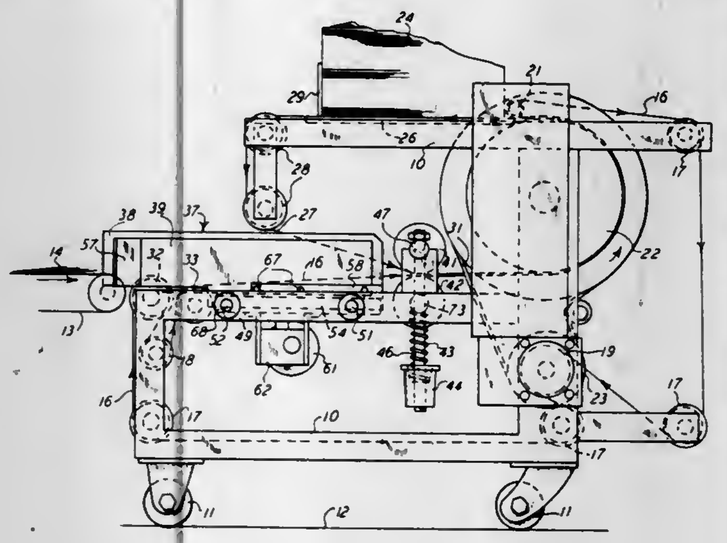
a sorter for arranging said copies in either of said stacked or collated relationships, said sorter having plural copy receiving trays arranged in at least two distinct sections; and,

control means adapted to prevent the start of the reproduction system in the absence of an empty section in said sorter, said control means being adapted to allow the start of the reproduction system when at least one of said sections is empty and direct the copies produced to said empty section, said control means being adapted when both of said sorter sections are empty to route copies to a predetermined one of said sections.



3,871,644
SHEET STACKER WITH JOGGER

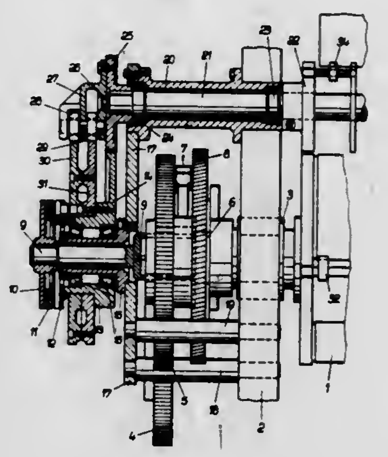
Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.
Filed May 23, 1973, Ser. No. 363,067
Int. Cl. B65h *29/14*
U.S. Cl. 271—198 **6 Claims**



1. A sheet stacker with a jogger, for conveying, jogging, and stacking a stream of imbricated flexible sheets, comprising a horizontally disposed sheet conveyor for supporting said stream thereon in a horizontal orientation and including two support portions disposed adjacent each other along the path of said stream and being horizontally spaced apart and with the one of said portions which is downstream from the other of said portions being disposed at an elevation lower than the elevation of said other portion to have said portions present a gap therebetween for passing said stream across said gap and from one of said portions to the other of said portions and to thereby permit said stream of sheets to curve in its said path of flow and about a line extending across said stream and downwardly across said gap and thereby cause said sheets to stiffen in the directions parallel to said line, a plate pivotally disposed adjacent the side of said stream and extending adjacent the location of the bend in said stream and being movable into and out of contact with the edges of said stiffened sheets adjacent said plate for jogging said sheets into alignment with each other, a pivot mounting for said plate and disposed downstream from the location of said gap and relative to the stream movement of said sheets for greater pivotal movement of said plate at its extent adjacent said gap than at the pivot location on said plate, oscillating mechanism connected to said plate for inducing the pivoting of said plate, and a stacker platform disposed adjacent said conveyor and downstream from said plate for receiving the aligned said sheets when the latter move off said conveyor.

3,871,645
DRIVING DEVICE FOR INTERMITTENTLY REVOLVING FEEDING CYLINDER IN PRINTING AND PAPER PROCESSING MACHINES

Artur Buttner, Heidelberg, and Hugo Rambausek, Wiesloch, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed May 18, 1973, Ser. No. 361,463
Claims priority, application Germany, May 18, 1972, 2224210
Int. Cl. B65h *5/12*
U.S. Cl. 271—270 **1 Claim**



1. Drive means for a printing and paper processing machine of the type having an intermittently revolving sheet feeding cylinder and a single revolution cylinder comprising a flange bushing, an elongated journal pin for the single revolution cylinder, an extension of said journal pin mounted for radial movement of its axis inside said flange bushing, two cam discs mounted on said flange bushing and adapted to control acceleration, delay and stoppage phases of the feeding cylinder, an elongated shaft for the feeding cylinder, a roller support member firmly connected to said feeding cylinder shaft, two rollers journalled on said roller support member, said rollers being in form-locking rolling engagement with said cam discs during said phases of the feeding cylinder, toothed segment means for effecting accurate coincidence of further rotation of the feeding cylinder with that of the single revolution cylinder, said toothed segment means being intermittently meshingly engageable with a gear secured to said elongated shaft of the feeding cylinder, said sheet feeding cylinder and said toothed segment means being rotatably mounted on the frame of said machine, said cam discs and said toothed segment means being separated from said journal pin extension and mounted on said flange bushing connected to the machine frame, and coupling means connected to said journal pin extension for transmitting rotation of said single revolution cylinder to said cam discs and said toothed segment means, said coupling means being adapted to accommodate said radial movement of said journal pin extension.

3,871,646
EXERCISE APPARATUS

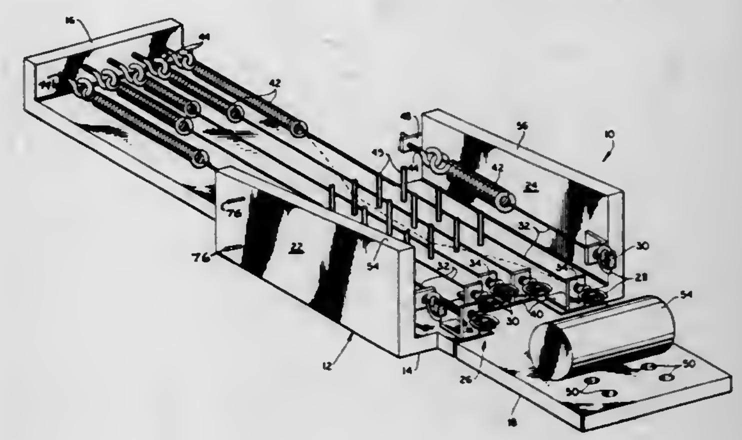
Robert W. Slack, 635 Sycamore St., Decatur, Ga. 30030
Filed Feb. 26, 1973, Ser. No. 335,578
Int. Cl. A63b *21/00, 23/00;* **G09b** *15/06*
U.S. Cl. 272—67 **9 Claims**

1. In an exercise device:

a. a base having finger exercise members mounted thereon,

b. each of said finger exercise members comprising a finger portion into which a finger is inserted, a resilient means actuated by said finger and a connecting member connecting said finger member to said resilient means,

c. upstanding sides on opposite sides of said base and each of said sides being inclined whereby said base may be inverted to incline said finger members and raise same above the level of a support surface whereby the hand may be inverted to a palm-down position and the finger member actuated in this position, and a platform including means to support the limb of a user when said device is being used in the upright base position, said base being movably mounted on said base to be swung out of the way when using said device in the inverted base position.



8. In an exercise device:

a. a base having a hand and wrist exercise device for attachment thereto,

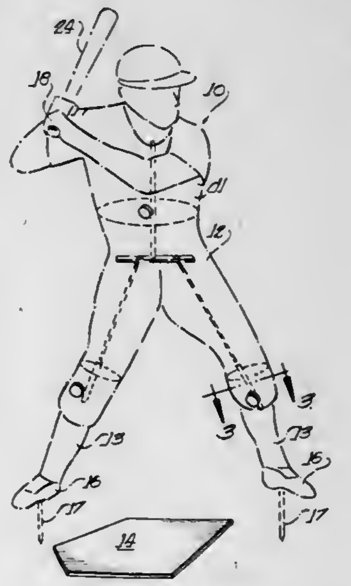
b. said hand and wrist exercise device comprising a frame attached to said base, said frame having support members positioned at the top of said frame and on opposite sides thereof and a hand member resiliently mounted thereon,

c. said hand member being suspended on opposite ends thereof on said frame by a plurality of resilient members, said resilient members each being connected to a different position on said support members, and

d. a removable arm support positionable on said base for use to support the arm while operating the hand member with the hand.

3,871,647
ADJUSTABLE HEIGHT BASEBALL BATTER DUMMY

Arturo O. Tellez, 96 Gila St., Morenci, Ariz. 85540
Filed Aug. 30, 1974, Ser. No. 502,219
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 A **4 Claims**



1. A baseball batter dummy simulating a real batter's stance comprising:

a rigid upper torso body portion containing the batter's chest, arms, hands, and head;

a middle body portion containing the batter's waist and lower portion of the chest and the pair of leg portions through the knee thereof;

a pair of rigid leg and foot portions each associated with one of the leg projections of the middle body portion and telescopically received relative thereto;

the body upper torso portion being telescopically received through the top of the middle body portion;

a stake projecting vertically from each of the feet portions adapted to be inserted into the ground to retain the batter in a batting stance adjacent a plate for pitching practice purposes;

pressure clips disposed in the finger portions of each hand of the batter, the finger portions being thus movable relative to the rigid thumb of each hand to wrap around the handle of a bat to removably retain a bat in the hand in a position simulating the position of the bat ready to hit a pitched ball; and

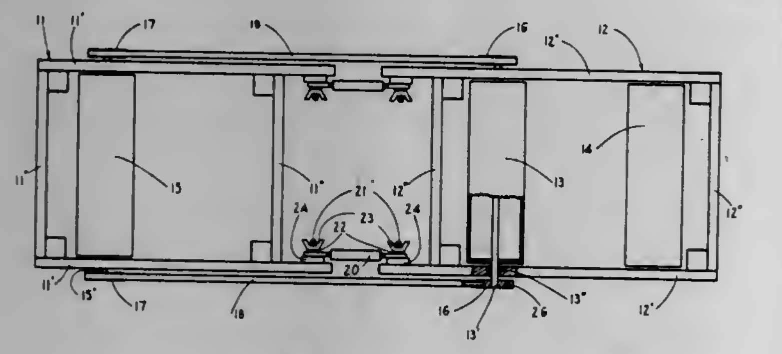
an adjusting mechanism extending through the upper torso, middle body portion, and leg portions and adjustably connecting the same together to provide for telescopic adjustment of the various portions relative to each other to vary the height and stance of the batter.

3,871,648
BICYCLE TRAVEL SIMULATOR
Robert A. Maurer, III, 140 E. Gorham St., Madison, Wis. 53703

Filed July 20, 1973, Ser. No. 381,146

Int. Cl. A63b *69/16*

U.S. Cl. 272—73 **5 Claims**



1. In a bicycle travel simulator wherein frame supported bearing mounted rollers are provided upon which a bicycle can be ridden in place with a front wheel support roller being belt driven by a rear wheel support roller, an improvement comprising in combination,

a. at least one peripheral groove unitary with each belt connected wheel support roller adapted to receive a power transmission belt wherein each said groove is wider at the mouth thereof than at the root,

b. at least one substantially non-extensible endless power transmission belt of greater minimum width than the roots of said grooves operably disposed in said grooves supported wedgelike by the walls of said grooves radially distant from the roots of said grooves, said belt being structured to be compressed deeper within the grooves to substantially increase the operating frictional losses between the wall of said grooves and said belt when the spacing between said wheel support rollers is increased,

c. first adjustment means anchorably connectible in incremental settings to said frame to adjustably space said belt connected wheel support rollers in accordance to the wheel base of a bicycle to be ridden thereon and second adjustment means biasable to variably tension said belt and the depth to which said belt is drawn into said grooves thereby to provide fine adjustment of the frictional loading between said belt and walls of said grooves and of the work expended in pedaling a bicycle thereon, to simulate the effort required to pedal a bicycle under conditions of actual bicycle travel.

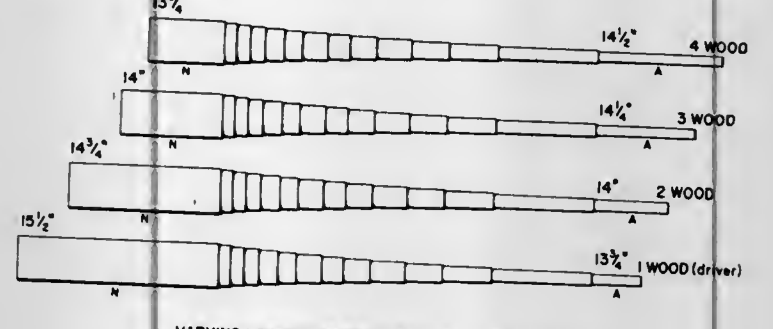
3,871,649
MATCHED SET OF GOLF CLUBS
John Arthur Kilshaw, Netherton, England, assignor to The Dunlop Company Limited, London, England

Filed Oct. 2, 1969, Ser. No. 863,181

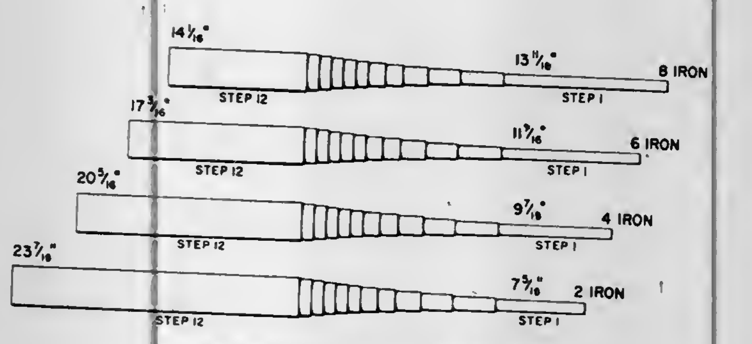
Claims priority, application United Kingdom, Oct. 4, 1968, 47175/68

Int. Cl. A63b *53/00*

U.S. Cl. 273—77 A **9 Claims**



VARYING LENGTHS OF SECTIONS A & N FOR WOODS 1–4



REPRESENTATIVE SHAFTS FOR A SET OF IRONS

1. A matched set of golf clubs having woods and irons, each club of said set comprising a shaft having a club head on one end and a grip on the opposite end and said set comprising a plurality of woods of decreasing shaft length and increasing loft and a plurality of irons of decreasing shaft length and increasing loft, the improvement comprising having the flexural rigidity of the shaft of any wood in the set not greater than that of the shaft of any longer wood in the set and having the flexural rigidity of the shaft of any iron in said set not greater than that of the shaft of any longer iron in said set.

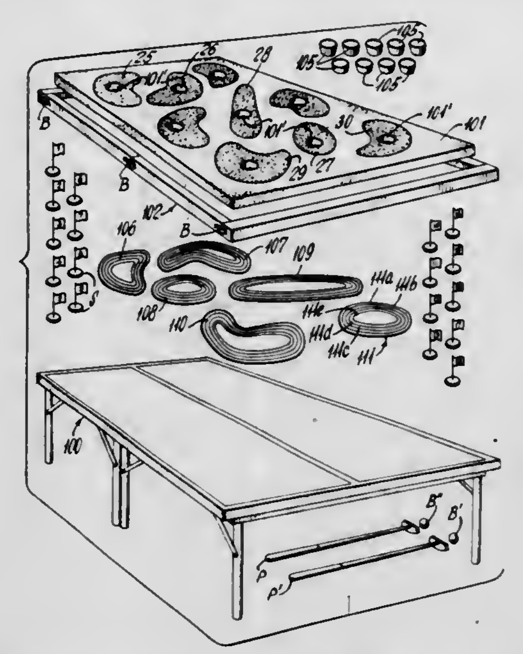
3,871,650
GAME APPARATUS
William J. Casey, 3204 Colony Club Rd., Pompano Beach, Fla. 32506

Continuation-in-part of Ser. No. 112,169, Feb. 3, 1971, abandoned, Continuation-in-part of Ser. No. 881,553, Dec. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 826,807, May 22, 1969, abandoned. This application June 8, 1973, Ser. No. 368,138

Int. Cl. A63f *7/06*

U.S. Cl. 273—87 R **7 Claims**

1. Golf game apparatus comprising a table defining a generally horizontal playing area surface spaced vertically from a surface on which said table is supported, flexible blanket means freely laying on and being removable from said playing area surface and for simulating a golf playing area on the upper surface of said blanket, said blanket means having a plurality of holes therein each constituting means for defining a target hole into which a ball can be propelled, said blanket means being otherwise continuous, flexible means defining at least one mound for insertion beneath said blanket means and constituting means for flexing said blanket means generally only in the areas thereabove under the weight of said blanket means, said last mentioned means constituting a plurality of flexible layer means for disposition one upon the other and being freely movable between said blanket means and said playing area surface for variably changing the contour of the upper surface of said blanket means; and a putting cue comprising a shaft and a head the head having a flat ball striking



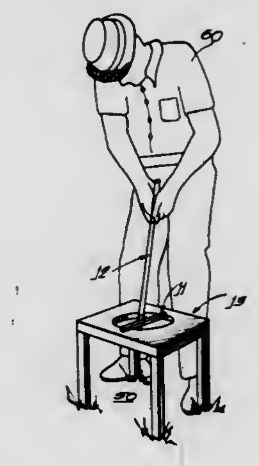
surface lying in a plane normal to the axis of the shaft, whereby said cue is constituted as ball striking means for use by a player standing on the surface supporting said table.

3,871,651
TIP CAT APPARATUS INCLUDING ELEVATED TEE
Mary E. Garcia, 3635 North 155th Terrace, Basehor, Kans. 66007, and Sophie A. Piekarski, 2024 Orville Ave., Kansas City, Kans. 66102

Filed May 2, 1974, Ser. No. 466,181

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 F **1 Claim**



1. A game apparatus for play by one or more individuals on a lawn area and the like, the apparatus comprising, in combination;

a playing stick of an elongated solid cylindrical configuration including cylindrical side wall surfaces, a flat top end, and a flat bottom end, said top and bottom ends disposed parallel to each other and normal to the axis of said playing stick, said stick having a diameter of about one inch and an overall length of about 3 inches;

a batting stick of a solid elongated cylindrical rod configuration formed into a handle portion at the top end thereof adapted to be gripped between the hands of an individual for use of the batting stick, and a striking portion formed integrally on the bottom end portion thereof, said batting stick having a flat top end extending normal to the axis of the batting stick, said batting stick having a bottom end disposed in aligned contact edge extending normal to the axis of the stick offset from the axis of the stick and disposed normal to and including the tangential line extending longitudinally along the side wall surface of the stick;

said striking portion of said batting stick being of an incline tapered flat surface which tapers upwardly from said bottom end in a direction toward said top end at an angle from about 12° to about 15° and terminates at a tangential line extending longitudinally of the side walls diametrically opposed to the tangential line contacting said stick bottom end, the width of said striking surface as measured at the axis of said batting stick being equal to the width of said striking surface as measured at bottom end; said batting stick having a diameter of about 2 inches and an overall length of about 14 inches as measured between said top end and said bottom end thereof;

a table consisting of a flat horizontally disposed top member and four independent identically configured vertically extending leg members adapted to support said top member at a vertical elevation spaced from the ground on which the table is supported;

said top member being square in configuration and having a horizontal flat top surface, a horizontal flat bottom surface, a pair of opposed parallel side edges, and opposed front and back edges;

an opening disposed centrally of said top member and extending completely therethrough between said top and bottom surfaces thereof, said opening being of a diameter less than the length of said playing stick;

a pair of diametrically opposed recesses disposed along the axis of the top member intersecting the midpoints of said opposite side edges, each of said recesses being of an identical semi-circular configuration and defined in said top member top surface adjacent perimeter portions of said opening such that the recesses open into said opening to be contiguous therewith, the overall length as measured between the diametrically opposed outermost surfaces of said recesses being greater than the overall length of said playing stick with said playing stick adapted to be restingly received along the axis of said opening with the ends of said playing stick restingly received in opposite ones of said recesses;

a plurality of vertically extending socket forming recesses, each of said sockets disposed in said top member bottom surface adjacent each of said corners thereof and extending vertically thereinto and opening out of said bottom surface;

each of said leg members being of an identical elongated rectangularly shaped configuration having a rectangular cross-section, a flat top end extending normal to the axis of the leg member, and a bottom end;

each of said bottom ends of said leg member being tapered to a point adapted to assist in the penetration of the lawn surface on which said table is supported for firm supporting of said table in position thereon; and

a plurality of axially elongated solid cylindrical peg members, each peg member having a bottom end and a top end, each peg member associated with one of said top ends of said leg members with said peg bottom end affixed centrally thereof to be axially aligned with the axis of said leg member, said peg projecting upwardly therefrom in a vertical direction and adapted to be removably engaged in associated one of said sockets of said table member, said socket being of a size and configuration complementary to the size and configuration of said peg, the pegs detachably affixing each of said leg members to a corner portion of said top member with said top end of each leg member disposed in juxtaposition with said top member bottom surface when said peg is fully engaged in said recess;

whereby said table top may be rapidly assembled to said legs and said playing stick having its ends restingly supported in said recesses to extend diametrically across said opening for batting with said striking portion of said batting stick.

3,871,652

said handle along said arms and between them to catch a

d. means mounting said first table top member on said base:

c. Said grid being mounted for pivoting with respect to said

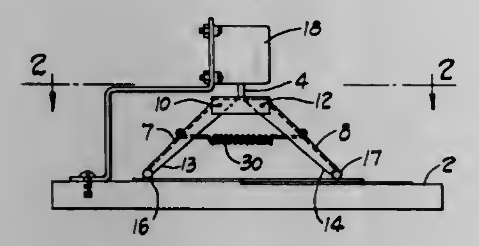
3,871,652
RANDOM SELECTOR SWITCH AND GAME

Donald R. Schreier, 2007 Grandee Ct., Apt. A, Belpre, Ohio 45714

Filed Sept. 20, 1972, Ser. No. 290,716

Int. Cl. A63f *7/06*

U.S. Cl. 273—94 R **18 Claims**



1. A random selector comprising a base, shaft means having an axis extending perpendicular to said base, said shaft means being mounted for rotation about its axis, and means to drive said shaft means at at least a predetermined speed, a pair of diametrically spaced arms, means hingedly supporting said arms on said shaft means for pivoting about an axis lying in a plane transverse of said shaft means axis, said arms being of length greater than the distance between said hinge means and said base, said arms having ends which engage said base when said shaft means is at rest, at least two indicia on said base and disposed to be in position to underly said arm ends when said arm ends engage said base, said arms extending angularly outwardly, relative to said shaft means, and means enabling and causing said arms to move out of contact with said base when said shaft means is rotated at said predetermined speed.

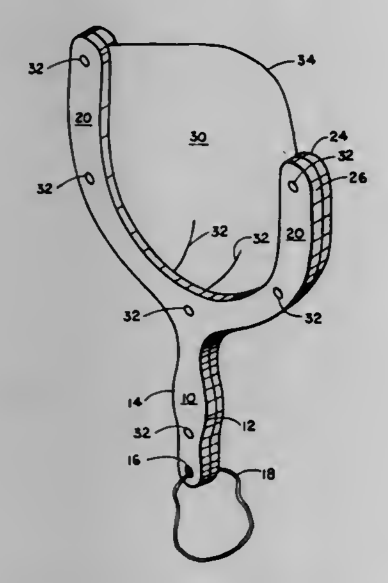
3,871,653
POCKETED CATCHER AND PROJECTOR

Wilbert Gus Sambos, 150 S. Rancho Santa Fe Rd., San Marcus, Calif. 92069

Filed July 9, 1973, Ser. No. 350,072

Int. Cl. A63b *71/02*

U.S. Cl. 273—96 R **11 Claims**



1. An article of sports equipment for catching and throwing a ball comprising:

a. A body having a handle and two arms extending from one end of the handle in bifurcated, generally semi-annular configuration, and their outer ends being parallel, and

b. a sheet of flexible material positioned between said arms and handle end and attached thereto, the sheet being wider and longer than the bifurcation so as to extend to one side of the plane of said arms thereby forming a scoop-like pocket which extends from said one end of said handle along said arms and between them to catch a ball.

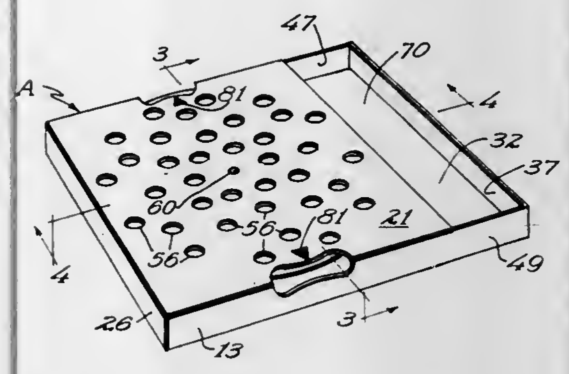
3,871,654
GAME CARTON

Robert A. Bliss, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed July 17, 1974, Ser. No. 489,258

Int. Cl. A63f *3/00*

U.S. Cl. 273—136 C **8 Claims**



1. A game structure including:
a carton having a rectangular bottom panel,
side walls of equal height extending upwardly from opposite sides of said bottom panel,
a top panel hinged to the upper edge of one of said side walls,
an outer side wall hingedly connected to the side of said top panel,
means connecting said walls and panels in tubular relation,
a top panel liner panel secured to one of said side walls and underlying said top panel,
flanges hinged to two opposed edges of said top panel liner panel and extending downwardly therefrom into engagement with said bottom panel, and
said top panel having apertures therethrough adapted to accomodate game pieces adapted to rest upon said top panel liner panel.

3,871,655
CONVERTIBLE GAME TABLE ASSEMBLY

Melvin Zimmers, Westport, and Gary A. Gerber, Weston, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Aug. 8, 1973, Ser. No. 386,599

Int. Cl. A63d *15/04*

U.S. Cl. 273—123 R **21 Claims**

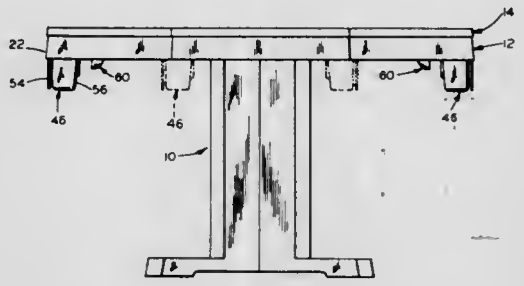
14. In a convertible game table, the combination comprising:

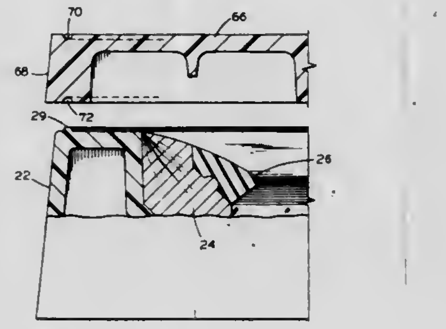
a. a base;

b. a first table top member having a periphery and a central portion, said table top member also having at least one aperture extending downwardly therethrough adjacent the periphery thereof and track means on the lower surface thereof adjacent said aperture and extending from adjacent said aperture towards the middle of said first table top member and terminating at a point adjacent the central portion of said table top member;

c. receptacle means slidably seated in said track means for movement between a first position adjacent said aperture and the periphery of said table top member to receive an object falling through said aperture and a second position wherein the outermost edge of said receptacle means is spaced substantially inwardly from said aperture and the periphery of said first table top member and is adjacent the central portion of said table top member to avoid interference with the legs of persons seated about said table;

d. means mounting said first table top member on said base; and





e. a second table top member overlying and removably seated upon said first table top member.

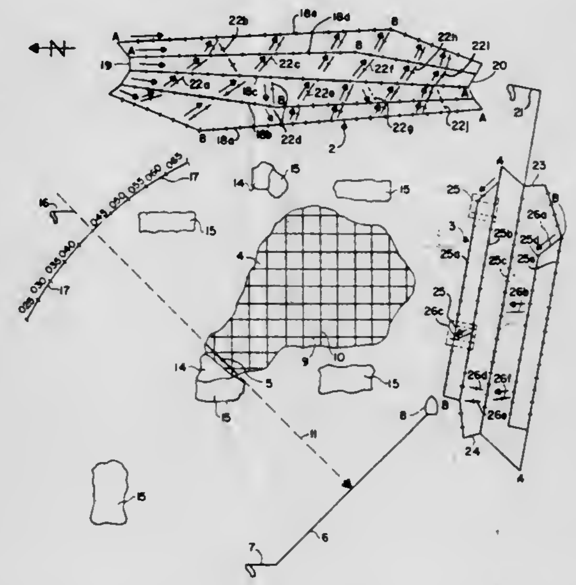
3,871,656
SAILING GAME APPARATUS

Jerry N. Selness, 1718 Shady Grove, Bossier City, La. 71010

Filed Dec. 2, 1971, Ser. No. 203,970

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 B **3 Claims**



1. A sailing game for use with playing pieces simulating sailing vessels comprising:

a. A grid having alternate windward position marks, intersecting starboard and port tack lines, compass bearings, and an arrow indicating wind direction inscribed thereon;
b. A transparent overplay positioned over said grid and having a leeward mark starting point and a windward mark finishing point inscribed thereon, said leeward mark starting point and said windward mark finishing point being positioned essentially across said grid from each other;

c. Said grid being mounted for pivoting with respect to said overlay to vary coincidence of said alternate windward position marks and said windward mark to effect a simulated change in wind direction; and

d. Playing pieces adapted to sequentially traverse said grid along said starboard and port tack lines at a predetermined rate from said leeward mark starting point to said windward mark finishing point.

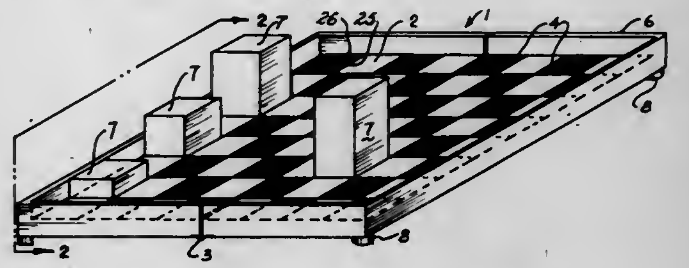
3,871,657
MULTILEVEL CHESS OR CHECKER BOARD

Marilyn J. Lorenz, 4188 Lockport Dr., Bridgeton, Mo. 63044, and Michael B. Larson, 6672G Peachtree Industrial Blvd., Doraville, Ga. 30340

Filed Mar. 20, 1974, Ser. No. 453,097

Int. Cl. A63f *3/02*

U.S. Cl. 273—131 AD **5 Claims**



5. A checkerboard for playing a game, comprising:
a playing surface, said playing surface including a layered construction including a first layer having an outer surface, said outer surface having a plurality of alternately colored squares displayed thereon, said squares being arranged in a checkerboard design, each of said squares having a length dimension and a width dimension, a second layer permitting attachment of a plurality of supporting pieces, and a third structural layer;
a peripheral lip extending around said playing surface; and a plurality of supporting pieces for varying the topography of said playing surface, said supporting pieces having length and width dimensions corresponding to the length and width dimensions of individual ones of said squares, said supporting pieces including means for removably mounting individual ones of said supporting pieces on said playing surface, equal numbers of individual elements of said supporting piece plurality having heights of one-half inch, 1 inch, 1½ inches and 2 inches.

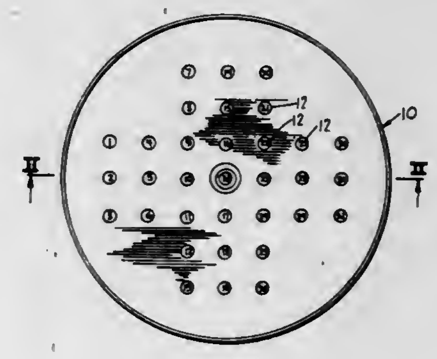
3,871,658
BOARD GAME APPARATUS

Milton C. Shaw, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 28, 1974, Ser. No. 501,334

Int. Cl. A63f *3/00*

U.S. Cl. 273—133 **3 Claims**



1. A plurality of generally cylindrical playing pieces, a game board having defined thereon one central position, a matrix of other positions disposed about said central position, each position being defined by round hole dimension for snug fitting engagement with each of said playing pieces, each position having a switch disposed therein, said switch in said central position being normally open and all other switches being normally closed, an electrical power source, a bell, and wiring connecting all of said switches, the electrical power source and said bell in series.

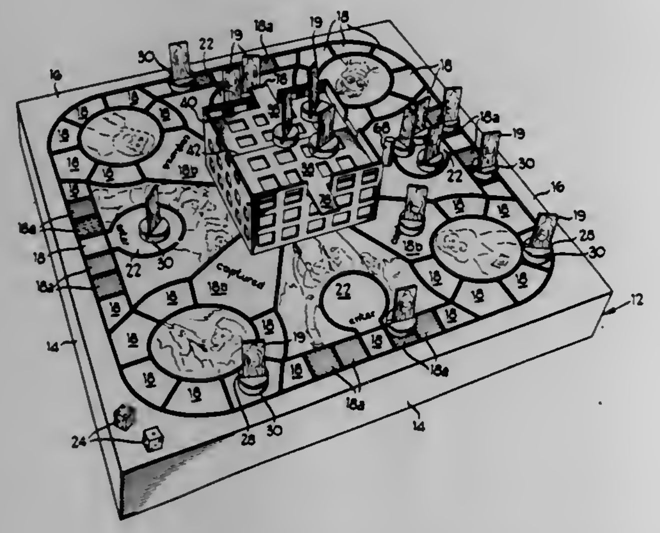
3,871,659
BOARD GAME APPARATUS

Jeffrey D. Breslow, Highland Park; Gordon A. Barlow, Skokie; Joseph M. Burck, Chicago, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 9, 1974, Ser. No. 468,516

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 AD **11 Claims**



1. In a board-type game apparatus including a gameboard having a playing surface with a plurality of stations defining at least one path of travel, a plurality of playing pieces positionable on said gameboard and movable over the playing surface along said path of travel, and means for determining the movement of the playing pieces, the improvement comprising: means defining a holding station on the gameboard at which at least one playing piece is positionable, means defining a receiving area for receiving at least one playing piece, and manually manipulatable randomly operable actuating means operatively associated between said holding station and said receiving area for moving a playing piece therebetween only during certain actuations of the actuating means as determined by the random operation thereof.

3,871,660
WORD GAME APPARATUS

Ardie Victor Estes, 4305 Kinglet, Houston, Tex. 77035

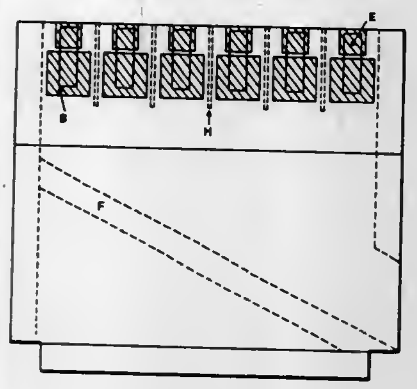
Filed Jan. 21, 1974, Ser. No. 434,852

Int. Cl. A63f *3/00*

U.S. Cl. 273—135 D **4 Claims**

1. A recreational and educational game apparatus comprising:

- a plural set of congruent, indicia bearing tiles,
- a retaining rack adapted to display the elements of a plural subset of said set of tiles in an ordered array wherein said elements may be so disposed as to have the sequence of their respective indicia convey information,
- a plurality of first identical and independently operable retaining and display means each capable of releasably and replacably receiving a single element of said set of said tiles whereby a plurality of said tiles, when simultaneously received by said first means may define said array.
- independently operable replacement means associated with each of said first means whereby operational engagement of a second said tile with any of said first means which already contains a first tile causes ejection of only said first tile from said array and retention of said second tile



by said first means thereby effecting replacement of said first tile by said second tile.

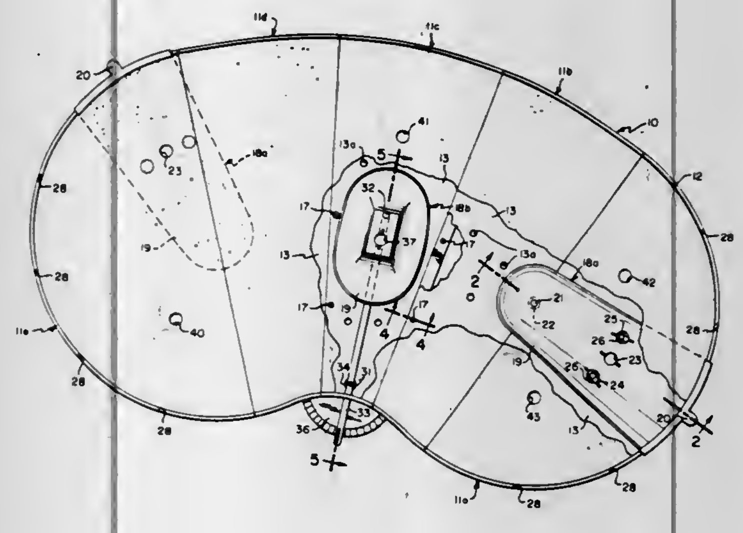
3,871,661
PUTTING GREEN

William S. Korff, 9215 Valley Stream Rd., Clarence, N.Y. 14031

Filed Oct. 6, 1972, Ser. No. 295,704

Int. Cl. A63b *69/36*

U.S. Cl. 273—178 B **8 Claims**



1. A putting green comprising a base support, a layer of artificial turf upon said base support and coextensive therewith to form a putting surface, a bumper around the perimeter of said base support and extending sufficiently above said putting surface to prevent egress of a golf ball therefrom, at least one contour changer means, each contour changer means including a contour body, said body being disposed between said base support and said layer of artificial turf for imparting a contour to said putting surface, and handle means connected to said contour body and extending away from said putting surface for moving said contour body to different positions relative to said putting surface, at least one opening in said layer of artificial turf disposed in cooperative relation with each contour changer means each contour body similarly having at least one opening and each of said openings being registerable when said contour body is moved to one of said different positions to jointly define a cup, and plug means for closing at least one of said openings when said openings are not in registry with each other.

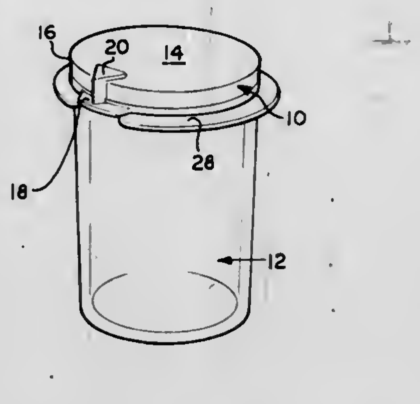
3,871,662
CHILD-RESISTANT CLOSURE

K. Kevin Hepp, Perrysburg, and James H. Price, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 11, 1974, Ser. No. 432,527

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—223 **8 Claims**



1. A child-resistant closure and container combination comprising a flexible closure member having a top portion and a depending peripherally continuous wall portion, the wall portion having an interior surface, the interior surface having a pair of inwardly projecting locking lugs of dissimilar configuration and an inwardly projecting camming lug thereon, one of said locking lugs having a first configuration and the other of said locking lugs having a second configuration, said pair of locking lugs being of limited annular extent and contained within a separate semicircular span of the interior surface of said closure wall portion from said camming lug, and a container having a mouth portion, the mouth having an outwardly projecting retaining rib adjacent an upper end thereof, said retaining rib being substantially continuous with a pair of slots of dissimilar configuration formed therein, one of said slots having a first configuration of sufficient size to allow said one locking lug to pass through said rib and the other of said slots having a second configuration of sufficient size to allow said other locking lug to pass through said rib, said locking lugs and said camming lug engaging the lower surface of said retaining rib upon application of the closure to the container to hold the closure on the container, and said locking lug preventing removal of said closure from said container except when said one locking lug is positioned adjacent said one slot and said other lug is positioned adjacent said other slot.

3,871,663
RECORD CONTACT SPINDLE

Frederick Roland Stave, Oaklandon, Ind., assignor to RCA Corporation, New York, N.Y.

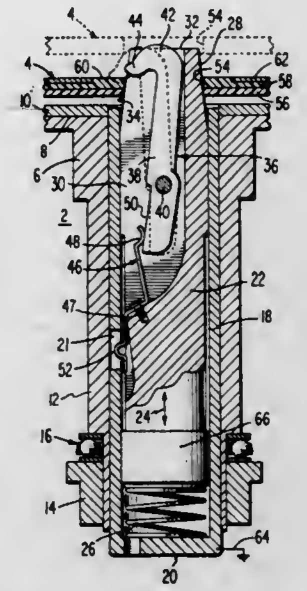
Filed Mar. 12, 1973, Ser. No. 340,545

Claims priority, application United Kingdom, Apr. 19, 1972, 18044/72

Int. Cl. G11b *9/06;* **H05f** *3/02*

U.S. Cl. 274—10 S **12 Claims**

1. A playback system for disc records of the type having a centrally apertured major surface comprising exposed conductive material in the vicinity of the aperture and susceptible to accumulating an electric charge of sufficient magnitude to damage a pickup device for transducing said record comprising: a rotatable turntable and a record centering spindle mounted for rotation with said rotatable turntable, a conductive member mounted in said spindle for movement between (1) a first position sufficiently withdrawn within said spindle to permit record passage to a playback position centered about said spindle and supported by said turntable, and (2) a second position extending sufficiently from said spindle to permit electrical contact between said member and the exposed conductive material of a major surface of a record when said record is disposed in said playback position with said turntable in supporting contact with a surface of said record opposite to said major surface, and means coupling said conductive member through said spindle to a point of reference potential for said playback system.



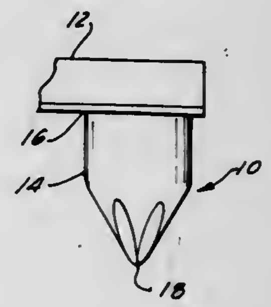
3,871,664
PHONOGRAPH STYLUS

George F. Hughes, Williston Park, N.Y., assignor to Diamagnetics, Inc., Freeport, N.Y.

Filed May 29, 1973, Ser. No. 364,829

Int. Cl. G11b *3/44*

U.S. Cl. 274—38 **4 Claims**



1. A phonograph stylus for use with a transducer for transposing mechanical variations on the opposed walls of the grooves of a phonograph record into electrical signals comprising: an elongated body portion having a mounting portion at one end and an active portion tapering to a tip opposite said one end, said tip being defined by the intersection of four convex faces, wherein two of said faces intersect to form a first curved edge which when engaged with a record is substantially tangent to one of the walls of said groove over a major portion of its length and the remaining two of said faces intersect to form a second curved edge substantially tangent to the other of the walls of said groove over a major portion of its length.

3,871,665
ROD WIPER ASSEMBLY

John A. Burke, Rocky River, Ohio, and Thorval L. Berg, Warminster, Pa., assignors to Greene, Tweed & Co., Inc., North Wales, Pa.

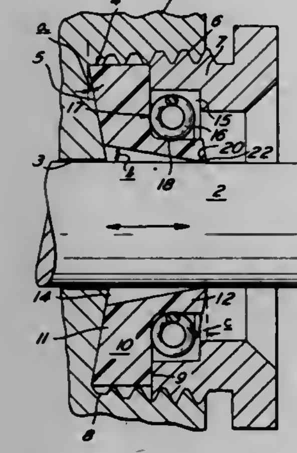
Filed Apr. 9, 1973, Ser. No. 349,353

Int. Cl. F16j *15/00;* **E21b** *33/08*

U.S. Cl. 277—24 **9 Claims**

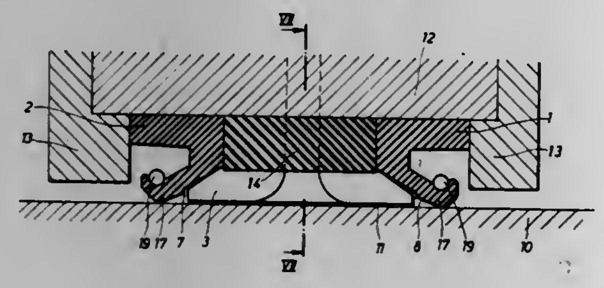
1. A piston rod wiper assembly arranged for circumferential contact of a wiper element of said assembly with a reciprocating piston rod comprising:

- a housing having a first central axis opening through which the piston rod is adapted to reciprocate, said housing being further provided with a concentric cavity at its outer end of greater diameter than that of said first central opening, thus forming an inner rear wall for said cavity; an annular wiper element formed of rigid, durable plastic material, fixedly arranged in said cavity; said wiper element having a body portion and an integral lip portion of reduced diameter extending axially from the body portion and having an internal circumferential face continuous with that of said body portion and an outer circumferential face intersecting the forward wall of said body portion; an annular retaining collar attached to the housing with the inner face of the collar contacting the forward wall of the body portion of said element to press the rear wall of the body portion into abutment with the rear wall of said cavity thereby forming a static seal; said retaining collar further having a flange extending radially inward toward said lip portion, thereby forming a channel between said flange and said wiper element; spring means in said channel surrounding the outer circumferential face of at least part of said lip portion adjacent its intersection with said body portion, the central opening in the annular wiper element being frusto-conical with the major diameter of the frustum being greater than that of the rod passing therethrough and its minor diameter slightly less than that of the rod, so that only the tip of the lip of the wiper element is in contact with the rod while the remaining inner surface of the wiper element slopes progressively away from said rod surface.



3,871,666
SHAFT PACKING

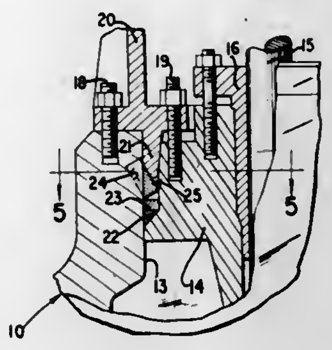
Dietmar Franz, Lampertheim; Willi Schoneberger, Wiesbaden, and Gerd Upper, Unterflockenbach, all of Germany, assignors to Firma Carl Freduenburg, Weinhelm, Germany
Filed Mar. 5, 1973, Ser. No. 338,192
Claims priority, application Germany, Mar. 3, 1972, 2210209
Int. Cl. F16j *15/32*
U.S. Cl. 277—59 **8 Claims**



1. A shaft packing comprising two lip type sealing elements of a rubber-elastic material, a damming component between said two sealing elements, said damming component reducing free space between a shaft and the sealing elements over part of the shaft periphery to a slit which substantially blocks oil from flowing therethrough, and an oil passage at the remaining circumference at both ends of the damming component, the passage traversed by the oil providing a free space and being so shaped that laminar flow will reliably occur for a given shaft speed.

3,871,667
PRESSURE SEALED BONNET PACKING RING

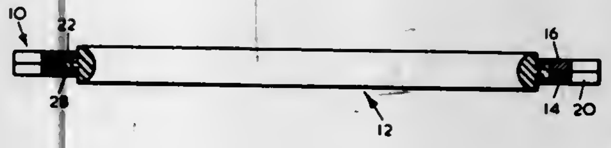
Bruce Thompson, Wethersfield, Conn., assignor to Ametek, Inc., New York, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,048
Int. Cl. F16j *15/06;* **F16k** *31/50*
U.S. Cl. 277—115 **3 Claims**



1. In a valve, the combination of a valve chamber having an opening therein, a bonnet positioned in said opening and defining a space between said bonnet and the wall of said opening, said bonnet having an annular portion thereon defining a shoulder within said space, there being a triangular sectioned annular groove in the wall of said opening above said bonnet shoulder, an annular packing ring within said space upon said bonnet shoulder, and means for mounting said bonnet within said opening and having an annular projection thereon extending into said space to urge the upper portion of the packing ring into said triangular shaped annular groove.

3,871,668
VACUUM SEALS

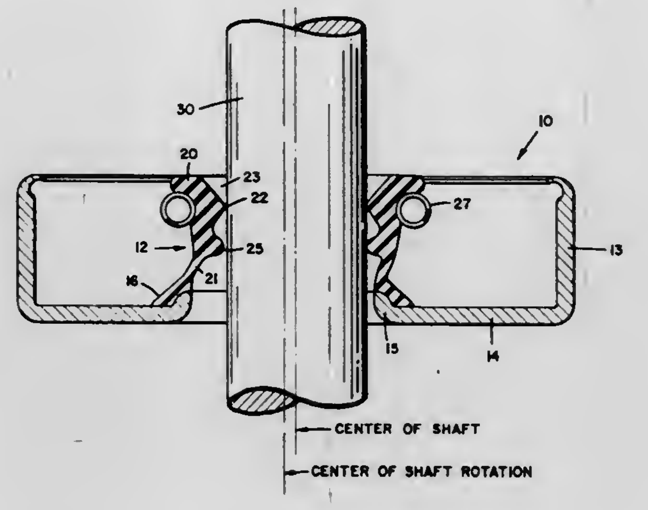
John Norman Coker, 21 Scallows Close, Three Bridges, Sussex, and Basil Dixon Power, 3 Mount Close, Pound Hill, Sussex, both of England
Filed Aug. 2, 1973, Ser. No. 385,082
Claims priority, application Great Britain, Aug. 4, 1972, 36639/72
Int. Cl. F16j *15/00*
U.S. Cl. 277—180 **4 Claims**



1. A vacuum sealing member comprising a continuous carrier ring of rigid material and a sealing ring of elastomeric material, said carrier ring comprising a pair of substantially identical continuous separable complementary half carriers mutually abutting face to face and each half carrier including in radial section a continuous groove, the two grooves together forming in radial section a T-shaped recess in the carrier ring, said sealing ring having sealing surfaces extending beyond the aggregate thickness of said half carriers and including means extending radially outwardly therefrom in the diametric plane defining an annular flange of complementary radial section to the recess in the carrier ring to secure the sealing ring when the two carrier halves are brought together in mutual abutment and latching means integral with said half carriers for aligning and joining the two half carriers with respect to each other.

3,871,669
ROTARY SHAFT SEAL WITH SHAFT RUNOUT PROTECTION

James A. Repella, Madison Heights, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed June 14, 1973, Ser. No. 369,974
Int. Cl. F16j *15/32*
U.S. Cl. 277—182 **5 Claims**

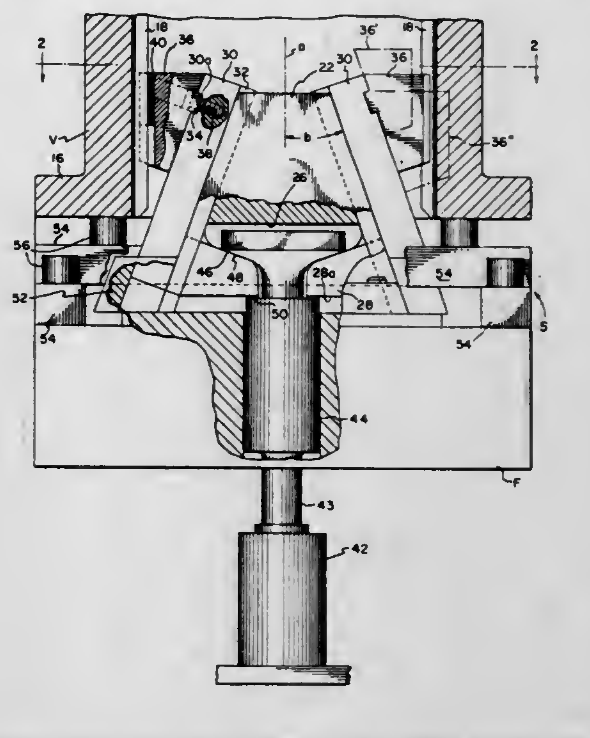


1. A shaft seal including in combination:
a rigid case having an anchor portion,
an elastomeric member having an anchor portion bonded to the anchor portion of said case and having a lip body, said lip body being joined to said anchor portion of said elastomeric member through a thin flexing section which is thinner than said body, and comprises a relatively short frustoconical shell,
said lip body including a sealing lip with an edge and a pair of surfaces meeting at said edge, one siad surface on the air side of the seal and one said surface on the oil side of said seal, the surface on said air side having an annular radially inwardly-extending projection spaced axially from said seal lip and terminating at a normally larger radius than said seal lip and not normally in engagement with a shaft during operation and serving to stablize said seal lip during extreme runout conditions, said projection being an integral portion of said lip body.

3,871,670
CHUCK APPARATUS FOR CLAMPING VARIED SIZED WORKPIECES TO BE MACHINED

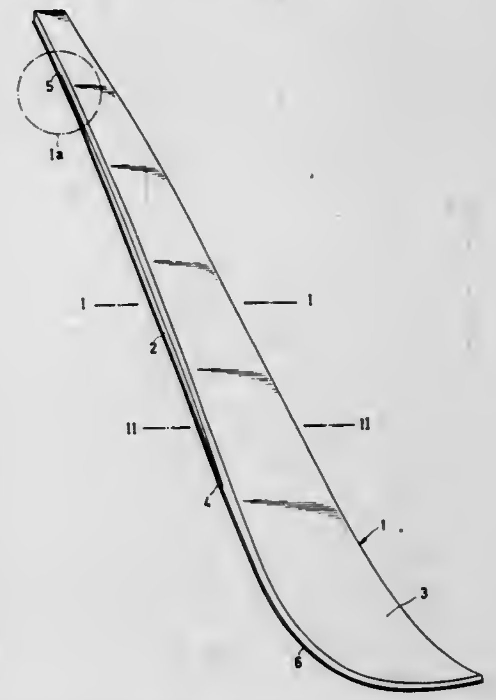
Dale W. Wright, Saginaw, Mich., assignor to Miles Machinery Company, Saginaw, Mich.
Filed Aug. 24, 1973, Ser. No. 391,286
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 R **6 Claims**

2. A chuck assembly for clamping workpieces comprising varied sized tubular valve bodies including:
work support means including an axially extending chuck body, with front and rear ends;
jaw carrying members mounted on said body for advancing and return movement axially and radially;
jaw mounting surfaces on said members near the front ends thereof;
a replaceable jaw having an axially extending side surface, fixed on each of said surfaces to project radially a predetermined distance;
power operated means engaging said jaw mounting members for moving the members to grip and release a valve body; and
said work support means incorporating a rest and clamp member body of variable axial height to synchronize with the radial projection of the jaws, comprised of stacked rest and clamp members mounted one atop the other in interfitted relationship to receive said valve body, and against which said jaws clamp said valve body when said power operated means moves said jaw mounting members in a direction to grip the valve body.



3,871,671
RADIAL SKI HAVING A PROFILED RUNNING SURFACE

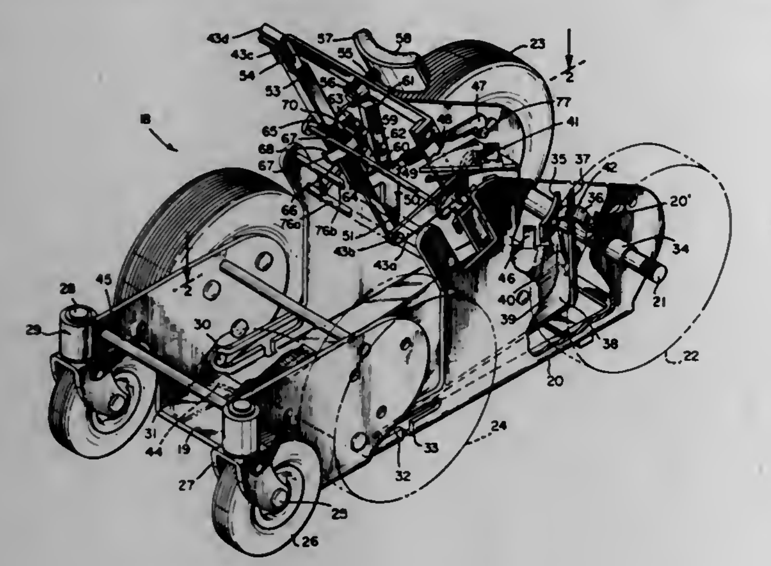
Heinz Bildner, Traunsteiner Strasse 57, 8221 Seebruck, Germany
Filed June 4, 1973, Ser. No. 366,615
Claims priority, application Germany, June 8, 1972, 2227980; Feb. 27, 1973, 2309782
Int. Cl. A63c *5/04*
U.S. Cl. 280—11.13 E **10 Claims**



1. A ski having a profiled running surface which is symmetric to the longitudinal axis of the ski and defined at both sides by edges of wear-resistant material, characterized in that at least one guide strip is provided at each side of the ski forming a further edge projecting laterally over an edge of wear-resistant material, in that each said guide strip extends in excess of one-half the longitudinal length of the ski, and in that each said guide strip has its lateral projection diminished continuously from the middle of the ski towards the tip end and tail end thereof.

3,871,672
WALKING-ROLLERSKATE DEVICE

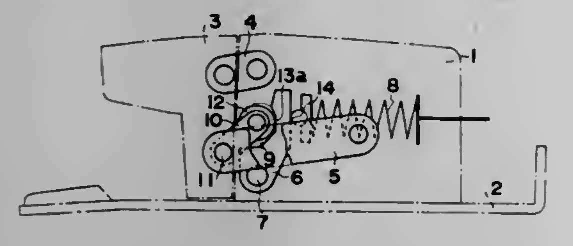
Andrew Bardy, 235 E. 73rd St., New York, N.Y. 10021
Filed May 18, 1973, Ser. No. 361,502
Int. Cl. A63c *17/20*
U.S. Cl. 280—11.21 **10 Claims**



1. A walking-skate device comprising in combination: a platform means divided into fore and aft portions; and a hinge means pivotably connecting the fore portion to the aft portion including rear wheel means mounted revolvably and supportedly on a rearward portion of the aft portion; each of foreportion rearward and forward wheel means mounted respectively at rearward and forward portions of the fore portion supportedly and revolvably thereon, at least one of the foreportion forward and rearward wheel means being pivotable about an upright axis; including toe-shoe-structure-securing means for retaining the fore portion onto a toe-shoe structure; and a rearward securing means for securing the rearward platform portion to a rearward portion of a shoe structure.

3,871,673
SKI BOOT HEEL BINDING

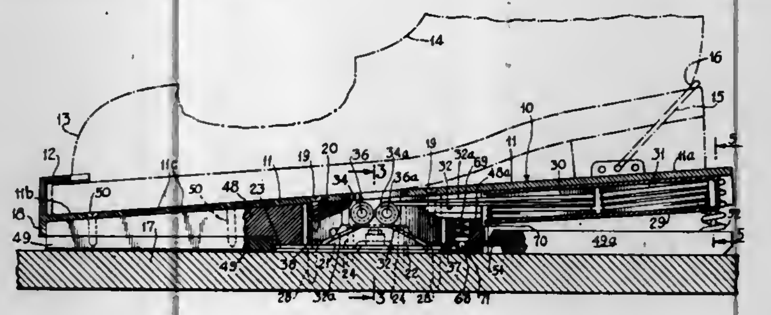
Masahiro Murata, Matsudo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1973, Ser. No. 426,026
Claims priority, application Japan, Dec. 25, 1972, 48-272
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **4 Claims**



1. A ski boot heel binding comprising a base adapted to be attached to a ski, a supporting block mounted on said base, a jaw member moveable between a boot heel engaging position and a boot heel release position, link means connecting said jaw member to said supporting block, a lever pivotally connected at its lower end to said supporting block, said lever having a longitudinally extending concave surface formed in its front face, a compression spring acting on the back face of said lever and resiliently biasing said lever forward, a rolling link pivotally connected at its front end to the lower portion of said jaw member, a roll connected to the rear end of said rolling link and contacting the upper portion of said concave surface when said lever is in the boot heel engaging position, said compression spring biasing said jaw member in the boot heel engaging position, said roll adapted to move down said concave surface of said lever against the spring force of said compression spring to a point below the dynamic production of said compression spring when said jaw member moves from the boot heel engaging position to the boot heel release position.

3,871,674
SKI SAFETY DEVICE

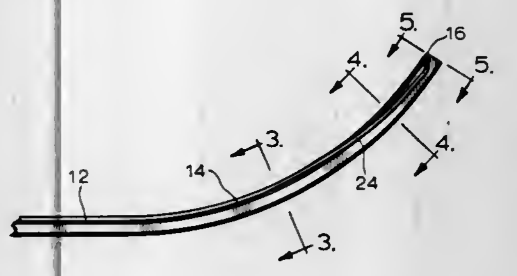
Thomas C. Bunn, Jr., 42 Southport Woods Dr., Southport, Conn. 06490
Filed June 3, 1974, Ser. No. 475,751
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 N **27 Claims**



1. A ski safety device for minimizing transmission of injurious forces to a skier's legs by providing controlled excursion of a skier's foot from normal alignment with a ski upon the occurrence of predetermined rotational and lifting forces, said device being an assemblage adapted for mounting at the foot engaging portion of a ski and comprising an elongated tread portion having means at the forward and rear ends thereof for firmly clamping a ski boot thereto, a mounting plate for securing to the ski having upwardly projecting means interfitting with coacting means centrally of said tread portion in a manner to permit rotary movement and lifting movement of the tread portion with respect to said mounting plate, and said tread portion and mounting plate being joined together by tensioned strands extending from anchor points on said mounting plate radially and circumferentially spaced with respect to said upwardly projecting means through guide means at the sides of said tread portion above said mounting plate to tensioning means longitudinally spaced from said mounting plate.

3,871,675
SNOWMOBILE SKI

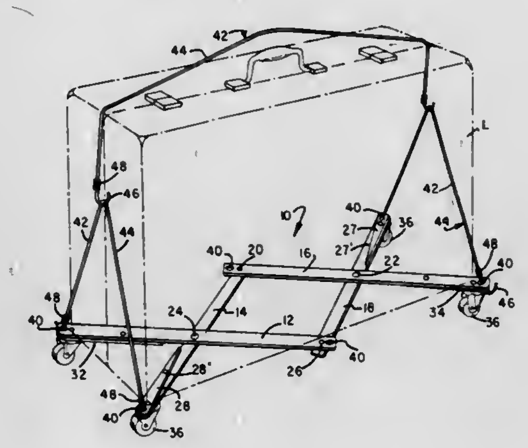
Jerome E. Lund, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc.,, Thief River Falls, Minn.
Filed Jan. 5, 1973, Ser. No. 321,120
Int. Cl. B62m *27/02*
U.S. Cl. 280—28 **7 Claims**



1. A snowmobile ski configured to reduce or eliminate the spraying of snow backwards onto occupants of a snowmobile and comprising an elongated body having a generally straight portion for riding upon the snow, an upwardly curved forward portion terminating in a leading tip, and opposed transversely extending longitudinal edges, the transverse edges solely on the upwardly curved forward portion of the ski having portions depending laterally downwardly near said leading tip to deflect snow away from occupants of said snowmobile when said snowmobile is in motion.

3,871,676
PORTABLE LUGGAGE OR LOAD CARRIER

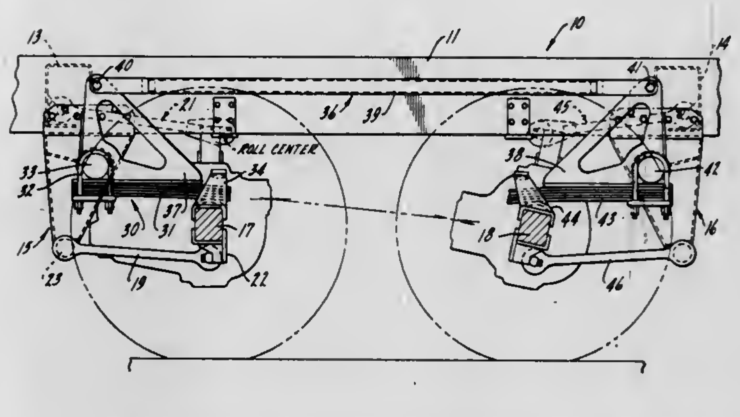
Charles J. Renard, 356 Vincent Pl., and Louis L. Rifken, 344 Vincent Pl., both of Elgin, Ill. 60120
Filed Feb. 1, 1974, Ser. No. 438,871
Int. Cl. B62d *21/14*
U.S. Cl. 280—35 **6 Claims**



1. A portable luggage carrier comprising at least four interconnected links pivotally connected, with each link pivotally connected to another link intermediate the opposite ends and also pivotally connected to another link adjacent their ends so that said interconnected links form a lazy-tongs type of linkage arrangement whereby said links may be pivoted to an extended elongated luggage carrying position or to a retracted no-luggage carrying position where the links are pivoted to lie adjacent and substantially contiguous to each other, a roller or caster secured to the outer ends of each of said links whereby the luggage carrier may be rolled or wheeled on a floor or ground surface with the luggage supported thereon, said links having means associated therewith whereby the top portions of the links are on the same horizontal plane so that the bottom of the luggage rests flat on the interconnected links, the outermost ends of each of said links having means to which straps are secured, which straps are secured to the luggage to retain the luggage on said luggage carrier while the carrier is rolled on a floor or ground surface.

3,871,677
HEAVY DUTY TRUCK SUSPENSION

Wallace J. Blank, and Thomas H. Watson, both of Oshkosh, Wis., assignors to Oshkosh Truck Company, Oshkosh, Wis.
Filed Oct. 4, 1971, Ser. No. 186,296
Int. Cl. B60g *11/20*
U.S. Cl. 280—104.5 A **16 Claims**

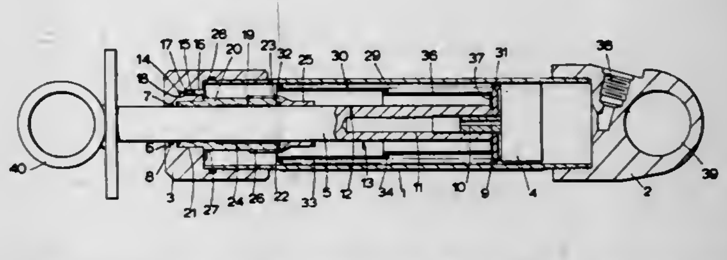


1. A suspension for a tandem axle system, said suspension including

a pair of support members for each axle connected to a base structure,
the pair of support members associated with each axle being connected to said base structure outside the axle span,
first torque transmitting members connecting each axle, below its axis, to its associated support members,
second torque transmitting members connecting each axle, above its axis, to the base structure,
said torque transmitting members being constructed and arranged to substantially eliminate axle hop,
a vertical force transmitting member connected to each support member and engaging an associated axle in force transmitting relationship,
means for transmitting forces imposed on one axle to another axle,
said means for transmitting forces from axle to axle including
a first lever member pivotally connected to a support member and associated with said vertical force transmitting member in such fashion as to be progressively rotated in a given direction upon progressive imposition of vertical forces on the axle,
a force transmitting member pivotally connected at one end portion to the aforesaid first lever member and, at the other end portion thereof, to a second lever member,
said second lever member being associated with the other axle in the tandem axle system in substantially the same functional relationship as the afore-described first lever member,
whereby forces causing rotation of one lever member are transmitted to said other lever member, and
means for varying the ratio of force distribution from axle to axle,
said varying means including means for connecting each end portion of the force transmitting member to its associated lever member at selected radial distances from the point of rotation of each lever member about its associated support member.

3,871,678
SUSPENSION UNITS FOR VEHICLES

Philip Augustus Taft, and Stuart Bruce Dawson, both of Solihull, England, assignors to Girling Limited, Birmingham, England
Filed Nov. 15, 1973, Ser. No. 416,204
Claims priority, application United Kingdom, Dec. 2, 1972, 55776/72; Apr. 5, 1973, 16235/73
Int. Cl. B60g *11/28*
U.S. Cl. 280—124 F **10 Claims**



1. An hydro-pneumatic suspension unit of the self-levelling type for a vehicle comprising a cylinder, a closure for one end of said cylinder, a piston-rod assembly defined by a piston adapted to work in said cylinder, and a piston-rod carrying said piston and adapted to work through said closure, a pressure chamber containing gas for supporting a load on the unit, an inlet for connection to a source of high pressure liquid, an inlet valve incorporated in said closure for controlling liquid flow through said inlet into the unit, means for maintaining the effective length of the unit at a predetermined value irrespective of the load, resilient means acting in association with said piston-rod assembly to control operation of said inlet valve, and a collapsible sub-assembly incorporating said resilient means to limit the maximum effective length which said resilient means can attain, said sub-assembly being engageable with said inlet valve to close said inlet valve when the effective length of said unit attains a predetermined extended value, further extension of said unit beyond the said extended value being opposed by said resilient means after collapse of said sub-assembly.

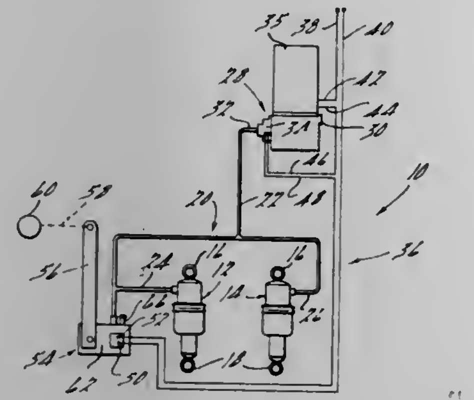
3,871,679
VEHICLE LEVELING SYSTEM

Johan H. Keijzer, Hasselt; Louis J. Jossa, Truiden; Herman E. A. Renders, Diepenbeek, and Alexandru Oancea, Zepperen, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Germany

Filed June 14, 1973, Ser. No. 370,169

Int. Cl. B60g *11/56, 17/00*

U.S. Cl. 280—124 F **12 Claims**



1. In combination with a leveling system for a vehicle having sprung and unsprung portions, at least one air pressure operated leveling strut for varying the attitude between the sprung and unsprung vehicle portions, an electrically energized air compressor for supplying pressurized air to said strut, first circuit means for communicating pressurized air between the compressor and the strut, second circuit means for communicating electrical energy to the compressor from a source thereof, the improvement which comprises,

a leveling valve responsive to orientation of the sprung vehicle portion below some predetermined position for completing the second circuit means and thereby energizing the compressor, and responsive to orientation of the sprung vehicle portion above some predetermined position for communicating said first circuit means with a relatively lower pressure condition, said valve comprising
a valve housing defining first and second chambers,
an oscillatable actuating shaft journaled in said body and extending into each of said chambers,
actuating means secured to said shaft in each of said chambers,
switch means in one of said chambers actuatable by one of said actuating means, and
valve means in the other of said chambers actuatable by the other of said actuating means for communicating the first circuit means with the relatively lower pressure condition.

3,871,680
VEHICLE SUSPENSION SYSTEM

Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissen Motor Company, Limited, Yokohama, Japan

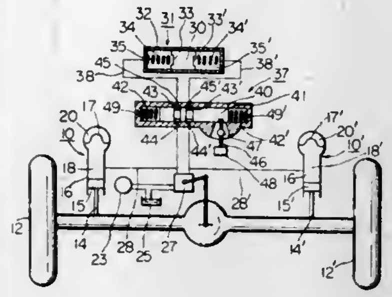
Filed Mar. 22, 1973, Ser. No. 343,965

Claims priority, application Japan, Mar. 27, 1972, 47-29702

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **21 Claims**

1. In a vehicle suspension system of the strut type, comprising first and second suspension struts having cylinders formed therein with fluid chambers filled with pressurized fluid and pistons slidably accommodated in said cylinders and provided with piston rods, hydropneumatic spring means connected to said cylinders and having gas chambers, and levelling means having a fluid pump fed from a fluid reservoir to pump fluid under pressure through at least one levelling valve responsive to the vehicle level and arranged to communicate with said fluid reservoir and first and second suspension struts to automatically maintain the effective lengths of said suspension struts constant independently of the load of the vehicle; the improvement comprising accumulator means having two auxiliary fluid chambers and at least one auxiliary gas chamber formed therebetween; normally open valve means connected to and between the two auxiliary fluid chambers and the respective fluid chambers of said first and second suspension struts; and sensor means for sensing a horizontal component of force exerted on the vehicle said sensor means being operatively connected to said valve means to close said valve means to isolate said two auxiliary fluid chambers of said accumulator means from said respective fluid chambers of said first and second suspension struts in response to exertion of said horizontal component of force being sensed, in which the accumulator means includes a cylinder, two pistons slidably mounted within the cylinder, and two spring members for urging the respective pistons away from each other, the auxiliary gas chamber being defined between the two pistons.



3,871,681
VEHICLE SUSPENSION DEVICE CAPABLE OF CORRECTING THE TRIM OF THE VEHICLE

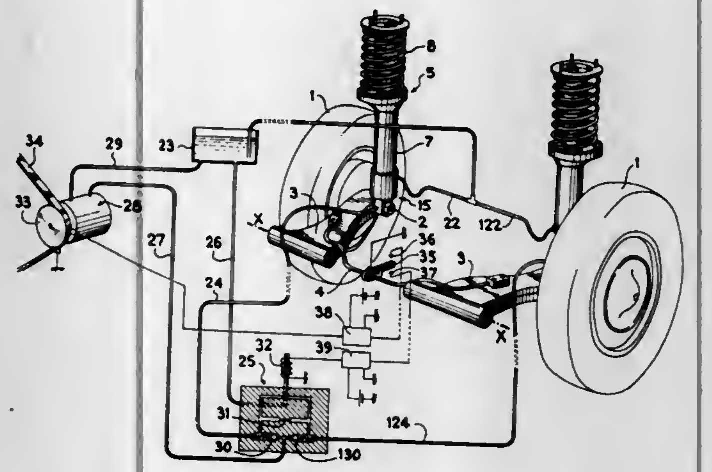
Daniel Piniot, Saint-Germain, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of, France

Filed Jan. 7, 1974, Ser. No. 431,309

Claims priority, application France, Jan. 31, 1973, 73.03342

Int. Cl. B60g *3/00*

U.S. Cl. 280—124 F **9 Claims**



1. A suspension device for a vehicle having a suspended part and a wheel, the device being capable of correcting the trim of the vehicle and comprising at least one suspending-damping assembly having a coil spring and a hydraulic damper interposed between the suspended part and the wheel of the vehicle and at least one trim-correcting cylinder device comprising a cylinder defining a chamber having an end and a piston movable in the chamber of the cylinder toward the end of the chamber, means for supplying pressurized fluid to said chamber between said piston and said end of said chamber, the cylinder device being arranged in series with the hydraulic damper between the suspended part and the wheel, the

damper having a cylinder which terminates short of said end of said chamber and is movable toward said end of said chamber and carries the piston of the cylinder device, which piston extends across substantially the entire section of said chamber so as to be exposed to said pressurized fluid substantially throughout the section of said chamber.

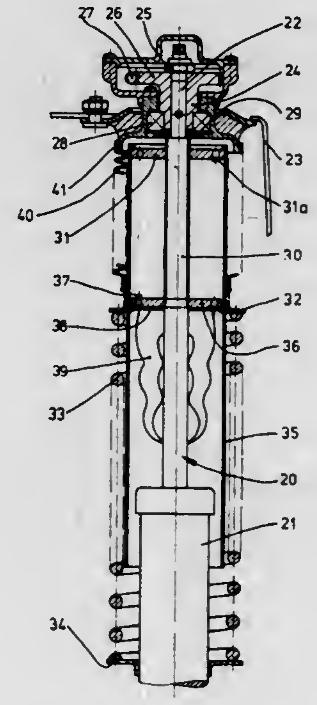
3,871,682
APPARATUS FOR STATIC LEVEL REGULATION OF A VEHICLE

Peter Kirschner, and Heinz Gunter Rauer, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of Ser. No. 285,082, Aug. 30, 1973, Pat. No. 3,829,119. This application Dec. 26, 1973, Ser. No. 428,082

Int. Cl. B60g *17/00*

U.S. Cl. 280—124 F **19 Claims**



1. Apparatus for static level regulation of a vehicle having a body, an axle, spring means arranged between the body and the axle, and shock absorber means including a cylinder, a piston positioned within the cylinder, a piston rod mounted on the piston, and two thrust bearings, a different one of the two thrust bearings being mounted on the piston rod adjacent one end of the spring means and on the cylinder adjacent the other end of the spring means, respectively, said apparatus comprising:

- a. screw means including a threaded shaft that is formed as a part of the end of the piston rod away from the piston and threaded receiving means arranged to engage the threaded shaft so that a relative rotation between the threaded receiving means and the threaded shaft causes a relative displacement of the threaded receiving means along the length of the threaded shaft, said screw means being self-locking;
- b. means for supporting the threaded shaft disposed between the threaded shaft and one of the body and the axle; and
- c. driving means engaging the threaded shaft and including
  - i. detecting means to sense a variation in loading of the vehicle and to provide an output representative of the variation, and
  - ii. motor means receiving the output and translating it into rotating motion of the threaded shaft so that a change in distance between the body and the one of the two thrust bearings disposed closer to the axle due to variations in vehicle load is accompanied by an oppositely directed compensating change in distance between the one of the two thrust bearings disposed closer to the screw means and the one of the body and the axle adjacent said one of the two thrust bearings closer to the screw means.

3,871,683
VEHICLE SAFETY BELT TIGHTENER

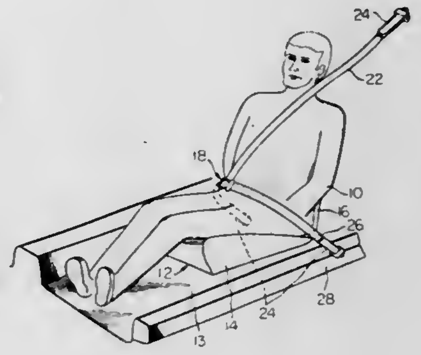
Syuichi Otani, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed Jan. 23, 1974, Ser. No. 435,992

Claims priority, application Japan, Jan. 24, 1973, 48-10430

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **3 Claims**



1. A safety belt tightener of a vehicle adapted to tighten a safety belt in the event of a collision or sudden deceleration of said vehicle, comprising a hollow member having formed therein a chamber closed at one end thereof and a slot, said slot extending parallel with a longitudinal axis, said hollow member being connected at the other end thereof to said safety belt, a casing fit in said chamber of said hollow member in such a manner that said hollow member is slidable relative to said casing and having an open end opposite to said closed end of said hollow member, a bracket extending from said casing through said slot and fixedly fastened to a stationary part of said vehicle, said hollow member having a first position in which said one end of said hollow member rather than the other end thereof is adjacent to said casing and a second position in which said other end of said hollow member rather than said one end thereof is adjacent to said casing and movable between said first and second positions, and a pressurized gas producer accommodated in said casing and responsive to an impact for producing pressurized gas to move said hollow member from said first position to said second position.

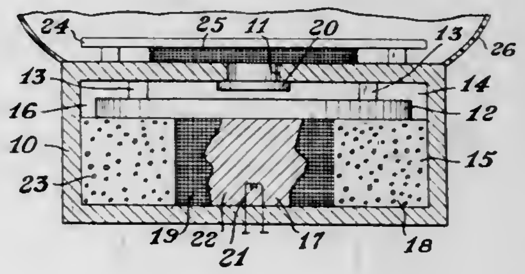
3,871,684
GAS GENERATOR

Gerald R. Staudacher, Bay City; Thomas E. Dergazarian, and George A. Lane, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 168,234, Aug. 2, 1971, abandoned. This application July 31, 1972, Ser. No. 276,397

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **13 Claims**



1. A gas generator apparatus comprising:
a. a hollow container having a cover member,

- b. a perforated screen, and
- c. a baffle plate,

the perforated screen and baffle plate being disposed within the container, the baffle plate forming, with the container, first and second compartments, the first compartment being smaller than the second, the perforated screen being disposed within the second compartment to divide the same into

- a first chamber for receiving a solid pyrotechnic and
- a second chamber, in fluid communication with said first compartment via a restricted passageway, for receiving means for cooling, within said second chamber, a gaseous reaction product generated from said pyrotechnic,

said cover member having means for securing said cover to said container and having an exhaust port located therein,

- d. a frangible closure member in sealed relationship with said exhaust port,
- e. a gas diffusing means exterior to said container and in communication with said exhaust port,
- f. an ignition means in communication with said first chamber, and
- g. an inflatable bag operatively surrounding said diffusing means in fluid communication with said exhaust port via said diffusing means, for receiving an effluent gas therefrom.

3,871,685

DEVICE FOR STATILIZATION OF AN APPLIANCE

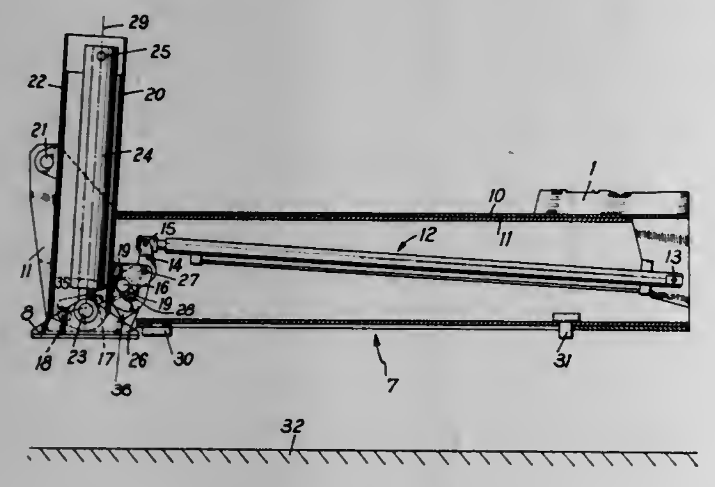
Bernard C. Senelet, Ciry-le-Noble, France, assignors to Societe Anonyme dite: Potain Poclaim Materiel, Montceau-Les-Mines, France

Filed Jan. 16, 1974, Ser. No. 433,797

Claims priority, application France, Jan. 18, 1973, 73.01789

Int. Cl. B60s *9/12*

U.S. Cl. 280—150.5 **7 Claims**



1. A device for stabilization of an appliance on a support surface and having a chassis comprising:

- a. at least one telescopic beam having at least first and second beam elements; said first beam element being adapted to be coupled to the chassis and said second beam element being slidably mounted for movement with respect to said first beam element;
- b. first means for adjusting the releative position of said first and second beam elements, said first adjusting means being operatively connected between said first and second beam elements;
- c. a telescopic arm pivotally mounted on said second beam element for pivotal movement about a horizontal axis and comprising at least first and second beam elements; said first arm element being pivotally mounted on said second beam element and said second arm element being slidably mounted for movement with respect to said first arm element;
- d. second means for adjusting the relative position of said first and second arm elements, said second adjusting means being operatively connected between said first and second arm elements; one of said arm elements having a free end positioned adjacent the support surface upon actuation of said second adjusting means;
- e. a stabilization support pivotally mounted at the free end of said one arm element; and
- f. third means for adjusting the relative angular position of said first arm element with respect to said second beam element; said third adjusting means being operatively connected between said first arm element and said second beam element for moving said telescopic arm between first and second extreme angular positions of adjustment corresponding to orientations of the direction of telescopic sliding movement of said arm which are respectively substantially vertical and inclined with respect to the vertical in the sense of movement of the free end of said second arm element away from the chassis.

3,871,686

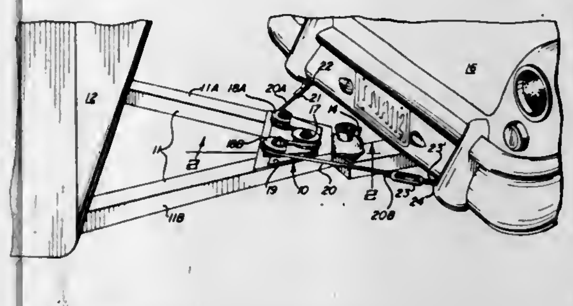
TRAILER SWAY CONTROL DEVICE

William L. Rendessy, 8028 N. 14th Pl., Phoenix, Ariz. 85020

Filed June 12, 1973, Ser. No. 369,263

Int. Cl. B60d *7/00*

U.S. Cl. 280—446 B **26 Claims**



1. A sway control device for mounting on the tongue of a vehicle towed trailer comprising in combination:

- guiding means mounted on the tongue having one or more arcuate guiding surfaces,
- at least one of said arcuate guiding surfaces being non-rotatably secured to the tongue,
- a flexible operating means comprising first and second end portions and an intermediate portion,
- said intermediate portion of said operating means engaging each of said non-rotatably secured arcuate guiding surfaces in a manner to induce frictional dampening thereon, said first and second end portions of said operating means being connectable to a towing vehicle at points spaced equally from the attachment of the towing vehicle to the trailer, and
- means for adjusting the tension of said operating means to keep said operating means taut against said non-rotatable arcuate guiding surface for inducing sliding resistance to the movement of said operating means about said non-rotatable arcuate guiding surfaces.

3,871,687

PIPE CONNECTIONS AND CONNECTORS THEREFOR

Basil Frederick Dockree, Welwyn Garden City, England, assignor to Gabine Precision Tubes Limited, Hertfordshire, England

Filed Oct. 3, 1973, Ser. No. 403,046

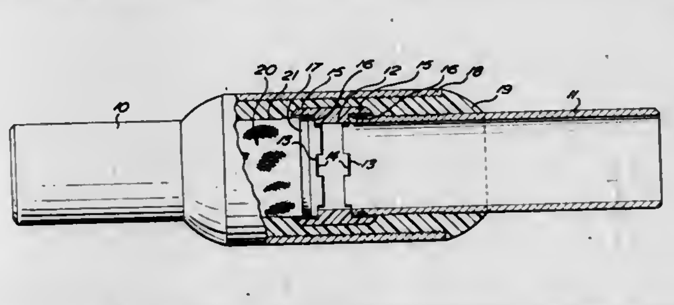
Claims priority, application United Kingdom, Oct. 6, 1972, 46329/72

Int. Cl. F16l *11/12*

U.S. Cl. 285—53 **10 Claims**

1. A leakproof pipe connection between two pipe lengths arranged end to end comprising an annular ring of electrical insulating material positioned between the pipe ends and maintaining the ends in spaced relation, the ring having annular flanges respectively surrounding the outer peripheral surface of each pipe end, an O-ring seal between said outer peripheral surface of each pipe end and the inner surface of the respective flange of the spacing ring, a casting of electrical insulating material overlapping each flange and extending

beyond each flange to overlap the outer surface of and be in contact with the adjacent length of otherwise exposed pipe, an outer metal sleeve surrounding said casting, anchoring means on at least a part of said outer surface of each said length of otherwise exposed pipe in contact with the casting precluding longitudinal movement of the respective pipe end relative to the casting, and further anchoring means precluding longitudinal movement of the outer sleeve relative to the casting.



3,871,688

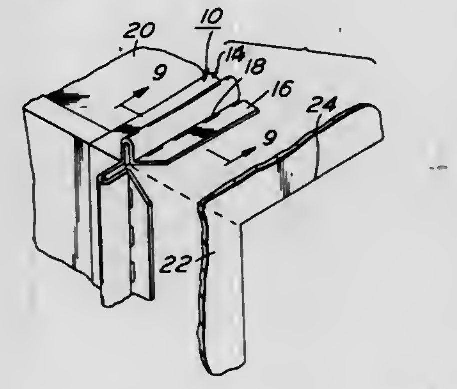
DUCT JOINING MEANS

Angelo R. Molino, 816 E. Bldg., Haddonview Apts., Haddonfield, N.J. 08033

Filed Dec. 26, 1972, Ser. No. 318,005

Int. Cl. F16l *23/00*

U.S. Cl. 285—189 **5 Claims**



1. In a duct system having a rectangular duct with four sides, each side having a flange and a duct joining member coupling said duct with a body, said duct joining members each comprising an elongated metal strip having an intermediate U-shaped portion with substantially parallel first and second legs and receiving therebetween a respective one of the upstanding flanges at the end of said duct, a first flange extending from the end of the first leg of said U-shaped portion for being positioned over a side at the end of said duct, and a second flange, extending from the end of the second leg of said U-shaped portion received into an opening of said body and being bent for securing same with said body, said second flanges including means permitting ease of bending thereof.

3,871,689

DEVICE FOR SEALING A HIGH-TEMPERATURE CONDUIT

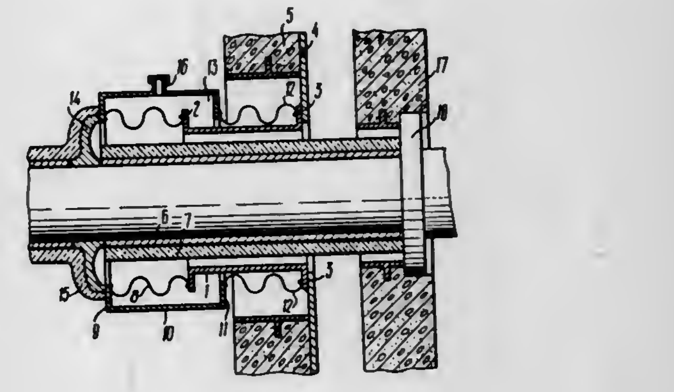
Nikolai Nikolaevich Zaderei, ulitsa Proletarskava, 77, kv. 30; Arnold Serafimovich Nikiforov, ulitsa Pavlovskaya, 90, kv. 60, and Evgeny Petrovich Ushankov, prospekt Obukhovskoi oborony 215, kv. 17, all of Leningrad, U.S.S.R.

Filed Mar. 1, 1973, Ser. No. 337,277

Int. Cl. F16l *5/00, 27/12*

U.S. Cl. 285—189 **2 Claims**

1. A device for sealing a high-temperature conduit in a wall, comprising: a first hollow member and a first corrugated member sealingly interconnected by their ends; and a second hollow member and a second corrugated member sealingly interconnected by their ends, said corrugated members being similar to each other and of the same diameters, and said first and second members being arranged coaxially about each other and about said conduit and forming a closed space around said conduit so that free ends of said first hollow member and said second corrugated member are sealingly connected to said wall and the free ends of said second hollow member and said first corrugated member are sealingly connected to said conduit.



3,871,690

PIPE CLAMP

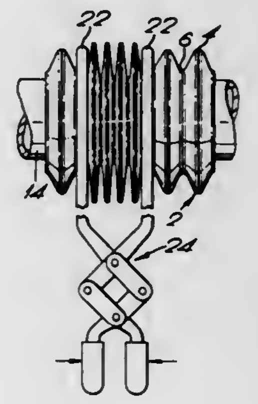
Peter C. Wright, Etobicoke, and Donald L. Kirsch, Toronto, Ontario, both of Canada, assignors to Gidon Industries, Inc., Rexdale, Ontario,, Canada

Filed Dec. 12, 1972, Ser. No. 314,342

Claims priority, application Great Britain, Feb. 28, 1972, 9161/72

Int. Cl. F16l *21/00*

U.S. Cl. 285—226 **7 Claims**

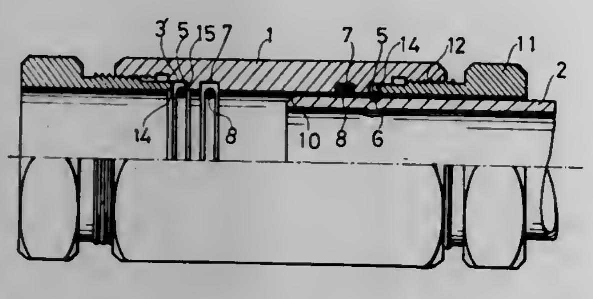


1. Apparatus for clamping a shaft comprising:

- a band having a mating fit with said shaft;
- corrugations extending axially thereof providing one group of formations constituting peaks on the surface of said band and a second group of formations constituting valleys extending into the interior of said band, the peaks and valleys alternating with each other and the formations of said groups being angularly acute and equal;
- a bore defined within said band by said valleys within which said shaft is receivable, said band being axially crushable to collapse the corrugations narrowing the said bore;
- compression elements at least one of which is seated in a valley; disposed in confronting relation with at least two said corrugations sandwiched therebetween, and
- means for effecting movement of at least one of said compression elements, toward the other to crush and collapse the sandwiched corrugations narrowing the bore of the band to effect a tight grip on said shaft and to clamp it.

3,871,691
PIPE JOINT

Tatsuya Takagi, No. 6-10 Araebisumachi, and Teruya Takagi, No. 6-4 Araebisumachi, both of Nishinomiya-shi, Japan
Filed Aug. 14, 1973, Ser. No. 388,144
Claims priority, application Japan, Aug. 14, 1972, 47-80801; Sept. 4, 1972, 47-87974
Int. Cl. F16l *39/00*
U.S. Cl. 285—321 **4 Claims**

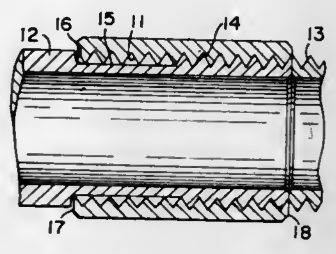


1. A pipe joint having a joint body with the inner diameter thereof larger than the outer diameter of a pipe to be joined, which comprises an annular groove formed in the inner circumference of said joint body, a spring lock-ring fitted in said annular groove, said spring lock-ring being, in contour, elliptically shaped in such a manner that the inner diameter of the minor axis is smaller than the outer diameter of the pipe, said spring lock-ring also having a split portion in its circumference, said annular groove in said joint body having from its bottom a diameter greater than the sum of double the thickness of said spring lock-ring and the outer diameter of the pipe, an annular groove formed by rolling in the outer surface of said pipe, said annular groove in said pipe being spaced a predetermined distance from the end of the pipe, said pipe having a tapered outer surface formed at its annular end, wherein, when the pipe is inserted endwise into said joint body, said spring lock-ring is caused to seat in said annular groove in the pipe and dispose the pipe in locking engagement with said joint body and a fastener loosely mounted over the outer surface of the pipe and in threading engagement with said joint body, said fastener having formed at its inside portion a tapered annular inner surface, said joint body having an annular inner shoulder radially extending from its first inside portion having an inner diameter substantially equal to the outer diameter of said pipe to its second inside portion having an inner diameter larger by a predetermined amount than the outer diameter of said pipe, whereby said annular groove is formed for receiving said spring lock-ring by said inner annular shoulder of said joint body and said tapered annular inner surface of said fastener.

3,871,692
KT CONDUIT WITH COMPANION COUPLING

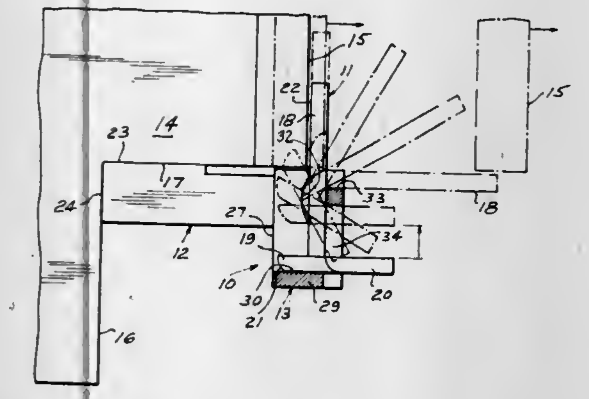
Russell B. Brownfield, 6126 S. Langley Ave., Chicago, Ill. 60637
Filed Feb. 19, 1974, Ser. No. 443,466
Int. Cl. F16l *15/00*
U.S. Cl. 285—390 **2 Claims**

1. A conduit and companion coupling arrangement for rigid electrical conduit comprising a coupling member having internal threads extending continuously therethrough, and a pair of conduit sections in end-to-end abutting relationship each having a threaded end portion, said coupling member being threaded fully onto one of said conduit sections in an uncoupled position and threaded substantially equally onto both of said conduit sections in a coupled position, said threaded end portions on the conduit sections comprising non-tapered threads and said internal threads in said coupling member being non-tapered, at least one of said conduit sections having a nonthreaded area behind the respective threaded end portions, said nonthreaded area being of less diameter than the outside diameter of said conduit sections and substantially the same as the smallest diameter of said threaded end portions, said nonthreaded area of less diameter providing space for receiving said coupling member in the uncoupled position, and an annular shoulder at the inner end of said nonthreaded area where the area of less diameter joins the outside diameter of such conduit section to act as a limit stop to inward movement of the coupling member, the combined lengths of said threaded end portion and said nonthreaded area on one of said conduit sections being substantially equal to the length of said coupling member and said coupling member in the uncoupled position engages said shoulder at one end of the coupling member and the opposite end thereof is disposed substantially flush with the end of said conduit section.



3,871,693
SAFETY LOCK FOR CABINET DOORS AND THE LIKE

William Roger Core, 1610 E. 55th Pl., Tulsa, Okla. 74105
Filed Feb. 23, 1973, Ser. No. 335,244
Int. Cl. E05c *5/00*
U.S. Cl. 292—67 **2 Claims**



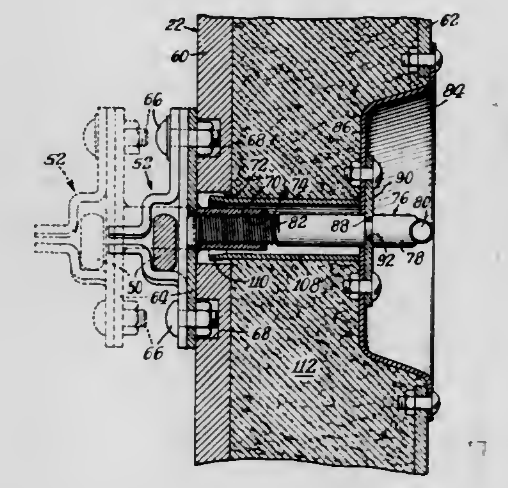
1. A lock for cabinet doors comprising a mounting block, a tee-bar, and a tee-bar retaining block, said combination when attached at the lower edge of a cabinet door holding said tee-bar in inverted configuration secured against rotation perpendicular thereto until said tee-bar is raised in said retaining block by the toe or hand wherein an arcuate opening in said retaining block permits said tee-bar to rotate in response to urging the cabinet door open, said tee-bar then retained in a position 90° away while said door is open, said door during the process of closing bearing against the now vertical cross-bar portion causing said tee-bar to turn back to the vertical and fall to the starting, non-rotatable configuration.

3,871,694
DOOR LOCK SAFETY RELEASE MEANS

Clarence E. White, Kenosha, Wis., assignor to White Welding & Mfg. Inc., Kenosha, Wis.
Filed Feb. 1, 1973, Ser. No. 328,859
Int. Cl. E05c *1/04*
U.S. Cl. 293—92 **8 Claims**

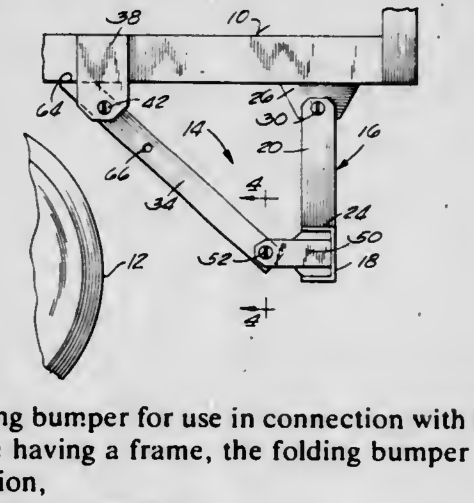
1. For use with an enclosed body having a door frame with upper and lower elements, a door having inner and outer faces and being movable into and out of the door frame between open and closed positions, keeper means mounted on the

upper and lower elements of the door frame, a vertically extending shaft rotatably mounted on the outer face of the door and having radially extending arm portions at the upper and lower ends thereof which are engageable with the keeper means for locking the door in closed position, and a revolvable element connected to the shaft for effecting rotation thereof, the combination of: retainer means at the outer face of the door for holding the revolvable element against rotation and thus maintaining the shaft arm portions engaged with the keeper means and the door locked in closed position; said retainer means comprising a base member normally abutting the outer face of the door, and an axial threaded hub projecting into the door; safety means carried by the door for releasably engaging said retainer means and normally securing the latter to the door; said safety means comprising a rotatable release handle having an axial shank with a threaded portion normally in threaded engagement with said threaded hub, and having a hand grip at the inner face of the door; securing means for preventing axial movement of said release handle in either direction while acommodating rotation thereof; and said release handle being manually rotatable at the inner face of the door for threading said threaded hub outwardly of the door and thereby pushing said retainer means outwardly and away from the door whereby to effect unlocking rotation of the revolvable element and the shaft causing disengagement of the shaft arm portions from the keeper means so that the door may be opened from the inside of the enclosed body.



3,871,695
FOLDING TRUCK BUMPER

Robert W. Koenig, 405 Washington St., Sauk City, Wis. 53583
Filed Feb. 20, 1974, Ser. No. 444,109
Int. Cl. B60r *19/04*
U.S. Cl. 293—73 **5 Claims**

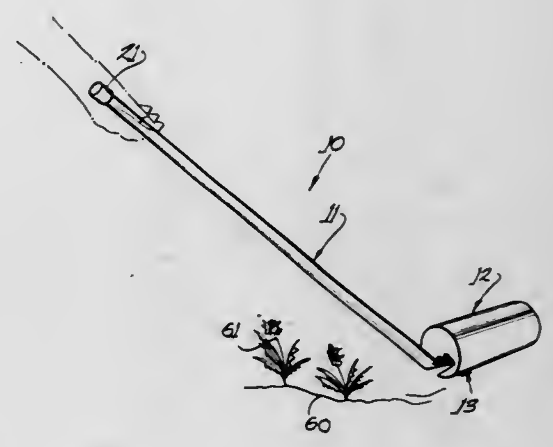


1. A folding bumper for use in connection with an over-the-road vehicle having a frame, the folding bumper comprising, in combination,

a bumper plate assembly,
first hinge means for pivotally connecting the bumper plate assembly to the vehicle frame and defining a generally horizontal pivot axis, said first hinge means supporting said bumper plate assembly for pivotal movement about said pivot axis between a first, generally vertical extended position and a second, generally horizontal collapsed position,
a support arm,
second hinge means spaced horizontally from said first hinge means and defining a generally horizontal pivot axis for said support arm and about which said support arm pivots between an extended and a collapsed position to hold said bumper plate assembly respectively in said first and second positions,
means defining a first hole in said bumper plate assembly and second and third holes spaced along said support arm, said second and third holes being selectively registerable with said first hole, and
pin means releasably receivable in said first, second and third holes and including means for locking said pin means in said registered first and second holes or said first and third holes,
whereby insertion of said pin means in said first and second holes locates and locks said bumper plate assembly in said extended position and said pin means inserted in said first and third holes locks said bumper plate assembly in said collapsed position.

3,871,696
DANDELION PICKER TOOL

Edwin M. Wesley, 2405 Randolph St. N.E., Washington, D.C. 20018
Filed Dec. 28, 1973, Ser. No. 429,113
Int. Cl. A01d *1/00, 45/00*
U.S. Cl. 294—50.6 **1 Claim**



1. A tool for picking dandelions adapted for use by an individual eliminating any bending or stooping of the individual either in the cutting of the dandelion or the recovery of the cut dandelion from the ground, the tool comprising, in combination:

an elongated tubular handle member having a gripping end at a top end thereof and a flattened end at the opposite bottom end thereof, the flattened end being bent at an angle to the axis of the handle member to assume a substantially horizontal plane with the remainder of the handle member projecting upwardly and outwardly therefrom at an angle thereto;
a cylindrically shaped cap adapted to fit over the gripping end of said handle member to close the top end thereof; a hollow elongated rigid cylindrical receptacle having cylindrical side wall surfaces, a closed back end, and an open front end;
a compartment defined interiorly of the receptacle and opening out of the front end thereof;
a V-shaped notch defined in a portion of said receptacle side wall surfaces and having the base portion thereof defined in and contiguous to said receptacle open front end with the apex portion thereof projecting inwardly of the receptacle side wall surfaces in the direction of said receptacle back end, said V-shaped notch including inclined side edges tapering from the base to the apex portion thereof;

the flattened end of said handle being aligned with one of said side edges of said slot and disposed adjacent thereto; a pair of spaced apart apertures disposed in said flattened end;

a pair of similarly aligned and disposed apertures disposed in said receptacle side wall surface adjacent said one side edge of said notch, said apertures of said handle and said receptacle adapted to be placed in alignment with each other;

a bolt associated with each pair of aligned apertures and adapted to pass therethrough;

a nut associated with each terminal end of each bolt and adapted to be threaded thereon to attach said handle to said receptacle with the handle projecting forwardly of the front end of the receptacle;

a single-edged substantially flat razor blade having a cutting edge extending therealong;

an opening provided in said receptacle side wall surfaces adjacent the edge of said notch opposite from the notch edge having the handle secured therealong;

an opening disposed approximately centrally of said razor blade;

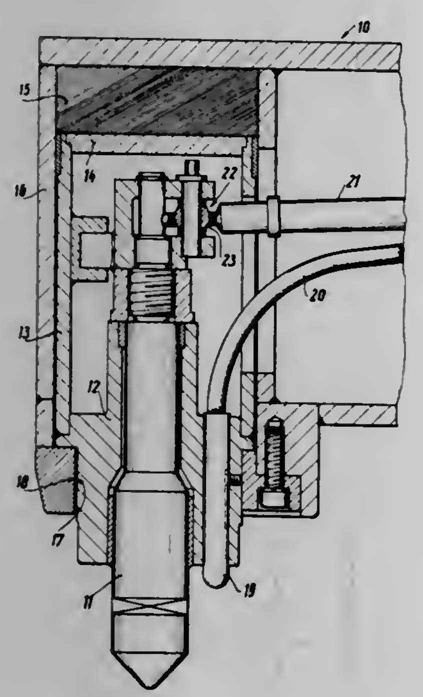
the razor blade disposed adjacent the exterior surface of said receptacle side walls with said razor blade opening in alignment with said associated receptacle opening;

a bolt adapted to pass through said aligned openings and be secured therein by a nut to detachably attach said razor blade to said receptacle; and

the razor blade being adjustable on said receptacle for various positions of projecting of said razor blade cutting edge into the open region of said V-shaped notch across the apex portion of said notch in a direction substantially normal to the longitudinal axis of said notch and adapted to slice the stems of dandelions as they pass through said notch with the dandelions being accumulated in said receptacle after being sliced by said cutting edge.

3,871,697
LOAD TAKE-UP APPARATUS FOR LIFTING DEVICES

Gert Bechtloff, Brucker Str. 12, 294 Wilhamshaven, Germany, assignor to Friedrick Kocks GmbH, Bremen, Germany
Filed June 7, 1973, Ser. No. 367,940
Claims priority, application Germany, June 8, 1972, 2227823
Int. Cl. B66c *1/42*
U.S. Cl. 294—81 SF **11 Claims**

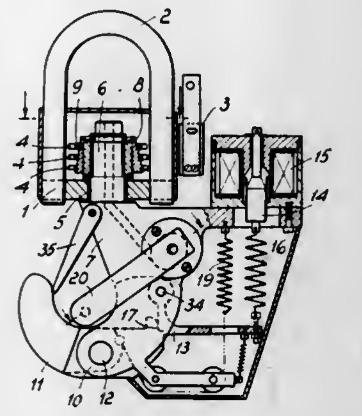


1. In a shock absorbing load take-up apparatus for containers having a supporting frame and rotatable bolts disposed thereon and adapted to be inserted into corresponding fittings in the container, the improved rotatable bolt mounting comprising:

a. an outer housing attached to said supporting frame,
b. an inner housing attached to said rotatable bolt and coaxially mounted within said outer housing so as to slide relatively thereto in a direction parallel to the longitudinal axis of said outer housing,
c. resilient buffer means interposed between one end of said inner housing and one end of said outer housing, and
d. means to prevent relative rotation between said inner and outer housings.

3,871,698
HOOKING SUSPENSION SYSTEM

Ludovico Fontana, Via Principe Amedeo 31, Bari, Italy
Filed Dec. 26, 1972, Ser. No. 318,485
Claims priority, application Italy, Jan. 28, 1972, 2106/72
Int. Cl. B66c *1/36;* **H02b** *1/02*
U.S. Cl. 294—83 R **3 Claims**

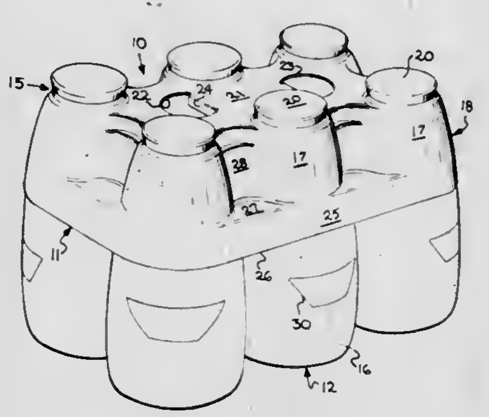


2. Hooking suspension system for suspending a load which comprises a hooking grip and a hook, said hook comprising a first portion forming one part of an enclosing hook loop, a second portion pivotal with respect to the first portion and forming the remaining part of the enclosing hook loop for engaging the load, an electromagnet connected to said first portion and operably connected to the second portion for opening the hook loop and disengaging the hook from the load, said first portion and said second portion forming a curved trough for bearing the load, the first portion being fixed and the second portion being movable downwardly so as to release the load when moved downwardly; a base having an aperture through which is rotatably mounted the first portion of the hook, said base having suspension means connected to said base, electrical current connecting means fastened to said base, means for conducting the electrical current from the base to the upper portion of the hook, said upper portion of the hook being fitted with movable contact means for engaging a load through said hooking grip when bearing on said hook; said electromagnet having a movable armature connected to said means for conducting electric current.

3,871,699
PLASTIC JACKET FOR CONTAINERS

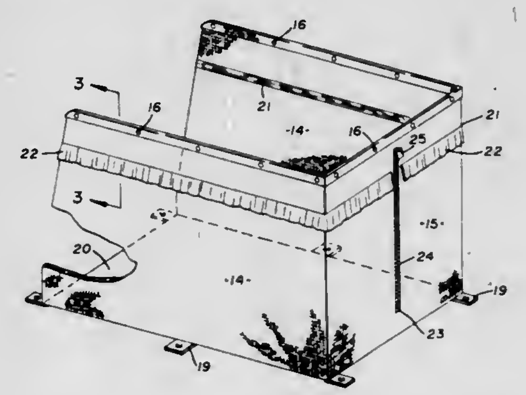
John D. Hatfield, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 135,925, April 21, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 294,171
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **23 Claims**

1. An integral one piece molded carrier adapted for engaging and embracing a substantial portion of each of a plurality of containers arranged upright in a substantially side wall abutting relationship comprising an elastomeric material of flat stock thermoformed and having vertically disposed walls defining cell-like compartments whose vertical axes correspond with the axes of said arrangement of plural containers, a horizontal wall integral with all of the vertical walls of said compartments and connected near the upper end of said compartments, means on said horizontal wall adapted for lifting and supporting the carrier, annularly disposed, radially inwardly projecting yieldable means along the interior surface of said vertical wall of each compartment, the interior diameter across said compartment of said yieldable means being slightly less than the outer diameter of a portion of the container adjacent its upper end to be received in said compartment to engage and support said container therein, a vertical skirt wall adapted to embrace the outer extending side wall portion of said plurality of containers and retain them in a cluster, the skirt wall being integral with said vertical walls of the compartments, and a second horizontal wall below said first mentioned horizontal wall and integral with said vertical skirt wall.



3,871,700
ADD ON ENCLOSURE FOR CAMPERS AND TRAILERS

Merrel F. Brownlee, 58 Euclid Ave., Struthers, Ohio 44471
Filed Sept. 26, 1973, Ser. No. 401,123
Int. Cl. B62c *1/06*
U.S. Cl. 296—26 **2 Claims**

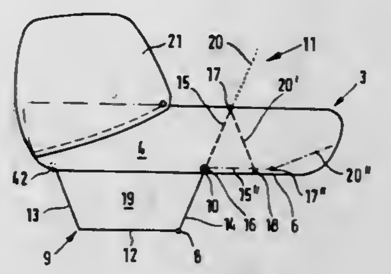


1. An add on enclosure for a trailer having an outwardly extending portion normally overlying a part of a towing vehicle, said add on enclosure consisting of a U-shaped wall means detachably secured to and along the peripheral edge of the lateral sides and the ends of said outwardly extending portion of said trailer and being of a height arranged to extend downwardly from said outwardly extending portion of said trailer to the ground level therebelow so as to enclose the area beneath said outwardly extending portion, and access means in said wall defining means;

said wall means consists of a flexible waterproof sheet material disposed on substantially the same vertical planes as the vertical side and end walls of the outwardly extending portion of the trailer thereabove; said flexible waterproof sheet having at least one horizontal resilient section extending the length of an entire section of said wall means which permits the height of said section of said wall means to be resiliently increased, means for securing the lower edge of said wall means to the ground at spaced points along the lower peripheral edge of each of each of said lateral sides and ends; and wherein said flexible waterproof sheet is detachably secured by separable fasteners which are secured to the peripheral edge of said outwardly extending portion of said trailer and to the upper edge of said wall defining means and the separable fasteners are placed and arranged for mutual engagement.

3,871,701
BABY CARRIAGE

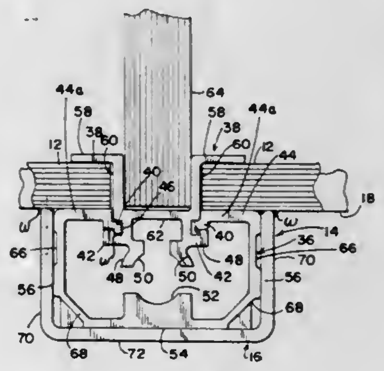
Georg Gesslein, D-8621 Mannsgereuth, Post Beikheim, Kreis Lichtenfels/Oberfranken, Germany
Filed June 12, 1972, Ser. No. 261,674
Claims priority, application Germany, June 14, 1971, 2129449
Int. Cl. B62b *7/12*
U.S. Cl. 296—28 B **20 Claims**



1. A convertible baby carriage for selective use as a flat perambulator or as a stroller, including a carriage body having walls and a bottom which latter can at least partly be lowered, comprising means for varying the overall height at least of one end of said carriage body, including a lowering unit arranged to be moved between the walls of said body, said lowering unit comprising side walls yieldingly connected to said carriage body a plane portion pivotally connected at the bottom of said carriage body for movement about a horizontal hinge, and an angled platform having a bottom portion and an inclined portion attached to said plane portion of said bottom by means of a pivot joint, whereby said angled platform is pivotable around said horizontal hinge between an upper position and a lower position, and a releasable detent for securing said inclined portion of said carriage body in said lower position, whereby said bottom portion remains substantially horizontal in said upper and lower positions.

3,871,702
STAKE POST ARRANGEMENT FOR TRAILER

John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.
Filed Sept. 20, 1973, Ser. No. 399,033
Int. Cl. B62d *27/00*
U.S. Cl. 296—36 **8 Claims**



1. In a highway vehicle of the convertible type from flat deck to side wall and tarpaulin roof,

a stake post arrangement comprising a plurality of side stake posts, each post having an inner post member and an outer post member vertically slidably received in the inner post member in dovetailing fashion to define with the inner post member, panel groove defining walls for receiving vertically extending wall panels to form the sides of the trailer,

each inner post member and each outer post member further together forming a tarpaulin stake receiving pocket, said inner post member being generally hatshaped and having a pair of brim flanges spaced apart from one another and directed outwardly from one another in a longitudinal direction,

said flanges each having its outer longitudinal surface adapted to engage a longitudinally extending panel,

each flange having an outwardly directed transverse panel portion spaced apart from one another and each extending outward from a respective brim flange and adapted to receive between each said transverse portion a transversely extending panel,

each transverse panel portion having a seat portion for limiting outward movement of said associated transversely extending wall panel,

said seat portion having an outer transversely extending flange portion provided with a tarpaulin stake engaging portion and a dovetailing receiving portion,

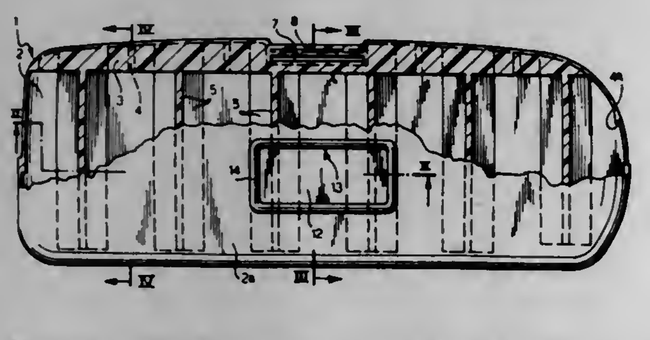
said outer post member being generally rectangular in shape and having an inner longitudinal portion having inwardly facing panel engaging longitudinal portions defining an opening for extending therethrough the transverse portions of the inner post, said panel engaging longitudinal portions being cooperative with the longitudinal surfaces of the brim flanges of the inner post member forming said groove defining walls,

said inner longitudinal portions of said outer post member further having a pair of dovetailing end portions on each side of said opening slidably receivable in the dovetailing receiving portions of said inner post member,

said outer post member further having a pair of laterally extending portions connecting with said inner longitudinal portion and having an outer longitudinal portion connecting with said laterally extending portions, said outer longitudinal portion being provided with a tarpaulin stake engaging portion for complementally forming with the tarpaulin stake engaging portions of the inner post member said tarpaulin stake receiving pocket.

3,871,703
SUN VISOR OF PLASTICS FOR MOTOR VEHICLES AND MANUFACTURING METHOD

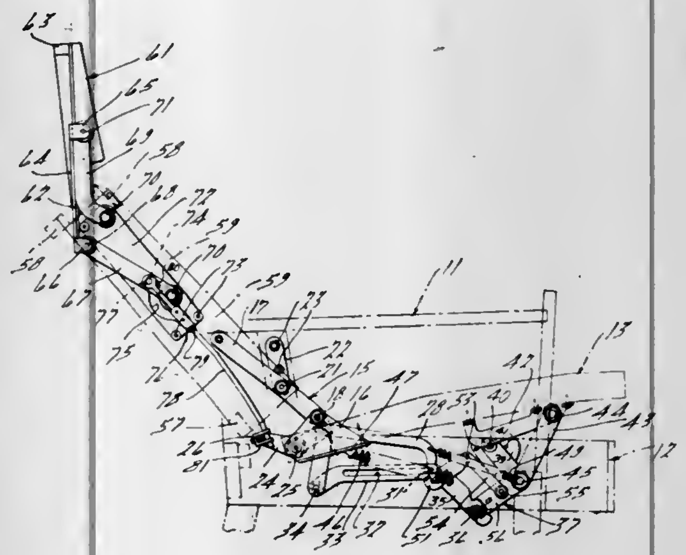
Augusto Accatino, Turin, Italy, assignor to Stat S.n.c. di Accatino & C., Turin, Italy
Filed Oct. 2, 1973, Ser. No. 402,691
Claims priority, application Italy, Oct. 5, 1972, 70142/72
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 H **4 Claims**



1. A motor vehicle sun visor comprising a unitary substantially flat generally rectangular body of plastic material including two substantially rectangular half shells integrally connected along a first long edge, said shells being symmetrical with respect to a longitudinal middle plane extending substantially parallel to said shells, a longitudinal reinforcing rib extending between said half shells along said first long edge, a plurality of longitudinally spaced sets of connecting walls extending between the opposed inner surfaces of the two half shells, each set of connecting walls being formed by walls which are inclined with respect to said longitudinal middle plane and which mutually intersect along lines situated in said plane parallel to the short edges of said body, said connecting walls extending transversely of the visor from said first long edge into close proximity to the second long edge of said body and comprising a first portion adjacent said first long edge in which the transversely extending edges thereof are of integral one piece construction with said half shells and a second portion adjacent said second long edge in which said transversely extending edges are disposed in contact with said half shells, said half shells, said longitudinal reinforcing rib and said sets of connecting walls being formed as a unitary one piece molding with said two half shells being secured together along said second long edge and a portion of each of the two short edges adjacent said second long edge.

3,871,704
HIGH-LOW BACK FOR CHAIR

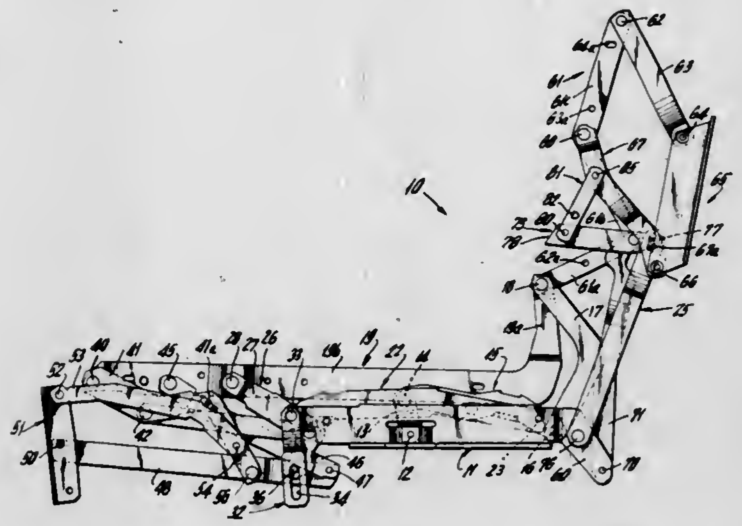
Edwin J. Shoemaker, Monroe; Harold P. Ruble, Deerfield, and David B. White, Monroe, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.
Continuation-in-part of Ser. No. 323,139, Jan. 12, 1973, abandoned. This application May 29, 1973, Ser. No. 364,644
Int. Cl. A74c *1/02*
U.S. Cl. 297—61 **10 Claims**



1. In a chair, a base frame, a seat frame, and a back frame, linkage means for interconnecting said back and seat frames for movement relative to each other, said back frame having spaced side members forming a hollow back which is open rearwardly, a back section, upper and lower pairs of links, a pair of plates secured to the inner surfaces of said side members, pivot means securing the upper ends of said pairs of links to said pair of plates and the lower ends to said back section, said pair of plates have an arcuate slot located adjacent to the pivots thereon which support the lower pair of links, said lower pair of links having a longitudinal slot crossing said arcuate slots, operating rods having means at the upper ends projecting through both said slots, and means connecting the lower ends of said operating rods to said seat frame the movement of which relative to the back frame produces the movement of said operating rods to move the back section relative to said back frame.

3,871,705
CHAIR WITH PROJECTING HEADREST AND HARDWARE THEREFOR

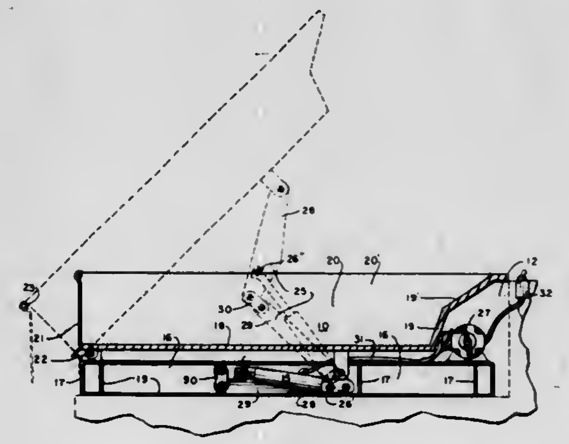
Kenneth S. Harrison, Ridgefield Park, N.J., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Oct. 23, 1973, Ser. No. 408,801
Int. Cl. A47c *1/02*
U.S. Cl. 297—61 **15 Claims**



1. Chair hardware, comprising a seat link, a support plate adapted to be fixed to the base of a chair, linkage connecting the seat link to said support plate, a backrest mounting link pivoted to said seat link, a headrest idler link pivoted to said backrest mounting link, a headrest bracket pivotally connected to said idler link, a headrest drive link pivotally connecting said headrest bracket with said backrest mounting link, a headrest bellcrank pivoted mediately the ends thereof, to said backrest mounting link, a connecting link connecting one end of said headrest bellcrank with said headrest drive link, a backrest control link pivoted at its lower end to said support plate and at its upper end to the pivotal connection of said headrest bellcrank to said backrest mounting link, and a headrest actuator link pivoted at its lower end to said support plate and at its upper end of the other end of said headrest bellcrank, said backrest mounting link, said headrest idler link, said headrest bracket and said headrest drive link forming a parallelogram linkage.

3,871,706
SELF-CONTAINED DEMOUNTABLE DUMP BED

Donald M. Odom, Verbena Rt. 3, Meridian, Idaho 83642
Filed Apr. 8, 1974, Ser. No. 458,616
Int. Cl. B60p *1/16*
U.S. Cl. 298—1 A **3 Claims**



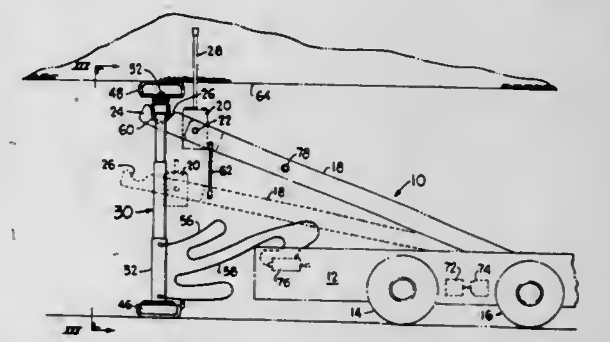
1. A demountable dump bed for truck vehicles having fixed box-type load bodies, comprising;

a support frame comprising a pair of rectilinear rails and a plurality of transverse cross-ties;

a tilt body pivotally mounted at its rearwardmost terminal end to the rearwardmost terminal end of said support frame, said tilt body comprising a bottom wall, a front wall issuing upwardly from the rearwardmost terminal end of said bottom wall, a pair of side walls issuing upwardly from the terminal side of said bottom wall and a tailgate pivotally mounted at its uppermost terminal end to the upwardmost rearwardmost terminal ends of said side walls and meeting with said bottom wall; and a lift assembly including lift scissors including a first lever pivotally mounted at one of its terminal ends and disposed rectilinearly with respect to said bottom wall, and a second lever pivotally mounted at one of its terminal ends to the free terminal end of said first lever and being connected by its terminal end opposite that connected to said first lever to a transverse cross-tie disposed centrally in said support frame, including a pressure cylinder pivotally connected at its base to said cross-tie having said lift scissors and being pivotally mounted at its piston head centrally in said first lever, and including a pressure pump mounted at the forwardmost terminal end of said support frame being accommodated by suitable configuration of said tilt body, said hydraulic pump having a valve detachably engageable with said truck box to control said cylinder.

3,871,707
METHOD FOR MINING AND SUPPORTING THE MINE ROOF

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 286,744, Sept. 6, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 391,032
Int. Cl. E21c *41/00*
U.S. Cl. 299—11 **8 Claims**



1. Method for mining and supporting a mine roof comprising,

dislodging material from the face in a mine entry with a self-propelled mining machine to form a first unsupported portion of a mine roof having a preselected length,

a portable temporary support device adapted to be extended laterally and support a substantial portion of a mine roof,

providing power from a power operated means on said self-propelled mining machine to extend said portable temporary support device both laterally and into abutting relation with a substantial portion of said mine roof and the mine floor,

supporting said first unsupported portion of said mine roof with said portable temporary support device, said temporary portable support device being detachable from said self-propelled mining machine,

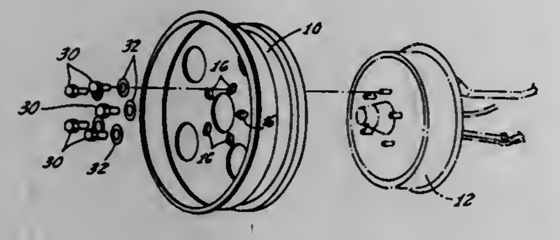
dislodging additional material from the mine face in said entry to form a second unsupported portion of said mine roof,

inserting permanent roof supports in said first unsupported portion of said mine roof while said first unsupported portion remains supported by said portable temporary support device, and

inserting permanent roof supports in said second unsupported portion of said mine roof.

3,871,708
CUSTOM WHEEL ASSEMBLY

Roy E. Richter, Downey, Calif., assignor to Cragar Industries, Inc., Compton, Calif.
Filed Apr. 10, 1972, Ser. No. 242,678
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **3 Claims**



1. A custom wheel assembly to be mounted on different motor vehicle hubs having mounting lug bolts protruding therefrom and disposed on any one of three different predetermined bolt circle radii comprising:

a wheel including a tire supporting rim and a central web portion having a plurality of oblong mounting holes,

each said mounting hole having semi-cylindrical end walls and having its longitudinal dimension radially disposed so as to cooperate with the lug bolts of maximum and minimum bolt circle radii, and having an enlarged arcuate center portion lying on the circumference of a circle of radius larger than that of said end walls, thereby to cooperate with lug bolts on the hub disposed at an intermediate bolt circle radius;

a plurality of sleeve nuts extending into threaded relationship with respective ones of said lug bolts of a particular one of said three bolt circle radii extending through the mounting holes in said web portion;

the sleeve nuts for the lug bolts of maximum and minimum bolt circle radii bearing directly on said semicylindrical end walls to retain said wheel in position on the hub;

the sleeve nuts for the lug bolts of the intermediate circle radius having an outer diameter greater than that of the sleeve nuts for the lug bolts of the maximum and minimum bolt circle radii, and bearing on said arcuate center portion, to retain said wheel in position on the hub.

3,871,709
AIRCRAFT WHEEL CONSTRUCTION

William Joseph Eaton, 4042 Valley Dr., Pueblo, Colo. 81008
Filed July 23, 1973, Ser. No. 381,501
Int. Cl. B60b *3/08;* **B64c** *25/32*
U.S. Cl. 301—63 DS **8 Claims**

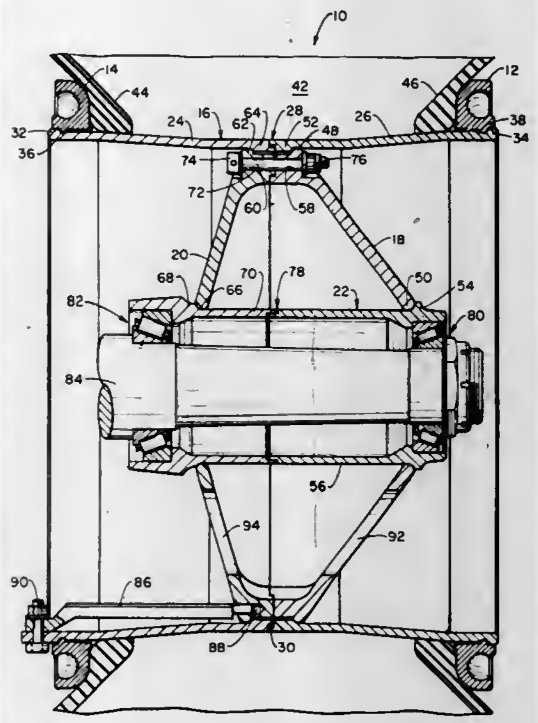
1. An aircraft wheel construction comprising:

a hub section assembly adapted to be located about a wheel axle of an aircraft, a bearing assembly located between said hub section assembly and said axle;

a tire supporting rim assembly;

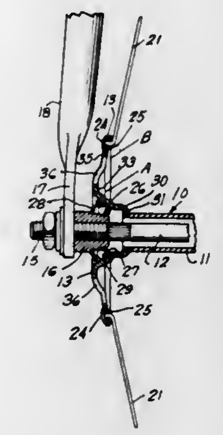
a flange exteriorly mounted by first means upon said rim adjacent each longitudinal edge of said rim, said first means for permitting axial pivotal movement of each of said flanges relative to said rim caused by lateral loads applied by the tire to said flanges, said flanges adapted to laterally restrain an inflatable tire;

a first disc connected between said rim and said hub section, a second disc connected between said rim and said hub section, said first and second discs connected by second means to said rim, said second means for permitting pivotal movement of said first and second discs relative to said rim, third means for fixedly connecting together said first and second discs, said first and second discs connected by fourth means to said hub section, said fourth means for permitting pivotal movement of said discs relative to said hub section.



3,871,710
WIDE FLANGE BICYCLE HUB

Walter Dian, Downers Grove, and Charles V. Wrobel, Rolling Meadows, both of Ill., assignors to Beatrice Foods Company, Elgin, Ill.
Filed Dec. 10, 1973, Ser. No. 423,315
Int. Cl. B60b *27/02*
U.S. Cl. 301—105 B **8 Claims**



1. In a bicycle hub assembly and in combination with a wheel and fork of a bicycle having relatively widely spaced tines:

a shaft having threaded opposite ends mounting the hub and wheel on the bicycle fork;

respective external cones threaded on said opposite ends of the shaft;

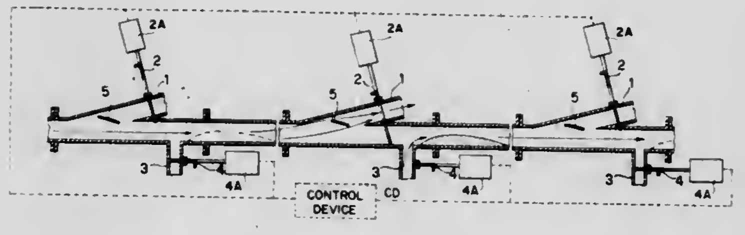
a sleeve coaxial with and radially spaced from said shaft;

means for mounting said sleeve for rotation about said shaft comprising spoke attachment flanges fixedly secured to opposite ends of said sleeve and having bell-shaped generally axially outwardly flaring internal cones cooperating rotatably with said external cones through ball bearings between said cones; and

wide generally radial flange portions extending from the axially outer end of said internal cones and flaring generally axially inwardly over at least a portion of said internal cones and positioning the peripheries of said flange portions within the extended limits of said ball bearings; said flange portions having means adjacent their perimeters to which wheel spokes are attached and the flange portions and the spokes being clear from the tines of the bicycle fork.

3,871,711
METHOD AND APPARATUS FOR PNEUMATICALLY CONVEYING DISCRETE AMOUNTS OF PARTICULATE MATERIAL

Otto Rusterholz, Via G.A. Borgese 14, Milan, Italy
Filed Mar. 21, 1973, Ser. No. 343,273
Claims priority, application Italy, Oct. 25, 1972, 30880/72
Int. Cl. B65g *53/58*
U.S. Cl. 302—26 **12 Claims**



1. A method of conveying an incoherent solid material along a pipeline utilizing a gaseous fluid, comprising the steps of:

forming said pipeline into a plurality of consecutive pipeline trunk sections;

feeding said pipeline at an initial feeding point with a metered amount of said incoherent solid material;

introducing a source of said gaseous fluid at a downstream portion of each said trunk sections while providing a through passage for said material through the respective trunk section;

venting said trunk sections by allowing the gaseous fluid to pass out from the respective truck section at a location downstream of the location where said gaseous fluid is introduced into the respective trunk section;

simultaneously with said venting, closing-off the respective trunk section at a location downstream of the location where the venting was effected and closingoff the introduction of said gaseous fluid into said respective trunk section,

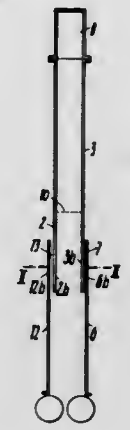
operating consecutive trunk sections alternately in opposite sequence whereby when one trunk section is operating as aforesaid in having said source of gaseous fluid introduced thereto, the next consecutive trunk section is operating as aforesaid to effect venting; and

repeating said operation of said consecutive trunk sections in alternate sequence to thereby impulsively advance said incoherent solid material along said pipeline.

3,871,712
SHAFT FOR DEPOSITING FIBER FLOCKS

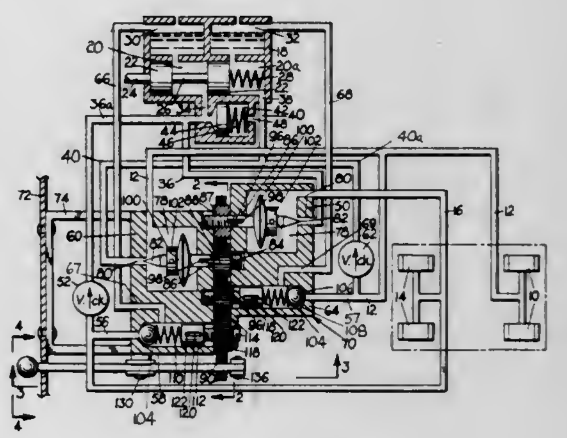
Hermann Trutzschler, Rheydt, Germany, assignor to Trutzschler & Co., Rheydt-Odenkirchen, Germany
Filed July 21, 1972, Ser. No. 274,129
Claims priority, application Germany, July 29, 1971, 2137913
Int. Cl. B65g *53/40*
U.S. Cl. 302—59 **3 Claims**

1. In an apparatus for conveying fiber flocks comprising means for conveying said fiber flocks pneumatically into an elongated vertical shaft, said means disposed at the upper end of said shaft and means at the lower end of said shaft for extracting mechanically a wad consisting of fiber flocks deposited in the shaft, the improvement for permitting escape of air from said shaft wherein said shaft is defined by four rectangular vertical air impermeable walls extending between said means for conveying said fiber flocks pneumatically and said means for extracting said fiber flocks, said walls disposed to define a shaft which in cross-section has a rectangular shape, one of said vertical walls consisting of two parts, the first of said parts reaching upwards to said means for conveying fiber flocks pneumatically and having its lower end at a distance remote from said extracting means, the upper end of the second of said parts terminating upwards of the lower end of said first part and being disposed exteriorly and in overlapping relationship outside of said first part to define a vertical channel between said both parts, said walls of said parts running substantially parallel to one another vertically, the width of said channel between said parts being 2 to 6 mm.



3,871,713
BRAKING SYSTEM FOR VEHICLES HAVING SPEED CONTROLLED PROPORTIONAL BRAKING FOR FRONT AND REAR WHEELS

Paul M. Lister, 1028 S. W. Taylor, Portland, Oreg. 97205
Continuation-in-part of Ser. No. 144,156, May 17, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,286
Int. Cl. B60t *8/06, 8/18*
U.S. Cl. 303—6 C **7 Claims**

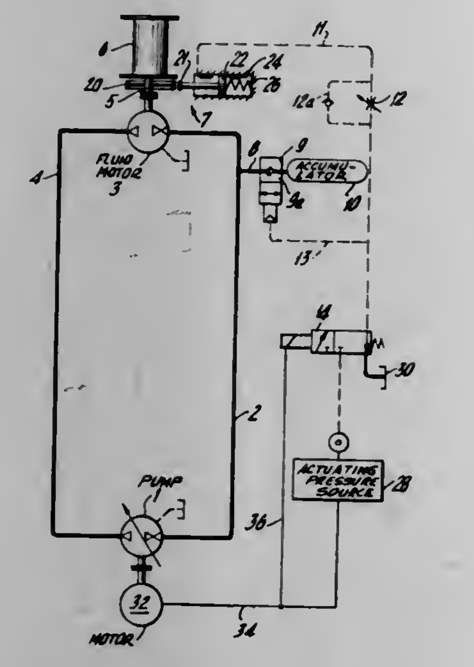


1. A brake system for vehicles comprising front and rear fluid operated braking means; individual brake applying means for said front and rear braking means operated by a brake pedal; conduit means communicating between said brake applying means and said braking means; and brake control means for each of said front and rear braking means; said brake control means including valves arranged to control flow of the brake applying fluid to the front and rear brakes, adjustment means operatively connected to said valves arranged to influence operation of said valves and provide proportionate braking to the front and rear wheels, and drive means connected to said adjustment means arranged to be connected to the drive shaft portion of a vehicle for positioning said adjustment means so that as the speed of the vehicle increases, greater braking force is made available to the front and rear wheel brakes prior to braking and in a proportion.

3,871,714

FLUID MOTOR DRIVE FOR LIFTING DEVICE SUCH AS A WINCH WITH ACCUMULATED PRESSURE STARTING AFTER BRAKE RELEASE

Volkmar Behrend, Bad Schwartau, Germany, assignor to Orenstein & Koppel AG, Lubick, Germany
Filed July 23, 1973, Ser. No. 382,019
Claims priority, application Germany, Aug. 19, 1972, 2240940
Int. Cl. B60t *13/16;* **B66d** *1/30*
U.S. Cl. 303—10 **5 Claims**



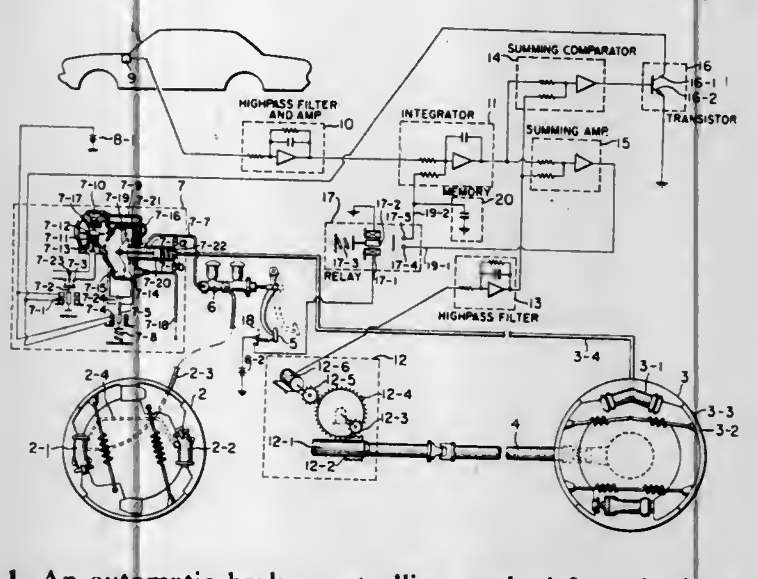
1. In a fluid motor driven system for driving a rotatable shaft adapted to be connected to a load which is lifted and which has an actuating pressure source, a brake for stopping the shaft which is actuated by an actuating pressure source and in which a pump provides a fluid pressure discharge into a line connected to operate a fluid motor to drive the shaft, the improvement comprising an accumulator connected to the connection between the pump and the motor with means in said connection for permitting the actuating pressure source to be communicated to said accumulator, and an actuating pressure connection from the actuating pressure source to the brake for operating the brake and to the accumulator for operating the accumulator to connect the accumulator to the fluid motor before the brake is released.

2. A fluid drive system for a winch and similar lifting device, comprising a fluid drive motor having a drive shaft adapted to be connected to the lifting device, a brake connected to said drive shaft having a brake applying member which is engageable with said shaft for stopping said shaft, a brake control cylinder, a piston slidable in said control cylinder and engaged with said brake applying member for actuating said member to stop said shaft, means biasing said piston from one side of said cylinder to engage said brake applying member to stop said shaft, said piston being shiftable by brake actuating pressure against said biasing means, a control cylinder pressure line connected to said brake cylinder on the side opposite to said biasing means, an adjustable throttle member in said pressure line, a fluid drive pump having a pump discharge connected to said drive motor to drive said drive motor to rotate said shaft, a pressure accumulator having a pressure release valve connected to said pressure line for actuation by pressure therein, an accumulator pressure line connected from said accumulator to the communication between said pump discharge and said motor to supply accumulator pressure to said motor before the release of said brake, a valve control connected to said pump and to said pressure line venting said control cylinder when said piston actuates said brake but connecting said control cylinder to a source of actuating pressure to release said brake, a source of actuating pressure connected to said valve control, said throttle being set so that said actuating pressure acts on said release valve to connect said accumulating pressure to said motor before said brake is released.

3,871,715

AUTOMATIC BRAKE CONTROLLING METHOD AND DEVICE

Ryotara Hikida; Yasutaka Hayashi, and Hideo Arakawa, all of Nagoya, Japan, assignors to Kabushiki Kaisha Tyota Chuo Kenkyusho, Nagoya-shi Aichi-ken, Japan
Filed May 1, 1972, Ser. No. 249,220
Claims priority, application Japan, May 4, 1971, 46-29595
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **18 Claims**



1. An automatic brake controlling method for a brake to apply the braking forces to wheels of a moving vehicle, comprising

detecting an acceleration of the moving vehicle,
simultaneously detecting a wheel speed of said moving vehicle,
computing a vehicle speed by integrating said acceleration with an integrator,
computing an electrical signal indicating the difference between said vehicle speed and said wheel speed by comparing said computed vehicle speed and said detected wheel speed,
feeding back the electrical signal indicating the difference between said vehicle speed and said wheel speed to said integrator and a memory circuit through a first switching means so as to compute said vehicle speed equal to said wheel speed, whenever the brake is not applied,
opening said feedback circuit immediately after the application of the brake, cancelling drifts, noises, the effects of gravitational acceleration when said moving vehicle is travelling on an inclined road, in the instruments adapted to obtain the vehicle speed such as means for detecting the acceleration by the electrical signal indicating the difference between said vehicle speed and said wheel speed memorized by the memory circuit connected to the input of said integrator,
computing whether a slip ratio of said wheel speed to said vehicle speed is larger than a predetermined value or not, and
controlling the braking force in such manner that the braking force is reduced whenever said slip ratio is larger than said predetermined value and the braking force is recovered whenever said slip ratio is smaller than said predetermined value, when the brake is applied.

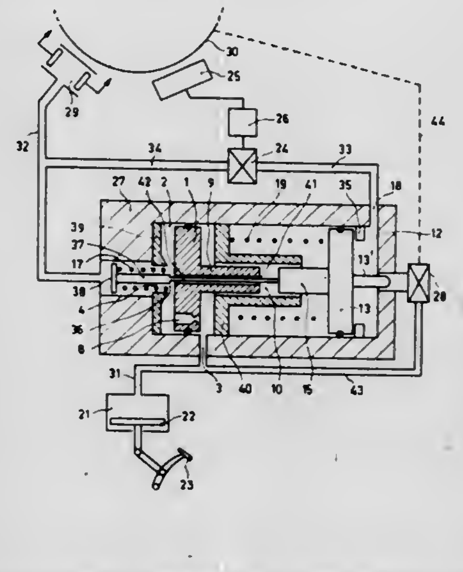
14. An automatic brake controlling device according to claim 3, wherein

said means for additionally controlling the braking force produced comprises
a four-way valve having two passages connected to each chamber of a brake booster a passage connected to engine intake manifold, and a piston, and
a relay comprising a solenoid connected to said second switching means and a D - C power source, a core connected to said piston of said four-way valve, and a spring to push said core,
thereby to connect selectively said passages connected to each chamber of a brake booster to said passage connected to engine intake manifold by controlling the position of said piston in response to pushing of the brake pedal, and to control the braking force.

3,871,716

ANTI-LOCK VEHICLE BRAKE SYSTEMS

Derek Robert Skoyles, Salford, United Kingdom, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 30, 1973, Ser. No. 365,220
Claims priority, application Great Britain, June 19, 1972, 28584/72
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **13 Claims**



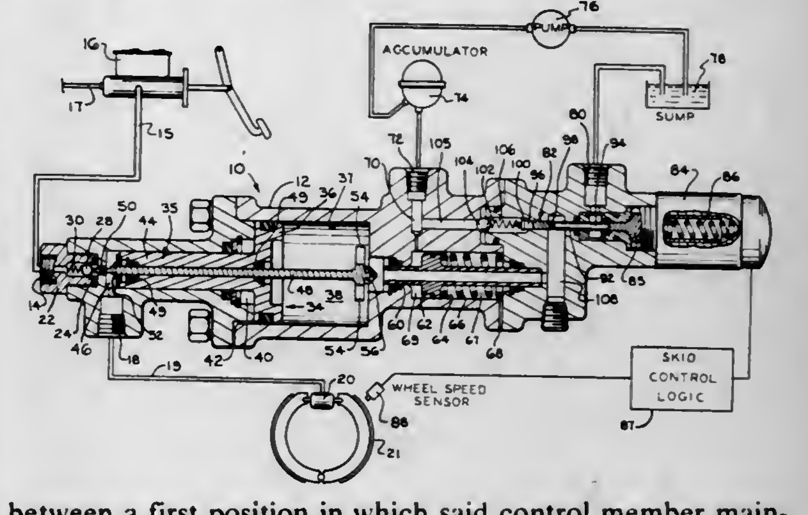
1. Fluid flow control apparatus comprising a housing having inlet and outlet ports, a metering orifice having a first side in fluid communication with said inlet port and a second axially spaced side in fluid communication with said outlet port, a flow-measuring piston carried by said housing for axial movement, with said piston having a first side in fluid communication with said inlet port and a second side in fluid communication with said outlet port, said piston modulating fluid flow upon axial movement thereof and shutting off all flow to said outlet in one axial position fluid outlet pressure never being more than the fluid inlet pressure and the fluid pressure difference across said piston providing a force tending to axially displace said flow-measuring piston into said one axial position, a fluid pressure equalizing path for applying fluid pressure at said outlet port to an equalizing area at the side of said flow-measuring piston remote from said outlet port which equalizing area is isolated from fluid pressure at said inlet port, spring means providing a force tending to displace said flow-measuring piston away from said outlet port in opposition to the force due to said fluid pressure difference, means for axially biasing said flow-measuring piston opposite to said spring means, said apparatus controlling the flow rate of fluid into said outlet port as a function of the force of said spring means and the cross-sectional area of said metering orifice.

3,871,717

HYDRAULICALLY OPERATED BRAKE PRESSURE MODULATOR

Kenneth D. Jensen, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Sept. 7, 1973, Ser. No. 395,267
Int. Cl. B60t *8/06, 13/16*
U.S. Cl. 303—21 AF **11 Claims**

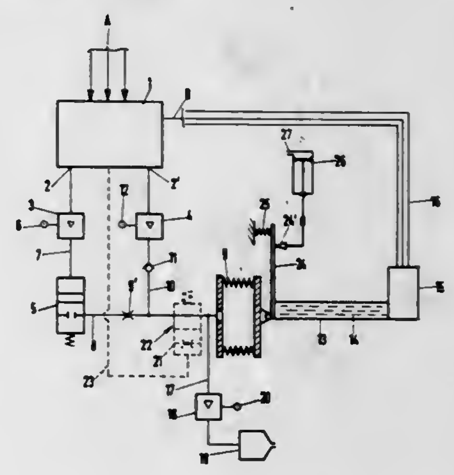
1. An antiskid brake pressure modulator having an inlet adapted for connection to a brake master cylinder and an outlet adapted for connection to a brake wheel cylinder and being operable in response to a sensed condition at a wheel to be braked and comprising; isolating valve means having a closed position for isolating said inlet from said outlet, piston means movable to form a variable volume chamber at one side between said valve means when the latter is in its closed position and said outlet, said piston means forming a variable pressure chamber at another side of said piston means, a source of secondary fluid pressure communicating with said variable pressure chamber for acting on said piston means and moving the latter between first and second positions to vary the volume of said variable volume chamber, a valve control member supported for movement relative to said piston means between a first position in which said control member maintains said isolating valve open and a second position in which said isolating valve is closed, and a fail-safe member slidably supported axially of said valve control member and having a normal position spaced from the latter in the presence of pressure at said secondary pressure source to communicate pressure to said variable pressure chamber and being movable to a second position in the absence of pressure at said secondary source to engage said valve control member and isolate said variable pressure chamber from said source and move said control member to its first position.



3,871,718

BRAKE CONTROL DEVICE FOR RAILWAY VEHICLES

Hans-Jorg Wurth, Lohhof, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany
Filed Apr. 9, 1974, Ser. No. 459,397
Claims priority, application Germany, Apr. 12, 1973, 2318499
Int. Cl. B60t *8/20*
U.S. Cl. 303—22 R **5 Claims**



1. In a brake control apparatus for railway vehicles and the like, the combination of a brake cylinder responsive to a pressure medium is selected stages of braking, adjustable means indicative of a selected braking stage for generating control signals as reference signals corresponding to a selected braking stage, means for sensing the pressure in the brake cylinder, means responsive to said pressure sensing means for generating actual value signals, means receiving said actual value signals and said reference value signals for comparing

said signals and generating an output signal indicative of said comparison and means including solenoid valves responsive to said output signals for regulating the pressure medium in the brake cylinder in accordance with a selected braking stage by introducing pressure medium into the cylinder and by venting the cylinder.

3,871,719

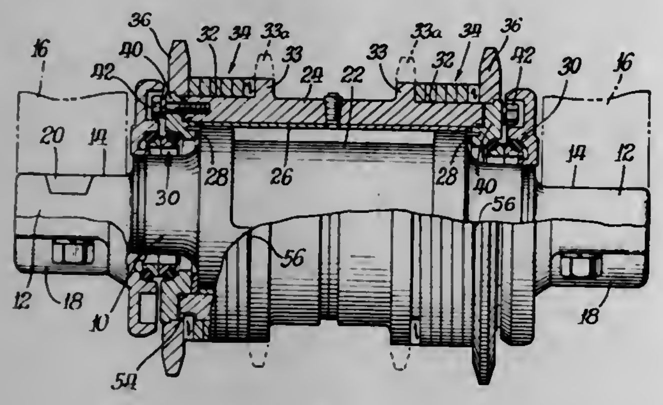
TRACK ROLLER WITH REPLACEABLE COILED TREAD

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1974, Ser. No. 438,666

Int. Cl. B62d *55/14*

U.S. Cl. 305—28 **7 Claims**



1. In a track roller assembly including a shaft adapted to be affixed to a tractor, a hub rotatably received on the shaft, a pair of treads on opposite ends of the hub and at least two guide flanges, one on each end of said hub, the improvement wherein each of said treads is defined by a plurality of metallic convolutions in side-by-side relationship.

3,871,720

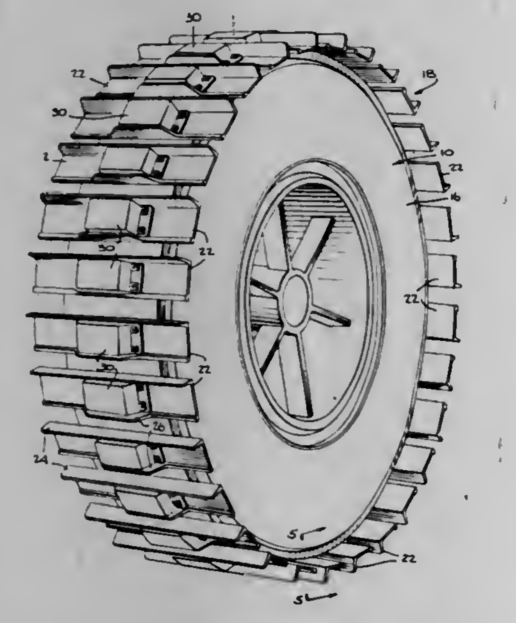
TRACTION TREAD BAND

Crockett Mosshart, and Paul Steve Martinkovic, both of Detroit, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed July 31, 1973, Ser. No. 384,187

Int. Cl. B62d *55/26*

U.S. Cl. 305—51 **8 Claims**



1. In combination, a pneumatic tire and a removable tread band therefor, said tread band having a continuously flexible, inextensible, annular band removably mountable, surroundingly, upon a conforming tread portion of said tire, the improvement comprising: a circumferential array of spaced rigid traction means affixed to said annular band for enhancing tire traction on a substantially soft road-bed; and a circumferential array of spaced elastomeric traction means affixed to said annular band for radially spacing said rigid traction means and absorbing shock from a substantially hard road-bed, said rigid and elastomeric traction means alternating with one another circumferentially of said annular band, said annular band to which are affixed said alternating rigid and elastomeric traction means being at least partially radially compressible for cooperating with said elastomeric traction means and said tire to absorb hard road-bed shocks, said rigid traction means including a plurality of substantially U-shaped grouser bars each of which in cross-section presents a pair of limbs and a transition portion integrally interconnecting said limbs, said elastomeric traction means including a plurality of pads each of which is confined between and embraced by a respective pair of limbs of a corresponding one of said grouser bars, each of said pads having a greater radial extent than the pair of limbs embracing it, each of said pairs of limbs constituting means for resisting shearing of the pad it embraces due to traction forces generated upon a hard road-bed, each of said transition portions constituting means for bearing the weight of the tire upon a soft road-bed and having an undersurface to which a respective one of said pads is fastened, at least one limb of each of said pairs of limbs having a greater axial extent than its associated pad and constituting a blade for gouging the surface of a soft road-bed.

3,871,721

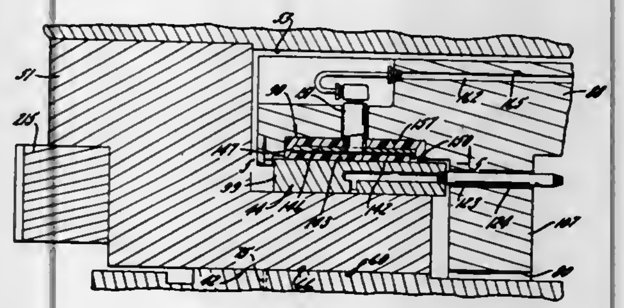
PRE-LOADED HYDROSTATIC WAY BEARING

William R. Siebert, Ford du Lac, Wis., assignor to Giddings & Lewis, Inc., Ford du Lac, Wis.

Division of Ser. No. 241,724, April 6, 1972, Pat. No. 3,772,961. This application Aug. 13, 1973, Ser. No. 387,916

Int. Cl. F16c *17/00*

U.S. Cl. 308—5 **3 Claims**



1. In a preloaded hydrostatic way bearing for relatively slidable machine tool members, the combination comprising

a. a supporting member having a supporting bearing surface;

b. a supported member slidably carried on said supporting member, said supported member having both a supported hydrostatic bearing surface disposed in sliding engagement with said supporting bearing surface and a preload hydrostatic bearing surface;

c. a plurality of hydraulic actuators held by said supporting member and linearly-spaced opposite said preload hydrostatic bearing surface; and

d. a plurality of preload gibs, each preload gib having a hydrostatic bearing surface and being interposed between an associated actuator and said preload hydrostatic bearing surface with said gib's hydrostatic bearing surface disposed in sliding engagement with said preload hydrostatic bearing surface;

e. each of said hydraulic actuators including
a flexible bladder means and
means defining a pressure chamber within said bladder means; a rigid core means disposed within said pressure chamber and

f. means for supplying hydraulic pressure to said pressure chambers to cause said actuators to apply a uniform preload force via said gibs to said hydrostatic bearings.

3,871,722

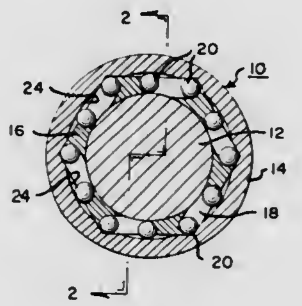
ANTI-FRICTION BALL BEARING ASSEMBLY

Albert R. McCloskey, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.

Filed Aug. 8, 1972, Ser. No. 278,790

Int. Cl. F16c *29/06*

U.S. Cl. 308—6 C **7 Claims**



1. An anti-friction ball bearing assembly comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, said inner sleeve having a central opening for the passage of a shaft therethrough, the inner sleeve having a number of tracks defining paths for the circulation of balls, circulation of a number of load carrying balls and idler balls between said sleeves and said shaft during relative movement between said shaft and said bearing assembly, said idler balls interposed between said load carrying balls, said idler balls having a diameter somewhat less than said load carrying balls, the outer surface of the inner sleeve being polyhedronal in shape, the inner surface of the outer sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways, said inner surface of the outer sleeve is further provided with a number of substantially concave bearing surfaces aligned with said tracks such that they provide a rolling bearing surface for said load carrying balls while said load carrying balls are in their loaded state.

3,871,723

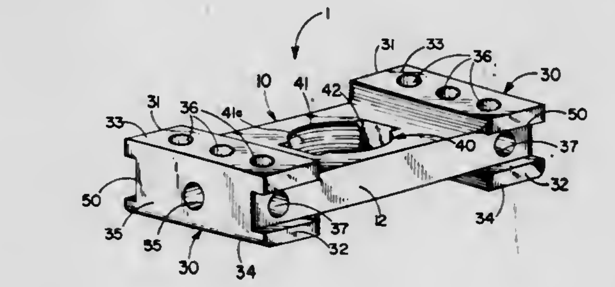
MULTI-PURPOSE BEARING MOUNT

Percy E. Pray, 912 Third Ave., South, Minneapolis, Minn. 51515

Filed Dec. 12, 1973, Ser. No. 424,090

Int. Cl. F16c *35/12*

U.S. Cl. 308—15 **4 Claims**



1. A bearing mount capable of being mounted in a plurality of optional orientations relative to a support surface, said bearing mount comprising:

a. a web member extending between two mounting flanges;

b. a bearing seat located in said web member for receiving a bearing therein with the bearing axis of rotation generally perpendicular to said web member;

c. each of said flanges having first and second mutually perpendicular mounting surfaces lying in planes removed from said web member, said first mounting surface generally parallel to said web member; and

d. means for selectively securing said bearing mount to the support surface with one of said first or second mounting surfaces of each flange abutting the support surface.

3,871,724

CLUTCH BEARINGS

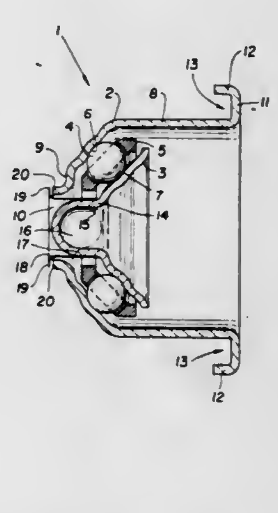
Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, both of Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Mar. 30, 1973, Ser. No. 346,581

Claims priority, application Germany, Apr. 13, 1972, 7213788

Int. Cl. F16c *19/04*

U.S. Cl. 308—233 **6 Claims**



1. A clutch bearing comprising a sheet metal bowl shaped outer ring having a central bore, a sheet metal bowl shaped inner ring having a cylindrically shaped central portion extending within said central bore and a plurality of ball bearing elements located between said inner and outer rings, said outer ring being cylindrically extended to form a sleeve adapted to seat within a conforming bore, and having means extending radially outward therefrom to receive an operating lever, whereby said outer ring may be axial and radially moved relative to said inner ring, a cylindrical sleeve located within the central bore of the outer ring about the extending cylindrical portion of the inner ring, said sleeve being secured to said central portion and having a free end extending radially outward over the edge of the bore of the outer ring to hold said inner and outer rings together.

3,871,725

SELF LEVELING MECHANISM FOR TRAY CART

Erik O. Vilen, La Grange Park, and Vytas Zygas, Cicero, both of Ill., assignors to G. S. Blakeslee & Co., Cicero, Ill.

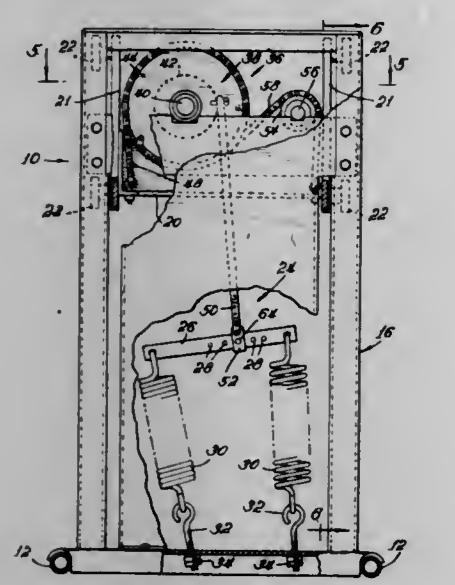
Filed Mar. 18, 1974, Ser. No. 451,985

Int. Cl. A47f *1/06*

U.S. Cl. 312—71 **4 Claims**

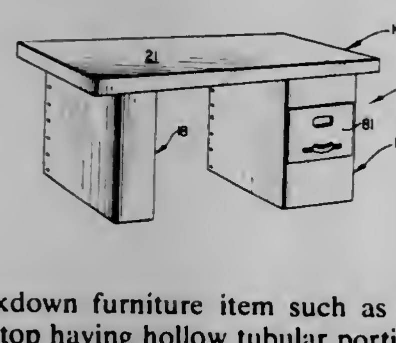
1. For use in a tray cart having main frame means including an upright mast, and a horizontal carrier supported for vertical movement in the upright mast: self leveling mechanism for the carrier comprising a free-floating cross bar, a pair of laterally spaced upright spring units adjacent the lower end of the upright mast, said spring units being secured at their lower ends to the main frame means and at their upper ends to the opposed ends of said cross bar, means for transmitting and reversing the direction of force between the carrier and said cross bar, said force transmitting means being carried by the upright mast adjacent the upper end thereof and having connection with the carrier, means connecting said force transmitting means to said cross bar intermediate of the ends of the latter whereby said spring units impose a tension on said cross

bar and said force transmitting means and thereby urge the carrier upwardly, and said connecting means being adjustably positionable lengthwise of said cross bar for varying the effective tension of said pair of spring units.



3,871,726
KNOCKDOWN DESK AND TABLE

Douglass M. Stegner, 1816 Circle Rd., Ruxton, Md. 21204
Filed June 20, 1973, Ser. No. 371,886
Int. Cl. A47b *41/00, 3/06*
U.S. Cl. 312—195 **8 Claims**



1. A knockdown furniture item such as a desk or table comprising a top having hollow tubular portions of rectangular cross section, two supporting uprights, each of said uprights being of hollow rectangular cross section including walls terminating in upwardly extending tongues, a bottom wall of said top having slots for receiving said tongues, means for interlocking certain of the tongues to the table top, at least certain of said slots being formed in bottom walls of said tubular portions, and an insert forming a part of said top and disposed beneath the central portion of a top wall thereof and between and in close engagement with certain of said tubular portions, said insert comprising two of said tubular portions disposed in side by side abutting engagement.

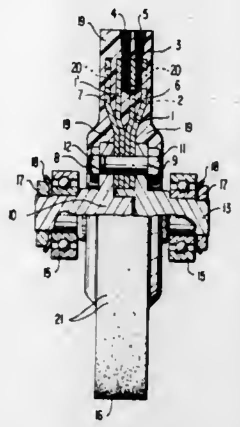
3,871,727
CURRENT COLLECTING ROLLER

Kazumi Matsui; Takashi Umemori, both of Tokyo; Yutake Shibata, and Kinzo Yamamura, both of Osaka, all of Japan, assignors to Japanese National Railways, Tokyo, and Sumitomo Electric Industries, Ltd., Osaka-shi, both of Japan
Filed Dec. 7, 1972, Ser. No. 313,070
Claims priority, application Japan, Dec. 20, 1971, 46-03432; Dec. 20, 1971, 46-03433; Dec. 20, 1971, 46-03434; Dec. 20, 1971, 46-20398; Dec. 20, 1971, 46-20400; Dec. 20, 1971, 46-20401; Dec. 20, 1971, 46-20402; Dec. 20, 1971, 46-20403; Apr. 25, 1972, 47-41880; Apr. 25, 1972, 47-49254
Int. Cl. H01r *39/64*
U.S. Cl. 339—8 R **21 Claims**

1. A current collecting roller having a cylindrical current collecting surface and comprising:

a. conductor means comprising a plurality of flexible conductors positioned in said roller at least in the proximity of said surface thereof for collecting current from a trolley wire;

b. an elastomer filling the spaces between said conductor and forming the body of said roller;

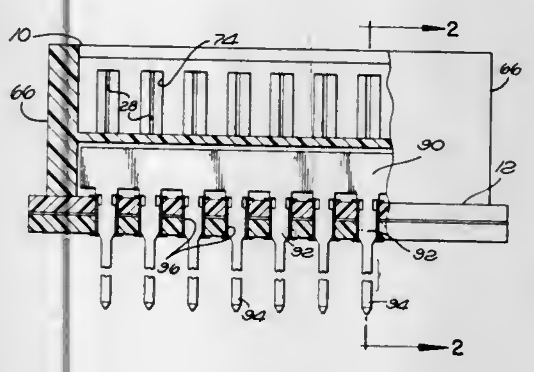


c. the ends of said conductors extending to said cylindrical surface, so that said elastomer and the outer ends of said conductors form said cylindrical current collecting surface; and

d. shaft means for mechanically supporting said roller body, said shaft means being disposed centrally of said roller body and being electrically connected to said plurality of conductors.

3,871,728
MATCHED IMPEDANCE PRINTED CIRCUIT BOARD CONNECTOR

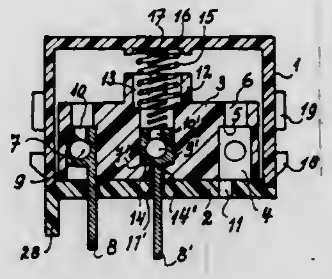
David S. Goodman, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 30, 1973, Ser. No. 420,532
Int. Cl. H01v *3/06;* **H05k** *1/07*
U.S. Cl. 339—14 R **8 Claims**



1. An electrical edge connector for a printed circuit board comprising:
- a mounting board having a ground plane and a signal trace separated by an insulator, a plurality of plated through holes in said board, a first plated through hole being connected to said trace, and second and third plated through holes being connected to said ground plane;
- an elongated insulative connector housing mounted on said board having a slot therein for receiving the edge of a printed circuit board;
- electrical contacts in said housing for engaging said printed circuit board edge;
- a grounding bus extending lengthwise in said housing below said slot;
- a first contact having a mounting portion mounted in said first plated through hole; and
- a second contact and said grounding bus having mounting portions mounted in said second and third plated through holes, respectively.

3,871,729
SYSTEM FOR THE INSTALLATION OF ELECTRIC WIRING IN A BUILDING

Gijsbertus Attema, Gorinchem, Netherlands, assignor to Researchcentrum Ogemat N.V., Gorinchem, Netherlands
Filed Oct. 2, 1972, Ser. No. 294,365
Claims priority, application Netherlands, Oct. 6, 1971, 13699; Oct. 25, 1972, 11599
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **29 Claims**

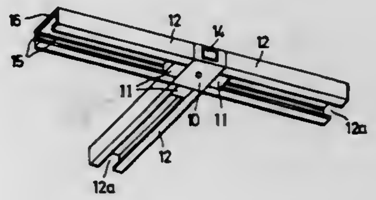


1. A contact plug including
- a housing comprising
  - an elongated bottom member having
    - apertures extending therethrough in a first direction
    - contact pins slidably mounted in said apertures and extending from said housing,
    - means for biasing said contact pins so that they normally extend from said housing,
    - longitudinal upstanding ribs extending along one surface of said bottom member and defining
    - grooves extending along said housing in a second direction and intersecting said apertures, and
    - electrical conductors extending along said grooves and connected to said contact pins and
  - an elongated cover member for enclosing said ribs, grooves, conductors, and one end of said apertures and including
    - means against which said biasing means may react when urging said contact pins out of said housing,
    - means for releasably attaching said bottom member thereto, and
    - means for releasably attaching said housing behind a pair of ribs within an elongated cable duct having a width dimension which is only wider than the width of said housing by an amount sufficient to allow said attaching means to cooperate with the ribs when said housing is pushed into the duct.

3,871,730
CONNECTING DEVICE FOR CURRENT DISTRIBUTOR RAILS

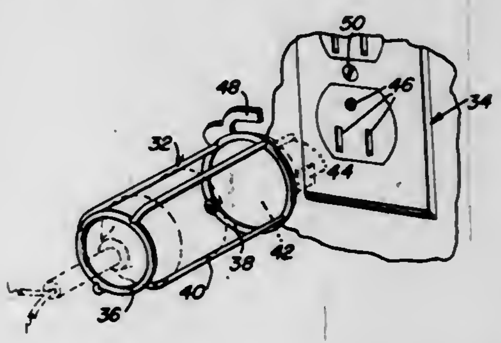
Kurt Hesse, Lemgo, Germany, assignor to Staff KG, Lemgo, Germany
Filed Mar. 23, 1973, Ser. No. 344,207
Claims priority, application Germany, Apr. 1, 1972, 2216085; Feb. 21, 1973, 7306545
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **22 Claims**

3. A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each said connecting contact having a contact bearing plate and four contact tabs with imaginary tab extensions crossing at a common point, said crossing point being located in a corner of said contact bearing plate, two adjacent ones of said contact tabs extending outwardly at a right angle to each other located on the inner sides of the angle of two adjacent ones of said sockets, and two other contact tabs extending outwardly also at a right angle to each other located on the outsides of the angle of two other two adjacent ones of said sockets, the contact bearing plate of said connecting contact being provided in a free corner between two adjacent tabs with a fixing surface which cooperates with a fixing surface of said connecting body for correct positioning of said contact, said fixing surfaces for all connecting contacts being arranged diagonally and alternately opposite to each other in said connecting body.



3,871,731
CAGE FOR REMOVABLY ENCLOSING COUPLED ELECTRICAL PLUGS

Peter A. LaCoursiere, Sr., Rt. 1, Box 1262, Grandview, Wash. 98930, and Peter A. LaCoursiere, Jr., Box 692, Goldendale, Wash. 98620
Filed Sept. 27, 1973, Ser. No. 401,154
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 P **7 Claims**

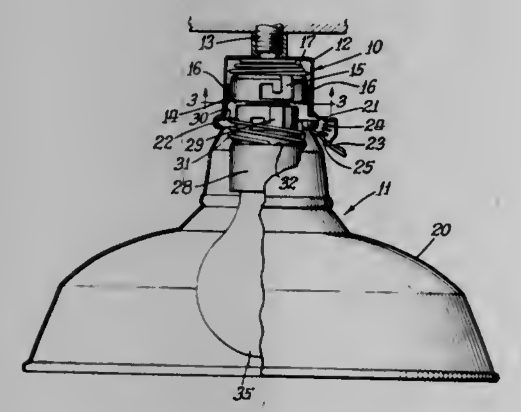


1. A retaining cage for coupled electrical plugs comprising a pair of longitudinally spaced rings, elongated bars extending between and rigidly fixed to said rings, and means providing for a lateral introduction of said cage over coupled electrical

plugs with the plug engaged current conductors projecting outward of the cage through said rings, one of said rings being of a lesser diameter than the internal diameter of the cage defined by the cage bars to preclude movement of a cage received plug therethrough, said bars, at the end corresponding to the one ring of lesser diameter, turning inward to engage this ring, the second ring also being of a lesser diameter than the internal diameter of the bar defined cage.

3,871,732
LIGHT SOCKET WITH AUXILIARY CONTACT

Arthur I. Appleton, 1 Bridlewood Rd., Northbrook, Ill. 60062
Filed June 21, 1973, Ser. No. 372,183
Int. Cl. H01r *13/54, 17/20*
U.S. Cl. 339—91 L **3 Claims**

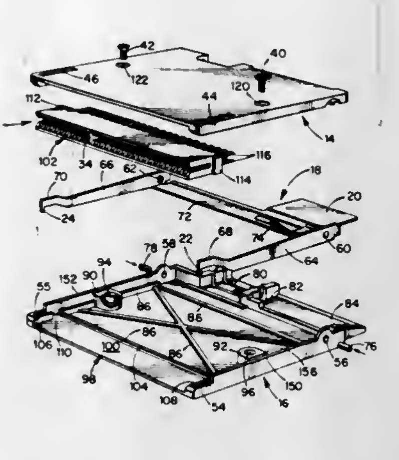


1. In a light fixture of the type comprising a fixedly mounted base and an assembly releasably attached to the base both of which are aligned with a vertical axis, said assembly and base each including an insulator member having ends in juxtaposition with each other, the assembly member defining a light bulb socket, each member having means, a portion of which is at said end thereof, for providing an electrical circuit from said base to said socket, said portion of said means on one member including a central contact transverse to and intersecting said axis and an annular contact surrounding and spaced a given distance from said central contact, said portion of said means of the other member comprising a first central contact transverse to and intersecting said axis and a second single contact spaced from said first contact by said distance in a first radial direction from said axis and covering only a small portion of the area covered by said annular contact, said contacts being relatively rigid, said assembly having means releasably holding said members with their ends so juxtaposed which holding means does not necessarily hold the members rigidly in that position but may permit some rocking of one member with respect to the other whereby a poor electrical circuit may occur between the second single contact and said annular contact, the improvement comprising:

said portion of said means of the other member including a third contact spaced from said first contact by said distance in a second radial direction angularly positioned from said first radial direction, said third contact converging only a small portion of the area covered by said annular contact, said portion of said means of the other member including a spring arm resiliently supporting said third contact from said other member.

3,871,733
CONNECTOR ASSEMBLY HAVING POSITIVE RETENTION MEANS

Eberhardt P. Praeger, Natick, Mass., and Richard P. Stanton, Clearwater, Fla., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 18, 1972, Ser. No. 316,335
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **18 Claims**



1. A connector assembly for use with a printed circuit board having a plurality of printed circuit contacts and at least one retention hole, said assembly comprising:

- A. a lower plate comprising
  - 1. slot means at one end of said lower plate for receiving a cable having a plurality of wires,
  - 2. connector retention means at the other end of said lower plate for receiving a connector having a plurality of contacts for mating with said printed circuit contacts, and
  - 3. pivot means on either side of said lower plate near said one end of said lower plate;
- B. further retention means pivotably mounted with said pivot means of said lower plate, said further retention means made from one piece of material and having depression means extending beyond said one end of said lower plate and at least one retention plug for engaging said at least one retention hole on said printed circuit board.
- C. an upper plate secured to said lower plate, both said plates partially enclosing said further retention means, said received cable and said connector; and
- D. means, securely attached to said further retention means and enclosed between said upper and lower plates, for enabling said at least one plug means in a normal position for engaging said at least one retention hole when said upper and lower plates are secured together, except when said depression means is depressed.

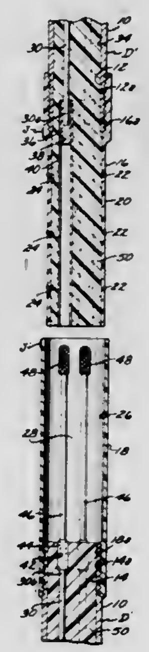
3,871,734
ELECTRICAL CONDUCTING FLUID TIGHT TUBULAR ASSEMBLY

Delbert Lyle Murtland, 20612 Kelvin Ln., Huntington Beach, Calif. 92646
Filed Feb. 25, 1974, Ser. No. 445,129
Int. Cl. H01r *7/02*
U.S. Cl. 339—94 M **9 Claims**

1. A fluid tight tubular assembly that includes a plurality of engaging sections that are longitudinally movable relative to one another and are disposed in coaxial alignment end to end in an oil well bore hole to supply electric power to a device situated in said bore hole, said assembly being removably secured to a string of oil well tubing situated in said bore hole and extending longitudinally therein, said tubular assembly including:

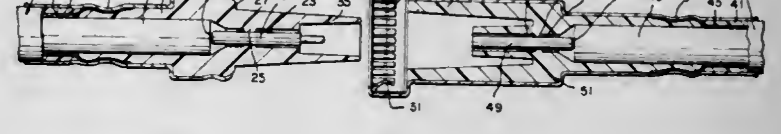
- a. a plurality of said sections, with each of said sections comprising:
  - 1. an elongate tubular member that has first and second ends;

  - 2. first and second tubular sleeves that are longitudinally aligned with said tubular members and extend outwardly from said first and second ends thereof, with the exterior diameter of said first sleeve being slightly less than the interior diameter of said second sleeve;
  - 3. a plurality of longitudinally extending laterally spaced electrical conducting cables in said tubular member;
  - 4. a plurality of electrical conducting tubes in said first sleeve that are laterally spaced from one another and in electrical communication with said cables;
  - 5. a plurality of rigid elongate electrical conducting prongs in said second sleeve that are in the same lateral spacing as said tubes, with said prongs being of such transverse cross section as to be slidably insertable in one of said tubes of an adjacently disposed one of said sections, and each of said prongs when so inserted establishing electrical communication between said prong and said tube in which it is inserted;
  - 6. a solidifed non-electrical conducting material in said tubular member and first sleeve that holds said cables and tubes in said lateral spacing, and said material gripping the portions of said prongs most adjacent said tubular member to maintain said prongs in said lateral spacing in said second sleeve; and
  - 7. a plurality of longitudinally spaced, circumferentially extending resilient sealing rings mounted on the exterior surface of said first sleeve that effect a fluid tight seal between said first sleeve and a second sleeve of an adjacent one of said sections when said first sleeve is longitudinally inserted in the latter;
- b. first means for electrically connecting said tubes in said first sleeve of the lowermost one of said sections in said bore hole to the terminals of said device;
- c. second means for electrically connecting said prongs in said second sleeve of the uppermost one of said sections to a source of electric power, with said assembly between said lowermost and uppermost sections comprising a plurality of said sections that are axially aligned with said first and second sleeves of the adjacent end portions of said plurality of sections in slidable sealing engagement and said tubes and prongs thereof also in slidable electrical communication with one another; and
- d. third means for removably securing each of said sections to said tubing string to maintain said tubular assembly in fixed lateral spacing relative thereto, with said tubular assembly elongating and contracting as said tubing string changes in length due to variations in temperature in said bore hole by said first and second sections and tubes and prongs therein of adjacently disposed of said sections moving longitudinally relative to one another.



3,871,735
SHIELDED HIGH VOLTAGE CONNECTOR

Henry Otto Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harrisburgh, Pa.
Filed Aug. 23, 1973, Ser. No. 390,812
Int. Cl. H01r *17/06*
U.S. Cl. 339—177 R **10 Claims**

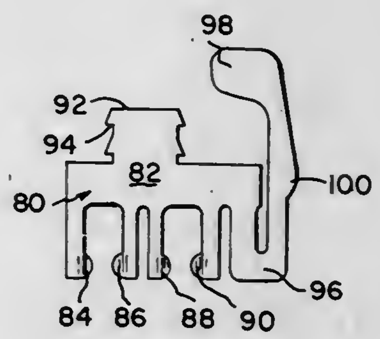


1. An electrical connector member which comprises, in combination,

- a. a wire having an inner conductor and an outer conductor electrically separated from said inner conductor by insulation and surrounding said inner conductor,
- b. a pin secured to said inner conductor,
- c. a body of rigid electrically insulating material positioned over said insulation, said outer conductor extending over the outer surface of said body, and
- d. a first electrically conducting metal can frictionally secured to said body and crimped to said outer conductor, wherein said body defines a shoulder and a reduced diameter nose forward of said housing, said first can being frictionally secured to said body behind said shoulder and extending over said shoulder.

3,871,736
CONNECTORS PROVIDING INTERCONNECTION BETWEEN CLOSELY SPACED CONDUCTORS AND WIDELY SPACED TERMINALS

Clyde Thomas Carter, Shermans Dale, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 20, 1973, Ser. No. 399,240
Int. Cl. H01r *9/08, 13/54*
U.S. Cl. 339—221 R **3 Claims**



1. An electrical connector mounted in a housing to make good electrical and mechanical interconnection between a circuit board attached to one side of the housing and a terminal adjacent the opposite side of the housing, comprising:

a connector body having at least one retention projection extending from each of two opposite sides of said body; a resilient circuit board contacting arm comprising a simple beam extending from said body and having a contact projection on the free end thereof;

at least one pair of resilient, parallel, spaced apart legs depending from said body and adapted to resiliently grip said terminal therebetween; and

a resilient test access arm integral with one of said legs and adapted to extend therefrom in cantilever fashion to project from said housing thereby providing constant test access to said connector.

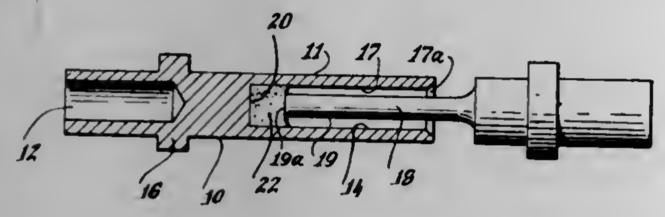
3,871,737
SOCKET CONTACT WITH CONDUCTIVE ELASTOMER CONTACTING SURFACE

Robert Francis Dorrell, Des Plaines, and Norman Richard Anderson, Cicero, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 323,867, Jan. 15, 1973, abandoned. This application June 5, 1974, Ser. No. 476,612

Int. Cl. H01r *13/12*

U.S. Cl. 339—255 R **2 Claims**



1. A socket contact for use in an electrical connector adapted to receive a metal pin, said pin having a peripheral surface and a transverse forward end surface for establishing an electrical connection between said pin and contact comprising:
- a metallic contact body having an elongated hole formed therein with an elongated axis, said hole extending from one end of said body and defined by an axially extending peripheral surface portion, a rear metal surface on said body at a position spaced in one direction from said one end of said body to define a rear axial end of said hole; an axially extending layer of conductive elastomer material positioned in said hole with said layer of elastomer material having a peripheral surface extending axially of said hole and engaging said peripheral surface portion of said hole throughout the axial extent of the peripheral surface of said layer of elastomer material;
- a rear surface on said layer of elastomer material engaged with the rear metal surface defining the rear axial end of said hole; and
- a forward surface on said layer of conductive elastomer material spaced from the one end of said body and transverse to the axis of said pin and hole with the forward surface of said layer of elastomer material terminating the peripheral surface of said layer and having an area corresponding to the area of said transverse forward end surface of said pin and placing said layer of elastomer material under the axial pressure of said pin between the rear axial end of said hole and said transverse forward end surface to establish said electrical connection as a low resistance electrical path through the transverse forward end surface of said pin and the forward surface of said layer of elastomer material transverse to the axis of said pin without deformation of either said pin or socket contact in response to the insertion of said pin in said hole to engage said layer of elastomer material under said axial pressure.

3,871,738
FUSE CONTACTS

Helen Dechelette, Saint Cloud, France, assignor to AMP Incorporated, Harrisburg, Pa.

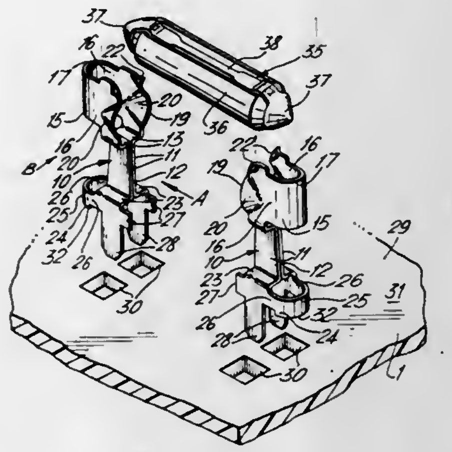
Filed Nov. 29, 1973, Ser. No. 420,181

Claims priority, application France, Dec. 14, 1972, 72.44595

Int. Cl. H05k *1/04*

U.S. Cl. 339—256 C **4 Claims**

1. A unitary electrical contact for a cartridge fuse having conical conductive ends, the contact being stamped and formed from resilient sheet metal and comprising two superposed strips having a contiguous portion forming a composite leg disposed in a first plane and having a mounting foot at one end, the strips being bent apart at the other end and being integrally joined at the other end by a U channel receptacle having two spaced walls joined by a bight, the channel extending generally along the axis of the composite leg with the walls located in second and third planes generally parallel to the first plane, each channel wall being bent at an end portion remote from the bight away from the other wall into the form of a part surface of a cone the apex of which is located between the bight and the end portions and the axis of which extends from the apex away from the bight and between the channel walls, the two part-conical surfaces forming a contact portion.



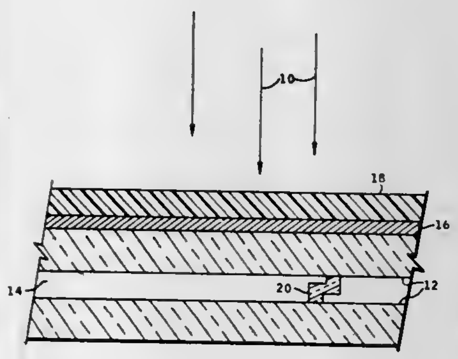
3,871,739
SYSTEM FOR PROTECTION FROM LASER RADIATION

Peter D. Poulsen, Huntsville, Ala., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Aug. 14, 1972, Ser. No. 280,312

Int. Cl. G02b *5/26*

U.S. Cl. 350—1 **3 Claims**



1. In a protective means for protecting against high energy infrared radiation comprising a sheet which is substantially transparent to visible light, an object sensitive to high energy radition on the first side of said sheet and a high energy infrared laser radiation source on the second side of said sheet, said sheet having a coating on said second side of said sheet which is substantially reflecting to infrared radiation and substantially transmitting to visible light; the improvement comprising about a 0.001 to 0.005 inch thick layer over said coating of a material which vaporized without residue when subjected to said laser radiation, whereby contamination on said layer is blown away without damage to said coating and said sheet, and said coating remains transparent to visible light and reflecting to infrared radiation.

3,871,740
BINARY CODE CONVERSION TO PRODUCE BINARY HOLOGRAMS WITH ENHANCED DIFFRACTION EFFICIENCY

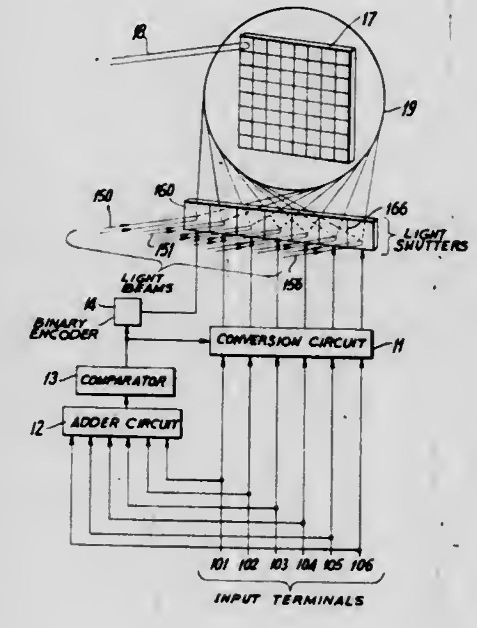
Itsuo Matsubara, Kanagawa, and Mitsuhito Sakaguchi, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company Limited, both of Tokyo, Japan

Filed Mar. 12, 1974, Ser. No. 450,401

Claims priority, application Japan, Mar. 14, 1973, 48-28964

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **2 Claims**



1. An arrangement for manufacturing a holographic memory plate with a number of mini-holograms recorded thereon in lines and columns, each mini-hologram being formed by the interference of a coherent reference beam and plural information-bearing coherent light beams, comprising:
- a plurality of input terminals for receiving binary signals supplied in a parallel word-by-word fashion,
- means for counting for each binary signal word the number of those digits which are in a predetermined one of the two binary states,
- means responsive to the binary state digit counting means for providing a control signal when the number exceeds one half of the binary digits of each said word,
- means coupled with said input terminals and responsive to said control signal supplied thereto by said control signal providing means for selectively inverting the states of said binary digits,
- means for converting said control signal into a binary digit, means for generating a plurality of parallel coherent light beams equal in number to the number of binary digits in each word plus one for the control signal binary digit,
- shutter means disposed in the light paths of said parallel coherent beams for controlling the passage of light therethrough such that each of said parallel coherent beams is selectively blocked or passed in response to the state of a different one of said binary digits provided by the output of said selective inverting means and said converting means,
- a photographic plate disposed to be irradiated by said light beams transmitted through said shutter means, and means for irradiating said photographic plate simultaneously with a reference beam to form interference patterns with the output beams from said shutter means to form one mini-hologram on said photographic plate.

3,871,741
COMPACT OPTICAL SYSTEM PERMITTING INSTANTANEOUS INCREASE IN MAGNIFICATION WITHOUT REFOCUSSING

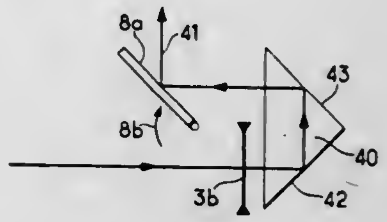
Serge Clave, and Marcel Clave, both of 9 rue Oliver Metra, Paris, France 75020

Filed Apr. 19, 1973, Ser. No. 352,610

Claims priority, application France, Apr. 26, 1972, 72.14870

Int. Cl. G02b *7/04*

U.S. Cl. 350—37 **5 Claims**



1. An optical system comprising:
- an eyepiece,
- an objective,
- movable reflecting means pivotally mounted between said eyepiece and objective to swing between a first position and a second position,
- stationary reflecting means, and
- stationary image-amplifying means,
- said movable reflecting means being positioned to reflect light rays from said objective to said eyepiece along a first patch excluding said image-amplifying means and stationary reflecting means, when said reflecting means is in said first position, and to reflect light rays from said objective to said eyepiece along a second path from said objective to said eyepiece including said stationary reflecting means and said image-amplifying means when said movable reflecting means is in said second position,
- said second optical path being longer than said first optical path by a distance equal to the increase in the distance between said objective and the image formed thereby resulting from the inclusion of said image-amplifying means in said second optical path.

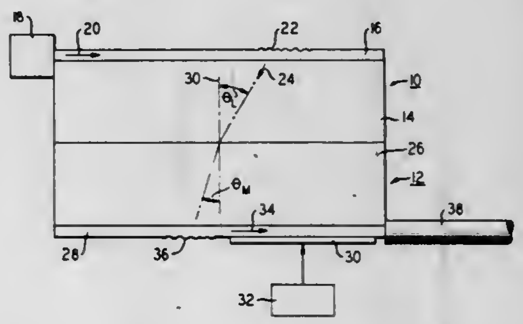
3,871,742
COMPOSITE THIN FILM OPTICAL DEVICE

Ivan Paul Kaminow, New Shrewbury, and Herwig Werner Kogelnik, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 18, 1973, Ser. No. 407,522

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **9 Claims**

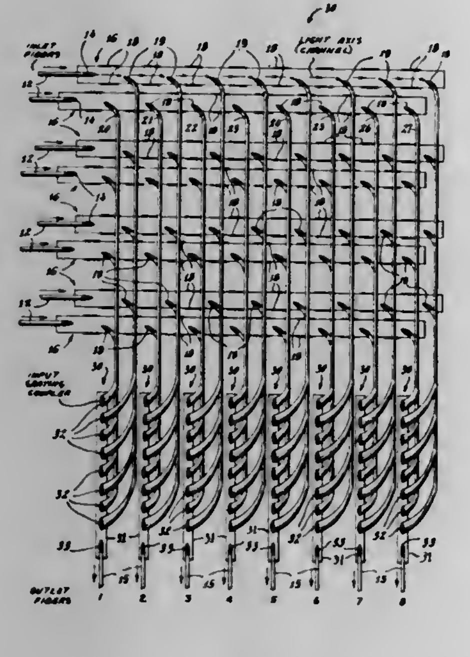


1. A device comprising substrate means having wave propagating layers on spaced-apart surfaces thereof, means interposed in the path of waves propagated in one of said layers for directing said waves through said substrate means to impinge upon said other layer, and means associated with said other layer and interposed in the path of said directed waves for causing said directed waves to propagate in said other layer, wherein said substrate means comprises two distinct substrate

members butted together, each of said members having an optical waveguiding thin film thereon.

3,871,743
OPTICAL CROSSPOINT SWITCHING MATRIX FOR AN OPTICAL COMMUNICATIONS SYSTEM

John E. Fulenwider, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed June 4, 1973, Ser. No. 366,941
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **11 Claims**



1. An optical switch for an optical communications system comprising:

a thin film light propagating channel formed on a supporting substrate of lower refractive index and having a longitudinal axis, an inlet port thereon adapted to be optically coupled to an external input signal of light, and a plurality of outlet ports also formed on the substrate and spaced one from another along said longitudinal axis and joined directly to the thin film light propagating channel and to a plurality of coupling fibers, said channel propagating said input signal along said longitudinal axis; and

switching means for interconnecting said input signal to any selected one of said outlet ports, said switching means including a means for optically steering the input signal from said longitudinal axis toward the selected one of said outlet ports, whereby any input signal may be switched through any selected outlet port for transmission.

3,871,744
OPTICAL FIBER CONNECTOR

drew Bridger, Brighton; Mark L. Dakss, Waltham; Stanley Zemon, Boston, and Samuel M. Stone, Lynnfield, all of Mass., assignors to GTE Laboratories Incorporated, Walham, Mass.
Filed Aug. 19, 1974, Ser. No. 498,805
Int. Cl. G02b *5/14;* **H01r** *13/58*
Cl. 350—96 C **9 Claims**

A connector for an optical fiber having a protective ath normally therearound comprising

main body having a generally cylindrical external configuration and front and rear surfaces, the optical fiber entering the main body through the rear surface and terminating adjacent to the front surface, the main body having a first, generally axial bore extending inwardly from the rear surface toward the front surface and being sized to receive the optical fiber freely therethrough, the first bore having a forward portion and an enlarged diameter rear portion, the enlarged portion being sized to receive freely the sheath and optical fiber over the full length thereof, the main body also having a second bore extending rearwardly from the front surface generally parallel to the first bore and having a rear portion and an enlarged diameter forward portion, and communicating at the rear thereof with the first bore,

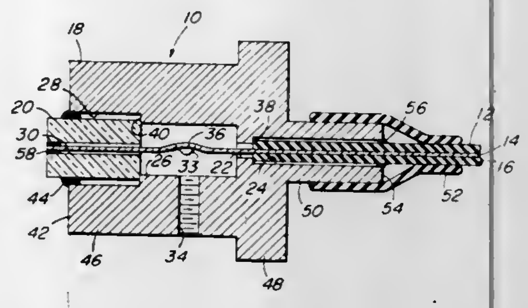
an inner rigid right circular cylindrical sleeve being disposed in the enlarged forward portion of the second bore and having an axial bore therethrough, the bore of the inner sleeve being sized to enable the optical fiber to be inserted therein, the outer diameter of the inner sleeve being within the range of diameters defined by the rear portion of the second bore and the enlarged portion thereof,

means for affixing the optical fiber to the inner sleeve,

means for forming a bow in the optical fiber in the rear portion of the second bore so that external forces are exerted on the sheath rather than the optical fiber,

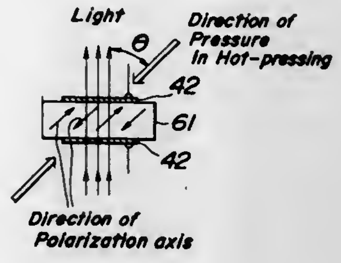
means for affixing the inner sleeve to the main body, and

means for affixing the sheath to the main body.



3,871,745
VISUAL INFORMATION STORAGE AND DISPLAY DEVICE

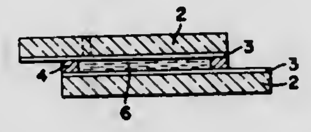
Shigeru Waku; Shintaro Hayashi, both of Tokyo; Hiroyuki Shibata, Tokorozawa, and Takehisa Kawashima, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan
Filed Mar. 21, 1973, Ser. No. 343,337
Claims priority, application Japan, Mar. 27, 1972, 47-29782; Nov. 14, 1972, 47-11344
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **11 Claims**


Light
θ
Direction of Pressure In Hot-pressing
42
61
42
Direction of Polarization axis

1. An information storage and display device which comprises a thin ceramic sheet having an optical axis oriented before the application of electrodes thereto at an angle of between 30° and 90° with the normal direction to the surface of the sheet, said sheet being cut out from a transparent ferroelectric ceramic block having an optically uniaxial anisotropy without annealing, wherein the direction of polarization axis orients antiparallel and that of optical axis orients parallel to direction of applied pressure during and after the hot-pressing stage; photoconductive films and transparent electrodes for writing and erasing informations by light and provided over both sides of said ceramic sheet; a light source and a power source for writing and erasing information by light; and a means of polarized light optic system for displaying the storaged informations.

3,871,746
LIQUID CRYSTAL CELL

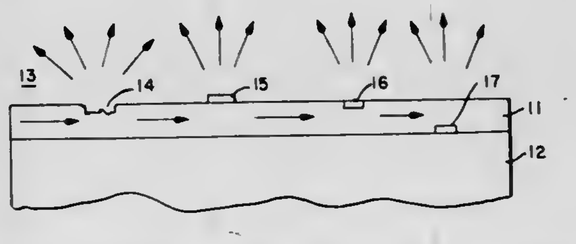
Ryujiro Muto; Shigemasa Furuuchi, both of Yokohama; Hiroshi Ukihashi, Tokyo; Katsuo Uchijima, and Hiromichi Nishimura, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed June 6, 1973, Ser. No. 367,527
Claims priority, application Japan, June 6, 1972, 47-55681
Int. Cl. G02f *1/34*
U.S. Cl. 350—160 LC **10 Claims**



1. In a liquid crystal cell filled with a liquid crystal material between the pair of plates sealed with a sealant and disposed at a designated distance from one another by a spacing element therefor, the improvement which comprises the use of a sealant of tetrafluoroethylene-ethylene copolymer or chlorotrifluoroethylene-ethylene copolymer.

3,871,747
OPTICAL WAVEGUIDE DISPLAY PANEL

Ronald A. Andrews, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 3, 1972, Ser. No. 294,733
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 R **16 Claims**



1. An optical waveguide display panel; which comprises,

a substrate,

at least one slab or dielectric material of uniform thickness secured onto said substrate, said slab of dielectric material having an index of refraction higher than said substrate,

a waveguide region formed by each of said slabs of dielectric material in which coupled light is trapped and directed along a trapped light optical path,

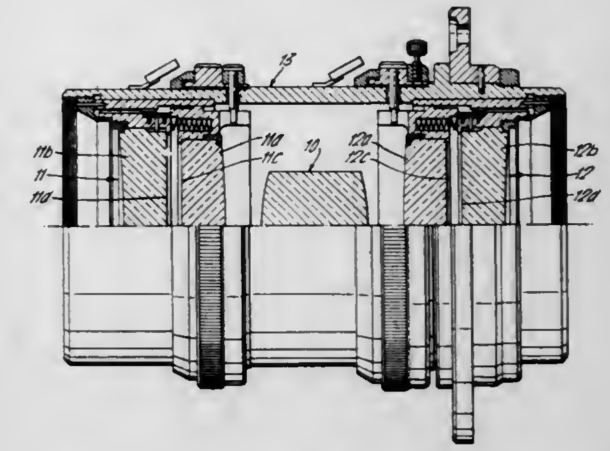
at least one abrupt discontinuity means in each of said waveguide regions in optical alignment along the trapped light optical path of each of said waveguide regions forming at least one light scattering center in each waveguide region for scattering light out of said waveguide region upon encountering an abrupt discontinuity means therein,

whereby light scattered out of each waveguide region by each of said abrupt discontinuity means is scattered in all possible directions from said waveguide region.

3,871,748
ANAMORPHOTIC OPTICAL OBJECTIVE

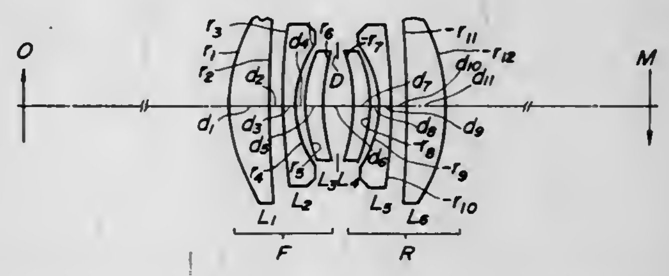
David John Day, Cheltenham, England, assignor to The Rank Organisation Limited, Millbanks, London, England
Filed Mar. 29, 1973, Ser. No. 346,188
Claims priority, application United Kingdom, Mar. 29, 1972, 14814/72
Int. Cl. G02b *13/08*
U.S. Cl. 350—181 **6 Claims**

1. An anamorphotic objective system comprising a spherical lens unit and two cylindrical lens groups constituted by one cylindrical lens group in front of the spherical lens unit and one cylindrical lens group to the rear of the spherical lens unit, wherein each cylindrical lens group comprises a pair of cylindrical lenses, one convergent and one divergent, and the cylindrical lens groups are individually parfocal between their cylindrically active and cylindrically passive planes with respect to the object plane and the focal plane of the spherical lens unit, the cylindrical lenses in each group being relatively movable in the axial direction to maintain equality of focus between the cylindrically active and cylindrically passive planes during variation of the anamorphotic effect.



3,871,749
LENS SYSTEM HAVING MAGNIFICATION X1

Kenichi Harada, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed June 11, 1973, Ser. No. 368,680
Claims priority, application Japan, June 20, 1972, 47-61468
Int. Cl. G02b *9/62*
U.S. Cl. 350—215 **3 Claims**



1. A lens system having a magnification ×1 with a front lens group and a rear lens group separated by a diaphragm space, said front lens group consisting of a first positive meniscus lens, a second negative meniscus lens and a third positive meniscus lens, said lenses all being convex toward the object side, said rear lens group consisting of a fourth positive meniscus lens, a fifth negative meniscus lens and a sixth positive meniscus lens, said lenses all being convex toward the image side, said front and rear lens groups being made completely symmetrical to each other with respect to said diaphragm, and defined by the following four conditions, i.e.,

$$0.01f < d_2 < 0.04f, \qquad 1.$$
$$1.9 < r_2/r_3 < 2\text{-}1, \qquad 2.$$
$$0.01f < d_4 < 0.03f, \qquad 3.$$

and

$$0.74 < r_4/r_5 < 0.81 \qquad 4.$$

where f is an overall focal length, d_2 an air space between the first positive meniscus lens and the second negative meniscus lens, r_2 a radius of curvature of the rear surface of the first positive meniscus lens, *rhd 3* a radius of curvature of the front surface of the second negative meniscus lens, d_4 an air space between the second negative meniscus lens and the third positive meniscus lens, r_4 a radius of curvature of the rear surface of the second negative meniscus lens, and r_5 a radius of curvature of the front surface of the third positive meniscus lens.

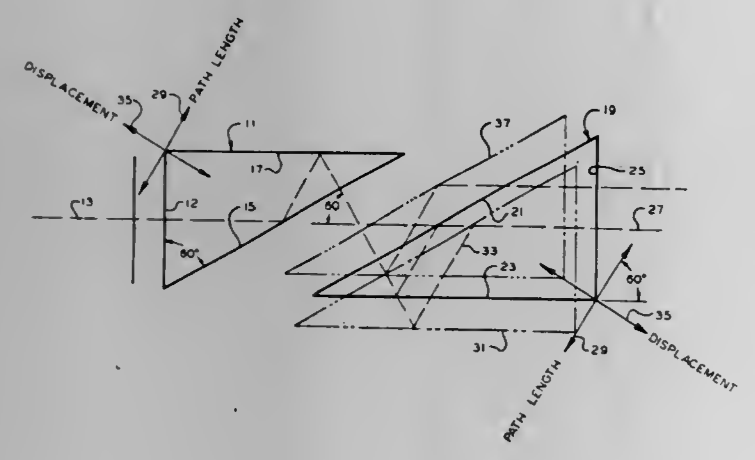
3,871,750
FOCUSING ROLL AND DISPLACEMENT PRISMS

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 207,033, Dec. 13, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,308

Int. Cl. G02b *5/04*

U.S. Cl. 350—286 **16 Claims**



1. Optical apparatus for selectively controlling the transmission of a light image therethrough comprising:

a pair of similar prisms each having substantially the same angular construction, an entry-exit or first surface opposite the smallest or first of the three prism angles for transmitting light images therethrough, a hypotenuse or second surface opposite the largest or second of the three prism angles for selectively reflecting and transmitting light images impinging thereon, and a third surface opposite the third angle for reflecting light images impinging thereon,

a first prism of said pair arranged for receiving at its entry-exit surface a light image traveling along a first optical axis of said apparatus, said received image being internally reflected from said hypotenuse surface and said third surface, respectively, prior to being transmitted through said hypotenuse surface, said first prism being further arranged such that the angle of incidence of said light image at said hypotenuse surface is greater than the critical angle when reflection of the image is required and less than the critical angle when transmission is required, a second prism of said pair being arranged so that its hypotenuse surface is parallel and adjacent to the hypotenuse surface of said first prism for receiving said light image from said first prism and then, subsequent to internally reflecting said light image from said third surface and said hypotenuse surface, respectively, transmitting said light image through said entry-exit face of said second prism along a second optical axis parallel to said first optical axis; and

means for selectively positioning one of said first an second prisms along a first line which makes an angle with said second optical axis, which angle is equivalent to the third prism angle, to change the path length of said light image through said optical apparatus.

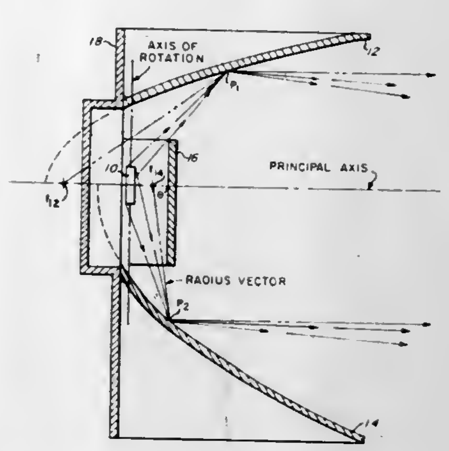
3,871,751
CATOPTRIC LENS ARRANGEMENT

Werner R. Rambauske, Carlisle, and Philip J. McFarland, Lynnfield, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 2, 1973, Ser. No. 375,562

Int. Cl. G02b *5/10*

U.S. Cl. 350—293 **2 Claims**



1. In a catoptric arrangement for forming from light radiated by a light source having a substantially cylindrical incandescent filament, a fan-shaped beam wherein substantially all aberrant rays are directed toward one of the broader sides of such beams, the improvement comprising:

a. a first and a second opposing mirror, each one being concave and having a reflecting surface corresponding to the surface generated by rotating a segment of a different quadratic conic section about a line, such line passing between the adjacent focal points of the two quadratic conic sections;

b. means for mounting a substantially cylindrical incandescent filament with its longitudinal axis collinear to the line; and

c. baffle means disposed to intercept all rays from such filament which are initially directed to pass between the first and the second mirror without reflection.

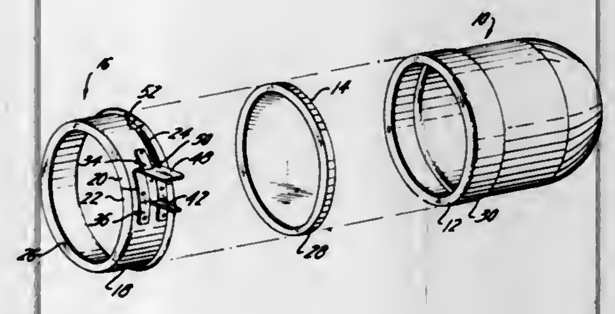
3,871,752
EASILY CHANGEABLE FILTER HOLDER

Max Habinger, Landing, N.J., assignor to Hygro Dynamics Industries, Inc., Landing, N.J.

Filed Aug. 20, 1973, Ser. No. 389,521

Int. Cl. G02b *7/00*

U.S. Cl. 350—318 **6 Claims**



1. In combination:

a housing for supporting a light source;

support means removably secured to said housing for supporting a filter with respect to said housing, said support means comprising,

a split ring member having first and second ends biased toward one another, whereby said split ring member frictionally engages said housing, said split ring member including an annular flange for supporting said filter, and said housing includes an outer extremity portion which urges said filter against said flange when said split ring member is frictionally engaged on said housing;

manually graspable release means for temporarily enlarging said split ring member, whereby said split ring member can be easily removed from said housing, said manually graspable release means comprising first and second L-shaped members secured to said split ring member, said first L-shaped member including a base portion having one segment thereof secured to said first end of said split ring member and a second segment thereof freely overlapping said second end of said split ring member and an outwardly directed leg portion extending from said second segment; said second L-shaped member including a base portion having one segment thereof secured to said second end of said split ring member and a second seggment thereof freely overlapping said first end of said split ring member and an outwardly directed leg portion extending from said second segment; whereby urging said outwardly directed leg portions toward one another will cause the separation of said first and second ends and enlargement of said split ring member; and

further including expansible biasing means one end of which is secured to one of said outwardly directed leg portions and the other end of which is secured to said split ring member for normally urging said first and second ends toward one another.

3,871,753
OPHTHALMOLOGICAL FIXATION LAMP ASSEMBLY

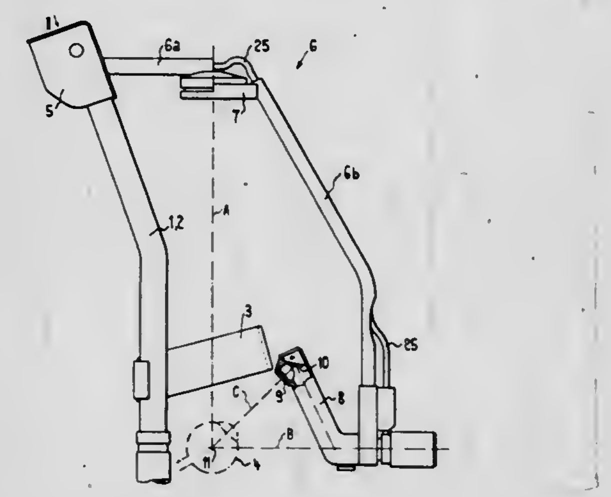
Hans Papritz, Liebefeld, and Kurt Hagi, Niederwangen, both of Switzerland, assignors to Haag-Streit AG, Bern, Switzerland

Filed Apr. 17, 1973, Ser. No. 351,847

Claims priority, application Switzerland, Apr. 24, 1972, 6025/72

Int. Cl. A61b *3/00*

U.S. Cl. 351—37 **9 Claims**



1. An ophthalmological fixation lamp assembly, comprising a head-rest for a patient; a light collimator having an optical axis; bearing means coupling said collimator to said head-rest for movement of said collimator about a plurality of axes intercepting one another at a position corresponding to the center of rotation of an eye of the patient, said bearing means constraining the optical axis of said collimator to pass through said position of interception independently of the position of said collimator about said plurality of axes whereby said eye may be fixed at any position while the other eye of the patient is examined; said bearing means including guide means disposed over said head-rest for enabling horizontal movement of said collimator relative to said head-rest for bringing the collimator in front of either eye of the patient; said guide means having a guide element fixedly attached over said head rest, and carriage means movable along said guide element; and said bearing means having a first arm extending from said carriage means, and a second arm pivotally connected with said first arm for rotation about one of said plurality of axes; said collimator being pivotally coupled to said second arm for rotation about another of said plurality of axes.

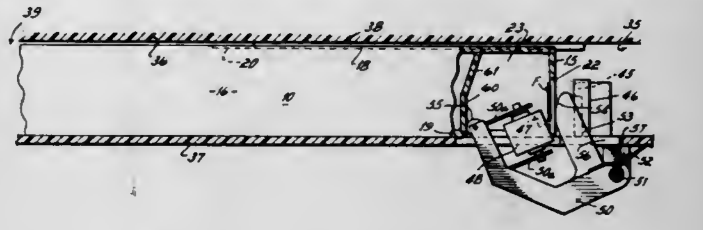
3,871,754
FILM PROJECTOR AND CARTRIDGE APPARATUS

Alex J. Procop, and Ace Boultinghouse, both of Northridge, Calif., assignors to Target Systems Corporation, Northridge, Calif.

Filed Aug. 22, 1973, Ser. No. 390,390

Int. Cl. G03b *31/02*

U.S. Cl. 352—29 **27 Claims**



1. Film projector and sound apparatus of the type utilizing a cartridge containing a film having a sound track, said cartridge being movable into a first operable position within said projector and being withdrawable therefrom, said apparatus comprising,

sound pickup means in said projector for picking up sound information from said sound track,

film advancing means in said projector for moving said film past said pickup means,

film-engaging means for engaging and urging said film into engagement with said sound pickup means and said film advancing means in direct response to movement of said cartridge into said first position,

said film-engaging means being retractable away from said film in direct response to withdrawal movement of said cartridge,

first cartridge engaging means for moving said film engaging means toward an operative position when said cartridge is moved toward said first position, and

second cartridge engaging means for holding said film-engaging means in engagement with said film when said cartridge is in said first position, said second cartridge engaging means being movable into engagement with said cartridge in response to movement of said first cartridge engaging means by said cartridge.

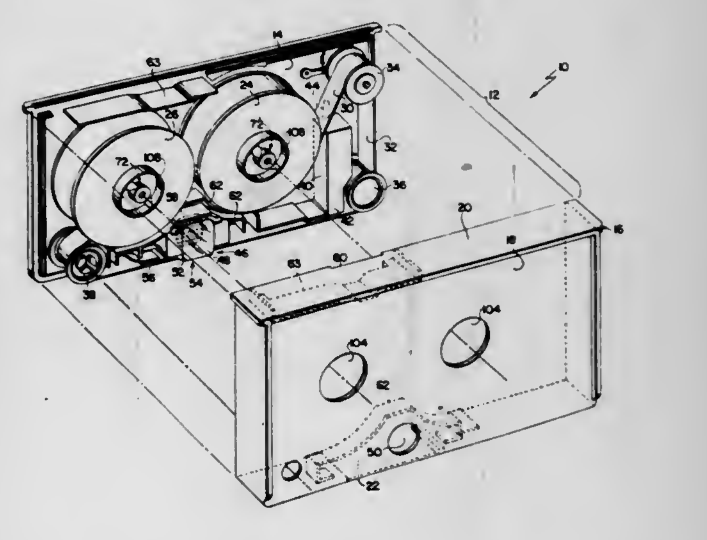
3,871,755
PHOTOGRAPHIC FILM HANDLING CASSETTE AND APPARATUS

Joseph H. Wright, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,536

Int. Cl. G03b *23/04*

U.S. Cl. 352—130 **7 Claims**



6. A reel for holding an elongated web of material and being adapted to be rotatably driven by an externally mounted drive means that is rotatable about an axis and includes an off axis

drive surface for engaging and rotatably driving said reel, said reel comprising:

a central hub section about which the elongated material is adapted to be wound, said hub section having an axis of rotation about which reel is adapted to be rotated by the externally mounted drive means;

at least one reel flange coupled to and coaxially disposed with said hub section for supporting an elongated web of material wound about said hub section, said flange extending outwardly from said hub section in a radial plane of said reel that is substantially normal to said reel axis of rotation and terminating in a circular peripheral edge that defines a circumference of said reel; and

coupling means adapted to be engaged by the off axis drive surface of the externally mounted drive means for coupling said reel in driving relation to the externally mounted drive means, said coupling means including a convex surface that is substantially normal to said radial plane of said reel and extends outwardly from said hub section toward said circumference of said reel.

3,871,756

MOTION PICTURE CAMERAS WITH AUTOMATIC FOCUSSING MEANS

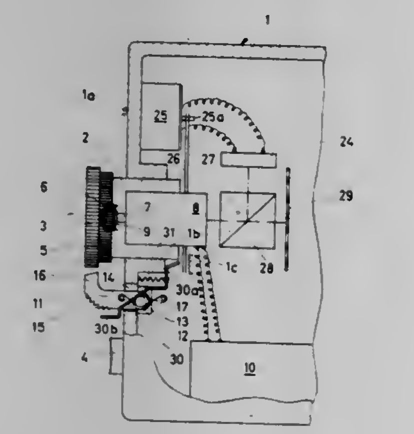
Albert Stieringer, Stadt, and Gerhard Borner, Musbert, both of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed June 7, 1973, Ser. No. 367,973

Claims priority, application Germany, June 19, 1972, 2229615

Int. Cl. G03b *3/10*

U.S. Cl. 352—140 **17 Claims**



1. In a motion picture camera, a combination comprising a housing; release means mounted in said housing and being actuatable to initiate the making of exposures; picture taking lens means mounted in said housing for movement between a plurality of positions at different distances from the film plane; automatic focussing means operatively connected with said lens means and operative to normally select the position of said lens means relative to the film plane — while said release means is actuated — as a function of the distance from a selected subject and to change the position of said lens means — while said release means is actuated — in response to changes in said distance; and blocking means actuatable at the will of the operator — while said release means is actuated — to effect a retention of said lens means in a position selected therefor by said focussing means whereby said lens means remains in said selected position, even if said distance changes, as long as said blocking means remains actuated.

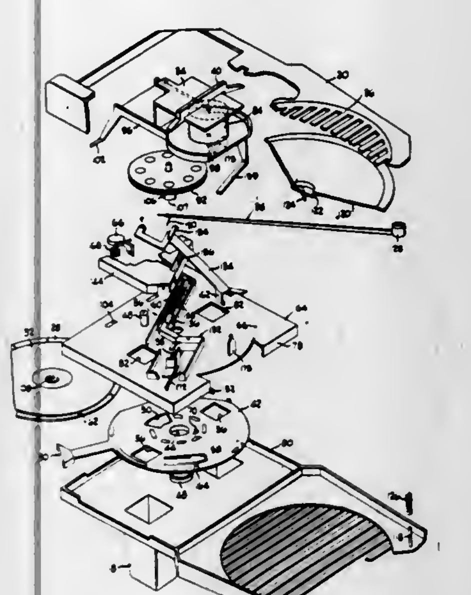
3,871,757

INDEX MEANS FOR AUDIO-VISUAL DEVICE

Marvin I. Glass, Chicago, and Gunars Licitis, Lombard, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill. Continuation of Ser. No. 555,200, June 3, 1966, Pat. No. 3,484,160. This application May 13, 1969, Ser. No. 824,158

Int. Cl. G02b *27/02;* **G09f** *27/00;* **G03b** *31/06*

U.S. Cl. 353—7 **4 Claims**



1. In an audio-visual device for stereoscopic viewing of pairs of photographic transparencies and for reproducing accompanying sounds, said device including a housing, a transparency-carrying disc having a plurality of pairs of circumferentially arranged transparencies mounted therein and adapted to be inserted in said housing, a sound record rotatably mounted on said disc, and a stylus means mounted in said housing for movement relative to said record, the improvement comprising means for simultaneously indexing one of said pairs of transparencies for viewing and positioning said stylus for reproduction of a related message on said record, said indexing means comrising a rotatable plate for supporting said disc within said housing and having a lever portion projecting from the housing, so that movement of said lever effects rotation of said plate and said disc, stylus guide means within said housing comprising a part positioned for engagement with said stylus means and movable through a path parallel to a face of said rotatable plate, a toothed rack fixed to said part, and a pawl in said housing which is movable in response to the rotary movement of said plate to engage a tooth of said rack and move said rack to thereby effect movement of said stylus guide means through a predetermined increment of travel.

3,871,758

AUDIO-VISUAL APPARATUS AND RECORD MEMBER THEREFORE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840 Continuation-in-part of Ser. No. 14,751, Feb. 24, 1970, Pat. No. 3,582,201, which is a continuation-in-part of Ser. No. 518,685, Jan. 4, 1966, abandoned. This application June 1, 1971, Ser. No. 148,513

Int. Cl. G03b *31/06*

U.S. Cl. 353—19 **4 Claims**

1. An audio-visual apparatus comprising in combination:

a record disc assembly composed of concentrically arranged first and second disc members,

means for rotatably supporting one of said disc members with respect to the other and means for separately power rotating both of said disc members about a common axis,

a spiral groove formed in a first of said disc members,

magnetic recording material defining a spiral track on said first disc member,

said second disc member being provided with a plurality of image frame locations extending in a circular track which is concentric with said first disc member and means for removably securing at least one photographic image containing member at each of said frame locations,

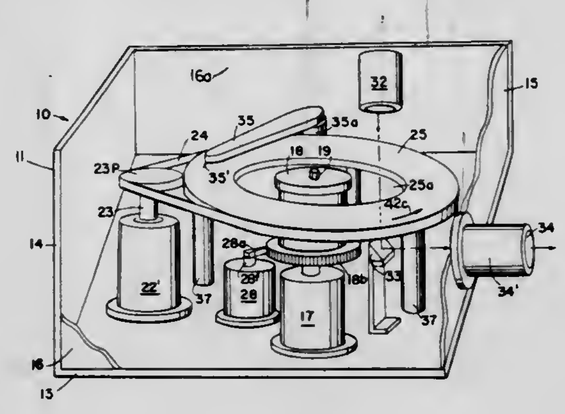
first means for rotating said first disc member at substantially constant speed,

means for holding said second disc member from rotating while said first disc rotates,

a projection optical system including means for projecting light through a selected frame of said second disc member,

means for receiving said projected light and displaying an image of the frame photographic containing member scanned,

means for selectively rotating said second disc member to selectively bring each of said photographic image containing members into the field of said projection optical system,



a pivoted arm including a needle operative to ride in and follow the groove in said first disc member as said disc member rotates,

a magnetic transducer supported by said pivoted arm and located thereon to scan said spiral magnetic track when said needle is riding in said spiral groove of said first disc member,

amplifier and speaker means operatively connected to said magnetic transducer for generating audio playback of the recordings on said spiral magnetic track as said magnetic transducer reproduces signals therefrom,

electrically operated means for causing said second disc member to step rotate to remove and replace one photographic image containing member disposed in the field of said projection optical system with the next photographic image containing member of said second disc,

control means for said electrically operated means, and

means for generating control signals as said first disc rotates for intermittently activating said control means and for synchronizing the operation of said first and second rotating means whereby selected portions of the sound produced from said magnetic track are generated while selected respective images are projected to said displaying means.

3,871,759

READER-SELECTOR INSTRUMENT FOR ULTRA-HIGH REDUCTION MICROFILM

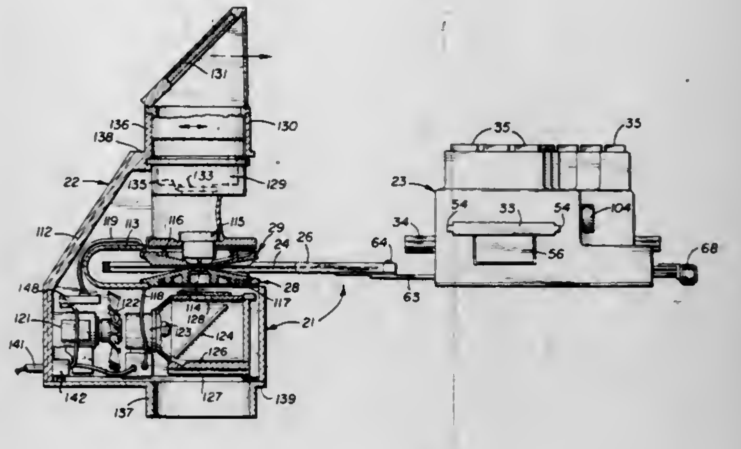
Wynn D. Crew, Denver, Colo., assignor to Microtech Press Inc., Lakewood, Colo.

Filed Dec. 30, 1971, Ser. No. 214,096

Int. Cl. G03b *1/50, 23/08, 21/16*

U.S. Cl. 353—95 **7 Claims**

1. A projector component for use when viewing image pages and the detail materials thereof that are presented in ordered arrangement at a reduced size on a film strip comprising a support body, a magnifying lens mounted in said body, a high intensity light source supported by said body and projecting a beam of light therefrom along an axis angularly disposed with respect to the axis of said lens, a pair of film gates movably mounted on said body adjacent said lens to intercept light from said light source and providing a receptacle for said film strip between said film gates, a selective reflector in the light path intermediate said light source and lens for differentially directing visible light and infra-red heat energy whereby the heat energy radiates along a path directed away from said lens, adjusting means between a first film gate and said body, and an elastic element disposed for urging said second film gate toward contact with said film strip and the said first film gate in its adjusted positions whereby the distance between the film strip in said film gate receptacle and said lens may be closely adjusted.



3,871,760

GUIDING THE FILM IN MOVIE PROJECTORS

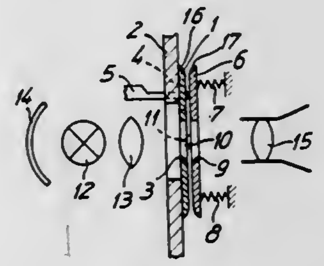
Johann Roth, Schwabhausen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Apr. 9, 1973, Ser. No. 349,474

Claims priority, application Germany, Apr. 18, 1972, 2218793

Int. Cl. G03b *1/48*

U.S. Cl. 353—95 **9 Claims**

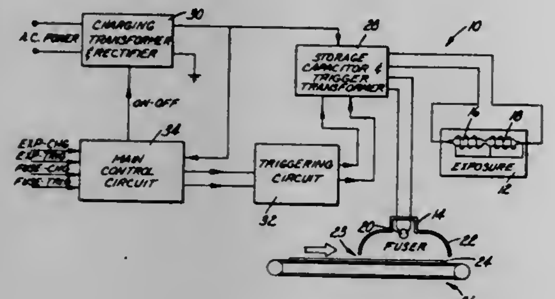


1. A film guiding arrangement for guiding a film of a certain thickness within a film projection apparatus comprising a film table and a pressure plate in substantially parallel relationship with said film table, biasing means for biasing said film pressure plate against said film table, spacing means provided on both sides of said film adjacent the respective outer edges of said film, said spacing means being mounted in operative relationship with either said film table or said pressure plate for maintaining a gap between said film table and said film pressure plate during the absence of said film and which gap is narrower than the thickness of the film, said film pressure plate being tiltable with respect to said film table, whereby film being inserted into said arrangement at a film entrance side causes said gap thereat to increase while at a film exit side, said gap decreases.

3,871,761
ELECTROPHOTOGRAPHIC FLASH SYSTEM

Saied Abd-Elrahman Mabrouk, Cleveland Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 3, 1973, Ser. No. 421,122
Int. Cl. G03g *15/22*
U.S. Cl. 355—11 **15 Claims**



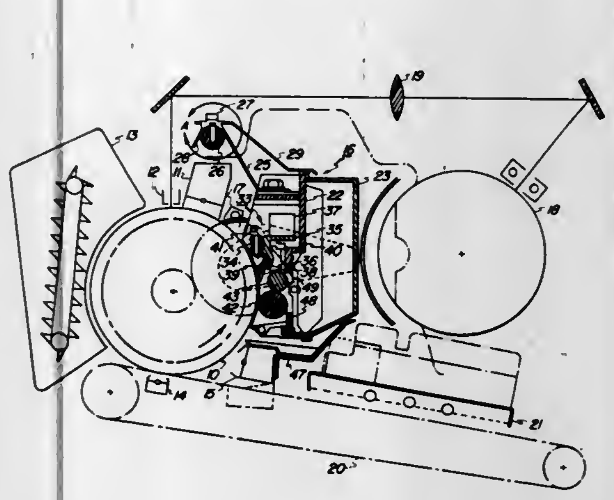
1. In an electrophotographic reproduction apparatus for producing copies of original documents, a flash system comprising:
- flash exposure means for irradiating original documents to be copied,
- flash fusing means for irradiating toner images on copy material support surfaces and fusing the images thereon, a voltage source,
- flash power supply means connected to said voltage source for controlled energization of either said flash exposure means or alternately said flash fusing means, and
- control circuit means operative in an exposure mode to cause said flash power supply means to energize said flash exposure means and operative in a fuse mode to cause said flash power supply means to energize said flash fusing means,
- said flash power supply means including energy storage means for storing energy for said flash exposure means and said flash fusing means, and charging circuit means for charging said storage means, said control circuit means being operative in a pre-expose mode to effect operation of said charging circuit means prior to energization of said flash exposure means and operative in a pre-fuse mode to effect operation of said charging circuit means prior to each energization of said flash fusing means.

3,871,762
BLADE CLEANING SYSTEM

Wilhelmus Van Der Vlasakker, Venray, Netherlands, assignor to Rank Xerox Limited, London, England

Filed Nov. 1, 1973, Ser. No. 411,851
Claims priority, application Netherlands, Nov. 10, 1972, 7215211
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **7 Claims**

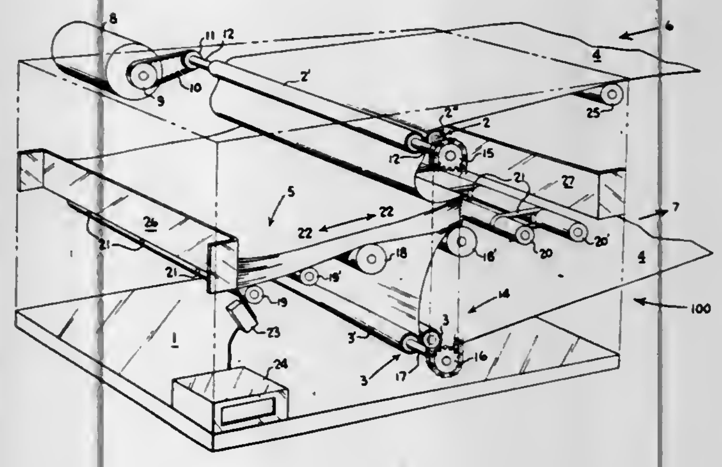
1. A cleaning assembly for removing residual particles from a moving image-bearing surface of an electrostatographic apparatus, comprising:
- a housing including a chamber for receiving removed particles, said housing having longitudinal engagement edges extending in the direction of movement of said surface for engaging said surface, said housing being mounted for angular movement about an axis which extends transversely of the housing, and said housing in its operative position being biased so that said engagement edges are held in engagement with said surface; and
- a cleaning device within said housing for removing said particles from said image-bearing surface, said device being pivotably mounted in said housing, said device being biased into engagement with said surface by means independent of said housing bias.



3,871,763
PHOTO-CONDUCTIVE MATERIAL HANDLING DEVICE

Ernst Schrempp, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 2, 1973, Ser. No. 384,808
Int. Cl. G03g *15/00*
U.S. Cl. 355—16 **6 Claims**

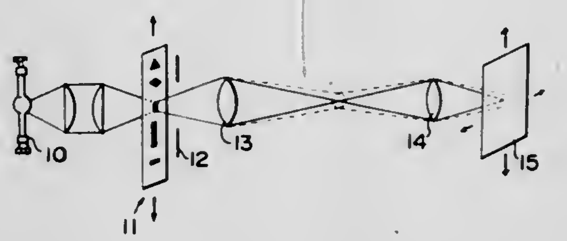


1. A xerographic plate handling device for a copier system, said handling device being operative to store and dispense an endless belt supporting a photoconductive material, said device comprising:
- means for supporting a first given quantity of said belt in a substantially flat fan-folded array, said supporting means having at least one rotatable supportive member adapted to support said array;
- means operatively associated with said supporting means for feeding a second quantity of said belt through a copier system for the purpose of making copies of an original document, said second quantity of said belt arranged in an endless loop with said first quantity of material, said means also causing reciprocal movement of said fan-folded array as a unit mass with respect to said supporting means; and
- means for rotatively driving said supportive member so as to facilitate said reciprocal movement of said fan-folded array as a unit mass with respect to said support means.

3,871,764
PATTERN GENERATOR APPARATUS

Junichi Nishizawa, No. 6-5, Tsuchitoi 1-chome, Sendai, Japan

Filed Nov. 8, 1972, Ser. No. 304,841
Claims priority, application Japan, Apr. 5, 1972, 47-34229; Apr. 5, 1972, 47-34230; Apr. 11, 1972, 47-36295; Apr. 13, 1972, 47-38095; Apr. 13, 1972, 47-38096; Apr. 13, 1972, 47-38097; Apr. 13, 1972, 47-38098; Apr. 17, 1972, 47-38499
Int. Cl. G03b *27/50*
U.S. Cl. 355—18 **15 Claims**

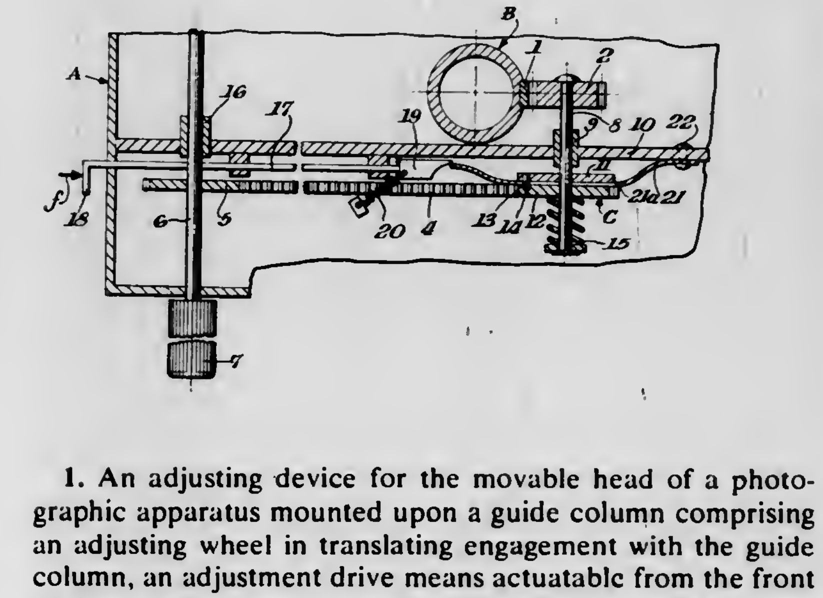


1. Pattern generator apparatus for projecting from means for determining a pattern, a corresponding light image onto a sensitive surface, said apparatus comprising:
- a. a light source;
- b. means for disposing the pattern determining means into the path of said light source to provide a light image corresponding to the pattern; and
- c. optical lens means including a varifocal lens for varying the degree of magnification of the light image and a reducing lens for directing and reducing the light image of varied magnification onto the sensitive surface whereby the surface is sensitized with a patterned image of reduced size with respect to the pattern of the pattern determining means.

3,871,765
DEVICE FOR ADJUSTING FOCAL DISTANCE OF A PHOTOGRAPHIC ENLARGING APPARATUS

Wilmut Pramstraller, Brixen near Bozen, Italy, assignor to Durst S.p.A. Fabbrica Macchine ed Apparecchi Fototecnici, Bolzano-Bozen, Italy

Filed Sept. 26, 1973, Ser. No. 400,978
Claims priority, application Italy, Sept. 29, 1972, 29868/72
Int. Cl. G03b *27/32*
U.S. Cl. 355—18 **12 Claims**

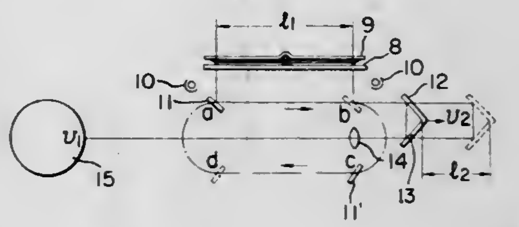


1. An adjusting device for the movable head of a photographic apparatus mounted upon a guide column comprising an adjusting wheel in translating engagement with the guide column, an adjustment drive means actuatable from the front of the apparatus, a disengageable clutch between the adjustment drive means and the adjusting wheel, the disengageable clutch being constructed and arranged to be normally engaged to cause movement of the adjusting wheel in response to the movement of the adjustment drive means, an actuating element connected to the clutch for disengaging it to prevent movement of the adjustment drive means when the head is being moved relative to the guide column in a coarse adjusting movement whereby the adjustment drive means may be grasped together with the clutch actuating to effect such movement, and the actuating element being constructed and arranged to be actuated from the front of the apparatus.

3,871,766
IMAGE EXPOSURE DEVICE

Shozo Inoue, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1973, Ser. No. 356,928
Claims priority, application Japan, May 6, 1972, 47-52882; June 2, 1973, 48-65640
Int. Cl. G03b *27/16*
U.S. Cl. 355—66 **8 Claims**

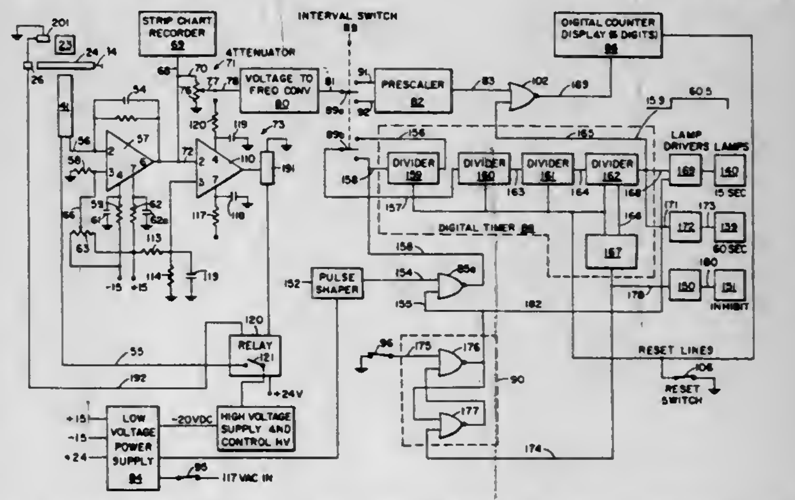


1. An image exposure device for applying the information of a stationary original to a moving photosensitive medium by a movable scanning mirror through a slit, comprising:
- means for holding the original at a fixed position;
- means for illuminating the original;
- a plurality of movable mirrors disposed on an endless track to scan the image light from the original only when they are moving in one direction;
- endless guides for guiding said plurality of movable mirrors;
  - power transmission members for moving said plurality of movable mirrors along said endless guides;
- mirror support members for engageably supporting said mirrors for movement along said endless guides; and
- connecting members for connecting said mirror support members to said power transmission members.

3,871,767
APPARATUS FOR DETERMINING LUMINESCENCE

Osmund Holm-Hansen, La Jolla, and Charles Rockwell Booth, San Diego, both of Calif., assignors to Science Applications, Inc., La Jolla, Calif.

Filed June 20, 1973, Ser. No. 371,738
Int. Cl. G01j *1/46*
U.S. Cl. 356—215 **13 Claims**



1. In an apparatus for the detection of the presence of micro-organisms in a test sample by means of a bioluminescent reaction comprising first means for providing a pulse train output having a frequency value which varies in proportion to the light output of a test sample as contacted by a

reactant, timer means, start means for initiating operation of said timer means, said timer means being operative to provide a first signal at a predetermined delay period after operation of said start means to initiate an integration period, and a second signal at a later selected time to terminate said integration period, means enabled by said pulse train during the time period defined by said first and second signals to provide an output which represents the integrated value of the light output of said sample, and output means for providing signals representative of such integrated value.

3,871,768
MOLECULAR EMISSION CAVITY ANALYSIS

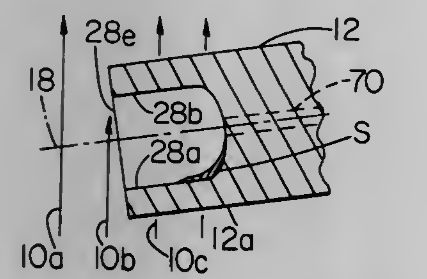
Ronald Belcher, 9 Chad Rd., Birmingham B15 3EM; Alan Townshend, 2 Selby Close, Birmingham B29 2JG, and Stanley Bogdanski, Flat 8, 7 Park Hill, Birmingham 13, all of England

Filed Aug. 20, 1973, Ser. No. 389,587

Claims priority, application Great Britain, Aug. 24, 1972, 39443/72

Int. Cl. G01j *3/30*

U.S. Cl. 356—87 **41 Claims**



1. A method of analyzing a sample of a matter by emission spectroscopy in which a reactant sample is exposed to flame gas to produce emissions and the emissions are detected by an optical analysis device, characterized by the steps of providing an emission-promoting strucutre defining a sheltered region, exposing reactant vapor within said region to flame gas and focusing the optical analysis device upon the interacting gases in said region and further characterized by providing said sheltered region by a structure which surrounds and defines a hollow space with an open end, introducing the sample to the space, and maintaining said structure in relation to an external flame so that at least said open end lies in the interior of a flame with the predominant direction of movement of the flame gases in the vicinity of the said open end being generally across the said open end.

10. An emission-promoting structure for use in an analyzer in conjunction with a flame and an optical emission analysis device, said structure defining a sheltered region for containing reactant, an exposure path for flame gas to interact with the reactant in the sheltered region and an optical path projecting out of said sheltered region whereby, under conditions influenced by said structure, reactant vapor in said sheltered region and flame gas can mix, interact and emit along said optical path to said analysis device radiation characteristic of said interaction.

3,871,769
APPARATUS FOR DETERMINING THE DIAMETERS OF SMALL PARTICLES

Andreas Hermann Engel, Baltimore, Md.; Gerd Bernd Herziger, Gumligen, and Theodor Heinrich Tschudi, Bern, both of Switzerland, assignors to Turlabor AG, Zumikon, Switzerland

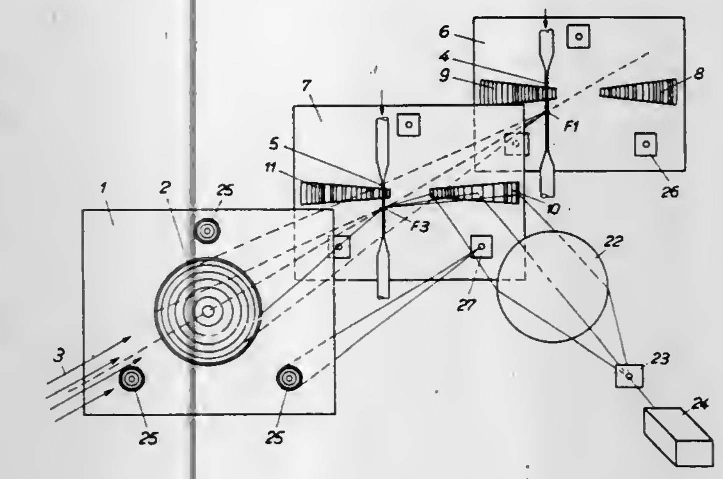
Filed May 18, 1973, Ser. No. 361,625

Claims priority, application Switzerland, May 19, 1972, 007527/72

Int. Cl. G01n *15/02*

U.S. Cl. 356—102 **5 Claims**

1. An apparatus for determining the diameters of small particles in which coherent light is scattered by said particles and the scattered light wavefronts are substituted with wavefronts previously recorded on hologram filters, wherein the improvement comprises first lens means for collecting said coherent light into a plurality of focal points, a sample of said particles being disposed in each of said focal points, at least one hologram filter positioned behind each of said focal points, said hologram filters each being adapted to convert the light waves scattered by particles of a predetermined different diameter into output light waves having a spherical wavefront, separate light-measuring means associated with each of said hologram filters for receiving said output light waves from each of said hologram filters, second lens means and apertured diaphragm means being interposed between said hologram filters and the light-measuring means associated therewith and having said output light waves pass therethrough, said light-measuring means each generating an electrical signal in response to said output light waves received from said hologram filters, said signal being linearly dependent upon the intensity of the light received and attaining a maximum value when the diameter of illuminated particle is equal to the predetermined particle diameter at which the respective hologram filter emanuates output light waves having a spherical wavefront.



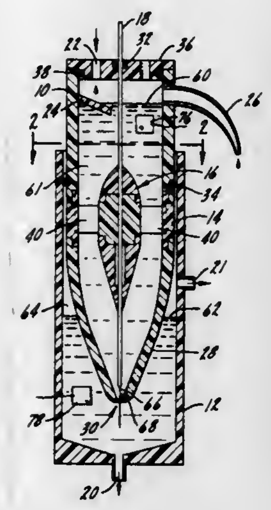
3,871,770
HYDRODYNAMIC FOCUSING METHOD AND APPARATUS

Wieland E. von Behrens, and Gordon C. Oates, both of Seattle, Wash., assignors to Nuclear Data, Inc., Palatine, Ill.

Filed June 4, 1973, Ser. No. 366,401

Int. Cl. G01n *21/26*

U.S. Cl. 356—103 **12 Claims**



1. A method for the hydrodynamic focusing of particles into a monofile including the steps of introducing a sample suspension, in an axial direction, into a fluid medium having a spiral flow pattern, passing the particles of the sample in monofile through a narrowly defined geometric path, and monitoring the particles in the monofile as they pass through a sensing zone.

3,871,771
OPTICAL APPARATUS FOR DETERMINING DEVIATIONS FROM A PREDETERMINED FORM OF A SURFACE

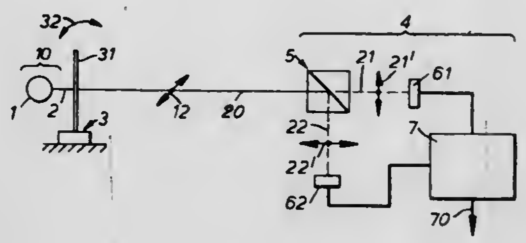
Richard Nelson Scott, Skeets Farm, Flanchford Rd., Leigh near Reigate, England

Filed June 8, 1973, Ser. No. 368,319

Claims priority, application Great Britain, June 9, 1972, 26942/72; Apr. 18, 1973, 18718/73

Int. Cl. G01b *11/30*

U.S. Cl. 356—114 **10 Claims**



1. Optical apparatus for determining deviations from a predetermined form of a surface, comprising a laser light source means for projecting a beam of light from said source to establish a predetermined axis, a sensing means including an optical element traversed by said light beam, said sensing means arranged to travel with said optical element and including follower means producing displacement of said optical element in relation to said light beam in response to said deviation of said surface whereby said optical element produces a rotation of the plane of polarisation of said light beam which is representative of the measured deviation, and a detector means positioned to receive the light beam after traversing said optical element, said detector means including optical beam splitter means for dividing said light beam into two components having mutually perpendicular planes of polarisation, two photoelectric elements each responsive to one of the component beams to yield a respective output signal representative of the magnitude of that component, and circuit means for combining said output signals thereby to obtain a signal representative of the measured deviation.

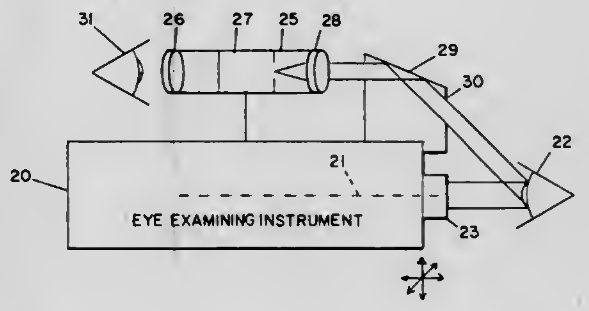
3,871,772
EYE EXAMINING INSTRUMENT ALIGNING MEANS AND METHOD THEREFOR

Charles R. Munnerlyn, Fairport, and Robert C. Moore, Rochester, both of N.Y., assignors to Tropel, Inc., Fairport, N.Y

Filed Apr. 23, 1973, Ser. No. 353,648

Int. Cl. G01b *11/27;* **A61b** *3/00*

U.S. Cl. 356—153 **3 Claims**



1. An eye viewer for aligning the optical axis of an eye examining instrument with an eye and spacing said instrument a predetermined distance from said eye, said viewer comprising:

a. a source of radiant energy;
b. means for directing a beam of said radiant energy on said eye along said optical axis;
c. means mounted on said instrument off said optical axis for forming a viewable image from said radiant energy;
d. means for focusing radiant energy reflected from said eye at an acute angle from said optical axis and onto said image forming means so the field of view of said image forming means intersects said optical axis at said predetermined distance from said eye;
e. means for adjusting said instrument transversely of said eye for centering said radiant energy beam on said eye as viewed in said image forming means to align said beam with said eye; and
f. means for adjusting said instrument in the direction of said optical axis to center said image of said eye in said field of view of said image forming means for spacing said instrument said predetermined distance from said eye.

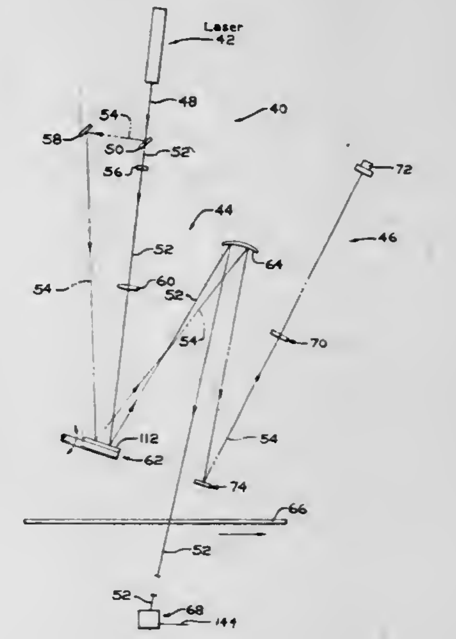
3,871,773
METHOD OF AND APPARATUS FOR DETECTING DEFECTS AND THE POSITION THEREOF IN TRANSPARENT ARTICLES

Hugh E. Shaw, Jr., New Kensington, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Apr. 24, 1973, Ser. No. 354,030

Int. Cl. G01n *21/16*

U.S. Cl. 356—200 **15 Claims**



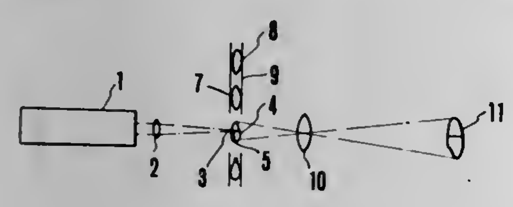
1. A method of determining defects in a glass ribbon as a function of position in the glass ribbon, comprising the steps of:

directing a first beam of light toward a first surface of the glass ribbon as a scanning beam of light;
directing a second beam of light toward position sensing means as a positioning beam of light;
synchronously displacing (1) the scanning beam of light relative to the surface of the glass ribbon along a predetermined scan path and (2) the positioning beam relative to the position sensing means wherein the beams of light are synchronously displaced at a predetermined constant speed;
sensing the intensity of the scanning beam of light with a photo detector as the scanning beam of light is moved with respect to the glass ribbon to determine defects in the glass ribbon along the scan path wherein defects in the glass ribbon along the scan path vary the intensity of the scanning beam of light; and
monitoring the position sensing means and the photo detector to determine the position of the scanning beam along

the scan path to determine defects in the glass ribbon as a function of position in the glass ribbon.

3,871,774
METHOD AND APPARATUS FOR DETECTING CRACKS IN UNHULLED GRAINS

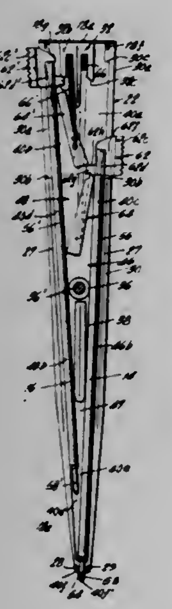
Noboru Murata, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 16, 1973, Ser. No. 388,766
Claims priority, application Japan, Sept. 8, 1972, 47-89621; Sept. 11, 1972, 47-106258[U]
Int. Cl. G01n *21/22, 21/32*
U.S. Cl. 356—201 **9 Claims**



1. A method of detecting cracks in unhulled grains comprising the steps of irradiating the grains with a laser beam thereby causing said laser beam to be scattered and or absorbed by said grains and indicating the variation in the quantity of said laser beam after transmitting through said grains as a function of the portion of a grain not illuminated because of a crack in said grain.

3,871,775
MECHANICAL WRITING INSTRUMENT

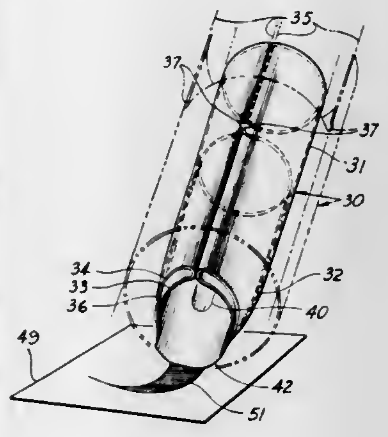
Nathan A. Zepell, 1359 Teresita Dr., Santa Barbara, Calif. 93105
Filed Nov. 20, 1973, Ser. No. 417,515
Int. Cl. B43k *27/12*
U.S. Cl. 401—31 **21 Claims**



1. A writing instrument having a plurality of writing points comprising a body member having first and second channels merging into a common point opening at one end thereof, first and second writing members each having a writing point disposed in said respective first and second channels in retracted positions and mounted for reciprocation therein to extend their respective writing points through said point opening into an extended writing position, first manual actuating means operatively connected to said first writing member and extending exteriorly of said body member for manually moving said first writing member in said first channel toward said point opening and into said extended writing position, second manual actuating means operatively connected to said second writing member and extending exteriorly of said body member for manually moving said second writing member in said second channel toward said point opening and into said extended writing position, first holding and releasing means operatively connected to said first actuating means and to said body member and being operable in a first position to hold said second writing member in said extended writing position and being operable in a second position to release said second writing member, second holding and releasing means operatively connected to said second actuating means and to said body member and being operable in a first position to hold said first writing member in said extended writing position and being operable in a second position to release said first writing member, first returning means operatively connected to said body member and to said second holding and releasing means for returning said second writing member from said extended writing position to said retracted position in response to the actuation of said first holding and releasing means to said second position and second returning means operatively connected to said body member and to said first holding and releasing means for returning said first writing member from said extended writing position to said retracted position in response to the actuation of said second holding and releasing means to said second position.

3,871,776
WRITING PENS

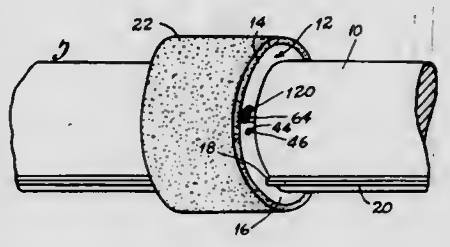
Ben Braun, 15 Georgia Dr., Syosset, N.Y. 11791
Filed Mar. 8, 1974, Ser. No. 449,527
Int. Cl. B43k *17/00*
U.S. Cl. 401—256 **11 Claims**



1. A pen having a pair of contiguous nibs defining an intervening ink feeding channel and terminating at their forward ends in a flexible writing tip wherein the improvement comprises, an embouchure to constitute means for tracking ink, said embouchure having a pair of shaped lips constituting the respective forward ends of said nibs, said lips being disposed in progressive-spring contact defining a capillary mouth for passing ink therethrough, said lips being generally turned upwardly from the point of common contact in the absence of writing pressure on the pen, means resiliently supporting said lips for movements together in response to writing pressure thereon and for reforming thereby said mouth into a cross-slit for ink feeding action, said lips constituting substantially a progressive-spring means responsive to hand pressure for controlling the spreading movements of said mouth whereby a line may drawn of corresponding breadth.

3,871,777
CLAMPING MEANS FOR SPLIT ROTARY ANVIL AND THE LIKE

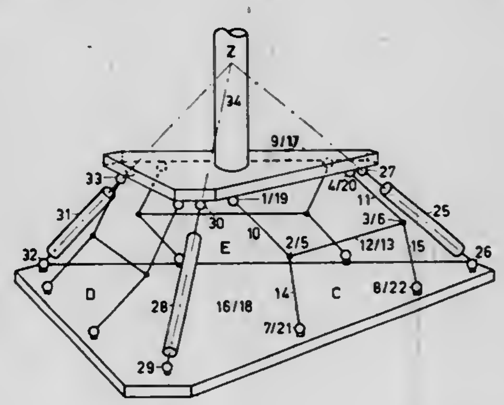
Louis E. Sauer, St. Louis, Mo., assignor to L. E. Sauer Machine Co., St. Louis, Mo.
Filed Dec. 22, 1972, Ser. No. 317,830
Int. Cl. F16d *1/06;* **B60b** *27/06*
U.S. Cl. 403—20 **13 Claims**



1. In a split rotary anvil or the like, comprising mating, arcuate members adapted for mounting upon a cylindrical rotatable shaft, a clamping mechanism for clamping mating ends of said arcuate members togehter, at least one mating end having a pin protruding therefrom and pivotally attached thereto for free pivotal movement with respect to said at least one mating end, and the end to be clamped to said at least one mating end having an orifice therein adapted to receive said pin, said pin having a transverse groove adjacent is protruding end to provide a camming surface thereon and the end of said arcuate member bearing said orifice having camming means for engaging and applying pressure to said camming surface after reception of the pin by the orifice, thereby permitting the mating ends to be clamped together, and wherein upon juxtaposition of said mating ends, the inner periphery of said rotary anvil approximates an ellipse with a respective major axis passing through at least one pair of juxtaposed ends and a minor axis being normal thereto.

3,871,778
MECHANISM FOR COUPLING TWO OBJECTS

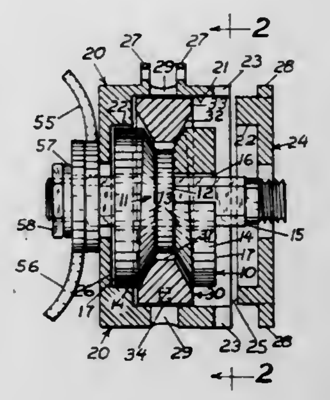
Anthonius Maria Schulte, Delden, and Uilko Van Der Wal, Hengelo, both of Netherlands, assignors to N. V. Hollandse Signaalapperten, Hengelo (O), Netherlands
Filed Feb. 9, 1971, Ser. No. 113,977
Claims priority, application Netherlands, Feb. 11, 1970, 7001896
Int. Cl. F16c *11/00*
U.S. Cl. 403—52 **6 Claims**



1. A mechanism for coupling two objects comprising at least one elastic element connected between said objects, a plurality of coupling devices connected between said objects, each of said coupling devices comprising two linkage systems connected to each other at sides thereof remote from the objects coupled by said coupling devices, each system comprising linkage elements connected by four hinges so as to form a closed parallelogram loop, said hinges being located at the vertices of said parallelogram, opposite linkage elements of each of said systems arranged for rotational movement relative to the object their respective system is directly coupled to about the hinges of their system, means connecting one of said systems of each coupling device to one of said objects so as to permit rotational movement of said system as an entire unit about a first axis and relative to said object connected thereto, the direction of said first axis being different from the direction of the axes about which said linkage elements can rotate, and means for connecting said other system of said coupling device to the other of said objects and to said first system so that said other system is capable of rotational movement about a second axis parallel to said first axis relative to said other object connected thereto or relative to said first system, wherein three of said coupling devices are provided between said objects, each of said coupling devices lying in a plane containing said first and second axes, said planes passing through a common point and intersecting each other forming three lines none of which are parallel or coincident.

3,871,779
MECHANICAL CONNECTIONS

James W. Butler, 117 Grant Ave., Bellevue, Pa. 15202
Continuation-in-part of Ser. Nos. 311,785, Sept. 26, 1963, abandoned, and Ser. No. 873,680, Nov. 3, 1969, abandoned. This application Dec. 19, 1972, Ser. No. 316,492
Int. Cl. A61f *1/04*
U.S. Cl. 403—52 **13 Claims**



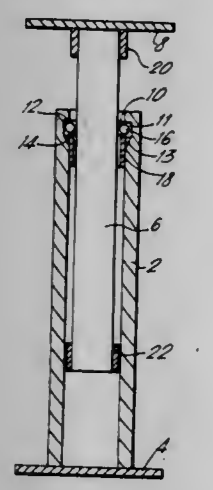
1. In a mechanical rotatable joint, a driving element and a driven element; and means in contact with said driving and said driven elements for securing the same for concentric rotation therebetween; said means being adjustable to secure said driving and said driven elements for eccentric rotatability relative to each other, to thereby restrain the relative rotation therebetween.

3,871,780
DEVICE FOR LOCKING TWO CONCENTRICALLY POSITIONED AND AXIALLY DISPLACEABLE MEMBERS

Jon-Erik Svensson, Skillingaryd, Sweden, assignor to Skillingaryds Mekaniska AB, Skillingaryd, Sweden
Filed Nov. 5, 1973, Ser. No. 412,714
Claims priority, application Sweden, Nov. 3, 1972, 14258/72
Int. Cl. F16b *7/14*
U.S. Cl. 403—104 **3 Claims**

1. A device for locking two concentrically positioned and axially displaceable members against displacement in one direction, characterized by a recess formed in one of said members adjacent the open end thereof and opening in the direction of the second member, and by locking elements located in said recess and contiguous with said open end, said recess having a first part with a bottom portion positioned at a greater distance from said second member than the distance corresponding to the size of the locking elements in a direction transversally to the axial direction of said members, and a second part of said recess having a bottom portion decreasing its distance to said second member away from said open

end in the axial direction of said members and from the first mentioned bottom portion to a distance less than the distance corresponding to the size of the locking elements in said direction transversally to the axial direction of the members, said locking elements being free from locking engagement between said elements when located in said first part of recess and engaging said members for locking the members against displacement in at least one axial direction when located in said second part of recess, and an actuating element in the form of a sleeve snugly and slidably engaged in said one member for actuation axially therein and adapted to engage the locking elements from one axial direction and displace the locking elements between said parts of said recess, a first shifter element in the form of an annular member secured to said second member adjacent one axial end thereof diameter smaller than said open end so as to be slidable therein and engageable through said recess in said one member and having a length adequate to allow direct contact with said locking elements from the opposite axial direction to displace said actuating element in one axial direction to permit said locking elements to assume a locking position and a second shifter element secured to said second member adjacent its opposite axial end spaced from said one member and engageable with said actuating element to displace it in an opposite axial direction whereby said locking elements are displaced to a nonlocking position.



3,871,781
MOLE PLOUGH LINKAGES

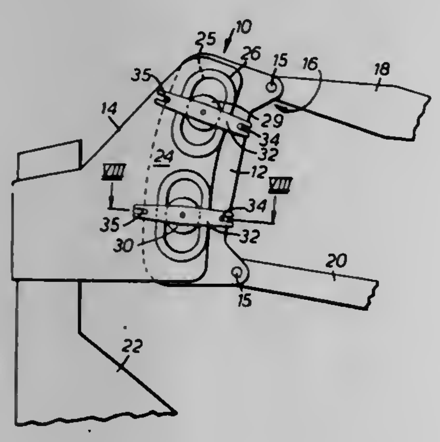
Terence Long, Leeds, England, assignor to Hudswell Yates Developments Limited, Leeds, England

Filed June 11, 1973, Ser. No. 369,080

Claims priority, application United Kingdom, Feb. 19, 1973, 8126/73

Int. Cl. B25g *3/38*

U.S. Cl. 403—121 **13 Claims**



1. A linkage arrangement for connecting first and second units comprising:
  a first supporting member adapted to be secured to said first unit;
  a second supporting member movable relative to the first supporting member and adapted to be secured to said second unit; and
  constraining follower means for controlling said relative movement; the follower means comprising at least one roller, and for each roller, roller support means pivotally connected to said first supporting member and said second supporting member and supporting its respective roller for movement transversely of the linkage arrangement relative to each of the first and second supporting members upon said relative movement.

3,871,782
DEVICE FOR POSITIVELY RETAINING A BALL-SHAPED BEARING MEMBER IN A MATING BEARING SEAT

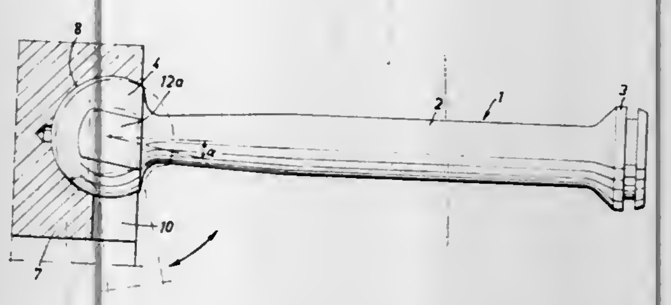
Roy Ingvar Mendel Johansson, Lilla Edet, and Roy S. G. Lagerqvist, Akarp, both of Sweden, assignors to Volvo Flygmotor Aktiebolag, Trollhattan, Sweden

Filed Dec. 26, 1973, Ser. No. 427,598

Claims priority, application Sweden, Dec. 22, 1972, 16933/72

Int. Cl. F16c *11/06*

U.S. Cl. 403—122 **1 Claim**



1. In apparatus for positively retaining a generally spherically shaped bearing member at the end of a piston rod in a mating bearing seat and being of the type wherein the depth of the bearing seat from its mouth plane is greater than its radius so that the angle of embracement of the bearing seat about the bearing member exceeds 180°, the improvement comprising:
  two diammetrically opposed grooves formed in the outer surface of said bearing member and so located that their respective center lines lie in a plane which intersects the center of said bearing member and forms a small angle with a plane also passing through said center and containing the axis of said rod,
  and a recess communicating with and extending radially from said bearing seat,
  said recess having a depth below the mouth plane of the bearing seat and sufficient width to receive temporarily at least a substantial portion of the piston rod at its end adjacent said bearing member during the assembly and disassembly of said bearing member and bearing seat,
  whereby said opposed grooves provide a predetermined sectional plane whose radius does not exceed the radius of the mouth of the bearing seat to thereby permit the bearing member to be readily inserted into said bearing seat while the bearing member and its associated piston rod are oriented so as to be almost parallel with the mouth plane but with said bearing member being positively retained in said bearing seat when the rod and bearing member are rotated to an operating position where a substantial angle is formed between said rod and said mouth plane.

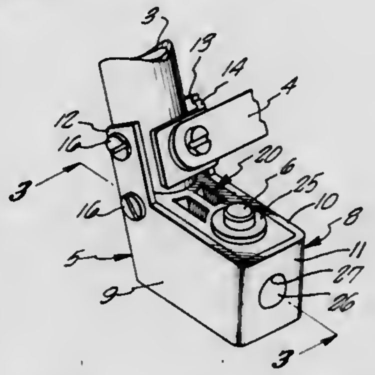
3,871,783
CONNECTING DEVICE FOR LOAD BEARING MEMBERS

Paul A. Vogler, Westminster, Calif., assignor to "Strolee" of California, a division of U.S. Industries, Inc., New York, N.Y.

Filed June 13, 1974, Ser. No. 479,163

Int. Cl. F16b *9/00*

U.S. Cl. 403—205 **8 Claims**



1. A connector device for connecting first and second elongate load bearing members the first of which is journaled in said device and the second of which is immovably affixed thereto such that its longitudinal axis intersects that of the first member at an acute angle, which device comprises a generally U-shaped elbow bracket having a forward component in which is received and secured an insert and rearwardly and upwardly extending arms adapted to embrace and secure said second member, the forward portion of said insert having a generally vertical bore to receive said first member in journaled relation, and the rearward portion of said insert having a declivity having a floor and sidewalls respectively configured to mate with the end and sides of said second member when it is embraced by said arms.

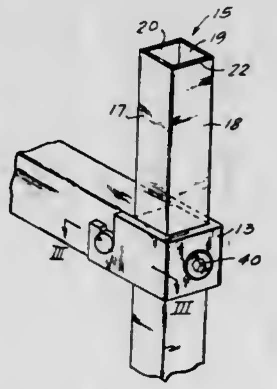
3,871,784
BRACKET SUPPORT STRUCTURE

James Van Horn, 185 Peter Rd., Libertyville, Ill. 60048

Filed Mar. 21, 1973, Ser. No. 343,520

Int. Cl. F16l *11/12*

U.S. Cl. 403—236 **2 Claims**



1. A frame structure comprising at least two first frame members and two second frame members, each frame member being elongated and being rectangular in cross section, the two first frame members having opposite ends thereof attached to two second frame members with an end face of each of the first frame members abutting a side surface of one of the second frame members and an opposite end face of each of the first frame members abutting a side surface of the other of said second frame members, projections extending through the first frame member adjacent each end thereof, the projections projecting from opposite side faces of the first frame members, the first frame members attached to the second frame members by brackets, said brackets being U-shaped and having two legs interconnected by a flat bight section, the legs terminating in free ends, first openings through the legs adjacent the free ends, the openings having throat openings thereto from an edge of the legs, the throat openings being narrower than the maximum dimensions of the first openings in a line from the free ends to the bight and being positioned closer to the bight than portions of the first openings, a set screw through the bight, said brackets dimensioned to be received around the second members with the free ends projecting beyond the side face of the second members abutted by the ends of the first members remote from the bight by an amount sufficiently large so that the projections of the first member abutting the associated second member can be received in the throat openings by moving the bracket relative to the first member when the bracket is in position around the second member and the free end of the first member abuts the side face of the second member, the first openings dimensioned to loosely receive the projections, the maximum dimension of said brackets, from an inside face of the bight to the most remote wall of the first opening being greater than the dimension from the most remote surface of the projections of an abutting first member and the wall of the abutted second member opposite the surface of the bight when the first member abuts the second member whereby the bracket and an associated first member are movable along the second member after insertion of the projections into the first opening through the throat opening and fastenable at any position therealong by the set screw.

3,871,785
NUT LOCKING DEVICES

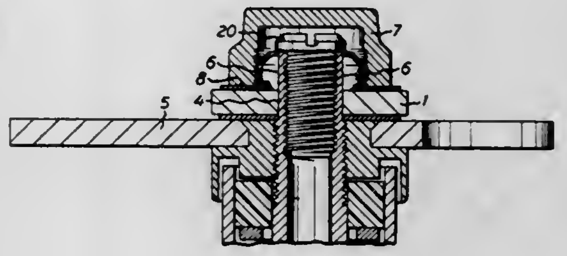
Ake Eugen Murvall, Svangsta, Sweden, assignor to Abu Aktiebolag, Svangsta, Sweden

Filed June 22, 1973, Ser. No. 372,617

Claims priority, application Sweden, June 29, 1972, 8546/72

Int. Cl. F16d *1/06*

U.S. Cl. 403—259 **7 Claims**



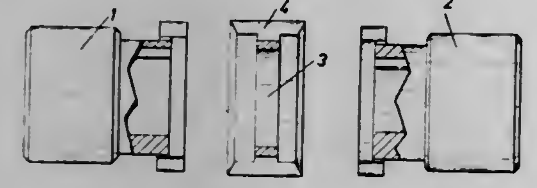
4. A locking device comprising a crank having a retaining nut on a threaded end portion of the drive shaft of a fishing reel, said threaded end portion having two diametrically positioned unthreaded, axially extending parallel flat surfaces and said crank having an aperture therein corresponding to the cross-section of said shaft end portion to receive the latter in driving engagement therewith, said crank when mounted in such driving engagement being fixed to said shaft by means of said nut mounted on said end portion; a locking washer having a flat base portion with a central aperture of a shape adapted to permit mounting the locking washer on said shaft end portion with said flat base portion placed between the crank and the nut when the latter is mounted on said shaft end portion; the aperture in the locking washer having a shape adapted to hold the locking washer in a non-rotatable position on said shaft end portion, said aperture in the washer having two diametrically positioned circular end portions and an intermediate portion the central part of which is flanked at opposite edges thereof by two diammetrically positioned identical tongues projecting substantially perpendicularly from the plane of said flat base portion of the locking washer and having each an outer convex surface, an inner concave surface and a radially inwardly extending outer end portion, the outer end portions of said tongues being adapted to bear against said two diammetrically positioned flat surfaces on the threaded shaft portion with each of the tongues positioned between the nut and a corresponding one of said flat surfaces of said shaft portion, and wherein the maximum distance between the

outer peripheral surfaces of the tongues on a washer diameter is somewhat greater than the inner diameter of the nut thread, such that said tongues, when the nut is tightened on the threaded shaft portion, will be pressed inwardly by the threads of the nut thereby to form a frictional connection between the nut and the threaded part.

3,871,786
SHAFT COUPLING

Sven Beinhard Rennerfelt, Louhagegangen 4, Gothenburg, Sweden

Filed Feb. 5, 1973, Ser. No. 329,638
Claims priority, application Sweden, Feb. 7, 1972, 1363/72
Int. Cl. F16d *1/12*
U.S. Cl. 403—300 **6 Claims**



1. In an assembly for coupling two shafts disposed at least substantially in alignment with each other, the combination of: a pair of shaft-associated sections having spaced, mutually opposed end portions; and

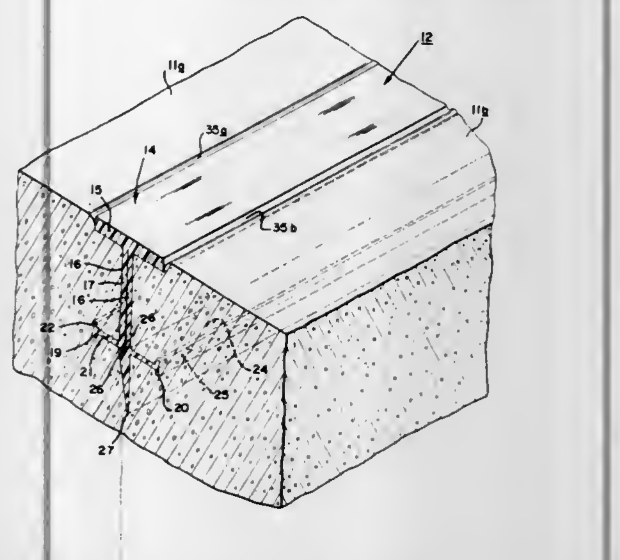
- an intermediate section disposed between and joining said shaft-associated sections; wherein the improvement comprises:
- an end portion on each of shaft-associated sections, each such end portion including a body having a series of external gear teeth integrally joined to the associated body for a portion only of the widths of the gear teeth whereby to project axially beyond said associated body and to define open spaces between adjacent pairs of gear teeth; said intermediate section including an annular body having external gear teeth integrally joined to said annular body for a portion only of the widths of the gear teeth and projecting axially beyond said annular body on opposite sides thereof and defining two sets of open spaces between adjacent pairs of teeth, one on one end of said annular body and the other on the other end thereof, the projecting base portions of at least those axially projecting portions of the gear teeth on opposite sides of said intermediate section being undercut by an amount sufficient to allow axial interdigitation between such axially projecting portions and the axially projecting gear teeth portions of the respective shaft-associated sections, said annular body of the intermediate section being of sufficiently thin radial thickness to permit deformation of said annular body into eliptical form.

3,871,787
JOINT STRUCTURE FOR CONCRETE MATERIALS AND THE LIKE

William James Stegmeier, 1021 C Shary Cir., Concord, Calif. 94520

Filed Oct. 30, 1973, Ser. No. 411,067
Int. Cl. E01c *11/02*
U.S. Cl. 404—48 **24 Claims**

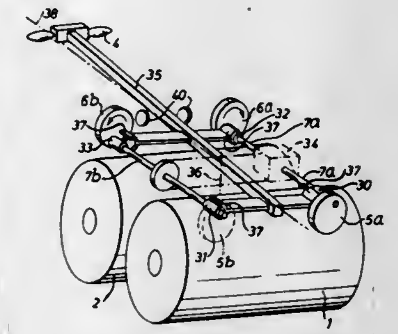
1. A joint structure adapted to be embedded in concrete materials and the like to accommodate relative displacements of sections thereof bounded in common by such joint, comprising: a longitudinally extending generally T-shaped channel having a transverse flange defining a topwall adapted to be disposed in generally planar relation with the surfaces of such sections and having also a web extending downwardly from said flange, said web being divided intermediate the transverse edges thereof into web components disposed in side-by-side juxtaposition and displaceable transversely relative to each other, means effective to secure each of said web components to the associated section for movement therewith; a cap removably secured to said channel in generally overlying relation with said flange; and a strip of protective material intermediate said flange and cap to protect the surface of the latter.



3,871,788
VIBRATING ROLLER

Alan Barsby, Gainsborough, England, assignor to Marshall-Fowler Limited, Gainsborough, England

Filed Feb. 1, 1973, Ser. No. 328,627
Claims priority, application United Kingdom, Feb. 4, 1972, 5301/72
Int. Cl. E01c *19/38*
U.S. Cl. 404—117 **5 Claims**



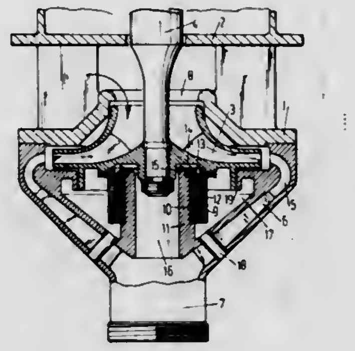
1. A steerable vibrating roller, having a center line, particularly for rolling ground surfaces or the like, comprising a frame; at least a front and a rear ground-engaging roll having parallel axes and being rotatably attached to said frame; a spaced-apart pair of out-of-balance masses rotatably mounted on said frame; means to rotate said masses attached to said masses; and means to vary the phase relationship between said rotating masses located on said frame, said masses being so positioned on said frame that as the phase relationship between said masses changes, a resulting force is generated by said masses which acts to turn said frame about a vertical axis to thereby steer said roller.

3,871,789
VERTICAL ROTATABLE CENTRIFUGAL PUMP

Herman Johannes Lameris, Hengelo, Netherlands, assignor to Koninklijke Machinefabriek Stork B.V., Hengelo, Netherlands

Filed June 29, 1973, Ser. No. 375,023
Int. Cl. F04d *29/04;* **F01d** *25/16*
U.S. Cl. 415—112 **6 Claims**

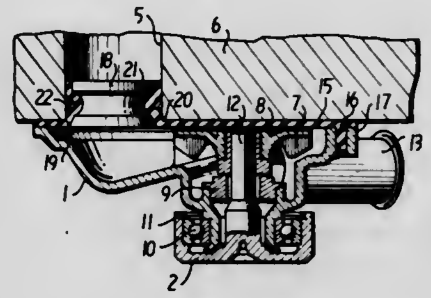
1. A vertical rotatable centrifugal pump for pumping fluid metals, more particularly sodium, comprising a rotor journalled in a hydrostatic bearing in which the pumped fluid is utilized as a bearing fluid characterized in that the rotor is provided with an auxiliary impeller whose suction side communicates directly with the pressure space of the pump and whose pressure side communicates with the hydrostatic bearing feed and in that the delivery side of the bearing communicates with a low pressure space which communicates through aperatures in the blades of the diffuser with the suction space of the pump.



3,871,790
ARRANGEMENT FOR DRIVING A FLUID-CIRCULATING PUMP

Jean Rameau, Sannois, France, assignor to Regie Nationale Des Usines Renault, Boulogne-Billancourt and Societe Dite Des Automobiles Peugeot, Paris, both of France

Filed Mar. 5, 1974, Ser. No. 448,241
Claims priority, application France, May 14, 1973, 73.17303
Int. Cl. F04d *29/40*
U.S. Cl. 415—219 C **7 Claims**



1. An arrangement for driving a fluid-circulating pump comprising:

- a housing;
- a pulley wheel associated with said housing and being rotatable about a first axis;
- tensionable means for driving said pulley wheel about said first axis;
- said housing having associated therewith means defining a fluid orifice the axis of which is offset and parallel to said first axis of said pulley; and
- means for permitting said housing to be pivoted about said orifice axis,
- whereupon said pulley is likewise pivoted about said orifice axis so as to adjust the tension within said tensionable driving means.

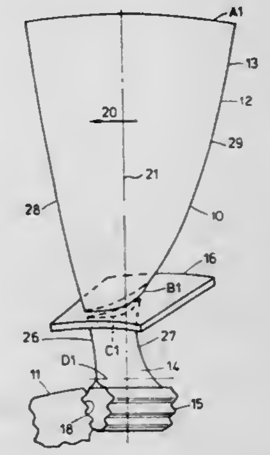
3,871,791
BLADE FOR FLUID FLOW MACHINES

Kenneth Ronald Guy, and Robert Burns Hood, both of Bristol, England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Feb. 20, 1973, Ser. No. 333,659
Claims priority, application Great Britain, Mar. 9, 1972, 11078/72
Int. Cl. F01d *5/14, 5/22*
U.S. Cl. 416—193 **4 Claims**

1. A fan rotor for gas turbine engines comprising:

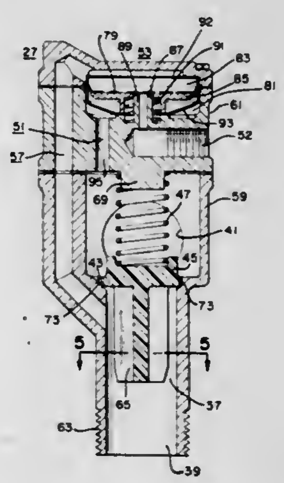
- a disc having an axis of rotation,
- fan blades connected to the disc and extending radially from the periphery thereof,
- means defining a wall extending circumferentially about said axis in spaced apart relationship to the periphery of the disc,
- each of said blades comprising
  - an aerofoil of given camber and twist extending radially outwardly of said wall and having a radially inner end adjacent said wall, the chord of said aerofoil generally increasing radially outwardly,
  - a shank extending between the inner end of the aerofoil and a location adjacent the periphery of the disc, said shank having a radially outer end of a cross-section similar in stagger, camber and aerofoil shape to that of the inner end of the aerofoil, and the camber of the shank gradually progressively decreasing from the outer end to the inner end thereof so as to be zero at the inner end of the shank,
- and means provided at the radially inner end of the shank for connecting the blade to the disc.



3,871,792
PUMP SYSTEM AND VALVE ASSEMBLY THEREFOR

Darrell D. Gritz, Little Rock, Calif., assignor to Jacuzzi Bros. Incorporated, Little Rock, Calif.

Filed Nov. 28, 1973, Ser. No. 419,687
Int. Cl. F04b *49/00*
U.S. Cl. 417—38 **13 Claims**

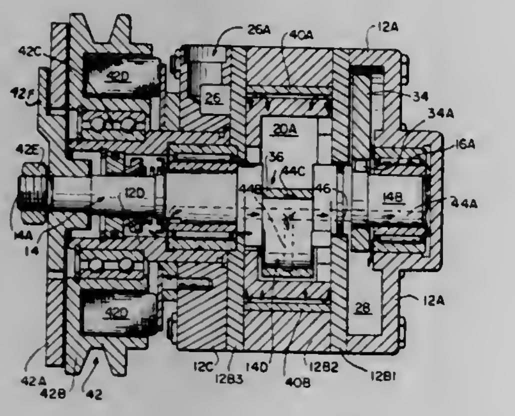


1. A pump system comprising a pump, an electric motor in drive connection with said pump, a service line, a service valve in said service line, a pressure switch in electric circuit with said motor, and a control valve assembly comprising a valve housing having an input opening for flow connection thereto of said pump, a discharge opening for flow connection to said service line, and a main flow passageway interconnecting said input opening and said discharge opening, a main valve spanning said main passageway, means biasing said main valve toward closing position, a first auxiliary passageway flow

connecting at one end with said main passageway on the downstream side of said main valve and terminating in an opening in said housing for hydraulic pressure connection to said pressure switch, means coupling said pressure switch to said valve housing at said last opening, a pilot valve assembly spanning said first auxiliary passageway and including a valve seat and a valve means normally biasing said pilot valve toward open condition, and a second auxiliary passageway, said second auxiliary passageway flow connecting at one end to said main passageway on the upstream side of said main valve and terminating at said pilot valve in pressure opposing relationship to said biasing means, whereby development of hydraulic pressure against said valve in excess of any opposing pressure against said valve will close said valve and block said first auxiliary passageway.

3,871,793
AUTOMOTIVE REFRIGERATION COMPRESSOR MODULE

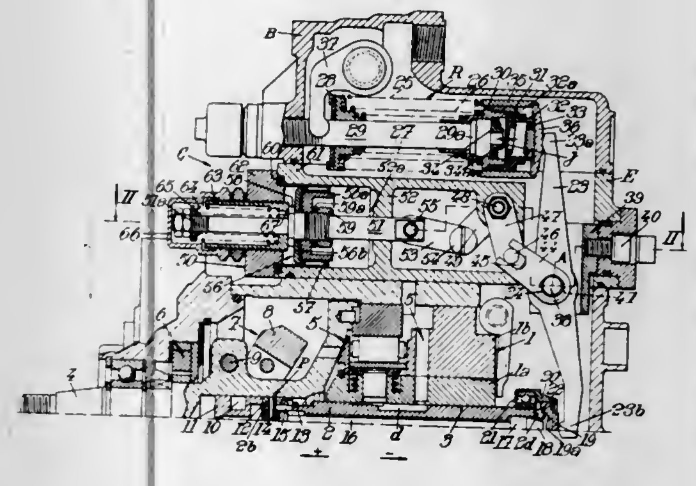
John W. Olson, Jr., 2723 National Pl., Garland, Tex. 75040
Filed Dec. 28, 1973, Ser. No. 429,635
Int. Cl. F04b *39/12*
U.S. Cl. 417—273 **17 Claims**



1. A compressor for automotive refrigeration system comprising:
- at least one compressor module having a housing, said housing including a first housing section defining a substantially rectangular compression chamber bounded on each end by second and third housing sections defining discharge and suction chambers internally thereof, respectively;
- a hollow substantially rectangular piston means in said compression chamber of a said module for reciprocation therein;
- suction port means and discharge port means formed within said housing and interconnencting said compression chamber of a said module at opposite ends thereof with said suction and discharge chambers, respectively;
- suction valve means within said compression chamber of a said module at said opposite ends thereof opening and closing said suction port means in response to reciprocation of said piston means;
- discharge valve means within said discharge chamber of a said module opening and closing said discharge port means in reverse order from said suction port means in response to reciprocation of said piston means;
- a shaft seal extension on said housing;
- a crankshaft extending through said housing and said piston means from a point external to said shaft seal extension to at least a point internal of said suction chamber;
- first bearing means in said second housing section and second bearing means journalling said crankshaft for rotation in said housing;
- a first counterweight means mounted on said crankshaft for rotation therewith in said suction chamber;
- a second counterweight means and integral drive clutch means mounted on the outboard end of said crankshaft externally of said shaft seal extension;
- said crankshaft having an eccentric portion rotatable within said piston means; and
- drive block means mounted on said eccentric portion within said piston means and imparting alternating thrust thereto to reciprocate said piston means in said compression chamber between said two ends thereof in response to rotation of said crankshaft means.

3,871,794
CORRECTION DEVICE FOR THE DELIVERY PER REVOLUTION OF A DISTRIBUTING INJECTION PUMP AND PUMP EQUIPPED WITH THIS DEVICE

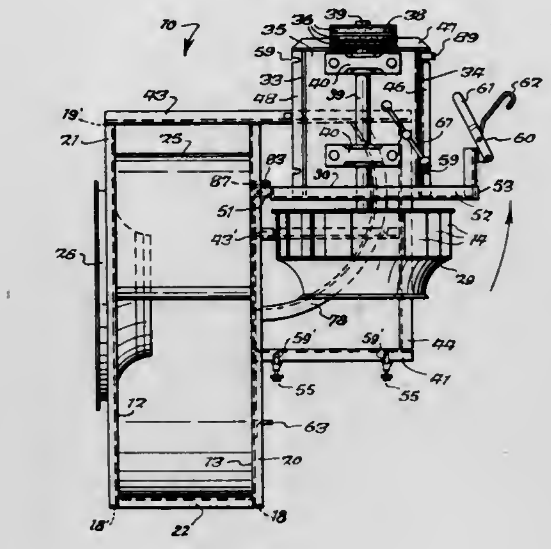
Jean Leblanc, Lyon, France, assignor to Societe Industrielle Generale De Mecanique Appliquee S.I.G.M.A., Venissieux, France
Filed June 12, 1973, Ser. No. 369,179
Claims priority, application France, June 19, 1972, 72.22041
Int. Cl. F04b *49/00;* **F02d** *1/04*
U.S. Cl. 417—282 **6 Claims**



1. Correction device for the delivery per revolution of a distributing rotary injection pump for an internal combustion engine, which pump comprises: a pump casing, a pump working chamber, a fixed body, and a rotary distributor driven inside said body by a substantially coaxial shaft, which shaft is itself driven by the engine supplied by the pump, delivery means in communication with said pump working chamber and said rotary distributor, said rotary distributor comprising distributing passages inclined to its longitudinal direction and cooperating with said delivery means for varying the delivery per revolution of the pump upon longitudinal displacement of the distributor; a regulator sensitive to the rotary speed of the drive shaft for controlling the longitudinal displacements of the distributor, the distributor being subject, on the one hand, to the action of the regulator through thrust means and, on the other hand, to the contrary action of elastic return means through a transmission lever mounted on pivoting means borne by a casing shielding the pump, said pivoting means comprising a pivot borne by said casing, on which said pivot is mounted in an eccentric manner, a pivoting axle constituting the pivot axis of said lever so as to enable displacement of the pivot axis of the lever upon rotation of said pivot, said correction device comprising a fluid pressure responsive jack with a rod to control the rotation of the pivot, said jack being situated between said distributor and the elastic return means and substantially between planes perpendicular to the axis of the distributor and passing through the ends of said distributor, the axis of the jack being substantially parallel to the axis of the distributor, linking means between the rod and the pivot, said linking means comprising an axle borne by said casing and two radial arms respectively fast in rotation with the ends of the axle, said arms being respectively operatively coupled with the pivot and with the rod.

3,871,795
FAN CONSTRUCTION

Robert T. Habdo, Tonawanda, and William P. Burger, Buffalo, both of N.Y., assignors to Buffalo Forge Company, Buffalo, N.Y.
Filed Apr. 18, 1973, Ser. No. 352,316
Int. Cl. F04b *17/00*
U.S. Cl. 417—360 **9 Claims**

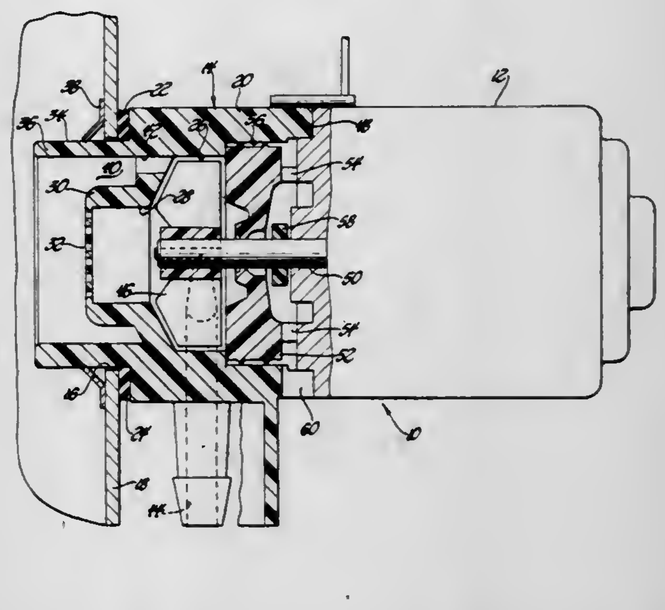


1. A fan construction comprising a fan housing, a door, pivot means pivotally mounting said door on said fan housing, a fan wheel journalled on said door for rotation within said fan housing when said door is closed, means mounted on said door for driving said fan wheel, a first rigid frame section fixed to said fan housing, a second rigid frame section fixed to said door, fastener means for selectively rigidly securing said first and second rigid frame sections to each other when said door is closed to thereby securely mount said fan and said means for rotating said fan relative to said housing, said means for rotating said fan including motor means, roller means operatively interposed between said first and second rigid frame sections for permitting said second rigid frame section to roll relative to said first rigid frame section during the opening of said door, said roller means comprising a wheel on said second rigid frame section and a track on said first rigid frame section, and means for lifting said second rigid frame section from said first rigid frame section so as to enhance relative movement therebetween during opening of said door.

3,871,796
PUMP ASSEMBLY

Walter Edward Mack, Westland, Mich., assignor to McCord Corporation, Detroit, Mich.
Filed Nov. 15, 1973, Ser. No. 409,777
Int. Cl. F04d *13/02*
U.S. Cl. 417—423 **10 Claims**

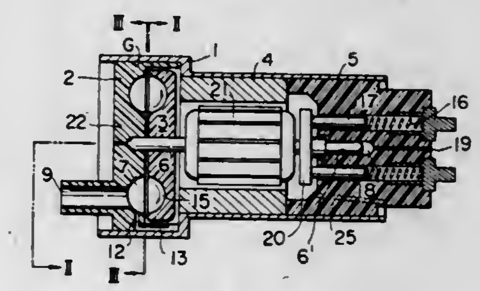
1. A pump assembly of the type for insertion into an opening in a fluid reservoir comprising; a housing, said housing having a shoulder for overlapping the periphery of an opening in a fluid reservoir, said housing defining an impeller chamber, an inlet passage means extending from said impeller chamber in the forward straight ahead direction and disposed inwardly



of said shoulder, a filter disposed in said inlet passage means inwardly of said shoulder.

3,871,797
FUEL PUMP FOR AUTOMOBILES

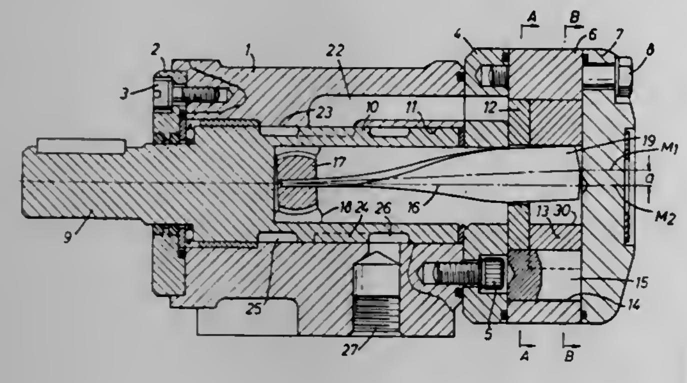
Osamu Igarashi, and Yukio Hohsho, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 20, 1973, Ser. No. 343,037
Claims priority, application Japan, Mar. 22, 1972, 47-28161
Int. Cl. F04b *17/00*
U.S. Cl. 417—423 **7 Claims**



1. A fuel pump for automobiles, suspended in a fuel tank and used for supplying fuel in the fuel tank to the carburetor of the like, comprising a casing having an inlet port and an outlet port at the opposite ends of an annular groove formed therein, a runner having formed at an end face thereof a plurality of annularly disposed chambers opposed by the annular groove said casing and having a shaft press-fitted into the center thereof, means for axially movably supporting one end of said shaft in said casing, a D. C. motor having an armature integral with said shaft, another shaft provided on that side of said D. C. motor opposite to said first shaft, means for axially movably supporting another shaft in a bracket, spring means for urging said armature towards the runner through brushes for said D. C. motor, passage means provided in the casing for leading fuel from the outlet port to the backside of the runner, and further passage means for discharging the fuel from the backside of the runner to the outside of the pump through the interior of the D. C. motor and neighboring portions of the brushes.

3,871,798
ROTARY AND ORBITING PISTON MACHINE WITH INTERNAL SHAFT

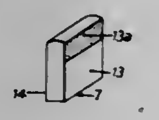
Bodo Berlich, Obertshausen, Germany, assignor to Danfoss A/S, Nordborg, Denmark
Filed Dec. 3, 1973, Ser. No. 420,936
Claims priority, application Germany, Dec. 2, 1972, 2259117
Int. Cl. F04c *29/00*
U.S. Cl. 418—39 **3 Claims**



1. A gerotor type rotary piston machine comprising an internally toothed ring gear having an axis and having teeth in the form of rollers equal in length to the width of said ring gear, a cooperating externally toothed star gear having fewer teeth than said ring gear disposed eccentrically relative to said ring gear axis, said star gear having rotational movement about its own axis and orbital movement about the axis of said ring gear with the teeth of said gears intermeshing in sealing engagement to form expanding chambers on one side of a line of symmetry and contracting chambers on the other side of said line during relative movement between said gears, wall means on opposite sides of said ring gear, an insert member disposed internally of said ring member and having recesses for receiving said rollers, said star gear and said insert member having a combined thickness equal to the width of said ring gear, a drive shaft, drive means between said star gear and said drive shaft for rotating said drive shaft at the rotating speed of said star gear.

3,871,799
ROTARY-PISTON MOTOR WITH IMPROVED CYLINDER CHAMBER MOVING SEALS

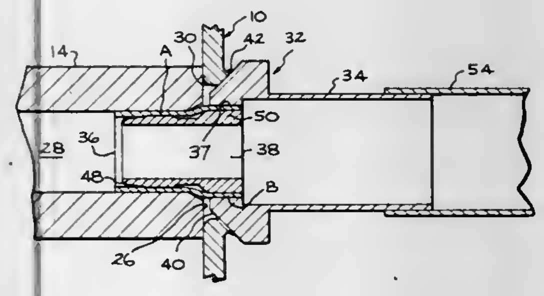
Harald Vogt, Frankfurt-Unter-Hederbach, and Walter Moller, Frankfurt am Main, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 5, 1973, Ser. No. 404,363
Claims priority, application Germany, Oct. 20, 1972, 2251504
Int. Cl. F03c *3/00;* **F01c** *21/04*
U.S. Cl. 418—178 **6 Claims**



1. In rotary-piston motor having a housing with a shaped inner circumferential surface and a rotor assembly mounted to rotate within said housing, the combination comprising:
a plurality of blades and a corresponding plurality of slots in said rotor assembly, said slots supporting said blades in substantially radial alignment with radially sliding freedom in a fluid medium, said blades having a maximum radial stroke from their most radially outward position to their radially innermost position
means for exerting a resilient force radially outward tending to produce abutment of an outer edge of each of said blades against said shaped inner housing surface;
and means comprising a plurality of recesses of relatively small depth and diameter along a lateral face of each of said blades in sliding contact with a corresponding inside slot face for retaining a film of said fluid between said slot and blade faces forming a band on the outward extremity of said blade faces, the balance of said blade faces being relatively smooth, whereby when said blades are in their radially innermost positions said outward bands are in sliding contact with their corresponding inside slot faces and when said blades are in their most radially outward positions said outward bands are in substantially full contact with said fluid medium radially outwardly of the rotor shafts.

3,871,800
HERMETICALLY SEALED COMPRESSOR SUCTION TUBE ASSEMBLY

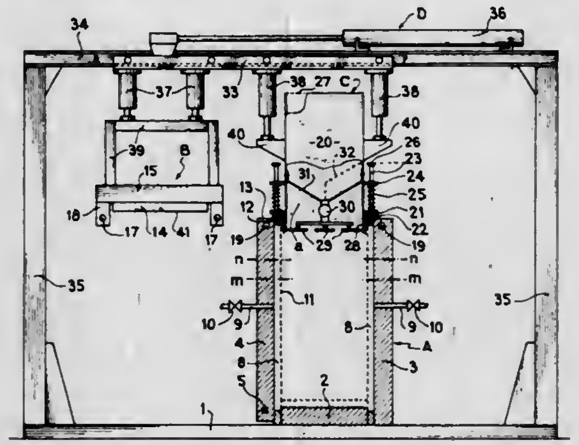
Curtis R. Slayton, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Mar. 11, 1974, Ser. No. 449,720
Int. Cl. F04b *17/00*
U.S. Cl. 418—248 **3 Claims**



1. A hermetic compressor unit comprising:
a casing including a side wall;
a compressor including a cylinder block positioned in said casing and having an outer surface adjacent the inner surface of said casing wall;
a passage in said block opening into said outer surface;
said casing having an opening aligned with and larger than said passage;
a suction tube connector including an end portion extending into said opening in axial alignment with said suction passage, and having an opening larger than said passage; a tubular sleeve member being of greater ductility than the suction tube connector, the sleeve having a reduced end portion extending into said passage and an enlarged portion extending into the end portion of said suction tube connector; and
a tubular fitting having an end portion extending into said reduced end portion of said sleeve member and a shoulder portion extending into said enlarged portion of said sleeve member to simultaneously radially compress said sleeve member in said passageway and said end portion of said suction tube connector to seal the casing and suction tube connector to the compressor cylinder block.

3,871,801
MACHINE FOR ENCLOSING EXPANDED PLASTIC MATERIAL FOR MOULDING PARTS

Rudolf C. Buchmann, Mannheim-Feudenheim, Germany, assignor to Pont-A-Mousson S.A., Nancy, France
Filed Nov. 24, 1972, Ser. No. 309,028
Claims priority, application Germany, Nov. 29, 1971, 2159005; Dec. 2, 1971, 2159809; Dec. 2, 1971, 2159794
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 R **15 Claims**

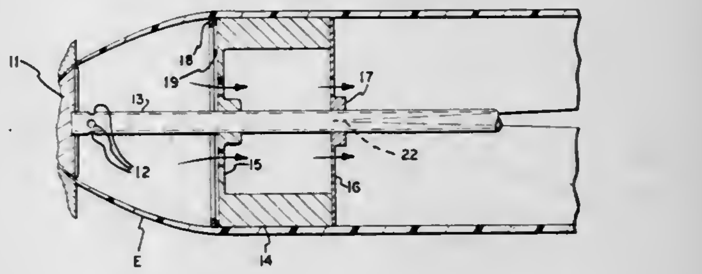


1. A machine for enclosing particles of preexpanded plastics material for subsequent moulding of a part, said machine comprising in combination: a stand, a moulding box supported in a fixed position relative to said stand and having a moulding cavity and a large upper charging opening; a closing cover capable of closing said charging opening in a fluidtight manner; means for locking said cover in the closing position; a mould charging device having a bin whose capacity is at least equal to that of said moulding cavity and has a lower pouring opening having a shape and dimensions substantially corresponding to those of said upper charging opening, said cover and said charging device being vertically movable relative to the moulding box and stand and said bin being capable of descending partly into the moulding cavity; first shifting means for shifting the cover and the charging device vertically with respect to the stand and selectively toward and away from and coaxially of the moulding cavity; at least one of the elements consisting of the cover and the charging device being movable transversely of the moulding box to allow the other of said elements to be shifted toward the moulding box by the first shifting means; closure means for said pouring opening, said closure means being capable of being withdrawn to allow passage for said material substantially throughout said pouring opening to allow the material to fall into said moulding cavity; means for selectively withdrawing said closure means and putting said closure means in their closing position, said closure means being in their closing position capable of compressing said material upon descent of said bin into the mould cavity.

3,871,802
DRESSING RING FOR TUBULAR EXPANDED POLYSTYRENE COOLING MANDREL

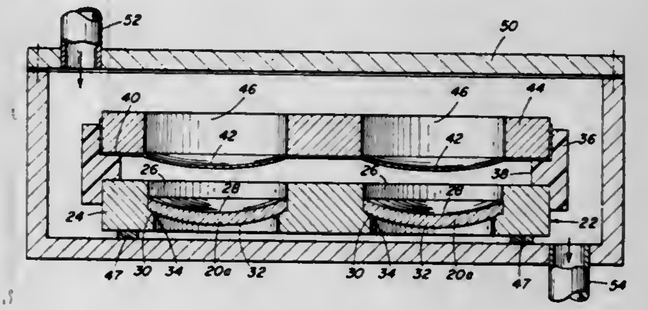
Maurice W. Blackwelder, Dix Hills, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 4, 1973, Ser. No. 366,265
Int. Cl. B29d *23/04*
U.S. Cl. 425—72 **3 Claims**

1. In apparatus for producing a web of expanded polystyrene comprising an extruder for extruding a tubular extrudate, means for expanding the extrudate and a cooling mandrel over which the expanded extrudate is drawn in surface to surface contact therewith, the improvement comprising: a contacting ring for dressing the inside surface of the extrudate which is thin in the longitudinal direction relative to the mandrel, which has an extrudate-contacting outside surface which is positioned to contact the extrudate at a location where the extrudate has reached its final diameter, which is disposed substantially concentrically, with the mandrel and which is spaced longitudinally upstream of the cooling mandrel.



3,871,803
APPARATUS FOR PRODUCING AN OPTICAL MOLDING PLAQUE

John O. Beattie, Riverside, Calif., assignor to Beattie Development Company, Stamford, Conn.
Division of Ser. No. 210,488, Dec. 21, 1971, Pat. No. 3,806,079, which is a continuation-in-part of Ser. No. 841,926, July 15, 1969, abandoned. This application Dec. 3, 1973, Ser. No. 420,819
Int. Cl. B29c *1/02*
U.S. Cl. 425—175 **10 Claims**



1. Apparatus for molding a replicate plaque from plastic monomer for use in simultaneously molding a plurality of plastic optical elements comprising:
a. a first support plate;
b. means on said first support plate for defining a mold surface, said mold surface including a plurality of master surfaces to be negatively reproduced on said replicate plaque;
c. a second support plate;
d. a flexible member having inner and outer surfaces supported by said second support plate, said flexible member having a plurality of sectors formed thereon, the outer surfaces of said sectors having the same general shape as said master surfaces;
e. means for supporting said first and second support plates in spaced relationship with said plurality of sectors being in substantial alignment with said plurality of master surfaces for defining a mold cavity between the inner surface of said flexible member and the mold surface of said first support plate within which said replicate plaque may be molded;
f. means for filling said mold cavity with said plastic monomer; and
g. means for applying a positive pressure to the outer surface of said flexible member during the molding of said plaque to cause said sectors to deform and maintain said plaque in intimate contact with said master surfaces during the molding thereof.

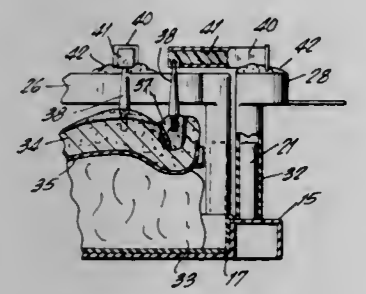
3,871,804
DENTAL RESTORATION JIG

Abraham Cooper, 1362 Gibson St., Far Rockaway, N.Y. 11694

Filed July 16, 1973, Ser. No. 379,856

Int. Cl. A61c *9/00*

U.S. Cl. 425—175 **5 Claims**



1. A jig for casting a model of a dental impression comprising a base, a plurality of vertically upstanding positioning pins on said base, a dental impression portion on said base within the said pins, (at least one) a plurality of table (member) members each comprising an arcuate support bar and downwardly extending hollow tubular members integral with said arcuate bar and receivable upon the positioning pins on the base, for selective placement of the tables to accommodate impressions having different sizes at least one dowel pin holder receivable upon the arcuate support, a dowel member carried by and depending from the dowel holder and extending for a portion of its length into the dental impression whereby after the dental impression, the dowel holders and the dowels have been adjusted to their proper relationship the table can be removed, the casting material poured and the table thereafter replaced in proper orientation before the casting material hardens.

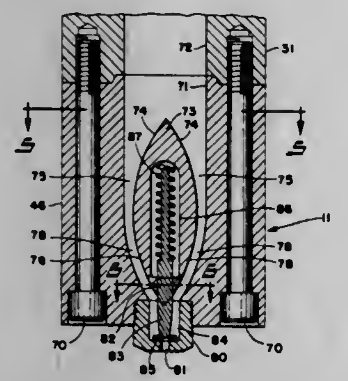
3,871,805
RECIPROCATING SCREW INJECTION MOLDING MACHINE CYLINDER HEAD WITH INTEGRAL SPREADER AND AUTOMATIC NOZZLE

Arthur W. Jacobs, 5994 Columbus Rd., North Olmsted, Ohio 44070

Filed Apr. 26, 1973, Ser. No. 354,655

Int. Cl. B29f *1/03*

U.S. Cl. 425—245 NS **9 Claims**



4. A spreader, valve, and nozzle assembly for a reciprocating screw type injection molding machine comprising a cylinder head adapted to be secured at the end of the heating cylinder of such machine and having a passage at one end registering with the bore of said heating cylinder and a nozzle at the other end having an orifice through which plasticized material flows through said passage into a mold engaged by the said nozzle; a spreader integral with said head and defining with said passage two flow passages for transforming a cylindrical body of plasticized material into two segmental streams of progressively decreasing area as the plasticized material flows toward said nozzle; said spreader being hollow and being communicated with the atmosphere via a lateral passage extending through said head between said segmental flow passages; said spreader having a central axial bore which is coaxial with said orifice and which leads into said spreader; a valve member slidably sealed in said bore; said nozzle having a valve seat smaller than said bore; and spring means in said spreader biasing said valve member into engagement with said seat except when the pressure of the plasticized material acting on the differential area of said bore and seat is sufficient to overcome the biasing force of said spring, at which time, said valve member is urged away from said seat for flow of plasticized material through said orifice.

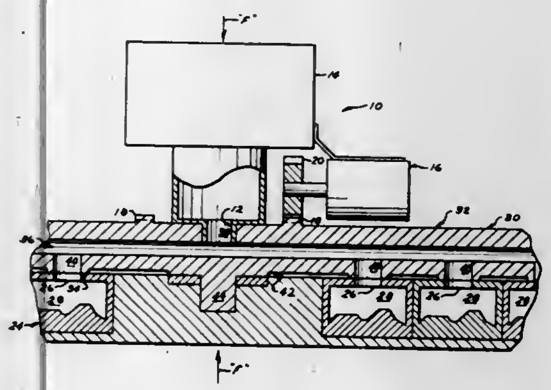
3,871,806
INJECTION MOLDING APPARATUS

Carl V. Leunig, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 28, 1974, Ser. No. 437,474

Int. Cl. B29c *5/00*

U.S. Cl. 425—247 **6 Claims**



1. In injection molding apparatus having a plasticator, a plasticator nozzle, and a mold system having a continuous planar surface interrupted only by a plurality of sprue openings opening at the planar surface for receiving material from the nozzle via the sprue openings, the improvement comprising:

a runner block having first and second surfaces, at least one channel extending laterally within the block, a feed opening extending through the block in communication with the channel, and at least a plurality of spaced-apart secondary openings each extending through the block between the second surface and said channel, said feed opening receiving the nozzle, and said second surface of the block being planar and slidably movable along the planar surface of the mold system about a preselected axis between at least a first position at which at least one of the secondary openings is in communication with an associated sprue opening and at least a second position wherein said secondary openings are sealed by mating engagement with the uninterrupted portion of said planar surface; and

means for slidably moving the block along the mold system and about the axis between at least the first and second positions.

3,871,807
DEVICE FOR FORMING TUBES OF THERMOPLASTIC MATERIAL BY EXTRUSION

Jean-Pierre Meyniel, Vauvert, and Jean-Louis Roulle, Nimes, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

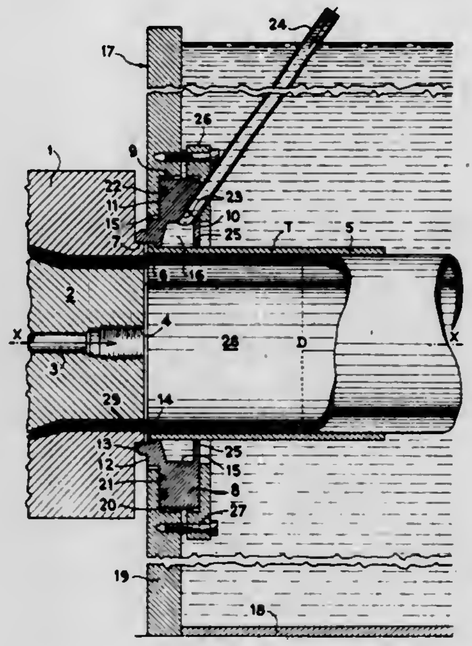
Filed Jan. 3, 1973, Ser. No. 320,783

Claims priority, application France, Jan. 12, 1972, 72.00949

Int. Cl. B29d *23/03, 23/04*

U.S. Cl. 425—326 R **6 Claims**

2. A device for forming tubes of thermoplastic material comprising a cooling tank for containing a bath of cooling liquid, a cold die head comprising tubular means having an upstream end and a downstream end and defining a cylindrical throughway passage, second means defining with said tubular means an annular chamber surrounding a portion of said tubular means adjacent said upstream end, said tubular means being combined with a wall of said tank adjacent said upstream end and putting the interior of said tank in communication with the exterior of said tank, said upstream end of said tubular means being for combination with an annular output end of an extruder so as to put said passage in axial alignment with said extruder annular output end for receiving the tubular extruded material from said extruder, said second means having a downstream end remote from said upstream end of said tubular means and said tubular means having a part extending beyond said downstream end of said second means so that said part of said tubular means is directly exposed to said bath of cooling liquid, said passage being for communication with a source of fluid under pressure for applying the tubular extended material against said tubular means, means for putting said chamber in communication with a source of cooling liquid so as to cool said extruded material indirectly through said portion of said tubular means, means defining a series of equally-spaced orifices disposes around and adjacent said tubular means and adjacent said downstream end of said second means for putting said chamber in communication with the interior of said tank and producing jets of said cooling fluid which issue from said chamber and create turbulence in said bath of cooling liquid around said part of said tubular means, said chamber having a length axially of said tubular means which length is a minor fraction of the diameter of said passage and a minor fraction of the axial length of said part of said tubular means.



3,871,808
APPARATUS FOR PRODUCING SUBSTANTIALLY UNIFORM CALENDERED MATERIAL

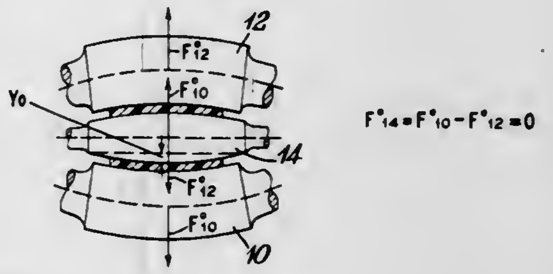
Fred H. Ancker, Bound Brook, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 870,698, Oct. 13, 1969, abandoned, which is a division of Ser. No. 759,013, Sept. 11, 1968, Pat. No. 3,499,957, which is a continuation-in-part of Ser. No. 398,182, Sept. 22, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,679

Int. Cl. B29c *15/00;* **B29d** *7/14*

U.S. Cl. 425—367 **2 Claims**

1. In calendering apparatus for the production of thermoplastic film having at least three coplanar, cooperating calender rolls suspended in bearing mountings in opposed side frames, the improvement which comprises a crowned penultimate roll interposed between cylindrical ultimate and antepenultimate rolls to form the three rolls of said coplanar system, said penultimate roll being crowned to provide an equidistant gauging nip when said penultimate roll is undeflected and said ultimate roll is at its maximum deflection and having a flexural ridigity ratio in respect to said ultimate roll of between about 0.03 and 0.75, means for adjusting the separation of said rolls, bearings for said penultimate roll comprises of a main normal clearance bearing disposed about each neck of said roll and two auxiliary adjustable bearings proximate to and disposed about each side of each of said main bearings providing pullback means adapted to force said roll necks into a stable position against each of said main bearings; and bearing housings for said penultimate roll being attached to the opposed side frames through self-aligning spring mountings.



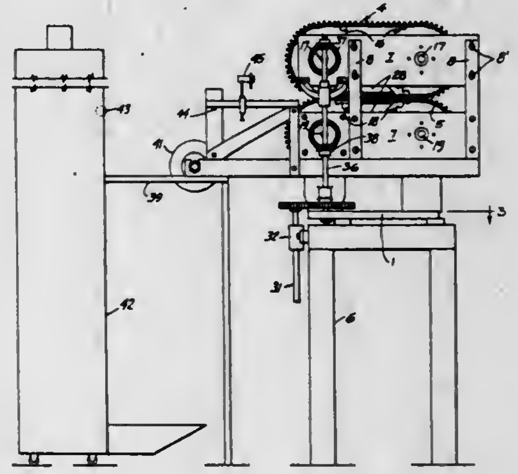
3,871,809
EXTERNAL SWIVEL CONNECTIONS FOR CORRUGATING MACHINE

James W. Williams, 3029 Country Club Dr., Costa Mesa, Calif. 92626

Filed Jan. 7, 1974, Ser. No. 431,227

Int. Cl. B29c *15/00*

U.S. Cl. 425—370 **7 Claims**



1. In a corrugating machine, the combination comprising

a. a series of longitudinally axially elongated rods and two generally parallel chains,

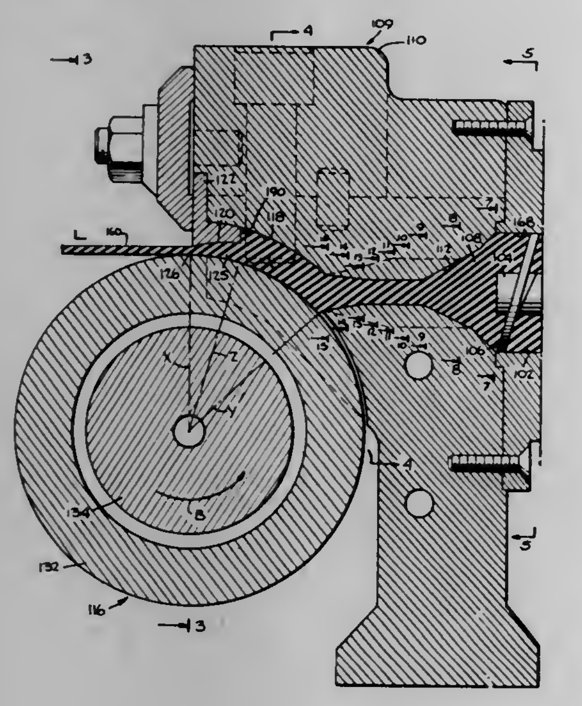
b. means interconnecting the ends of the rods with chain links of the two chains so that the rod ends can swivel relative to the links to which they are connected, and including a universal joint between each rod end and associated link, the joint including a member having axially slidable telescopic connection with the rod end and wherein said telescopic connection is defined by a bore in the rod end, the member rotatably received in the bore.

3,871,810

EXTRUDER AND ROLLER-DIE COMBINATION

Paul Geyer, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,161
Int. Cl. B29f *3/012*
U.S. Cl. 425—374 **2 Claims**



1. Apparatus for forming an elastomeric strip, comprising a roller, a stationary surface confronting and in spaced relation converging toward said roller, said surface and roller cooperatively defining a wedge chamber terminating in a restriction orifice, extrusion means for advancing elastomeric material under pressure to said wedge chamber, and means for defining a transition chamber intercommunicating said extrusion means and said wedge chamber, said transition chamber in one plane of cross-section having a converging portion proximate to and directed away from said extrusion means and a diverging portion remote from and directed away from said extrusion means, said transition chamber in successive downstream planes of cross-section normally of the first said plane having a medial portion which at least in said converging portion progressively narrows at a greater rate than do the respective opposite end portions of said transition chamber in said successive planes, said medial portion of said transition chamber in said successive planes passing through said diverging portion progressively widening in a direction normally of the direction it narrows in said converging portion.

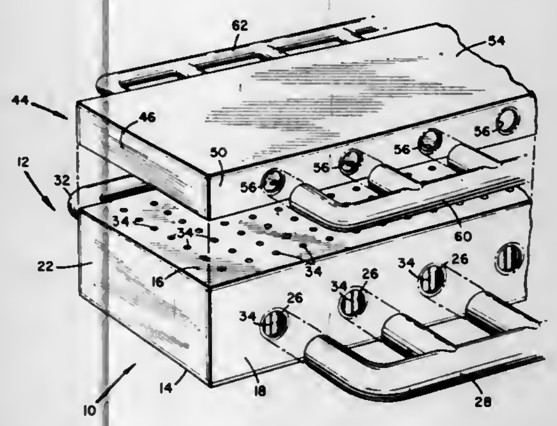
3,871,811

APPARATUS FOR APPLYING HEATING AND COOLING MEDIA TO MOLD PLATE

Martin J. Barry, Westport, Conn., and Elon J. Nobles, Minnetonka, Minn., assignors to Edward J. Cabic, Falls Church, Va., a part interest

Filed June 25, 1973, Ser. No. 373,138
Int. Cl. B29c *3/00*
U.S. Cl. 425—407 **10 Claims**

1. A mold plate adapted for applying heating and cooling fluids to a layer of plastic material to form a plastic panel comprising:
- a. a pair of spaced apart plates consisting of a first plate and a second plate wherein the first plate which engages the plastic material is made of a material having good heat transfer properties;
- b. wall means connecting the edges of said plates to form a fluid-tight chamber between said plates;
- c. inlet and outlet means within said walls to allow a heat-transfer media to enter and exit from said chamber; and
- d. a plurality of open ended tubes extending between and into the two plates, said tubes being in a fluid-tight relation with said plates so that the media within said chamber cannot escape through said plates to provide additional fluid to the face of the mold.

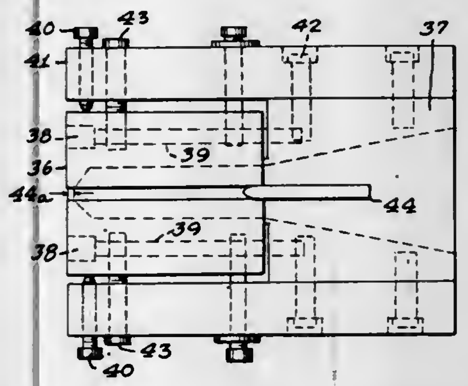


3,871,812

FOAM EXTRUSION DIE

Arthur L. Phipps, 6204 Raymond Ct., Erie, Pa. 16505

Filed Aug. 2, 1972, Ser. No. 277,407
Int. Cl. B29d *7/04*
U.S. Cl. 425—466 **20 Claims**



1. An extrusion die for extruding a homogeneous distribution of foaming polymeric material comprising, having the property of changing shape after it leaves said die,
- two spaced lips fixed to said die and extending therefrom disposed substantially in two parallel planes,
- the edge of said lips remote from said die defining an exit passage for said material,
- said lips extending beyond the end of said die in spaced relation to each other providing an open space therebetween for material to move laterally relative to said lips,
- means supporting said lips on said die,
- and means to adjust the position of said lips relative to each other to control the shape of said passage,
- said exit passage being generally in the shape of a bow tie having inwardly curving sides,
- said lips are movably connected to said die to swing about spaced parallel axes whereby said lips may be moved to converge toward each other or to diverge from each other,
- and means to hold said lips selectively in converging position or in diverging position.

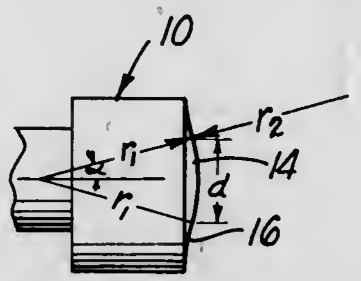
3,871,813

MOLD MEMBER FOR CONTACT LENS CONSTRUCTION

Quido A. Cappeli, Bronx, N.Y., assignor to Danker & Wohlk, Inc., Uniondale, N.Y.

Division of Ser. No. 193,380, Oct. 28, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,091
Int. Cl. B29d *11/00*
U.S. Cl. 425—469 **1 Claim**

1. A mold for forming the inner surface of a plastic corneal-type contact lens such that the inner surface includes a semi-spherical central cornea engaging portion and a slightly concave outer annular cornea engaging and limbus bridging portion, said mold comprising:
- a mold member having an end face including a central semi-spherical convex portion of radius r_1 having substantially the contour of the central portion of the cornea and an outer slightly concave annular portion forming the periphery of said end face and of radius r_2 greater than and colinear to r_1, and a junction of curves defined by r_1 and r_2 defining a surface having substantially the contour of the outer annular generally hyperbolic portion of the cornea and bridging the limbus just to the sclera of the eye, the diameter of said portion of radius r_1 being of the order of one-half the diameter of said end face.

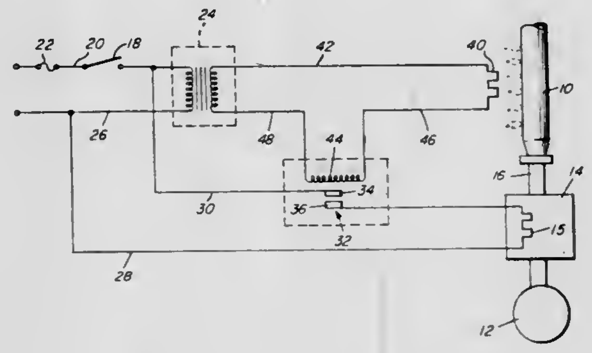


3,871,814

ELECTRIC IGNITION SYSTEM

Nalini R. Das, Bethlehem, and Edwin H. Strain, Allentown, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 4, 1973, Ser. No. 394,204
Int. Cl. F23n *5/14*
U.S. Cl. 431—66 **6 Claims**



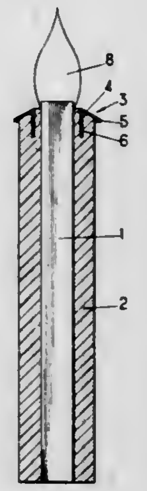
1. An electric ignition system for a fluid-fueled burner comprising an electrically operable valve for controlling flow of fuel to the burner, an electrical resistance type ignition wire for igniting fuel at the burner when at least a predetermined minimum amount of electric current is passing through it, and a current-activated relay connected directly to said wire and said valve, said relay being sensitive to current passing to it from said ignition wire and being operable to energize said valve only when at least said predetermined minimum amount of current is passing through said ignition wire.

3,871,815

CANDLE FOR PRODUCING A COLORED FLAME

Jean Cangardel, Saint Front sur Lemance, 47500 Fumel, France

Filed Feb. 11, 1974, Ser. No. 441,349
Claims priority, application France, Mar. 8, 1973, 73.08409
Int. Cl. C11c *5/00*
U.S. Cl. 431—126 **13 Claims**



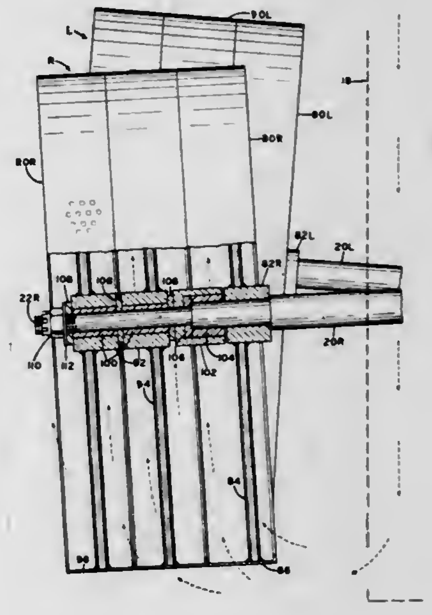
1. A candle for producing a colored flame comprising:
- a. a central rod made of at least 70 percent metaldehyde;
- b. a body surrounding said rod and made of a composition including stearic acid.

3,871,816

DRIVE MECHANISM FOR PASSING CONTINUOUS STRIP THROUGH AN OVEN

Grant F. Strong, Wabash, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Aug. 3, 1973, Ser. No. 385,620
Int. Cl. F27b *9/28*
U.S. Cl. 432—59 **10 Claims**



1. In an oven for heating an elongated strip of material, the oven including an inlet side, an outlet side, a front, and drive mechanism to pass the strip through the oven, said drive mechanism comprising:
- a. first and second drive shafts, each having a drive end and a wheel end, said shafts defining a pair of substantially parallel vertical planes, said first drive shaft adjacent the inlet side of the oven and said second drive shaft adjacent the outlet side of the oven;
- b. a first free shaft, rotatably located axially with said first

drive shaft and a second free shaft, rotatably located axially with said second drive shaft, each of said free shafts having a drive end and a wheel end;

c. a number of generally cylindrical substantially hollow wheels including:

  i. a first driven wheel fixedly mounted on said wheel end of said first drive shaft, a second drive wheel fixedly mounted on said wheel end of said second drive shaft; and

  ii. at least one free wheel rotatably mounted on said wheel end of each of said free shafts, each of said free wheels being adapted to rotate at slower rotational speeds than said free shafts;

d. drive means operatively associated with said drive shafts and said free shafts to provide rotational movement of each of said shafts, each of said shafts being adapted to rotate at a different speed than the remainder of said shafts.

3,871,817
SIMULTANEOUS DYEING AND CROSSLINKING OF CELLULOSIC FABRICS

Robert J. Harper, Jr., Metairie; Joseph S. Bruno, Chalmette; Eugene J. Blanchard, New Orleans, and Gloria A. Gautreaux, Metalrie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 7, 1973, Ser. No. 395,097

Int. Cl. D06p *5/04*

U.S. Cl. 8—17 **5 Claims**

1. A process for simultaneously imparting to cellulosic fabrics durable-press performance and the dyeing of cellulosic fabrics with more than one color of which one color is due to basic dye, said process comprising:

a. coating one side of cellulosic fabric with a formulation containing about 9.0 weight percent of dimethylol dihydroxyethyleneurea, from about 0.5 to 4.0 weight percent of an acid type catalyst selected from the group consisting of:

  zinc nitrate hexahydrate, magnesium chloride hexahydrate, citric acid, tartaric acid, glycolic acid, mandelic acid,

  and a mixture of magnesium chloride hexahydrate with either citric, tartaric, glycolic or mandelic acid in 1:1 or 1:3 ratios, from about 0.2 to 3.0 weight percent of a basic dye, from 0.6 to 1.0 weight percent of hydroxyethylcellulose, and the remainder water,

b. drying the coated fabric from (a) at a temperature from 30° to 90° C for a period of 2 to 30 minutes,

c. curing the fabric from (b) at a temperature of 120° to 160° C for a period from about 5 to 15 minutes,

d. laundering the fabric from (c), and

e. dyeing the fabric from (d) with a reactive cotton dye.

3,871,818
PROMOTING COLOR CHANGE IN HUMAN HAIR WITH A DIALDEHYDE COMPOUND AND A NITROGEN CONTAINING COMPOUND

James F. Kinney, Ramsey, N.J., and Antoni Edward Gadzala, Suffern, N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 301,785, Oct. 30, 1972. This application Apr. 11, 1973, Ser. No. 350,170

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 **9 Claims**

1. A method of promoting color change in human hair comprising applying to the hair an aqueous carrier containing dispersed therein from about 0.5 to about 5 parts per 100 parts of composition of a dialdehyde compound selected from the group consisting of ortho, meta, or para-phthalaldehyde and from about 0.1 part to 20 parts per 100 parts of composition of at least one nitrogen containing compound selected from the group consisting of monoalkanolamine, dialkanolamine, trialkanolamine, C_1–C_{15} alkyl alkanolamine, C_1–C_{15} dialkyl alkanolamine, C_1–C_{15} alkyl dialkanolamine and ammonium hydroxide, said alkanol radical of said nitrogen containing compound being a C_1–C_3 alkanol group; allowing the composition to remain on the hair for a period to effect the desired color change and rinsing said spent composition from the hair.

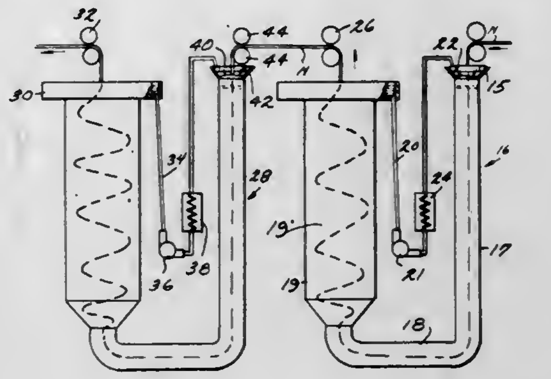
3,871,819
CONTINUOUS LIQUID TREATMENT OF TEXTILE MATERIALS

James E. Greer, P.O. Box B2, Greensboro, N.C.

Division of Ser. No. 716,256, March 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 292,389, July 2, 1963, abandoned. This application Oct. 31, 1969, Ser. No. 870,825

Int. Cl. D06m *3/42*

U.S. Cl. 8—130.1 **7 Claims**



1. A process for decreasing the elongation, residual shrinkage and crocking of a dyed nylon textile containing nylon textile fibers comprising drawing the textile to stretch the fibers about 2 to 5 percent, contacting the textile with a dye and subsequently alternately contacting the textile with steam and liquid water maintained at temperatures between about 240°F. and 300°F. for 1 second to 20 minutes, cooling the said textile below 230°F. and releasing the drawing tension thereon, whereby the said nylon textile has an elongation of not in excess of 15 percent, a shrinkage no greater than about 4 percent and improved crocking.

3,871,820
WOOL SCOURING

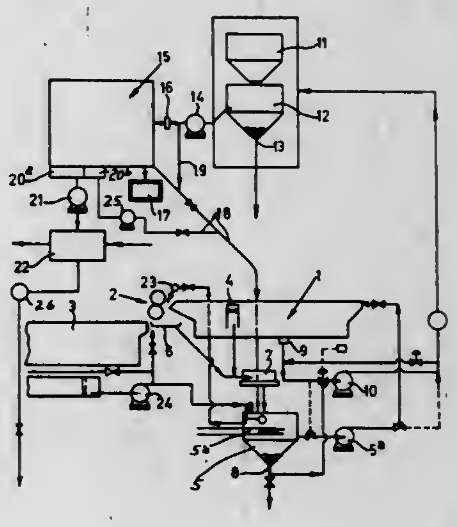
Rex George Stewart, Christchurch; Gerald Vivian Barker, Lincoln, and John Leonard Hoare, Christchurch, all of New Zealand, assignors to Wool Research Organization of New Zealand (Inc.), Lincoln, Canterbury, New Zealand

Filed Aug. 17, 1973, Ser. No. 389,224

Claims priority, application New Zealand, Aug. 18, 1972, 168134

Int. Cl. D01c *3/00*

U.S. Cl. 8—139 **23 Claims**



1. Apparatus for use in wool scouring operations comprising a scouring tank for containing hot aqueous cleansing solution into which wool to be scoured is passed, means for moving the wool to liquor removing means associated with the scouring tank and whereby excess liquor is removed from the wool

leaving the scouring tank, a side tank for receiving overflow liquid and suspended solids from the scouring tank and liquid removed from wool leaving the scouring tank, means for recycling liquid from the side tank to the scouring tank, said scouring and side tanks having bottom outlets for heavy solids and from which the heavy solids can be passed to a heavy solids settling tank, said solids settling tank having an outlet for the discharge of solids and an outlet in communication with lanolin extraction or recovery plant whereby lanolin is recovered from liquid from the solids settling tank to leave liquid for recycling to the scouring tank and/or drainage.

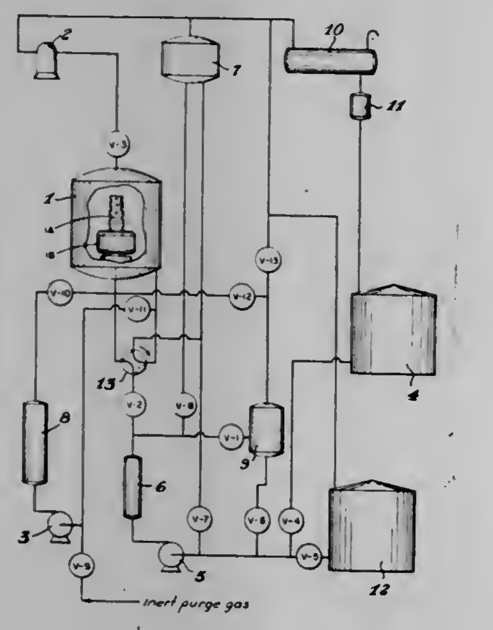
3,871,821
PACKAGE DYE PROCESS

William D. Winn, and James L. Dunn, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 296,881, Oct. 12, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,299

Int. Cl. B05c *8/02*

U.S. Cl. 8—149.1 **1 Claim**



1. In a method for dyeing packaged yarn in a discontinuous process by stacking the packaged yarn onto spindles in a dye kier, filling the kier under pressure with dye liquor, heating said dye liquor while circulating the same through the kier, draining the spent dye liquor from the kier and drying the yarn packages, the improvement which comprises:

1. sealing the kier and subjecting the interior to a vacuum,
2. introducing into said evacuated kier vapors of an organic solvent which is to be employed as the solvent dye vehicle, continuing the introduction of vapors into said kier until the temperature of the kier and its contents are raised to the solvent boiling point, and the kier is filled with solvent vapors thereby expelling residual air from the kier and its contents,
3. filling the kier with a solvent dyebath which is heated and circulated through the kier until the desired dye fixation temperature is obtained,
4. removing the dyebath, now spent, and circulating vapors from the kier to a heater to raise the temperature of the kier and contents to above the boiling point of the dye vehicle, diverting a portion of the vapors from the kier to a condenser, thus removing from the cycle those vapors in excess of that necessary to fill the kier and the vapor heating system,
5. evacuating and purging the kier with an inert gas to remove residual traces of solvent vapors,
6. removing the dry dyed yarns, and
7. recovering solvent from the spent dyebath.

3,871,822
TREATMENT OF CELLULOSIC TEXTILE FABRICS WITH METHYLOLATED ALKOXYALKYL CARBAMATES

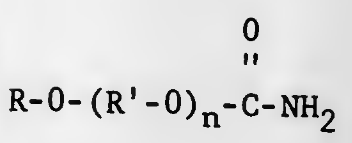
Henry G. Goodman, Jr., White Plains; Carol A. Dupraz, Flushing (Corona), and George H. Lourigan, New City, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 16, 1966, Ser. No. 527,772

Int. Cl. D06m *13/40, 15/54*

U.S. Cl. 8—187 **4 Claims**

1. A process for treating cellulosic textile fabric comprising the step of applying to said textile fabric at elevated temperatures in the presence of an acid catalyst an effective amount of the product of the reaction of formaldehyde with an alkoxyalkyl carbamate of the general formula:



$$R\text{-}O\text{-}(R'\text{-}O)_n\text{-}\overset{\overset{O}{\|}}{C}\text{-}NH_2$$

wherein R is an alkyl group of 1 to 8 carbon atoms, R′ is an alkylene radical of 2 carbon atoms, and *n* is an integer having a value of 1, said reaction being conducted at from about 20°C. to about the reflux temperature of the reaction mixture for a period of time from about 10 minutes to about 24 hours at an initial pH of from about four to about ten in a ratio of about 1.5 to about three moles of formaldehyde per mole of alkoxyalkyl carbamate.

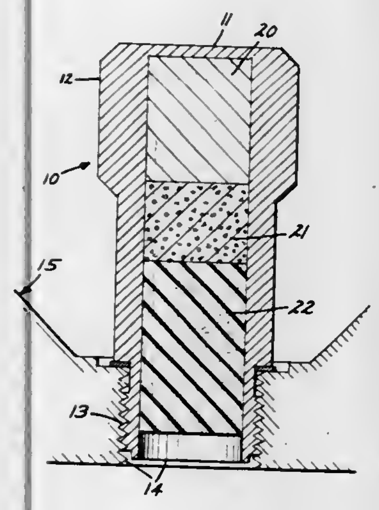
3,871,823
METHOD AND DEVICE FOR INHIBITING THE CORROSION OF METALLIC SURFACES

John D. Skildum, 34 North Oaks Rd., St. Paul, Minn. 55110

Filed June 3, 1971, Ser. No. 149,665

Int. Cl. C23f *11/02;* **F02b** *77/04*

U.S. Cl. 21—2.5 B **4 Claims**



1. A method of inhibiting the corrosion of the internal metallic surfaces of an apparatus comprising the steps of:

a. providing a housing defining a cavity therein;
b. placing a mixture of organic ammonium nitrites with varying vapor pressures within said cavity;
c. placing within said cavity a chemical buffer system for neutralizing lead acids;
d. placing said housing within the apparatus to be protected; and,
e. whereby said internal surfaces are exposed to and contacted by the organic nitrites and chemical buffer system within said cavity.

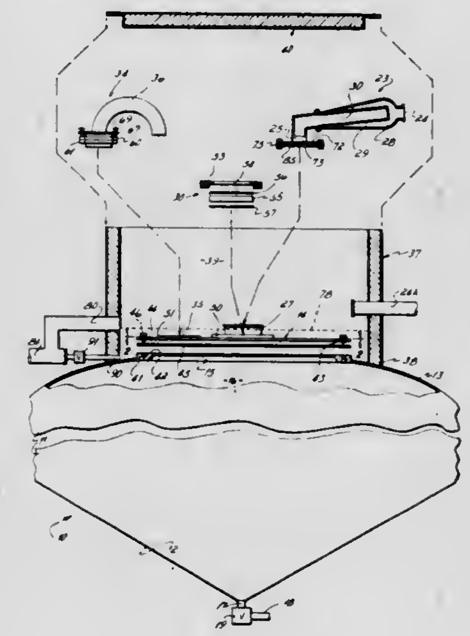
3,871,824
METHOD OF ASEPTICALLY CONNECTING A FITTING TO AN ASEPTIC STORAGE TANK

Steve A. Rechtsteiner; Philip E. Nelson, both of Cincinnati, Ohio, and John R. Heron, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed June 19, 1974, Ser. No. 480,842

Int. Cl. A61l *1/00*

U.S. Cl. 21—58 **9 Claims**



1. A method of aseptically connecting a fitting to an opening in a bulk storage tank, which opening is surrounded by a liquid-retaining enclosure, whereby the fitting communicates with the tank interior, comprising the steps of:

filling the tank with liquid chemical sterilant to sterilize the tank interior,

filling the liquid-retaining enclosure which surrounds the tank opening, while the tank interior is in a sterile condition, with a liquid chemical sterilant to provide a liquid sterilant bath in contact with the tank opening, and

immersing the fitting in the sterilant bath to sterilize the fitting and while immersed and in a sterile condition connecting the fitting to the tank opening to thereby isolate the sterile tank interior from the environment via the sterile fitting.

3,871,825
FLUOROMETRIC REAGENTS AND METHODS

Willy Leimgburger, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann La-Roche Inc., Nutley, N.J.

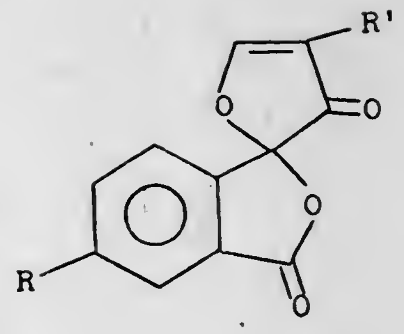
Division of Ser. No. 212,790, Dec. 27, 1971, Pat. No. 3,812,181. This application Mar. 4, 1974, Ser. No. 447,610

Int. Cl. G01n *31/22;* **g01n** *33/16*

U.S. Cl. 23—230 M **23 Claims**

1. A method for determining a primary amine-containing compound in a mixture containing same which method comprises:

treating said mixture with a compound of formula I



wherein R is hydrogen, halogen, lower alkyl or lower alkoxy and R′ is lower alkyl or aryl

to produce a fluorescent substance therein and fluorescing said substance.

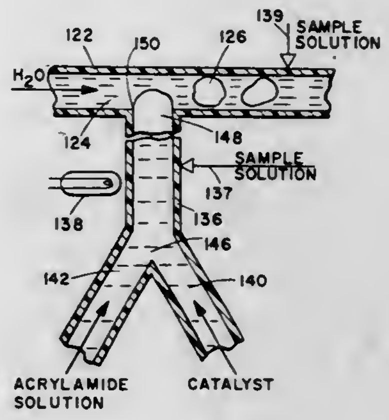
3,871,826
METHOD AND APPARATUS FOR TRANSPORTING DISCRETELY SAMPLES TO BE ANALYZED IN A GEL

Bohdan Bakay, 2967 Curie St., San Diego, Calif. 92122

Continuation-in-part of Ser. No. 211,182, Dec. 23, 1971, abandoned. This application Dec. 29, 1972, Ser. No. 319,525

Int. Cl. B08b *9/00;* **G01n** *31/08, 33/00*

U.S. Cl. 23—230 R **17 Claims**



1. In the method for transporting samples to an analyzer the improvement comprising the steps of:

forming a stream by introducing a liquid carrier into a conduit and by introducing gel spacers into said conduit, introducing fluid samples into the stream at spaced intervals,

and wiping films of the liquid carrier and sample from the inner wall surfaces of said conduit with said gel spacers.

2. In a method for transporting samples of material through a conduit of an automatic transfer apparatus as a flowing stream of such samples separated by spacers, the improvement wherein the spacer consists essentially of a gel which is characterized by cohesive forces which cause the gel to retain its physical form and shape and having a size to be squeezed into the conduit which carries the sample stream thereby to wipe the inner surface of the conduit to prevent smearing of said material along the conduit, to reduce conical flow and cause discrete zonal flow of the samples which are spaced by the gel spacer.

3,871,827

APPARATUS FOR DETERMINING SMALL AMOUNTS OF CARBON MONOXIDE OR HYDROGEN IN ATMOSPHERIC AIR

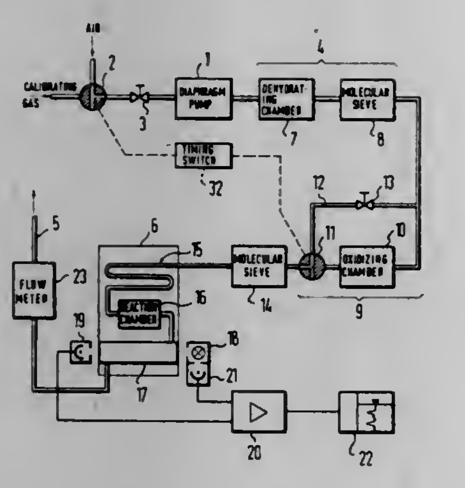
Wolfgang Seiler, Mainz-Gonsenheim, and Ulrich Schmidt, Mainz-Finthen, both of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Germany

Filed Apr. 25, 1973, Ser. No. 354,307

Claims priority, application Germany, May 18, 1972, 2224408

Int. Cl. G01n *21/26, 31/00*

U.S. Cl. 23—254 R **13 Claims**



1. Apparatus for determining the concentration in a gas mixture of one gaseous component capable of reducing mercuric oxide to metallic mecury, said apparatus comprising:

- a. purifying means permeable to said component while substantially impervious to at least one other component of said mixture capable of reducing said mercuric oxide;
  b. measuring means for measuring the remainder of mercuric oxide reducing components in the purified mixture, said measuring means including:
- 1. heating means for heating said purified mixture to a reaction temperature sufficient to permit reaction of said one component with mercuric oxide,
  - 2. a reaction chamber maintained by said heating means at said temperature and charged with yellow mercuric oxide for contact with the heated purified mixture, and
  - 3. a measuring cell maintained by said heating means at least at said temperature;
- c. conveying means for passing a stream of said mixture sequentially through said purifying means, said heating means, said reaction chamber, and said measuring cell; and
- d. optical sensing means responsive to the presence of elementary mercury in said cell for producing indicia indicative of the concentration of mercury in said cell.

3,871,828

HYDRAZINE GAS GENERATOR

M. Edmund Ellion, Arcadia, and Dwight A. Mahaffy, Englewood, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1972, Ser. No. 296,392

Int. Cl. B01j *0/04;* **F02k** *9/02*

U.S. Cl. 23—281 **10 Claims**

1. A hydrazine gas generator comprising:

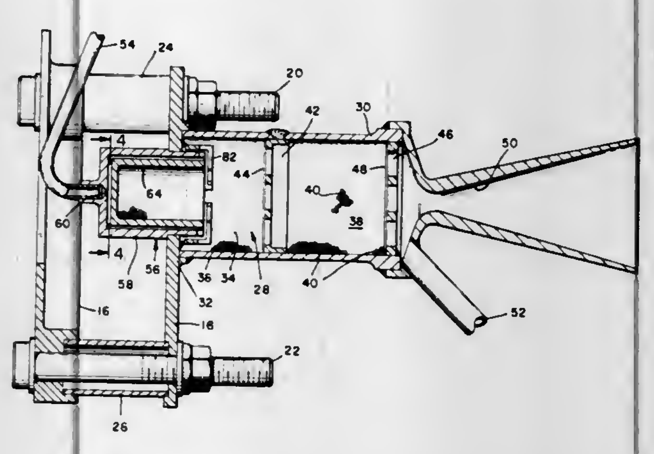
a decomposition chamber for containing a decomposition catalyst;

a liquid distributor for distributing liquid which is exothermically decomposable in the presence of the decomposition catalyst;

an outlet from said decomposition chamber to permit the discharge of hot gaseous products of decomposition for utilization, said liquid distributor comprising:

an orifice for controlling hydrazine liquid flow to said decomposition chamber;

an injector housing having an internal surface a distributor body having an external surface positioned within said injector housing, said surfaces being in contact with each other, a plurality of grooves formed in at least one of said surfaces to define a plurality of passages, said passages being connected to receive liquid passed through said orifice, said passages opening into said decomposition chamber so that liquid passing through said orifice is delivered into said decomposition chamber in a plurality of locations.



3,871,829

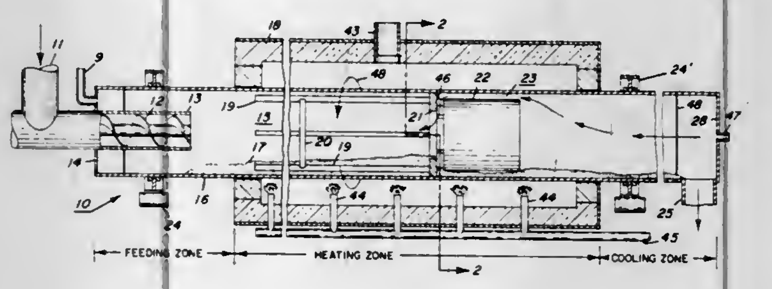
CALCINER WITH BAFFLE MEANS

W. Gill Keith, San Jose, and F. Donald Ferris, San Martin, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 20, 1972, Ser. No. 299,356

Int. Cl. B01j *6/00*

U.S. Cl. 23—279 **13 Claims**



1. A rotary calciner comprising

- a. a housing defining a chamber having a feeding zone, a heating zone and a cooling zone,
- b. heating means for heating the heating zone,
- c. feeding means for introducing a composition into the chamber,
- d. outlet means for removing the treated composition from the chamber,
- e. means for circulating the composition and moving the composition from the feeding means to the outlet means of the chamber,
- f. gas inlet means for introducing an atmosphere into the chamber positioned so that the atmosphere moves countercurrently to the movement of the composition through the calciner,
- g. gas outlet means for removal of the atmosphere from the chamber, and
- h. a baffle means having at least one face positioned in the housing of the calciner so that the baffle means restricts the passage of the controlled atmosphere to a zone of greater flow velocity around the periphery of the baffle means and the gaseous impurities removed from the composition in the heating zone are substantially prevented from diffusing to the cooling zone of the calciner.

3,871,830

POLYMERIZATION REACTOR HAVING A CLOSED UPPER CHAMBER PORTION OF REDUCED DIAMETER AND POLYMERIZATION PROCESS THEREIN

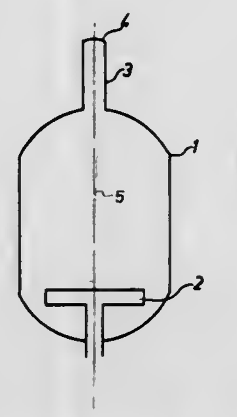
Jean-Marie Chauvier, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed July 12, 1973, Ser. No. 378,403

Claims priority, application France, July 13, 1972, 72.25672

Int. Cl. B01j *3/00;* **C08f** *3/30*

U.S. Cl. 23—285 **3 Claims**



1. An improved reactor for carrying out polymerization in an aqueous medium, comprising, in combination:

a cylindrical vessel having a vertical axis;

a stirrer system in the lower portion of said vessel;

a closed upper chamber portion at the upper portion of said vessel and coaxial with the vessel, said upper chamber portion having an inside diameter whose ratio to the inside diameter of the cylindrical vessel is between 0.20 and about 0.33 and a volume exceeding 2.5% of the actual volume of the reactor; and

a bursting disc on said upper chamber portion.

3,871,831

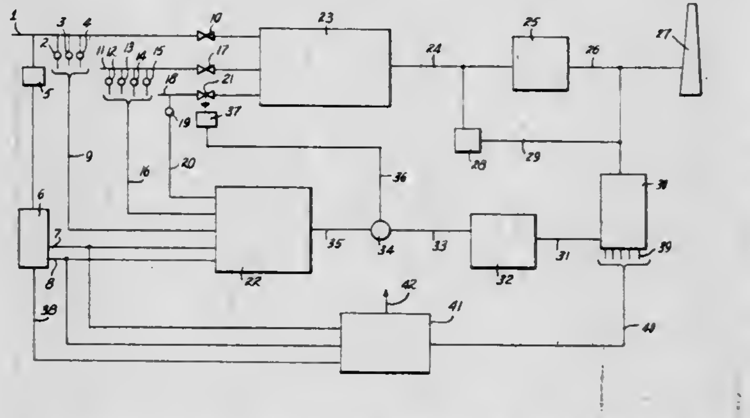
PROCESS FOR AUTOMATED REGULATION OF SULPHUR PRODUCTION UNITS

Guillaume Andral, Pau; Michel Carmassi, Mazeres-Lezons; Bernard Louvel, Buros; Jacques Maurice, Mourenx, and Georges Vandesande, Aroagnon, all of France, assignors to Societe Anonyme dite: Aquitaine Total Organico, Paris, France

Division of Ser. No. 207,790, Dec. 14, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,478

Int. Cl. G01n *7/00;* **C01b** *17/16*

U.S. Cl. 23—255 R **10 Claims**



1. A device for the automatic regulation of a sulphur unit that produces sulphur by the oxidation of a hydrogen sulphide-containing gas by means of a free oxygen-containing gas, said gases being fed to the inlet of the sulphur unit through suitable inlet pipes and said sulphur unit liberating residual gases containing H_2S and SO_2 through a residual gas pipe, said device comprising:

a first analyzer for automatically analyzing the H_2S-containing gas fed to the inlet of the sulphur unit for providing a signal representative of the H_2S content of said gas,

a first calculator connected to receive the signal provided by said first analyzer for computing the theoretical flow of free oxygen-containing gas to be fed to the inlet of the sulphur unit to keep the $H_2S : SO_2$ molar ratio in the residual gases to a set value and for providing an output signal representative of said theoretical flow,

sampling means for continuously taking samples of the residual gases,

a second analyzer for automatically analyzing said samples for providing signals representative of the H_2S and SO_2 contents of the residual gases,

a second calculator connected to receive the signals from the second analyzer for computing the instantaneous $H_2S : SO_2$ molar ratio in the residual gases and for computing a correction value representing the correction needed in the flow of free oxygen-containing gases to the inlet of the sulfur unit to adjust said instantaneous ratio to the set value, said second calculator providing a signal representative of said correction value,

means for electronically combining the signals provided by said first and second calculators to produce a resulting signal representing their sum, and

means responsive to said resulting signal for automatically controlling the flow of free oxygen-containing gas to the inlet of the sulphur unit.

3,871,832

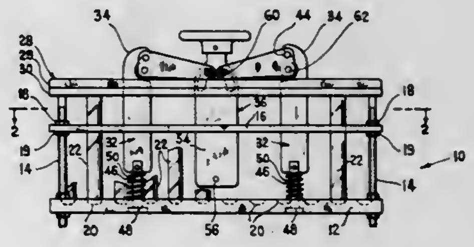
TEST TUBE RACK

Alcide Leblanc, Montreal, Quebec, Canada, assignor to Institut de Bio-Endrocrinologie, Inc., Montreal, Canada

Filed Mar. 5, 1974, Ser. No. 448,360

Int. Cl. G01n *1/10;* **B01l** *3/14*

U.S. Cl. 23—259 **12 Claims**



1. A locking mechanism for locking a removable cover over a plurality of open ended tubes of a test tube rack, the cover including a resilient liner on the lower face thereof, comprising, in combination: vertical securing means having one end mounted to a bottom wall of said rack and having at the opposite end thereof a portion protruding said cover; actuator means having an upper portion disposed above said cover and a lower portion slidably mounted through said cover; lever means pivotally attached to one end thereof to the upper portion of said actuator means, the other end thereof defining engagement means for engaging said protruding portion of said securing means; pivot means on said lever means in contacting engagement with the upper face of said cover, and being slidable thereon whereby, upon downward movement of said actuator means, said lever means are moved to said protruding portion of said securing means and said engagement means tightly secure said protruding portion to provide a sealing engagement between the liner and the tubes, the resiliency in said liner allowing for height differential between the ends of the tubes.

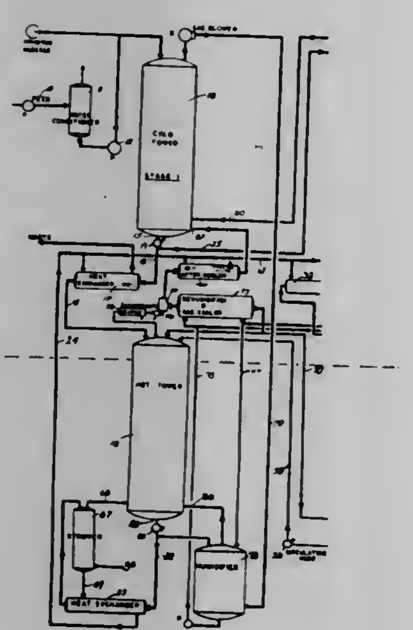
3,871,833
MEANS FOR IMPROVING THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS

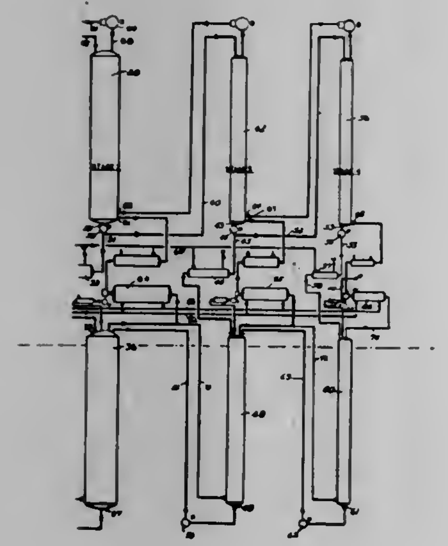
Jerome S. Spevack, 160 Pinebrook Dr., New Rochelle, N.Y. 10801

Continuation of Ser. No. 43,626, April 30, 1970, abandoned, which is a division of Ser. No. 587,365, Sept. 26, 1966, which is a continuation of Ser. No. 822,973, June 25, 1959, abandoned, which is a division of Ser. No. 188,925, Sept. 29, 1950, Pat. No. 2,895,803. This application Feb. 7, 1973, Ser. No. 330,327

Int. Cl. B01j *1/00*

U.S. Cl. 23—260 **10 Claims**





1. A cooperating assembly for increasing thermal efficiency in a gas and liquid processing apparatus of the type which comprises:
   a. a first means for heating from a first temperature to a second temperature a flow of gas, to be subsequently processed at a third temperature higher than said second temperature in contact with a vaporizable liquid, said first means having an inlet thereto and an outlet therefrom for said flow.
   b. a second means, for further heating to and processing said flow of gas at said third temperature in contact with the vaporizable liquid, said second means having a vaporizable liquid supply thereto, a gas inlet end with a gas inlet thereto and a gas outlet end with a gas outlet therefrom and having its gas inlet connected to the outlet from said first means to receive said flow therefrom,
   c. a third means, for cooling said processed flow and condensing vapors of said liquid therefrom, said third means having an inlet thereto connected to the gas outlet of said second means for receiving the processed flow therefrom and having gas and liquid outlet means for discharging flows of the cooled gas and liquid condensate therefrom, and
   d. heat transfer means interconnecting said first and third means and comprising an indirect contact heat exchanger for transferring heat from said third means to said first means,

in which assembly
   e. said first means further comprises liquid inlet means for providing a quantity of the vaporizable liquid in contact with the flow of gas being heated therein, for effecting in said first means vaporization of said liquid and saturation of said gas with vapor of the liquid in contact therewith by heat transferred to said first means by said heat transfer means,

whereby the flow in said first means is enabled to recover from the flow in said third means all of the heat required for both heating said flow of gas in said first means and saturating the same with vapors of said liquid at said second temperature, thus correspondingly reducing the amount of further heating which would otherwise be required to attain said higher temperature in said second means.

3,871,834
CARBON-FIBER-REINFORCED ALUMINUM COMPOSITE MATERIAL

Keiichi Kuniya, and Hideo Arakawa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,177

Claims priority, application Japan, Dec. 25, 1970, 45-117612

Int. Cl. B32b *15/14*

U.S. Cl. 29—183 **23 Claims**

1. A carbon fiber-reinforced aluminum composite material comprising an aluminum containing matrix with at least one alloying element which is reactive with carbon and carbon fibers embedded in said matrix that have a tensile strength larger than that of said matrix, the amount of said carbon fibers being larger than the critical volume ratio required to reinforce said matrix and the surfaces of said carbon fibers being substantially covered with a thin carbide film formed by reaction of said element with carbon, said carbide film being in direct contact with said matrix so that said carbon fibers intimately adhere to said matrix.

3,871,835
REFRACTORY COMPOSITE ALLOYS CONTAINING ROD-LIKE AND/OR PLATELET-LIKE LAMELLAE

Herve E. Bibring, Meudon; Georges P. Seibel, Cachan, and Maurice Rabinovitch, Chatillon, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Continuation-in-part of Ser. No. 2,160, Jan. 12, 1970, abandoned. This application July 3, 1972, Ser. No. 268,751

Claims priority, application France, Apr. 21, 1969, 69.12452; Dec. 23, 1969, 69.44708

Int. Cl. B32g *15/00;* **C22c** *19/00*

U.S. Cl. 29—191.2 **16 Claims**

1. A refractory directionally solidified polyvariant fiber-reinforced composite having eutectic-type structure consisting essentially of two distinct independent phases constituted by:
   a. a complex multicomponent matrix phase consisting essentially of:
      i. at least one metal selected from the group consisting of Fe, Ni and Co, and

      ii. chromium in an amount between 10 and 25 percent by weight of the composite;

and in said matrix:
   b. an in situ grown reinforcing phase free from chromium and consisting essentially of whisker-like elongated monocrystalline fibers of at least one metal monocarbide, the metal of which is selected from the group constituted by Ta, Nb, Hf and Ti.

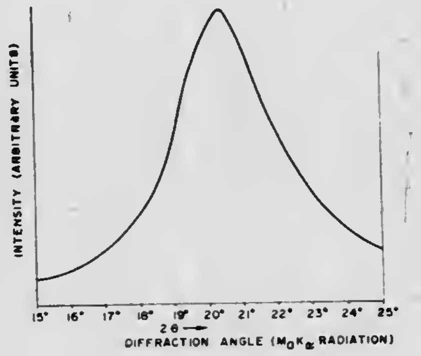
3,871,836
CUTTING BLADES MADE OF OR COATED WITH AN AMORPHOUS METAL

Donald E. Polk, Morristown, and Robert C. Morris, Flanders, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 317,039

Int. Cl. B26b *21/54;* **B32b** *15/00*

U.S. Cl. 29—194 **7 Claims**



1. A cutting implement comprising a metal which is at least 50% amorphous, characterized in that the metal has the composition M_aX_b, where M is at least one element selected from the group consisting of Ni, Fe, Co, Cr and V, X is at least one element selected from the group consisting of P, B, C, Si, Al, Sb, Sn, In, Ge and Be, *a* ranges from 65 atomic percent to 90 atomic percent and *b* ranges from 10 atomic percent to 35 atomic percent.

3,871,837
METHOD FOR LUBRICATING 2-STROKE ENGINES AND ROTARY ENGINES

Pierre Bedague, Meylan; Pierre Marchand; Guy Parc, both of Rueil-Malmaison, and Fernand Roux, Bougival, all of France, assignors to Institut Francais du Petrole, des Carburants et Carburants, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 319,871, Dec. 29, 1972, abandoned. This application June 1, 1973, Ser. No. 366,014

Claims priority, application France, June 2, 1972, 72.20040

Int. Cl. C10l *1/22*

U.S. Cl. 44—58 **13 Claims**

1. A method for lubricating a two-stroke engine fed with gasoline, comprising introducing into the engine a lubricating composition having a viscosity at 98.9°C of at least 6 centistokes, the base lubricant of which contains from 10 to 100% by weight of at least one polyalkyleneglycol derivative being bis octadecanoate or bis dodecanoate of a C_2–C_5 polyoxyalkylene glycol containing 2–50 oxyalkylene units.

3,871,838
APPARATUS FOR REACTING VAPORIZED, GASIFIED OR ATOMIZED HYDROCARBON WITH A GAS SERVING AS AN OXYGEN CARRIER

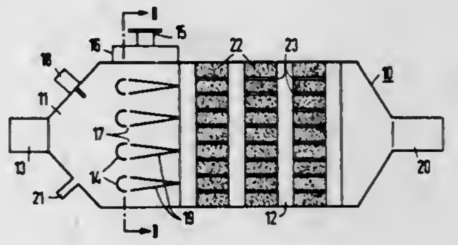
Hans-Joachim Henkel; Eugen Szabo De Bucs, both of Erlangen, and Christian Koch, Nurnberg-Grossgrundlach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 21, 1973, Ser. No. 372,311

Claims priority, application Germany, July 3, 1972, 2223656

Int. Cl. C10g *9/04*

U.S. Cl. 48—107 **10 Claims**



1. In apparatus for the catalytic reaction of a mixture of evaporated liquid fuel and an oxygen carrying gas to form reformed gas, comprising:
   a. a mixing chamber which is free of catalytic material;
   b. a reaction chamber adjacent to the mixing chamber and connected therewith, which contains catalytic material;
   c. means for feeding the evaporated liquid fuel to said mixing chamber in such a manner that a flow through the mixing chamber and the reaction chamber is established; and
   d. means within the mixing chamber to mix the oxygen carrying gas with said evaporated liquid fuel, wherein the improvement comprises improved mixing means comprising:
      1. at least one tube with a multiplicity of discharge openings for the oxygen carrying gas, which openings are distributed over the flow cross section of the mixing chamber in such a manner that the oxygen carrying gas leaves said tube perpendicular to the flow direction of the evaporated liquid fuel flow through the mixing chamber;
      2. gas guide surfaces arranged adjacent to the discharge openings at the tube, said surfaces extending in the flow direction of the evaporated liquid fuel flow up to the vicinity of the reaction chamber, said surfaces gradually increasing the clear flow cross section narrowed down by said tube; and
      3. means for supplying the oxygen carrying gas to said tube.

3,871,839
METHOD OF FEEDING SOLID CARBONACEOUS MATERIAL TO A HIGH TEMPERATURE REACTION ZONE

Burton E. Moody, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

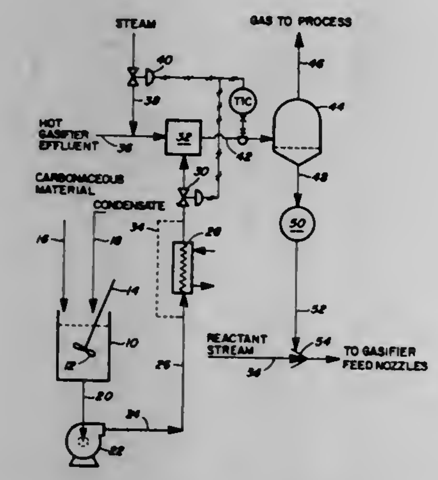
Filed Oct. 12, 1972, Ser. No. 296,959

Int. Cl. C10j *3/06*

U.S. Cl. 48—197 R **7 Claims**

1. A method of feeding carbonaceous particles to a gasifier operating at elevated temperature and pressure comprising the steps of:
   forming a slurry of solid carbonaceous particles with water as a liquid vehicle;
   pumping the slurry into a drying chamber, said drying chamber being separated from said gasifier, maintained at approximately the operating pressure of the gasifier wherein the slurry is mixed with hot effluent gases from

the gasifier so that the carbonaceous particles without substantial reaction are dried and heated and entrained in the effluent gas;



substantially immediately separating the entrained carbonaceous particles from the effluent gas which effluent gas includes evaporated water vehicle in the form of steam; and injecting the separated carbonaceous particles into the gasifier.

3,871,840

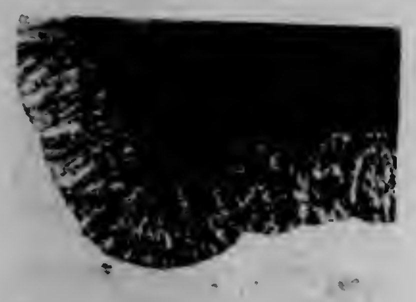
ABRASIVE PARTICLES ENCAPSULATED WITH A METAL ENVELOPE OF ALLOTRIOMORPHIC DENTRITES

Arthur G. Wilder, and Harold C. Bridwell, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Jan. 24, 1972, Ser. No. 219,973

Int. Cl. B24d *3/06, 3/34*

U.S. Cl. 51—295 **25 Claims**



1. An article of manufacture consisting of abrasive particles having a hardness of above about 2000 kg/mm² encapsulated with a metal envelope formed of allotriomorphic dendrites.

3,871,841

PROCESS OF RADIOACTIVE WASTE GASES

Horst Queiser, Hochstadt; Horst Schwarz, Wiesbaden, and Hans-Jurgen Schroter, Essen, all of Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Filed Apr. 2, 1973, Ser. No. 346,890

Claims priority, application Germany, Apr. 1, 1972, 2216104

Int. Cl. B01d *53/04*

U.S. Cl. 55—66 **9 Claims**

1. Method for processing waste gases containing radioactive activation gases including radioactive isotopes of nitrogen and oxygen, which comprises passing said waste gases containing radioactive isotopes of nitrogen and oxygen through an adsorptive delay path wherein the adsorber volume is sufficient to adsorptively delay said radioactive isotopes of nitrogen and oxygen therein to permit substantial decay of said radioactive isotopes of nitrogen and oxygen, such substantial delay occurring without prior or subsequent mechanical delays of said radioactive isotopes of nitrogen and oxygen.

3,871,842

EXHAUST GAS CLEANING SYSTEM FOR HANDLING RADIOACTIVE FISSION AND ACTIVATION GASES

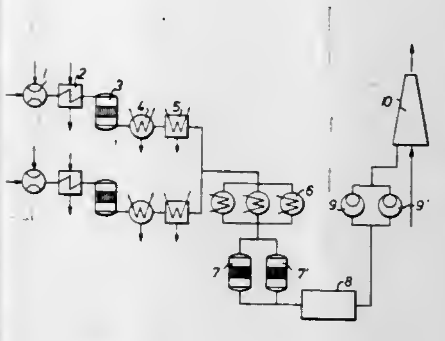
Horst Queiser, Hochstadt, and Horst Schwarz, Wiesbaden, both of Germany, assignors to Licentia-Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed July 5, 1972, Ser. No. 269,272

Claims priority, application Germany, July 5, 1971, 2133250; July 5, 1971, 7125651

Int. Cl. B01d *53/04*

U.S. Cl. 55—179 **9 Claims**



1. Apparatus for processing radioactive exhaust gases including fission gases and activation gases, said apparatus comprising preliminary adsorber means including a container, main adsorber means including a container, and adsorber material filling each of said adsorber containers, said main and preliminary adsorber means being connected to form a series delay path between a source of such exhaust gases and an exhaust gas chimney to constrain such exhaust gases to flow through said absorber material and to be delayed by said delay path in order to undergo radioactive decay, said delay path providing essentially the only gas delay between the source and the chimney, said preliminary adsorber means serving to permit radioactive decay of those exhaust gas components which constitute short-lived fission products and to filter out the resulting daughter products, said preliminary adsorber means being provided with shielding means and comprising means permitting easy replacement of said adsorber material.

3,871,843

LIQUID FUEL VAPORIZER

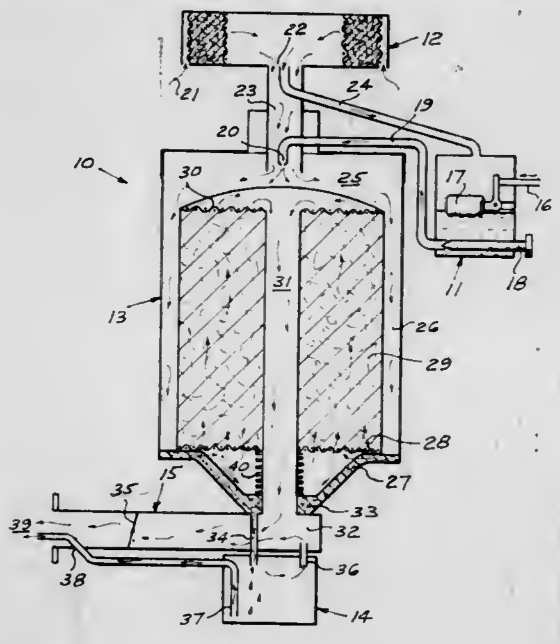
Ellis Leftwich, Rt. 2, Farmville, Va. 23901

Filed Nov. 6, 1972, Ser. No. 304,141

Int. Cl. F02m *29/04*

U.S. Cl. 55—259 **10 Claims**

1. A liquid fuel vaporizer for converting a mixture of air and liquid fuel into a dry air-fuel mixture, said vaporizer comprising a central housing, means defining an inlet located at the bottom of said housing, means within said housing defining a first elongate vertical passageway within said housing which extends substantially the full height of said housing, a filter located in said passageway for vaporizing a mixture of air and liquid fuel drawn into said vaporizer inlet, a further elongate vertical passageway, concentric with said first passageway and in communication with said first passageway at a location adjacent the top of said housing, which communicates at the outlet end thereof with an outlet manifold, and an absorbent lining located in said vaporizer inlet.



3,871,844

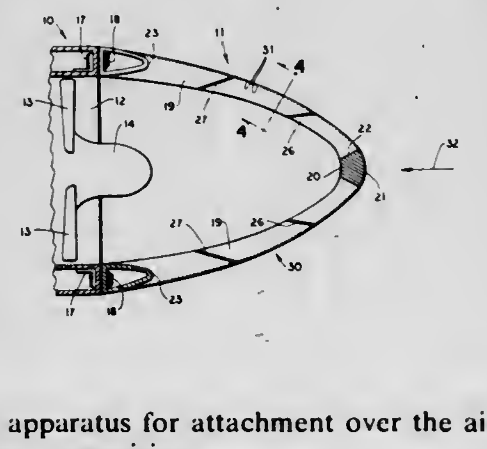
SCREEN APPARATUS FOR AIR INLET

Frank F. Calvin, Sr., 3792 Donaldson Dr., Chamblee, Ga. 30341

Filed Sept. 28, 1973, Ser. No. 401,898

Int. Cl. B01d *39/12*

U.S. Cl. 55—306 **6 Claims**



1. Screen apparatus for attachment over the air inlet of a turbine engine, comprising:

screen means connected to the engine in fixed relation surrounding the engine air inlet and extending to a forward location extending outwardly and in front of the engine air inlet, said screen means having a generally smooth exterior surface presenting an oblique angle to the direction of relative movement between the engine air inlet opening and the surrounding air;

an imperforate arcuate frontal surface carried by said screen means at said forward location, said frontal surface having a blunt leading edge provided substantial resistance to oncoming air flow;

said screen means comprising a plurality of structural support members connected to said turbine engine in surrounding relation to the engine air inlet and extending outwardly to terminate at said forward location, with each of said support members being spaced apart from the adjacent support members to provide respective open spaces therebetween;

means connecting together said support members at least at one location spaced apart from said engine air inlet so that siad support members comprise a rigid skeletal support; and

said screen means including perforate means carried by said support members in surrounding relation thereto to comprise a perforate shell covering said open spaces and presenting said oblique angle, said perforate means having airflow perforations which are individually too small to admit engine damaging articles, the total aggregate area of all of said airflow perforations being at least as great as the airflow area of the engine air inlet.

3,871,845

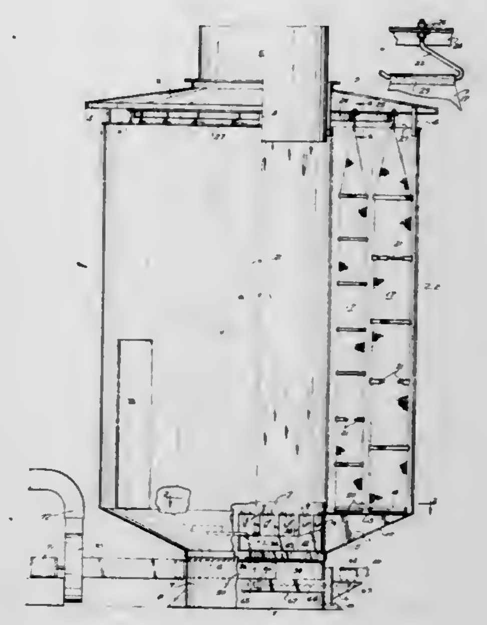
INDUSTRIAL AIR FILTER

Ralph H. Clarke; Wesley James Clarke, and Steven L. Mays, all of Eugene, Oreg., assignors to Clarke's Sheet Metal, Inc., Eugene, Oreg.

Filed June 25, 1973, Ser. No. 373,433

Int. Cl. B01d *46/02*

U.S. Cl. 55—284 **13 Claims**



5. An industrial air filter structure receiving a dust laden airflow from a primary air-particle separator, said filter structure comprising in combination,

an upright casing enclosing a plurality of filter bags, said casing normally open to the atmosphere,

a tubular inlet centrally disposed within the casing for reception of a downward flow of dust laden air,

a walled enclosure of circular configuration integral with the end of said inlet for reception of the dust laden air, said enclosure defining ports spaced circumferentially thereabout through which the dust laden airflow normally passes, a floor extending across and closing the lower end of the enclosure opposite the inlet end,

a bag mounting plate affixed to the upper peripheral edge of the walled enclosure,

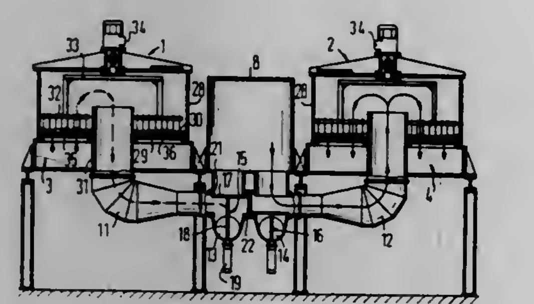
filter bags mounted at their ends to the bag mounting plate and radially spaced from the tubular inlet, said bags receiving at their lower ends a flow of dust laden air for upward passage therealong,

a series of plenums circumferentially disposed about said walled enclosure each in communication with one of said ports and with at least one filter bag, each of said plenums defined by upright divider walls, an inclined bottom wall of the filter structure extending intermediate the outer periphery of the bag mounting plate and the walled enclosure, said bag mounting plate and said walled enclosure, and

a purge assembly within said walled enclosure and comprising a traveling purge duct in central communication with a continuous source of negative air pressure, an arcuate plate member carried by the duct outer end for moving surfacial contact with the walled enclosure, said plate member defining a purge opening sequentially communicating duct negative pressure to one of said plenums via one of said ports and to a filter bag associated therewith to impart a reverse flow through the filter bag wall whereby dust particles deposited on the bag interior are dislodged from the bag for removal through said one of said plenums and the purge duct, said plate having port blocking surfaces adjacent said purge opening for blocking the entry of dust laden air during arcuate travel of the purge duct past said one port during filter bag purging.

3,871,846
DUST FILTER ARRANGEMENT

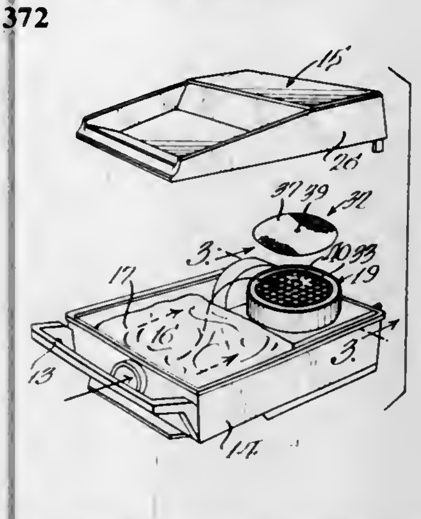
Max Berz, and Wolfgang Berz, both of Kochel am See, Germany, assignors to Wolfgang Berz, Kochel am See, Germany
Continuation of Ser. No. 208,269, Dec. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 143,130, May 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 777,454, Nov. 20, 1968, Pat. No. 3,594,991, which is a continuation-in-part of Ser. No. 491,670, Sept. 30, 1965, abandoned. This application Apr. 1, 1974, Ser. No. 456,862
Claims priority, application Germany, Dec. 30, 1970, 2064611; Jan. 14, 1971, 2101606; Apr. 7, 1971, 2117088; Apr. 13, 1971, 2117834
Int. Cl. B01d *46/00*
U.S. Cl. 55—303 **5 Claims**



1. A filter arrangement for separating suspended solid particles from a raw gas comprising, in combination:
   - a. two groups of filter chambers arranged in respective rows;
   - b. a horizontally extending wall vertically separating a first compartment from a second compartment in each chamber,
     - 1. said wall being permeable to gas flowing between said compartments while retaining solid particles suspended in said gas when the gas flows from said second compartment toward said first compartment through said wall,
     - 2. said wall including a foraminous support member and a filter bed of granular material supported on said member;
   - c. a purified gas manifold permanently communicating with each of said first compartments;
   - d. a single branch conduit leading out of each of said second compartments;
   - e. a raw gas intake including a manifold portion interposed between said rows,
     - 1. each branch conduit having an end portion remote from the associated second compartment and located below said manifold portion;
   - f. scavenging gas discharge means including two scavenging gas conduits located below said end portions;
   - g. valve means associated with each of said branch conduits for alternatively connecting the associated branch conduit with said raw gas intake and said scavenging gas discharge means,
     - 1. said valve means being arranged in two rows, each valve means being operatively interposed between the end portion of the associated branch conduit, said manifold portion, and one of said scavenging conduits;
   - h. centrifugal separator means in said intake for removing suspended coarse particles from the raw gas before said raw gas is admitted to said filter chambers;
   - i. separating means connected to said scavenging gas discharge means for separating solid particles from scavenging gas flowing outward of said second compartments through said discharge means;
   - j. a circulating fan having a suction port connected to said separating means and a pressure port connected to said raw gas intake ahead of said centrifugal separator means; and
   - k. an exhaust fan connected to said purified gas manifold for drawing raw gas and scavenging gas separated from solid particles into said centrifugal separator means and for discharging purified gas from said manifold.

3,871,847
VACUUM CLEANER FILTER

Warren H. Fish, White Bear Lake, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 16, 1974, Ser. No. 433,916
Int. Cl. B01d *46/10*
U.S. Cl. 55—372 **10 Claims**

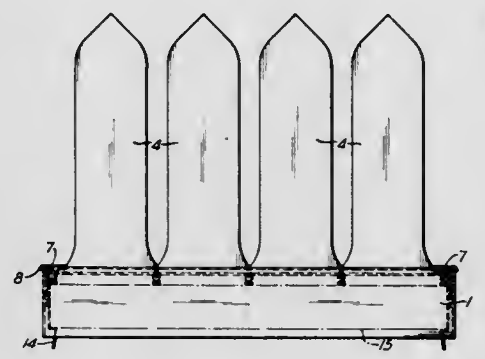


1. In a vacuum cleaner having a housing portion defining an air flow passage having an inlet, air flow means carried by said housing portion for drawing air through said inlet and including motor means disposed in heat transfer association with the drawn air, filter means for preventing foreign objects from passing through said inlet to said air flow means thereby to prevent damage to said air flow means by said foreign objects, said filter means comprising: a substantially rigid pervious support extending transversely across said inlet and formed integrally with said air flow passage means; a retainer element formed integrally with said air flow passage means and defining a retaining shoulder overlying said support; and a removable pliant filter pad overlying said support and being retained thereto substantially solely by a portion of the filter disposed between said retainer element and support and the air drawn through the filter pad by said air flow means.

3,871,848
AIR FILTER WITH BAGS

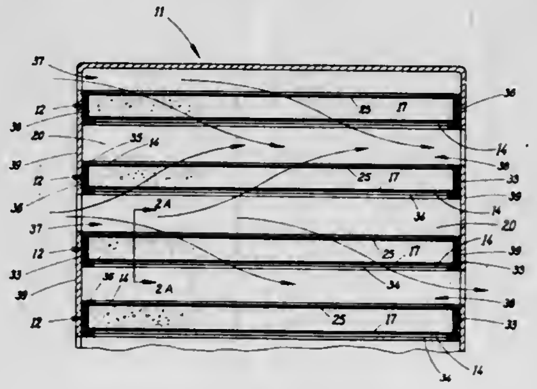
Wayne L. Smith, Bradford Woods, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Sept. 24, 1973, Ser. No. 399,836
Int. Cl. B01d *25/02*
U.S. Cl. 55—374 **6 Claims**

1. An air filter comprising a rectangular frame having a front and back, the back being provided with flange members projecting inwardly from the four sides of the frame, a row of filter bags disposed side by side behind the frame and having rectangular open front ends projecting forward into the frame, spaced parallel intermediate elongated channel members in the frame, each of said channel members receiving and clamping together adjoining side walls of the open ends of two of the bags, each channel member having opposite ends overlapping the front surfaces of said flange members at two opposite sides of the frame, a pair of end elongated channel members spaced from the intermediate channel members and receiving and clamped onto the outer sides of the open ends of the two outermost bags in said row, said end channel members extending along the front surfaces of the flange members at the other two sides of the frame, and holding means engaging said end channel members to hold them in place with the areas of said outer sides of said outermost bags that are between the end channel members and said last-mentioned flange members engaging said last-mentioned flange members, the portions of the bags that span the spaces between the channel members at the opposite ends of those members overlapping the front surfaces of said first-mentioned pair of flange members being pulled into sealing engagement with said first-mentioned flange members when the bags are inflated behind the frame.



3,871,849
DISPOSABLE CARBON FILTER

Tom R. Smith, and Richard D. Rivers, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.
Filed Apr. 5, 1973, Ser. No. 348,172
Int. Cl. B01d *27/08*
U.S. Cl. 55—484 **6 Claims**

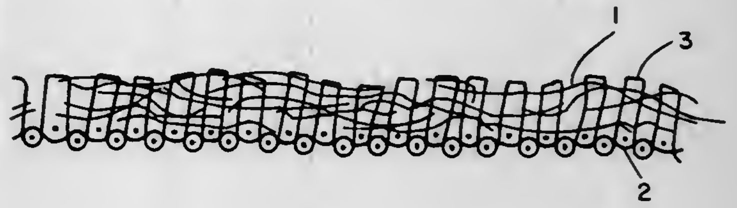


1. A carbon filter comprising: at least one six-sided carton including a pair of opposed panels each having cutaway sections defining flow-through apertures therein;
sidewalls connecting said panels;
end portions forming closed ends on said carton;
a fluid pervious scrim material disposed within said carton across said flow-through apertures compressively containing activated granular carbon particles to form a filter bed resistant to the adverse effects of vibration and carbon particle attrition.

3,871,850
FILTER ELEMENT

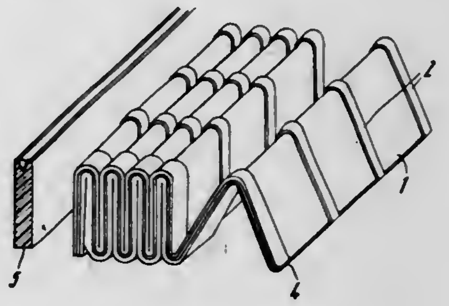
Denis L. Lenane, Ferndale, Mich., assignor to Ethyl Corporation, Richmond, Va.
Filed Mar. 20, 1973, Ser. No. 343,104
Int. Cl. B01d *46/46*
U.S. Cl. 55—486 **1 Claim**

1. An exhaust system for an internal combustion engine including an exhaust gas filter, said filter comprising a filter housing having an inlet and an outlet, said inlet being operatively connected to receive the exhaust gas from said internal combustion engine, said filter housing containing a filter element disposed across said housing such that substantially all of the exhaust gas passes through said filter element in passing from said inlet to said outlet, said filter element comprising a wire mesh having non-woven poly(m-phenylene-isophthalamide) mats on both surfaces of said wire mesh sewn to each other through said wire mesh.



3,871,851
FILTER PACK

Gerhard Max Neumann, Berlin, Germany, assignor to Delbag Luftfiler GmbH, Berlin, Germany
Filed July 27, 1972, Ser. No. 275,700
Int. Cl. B01d *27/06*
U.S. Cl. 55—521 **13 Claims**



1. A filter pack comprising:
an elongated sheet of filter paper folded in a zigzag shape along transversely extending folds to present a continuous filter structure having a series of lengths interconnected by a corresponding series of generally U-shaped bight sections,
said lengths being disposed in space, generally parallel relationship to present, along with said bight sections, a series of outwardly opening spaces between the lengths with alternate spaces opening outwardly of the structure from opposite sides thereof; and
a plurality of elements constructed of a hardened, initially adhesive material interconnecting the lengths of the paper and rigidifying the shape of the structure,
each of said elements extending longitudinally of the folded sheet of paper and each including a series of generally parallel, spaced, rigid, projecting portions, each portion being shaped to substantially completely fill the cross-sectional area of one of the spaces,
there being a first sequence of said elements disposed in laterally spaced relationship on one side of the structure, each element of said first sequence thereof having a respective portion projecting into each of the spaces which open outwardly of said one side of the structure,
there being a second sequence of said elements disposed in laterally spaced relationship on the other side of the structure, each element of said second sequence thereof having a respective portion projecting into each of the spaces which open outwardly of said other side of the structure,
each of said portions being rigidly connected to each of the lengths of filter paper which define the corresonding space in which that portion is disposed whereby said lengths are interconnected and the shape of the structure is rigidified.

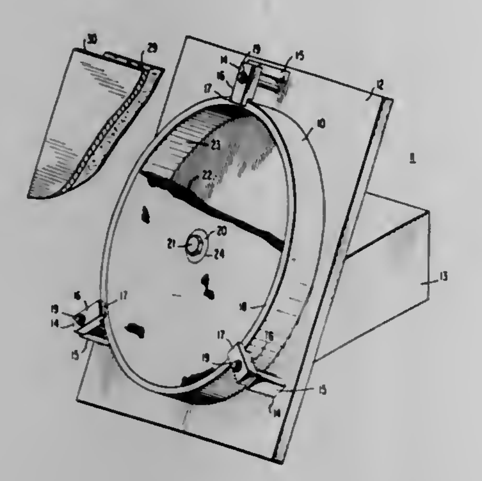
3,871,852
METHOD OF MAKING GLASS-CERAMIC MATRIX USING CLOSED TUBES

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 146,665, May 25, 1971, , which is a continuation-in-part of Ser. No. 30,859, April 22, 1970, abandoned. This application May 5, 1972, Ser. No. 250,550

Int. Cl. C03c *23/20, 29/00*

U.S. Cl. 65—4 **19 Claims**



1. A method for making a glass-ceramic matrix comprising an assembly of integrally fused tubes forming a series of smooth, longitudinal parallel passageways therethrough, wherein the walls defining said passageways have essentially zero proosity and an average coefficient of lineal thermal expansion of about −12 to +12 × 10^{-7}/°C. over the range 0°–300°C., which comprises

1. tightly packing together a multiplicity of elongated tubes made of a glass that is thermally crystallizable to a low expansion glass-ceramic having a coefficient of lineal thermal expansion of about −12 to +12 × 10_{+}^{7}/°C. over the range before stated, each of the tubes being sealed at each end and containing an expansible, fluid medium, each of said tubes being essentially parallel to the other tubes in the pack,
2. said tubes having a maximum inner diameter of 0.1 inch, a wall thickness of about 0.015 inch to about 0.001 inch and an inner diameter to wall thickness ratio of at least 6, 3. constraining the outer periphery of said tightly packed tubes against outward movement in a direction perpendicular to said longitudinal passageways,
4. subjecting said constrained tightly packed tubes to a temperature sufficient to soften said tubes and thus to cause said fluid medium entrapped therein to urge the said tubes into tight contact with adjacent tubes, thereby to aid in the fusion of such tubes, said temperature being in the temperature range of 50° to 250° F. above the annealing point of said glass, in which temperature range said glass nucleates during said expansion and fusion, and 5. thereafter further heating said tubes to a higher temperature than the temperature in step 4 in the range from 200° to 500° F. above the annealing point of the original glass, and
6. finally heating said fused matrix in a temperature range of from 1800° to 2300° F. and thereby completing crystallization thereof to a glass-ceramic having an expansion in the range aforementioned.

3,871,853
METHOD OF MELTING GLASS IN A PLATINUM CONTAINER IN A CONTROLLED ATMOSPHERE

Earl D. Dietz, and Paul R. Wengert, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. Nos. 177,095, Sept. 1, 1971, abandoned, and Ser. No. 177,090, Sept. 1, 1971, Pat. No. 3,837,828. This application July 9, 1973, Ser. No. 377,883The portion of the term of this patent subsequent to Sept. 24, 1991, has been disclaimed.

Int. Cl. C03b *5/16;* **C03c** *15/00*

U.S. Cl. 65—32 **13 Claims**

1. In a method of melting glass compositions in a container containing at least 50% by weight of platinum with a minimum of attack on the container, the improvement comprising melting the glas in a reducing atmosphere in which the partial pressure of oxygen is no greater than about 10^{-3} atmospheres with a buffered gas mixture of the group consisting of CO_2/NH_3, CO_2/H_2, H_2O/H_2, H_2O/NH_3, H_2O/CO and CO_2/CO

3,871,854
MANUFACTURE OF FLAT GLASS RIBBONS ON A MOLTEN METAL BATH

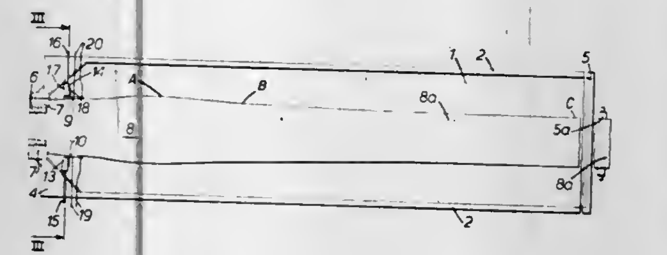
Harold Barry Milnes, Billinge, near Wigan, England, assignor to Pilkington Brothers Limited, Lancashire, England

Filed Oct. 24, 1973, Ser. No. 411,017

Claims priority, application United Kingdom, Oct. 31, 1972, 50170/72

Int. Cl. C03b *18/02*

U.S. Cl. 65—65 A **10 Claims**



1. A method of manufacturing flat glass in ribbon form of a desired thickness in the range 5.5 mm to 8 mm on a molten metal bath, comprising pouring molten glass onto the bath to forwardly feed a layer of molten glass advancing along the bath, imposing initial acceleration on the layer of molten glass by laterally confining the edges of that layer of molten glass adjacent the location of said pouring as the glass is advanced under the influence of tractive effort discharging the ribbon from the bath at a speed in the range 380 to 600 metres per hour thereby forming a laterally confined and accelerating body of molten glass of thickness greater than the desired thickness, and then, while the glass is at a viscosity which permits deformation and lateral movement and the glass is advancing at a speed in excess of about 250 metres per hour engendered by said tractive effort and said initial acceleration of the layer of molten glass enhanced by lateral confinement thereof, permitting unconstrained lateral movement of the edges of the advancing ribbon as the glass is attenuated to the desired thickness in said range by further acceleration to the high speed of discharge of the ribbon from the bath.

6. Apparatus for manufacturing flat glass in ribbon form of thickness in the range 5.5 mm to 3 mm, comprising an elongated tank structure containing a bath of molten metal, means for delivering molten glass to one end of the tank structure under a forwardlly directed pressure head at a controlled rate to forwardly feed a layer of molten glass advancing along the bath, fenders disposed at opposite sides of the tank structure at said one end thereof for laterally confining the edges of the layer of molten glass adjacent the location of said delivering and imposing initial acceleration on the layer of molten glass advanced under the influence of traction, the fenders having faces for engagement by the glass of a material not wetted by the glass and being splayed at an angle of the order of three

degress to the downstream direction of advance of the glass along the bath, the fenders further having an extent short of a zone where the glass is at a viscosity which permits deformation and lateral movement of the glass advancing at a speed in excess of about 250 metres per hour engendered by said traction and the initial acceleration of the layer of molten glass enhanced by confinement thereof, and traction means at the other end of the tank structure for applying traction to the glass and discharging a ribbon of glass of desired thickness from the bath.

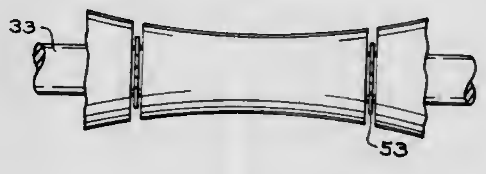
3,871,855
APPARATUS FOR ROLL-PRESS FORMING HEAT-SOFTENED GLASS SHEETS

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 5, 1973, Ser. No. 376,751

Int. Cl. C03b *23/02*

U.S. Cl. 65—245 **9 Claims**



1. In apparatus for shaping glass sheets by the roll forming process comprising:

- a set of upper shafts for supporting upper segmented shaping rolls,
- a set of lower shafts for supporting lower segmented shaping rolls,
- upper and lower segmented shaping rolls mounted in opposed pairs on said upper and lower shafts, respectively, each of said pairs of shaping rolls comprising a series of adjacent, axially aligned shaping roll segments, at least some of said adjacent segments having different diameters, and
- at least one of the segments of each of said pairs of shaping rolls being fixed to its supporting shaft to rotate therewith, a predominate number of said segments of said shaping rolls being freely rotatable about their respective shafts,
- the improvement comprising separator means affixed to said supporting shaft between at least some of said adjacent segments of different diameters, said separator means being spaced on said shaft so that only one of said adjacent segments of different diameters contacts said separator means at a time.

3,871,856
SELF-ALIGNING BAFFLE AND BLOWHEAD ASSEMBLY

Albert J. Trahan, Vernon, Conn., assignor to Emhart, Bloomfield, Conn.

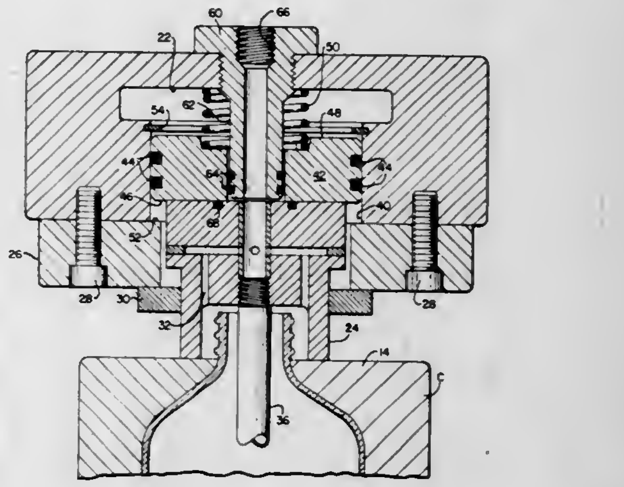
Filed Oct. 11, 1973, Ser. No. 400,432

Int. Cl. C03b *9/00*

U.S. Cl. 65—261 **4 Claims**

1. In a glassware forming machine of the type having at least two side-by-side upwardly open molds, the upper surfaces of which may not be in the same horizontal plane, the improvement comprising:

- a. a blowhead carrier movable toward away from the upper surfaces of said molds,
- b. a blowhead retaining means mounted to the underside of said blowhead carrier,
- c. a means for providing air under pressure, and said carrier defining an internal plenum chamber communicating therewith,
- d. annular pistons slidably received in side-by-side bores defined in the lower wall of said carrier directly above each of said upwardly open molds,
- e. adapters having depending stem portions, and portions fixed in an upper carrier wall, each of said pistons having a central opening for receiving one of said stem portions, each adapter having an opening extending therethrough, and an annular sealing means between each stem portion and piston opening,
- f. blowheads for mating with each of said upwardly open molds, each blowhead having a depending blowpipe for conveying blow air to the interior of each mold, each blowpipe having an upper end communicating with said adapter opening, and
- g. each piston having its lower surface held in engagement with one of said blowheads as a result of the air pressure in said plenum chamber, said piston and its associated blowhead being urged upwardly against the biasing force offered by said air pressure as said blowhead engages its associated mold.



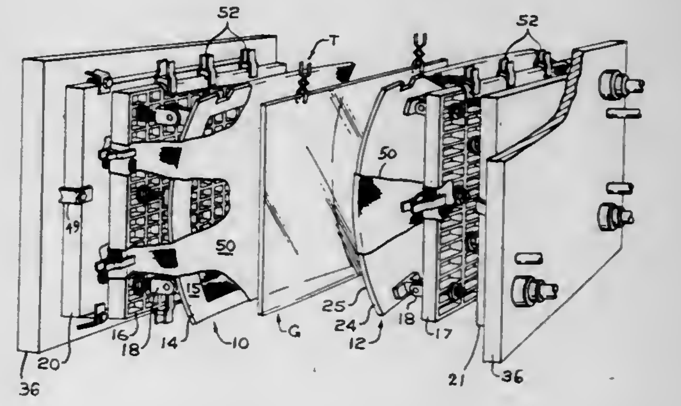
3,871,857
APPARATUS FOR PRESS BENDING GLASS SHEETS

George R. Claassen, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 19, 1974, Ser. No. 443,288

Int. Cl. C03b *23/02*

U.S. Cl. 65—273 **6 Claims**



1. In apparatus for press bending a heat-softened glass sheet by pressurized engagement thereagainst comprising:

1. a metal plate deformable in the direction of its thickness and having a shaping surface whose shape approximates that of the shape desired for the glass sheet after bending and having sufficient rigidity to resist deformation during pressurized engagement against a. heat-softened glass sheet,
2. a relatively rigid member more rigid than said metal plate located in spaced relation behind and in facing relation to said metal plate, and
3. adjustable attachment means distributed in spaced relation throughout the area of said metal plate and said relatively rigid member by which the shape of said metal plate may be altered,

the improvement wherein said relatively rigid member comprises a metal grate with a plurality of elongated openings therein, said adjustable attachment means are attached to the rear surface of said metal plate and each have a portion that extends through a selected one of said elongated openings of said grate, said portions being of a dimension to permit lateral and longitudinal movement of said attachment means within said selected one of said openings, and means disposed on each side of said grate to engage therewith and with each said adjustable attaching means to adjust the position of said adjustable attaching means along said elongated openings and lengthwise relative to said grate to alter the shape of said metal plate.

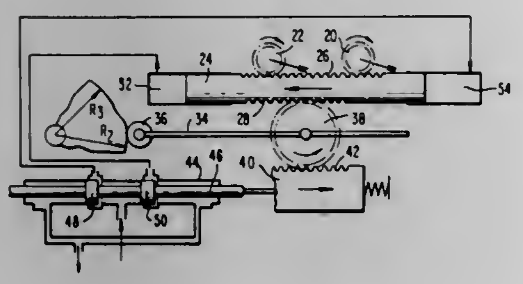
3,871,858
GOB SELECTORS WITH CLOSED LOOP SERVO SYSTEM

John Martin, Monterrey, N.L., Mexico, assignor to Fabricacion de Maquinas, Monterrey, N.L., Mexico

Filed Nov. 13, 1973, Ser. No. 415,294

Int. Cl. C03b *5/30*

U.S. Cl. 65—304 **3 Claims**



1. Apparatus for simultaneously distributing a pair of mold charges being fed from a double orifice glass feeder to the double cavity blank molds of a plurality of glass forming machines comprising a pair of elongated, curved deflector scoops, means supporting said scoops in generally side by side relationship, each scoop being formed with an open, upwardly facing receiving end in co-axial alignment with one of the feeder orifices only and a lower end, a pair of rotatably mounted shafts one rigidly attached to each of said scoops repectively each of said shafts having a pinion gear rigidly attached thereto;

- gear means engaged with said gears and movable to rotate said shafts in synchronism;
- fluid pressure means for moving said gear means in opposite directions depending on the direction of application of fluid pressure;
- valve means for controlling the admission of fluid under pressure to said fluid pressure means;
- continuously rotatable cam means for controlling the position of said valve; and
- means interconnecting said cam means, said fluid pressure means said gear means and said valve in a closed loop servo system so that any movement of said gear means in response to movement of said valve means tends to return said valve means to its initial position.

3,871,859
PROCESS OF TREATING ELECTROLYTIC ZINC REFINING JAROSITE RESIDUES

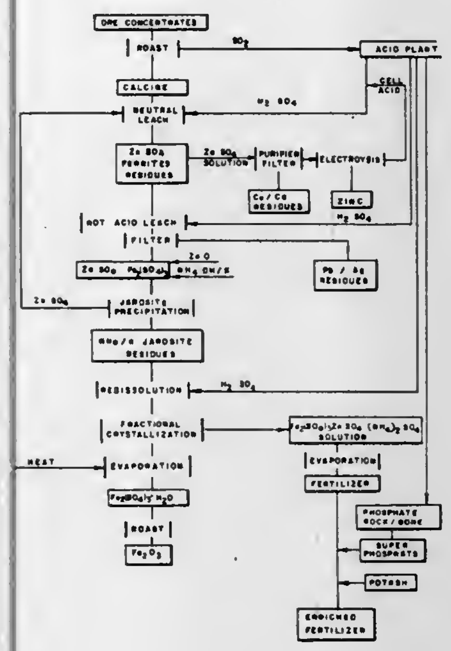
David A. Jackson, 330 W. Diversey Pkw. No. 1407, Chicago, Ill. 60657

Continuation-in-part of Ser. No. 377,623, July 9, 1973, abandoned. This application Nov. 19, 1973, Ser. No. 416,845

Int. Cl. C05b *11/00*

U.S. Cl. 71—40 **8 Claims**

1. The method of producing a fertilizer material and valuable by-products from jarosite residue from the jarosite process of electrolytic refining of zinc which comprises acidifying the wet residue sufficiently to break down and redissolve the jarosite residue solids to produce a solution containing plant nutrients including the sulphates of iron, ammonium, zinc, manganese and trace metals, and thereafter evaporating free water from the solution to crystallize out a substantial part of the iron sulphate, leaving the mother liquor containing the fertilizer material.



3,871,860
PRESERVATIVES FOR AQUEOUS SYSTEMS

Milton Manowitz, Fair Lawn, N.J.; Goerge R. Walter, Racine, Wis., and Stephen Foris, Jr., Belleville, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation-in-part of Ser. Nos. 573,845, Aug. 22, 1966, abandoned, and Ser. No. 786,453, Dec. 23, 1968, Pat. No. 3,629,465. This application Aug. 4, 1971, Ser. No. 169,043

Int. Cl. A01n *9/00;* **C02b** *3/06;* **D21f** *1/66*

U.S. Cl. 71—67 **3 Claims**

1. The process for combating spoilage by the action of slime-forming algae, bacteria and fungi microorganisms in industrial cooling water and water used in pulp and paper manufacturing, which comprises inhibiting said slime-forming organisms in such waters with an effective inhibiting amount of β-bromo-β-nitrostyrene, said amount being less than the minimal effective inhibiting concentration required for 2-bromo-2-nitroethylbenzene.

3,871,861
METHOD OF INHIBITING ALGAE UTILIZING TRIMETHYLBENZYLAMINOETHYLAMINE

John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 130,783, April 2, 1971, Pat. No. 3,821,407. This application Dec. 3, 1973, Ser. No. 421,416The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.

Int. Cl. A01n *9/24*

U.S. Cl. 71—67 **1 Claim**

1. A method of inhibiting algae which comprises applying to said algae an effective amount sufficient to inhibit the growth of said algae of trimethylbenzylaminoethylamine.

3,871,862
AMINO DERIVATIVES OF TETRASUBSTITUTED BENZENE COMPOUNDS

John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 291,824, Sept. 25, 1972, Pat. No. 3,838,197, which is a continuation-in-part of Ser. No. 130,783, April 2, 1971, Pat. No. 3,821,407. This application Dec. 5, 1973, Ser. No. 421,750The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.

Int. Cl. A01n *9/24*

U.S. Cl. 71—67 **2 Claims**

1. A method of inhibiting algae which comprises applying to said algae an effective amount sufficient to inhibit the growth of said algae of the compound of N-trimethylbenzyl diethylene triamine.

3,871,863
PHYTOCIDAL COMPOSITIONS CONTAINING N-HETEROCYLIC ETHERS

Kenneth P. Dorschner, Jackson, and Carl Bordenca, Ponte Vedra, both of Fla., assignors to SCM Corporation, Cleveland, Ohio

Continuation of Ser. No. 8,094, Feb. 2, 1970, abandoned. This application May 31, 1972, Ser. No. 258,315

Int. Cl. A01n *9/00*

U.S. Cl. 71—88 **6 Claims**

1. A process for controlling undesirable plant growth which comprises applying to the plant environment an amount effective for substantially inhibiting the growth of undesirable plants, said amount being not in excess of about ten pounds per acre, of a heterocyclic tertiary aminoalkyl ether of the formula:

where Y is a C_{8-12} hydrocarbon radical;
"*n*" is an integer of 1 to 3;
R is lower alkylene; and
is morpholino.

3,871,864
HERBICIDE

Adolf Fischer, Mutterstadt; Siegfried Behrendt, Wachenheim, and Bernd-Heinrich Menck, Schilfferstadt, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 31, 1973, Ser. No. 328,470

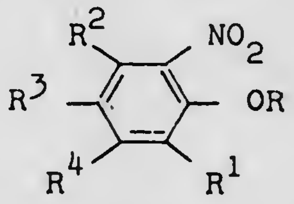
Claims priority, application Germany, Feb. 14, 1972, 2206861

Int. Cl. A01n *9/14*

U.S. Cl. 71—91 **2 Claims**

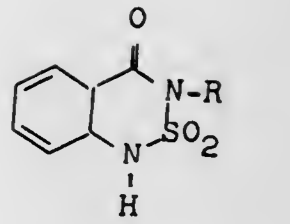
1. A herbicide composition comprising a herbicidally effective amount of a mixture of a compound of the formula

a)



where R denotes hydrogen or acetyl, R^1 denotes lower alkyl of a maximum of 6 carbon atoms, R^2 denotes hydrogen or methyl, R^3 denotes nitro, and R^4 denotes hydrogen or methyl, and a compound of the formula

b)



where R denotes lower alkyl of a maximum of 4 carbon atoms, or a salt thereof with sodium, lithium, potassium, calcium, iron, methylamine, trimethylamine, ethylamine, diethanolamine, ethanolamine, dimethylamine, dimethylethanolamine, ethanolamine or cyclohexylamine in a weight ratio of *a* to *b* of 1:6 to 2:1.

3,871,865
ETHER AND SULFIDE META-SUBSTITUTED ANILIDES AND THEIR UTILITY AS HERBICIDES

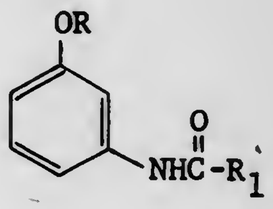
Eugene G. Teach, 1929 Downey Pl., El Cerrito, Calif. 94530

Division of Ser. No. 90,803, Nov. 18, 1970, abandoned. This application Mar. 21, 1973, Ser. No. 343,595

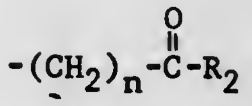
Int. Cl. A01n *9/20*

U.S. Cl. 71—98 **11 Claims**

1. A method for controlling the growth of vegetation which comprises applying to the locus wherein control is desired, an herbicidally effective amount of a compound having the formula



in which R is ketoalkyl of the formula



$$-(CH_2)_n-\overset{\displaystyle O}{\overset{\|}{C}}-R_2$$

in which *n* is 1 or 2 and R_2 is alkyl containing from 1 to 4 carbon atoms, inclusive, and R_1 is alkyl containing from 2 to 6 carbon atoms, inclusive.

3,871,866
HERBICIDE AND METHOD FOR CONTROLLING WEEDS

Warren H. Zick, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 1, 1971, Ser. No. 148,925. The portion of the term of this patent subsequent to Mar. 18, 1972, has been disclaimed.

Int. Cl. A01n *9/20*

U.S. Cl. 71—106 **20 Claims**

1. A herbicidal composition containing herbicidally-effective amounts of both an alkyl N-phenylcarbamate or mixtures of alkyl N-phenylcarbamates and 2-chloro-2′,6′-diethyl N-methoxymethyl)acetanilide and further containing a commpound selected from the group consisting of aryl N-alkylcarbamate, aryl N,N-dialkylcarbamate, aryl N-cycloalkylcarbamate, and mixtures thereof in an amount sufficient to extend the soil life of said alkyl N-phenylcarbamate or mixtures of alkyl N-phenylcarbamates.

3,871,867

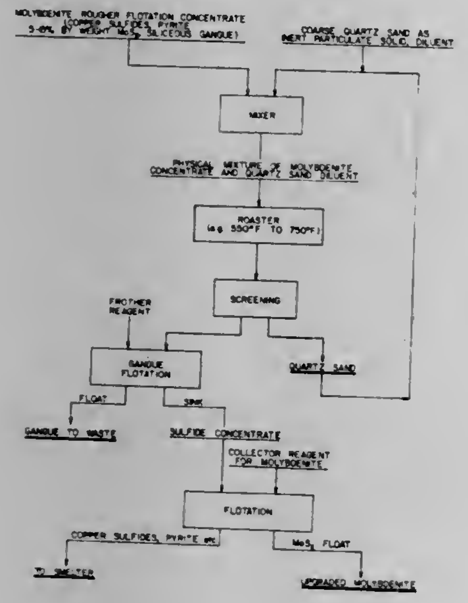
ROAST-FLOTATION PROCESS FOR UPGRADING MOLYBDENITE FLOTATION CONCENTRATES

Arthur W. Last, Salt Lake City, and George L. Fraser, Magna, both of Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,167

Int. Cl. B03d ***1/08***

U.S. Cl. 75—2 **11 Claims**


MOLYBDENITE ROUGHER FLOTATION CONCENTRATE (COPPER SULFIDES, PYRITE 5-8% BY WEIGHT MoS₂, SILICEOUS GANGUE)
COARSE QUARTZ SAND AS INERT PARTICULATE SOLID DILUENT
MIXER
PHYSICAL MIXTURE OF MOLYBDENITE CONCENTRATE AND QUARTZ SAND DILUENT
ROASTER (e.g. 550°F TO 750°F)
SCREENING
FROTHER REAGENT
GANGUE FLOTATION
QUARTZ SAND
FLOAT
SINK
GANGUE TO WASTE
SULFIDE CONCENTRATE
COLLECTOR REAGENT FOR MOLYBDENITE
FLOTATION
COPPER SULFIDES, PYRITE etc.
MoS₂ FLOAT
TO SMELTER
UPGRADED MOLYBDENITE

1. In a molybdenite recovery process applicable to a finely divided ore material containing molybdenite and sulfide minerals other than molybdenite, but relatively little gangue, which ore material has been previously treated by flotation and which process comprises roasting said ore material to deactivate sulfide minerals other than molybdenite and subjecting the roast product to flotation for the recovery of the molybdenite as a froth concentrate, the improvement which comprises mixing with said ore material under substantially ambient conditions a sufficient quantity of a particulate, solid diluent to prevent ignition of the roast at a temperature at which ignition would otherwise occur, said diluent being chemically inert with respect to the molybdenite and sulfide materials in said ore material; roasting the mixture of ore material and diluent at a temperature at which ignition would occur if said diluent were not present; and separating the diluent from the roasted ore material.

3,871,868

METHOD OF PREPARING A CORROSION-RESISTANT AND DUCTILE IRON ALLOY WITH A HIGH ALUMINUM CONTENT

Henri Renaud, 15, Avenue Maunoury, 41 Mer, France

Filed Feb. 4, 1972, Ser. No. 223,784

Claims priority, application France, Feb. 4, 1971, 71.04920

Int. Cl. C21c ***7/00;*** **C22c** ***1/02***

U.S. Cl. 75—53 **1 Claim**

1. Process of preparing a casting of an iron alloy with a high aluminum content which has the composition:

total carbon	1.4	to	2%
aluminum	8	to	25%
silicon	1.8	to	2.6%
manganese	0.30%		
iron	(remainder)		

consisting of the following steps:

a. preparing an admixture having the composition:

total carbon	1.4	to	2%
aluminum	8	to	25%
manganese	0.30%		
iron	(remainder)		

b. heating said admixture to a temperature in the order of 1,600°C, a melt having formed thereby:

c. incorporating in said melt maintained at 1,600°C. an additive composition formed of:

⅓ magnesium fluoride
⅓ magnesium chloride and
⅓ of powdered calcium;

d. removing the slag from said melt;

e. completing the composition of said alloy by the addition of ferrosilicon in said melt after a period of rest of the order of five minutes following the removal of said slag; and

f. casting the melt to form said alloy.

3,871,869

PROCESS FOR PRESSING BRIQUETTES FROM POWDERED SUBSTANCES MORE PARTICULARLY FROM FINE-GRAINED FLUORSPAR AND BRIQUETTES THUS OBTAINED

Willem B. Overdijk, Velsen, and Adam Steen, Heemskerk, both of Netherlands, assignors to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed July 3, 1973, Ser. No. 376,161

Claims priority, application Netherlands, Oct. 2, 1972, 7201775

Int. Cl. C21c ***7/00;*** **C21b** ***1/08;*** **C04b** ***7/02***

U.S. Cl. 75—53 **7 Claims**

1. A process for producing pressed briquettes comprising mixing powdered fluorspar with from 0.5 to 6% by weight of molasses and 0.5 to 5% by weight of cement and compressing the resultant mixture into briquettes.

3,871,870

METHOD OF ADDING RARE EARTH METALS OR THEIR ALLOYS INTO LIQUID STEEL

Hidetaro Nemoto; Takaho Kawawa, both of Tokyo; Hideki Sato, Yokohama; Eiichi Sakamoto, Kamakura; Takayuki Koyano, Tokyo, and Takanori Anzai, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1973, Ser. No. 356,087

Int. Cl. C21c ***7/00***

U.S. Cl. 75—58 **3 Claims**

1. In a continuous casting process using a succession of separate ladle, tundish and mold, the steps comprising

substantially completely deoxidizing molten steel in said ladle by addition of aluminum, silicon, manganese or any combination thereof;

thereafter pouring said molten steel into said separate tundish having means for preventing oxidation of said steel therein;

adding a rare earth metal selected from the group consisting of La, Ce, Pr and Nd, any alloy thereof or any combination thereof, in the ratio of rare earth metal to sulfur of between 1.2 and 2.0 and in the form of a wire of a diameter of at least 2.0 to 4.0 mm, deeply into said substantially completely deoxidized steel contained in said tundish, without being exposed to oxidation, said adding being at the rate of at least 0.05 m/sec; and

thereafter passing said molten steel to said separate mold having means for preventing oxidation thereof, thereby to produce a steel having improved impact strength.

3,871,871

MONITORING AND CONTROL OF PIG IRON REFINING

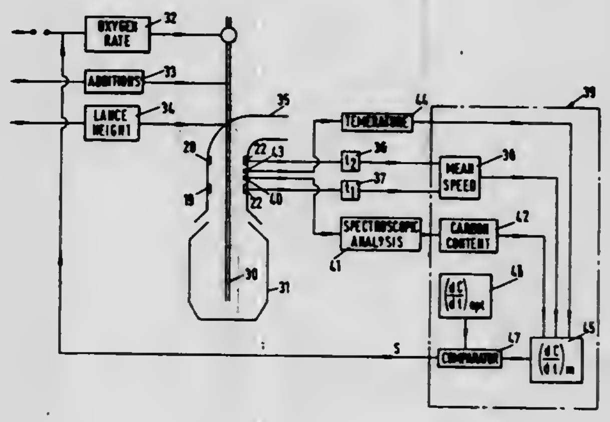
Etienne Marie Denis, Grivegnee, and Roland Holper, Seraing, both of Belgium, assignors to Centre National De Recherches Metallurgiques, Brussels, Belgium

Continuation-in-part of Ser. No. 782,032, Dec. 9, 1968, abandoned. This application Apr. 28, 1971, Ser. No. 138,152

Claims priority, application Luxembourg, Dec. 11, 1967, 55064

Int. Cl. C21c ***5/30;*** **B21d** ***28/00;*** **G01n** ***21/26***

U.S. Cl. 75—60 **13 Claims**



1. A method of monitoring and controlling a pig iron refining operation in which an oxygen-containing gas is blown from above by means of a lance onto a bath of molten pig iron in a vessel, refining agents are fed into the vessel, and the gases leaving the vessel are withdrawn through a hood; the refining operation taking place under regulable refining conditions comprising the height of the lance above the bath, the rate of flow of gas through the lance, and the rate at which refining agents are fed in; the method comprising the steps of

i. automatically determining the means speed of said gases at a given position in the hood at which the CO in said gases has burnt to CO_2 and prior to dust removal or drying of said gases, by

 a. automatically measuring the time taken by an acoustic wave to travel through said gases from an emitter to a receiver upstream of the emitter,

 b. automatically measuring the time taken by an acoustic wave to travel through said gases from an emitter to a receiver downwstream of the emitter, and

 c. transmitting said time measurements to a computing device adapted to calculate said mean speed from said time measurements;

ii. automatically determining the carbon content of said gases at said given position by spectrographic analysis;

iii. automatically measuring the temperature of said gases at said given position;

iv. transmitting the calculated value of the means speed, the determined value of the carbon content, and the measured value of the temperature to a computing device adapted to calculate the rate of decarburisation of said bath from said values;

v. automatically comparing the calculated valve of the decarburisation rate with a predetermined instantaneous optimum value;

vi. automatically generating a signal representative of the difference, if any, between said calaculated value and said predetermined instantaneous optimum value; and

vii. automatically regulating at least one of said regulable refining conditions in accordance with said signal so as to reduce or annul said difference.

3,871,872

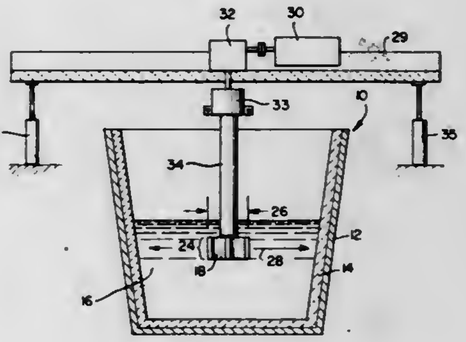
METHOD FOR PROMOTING METALLURGICAL REACTIONS IN MOLTEN METAL

James H. Downing, Clarence, and Robert H. Kaiser, Youngstown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,310

Int. Cl. C21c ***7/00***

U.S. Cl. 75—61 **3 Claims**



1. A method for refining molten metal containing impurities which comprises

i. introducing molten metal into a substantially cylindrically shaped vessel

ii. agitating the molten metal in said vessel by means of a graphite rotating agitating member substantially centrally and axially aligned within said vessel with the bottom portion of said agitating member being in the upper 50 percent of the height of the metal bath, said agitating member being rotated at a speed of from about 120 to 225 r.p.m. to provide turbulent agitation at least at the surface of the metal bath and said agitating member comprising a substantially cylindrical hub portion having from three to eight radial extensions, the length of said radial extensions being from about 25 to 85 percent of the diameter of the hub, the width of said radial extensions being about 40 to 80 percent of their length, and the height of said radial extensions being from about 75 to 200 percent of the hub diameter and the diameter of a circle circumscribing said radial extensions being about 25 to 40 percent of the diameter of said vessel containing said molten metal.

3,871,873

METHOD FOR PRODUCING NICKEL BY SEGREGATION OF ITS OXIDE ORES

Maurice Rey, Paris, France, assignor to "Le Nickel" and "Societe Miniere et Metallurgique de Penarroya", both of Paris Cedex, France

Filed Nov. 6, 1973, Ser. No. 413,265

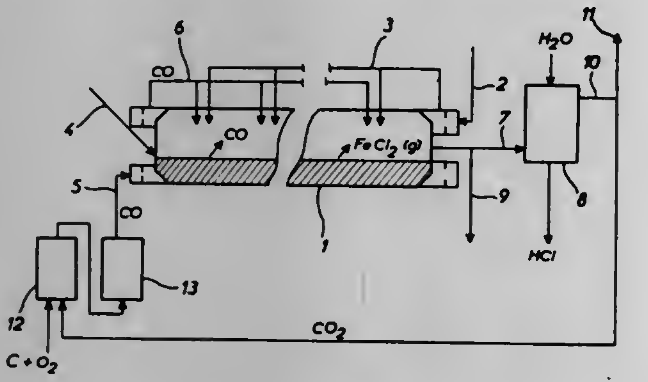
Claims priority, application France, Nov. 6, 1972, 72.39190

Int. Cl. C22b ***23/02***

U.S. Cl. 75—82 **11 Claims**

1. A method for producing nickel by segregation of nickel oxide ore comprising mixing said ore with a carbonaceous material and a chloridizing material, introducing said mixture into a non-fluidized bed furnace, and internally heating said

furnace to a temperature of about 800° to 1050° C by burning a combustible gas in said furnace containing at least 75 volume percent carbon monoxide, said combustible gas being substantially free from hydrogen and steam.



3,871,874

PURIFICATION OF VANADIUM-CONTAINING $TICL_4$ BY HEATING WITH $TICL_3$0.33 $ALCL_3$

Gerhard Winter, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 2, 1973, Ser. No. 347,584

Claims priority, application Germany, Apr. 15, 1972, 2218361

Int. Cl. C22b *53/00*

U.S. Cl. 75—84.5 **7 Claims**

1. A process for the purification of vanadiumcontaining titanium tetrachloride which comprises heating vanadium-containing titanium tetrachloride to a temperature of about 120° to 180°C in the presence of $TiCl_3 \cdot 0.33\ AlCl_3$, and separating the resulting vanadium-free $TiCl_4$ from the solids.

3,871,875

FLUX COMPOSITION AND A CENTRIFUGAL CASTING PROCESS USING THE SAME

Reizo Yokota, Hirakata, Japan, assignor to Yodogawa Steel Works Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 15, 1972, Ser. No. 315,499

Int. Cl. C22b *9/10*

U.S. Cl. 75—94 **1 Claim**

1. A flux composition adapted for use in the Centrifugal casting of a composite roll from a metal melt, said composite roll having a core portion and a shell portion directly bonded to said core portion, said flux consisting essentially of; in weight percent of the total, from **5** to **20%** of a metallic element selected from aluminum, silicon and magnesium, from 30 to 45% of a mixture of borax and silica sand and from 65 to 35% of a fluidizing agent selected from sodium compounds, fluorides and mixtures thereof.

3,871,876

DENTAL AMALGAM

Kamal Asgar, 1351 Glendaloch Circle, Ann Arbor, Mich. 48104 and Steven H. Reichman, 1330 Orkney Dr., Ann Arbor, Mich. 48103

Filed Mar. 18, 1974, Ser. No. 451,840

Int. Cl. C22c *5/00, 7/00*

U.S. Cl. 75—169 **9 Claims**

1. An amalgamable silver alloy powder in which each of the particles are of substantially the same composition and consist essentially of silver, tin and copper; said silver and tin being present at a ratio of from about 1.8:1 to about 3.0:1 and said tin and copper being present at a ratio of about 1:1 up to 3:1, said powder further characterized as being of an average particle size less than about 100 microns and wherein each particle is of a gradient composition on moving from the surface toward the core thereof.

5. A dental amalgam consisting essentially of a continuous matrix composed of an amalgam having interspersed therethrough a plurality of discrete phases chemically bonded by said continuous phase into an integral matrix, said discrete phases comprising particles of an alloy consisting essentially of silver, tin and copper and wherein the particles are of a gradient composition on moving from the surfaces thereof toward their center, said continuous phase comprising intermetallic compounds of mercury with silver, tin and copper; said dental amalgam containing from about 42% to about 54% mercury, and said silver, tin and copper being present in amounts so as to provide a ratio of silver-to-tin of from about 1.8 up to about 3.0 and tin-to-copper of from about 1:1 up to 3:1.

3,871,877

PRODUCING ALUMINUM POWDER COMPACTS

Samuel Storchheim, Forest Hills, N.Y., assignor to Sinteral Corporation, Jamaica, N.Y.

Filed July 8, 1970, Ser. No. 53,289

Int. Cl. B22f *3/12*

U.S. Cl. 75—214 **2 Claims**

1. A process for producing a high density aluminum powder compact capable of being sintered, said process comprising:

a. forming a bulk metal particle mixture containing predominantly aluminum metal powder particles wherein the metal particles are in direct metal-to-metal contact, said particles ranging in shape from chips to needles to spheres;
b. applying to the walls of a powder compacting die a coating of a normally liquid methyl alkyl polysiloxane having a molecular weight of between about 1500 and about 10,000, the alkyl radicals in said methyl alkyl polysiloxane being selected one the group consisting of linear alkyl radicals ranging from to 40 carbon atoms in length;
c. charging the mixture of aluminum metal powder particles formed in step (a) to the powder compacting die whose walls have been treated with the methyl alkyl polysiloxane according to step (b);
d. compacting the aluminum metal powder particles charged to the powder compacting die in step (c) under pressure to form a green compact having a strength of at least about 5,000 p.s.i. at 93 percent theoretical density; and
e. sintering the green compact formed in step (d).

3,871,878

ELECTROPHOTOGRAPHIC OR XEROGRAPHIC METHOD FOR TREATING A PICTURE IMAGE

Masayuki Mino, Sakai-shi, Osaka-fu, and Kuniki Seino, Kawasaki-shi, Kanagawa-ken, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 2, 1973, Ser. No. 356,698

Claims priority, application Japan, May 25, 1972, 47-051915

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **11 Claims**

1. The method of producing a composite picture comprising the steps of producing a reversed electrostatic latent primary image on a substrate by forming said primary image at a predetermined polarity on said substrate and thereafter reversing the polarity of said first latent image, directing on said latent image carrying substrate a secondary image to produce a resultant latent electrostatic image which is a function of said primary and secondary images and developing said resultant latent electrostatic image.

3,871,879

METHOD OF FORMING COLORED COPIED IMAGE

Akio Arai, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,146

Claims priority, application Japan, Jan. 19, 1973, 48-7889

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.2 **10 Claims**

1. In a method of forming a colored copied image on a transfer sheet by repeating a cycle comprising (1) forming an electrostatic latent image on an electrophotographic copying material having a photoconductive layer, (2) transferring said electrostatic latent image onto a transfer sheet having a dielectric layer which is an insulating resin and (3) developing the thus transferred electrostatic latent image for each primary color constituting the colored original image; the improvement comprising employing a transfer sheet having a photoconductive dielectric layer upon which the image is developed and applying active radiant rays to the whole surface of said dielectric layer between successive cycles to dissipate residual charge from a previous cycle.

3,871,880

ORGANIC PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

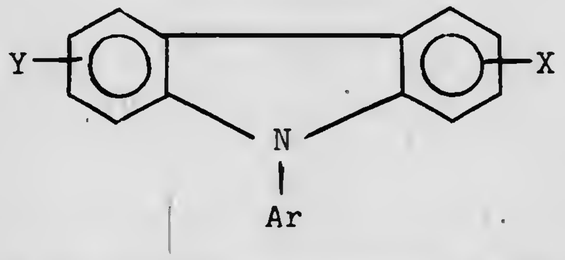
Jean-Pierre Montillier, Manchester, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 1, 1972, Ser. No. 311,221

Int. Cl. G03g *5/06, 7/00*

U.S. Cl. 96—1.5 **3 Claims**

1. A photoconductive electrically insulating composition comprising a charge transfer complex of a Lewis acid and an N-aryl carbazole, characterized by the structural formula:



wherein X and Y are each selected from the group consisting of N, Cl, Br, and NO; wherein Ar is selected from the group consisting of phenyl, naphthyl and phenanthryl; wherein said Lewis acid is taken from the group consisting of 2,4,7-trinitro-9-fluorenone; 2,4,5,7-tetranitro-9-fluorenone; 2,6-dichloro-p-benzoquinone; 2,5-dinitro-9-fluorenone; 1,5-dichloro-2,4-dinitrobenzene; 2,5-dichloro-p-benzoquinone; 2,3,6-trichloro-p-benzoquinone; 2-chloro-3, 5-dinitropyridine; 2,4,5,7,9-pentanitroindene; 2,1-alpha 7-fluorene-11, 12-dione; 2,5-diphenyl-p-benzoquinone; 2,3-dichloro-1, 4-naphthoquinone; 3-dicyanomethylene-2,4,7-trinitro-fluorene; and the molar ratio of the N-aryl carbazole to the Lewis acid is in the range of 1:0.5 to 1:1and there is included a dicarbazolyl cycloalkane in an amount sufficient to prevent crystallization of the composition.

3,871,881

COATED ALUMINUM SUBSTRATES HAVING A BINDER OF ALUMINUM HYDROXYOXIDE

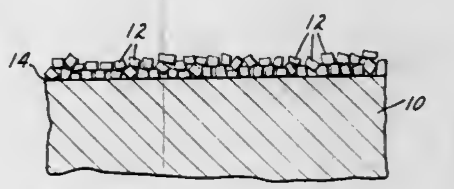
Valdis Mikelsons, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 12, 1973, Ser. No. 331,372

Int. Cl. G03g *5/04, 7/00;* **G03c** *1/76, 3/00, 1/94;* **B05c** *1/00*

U.S. Cl. 96—1.5 **16 Claims**

1. An article comprising an aluminum substrate bearing a layer of particulate material, said particulate material being bound to said substrate by an in situ formed binder of aluminum hydroxyoxide, said particulate material having an average particle size of about 0.05 to 3000 microns, a melting point above about 150°C., and a water solubility of less than about 0.1 part per 100 parts of water at 100°C.



3,871,882

ELECTROPHOTOGRAPHIC RECORDING MATERIAL

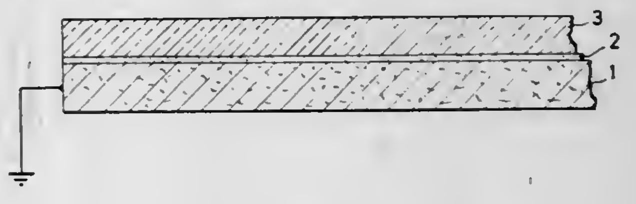
Wolfgang Wiedemann, Geisenheim-Johannisberg, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Apr. 25, 1973, Ser. No. 354,190

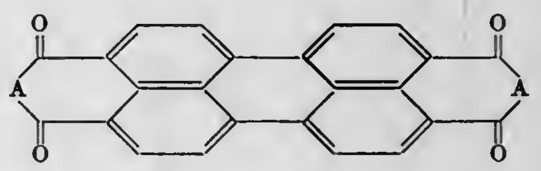
Claims priority, application Germany, July 31, 1972, 2237539

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **14 Claims**



1. Electrophotographic recording material comprising an electroconductive support and a photoconductive double layer of organic materials thereon, said double layer being composed of a tightly packed, homogeneous, uniform, opaque, charge carrier producing dyestuff layer of a compound corresponding to the general formula



wherein
- **A** is oxygen or =NR (imide nitrogen) in which
- **R** is hydrogen, lower alkyl with one to four carbon atoms, an aryl group, an N-substituted heterocyclic group, or —NHR′, with
- **R′** being either a phenyl group or benzoyl,

and a transparent top layer of insulating materials containing at least one charge transporting compound, in which the transparent top layer is composed of a mixture of a binder with a charge-transporting, monomeric heterocyclic compound having an extended π-electron system which is substituted by at least one dialkylamino group or by two alkoxy groups, or with a condensation product of 3-bromopyrene and formaldehyde.

3,871,883

ELECTROPHOTOGRAPHIC PHOTOCONDUCTIVE LAYER COMPRISING AN ORGANIC PHOTOCONDUCTOR AND A DICYANOMETHYLENE-INDENOTHIOPHENE SENSITIZER

Mitsuru Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

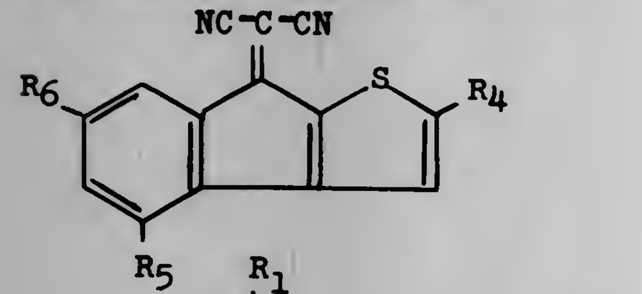
Filed Dec. 19, 1973, Ser. No. 425,967

Claims priority, application Japan, Dec. 28, 1972, 48-1944; Dec. 28, 1972, 48-1945

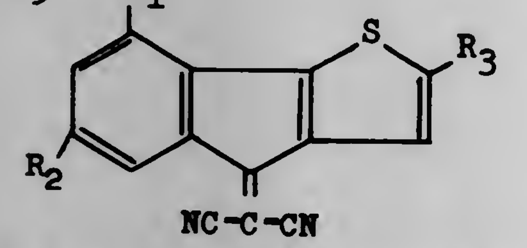
Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **5 Claims**

1. An electrophotographic light-sensitive material having a photoconductive layer formed on an electroconductive support, the photoconductive layer comprising an organic photoconductive monomer or an organic photoconductive polymer, and a sensitizing compound of the formula:



(A)



(B)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen or nitro groups wherein the sensitizing compound is present in an amount of from about 0.01 to about 1.2 mole per mole of the organic photoconductive monomer or per monomeric unit of the organic photoconductive polymer.

3,871,884

PHOTOCONDUCTIVE COMPLEX WITH HYDROXY-NITROBENZOIC ACIDS AND TRIARYLMETHANE DYES

Shoichi Matsumoto, and Kazuhiko Kurematsu, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 14, 1971, Ser. No. 207,981

Claims priority, application Japan, Dec. 16, 1970, 45-11880

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **5 Claims**

1. A photoconductive material for electrophotography comprising a blend of

a. a molecular charge transfer reaction product of poly-N-vinylcarbazole and tetrachloro-p-benzoquinone,

b. at least one benzoic acid derivative selected from the group consisting of 2-hydroxy-3,5-dinitrobenzoic acid, 2-hydroxy-3-nitrobenzoic acid and 2-hydroxy-5-nitrobenzoic acid, and

c. at least one triaryl methane dyestuff.

3,871,885

CRYSTALLINE PHOTO-POLYMERIZABLE COMPOSITION

Walter Raymond Hertler, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 144,629, May 18, 1971, abandoned, which is a continuation of Ser. No. 53,537, June 9, 1970, abandoned. This application Oct. 20, 1972, Ser. No. 299,471

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—35.1 **79 Claims**

1. A substantially dry, predominantly crystalline photoimageable composition in the form of a thin layer ranging from about 1 micron to about 1 millimeter in thickness, having substantially homogeneously distributed therethrough closely arrayed crystals consisting essentially of at least one

solid ethylenically unsaturated monomer melting in the range 25° to 100°C. and capable of forming a polymer having a degree of polymerization of at least 10 by free-radical initiated, chain propagating, addition polymerization, and

for each part by weight of monomer, 0.001 to 1 part by weight of an organic, light-sensitive, free-radical generating system free of aliphatic halogen which initiates and subsequently does not terminate the polymerization,

at least one component of which has an active light absorption band with a molar extinction coefficient of 100 or more measured in hexane in the range of 3300 to 8000 A, said composition having a crystallinity index of at least 0.2,

being photopolymerizable in atmospheric oxygen and capable of yielding a photoimage on receiving light totalling 2000 μj./sq.cm. or less, said light being active to cause said free-radical generating system to generate free radicals.

3,871,886

PHOTOCHROMIC COPYING METHOD

Jean Jules Achille Robillard, Vitry, France, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,405

Claims priority, application France, June 27, 1972, 72.23184; July 10, 1972, 72.24945

Int. Cl. G03c *5/24, 1/52*

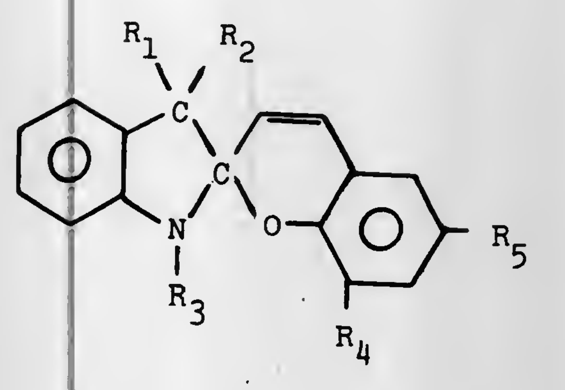
U.S. Cl. 96—48 R **7 Claims**

1. A copying method selected from the group consisting of:

A. a first method which comprises imagewise exposure of a photochromic copying material to light rays having a wavelength λ_1, said copying material comprising a support and a photosensitive layer comprising (a) a spiropyran, (b) an aromatic or a cyclic ketone and (c) a semiconductive metal oxide doped with at least one metal;

said wavelength λ_1 corresponding to the absorption wavelength of the spiropyran compound;

said spiropyran compound having the general formula:



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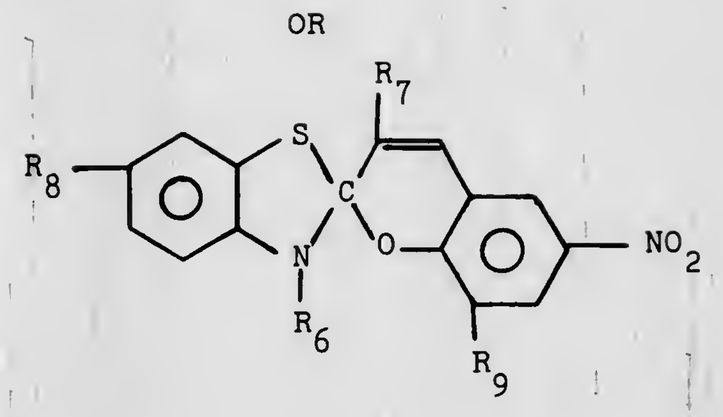
OR



II

wherein:

R_1 and R_2 are alkyl containing 1 to 3 carbon atoms,

R_3 is alkyl containing 1 to 3 carbon atoms or phenyl,

R_4 is hydrogen, alkyl containing 1 to 3 carbon atoms, alkoxy containing 1 to 3 carbon atoms or halogen,

R_5 is hydrogen, halogen or nitro,

R_6 is alkyl containing 1 to 6 carbon atoms, or benzyl,

R_7 is alkyl containing 1 to 3 carbon atoms, naphthyl, phenyl, cyclohexyl, methoxyphenyl, hydroxyphenyl, halogen substituted phenyl or thiophenyl,

R_8 is hydrogen, hydroxyl, or thiomethyl, and

R_9 is hydroxyl or alkoxy containing 1 to 3 carbon atoms;

said ketone being selected from the group consisting of benzophenone, biphenyl-6-acetophenone, triketoindane, xanthotoxine and β-propiolactone;

said doped metal oxide being selected from the group consisting of TiO_2/TiO doped with Cu; TiO_2 doped with Ce/Ni, La/Ni or Ce/Cu; ZrO_2 doped with Ce/Ni, ZrO doped with La/Cu; and ZnO doped with Cu, Ce/Ni, Ni and La/Ni; and thereafter decomposing said ketone by exposure to light rays of wavelength λ_2, in the presence of an alcohol when said ketone is aromatic: and

B. a second method which is the reverse of said first method whereby the first exposure is to light of wavelength λ_2 and the second exposure is to light of wavelength λ_1.

3,871,887

PHOTOTHERMOGRAPHIC COMPOSITION, ELEMENT AND PROCESS

Cynthia G. Jones, Leroy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,364

Int. Cl. G03c *1/28*

U.S. Cl. 96—67 **20 Claims**

1. In a method of preparing a photothermographic composition comprising:

A. preparing a dispersion of:
  a. an oxidation-reduction image-forming combination comprising:
    i. a silver salt oxidizing agent and
    ii. an organic reducing agent with:
  b. a synthetic polymer-peptized photosensitive silver halide, and
  c. a cyclic imide toner in
  d. a non-gelatin polymeric binder, the improvement comprising:

B. mixing with said dispersion a sensitizing concentration of a non-silver iodide salt, said iodide salt having the property of increasing the photosensitivity of said photothermographic composition.

3,871,888

PHOTOSENSITIVE COMPOSITION CONTAINING A PROTOCHLOROPHYLLIDE-APOPROTEIN IN COMPLEXED OR IN ASSOCIATION WITH A POLYMERIC MATERIAL

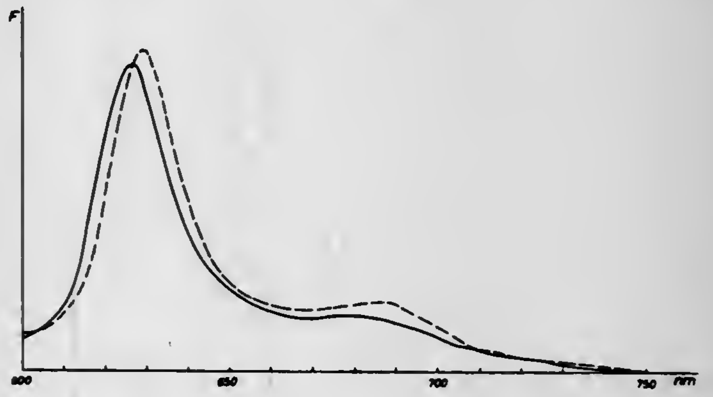
Marie-Rose Michel-Wolwertz, Vielle Voie de Liege 107, Dolembreux; Esther Dujardin, and Cyrille Sironval, both of Avenue des Bois 8, Mery-Esneux, all of Belgium

Filed Jan. 24, 1973, Ser. No. 326,442

Claims priority, application Great Britain, Jan. 25, 1972, 3499/72

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 **6 Claims**



1. A process for preparing a photoactive material of biological origin remaining photoactive at room temperature which comprises the steps of

a. extracting from an etiolated plant material a photoactive protochlorophyll(ide)-apoprotein binary complex with a buffer solution at a pH between 7 and 10 in the presence of an agent to protect the apoprotein against denaturation at a temperature of at most 5°C;

b. adding to said binary complex at a temperature of at most 5°C a natural or synthetic polymeric material selected from the group consisting of polyethylene glycol, polyvinylpyrrolidone and dextran to form a precipitate;

c. cold-centrifuging said precipitate of said binary complex to form a product which is either in complexed or in association with said polymeric material, and

d. lyophylizing said product at a temperature of at most 5°C so that the dried final product remains photoactive at room temperature.

3,871,889

ACTIVATOR SOLUTIONS, THEIR PREPARATION, AND USE IN ELECTROLESS PLATING OF SURFACES

Earl J. Fadgen, Jr., Clinton, and Juan Hajdu, Orange, both of Conn., assignors to Enthone, Inc., West Haven, Conn.

Filed Oct. 29, 1973, Ser. No. 410,645

Int. Cl. C23c *3/00*

U.S. Cl. 106—1 **35 Claims**

1. A catalyst solution comprising a substantially colloidal metal particle-free acidic liquid solution containing a soluble lower alkanol-modified noble metal-tin chloride complex, and hydrochloric acid, the soluble lower alkanol-modified noble metal-tin chloride complex being obtained by mixing together a lower alkanol, a soluble noble metal chloride, stannous chloride and hydrochloric acid, and maintaining the thus-obtained liquid mixture at a reaction temperature of at least about 160°F. but below that temperature at which an excessive amount of noble metal is precipitated for a period sufficient to obtain a catalytically effective solution containing the soluble lower alkanol-modified noble metal-tin chloride complex, the stannous chloride being present in excess of the amount thereof required to reduce the noble metal chloride to zero valent noble metal, the molar ratio of stannous chloride to noble metal chloride (calculated as palladium chloride) being initially at least about 9-10:1 respectively, and the lower alkanol being present in amount sufficient to obtain a soluble complex.

3,871,890

COMPOSITION AND PROCESS FOR GLAZING CERAMIC WARE

Richard Andrew Eppler, Timonium, and Eugene F. O'Conor, Baltimore, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 207,522, Dec. 13, 1971, Pat. No. 3,804,666. This application Nov. 19, 1973, Ser. No. 417,126

Int. Cl. C03c *3/04, 5/02;* **C04b** *33/00*

U.S. Cl. 106—48 **7 Claims**

1. As component for glazing low-expansion ceramic whiteware with a substantially non-porous, acid-resistant, opaque glaze, a substantially water-insoluble ceramic frit being substantially entirely in the vitreous state as frit particles, said frit after melting into a fluent vitreous state being thermally autocrystallizable to a low-expansion, semi-crystalline glass-ceramic glaze containing zirconia or zircon as one of the crystalline phases and having a coefficient of thermal expansion of less than 5×10^{-6}/°C., said frit consisting essentially of:

Ingredient	Percent by Weight
Li_2O	about 3 to 22%
MgO	about 0 to 6%, 0.74 part of MgO replacing 1 part of Li_2O when MgO is used, but a minimum of 4% Li_2O + MgO being present
Al_2O_3	about 17 to 38%
SiO_2	about 26 to 70%, the subtotal sum of Li_2O, MgO, Al_2O_3 and SiO_2 being 70 to 90%
ZrO_2	about 6 to 25%
Flux	about 4 to 19%.

wherein said flux is selected from the group consisting of: B_2O_3, K_2O, F, PbO, Na_2O, CaO, SrO, ZnO, BaO up to 5% or mixtures of same.

3,871,891

METHOD FOR THE PRODUCTION OF HIGHLY WEAR-ESISTANT CERAMIC MATERIAL

Karl-Heinz Schuller, and Horst Nink, both of Lauf/Pegnitz, Germany, assignors to Rosenthal Stemag Technische Keramik AG, Selb, Germany

Filed Dec. 14, 1973, Ser. No. 424,749

Claims priority, application Germany, Mar. 23, 1973, 2314442

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **7 Claims**

1. Method for the production of highly wear-resistant bodies of Al_2O_3 ceramic material, characterized by the succession of the following operating steps:

a. preparing a mixture consisting of 100 parts by weight of at least 98% pure Al_2O_3 and 10 to 50 parts by weight of a carbonaceous plasticizer;
b. heating the mixture in a hot press at a rate of at least 50° C./minute to a temperature between 1,280° and 1,500° C. and pressure sintering with a holding time of at least 5 minutes at a maximum temperature; and
c. cooling the mixture.

3,871,892

SHAPED BODIES OF PULLULAN ESTERS AND THEIR USE

Hiromi Hijiya, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama, Japan

Filed Dec. 12, 1973, Ser. No. 424,151

Claims priority, application Japan, Dec. 18, 1972, 47-126949; Dec. 22, 1972, 47-128971

Int. Cl. C08h *1/00, 7/00*

U.S. Cl. 106—126 **6 Claims**

1. A shaped solid body essentially consisting of a pullulan ester of a fatty acid having up to 18 carbon atoms or benzoic acid, or of a mixture of said ester with at least one member of the group consisting of up to 120% amylose and up to 150% gelatin, said percent being by weight of said pullulan ester, the pullulan in said ester having a molecular weight of 10,000 to 5,000,000.

3,871,893

LIGNIN AMINES AS ASPHALT EMULSIFIERS

Joseph B. Doughty, Sullivan's Island, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 134,856, April 16, 1971, abandoned. This application June 21, 1972, Ser. No. 264,864

Int. Cl. C08h *13/00;* **C08k** *1/162*

U.S. Cl. 106—277 **4 Claims**

1. An oil-in-water cationic bituminous emulsion of improved mechanical stability which comprises, from about 30 to about 75% by weight of bitumen as the dispersed phase, from about 0.2 to about 2.5% by weight of a watersoluble salt of a lignin amine product of the reaction of from 1 to 10 moles of a glycidyl/tertiary amine intermediate per 1000 grams lignin as the cation active emulsifier for dispersing said bitumen in water and water to make up 100% by weight as the continuous phase, the pH of the emulsion being adjusted to a value in the range from about 1 to 3.

3,871,894

COATED CHROMATE PIGMENT COMPOSITIONS AND PROCESS FOR PRODUCING THE SAME

Shigenaga Kubo, Tokyo, and Nobuyoshi Abe, Saitama, both of Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,084

Claims priority, application Japan, May 18, 1972, 47-48532; May 19, 1972, 47-49201; June 7, 1972, 47-56088

Int. Cl. C09c *1/08, 1/20, 1/34*

U.S. Cl. 106—302 **19 Claims**

1. A pigment composition comprising chromate particles having deposited thereon a zirconium compound in an amount 0.2–5% by weight (calculated as ZrO_2) based on the total amount of chromate particles plus zirconium compound, and also having deposited thereon silica.

13. A pigment composition comprising chromate particles having deposited thereon a zirconium compound in an amount of 0.2 – 10 percent by weight (calculated as ZrO_2) based on the total amount of chromate particles plus zirconium compound, and also having deposited thereon a water-insoluble antimony compound.

3,871,895

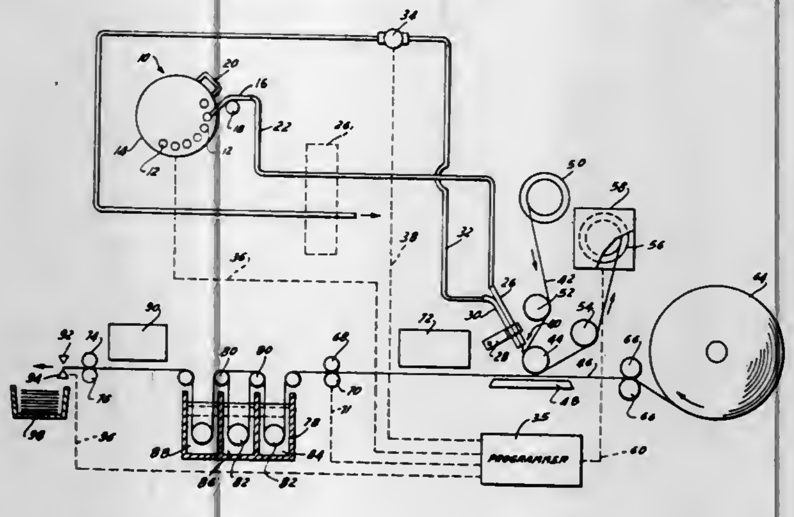
METHOD FOR PREPARING SMEARS OF BIOLOGICAL LIQUIDS

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 29, 1973, Ser. No. 375,291

Int. Cl. B44d *1/02*

U.S. Cl. 117—3 **7 Claims**



1. A method of preparing a smear on a substrate element, utilizing a ribbon element, comprising:

supporting the substrate element for movement,
supporting said ribbon element for movement in close proximity to the substrate element at a sample-applying station,
introducing a relatively small quantity of a biological liquid sample between said ribbon and substrate elements at said sample applying station,
spreading the sample across at least the central portion of said ribbon element,
drawing the sample on said substrate element by moving one of said elements relatively to the other, and
moving the ribbon element by advancing it to present a fresh portion thereof to said sample-applying station.

3,871,896

PRECOATED METAL SHEETS AND MANUFACTURE THEREOF

Tadashi Matsudaira, and Minoru Namiki, both of Hiratsuka, Japan, assignors to Kansai Paint Company Limited, Amagasaki-shi, Hyogoken, Japan

Filed Oct. 4, 1972, Ser. No. 294,917

Claims priority, application Japan, Oct. 11, 1971, 46-80405

Int. Cl. B32b *15/04*

U.S. Cl. 117—6 **2 Claims**

1. A precoated metal sheet for producing a metal working product which comprises a base metal sheet, a coating film of a thermosetting resin which is formed on the base metal sheet and cured to semi-hardened state having a tackiness of from 2.0 to 40 g/cm width at a temperature of 25°C and at a relative humidity of 75% and a polyolefin sheet removably adhered to the above semi-hardened coating film; said base metal sheet being one species selected from the group consisting of mild sheet, aluminum sheet, chromium-plated steel sheet and zinc-plated steel sheet; said thermosetting resin being one species selected from the group consisting of

1. thermosetting acrylic resin containing hydroxyl group in the molecule and having an acid value of 5 to 20and hydroxyl value of 10 to 70, 100 parts by weight of this resin being used with 20 to 60 parts by weight of melamine-formaldehyde resin and/or not more than 20 parts by weight of bisphenol A — epichlorohydrine type epoxy resin having an epoxy equivalent of 300 to 800,
2. alkyd-melamine resin comprising 100 parts by weight of alkyd resin modified with non-drying oil and/or non-drying oil fatty acid and having an oil length of 10 to 30 and 20 to 60 parts by weight of melamine-formaldehyde resin,
3. bisphenol A—epichlorohydrine type epoxy resin having an epoxy equivalent of 800 to 4,000 100 parts by weight of this resin being used with 20 to 60 parts by weight of butyl-etherified phenol-formaldehyde resin or with 20 to 60 parts by weight of butyl-etherified urea-formaldehyde resin, and
4. oil free polyester-melamine resin comprising 100 parts by weight of oil free polyester having an acid value of 5 to 20 and hydroxyl equivalent of 400 to 1,300 and 20 to 60 parts by weight of melamine-formaldehyde resin modified with an aliphatic monoalcohol having from 1 to 4 carbon atoms.

3,871,897

FOAMED OLEFIN POLYMER WALLPAPER

Cyril John Ealding, Puckeridge, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 119,713, March 1, 1971, Pat. No. 3,839,238, which is a continuation-in-part of Ser. No. 724,237, April 25, 1968, abandoned. This application Mar. 6, 1973, Ser. No. 338,525

Int. Cl. B32b *27/32*

U.S. Cl. 117—15 **3 Claims**

1. Wallpaper comprising a foamed film of at least one olefin polymer selected from homopolymers of ethylene, propylene, butene-1 and 4-methyl pentene-1, and copolymers of at least two olefins selected from ethylene, propylene, butene-1 and 4-methyl pentene-1, having a printed repeating pattern on one side thereof, said film having

i. a thickness of from 0.014 to 0.065 in,
ii. a density of from 0.05 to 0.5 g cm^{-3},
iii. an average cell diameter of from 120 to 250 μm,
iv. an air permeability of at least 0.0075 ml cm^{-2} sec^{-1} cm $head^{-1}$ mil thickness,
v. a water vapour permeability of from 500 to 10000 g m^{-2} day^{-1} mil thickness, and
vi. at least 50% of the volume of the film comprising open cells.

3,871,898

PROCESS FOR THE OPTICAL BRIGHTENING OF ORGANIC FIBRE MATERIAL

Gerhard Reinert, Allschwil/Basel-land, and Alois Kleemann, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 72,210, Sept. 14, 1970, abandoned. This application Aug. 23, 1971, Ser. No. 174,155

Claims priority, application Switzerland, Nov. 14, 1969, 16959/69

Int. Cl. C09k *1/02*

U.S. Cl. 117—33.5 T **10 Claims**

1. A process for the non-aqueous optical brightening of organic fibre material by the exhaustion method, which essentially comprises the steps of

a. treating said fibre material, at a goods: liquor ratio of at least 1:5 in the solution of
    I. at least one optical brightener salt consisting of the anionic radical of an anionic optical brightener and at least one cationic radical of an inorganic base,
    II. a solvent mixture consisting of
        α. from 50 to 99 percent by weight of halogenated hydrocarbon boiling between 50° and 150°C, the balance consisting of
        β. a liquid, water-soluble organic solvent boiling below 220° C and selected from the group consisting of alkanols, cyloaliphatic alcohols, araliphatic alcohols, aliphatic and cycloaliphatic ketones, alkylene glycol monoalkyl ethers, furfuryl alcohol, tetrahydrofurfuryl alcohol, lower cyclic ethers, lower anhydrous monocarboxylic acids, N,N-dialkylamides of lower monocarboxylic acids, amides of carbonic acid, cyclic amides, lower carboxylic acid nitriles, and mixtures thereof which are soluble in water, at a temperature between room temperature and the boiling point of the solvent mixture, optionally under pressure, and
b. finishing the brightened fibre material by removing excess solvent and drying.

3,871,899

DUPLICATOR STENCIL

John V. Andersen, Maalov, Denmark, assignor to Aktieselskabet For Kantor Kemi, Glostrup, Denmark

Continuation-in-part of Ser. No. 51,041, June 30, 1970, abandoned. This application Oct. 3, 1972, Ser. No. 294,697

Claims priority, application Denmark, July 11, 1969, 3750/69; Apr. 29, 1970, 2157/70

Int. Cl. B41n *1/24;* **B44d** *3/30*

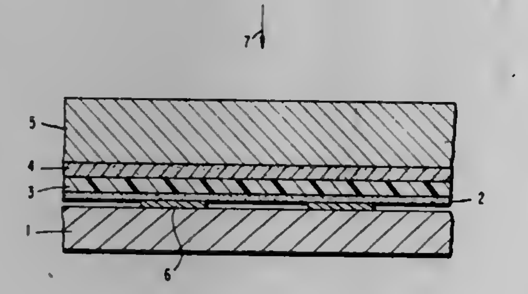
U.S. Cl. 117—35.5 **4 Claims**

1. A duplicator stencil adapted to be perforated through heat action in selected areas, comprising a film of a thermoplastic resin carrying on the surface thereof, which is to be exposed to heat action, coating consisting essentially of the following ingredients:

a. a softener for said synthetic resin selected from the group consisting of dioctyl phthalate, tricresyl phosphate, trixylyl phosphate, polyphenyl chlorides and di-cyclohexyl phthalate in an amount which promotes the rapidity and lowers the temperature of perforation of said film material when the film material is exposed to heat action;

b. a substance influencing the surface property of said film material and selected from the group consisting of isobutylene-naphthalene-sulfuric acid sodium, derivatives of fatty-acid-dibutyl-amide, poly-dimethyl-siloxane, methyl-silicone-polymers, polymer tetra-alkylsilanes, polyethylene glycols and ethanolized alkyl-guanidine-amine-complexes in an amount to make it more supple under the influence of heat action so as to allow a complete contact with the original to be stenciled, and to insure an easy separation of the original and stencil after heat perforation of the latter; said components (a) and (b) not being the same; and

c. an inorganic finely divided powder in an amount effective to eliminate any residual tackiness of the film material and to impart sharp contours to the perforations, said ingredients (a), (b) and (c) having the capability and being present in amounts effective to facilitate penetration and rapid perforation of the film at places where the film is exposed to a source of heat.



3,871,900
RECORDING SHEET

Takao Hayashi; Hajime Kato, both of Minami Ashigara-shi, Shizuoka, and Sadao Ishige, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Fujinomiya-shi, Kanagawa, Japan

Filed July 24, 1973, Ser. No. 382,224

Claims priority, application Japan, July 28, 1972, 47-75758

Int. Cl. B41m *5/00*

U.S. Cl. 117—36.8 **19 Claims**

1. A recording sheet comprising a support having thereon a color developer layer capable of reacting with a color former to form color images, said color developer layer containing (1) a metal salt of an aromatic carboxylic acid and (2) at least one member selected from the group consisting of ethers and alcohols, said component (1) and said component (2) being present at a proportion sufficient to increase the color-developing ability of said color developer and said color former.

3,871,901
PHOTOSTABILIZATION OF POLYMERS

David J. Carlsson; Tony Suprunchuk, and David M. Wiles, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

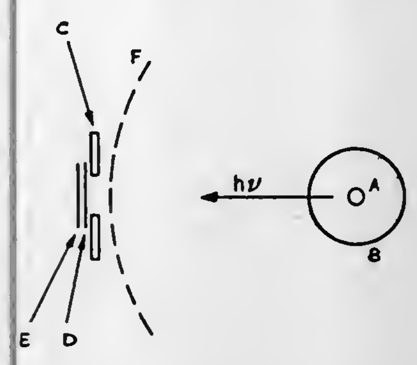
Filed June 29, 1972, Ser. No. 267,461

Claims priority, application Canada, July 2, 1971, 117203

Int. Cl. B44d *1/32, 1/092*

U.S. Cl. 117—47 A **24 Claims**

1. Thin films, fibres, and filaments of polymeric material having high surface area in relation to volume stabilized against the degradative effects of actinic radiation, which comprises said polymeric material having a continuous thin surface layer containing an energy transfer agent which is a metal coordination compound containing at least one metal atom and a ligand comprising a cyclic olefin or a ligand which contains an electron donor atom of nitrogen, oxygen or sulfur, the amount of energy transfer agent in the layer being at most 0.5% by weight based on the weight of the polymeric material.



3,871,902
METHOD OF COATING A SPACECRAFT SHELL SURFACE

Charles Z. Leinkram, Bowie, and Robert S. Rovinski, Forest Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1973, Ser. No. 343,771

Int. Cl. C23d *5/00;* **C23b** *5/26*

U.S. Cl. 117—49 **4 Claims**

1. A method of coating a spacecraft shell surface to improve the optical qualities thereof by providing a low solar absorptivity, α_s, with a relatively high spacecraft shell emissivity, ϵ, and to provide good electrical insulation for securing solar cells thereto which comprises,

cleaning said surface to be coated,

polishing said cleaned surface to a high gloss,

coating said polished surface with a liquid glass solution such as a lead silica film,

baking said liquid glass solution coated surface at a temperature of from about **100°** to **250°C** for a period of from about 1 hour to about 3 hours to densify said glass solution,

continuing said coating and baking steps until a coating thickness of about 5 microns with an α_s/ϵ ratio of about 0.46 is obtained.

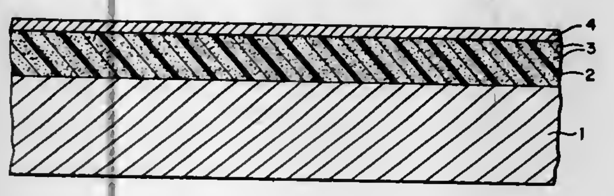
3,871,903
METALLIZED SHAPED BODY OF MACROMOLECULAR MATERIAL

Wilhelm Brandt, Wertach, and Irmgard Bindrum, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Division of Ser. No. 231,825, March 6, 1972. This application Aug. 2, 1973, Ser. No. 385,147

Int. Cl. B44d *1/14, 1/18*

U.S. Cl. 117—71 R **5 Claims**



1. A shaped body comprising a solid support being thermally resistant in the temperature range between 250° to 400°C,

a sintered film, on the surface of said support, of polytetrafluoroethylene having a noble metal salt dispersed therein,

and a metal coating on the surface of said noble metal salt-containing sintered polytetrafluoroethylene film.

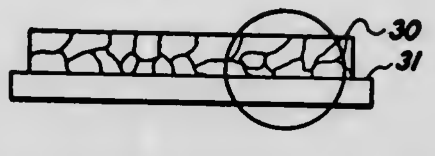
3,871,904
METHOD FOR PROVIDING A LIQUID CRYSTALLINE FILM

Werner E. L. Haas, Webster; James E. Adams, Ontario, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 173,532, Aug. 20, 1971, Pat. No. 3,803,050. This application Nov. 9, 1973, Ser. No. 414,473

Int. Cl. G02f *1/16*

U.S. Cl. 117—72 **5 Claims**



1. A method for providing a spontaneously aligned liquid crystalline film comprising

providing a substrate; and

providing on said substrate a layer claim an aligned liquid crystalline composition comprising a smectic liquid crystalline material and an aligning agent, said aligning agent comprising a polyamide resin surfactant material, whereby said liquid crystalline composition spontaneously aligns with the major molecular axes of a substantial portion of the molecules of the liquid crystalline material substantially perpendicular to the plane of the substrate.

3,871,905
METHOD OF FORMING A PROTECTIVE, FLEXIBLE, INSULATING COATING FOR COVERING THE METAL CASTING SURFACE OF A FLEXIBLE CASTING BELT

Charles J. Petry, Winooski, Vt., assignor to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Nov. 16, 1972, Ser. No. 307,216

Int. Cl. C09k *9/00*

U.S. Cl. 117—75 **1 Claim**

1. A method of forming a protective, flexible, insulating coating for covering the metal casting surface of a flexible casting belt used for confining molten metal during a continuous metal casting operation, comprising roughening the metal casting surface, applying a first coating comprising finely divided carbon and finely divided refractory material carried in a thermosetting resin and organic solvent to the roughened metal casting surface, heat curing the first coating to form a thermally insulative uniform first layer adjacent to the metal casting surface, and applying a second coating covering the first coating comprising amorphous carbon and a resin binder in a quick-drying solvent to form a second layer to be adjacent to the metal being cast and serving to eliminate contact between the first layer and the metal being cast.

3,871,906
PROCESS FOR MAKING PARTICULATE SELF-DESTRUCTING PESTICIDAL COMPOSITIONS

Keith H. Sweeny, West Covina; James R. Fischer, Claremont; Charles A. Lung, Buena Park, and Elmer M. Wilson, Pasadena, all of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 100,985, Dec. 23, 1970, Pat. No. 3,767,783. This application Oct. 11, 1973, Ser. No. 405,709

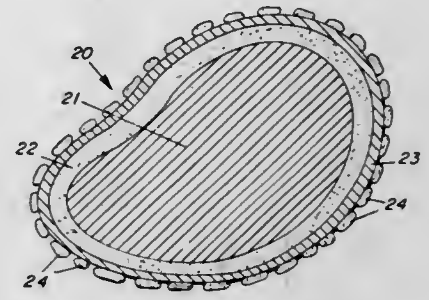
Int. Cl. B44d *1/14*

U.S. Cl. 117—75 **7 Claims**

1. A process for making a composite, particulate, self-destructing pesticidal composition which comprises:

depositing a layer of solid, acid-producing material upon a central particulate core, said core comprising a metallic reductant, said metallic reductant being capable of reacting with chlorinated organic pesticides in an acidic environment to produce relatively innocuous degradation products;

forming a second layer around said acid producing material; said second layer comprising a material which serves to temporarily isolate said metallic core and said acid producing material from an external environment and which degrades after exposure to moisture, ultraviolet radiation or oxygen of a field environment for a predeterminated length of time, and



adhesively depositing a pesticide selected from the group consisting of DDT, toxaphene, lindane, methoxychlor, dieldrin, kelthane, chlordane, Perthane, endrin, aldrin, and heptachlor upon the exterior surface of said second layer.

3,871,907
DECORATIVE WALLCOVERING

Arthur Burton, Denton; Arthur John Naylor, Hazlemere, and John Anthony Handforth, Bollington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 29, 1973, Ser. No. 364,633

Claims priority, application Great Britain, June 5, 1972, 26136/72

Int. Cl. B32b *29/00;* **B44d** *1/14*

U.S. Cl. 117—76 P **6 Claims**

1. A decorative wallcovering comprising a paper sheet having on one of its surfaces, its decorative surface, a coating of a plasticized vinyl polymer, and, on the vinyl coating, two superimposed dry lacquer coatings, the first lacquer coating, being free of plasticizer, serving to reduce plasticizer migration from the plasticized vinyl coating and comprising a film-forming polymeric material having a glass transition temperature greater than 70° and selected from the group consisting of polymers and copolymers of vinyl chloride, vinyl acetate, styrene, vinyl acetals, methyl methacrylate, acrylonitrile and polyvinyl alcohol, the second lacquer coating also being free of plasticizer and comprising a film-forming polymeric material selected from the said group and in the second lacquer coating being dispersed from 90 to 480 parts by weight, per 100 parts by weight of the polymeric material, of a particulate inorganic material having a particle size in the range 2.5 millimicrons to 40 microns, the second lacquer coating serving to render the coated surface of the wall covering suitable for painting with a decorative paint.

3,871,908
PRODUCTION OF URETHANE GROUP CONTAINING COATINGS BY CURING WITH IONIZING RADIATION

Herbert Spoor, Limburgerhof, and Kurt Demmler, Ludwigshafen, both of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Dec. 28, 1971, Ser. No. 213,153

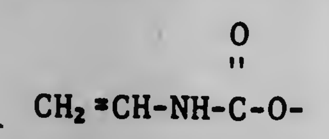
Claims priority, application Germany, Dec. 31, 1970, 2064701

Int. Cl. B44d *1/50;* **C08f** *3/38*

U.S. Cl. 117—93.31 **10 Claims**

1. A process for the manufacture of coatings which comprises: applying a coating composition containing an olefinically unsaturated, urethane group-containing polymeric material prepared by reacting oligomers or polymeric organic materials, which contain at least two free hydroxyl groups per molecule, with vinyl isocyanate to a substrate in admixture

with olefinically unsaturated monomeric compounds, said olefinically unsaturated, urethane group-containing polymeric materials containing at least two units of the formula



$$CH_2{=}CH{-}NH{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}$$

and thereafter curing said material by means of ionizing radiation to form a coating on said substrate.

3,871,909
HOSIERY FINISHING PROCESS FOR TREATING FABRICS CONTAINING SPANDEX YARN

William E. Aldrich, Pittsford, Vt., assignor to Warnaco, Inc., Bridgeport, Conn.

Filed June 22, 1072, Ser. No. 265,318

Int. Cl. B44d *5/00*

U.S. Cl. 117—138.8 N **8 Claims**

1. A finishing process for treating fabrics containing spandex yarn comprising placing the fabric in a bath containing a water emulsion of a lower alkyl polysiloxane polymer, said polymer having an active hydrogen group, acidifying the bath, exhausting said polymer onto said fabric at a temperature of 100° to 200°F. for a period of 10 to 30 minutes to permit substantially uniform absorption of said polymer by the spandex in said fabric, adding dimethylolethylene urea and a curing agent for said urea to said bath, said urea being curable to form a viscous thermosetting resin, reacting said urea with said absorbed polysiloxane polymer at a temperature and for a time sufficient to permit a substantially uniform reaction throughout the fabric and thereafter subjecting said fabric to elevated temperature for a time sufficient to cure the reaction product.

3,871,910
EXTRUDED POLYPROPYLENE PRINT BANDS FOR POLYPROPYLENE LENO FABRIC

Edward Barkis, Marietta, and Ronnie Lee Sirmans, Lakeland, both of Ga., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 26, 1972, Ser. No. 318,529

Int. Cl. B44d *1/09*

U.S. Cl. 117—138.8 E **10 Claims**

1. A polyolefin fabric having integrally adhered to it, by extrusion without significant loss of fabric strength, a printable surface consisting of a polypropylene copolymer resin having a terminal block of copolymerized ethylene and propylene wherein the ethylene of said terminal block represents from 1.0 to 6.0 weight per cent of said propylene copolymer resin, a melt flow of 1.5 to 10.0 g/10 min, and a specific gravity of at least 0.865.

9. A process for making a polyolefin mesh fabric having integrally adhered to it, without significant loss of fabric strength, a printable surface involving the steps of extruding a polypropylene copolymer resin having a terminal block of copolymerized ethylene and propylene wherein the ethylene of said terminal block represents from 1.0 to 6.0 weight per cent of said propylene copolymer resin, a melt flow of 3.0 to 10.0 g/10 min, and a specific gravity of at least 0.865 onto a polyolefin mesh fabric while simultaneously removing heat energy from said polyolefin mesh fabric, pressing said extruded polypropylene copolymer partially into said polyolefin mesh fabric and then cooling said extruded polypropylene copolymer.

3,871,911
NON-DISCOLORING PAINTED POLYURETHANE

Philip Conacher, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1973, Ser. No. 365,978

Int. Cl. B44d *1/02*

U.S. Cl. 117—138.8 D **10 Claims**

1. A process for preparing a substantially nondiscoloring painted polyurethane part which consists essentially of heat-curing an NCO-terminated polyurethane prepolymer with a complex of 4,4'-methylene dianiline and a salt, the salt being selected from the group consisting of sodium chloride, sodium bromide, sodium iodide, sodium nitrite, lithium chloride, lithium bromide, lithium iodide, lithium nitrite, and sodium cyanide, the ratio of said dianiline to said salt in said complex being 3 moles to 1 mole, the proportions of prepolymer and complex being adjusted so that the NCO/NH_2 ratio is greater than one, thereby forming a polyurethane, and painting or coating said polyurethane with a flexible paint or coating.

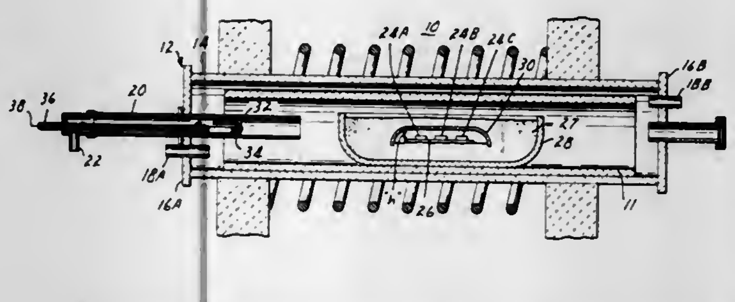
3,871,912
PROCESS FOR PRODUCING A PARALLEL OVERGROWTH FOR USE AS AN EPITAXIAL THIN FILM LASER

Gunther H. Dierssen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 887,650, Dec. 23, 1969, Pat. No. 3,730,764. This application Apr. 2, 1973, Ser. No. 347,236

Int. Cl. H01l *7/32*

U.S. Cl. 117—201 **12 Claims**



1. A vapor deposition process for the production of an epitaxial thin-film on a single crystalline substrate, wherein the resultant thin-film-substrate combination, when formed into a resonant cavity, is capable of laser emission, said process comprising the steps of:

a. selecting a combination of a single crystalline substrate material and source material wherein both said materials are compounds or solid solutions of at least one of the elements selected from the group consisting of cadmium and zinc, together with at least one of the elements selected from the group consisting of sulfur, selenium and tellurium, wherein crystals of both said materials have an interatomic spacing mismatch along at least one crystallographic axis of less than 12 percent, wherein said single crystalline substrate has at least one substantially flat growth surface crystallographically oriented so as not to correspond with a naturally occurring major face of a crystal of said source material and wherein said substrate has an optical band edge at least equal to the source material optical band edge;

b. providing a vacuum tight enclosure as a static reaction chamber;

c. positioning within said reaction chamber a bed of a predetermined quantity of sinter powder of said source material;

d. positioning said substrate on an inert spacer block and above said bed; and

e. heating said reaction chamber to a uniform predetermined temperature sufficient to enable sublimation of said source material and continuing heating to produce

said epitaxial thin-film of said source material on said substantially flat growth surface.

3,871,913
CLEANING OF DIALYSER COMPARTMENTS AND BLOOD LINES OF ARTIFICIAL KIDNEY MACHINE

Stanley Shaldon, London, England, assignor to Dialysis Systems Limited, London, England

Filed Feb. 13, 1973, Ser. No. 332,077

Claims priority, application Great Britain, Mar. 14, 1972, 11898/72

Int. Cl. B08b *9/02, 9/08*

U.S. Cl. 134—22 R **9 Claims**

1. A method of washing a blood dialyser of an artificial kidney machine of the type having a supply system which produces dialysate by mixing water with metered quantities of dialysate concentrate and heats and deaerates the resultant mixture, said dialyser having a blood compartment and a dialysate compartment, said method comprising the steps of:

a. connecting the blood compartment of said dialyser to said dialysate supply system of said machine, and

b. using liquid from said supply system to wash both the blood and dialysate compartments of said dialyser.

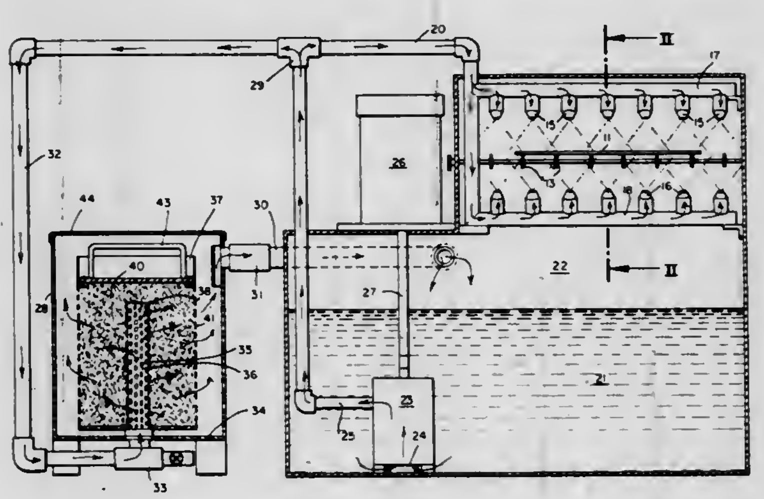
3,871,914
ETCHANT RINSE APPARATUS

Daniel L. Goffredo, Riverton, N.J., and John Alfred Dunkelberger, Jr., Centre Hall, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Oct. 18, 1971, Ser. No. 190,136

Int. Cl. B08b *3/02, 3/10*

U.S. Cl. 134—109 **6 Claims**



1. A rinsing appartus for rinsing etching reactant from articles that have been etched by a reactant comprising a rinsing chamber, means for conveying etched articles through the chamber, rinse dispensing members located in said chamber and positioned for dispensing rinsing liquid onto the articles in the chamber, a rinse reservoir for containing a rinsing liquid, means for delivering rinsing liquid from said reservoir to said dispensing members, a replacement chamber having an inlet connected for receiving rinse liquid from said reservoir and having an outlet connected for recycling the rinse liquid for delivery to the reservoir, said replacement chamber including a tank containing a displacing material and means for facilitating flow of rinse liquid from the inlet through the displacing material in the tank and to the outlet, with the displacing material comprising means facilitating an ion replacement of etchant ions in the rinse liquid with ions from the displacing material, wherein said means for delivering rinsing liquid includes pump means for delivery of liquid simultaneously to both the rinse dispensing members and the replacement chamber.

3,871,915
HIGH ENERGY LITHIUM TYPE ELECTROCHEMICAL CELLS

Alfred Brych, Chasseneuil Du Poitou, France, assignor to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

Filed Oct. 23, 1973, Ser. No. 408,290

Claims priority, application France, Oct. 30, 1972, 72.38412

Int. Cl. H01m *43/06*

U.S. Cl. 136—6 LN **8 Claims**

1. An electrochemical cell comprising a positive electrode containing a metal compound selected from the group consisting of a metallic chromate and a metallic oxide a negative electrode containing basically lithium and an electrolyte containing lithium perchlorate as solute and a solvent therefor, said solvent consisting of a mixture of a cyclic ether selected from the group consisting of tetrahydrofuran, dioxolane and propylene oxide and a non-saturated cyclic ester vinylene carbonate.

3,871,916
NONAQUEOUS CELL UTILIZING A 3ME20X-BASED ELECTROLYTE

Marvin L. Kronenberg, Cleveland Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,792

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LN **13 Claims**

1. A nonaqueous cell comprising a highly active metal anode, a solid $(CF_x)_n$ cathode wherein x is between about 0.5 and about 1.2, and a liquid organic electrolyte consisting essentially of 3-methyl-2-oxazolidone in combination with at least one low viscosity cosolvent and a conductive solute.

3,871,917
NEGATIVE ACTIVE SUBSTANCE FOR A STORAGE CELL

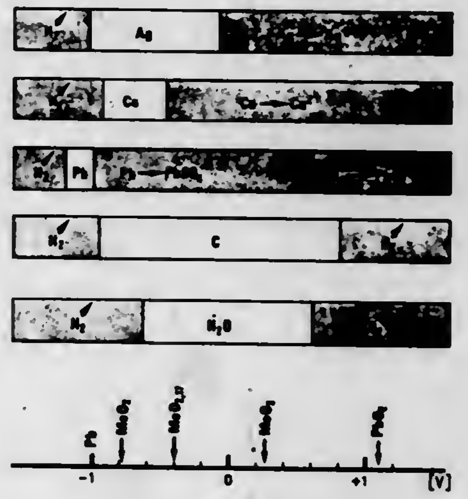
Jean-Paul Gabano, and Yves Jumel, both of Poitiers, France, assignors to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

Filed June 11, 1973, Ser. No. 368,866

Claims priority, application France, June 9, 1972, 72.20843; June 9, 1972, 72.20844; Nov. 23, 1972, 72.41702

Int. Cl. H01m *39/00*

U.S. Cl. 136—26 **30 Claims**



1. Storage cell comprising an acid electrolyte, a positive electrode constituted by the electrochemical system $PbO_2/H_2SO_4/PbSO_4$ and a negative electrode having active negative material that varies between the charged state and the discharged state in the form of oxides which are insoluble in the acid electrolyte, these oxides being selected from the group consisting of simple and mixed molybdenum oxides such that the average value of the valency of the oxide ranges from greater than or equal to four and less than or equal to six.

3,871,918

NEGATIVE ELECTRODE FOR ELECTROCHEMICAL GENERATOR

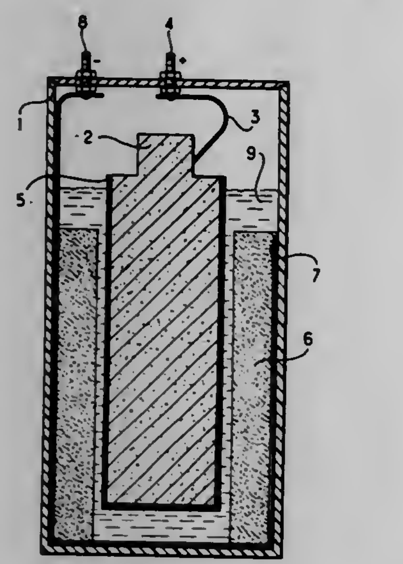
Claude Vlescou, Epinay Sur Seine, France, assignor to Compagnie Industrielle Des Piles Electriques "Cipel", Levallois-Perret, France

Filed May 29, 1973, Ser. No. 364,273

Claims priority, application France, May 30, 1972, 72.19352

Int. Cl. H01m ***43/00***

U.S. Cl. 136—30 **12 Claims**



1. Negative electrode for an electrochemical cell whose active material mainly consists of zinc powder in the form of a suspension in a gel, characterized in that the zinc particles are contained and retained in a three-dimensional gel and maintained therein in a stable space configuration, the three-dimensional gel being constituted by a polymerizing reaction product of acrylamide, acrylic acid and methylenebisacrylamide, said gel containing an electrolyte consisting of potassium hydroxide solution.

3,871,919

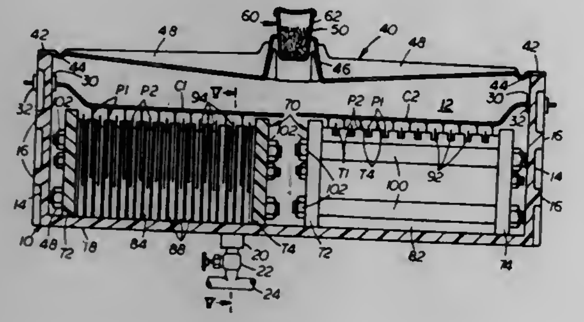
BATTERY PLATE FORMING APPARATUS

James H. Barrett, Jr., 3863 Surrey Rd., Toledo, Ohio 43615

Filed Sept. 24, 1969, Ser. No. 860,620

Int. Cl. H01m ***35/18***

U.S. Cl. 136—82 **2 Claims**



1. In a series of battery plate forming boxes for transforming lead sulfate paste used in filling the lead grids of the negative and positive plates into spongy lead and lead peroxide, respectively, each box being independent of each other and each having its own electrolyte and separate non-corrosive plastic rack for supporting plates to be formed with their longer sides horizontal for easy viewing, each said box comprising:

A. a shallow open non-corrosive plastic tank having an upper peripheral horizontal edge, vertical side walls and a flat horizontal bottom, and at least one aperture below said edge in a side wall for an electrical conductor connected to the plates to be formed, and having a normally closed drain in said bottom,

B. means for sealing the conductor in said aperture,

C. a removable non-corrosive plastic cover for the top of said tank having a peripheral flange resting on said peripheral edge, a depending peripheral ridge inside said flange adjacent said side walls, an under surface which slopes downwardly and inwardly from said peripheral edge to an aperture, which surface directs condensate away from the edges of said cover to drip back into the tank,

D. a replaceable filter means in said aperture in said cover to permit gases generated in said tank to escape but to condense and retain acid vapors, and

E. a spigot above each tank for filling it with liquid;

said rack being adjustable for supporting the battery plates in said tank, said rack comprising:

a. a pair of vertical parallel side walls,

b. a pair of vertically slotted parallel end walls having ends against said side walls, said end walls having alternately notched top edges, and

c. means for adjusting the distance between said end walls.

2. In a series of battery plate forming boxes, each box being independent of each other and each having its own electrolyte and separate rack for supporting plates to be formed, each said box comprising:

A. an open top tank having at least one aperture in its side for an electrical conductor connected to the battery plates to be formed,

B. means for sealing said conductor in said aperture,

C. a removable cover for the top having

a. a filter vent therein, and

b. means on the lower side of said cover extending below the peripheral edge of said cover for directing condensate away from said edges of said cover to drip toward the center portion of said tank; and

D. each said rack being adjustable for supporting the battery plates in said tank and comprising:

a. a pair of vertical parallel side walls,

b. a pair of vertically slotted parallel end walls having ends against said side walls, said end walls having alternately notched top edges, and

c. means for adjusting the distance between said end walls.

3,871,920

AIR DEPOLARIZED CELL

Gerard Grebier, Biard-Poitiers, and Pierre Arlot, Chasseneuil, both of France, assignors to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

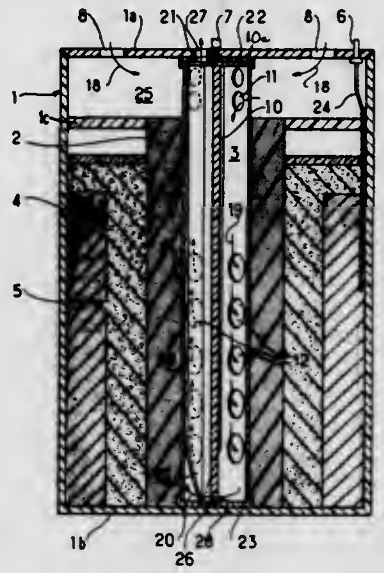
Filed Apr. 24, 1973, Ser. No. 353,992

Claims priority, application France, Aug. 25, 1972, 72.30383

Int. Cl. H01m ***29/04***

U.S. Cl. 136—86 A **12 Claims**

1. Air depolarization cell comprising a negative electrode having a zinc base, an electrolyte, and a positive electrode, means for supplying circulating air to said positive electrode comprising a flue in the said positive electrode, in communication with the outside air at its upper portion, a tubular conductive collector lining said flue in its length and extending outwardly of said upper portion, partitioning means of a length substantially equal to the length of said collector positioned within said collector and defining at least two longitudinal chambers of different volumes therein communicating at their lower portions and the said collector having perforations in each of said chambers exposing catalytic sites of said positive electrode in said flue to air, the proportionality coefficients of the air input surfaces at the catalytic sites of said positive electrode via said perforations with respect to the corresponding volumes of the respective chambers being different.



3,871,921

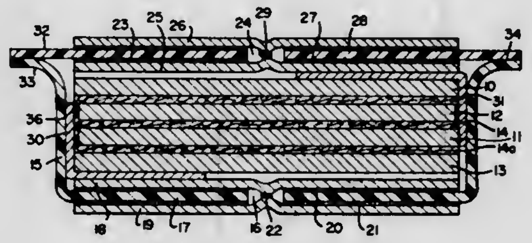
FLAT ALKALINE CELL CONSTRUCTION AND METHOD FOR ASSEMBLING THE SAME

Theodore R. Beatty, Bay Village, and Harry Vourlis, Lakewood, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,838

Int. Cl. H01m ***21/00***

U.S. Cl. 136—111 **29 Claims**



1. A flat alkaline cell comprising an electrode assembly including at least a pair of flat electrode elements of opposite polarity and a porous separator containing an alkaline electrolyte interposed between and in contact with the pair of electrode elements, said electrode assembly being enclosed within a sealed, liquid impervious plastic film envelope having an opening in one wall thereof, a flat internal current collector member disposed adjacent to the inner side of said wall and overlying said opening, a flat external current collector member disposed adjacent to the outer side of said wall and overlying said opening, said internal and external current collector members being tightly adhered to the inner and outer sides of said wall by means of thin layers of an adhesive sealant which is non-wettable by the alkaline electrolyte, said flat internal current collector being in electrical connection with one of said flat electrode elements and means for making electrical connection between said internal and external current collector members through said opening in said wall.

22. The method of assembling a flat alkaline cell including an electrode assembly comprising at least a pair of flat electrode elements of opposite polarity and a porous separator containing an alkaline electrolyte interposed therebetween, said method comprising the steps of providing at least two plastic film wall members for forming a sealed envelope for said cell, at least one of said wall members having an opening therein, placing a flat internal and a flat external current collector adjacent to the inner and outer sides of said one wall member overlying said opening therein, applying a thin layer of adhesive sealant which is non-wettable by the alkaline electrolyte on the surface of at least one of said internal and external current collectors and said one wall member, tightly adhering said current collectors to the respective inner and outer sides of said one wall member by means of said thin layer of adhesive sealant, electrically connecting said internal and external current collectors through said opening in said one wall member, placing the so-formed composite collector-wall member adjacent to one end of said electrode assembly with said internal current collector making electrical connection with one of said flat electrode elements, and then completing the assembly of said sealed envelope by placing the other of said wall members adjacent to the other end of said electrode assembly and then sealing together the marginal borders of said wall members.

3,871,922

GAS DIFFUSION ELECTRODE FOR ELECTROCHEMICAL CELLS

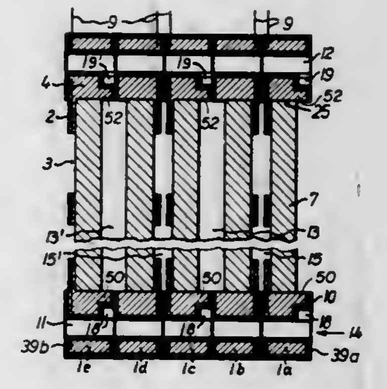
Harald Bohm, Oberursel, and Jochen Heffler, Grossauheim, both of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed July 12, 1972, Ser. No. 271,157

Claims priority, application Germany, July 12, 1971, 2134704; July 12, 1971, 7126690

Int. Cl. H01m ***35/00***

U.S. Cl. 136—120 FC **9 Claims**



1. A gas diffusion electrode for an electrochemical cell having a acidic electrolyte and in which cell the gas diffusion electrode contacts an abutting electrode comprising:

a. a metal net;

b. a corrosion resistant, electrolyte-and gas-impervious, graphite foam coating encasing said net, said foam coating having a frame having on one side two spaced apart, lateral extensions;

c. a porous catalyzing layer having a first side defining one side of a gas chamber, a second side defining one side of an electrolyte chamber, a top wall and a bottom wall, with said graphite foam coating being in contact with said layer along said first side and the extensions of said coating being in contact with the top and bottom walls of the catalyst layer and extending past the second side of said catalyst layer;

d. a main electrolyte inlet canal passing through said frame;

e. a main electrolyte outlet canal passing through said frame;

f. sunken canal means on one of said two spaced apart lateral extensions of the frame of the graphite foam coating for conducting electrolyte from the main inlet electrolyte canal to the electrolyte chamber defined by said second side of said catalyst layer;

g. sunken canal means on the other of said two spaced apart lateral extensions of the frame of the graphite coating for conducting electrolyte from the electrolyte chamber defined by said second side of said catalyst layer to the main outlet electrolyte canal; and

h. an electrically insulating coating on said frame of the graphite-foam coating for preventing electrical contact between the electrolyte and the graphite coating and for preventing electrical contact between the electrode and an abutting electrode.

3,871,923

STORAGE BATTERY

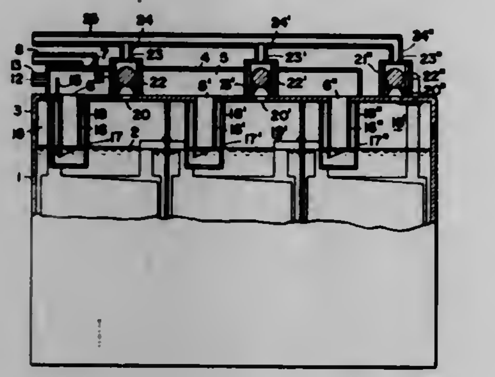
Seiichiro Ikeda, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Japan

Filed Nov. 16, 1973, Ser. No. 416,498

Claims priority, application Japan, Dec. 14, 1972, 47-125424

Int. Cl. H01m *7/02*

U.S. Cl. 136—162 **7 Claims**



1. A storage battery adapted to be supplied with air from an air source and water from a water supply tank, the battery comprising:

a monoblock battery container having a plurality of storage cells arranged therein and a lid covering said cells, said lid being provided with liquid supplying means for use in supplying air and water to said cells and gas exhausting means for use in exhausting oxygen and hydrogen produced in said cells from said cells;

said liquid supplying means including a slender section provided within said lid;

a plurality of electrolyte level setting tubes arranged in communication with said slender section each extending in a downward direction from the back of said lid into a respective one of said cells;

a plurality of gas passageways, each arranged in communication with a respective one of said cells;

said gas exhausting means including a plurality of valves, each arranged within a respective gas passageway;

means adapted for supplying air from the air source into each of said cells through said liquid supplying means and said electrolyte level setting tubes and causing an exhaust flow of oxygen and hydrogen gas from within said cells to escape through said gas exhausting means into the atmosphere;

means adapted for discontinuing the flow of air into said cell and the exhaust of the exhaust gases and subsequently to feed water from the water supply tank into each of said cells through said liquid supplying means and said electrolyte level setting tubes; and,

means adapted for supplying air from the air source into said gas exhausting means so as to cause the closure of said valves when water is being supplied to said cells.

3,871,924

BATTERY HOUSING WITH HANDLE FOR STACKING

David A. DeMattie, 18110 Carol Dr., Strongsville, Ohio 44136, and Anthony Fago, 4473 W. 137th St., Cleveland, Ohio 44135

Filed May 25, 1973, Ser. No. 363,890

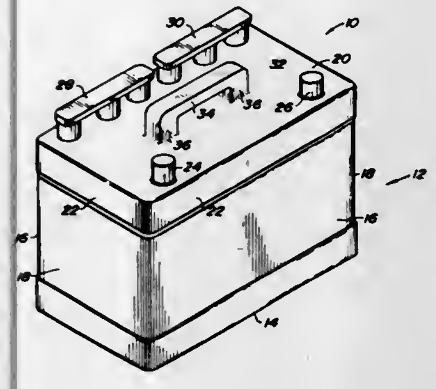
Int. Cl. H01m *1/02, 1/04*

U.S. Cl. 136—166 **5 Claims**

1. An improved battery casing for automotive-type wet cell storage batteries comprising a generally rectangular molded housing including a bottom wall, vertically extending side and end walls, and a generally horizontal top wall;

at least a pair of terminal posts spaced on said top wall and extending upwardly therefrom and terminating in upper top surfaces;

at least one rigid handle member rigidly connected to and extending outwardly from said top wall, said handle member having an upper body portion spaced from the top wall to define a finger-receiving recess, said upper body portion having a top surface; and,



said handle and said terminal posts being located such that their top surfaces define at least three nonaligned support surfaces spaced apart and defining a plane parallel with the bottom wall of said casing and the bottom wall of a second battery casing to form means for engaging the bottom wall of said second battery casing of similar configuration rested in alignment thereon to be supported on the tops of the handle and the terminal posts with substantial stability.

3,871,925

METHOD OF CONDITIONING 18–8 STAINLESS STEEL

John Nunes, Libertyville, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 29, 1972, Ser. No. 310,222

Int. Cl. C22c *39/20;* **C21d** *7/14*

U.S. Cl. 148—12 E **6 Claims**

1. A process for conditioning Type 18–8 stainless steel for subsequent cold deforming comprising the steps of:

a. annealing the material in a temperature range of from about 1,500°F to about 2,100°F; and,

b. mechanically deforming the material not more than approximately 85% at a temperature of from 150°F above the M_{d30} temperature, thereby

c. decreasing the ambient temperature stability of the austenite wherein it forms martensite at a rapid rate upon being cold worked.

3,871,926

PROCESS FOR PRODUCING A COMPOSITE METALLIC ARTICLE

James Q. Steigelman, Athens, Pa., assignor to W. M. Chace Company, Detroit, Mich.

Continuation of Ser. No. 303,195, Nov. 2, 1972, abandoned, which is a division of Ser. No. 138,779, April 29, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,221

Int. Cl. B23p *3/10*

U.S. Cl. 148—12 E **8 Claims**

1. A process for producing a strip of laminated material comprising:

a. heating a relatively thick layer of a stainless steel alloy to a first temperature sufficient to solution treat the stainless steel alloy,

b. cooling said alloy to a second temperature from about 50°F to about 200°F below said first temperature,

c. applying a layer of a brazing alloy to one surface of said stainless steel to achieve a bond along a common interface,

d. cooling the resulting laminate to a third temperature below about 900°F and above the martensitic transformation temperature,

e. reducing the thickness of the laminate while at said third temperature to produce a strip and

f. cooling said strip to ambient temperature.

3,871,927

PROCESS FOR PRODUCING A HIGH-PERMEABILITY ALLOY FOR MAGNETIC RECORDING-REPRODUCING HEADS

Hakaru Masumoto, Sendai City; Yuetsu Murakami, Izumi-Machi, and Masakatsu Hinai, Natori City, all of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai City, Japan

Division of Ser. No. 290,424, Sept. 19, 1972, Pat. No. 3,794,530. This application July 20, 1973, Ser. No. 381,134

Claims priority, application Japan, Oct. 13, 1971, 46-80207

Int. Cl. H01f *1/00*

U.S. Cl. 148—121 **4 Claims**

1. A method of manufacturing a high permeability and high hardness alloy for use for magnetic recording and reproducing heads comprising, melting an alloy consisting of 60.2 to 85.0 Wt. % of nickel, 6.0 to 30.0 Wt. % of iron and 3.1 to 23.0 Wt. % of tantalum as the main ingredient, and further consisting of the total amount of 0.01 to 10.0 Wt. % of at least one element selected from the group consisting of 0 to 7 Wt. % of molybdenum, 0 to 5.0 Wt. % of chromium, 0 to 10.0 Wt. % of tungsten, 0 to 7.0 Wt. % of vanadium, 0 to 3.1 Wt. % of niobium, 0 to 10.0 Wt. % of manganese, 0 to 7.0 Wt. % of germanium, 0 to 5.0 Wt. % of titanium, 0 to 5.0 Wt. % of zirconium, 0 to 5.0 Wt. % of aluminum, 0 to 5.0 Wt. % of silicon, 0 to 5.0 Wt. % of tin, 0 to 5.0 Wt. % of antimony, 0 to 10.0 Wt. % of cobalt, and 0 to 10.0 Wt. % of copper as the subingredient, and an inevitable amount of impurities so as to form an alloy having a homogenized solid solution structure, heating at a temperature of more than 800°C, in a non-oxidizing atmosphere or in vacuo, for at least more than 1 minute but not longer than 100 hours depending upon the composition, and cooling from a temperature of more than the order-disorder transformation point of about 600°C to a room temperature at a suitable speed depending upon the composition so as to provide the degree of order of 0.1 to 0.6, the Vickers hardness of more than 150, initial permeability of more than 3,000 and maximum permeability of more than 5,000.

3,871,928

HEAT TREATMENT OF NICKEL ALLOYS

Darrell Franklin Smith, Jr., and Edward Frederick Clatworthy, both of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Aug. 13, 1973, Ser. No. 387,944

Int. Cl. C22c *41/02;* **C22f** *1/10;* **C22c** *39/20*

U.S. Cl. 148—142 **8 Claims**

1. A process of heat treating an age-hardenable heat-resistant nickel alloy consisting essentially of at least about 25% nickel and up to 60% iron, with a total of at least 50% nickel-plus-iron, and precipitable amounts of gamma-prime forming metal selected from the group consisting of up to 6.5% columbium, up to 5% titanium and up to 6% tantalum and mixtures thereof with a total of at least 2% columbium-plus-titanium-plus-½ tantalum up to 6.5% aluminum, the total of the columbium content plus the titanium content plus the aluminum content plus one-half the tantalum content does not exceed 10%, up to 2% vanadium, up to 25% chromium, up to 30% cobalt, up to 10% molybdenum, tungsten or mixtures thereof, up to 0.2% boron, up to 0.2% zirconium and up to 0.2% carbon and characterized by a solidus temperature of at least about 2,300°F., a gamma-prime solvus temperature of at least 1600°F. and a gamma-prime precipitation temperature of at least 1100° F. comprising:

a. heating the alloy at a temperature of about 1,600 to 1,950°F and gamma-prime solid solution range of the alloy and obtaining the alloy in the solid solution condition having precipitable amounts of the gamma-prime forming metal in solid solution; b. cooling the alloy from the solid solution temperature down to the gamma-prime solvus temperature;

c. then slowly cooling the alloy uniformly at a controlled cooling rate of at least about 20°F. per hour and not greater than 500°F. per hour from the gamma-prime solvus temperature down to about 1,100°F or lower;

d. heat treating the slow-cooled alloy at an upper temperature in the precipitation range to precipitate coarse patches of gamma-prime in the vicinity of the grain bounderies of the alloy and dispersed uniformly within the grains while retaining a portion of the gamma-prime forming metal in solution;

e. thereafter heat treating the alloy at a lower temperature in the precipitation hardening range to precipitate fine particles of gamma-prime dispersed uniformly within the grains; and

f. then cooling the alloy to room temperature, to thereby provide the alloy in the heat treated condition characterized by having coarse gamma-prime particles at least twice the size of the fine gamma-prime particles.

3,871,929

POLYMERIC ETCH RESIST STRIPPERS AND METHOD OF USING SAME

William R. Schevey, Hawley, Pa., and Frank J. Kremers, Jordan, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 438,127

Int. Cl. C23g *1/02;* **C09k** *3/00*

U.S. Cl. 156—2 **17 Claims**

1. A stripper for polymeric organic substances which stripper comprises from about 25 to about 35 weight percent phenol or acetic acid, from about 10 to about 30 weight percent phenol sulfonic acid, from about 15 to about 30 weight percent of a chlorinated hydrocarbon which boils between about 120 to about 210° Centigrade, from about 25 to 35 weight percent of a suitable surface active agent having a HLB number of between about 11.0 and 12.5.

3,871,930

METHOD OF ETCHING FILMS MADE OF POLYIMIDE BASED POLYMERS

John G. Fish, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1973, Ser. No. 426,275

Int. Cl. H05k *3/06*

U.S. Cl. 156—3 **11 Claims**

1. A process for etching a film of a polyimide based polymer which comprises contacting said film with a solution of a strong organic base in a non-aqueous solvent selected from the group consisting of dimethylsulfoxide, sulfolane, dimethylformamide, hexamethylphosphoramide, N-methyl pyrrolidone, N, N-dimethylacetamide, N, N-diethylformamide; N, N-diethylacetamide, and pyridine.

3,871,931

METHOD FOR SELECTIVELY ETCHING SILICON NITRIDE

Geoffrey Allan Godber, Roade, Northampton, United Kingdom, assignor to Plessey Incorporated, New York, N.Y.

Filed Jan. 17, 1974, Ser. No. 434,109

Claims priority, application United Kingdom, July 18, 1973, 34213/73

Int. Cl. C23g *1/00*

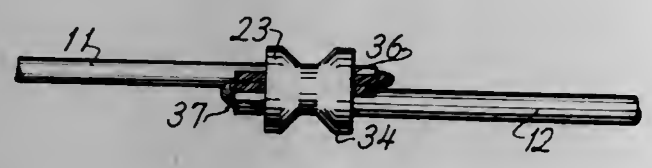
U.S. Cl. 156—7 **9 Claims**

1. A method of selectively etching silicon nitride comprising:

providing an etch solution of arsenic acid;
heating said etch solution to an elevated temperature; and
exposing selected areas of said silicon nitride to the heated etch solution.

3,871,932
METHOD OF CONNECTING INSULATED CONDUCTORS

Earl G. Langenberg, New York, N.Y., assignor to The Anaconda Company, New York, N.Y.
Filed Mar. 2, 1973, Ser. No. 337,350
Int. Cl. H01r *5/08;* **B21f** *15/02*
U.S. Cl. 156—49 **4 Claims**



1. The method of splicing together first and second insulated conductors, each comprising a metallic strand and a tubular wall of insulation surrounding said strand, said wall having an outer peripheral surface, comprising the steps of:

A. stripping lengths of said walls of insulation from the ends of each of said insulated conductors, thereby forming newly cut end faces in each of said walls and exposing end lengths of each of said strands,
B. folding back each of said end lengths against said surface of the wall of insulation of its respective insulated conductor,
C. overlaying the ends of said insulated conductors so that a substantial section of the folded back end length of the strand of one insulated conductor is coextensive with a substantial section of the folded-back end length of the other insulated conductor,
D. fitting a metal ferrule around said first and second insulated conductors and both of the folded-back exposed strands while leaving both a substantial insulated portion and a substantial exposed strand portion of each insulated conductor projecting from each end of said ferrule,
E. crimping said ferrule down upon both exposed end lengths of said insulated conductors and said surfaces so as to provide flared openings of said ferrule at both ends thereof, thereby holding said conductors firmly against separation.

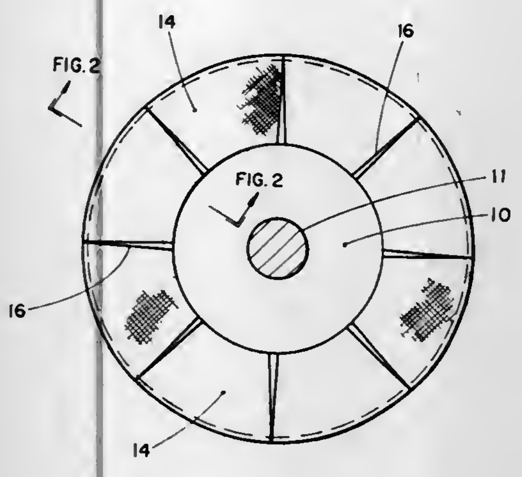
3,871,933
PROCESS FOR THE INDUSTRIAL MANUFACTURE OF FABRICS, STRIPS OR RIBBONS AND THE SO MANUFACTURED PRODUCTS

Jean De Brabander, Hamme-Durme, Belgium, assignor to Velcro S.A., Cesar-Soulie, Switzerland
Filed Feb. 16, 1970, Ser. No. 11,863
Int. Cl. D03d *47/50*
U.S. Cl. 156—88 **1 Claim**

1. A process of producing ribbons from a relatively large sheet of fabric susceptible to raveling when cut and consisting of a structure with interstices covered by piles made of a thermoplastic material, said process comprising the steps of heating the piles of surfaces intended to form marginal edges of said ribbons to a temperature at which said piles are in a softened state and pressing the thus softened piles in the interstices of said structure.

3,871,934
RESURFACING BRAKE DISCS

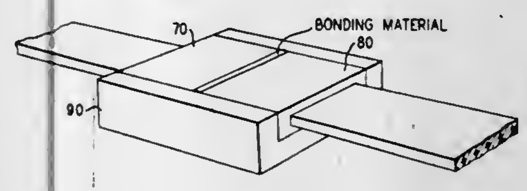
Glenn R. Marin, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed June 28, 1973, Ser. No. 374,742
Int. Cl. B32b *31/12, 31/18, 35/00*
U.S. Cl. 156—94 **6 Claims**



1. A method for applying a friction surface to a carbonaceous brake disc, the disc having at least one periphery and including at least one wearing surface, the method comprising:
a. applying to said periphery a flexible tape of sufficient length to circumvent the periphery of the disc at least once, the tape having sufficient width to cover the periphery and to provide sufficient tape overlap to cover at least one wearing surface of the disc;
b. cutting the tape overlap on at least one side of the disc in at least one place;
c. folding and pressing the tape overlap against the wearing surface of the disc;
d. impregnating the tape with a curable carbonizable resin; and
e. curing and carbonizing the resin to form the friction surface.

3,871,935
METHOD OF ENCAPSULATING AND TERMINATING THE FIBERS OF AN OPTICAL FIBER RIBBON

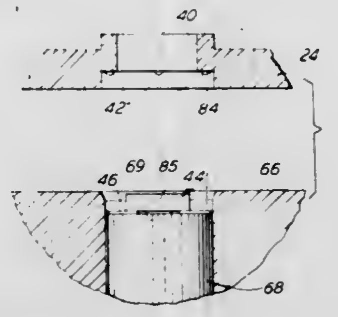
Detlef Christoph Gloge, Red Bank, and Peter William Smith, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 14, 1974, Ser. No. 451,217
Int. Cl. B65h *69/02*
U.S. Cl. 156—158 **5 Claims**



1. A method of encapsulating and terminating an optical fiber ribbon comprising a plurality of optical fibers embedded in a common protective jacket including the steps of:
dissolving the protective jacket along a portion of said ribbon thereby exposing the plurality of individual fibers;
placing the fibers thus exposed in a mold which aligns said fibers in a predefined manner relative to each other;
adding an encapsulating material to said mold thereby encapsulating the fibers located therein in said predefined manner;
and dividing said encapsulated fibers into two parts thereby exposing the transverse surfaces of said fibers.

3,871,936
LOADING OF COMPLIANT TAPE

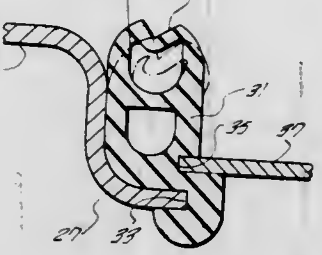
John A. Boyer, Allentown; David P. Ludwig, and Friedrich Zwickel, both of Whitehall, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 185,648, Oct. 1, 1971,. This application Aug. 24, 1973, Ser. No. 391,435
Int. Cl. B65d *85/00*
U.S. Cl. 156—238 **3 Claims**



3. A method of handling beam-lead semiconductor devices which comprises the steps of:
aligning the devices to cavities formed in a tape, the beam-leads of the devices extending over the periphery of the cavities to align with pocket-like depressions in the tape located about each of the cavities;
adhesively securing beam leads of the devices to the pocket-like depressions, thereby suspending the devices in the cavities; and
reeling the loaded tape to provide a compact and damage-preventing package, said cavities and depressions forming protective barriers for the devices and their beam-leads in the reeled package.

3,871,937
METHOD OF FORMING A GASKET

Robert A. Hollingsead, Yorba Linda, and Clyde Robert Pryor, Anaheim, both of Calif., assignors to Hollingsead-Pryor Enterprises, Inc., Santa Fe Springs, Calif.
Division of Ser. No. 125,561, March 18, 1971, Pat. No. 3,771,023. This application Sept. 24, 1973, Ser. No. 399,691
Int. Cl. B29d *27/00*
U.S. Cl. 156—244 **5 Claims**



1. A method of forming a gasket for use in an avionic tray having an apertured rim and a removable metering plate, comprising the steps of:
extruding an elongated flexible material to form a gasket member which defines first and second generally parallel grooves on opposite sides of the gasket member, a passageway disposed above the grooves and a sealing surface formed along the top of the gasket member and above the passageway;
cutting the extruded gasket member to a predetermined length, and
bonding the two ends of the gasket together to form an annular gasket, the gasket maintaining a flat sealing surface when the gasket is deformed into an oblong shape.

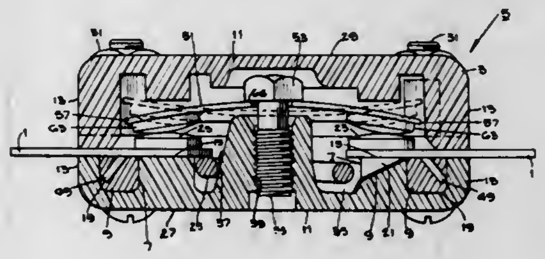
3,871,938
PROCESS OF MAKING LEATHER LIKE SHEET MATERIAL

Takemitsu Takahasi, Tokyo; Keigi Yamazaki, Omiya, and Hirosi Tanaka, Urawa, all of Japan, assignors to Fuji Spinning Co., Ltd., Tokyo, Japan
Filed July 6, 1972, Ser. No. 269,381
Claims priority, application Japan, Nov. 27, 1971, 46-94890
Int. Cl. B32b *27/40*
U.S. Cl. 156—246 **10 Claims**

1. A process for preparing a leather-like sheet of material which comprises:
a. applying a polyurethane polymer to a supporting base;
b. coagulating said polymer solution to form a porous structure which constitutes a first coagulated polymer layer (I) by immersing the supporting base and layer in a non-solvent for said polymer such that at least a portion of said non-solvent is retained in the pores of said layer;
c. applying a second layer of a polyurethane polymer solution onto said first coagulated layer (I), whereby the non-solvent which is retained in the pores of said first layer acts to coagulate the second layer at the interface between said layers;
d. applying a fibrous substrate to said second layer to form a composite;
e. coagulating said second layer by immersing the composite in a non-solvent for the polymer to form a second coagulated polymer layer (II);
f. peeling the resulting composite which consists of said first coagulated layer (I), said second coagulated layer (II), and said fibrous substrate, from its supporting base to yield the product; and
g. removing the solvent from the resulting product by washing with water and drying.

3,871,939
PROCESS FOR MOUNTING TERMINAL MEANS

Lee O. Woods, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 290,574, Sept. 20, 1972. This application Oct. 23, 1973, Ser. No. 408,868
Int. Cl. B32b *31/00;* **H01r** *9/16*
U.S. Cl. 156—293 **12 Claims**



1. A process of mounting a metallic terminal to a generally hollow dielectric housing of an electrical device with electrical components thereof predeterminately disposed within the housing, the housing having a wall with a terminal receiving aperture therethrough and a step raised from an interior floor of the housing with the top of the step extending to the wall adjacent the aperture, the step having a generally planar terminal support surface and a recess in the top of the step between the support surface and the wall, a conduit in the housing between the recess and the housing floor, the terminal having a generally planar surface adapted to be secured atop the terminal support surface, and a tab projecting from the terminal surface, said process comprising the steps of:
a. coating at least a portion of the terminal surface with a thermosetting adhesive;
b. placing the coated terminal surface upon the support surface therefor and extending the tab into the recess;
c. flowing at least a portion of the adhesive from the coated terminal surface toward the aperture into the recess onto

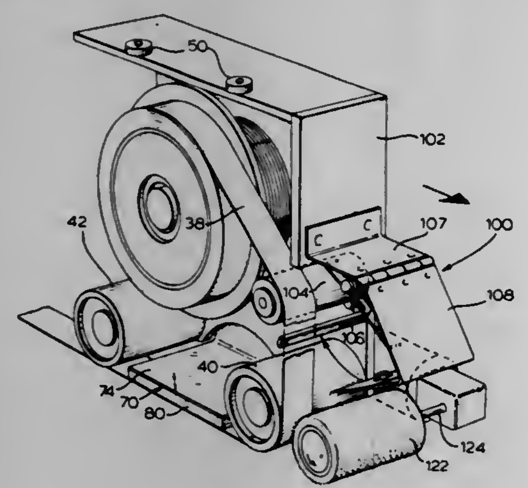
the tab therein and directing excess adhesive into the conduit; and

d. collecting the flow of excess adhesive through the conduit upon the floor of the housing at a location therein predeterminately spaced from the electrical components.

3,871,940
TAPE DISPENSER

Rinaldo Antonioni, Chelmsford, Ontario, Canada, assignor to Andrew A. Hatala, Saint Catharines, Ontario, Canada, a part interest

Filed Nov. 12, 1973, Ser. No. 414,931
Int. Cl. B26d *5/00;* **B32b** *31/00;* **B44c** *7/00*
U.S. Cl. 156—353 **10 Claims**



1. A tape dispenser applicator for dispensing and applying a tape to a ledge projecting outwardly from a substantially planar surface comprising:

a. a body having an upper end and a lower end,

b. a body having means for mounting a tape spool for unwinding rotation thereon with an edge of the spool disposed in an exposed outwardly directed first plane at one side of said body,

c. said body having applicator roller means for guiding and unwinding a tape in an application path with the outer edge of the unwinding tape disposed in said first plane, said applicator guide roller means including at least one applicator roller located at the lower end of said body for receiving and unwinding tape and applying the tape to a ledge in use,

d. spacer means located a substantial distance above the lower end of said body for spacing said first plane outwardly from said planar surface whereby said tape is free to unwind without frictional interference from said planar surface, and

e. pressure plate means mounted on said body rearwardly of said applicator roller for movement with respect to said body toward and away from said ledge to apply a pressure to a portion of an unwinding tape downstream of and adjacent said first applicator roller.

3,871,941
APPARATUS USED IN BONDING A PRECURED TREAD ON A TIRE CASING

Elmer J. Wasko, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

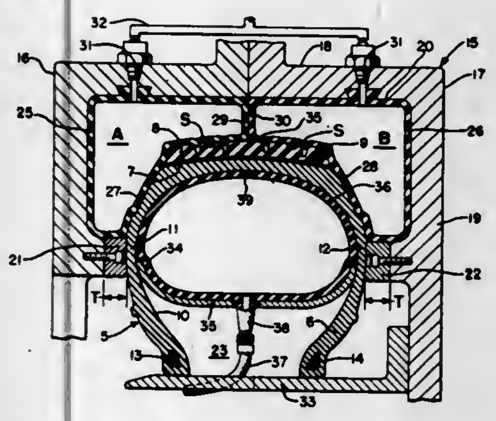
Filed Feb. 14, 1972, Ser. No. 225,781
Int. Cl. B29h *5/04*
U.S. Cl. 156—394 **24 Claims**

1. A mold-like apparatus in which a tire casing with a precured tread is placed for heating and curing an adhesive for bonding the precured tread to the tire casing, comprising in combination:

a. a pair of rigid sections movable relative to each other and, when closed in abutting relation, forming a cavity for receiving a tire casing with a precured tread, each of the sections including a closure plate secured to an outstanding cylindrical casing extending from the plate;

b. a single, rigid, annular stop projecting from each of the sections into the cavity for substantially closing the space between the sections and adjacent sidewalls of a tire in said cavity, the stops being in radially spaced relation from the outstanding cylindrical casings to effect an annular seal with the sidewalls in spaced relation from the juncture of the precured tread and tire casing;

c. a pair of separate, non-communicating, annular chambers for receiving steam, disposed in the sections between the cylindrical casings and stops;



d. a pair of annular, flexible elastomeric diaphragms sealing the steam chambers from the tire cavity formed by the sections, the diaphragms designed to, (I) cover the precured tread and juncture and prevent steam from contacting the tread and juncture, and (II) compress the precured tread against the tire casing when the chambers are filled with steam sufficient to move the diaphragms into contact with the precured tread and juncture;

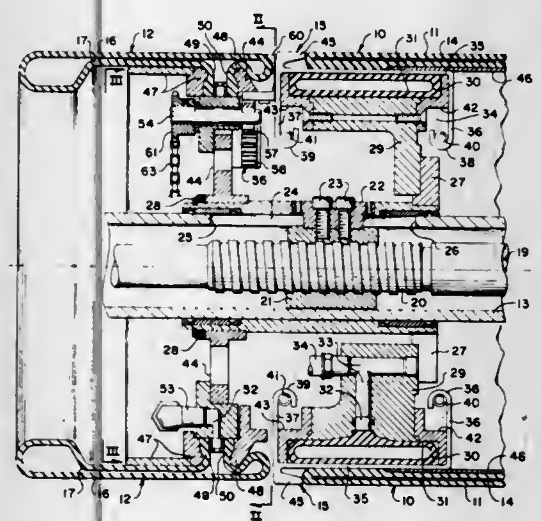
e. means for uniformly filling the chambers with steam; and

f. means for selectively, detachably mounting a plurality of stops with different thicknesses (T) on the closure plates.

3,871,942
PNEUMATIC TIRE CARCASS BUILDING MACHINE HAVING A BEAD LOCK ASSEMBLY AND A METHOD OF USING THE SAME

Virgil E. Henley, and Steve Kovalchik, Jr., both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Sept. 17, 1973, Ser. No. 398,052
Int. Cl. B29h *17/22*
U.S. Cl. 156—400 **1 Claim**



1. A pneumatic tire carcass building machine comprising:

A. a cylindrical drum rotatably mounted on a shaft, said drum adapted for building thereon a tire carcass of rubberized fabric plies;

B. shoulder forming means for forming bead ring receiving shoulders at each side of a rubberized fabric ply disposed on said cylindrical drum;

C. bead setting means for abutting bead rings with bead ring receiving shoulders at each side of a said ply formed by said shoulder forming means disposed exteriorly of said cylindrical drum;

D. turnover means for wrapping edge portions of a said ply disposed on said cylindrical drum about the bead rings abutted by the bead setting means disposed exteriorly of said cylindrical drum; and

E. bead lock means for concentrically positioning the bead rings abutted by the bead setting means while said turnover means wrap edge portions of a said ply disposed on said cylindrical drum around the bead rings to form the bead ring portions of the tire carcass each said bead lock including

  i. at least three bead clamps spaced radially about the shaft of the cylindrical drum to concentrically position, when in preset extended positions, the bead rings while the turnover means wrap said edge portions of a said ply around said bead rings; and

  ii. drive means for simultaneously moving said bead clamps from retracted positions to said preset extended positions said drive means including

    a. a rack and pinion means at each bead clamp with the rack rigidly fastened to the bead clamp,

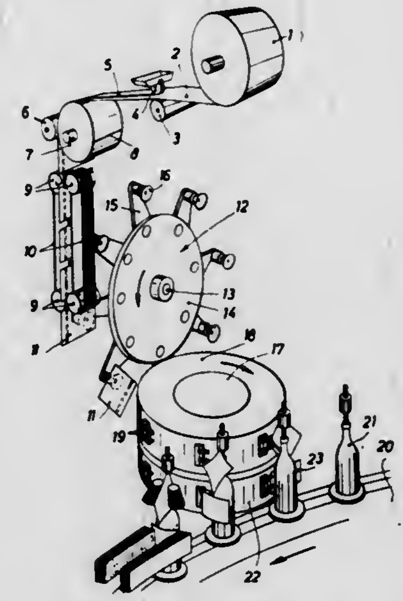
    b. a power train transmission means at each bead clamp fastened to the pinion of said rack and pinion means, and

    c. a hydraulic means to drive said train transmission means and in turn move said bead clamps radially between said retracted positions and said extended positions.

3,871,943
BOTTLE LABELING MACHINE

Rudolf Zodrow, Lichtstr. 37, 4 Dusseldorf, Germany

Filed Nov. 28, 1972, Ser. No. 310,044
Claims priority, application Germany, Dec. 4, 1971, 2160212
Int. Cl. B65c *9/14, 9/18*
U.S. Cl. 156—521 **1 Claim**

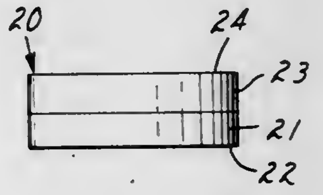


1. In a container labelling machine including a roll of wrapping elements, means for dividing said roll into individual wrapping elements lying in a common plane, means for receiving and applying said individual wrapping elements, and means for conveying containers past said receiving and applying means whereby a wrapping element is applied to each container, the improvement wherein said receiving and applying means includes (a) a plurality of members for gripping respective wrapping elements, each gripping member including a suction member with all of said suction members lying in the common plane of said divided individual wrapping elements, (b) means for rotating said plurality of gripping members continuously about a first axis, (c) means for rotating each of said gripping members about a second axis parallel to but spaced from said first axis after each of said gripping members has gripped its wrapping element, thereby to cause said wrapping element to rotate simultaneously about the first axis and the axis of said gripping member and to change its orientation in its own plane so as to establish a predetermined orientation relative to said containers, the extent of rotation about said second axis determining such orientation, and (d) a rotatable transfer member for bringing said oriented element to a location where said element is picked up by a container as it is moved by said container conveying means, the axis about which said transfer member rotates being perpendicular to said first axis.

3,871,944
INTEGRAL COMPOSITE ELEMENT USEFUL IN ELECTROSTATIC CLUTCH OR BRAKE DEVICES

Mario Dominguez-Burguette, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed June 11, 1973, Ser. No. 368,718
Int. Cl. B32b *1/04;* **F16d** *37/02;* **B32b** *5/16;* **F16d** *69/00;* **B32b** *19/02;* **B60l** *7/10*
U.S. Cl. 161—42 **8 Claims**

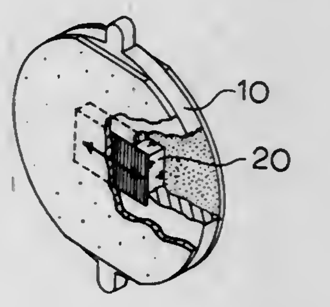


1. An integral composite element having a highly electrically conductive surface and a semiconductive surface, said element being especially suited for use in electrostatic brake or clutch devices, comprising a first layer of bonded particulate semiconductive material and a second layer of bonded particulate highly conductive metal, said metal being solid at room temperature and capable of prolonged exposure to an ambient atmosphere without appreciable reduction in electrical conductance, said particulate semiconductive material and said particulate metal being bonded together with a quantity of thermoset resin sufficient to provide an integral, self-supporting, handleable, rigid article but not sufficient to electrically isolate either the metal particles or the semiconductive particles in their respective layers and at the interface between the layers.

3,871,945
MAGNETICALLY ACTUABLE ELEMENT

Donald Winrow, Weston, Ontario, and Charles Norman Smith, Mississauga, Ontario, both of Canada, assignors to Ferranti-Packard Limited, Toronto, Ontario, Canada

Filed Mar. 12, 1973, Ser. No. 340,109
Int. Cl. B32b *1/04*
U.S. Cl. 161—44 **3 Claims**



1. A plurality of tape layers arranged so that a plurality of

magnetically rotatable thin flat members may be formed therefrom comprising:

- three laminated layers of tape extending longitudinally together,
- with adjacent layers arranged to adhere to each other,
- both said outer tapes being set back from at least one edge of said middle tape,
- a series of magnet apertures in said middle tape spaced longitudinally therealong, and located in that portion of said tape covered on each side by said outer tapes,
- magnets in said apertures magnetizable at a predetermined angle relative to the longitudinal extension direction of the tape,
- a series of cut-out locations in said middle tape, spaced longitudinally therealong and located in that portion of said middle tape, which is exposed on each side, by the set-back of said outer tapes,
- said cut-out locations being so arranged that each magnet aperture is a predetermined bearing and distance from one of said cut-out locations.

3,871,946

NOVEL HIGH TEMPERATURE RESISTANT FABRICS

Eric R. Romanski, Delmar; J. Drew Horn, Kinderhook, and William H. Dutt, Rensselaer, all of N.Y., assignors to Albany International Corporation, Albany, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,431

Int. Cl. B32b *5/02;* **D03d** *19/00*

U.S. Cl. 161—88 **11 Claims**

1. A high temperature resistant open weave fabric which comprises:

in a leno weave,

- i. warp yarns comprising a high temperature resistant polyamide fiber and
- ii. crossover yarns which comprise a high temperature resistant polyamide fiber braided over a core selected from glass fiber, metal wire and mixtures thereof;

said wrap yarns and said crossover yarns of said weave being coated with a high temperature resistant resin selected from polyamides, polyimides, polyamideimides and mixtures thereof.

3,871,947

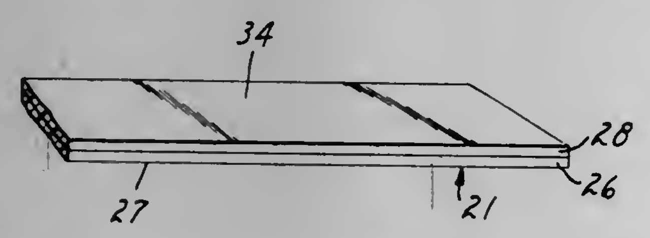
BIAXIALLY ORIENTED POLYETHYLENE TEREPHTHALATE FILM HAVING A SURFACE SUITABLE FOR WRITING THEREON

Roger A. Brekken, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 15, 1973, Ser. No. 323,844

Int. Cl. B32b *3/00, 33/00*

U.S. Cl. 161—116 **9 Claims**



1. An integral heat-set, biaxially oriented composite film comprised of a layer of transparent polyethylene terephthalate having a smooth exposed major surface and an internally transparent copolyester layer having a matte exposed major surface, the copolyester layer having a softening temperature range at least part of which is lower than the melting temperature of said polyethylene terephthalate layer wherein the copolyester layer contains from more than 50 mole percent to less than 90 mole percent ethylene terephthalate and correspondingly from less than 50 mole percent to more than 10 mole percent ethylene isophthalate or ethylene hexahydrophthalate.

4. An integral heat-set, biaxially oriented composite film comprised of a layer of transparent polyethylene terephthalate layer having a smooth exposed major surface and a transparent copolyester layer having an embossed major surface, the copolyester having a softening temperature less than that of said polyethylene terephthalate layer wherein the copolyester layer contains from more than 50 mole percent to less than 90 mole percent ethylene terephthalate and correspondingly from less than 50 mole percent to more than 10 mole percent ethylene isophthalate or ethylene hexahydrophthalate.

6. A pressure-sensitive adhesive tape which is dimensionally stable, strong, tough, water-resistant, has a surface suitable for writing thereon and is transparent when applied to a substrate, comprising, in combination, an integral heat-set biaxially oriented composite film comprised of a layer of transparent polyethylene terephthalate having a smooth exposed major surface and a transparent copolyester layer having a matte exposed major surface and a layer of tacky pressure-sensitive adhesive uniformly covering said smooth exposed major surface wherein the copolyester layer contains from more than 50 mole percent to less than 90 mole percent ethylene terephthalate and correspondingly from less than 50 mole percent to more than 10 mole percent ethylene isophthalate or ethylene hexahydrophthalate.

3,871,948

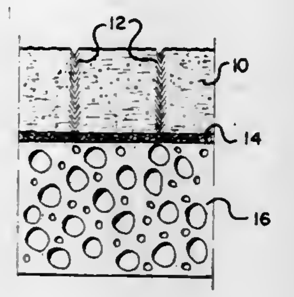
NON-WOVEN CARPET MATERIAL WITH RESILIENT BACKING

Alan H. Norris, Somers, Conn., assignor to Bigelow-Sanford, Inc., New York, N.Y.

Continuation of Ser. No. 130,155, April 1, 1971, abandoned. This application June 22, 1973, Ser. No. 372,634

Int. Cl. B32b *7/04*

U.S. Cl. 161—154 **6 Claims**



1. Carpet material comprising a layer of substantially resilient material having a predetermined height and providing a base support of said carpet material;

- a layer formed of non-woven fibers being vertically intermixed by needling, said layer having a height less than the height of said resilient backing and including top and bottom surfaces;
- each of said top and bottom surfaces being heat fused and thereby leaving interior fibers of said non-woven layer mobile, said bottom surface being attached to said resilient layer, and said top surface forming a non-tufted wear surface of said carpet material.

3,871,949

FERMENTATION CONTROL-CONTAINING LAMINATE

Joseph G. Forest, P.O. Box 29, Waverly, N.Y. 14892, and Edward J. Czarnetzky, Box 88, Chazy, N.Y. 12921

Continuation-in-part of Ser. No. 263,130, June 15, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,307

Int. Cl. C09j ; B32b *29/06, 27/18*

U.S. Cl. 161—165 **19 Claims**

1. A fermentation control-containing laminate for retarding the spoilage of silage and the like and for promoting the production of beneficial acids and bacteria during silage storage, which comprises:

- a. a polyvinylidene chloride resin layer, and
- b. a layer of Kraft paper impregnated with sodium sulfate and malt diastase,
  - said malt diastase being present in an amount of from one to fifty parts by weight per fifty parts by weight of sodium sulfate.

3,871,950

HOLLOW FIBERS OF ACRYLONITRILE POLYMERS FOR ULTRAFILTER AND METHOD FOR PRODUCING THE SAME

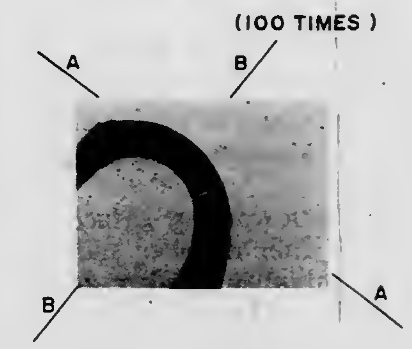
Yasuo Hashino, Matsudoshi; Masatsugu Yoshino, Tokyo; Hitoshi Sawabu, Tokyo, and Tsugio Konno, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 26, 1973, Ser. No. 354,785

Claims priority, application Japan, Apr. 28, 1972, 47-42750; Dec. 29, 1972, 48-1578

Int. Cl. T07g *3/00;* **B01d** *31/00*

U.S. Cl. 161—178 **3 Claims**



1. A hollow fiber of acrylonitrile polymer for ultrafilter, having a water-permeability greater than 0.2 ml/cm^2.min. atm.; said acrylonitrile polymer containing at least 60% by mol of acrylonitrile units; said hollow fiber having a structure consisting of:

1. a reticulate porous region concentric with the central axis of said hollow fiber, the pores of said reticulate porous region being essentially of the same size; said reticulate porous region including therewithin at least one succession of voids concentric with the central axis of said hollow fiber, each void defining a closed cylindrical or revolving ellipsoid shape having a diameter in the direction of its short axis of 10 to 50 μ and a long axis that points essentially toward the central axis of said hollow fibers and a cross-section perpendicular to the long axis that is nearly circular; the lengths of the long axes of said voids being at least two times the diameters of their cross-sections and the diameters of their cross sections being almost equal on the same assumptive cylindrical surfaces whose central axes are the same as the central axis of said hollow fibers, and
2. a gradient-type porous region adjacent to the outer portion of said reticulate porous region or to each of the outer and inner portions of said reticulate porous region and concentric with the reticulate porous region and the central axis of said hollow fiber, the size of pores in the gradient-type porous region having a gradient in that the average size of pores contained in a gradient-type porous region becomes smaller toward the outer surface of said hollow fibers and the average size of pores contained in a gradient-type porous region adjacent the inner portion of said reticulate porous region becomes smaller toward the inner surface of said hollow fibers; the average size of pores in a gradient type porous region decreasing from about 5μ –1μ adjacent the reticulate porous region to about 0.1μ -several A at a surface of said hollow fiber.

3,871,951

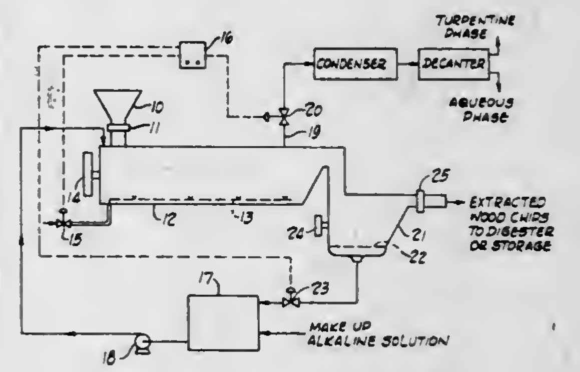
TURPENTINE RECOVERY BY STEAM DISTILLING WOODCHIPS WHILE THEY ARE IMMERSED

John Drew, Jacksonville, Fla., assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 187,160, Oct. 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 853,162, Aug. 26, 1969, abandoned. This application Nov. 1, 1973, Ser. No. 411,641

Int. Cl. D21c *1/02, 1/06*

U.S. Cl. 162—14 **4 Claims**



1. In the recovery of turpentine from a woodpulping process wherein woodchips are digested in an alkaline digestion liquor to yield woodpulp and vaporous products containing turpentine, the improvement which comprises:

- immersing said woodchips prior to digestion to pulp in an aqueous alkaline solution having a normality of alkali metal hydroxide in the range of about 0.20 to about 2.0, said solution being present in an amount sufficient to provide alkali metal hydroxide in the range of about five times to about 200 times the theoretical amount required to neutralize the tall oil acids present in said woodchips; steam distilling from the woodchips while they are immersed prior to digestion a product consisting essentially of turpentine for a sufficient time less than about two hours to liberate at least about 70% by weight of the available turpentine but for a temperature and said time insufficient for digesting said woodchips to woodpulp; and
- condensing the steam distillate and separating and collecting turpentine for the steam distillate, said steam distillate being substantially free of tall oil rosins and soaps;
- the turpentine recovered being substantially free of sulfurous by-products.

3,871,952

MANUFACTURE OF NON-WOVEN FIBROUS MATERIAL FROM A FOAMED FURNISH

Neil George Douglas Robertson, Marlow, England, assignor to Wiggins Teape Research & Development Limited, London, England

Filed Apr. 6, 1973, Ser. No. 348,596

Claims priority, application United Kingdom, Apr. 7, 1972, 16210/72; Mar. 30, 1973, 15344/73

Int. Cl. D21d *3/00*

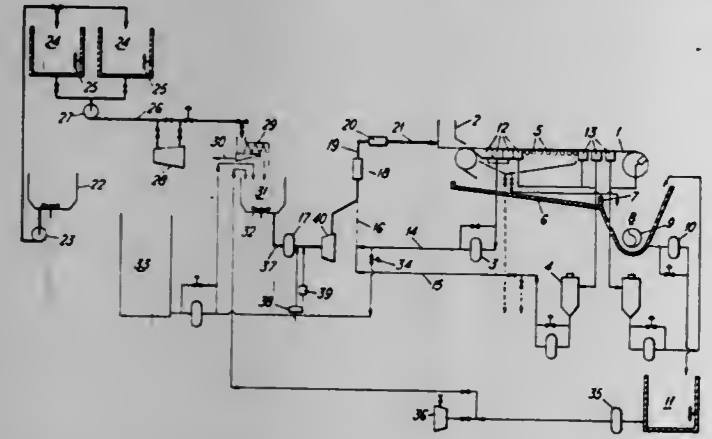
U.S. Cl. 162—101 **4 Claims**

1. A process for manufacturing a non-woven fibrous material from a foamed fiber dispersion fed to a foraminous support from a foaming device wherein the amount of surface active agent required is reduced, the process comprising:

- establishing an air/water/fibers/surface active agent mixture provided by a mixer;
- delivering said mixture to a closed foaming device and effecting foaming thereof by the creation of turbulence without the use of moving mechanical means to establish said foamed fiber dispersion;
- feeding said foamed fiber dispersion to said foraminous support;

recovering, by vacuum draining through vacuum box means, a major part of the liquid, generally in a foamed condition, from said foamed fiber dispersion on said foraminous support;

recirculating said liquid so recovered generally in a foamed condition directly from said vacuum box means to said mixer;



introducing into said mixer, together with said recirculated liquid, fibers, water and metered quantities of air and make-up surface active agent;

directing the contents of said mixer to said foaming device; and

repeating said feeding, recovering, recirculating, introducing and directing steps.

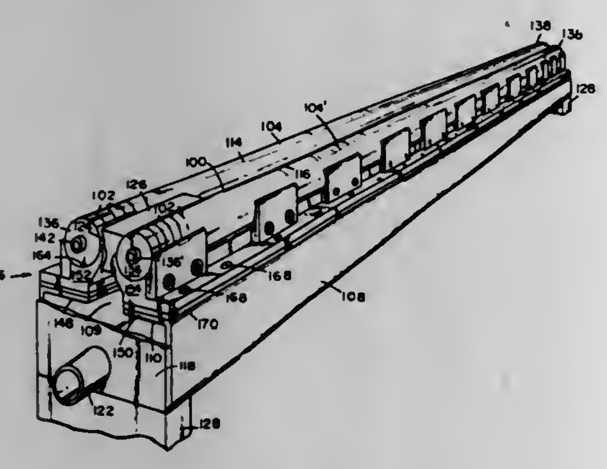
3,871,953
PAPERMAKING SYSTEM INCLUDING A FLEXIBLE CERAMIC MEMBER HAVING A PRE-LOADED TENSILE FORCE APPLYING MEANS

Charles A. Lee, Knoxville, and Robert F. Hunt, Concord, both of Tenn.

Continuation-in-part of Ser. Nos. 273,027, July 19, 1972, abandoned, and Ser. No. 273,307, July 19, 1972, abandoned, and Ser. No. 377,893, July 10, 1973, abandoned. This application Mar. 28, 1974, Ser. No. 455,678

Int. Cl. D21f *1/48;* **D21g** *3/00*

U.S. Cl. 162—274 13 Claims



1. In a papermaking system including at least two members one of which is movable relative to the oter and in frictional engagement therewith, and in which system at least one of said members is subjected to deflection, the improvement wherein said latter member comprises

an elongated flexible assemblage including a plurality of ceramic segments, each having at least two opposite surfaces that are substantially flat and parallel, said segments being aligned with their flat faces in abutting face-to-face relation and in respective planes that are oriented substantially perpendicular to the composite length of said plurality of segments,

tension means extending between opposite ends of said assemblage and forcing said segments toward each other in a direction along their composite length and substantially perpendicular to their respective parallel faces with a preload force on said tension means, when said latter member is in an undeflected condition, that is at least the force calculated by the equation:

$$P=[(E_cA_c)(8dh/l^2+4d^2)/2\,(L)]+[(\alpha_s-\alpha_c)\,\Delta T]/[(1/A_sE_s)+(1/A_cE_c)]$$

where:

P is the preload of said tension means, in pounds;

E_c is the modulus of elasticity of the ceramic material;

A_c is the cross-sectional area of a ceramic segment in a plane perpendicular to the composite length of said assemblage, in square inches;

d is the maximum anticipated deflection of said assemblage, in inches,

h is the dimension of a ceramic segment in the plane perpendicular to the composite length of said assemblage and in alignment with the direction of said deflective force, in inches;

l is the overall length of said assemblage;

α_s is the coefficient of thermal expansion of said tension means;

α_c is the coefficient of thermal expansion of said ceramic; ΔT is the degrees of temperature change anticipated, in degrees F.;

A_s is the cross-sectional area of said tension means;

E_s is the modulus of elasticity of said tension means, and

L is the length of a ceramic segment, in inches,

but less than the amount of force which will compress said ceramic to over about one-half of its maximum compressive strength,

an elongated smooth working surface extending along the length of said latter member and defining an area of contact with said other member, and

means supporting said latter member relative to said other member with its longitudinal dimension oriented generally transversely of the direction of relative movement of said members whereby loading forces exerted upon said latter member are directed thereagainst in a direction substantially perpendicular to the longitudinal dimension thereof and deflection of said latter member pursuant to such loading forces is compensated for in said compressed segments by further compression of said segments in those portions of the abutting faces thereof disposed along the inside of the line of curvature of said latter member and by relief of less than all of the compression in those portions of said abutting faces that are disposed along the outside of said line of curvature of said member without physical separation of said segments at their abutting faces.

3,871,954
CELL LINES AND VIRUS CULTURE

Arie Jeremy Zuckerman, London, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 62,607, Aug. 10, 1970, abandoned. This application Jan. 4, 1974, Ser. No. 430,918

Claims priority, application Great Britain, Aug. 22, 1969, 42062/69

Int. Cl. C12k *9/00*

U.S. Cl. 195—1.1 4 Claims

1. A virus cultivation process which comprises maintaining a viable culture of cells derived from the human embryo liver cell line designated by A.T.C.C. Number CL.99 in a synthetic nutrient culture medium, inoculating the culture with a virus to which the cells are susceptible and cultivating the virus in the culture.

3,871,955
PROCESS FOR AUTOMATED PRODUCTION OF SYNCHRONOUS MAMMALIAN CELLS

Robert R. Klevecz, 227 Bettyhill Dr., Duarte, Calif. 91010

Filed May 14, 1973, Ser. No. 360,047

Int. Cl. C12k *9/00*

U.S. Cl. 195—1.8 9 Claims

1. A process for automated production of synchronous mammalian cells, comprising:

adding a suitable medium to a series of roller bottles in a roller apparatus;

incubating the medium;

subculturing the medium with mammalian cells;

allowing growth of the cells for about 24 hours;

initiating turning of the roller bottles by automatic controllers at a speed sufficiently slow to prevent detaching said cells;

speeding up the turning of the roller bottles by automatic controllers to a speed sufficient to detach rounded mitotic cells;

removing the detached rounded mitotic cells from the roller bottles;

collecting the detached rounded mitotic cells in a manifold; and

discharging said cells into a growth flask through a valve.

3,871,956
MICROBIAL DEGRADATION OF PETROLEUM

Edward N. Azarowics, Vienna, Va., assignor to Bioteknika International Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 43,226, June 3, 1970, Pat. No. 3,769,164. This application Feb. 20, 1973, Ser. No. 333,707

Int. Cl. C12b *1/00*

U.S. Cl. 195—2 12 Claims

1. A process for the microbial degradation of aqueous polluting petroleum and oily wastes which comprises treating the petroleum or oily waste with at least one microorganism selected from the group consisting of *Nocardia corallina* ATCC 21504, *Nocardia globerula* ATCC 21505; *Nocardia globerula* ATCC 21506, *Nocardia opaca* ATCC 21507, *Nocardia rubra* ATCC 21508 and *Nocardia paraffinae* ATCC 21509, and mutants thereof, in an aqueous system for a sufficient time until the treated petroleum oily waste has been substantially degraded.

3,871,957
USE OF MICROORGANISMS TO DISPERSE AND DEGRADE OIL SPILLS

Raam R. Mohan, Berkeley Heights; George H. Byrd, Jr., Red Bank; James Nixon, Westfield, and Edward R. Bucker, Cranford, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 9, 1973, Ser. No. 358,640

Int. Cl. C12b *1/100*

U.S. Cl. 195—2 6 Claims

1. A method for protecting beaches and shorline solid surfaces against oil contamination, said method comprising the steps of pretreating said beach or shoreline solid surface with a water slurry said water slurry prepared by admixing mutually compatible microorganism cells, said microorganism cells being selected from the group consisting of Arthrobacter, Micrococcus and Achromobacter, and mixtures thereof, with an inert absorbent substance; drying said mixture at a room temperature ranging from 25° to 55°C so as to form an anhydrous powder, reconstituting said anhydrous powder with an aqueous phase so as to generate a slurry thereby maintaining the viability and biological activity of the microorganism and coating said beach or shoreline solid surface with said aqueous slurry of viable mutually compatible microorganism cells.

3,871,958
BIOLOGICAL METHOD OF PRODUCING SERINE AND SERINOL DERIVATIVES

Hidetsugu Nakazawa, Kawasaki; Hitoshi Enei, Zushi; Koji Kubota, Kawasaki, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

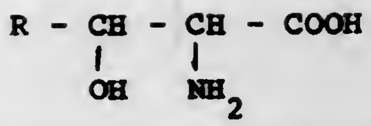
Filed Feb. 28, 1973, Ser. No. 336,808

Claims priority, application Japan, Mar. 4, 1972, 47-22650; Apr. 13, 1972, 47-37296

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 10 Claims

1. A method of producing a serine derivative of the formula



$$\mathrm{R-\underset{\displaystyle OH}{\underset{|}{CH}}-\underset{\displaystyle NH_2}{\underset{|}{CH}}-COOH}$$

which comprises reacting an aldehyde of the formula R-CHO with glycine in aqueous solution in the presence of an effective amount of a source of an enzyme capable of condensing glycine and the aldehyde at pH 5 to 10 at 5° to 60°C until said serine derivative is formed, and recovering said serinc derivative from said solution; in said formulas, R being an organic radical having at least two carbon atoms, said enzyme source being a member of the group consisting of intact and comminuted cells of Escherichia, Citrobacter, Klebsiella, Aerobacter, Serratia, Proteus, Bacillus, Staphylococcus, Arthrobacter, Bacterium, Xanthomonas, Candida, Debaryomyces, Corynebacterium, and Brevibacterium, broth in which said cells have been cultivated, and an extract of said cells.

3,871,959
FERMENTATIVE PRODUCTION OF D-ALANINE

Ichiro Chibata; Shigeki Yamada, both of Osaka; Mitsuru Wada, Nara; Haruko Maeshima, Osaka, and Nobuhiko Izuo, Yamatotakada, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed July 17, 1973, Ser. No. 379,956

Claims priority, application Japan, July 28, 1972, 47-76329

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 19 Claims

1. A process for producing D-alanine which comprises cultivating a *Corynebacterium fascians* ATCC No. 21950 in an aqueous nutrient medium under aerobic conditions to produce a fermentation broth, and recovering D-alanine from the fermentation broth.

3,871,960
METHOD OF PRODUCING L-LYSINE BY FERMENTATION

Koji Kubota; Yasuhiko Yoshihara, both of Kawasaki, and Hiroshi Okada, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,552

Claims priority, application Japan, Oct. 9, 1972, 47-101446

Int. Cl. C12d *1/00*

U.S. Cl. 195—29 4 Claims

1. A method of producing L-lysine which comprises:

a. culturing a lysine-producing strain of Corynebacterium under aerobic conditions in an aqueous medium containing assimilable sources of carbon and nitrogen, inorganic salts and organic substances required for the growth of said strain at pH 5 to 9 until L-lysine accumulates in said medium; and

b. recovering the accumulated lysine from said medium,
   1. said strain being resistant to feedback inhibition by 1 mg/ml S-(2-aminoethyl)-L-cysteine,
   2. the growth of said strain being severely inhibited during 24 hours cultivation on a minimal medium when said minimal medium is supplemented with 0.1 millimole per liter methionine, and
   3. the inhibition of said growth by said methionine not being overcome by addition of L-threonine in any amount up to 100 millimole per liter.

3,871,961
METHOD FOR ACCELERATING THE GROWTH AND INCREASING THE YIELD OF MICROORGANISMS

Matilde Gianessi, Via Baldissera 2, Milan, Italy

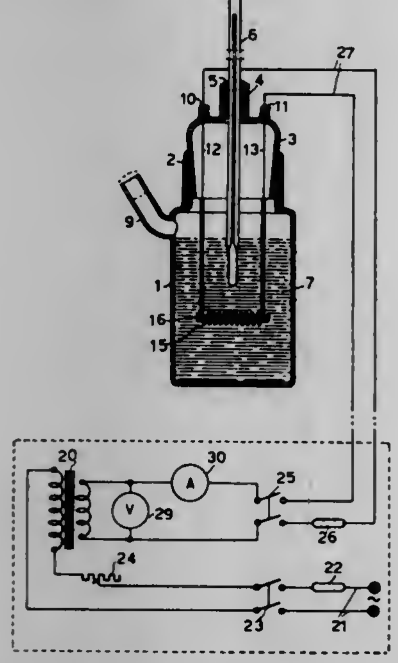
Filed Mar. 15, 1973, Ser. No. 341,792

Int. Cl. C12b *1/22*

U.S. Cl. 195—37 4 Claims

1. A method for accelerating the growth of the microorganism Penicillum Widemanni, comprising establishing a liquid culture medium of said microorganism, immersing a coil com-

prising a few dozens of insulated turns of electrically conductive material in said culture medium, passing through said coil an alternating current having a voltage of 1 and an amperage of 1.8, and maintaining said coil immersed in said medium, with said current passing therethrough for a period of time sufficient to achieve the growth of a substantial quantity of said microorganism.



3,871,962
PENICILLIN ACYLASE

Carl Kutzbach, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 16, 1972, Ser. No. 297,856

Claims priority, application Germany, Oct. 14, 1971, 2151236; Apr. 13, 1972, 2217745

Int. Cl. C07g *7/02*

U.S. Cl. 195—62 **32 Claims**

1. A process for the purification of penicillin acylase from penicillin acylase producing bacteria, initially in the form of a solution, comprising sorbing the penicillin acylase on an aluminosilicate to produce a sorbate, separating the sorbate from the solution, and eluting the penicillin acylase from the sorbate to produce a second, purer, solution of penicillin acylase.

3,871,963
MICROBIAL PROTEASE AND PREPARATION THEREOF

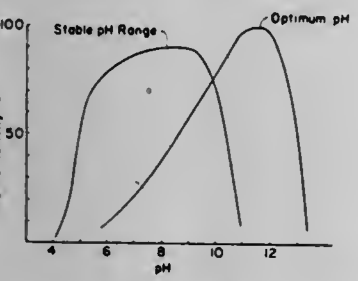
Sadanobu Tobe, Tokyo; Yoshiteru Hirose, Yokohama; Yoshihiro Nakamura, Tokyo, and Koji Mitsugi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 13, 1973, Ser. No. 340,841

Claims priority, application Japan, Mar. 18, 1972, 47-27973

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **2 Claims**



1. A method of producing a protease having optimum pH between 11 and 12 and being stable at pH 5.5 to 9.0 when heated 30 minutes to 50℃ in an aqueous medium which comprises:

a. culturing the gram-positive, asporogenous strain Bacillus sp. FERM P-1396 in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen, inorganic salts, and minor organic nutrients until a significant amount of said protease is accumulated in said medium; and

b. recovering the accumulated protease from said medium.

3,871,964
WATER-INSOLUBLE PEPTIDE MATERIALS

Fritz Huper; Erich Rauenbusch; Gunter Schmidt-Kastner, all of Wuppertal; Bruno Bomer, Leverkusen, and Herbert Bartl, Odenthal-Hahnenberg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 27, 1973, Ser. No. 345,452

Claims priority, application Germany, Mar. 30, 1972, 2215687

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **31 Claims**

1. A water-insoluble preparation comprising dn enzyme or polypeptide enzyme inhibitor bound to a crosslinked copolymer comprising the following copolymerized units:

A. about 0.1 to 30 wt.% of at least one α,β-monoolefinically unsaturated dicarboxylic acid anhydride having 4 to 9 carbon atoms;

B. about 35 to 90 wt.% of at least one di- and/or poly(meth) acrylate of a diol and/or a polyol; and

C. about 5 to 60 wt.% of at least one hydrophilic monomer containing a carboxyl, aminocarbonyl, sulfo or sulfamyol group.

3,871,965
PRODUCTION OF RIFAMYCIN B

Richard J. White, Como, and Giancarlo Lancini, Pavia, both of Italy, assignors to Gruppo Lepetit S.p.A, Milan, Italy

Filed Apr. 26, 1973, Ser. No. 354,811

Claims priority, application Italy, May 5, 1972, 23926/72

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **1 Claim**

1. In a fermentation process for the production of rifamycin B, the improvement which comprises fermenting under aerobic conditions and in the absence of barbiturate a fermentation medium consisting essentially of an assimilable carbon source, an assimilable nitrogen source and essential mineral salts with a mutant identified as *Streptomyces mediterranei M* 18 ATCC 21789 until the fermentation medium shows substantial antibiotic activity, and recovering rifamycin B from the fermentation medium.

3,871,966
PROCESS FOR THE PRODUCTION OF ANTIBIOTICS

Carmine Renato Pasqualucci, Milan, and Giuseppe Zucco, Rovereto, both of Italy, assignors to Arckifar Industrie Chimiche Del Trentino S.p.A., Rovereto, Trento, Italy

Filed Oct. 12, 1973, Ser. No. 405,829

Claims priority, application Italy, Nov. 29, 1972, 32248/72

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **1 Claim**

1. A process for producing Rifamycin B, comprising:

cultivating the mutant known as Streptomyces G 5/A capable of high productivity, in a buffered nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic conditions.

3,871,967
SYNTHETIC NUTRIENT MEDIUM FOR MICROORGANISMS AND METHOD OF USE

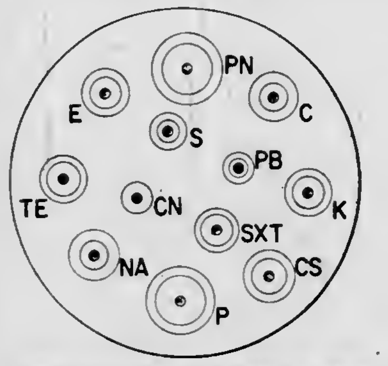
Mohamed Abdou, and Karl Buchta, both of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

Filed Jan. 11, 1974, Ser. No. 432,546

Int. Cl. C12b *3/02, 3/12*

U.S. Cl. 195—100 **3 Claims**

1. A nutrient medium composition for microorganisms, in particular for germs which cause urinary tract infections, consisting essentially of water and about 0.25 to 1 gm of L-arginine, 0.5 – 2 gm of L-asparaginic acid, 0.25 – 1 gm of L-cysteine, 1 – 4 gm of L-glutaminic acid, 0.1 – 0.4 gm of glycocoll, 0.15 – 0.6 gm of L-histidine, 0.4 – 1.6 gm of L-leucine, 0.25 – 1 gm of L-isoleucine, 0.2 – 1.3 gm of L-lysine, 0.15 – 0.6 gm of L-methionine, 0.15 – 0.6 gm of L-phenylalanine, 0.2 – 0.8 gm of L-proline, 0.2 – 0.8 gm of L-threonine, 0.05 – 0.2 gm of L-tryptophane, 0.2 – 0.8 gm of L-tyrosine, 0.5 – 2 gm of L-valine, 1.5 – 6 gm of sodium-chloride, 0.15 – 0.6 gm of potassium chloride, 0.5 – 2 gm of anhydrous sodium acetate, 0.5 – 2 gm of sodium pyruvate, 3 – 12 gm of sodium glycerophosphate pentahydrate, 0.025 – 0.1 gm of magnesiumsulfate heptahydrate, 0.005 – 0.02 gm of adenine, 0.005 – 0.02 gm of guanine, 0.005 – 0.02 gm of uracil, 1 – 4 gm of D-glucose, 0.005 – 0.02 gm of inosite, 0.005 – 0.02 gm of choline chloride, 0.005 – 0.02 gm of nicotinic acid amide, 0.005 – 0.02 gm of thiamine hydrochloride, 0.0005 – 0.002 gm or riboflavin, 0.003 – 0.012 gm of pyridoxin hydrochloride, 0.005 – 0.02 gm of calcium pantothenate, 0.005 – 0.02 gm of folic acid, 0.0001 – 0.0004 gm of biotin, 0.0025 – 0.01 gm of p-nitrophenylpropanetriol, 0.05 – 0.2 gm of pimaricin per liter of water, as well as a quantity of dilute aqueous sodium hydroxide dilution necessary for adjusting the pH of the composition to 7.2, and optionally a quantity of agar (free from germ growth inhibiting or antimicrobial agent antagonizing substances) necessary for solidification of the nutrient medium.



TEMPLATE >1X 10^5–1X10^6 GERMS/ml URINE

3,871,968
MULTISTAGE EVAPORATORS

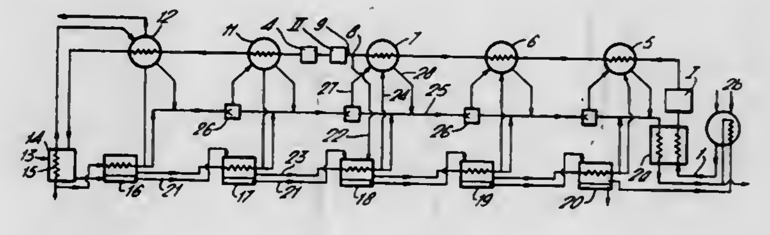
Frank Chiltern Wood, Broadstone, and Allan Barker, Chester, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 16, 1973, Ser. No. 351,546

Claims priority, application Great Britain, Apr. 21, 1972, 18703/72

Int. Cl. B01d *1/26;* **C23f** *17/00*

U.S. Cl. 202—173 **8 Claims**



1. A multistage evaporator plant comprising an inlet for feed liquid, a chain of liquid preheaters interconnected with one another and with the inlet by pipe connections, a feed liquid heater, a number of evaporator compartments interconnected in series, conduits for communicating the chain of liquid preheaters with the heater inlet and for communicating the heater outlet with an evaporator compartment, said pipe connections including a branch pipe connected to bypass the heater and direct feed liquid to one of the evaporator compartments, a high temperature scale inhibiting treatment plant, pipe work connected to the high temperature scale inhibiting additive plant and a portion in the preheater chain between the branch pipe and the heater, and a low temperature scale inhibiting treatment plant for treating at least the feed liquid bypassing the heater.

3,871,969
APPARATUS FOR PURIFYING HF

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Divlsion of Ser. No. 203,768, Dec. 1, 1971,. This application Oct. 23, 1973, Ser. No. 409,017

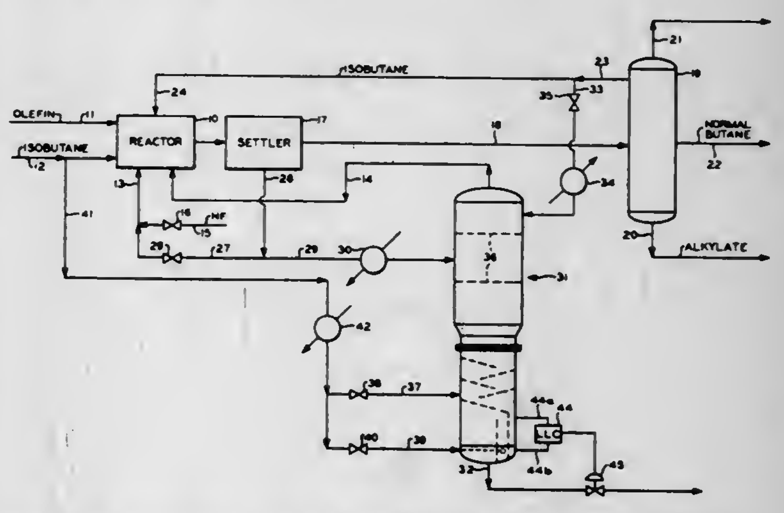
Int. Cl. B01d *3/06, 3/24*

U.S. Cl. 202—234 **7 Claims**

1. Apparatus adapted for use in purifying an HF stream by removing acid soluble oil therefrom comprising:

an elongated upright vessel having first vapor-liquid contacting means in the upper region thereof and second vapor-liquid contacting means in the lower region thereof; an inclined transverse baffle means defining the lower extremity of said second vapor-liquid contacting means, said inclined baffle having at least one opening in the upper portion thereof to permit vapor to flow upwardly therethrough;

a first generally vertical baffle extending across the bottom of said vessel below said second contacting means and cooperating with said inclined baffle to direct liquid flowing downwardly from said second contacting means to a first zone defined between said first baffle and the side of the vessel located in the bottom of said vessel, said first baffle defining an opening at the lower end thereof;



a second generally vertical baffle extending across the bottom of said vessel in spaced relationship with said first baffle and generally parallel thereto so that liquid can flow from said first zone through said opening at the lower end of said first vertical baffle into a second zone defined between said first and second baffles and then upwardly between said baffles and over said second baffle to a third zone located in the bottom of said vessel; and a sparger having a plurality of openings therein positioned in the lower portion of said second zone between said baffles to permit introduction of a stripping vapor between said baffles, said vessel being provided with a first outlet at the top thereof to permit removal of a purified HF containing stream, a first inlet above said first contacting means to permit introduction of a reflux liquid, a second inlet in said upper region to permit introduction of a feed stream, and a second outlet communicating with said second zone to permit removal of acid soluble oil.

3,871,970
WORKING UP HYDROFORMYLATION MIXTURES

Hans Juergen Nienburg, Ludwigshafen, and Rudolf Kummer, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Aug. 30, 1972, Ser. No. 284,759

Claims priority, application Germany, Sept. 11, 1971, 2145532

Int. Cl. B01d *3/34*

U.S. Cl. 203—6 **2 Claims**

1. A process for working up by distillation a hydroformylation mixture obtained by reaction of an olefin of three to

twenty carbon atoms with carbon monoxide and hydrogen at a temperature of from 140° to 220°C and at a pressure of from 30 to 300 atmospheres in the presence of a cobalt, rhodium, ruthenium or iridium carbonyl complex which has been modified with a tertiary organic phosphine wherein the organic portion is selected from the group consisting of alkyl of one to thirty carbon atoms, cycloalkyl of five to twelve carbon atoms, aralkyl of seven to ten carbon atoms and aryl of six to ten carbon atoms as a substituent, said mixture containing from 60 to 70 percent by weight of produced aldehyde and alcohol containing one more carbon atom than the olefin used, from 15 to 30 percent by weight of the acetal of the aldehyde and alcohol produced and esters of said alcohol, and from 2 to 6 percent by weight of metal carbonyl complex and tertiary phosphine, wherein a fatty acid having three to ten carbon atoms is added to the hydroformylation mixture after the separation therefrom of excess carbon monoxide and hydrogen, and the resultant hydroformylation mixture is then distilled in the presence of the added fatty acid.

3,871,971

EXTRACTIVE RECOVERY OF A MANGANESE ACETATE CATALYST FROM RESIDUE RECOVERED FROM DISTILLATION OF AN ACETIC ACID FEED PRODUCED BY THE OXIDATION OF ACETALDEHYDE

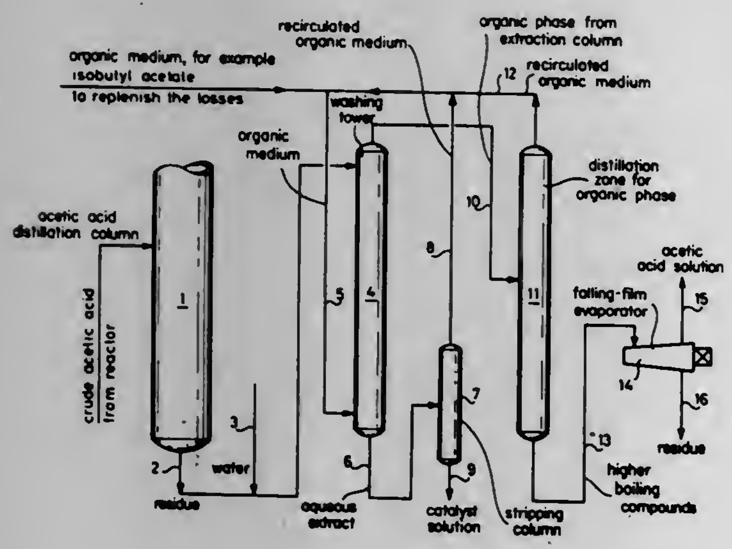
Helmut Schaum, Bad Oden/Taunus, and Helmut Gossel, Frankfurt/Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Oct. 26, 1972, Ser. No. 301,175

Claims priority, application Germany, Oct. 28, 1971, 2153767

Int. Cl. B01d *11/00*

U.S. Cl. 203—43 **3 Claims**


recirculated organic medium
organic phase from extraction column
organic medium, for example isobutyl acetate
to replenish the losses
12
recirculated organic medium
washing tower
organic medium
distillation zone for organic phase
acetic acid distillation column
10
8
acetic acid solution
crude acetic acid from reactor
1
5
4
11
falling-film evaporator
15
14
3
7
16
13
2
water
6
9
residue
higher boiling compounds
residue
aqueous extract
catalyst solution
stripping column

1. A process for the manufacture of acetic acid comprising the steps of:

1. oxidizing acetaldehyde in a mixture containing a manganese acetate catalyst and thereby forming a mixture of acetic acid, acetaldehyde, manganese acetate and other higher and lower boiling components;
2. passing the mixture formed in 1 to a distillation zone and removing therefrom an overhead product comprising acetaldehyde, acetic acid and lower boiling components and a bottoms stream comprising manganese acetate and higher boiling components;
3. contacting said bottoms stream, in a liquid-liquid extraction zone with water and with a substantially water immiscible, organic liquid in which said higher boiling components are soluble, and thereby extracting the said manganese acetate in water solution and extracting said higher boiling components in said organic liquid.

3,871,972

ELECTRORECORDING SHEET

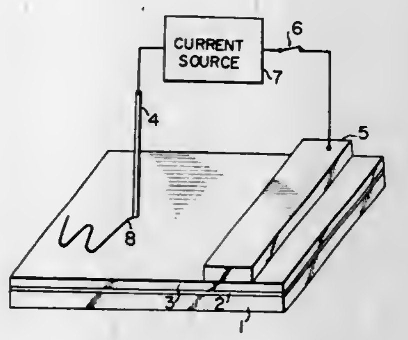
Yoichi Sekine, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1973, Ser. No. 320,821

Claims priority, application Japan, Mar. 24, 1972, 47-30088

Int. Cl. B41m *5/20;* **G01d** *15/34*

U.S. Cl. 204—2 **10 Claims**



1. An electro-recording sheet having an electroconductive layer of cuprous iodide which has a surface resistivity of less than $10^6\Omega$ at a temperature of 20°C and a relative humidity of 65 percent and a color forming layer provided in contact with said electroconductive layer and which forms a mark due to selective color formation or color change in the parts of said color formation layer to which electric current is applied through said electroconductive layer.

3,871,973

ELECTROPLATING OF IRON AND COATING SUBSTRATES WITH AN IRON-ALUMINUM COATING

Frederick William Topham, Deeside, Wales, assignor to British Steel Corporation, London, England

Filed June 4, 1973, Ser. No. 366,760

Claims priority, application United Kingdom, June 20, 1972, 28775/72

Int. Cl. C23b *5/04, 5/52, 5/58*

U.S. Cl. 204—28 **13 Claims**

1. A method of forming a coating on a substrate comprising an electroplating step utilizing a cathodic current density in the range of approximately 150–500 amps per square foot while employing an acidic, aqueous electroplating bath containing an additive which is selected from the group consisting of citrates and citric acid, the citrate ion concentration in the bath being in the range of approximately 2–32 grams per litre and the rest of the bath being made up of an electrolyte which is selected from the group consisting of ferrous chloride and ferrous sulphate and which contains approximately 50–150 grams per litre of ferrous iron, with iron being periodically added to the bath at a rate sufficient to reduce substantially all the ferric citrate formed therein by aeration.

2. A method as claimed in claim **1** in which the method is employed to provide a ferrous substrate with a coating of metallic iron.

3. A coating method as claimed in claim **2** further including the steps of:

A. wetting the iron coating with an aqueous alkali metal silicate solution,

B. coating the wetted iron coating with a layer of aluminum powder which forms an alloy with the substrate when heat treated at a temperature within the range of 500°–650°C,
C. compacting the aluminum powder layer and the iron coating to the surface of the substrate at a temperature at which sintering will not occur during the compaction, and
D. heat-treating the compacted substrate at a temperature within the range of 500°–650°C to sinter and bond the aluminum particles to each other and to the substrate.

5. A method as claimed in claim **2** in which the ferrous substrate is passed through the bath during plating.

3,871,974

ALKALINE BRIGHT ZINC PLATING

Joseph R. Duchene, Southfield, Mich., and Phillip J. DeChristopher, Chicago, Ill., assignors to The Richardson Chemical Company, Des Plaines, Ill.

Filed Sept. 24, 1973, Ser. No. 400,240

Int. Cl. C23b *5/10, 5/46*

U.S. Cl. 204—55 R **27 Claims**

1. A bright zinc, cyanide free electroplating bath comprising an aqueous alkaline solution containing a source of zinc ions, from about 0.1 to about 5 grams per liter of a brightener containing a carbonyl group of aldehyde functionality, from about 0.01 to about 0.2 grams per liter of a heterocyclic compound selected from the group consisting of a 2-mercapto substituted pyridine or pyrimidine and from about 0.25 to about 5 grams per liter of a quarternary salt of a polymeric condensate of an alkylene polyamine having at least one tertiary amino group and an epihalohydrin wherein the mol ratio of the polyamine to the epihalohydrin ranges from about 0.5:1 to 1.75:1, respectively.

3,871,975

ELECTROLYTIC PROCESS FOR PRODUCTION OF PERFLUOROCYCLOHEXANE DERIVATIVES

Shunji Nagase, 13-1, Aza-Shikannonmichi-Nishi, Tashiro-cho, Chigusa-ku; Hajime Baba, 34-140, Aza-Togasama, Ohaza-Inokoishi, Idaka-cho, Chigusa-ku; Kazuo Kodaira, 1. Hirate-cho, 1 chome, Kita-ku; Takashi Abe, 34-140, Aza-Togasama, Ohaza-Inokoishi, Idaka-cho, Chigusa-ku, and Michimasa Yonekura, 19, Shinike-cho, 1 chome, Chigusa-ku, all of Nagoya, Japan

Filed Mar. 12, 1973, Ser. No. 340,602

Claims priority, application Japan, June 1, 1972, 47-54698

Int. Cl. B01k *3/00*

U.S. Cl. 204—59 F **4 Claims**

3. The process according to claim 1 wherein the electrolized solution contains a member selected from the group consisting of benzotrifluoride, bis(trifluoromethyl) benzene, and p-chlorobenzotrifluoride.

3,871,976

ELECTROCHEMICAL ADIPONITRILE PROCESS

John F. Connolly, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 10, 1973, Ser. No. 395,720

Int. Cl. C07b *29/06;* **C07c** *121/02, 121/26*

U.S. Cl. 204—73 A **10 Claims**

1. The process for the electrochemical hydrodimerization of acrylonitrile to adiponitrile in an electrochemical cell containing acrylinitrile dissolved in an aqueous-electrolyte, wherein ammonia is added to the cell and oxidized at or near the anode.

3,871,977

ELECTROLYTIC PROCESS FOR THE MANUFACTURE OF ALPHA-KETOGLUTARATE ESTERS

Charles J. V. Scanio, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed June 7, 1974, Ser. No. 477,491

Int. Cl. C07b *3/00;* **B01k** *1/00*

U.S. Cl. 204—78 **6 Claims**

1. A continuous process for producing a mixture of δ-monoesters and diesters of α-ketoglutaric acid and the corresponding ketals thereof which comprises electrolysis of a solution of 2-furoic acid in alcoholic solvent containing acid catalyst at a concentration of from about 0.01 to 1 mole per liter, wherein said alcoholic solvent is an alkanol of from about one to five carbon atoms, and wherein said acid catalyst is a reaction inert acid of pK_a less than about 2.5, and continuing said electrolysis until a substantial amount of said mixture of esters and ketals of α-ketoglutaric acid is formed.

3,871,978

PROCESS FOR THE PRODUCTION OF HIGH-PURITY METALS FROM NICKELIFEROUS MATTES

Louis Gandon, Rambouillet, and Robert Lemarinel, Elancourt, both of France, assignors to "Le Nickel", Paris Cedex, France

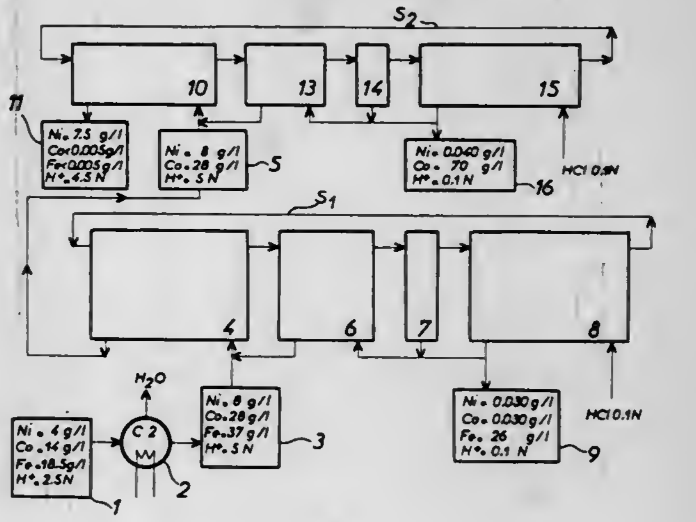
Filed Nov. 28, 1973, Ser. No. 419,533

Claims priority, application France, Dec. 1, 1972, 72.42776

Int. Cl. C22d *1/14;* **C22b** *23/04*

U.S. Cl. 204—113 **11 Claims**

1. In a method for producing high-purity nickel from pure nickel matte containing cobalt and other impurities comprising successively the following steps: (a) communiting and roasting said impure matte at a temperature of about 900°C to obtain impure nickel oxide; (b) dissolving this impure nickel oxide in concentrated hydrochloric acid; (c) oxidizing to the ferric state the iron which is contained in the impure solution resulting from the preceding step; (d) removing the impurities from this solution by means of ion-exchange resin to produce a purified nickel chloride solution and selectively eluting said impurities to recover a cobalt chloride solution; and (e) subjecting the purified nickel chloride solution to an electrolysis to recover high-purity nickel; the improvement according to which said ion-exchange resin containing said impurities is eluted by means of approximately decinormal hydrochloric acid, the eluate obtained is concentrated and then placed in contact consecutively with a first organic solvent to extract iron and a second organic solvent to extract cobalt to produce a pure nickel chloride solution, the first organic solvent is washed, decanted and then subjected to an iron re-extraction operation to produce a solution rich in iron, and the second organic solvent is washed, decanted and then subjected to a cobalt re-extraction operation to produce a purified cobalt chloride solution.


S2
10
13
14
15
11
Ni. 7.5 g/l Co 0.005 g/l Fe 0.005 g/l H+. 4.5 N
Ni. 8 g/l Co. 28 g/l H+. 5 N
5
Ni. 0.040 g/l Co. 70 g/l H+. 0.1 N
16
HCl 0.1N
S1
4
6
7
8
H2O
C 2
Ni. 4 g/l Co. 14 g/l Fe. 18.5 g/l H+. 2.5 N
1
2
Ni. 8 g/l Co. 28 g/l Fe. 37 g/l H+. 5 N
3
Ni. 0.030 g/l Co. 0.030 g/l Fe. 26 g/l H+. 0.1 N
9
HCl 0.1N

3,871,979

NEW PHOTOCHEMICAL PROCESS FOR PRODUCING 9-OXYGENATED-11α-HYDROXYMETHYL-15α-HYDROXYPROSTA-5-CIS,13-TRANS-DIENOIC ACIDS

Angel Guzman, Mexico D.F., Mexico, and Michael Marx, Cupertino, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 1, 1974, Ser. No. 447,323

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **7 Claims**

1. A process for introducing a hydroxymethyl group at the C-11α-position in 8R-9-keto-15α-hydroxyprosta-5-cis, 10, 13-trans-trienoic acid methyl ester or its racemate, which comprises irradiating said PGA_2 methyl ester compound in dilute methanol solution in the presence of a sensitizing agent, at a wavelength of about 320 to 400 μ, for a period of time of the order of 4 to 10 hours under an inert atmosphere, thereby yielding 8R-9-keto-11α-hdyroxymethyl-15α-hydroxyprosta-5-cis, 13-trans-dienoic acid methyl ester or the racemic compound thereof.

3,871,980

METHOD FOR IMPROVING THE WETTABILITY OF A SHEET MATERIAL

Louis M. Butcher, Jr., New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 12, 1972, Ser. No. 296,822

Int. Cl. B01k *1/00*

U.S. Cl. 204—164 **6 Claims**

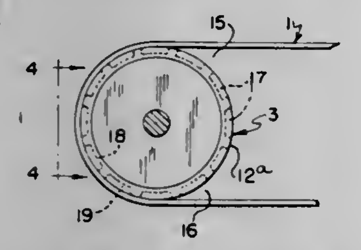
1. A method of treating the surface of a substrate of sheet metal material in a treater assembly to improve the wettability thereof, the assembly including a pair of electrodes having conductive portions connected in circuit with a source of electrical energy, and wherein one electrode has its conductive portion covered by non-conductive material, said method comprising the steps of,

moving said substrate into engagement with said treater assembly,

supporting said substrate in spaced relation from said conductive portion of said one electrode by supporting said substrate in contact with said non-conductive material,

maintaining an air space between said substrate and said one electrode in the area of contact therebetween by supporting said substrate in contact with a cavitated portion of said non-conductive material

supporting said substrate in contact with said conductive portion of said other electrode,



creating a potential difference between said substrate and said conductive portion of said one electrode by establishing a potential difference between said conductive portion of said one electrode and said conductive portion of said other electrode sufficient to cause ionization of the air in the cavities forming said cavitated portion of said non-conductive material for electrostatically treating the surface of said substrate confronting said cavities over the area supported in contact with said cavitated portion of said non-conductive material, and

insulating said conductive portion of said one electrode from said substrate by separating said cavitated portion of said non-conductive material from said conductive portion of said one electrode with a non-cavitated portion of said non-conductive material having a dielectric strength sufficient to prevent arcing between said substrate and said conductive portion of said one electrode while applying said ionizing potential difference therebetween.

3,871,981

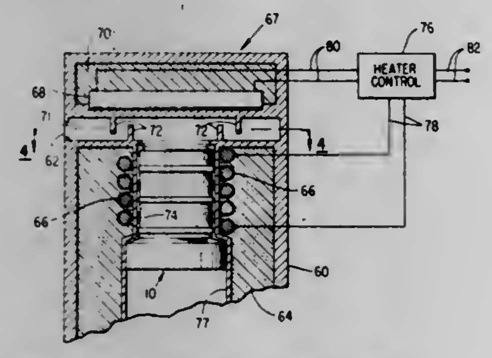
IN-SITU OXYGEN DETECTOR

Louis R. Flais, and Ralph G. Gentle, both of Alliance, Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Division of Ser. No. 176,804, Sept. 1, 1971, Pat. No. 3,767,469. This application July 2, 1973, Ser. No. 376,053

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **6 Claims**



1. An in-situ oxygen detector comprising

an electrolyte tube of zirconium - oxide formed so as to have one end open and one end closed;

a first porous platinum electrode strip bonded to the outside of said tube, extending partially across the closed end and continuing along the side of said tube to a first contact terminal on the outside of said tube;

a second porous platinum electrode strip bonded to the inside of said tube, extending partially across the closed end of said tube so as to overlap said first electrode and continuing along the inside, over the open end and partially on the outside of said tube to a second contact terminal on the outside of said tube;

means sealing the open end of said tube including a zirconia cap;

a self-contained reference atmosphere sealed inside said tube by said sealing means;

a first thermocouple located on the outside closed end of said electrolyte tube so as to detect the temperature of said first electrode; and

a second thermocouple located on the inside closed end of said electrolyte tube so as to detect the temperature of said second electrode.

3,871,982

APPARATUS FOR TREATMENT OF METAL STRIP WITH A LIQUID

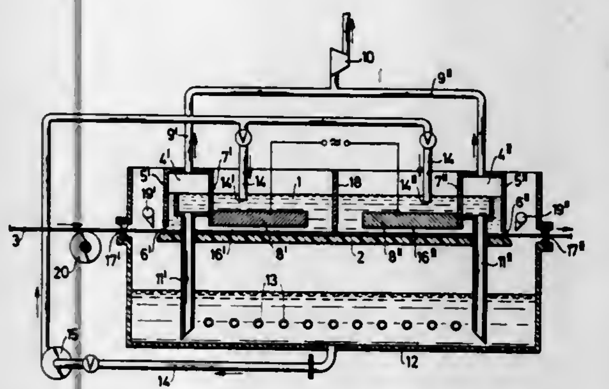
Walter Idstein, Oestrich/Rhine, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 11, 1973, Ser. No. 378,079

Claims priority, application Germany, July 13, 1972, 2234424

Int. Cl. B01k *3/00;* **B08b** *3/00;* **C23b** *5/68*

U.S. Cl. 204—207 **9 Claims**



1. An apparatus for the treatment of metal strip with a liquid, comprising, at least one tank provided with an inlet and an outlet for the strip, which inlet and outlet are below the level of the liquid surface in operation, which tank comprises at least one treatment chamber through which the strip is adapted to pass,

a reserve chamber,

means for transporting liquid from the reserve chamber to the treatment chamber, and

two bell chamber means, one close to the inlet and the other close to the outlet, each bell chamber means having an overflow means for liquid to the reserve chamber and each bell chamber means being so constructed that, in operation, the space above the liquid surface is isolated from the ambient atmosphere and is in communication with pressure-reducing means.

3,871,983

SURFACE FINISHING AND PLATING APPARATUS

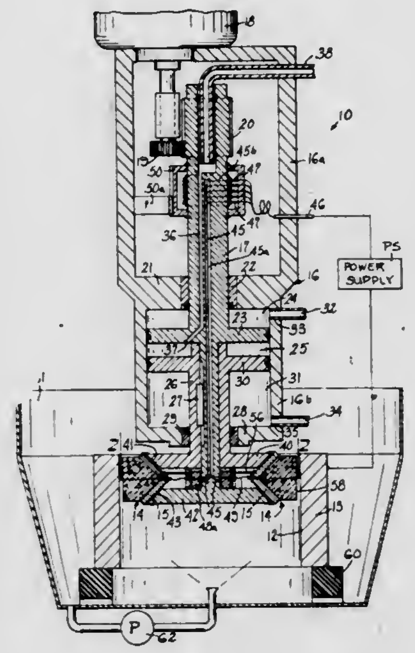
John D. Watts, 2 Mohawk Dr., Clinton, Conn. 06413

Filed July 31, 1972, Ser. No. 276,882

Int. Cl. C23b *5/72;* **B01k** *3/04*

U.S. Cl. 204—209 **18 Claims**

1. Apparatus for operating upon the surface of a workpiece comprising an anode tool having a plurality of non-conductive particles bound in and uniformly distributed through at least one electrically conductive body, means for moving said tool with respect to the surface of a workpiece such that the non-conductive particles engage said surface, and space said surface from said conductive body, means supplying an electrolytic solution between said body and the surface, and means for applying a positive electric potential to said body with respect to an electrical potential applied to said workpiece.



3,871,984

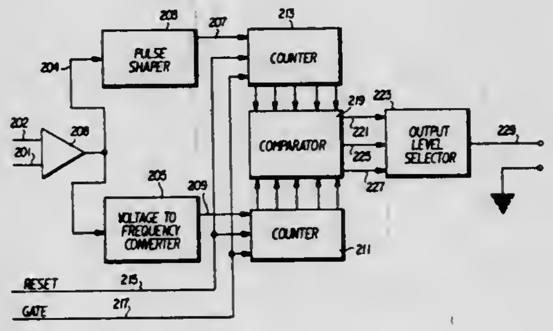
TRANSMISSION OF POT LINE CONTROL SIGNALS

James Simmons Berry, Jr., Savannah, Tenn., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sept. 17, 1973, Ser. No. 398,287

Int. Cl. B01k *3/00;* **C22d** *3/02*

U.S. Cl. 204—228 **14 Claims**



1. A system for controlling a plurality of alumina reduction cells each including a plurality of anodes, said system including:

data processor means for issuing address codes and function codes;

a plurality of sensor means for sensing the stem voltages of the anodes in each of said cells, there being one group of sensor means for each of said cells;

ground detector means;

a ground detector bus connected to said ground detector means; and

a plurality of addressable multiplexers, one for each cell, said multiplexers each including means responsive to address and function codes from said data processor for selectively connecting one of said sensor means in one of said groups to said ground detector bus.

3,871,985

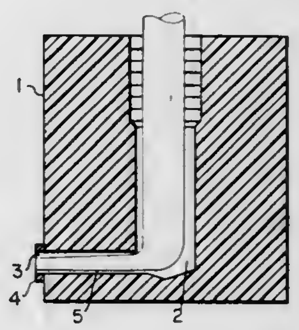
LUGGIN TIP BLOCK ASSEMBLY AND USE IN ELECTROLYTIC CELLS

Monte D. Crippen, and Bernardus J. Mentz, both of North Vancouver, British Columbia, Canada, assignors to Hooker Chemical & Plastics Corp., Niagara Falls, N.Y.

Filed June 25, 1973, Ser. No. 373,215

Int. Cl. G01n *27/30;* **B01k** *3/02;* **C23b** *5/72*

U.S. Cl. 204—231 **6 Claims**



1. Apparatus for use in the determination of half-cell voltages of operating electrodes which apparatus consists essentially of a block of non-conductive material having at least one passageway therein, which passageway consists essentially of a first channel and a second channel, said first channel, at one end extending through one wall of said block and, at the opposite end, terminating within said block in communication with one end of said second channel, said second channel being disposed at a substantially right angle to said first channel, one end of said second channel being in communication with the end of said first channel which terminates within said block and the opposite end of said second channel extending through a wall of said block and terminating in a collar which surrounds the said end of the channel and projects beyond the surface of the said wall of the block, a Luggin Tubulus disposed in said first and second channels, said Tubulus conforming substantially to the dimensions and configurations of said channels, the tip of said Tubulus terminating at the outer surface of said collar and the opposite end of said Tubulus extending beyond the wall of said block through which said first channel extends and being connected to potentiometric means for measuring electrical potential differences.

5. An electrochemical cell comprising a housing, a cathode, an anode and a porous diaphragm separating said cathode and said anode, said anode having secured thereto at least one apparatus as described in claim 1.

3,871,986

JOINT RAMMING CEMENT FOR ELECTROLYTIC REDUCTION CELL CATHODES

Herbert K. Reamey, and Jerry F. Newman, both of Hot Springs, Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 31, 1973, Ser. No. 411,537

Int. Cl. C22d *3/02;* **B01k** *3/08;* **H01b** *1/04*

U.S. Cl. 204—243 R **5 Claims**

1. Process for forming the cathode lining of an electrolytic cell, said lining being made up of adjacent carbonaceous blocks having joint spaces therebetween, comprising the steps of introducing into said joint spaces a ramming cement comprising a mixture of pitch and a carbonaceous aggregate, at a temperature sufficient to maintain suitable consistency for compacting the cement in said spaces, and then baking the blocks and cemented joints at a temperature and for a period of time sufficient to carbonize the cement and to form a continuous lining structure, said mixture containing from about 13 to about 16.5% by weight of petroleum pitch characterized by having a cube-in-water softening point between about 40° and about 85°C. and having a content of material insoluble in quinoline not greater than about 1%.

3,871,987

APPARATUS FOR REMOVING ACID GAS FROM WASTE GAS

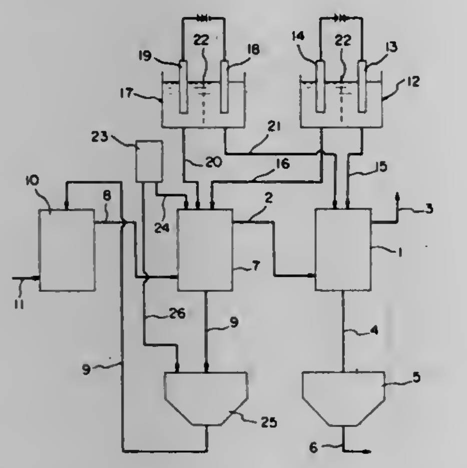
Tsuneo Hasegawa, Shimouchikahara-cho, 46-banchi, Koyama, Kita-ku, Kyoto-shi, 603 Koyoto-fu, and Kiyoharu Nakahara, Gakuendaiwa-cho, 5-chome, 631 Nara-shi, both of Japan

Filed Feb. 14, 1974, Ser. No. 442,455

Claims priority, application Japan, Feb. 16, 1973, 48-19460; Feb. 17, 1973, 48-19466; Feb. 17, 1973, 48-19467; Feb. 19, 1973, 48-20372

Int. Cl. C22d *1/02*

U.S. Cl. 204—263 **8 Claims**



1. An apparatus for removing acid gas from waste gas comprising:

a first reactor for reacting the form a gas with an alkaline solution of aluminic acid to form a reaction product of the acid gas and aluminum, the first reactor being connected to first conduit means for introducing the waste gas into the reactor, second conduit means for discharging the waste gas after the acid gas has been removed therefrom and third conduit means for discharging the reaction product from the reactor,

a first electrolysis device having an aluminum cathode to convert electrolyte in a cathode zone to an alkaline solution of aluminic acid as electrolysis proceeds, and fourth conduit means for introducing into the first reactor the alkaline aluminic acid solution produced in the first electrolysis device.

3,871,988

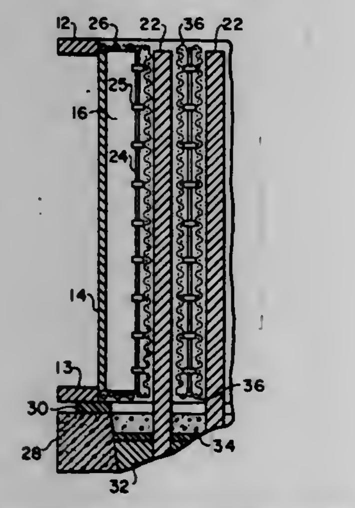
CATHODE STRUCTURE FOR ELECTROLYTIC CELL

Cyril J. Harke, Burnaby, British Columbia, and Monte D. Crippen, North Vancouver, British Columbia, both of Canada, assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed July 5, 1973, Ser. No. 376,782

Int. Cl. B01k *3/04*

U.S. Cl. 204—284 **8 Claims**



1. A cathode structure for a diaphragm type electrolytic cell comprising a conductive metal enclosure having positioned therein a foraminous metal chamber, said chamber having in communication therewith a plurality of foraminous metal projections, said foraminous metal projections being substantially rectangular in cross section and including therein reinforcing means which comprise a substantially planar metal sheet extending substantially throughout the inner portion of said foraminous metal projections, said metal sheet having a plurality of projections extending from each side thereof to the inner surfaces of said foraminous metal projection.

3,871,989

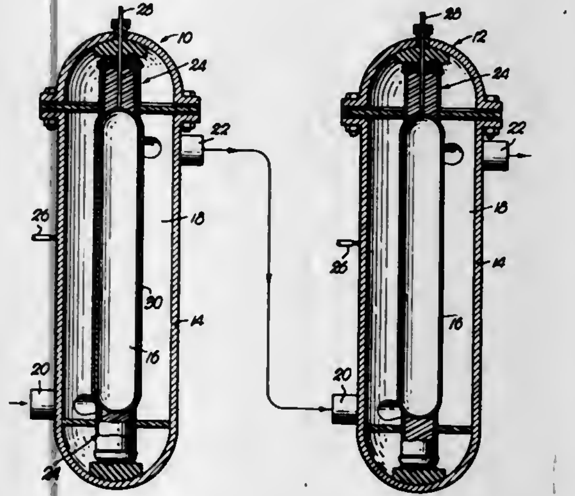
APPARATUS FOR FLOCCULATION OF DISSOLVED SUBSTANCES

Arthur S. King, P.O. Box 5337, 9001 Rosehill Rd., Leawood, Kans. 66215

Continuation-in-part of Ser. No. 298,278, Oct. 17, 1972, Pat. No. 3,801,482. This application Feb. 14, 1974, Ser. No. 442,495

Int. Cl. C02b *1/82;* **C02c** *5/12*

U.S. Cl. 204—299 **9 Claims**



1. Apparatus for electrically treating fluids including:

an electrostatic treater having a pair of spaced apart, oppositely charged electrodes for subjecting a fluid passed therebetween to an electrostatic field to neutralize particles contained within the fluid and initiate nucleation,

at least one of said electrodes being electrically insulated from the fluid to prevent electrical current flow; and

an electrolytic treater coupled with said electrostatic treater downstream from the latter for boosting the rate of nucleation of said particles by electrolysis to cause flocculation of the nucleating particles,

said electrolytic treater having a pair of oppositely charged, spaced apart, bare electrodes exposed to the fluid to establish an electrical current flow in the fluid passed therebetween.

3,871,990

ELECTROOSMOTIC OSMOMETER

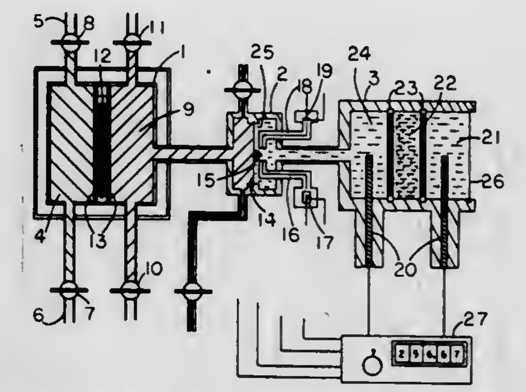
Albert F. Hadermann, Rt. 1, Ijamsville, Md. 21754; Paul F. Waters, 3318 45th St., N.W., Washington, D.C. 20016, and Jung Woo Woo, 2008 N. Adams, Arlington, Va.

Filed Oct. 15, 1973, Ser. No. 406,268

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **4 Claims**

1. An electroosmotic osmometer which comprises in combination a housing containing a solution chamber, a solvent chamber adjacent to said solution chamber and separated therefrom by a semi-permeable membrane, a sensor chamber connected to said solvent chamber, said sensor chamber separated into two sections by an impermeable membrane, an opaque knife edge positioned adjacent to said impermeable membrane in said second section, and movable by movement of said impermeable membrane, a fiber optic light system sensitive to movement of said knife edge, an electroosmotic pressure source containing three chambers said first chamber connected to said second section of said sensor chamber, a porous membrane separating said first chamber from said second chamber, a second porous membrane separating said second chamber from said third chamber, electrodes positioned in said first and third chambers, said electrodes connected to a variable transformer actuated by a servomechanism operably connected to said fiber optic light system, and voltmeter connected to said electrodes which measures the potential applied to said electrodes.



3,871,991

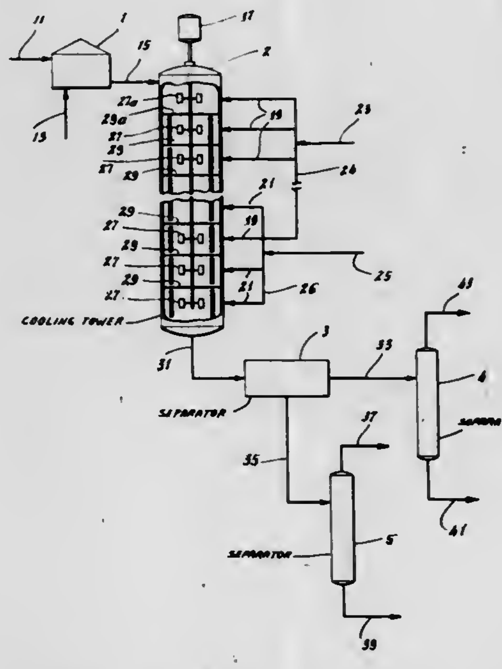
TEMPORARILY IMMISCIBLE DEWAXING

David H. Shaw, Sarnia, Ontario, Canada, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed June 22, 1973, Ser. No. 372,775

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 **24 Claims**



1. A process for separating wax from a waxy petroleum oil stock comprising the steps of introducing said oil stock, at a temperature above its cloud point, into a cooling zone, said oil containing at least a portion of the wax dissolved therein, contacting said oil as it passes through the cooling zone with a dewaxing solvent system comprising two or more solvents of differing polarity, the more polar solvent being less miscible with the oil than the less polar solvent, said solvents being introduced into the cooling zone in incremental amounts, adjusting the composition and amounts of said solvents and gradually reducing the temperature in the cooling zone, thereby producing therein a plurality of temporary periods of bulk immiscibility between said solvent system and oil interspersed with temporary periods of bulk miscibility between said solvent system and oil, cooling and agitating the oil and solvents as they pass through the cooling zone, thereby precipitating at least a portion of the wax from said oil and forming a solvent/oil mixture containing precipitated wax, and recovering oil of diminished wax content.

3,871,992

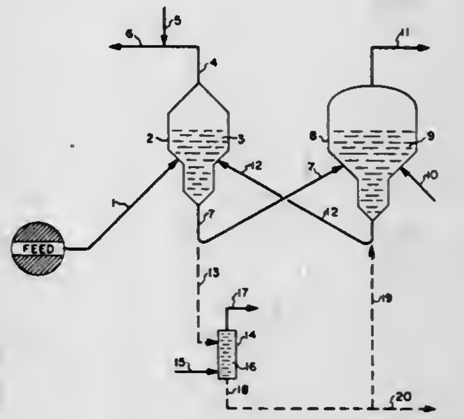
VISBREAKING A HEAVY HYDROCARBON FEEDSTOCK IN A REGENERABLE MOLTEN MEDIUM

Lawrence F. King, R.R. No. 1, Moorestown, Ontario; Noel J. Gaspar, 562 Cathcart Blvd., Sarnia, Ontario, and Israel S. Pasternak, 579 Highbury Park, Sarnia, Ontario, all of Canada

Filed Mar. 28, 1973, Ser. No. 345,540

Int. Cl. C10g *9/34*

U.S. Cl. 208—125 **11 Claims**



1. A process for cracking a heavy hydrocarbon feedstock comprising a component selected from the group consisting of crude oils and residua containing from about 2 to 6 wt. percent sulfur to lighter hydrocarbon materials which comprises contacting said heavy hydrocarbon feedstock with a regenerable alkali metal carbonate molten medium containing from 0.1 to 25 wt. percent, calculated as oxide and based on total molten medium, of a glass-forming oxide selected from the group consisting of oxides of boron, phosphorus, vanadium, silicon, tungsten and molybdenum, at a temperature in the range of from about the melting point of the molten medium to less than 1,200°F. to form predominantly liquid hydrocarbon products and carbonaceous materials, said carbonaceous materials being suspended uniformly in the molten medium, and thereafter gasifying at least a portion of said carbonaceous materials formed during said conversion process by contacting said molten medium containing said carbonaceous materials with oxygen, carbon dioxide, steam or mixtures thereof at a temperature in the range of from about the melting point of said molten medium to about 2,000°F.

3,871,993

UPGRADING THE OCTANE VALUE OF NAPHTHA EMPLOYING A CRYSTALLINE ALUMINOSILICATE ZEOLITE WHICH HAS A HIGH SILICA TO ALUMINA RATIO WHEREIN ALUMINA IS INCORPORATED IN THE INTERSTICES OF THE ZEOLITE CRYSTAL

Roger A. Morrison, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,104

Int. Cl. C10g *35/06*

U.S. Cl. 208—135 **7 Claims**

1. In the process of upgrading the octane value of naphtha having a clear research octane number of up to about 65 by converting such at elevated temperature in contact with an aromatization improving modified synthetic crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12, a constraint index of about 1 to 12, and a crystal density of not substantially less than about 1.6 grams per cubic centimeter; the improvement, whereby increasing the production of saturated C_3-C_4 LPG while maintaining production of higher octane gasoline having a clear research octane number of at least about 85, which comprises contacting said naphtha with said zeolite catalyst having aluminum incorporated into the interstices of the zeolite crystal about 600° to 750°F in the absence of added hydrogen at a space velocity of up to about 15 WHSV.

3,871,994
AROMATIZATION PROCESS

Samuel J. Tauster, 10 Galahad Dr., Englishtown, and John H. Sinfelt, 296 Chaucer Dr., Berkley Heights, both of N.J.

Division of Ser. No. 79,665, Oct. 9, 1970, Pat. No. 3,769,238, which is a continuation-in-part of Ser. No. 724,589, April 26, 1968, abandoned. This application May 15, 1973, Ser. No. 360,441

Int. Cl. C10g *35/06, 35/04*

U.S. Cl. 208—137 **11 Claims**

9. A process for upgrading a naphtha boiling in the motor fuel range to increase the aromatics content and decrease the amount of paraffins, which comprises contacting said naphtha at aromatization conditions with a catalyst comprising (a) a catalytically active material comprising a compound having the formula

$$M_2Mo_3O_8$$

where M is a divalent metal having an ionic radius not greater than 0.95 A and (b) a support comprising deacidified alumina in which said deacidified alumina comprises alumina and a minor amount of a metal oxide selected from the group consisting of Group I-A metal oxides and Group II-A metal oxides.

3,871,995
REFORMING PROCESS USING PLATINUM-INDIUM-THALLIUM OR INDIUM CATALYST

Pierre Duhaut, LeVesinet, and Jean Miquel, Paris, both of France, assignors to Societe Francaise Des Produits Pour Catalyse, Rueil-Malmaison, France

Division of Ser. No. 267,946, June 30, 1972, Pat. No. 3,793,232. This application Nov. 1, 1973, Ser. No. 412,035

Claims priority, application France, July 5, 1971, 71.24567

Int. Cl. C10g *35/06*

U.S. Cl. 208—138 **9 Claims**

1. A catalytic reforming process comprising the step of passing hydrocarbons at elevated temperatures in contact with a catalyst,

the improvement comprising employing as said catalyst a catalyst containing:

a. alumina

b. from 0.005 to 1 percent by weight of platinum with respect to the alumina

c. from 0.005 to 1 percent of iridium by weight with respect to the alumina

d. from 0.05 to 3 percent by weight, with respect to the alumina, of a metal selected from the group consisting of thallium and indium.

3,871,996
REFORMING WITH A SINGLE PLATINUM GROUP METAL

John Henry Sinfelt, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 41,613, May 28, 1970, Pat. No. 3,684,693. This application Aug. 14, 1972, Ser. No. 280,253

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **26 Claims**

1. A naphtha reforming process which comprises contacting a hydrocarbon material, under reforming conditions, and in the presence of hydrogen with a catalyst consisting essentially of a refractory support in association with greater than 0.1 wt. percent, based on total catalyst, of a single catalyst metal selected from the group consisting of iridium, ruthenium and osmium, the surface area of said catalyst metal on said support being at least 150 square meters per gram of catalyst metal as determined by carbon monoxide chemisorption techniques, said catalyst being prepared by a procedure comprising (a) contacting said support with a solution of a decomposable compound of said catalyst metal, (b) drying said metal containing support, (c) calcining said metal containing support at conditions that inhibit the formation of crystalline metal oxides, and (d) reducing said catalyst metal compound, said catalyst metal not being present on said support in a crystalline oxide form immediately prior to said reduction.

3,871,997
NOVEL HYDROCARBON CONVERSION CATALYST AND REFORMING USE THEREOF

John H. Sinfelt, Berkeley Heights; Allan E. Barnett, Westfield, and James L. Carter, Chatham, all of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Filed July 19, 1973, Ser. No. 380,833

Int. Cl. C10g *35/08;* **B01j** *11/78, 11/08*

U.S. Cl. 208—139 **7 Claims**

3. A hydrocarbon reforming process which comprises contacting a normally liquid hydrocarbon material at reforming conditions and in the presence of hydrogen with a catalyst comprising from 0.1 to 1.0 wt % platinum, from 0.1 to 1.0 wt % iridium and from 0.05 to 0.5 wt % rhodium based on total catalyst weight supported on a refractory inorganic oxide support, said platinum, iridium and rhodium being present as metals having a surface area of at least 200 square meters per gram as determined by carbon monoxide chemisorption techniques, said catalyst containing less than about 2 atoms of sulfur per atom of metal and being substantially free of alkali and alkaline earth metal constituents.

3,871,998
HYDRODESULFURIZATION OF HEAVY HYDROCARBON FEEDSTOCKS WITH NONSTOICHIOMETRIC TITANIUM CARBIDE CATALYST SUPPORT

Howard F. Rase, 3700 River Rd., Austin, Tex. 78703, and Larry A. Maddox, 4426 Sutton Ln., Corpus Christi, Tex. 78411

Division of Ser. No. 212,376, Dec. 27, 1971,. This application Oct. 15, 1973, Ser. No. 406,165

Int. Cl. C10g *23/02, 23/04*

U.S. Cl. 208—216 **4 Claims**

1. A process for the hydrodesulfurization of a sulfur-containing heavy hydrocarbon feedstock boiling above about 650°F. which comprises contacting said feedstock with hydrogen and a catalyst composite comprising from about 0.1 to about 25 weight percent of said composite of a hydrogenation component selected from the group consisting of a metal, metal oxide, metal sulfide, or mixtures thereof, selected from Group VI-B, Group VIII or mixture of said Groups of the Periodic Chart of the Elements and titanium carbide base characterized as a stable phase solid of stoichiometry ranging from $TiC_{0.52}$ to $TiC_{0.99}$.

3,871,999
REMOVAL OF POLLUTANTS FROM WASTE-WATER

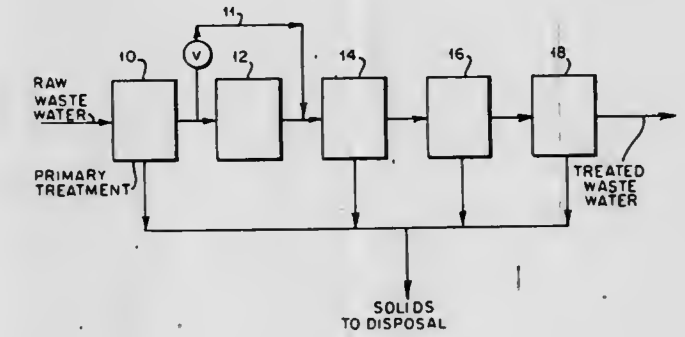
Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 338,355, March 5, 1973, abandoned. This application Jan. 31, 1974, Ser. No. 438,414

Int. Cl. C02c *1/02*

U.S. Cl. 210—16 **12 Claims**

1. A method for treating wastewater including at least about 10 mg/liter of ammonia nitrogen and at least about 100 mg/liter of carbonaceous pollutants, expressed as BOD_5, comprising the steps of supplying said wastewater to a first biological treatment unit, biochemically oxidizing from about 85 to 95% BOD_5 in said first biological treatment unit, biochemically oxidizing at least about 20% and less than about 50% of said ammonia nitrogen in said first biological treatment unit to form oxidized nitrogenous compounds while conserving at least 50% of said ammonia nitrogen, supplying wastewater effluent from said first biological treatment unit to a second biological treatment unit a predetermined rate, said second biological treatment unit including a plurality of rotatable contactors having surface area for the growth and maintenance of denitrifying organisms, said predetermined rate being from about 1 to about 4 gallons per day per square foot of said surface area, said contactors being at least partially submerged in said wastewater, said wastewater having a temperature from about 53°F. to about 80° F. and a pH from about 6 to about 8 in said second biological treatment unit, rotating said contactors in said wastewater at a peripheral velocity from about 0.5 to about 1 foot per second to grow and maintain denitrifying organisms on said surface area, and excluding molecular oxygen from said denitrifying organisms, said denitrifying organisms biochemically oxidizing conserved ammonia nitrogen by utilizing said oxidized nitrogeneous compounds as an oxygen source whereby nitrogen gas is evolved and denitrification proceeds without the addition of an external carbonaceous energy source.



3,872,000
LIQUID FLOCCULANT COMPRISING CONDENSATION PRODUCT OF AROMATIC ALDEHYDE AND POLYOL

Kenzo Hamada; Hiroshi Uchiyama, both of Osaka; Jiro Sugi, Tokyo, and Osamu Kamada, Kawasaki, all of Japan, assignors to E. C. Chemical Industries & Co., Ltd., Osaka-fu and Mitsubishi Chemical Indsutries Ltd., Tokyo, both of, Japan

Filed Apr. 9, 1973, Ser. No. 349,325

Claims priority, application Japan, Apr. 8, 1972, 47-35390

Int. Cl. B01d *21/01;* **C08f** *3/40;* **C08g** *11/00*

U.S. Cl. 210—54 **15 Claims**

1. A method of treating fluid drainage, which comprises:

flocculating said fluid drainage with a filamentous liquid composition consisting essentially of from 5 – 50 parts by weight of a condensation product of an aromatic aldehyde and a polyhydroxy alcohol containing at least four hydroxyl groups, 15 – 50 parts by weight of a surfactant and 15 – 50 parts by weight of a polar organic solvent, all of which are uniformly dispersed in water, such that contaminants are removed from said waste fluid.

3,872,001
REMOVAL OF HEAVY METAL POLLUTANTS FROM AQUEOUS MEDIA

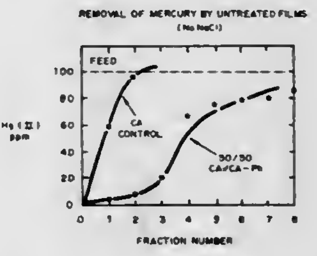
Howard J. Davis, Warren, N.J., and Leonard A. Lee, Rockville, Md., assignors to Celanese Corporation, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,792

Int. Cl. C02b *1/18*

U.S. Cl. 210—58 **5 Claims**

1. A process for removing pollutant heavy metal cations from an aqueous media containing same which comprises passing said pollutant-containing aqueous media through a substantially water insensitive, flexible base, porous polymeric film thereby forming a complex with the pollutant metal cations to be removed from the aqueous media, said film being prepared from a polymer containing from about 0.01 to 3.0 free hydroxyl groups per gram of polymer which has been reacted with a polyfunctional carboxylic or sulfonic acid or anhydride to produce an acid-containing polymer and subsequently contacted with a divalent metal chelate which is not subject to water degradation.



3,872,002
PROCESS FOR EXTRACTING PHOSPHATE FROM SOLUTIONS

Ralph E. Musgrove, Midland, Tex., assignor to GeoResources, Inc., Williston, N. Dak.

Filed Mar. 29, 1973, Ser. No. 346,090

Int. Cl. C02c *5/02*

U.S. Cl. 210—59 **12 Claims**

1. A method of extracting water-soluble phosphate contaminants from a solution which comprises intimately blending a water-insoluble humic acid salt selected from the group consisting of iron humate, aluminum humate and mixtures thereof with the solution containing said water-soluble phosphate contaminants, subsequently removing the resulting water-insoluble humate/phosphate solids component from the solution, leaching said humate/phosphate solids component with an alkali solution and separating the resulting regenerated humate separated as solids from the leach solution.

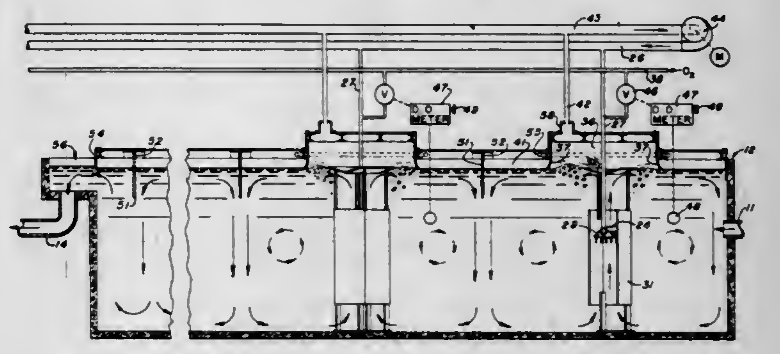
3,872,003
HIGH-OXYGEN TREATMENT OF WASTE WITH SELECTIVE OXYGEN RECIRCULATION

James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.

Filed Sept. 20, 1972, Ser. No. 290,627

Int. Cl. C02b *3/08;* **C02c** *1/10, 5/04*

U.S. Cl. 210—63 **11 Claims**



1. The method of treating waste liquid with gas richer than air in oxygen which includes flowing the waste liquid through a retention tank, maintaining a gas-lift rolling action of the tank contents with the gas-lifted contents forming a horizontal stream flowing away from the gas-lift zone in surface-exposed position by liberating and allowing to rise immediately by buoyancy said gas at submerged locations along selected zones of the tank comprising a small portion of its total horizontal cross section in sufficient quantities to create and maintain said rolling action and thereby cause said contents to carry small entrained bubbles to remote areas, characterized by:

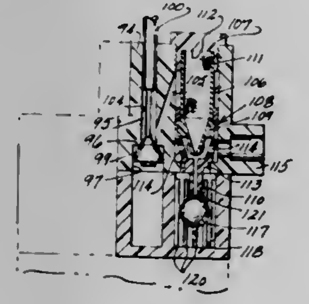
selectively entrapping gas escaping the liquid in the area over said zones where relatively large gas-lift bubbles quickly escape the liquid forming said horizontal stream, and recirculating and enriching said gas by adding substantially pure oxygen to it, compressing it and liberating it again in the same locations, while substantially excluding from the recirculated gas a significant portion of the gas liberated, namely, such gas from smaller bubbles as escapes the liquid at remote areas beyond the area of selective entrapment.

8. Apparatus for treating waste liquid with gas richer than air in oxygen which includes a retention tank, means for flowing liquid waste through said tank largely with successive passage through successive sections of the tank, a source for supplying substantially pure oxygen, means for releasing gas including gas from said source at submerged locations along selected zones of a plurality of the tank sections, said zones comprising only a small portion of the total horizontal cross section of each section, said means for releasing the gas releasing it at positions from which the gas can rise immediately by buoyancy with gas-lift action, and in sufficient quantities to create rolling action of the tank contents in the section with the gas-lifted contents immediately forming a horizontal stream having its surface exposed to release large bubbles while carrying small entrained bubbles to remote areas, characterized by:

a cover over said zones largely segregating areas where large bubbles escape the stream from more remote areas, selectively entrapping gas escaping the liquid in said areas of large-bubble escape, said apparatus being substantially free of impediment to the rolling action through the region of gas lifting and outward therefrom to beyond the area segregated by said cover, common means for drawing off the entrapped gas and recirculating and compressing said gas from various sections and means for enriching said gas by adding substantially pure oxygen from said source to it separately for each of a plurality of tank sections before it is released again in the same locations; said cover comprising means for substantially excluding from the recirculated gas a significant portion of the gas liberated, namely, such gas from smaller bubbles as escapes the liquid more remotely from the gas-lift area than said areas segregated by said cover; and

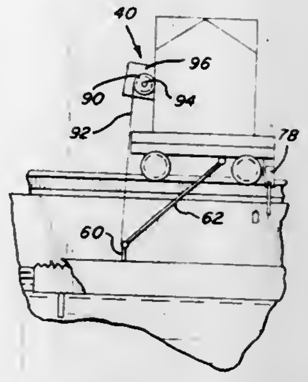
means for regulating the addition of oxygen separately for each of a plurality of sections.

3,872,004
CONTROL UNIT FOR A WATER SOFTENER
Edward C. Grout, and Donald F. Klassy, both of Delavan, Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.
Filed Sept. 14, 1972, Ser. No. 288,924
Int. Cl. C02b *1/22*
U.S. Cl. 210—127 **21 Claims**



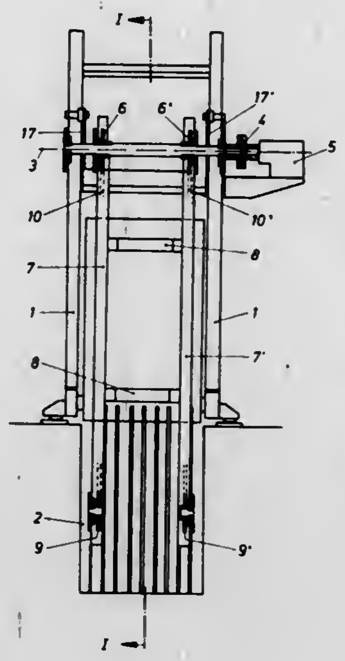
1. In a control unit for a water softener, a tank, a casing mounted on the tank and having a water inlet and a water outlet, a tubular member disposed within the casing and extending downwardly within the tank with the lower portion of the tubular member communicating with the interior of the tank, first port means providing communication between the inlet and the tubular member, a first valve seat located in said tubular member, a main control valve disposed to engage said first valve seat and movable between an open and a closed position, second port means providing communication between the tubular member at a location below said valve seat and the upper end of the tank, third port means located in the tubular member below said second port means and connected with said outlet, check valve means located in the tubular member beneath said third port means, said check valve means disposed to permit flow of water from said tubular member through said third port means to the outlet and disposed to prevent flow of water in the opposite direction, and sealing means for sealing off the tubular member at a location between said second port means and said third port means to prevent direct communication therebetween, when said main control valve is in the open position water entering said inlet passes through said first port means into said tubular member and through said second port means to the interior of the tank, and then upwardly through said tubular member and through said check valve means and said third port means to the outlet.

3,872,005
SKIMMING APPARATUS FOR CLARIFICATION TANKS
Jeffrey A. Baker, Northbrook, Ill., assignor to FMC Corporation, Chicago, Ill.
Filed Oct. 18, 1972, Ser. No. 298,595
Int. Cl. B01d *21/18*
U.S. Cl. 210—141 **2 Claims**



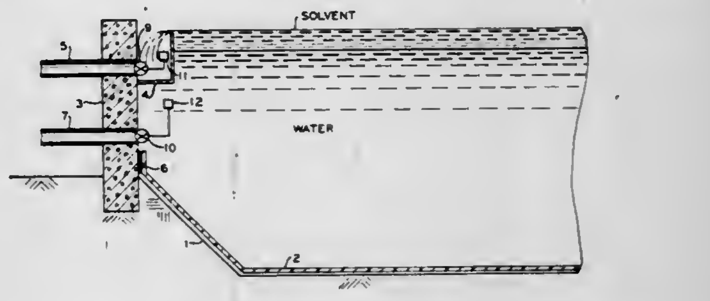
2. In a liquid clarification apparatus including a tank having an inlet for supplying fluid with entrained solids and an outlet for receiving clarified liquid, said outlet including a plurality of transversely spaced longitudinally extending weir boxes, said weir boxes each having a bottom wall and side walls having upper edges defining the liquid level for said tank; baffle structure surrounding each weir box, said baffle structure having upper and lower edges respectively located above and below said upper edges; a traveling bridge above said tank; drive means for reciprocating said bridge between extreme positions parallel to said longitudinally extending weir boxes; and skimming means depending from said bridge for removing scum from the surface of said liquid, said skimming means including an elongated blade extending transversely of said tank, said blade having recesses aligned with said weir boxes and extending from the lower edge of said blade, said recesses allowing the lower edge of the blade to be below the liquid level while the bridge is in the weir box area of the tank; power means for raising and lowering said blade on said bridge, said power means defining a first skimming position for said blade where the lower edge of the blade is located below the liquid level and the bases of the recesses are above said upper edges of said side walls when said bridge is traveling in one direction in the weir box area of the tank, said power means defining a second skimming position for said blade wherein the recesses and the lower edge of said blade are located below said upper edges of said side walls while the blade is located in the area of the tank between the weir boxes and the inlet end, said power means defining a third inoperative position for said blade where the lower edge of said blade is located above said upper edges of said side wall; said power means including a shaft rotatable on said bridge, drum means fixed to said shaft, cable means between said drum means and said blade, reversible drive means connected to said shaft; switch means cooperating with said drive means and carried by said bridge; and actuating means for actuating said switch means when said bridge is at opposite ends of said tank and at inner ends of said weir boxes to operate said drive means and move said blade between said positions.

3,872,006
APPARATUS FOR TAKING FLOATING AND SOLID MATERIALS OUT OF CHANNELS
Gunther Abel, 10 Benzstrasse, 79 Ulm, Germany
Filed Aug. 27, 1973, Ser. No. 392,115
Int. Cl. B01d *35/28*
U.S. Cl. 210—158 **14 Claims**



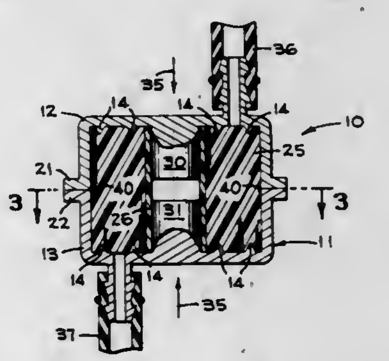
1. Apparatus for removing floating and solid materials from a channel, said apparatus comprising a support frame; a first vertically inclined member supported by the support frame; said first vertically inclined member including a lower portion comprising a liquid-transmissible grate for extending to the bottom of the channel and further including an adjoining upper portion comprising a conveyer chute leading to a discharge outlet; a drive shaft supported at opposite end portions thereof above the conveyer chute by the support frame; spaced second and third vertically inclined members comprising opposite side walls for the liquid-transmissible grate and adjoining conveyer chute; each of said side walls being supported at the upper end portion thereof by the drive shaft for pivotal movement about the longitudinal axis of the drive shaft independently of the other side wall; first and second pairs of spaced sprockets; each of said first pair of spaced sprockets being operatively connected to the drive shaft adjacent to the upper end portion of an associated different one of the side walls; each of said second pair of spaced sprockets being supported at the lower end portion of an associated different one of the side walls; a pair of spaced endless elevator chains supporting a plurality of successively arranged blades adjacent to the liquid-transmissible grate and adjoining conveyer chute; each of said conveyer chains being supported in operative engagement with the sprockets supported at the upper and lower end portions of an associated different one of the side walls to guide the blades supported by the elevator chains along the transmissible grate and adjoining conveyer chute and thereby permit removal of floating and solid materials from the channel; whereby the side walls and, hence, the elevator chains may be independently displaced at different angles relative to the liquid-transmissible grate and adjoining conveyer chute to facilitate removal of floating and solid materials from the channel.

3,872,007
CONTAINER FOR PLURALITY OF IMMISCIBLE LIQUIDS
Floyd H. Holland, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 29, 1972, Ser. No. 310,449
Int. Cl. E02b *3/16*
U.S. Cl. 210—170 **1 Claim**



1. A reservoir for storing two immiscible liquids of different densities which comprises a walled-in space, said space containing therein a liner composed of a material selected from the group consisting of asphalt, plastic, or rubbery material which is sensitive to the solvent effects of the lighter liquid, and surrounding the top of said space an impervious wall that is resistant to the solvent effects of said liquid, the lower portion of said wall and the upper portion of said liner being attached in sealing engagement, said wall containing at a point above the liner a first valved conduit outlet means combined with a first liquid level sensing means which allows removal of the heavier liquid in response to the liquid level sensing means such that the level of the heavier liquid is maintained at a chosen level above the outlet means, said wall further containing a weir means located above said first outlet conduit means, said weir means and said impervious wall defining an overflow area containing a second liquid level sensing means being constructed and arranged to control a second valved conduit outlet means such that at least the lighter liquid can be removed from the reservoir.

3,872,008
DISPOSABLE FILTER UNIT
Wilbur W. Lee, 43 Achcia Dr., Orinda, Calif. 94563; William A. Lee, 1024 Second St., Lafayette, Calif. 94549, and Robert D. Lee, 43 Acacia Dr., Orinda, Calif. 94563
Filed Sept. 7, 1973, Ser. No. 395,271
Int. Cl. B01d *27/08*
U.S. Cl. 210—232 **1 Claim**



1. A fluid filter comprising:

a. a housing having confronting generally cup-shaped sections, said cup-shaped sections being arranged for sealing juncture at their lips;

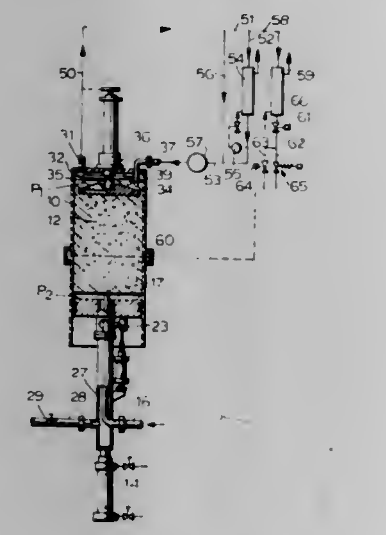
b. a roll of compressible material disposed within said housing, said roll of compressible material having an axial length slightly greater than the inner axial dimension of said housing and having a radius of a dimension to fit tightly within said housing, the movement of said cup-shaped sections toward one another in the axial direction compressses said roll of compressible material axially causing said roll of compressible material to be compressed radially through said housing,

c. said lips of said cup-shaped sections being fixedly sealed together and to said roll of compressible material to reduce fluid by-passing said roll of compressible material,
d. said housing being formed with annular rings on the inner end walls thereof for additionally compressing said roll of compressible material to reduce fluid by-passing said roll of compressible material,
e. said roll of compressible material being wound on a compressible core;
f. oppositely directed tapered tubular sections disposed axially from said inner end walls of said housing for receiving said compressible core telescopically thereover and to engage said compressible core to exert a compressive force thereon for reducing fluid by-passing said roll of compressible material, said tapered tubular members terminate in spaced relation when said lips of said cup-shaped sections are sealed together;
g. an inlet connector on one of said cup-shaped sections at the upstream side of said housing; and
h. an outlet connector on the other of said cup-shaped sections at the downstream side of said housing, whereby the fluid enters said housing at said inlet connector, flows through said roll of compressible material and is discharged from said housing through said outlet connector.

3,872,009
APPARATUS FOR THE SEPARATION AND TREATMENT OF SOLID PARTICLES FROM A LIQUID SUSPENSION

Henricus Alexis Cornelis Thijssen, Rontgenlaan 2, Son, Netherlands

Continuation-in-part of Ser. No. 156,717, June 25, 1971, Pat. No. 3,777,892
Filed Sept. 20, 1973, Ser. No. 399,112
Claims priority, application Netherlands, Sept. 26, 1972, 7212995
Int. Cl. B01d *29/00*
U.S. Cl. 210—178 **18 Claims**

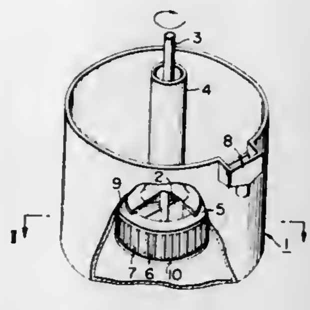


1. Apparatus for the separation and purification of solids from a suspension and for leaching solid particles comprising an impervious column including:
a. piston means closing one end of said column and mounted for reciprocating movement within said column to compact the solid particles to a bed and advance said compacted bed of solid particles to the opposite end of said column during the compression stroke of said reciprocating movement, said piston means including:
i. a surface facing the bed of solid particles;
ii. filtering means on said surface which is selectively permeable for the liquid phase of said suspension;
iii. feeding means in communication with said surface for feeding said suspension into said column, said feeding means including:
a. at least one opening in said surface and
b. at least one conduit in flow communication with said opening;
iv. first discharge means for the removal of said liquid phase of said suspension from said column including at least one conduit in flow communication with said filtering means;
v. valve means in said at least one conduit of said feeding means to pass said suspension to said column only during the suction stroke of said reciprocating movement;
vi. valve means in said at least one conduit of said discharge means to remove said liquid phase of said suspension only during said compression stroke of said reciprocating movement;
vii. a pressure applicator in communication with said first discharge means before said valve means in said at least one conduit of said first discharge means including a cylinder with a double acting piston and pressure applying means connected thereto for actuating said pressure applicator; and
b. treating means at the opposite end of said column for treating successive portions of said bed to facilitate removal of the treated portion from said column and second discharge means at said opposite end of said column for the progressive removal of said successive portions of said bed.

3,872,010
FLOTATION MACHINE

Tatsuya Nagahama, Tokyo, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 341,269, March 14, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,501
Claims priority, application Japan, Mar. 18, 1972, 47-27601
Int. Cl. B03d *1/24*
U.S. Cl. 210—219 **1 Claim**



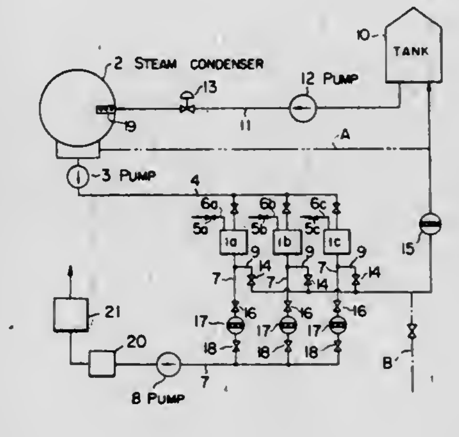
1. A froth flotation machine comprising a flotation cell having an air inlet pipe for introducing air into the flotation liquid close to the bottom of the cell, froth removal means for removing froth from the upper end of the cell, a rotatable impeller disposed close to the bottom of the cell for mixing the flotation liquid with the air supplied by the pipe and circulating the mixture along the bottom of the cell, an annular stationary dispersing unit mounted on the lower end of said air inlet pipe and adjacent to the bottom wall of the cell, said impeller being disposed within the central opening of said dispersing unit and said dispersing unit being coaxial with the axis of rotation of said impeller, said dispersing unit comprising two coaxial, vertically spaced, imperforate, annular supports, a series of substantially uniformly spaced guide vanes mounted on and extending between said supports and located in the path of flow of said mixture from said impeller and being forwardly curved in the direction of rotation of the impeller for directing the liquid in a direction substantially tangential to the side wall of the cell and substantially parallel to the bottom wall of the cell, with the radially outer edge of each guide vane being positioned forwardly of its radially inner edge in the direction of rotation of said impeller, each pair of adjacent guide vanes defining a discharge passage for said mixture, said discharge passage having an inlet at the radially inner end thereof and an outlet at the radially outer end thereof, said outer edge of each guide vane also being

positioned circumferentially forwardly of said inner edge of the adjacent leading guide vane in the direction of rotation of said impeller, the entirety of the outlet of each discharge passage being disposed circumferentially forwardly of the entirety of the inlet of the same discharge passage in the direction of rotation of said impeller, and the radially outer edge of said upper annular support is located substantially at and directly above the outer edges of said guide vanes.

3,872,011
CONDENSED WATER DECHLORINATION APPARATUS

Tsugutomo Teranishi, and Osami Takita, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 190,601, Oct. 19, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,532
Claims priority, application Japan, Oct. 21, 1970, 45-92053
Int. Cl. B01d *23/10*
U.S. Cl. 210—269 **18 Claims**

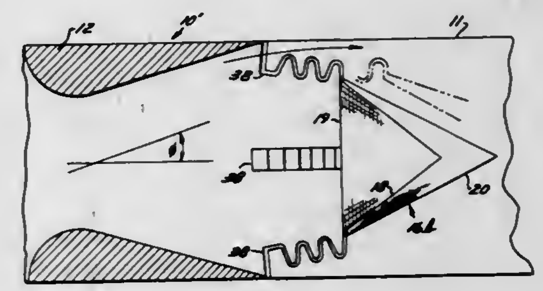


1. Condensed water dechlorination apparatus comprising:
a steam condenser maintained at a negative pressure;
boiler means for producing steam;
first conduit means for passing water produced in said condenser to said boiler means;
means for returning steam produced in said boiler means to said steam condenser;
a water supply tank for supplying make up water to said steam condenser;
a second conduit means fluidly connecting said supply tank to said steam condenser;
a pump in said second conduit means for pumping water from said supply tank to said steam condenser;
a control valve attached to said second conduit means for controlling the flow of water from said supply tank to said steam condenser;
at least one dechlorination water tower including a quantity of resin which must be periodically withdrawn, regenerated and reinserted into said dechlorination tower to remain effective, said dechlorination tower being attached to said first conduit means intermediate said steam condenser and said boiler;
a blow pipe fluidly connected to the downstream side of said dechlorination water tower and in fluid communication with said second conduit upstream of said pump and control valve for passing blow water produced in said dechlorination water tower immediately after regeneration and replacement of said resin therein to said second conduit;
and valve means fluidly connected to said dechlorination water tower for causing the water passing out of said dechlorination water tower to pass through said first conduit means and into said boiler during normal operation of said apparatus and for further causing the water passing out of said dechlorination water tower to pass through said blow pipe immediately after the regenerated resin is reinserted into said dechlorination water tower.

3,872,012
PARTICULATE SEPARATOR

Donald L. Endicott, Garden Grove, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 20, 1973, Ser. No. 426,791
Int. Cl. B01d *33/00*
U.S. Cl. 210—297 **14 Claims**

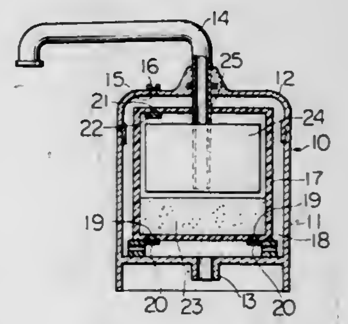


1. A separator for removing particulate contamination from a medium flowing in a predetermined direction in a conduit, the medium having a different density than the contamination, the separator including:
venturi means to accelerate the flowing medium to flow in a direction different than said predetermined direction so that the contamination is concentrated in a predetermined downstream area of the flow and to recover the pressure drop caused by the acceleration; and
means positioned in said predetermined downstream area of the flow to entrap and retain said particulate contamination, said last named means including a first screen, a second screen of finer mesh than said first screen and downstream therefrom and support means connected to said screens to support said first and second screens in said predetermined downstream area of the flow and spaced from the conduit whereby a primary flow path around said first and second screens is present, said first and second screens being connected together at at least one edge thereof and defining an entrapment zone therebetween in which the particulate is entrapped.

3,872,013
BACTERICIDAL WATER PURIFIER FOR DECHLORINATED WATER

Atsushi Nishino; Yukihide Iura; Masayoshi Kubo, and Motosi Tateisi, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Osaka, Japan

Filed Nov. 8, 1973, Ser. No. 414,133
Claims priority, application Japan, Nov. 9, 1972, 47-112696; Aug. 11, 1973, 48-90385; Aug. 11, 1973, 48-90386
Int. Cl. B01d *31/00*
U.S. Cl. 210—317 **3 Claims**



1. In a water purifier having absorption means to dechlorinate potable water supplied thereto, a filter assembly to filter and sterilize the water, comprising two layers of filter cloth joined with each other to form a space therebetween, a water conduit communicating with said space and with an outlet of the purifier, at least one sheet of a synthetic fiber non-woven cloth having a thickness of 0.01 to 5 mm and coated and

impregnated with a bactericidal substance and arranged in said space to be substantially opposite the entire inner surfaces of said filter cloth layers, and at least one support member having a multiplicity of openings to allow water to flow freely therethrough arranged in said space to prevent said sheet from contacting said filter cloth layers, so that said sheet is exposed to the filtered water and exerts a bactericidal action thereon.

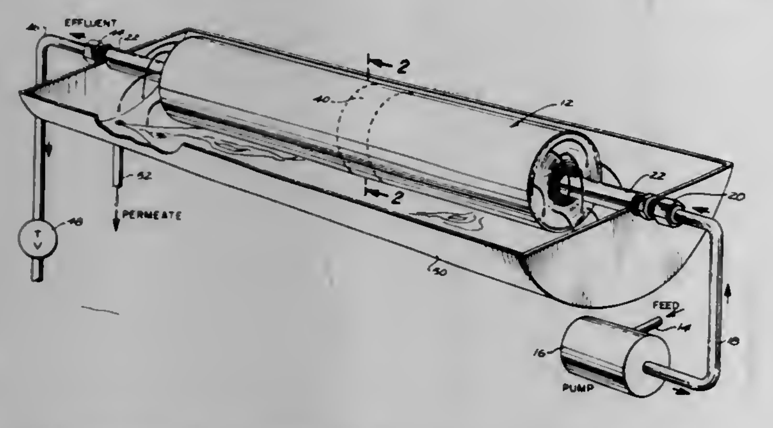
3,872,014
MEMBRANE SEPARATION APPARATUS

William J. Schell, Manhattan Beach, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 11, 1974, Ser. No. 449,605

Int. Cl. B01d *31/00*

U.S. Cl. 210—232 **20 Claims**



1. A module of a convolute design employing a permselective membrane for use in separating a permeate from a fluid feed mixture, said module comprising:

a generally-hollow mandrel having a wall intermediate its length dividing the mandrel into a first compartment and a second compartment with means for introducing a fluid feed stream to the first compartment of said mandrel and means for removing an effluent fluid stream from the second compartment of the mandrel;

two permselective membranes spaced from each other by a backing to provide a first fluid passageway therebetween; means defining a second fluid passageway for presenting the fluid feed to the two membranes upon the spiral wrapping of said two membranes about the mandrel to form a compact module roll, said second passageway beiing divided into two juxtapositioned regions which two regions at a spaced distance first compartment the mandrel are interconnected to direct flow of the fluid feed from the first region into the second region with said first region being in fluid communication with the firstcompartment of the mandrel to receive the incoming fluid feed and said second region being in fluid communication with the second compartment of the mandrel whence the effluent fluid stream is removed;

means for removal of fluid from the first fluid passageway to exterior of the module; and

means restraining the unspiralling of the compact module roll under operational conditions.

3,872,015
APPARATUS FOR SEPARATING FLUIDS INTO TWO FRACTIONS BY MEANS OF SEMIPERMEABLE MEMBRANES

Rud Erik Madsen, Nakskov, Denmark, assignor to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Feb. 2, 1973, Ser. No. 329,196

Claims priority, application United Kingdom, Feb. 2, 1972, 4971/72

Int. Cl. B01d *31/00*

U.S. Cl. 210—346 **4 Claims**

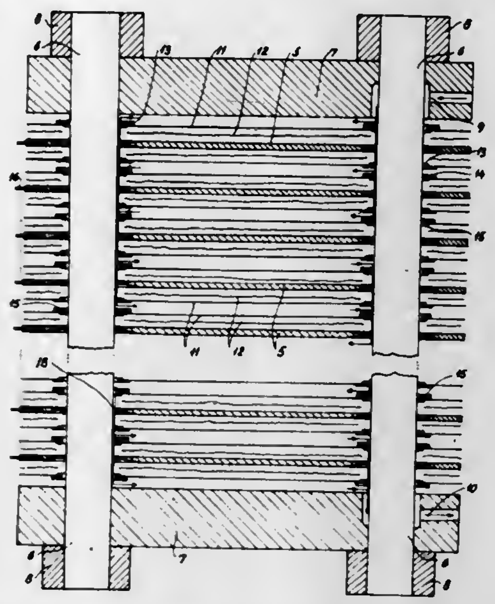
1. Apparatus for separating liquids into two fractions by means of semipermeable membranes, comprising:

a stack of membrane supports, each membrane support supporting at least one semipermeable membrane so as to form a flow passage extending parallel to the membrane surface;

liquid inlet and liquid outlet means communicating with said flow passages;

means for collecting and discharging liquid passing through said membranes; and

means for compressing the stack of membrane supports and membranes, said means for compressing including two spaced bolts connected to end flanges at the end of the stack, each bolt being inserted in aligned holes in said membrane supports and membranes to form around said bolt an annular flow passage extending longitudinally through said stack and communicating with a plurality of adjacent flow passages extending parallel to the membrane surfaces over which adjacent passages the liquid flows in the same direction, and a plurality of closing means provided at spaced locations in said longitudinal annular flow passages so as to deflect a liquid flow through such a longitudinal annular flow passage into the flow passages extending parallel to the membrane surfaces.



3,872,016
FILTER AID MATERIALS DISPERSIBLE IN ORGANIC LIQUIDS

George Richard Bell, Larkspur, Colo., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Mar. 25, 1974, Ser. No. 454,532

Int. Cl. B01d *39/00*

U.S. Cl. 210—500 **10 Claims**

1. A filter aid product dispersible in relatively non-polar organic liquids comprising an intimate mixture of a filter aid material and more than 0.1%, based on the weight of the filter aid material, of a surfactant selected from a group consisting of aliphatic and aromatic hydroxypoly (oxyethylene) mixtures of dihydrogen phosphate and monohydrogen phosphate esters containing from about 1 to about 5.5 moles of ethylene oxide per mole of aliphatic or aromatic base.

3,872,017
SKIMMING BLADE

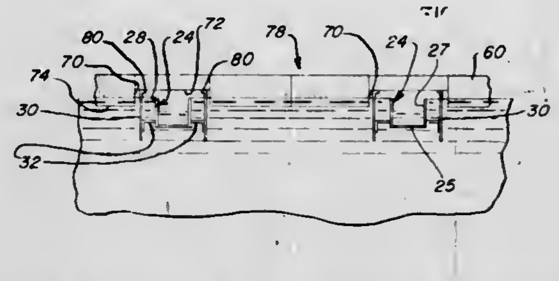
Wayne C. Bishop, Doylestown, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 18, 1972, Ser. No. 298,506

Int. Cl. B01d *21/00*

U.S. Cl. 210—525 **11 Claims**

1. In a liquid clarification apparatus including a tank having an inlet for supplying fluid with entrained solids and an outlet for receiving clarified liquid, said outlet including a plurality of transversely spaced longitudinally extending weir boxes, each having a bottom wall and side walls, said side walls having upper edges defining the liquid level for said tank; a traveling bridge above said tank; drive means for reciprocating said bridge between extreme positions parallel to said longitudinally extending weirs; and skimming means depending from said bridge for removing scum from the surface of said liquid, said skimming means including an elongated blade extending transversely of said tank, said blade having cutouts aligned with said weir boxes in the direction of travel of said bridge, and said cutouts having bases located above the lower edge of said blade and below the upper edge of said blade; and means maintaining said blade in a first skimming position while said bridge is moving in the area of said weir boxes, a second skimming position below said first skimming position while said blade is in the area of the tank between said inlet and said weir boxes and an inoperative position where said blade is located above said upper edges when said bridge is traveling in an opposite direction, said bases of said cutouts being located above said upper edges in said first skimming position and below said upper edges in said second skimming position while said lower edge of said blade is located below said upper edges in both skimming positions.



3,872,018
WATER LOSS ADDITIVE FOR SEA WATER MUD COMPRISING AN ALKALINE EARTH OXIDE OR HYDROXIDE, STARCH AND POLYVINYL ALCOHOL

Albert H. D. Alexander, Houston, Tex., assignor to Oil Base, Inc., Houston, Tex.

Filed Nov. 15, 1972, Ser. No. 306,856

Int. Cl. C10m *3/16*

U.S. Cl. 252—8.5 A **9 Claims**

1. An aqueous clay-free drilling fluid comprising an alkaline earth oxide or hydroxide dissolved in a brine solution and including starch as a fluid loss control agent, the improvement wherein said composition contains a small amount of polyvinyl alcohol polymer sufficient to maintain desirable fluid loss properties at elevated temperatures.

3,872,019
OIL-SOLUBLE LUBRICANT BI-FUNCTIONAL ADDITIVES FROM MANNICH CONDENSATION PRODUCTS OF OXIDIZED OLEFIN COPOLYMERS, AMINES AND ALDEHYDES

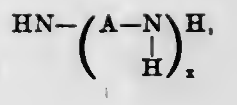
George S. Culbertson, Downers Grove; Gary R. Chipman, Naperville, and Robert E. Karll, Batavia, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 8, 1972, Ser. No. 278,719

Int. Cl. C08g *9/04*, *37/32*; **C10m** *1/32*

U.S. Cl. 252—51.5 A **13 Claims**

1. The oil-soluble condensation product prepared by the process comprising, reacting simultaneously at a temperature of from about 250°F. to about 350°F. (1) an oxidized high molecular weight amorphous copolymer of essentially ethylene and propylene, said copolymer having a number average molecular weight of at least about 10,000 and at least 140 pendant methyl groups per 1,000 chain carbon atoms, (2) a formaldehyde-yielding reactant and (3) a primary or secondary aliphatic amine selected from the group consisting of an alkyl amine having from about 2 to about 12 carbon atoms, an aliphatic diamine of the general formula $H_2N(CH_2)_yNH_2$ wherein y is an integer of from about 3 to about 10, and a polyalkylene polyamine of the general formula



$$\mathrm{HN}-\left(\mathrm{A}-\underset{\mathrm{H}}{\underset{|}{\mathrm{N}}}\right)_{x}\mathrm{H},$$

wherein *A* is a divalent alkylene radical of from about 2 to 6 carbon atoms, and *x* is an integer of from 1 to about 10, wherein said reactants are used in the respective reactant molar ratio of from about 1:2:2 to about 1:20:20.

3,872,020
DETERGENT COMPOSITIONS

Fumiaki Yamagishi, and Kenro Kitagawa, both of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Sept. 8, 1972, Ser. No. 287,551

Claims priority, application Japan, Sept. 18, 1971, 46-72819; Sept. 14, 1971, 46-71436

Int. Cl. C11d *3/16*

U.S. Cl. 252—89 **5 Claims**

1. An aqueous detergent composition having a good and stable transparency consisting essentially of 3 to 25 parts by weight of at least one sucrose ester of a saturated or unsaturated fatty acid having from six to 22 carbon atoms, the degree of substitution of substitution of said sucrose ester given by the average value of the number of esterified fatty acid molecules per one sucrose molecule being within the range of 1.0 to 1.8, 3 to 45 parts by weight of an organic acid component which is a member selected from the group consisting of malic acid, alkali metal salts of malic acid and mixtures of the foregoing, and 30 to 94 parts by weight of water.

3,872,021
CLEANING COMPOSITION

Audrey M. McKnight, 3524 East Avenue R, No. 96, Palmdale, Calif. 93550

Filed Nov. 13, 1972, Ser. No. 305,931

Int. Cl. C11d *9/32*

U.S. Cl. 252—121 **5 Claims**

1. A dry cleaning agent for textiles and the like comprising about 4 to 15 weight percent of a high molecule weight fatty acid soap, about 5 to 20 weight percent of anionic alkyl benzene sulfonate wherein the alkyl group contains from about 10 to 15 carbon atoms, about 5 to 20 weight percent amyl acetate, about 1 to 10 weight percent of a nonionic detergent, and from about 35 to 80 weight percent dry cleaning solvent.

3,872,022
SINTERING URANIUM OXIDE IN THE REACTION PRODUCTS OF HYDROGEN-CARBON DIOXIDE MIXTURES

William R. De Hollander, and Yogesh Nivas, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

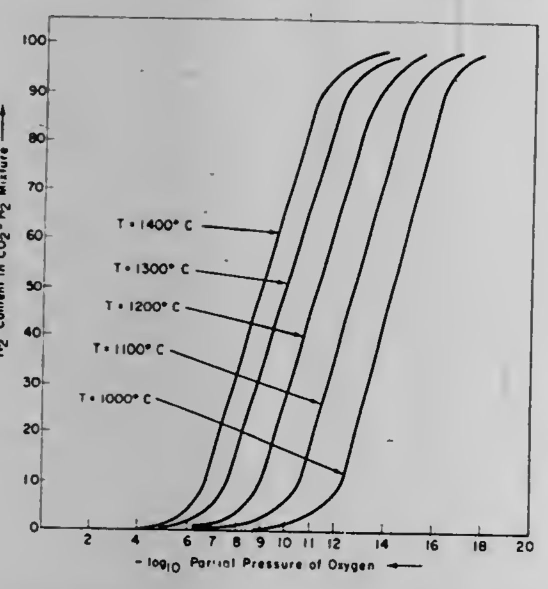
Continuation-in-part of Ser. No. 62,353, Aug. 10, 1970, abandoned. This application May 9, 1973, Ser. No. 358,737

Int. Cl. G04b *35/64*; **G21c** *3/62*

U.S. Cl. 252—301.1 R **19 Claims**

1. A method of producing dense, sintered bodies of a particulate composition comprising uranium oxide, comprising the steps of heating compacted bodies of the composition comprising uranium oxide, which composition can contain fluoride impurities, to a temperature in the range of about 900° to about 1,500°C in a sintering atmosphere consisting essentially of an initial mixture of carbon dioxide and hydrogen, either alone or with an inert gas, which mixture reacts to give the presence of water vapor and carbon monoxide, sintering the bodies in said atmosphere at a temperature in the range of 900° to 1,500°C, wherein said initial mixture of carbon dioxide and hydrogen is selected to give a ratio of oxygen to uranium

atoms in the sintered uranium oxide within the range of about 1.98:1 to about 2.10:1, and thereafter cooling the sintered body in a cooling atmosphere having an oxygen partial pressure in the range of 10^{-4} to 10^{-18} atmospheres of oxygen.



3,872,023
MICROCAPSULES HAVING WALLS MADE OF COPOLYMER OF METHYLMETHACRYLATE AND ACETYLACETATES OF MONO(METH) ACRYLATES OF ALIPHATIC DIOLS

Guenter Baum, Ludwigshafen; Rudolf Bachmann, Frankenthal, and Wolfgang Sliwka, Weinheim, all of Germany, assignors to Badische Anilin- & Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 17, 1972, Ser. No. 244,929
Int. Cl. B01j *13/02*

U.S. Cl. 252—316 **3 Claims**

1. Microcapsules of which the wall material consists of a copolymer of:

A. from 20 to 50 percent by weight of methyl methacrylate,
B. from 20 to 50 percent by weight of acetylacetates of mono(meth)acrylates of aliphatic diols of from 2 to 8 carbon atoms,
C. from 0 to 30 percent by weight of acrylamide,
D. 0 to 30 percent by weight of acrylic acid,
E. from 0 to 30 percent by weight of vinyl pyrrolidone, and
F. from 0 to 3 percent by weight of 2-sulfoethyl methacrylate; and the core substance includes a solvent or dispersing member selected from the group consisting of castor oil, sperm oil, olive oil, paraffins and waxes, chloroparaffins, chlorinated diphenyl, light naphtha, kerosene, dibutyl phthalate, tricresyl phosphate, benzene, toluene, xylene, ethylhexyl acrylate, n-butyl acrylate, t-butyl acrylate, lauryl acrylate, styrene and other hydrocarbons which are (1) soluble in methylene chloride; (2) substantially insoluble in water; and (3) less volatile than methylene chloride.

3,872,024
ENCAPSULATION PROCESS BY SIMPLE COACERVATION USING INORGANIC POLYMERS

Georg Horger, Steppach, Germany, assignor to NCR Corporation, Dayton, Ohio

Filed May 27, 1970, Ser. No. 41,112
Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **2 Claims**

1. In a process for manufacturing minute capsules, en masse, in an aqueous liquid capsule manufacturing vehicle comprising the step of

establishing an agitating three-phase aqueous liquid capsule manufacturing system wherein
  i. a major proportion of the system comprises a continuous phase of aqueous liquid,
  ii. a minor proportion of the system is a discontinuous phase of minute mobile particles of intended capsule core entities and,
  iii. a minor proportion of the system is a discontinuous phase of liquid globules of capsule wall material,

the capsule core entities being wettable by the capsule wall material, the three phases being substantially mutually immiscible, and the liquid globules of capsule wall material being present in sufficient volume to wet and enwrap the capsule core entities and comprising two hydrophilic polymeric materials

the improvement which comprises effecting establishment of the phase including capsule wall material by simple coacervation of poly(vinyl alcohol) concentrated in the capsule-wall-material-containing liquid phase using, as phase-separation-inducing material, an inorganic polymeric material wherein the inorganic polymeric material is selected from the group consisting of polyphosphates, polysilicates, polymolybdates, and polytungstates.

3,872,025
PRODUCTION AND UTILIZATION OF SYNTHESIS GAS

Alan H. Singleton, Emmaus, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 873,777, Oct. 31, 1969, abandoned. This application May 15, 1972, Ser. No. 253,363
Int. Cl. C07c *2/02, 2/06*

U.S. Cl. 252—373 **3 Claims**

1. An improved method of making prepressurized synthesis gas containing hydrogen from a low grade carbon monoxide containing industrial gas, after an initial removal of carbon dioxide, comprising:

a. cryogenically processing the carbon dioxide free industrial gas to form liquid carbon monoxide and cryogenically separating the carbon monoxide from the industrial gas as a liquid,
b. pumping the carbon monoxide as a liquid to raise the pressure of the liquid to from about 500 to 10,000 psia.,
c. heating the pressurized liquid carbon monoxide to above its boiling point while maintaining the pressure to produce without phase change a gaseous feed at between 500 and 10,000 psia.,
d. passing the pressurized feed gas to a high pressure catalystic water gas shift reactor and reacting said gas at substantially the pressure obtained in step (b) with steam of substantially the same pressure and at a temperature of from about 600° to about 900° F. to form prepressurized synthesis gas containing hydrogen and carbon monoxide and carbon dioxide.

3,872,026
NICKEL COMPLEX CATALYST COMPOSITIONS

Howard E. Dunn, Mount Vernon, Ind., assignor to Phillips Petroleum Company, Bartlesville, Okla.

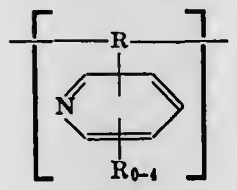
Division of Ser. No. 884,351, Dec. 11, 1969, Pat. No. 3,737,474. This application Mar. 30, 1973, Ser. No. 346,335
Int. Cl. B01j *11/84*

U.S. Cl. 252—429 B **11 Claims**

1. A catalyst system consisting essentially of (A) an organoaluminum compound having the formula $R''_n\ \mathrm{AlX}_m$ wherein each R″ is an alkyl, alkenyl, aryl, cycloalkyl radical, or combination thereof, having from 1 to 12 carbon atoms, X is a halogen, n is 1, 2, or 3, m is 0, 1, or 2, such that n plus m equals 3, and (B) a normally solid nickel complex

wherein said (B) normally solid nickel complex is the coordination product of a nickel compound and a complexing solid polymeric component, said nickel compound is a nickel salt of an acid selected from the group consisting of mineral acids, acetic and propionic acids, the amount of organoaluminum compound present being in the range of 0.1 to 20 moles per mole of nickel complexed with the polymer,

said complexing solid polymeric component is substantially hydrocarbon insoluble and is a polymer containing repeating units represented by :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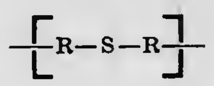
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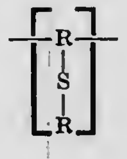
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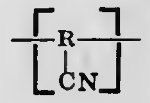
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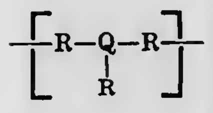
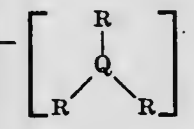

V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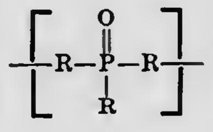
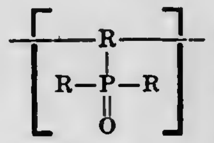

VII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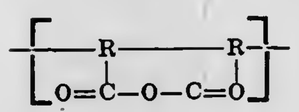
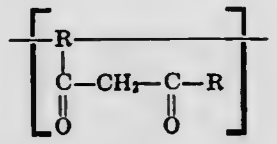

IX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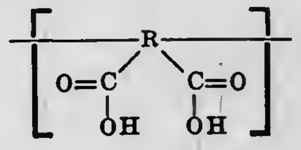

XI

wherein each R is an aromatic or aliphatic radical having up to 12 carbon atoms, Q is nitrogen, phosphorus, arsenic, or antimony, and said complexing solid substantially hydrocarbon insoluble polymeric component contains at least 75 percent by weight of one or more of said repeating units and the balance is hydrocarbon monomer copolymerizable therewith.

3,872,027
OXIDATIVE DEHYDROGENATION CATALYSTS AND THEIR METHOD OF PREPARATION

Harold F. Christmann, Seabrook, and Paul H. Teel, Houston, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 11,289, Feb. 13, 1970, abandoned. This application Aug. 6, 1973, Ser. No. 385,948
Int. Cl. B01j *11/22*

U.S. Cl. 252—430 **15 Claims**

1. In the method of preparing a catalyst for use in proceses for oxidatively dehydrogenating organic compounds wherein the method comprises

preparing a solution of a soluble iron component and another soluble metal component selected from the group consisting of Mg, Ca, Sr, Ba, Mn, Cr, Co, Ni, Zn, Cd and mixtures thereof,

contacting said solution of soluble components with a precipitation agent to precipitate an insoluble component of iron and the other metal at a temperature in the range of 20° to 100° C. and a pressure of .5 to 50 atmospheres,

recovering and filtering said insoluble metal component and calcining said metal component to form metal ferrite, wherein the improvement comprises

adding 0.1 to 4 weight percent based on the metal component of a soluble polyhydric organic compound to said solution prior to contacting said solution with said precipitating agent, said polyhydric compound having a number average molecular weight of about 3,000 to 400,000 and further being selected from the group consisting of polyesters derived from polybasic hydrocarbyl carboxylic acids and hydrocarbyl polyols; polyethers being the condensation products of ethylene oxide, propylene oxide or mixtures thereof with polyols; polysaccharides and mixtures thereof, said insoluble metal component being a gelatinous material.

3,872,028
PROCESS FOR THE PREPARATION OF PARTIALLY SULFIDED METALLIC SUPPORTED CATALYSTS

Hendrik Theodorus Rijnten, Maasland, and Eduard Theodoor Jasper Eikema, Den Brielle, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,726

Claims priority, application United Kingdom, Jan. 20, 1972, 2839/72; July 28, 1972, 35356/72
Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **4 Claims**

1. A process for the preparation of a partly sulfided metallic supported catalyst containing from about 2 to about 20 percent sulfur based on metal in which process a metal selected from the group consisting of nickel, molybdenum, cobalt, tungsten, iron, copper, cadmium and manganese, its hydroxide, oxide or salt, during or after precipitation on a support, is partly sulfided by contact with flowers of sulfur suspended in water at a temperature above 80°C with a pH between 7 and 11.

3,872,029
CATALYST FOR THE CONVERSION OF HYDROCARBON, A METHOD FOR THE PREPARATION OF THE CATALYST

Shinji Takase, Kawasaki, and Takahiko Yamazi, Yokohama, both of Japan, assignors to Nippon Oil company, Limited, Tokyo, Japan

Filed July 7, 1972, Ser. No. 269,712

Claims priority, application Japan, July 14, 1971, 46-51769The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl. B01j *11/40*

U.S. Cl. 252—453 **16 Claims**

1. A process for preparing a catalyst for the conversion of hydrocarbon which comprises preparing silica-alumina be reacting a water-soluble aluminum salt and a water-soluble silicon salt in an aqueous solution while maintaining the pH at least at 10, said salts being water-soluble at said pH, adding to the reaction solution an acid to adjust the pH to from about 1 to below 5 and increasing the pH of the resulting acid solution to 5–9 by addition of an alkali; blending said silica-alumina and a crystalline alumino-silicate zeolite having a silica and alumina molar ratio of at least 2.5:1 and a micropore diameter of 5–15A so that the finished catalyst ontains 5–60% by weight of said crystalline alumino-silicate; and carrying at least one hydrogenation-active metal thereon; said blending of crystalline alumino-silicate being conducted at any step before drying for dehydration of said silica-alumina; and at least 60% of an ion-exchangeable alkali metal of said crystalline alumino-silicate being replacing with hydrogen and/or at least one polyvalent metal before and/or after said blending.

3,872,030
MIX-MULLING PROCESS FOR IMPROVED HYDROTREATING CATALYST AND RESULTING PRODUCT

Irvin Ralph Feins, Westport, and Robert Alan Bornfriend, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 6, 1973, Ser. No. 330,167
Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **10 Claims**

1. A process for preparing a hydrotreating catalyst composite which comprises: preparing an aqueous slurry of alumina powder; furnishing to said slurry sufficient of (a) a soluble cobalt compound thermally decomposable to the metal oxide to provide from about 1 to 8 percent cobalt, (b) sufficient of a soluble molybdenum compound thermally decomposable to the metal oxide to provide from about 8 to 20 percent molybdenum, and (c) sufficient urea to provide at least 0.5 mole of urea per mole of cobalt present, said furnish providing in said

slurry an aqueous solution of said furnish stable against precipitation; mix-mulling the resulting slurry so as to obtain an extrudable consistency; extruding the mixed-mulled slurry; dehydrating the extrudate; and thereafter activating the composite formed to convert said metal compounds to the corresponding oxides, said percentages being by weight, based on the weight of the activated support and expressed as the oxides.

3,872,031

PROCESS FOR ALTERING FRAGRANCE WITH 4-(2,6,6-RIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-2-BUTANONE OR 4-(6,6-DIMETHYL-2-METHYLENE-3-CYCLOHEXEN-1-YL)-2-BUTANONE

Braja Dulal Mookherjee, Matawan; Robert Walter Trenkle, Bricktown; Manfred Hugo Vock, West Orange, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 7, 1973, Ser. No. 386,320

Int. Cl. C11b *9/00*

U.S. Cl. 252—522 **2 Claims**

1. A process for altering the fragrance of a consumable material selected from the froup consisting of a soap, detergent cosmetic, space deodorant, space odorant, and perfume composition which comprises adding thereto a small but effective amount of a butanone compound selected from the group consisting of 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanone and 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanone.

3,872,032

PROCESS FOR THE PREPARATION OF GRAPHITE FLUORIDE

Toyonosuke Kanemaru, Yokohama; Toshio Shimada, Maebashi, and Isao Inudow, Shibukawa, all of Japan, assignors to Nippon Carbon Co. Ltd., Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,876

Claims priority, application Japan, Feb. 14, 1972, 47-15405

Int. Cl. C08b *31/00, 7/00*

U.S. Cl. 260—2 H **6 Claims**

1. A process for the preparation of a white-colored, inorganic, high molecular weight graphite fluoride having a carbon-to-fluorine atomic ratio of 1:1, comprising reacting a non-crystalline carbon selected from the group consisting of coke, carbon black, charcoal and carbonized sugar with a fluorine material consisting essentially of fluorine and hydrogen fluoride, said hydrogen fluoride being present in an amount not more than 5% by volume, of said fluorine, for a sufficient time to obtain the graphite fluoride.

3,872,033

FOAMED REACTION PRODUCT OF A RESALE WITH A SULFONATED NOVOLAC

Philip Boden, Aberdeen, Scotland; Peter John Crook, Wallasey, England; Michael Edgar Hall, Warrington, England, and Stephen Philip Riley, Prescot, England, assignors to Fibreglass Limited, Liverpool, England

Division of Ser. No. 123,851, March 12, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,267

Claims priority, application United Kingdom, Mar. 13, 1970, 12311/70

Int. Cl. C08g *53/08;* **C08j** *1/26*

U.S. Cl. 260—2.5 F **6 Claims**

1. A solid fire-retardant phenol-formaldehyde resin foam produced by reacting a first composition with a resole in the presence of a surfactant and a foaming agent, said first composition acting as a hardener for said resole and being produced by reacting a phenol with concentrated sulphuric acid in the ratio 0.8 to 1.5 moles of sulphuric acid per mole of the phenol and then adding per mole of the phenol a quantity of formaldehyde in the range having a lower limit of 0.3 mole and an upper limit of 0.8 mole when using 0.8 mole of sulphuric acid and decreasing to 0.5 mole when using 1.5 moles of sulphuric acid; said resole being produced by reacting a phenol and formaldehyde in the ratio of at least 0.9 mole of formaldehyde per mole of the phenol in the presence of a basic catalyst.

3,872,034

PHENOLIC FOAM

Eugene A. Dickert, Kansas City, Mo., assignor to Cook Paint & Varnish Company, Kansas City, Mo.

Filed Feb. 2, 1973, Ser. No. 329,166

Int. Cl. C08g *22/16, 22/44*

U.S. Cl. 260—2.5 AM **4 Claims**

1. A rigid resole phenolic foam which is non-corrosive, free from punking, non-friable and of uniform and strong cell structure with a density of up to about 1.5 lbs/ft^3, said foam being obtained by foaming and curing at a temperature below 90°F, a reaction mixture expressed on the basis of weight percentages of the reaction mixture consisting of from about 15% to about 55% of a resole resin; from about 6% to about 20% of an alkylene glycol selected from the group consisting of ethylene glycol, butylene glycol, propylene glycol, diethylene glycol and dipropylene glycol; from about 3% to about 25% of a halo-organic phosphate plasticizer-flame retardant which has a boiling point above the reaction temperature and a halogen/carbon ratio sufficiently high to possess fire retardant properties; from about 0.01% to about 3% of stannous chloride or non-acidic organotin catalyst; from about 0.01% to about 20% of a surfactant; from about 30% to about 60% of a difunctional diisocyanate; and from about 1% to about 30% of a blowing agent which is a halogenated alkane having 1 to 3 carbon atoms and a boiling point below 90°F.

3,872,035

N-(2-HYDROXYETHYL)-ETHYLENEIMINES AS CATALYSTS FOR POLYISOCYANURATE FOAM FORMATION

Anthony J. Papa, St. Albans, W. Va., and William R. Proops, Hockessin, Del., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 764,288, Oct. 1, 1968, abandoned. This application Apr. 12, 1973, Ser. No. 350,588

Int. Cl. C08g *22/46, 22/34*

U.S. Cl. 260—2.5 AW **10 Claims**

1. A process for producing a closed cell rigid organic polyisocyanurate foam by reacting and foaming a reaction mixture comprising an organic polyisocyanate, a catalytic amount of N-(2-hydroxyethyl)-ethylene imine and a blowing agent, said blowing agent consisting of a low boiling alkane or a low boiling haloalkane.

3,872,036

PROCESS FOR PREPARATION OF RUBBER COMPOSITION

Yoshihiro Todani, Kamakura; Nagatoshi Sugi, and Kinro Hashimoto, both of Yokohama, all of Japan, assignors to The Japanese Geon Co. Ltd., Tokyo, Japan

Filed Mar. 10, 1971, Ser. No. 123,020

Claims priority, application Japan, Mar. 11, 1970, 45-20071

Int. Cl. C08c *9/04, 11/18;* **C08d** *9/00*

U.S. Cl. 260—5 **3 Claims**

1. In a process for the preparation of a carbon black-containing rubber composition wherein the rubber components of said composition consist of 80–40 percent by weight of butadiene-acrylonitrile copolymer rubber (A) and 20–60 percent by weight of isoprene-acrylonitrile copolymer rubber (B) or 60–30 percent by weight of butadiene-styrene copolyner (A) and 40–70 percent by weight of natural rubber (B), the improvement wherein a rubber composition having improved green strength is obtained by mixing 100 parts by weight of said rubber (A) with 30–100 parts by weight of carbon black, milling the resulting mixture and aging the resulting mixture by allowing said mixture to stand at room temperature for a period of at least 12 hours, and then mixing the milled and aged mixture with said rubber (B), and milling the resultant mixture.

3,872,037

IMPROVED CARBOXYLIC LATEX FOR PAPER COATING UTILIZING BUTADIENE-STYRENE-ACRYLIC ACID-ACROLEIN TETRAPOLYMERS

Alastair Cameron MacLeod, Sarnia, Ontario, Canada, assignor to Polysar Limited-Polysar Limitee, Sarnia, Ontario, Canada

Division of Ser. No. 204,748, Dec. 3, 1971,. This application Jan. 26, 1973, Ser. No. 327,227

Claims priority, application Canada, Dec. 11, 1970, 100375

Int. Cl. C08f *15/40, 19/08, 45/06*

U.S. Cl. 260—8 **10 Claims**

1. A composition comprising (A) an alkaline latex of a copolymer of (a) at least 25 parts of an acyclic C_4-C_8 conjugated diolefin selected from butadiene-1,3, isoprene, chloroprene and 2,3-dimethyl butadiene-1,3, (b) at least 25 parts of a mono-olefinically unsaturated copolymerizable compound which is free of carbonyl and carboxyl groups selected from styrene, substituted styrenes, esters of acrylic acids and C_1-C_6 alcohols and mixtures thereof, (c) 3 parts of an olefinically unsaturated carboxylic acid selected from (a) unsaturated carboxylic acids containing 3-5 carbon atoms, (b) cinnamic acid and (c) mixtures thereof and (d) 3 parts of an olenfinically unsaturated carbonyl compound of the general formula $H(R_1)C{=}C(R_2)\text{-}C(R_3)O$ where R_1 is selected from hydrogen and C_1-C_6 monovalent hydrocarbon radicals and R_2 and R_3 are selected from hydrogen and C_1-C_2 alkyl radicals selected from acrolein, alpha-methyl, beta-methyl and beta-phenyl acroleins, methyl vinyl ketone and mixtures thereof, said parts being parts by weight per 100 parts by weight of copolymer, (B) and inert filler in amount of about 1–20 parts per one part by weight of copolymer, and (C) a starch or protein adhesive in amount of about 3–30 parts per 100 parts by weight of filler.

3,872,038

AQUEOUS BASED RELEASE COMPOSITION

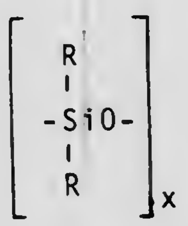
William Kiger Adams, and James Alan Anderson, both of Tecumseh, Mich., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 3, 1973, Ser. No. 420,818

Int. Cl. C08g *47/02*

U.S. Cl. 260—13 **10 Claims**

1. A release composition comprising
A silicone emulsion in an amount to provide from 2 to 25 percent by weight of silicone in said release composition,
B from 0.1 to 5 percent by weight of a dispersing agent,
C from 0 to 25 percent by weight of a lubricant,
D from 20 to 60 percent by weight of a filler,
E from 0.02 to 1.5 percent by weight of a suspending agent, and
F at least 20 percent by weight of water based on the weight of the release composition, said silicone emulsion is obtained by (1) mixing an organopolysiloxane fluid having recurring units of the formula



$$\left[\begin{array}{c} R \\ | \\ -SiO- \\ | \\ R \end{array}\right]_x$$

wherein R, which may be the same or different, is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and x is a number greater than 20, and a silicone gum having a plasticity value of from 80 to 120 millimeters with sufficient organic solvent to form a silicone solvent dispersion having an average viscosity of from 10,000 to 100,000 cps. at 25°C., said silicone gum to organopolysiloxane fluid being in a weight ratio of from 1:3 to 1:25, (2) adding said silicone dispersion to a mixture containing an emulsifying agent and sufficient water to form a water-in-oil emulsion having a paste-like consistency, said emulsifying agent and silicone dispersion being in a weight ratio of from 1:10 to 1:25 and thereafter (3) adding with agitation sufficient water to invert the water-in-oil emulsion to an oil-in-water emulsion.

3,872,039

CELLULOSIC MATERIALS INTERNALLY SIZED WITH LOW MOLECULAR WEIGHT COPOLYMERS OF ALPHA, BETA-ETHYLENICALLY UNSATURATED HYDROPHOBIC MONOMERS AND AMMONIATED CARBOXYLIC ACID COMONOMERS

Walter Lee Vaughn, Lake Jackson, and Robert James Beam, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1974, Ser. No. 438,914

Int. Cl. C08g *45/18*

U.S. Cl. 260—17.4 ST **21 Claims**

1. In a method for internal sizing of a cellulosic material wherein an internal sizing agent and a retention aid are applied to the fibers of the cellulosic material, the improvement wherein the internal sizing agent is a water-dispersible, water- and alkali-insoluble copolymer of an α,β-ethylenically unsaturated hydrophobic monomer and an ammoniated α,β-ethylenically unsaturated carboxylic acid, said copolymer having a number average molecular weight as determined by ebulliometry in the range from about 1,000 to about 10,000.

3,872,040

WAX-CONTAINING POWDER COATINGS

Kenneth L. Mollohan, Freeport, and Joseph M. Makhlouf, Mars, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1972, Ser. No. 294,046

Int. Cl. C09d *3/58, 3/60, 3/66*

U.S. Cl. 260—21 **15 Claims**

1. A method of providing a substantially void-free film surface from a resin powder coating composition which comprises the steps of:

a. incorporating from about 2 percent to about 5 percent by weight of resin solids of a natural or synthetic wax in said resin powder coating composition, wherein said resin powder coating composition comprises a resin powder selected from the group consisting of crosslinking acrylic copolymers, polyesters, polyepoxides and amide-imine polymers;
b. applying said wax-containing resin powder coating composition to a substrate; and
c. fusing said wax-containing resin powder composition thereby producing a substantially void-free film surface.

3,872,041

THERMOPLASTIC FILM

Marvin A. Koerber, Abbeville, S.C., assignor to Automation Industries, Inc., Century City, Los Angeles County, Calif.

Filed May 31, 1973, Ser. No. 365,566

Int. Cl. C08f *19/14*

U.S. Cl. 260—23 XA **8 Claims**

1. A flexible and multi-directional stretchable sheet which is resistant to flame, moisture and degradation upon exposure to ultraviolet light and temperatures between −20°F and 140°F, said sheet consisting essentially of (A) a thermoplastic resin component consisting essentially of from 45 to 80 percent, by weight, of chlorinated polyethylene and from 20 to 55 percent, by weight, of polyvinylchloride; (B) from 2 to 4 parts, by weight, based on the resin component, of a heat stabilizer selected from the group consisting of an epoxy stabilizer, a

barium-cadmium stabilizer, and an organa-tin stabilizer; (C) from 10 to 35 parts, by weight, based on the weight of the resin component, of a flame retardant selected from the group consisting of alumium oxide and antimony oxide; and (D) from 0.25 to 2.0 parts, by weight, based on the weight of the resin component, of a phosphate chelating agent.

3,872,042

PLASTIC LENSES AND METHOD OF MAKING SAME

Herbert M. Bond, Stillwater, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 222,464, Feb. 1, 1972, abandoned. This application Aug. 28, 1973, Ser. No. 392,268

Int. Cl. C08f *15/02, 15/16*

U.S. Cl. 260—23 AR **4 Claims**

1. The process of making a copolymerized lens having a convex surface and a concave surface with a monomer mixture of methyl methacrylate and diethylene glycol bis (allyl carbonate) which comprises mixing together in an evacuable container methyl methacrylate and diethylene glycol bis (allyl carbonate) with the monomer methyl methacrylate ranging from 11 to 13% by weight of the monomer mixture and the monomer diethylene glycol bis (allyl carbonate) ranging from 89 to 87% by weight of the monomer mixture, adding to the monomer mixture a catalyst of benzoyl peroxide ranging from 1 to 1.5% by weight of the monomer mixture of methyl methacrylate and diethylene glycol bis (allyl carbonate), drying the mixture to remove any water therein, evacuating the air from the evacuable container containing the mixture, followed by pressurizing the evacuable container with nitrogen gas to prevent formation of bubbles in the lens during the curing cycle, forcing the mixture into a mold followed by copolymerizing the mixture by curing the mixture in an oven at about 65° C. for a minimum of about three hours followed by raising the temperature from about 65° to about 75° C. in a minimum of about 4 hours, followed by raising the temperature from about 75° C. to about 100° C. in a minimum of about 10 hours and then stripping the copolymerized lens from the mold.

3,872,043

PREPARATION OF POLYCHLOROPRENE FOR USE IN ADHESIVES

Paul Branlard, Grenoble, and Jacques Modiano, Varces, both of France, assignors to Distugil, Clichy, France

Filed Nov. 28, 1972, Ser. No. 310,105

Claims priority, application France, Dec. 9, 1971, 71.45172

Int. Cl. C08c *11/72;* **C08d** *9/14*

U.S. Cl. 260—23.7 H **13 Claims**

1. Process for the production of polychloroprene rubber in an aqueous emulsion, comprising polymerizing chloroprene in the presence of an emulsifying system, the weight composition of which with regard to chloroprene is 1.8 to 3% of resinic acid or salt selected from the group consisting of non-modified rosin, disproportioned rosin, hydrogenated rosin and their alkaline soaps and 0.1 to 1% of saturated or unsaturated fatty acid selected from the group consisting of lauric acid, myristic acid, stearic acid, oleic acid, palmitic acid, and synthetic fatty acid, an alkaline salt of said fatty acid, a mixture of said fatty acids, mixtures of said alkaline salts, or mixtures of said fatty acids and alkaline salts.

3,872,044

THERMOPLASTIC SCREEN PROCESS INKS

John D. Hervey, Cleveland Heights, and Waymon G. Smith, Cleveland, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Sept. 25, 1972, Ser. No. 291,710

Int. Cl. B44d *1/09;* **c08g** *41/02;* **C08g** *51/48*

U.S. Cl. 260—30.8 R **10 Claims**

1. A normally solid, thermo-fluid, fast-set ink free of liquid vehicle adapted for direct application by a screen process to ceramic, metal and plastic ware and for substantially instant solidification after application, said ink consisting essentially of: 60 to 80 parts by weight of a solid, thermoplastic polyamide resin consisting essentially of the reaction product of a dicarboxylic acid and a linear diamine, and 0.5 to 10.0 parts of a compatible liquid plasticizer for the resin consisting essentially of an aryl sulfonamide, said polyamide resin with said plasticizer having a melting point within the range of about 85°C to about 120°C, and a sufficient amount of a pigment to impart color to said ink.

3,872,045

FLUORINATED EPOXY RESINS CONTAINING POLYTETRAFLUOROALKYLENE FILLERS

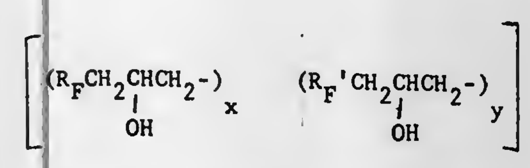
Donald E. Field, Falls Church, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1973, Ser. No. 390,673

Int. Cl. C08g *30/14, 45/04, 51/02*

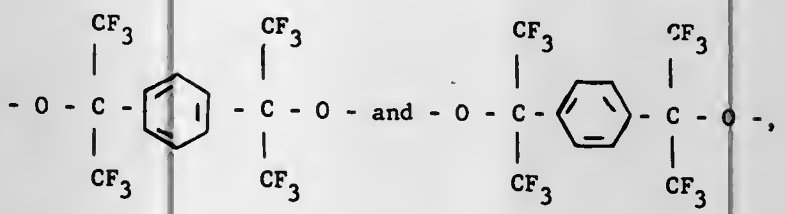
U.S. Cl. 260—31.2 R **12 Claims**

1. A coating comprising a solution of an epoxy - terminated polymer having recurring units of the formula



$$\left[(R_F CH_2 \underset{OH}{\underset{|}{CH}} CH_2-)_x \quad (R_F' CH_2 \underset{OH}{\underset{|}{CH}} CH_2-)_y \right]$$

wherein the units recur more than 9 times, R_f is selected from the group consisting of



R_f' is $—OCH_2(CF_2)_zCH_2O—$, *z* being an integer from 2 to 12, *x* is integer from 1 to 4 and *y* is an integer from 0 to 4, and a solvent in an amount from 35 to 65 weight percent of total composition;

said solution being mixed with a fluorinated polymeric extender, a pigment and a crosslinking agent.

3,872,046

SULFONATED PHENOL (SULFO) PHTHALEIN

Saburo Torii, Tokyo; Takaaki Miyazaki, and Tatsuo Aizawa, both of Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

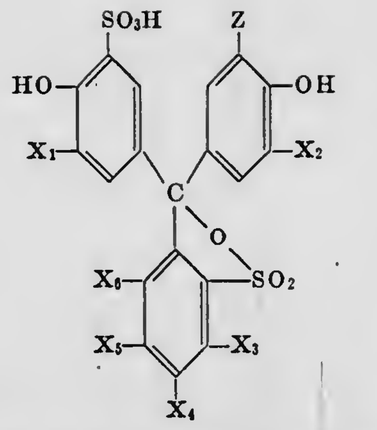
Filed Mar. 3, 1972, Ser. No. 231,744

Claims priority, application Japan, Mar. 8, 1971, 46-11812

Int. Cl. C07d *89/06*

U.S. Cl. 260—327 S **8 Claims**

1. A compound of the formula



wherein X_1 and X_2 each represent a halogen atom or alkyl group having 1 to 4 carbon atoms; X_3, X_4, X_5 and X_6 each represent hydrogen atom, halogen atom, alkoxy group having 1 to 4 carbon atoms or nitro group, and Z represents a hydrogen atom, halogen atom or sulfonic acid group, or an alkali salt thereof.

3,872,047

COMPOSITION AND METHOD FOR IMPROVING ADHERENCE OF POLYMERIC MATERIALS TO SUBSTRATES

Hana Jandourek, 4475 Jonathon Ave., Dearborn, Mich. 48126

Filed Dec. 4, 1972, Ser. No. 311,788

Int. Cl. C08f *45/32, 15/36*

U.S. Cl. 260—33.4 R **3 Claims**

1. A primer to improve the adherence of a free radical polymerized dental restorative material comprising a polar low aliphatic alcohol liquid solvent having a boiling point between about 50°C and 150°C and containing in solution a polymeric composition characterized by containing high polar, hydrophillic surface active groups and low polar hydrophobic reactive groups, said low polar reactive groups being located in terminal positions in the structure of said polymeric material, said polymeric material being the reaction product of polyacrylic acid and a monomer selected from the group consisting of glycidyl methacrylate and sulfoethylmethacrylate, the mol ratio of said polyacrylic acid to said monomer is between 0.1:1 to about 1:1 on mol weight/mol weight basis.

3,872,048

HYDRAULIC AND LUBRICATING OIL COMPOSITION

Charles L. Brown, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 28, 1970, Ser. No. 75,896

Int. Cl. C10m *1/40, 1/26*

U.S. Cl. 252—33.4 **6 Claims**

1. A hydraulic and lubricating oil composition comprising 1. 94–97 percent by weight petroleum oil which is itself a mixture of 15–95 percent by weight of solvent refined neutral oil derived from a midcontinent crude which has a viscosity of 33–41 centistokes at 100°F, a viscosity of 5.2–6.0 centistokes at 210°F and a viscosity index of 100–108, and 5 to 85 percent by weight of solvent refined neutral oil derived from midcontinent crude which has a viscosity of 110–135 centistokes at 100°F, a viscosity of 10–14 centistokes at 210°F and a viscosity index of 90 to 95;

2. about 0.3–0.5 percent by weight 2,6-ditertbutyl p-cresol;
3. an emulsifier consisting of about 2.0–3.0 percent by weight neutral calcium petroleum sulfonate as a 40–60 percent by weight mixture in a petroleum oil carrier;
4. about 0.8–1.2 percent by weight of the reaction product of ethylene oxide and nonyl phenol in a ratio between 3:1 and 7:1 and which has a hydroxyl number between 120–140; and
5. about 0.25–0.35 percent by weight sorbitan monooleate.

3,872,049

METHOD FOR PREPARING UREA URETHANE POLYMER PARTICLES

Basil S. Farah, Elma, and Henry A. Kasprzak, Lackawanna, both of N.Y., assignors to Textron, Inc., Providence, R.I.

Filed Oct. 2, 1973, Ser. No. 402,722

Int. Cl. C08g *51/28*

U.S. Cl. 260—33.6 UB **32 Claims**

1. A method for preparing finely-divided, urea-urethane particles comprising combining under agitation and in an inert liquid, aromatic hydrocarbon-containing reaction medium, diamine and isocyanate-terminated urethane prepolymer of hydroxy-terminated polyester polyol and essentially hydrocarbon diisocyanate to provide urea-urethane polymer, said liquid reaction medium containing sufficient aromatic hydrocarbon solvent which swells urea-urethane polymer, to dissolve the isocyanate-terminated urethane prepolymer; and contacting the urea-urethane polymer with aliphatic or alicyclic hydrocarbon liquid to obtain urea-urethane particles.

3,872,050

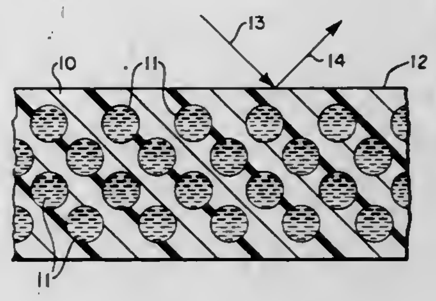
POLYURETHANE LIQUID CRYSTAL DISPERSION SYSTEM AND DEVICES

William J. Benton, 1046 Murray Hill Ave., and Joseph R. Quigley, 6611 Ridgeville St., both of Pittsburgh, Pa. 15217

Continuation-in-part of Ser. No. 273,105, July 19, 1972, abandoned. This application Aug. 9, 1973, Ser. No. 387,110

Int. Cl. G02s *1/16*

U.S. Cl. 260—37 N **16 Claims**



1. A polymerized polyurethane elastomer which is a reaction product of at least one organic polyisocyanate and at least one organic compound containing at least one active hydrogen according to the Zerewitinoff method.

said elastomer having uniformly dispersed therethrough naked aggregates of liquid crystals which provide a visible response to application of energy said liquid crystals having a particle size of 0.1 to 300 microns and wherein the said liquid crystals constitute at least 20 per cent of the weight of the elastomer.

3,872,051

ADHESIVES CONTAINING METAL POWDERS

George T. Tiedeman, and Maurice F. Gillern, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed May 25, 1972, Ser. No. 256,708

Int. Cl. C08g *51/04*

U.S. Cl. 260—38 **24 Claims**

1. In a liquid, curable adhesive composition comprising an aldehyde condensation polymer and having a pH of less than 3.5, the improvement wherein said composition further comprises a minor amount of a metal selected from aluminum and iron, said metal being in a finely divided form.

3,872,052

POLYPROPYLENE COMPOSITION

Ivor R. Fielding, Naperville, and Wassily Poppe, Lombard, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 25, 1974, Ser. No. 436,711

Int. Cl. C08f *45/16*

U.S. Cl. 260—42.46 **8 Claims**

1. A composition having improved stiffness comprising a resinous polymer of propylene and an acicular hydrated sodium aluminum carbonate in a concentration of 1 to 25 parts by weight per 100 parts by weight resinous polymer of propylene, wherein said hydrated sodium aluminum carbonate has a ratio of length to diameter of at least 25:1.

3,872,053

FLAME-RETARDANT POLYURETHANE COMPOSITIONS

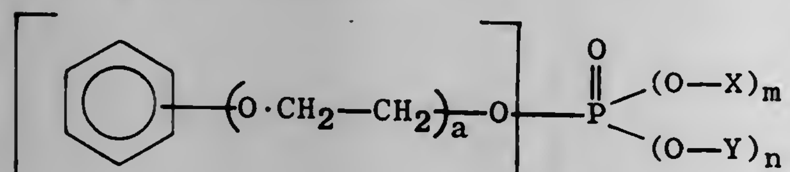
Joseph Fath, Princeton, and Roy T. Gottesman, Glen Rock, both of N.J., assignors to Tenneco Chemicals Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 290,059, Sept. 18, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 424,237

Int. Cl. C08d *11/04*

U.S. Cl. 260—45.7 P **14 Claims**

1. A flame-retardant polyurethane resin composition that comprises (a) the reaction product of an organic polyisocyanate and a polyol having a molecular weight of at least about 500 and (b) a flame-retarding amount of a phosphate ester that has the structural formula



wherein X and Y each represents haloalkyl having 2 to 4 carbon atoms and at least 2 halogen atoms selected from the group consisting of chlorine, bromine, and mixtures thereof; *a* represents a number in the range of 0 to 1; and

m and *n* each represents a number in the range of 0 to 2, the sum of *m* and *n* being 1 to 2.

3,872,054

FLAME RETARDANT ROOM TEMPERATURE VULCANIZING ORGANOPOLYSILOXANE COMPOSITION

Harvey P. Shaw, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,554

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.7 R **7 Claims**

1. Composition convertible to the solid, cured elastic state upon exposure to moisture comprising

A. a substantially liquid organopolysiloxane having a viscosity of from 200 to 500,000 centistokes containing an average of from 1.85 to 2.02 silicon-bonded organic groups per silicon atom, and containing from 0.02 to 2.0 mole percent silicon-bonded hydroxyl and/or alkoxy groups;

B. an organotriacyloxysilane or an organosilicate having the formula,

$$R''Si(OY)_3$$

wherein R'' is selected from the class of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals, and cyanoalkyl radicals, and Y is selected from the class of a saturated aliphatic monoacyl radical of a carboxylic acid and an alkyl radical; and

C. an effective flame retardant amount of a halogenated organic compound containing a ratio of 4 bromine atoms to 6 chlorine atoms, and a total halogen content of about 76.9 weight percent, said flame retardant being an adduct of Cl_6C_5 containing at least one bromine substituted aromatic ring and being a white, free-flowing crystalline powder, having a melting point of 179°C, a density of 2.37 gm/cc at 20°C, a vapor pressure of 0.0014 mm Hg at 139°C, and the following solubility characteristics;

Solvent	Grams of flame retardant/100 ml of solvent at 25°C
Benzene	0.23
Xylene	0.18
Methylene Chloride	0.15
Heptane	Insoluble
Methyl Ethyl Ketone	0.07
Isopropyl Alcohol	Insoluble
Carbon Tetrachloride	0.13
Acetylene Tetrachloride	0.16

3,872,055

POLYAMIDE COMPOSITION HAVING DECREASED GEL-FORMING PROPERTY IN MOLTEN STATE

Kaoru Furukawa; Chiaki Isukamoto, and Hiroshi Nagai, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

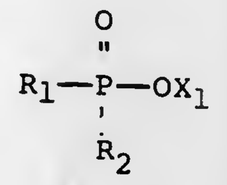
Filed Aug. 15, 1973, Ser. No. 388,698

Claims priority, application Japan, Aug. 19, 1972, 47-83118; Sept. 7, 1972, 47-89853; Sept. 27, 1972, 47-97558

Int. Cl. C08g *51/60*

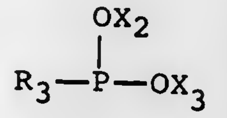
U.S. Cl. 260—45.7 P **6 Claims**

1. A polyamide composition which comprises a polyamide; at least one phosphorus component (A) selected from the group consisting of (1) a phosphinic acid compound of the formula



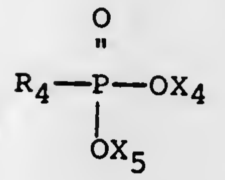
$$R_1-\overset{\overset{O}{\|}}{\underset{\underset{R_2}{|}}{P}}-OX_1$$

in which each of R_1 and R_2 is hydrogen, alkyl, aryl or cycloalkyl, and X_1 is hydrogen, alkyl, aryl, cycloalkyl or an alkali metal, or X_1 may be linked to either R_1 or R_2 to form a ring, (2) a phosphonous acid compound of the formula



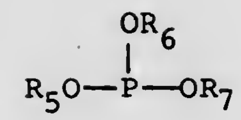
$$R_3-\overset{\overset{OX_2}{|}}{P}-OX_3$$

in which R_3 is hydrogen, alkyl, aryl or cycloalkyl, and each of X_2 and X_3 is hydrogen, alkyl, aryl, cycloalkyl or an alkali metal, or one of X_2 or X_3 may be linked to R_3 to form a ring (3) a phosphinic acid compound of the formula



$$R_4-\overset{\overset{O}{\|}}{\underset{\underset{OX_5}{|}}{P}}-OX_4$$

in which R_4 is hydrogen, alkyl, aryl or cycloalkyl, and each of X_4 and X_5 is hydrogen, alkyl, aryl, cycloalkyl or an alkali metal, or one of X_4 and X_5 may be lined to R_4 to form a ring, and (4) a phosphorous acid compound of the formula

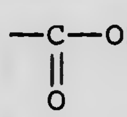


$$R_5O-\overset{\overset{OR_6}{|}}{P}-OR_7$$

in which each of R_5, R_6 and R_7 is hydrogen, alkyl, aryl or cycloalkyl; and at least one alkali metal component (B) of the formula

$$Z-OR_8$$

in which Z is an alkali metal, and R_8 is hydrogen, alkyl, aryl, cycloalkyl or a group of the formula



$$-\underset{\underset{O}{\|}}{C}-OZ'$$

wherein Z' is hydrogen or an alkali metal; the amount of component (A) being from 50 to 1,000 ppm, in terms of phosphorus, based on the weight of the polyamide; and the amount of component (B) being from 1 to 5 moles, in terms of alkali metal, per mole of component (A).

3,872,056

MANUFACTURE OF PHENOL/FORMALDEHYDE RESINS

Ewald Daubach, 18 Verschaffelstrasse, 6700 Ludwigshafen; Hermann Windel, 15 Knietschstrasse, 6710 Frankenthal; Walter Boehm, 11 Mittlerer Waldweg, 6719 Kirchheim; Dieter Weiser, 14 Berliner Strasse, and Manfred Herrmann, 23 Parkstrasse, both of 6700 Ludwigshafen, all of Germany

Filed Jan. 14, 1974, Ser. No. 433,361

Int. Cl. C08g *5/06*

U.S. Cl. 260—49 **1 Claim**

1. In a process for the manufacture of sulfo group-containing phenol/formaldehyde condensates on the basis of alkaline condensation of phenols, formaldehyde or formaldehydedonating substances, a compound selected from the group consisting of sodium sulfite and sodium bisulfite and alkali metal hydroxide at elevated temperature, which phenols, formaldehyde or formaldehyde-donating substances, compound selected from the group consisting of sodium sulfite and sodium bisulfite and alkali metal hydroxides are used in the condensation in molar ratios of from 1:1.0:0.3:0.05 to 1:4:1.6:0.5, wherein the improvement comprises effecting condensation using phenol itself as starting component at temperatures of from 125° to 200°C.

3,872,057

POLYMERS COUPLED BY NITROSO GROUPS

Jose F. Pazos, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 195,027, Nov. 2, 1971, abandoned. This application Feb. 2, 1973, Ser. No. 329,072

Int. Cl. C08g *22/10*

U.S. Cl. 260—75 TN **26 Claims**

1. A nitrosated precursor compound containing an average of at least two C-nitroso groups per molecule said nitroso group being attached to an aliphatic carbon atom or to an aromatic ring containing two ortho substituents of lower alkyl, lower alkoxycarbonyl or chlorine and joined by a carbonyl linkage and at least two of which are separated from the nearest nitroso group by at least six atoms, said precursor compound being

1. organic monomers or polymers melt fabricable below 200°C; or

ii. a melt-compatible blend of said monomers or polymers, said nitrosated precursor compounds coupling to polymers at ambient temperatrue by dimerization of said nitroso groups.

3,872,058

FLUORINATED POLYURETHANE STAIN REPELLENTS

John T. Gresham, Skillman, N.J., assignor to AMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 184,267, Sept. 27, 1971, abandoned. This application Jan. 10, 1974, Ser. No. 432,173

Int. Cl. C08g *22/08*

U.S. Cl. 260—77.5 AM **13 Claims**

1. A fluorinated polyurethane selected from the class consisting of (A) the reaction product formed by sequentially reacting (a) an organic polyol containing 2 to 6 primary or secondary —OH functions, the polyol having a molecular weight not exceeding about 2000 and free of repeating $—OCH_2CH_2—$ units with (b) Z' moles (Z'=3–6) of an organic diisocyanate to form the adduct $J(NCO)_{Z'}$ wherein J contains three to six urethane functions and then reacting $J(NCO)_{Z'}$ with (c) 0.3Z' to Z' moles of $R_fC_nH_{2n-a}(OH)_aXR'(OH)_b$ wherein R_f is a perfluoroalkyl group of 4–16 carbon atoms, X=O or S, R' is a di- or trivalent saturated group which may contain in addition to carbon and hydrogen, an ether or thioether linkage, *n*=1-11, *a*=O-1, *b*=1-2, *a*+*b*=1, per mole of $J(NCO)_{Z'}$ and optionally reacting any residual isocyanate functions with (d) a component selected from the class consisting of (1) an aliphatic alcohol of 1–18 carbon atoms; (2) an isocyanate blocking agent; (3) a chain extender of the group low molecular weight diamines and (4) a cross-linking agent selected from the class consisting of diols and triols and (B) the reaction product formed by reacting (a') an organic polyol selected from the group consisting of diols and triols, the polyol having a molecular weight not exceeding about 2,000 and free of repeating $—OCH_2CH_2—$ units with (b') 2–43 moles of an organic diisocyanate per mole of (a') and (c') 2–40 moles of $R_fC_nH_{2n-a}(OH)_aXR'(OH)_b$ wherein *a*+*b*=2 per mole of (*a*') and reacting the product of (a'), (b') and (c') with 0–3 moles of (d') per mole of (a') which has the values assigned to (d) aforesaid.

3,872,059

POLYMERIC SEALANTS

Christopher Scott Ely, Birmingham, England, assignor to Albright & Wilson Limited, Oldbury, Warley, West Midlands, England

Continuation of Ser. No. 259,935, June 5, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,700

Claims priority, application United Kingdom, June 3, 1971, 18790/71

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **20 Claims**

1. A moisture curable sealant maintained under anhydrous conditions containing unreacted SH groups which comprises the addition product of reacting under anhydrous conditions (1) a polysulphide of the statistical formula

$$HS(CH_2(R')_bCH_2S_a)_c(CH_2(R'')_{b'}CH_2S_a)_d(CH_2(R')_bCH_2)SH$$

wherein *a* is 2, 3 or 4; *b* and *b'* are 0 or 1; *c* is 20 – 50; *d* is less than 0.05*c*; R' is a divalent radical free from aliphatic unsaturation consisting of radicals containing C, H and at least one atom selected from the group consisting of O and S in the form of

—C—O—C, —OH, or —CSC— groups;

R'' is a tri- or polyvalent radical containing C, H and at least one atom selected from the group consisting of O and S in the form of C—O—C, —OH, —SH or —CSC— groups;

with an amount of (2) a compound of the formula $QSiX_3$ wherein Q is a group selected from a group having a terminal epoxide group, 3-(methacryloxy)-propyl group, and a $CH_2{=}CH(C_mH_{2m})$ group, wherein *m* is 0, 1, 2 or 3, at least two of X are hydrolisable groups and the remainder, if any, is selected from the group consisting of monovalent hydrocarbon and chlorohydrocarbon radicals, sufficient to react with 3–30 percent of the SH groups of said polysulphide.

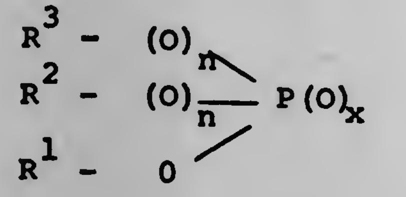
3,872,060

METHOD OF SULFOALKYLATING POLYHYDRIC ALCOHOLS AND THE CORRESPONDING PRODUCT

Noel I. Burke, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Oct. 4, 1973, Ser. No. 403,346
Int. Cl. C08b *3/00, 9/00;* **C08f** *27/06*
U.S. Cl. 260—79.3 R **20 Claims**

1. A process for sulfoalkylating a polyhydric alcohol which comprises reacting said polyhydric alcohol with a sulfur trioxide-organophosphorus complex represented by the formula:



where R^1, R^2, and R^3 are hydrogen or alkyl cycloaliphatic groups containing up to 18 carbon atoms provided that at least one of the groups R^1, R^2, and R^3 is organic, (O) represents oxygen, *n* is 0 or 1, *x* is 0 or 1, and P represents phosphorus, said sulfur trioxide being present from 0.1–0.8 moles per mole of organophosphorus compound and said complex being present in a proportion sufficient to provide at least 50 mole percent SO_3 in excess of the stoichiometric requirement to form the sulfoalkylated ester, under conditions for forming the sulfoalkylated ester of said polyhydric alcohol.

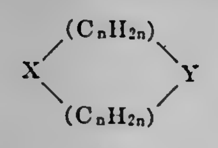
3,872,061

DIAZACYCLODIONES

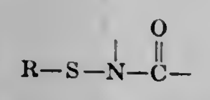
Kamel Boustany, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 56,682, July 20, 1970, abandoned. This application May 3, 1973, Ser. No. 356,778
Int. Cl. C08d *9/00;* **C08c** *11/54*
U.S. Cl. 260—79.5 B **12 Claims**

1. A method of inhibiting premature vulcanization of vulcanizable rubber containing sulfur or sulfur-containing vulcanizing agent and an accelerating agent selected from the group consisting of thiazole accelerators, dithiocarbamate accelerators, thiuram sulfide accelerators, aldehyde-amine accelerators and guanidine accelerators which comprises: incorporating therein, in an amount effective to inhibit premature vulcanization, a six membered ring compound of the formula



in which X and Y are



$$R{-}S{-}\overset{|}{N}{-}\overset{\overset{O}{\|}}{C}{-}$$

and are linked to each ring carbon atom through the same or different elements, *n* is 1–6, and R is alkyl of 1–20 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–12 carbon atoms, alkaryl of 7–10 carbon atoms, phenyl or naphthyl.

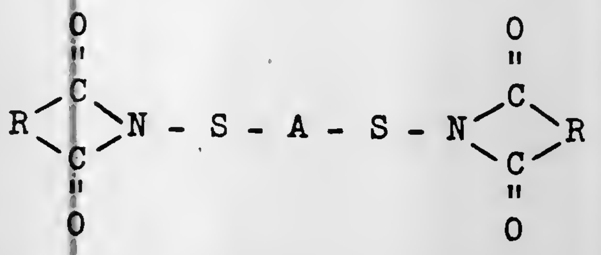
3,872,062

IMIDE ADDITIVES FOR SULFUR VULCANIZABLE POLYMERS

John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 266,008, June 26, 1972. This application Mar. 7, 1974, Ser. No. 448,857
Int. Cl. C08c *11/60;* **C08d** *9/00;* **C08f** *27/06*
U.S. Cl. 260—79.5 B **8 Claims**

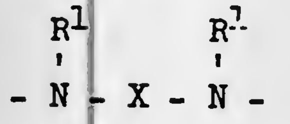
1. A sulfur vulcanizable diene polymer having incorporated therein at least one imide having the following structural formula



wherein A is an N,N'-disubstituted radical selected from the group consisting of

a. an N,N'-disubstituted radical which is a derivative of a heterocyclic diamine,

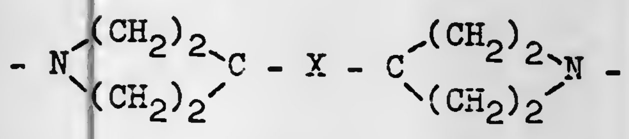
(b)



$$-\overset{\overset{R^1}{|}}{N}-X-\overset{\overset{R^1}{|}}{N}-$$

and

(c)



wherein R is selected from the group consisting of saturated or olefinic divalent aliphatic radicals having 1 to 7 carbon atoms, saturated or olefinic divalent cyclic aliphatic radicals having 5 to 10 carbon atoms and arylene radicals having 6 to 10 carbon atoms and wherein R^1 is selected from the group consisting of alkyl radicals having 1 to 20 carbon atoms, cyanoalkyl radicals having 2 to 21 carbon atoms, cycloalkyl radicals having 5 to 20 carbon atoms, aralkyl radicals having 7 to 20 carbon atoms and aryl radicals having 6 to 20 carbon atoms, and wherein X is selected from the group consisting of alkylene radicals having 2 to 10 carbon atoms, cycloalkylene radicals having 5 to 10 carbon atoms and arylene radicals having 6 to 10 carbon atoms.

3,872,063

POLYMERIZATION PROCESS

Oh-Kil Kim, Springfield, Va., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 29, 1972, Ser. No. 284,690
Int. Cl. C08f *1/70, 1/74*
U.S. Cl. 260—80 C **9 Claims**

1. A process for effecting the aqueous polymerization of a polymerizable vinyl, acrylic or methacrylic monomer which consists in: polymerizing at temperatures ranging from 0°C. to 100°C. an aqueous solution of an α,β-ethylenically unsaturated water soluble vinyl, acrylic or methacrylic monomer in the presence of a polymerization catalyst system consisting of a cyclic or an acyclic polyhydric alcohol and an alkali metal sulfite or an alkali bisulfite and in the absence of an oxygen or peroxide environment, and recovering resultant storage-stable, high molecular weight polymer.

3,872,064

LIQUID HYDROCARBON DERIVED RESIN

Henry A. Pace, Akron; David R. St. Cyr, Uniontown, and Herbert L. Bullard, Norton Village, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 192,581, Oct. 26, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,031
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.7 **3 Claims**

1. A hydrocarbon-derived resin having a structure characterized by a softening point in the range of about 15°C to about 25°C, a viscosity at about 25°C in the range of about 1,000 to about 20,000 centipoises and comprising from about 50 to about 75 weight percent units derived from piperylene and correspondingly from about 50 to about 25 weight percent units derived from 2-methyl-2-butene, prepared by the method which comprises polymerizing a mixture comprising from about 35 to about 65 weight percent piperylene and correspondingly from about 65 to about 35 weight percent 2-methyl-2-butene, and containing up to about 20 weight percent of at least one other unsaturated hydrocarbon selected from at least one of the group consisting of piperylene dimers, piperylene trimers and other unsaturated hydrocarbons containing from 4 to 6 carbon atoms based on 100 weight percent of said piperylene/2-methyl-2-butene mixture, at a temperature in the range of about 10°C to about 500°C in the presence of a catalyst selected from the group consisting of boron trifluoride and boron trifluoride etherate, wherein the etherate is derived from boron trifluoride and an ether selected from dimethyl ether, diethyl ether, methyl ethyl ether, di-n-propyl ether, diisopropyl ether, di-n-butyl ether, diisobutyl ether, di-t-butyl ether, di-n-amyl ether, diisoamyl ether, di-t-amyl ether, ethyl amyl ether, diisohexyl ether, di-n-hexyl ether, di-t-hexyl ether and butyl (2-ethyl hexyl) ether.

3,872,065

VULCANIZABLE FLUOROELASTOMER COMPOSITION

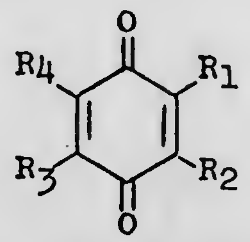
Walter Werner Schmiegel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1973, Ser. No. 403,325
Int. Cl. C08f *27/00, 37/00*
U.S. Cl. 260—80.76 **8 Claims**

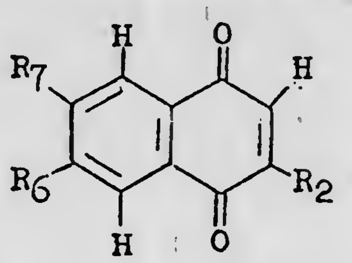
1. A vulcanizable fluoroelastomer composition which comprises

A. an elastomeric copolymer of vinylidene fluoride and at least one other fluorine-containing monomer,

B. as a vulcanization agent for said copolymer, a quinone compound selected from the group: 1,4-benzoquinones of the formula



wherein R_1, R_2, R_3 and R_4 are selected individually from the group: H, alkyl, aryl, alkaryl and aralkyl, at least two of said R's being H, and 1,4-naphthoquinones of the formula



wherein R_2, R_6 and R_7 are selected individually from the group: H, alkyl and aralkyl,

C. as a vulcanization accelerator capable of accelerating the cure of component (A) in the presence of component (B), a quaternary ammonium, phosphonium, stibonium or arsonium compound, and

D. a divalent metal oxide or hydroxide; said composition containing for each 100 parts by weight of component (A), about 0.2–7 parts by weight of compound (B), about 0.1–10 parts by weight of component (C), and about 1–20 parts by weight of component (D).

3,872,066

PERFLUOROMETHYLENECYCLOPROPANE AND POLYMERS THEREOF

Bruce E. Smart, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 339,422, March 8, 1973, Pat. No. 3,816,553. This application Jan. 18, 1974, Ser. No. 434,416
Int. Cl. C08f *5/00, 15/02, 15/06*
U.S. Cl. 260—80.76 **13 Claims**

1. A polymer containing from 0.1 to 100% by weight of units derived from perfluoromethylenecyclopropane by ring-opening polymerization and from 0 to 99.9% complementally of units derived from at least one comonomer consisting of a compound polymerizable by freeradical initiated chain propagation.

3,872,067

PROCESS FOR PREPARING CHLOROMETHYLATED POLYSTYRENE-DIVINYLBENZENE COPOLYMER

Nicholas D. Harris, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,177
Int. Cl. C08f *7/06*
U.S. Cl. 260—80.78 **1 Claim**

1. The process for preparing chloromethylated polystyrenedivinylbenzene copolymer which consists in polymerizing styrene, vinylbenzyl chloride and divinylbenzene in the presence of benzoyl peroxide.

3,872,068

PROCESS FOR PREPARING BLOCK COPOLYMER RESIN

Shigeki Horiie, Yokohama; Susumu Kurematsu, Zama, and Shin-ichiro Asai, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo K.K., Machida, Japan

Continuation of Ser. No. 134,391, April 15, 1971, abandoned. This application May 4, 1973, Ser. No. 357,170
Claims priority, application Japan, Apr. 24, 1970, 45-034737
Int. Cl. C08f *19/08, 1/28*
U.S. Cl. 260—83.7 **7 Claims**

1. A process for preparing an impact resistant block copolymer which comprises:

forming a complex of lithium metal and biphenyl or terphenyl in a solvent selected from the group consisting of tetrahydrofuran, tetrahydropyran, ethylene glycol diethyl ether, ethylene glycol dimethyl ether and diethylene glycol dimethyl ether at a temperature of −78°C to 30°C wherein 1 – 10 gram atom of lithium per mole of said biphenyl or terphenyl is used,

reacting butadiene with said complex so as to prepare a aromatic hydrocarbon soluble butadiene oligomer dilithium,

removing said solvent from said complex and contacting and polymerizing a vinyl substituted aromatic hydrocarbon and a conjugated diene in the presence of said complex, wherein said polymerization reaction is effected in an aromatic hydrocarbon solvent so as to form a block copolymer having a middle portion of an elastomeric tapered copolymer of a conjugated diene and a minor amount of a vinyl substituted aromatic hydrocarbon, which is chain terminated on both ends with blocks of a polymerized vinyl substituted aromatic hydrocarbon.

3,872,069

PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF ISOBUTYLENE

Aldo Priola; Sebastiano Cesca, and Giuseppe Ferraris, all of San Donato Milanese, Italy, assignors to Snamprogetti, S.p.A., San Donato Milanese, Italy

Filed Mar. 9, 1973, Ser. No. 339,940

Claims priority, application Italy, Mar. 11, 1972, 21727/72

Int. Cl. C08d *1/26, 3/10*

U.S. Cl. 260—85.3 R **6 Claims**

1. Process for the production of butyl rubber through the copolymerization of isobutylene and isoprene wherein the improvement comprises conducting the copolymerization reaction in the presence of a catalyst system consisting essentially of:

a. a metalorganic compound having the following general formula

$$R_m \text{ Me } X_n$$

wherein

R is a monovalent alkyl, aryl, cycloalkyl, aralkyl or alkylaryl radical having from 1 to 12 carbon atoms;

Me is a metal selected from Al, Ti, Sn, V, Zn, B, Pb, W, Zr, As, Bi and Mo;

X is halogen, hydrogen, alkoxy or an ester group;

m may be 0 or an integer ranging from 1 to 4;

n is a number ranging from 1 to 5;

$m + n$ being the valence of the metal Me; and

b. an organic compound having an electron affinity value ranging from 0.3 to 2 electron volts, selected from the group consisting of: 1,3,5-trinitrobenzene; 2,4,6-trinitrotoluene; pyromellitic anhydride; 2,4,7-trinitro-9-fluorenone; tetrachloro-p-benzoquinone and tetrabromo-p-benzoquinone.

3,872,070

DIBROMOBUTYL PHOSPHORONITRIDE ESTERS

Gerd Wunsch, Speyer; Volker Kiener, Ludwigshafen; Friedrich Fuchs, Kirchheim; Walter Himmele, Walldorf, and Werner Fliege, Otterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhine, Germany

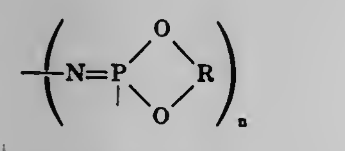
Filed Oct. 24, 1973, Ser. No. 409,256

Claims priority, application Germany, Oct. 26, 1972, 2252485

Int. Cl. C07d *105/04;* **C09k** *3/28*

U.S. Cl. 260—927 N **2 Claims**

1. A compound of the formula



(I)

where R denotes the divalent radical

$$\overset{|}{C}H_2-\overset{|}{C}H-CHBr-CH_2Br$$

and n is an integer of from 3 to 8 inclusive, and mixtures thereof.

3,872,071

POLYMERS OF CONJUGATED DIENE HYDROCARBONS AND METHOD OF PREPARATION

James Neil Henderson, Hudson, and Frank G. Shaheen, Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 278,307, Aug. 7, 1972, abandoned, which is a continuation of Ser. No. 113,726, Feb. 8, 1971, Pat. No. 3,682,084, Continuation of Ser. No. 776,770, Nov. 18, 1968, abandoned. This application Apr. 5, 1974, Ser. No. 458,372

Int. Cl. C08d *1/14, 5/02, 5/04*

U.S. Cl. 260—94.3 **1 Claim**

1. A method of preparing a polymer of a conjugated diene hydrocarbon which comprises

A. polymerizing at least one conjugated diene hydrocarbon selected from 1,3-butadiene, 2-methyl-1,3-butadiene, 2-ethyl-1,3-butadiene and 1,3-pentadiene at a temperature in the range of about 0°C to about 100°C to form a polymer having an inherent viscosity in the range of about 5 to about 12 as determined in benzene at 30°C and about 90 to about 100 percent of a trans-1,4 structure in a dilute solution of an inert solvent, containing less than about 5 weight percent monomer, and a catalyst prepared by mixing a vanadium compound selected from vanadium trichloride and the product of vanadium tetrachloride and titanium tetrachloride with at least one organoaluminum compound selected from the group consisting of triethyl aluminum, tripropyl aluminum, triisopropyl aluminum, tributyl aluminum and triisobutyl aluminum and with up to about 3 moles of a titanium compound per mole of the vanadium compound where the titanium compound is selected from the group consisting of titanium triacetylacetonate and titanium compounds selected from the group consisting of titanium triacetylacetonate, titanium tetrapropoxide, titanium tetraisopropoxide, titanium tetra normal butoxide and titanium tetraisobutoxide, wherein the mole ratio of the organo aluminum compound to the vanadium compound is from about 1.5:1 to about 30:1, and the mole ratio of the titanium compound to the vanadium compound is from about 1.5:1 to about 30:1, and

B. mixing essentially and sufficient gaseous oxygen by agitation with the mixture of polymerized diene hydrocarbon, solvent and active catalyst at a temperature of about 20°C to about 50°C and a mole ratio of oxygen to the aluminum compounds of about 0.25 to about 2.5 to enable a rapid reduction of the polymer's inherent viscosity by at least about 50 percent, wherein said method is characterized by the polymer's inherent viscosity being reduced by at least about 50 percent within about 1 minute at about 25°C with vigorous mixing with oxygen when the polymer concentration is less than about 5 weight percent.

3,872,072

NEW HYDROGENATION CATALYST FOR ELASTOMERS, AND THE PROCESS OF HYDROGENATION

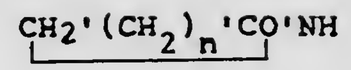
Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 13, 1973, Ser. No. 424,264

Int. Cl. C08d *5/00*

U.S. Cl. 260—94.7 H **3 Claims**

1. The process of hydrogenating an unsaturated elastomer which comprises hydrogenating the same in solution in an aliphatic solvent in the presence of 0.02 mM to 1.0 mM per gram of elastomer of a catalyst which is reduced cobaltous chloride.(lactam)$_{6 \text{ or } 8}$ catalyst, which lactam having the formula



$$CH_2\cdot(CH_2)_n\cdot CO\cdot NH$$

in which n=0 to 20 and which reducing agent is a trialkyl or triaryl aluminum or a dialkyl or diaryl aluminum hydride at a temperature of 250° to 500° C. and a pressure of 25 to 1000 psig.

3,872,073

PROCESS FOR THE PREPARATION OF CRYSTALLIZATION-RESISTANT DISPROPORTIONATED ROSIN

Susan Dale Thorpe; Curry Beach Davis, and Charles Glenn Wheelus, all of Panama City, Fla., assignors to Arizona Chemical Company, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,618

Int. Cl. C09f *1/00, 5/00*

U.S. Cl. 260—106 **7 Claims**

1. A method for preparing a crystallization-resistant disproportionated rosin comprising the steps of: heating a rosin until the 9,10-secodehydroabietic acid is increased to from 5 to 10 percent, based on the weight of said rosin, at a temperature ranging from about 250°C. to about 275°C. in the presence of about 0.3 to about 1 percent of a phenol sulfide selected from a group consisting of 1,1′-di-(2-naphthol)-disulfide, 1,1′-di-(2-naphthol)-sulfide, and 1-thio-2-naphthol, and recovering said crystallization-resistant disproportionated rosin.

3,872,074

METHOD FOR THE AMINOLYSIS OF ACTIVATED ESTERS IN THE PRESENCE OF N-HYDROXY COMPOUNDS AS CATALYSTS

Wolfgang Koenig, Langenhaim/Taunus; Rolf Geiger, Frankfurt/Main, and Hans Wissmann, Bad Soden/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

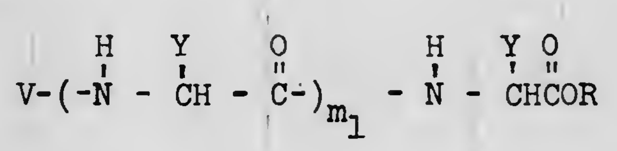
Filed June 20, 1972, Ser. No. 264,441

Claims priority, application Germany, Jan. 20, 1972, 2202613

Int. Cl. C07c *103/52;* **C07g** *7/00*

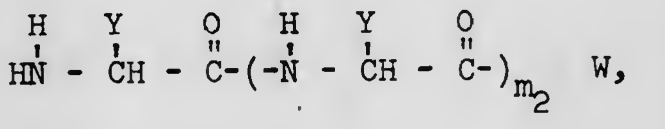
U.S. Cl. 260—112.5 **2 Claims**

1. In a method for synthesizing a peptide which comprises reacting a protected amino acid or protected peptide of the formula



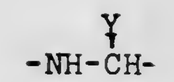
$$V\text{-}(\text{-}\overset{H}{N}-\overset{Y}{C}H-\overset{O}{\overset{\|}{C}}\text{-})_{m_1}-\overset{H}{N}-\overset{Y}{C}H\overset{O}{\overset{\|}{C}}OR$$

with a protected or unprotected amino acid or peptide of the formula



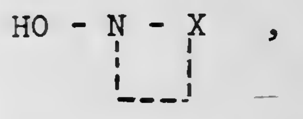
$$H\overset{H}{N}-\overset{Y}{C}H-\overset{O}{\overset{\|}{C}}\text{-}(\text{-}\overset{H}{N}-\overset{Y}{C}H-\overset{O}{\overset{\|}{C}}\text{-})_{m_2}\quad W,$$

wherein V is an amino protective group or pyroglutamyl: Y is a protected or unprotected side chain of a natural or synthetic α-or β-amino acid, or



$$\text{-}NH\text{-}\overset{Y}{C}H\text{-}$$

may be pyrrolidinyl; R is di-, tri-, tetra-, or pentachlorophenyl, nitrophenyl, or chloronitrophenyl; m_1 is zero or an integer from 1 to about 10; m_2 is zero or an integer from 1 to an order of magnitude of 500; and W is hydroxy, O-alkyl, O-aralkyl, amino-alkylamino, aralkylamino, or arylamino, or a polymeric carrier bonded by an ester or amide bond, the improvement wherein the reagents are reacted in a strongly polar solvent in the presence of a catalytic compound of the formula



$$HO-N-X\quad,$$

wherein X is C═O, C═S, or N= and X and N are members of a 5-or 6-membered substituted or unsubstituted heterocyclic ring, or of such a ring containing 1 or 2 additional hetero atoms, or of such rings fused with a substituted or unsubstituted benzene nucleus, said catalytic compound having a pK-value for the —N═OH group thereof which is between 3.7 and 4.2, and wherein the substituents on said substituted heterocyclic ring and on said substituted benzene nucleus are selected from the group consisting of lower alkyl, lower alkoxy, halo, perhalo lower alkyl and nitro.

3,872,075

SALTS OF AMINO-ACIDS WITH POLYSULFURIC ESTERS OF NATURAL GLY-COPEPTIDES AND PROCESS FOR PREPARING SAME

Adriano Butti, Como, and Giuseppe Prino, Milan, both of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Villa Guardia, Italy

Filed Oct. 10, 1973, Ser. No. 405,179

Claims priority, application Italy, Oct. 18, 1972, 30582/72

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 R **15 Claims**

1. In the process for preparing sulfoglycopeptide.salts comprising:

a. hydrolyzing the gastric mucosa or duodenum of swine in water at a temperature from about 50°C. to about 100°C. for from about 10 minutes to about 45 minutes at a pH from about 1 to 10;

b. removing acidic hydrolysis by-products obtained by the hydrolysis of (a);

c. diluting the product of (b) with a non-solvent therefore whereby a glycopeptide is precipitated therefrom;

d. suspending the product of (c) in a heterocyclic tertiary base having a boiling point of from about 100°C. to about 200°C.;

e. contacting the resulting suspension of (d) with a sulfonating agent selected from the group consisting of sulfuric acid, oleum, chlorosulfonic acid and an adduct of sulfuric anhydride with an organic compound, at a temperature from about —40°C. to about 0°C. and then a temperature from about 50°C. to about 80°C., and recovering the resulting sulfonated product;

f. reacting the product recovered in (e) with a hydroxide selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide and ammonium hydroxide, whereby the sulfonated product is converted to its corresponding alkali, alkaline earth metal or ammonium salt; and

g. contacting the product resulting from (f) with acetone or methyl alcohol whereby said salt is precipitated,

the improvement wherein an amino acid salt of sulfoglycopeptide is prepared, comprising:

1. contacting an aqueous solution of the salt which is the product of (g) with a strongly cationic ion exchange resin

whereby said sulfoglycopeptide salt is converted into a free acid; and

2. contacting said free acid resulting from (1) with an alpha-amino acid selected from the group consisting of glutamine, methionine, histidine, lysine, asparaginine, arginine, cysteine, proline, serine, threonine, and tryptophane.

3,872,076

16-DIAZOKETONES OF THE ANDROSTANE, PREGNANE, ESTRANE, AND 19-NORPREGNANE SERIES

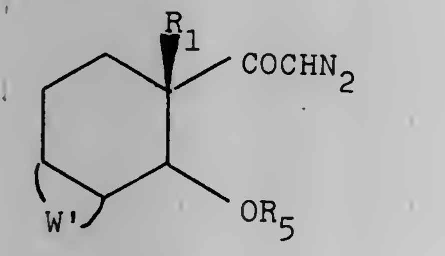
Perry Rosen, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 14, 1972, Ser. No. 217,956

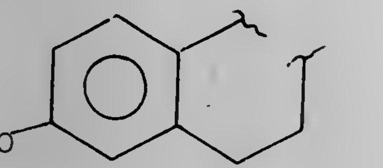
Int. Cl. C07c *113/02;* A61k *17/06*

U.S. Cl. 260—141 **9 Claims**

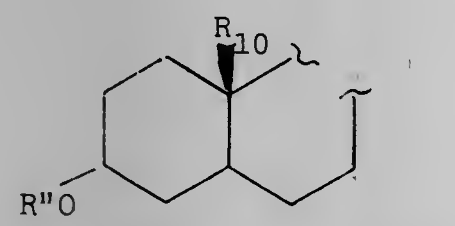
1. A compound of the formula



wherein R_1 is lower alkyl of from 1 to 5 carbon atoms, R_5 is hydrogen or lower alkanoyl and W' is



or



wherein R is hydrogen, lower alkyl or lower alkanoyl R'' is hydrogen or lower alkanoyl and R_{10} is hydrogen or methyl.

3,872,077

AZO PIGMENTS FROM A 1-AMINOANTHRAQUINONE DIAZO COMPONENT AND A PHTHALIMIDACETOACETANILIDE COUPLING COMPONENT

Peter Dimroth; Joerg Redeker, and Wolfgang Lotsch, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhein, Germany

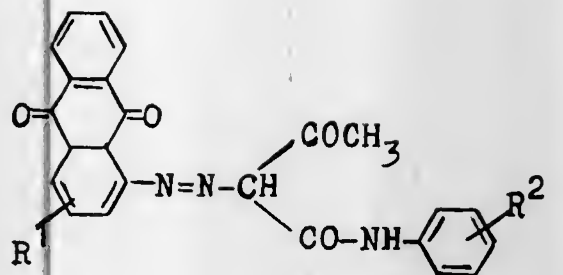
Filed Apr. 23, 1973, Ser. No. 353,619

Claims priority, application Germany, May 17, 1972, 2224010

Int. Cl. C09b *29/32*

U.S. Cl. 260—152 **2 Claims**

1. An azo pigment of the formula:



in which

R^1 is hydrogen or chloro in the meta-position or para-position to the diazo group; and

R^2 is phthalimido in the meta-position or para-position.

3,872,078

DISAZO PIGMENTS, PROCESSES FOR THEIR MANUFACTURE AND USE

Georg Cseh, Basel, and Willy Muller, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

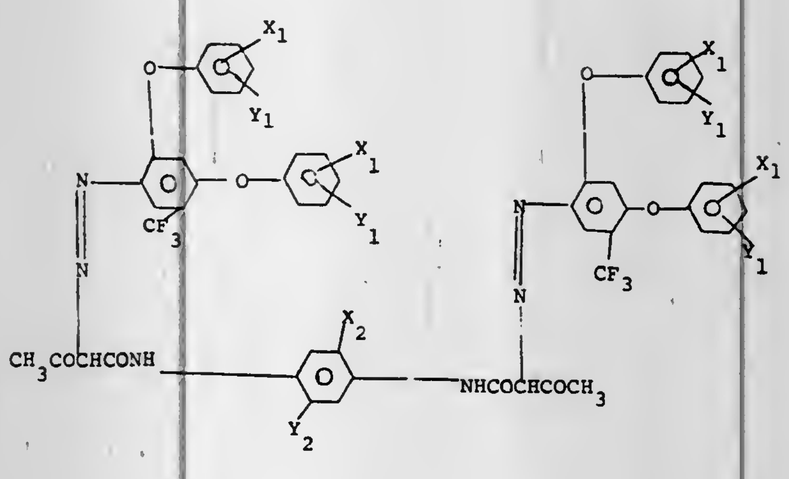
Filed Nov. 7, 1972, Ser. No. 304,426

Claims priority, application Switzerland, Nov. 11, 1971, 16374/71

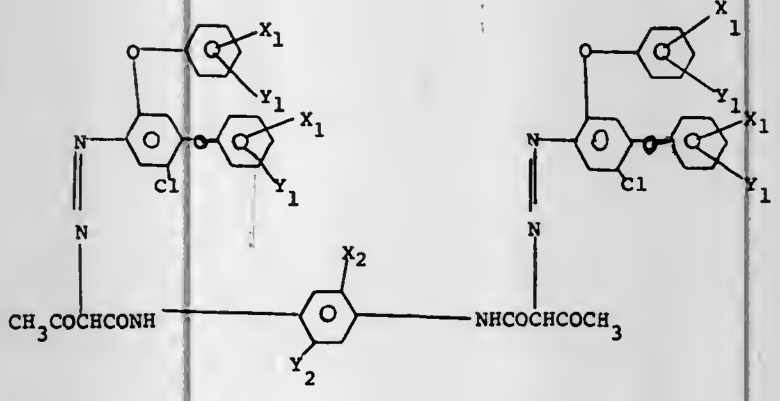
Int. Cl. C09b *33/16*

U.S. Cl. 260—176 **7 Claims**

1. A disazo pigment of the formula



or



wherein X_1, Y_1 and X_2 is hydrogen, chloro, bromo, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 5 carbon atoms, or carbalkoxy of 1 to 5 carbon atoms, and Y_2 is hydrogen, chloro, bromo, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms.

3,872,079

SEMISYNTHETIC DERIVATIVES OF TOBRAMYCIN

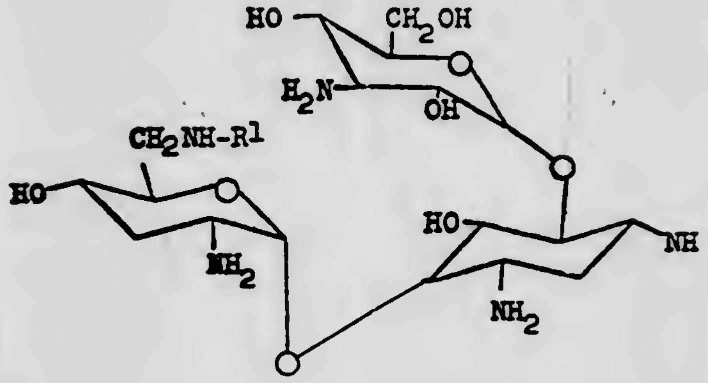
Takayuki Naito, and Susumu Nakagawa, both of Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 232,978, March 8, 1972, abandoned. This application Mar. 13, 1973, Ser. No. 340,852

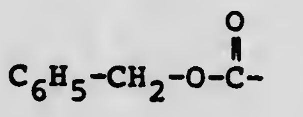
Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **7 Claims**

1. A compound having the formula



in which R^1 is H or



$$C_6H_5-CH_2-O-\overset{O}{\overset{\|}{C}}-$$

and R^2 is H, L-(−)-γ-amino-α-hydroxybutyryl, L-(−)-β-amino-α-hydroxypropionyl, L-(−)-δ-amino-α-hydroxyvaleryl, L-(−)-γ-benzyloxycarbonylamino-α-hydroxybutyryl, L-(−)-β-benzyloxycarbonylamino-α-hydroxypropionyl, or L-(−)-δ-benzyloxycarbonylamino-α-hydroxyvaleryl, wherein R^1 or R^2 must be other than H; or a nontoxic pharmaceutically acceptable acid addition salt thereof.

3,872,080

PROCESS FOR THE PREPARATION OF GARAMINE AND INTERMEDIATES PRODUCED THEREBY

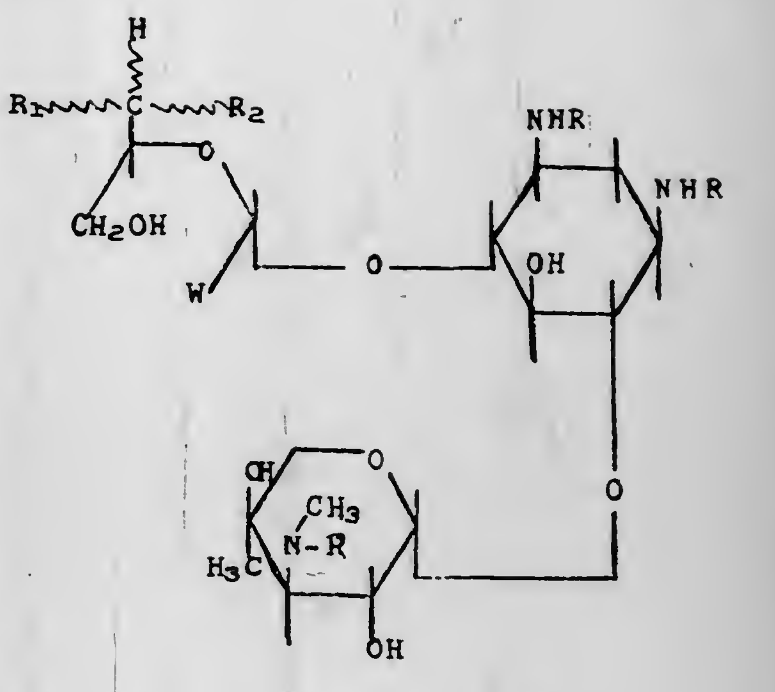
Peter J. L. Daniels, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed June 26, 1973, Ser. No. 373,692

Int. Cl. C07c *129/08*

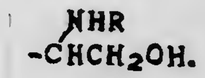
U.S. Cl. 260—210 R **23 Claims**

15. A compound represented by the following formula IV:



IV

wherein R is a member selected from the group consisting of hydrogen and an amino-protecting group selected from the group consisting of benzyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, methoxycarbonyl, ethoxycarbonyl, acetyl and benzoyl; R_1 is a member selected from the group consisting of hydrogen and methyl; R_2 is a member selected from the group consisting of hydroxy and —NHR; and W is a member selected from the group consisting of —CH_2OH and



$$-\overset{NHR}{\overset{|}{C}}HCH_2OH.$$

3,872,081

DIGITOXIGENIN RHAMNOSIDE CYCLOCARBONATES

Ulrich Stache; Werner Haede, both of Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

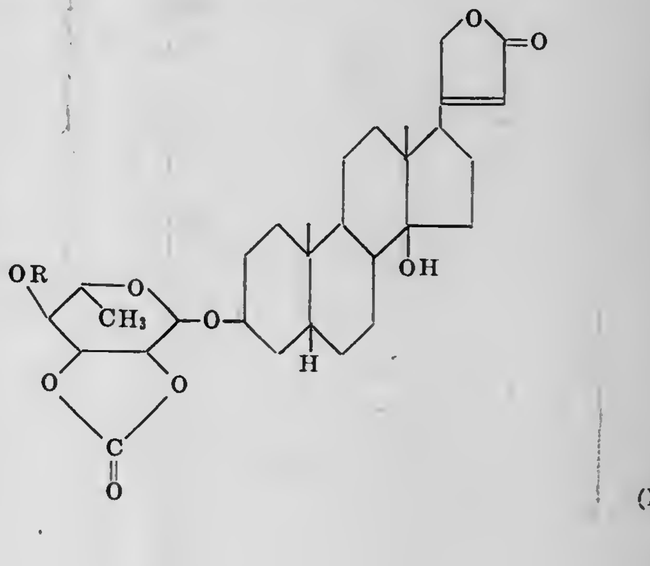
Filed June 18, 1973, Ser. No. 370,685

Claims priority, application Germany, June 20, 1972, 2230004

Int. Cl. C07c *173/02*

U.S. Cl. 260—210.5 **5 Claims**

1. A digitoxigenine-3-α-[L-rhamnopyranoside-2',3'-cyclocarbonate] of the formula I



(I)

wherein R is hydrogen or alkanoyl or alkyl having 1 to 5 carbon atoms.

3,872,082
SUBSTITUTED PURINERIBOFURANOSIDE-3,5-CYCLOPHOSPHATE COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Hans Ulrich Bergmeyer; Michael Nelboeck-Hochstetter; Gerhard Michal, all of Tutzing/Upper Bavaria; Klaus Muhlegger, Starnberg; Gunter Weimann, Percha/Upper Bavaria, and Egon Roesch, Lampertheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldorf, Germany

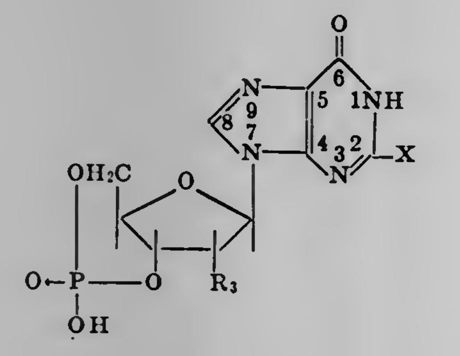
Filed May 11, 1972, Ser. No. 252,393

Claims priority, application Germany, May 19, 1971, 2125077

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **24 Claims**

1. Purine-ribofuranoside-3′,5′-cyclophosphate compound of the formula



(I)

wherein X is:

i.

$$-N\begin{matrix}R_1\\R_2\end{matrix}$$

in which R_1 and R_2, which can be the same or different, are alkyl or cycloalkyl of up to 6 carbon atoms, aryl and aralkyl of up to 4 carbon atoms in the alkyl group and from 6 to 10 carbon atoms in the aryl moiety; or wherein R_1 and R_2, together with the nitrogen atom to which they are attached, form a 6-membered heterocyclic ring; or R_2 can be hydrogen;

ii. chlorine or fluorine;

iii. sulfhydryl or alkylthio of from 1 to 6 carbon atoms;

iv. alkyl of up to 6 carbon atoms;

v. alkylsulfonyl or alkylsulfoxy; or

vi. hydrocarbylthio where the hydrocarbyl moiety contains up to 12 carbon atoms

and the physiologically compatible salts of said compound.

3,872,083
NUCLEOSIDE-5′-DIPHOSPHATE ETHANOLAMINES AND METHOD OF PRODUCING THE SAME

Masaru Okutsu, and Akihiro Yamazaki, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

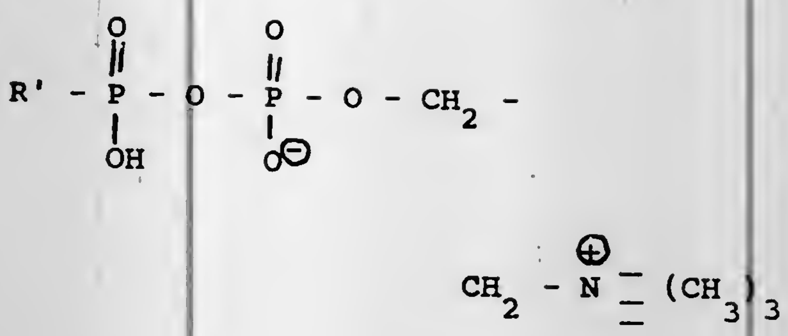
Filed Feb. 22, 1973, Ser. No. 334,574

Claims priority, application Japan, Feb. 23, 1972, 47-18669

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **14 Claims**

7. A compound of the formula



$$R'-\underset{OH}{\overset{O}{\overset{\|}{\underset{|}{P}}}}-O-\underset{O^{\ominus}}{\overset{O}{\overset{\|}{\underset{|}{P}}}}-O-CH_2-CH_2-\overset{\oplus}{N}\equiv(CH_3)_3$$

wherein R′ is the 5′-riboside radical or inosine, 5-amino-1-ribofuranosylimidazole-4-carboxamide, N¹-methylinosine, 2-methylinosine, 6-thioinosine, 2-methylthioinosine, or N²-methylguanosine.

3,872,084
PURINE NUCLEOSIDE 3,5-CYCLICPHOSPHATE COMPOUNDS

Gordon H. Jones, Cupertino; Ramachandran S. Ranganathan, San Diego, and John G. Moffatt, Los Altos, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

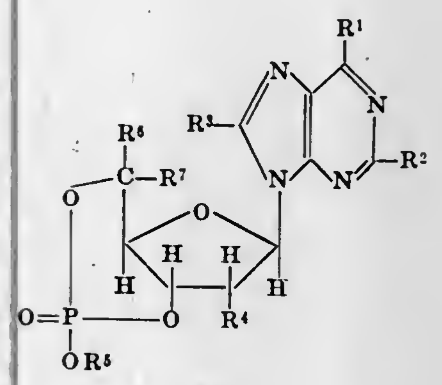
Continuation-in-part of Ser. No. 294,777, Oct. 10, 1972, abandoned

Filed July 11, 1973, Ser. No. 378,219

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **20 Claims**

1. A compound selected from those represented by the formula:



(A)

wherein

R^1 is chloro, amino, acylamino, alkylamino, aralkylamino, dialkylamino, diaralkylamino, sulfhydral, alkylthio, arylthio, aralkylthio, hydroxy, alkoxy, aryloxy, or aralkoxy in which the acyl radical contains 1 to 22 carbon atoms, each alkyl radical contains 1 to 18 carbon atoms, and each aralkyl radical contains 7 to 20 carbon atoms; R^2 is hydrogen or amino;

R^3 is hydrogen, halo, hydroxy, alkoxy, aryloxy, aralkoxy, sulfhydryl, alkylthio, arylthio, aralkylthio, azido, amino, acylamino, alkylamino, aralkylamino, dialkylamino, or diaralkylamino in which the acyl radical contains 1 to 22 carbon atoms, each alkyl radical contains 1 to 18 carbon atoms, and each aralkyl radical contains 7 to 20 carbon atoms;

R^4 is hydroxy, an acyloxy radical having from 1 to 22 carbon atoms, tetrahydropyran-2-yloxy, tetrahydrofuran-2-yloxy or 4-(lower)-alkoxytetrahydropyran-4-yloxy;

R^5 is hydrogen or a pharmaceutically acceptable cation; and One of R^6 and R^7 is hydrogen and the other of R^6 and R^7 is a lower alkyl group or R^6 and R^7 are identical lower alkyl groups.

3,872,085
PREPARATION OF SALTS OF ALPHA-D GLUCOSE-PHOSPHORIC ACID

Lucien Penasse, Paris, and Pierre Barthelemy, Clichy-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

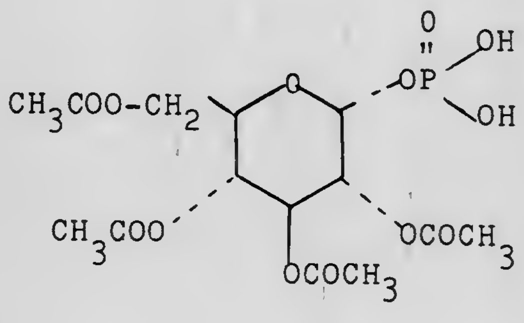
Filed Jan. 11, 1973, Ser. No. 322,847

Claims priority, application France, Jan. 19, 1972, 72.01719

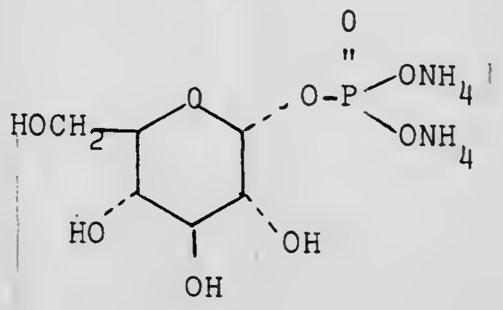
Int. Cl. C07c *69/32;* **C07d** *51/50*

U.S. Cl. 260—234 R **4 Claims**

1. A process for the preparation of ammonium α-D-glucose-1-phosphate consisting essentially of reacting a compound of the formula



in methanol with ammonia to obtain the ammonium salt of α-D-glucose-1-phosphate of the formula



3,872,086
CERTAIN DISULFIDE DERIVATIVES OF 2-AZETIDINONES

Derek Harold Richard Barton, London; William George Elphinstone Underwood, Stoke Poges; Brian Edgar Looker, Greenford; Graham Hewitt, Northolt, and Michael Victor Taylor, London, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

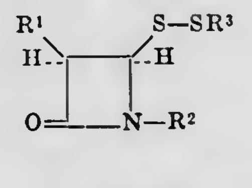
Filed July 30, 1971, Ser. No. 167,848

Claims priority, application United Kingdom, Nov. 3, 1970, 52288/70

Int. Cl. C07d *25/00, 49/10*

U.S. Cl. 260—239 A **2 Claims**

1. A compound of the formula



wherein R^1 is the group —NHCOR, where R is hydrogen or RCO—is selected from the group consisting of:

$$R''(O)_rC_nH_{2n}—CO$$

where R'' is cycloalkyl, cyclohexadienyl, phenyl, fluorophenyl, nitrophenyl, aminophenyl, acetoxphenyl, methoxphenyl, methylphenyl, hydroxyphenyl, N,N-bis(2-chloroethyl)-aminophenyl, R^2 is hydrogen, an alkyl or alkenyl group having up to 4 carbons and which can carry one or more halogen atoms, esterified carboxyl groups wherein the esterifying group is methyl, 2,2,2-trichlorethyl or p-nitro benzyl, or R^2 is a 1-pyrazolin-3-yl group; and R^3 is an alkyl group containing one to six carbon atoms, benzyl, phenethyl, phenylpropyl or a cycloalkyl group containing five to seven carbon atoms, *r* is 0 or 1 and *n* is an interger from 1–4.

3,872,087
PROCESS FOR PRODUCTION OF 1,3-DISUBSTITUTED AZETIDINE DERIVATIVES

Kunio Tsukamoto, Tokyo; Yasushi Suzuki, Yokohama; Akihiro Izumi, Kawasaki, and Yoshio Hiramatsu, Tokyo, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

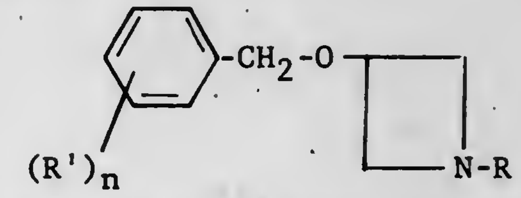
Continuation-in-part of Ser. No. 92,252, Nov. 23, 1970. This application Oct. 17, 1972, Ser. No. 298,371

Claims priority, application Japan, Nov. 28, 1969, 44-95027; Mar. 31, 1970, 45-26548; Mar. 31, 1970, 45-26549; July 21, 1970, 45-63377; Oct. 16, 1970, 45-90429; Nov. 13, 1970, 45-99733

Int. Cl. C07d *25/00*

U.S. Cl. 260—239 A **19 Claims**

1. A compound of the formula



wherein R is an alkyl group of one to 13 carbon atoms or an aralkyl group of seven to nine carbon atoms,

R′ is a hydrogen atom or an electron donor group selected from the group consisting of an alkyl group of one to four carbon atoms, an alkoxy group of one to four carbon atoms, a halogen atom and a halogenated alkyl group of one to four carbon atoms, and n is an integer of 1 to 3.

3,872,088
METHOD FOR THE PRODUCTION OF D(-)-α-AMINOBENZYLPENICILLIN DIRECTLY FROM NATURAL PENICILLINS

Carmine Renato Pasqualucci, Milan; Giovanni Bonfanti, Sassari; Sesto San Giovanni, Sassari, and Giorgio Cignarella, Sassari, all of Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Rovereto (Irento), Italy

Filed June 12, 1972, Ser. No. 262,123

Claims priority, application Italy, June 25, 1971, 26279/71

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **3 Claims**

1. A method for preparing D(−)-a-aminobenzylpenicillin directly from natural penicillins, comprising the steps of:

mixing a natural penicillin selected from a group consisting of benzylpenicillin, phenoxymethylpenicillin, and combinations of benzylpenicillin and phenoxymethylpenicillin in a solvent selected from a group consisting of methylene chloride, chloroform, acetone, and combinations of methylene chloride, chloroform and acetone;

adding to the mixture an alkychlorosilane selected from the group consisting of dimethyldichlorosilane and trimethylchlorosilane, and a tertiary base selected from the group consisting of dimethylaniline and quinoline to esterity said natural penicillin;

adding to the mixture containing esterified penicillin phosphorous pentachloride to transform the esterified penicillin into the corresponding iminochloride;

adding to the mixture containing the iminochloride a primary alcohol selected from the group consisting of methyl alcohol and butyl alcohol to transform the iminochloride into an imidate;

adding acetone to the mixture containing the imidate;

reacting the imidate in the mixture at a temperature range from −50°C to −15°C simultaneously with water and acid chloride of phenylglycine hydrochloride at a pH between 1 and 2; and

adding a large excess of water to hydrolyze the ester.

3,872,089
SUBSTITUTED THIENODIAZEPINES

Otto Hromatka, and Dieter Binder, both of Vienna, Austria, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed May 5, 1972, Ser. No. 250,701

Claims priorlty, application Switzerland, May 14, 1971, 7303/71; Mar. 29, 1972, 4664/72

Int. Cl. C07d *53/02, 63/18*

U.S. Cl. 260—239.3 T **4 Claims**

1. A compound of the formula 7-chloro-1,3-dihydro-5-(o-nitrophenyl)-2H-thieno[2,3-e][1,4]diazepin-2-one.

3,872,090
3-(AMINO-METHYLENE)-5-PHENYL-1,4-BENZODIAZEPIN-2-ONES

Helmut Pieper; Gerd Kruger; Johannes Keck, all of Biberach, Riss; Klaus-Reinhold Noll, Wart Hausen-Oberhofen, and Joachim Kahling, Biberach, Riss, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

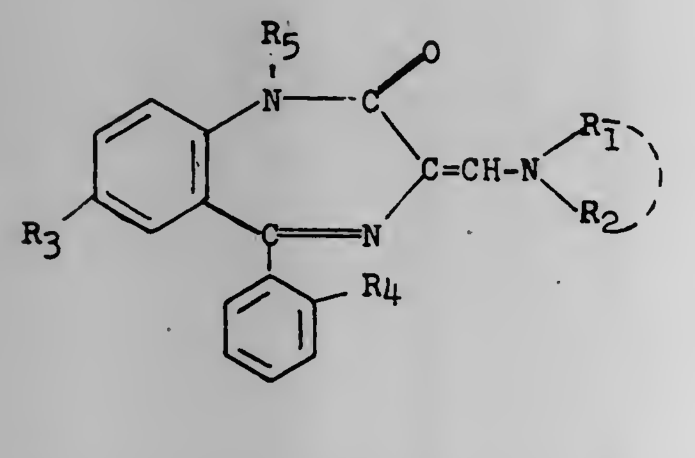
Filed July 5, 1973, Ser. No. 376,378

Claims priority, application Germany, July 12, 1972, 2234150; May 15, 1973, 2324962

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **10 Claims**

1. A compound of the formula



wherein

R_1 and R_2 are each hydrogen cycloalkyl of 3 to 6 carbon atoms, phenyl,

—A—Y

where

A is alkyl of 1 to 5 carbon atoms or alkenyl of 1 to 5 carbon atoms, and

Y is furyl, di(lower alkyl)amino, hydroxyl, lower alkoxycarbonyl or carbamido, or, together with each other and the nitrogen atom to which they are attached, pyrrolidino, piperidino, hexamethyleneimino, morpholino, thiomorpholino, thiomorpholino-S-oxide or N′-lower alkyl-piperazino,

R_3 is halogen, nitro or trifluoromethyl,

R_4 is hydrogen, halogen or trifluoromethyl, and

R_5 is hydrogen, lower alkyl, (cycloalkyl of 3 to 6 carbon atoms)-methyl, lower alkyl-amino-lower alkyl, di(lower alkyl) amino-lower alkyl or tri-fluoromethyl-lower alkyl.

3,872,091
NEW 2β, 16β-DIAMINO-ANDROSTANES AND THEIR PREPARATION

Colin Leslie Hewett, and David Samuel Savage, both of Glasgow, Scotland, assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 26, 1973, Ser. No. 419,001

Claims priority, application United Kingdom, Nov. 29, 1972, 55191/72

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.5 **4 Claims**

1. A 2β, 16β -diamino-5α-androstane compound selected from the group consisting of said compound unsubstituted in the other positions, and said compound having as the only other substituent in 3α-position a substituent selected from the group consisting of hydroxyl and acyloxy wherein acyloxy is derived from an organic carboxylic acid having 1 to 18 carbon atoms, and the pharmaceutically acceptable acid addition salts and quaternary ammonium salts thereof.

3,872,092
NOVEL $\Delta^{9,11}$-GONADIENE-5α-OLS

Jean Georges Teutsch, Le Blanc-Mesnil, France, assignor to Roussel Uclaf, Paris, France

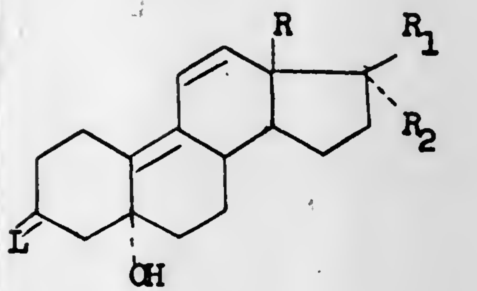
Filed Jan. 15, 1974, Ser. No. 433,569

Claims priority, application France, Jan. 29, 1973, 73.2991

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 C **5 Claims**

1. A compound having the formula



wherein R is alkyl of 1 to 4 carbon atoms, L is a ketal group, R_1 is selected from the group consisting of OH, alkoxy of 1 to 5 carbon atoms, alkenyloxy of 2 to 5 carbon atoms, acyloxy of an organic carboxylic acid of 1 to 12 carbon atoms and tetrahydropyranyloxy and R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms or R_1 may be acyl of 2 to 4 carbon atoms with the =0 in its free form or blocked in the form of a ketal and R_2 is selected from the group consisting of hydrogen, —OH and acyloxy or R_1 and R_2 form a ketalized ketone.

3,872,093
NAPHTHISOXAZOLYL ALKANOIC ACIDS AND THEIR DERIVATIVES

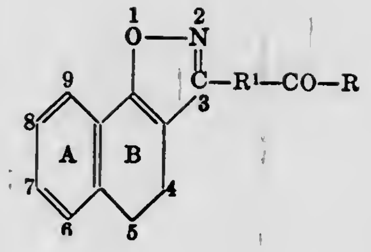
Yasushi Suzuki. Yokohama: Toshihisa Itava: Nobuyoshi, Minami, both of Kawasaki; Masaaki Tarutani; Tokutaro Miki, both of Tokyo, and Katsuhiko Myasaka, Kawasaki, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 864,163, Oct. 6, 1969, abandoned. This application Feb. 2, 1972, Ser. No. 223,009

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 D **15 Claims**

1. A compound expressed by the formula:



where ring A may be substitued with 1- 2 substituents selected from the group consisting of alkoxy of up to 4 carbon atoms, alkyl of up to 4 carbon atoms, and halogen; ring B may have a carbon-to-carbon double bond between the positions of C-4 and C-5; R^1 represents methylene, and R is selected from hydroxyl, $—O(M)_{1/m}$ wherein M is a metal selected from the group consisting of alkali metals, alkaline earth metals and aluminum having a valence of 1, 2, or 3, ammonium or HZ wherein Z is a pharmaceutically acceptable, non toxic organic amine, and *m* is the valence of M, alkoxy of up to 4 carbon atoms, amino, aminoalkoxy in which alkoxy has up to 4 carbon atoms, and aminoalkyl amino in which alkyl has up to 2 carbon atoms.

3,872,094
BIS-AROXAZOLYL COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Hans-Rudolf Meyer, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Swltzerland

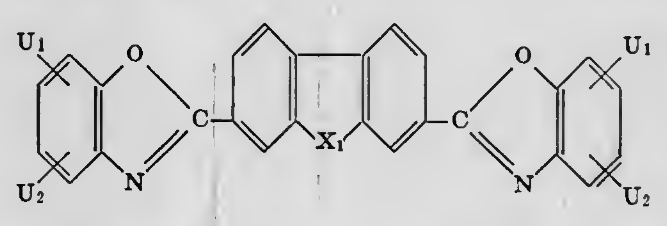
Filed Dec. 16, 1970, Ser. No. 98,869

Claims priority, application Switzerland, Dec. 17, 1969, 18853/69

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **9 Claims**

1. A symmetrical bisaroxazolyl compound of the formula



wherein X_1 represents a bridge member $-O-$ or $-SO_2-$, U_1 denotes hydrogen, alkyl with 1 to 12 carbon atoms, chlorine, cyclohexyl, phenylalkyl with 1 to 4 carbon atoms in the alkyl part, cyanoethyl, phenyl, alkoxy with 1 to 4 carbon atoms, and U_2 denotes hydrogen, an alkyl group with 1 to 5 carbon atoms or chlorine, and wherein furthermore U_1 together with U_2 can form a fused benzene ring.

3,872,095
N-TRITYL-IMIDAZOLES AND THEIR PRODUCTION

Karl-Heinz Buchel, Leverkusen; Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 13,797, Feb. 24, 1970, Pat. No. 3,705,172, which is a division of Ser. No. 758,594, Sept. 9, 1968, Pat. No. 3,660,577. This application Jan. 17, 1972, Ser. No. 218,520

Claims priority, application Germany, Sept. 15, 1967, 535043

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **9 Claims**

1. N-triphenyl-methyl-imidazolium lactate.

3,872,096
2-AMINOALKYL-SUBSTITUTED CYCLIC IMIDO ESTERS AND PROCESS FOR THE PREPARATION THEREOF

Helmut Witte, and Wolfgang Seeliger, both of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

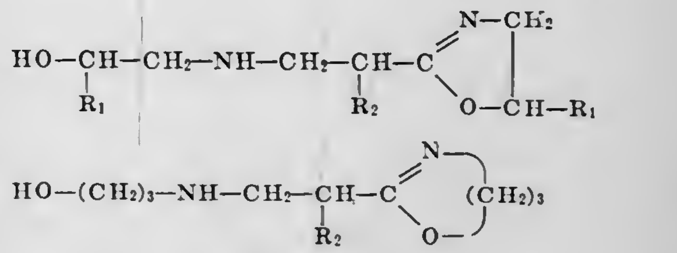
Filed Apr. 25, 1973, Ser. No. 354,462

Claims priority, application Germany, Apr. 26, 1972, 2220413

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F **5 Claims**

1. A 2-aminoalkyl-substituted cyclic imido ester of one of the formulae



wherein R_1 and R_2 each are a hydrogen atom or methyl.

3,872,097
BINUCLEAR N-HETEROCYCLIC N,N-DIGLYCIDYL COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Juergen Habermeier, Allschwil; Dieter Baumann, Birsfelden; Daniel Porret, Binningen, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

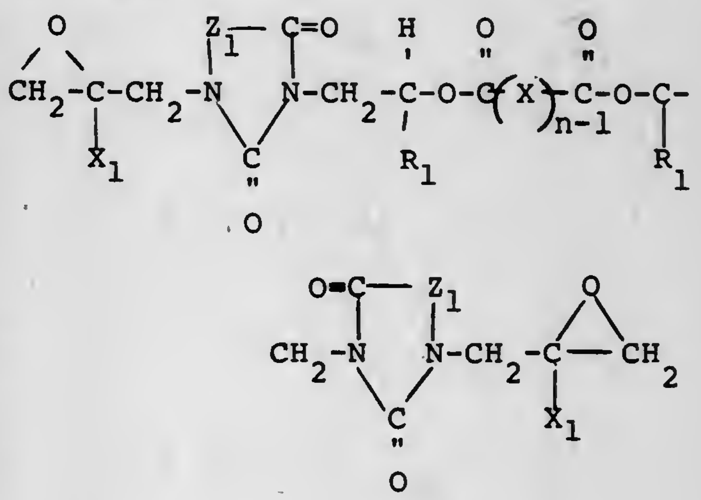
Continuation-in-part of Ser. No. 144,407, May 17, 1971, abandoned. This application Dec. 15, 1972, Ser. No. 315,396

Claims priority, application Switzerland, May 22, 1970, 7627/70

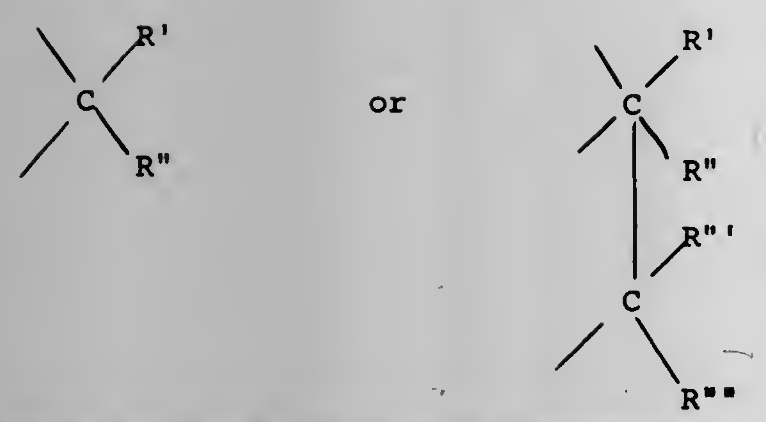
Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **7 Claims**

1. A binclear N-heterocyclic N,N′-diglycidyl compound of the formula



(I)



wherein X_1 is hydrogen or methyl, R_1 is hydrogen, methyl, ethyl, or phenyl, X is alkylene of 1 to 4 carbon atoms, cyclohexylene, or phenylene, Z_1 is
wherein R', R'', R''' and R'''' independently of one another are hydrogen, alkyl of 1 to 4 carbon atoms or R' and R'' together are pentamethylene and *n* is 1 or 2.

3,872,098
1,N6-ETHENOADENOSINE CYCLOPHOSPHATE COMPOUNDS

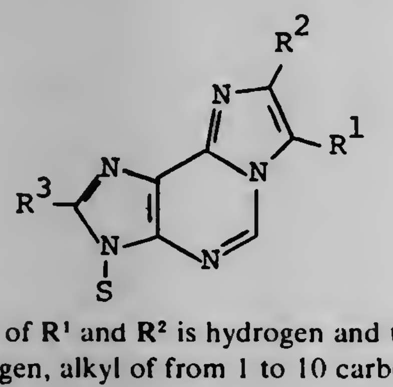
Gordon H. Jones, Cupertino, and John G. Moffatt, Los Altos, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 295,889, Oct. 10, 1972, abandoned. This application July 11, 1973, Ser. No. 378,220

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **21 Claims**

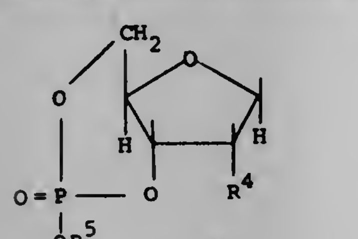
1. A compound selected from those represented by the following formula:



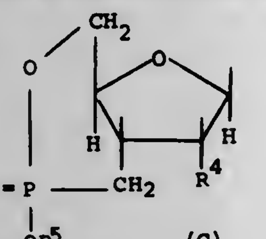
wherein one of R^1 and R^2 is hydrogen and the other of R^1 and R^2 is hydrogen, alkyl of from 1 to 10 carbon atoms, phenyl, substituted phenyl, or 2-naphthyl;

R^3 is hydrogen, halo, hydroxy, alkoxy, aryloxy, aralkoxy, sulfhydryl, alkylthio, arylthio, aralkylthio, azido, amino, acylamino, alkylamino, aralkylamino, dialkylamino, or diaralkylamino in which each alkyl radical contains 1 to 18 carbon atoms, each acyl radical contains 1 to 22 carbon atoms and each aralkyl radical contains 7 to 20 carbon atoms;

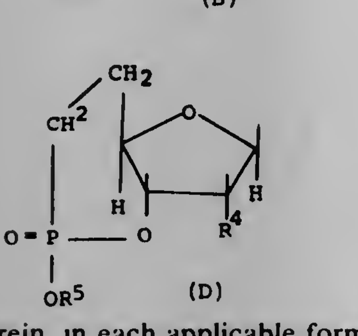
S is a sugar moiety selected from the group consisting of:



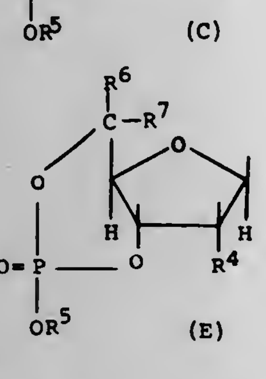
(B)



(C)



(D)



(E)

wherein, in each applicable formula,

R^4 is hydroxy an acyloxy radical having from 1 to 22 carbon atoms tetrahydropyran-2-yloxy, tetrahydrofuran-2-yloxy or 4-(lower)-alkoxytetrahydropyran-4-yloxy;

R^5 is hydrogen or a pharmaceutically acceptable cation; and one of R^6 or R^7 is hydrogen and the other is a lower alkyl group or R^6 and R^7 are identical lower alkyl groups.

3,872,099
METHOD OF PRODUCING ACTIVE AMINO ACID ESTERS

Naohiko Yasuda, Kawasaki; Yasuo Ariyoshi, and Koji Toi, both of Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 26, 1972, Ser. No. 317,921

Claims priority, application Japan, Dec. 27, 1971, 46-1997; Japan, Nov. 17, 1972, 47-115332

Int. Cl. C07d *27/10*

U.S. Cl. 260—326.4 **7 Claims**

1. A method of producing an amino acid ester which comprises contacting an amino acid having a masked amino group and an available carboxyl group with N-hydroxysuccinimide, in a liquid reaction medium including an amount of an isonitrile effective for causing formation of an ester from said amino acid and said compound until said ester is formed as a reaction product.

3,872,100
PROCESS FOR THE PREPARATION OF 1,3-BIS(2-PYRROLIDONYL) BUTANE

Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 172,198, Aug. 16, 1971, Pat. No. 3,772,186. This application Sept. 15, 1972, Ser. No. 289,412

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.25 **4 Claims**

1. A process for the preparation of 1,3-bis(2-pyrrolidonyl) butane comprising contacting 1,3-bis(2-pyrrolidonyl)-1-butene at a temperature above the melting point thereof and between about 60°C and about 160°C with hydrogen and a nickel hydrogenation catalyst at a pressure between about 100 and about 5,000 PSIG to thereby hydrogenate 1,3-bis(2-pyrrolidonyl)-1-butene to 1,3-bis(2-pyrrolidonyl) butane, the amount of catalyst employed ranging from about 0.1% to about 10% by weight based on weight of the vinyl pyrrolidone dimer and thereafter recovering the hydrogenated product.

3,872,101
SYNTHESIS OF α, β-UNSATURATED COMPOUNDS

John E. Siddall, and John H. Fried, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

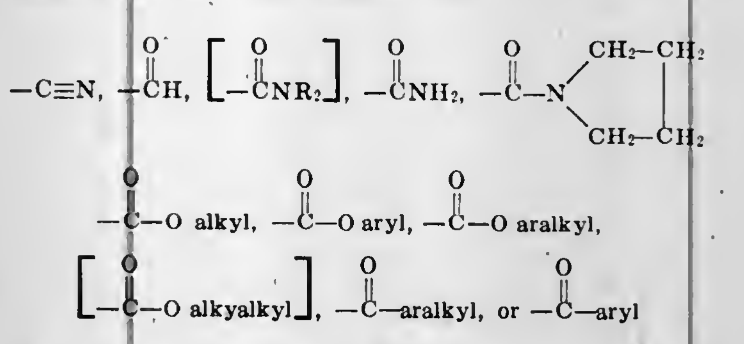
Continuation of Ser. No. 815,482, April 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 796,201, Feb. 3, 1969, abandoned. This application Jan. 19, 1973, Ser. No. 325,770

Int. Cl. C07d *27/02;* **C07c** *67/00, 45/00*

U.S. Cl. 260—326.5 E **18 Claims**

1. A process for the stereoselective synthesis of α,β-ethylenically unsaturated compounds which comprises reacting in an anhydrous organic solvent inert to the reaction, k

a. an α,β-acetylenically unsaturated compound of the formula $R^1—C\equiv C—Q$ wherein Q is



$$-C\equiv N,\ -\overset{O}{\overset{\|}{C}}H,\ \left[-\overset{O}{\overset{\|}{C}}NR_2\right],\ -\overset{O}{\overset{\|}{C}}NH_2,\ -\overset{O}{\overset{\|}{C}}-N\begin{matrix}CH_2-CH_2\\ |\\ CH_2-CH_2\end{matrix}$$

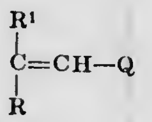
$$-\overset{O}{\overset{\|}{C}}-O\ \text{alkyl},\ -\overset{O}{\overset{\|}{C}}-O\ \text{aryl},\ -\overset{O}{\overset{\|}{C}}-O\ \text{aralkyl},$$

$$\left[-\overset{O}{\overset{\|}{C}}-O\ \text{alkyalkyl}\right],\ -\overset{O}{\overset{\|}{C}}-\text{aralkyl, or }-\overset{O}{\overset{\|}{C}}-\text{aryl}$$

and R^1 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl or aralkyl, each hydrocarbon group being optionally substituted with one or more chloro, fluoro, bromo, iodo, carbonyl, acyloxy, alkoxy, cycloalkoxy, cycloalkyl, alkylenedioxy, dialkyl-amino, furyl or pyridyl groups with the proviso that there are no carbonyl substituents immediately adjacent the β-carbon atom of the α,β-acetylenic group; with

b. an organometallic compound of the formula RCuL, R_2CuLi, or R_3MnLi, wherein L is a solubilizing ligand selected from tertiary phosphites, tertiary amines and secondary amines, and R is alkyl, alkenyl, alkynyl, cycloalkyl, aryl or aralkyl, each being optionally substituted by one or more alkyl, alkoxy, cycloalkyl, cycloalkoxy, alkylenedioxy, dialkylamino, pyridyl or furyl groups, with the proviso that any unsaturation present in R is spaced from the metal by two tetrahedral carbon atoms;

said reaction being carried out at a temperature of -40° to -100°C to give selectively cis addition of the group R to the β-carbon atom of the acetylenically unsaturated compound of the formula



$$\begin{matrix}R^1\\ |\\ C{=}CH{-}Q\\ |\\ R\end{matrix}$$

wherein R^1, R and Q are as defined above.

3,872,102
TRICYCLIC COMPOUNDS OF ALIPHATIC W-AMINO ALCOHOLS

Charles Malen, Fresnes; Monique Desnos, Issy-Les-Mouleneaux, and Jean-Claude Poignani, Wissous, all of France, assignors to Societe en nom collectif Science Union et Cie, Societe Francais de Recherche Medicale, Suresnes, France

Filed Nov. 2, 1971, Ser. No. 195,036

Claims priority, application United Kingdom, Nov. 4, 1971, 52469/71

Int. Cl. C07d *93/42*

U.S. Cl. 260—327 B **7 Claims**

1. A compound selected from the group consisting of

a. 7-[dibenzo (a,d) cycloheptadien-5-yl] amino heptanol, dl-7-[8-chloro-10,10-dioxo-11-methyl dibenzo (c,f) thiazepin (1,2)-5-yl] amino heptanol, 11-[dibenzo (a,d) cycloheptadien-5-yl] amino undecanol; and

b. the hydrochloric acid addition salts thereof.

3,872,103
MANUFACTURE OF DEEP-SHADE 3,4,9,10-PERYLENETETRACARBOXYLIC ACID DIANHYDRIDE PIGMENTS

Wolfgang Fabian, Wilhelmsfeld, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Oct. 24, 1973, Ser. No. 409,091

Claims priority, application Germany, Oct. 26, 1972, 2252461

Int. Cl. C07d *9/00*

U.S. Cl. 260—333 **8 Claims**

1. A process for the manufacture of a deep-shade 3,4,9,10-perylenetetracarboxylic acid dianhydride pigment, which process comprises:

grinding the initial pigment in dry crude form until its average primary particle size is 0.01 to 1μ;

then treating the resulting ground pigment at a temperature of from 50° to 200° C. with a liquid consisting essentially of a swelling agent selected from the group consisting of primary or tertiary aromatic amines which are liquid at the treatment temperature, dimethyl formamide, N-methyl-pyrrolidone, dimethylsulfoxide, acetonitrile or acrylonitrile, the ratio of said ground pigment to swelling agent being from 1:0.5 to 1:5 parts by weight, said treatment being carried out for a period of time sufficient for the pigment to acquire approximately its optimum color strength; and

removing the swelling agent from the thus treated pigment.

3,872,104
PROPARGYL ETHERS COMPOSITIONS CONTAINING THEM AND A METHOD OF COMBATING SOIL FUNGI

Henry Martin, Basel; Otto Rohr, Therwil, both of Switzerland, and Georg Pissiotas, Lorrach, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

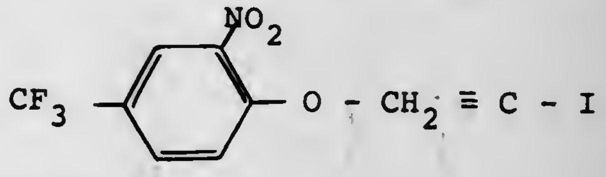
Division of Ser. No. 265,367, June 22, 1972, Pat. No. 3,830,849, which is a continuation-in-part of Ser. No. 89,528, Nov. 13, 1970, abandoned. This application June 10, 1974, Ser. No. 477,875

Claims priority, application Switzerland, Nov. 26, 1969, 17574/69

Int. Cl. A01n *9/24*

U.S. Cl. 424—340 **2 Claims**

1. A fungicidal composition for application to the sail comprising a fungicidally active amount of the compound of the formula



and a suitable carrier.

3,872,105
DERIVATIVES OF 1,3-BENZODIOXOLE-2-CARBOXYLIC ACID

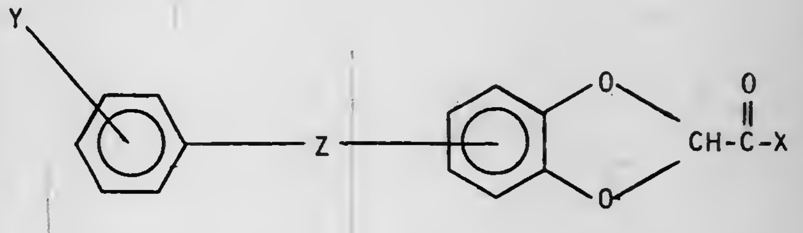
J. Martin Grisar; Roger A. Parker, and Takashi Kariya, all of Cincinnati, Ohio, assignors to Richard-Merrell Inc., New York, N.Y.

Filed June 11, 1973, Ser. No. 368,723

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **5 Claims**

1. A 1,3-benzodioxole-2-carboxylic acid derivative having the formula:



in which X is selected from the group consisting of hydroxy and lower alkoxy having from one to four carbon atoms; Y is selected from the group consisting of hydrogen, halogen, lower alkyl having from one to four carbon atoms and trifluoromethyl; Z is selected from the group consisting of a sigma bond, oxygen, lower alkylidene having from one to six carbon atoms, cycloalkylidene having from four to six carbon atoms and which when taken together with and adjacent to the group Y is selected from the group of cyclic radicals consisting of $—(CH_2)_3—$, $—(CH_2)_4—$ and $—(CH_2)_5—$; and the pharmaceutically acceptable acid addition salts thereof.

3,872,106
COUMARINIMIDES

Werner Koch, Oberwil, Basel Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

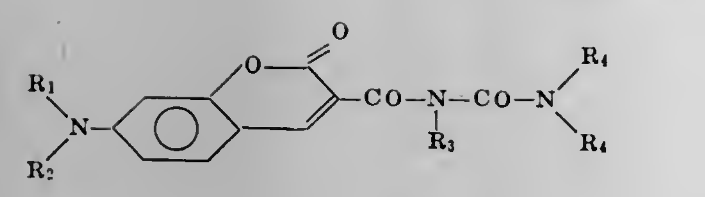
Filed Feb. 12, 1973, Ser. No. 331,974

Claims priority, application Switzerland, Feb. 15, 1972, 2182/72

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **12 Claims**

1. A compound of the formula



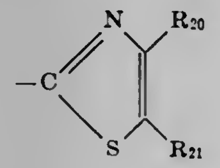
in which

R₁ is substituted or unsubstituted alkyl, or mono- or disubstituted or unsubstituted phenyl

R_2 is hydrogen, substituted or unsubstituted alkyl, or mono- or disubstituted or unsubstituted phenyl

R_3 is hydrogen, acyl, substituted or unsubstituted alkyl, or mono- or disubstituted or unsubstituted phenyl, and

R_4 R_5 are the same or different and are hydrogen, acyl, substituted or unsubstituted alkyl, mono- or disubstituted or unsubstituted phenyl, or a heterocyclic radical selected from the group consisting of a thienyl radical and a radical of formula



in which

each of R_{20} and R_{21} is a hydrogen atom or

both R_{20} and R_{21} together signify a phenyl ring or a phenyl ring substituted by an alkoxy group,

any substituent on substituted alkyl is chlorine, bromine, alkoxy, hydroxyl, cyano, acyl, acyloxy, phenylamino, N-phenyl-N-alkylamino, alkylamino, acylamino, dialkylamino, amino, vinyl, thiocyano, phenyl or phenoxy; any substituent on substituted phenyl is chlorine, bromine, alkyl, alkoxy, acyl, acyloxy, hydroxyl, cyano, thiocyano, vinyl, amino, nitro, alkylamino, dialkylamino, phenylamino, N-phenyl-N-alkylamino, acylamino, phenyl or phenoxy; any acyl substituent or acyl portion of acyloxy or acylamino is of the formula R—OCO—, R—SO_2—, R—O—SO_2—, R′—NR′SO_2—, R′—NR′CO— or R′—CO—

in which R is alkyl or phenyl and R′ is hydrogen, alkyl or phenyl;

and any alkyl group for R_1 to R_5 or any alkyl moiety of any substituent on substituted phenyl or alkyl contains one to six carbon atoms.

3,872,107
DIFLUOROMETHYLENE SUBSTITUTED PROSTAGLANDIN INTERMEDIATES

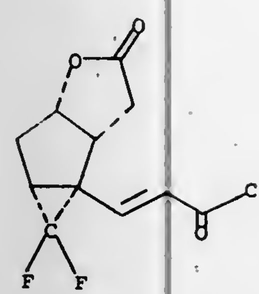
Pierre Crabbe, Mexico City, Mexico, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 287,333, Sept. 8, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,353

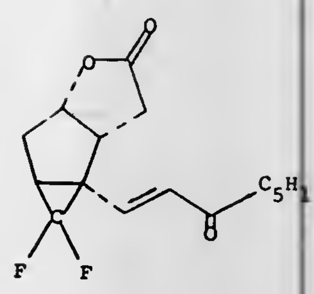
Int. Cl. C07d *5/40*

U.S. Cl. 260—343.3 **4 Claims**

1. A compound selected from the group of isomers and racemic mixtures thereof having the formulas:



(IV)



(V)

3,872,108
NOVEL CHROMONE DERIVATIVES AND THE PRODUCTION THEREOF

Akira Nohara Ukyo; Tomonobu Umetani; Yoshibumi Miyata, and Yasushi Sanno, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

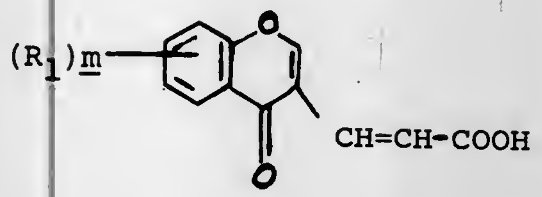
Filed Nov. 1, 1972, Ser. No. 302,652

Claims priority, application Japan, Nov. 4, 1971, 46-87880

Int. Cl. C07d *7/52*

U.S. Cl. 260—345.2 **28 Claims**

1. A compound of the formula:



wherein *m* is 0, 1 or 2 and each of R_1 is a member selected from the group consisting of halogen, hydroxy, nitro, amino, lower alkylamino, lower alkyl, lower alkoxy, alkanoyloxy and benzoyloxy and the pharmaceutically acceptable salts thereof.

3,872,109
SUBSTITUTED 2-PYRONES

Harald Furrer, Frankfurt am Main, and Gerhard Lohaus, Kelkheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

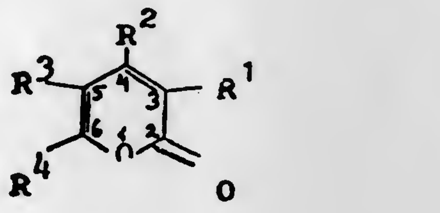
Filed Feb. 27, 1974, Ser. No. 446,289

Claims priority, application Germany, Mar. 1, 1973, 2310306

Int. Cl. C07d *7/16*

U.S. Cl. 260—343.5 **8 Claims**

1. A substituted 2-pyrone having the formula



I

wherein

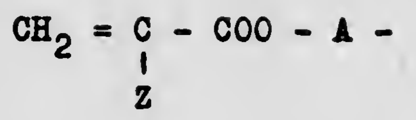
R_1 represents hydrogen, alkyl having from 1 to 4 carbon atoms, or halogen;

R_2 represents alkyl having from 1 to 4 carbon atoms,

R_3 represents hydrogen, alkyl having from 1 to 4 carbon atoms, or halogen;

R_4 represents alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 5 to 8 carbon atoms or phenyl optionally substituted by chlorine atoms or methyl groups;

and one single radical among the radical R_1, R_3 and R_4 represents the group



$$CH_2 = \underset{\displaystyle Z}{\underset{|}{C}} - COO - A - \qquad II$$

in which Z stands for hydrogen or methyl and A for straight-chain or branched alkylene having from 1 to 6 carbon atoms.

3,872,110
METHOD OF PREPARING HYDROHALIDES OF ASPARTIC ANHYDRIDE

Yasuo Ariyoshi, Yokohama; Tetsuo Yamatani; Noboru Uchiyama, both of Kawasaki; Naotake Sato, Tokyo, and Koji Toi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 24, 1972, Ser. No. 246,781

Claims priority, application Japan, Apr. 28, 1971, 46-28317

Int. Cl. C07c *55/02*

U.S. Cl. 260—346.8 R **12 Claims**

1. In a method of converting aspartic acid to the hydrochloride or hydrobromide of aspartic acid anhydride by reacting said aspartic acid in a liquid medium with a chlorine or bromine bearing dehydrating agent capable of forming hydrogen chloride or hydrogen bromide by reaction with said aspartic acid, the improvement which consists in the presence in said liquid medium of at least one mole of a monocarboxylic, unsubstituted alkanoic acid per mole of said aspartic acid, said alkanoic acid having not more than five carbon atoms in the molecule thereof, said medium, prior to said reacting, being free of components other than said alkanoic acid and capable of reacting with said aspartic acid, said dehydrating agent, and said hydrochloride or hydrobromide of aspartic anhydride.

3,872,111
ESTERS OF 3-FURANTHIOLS

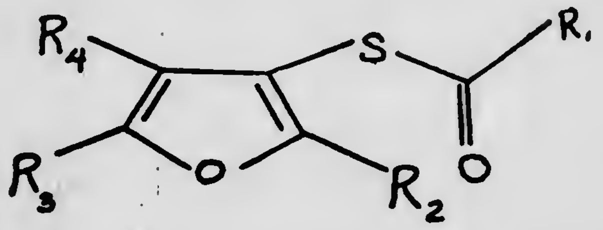
William J. Evers, Atlantic Highlands; Howard H. Heinsohn, Jr., Hazlet, and Bernard J. Mayers, Cliffwood Beach, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 7, 1973, Ser. No. 386,453

Int. Cl. C07d *5/14*

U.S. Cl. 260—347.2 **22 Claims**

1. An ester of 3-furan-thiol having the structure:



wherein R_1 is C_1–C_7 straight chain or branched chain alkyl or alkenyl; or R_1 is either of furyl, thienyl, toluyl, phenyl ethenyl or phenyl; wherein each of R_2, R_3 and R_4 is the same or different hydrogen or lower alkyl.

3,872,112
TETRAHYDROFURFURYL AMINOESTERS

Etienne Szarvasi, Charbonnieres-les-Bains, France, assignor to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyon, France

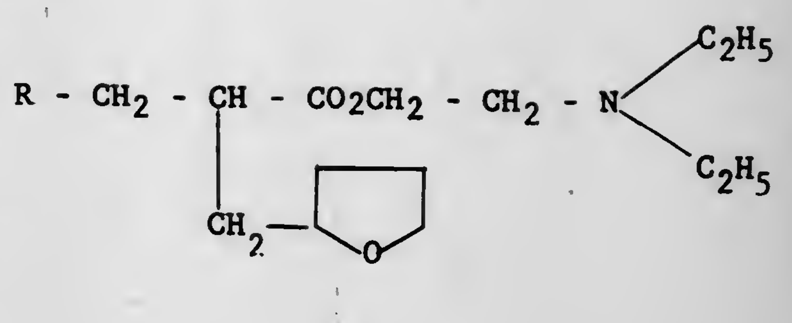
Filed July 27, 1972, Ser. No. 275,638

Claims priority, application France, July 29, 1971, 71.27823

Int. Cl. C07d *5/04*

U.S. Cl. 260—347.5 **6 Claims**

1. A tetrahydrofurfuryl aminoester of formula



wherein R is the 2-naphthyl radical substituted in the 6-position with lower alkoxy.

3,872,113
HYDROXY- AND ACETOXY-PHTHALALDEHYDRIC, ACID, O-(SUBSTITUTED) OXIMES

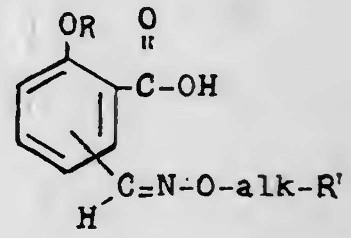
Leonard J. Fliedner, Jr., Point Lookout, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 257,642, May 30, 1972, abandoned. This application Apr. 19, 1973, Ser. No. 352,739

Int. Cl. C09b *23/00;* C07c *63/06, 69/14*

U.S. Cl. 260—240 G **12 Claims**

1. Compound of the formula



where

R is hydrogen or acetyl;

R′ is phenyl, morpholino, or phenyl substituted with 1 or 2 substituents individually selected from Cl, F, Br, NO_2, CF_3, methoxy, and ethoxy; and

alk is alkylene of one, two, or three carbon atoms, provided that, when R′ is morpholino, alk is ethylene, or propylene;

and their pharmaceutically suitable salts.

3,872,114
BENZOFURANE DERIVATIVES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS

Wilfried Sahm, Kelkheim, Taunus; Erich Schinzel, Hofheim, Taunus, and Gunter Rosch, Altenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellshaft, Frankfurt, Main, Germany

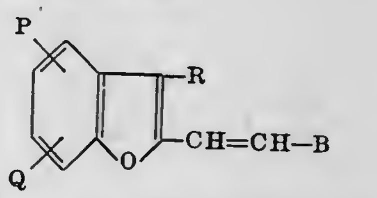
Continuation-in-part of Ser. No. 223,771, Feb. 4, 1972, abandoned. This application July 9, 1973, Ser. No. 377,277

Claims priority, application Germany, Feb. 5, 1971, 2105305

Int. Cl. C09b *23/14*

U.S. Cl. 260—240 D **18 Claims**

1. A compound of the formula



in which P and Q are hydrogen, halogen, lower alkyl, lower alkoxy or phenyl or, together, alkylene of 3 or 4 carbon atoms or an annellated phenyl nucleus; R is hydrogen or lower alkyl and B is an aromatic radical selected from the group consisting of phenyl, naphthyl, furanyl or thienyl which aromatic radical is unsubstituted or substituted by up to three substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy, phenyl, amino, lower alkylamino, di-(lower alkyl) amino, tri-(lower alkyl) ammonium, lower alkanoyl amino, cyano and a group of the formula

$-COOR^1$, $-SO_2OR^1$, $-CO\text{-}NR^2R^3$ or $SO_2NR^2R^3$

wherein R^1 is hydrogen, alkyl of 1 to 20 carbon atoms, lower alkyl substituted by hydroxy, lower alkoxy, di-(lower alkyl)-amino or tri-(lower alkyl)-ammonium; and R^2 and R^3 are hydrogen, lower alkyl or lower alkyl substituted by di-(lower alkyl)-amino or tri-(lower alkyl)-ammonium.

3,872,115
CEPHALOSPORINS

Keiichi Sugimoto, Kawanishi; Kunio Kobayashi; Kouji Nishijima, both of Osaka, and Shiro Morimoto, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

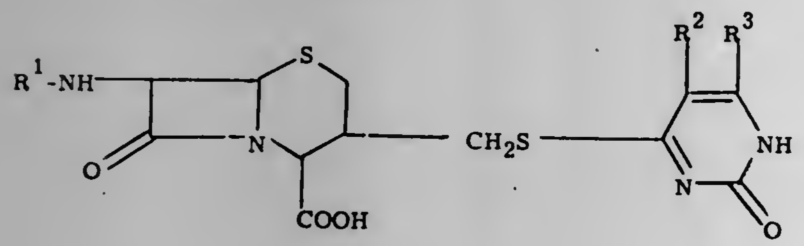
Filed May 31, 1972, Ser. No. 258,177

Claims priority, application Japan, May 31, 1971, 46-38007

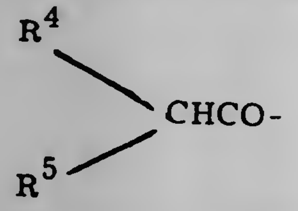
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **30 Claims**

1. A compound of the formula



wherein R^1 is an acyl group of the formula,



wherein R^4 is phenyl, phenoxy, cyclohexenyl, thienyl, phenylthio, 3-amino-3-carboxypropyl, cyano, tetrazolyl, or cyclohexyl group; and R^5 is hydrogen, amino, carboxyl, sulfo, carbamoyl, halogen or hydroxy group, R^2 and R^3 represent hydrogen, a alkyl group having one to four carbon atoms, carboxylic group, amino group, dimethylamino group, or hydroxymethyl group, respectively, or R^2 and R^3 may be bonded to form —NH—CH=N— group or a salt thereof.

3,872,116
AMINO ALCOHOLS

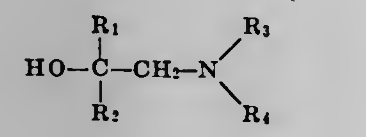
Robert M. Gipson, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed June 16, 1972, Ser. No. 263,552

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 A **11 Claims**

1. An amino alcohol of the formula



wherein R_1 and R_2 are C_4 to C_{18} alkyls and R_3 and R_4 are selected from methyl, ethyl, hydroxyethyl, hydroxypropyl, aminoethyl, aminopropyl or benzyl or one of R_3 and R_4 is hydrogen.

3,872,117
PHENYL-IMIDAZOLYL ACETIC ACID AMINO ALKANOL ESTERS AND AMIDES

Werner Meiser; Carl Metzger; Karl Heinz Buchel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

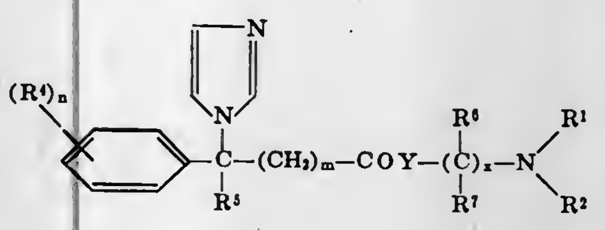
Filed Apr. 30, 1971, Ser. No. 139,284

Claims priority, application Germany, May 6, 1970, 2022206

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 B **13 Claims**

1. A compound of the formula:



wherein

R^1 and R^2 when taken independently of one another are hydrogen or (lower)alkyl of one to three carbon atoms, or when taken together with the nitrogen atom to which they are attached are morpholino;

R^4 is hydrogen, (lower)alkyl of one to three carbon atoms, (lower)alkoxy of one to three carbon atoms, halogeno, or nitro;

R^5 is lower alkyl of one to four carbon atoms or phenyl unsubstituted or substituted by one (lower)alkyl of one to three carbon atoms, (lower)alkoxy of one to three carbon atoms, halogeno, or nitro group;

each of R^6 and R^7, independent of the other, is hydrogen or of one to three carbon atoms;

Y is oxygen or —NH—;

n is 1;

m is 0; and

x is an integer from 2 to 6;

or a nontoxic acid addition salt thereof.

3,872,118
PREPARATION OF SODIUM DICHLOROISOCYANURATE DIHYDRATE COMPOSITION

Sidney Berkowitz, Highland Park, and Raymond Mesiah, Somerset, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed July 18, 1973, Ser. No. 380,459

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 C **6 Claims**

1. A process for producing a free-flowing, storage-stable, thermal-decomposition resistant sodium dichloroisocyanurate-containing product which comprises mixing sodium dichloroisocyanurate containing less than about 11% by weight water of hydration, and no more than stoichiometric amounts of a hydrated salt that will react to convert the sodium dichloroisocyanurate to its dihydrate, heating the mixture from ambient temperature to 70°C to obtain an exothermic reaction, maintaining the temperature between ambient and 70°C until the exothermic reaction subsides, and recovering a product mixture of sodium dichloroisocyanurate containing from 11% to 14.1% by weight water of hydration and the residue of the hydrated salt.

3,872,119
1-SUBSTITUTED-5,6-DIHYDRO-PYRROLO(3,2,1-IJ)QUINAZOLIN-3(3H)-ONES

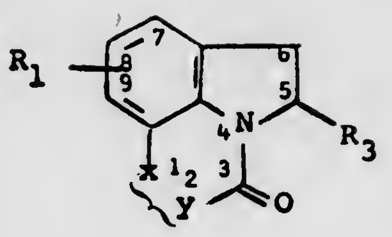
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 26, 1973, Ser. No. 344,736

Int. Cl. C07d *57/12*

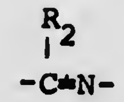
U.S. Cl. 260—251 A **9 Claims**

1. A compound of the formula



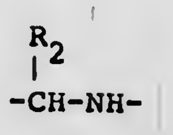
(I)

wherein $\widehat{x\,y}$ is



$-\overset{R_2}{\overset{|}{C}}=N-$

or



$-\overset{R_2}{\overset{|}{C}}H-NH-$

R_1 is hydrogen, mono- or dialkylamino in which the alkyl group contains 1 to 3 carbon atoms, halo of atomic weight 18 to 80, amino, nitro, alkyl or alkoxy of 1 to 3 carbon atoms or trifluoromethyl,

R_2 is pyridyl or phenyl and may be mono- or disubstituted by halo of atomic weight 18 to 80, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkoxy carbonyl in which the alkoxy group contains 1 to 3 carbon atoms or trifluoromethyl,

R_3 is hydrogen, or alkyl of 1 to 5 carbon atoms.

3,872,120
PROCESS FOR THE PREPARATION OF 1,3-DIALKANOYL HEXAHYDROPYRIMIDINE

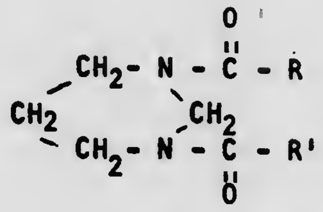
Robert R. Mod; Frank C. Magne; Gene Sumrell, all of New Orleans; Arthur F. Novak, Baton Rouge, all of La., and James M. Solar, Lubbock, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 154,698, June 18, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 448,426

Int. Cl. C07d *57/28, 57/30*

U.S. Cl. 260—251 R **2 Claims**

1. A process for preparing a compound represented by the formula



where R and R′ are monovalent organic radicals, which process comprises reacting N,N′-propylenebisamide with formaldehyde in the presence of a strong acid catalyst.

3,872,121
2-(PHENYL-AMINO-2-IMIDAZOLINES AND SALTS THEREOF

Werner Kummer; Helmut Stahle; Herbert Koppe, all of Ingelheim am Rhine, and Wolfgang Hoefke, Budenheim, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

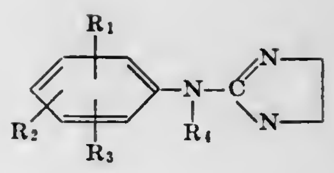
Filed Apr. 30, 1973, Ser. No. 355,412

Claims priority, application Germany, Apr. 28, 1972, 2220906

Int. Cl. C07d *57/00*

U.S. Cl. 260—256.4 N **4 Claims**

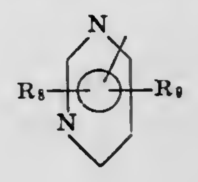
1. A compound of the formula



wherein

R_1, R_2 and R_3 are each hydrogen, fluorine, chlorine, bromine, methyl, ethyl, ethoxy, trifluoromethyl or cyano, and

R_4 and R_5, which must be different, are hydrogen or



where

R_8 and R_9 are each hydrogen; halogen, methyl or nitro,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,872,122
11 H-PYRIMIDO[4,5-b][1,4]BENZODIAZEPINES

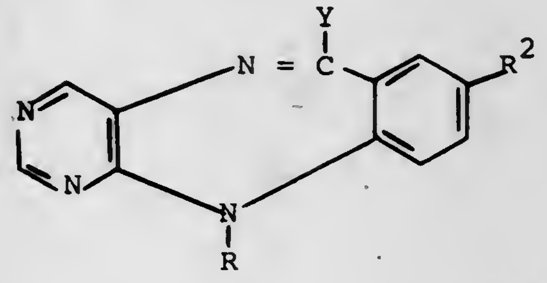
Peter Frederick Juby, Jamesville, and Thomas William Hudyma, Manlius, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,217

Int. Cl. C07d *57/02*

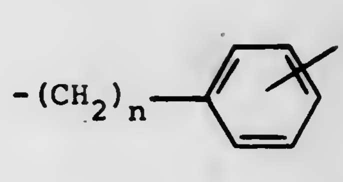
U.S. Cl. 260—256.4 F **4 Claims**

1. The compound having the formula



Ia

in which Y is di(lower)alkylamino, cyclo(lower)alkylamino, benzylamino, phenethylamino, or di(lower)alkylamino (lower)alkylamino; R is H, (lower)alkyl or a radical of the formula



in which *n* is an integer of 1 to 4 and R^5 is chloro, CF_3, H, fluoro, bromo, (lower)alkoxy or (lower)alkyl; R^2 is H, chloro, bromo, fluoro, (lower)alkyl, CF_3, (lower)alkoxy or nitro; or a pharmaceutically acceptable nontoxic salt thereof.

3,872,123
CERTAIN THIAMINE DISULFIDE COMPOUNDS

Akira Takamizawa, Osaka; Kentaro Hirai, Kyoto; Hiroshi Oikawa, Kusatsu, and Kunihei Inazu, Suita, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

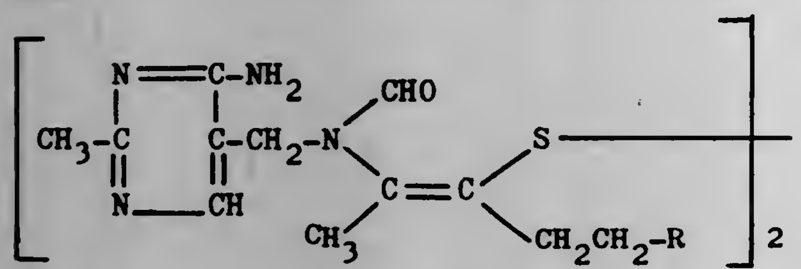
Filed Sept. 26, 1972, Ser. No. 292,454

Claims priority, application Japan, Oct. 4, 1971, 46-77774

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.5 B **3 Claims**

1. Thiamine disulfide compounds represented by the formula:



wherein R represents an alkylthio group containing 1 to 4 carbon atoms or an alkylsulfinyl group containing 1 to 4 carbon atoms, or their pharmaceutically acceptable acid-addition salts.

3,872,124
N-[4-(PHENYL)-PIPERAZINO]ALKYL-THIAZOLE-5-CARBOXAMIDES

Odile Le Martret, Paris, and Francois Clemence, Rosny-sous-Bois, both of France, assignors to Roussel UCLAF, Paris, France

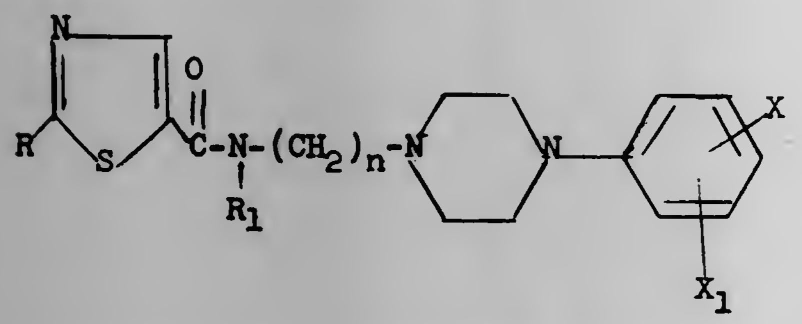
Filed Mar. 12, 1973, Ser. No. 340,289

Claims priority, application France, Mar. 22, 1972, 72.10010

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH **8 Claims**

1. A compound selected from the group consisting of thiazolcarboxamides of the formula



wherein R is selected from the group consisting of alkyl of 1 to 6 carbon atoms and phenyl, R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, *n* is a whole number from 2 to 5 and X and X_1 are individually selected from the group consisting of hydrogen, halogen, trifluoromethyl and alkyl, alkoxy and alkylthio of 1 to 4 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

3,872,125
3-SUBSTITUTED-4-ARYL ISOQUINOLINES

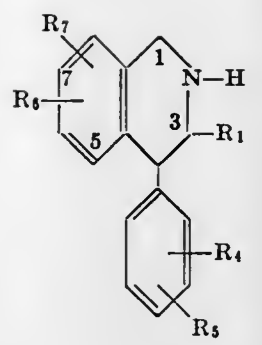
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 339,616, March 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 259,860, June 5, 1972, abandoned. This application Oct. 30, 1973, Ser. No. 411,074

Int. Cl. C07d *33/34*

U.S. Cl. 260—283 R **2 Claims**

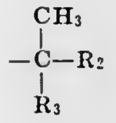
1. A compound of the formula



(I)

where

R_1 represents



$$-\overset{\displaystyle CH_3}{\underset{\displaystyle R_3}{\overset{|}{\underset{|}{C}}}}-R_2$$

where

R_2 and R_3 are each, independently, methyl or ethyl, or R_2 and R_3 together represent $(CH_2)_n$

where

n represents 4, 5 or 6,

and

R R_4, R_5, R_6 and R_7 each, independently, represent hydrogen, halo of atomic weight 19–36, trifluoromethyl, lower alkyl having 1–4 carbon atoms, or lower alkoxy having 1–4 carbon atoms, provided that R_6 and R_7 may not represent said lower alkyl at the 8-position, and provided further that two trifluoromethyl groups or two tertiary butyl groups or a trifluoromethyl group and a tertiary butyl group are not on adjacent carbon atoms and the pharmacologically acceptable acid addition salts thereof.

3,872,126
1-(CHLOROALKYLTHIO-CARBONYL)-DECAHYDROQUINOLINES

Elmar Sturm, Arlesheim; Hans Joerg Cellarius, Riehen, and Christian Vogel, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

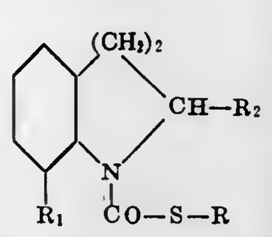
Division of Ser. No. 216,778, Jan. 10, 1972, Pat. No. 3,776,912. This application Sept. 10, 1973, Ser. No. 395,883

Claims priority, application Switzerland, Jan. 14, 1971, 553/71

Int. Cl. C07d *33/60*

U.S. Cl. 260—283 S **3 Claims**

1. A compound of the formula



wherein R is mono chloroalkyl having two or three carbon atoms; and one of R_1 and R_2 is hydrogen and the other is hydrogen or methyl.

3,872,127
N-(FURYL- OR THIENYL-METHYL)-14-OXY-7,8-DIHYDRO-NORMORPHINONES AND -NORCODEINONES AND SALTS THEREOF

Herbert Merz; Adolf Langbein; Gerhard Walther, and Klaus Stockhaus, all of Ingelheim am Rhine, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

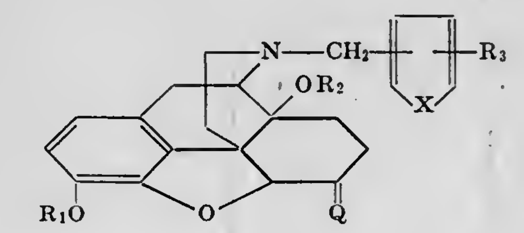
Filed Aug. 6, 1973, Ser. No. 386,065

Claims priority, application Germany, Aug. 7, 1972, 2238839

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 **10 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, methyl or acetyl,

R_2 is hydrogen or acetyl,

R_3 is hydrogen or methyl,

Q is oxygen, dimethoxy, diethoxy, ethylenedioxy or propylene(1,3)dioxy, and

X is oxygen or sulfur,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,872,128
ANTIMICROBIAL HYDROXY QUINOLINE, ETHYLENE-CRYLIC POLYMER COMPOSITIONS

Joseph S. Byck, Middlesex, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 8, 1972, Ser. No. 232,970

Int. Cl. C07d *33/38*

U.S. Cl. 260—286 R **7 Claims**

1. Antimicrobial ammonium salt composition consisting of:

a. cations of a quinoline selected from the group consisting of 5-formyl-8-hydroxyquinoline, 7-bromo-5-formyl-8-hydroxyquinoline, 5-benzoyl-8-hydroxyquinoline, 8-hydroxyquinoline, 2-methyl-8-hydroxyquinoline, 2-methyl-6-hydroxyquinoline, 5-ethyl-8-hydroxyquinoline, 8-acetoxyquinoline, 5-acetyl-8-hydroxyquinoline, 5-chloro-7-iodo-8-hydroxyquinoline, 5,7-dichloro-2-methyl-8-hydroxyquinoline, 5-nitro-8-hydroxyquinoline, and 7-iodo-5-nitro-8-hydroxyquinoline, and

b. anions of a normally solid copolymer of ethylene and acrylic or methacrylic acid having polymerized therein a major amount of ethylene.

3,872,129
PROCESSES AND INTERMEDIATES FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

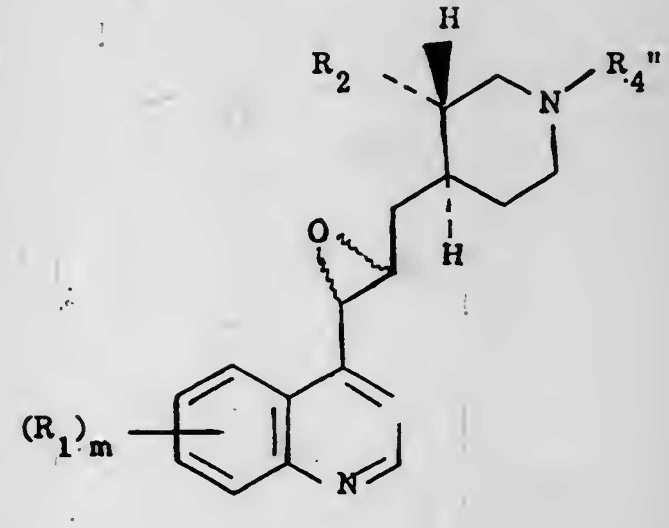
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,766

Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **2 Claims**

1. A compound of the formula



wherein *m* is 0, 1 or 2; R_1 is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl or butyl or when m is 2, R_1 taken together with an adjacent R_1, is also methylenedioxy; and R_2 is vinyl or ethyl; and R_4'' is hydrogen, lower alkanoyl of 1-7 carbon atoms, or phenyllower alkanoyl of 1–7 carbon atoms; its antipode or racemate.

3,872,130
1-HYDROXYISOQUINOLONES

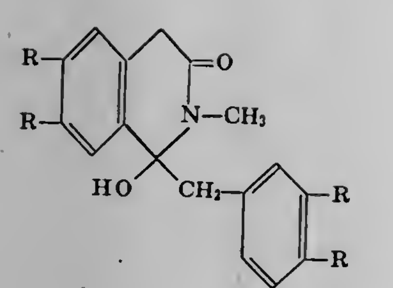
William Eugene Kreighbaum, and William Timmey Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 184,197, Sept. 27, 1971, Pat. No. 3,798,225. This application Nov. 23, 1973, Ser. No. 418,710

Int. Cl. C07d *33/38*

U.S. Cl. 260—289 R **3 Claims**

1. A compound selected from the group of 6,7-dialkoxy-1-hydroxy-2-methyl-3(2H)-isoquinolines having the formula

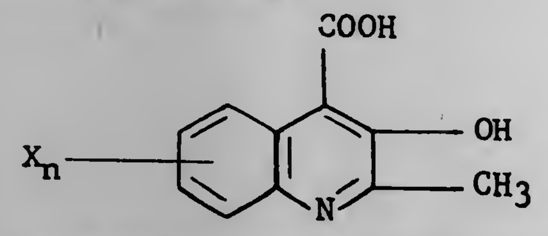


Formula I

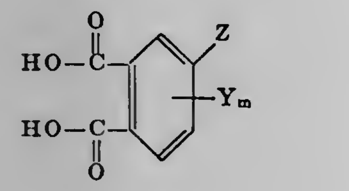
wherein R is lower alkoxy from 1 to 4 carbon atoms inclusive.

3,872,131
METHOD OF PREPARING QUINOPHTHALONE DYES
William E. Wallace, Rensselaer, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,880
Int. Cl. C07d *33/48*
U.S. Cl. 260—289 QP **15 Claims**

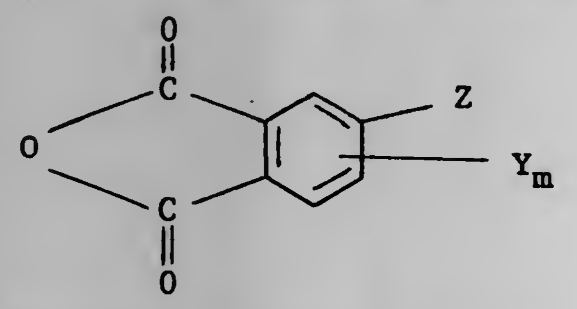
1. An improved process for the preparation of 3′-hydroxyquinophthalones consisting essentially of reacting, at a temperature of about 180°C to about 220°C, a 2-methyl-3-hydroxycinchoninic acid of the formula:



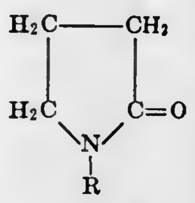
wherein X is a member taken from the group consisting of H; Cl; Br; Fl; CH_3; methoxy; ethoxy; propoxy; butoxy; nitro; cyano; a sulfonamide group of the formula $—SO_2NR_1R_2$, wherein said R_1 and R_2 are taken from the group consisting of H, methyl, ethyl, and butyl; and an acylamido group of the formula $—CONR_1R_2$, wherein R_1 and R_2 are as described above, and *n* is 0 or an integer of from 1 to 4 except that *n* is 1 or 0 when X is nitro, cyano, sulfonamido or acylamido, with an acid taken from the group consisting of (a) an aryl polycarboxylic acid of the formula:



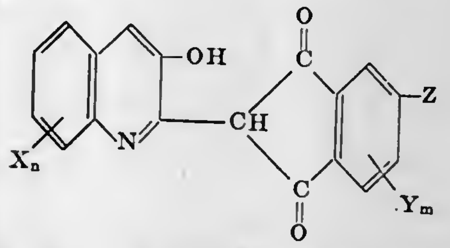
wherein Z is hydrogen or —COOH except that Z is hydrogen when Y is sulfonamido or acylamido and Y and m are the same as X and *n*, respectively, as above, only one of said X and Y being said cyano, substituted sulfonamide or acylamide; (b) an aryl polycarboxylic acid anhydride of the formula:



wherein Z, Y and *m* are the same as above with respect to said aryl polycarboxylic acid, only one of said X and Y being said cyano, substituted sulfonamide or acylamido; and (c) mixtures thereof, said reaction being carried out in the presence of an N-substituted lower alkyl pyrrolidone solvent having the formula:



wherein R is a lower alkyl group having about 1–7 carbon atoms, the resulting product formed in the reaction mixture having the formula:

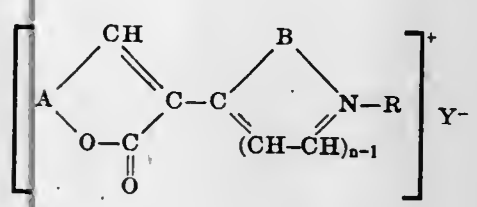


wherein X, Y, *m*, *n*, R_1 and R_2 are as described above, whereby the presence of said pyrrolidone solvent serves to render the reaction mixture readily stirrable during the desired reaction operation, the resulting product being conveniently precipitated therefrom in the isolation of said product in high yields as disperse dyestuffs of high purity and quality.

3,872,132
PROCESS FOR THE MANUFACTURE OF SIGNAL DYES OF THE CATIONIC SERIES
Stefan Koller, Pratteln; Rudolf Zink, Oberwil Basel-land; Dieter Reichel, Kuessnacht am Rigi, and Jacques Voltz, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Aug. 23, 1971, Ser. No. 174,156
Claims priority, application Switzerland, Aug. 26, 1970, 12749/70
Int. Cl. C07d *7/34*
U.S. Cl. 260—296 B **8 Claims**

1. A process for the manufacture of fluorescent cationic compounds of the 1,2-pyran series of the formula I

(I)

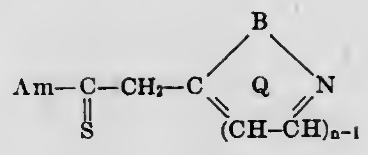


in which:

A represents a bivalent aromatic residue which is linked in the O-position and may, if desired, be substituted,
B represents a bivalent residue as hereinafter defined,
R represents an alkyl or aralkyl residue which, if desired, may be substituted,
n is 1 or 2 and when *n* is 2, B is a bivalent residue selected from the group consisting of vinylene or o-phenylene and when *n* is 1, B is a bivalent residue selected from the group consisting of butadienylene or o-styrylene and B is unsubstituted or substituted by methyl or ethyl,
Y represents the equivalent charge of an anion,

wherein a thioacetiamide compound of the formula II

(II)



in which

A*m* represents a primary, secondary or tertiary amino group and
B and *n* have the same meanings as in formula I

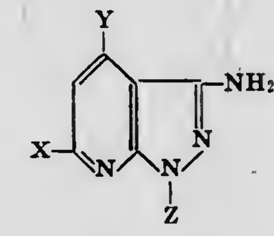
is converted with a reactive ester of an aliphatic or araliphatic alcohol with an inorganic or organic acid of the formula

$$R — Y' \qquad (III)$$

(in which R has the same meaning as in formula I and Y′ represents the acid residue corresponding to the anion Y^-) into a cycloammonium compound which latter compound is then reacted with an aromatic aldehyde, which contains a hydroxyl group in the orthoposition to the aldehyde group, to form a cationic coumarin compound of the formula I, and the starting materials are chosen so that the cationic portion of the final product does not contain any groups that undergo acid dissociation in water.

3,872,133
3-AMINO-1H-PYRAZOLO(3,4-B)PYRIDINES
Erwin Fleckenstein, Hofheim, Taunus, and Reinhard Mohr, Offenbach, Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Main, Germany
Filed June 26, 1973, Ser. No. 373,766
Claims priority, application Germany, June 30, 1972, 2232038
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 H **6 Claims**

1. A 3-amino-1H-pyrazolo [3,4-b] pyridine of the formula



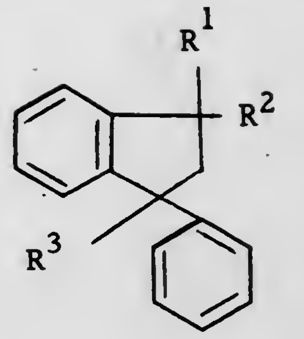
(1)

wherein

X ia amino or alkylamino of 1 to 6 carbon atoms or di-lower alkylamino,
Y is lower alkyl and
Z is hydrogen.

3,872,134
PRODUCTION OF ANTHRAQUINONE
Hermann Wistuba; Michael Jolyon Sprague, both of Mannheim; Heinz Engelbach, Limburgerhof; Herbert Armbrust, and Hans-Juergen Sturm, both of Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed July 11, 1972, Ser. No. 270,673
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 **8 Claims**

1. In a process for the production of anthraquinone in the gas phase in the presence of a catalyst at an elevated temperature of from 250° to 500°C wherein an indan of the formula (1):



(I)

in which R^1, R^2 and R^3 may be identical or different and each is alkyl of 1 to 4 carbon atoms, and R^1 and/or R^3 may also each be a hydrogen atom, is oxidized in the presence of a catalyst, the improvement which comprises: using a catalyst consisting essentially of a pentavalent vanadium compound, a compound of thallium and a compound of antimony with an atomic ratio of 30,000 to 10 of vanadium to 1 of thallium and of 8,000 to 3 of vanadium to 1 of antimony.

3,872,135
SEPARATION OF ANTHRAQUINONE FROM A MIXTURE OF ITS VAPOR WITH A CARRIER GAS
Helmut Reinicke, Ludwigshafen; Dieter Stockburger, Gruenstadt; Theo Teutsch, Neuhofen; Ludwig Vogel, Frankenthal; Hermann Wistuba, Mannheim, and Heinz Engelbach, Limburger, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed June 29, 1973, Ser. No. 375,177
Claims priority, application Germany, July 1, 1972, 2232453
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 **16 Claims**

1. A process for separation of anthraquinone from a mixture of its vapor with a hot carrier gas, wherein the gas-vapor mixture at a temperature of at least 200°C is treated in a desublimation zone with an aqueous suspension of anthraquinone at a temperature below the boiling point of water at the prevailing pressure.

3,872,136
PROCESS FOR THE PREPARATION OF VANADIUM OXYCARBIDE, OXYNITRIDE AND OXYCARBONITRIDE
Servaas Middelhoek, Arnhem, Netherlands, assignor to N. V. Hollandse Metallurgische Industrie Billiton, Arnhem, Netherlands
Filed Sept. 9, 1970, Ser. No. 70,887
Claims priority, application Netherlands, Sept. 9, 1969, 6913685
Int. Cl. C01b *21/10*
U.S. Cl. 423—371 **13 Claims**

1. Process for the preparation of a material consisting mainly of at least one vanadium compound selected from the group consisting of vanadium oxy carbide, vanadium oxy nitride and vanadium oxy carbonitride, the oxygen content ranging from about 0.2 to 1.7 percent wt. having the formula: VC_xN_yO, wherein X and Y are in any desired ratio and either may be zero, except that when X is O, Y cannot be zero and conversely, comprising reacting at a temperature ranging from about 800°C to 1,250°C a solid compound defined by the formula $VO_pC_qN_z$, having an oxygen content in the range of about 7.3 to 14.9 percent by wt., wherein p and q may have any ratio to one another and z can range from 0 to 3 percent by wt., with a gas comprising from 0 to 100 volume per cent of hydrogen, 0 to 100 volume per cent of nitrogen, 0 to 100 volume per cent of ammonia, the sum of the hydrogen, nitrogen and ammonia contents constituting at least 50 volume per cent of said gas.

3,872,137
ANTHRAQUINONE COMPOUNDS

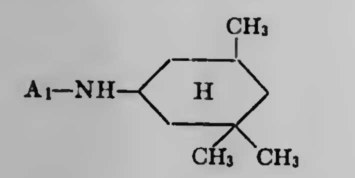
Wolfgang Frey, Munchenstein/BL, and Wolfgang Schoenauer, Riehen/BS, both of Switzerland, assignors to Fidelity Union Trust Company, Executive Trustee under Sandoz Trust of May 4, 1955

Division of Ser. No. 808,322, March 18, 1969, Pat. No. 3,646,071. This application Nov. 17, 1971, Ser. No. 199,811

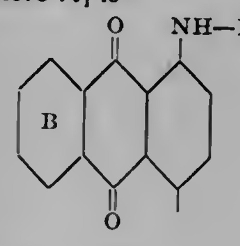
Int. Cl. C09b *1/30, 1/34, 1/52*

U.S. Cl. 260—374 **7 Claims**

1. A compound of the formula

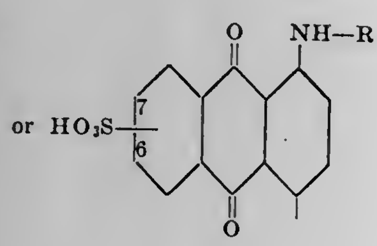


where A_1 is



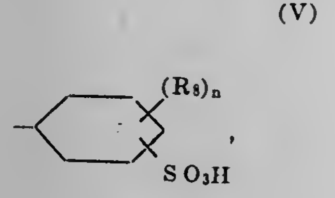
(IV)

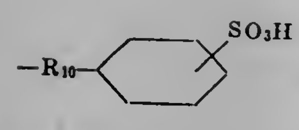
or



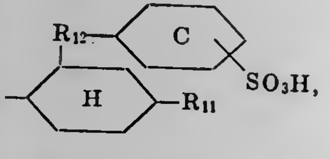
(V)

R_3 is

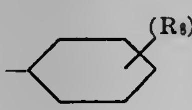




or

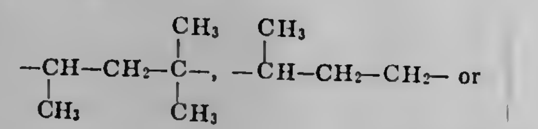


R_4 is secondary alkyl of 3 to 6 carbon atoms, cyclohexyl, 3,5,5-trimethylcyclohexyl, or

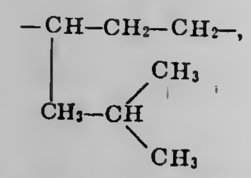


R_8 is hydrogen, lower alkyl, lower alkoxy, halogen or lower acylamino,

R_{10} is $—CH_2—$,



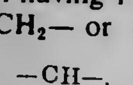
$$-\underset{CH_3}{CH}-CH_2-\overset{CH_3}{\underset{CH_3}{C}}-,\quad -\overset{CH_3}{CH}-CH_2-CH_2-\ \text{or}$$



$$-\underset{CH_2-CH(CH_3)_2}{CH}-CH_2-CH_2-,$$

R_{11} is hydrogen or alkyl having 1 to 8 carbon atoms,

R_{12} is $—CH_2—$, $—CH_2—CH_2—$ or



$$-\underset{CH_3}{CH}-,$$

n is 1 to 3,

the SO_3H group in formula (V) being in the 6- or 7-position; the nucleus B bearing optionally a chlorine atom or an SO_3H group in the 6- or 7-position or two hydroxyl or amino groups or one hydroxyl and one amino group in the 5- and 8-positions, respectively; the nucleus C bearing optionally 1 to 3 lower alkyl or lower alkoxy groups; all substituents R_8 being the same or different from each other if *n* stands for 2 or 3, and any acylamino group being acetylamino, propionylamino, n-butyrylamino, methoxycarbonylamino or ethoxycarbonylamino.

3,872,138
PROCESS FOR THE PREPARATION OF QUATERNARY AMMONIUM SALTS

Yuzuru Ogata, Wakayama, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

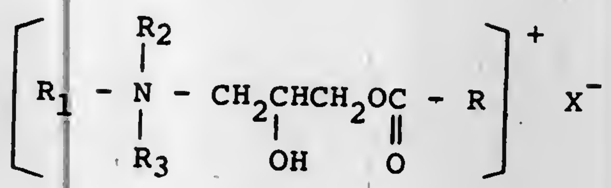
Filed Nov. 6, 1972, Ser. No. 304,128

Claims priority, application Japan, Nov. 9, 1971, 46-892257

Int. Cl. C11c *1/00*

U.S. Cl. 260—404 **5 Claims**

1. A process for preparing quaternary ammonium salts containing an ester linkage in the cationic moiety, of the formula

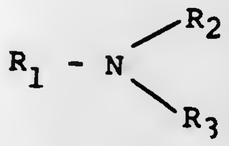


$$\left[R_1-\overset{R_2}{\underset{R_3}{N}}-CH_2\underset{OH}{CH}CH_2O\underset{O}{\overset{\|}{C}}-R\right]^+X^-$$

in which R is alkyl, alkenyl or cycloalkyl having 1 to 17 carbon atoms, X is halogen and each of R_1, R_2 and R_3 is alkyl or alkenyl having 1 to 18 carbon atoms

which comprises

neutralizing a carboxylic acid of the formula RCOOH with a substantially stoichiometric amount of a tertiary amine of the formula



to form a salt and then reacting said salt with a stoichiometric amount or a slight excess of an epihalohydrin to form a compound of the first-mentioned formula.

3,872,139
15 DEOXY PGE_2

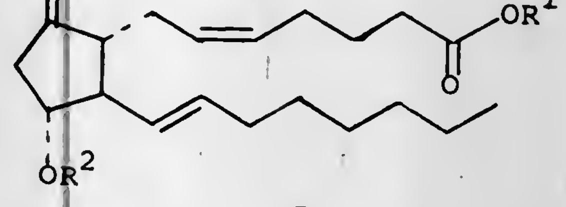
John W. Patterson, Mountain View, and John H. Fried, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc.

Filed May 12, 1972, Ser. No. 252,721

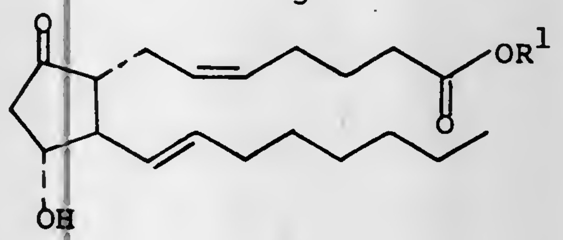
Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D **7 Claims**

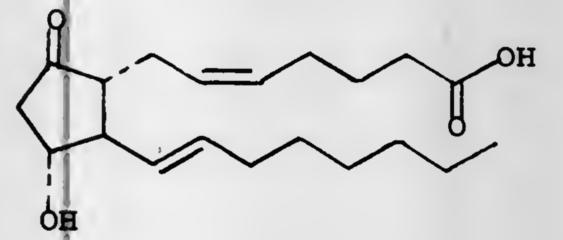
1. The dl compounds of the formulas:



5



6



7

wherein

R^1 is lower alkyl, $—CH_2CH_2Cl$ or $—CH_2CCl_3$; and

R^2 is $—C(CH_3)_2O(CH_2)_xCH_3$, in which *x* is 0, 1, 2 or 3.

3,872,140
LIQUID CRYSTALLINE COMPOSITIONS AND METHOD

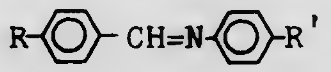
Bruce H. Klanderman, and Thomas R. Criswell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 268,265, July 3, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,438

Int. Cl. C09k *1/02*

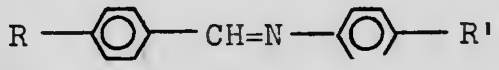
U.S. Cl. 252—408 **9 Claims**

1. A process for interconversion of Schiff bases comprising the steps of mixing together at least two different Schiff bases of the formula:



wherein R and R′ each represent a member selected from the group consisting of an alkyl radical, an alkoxy radical, an acyloxy radical, an alkoxy carbonyloxy radical and a cyano radical and heating the resultant mixture in the presence of a catalyst capable of effecting interconversion of the Schiff bases to form a mixture of different Schiff bases having all possible combinations of the selected substituents R and R′.

2. A process for interconversion of Schiff bases comprising the steps of mixing together at least two different Schiff bases of the formula:



wherein R and R′ each represent a member selected from the group consisting of an alkyl radical, an alkoxy radical, an acyloxy radical, an alkoxycarbonyloxy radical and a cyano radical and heating the resultant mixture in the presence of a catalyst capable of effecting interconversion of the Schiff bases to form a mixture of different Schiff bases having all possible combinations of the selected substituents R and R′, wherein said catalyst is selected from the group consisting of alkylamine salts, p-toluenesulfonic acid, ammonium chloride, ammonium acetate and sodium acetate.

3,872,141
1-ALKOXYCARBOXYLIC ACID DERIVATIVES FOR THE REGULATION OF PLANT GROWTH

Claus Weis, Arlesheim, and Hanspeter Fischer, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,013

Claims priority, application Switzerland, Aug. 3, 1971, 11390/71

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **1 Claim**

1. 1-methoxy-dec-3-enecarboxylic acid and the allkali metal and alkaline-earth metal salts thereof.

3,872,142
METHOD OF PURIFYING ALKALI METAL SOAPS OF SYNTHETIC FATTY ACIDS

Hideomi Saito, Sagamihara; Takashi Yamashita; Takuro Munezawa, both of Yokohama, and Tetsuya Kato, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc. and Japan Carboxylic Acids Co., Ltd., both of Tokyo, Japan, a part interest to each

Filed Apr. 13, 1973, Ser. No. 350,772

Claims priority, application Japan, Apr. 20, 1972, 47-39789

Int. Cl. C11d *13/02*

U.S. Cl. 260—418 **5 Claims**

1. A method of purifying an alkali metal soap contaminated with unsaponifiable matter and prepared by oxidizing paraffin to an oxidation product essentially consisting of fatty acids substantially insoluble in water and containing said unsaponifiable matter, and holding said oxidation product under saponifying conditions, said method comprising:

a. preparing an aqueous solution of said contaminated soap and of a lower alkanol, the amount of said alkanol being 5 to 50 percent of the weight of said solution;

b. extracting said solution with ethylene dichloride until said saponifiable matter is substantially completely extracted from said solution and dissolved in said ethylene dichloride,

1. the amount of said lower alkanol being sufficient to prevent the formation of an emulsion from said aqueous solution and said ethylene dichloride; and

c. separating the extracted aqueous solution from the ethylene dichloride having said unsaponifiable matter dissolved therein.

3,872,143
PROCESS FOR THE PREPARATION OF A MIXTURE OF N-OCTYLTIN CHLORIDES WHICH IS ENTIRELY FREE FROM TRI-N-OCTYLTIN CHLORIDE

Fdyta Boboli; Wladyslaw Longin Malasnicki; Mieczyslaw Kowalski, all of Warsaw and Andrzej Pazgan, Sochaczew, all of Poland, assignors to Instytut Przemyslu Organiczego

Continuation of Ser. No. 148,882, June 1, 1971, abandoned. This application June 15, 1973, Ser. No. 370,231

Claims priority, application Poland, June 6, 1970, 141123

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **1 Claim**

1. A process for the preparation of a mixture of di- and mono-n-octyltin chlorides which has a high di-n-octyltin dichloride content comprising directly reacting tin, n-octyl chloride and n-octyl iodide in the presence of phosphorus trichloride as a catalyst at an elevated temperature of 175° – 200° C and simultaneously distilling off the formed alpha-octene during the course of the reaction, filtering off the unreacted tin and formed tin dichloride and distilling off from the filtrate the unreacted n-octyl chloride and n-octyl iodide, said phosphorus trichloride catalyst being present in an amount of 0.03 – 0.08 mol per 1 gram atom of tin.

3,872,144
ORGANOALUMINUM COMPOUNDS AND THEIR PREPARATION

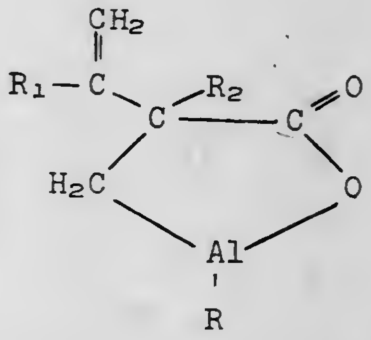
Lawrence H. Shepard, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 25, 1973, Ser. No. 409,415

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A **30 Claims**

9. An organoaluminum compound of the formula



wherein R is a hydrocarbon group having up to about 18 carbon atoms, R_1 is hydrogen or an alkyl or alkenyl group, and R_2 is hydrogen or an alkyl group.

19. A process of preparing an organoaluminum compound possessing a 4-vinylic-(1-alumina-2-oxacyclopentan-3-one) moiety which comprises reacting (i) a nonionic organoaluminum compound possessing an aluminacyclopent-3-ene moiety, the moiety being attached by means of an aluminum-carbon bond to a hydrocarbon group which optionally may be

substituted by no more than one additional so-bonded aluminacyclopent-3-ene moiety, with (ii) carbon dioxide, the reaction being conducted in the presence of a stable Lewis base.

3,872,145
PROCESS FOR OBTAINING TRIMETHYLVINYLSILANE BY LIQUID-LIQUID EXTRACTION

Jacques Breysse, Villeurbanne; Gilbert Joseph Marin, Saint-Foy-les-Lyon, and Marcel Lefort, Caluire, all of France, assignors to Rhone-Polenc S.A., Paris, France

Filed Nov. 21, 1973, Ser. No. 417,903

Claims priority, application France, Nov. 23, 1972, 72.41637

Int. Cl. C07f *7/20*

U.S. Cl. 260—448.2 E **9 Claims**

1. A process for obtaining a trimethylvinylsilane containing less than 0.01 percent w/w of tetrahydrofuran from a mixture of trimethylvinylsilane and tetrahydrofuran, wherein the mixture of trimethylvinylsilane and tetrahydrofuran is subjected to liquid-liquid extraction using water as the solvent.

3,872,146
PROCESS OF REMOVING SULFATE GROUPS FROM ORGANOPOLYSILOXANES

Gerd Rossmy, Essen-Werden, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed May 22, 1974, Ser. No. 472,359

Claims priority, application Germany, June 16, 1973, 2330717

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **8 Claims**

1. A process of removing sulfate groups from polysiloxanes which contain groups in which sulfate groups are intramolecularly and/or terminally linked to silicon atoms, which comprises reacting said polysiloxanes with peralkylated amides of at least one acid selected from the group consisting of carboxylic acids, phosphonic acids and phosphoric acids, whereby an SO_3-containing peralkylated acid amide phase is obtained and separating said phase.

3,872,147
1-PHENOXY-2-HYDROXY-3-ALKYLAMINO-PROPANES

Herbert Koppe; Werner Kummer; Helmut Stahle; Karl Zeile, all of Ingelheim am Rhein, and Albrecht Engelhardt, Main/-Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

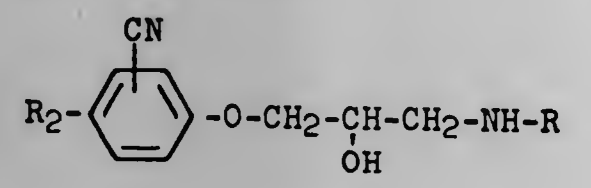
Continuation of Ser. No. 781,985, Dec. 6, 1968, abandoned. This application Dec. 2, 1971, Ser. No. 204,316

Claims priority, application Germany, Dec. 13, 1967, 1643625

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **3 Claims**

1. A compound of the formula



wherein

R is branched alkyl of 5 to 8 carbon atoms containing a quaternary carbon atom which is attached, directly or through an alkylene chain of 1 to 4 carbon atoms, to the amino nitrogen atom, and

R_2 is hydrogen or chlorine,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,872,148
CATALYTIC AMMOXIDATION OF PROPYLENE OR ISOBUTYLENE

Sumio Umemura; Kyoji Ohdan; Yasuo Bando, all of Ube; Mikio Hidaka, Shimonoseki, and Kazuo Fukuda, Ube, all of Japan, assignors to UBE Industries, Ltd., Ube, Yamaguchi-ken, Japan

Filed July 13, 1973, Ser. No. 378,978

Claims priority, application Japan, Aug. 4, 1972, 47-77616

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **5 Claims**

1. A process for the manufacture of acrylonitrile or methacrylonitrile from propylene or isobutylene, respectively, comprising contacting in the vapor phase at an elevated temperature a mixture of propylene or isobutylene, ammonia and oxygen with a catalyst consisting of an oxide composition containing the elements according to the formula

$$BiMo_aW_bII_cX_dO_e$$

wherein II is at least one metal selected from the group consisting of calcium, barium and zinc; X is a single metal selected from the group consisting of titanium, zirconium, niobium, tantalum, vanadium, chromium, manganese, iron, cobalt and nickel or a two metal combination selected from the group consisting of titanium and niobium, titanium and zirconium, chromium and titanium, chromium and zirconium and chromium and niobium; and each of the subscripts a, b, c and d denote the atomic ratio of the respective metal to bismuth and falling within the following ranges, $a = 0.3$ to 10, $b = 0.05$ to 3.0, $c = 0.1$ to 6.0 and $d = 0$ to 5.0, and e is a value corresponding to the oxides formed from the above components by combination and is a number which satisfies the average valency of the metals employed, and falls within the range of 3.2 and 61.5, said catalyst being a mixture of the metal oxides or in bonded state and being produced by intimately mixing at least one compound selected from the group consisting of the salts, the oxides, and mixtures thereof of each of respective elements in an aqueous system, heating to dryness, and then subsequently calcining at a considerably higher temperature.

3,872,149
9-HYDROXY PROSTA-5-CIS, 11,13-TRANS-TRIENOIC ACIDS AND DERIVATIVES THEREOF

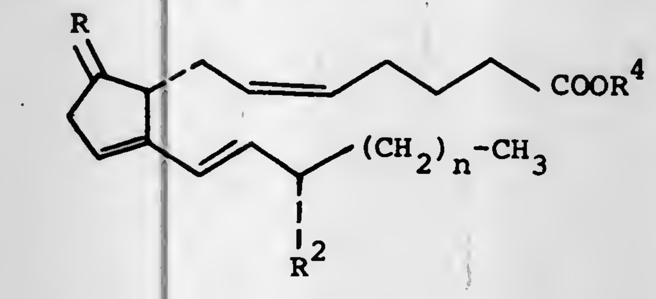
Pierre Crabbe, Grenoble, France, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed June 25, 1973, Ser. No. 373,597

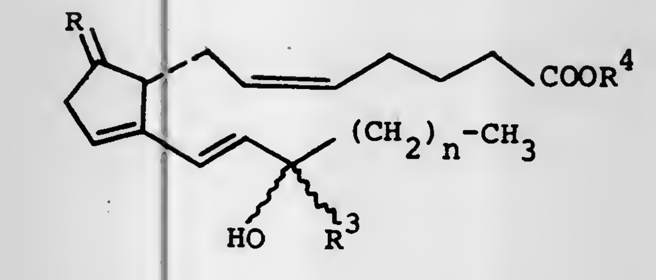
Int. Cl. C07c *61/32*

U.S. Cl. 260—468 D **16 Claims**

1. A compound selected from the group of those represented by the following formulas:



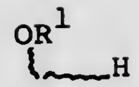
(A)



(B)

wherein

R is the grouping



in which R^1 is hydrogen, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy group having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to twelve carbon atoms, nitro, amino and halogen;

R^2 is hydroxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy group having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to twelve carbon atoms, nitro, amino and halogen;

R^3 is methyl, ethyl or propyl;

R^4 is hydrogen, a lower alkyl group or the pharmaceutically acceptable, non-toxic salts of compounds in which R^4 is hydrogen; n is an integer of from 2 to 9; and

the wavy lines (ξ) indicate the α or β configuration, or mixtures thereof.

3,872,150
POLYENE CARBAMATES

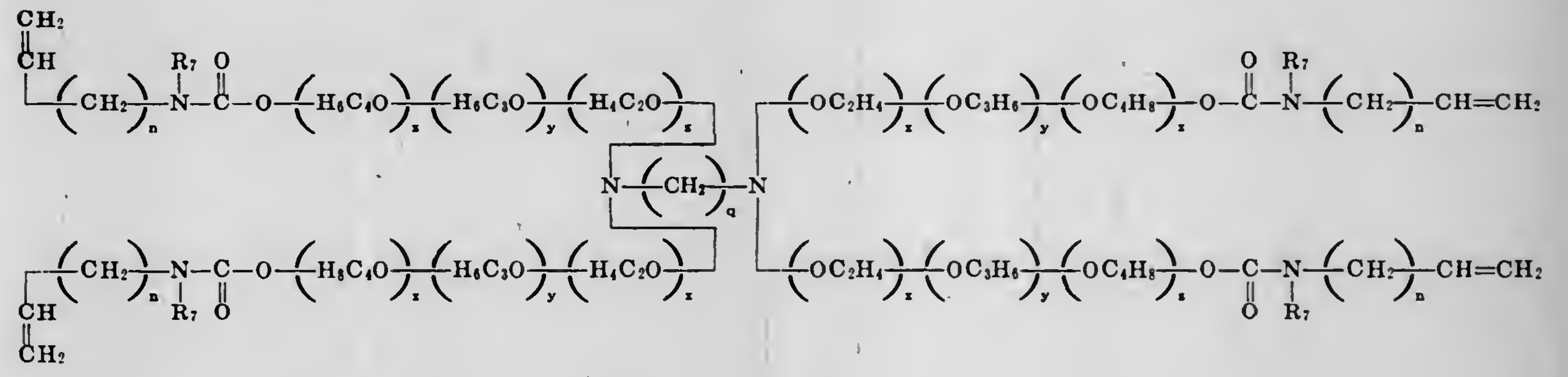
Clifton L. Kehr, 1216 Ednor Rd., Silver Spring, Md. 20904, and Walter R. Wszolek, Box 196, Rt. 2, Sykesville, Md. 21784

Division of Ser. No. 40,737, May 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application Aug. 22, 1973, Ser. No. 390,664

Int. Cl. C07c *125/06*

U.S. Cl. 260—468 E **1 Claim**

1. A polyene having the formula:


CH2
CH
R7 O
(CH2)n-N-C-O-(H8C4O)z-(H6C3O)y-(H4C2O)x
N-(CH2)q-N
(OC2H4)x-(OC3H6)y-(OC4H8)z-O-C-N-(CH2)n-CH=CH2
O R7
CH
CH2

wherein q is at least 2; the sum of $x + y + z$ in each chain segment is at least 1; n is at least 1; and R_7 is a member of the group consisting of $CH_2{=}CH{-}(CH_2)_n$, hydrogen, phenyl, cycloalkyl and alkyl; and

wherein said alkyl having from 1 to 9 carbon atoms and said cycloalkyl having from 3 to 8 carbon atoms.

3,872,151
POLYENE CARBAMATES

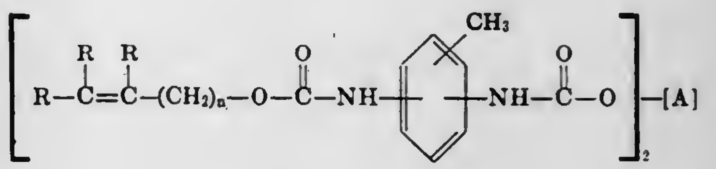
Clifton L. Kehr, 1216 Ednor Rd., Silver Spring, Md. 20904, and Walter R. Wszolek, Box 196, Rt. 2, Sykesville, Md. 21784

Continuation of Ser. No. 40,737, May 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application Aug. 22, 1973, Ser. No. 390,663

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **3 Claims**

1. A polyene of the formula:



wherein R is a radical selected from the group consisting of hydrogen, fluorine, chlorine, phenyl, benzyl, alkyl, alkoxy, and cycloalkyl; said alkyl and alkoxy having from 1 to 9 carbon atoms and said cycloalkyl having from 3 to 8 carbon atoms;

wherein [A] is free of reactive carbon to carbon unsaturation and formed of at least two repeating units selected from the group consisting of $-(CH_2)_g$, $-(C_2H_4O)_h$, $-(C_3H_6O)_h$, and $-(C_4H_8O)_h$, g is an integer from 1 to 9 and h is an integer from 1 to 200;

said polyene having a molecular weight in the range of 300 to 20,000 and a viscosity in the range from essentially 0 to 20 million centipoises at 70°C.

3,872,152

TERMINALLY UNSATURATED LIQUID POLYENE HAVING INTERNALLY UNREACTIVE CARBON-TO-CARBON UNSATURATION

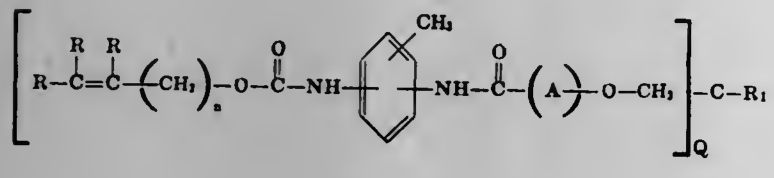
Clifton L. Kehr, 1216 Ednor Rd., Silver Spring, Md. 20904, and Walter R. Wszolek, Box 196, Rt. 2, Sykesville, Md. 21784

Continuation of Ser. No. 40,737, May 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application Aug. 22, 1973, Ser. No. 390,666

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **3 Claims**

1. A polyene of the formula:



wherein Q is 2–3; *n* is at least 1;
wherein R is a radical selected from the group consisting of hydrogen, fluorine, chlorine, phenyl, benzyl, alkyl, alkoxy and cycloalkyl; said alkyl and alkoxy having from 1 to 9 carbon atoms and said cycloalkyl having from 3 to 8 carbon atoms;
wherein [A] is free of reactive carbon to carbon unsaturation and formed of at least two repeating units selected from the group consisting of $\left(CH_2\right)_g$, $\left(C_2H_4O\right)_h$, $\left(C_3H_6O\right)_h$, and $\left(C_4H_8O\right)_h$, *g* is an integer from 1 to 9 and *h* is an integer from 1 to 200;
said composition having a molecular weight in the range of 300 to 20,000 and a viscosity in the range from essentially 0 to 20 million centipoises at 70°C;
wherein R_1 is selected from the group consisting of hydrogen, phenyl, benzyl, alkyl, and cycloalkyl;
wherein said alkyl having from 1 to 9 carbon atoms, said cycloalkyl having from 3 to 8 carbon atoms.

3,872,153

PROCESS FOR THE PRODUCTION OF UNSATURATED ORGANIC COMPOUNDS

Donald Wright, and Samuel Gardner, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

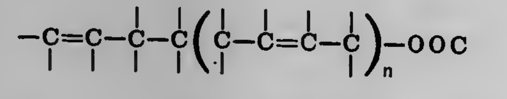
Filed Mar. 27, 1972, Ser. No. 238,611

Claims priority, application United Kingdom, Apr. 5, 1971,

Int. Cl. C07c *69/02, 69/34, 69/80*

U.S. Cl. 260—475 N **11 Claims**

1. A process for the production of unsaturated compounds containing one or more groups



in which *n* is 1, which consists essentially of reacting butadiene, isoprene or piperylene with an aromatic or alkanoic mono- or di- carboxylic acid in the presence of 10^{-7} to 1.0 molar concentration of a platinum or iridium compound and 10^{-5} to 10^{-2} molar concentration of a copper compound selected from copper nitrate, copper halide, copper naphthenate and copper alkanoate derived from a carboxylic acid containing up to 20 carbon atoms.

3,872,154

TRIMELLITATES

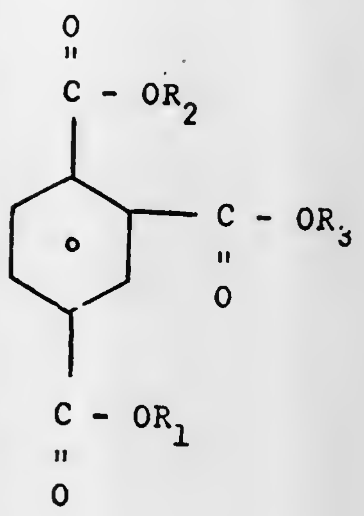
John William Hirzy, Saint Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 74,898, Sept. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 481,928, Aug. 23, 1965, abandoned. This application Nov. 20, 1972, Ser. No. 308,220

Int. Cl. C07c *69/76*

U.S. Cl. 260—475 N **5 Claims**

1. A monoallyl trimellitate of the formula



, wherein one of R_2 and R_3 is allyl and the remaining R groups are like radicals selected from the group consisting of alkyl of 1 to 18 carbon atoms and cycloalkyl of 6 to 18 carbon atoms.

3,872,155

ESTERS OF BROMINATED DIPENTAERYTHRITOL

Steffen F. Dieckmann, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 47,897, June 19, 1970, abandoned. This application June 22, 1973, Ser. No. 372,577

Int. Cl. C07c *69/16, 69/62, 69/78, 69/88, 69/92*

U.S. Cl. 260—476 R **4 Claims**

1. An ester of brominated dipentaerythritol prepared by hydrobrominating dipentaerythritol in solution in an excess of an esterifying acid which is an unsubstituted or halosubstituted saturated aliphatic monocarboxylic acid containing 2 to 7 carbon atoms, benzoic acid, a substituted benzoic acid containing as substituents at least one halogen, lower alkyl, lower alkoxy or hydroxyl group, or a mixture of any of said acids at a temperature ranging from about 100° to about 140°C.

3,872,156

PROCESS FOR THE PREPARATION OF PHENOLS BY OXIDATION OF AROMATIC ALDEHYDES

Francois Bourdin, Lyon; Francois Chizat, Bron; Michel Costantini, Lyon, and Michel Jouffret, Francheville le Bas, all of France, assignors to Rhone-Poulenc S.A., Paris, France

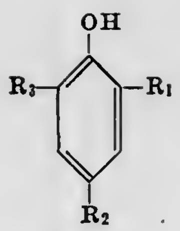
Filed Nov. 17, 1972, Ser. No. 307,530

Claims priority, application France, Nov. 19, 1971, 71.41411

Int. Cl. C07c *37/00*

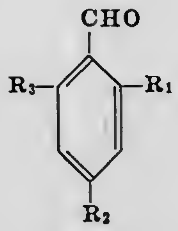
U.S. Cl. 260—479 R **8 Claims**

1. A process for the preparation of an oxidation product containing a major amount of a phenol of the general formula:



(I)

in which R_1, R_2 and R_3, which may be identical or different, each represent a hydrogen atom or a linear or branched alkyl radical containing 1 to 5 carbon atoms, or a formate ester of said phenol which comprises oxidising an aldehyde of the general formula:



(II)

in which R_1, R_2 and R_3, are as defined above, with hydrogen peroxide, the aldehyde being in solution in a solvent selected from the group consisting of tetramethylene-sulphone and C_1–C_4 alkyl substituted tetramethylene-sulphones.

3,872,157

SUBSTITUTED ANILIDE CARBAMATES

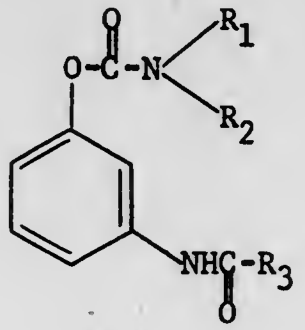
Mervin E. Brokke, Richmond, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 23, 1967, Ser. No. 677,050

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **6 Claims**

1. A compound having the formula:



in which R_1 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, inclusive, and lower alkenyl having from 2 to 4 carbon atoms, inclusive; R_2 is selected from the group consisting of alkyl containing from 1 to 8 carbon atoms, inclusive, and lower alkenyl having 2 to 4 carbon atoms, inclusive; and R_3 is benzyl.

3,872,158

OXALACETIC ACID BIS(2-SUBSTITUTED-2,2-DINITROETHYL)ESTERS

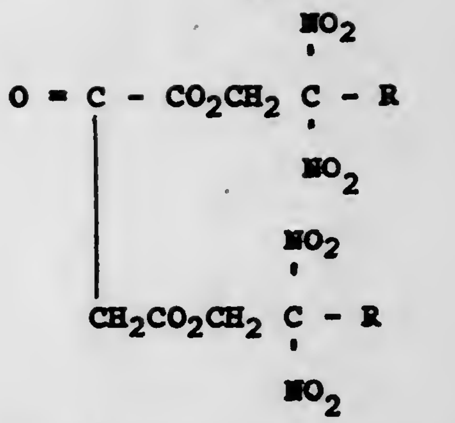
Henry J. Marcus, West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1970, Ser. No. 97,438

Int. Cl. C07c *69/66*

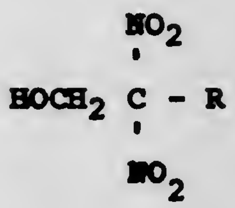
U.S. Cl. 260—483 **4 Claims**

1. Oxalacetic acid ester of the formula



wherein R is selected from the group consisting of H, F, NO_2 and CH_3.

3. A method of preparing the compounds of claim 1 comprising contacting acetylenedicarboxylic acid and an alcohol of the formula



$$HOCH_2\,\overset{NO_2}{\underset{NO_2}{C}}-R$$

wherein R is selected from the group consisting of H, F, NO_2 and CH_3 at a temperature between about 5°C and 40°C in the presence of sulfuric acid.

3,872,159

2-SUBSTITUTED-2,2-DINITROETHOXY-FUMARIC ACID BIS(2-SUBSTITUTED-2,2-DINITROETHYL)ESTER

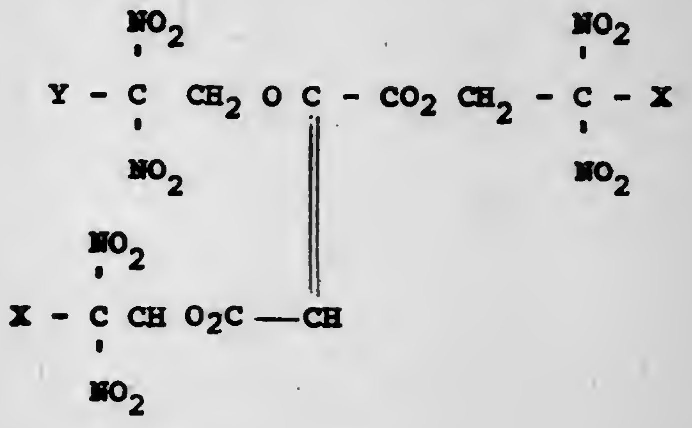
Henry J. Marcus, West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1970, Ser. No. 97,439

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 P **4 Claims**

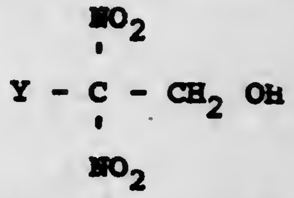
1. A fumaric acid ester of the formula



wherein X and Y vary independently and are selected from the group consisting of F, H, NO_2 and CH_3.

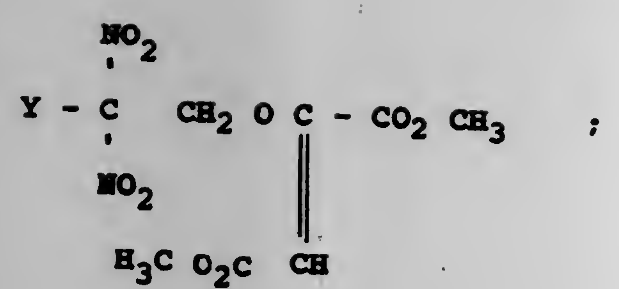
3. A method of preparing the compounds of claim 1 comprising;

1. contacting in solution dimethyl acetylenedicarboxylic acid with an alcohol of the formula

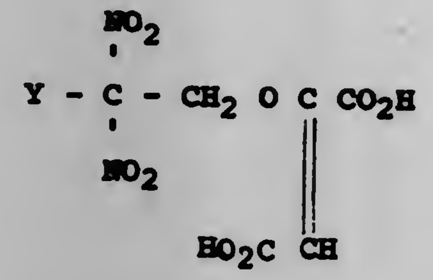


$$Y-\overset{NO_2}{\underset{NO_2}{C}}-CH_2\,OH$$

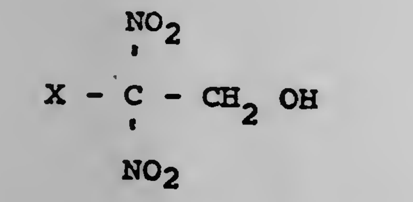
in the presence of pyridine at about 0°–5°C to produce



2. contacting in solution the product of step 1 with HCl to produce



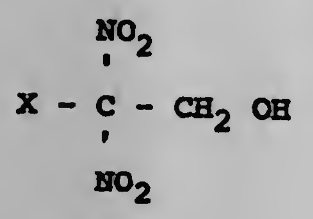
3. contacting in solution the product of step 2 with an alcohol of the formula



$$X-\overset{NO_2}{\underset{NO_2}{C}}-CH_2\,OH$$

in the presence of polyphosphoric acid to yield the mono ester of the product of step 2;

4. contacting in solution the mono ester of step 3 with thionyl chloride in the presence of pyridine to obtain the mono ester - mono acid chloride, and
5. contacting said mono ester - mono acid chloride of step 4 with an alcohol of the formula



$$X-\overset{NO_2}{\underset{NO_2}{C}}-CH_2\,OH$$

3,872,160

CIS 6-HYDROXY-HEXENOATE

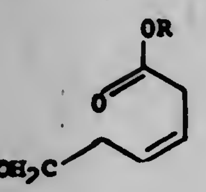
Robert T. Dahill, Jr., Perth Amboy, N.J., assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 49,544, June 24, 1970, Pat. No. 3,836,513. This application June 15, 1973, Ser. No. 370,251

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **3 Claims**

1. A cis 6-hydroxy-3-hexenoate of the formula



wherein R is lower alkyl or 1–6 carbons or cyclo alkyl of 4–8 carbon atoms.

3,872,161

PROCESS FOR THE MANUFACTURE OF ALKYLAMINOALKYL ACRYLATES

Shuzo Fukuchi; Noboru Shimizu, both of Osaka, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

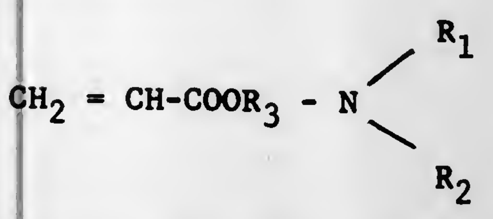
Filed Mar. 2, 1973, Ser. No. 337,421

Claims priority, application Japan, Mar. 6, 1972, 47-022239

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **30 Claims**

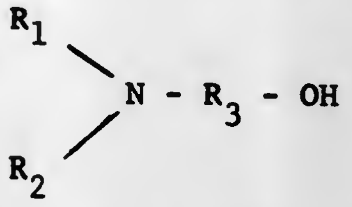
1. A process for the manufacture of alkyl aminoalkyl acrylates of the general formula:



wherein R_1 represents hydrogen atom or alkyl group containing 1 to 8 carbon atoms, R_2 represents alkyl group containing 1 to 8 carbon atoms, in case of R_1 being hydrogen atom, R_2 represents tert-alkyl group containing 4 to 8 carbon atoms and R_3 represents straight or branched alkylene group containing 2 to 4 carbon atoms comprising reacting an alkyl acrylate of the general formula:

$CE_2 = CH - COOR_4$

wherein R_4 represents alkyl group containing 1 to 4 carbon atoms with an alkyl aminoalkanol of the general formula:



wherein R_1, R_2 and R_3 have the same meanings as mentioned above, in the presence of a catalytic amount of a zinc compound selected from the group consisting of metallic zinc, zinc oxide, hydroxide and sulfide, inorganic and organic acid salts of zinc, alkyl zinc, zinc alkoxides, zinc chelat^ compounds, and zinc carbamates.

3,872,162

STABILIZED ETHYLENICALLY UNSATURATED BETA-YDROXY ESTERS PREPARED FROM A POLYEPOXIDE AND ACRYLIC OR METHACRYLIC ACID

Sol B. Radlove, Chicago; Abraham Ravve, Lincolnwood, and Kenneth H. Brown, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 12, 1973, Ser. No. 378,759

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 B **8 Claims**

1. A method of preparing an ethylenically unsaturated beta-hydroxy ester stable to premature gelation comprising reacting at a temperature below 110°C a polyepoxide having at least 2 epoxide groups in the polyepoxide molecule with an ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic and methacrylic acid in the presence of a small but effective amount of an divalent tin salt and an alkaline catalyst to prepare the beta-hydroxy ester and then recovering the ester.

3,872,163

METHOD OF PREPARING 1,4-DIACYLOXY-2-BUTENES

Tohru Shimizu; Teruo Yasui, and Sieshiro Nakamura, all of Kurashiki City, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed Jan. 19, 1972, Ser. No. 219,146

Int. Cl. C07c *67/04*

U.S. Cl. 260—491 **4 Claims**

1. A method for preparing 1,4-diacyloxy-2-butene which comprises reacting in the gaseous phase at a temperature of 100°–160°C. 1-acyloxy-1,3-butadiene with a carboxylic acid and oxygen in the presence of an effective amount of a catalyst consisting of metallic palladium.

3. A method for preparing 1,4-diacyloxy-2-butene wherein butadiene is reacted in the gaseous phase at a temperature of 100°–160°C. with a carboxylic acid and oxygen in the presence of an effective amount of a catalyst consisting of metallic palladium to obtain the product 1,4-diacetoxy-2-butene and 1-acyloxy-1,3-butadiene as a by-product, recycling the 1-acyloxy-1,3-butadiene and unreacted carboxylic acid to the reaction system wherein the 1-acyloxy-1,3-butadiene is simultaneously converted to 1,4-diacyloxy-2-butene.

3,872,164

PREPARATION OF GLYOCOL ACETATES

John P. Schmidt, Princeton, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,039

Int. Cl. C07c *67/04, 69/16*

U.S. Cl. 260—497 R **14 Claims**

1. In a process for producing glycol acetates by reacting acetic acid, ethylene and molecular oxygen in an oxidation zone in the presence of a catalyst system comprising a variable valent cation selected from at least one member of the group consisting of tellurium, cerium, antimony, manganese, vanadium, gallium, arsenic, cobalt, copper, chromium, and selenium and at least one of bromine, chlorine, a bromine-containing compound yielding bromide ions during reaction, or a chlorine-containing compound yielding chloride ions during reaction to produce a reaction mixture containing said product glycol acetates, said oxidation zone being supplied with a liquid feed comprising acetic acid, the improvement which comprises maintaining in said liquid feed a level of formic moieties of 3 to 10 weight percent.

3,872,165

MANUFACTURE OF VINYL SULFONATES AND VINYLSULFONIC ACID FROM CARBYL SULFATE

Walter Schenk, Bad Duerkheim; Roland Dahlinger, Neckargemuend, and Dieter Stockburger, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 30, 1971, Ser. No. 203,453

Claims priority, application Germany, Nov. 30, 1970, 2058776

Int. Cl. C07c *143/16*

U.S. Cl. 260—513 R **3 Claims**

1. In a process for the manufacture of a vinyl sulfonate by treating carbyl sulfate under alkaline conditions, the improvement comprises carrying out the process in two stages wherein

a. said first stage is carried out by circulating a 20 to 28% aqueous caustic soda solution in a cooled closed loop, adding carbyl sulfate to the circulating solution until the pH reaches a value of 10 and then adding to the circulating solution on a continuous basis carbyl sulfate and sufficient 20 to 28% aqueous caustic soda solution such that the pH value is maintained between 10 and 12, the reaction solution being subjected to stirring and maintained at a temperature between 30° and 50°C, while continuously passing overflowing reaction solution into a separate reaction zone; and

b. said second stage is carried out by heating the reaction solution in said separate reaction zone to a temperature of from 70° to 150°C for a period of from 10 to 60 minutes and then cooling the solution for terminating the reaction.

3,872,166

IMPROVEMENT IN THE RECOVERY OF GLYOXYLIC ACID

Hermann Spaenig, 5 Eschkopfstrasse, 6703 Limburgerhof; Toni Dockner, 6 In der Grossgasse, 6701 Meckenheim, and Helmut Karn, 120 Sternstrasse, 6700 Ludwigshafen, all of Germany

Filed June 25, 1973, Ser. No. 373,011

Claims priority, application Germany, July 1, 1972, 2232352

Int. Cl. C07c *59/10*

U.S. Cl. 260—526 R **2 Claims**

1. A process for the recovery of pure glyoxylic acid or sodium glyoxylate from the regeneration liquor obtained in the treatment of reaction mixtures from the production of glyoxal with a basic ion exchanger and elution of the ion exchanger wherein the ion exchanger containing glyoxylic acid is eluted with caustic soda solution, sodium carbonate solution or sodium bicarbonate solution, the eluate containing from 1 to 15 percent of glyoxylic acid is adjusted to a pH of from 3 to 6 and concentrated to such an extent, with or without cooling, that sodium glyoxylate is precipitated.

3,872,167

PRODUCTION OF O-SULFAMIDOBENZOIC ACIDS

Gerhard Hamprecht, Mannheim; Karl-Heinz Koenig, Frankenthal, and Gerhard Bolz, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

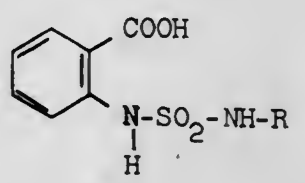
Filed Jan. 26, 1972, Ser. No. 221,021

Claims priority, application Germany, Feb. 2, 1971, 2104682

Int. Cl. C07c *143/80*

U.S. Cl. 260—518 R **8 Claims**

1. A process for the production of an o-sulfamidobenzoic acid of the formula:



(I)

in which R is an aliphatic or cycloaliphatic radical, which process comprises reacting anthranilic acid or a salt of anthranilic acid with a sulfamyl halide of the formula:

$X\text{-}SO_2\text{-}NH\text{-}R$ (II)

in which R has the above meanings and X is halogen in the presence of a polar organic solvent at a temperature of from 15° to 40°C.

3,872,168

SYNTHESIS OF ACIDS AND AMIDES

James P. Collman, Stanford; Stanley R. Winter, Palo Alto, and Robert G. Komoto, East Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stamford Junior University, Stamford, Calif.

Filed Oct. 2, 1972, Ser. No. 293,859

Int. Cl. C08h *17/36*

U.S. Cl. 260—539 R **13 Claims**

1. A method of producing acids R_1COOH which comprises reacting a tetracarbonyl ferrate dianion with the substrate R_1X to produce an intermediate $R_1(CO)n\ Fe\ (CO)_4^-$, and reacting said intermediate with a cleaving agent and water, said cleaving agent being a halogenating agent or an oxygenating agent, to form said acids, wherein R_1 is selected from the group consisting of normal and branched chain alkyl, normal and

branched chain alkyl substituted by halide, hydroxyl, carboxy ester, ether or epoxy, an olefinic group, an aryl group and a cycloaliphatic group; X is selected from the group consisting of halide, tosylate, methane sulfonyl, trifluoromethane sulfonyl, phosphito, or phosphato; and *n* is zero or unity.

3,872,169

AMINO-OXIME ACETAMIDE-0-CARBAMATES AS ANTIHYPERTENSIVES

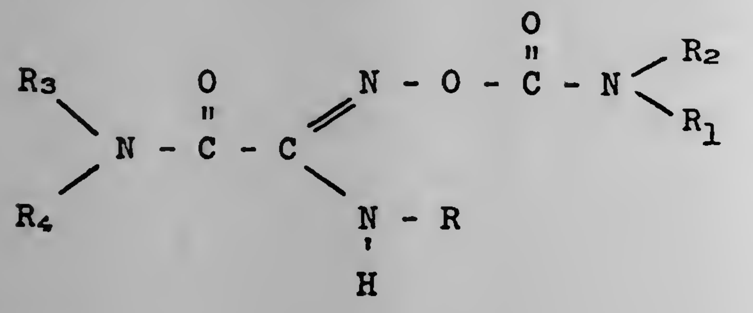
Russell F. Bellina, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1974, Ser. No. 442,406

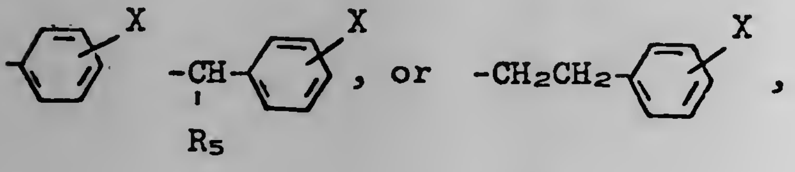
Int. Cl. C07c *103/28*

U.S. Cl. 260—558 A **6 Claims**

1. A compound of the formula



wherein
R is



where
X is H, Br, Cl, F, or CF_3, and R_5 is H, CH_3, C_2H_5, n-C_3H_7, or iso-C_3H_7;
R_1 and R_2 are the same or different and are hydrogen, methyl, ethyl, normal propyl, isopropyl, cyclopropyl, or allyl, with the proviso that the sum of the carbon atoms in R_1 and R_2 does not exceed 4; and
R_3 and R_4 are the same or different and are C_1-C_3 alkyl.

3,872,170

CONTINUOUS MANUFACTURE OF AN AQUEOUS CHOLINE CHLORIDE SOLUTION

Horst Bosche, and Uwe Soenksen, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Mar. 23, 1972, Ser. No. 237,321

Claims priority, application Germany, Mar. 29, 1971, 2115094

Int. Cl. C07c *91/06*

U.S. Cl. 260—567.6 M **7 Claims**

1. In a continuous process for the manufacture of choline chloride by reacting excess ethylene oxide with trimethylammonium chloride in aqueous solution at a temperature of from 30° to 100°C in a closed stirred vessel in which a gas space is present above the level of the liquid reaction mixture, the improvement comprising operating at substantially atmospheric pressure and continuously bathing the surfaces defining the gas space in the stirred vessel with the reaction mixture or with fresh trimethylammonium chloride solution.

3,872,171

POLYAMINES AS ANTIVIRAL AGENTS IN ANIMALS

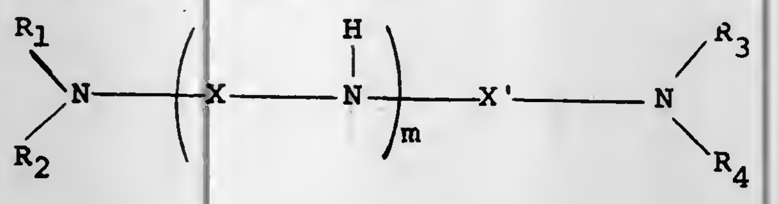
Timothy H. Cronin, Niantic; Hermann Faubl, Groton; William W. Hoffman, Mystic, and James J. Korst, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 146,548, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 62,192, Aug. 7, 1970, abandoned. This application Feb. 6, 1973, Ser. No. 330,042

Int. Cl. C07c *91/12*

U.S. Cl. 260—584 R **6 Claims**

1. A compound of the formula



and the non-toxic acid addition salts therof wherein
R_1 is alkyl of from 1 to 20 carbon atoms;
R_2 is alkyl of from 12 to 20 carbon atoms;
R_3 and R_4 are each hydroxyalkyl of from 2 to 8 carbon atoms;
X and X′ are each straight chain alkylene of from 2 to 6 carbon atoms; and
m is 0 or 1.

3,872,172

PROCESS FOR PREPARATION OF TERPENE FLAVORANTS AND NOVEL INTERMEDIATES THEREFOR

Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Delawanna, N.J.

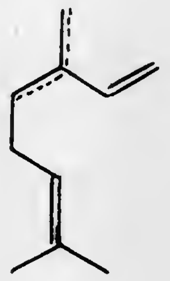
Filed July 3, 1968, Ser. No. 742,178

Claims priority, application Switzerland, July 7, 1967, 9749/67; Nov. 1, 1967, 15391/67

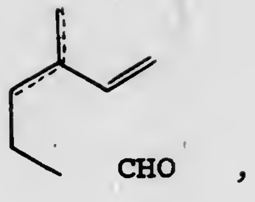
Int. Cl. C07c *47/20*

U.S. Cl. 260—601 R **3 Claims**

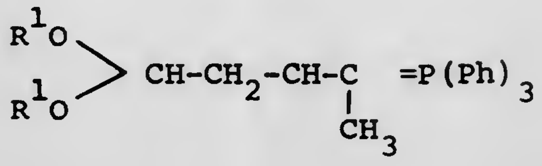
1. The process which comprises ozonizing a solution of a product having the formula:



at temperatures below ambient room temperature with not more than an equimolecular equivalent of ozone decomposing the resulting ozonized product, in the presence of a reducing agent suitable for reducing ozonization products to aldehydes, selected from the group consisting of an iodide, a sulphite, a bisulphite, formaldehyde, sulphur dioxide, pyridine, hydrazine hydrate, a sulphide, hydroquinone, zinc or magnesium in acidic solution, Raney-nickel, phosphorus (III)-compounds, tri-lower alkyl-phosphites and hydrogen, to form the product having the formula:

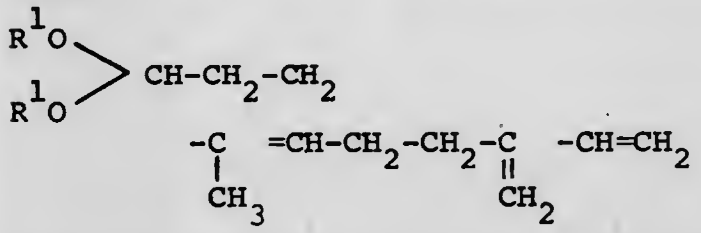


reacting said aldehyde with a phosphorane of the general formula:



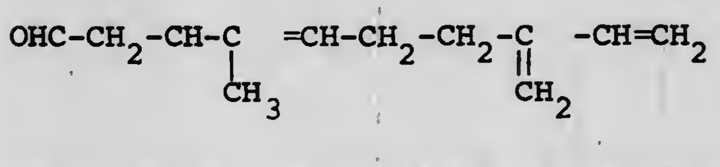
$$\mathrm{(R^1O)_2{>}CH{-}CH_2{-}CH{-}\underset{\underset{CH_3}{|}}{C}{=}P(Ph)_3}$$

wherein Ph signifies a phenyl group and the symbols R^1 signify lower alkyl groups which may also be linked with each other to form a lower alkylene group, in accordance with a Wittig reaction, to give a mixture of triene acetals of the general formula:



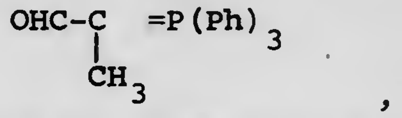
$$\mathrm{(R^1O)_2{>}CH{-}CH_2{-}CH_2{-}\underset{\underset{CH_3}{|}}{C}{=}CH{-}CH_2{-}CH_2{-}\underset{\underset{CH_2}{\|}}{C}{-}CH{=}CH_2}$$

wherein R^1 has the same meaning as above, hydrolyzing, the triene acetal which is obtained to the triene aldehyde of the formula:



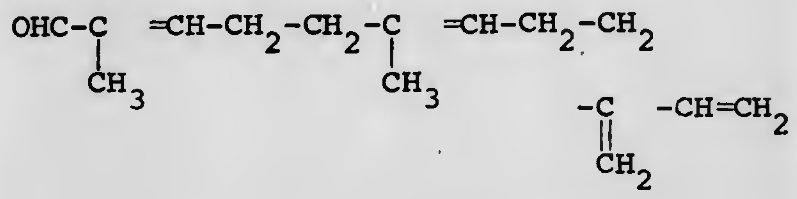
$$\mathrm{OHC{-}CH_2{-}CH{-}\underset{\underset{CH_3}{|}}{C}{=}CH{-}CH_2{-}CH_2{-}\underset{\underset{CH_2}{\|}}{C}{-}CH{=}CH_2}$$

and reacting this triene aldehyde with a phosphorane of the general formula:



$$\mathrm{OHC{-}\underset{\underset{CH_3}{|}}{C}{=}P(Ph)_3}$$

wherein Ph has the above significance, to give the corresponding tetraene aldehyde of the formula:



$$\mathrm{OHC{-}\underset{\underset{CH_3}{|}}{C}{=}CH{-}CH_2{-}CH_2{-}\underset{\underset{CH_3}{|}}{C}{=}CH{-}CH_2{-}CH_2{-}\underset{\underset{CH_2}{\|}}{C}{-}CH{=}CH_2}$$

3,872,173

PROCESS OF MANUFACTURING PARA-TERT-BUTYL-PHENOL

Jean Berthoux, Decines, and Ghislain Schwachhofer, Miribel, both of France, assignors to Progil, Paris, France

Filed July 6, 1970, Ser. No. 52,732

Claims priority, application France, July 11, 1969, 69.23923

Int. Cl. C07c *39/06*

U.S. Cl. 260—624 E **10 Claims**

1. In a process of manufacturing para-tertbutylphenol from phenol and isobutene which comprises reacting said isobutene with liquid phenol mixed with an acid-activated clay, the improvement comprising
providing said isobutene in the form of a gaseous mixture with normal butenes, and wherein the reaction mixture contains a quantity of moisture representing 0.5 to 5 percent by weight of water with respect to phenol,
the reaction being carried out in two stages comprising
(1) maintaining the liquid mixture at a temperature not exceeding 55° C. in the presence of said acid-activated clay and said water and during feeding of said gaseous mixture and
(2) then, stopping the introduction of said gaseous mixture at a point such that after the olefin introduction step the molar ratio of free or combined phenol in the reaction mass to fixed isobutene is not lower than 1.5; and submitting the reaction mixture without intermediate treatment to a temperature of about 110°C. to about 120°C. while dehydrating it by azeotropic distillation.

3,872,174

PRODUCTION OF DICHLOROETHYLENE USING MELT CHLORINATION PROCESS

Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 740,672, June 27, 1968, abandoned. This application May 6, 1971, Ser. No. 141,013

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R **3 Claims**

1. A chlorination process consisting essentially of chlorinating a material selected from the group consisting of ethylene, ethylene dichloride, vinyl chloride and mixtures thereof to produce a chlorinated product which contains at least 50 mole percent of dichloroethylene, in a reaction zone, which is essentially free of elemental chlorine at a temperature within the range of from 200°–450°C., by means of a melt comprising iron chloride and alkali meltal chloride by dispersing the material to be chlorinated in the melt, the melt being the continuous phase, whereby said material is chlorinated by the melt; withdrawing a gaseous effluent from the reaction zone which contains unreacted starting material and the resulting chlorinated hydrocarbon products and recovering the chlorinated hydrocarbon products from the effluent as the products of the process; wherein:
a. the alkali metal chloride is selected from the group consisting of sodium chloride, potassium chloride, a mixture thereof, a mixture of sodium chloride and no more than 20 mole peprcent lithium chloride, a mixture of potassium chloride and no more than 20 mole percent lithium chloride, and a mixture of sodium chloride, potassium chloride and no more than 20 mole percent lithium chloride;
b. the mole ratio of alkali metal chloride to iron chloride is from about 0.5:1 to about 2:1; and
c. 60–90 mole percent of the iron chloride is maintained as ferric chloride.

3,872,175

CATALYTIC PROCESS FOR PREPARING ALKYL CHLORIDES

Stephen Robota, N. Tonawanda, and Francis P. Mershon, White Plains, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,550

Int. Cl. C07c *17/16*

U.S. Cl. 260—657 **2 Claims**

1. A process for the production of alkyl chlorides of from 1 to 4 carbon atoms by the vapor phase reaction of hydrogen chloride with the corresponding alkanol at a temperature between about 250° and about 400°C in the presence of a calcined attapulgus clay catalyst.

3,872,176
PREPARATION OF 1,1,1-TRICHLOROETHANE

Gerald L. Kochanny, Jr., and Thomas A. Chamberlin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 799,484, Feb. 14, 1969, abandoned. This application Aug. 17, 1972, Ser. No. 281,475

Int. Cl. C07c *17/10*

U.S. Cl. 260—658 R **9 Claims**

1. A process for making 1,1,1-trichloroethane comprising reacting by contacting in liquid phase (a) Cl_2O with (b) chloroethane, 1,1-dichloroethane or a mixture thereof; said process being conducted neat or in an inert solvent selected from the group consisting of liquid perhalogenated hydrocarbons and 1,1,1-trichloroethane at a reaction temperature of from about −20° to about 80°C under substantially anhydrous conditions in the substantial absence of actinic light.

3,872,177
POLYMERIZATION CATALYST

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 139,804, May 3, 1971, Pat. No. 3,767,632, which is a continuation-in-part of Ser. No. 761,831, Sept. 23, 1968, abandoned. This application June 21, 1973, Ser. No. 372,360

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R **3 Claims**

1. A complex of (1) one mole of a hydrocarbon lithium which is a polymerization catalyst and (2) 0.1 to 20 moles of potassium hydroxide.

3,872,178
CATALYST AND PROCESS FOR DOUBLE-BOND ISOMERIZATION

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum, Bartlesville, Okla.

Division of Ser. No. 78,209, Oct. 5, 1970, Pat. No. 3,770,660. This application Mar. 22, 1973, Ser. No. 344,046

Int. Cl. C07c *5/24*

U.S. Cl. 260—666 **25 Claims**

1. A process for the double bond isomerization of double bond isomerizable olefinic hydrocarbons which comprises contacting said olefinic hydrocarbon under double bond isomerization conditions in admixture with molecular hydrogen with a catalyst composition consisting essentially of uranium, a Group VA element selected from the group consisting of phosphorus, arsenic, antimony, and bismuth, oxygen in combined form with said uranium or Group VA element, and a solid high surface area catalyst support, wherein the ratios of uranium: Group VA element are effective for said double bond isomerization, and said catalyst composition is pretreated at elevated temperatures with molecular hydrogen prior to said contacting.

3,872,179
PROCESS FOR CATALYTIC STEAM CRACKING

Kjeld Jorn Andersen, Tulstrup; Finn Fischer, Holte; Jens Rostrup-Nielsen, Virum, and Johannes Wrisberg, Holte, all of Denmark, assignors to Haldor Topsoe A/S, Soberg, Denmark and Fluor Corporation, Los Angeles, Calif.

Filed July 25, 1973, Ser. No. 382,429

Claims priority, application United Kingdom, Aug. 14, 1972, 37858/72

Int. Cl. C07c *3/34*

U.S. Cl. 260—683 R **6 Claims**

1. An improved cracking process for the manufacture of unsaturated hydrocarbons comprising a gaseous catalytic reaction step of contacting a preheated vaporized hydrocarbon feedstock consisting of predominantly saturated hydrocarbons at a temperature below 1,100°C and at a pressure in the range from 1 to 30 atm. abs. in the presence of steam added in a proportion of from 0.1 to 10 parts per part of hydrocarbon feedstock with a catalyst consisting of zirconia together with 0.1–10 wt.% of an alkali metal compound calculated as the oxide and less than 2 wt.% of other metal compounds calculated as the metal, wherein the improvement comprises a step of adding, at least during periods of operation of the process, to the preheated vaporized hydrocarbon feedstock an alkali metal compound in an average proportion of from 0.1 to 500 mg of alkali metal per kg of hydrocarbon feedstock.

3,872,180
METHOD FOR PRODUCING ISOPENTENE

Shunsuke Nakatomi, Chiba; Yasuhiko Kohtoku, and Tosihiro Inoue, both of Ichihara, all of Japan, assignors to UBE Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed June 6, 1974, Ser. No. 476,938

Claims priority, application Japan, June 22, 1973, 48-69802

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **22 Claims**

1. A method for producing isopentene comprising the steps of:

bringing a hydrocarbon mixture containing isobutene and n-butene into contact, at a temperature of 220°C to 380°C, with a catalyst which has been prepared by depositing a molybdenum compound and at least one additional metal compound selected from the group consisting of cobalt, tin, silver, zinc, cadmium, lead, bismuth and antimony compounds on an alumina carrier and calcining the compounds deposited, thereon the contact being carried out in the presence of steam in an amount of 0.1 to 25% based on the volume of said hydrocarbon mixture and calculated in terms of volume under standard conditions of a temperature of 0°C and a pressure of 760 mmHg;

isolating the resultant isopentene from the reaction mixture.

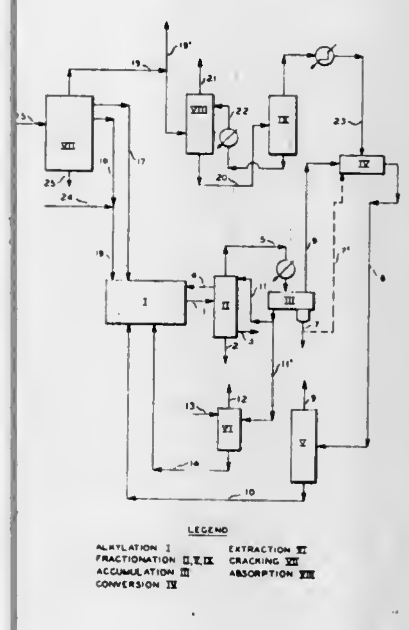
3,872,181
PRODUCTION OF ETHYL FLUORIDE FOR HF ALKYLATION

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 14, 1972, Ser. No. 288,937

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.49 **6 Claims**



1. A combination alkylation-cracking process which comprises the steps of:

a. subjecting a hyrocarbon feedstream to cracking to produce separate product streams comprising an olefin feedstock including butylenes, an isobutane stream, and an ethylene-containing light gas stream,

b. passing said streams comprising said olefin feedstock and isobutane as at least a part of the feed to an HF alkylation zone to produce an alkylation reaction effluent comprising C_5 and heavy alkylate products, unreacted isobutane, butane, propane, ethane, lighter hydrocarbon components, and HF,

c. separating said HF from said alkylation reaction effluent to form an alkylation effluent product stream,

d. separating said alkylation effluent product stream into an overhead stream comprising said propane, said ethane, said lighter hydrocarbon components and HF content remaining in said stream, a bottoms stream comprising said C_5 and said heavier alkylate products, and intermediate streams comprising said butane and said unreacted isobutane,

e. passing said overhead stream to a conversion zone and therein contacting said stream with said ethylene-containing light gas stream produced in said cracking step (a) to convert said HF content in said overhead stream into ethyl fluoride, and

f. withdrawing from said conversion zone a stream comprising HF-free ethyl fluoride, propane, ethane, and lighter hydrocarbons and passing said stream to a separation zone wherein the ethane and lighter hydrocarbons are recovered overhead, and propane and ethyl fluoride are recovered as bottoms therefrom.

3,872,182
THERMOPLASTIC MOULDING COMPOSITION ON THE BASIS OF POLYOXYMETHYLENE

Gunter Sextro, Naurod; Karlheinz Burg, Langenhain/Taunus, Rudolf Kern, Mainz; Heinz Schmidt, and Ernst Wolters, both of Frankfurt/Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Feb. 16, 1973, Ser. No. 332,810

Claims priority, application Germany, Feb. 22, 1972, 2208168

Int. Cl. C08g *37/04*

U.S. Cl. 260—830 R **8 Claims**

1. A thermoplastic molding composition based on polymers predominantly comprising oxymethylene units and essentially consisting of a mixture of

a. 99.999 to 80 wt. % of a linear poly(oxymethylene) or a copolymer containing oxymethylene units and 0.1 to 20 wt. % of oxyalkylene groups, based on the weight of said copolymer, with 2 to 8 adjacent carbon atoms, and

b. 0.001 to 20 wt. % of a graft copolymer consisting of

  1. 0.1 to 30 wt. %, based on the weight of said graft copolymer, of a primary polymer with a main chain consisting of aliphatically or aromatically bound carbon atoms which may be interrupted by ether oxygen atoms, the primary polymer having a number average molecular weight of at least 400 and

  2. 99.9 to 70 wt. %, based on the weight of said graft copolymer, of side chains grafted on said primary polymer, said side chains consisting of oxymethylene groups which may be interrupted by 0.1 to 20 wt. % based on the weight of said side chains, of statistically distributed oxyalkylene groups with 2 to 8 adjacent carbon atoms.

3,872,183
COPOLYESTER RESIN CONTAINING ANION ATTRACTIVE GROUPS

Max H. Keck, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1973, Ser. No. 375,573

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **30 Claims**

1. A thermoplastic polymeric fiber forming polyester resin having the capability of being dyed by anionic dyes which comprises a fiber forming polyester resin derived from dicarboxylic acids or ester forming derivatives thereof and glycols and containing as a part of the polymeric polyester molecules an anion attractive group that has associative properties sufficiently strong that interaction occurs between anion attractive groups of the polymer molecules, said anion attractive group is derived from compounds selected from the group consisting of monohydroxyamine salts of oxalic acid and dihydroxyamine salts of organic dicarboxylic acids in which the carboxyl groups are separated by at least two carbon atoms and, said amine salts are used in amounts to provide from about 1 to about 15 mol percent of amine units based on the total mols of acid units in the polyester exclusive of the acid units in the amine salt.

3,872,184
O-ALKYL-S-ALKYL-S-[1,2-BIS(ALKOXYALKOXY, BENZLOXY(ALKYLAMINO)CARBONYL ETHYL] DITHIOPHOSPHATES

Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

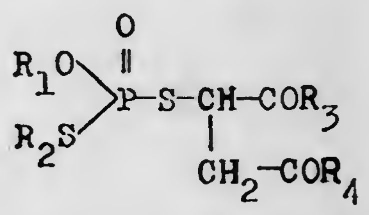
Filed Apr. 25, 1973, Ser. No. 354,405

Claims priority, application Switzerland, Apr. 27, 1972, 6265/72

Int. Cl. C07f *9/16;* **A01n** *9/36*

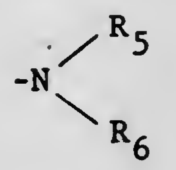
U.S. Cl. 260—942 **7 Claims**

1. Thiol phosphoric acid esters of the formula



$$(R_1O)(R_2S)P(=O)-S-CH(COR_3)-CH_2-COR_4$$

wherein R_1 represents methyl or ethyl, R_2 represents n-propyl, n-butyl, i-butyl, sec.butyl, n-pentyl, sec.pentyl, or methoxyethyl, R_3 and R_4 each represents methoxyethoxy, ethoxyethoxy, ethoxyethoxyethoxy, benzyloxy, or the group



$$-N(R_5)(R_6)$$

in which R_5 and R_6 each represents hydrogen, methyl, or allyl.

3,872,185
O-(N-ALKOXY-BENZIMIDOYL)-(THIONO)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Walter Lorenz, Wuppertal; Ingeborg Hammann; Wolfgang Behrenz, both of Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

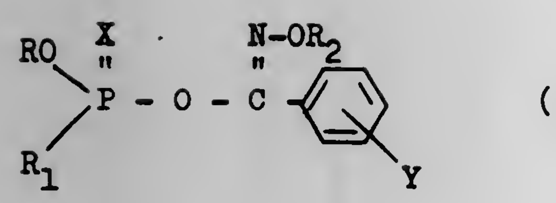
Filed Mar. 26, 1973, Ser. No. 344,798. The portion of this patent subsequent to Sept. 18, 1990 has been disclaimed

Claims priority, application Germany, Apr. 6, 1972, 2216551

Int. Cl. C07f *9/08, 9/40;* **A01n** *9/36*

U.S. Cl. 260—944 **7 Claims**

1. An O-(N-alkoxy-benzimidoyl)-(thiono)-phosphoric (phosphonic) acid ester of the formula



(I)

in which

R and R_2 each independently is alkyl of 1 to 6 carbon atoms,
R_1 is alkyl or alkoxy of 1 to 6 carbon atoms,
X is oxygen or sulfur, and
Y is lower alkoxy or alkylmercapto.

3,872,186
3-ACETYL-4-HYDROXYBENZYL PHOSPHONATES

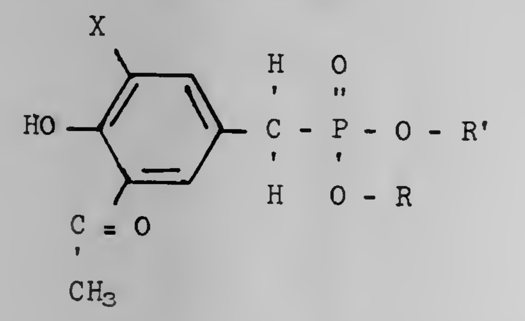
Joseph G. E. Fenyes, and Kenneth J. Flanagan, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Continuation of Ser. No. 168,744, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 127,776, March 24, 1971, Pat. No. 3,767,735. This application Oct. 3, 1973, Ser. No. 399,022

Int. Cl. C07f *9/40;* **C08f** *45/58*

U.S. Cl. 260—946 **3 Claims**

1. A compound having the formula:



wherein R and R′ are straight or branched chain unsubstituted or substituted wherein R and R′ are straight or branched chain unsubstituted or substituted alkyl groups containing 1 to 18 carbon atoms wherein the substituent group is a halogen, and X is bromine or hydrogen with the provision that when X is hydrogen, R and R′ are substituted.

3,872,187
ARYLOXYALKYL HALOALKYL PHOSPHATES

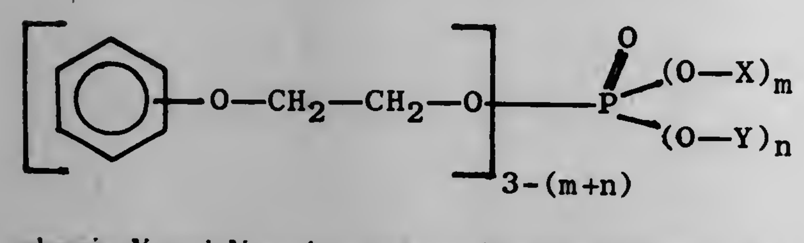
Joseph Fath, Princeton, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 290,058, Sept. 18, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,076

Int. Cl. C07f *9/08*

U.S. Cl. 260—951 **6 Claims**

1. A phosphate ester that has the structural formula



wherein X and Y each represents haloalkyl having 2 to 4 carbon atoms and at least 2 halogen atoms selected from the group consisting of bromine, chlorine, and mixtures thereof; and

m and *n* each represents a number in the range of 0 to 2, the sum of *m* and *n* being 1 or 2.

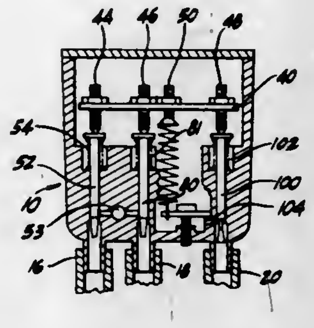
3,872,188
APPARATUS FOR CONTROLLING AND MODULATING ENGINE FUNCTIONS

Morris C. Brown, Florissant; Forrest W. Cook, Webster Groves, both of Mo.; Kalert, Ralph E., Granite City, Ill.; Arthur C. Vollmer, St. Charles, and Jerry H. Winkley, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,198

Int. Cl. F02m *1/10*

U.S. Cl. 261—39 A **4 Claims**



1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising;

an attachment connected to said engine communicating on one side with ambient air and on another side with at least one suction controlled passage leading to at least one engine function controlling means,

said attachment including a bellows responsive to barometric and/or temperature changes of said atmospheric air to change a dimension of said bellows,

said bellows being mounted in a housing, said housing also including a pivotable plate surmounting said bellows,

at least one metering means being connected to said plate, said metering means being adapted to meter ambient air to said at least one engine function controlling means,

said pivotable plate being pivoted at one end thereof,

said plate adjustable contacting said bellows at an intermediate position along the length of said plate,

said plate also having adjustable biasing means at the end opposite said pivoted end, and

said biasing means constituting an adjustable spring adjustably secured to said plate at a first end thereof and also adjustably secured to said housing.

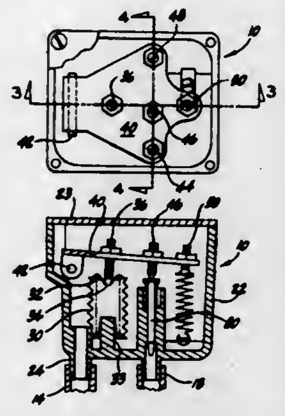
3,872,189
APPARATUS FOR CONTROLLING AND MODULATING ENGINE FUNCTIONS

Morris C. Brown; Forrest W. Cook; Ralph E. Kalert; Arthur C. Vollmer, and Jerry H. Winkley, all of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,219

Int. Cl. F02m *1/10*

U.S. Cl. 261—39 A **5 Claims**



1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising;

an attachment connected to said engine communicating on one side with ambient air and on another side with at least one suction controlled passage leading to at least one engine function controlling means,

said attachment including a bellows responsive to barometric and/or temperature changes of said atmospheric air to change a dimension of said bellows,

said bellows being mounted in a housing, said housing also including a pivotable plate surmounting said bellows,

at least one metering means being connected to said plate, said metering means being adapted to meter ambient air to said at least one engine function controlling means and said metering means including an adjustment means for setting said metering means to a preselected value of metered air when said attachment is subjected to a preselected set of ambient air conditions of altitude and/or temperature.

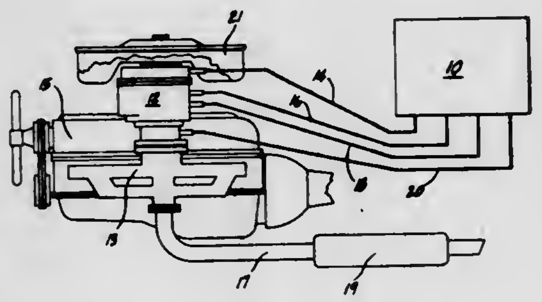
3,872,190
APPARATUS FOR CONTROLLING AND MODULATING ENGINE FUNCTIONS

Morris C. Brown, Florissant; Forrest W. Cook, Webster Groves, both of Mo.; Ralph E. Kalert, Granite City, Ill.; Arthur C. Vollmer, St. Charles, and Jerry H. Winkley, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,286

Int. Cl. F02m *1/10*

U.S. Cl. 261—39 A **4 Claims**



1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising;

an attachment connected to said engine communicating on one side with ambient air and on another side with at least one suction controlled passage leading to at least one engine function controlling means,

said attachment including control means responsive to barometric and/or temperature changes to change a dimension of said control means,

said control means being connected to a metering means adapted to admit said ambient air to said suction controlled passage in accordance with changes in said dimension, and

the said suction controlled passage terminating at an end thereof in the vacuum chamber of a vacuum motor.

3,872,191
FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Jake J. Walcker, 286 Merrywood Cir., Loma, Calif. 91752

Filed Nov. 8, 1973, Ser. No. 413,955

Int. Cl. F02m *15/02*

U.S. Cl. 261—145 **4 Claims**

1. In a fuel system for an internal combustion engine having an intake manifold, a source of liquid hydrocarbon fuel, a source of heated fluid, and a throttle linkage, the combination of:

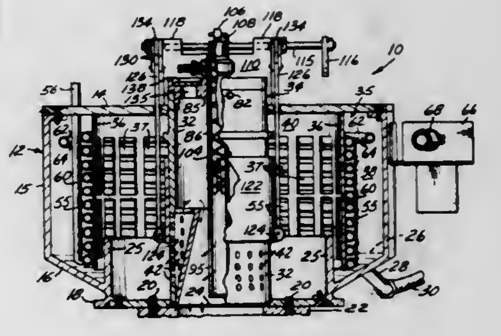
a generally circular housing mounted on the end of said intake manifold and having an inlet opening through one wall thereof;

a cylindrical conduit disposed vertically within said housing at the center thereof, the bottom end of said conduit being attached to the bottom of the housing and communicating with the interior of said intake manifold;

a length of heat-exchange tubing wound into a vertically disposed cylindrical coil surrounding said conduit, the individual turns of the coil being closely spaced apart with respect to one another;

the ends of said heat exchange tubing being connected to said source of heated fluid, whereby the heated fluid is circulated continuously through the tubing;

a wire mesh screen wrapped around said coil of heat exchange tubing in close, heat-exchange contact therewith,



whereby the screen becomes hot by conduction of heat from the tubing;

means for flowing liquid hydrocarbon fuel down over said wire mesh screen from the top edge thereof;

the liquid fuel flowing down over said hot wire mesh screen and the coils of heated tubing being vaporized, and the fuel vapor being mixed with air flowing radially inward through the screen;

means for admitting the mixture of vaporized fuel and air into said conduit;

means connected to said throttle linkage for controlling the volume of vaporized fuel and air mixture into said intake manifold; and

means for introducing a controlled amount of additional fresh air into said fuel-and-air mixture as the latter flows downwardly through said conduit into said intake manifold.

3,872,192
WET PROCESS FOR COMPOUNDING POLYMER-SOLIDS COMPOSITIONS

Martin H. Kaufman, and Edward M. Roy, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1970, Ser. No. 69,512

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 B **5 Claims**

1. A process for compounding polymer-solids compositions which comprises the steps of:

a. forming a solution by dissolving a polymer which is soluble in a volatile solvent which will dissolve the polymer;

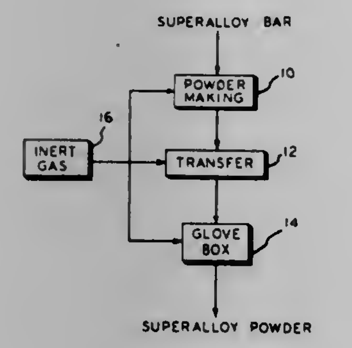
b. forming a paste by adding solid particles selected from the group consisting of solid oxidizer particles, solid metal particles, solid high explosive particles, solid fluorocarbon particles and mixtures thereof to said solution;

c. extruding said paste through a die having a diameter at least as large as the maximum diameter of said solid particles; and

d. passing the extruded paste through a current of warm air.

3,872,193
PROCESS FOR PRODUCING POWDERED SUPERALLOYS

James Thomas Smith, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed May 24, 1971, Ser. No. 146,142
Int. Cl. B01j *2/04*
U.S. Cl. 264—8 **5 Claims**

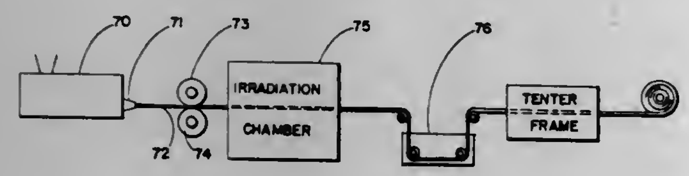


1. A process suitable for producing prealloyed superalloy powders, said process comprising conducting in an inert atmosphere containing less than about 1 part per million of oxygen, water and nitrogen the following processing steps:

- a. placing a shaped article of a superalloy having a preselected metallurgical content in an induction furnace,
- b. induction melting a portion of said article at a controlled rate by induction heating,
- c. forming droplets of molten metal by subjecting the molten metal to a centrifugal force by a rotating disc,
- d. cooling said droplets to form solid particles of superalloy, and
- e. collecting said particles.

3,872,194
PROCESS FOR PRODUCING A BULK CUSHIONING MATERIAL

Robert D. Lowry, and John W. Harrison, both of Winchester, Mass., assignors to W. R. Grace & Co., Duncan, S.C.
Filed Sept. 30, 1970, Ser. No. 76,723
Int. Cl. B29d *7/02, 7/24*
U.S. Cl. 264—22 **5 Claims**

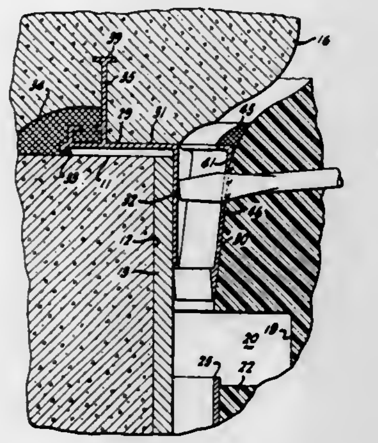


1. A process for producing a bulk cushioning material comprising the steps of:

- a. producing a regular, repeating bulking pattern in a plastic sheet with a memory;
- b. heating said plastic sheet;
- c. stretching said sheet while it is heated until it is flattened thereby removing the bulking effect of said pattern;
- d. cooling said sheet; and, thereafter,
- e. heating said sheet to restore the pattern which had been formed therein.

3,872,195
METHOD OF MOLDING CONCRETE COPING

William J. Stegmeier, 1073 Shary Cir., Concord, Calif. 94520
Division of Ser. No. 154,865, June 21, 1971, Pat. No. 3,708,930, which is a division of Ser. No. 819,173, April 25, 1969, Pat. No. 3,605,357, which is a continuation-in-part of Ser. No. 761,726, Sept. 23, 1968,. This application Oct. 20, 1972, Ser. No. 299,318
Int. Cl. E04b *1/16*
U.S. Cl. 264—35 **11 Claims**



5. The method of claim 1 wherein said step of securing said tearable strip component to said form section comprises the step of applying an elastomeric mastic to said seal structure in overlapping relationship with said tearable strip component and said form section.

3,872,196
PROCESS FOR PLASTICIZING AND PARTIALLY DRYING TUBULAR FILM CASINGS FOR EDIBLE PRODUCTS

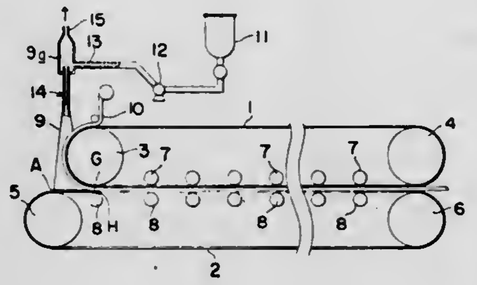
Douglas J. Bridgeford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.
Filed Dec. 4, 1972, Ser. No. 311,985
Int. Cl. B29c *25/00*
U.S. Cl. 264—37 **7 Claims**

1. In a process for producing tubular food casings of a hydrophilic polymeric film in which the tubular film is continuously formed in a gel state and dried the improvement for simultaneously drying and plasticizing said casing which comprises passing gel tubular film containing about 40–90% water continuously through a hygroscopic liquid consisting essentially of a hygroscopic and plasticizing agent for said gel film or an aqueous solution of a hygroscopic and plasticizing agent containing up to about 75% water at a rate sufficient to remove about 25–70% of the water therefrom without reaching equilibrium distribution of water and plasticizing agent between said gel film and said liquid and without allowing the plasticizing agent in said film to exceed about 30%.

3,872,197
PROCESS AND AN APPARATUS FOR CONTINUOUSLY CASTING A SHEET AND THE LIKE

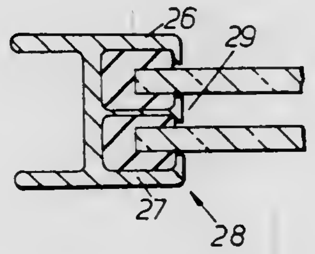
Tetsuji Kato; Katsumi Tamai; Isao Kamada; Hiroshi Kichiji; Yoshio Nakai; Haruyoshi Kitahara; Yasuhiko Iwaoka; Kiyonori Okajima, and Tadaomi Ueno, all of Otake, Japan, assignors to Mitsubishi Rayon Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 889,178, Dec. 30, 1969, abandoned. This application Oct. 30, 1972, Ser. No. 301,716
Claims priority, application Japan, Dec. 30, 1968, 43-96655; Apr. 17, 1969, 44-29359
Int. Cl. B29d *7/14*
U.S. Cl. 264—40 **18 Claims**

1. A method for continuously casting a liquid having a viscosity rendering it flowable under the force of gravity and which hardens with changing temperature and time, in a traveling casting space having casting and discharging ends, said space being defined between two opposed, vertically inter-spaced, externally restrained, horizontal upper and lower, elongated, flexible belt spans having side seals and traveling at the same speed and in the same direction and formed by endless flexible belts each running around horizontally inter-spaced cylindrical rolls forming each belt into a loop having semi-cylindrical ends; wherein the improvement comprises continuously casting said liquid into said casting end by flowing the liquid into contact with said belts while controlling the traveling speed of said belts so that by the belts' engagement with the liquid the latter receives therefrom a forwardly directed force, said liquid hardening as it travels through said space and the latter being long enough to permit said hardening, said force being greater than the force of gravity on the liquid to a degree preventing the latter force from causing said liquid to flow reversely out of said casting end far enough to fall from said lower belt, and the total of said forces producing a pressure on the liquid cast in said casting space, prior to the liquid hardening therein, which is at least sufficient to hydraulically support said upper span



3,872,198
METHOD OF MAKING MULTIPLE-GLAZED UNITS

John C. Britton, Fritton Lodge, 103 Gayton Rd., King's Lynn, Norfolk, England
Filed Jan. 8, 1973, Ser. No. 321,674
Int. Cl. C03c *27/00;* **B29d** *27/00*
U.S. Cl. 264—46.6 **3 Claims**



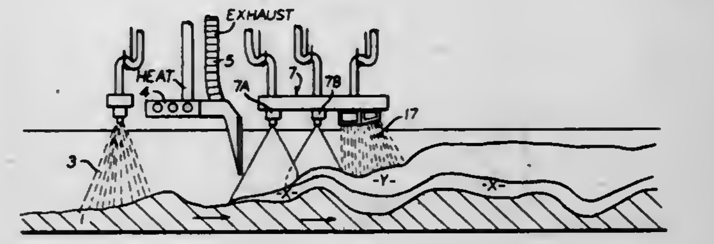
1. A method of forming a multiple-glazed door or window unit, comprising

inserting at least two sheets of glazing material in parallel channels in a frame, each of said channels having a bottom and side walls, said side walls having flange portions which project inwardly of said channels and so closely approaching opposite surfaces of the respective sheet of glazing material as to provide only a small clearance adjacent said surfaces; and

injecting a foam plastics material into the space between the bottom and side walls of each channel and the respective sheet of glazing material to form a substantially rigid foam plastics material insert, while utilizing said flange portions to retain the injected material within said channels.

3,872,199
METHOD OF MANUFACTURING A FOAMED URETHANE STRUCTURAL PRODUCT HAVING HIGH AND LOW DENSITY PORTIONS

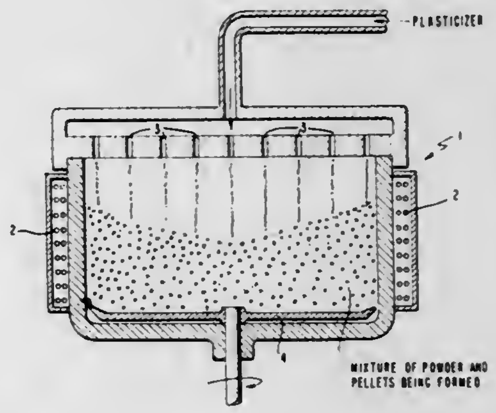
Lester V. Ottinger, Danbury, assignor to Champion International, Corporation, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,604
Int. Cl. B29d *27/04*
U.S. Cl. 264—46.4 **13 Claims**



1. Process for manufacturing a high quality molded urethane structural product which comprises introducing a relatively high density foamable urethane mixture into a moving mold from a first spray applicator, subsequently continuously introducing additional relatively low density foamable urethane mixture into said mold from a second spray applicator in a manner that the spray from said second applicator slightly overlaps the spray from said first applicator, and in a manner that the foamable urethane mixture from said second applicator completely covers the foamable urethane mixture from said first applicator in said mold.

3,872,200
METHOD OF PRODUCING FOAMABLE PELLETS

Takao Tokito, and Yasushige Kawamoto, both of Fukuyama, Japan, assignors to Hiroshima Kasei, Ltd., Fukuyama-shi, Hiroshima-ken, Japan
Filed July 3, 1972, Ser. No. 268,559
Int. Cl. B29c *23/00;* **B29d** *27/00;* **C08j** *1/18*
U.S. Cl. 264—54 **4 Claims**



1. A method for producing foamable pellets having diameters ranging from 0.2 to 4.0mm comprising the step of agitating a powdered mixture comprising thermoplastic synthetic resin selected from the group consisting of polyvinyl chloride and polyvinyl chloride copolymer, stabilizers, fillers, pigments and blowing agents at the temperature within the range of 20° -60°C in a tank provided with nozzles and a stirrer in which the stirrer is rotating at a rotational speed within the range of 100 – 400 R.P.M. while slowly dropping through said nozzles a plasticizer for said thermoplastic resin in liquid form on to said powdered mixture, whereby said pellets are formed in said tank.

3,872,201
METHOD OF CURING FOAM INFLATED TIRES

David H. Paul, Akron, and Joseph A. Rosey, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 42,581, June 1, 1970,. This application Sept. 19, 1973, Ser. No. 398,617

Int. Cl. B29d *27/00;* **B60c** *7/00*

U.S. Cl. 264—55 **6 Claims**

1. A method of inflating tires with foamable elastomeric material comprising the steps of:

a. at least partially filling the cavity of a previously molded and vulcanized tire with unfoamed, uncured, foamable elastomeric material selected from a group of natural rubber, polyisoprene, ethylene-propylene terpolymer, polybutadiene, silicone polymer, styrene-butadiene, neoprene, acrylonitrile, and chlorosulfonated polyethylene;
b. mounting the tire with the material on a wheel rim;
c. placing the tire, mounted on the wheel rim, in a chamber sealed from the ambient atmosphere;
d. circulating steam at a temperature in the range of from 212°F. to 400°F., within the chamber in contact with the tire and rim for a predetermined desired period of time;
e. releasing the steam from within the chamber and maintaining the atmosphere surrounding the tire and rim substantially free of elemental oxygen for a predetermined desired period of time to let the material within the tire cavity at least partially foam; and
f. recirculating steam at a temperature in the range of from 212°F. to 400°F. within the chamber to again contact the tire and rim, the steps (e) of releasing the steam, and (f) of recirculating steam being repeated, if necessary, until the material within the tire is foamed and cured.

3,872,202
METHOD FOR BLOWING HOLLOW ARTICLES OF PLASTIC MATERIALS

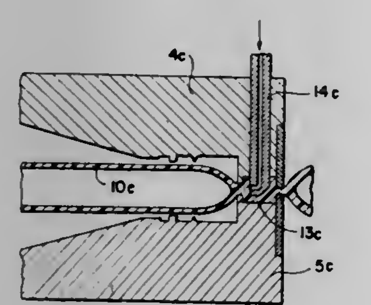
Claude Lafosse, Chalon-sur-Saone, France, assignor to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 26, 1972, Ser. No. 247,733

Claims priority, application France, Apr. 26, 1971, 71.14777

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **3 Claims**



1. The method of blowing a plurality of hollow articles from an elongated extruded tube of plastic material which comprises closing a plurality of successive molds formed by paired mold halves about contigous lengths of said tube to enclose in each said mold a hollow parison of plstic material and to form a mass of said material between and connecting adjacent said parisons, and sequentially acting upon each parison by directing a fluid first generally radially inwardly of said mold between the ends of said mass toward substantially the longitudinal axis of said mass and then generally axially to penetrate said mass along said axis to enter within the confines of and inflate said parison to a position juxtaposed to the walls of said mold.

3,872,203
METHOD FOR PRODUCING BIAXIALLY STRETCHED RECEPTACLES BY BLOW MOLDING

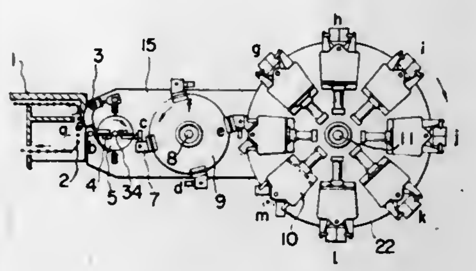
Shinsuke Yoshikawa, and Yuji Sawa, both of Fukushima, Japan, assignors to Kureka Kagaku Kogyo Kabushiki Kaisha and Mitsui Toatsu Chemicals Inc., both of Tokyo, Japan

Filed June 7, 1973, Ser. No. 367,927

Claims priority, application Japan, June 7, 1972, 47-56101

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **1 Claim**



1. A method for blow molding a parison to form receptacles, comprising the steps of:

a. heating a tubular parison cut to a predetermined length in a heating furnace while supporting said tubular parison on a supporting rod,
b. transferring said tubular parison from said heating furnace to a delivery rotary,
c. gripping a central portion of said tubular parison by movable jaws disposed on said delivery rotary, and maintaining said parison in a vertical position,
d. rotating said delivery rotary about a vertical axis to bring said tubular parison adjacent a stretching rotary;
e. transferring said tubular parison to said stretching rotary,
f. gripping each end of said tubular parison by stretching means disposed on said stretching rotary,
g. stretching said parison vertically by the stretching means at each end of said parison moving at equal speeds away from each other while rotating said stretching rotary continuously about a vertical axis to bring said parison adjacent a molding rotary having a plurality of openable molds adjacent its periphery,
h. placing a mold about a central portion of said parison,
i. separating the portion of said parison gripped by said stretching means from the portion retained by said mold,
j. releasing said separated portions from said stretching means at a predetermined position of said stretching rotary,
k. blow molding said parison while rotating said molding rotary about a vertical axis,
l. separating said molded article from said mold at a predetermined position of said molding rotary.

3,872,204
METHOD FOR CONTINUOUSLY MANUFACTURING SHAPED GYPSUM ARTICLES

Tsuyoshi Yano; Hiroshi Onishi, and Inahide Tanaka, all of Tokyo, Japan, assignors to Onoda Cement Co., Ltd., Onoda, Yamaguchi-ken, Japan

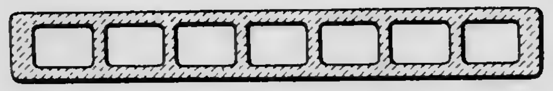
Filed Aug. 2, 1972, Ser. No. 277,372

Claims priority, application Japan, Aug. 5, 1971, 46-58674

Int. Cl. B28b *21/52;* **C04b** *11/00*

U.S. Cl. 264—102 **4 Claims**

1. A method for continuously manufacturing shaped gypsum articles comprising mixing 100 weight parts of insoluble anhydrite with from 0.5 to 2.5 weight parts of an alum as an accelerator for the setting, from 3 to 10 weight parts of bentonite, from 1 to 4 weight parts of alcohol selected from the group consisting of methyl alcohol and ethyl alcohol, and from 20 to 30 weight parts of water; kneading the mixture to obtain a doughy paste; extruding the doughy paste to obtain a continuous band of shaped dough through a die wherein the extruding pressure is substantially 10 to 12 Kg/cm² cutting said band into a number of shaped soft articles; and causing said articles to set at room temperature and atmospheric pressure.



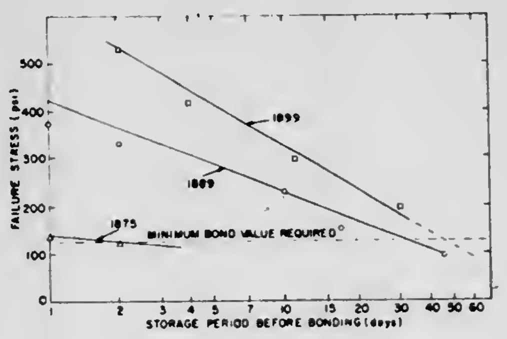
3,872,205
MOLDING PROCESS FOR BONDING INSULA IN RACHET MOTOR CASING

Jacques Ratte, and Jean Bigras, both of Quebec, Quebec, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defense

Division of Ser. No. 149,303, June 2, 1971,. This application Oct. 12, 1973, Ser. No. 406,046

Int. Cl. B29d *3/02, 7/14;* **B29b** *9/11;* **F02k** *9/00*

U.S. Cl. 264—175 **3 Claims**



1. A process comprising mixing in a preheated mixer a carboxyl-terminated polybutadiene binder, a curing agent and a curing catalyst, admixing the mixture with a siliceous filler comprising from 50–80% by weight of asbestos fibers and 20–50% by weight of asbestos floats, partially curing to a dough of the required consistency for subsequent rolling and rolling the partially cured dough into a sheet and molding said sheet to the steel wall of a rocket motor casing by low pressure bag molding to effect bonding thereto and produce a partially cured insulant bonded to said steel wall.

3,872,206
ACETAL ADDITION TO VISCOSE OR AMGLOSE XANTHATE SOLUTIONS FOR THE MANUFACTURE OF CROSSLINKED SHAPED ARTICLES

Noel I. Burke, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Oct. 5, 1973, Ser. No. 404,053

Int. Cl. D01f *3/10, 3/14*

U.S. Cl. 264—188 **7 Claims**

1. In a method for the manufacture of a shaped article from a polymer selected from the group consisting of cellulose and amylose wherein said polymer is extruded as an alkaline solution as the xanthate through a die to form said shaped article, the shaped article passed into an acid bath for regenerating said polymer, and reacted with an aldehyde, the improvement which comprises adding to the alkaline solution and prior to extrusion a water-soluble acetal selected from the group consisting of the reaction product of a monohydroxy alcohol having from 1–7 carbon atoms and a monoaldehyde having from 1–7 carbon atoms, a monohydroxy alcohol having from 1–7 carbon atoms and dialdehyde compound having from 1–7 carbon atoms, and a monoaldehyde having from 1–7 carbon atoms and a dialkanol having from 1–7 carbon atoms.

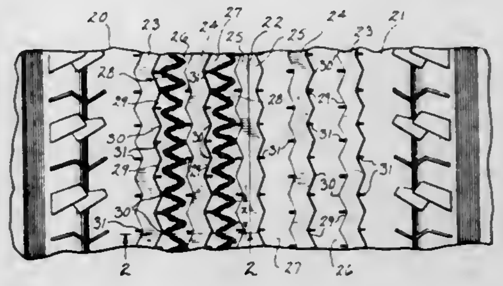
3,872,207
METHOD OF FORMING TIRE TREADS WITH ELONGATED TRACTION-AUGMENTING ELEMENTS

Paul J. Felker, 211 W. First St., Marshfield, Wis. 54449

Filed Mar. 17, 1970, Ser. No. 20,356

Int. Cl. B29h *17/00*

U.S. Cl. 264—277 **3 Claims**



1. In a method of forming non-skid tire treads with the use of a tire molding machine of a type which has a matrix provided with circumferentially-extending laterally-spaced ribs to provide rider strip-forming grooves therebetween, the steps of forming said ribs with zig-zag sides to provide alternating short peaks and valleys while maintaining a relatively straight clear space between ribs, inserting sipe-forming strips in said valleys of the matrix ribs to project transversely approximately the same distance as the altitude of said peaks, inserting elongated traction-augmenting members, each of a width to be received between the peaks of a pair of matrix ribs and of a width to be received in said clear space without substantial bowing, in substantially straight lines in said matrix grooves to extend around the circumference of the matrix whereby said members will be centered between peaks of the matrix ribs and between the ends of the sipe-forming strips, and then, while the traction-augmenting members are thus held, forming a tire tread with the traction-augmenting members in the rider strips thereof, whereby said tread has traction-augmenting members disposed circumferentially about said tire and completely embedded within the rider strips thereof.

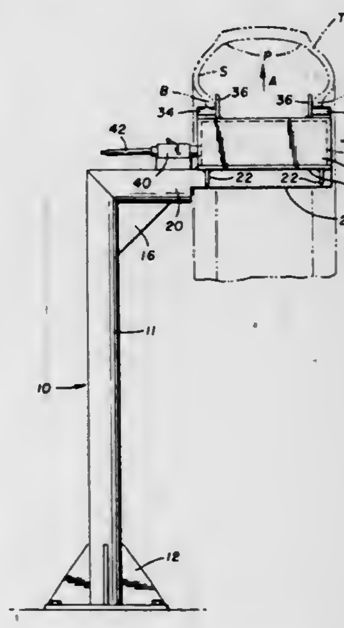
3,872,208
CORRECTIVE HEATING OF PNEUMATIC TIRES

Edward S. Brown; Rudy D. Henson; James D. Farris, all of Mayfield, Ky., and John A. Feola, Akron, Ohio, assignors to The General Tire and Rubber Company, Akron, Ohio

Filed July 24, 1972, Ser. No. 274,356

Int. Cl. B29c *25/00*

U.S. Cl. 264—346 **2 Claims**



1. In the method of heat treating a cured pneumatic tire suspended in an upright position such that the axis of rotation of said tire is substantially horizontal and an area indicative of

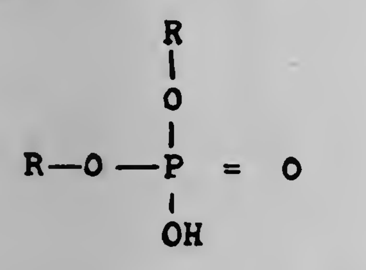
an undesirable radial force variation is located substantially vertically above said axis, the improvement wherein said heat treating, which results in a reduction in the magnitude of said force variation without adversly affecting the dimensional regularity of the tire, comprises applying heat directly only upon a portion of the inner surface of said tire adjacent said area until said inner surface reaches a maximum predetermined temperature not to substantially exceed about 240°F.

3,872,209
ION EXCHANGE PROCESS FOR THE RECOVERY OF METALS

Wayne C. Hazen, Denver, and Enzo L. Coltrinari, Arvada, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Mar. 17, 1972, Ser. No. 235,623
Int. Cl. C01g *3/00*
U.S. Cl. 423—24 **13 Claims**

1. A process for the recovery of copper values from an aqueous medium comprising contacting said aqueous medium for a time up to about one minute with a mixed extraction reagent, the mixed extraction reagent comprising a water-immiscible organic solvent having dissolved therein a 2-hydroxy benzophenoxime having a solubility of at least 2% by weight in the organic solvent and an organophosphoric acid having the formula:



$$\mathrm{R{-}O{-}}\underset{\displaystyle\mathrm{OH}}{\underset{|}{\overset{\displaystyle\mathrm{R}}{\overset{|}{\overset{\displaystyle\mathrm{O}}{\overset{|}{\mathrm{P}}}}}}}\mathrm{{=}O}$$

wherein R is selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl and wherein not more than one R is hydrogen, to extract the copper values from the aqueous to the organic phase, separating said phases, and recovering the copper from the organic phase.

3,872,210
PROCESS FOR RECOVERING ANTIMONY VALUE OUT OF SPENT CATALYST

Rokuo Ukaji, and Toshio Shiomi, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 7, 1972, Ser. No. 278,201
Claims priority, application Japan, Aug. 11, 1971, 46-61153; Aug. 13, 1971, 46-61756; Aug. 14, 1971, 46-61910
Int. Cl. C01b *29/00;* **C22b** *31/00*
U.S. Cl. 423—87 **8 Claims**

1. A process for recovering antimony value out of spent antimony halide catalyst used in the fluorination of chloroalkanes, containing antimony trifluoride, antimony chlorfluoride, antimony trioxide, antimony pentoxide, a small amount of metal chloride, silicon dioxide and organic compounds which strongly adhere into spent antimony catalyst which comprises

contacting said spent catalyst with water or mineral acid with agitation to separate organic compounds strongly adhered or included in said spent catalyst as an under layer from an aqueous upper layer into which antimony value is transferred,

separating the resultant mixture into an aqueous upper layer and an organic under layer,

treating said aqueous upper layer with at least one metal selected from the group consisting of iron, manganese, copper, zinc, tin and their chloride, sulfate or nitrate salts, neutralizing the treated aqueous layer with an alkali converting the antimony value to insoluble antimony compounds for co-precipitation with insoluble antimony compounds present wherein the pH of the layer is from about 7 to 10,

adsorbing the residual antimony compounds into the co-precipitates and

recovering the antimony compounds such that the antimony ion is present in the waste water in an amount less than 1 p.p.m.

6. A process for recovering antimony value out of spent antimony halide catalyst used in the fluorination of chloroalkanes containing antimony trifluoride, antimony chlorfluoride, antimony trioxide, antimony pentoxide, a small amount of metal chloride, silicon dioxide and organic compounds which strongly adhere into spent antimony catalyst which comprises

contacting said spent catalyst with water or mineral acid with agitation to separate organic compounds strongly adhered or included in said spent catalyst as an under layer from an aqueous upper layer into which antimony value is transferred,

separating the resultant mixture into an aqueous upper layer and an organic under layer,

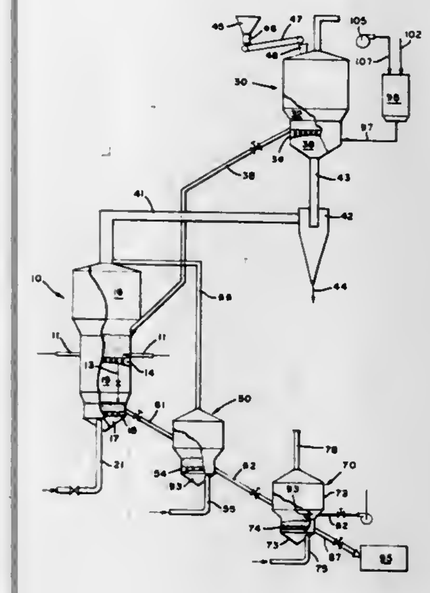
contacting said aqueous upper layer containing antimony value with at least one sulfide selected from the group consisting of hydrogen sulfide, sodium sulfide and ammonium sulfide under acidic conditions of about 0.001 to 4 N as hydrochloric acid and

recovering the antimony compounds such that the antimony ion is present in the waste water in an amount of less than 1 p.p.m.

3,872,211
CALCINATION OF HIGH MOISTURE CONTENT PHOSPHATE ROCK

Clarence J. Wall, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Nov. 7, 1972, Ser. No. 304,350
Int. Cl. C01f *1/00, 5/00, 11/00;* **C22b** *3/00, 79/00*
U.S. Cl. 423—167 **7 Claims**



1. A process for calcining phosphate rock containing 12% or more by weight of water while minimizing scaling in which the phosphate rock is moved serially through a plurality of fluidized beds to accomplish preheating, calcination and at least two stages of cooling, comprising the steps of, fluidizing a primary cooling bed with air from a first source of pressurized air to cool the phosphate rock, conducting the heated off-gases of said primary cooling bed to the calcination bed as the fluidizing gas therefor, passing the calcined, partially cooled phosphate rock from said primary cooling bed to a secondary cooling bed, fluidizing said secondary cooling bed with air from an independent second source of pressurized air to further cool the phosphate rock, the fluidizing air stream for said secondary cooling bed flowing in parallel with the fluidizing air stream for said primary cooling bed and said calcination bed, mixing the high-temperature off-gases from the calcination bed with the cooler off-gases of said secondary cooling bed and conducting the mixed gases to the preheating bed as the fluidizing gas therefor.

3,872,212
SEPARATION OF POTASSIUM IONS FROM SODIUM IONS USING ALKANOLAMINES

Gilbert R. Atwood, Briarcliff Manor; Robert J. Blake, Yorktown Heights; Kenneth F. Butwell, Newburgh, and David A. Dunnery, New York, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,684
Int. Cl. C01d *5/02;* **B01j** *17/04;* **C01d** *1/34*
U.S. Cl. 423—184 **8 Claims**

1. A method for the separation of potassium cations from sodium cations in an aqueous solution of potassium sulfate and sodium sulfate ranging from about 2 to about 25% salts by weight which comprises:

A. mixing the aqueous solution of potassium and sodium sulfates with from 0.05 to 100 parts by weight per part of said solution of an alkanolamine having 1 to 4 alkanol moieties and 2 to 6 carbon atoms in each moiety whereby more than 75% by weight of the potassium salt precipitates out of solution as crystalline potassium sulfate;

B. isolating the precipitated potassium sulfate from the mixture of (A);

C. removing water from the mixture remaining in (B) after isolation of precipitated potassium sulfate until the remaining salts precipitate out of solution; and

D. isolating the precipitated salts of (C).

3,872,213
METHOD FOR REMOVING HARMFUL COMPONENTS FROM EXHAUST GASES

Shigeru Haseba, Kobe, Japan, assignor to Kobe Steel Ltd., Kobe, Japan

Filed Aug. 30, 1972, Ser. No. 285,104
Claims priority, application Japan, Aug. 30, 1971, 46-066784
Int. Cl. B01d *53/00*
U.S. Cl. 423—213.7 **7 Claims**

1. A method for the catalytic conversion of harmful components in exhaust gases containing nitrogen oxides, carbon monoxides, hydrogen and hydrocarbons, which comprises·

charging oxygen or an oxygen containing gas into said exhaust gases in amounts sufficient to completely oxidize said hydrogen component but less than half the total quantity of oxygen needed to oxidize both the hydrogen and carbon monoxide components in said exhaust gases;

introducing said oxygen containing exhaust gases into an oxidizing catalyst bed at a temperature of 50° – 300°C sufficient to oxidize said hydrogen in the exhaust gases and to remove all of said oxygen from said exhaust gases;

introducing the exhaust gases issuing from said oxidizing catalyst bed into a nitrogen oxide reducing catalyst bed at a temperature above 300°C to reduce the nitrogen oxides present in the exhaust gases;

admixing the exhaust gases issuing from said reducing catalyst bed with additional oxygen or oxygen containing gas; and

introducing said admixture into a second oxidizing catalyst bed at a temperature of 100° – 700°C to oxidize any remaining carbon monoxide and hydrocarbons in said exhaust gases.

3,872,214
PROCESS FOR THE TREATMENT OF WASTE GASES FROM THE SEPARATION OF BORON

Gunter Kratel, Sankt Mang; Gunter Stohr, Kempten am Gohlenbach; Gunter Wiebke, and Volker Frey, both of Munich, all of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Filed Mar. 16, 1972, Ser. No. 235,137
Claims priority, application Germany, Apr. 1, 1971, 2115810
Int. Cl. C01b *35/00*
U.S. Cl. 423—298 **5 Claims**

5. In a process for the treatment of waste gases resulting from the reaction of boron halides with hydrogen to produce boron, the improvement which comprises reacting said waste gases, at temperatures of the order of 300° to 900°C, with borides selected from the group consisting of alkali metal, alkaline earth metal and aluminum borides.

3,872,215
PHOSPHATE PURIFICATION PROCESS

Egon Cherdron, Limburgerhof/Pfalz; Hans-Joachim Forster, Schwetzingen-Hirschacker; Istvan Potencsik, Mannheim, and Manfred Haerter, Neuhofen/Pfalz, all of Germany, assignors to Gebruder Giulini GmbH, Ludwigshafen/Rhine, Germany

Filed June 16, 1971, Ser. No. 153,471
Claims priority, application Germany, June 16, 1970, 2029546
Int. Cl. C01b *15/16, 25/26*
U.S. Cl. 423—309 **13 Claims**

1. A method for producing pure phosphate from crude phosphoric acid, comprising the steps of:

a. mixing crude phosphoric acid with an alcohol or alcohol mixture having the ability to absorb at least 9 weight-% water as based on solution weight and which forms a water/phosphoric acid/alcohol phase, the volume ratio of the phosphoric acid to the alcohol being from the range 1:025 to 1:20, in the presence of at least one dissolved alkali or ammonium compound;

b. withdrawing from step a) the water/phosphoric acid/solvent phase;

c. mixing with the water/phosphoric acid/solvent phase of step b) at least one basic compound selected from the group consisting of alkali oxides, alkali hydroxides, alkali carbonates, alkali phosphates, ammonia, ammonia hydroxides, and ammonium salts, in an amount equal to 1 to 40 weight-% calculated as oxide and based on the amount required for producing monoalkali — or monoammonium-orthophosphate from the phosphoric acid present in said water/phosphoric acid/solvent phase thereby removing inorganic impurities from said water/-phosphoric acid/solvent phase;

d. withdrawing from step c) a purer water/phosphoric acid/-solvent phase;

e. adding to the water/phosphoric acid/solvent phase of step d) a basic compound for causing at least the said mono-orthophosphate to pass from said water/phosphoric acid/-solvent phase of step d) into an aqueous phase; and

f. recovering said aqueous phase containing said mono-orthophosphate; wherein the temperature in steps a) through e) is from 5° to 100°C.

3,872,216
METHOD FOR PRODUCING PHOSPHATE CATALYST

Revekka Vulfovna Kachalova, ulitsa Krylenko, 5, kv. 194; Mark Semenovich Nemtsov, prospekt Gagarina, 21, kv. 8, and Galina Fedorovna Balkhanova, ulitsa Telmana, 48, korpus 3, kv. 60, all of Leningrad, U.S.S.R.

Filed July 17, 1972, Ser. No. 272,622

Int. Cl. C01b *25/26, 15/16*

U.S. Cl. 423—313 **4 Claims**

1. A method for producing tertiary phosphates of Group II metals, useful as a catalyst for selective rupturing of

$$>C-O-$$

bonds in organic compounds, and, in particular, for splitting 4,4-dimethyl-1,3-dioxane into isoprene and for dehydration of alcohols, comprising reacting, at a temperature not exceeding 25°C., an aqueous solution of a salt of a Group II metal and a water-soluble salt of phosphoric acid in the presence of an amount of ammonia exceeding the stoichiometric amount required for the formation of tricalcium phosphate by 20–50 mole % per anion of phosphoric acid incorporated therein; and recovering the resulting tertiary phosphate.

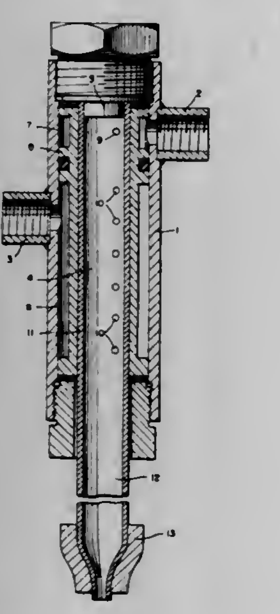
3,872,217
PROCESS FOR THE MANUFACTURE OF SUBSTANTIALLY SPHERICAL, SILICA-CONTAINING HYDROGELS

Gerhard Merz, Frankenthal; Heinz Gehrig, Buerstadt, and Wilhelm Chorbacher, Neustadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 24, 1972, Ser. No. 220,142

Int. Cl. C01b *33/16*

U.S. Cl. 423—338 **6 Claims**



1. A process for forming substantially spherical, silica-containing hydrogels which comprises: feeding a dilute mineral acid to the upstream end of a continuous-flow mixing zone; adding waterglass of sodium or potassium to said dilute acid at various points distributed along the downstream path of said dilute acid at temperatures of from 5° to 45°C, the dilute acid and the waterglass being fed to the mixing zone in such an amount that the silica hydrosol formed in the mixing zone reaches a pH of from 5 to 10; and spraying said silica hydrosol into a gaseous medium to form droplets of hydrosol which solidity to a spherical silica hydrogel while freely falling, whereby said spherical silica hydrogel is formed without any substantial incrustration taking place in the mixing zone chamber and in the orifice through which said reactant passes to said mixing zone apparatus.

3,872,218
SYNTHESIS OF ALKALI METAL TETRACARBONYLFERRATES

James P. Collman, Stanford, and Stanley R. Winter, Irvine, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 232,247, March 6, 1972,. This application June 11, 1973, Ser. No. 368,496

Int. Cl. C01g *1/04, 49/16*

U.S. Cl. 423—417 **5 Claims**

1. A method of producing a tetracarbonylferrate $M_2Fe(CO)_4$ wherein M is Na, K or a mixture of the two, said method comprising reducing an iron carbonyl with the metal M in elemental form in a solvent and in the presence of an electron carrier A capable of the reactions (a) and (b),

(a) $2M+2A\rightarrow 2M^{+}+2A^{-}$

(b) $2A^{-}+Fe(CO)_5\rightarrow Fe(CO)_4^{=}+2A$

3,872,219
PROCESS FOR MANUFACTURING OF CHLORINATED LIME SOLUTION

Walter J. Sakowski, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 26, 1973, Ser. No. 400,872

Int. Cl. C01b *11/06;* **C01f** *11/28, 11/24*

U.S. Cl. 423—474 **18 Claims**

1. A method of inhibiting the solubilization of iron from lime during the chlorination of an aqueous slurry of lime, which comprises chlorinating said slurry of lime in the presence of an iron solubilization inhibiting proportion of an alkali metal compound selected from the group consisting of alkali metal silicates and alkali metal hydroxides, wherein said iron solubilization inhibiting proportion is equivalent to from about 0.1 to about 8 percent by weight of said lime on a dry basis.

3,872,220
PROCESS FOR THE PRODUCTION OF LITHIUM CHLORIDE

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed Jan. 24, 1974, Ser. No. 436,195

Int. Cl. C01d *11/02*

U.S. Cl. 423—499 **12 Claims**

1. A process for the production of lithium chloride substantially free of lithium salts of chlorine oxygen acids through substantially quantitative conversion of chlorine in a gas stream to said lithium chloride which comprises:

a. absorbing chlorine from a gas stream in a substantially saturated aqueous solution of lithium hydroxide until the lithium hydroxide solution has been substantially completely converted to a solution of lithium chloride containing lithium salts of chlorine oxygen acids;
b. adding ammonia to said solution of lithium chloride while maintaining said solution at a temperature of from about 0° to about 100°C. to reduce lithium hypochlorite and lithium chlorite present in said solution to lithium chloride;
c. reducing the pH of said lithium chloride solution to about pH 1.5, and adding an organic reducing agent selected from the group consisting of formaldehyde, oxalic acid and hydroxylamine hydrochloride to said solution while maintaining the temperature thereof at about 80°C. to reduce lithium chlorate and lithium perchlorate present in said solution to lithium chloride; and
d. recovering lithium chloride.

3,872,221
METHOD FOR PRODUCING ANHYDROUS SODIUM HYDROSULPHITE USING SODIUM FORMATE, FORMIC ACID OR FORMIC ACID ESTER

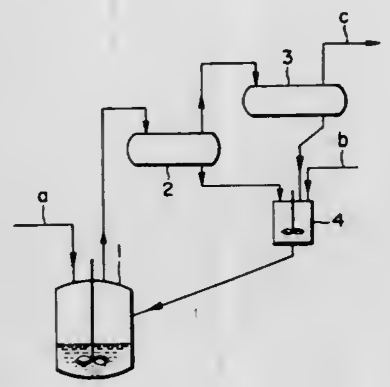
Yoshio Yoshikawa, Ushiku-Machi, Ibaraki-ken, and Takeo Suzumori, Nüjuku-Machi, Tokyo-fu, both of Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,452

Claims priority, application Japan, Nov. 28, 1972, 47-118528

Int. Cl. C01b *17/98*

U.S. Cl. 423—515 **2 Claims**



1. In a method for producing anhydrous sodium hydrosulphite by the reaction of sodium formate, formic acid or formic acid ester with sodium hydroxide and sulphur dioxide or sodium bisulphite in an aqueous solution of alcohol, under reflux of formic acid ester which is boiled off from the reaction solution, the improvement comprising the steps of adding sodium hydroxide to formic acid ester which is condensed for reflux and returning the resulting mixture to the reaction solution.

3,872,222
PROCESS FOR PRODUCING METAL SULPHIDE CRYSTALS

Hubert L. Barnes, State College, Pa., assignor to Crysdyn Corporation, Washington, D.C.

Continuation-in-part of Ser. Nos. 249,136, Jan. 3, 1963, abandoned, and Ser. No. 697,017, Jan. 11, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,359

Int. Cl. C01g *13/00, 9/08;* **C01b** *17/20*

U.S. Cl. 423—561 **20 Claims**

1. A method of growing single isometric metal sulphide crystals of high purity which have a dimension of 25 microns or more comprising:

a. forming a saturated aqueous metal sulphide crystallizing solution that has a pH of 6 to 14 at a reference temperature of 25°C comprising compounds that form metal bisulphide complex ions, HS^- ions, dissolved H_2S and an excess amount of metal sulphide nutrient, in which (1) at a pH above 7 the HS^- ion is the predominant sulfur containing ion in solution and (2) at a pH between 6 and 7 contains dissolved hydrogen sulphide which is predominant in solution but the HS^- ion concentration is not less than 1/10th of the H_2S molar concentration in the solution; and
b. after said crystallizing solution reaches a chemical equilibrium between said metal bisulphide complex ion, said HS^- and said metal sulphide, subjecting said crystallizing solution to a chemical potential gradient that causes the metal bisulphide complex ion to dissociate to form more metal sulphide which initiates the formation and the growth of metal sulphide crystals in the crystallizing solution.

3,872,223
IMPROVEMENTS IN DUAL TEMPERATURE EXCHANGE PROCESS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,623

Int. Cl. C01b *5/02*

U.S. Cl. 423—580 **13 Claims**

1. In a method for producing a fluid phase containing a first material concentrated therein, by exchanging at different temperatures said first material with a second material between chemically different first and second fluid phases which are physically separable from each other and which are each capable of containing each of said materials, said materials being isotopic, said method being of the type in which

a. said second fluid phase is passed through each of second and first units, in that order, of a pair of exchange units,
b. said first fluid phase is caused to flow in countercurrent contact with said second fluid phase in each of said first and second units of said pair,
c. said first and second units are maintained at different temperatures to cause: (1) said second fluid phase to become progressively enriched in said first material in said second unit, and to become progressively impoverished in said first material in said first unit of said pair: and (2) said first fluid phase to become progressively enriched in said first material in said first unit and to become progressively impoverished in said first material in said second unit of said pair of units, and
d. enriched fluid passing between said units is withdrawn, the improvement which comprises:
e. increasing, in a part of said second unit, the proportionate amount of first fluid phase in contact with the second fluid phase after said second fluid phase has reached an increased level of enrichment of said first material therein, while
f. decreasing, in a part of said first unit, the proportionate amount of first fluid phase in contact with the second fluid phase after said second fluid phase has reached an increased level of impoverishment of said first material therein

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3,872,224
PROCESS FOR THE PRODUCTION OF BERYLLIUM HYDRIDE

Byron R. Lowrance, Birmingham, Mich., and Jesse Roger Mangham, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Aug. 24, 1964, Ser. No. 392,371

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **8 Claims**

1. A process for the preparation of beryllium hydride which comprises pyrolyzing a dialkylberyllium compoud, wherein each alkyl group contains up to about 12 carbon atoms in admixture with a catalytic quantity of a product modifier selected from the group consisting of lithium hydride and an organic lithium compound capable of providing lithium hydride upon pyrolysis.

3,872,225
PROCESS OF VIRAL DIAGNOSIS AND REAGENT

John A. Coller, Merion; Irving Millman, Willow Grove, and Baruch S. Blumberg, Philadelphia, all of Pa., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

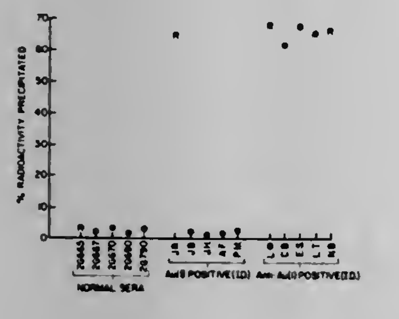
Continuation of Ser. No. 33,327, April 30, 1970, abandoned. This application July 12, 1972, Ser. No. 271,051

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **29 Claims**

1. A process of determining the presence of human anti-Au(1) antibody to Australia antigen Au(1) in human serum, which comprises incubating radioactively labeled Australia

antigen Au(1) and an unknown sample of human serum to form antibody-bound labeled antigen if the unknown sample of human serum contains human anti-Au(1) antibody, adding heterologous anti-human gamma globulin, then centrifuging



to precipitate the radioactive complex and thus getting separation between the antibody-bound labeled antigen and unbound materials, and measuring the radioactivity of at least one of the materials mentioned above as separated from each other.

3,872,226
TC-99M ALBUMIN AGGREGATES WITH STANNOUS TIN AND DENATURED ALBUMIN

Thomas Albert Haney, East Brunswick; Gerald Anthony Bruno, Shrewsbury, and Janeth Bartlett, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 164,456, July 20, 1971, abandoned. This application June 23, 1972, Ser. No. 265,849

Int. Cl. A61k *27/04*; **G21h** *5/02*

U.S. Cl. 424—1 **9 Claims**

1. A macroaggregate of Technetium-99m, denatured albumin and stannous tin.

3,872,227
FORMULATION FOR ORAL ADMINISTRATION OF PENICILLINS HAVING IMPROVED TASTE PROPERTIES

Dieter Hoff, Leverkusen, and Kurt Bauer, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1973, Ser. No. 336,478

Claims priority, application Germany, Mar. 8, 1972, 2211019

Int. Cl. A61k *21/00*

U.S. Cl. 424—271 **20 Claims**

1. An orally administrable pharmaceutical composition which comprises in combination ampicillin and an amino acid selected from the group consisting of glycine, a mixture of equal parts of glycine and alanine and a mixture of equal parts of glycine and β-alanine, in the proportions of 0.3 to 10 parts by weight of amino acid per part by weight of ampicillin.

3,872,228
PROCESS FOR THE PREPARATION OF FOOD CONTAINING PULLULAN AND AMYLOSE

Hiromi Hijiya, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama, Japan

Filed Jan. 14, 1974, Ser. No. 433,379

Claims priority, application Japan, Jan. 19, 1973, 48-8406

Int. Cl. A21d *13/02, 13/06*

U.S. Cl. 426—19 **4 Claims**

1. A method of preparing a baked food which comprises:

a. mixing cereal flour, amylose having 20 to 500 glucose units per molecule, and pullulan with enough water to form a dough,

1. the weight ratio of said pullulan to said flour in said dough being between 2:1 and 1:5,
2. the amount of said amylose in said dough being between 30 to 170 percent of the weight of said pullulan; and

b. baking said dough.

3,872,229
FOOD COMPOSITION HAVING A NUT-LIKE TEXTURE AND METHOD FOR PRODUCING THE SAME

Jack R. Durst, Osseo, and Warren L. Ganske, Golden Valley, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 172,337, Aug. 12, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,747

Int. Cl. A23c *1/18, 1/00*

U.S. Cl. 426—62 **13 Claims**

1. A process for making a nut-like product which comprises intermixing about 1.5 to 32 percent by weight of an edible, hydratable film-forming substance with about 25 to about 85 percent by weight of an edible, water-immiscible, oleaginous material in liquid form, and water in the amount of from about 13.5 to about 67 percent by weight to hydrate the film-forming substance, beating to disperse the water-immiscible oleaginous liquid and form a continuous cellular film which isolates and entraps globules of the oleaginous liquid thereabout, near the beginning of mixing maintaining the dispersion free from exposure to gas and maintaining the mixture free from exposure to gas to the end of mixing whereby the oleaginous material is dispersed homogeneously in the continuous phase composed of said edible film-forming substance under conditions which exclude air and then slowly drying the cellular film to a moisture content of about 10% or less while preserving the continuity thereof.

3,872,230
METHOD FOR PRODUCING FOOD COMPOSITIONS HAVING A NUT-LIKE TEXTURE

Joseph M. Sinner, Bloomington; Edward L. Galle, St. Paul; Joseph F. Kolosky, Minneapolis, and Marvin O. Mikkelson, Brooklyn Park, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 225,943, Feb. 14, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,695

Int. Cl. A23j *3/00*

U.S. Cl. 426—98 **11 Claims**

1. A process for making a nut-like product which comprises intermixing about one part by weight of a hydratable film-forming substance comprising heat stabilized wheat germ flour, about three parts of an edible water immiscible oil and from about 13.5–67 percent by weight water, beating for a period of time sufficient to disperse the water-immiscible oil and cause the film forming substance to coalesce into a continuous cellular phase which isolates and entraps globules of the oil while maintaining the dispersion at a vacuum of between about 24 and 29 inches of Hg gauge and then slowly drying the cellular film in two stages while preserving the continuity thereof.

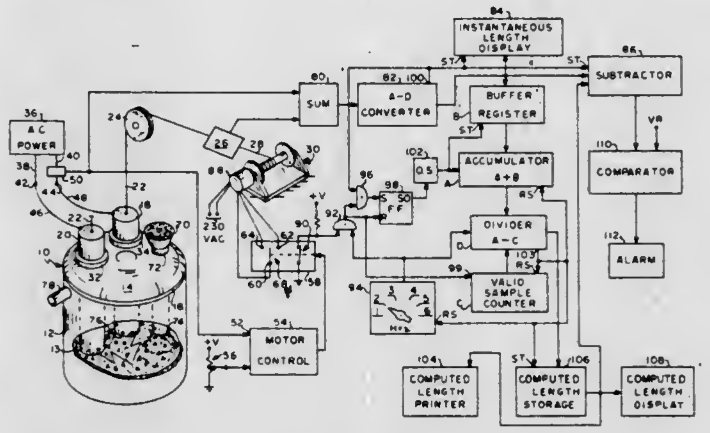
3,872,231
SYSTEM FOR DETERMINING ELECTRODE LENGTH

James W. Motter, and Connie A. Allen, both of Huntsville, Ala., assignors to Toroid Corporation, Huntsville, Ala.

Filed May 23, 1974, Ser. No. 472,555

Int. Cl. H05b *7/12*; **F27d** *11/10*

U.S. Cl. 13—13 **4 Claims**



1. A system for measuring the length of an electrode suspended in an arc furnace comprising:

suspension means for suspending a said electrode in a furnace;

electrical force indicating means coupled to said suspension means for providing an electrical output representative of the force reflected on said suspension means by said electrode.

elevation means for selectively raising and lowering said electrode in said furnace;

current sensing means for providing an output signal representative of the current flow through said electrode; summing usumming means responsive to the output of said force indicating means and said current sensing means for providing an output generally indicative of the length of said electrode;

analog-to-digital conversion means for periodically providing a signal representative of instantaneous length;

accumulating means responsive to the output of said analog-to-digital conversion means for sequentially, at selected times, summing instantaneous lengths provided by said analog-to-digital conversion means;

counting means for providing an accumulated count responsive to the lengths accumulated by said accumulator means;

division means responsive to a dividend signal from said accumulating means and a divisor signal from said counting means for providing as a quotient a signal representative of the average lengths of the sample lengths accumulated; and

means responsive to said division means for indicating a said average length.

3,872,232
WATER-COOLED FLEXIBLE RISER TUBE CABLE TERMINAL

Daniel J. Goodman, 23236 Westbury Dr., St. Clair Shores, Mich. 48080

Filed Jan. 11, 1974, Ser. No. 432,431

Int. Cl. H01b *7/34*

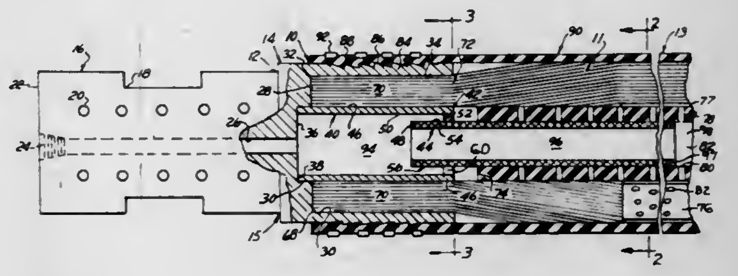
U.S. Cl. 174—19 **7 Claims**

1. A cable terminal adapted to be connected to a cable conductor assembly including a multiplicity of flexible stranded wire conductor ropes surrounding a central flexible coolant conduit within the flexible tubular casing of a water-cooled electric arc furnace cable, said terminal comprising

a terminal body having a cup-shaped head portion containing a socket and having an electrical connection portion projecting outward from one end of said head portion away from said socket,

and an elongated riser tube structure having an outer component with an outer end secured to said body centrally within said socket and defining with said socket an annular cavity adapted to receive the outer ends of the conductor ropes and also adapted to receive means for securing the conductor ropes to said head portion,

said body having a coolant passageway therethrough communicating with said outer end of said riser tube structure,



said riser tube structure having an inner component disposed in coaxial end-to-end relationship with said outer component and adapted to be inserted in the outer end portion of the central flexible coolant conduit,

said riser tube structure having connecting means joining the outer end portion of said inner component with the inner end portion of said outer component and having coolant bypass means disposed adjacent said connecting means and effecting coolant bypass flow from said outer component exteriorly of said inner component and also exteriorly of the flexible coolant conduit into the flexible tubular casing.

3,872,233
SEALED CONNECTION DEVICE FOR A CABLE

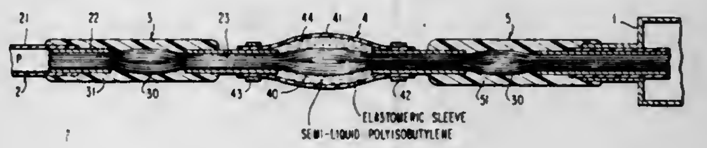
Lucien Rocton, Malakoff, France, assignor to Compagnie Industrielle Des Telecommunications CIT-ALCATEL, Paris, France

Filed Nov. 14, 1973, Ser. No. 415,795

Claims priority, application France, Nov. 14, 1972, 72.40314

Int. Cl. H02g *15/00*

U.S. Cl. 174—23 R **9 Claims**



1. A sealed connection device for a cable under gaseous pressure, said cable including covering means enclosing a harness of electrically insulated conductors subjected to the pressure of an inert internal gas, said sealed connection device comprising:

sleeve means enclosing a bared zone of the conductor harness of the cable, said sleeve means including an outer covering of an elastomeric substance,

a viscous chemically neutral liquid contained inside said sleeve means in contact with the conductors, said viscous liquid being under a pressure greater than the gaseous pressure in the cable, and

sealing means sealing the ends of said sleeve means onto the cable.

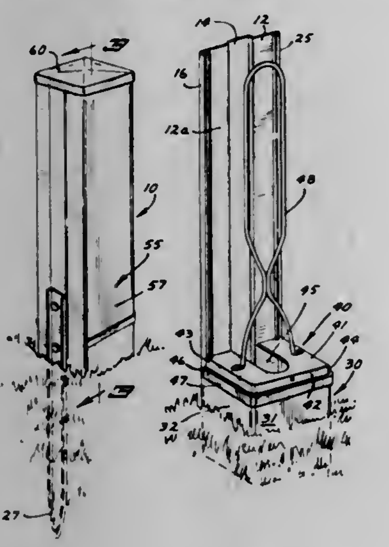
3,872,234
ELECTRICAL CABLE PEDESTAL STRUCTURE

Robert L. Smith, Minnetonka, Minn., assignor to Roart Plastics, Inc., Hopkins, Minn.

Filed Feb. 11, 1974, Ser. No. 441,437

Int. Cl. H02g *9/02*

U.S. Cl. 174—38 **8 Claims**



1. A pedestal enclosure to receive an above-ground cable splice of an underground wiring system having in combination an upstanding plate member forming a housing support,
  - an interlocking groove formed along each side of said plate member,
  - a ground anchored means having said plate member secured thereto,
  - a base housing member, a pair of interlocking tongue portions integral with said base housing member and respectively interengaging said grooves,
  - a cable splice support upstanding from said base housing member,
  - an upper housing member carried by said plate member and said base housing member, and
  - means removably securing said upper housing member to said plate member and said base housing member.

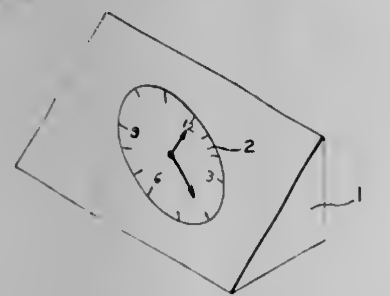
3,872,235
INFLATABLE HOUSING FOR AN ELECTRICITY CONSUMING DEVICE

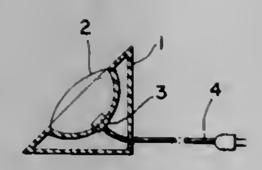
Frank W. Manly, Jr., Dalton, Ga., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 4, 1974, Ser. No. 439,301

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 R **8 Claims**





1. In combination, an electricity consuming device and an inflatable housing for said electricity consuming device comprising a sheet of material forming an inflatable triangular enclosure, said sheet having an opening in one face thereof for exposing said electricity consumer device, means within said housing to an electrical energy source, and means integral with said sheet of material to inflate said sheet and form said enclosure.

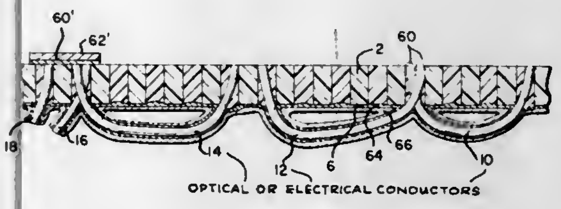
3,872,236
BONDED WIRE I INTERCONNECTION SYSTEM

Robert Charles Swengel, Sr., York; Timothy Allen Lemke, and Frederick Phillip Villiard, both of Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 152,140, June 11, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,062

Int. Cl. H05k *3/20*

U.S. Cl. 174—68.5 **5 Claims**



1. A system of point - to - point interconnected transmission lines, comprising:
  - a relatively thin substrate provided with a plurality of apertures therethrough defining discrete point - to - point locations on said substrate;
  - a plurality of transmission line lengths bridging between discrete locations on said substrate,
  - the end portions of said transmission line lengths protruding through said substrate apertures and terminating at a first planar surface of said substrate,
  - intermediate portions of said transmission line lengths between the end portions of said transmission line lengths being looped over a second surface of said substrate which is opposite the planar surface of said substrate,
  - a filler material comprising a solid substance within the apertures of said substrate and filling the spaces between the peripheries of said apertures and the peripheries of the end portions of said transmission line lengths,
  - said filler material being confined entirely within said apertures and adhering to and forming portions of said substrate,
  - said filler material adhering to and anchoring the end portions of said transmission line lengths within the confines of said apertures,
  - said end portions of said transmission line lengths being provided with transverse end areas at said first planar surface of said substrate, said end areas comprising energizable signal energy planes integral with and on terminated end portions of said transmission line lengths, and said transmission line lengths are optical conductors.

3,872,237
JOINT FOR COAXIAL CABLE END

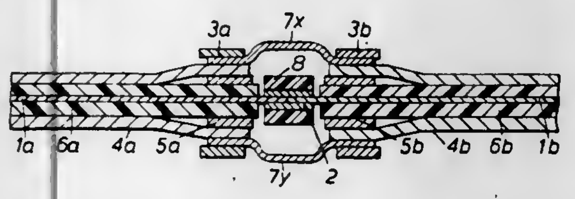
John Richard Eyre; Kenneth Richard Way, both of Kent, and David Neil Kielty, London, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 3, 1974, Ser. No. 457,518

Claims priority, application United Kingdom, Apr. 10, 1973, 17122/73

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 C **4 Claims**



1. A jointing arrangement for a coaxial cable core comprising a pair of cable ends including a pair of adjacent inner conductors, dielectric spacers surrounding said inner conductors at a distance from said ends, a pair of outer coaxial conductors around said spacers, an inner metal sleeve about the ends of said inner conductors, a dielectric sleeve about said inner sleeve, a pair of reinforcing metallic sleeves around respective said dielectric spacers adjacent each end, said outer coaxial conductors surrounding said reinforcing sleeves, a plurality of like outer metallic tubular shells positioned to form a tubular enclosure about the adjacent inner conductors and inner sleeve, said tubular shell enclosure having a larger diameter midsection spaced from said dielectric sleeve and having narrower diameter outer ends, said outer ends of said enclosure encircling the respective ends of said outer coaxial conductors over said reinforcing sleeves, and a pair of outer metallic sleeves surrounding respective said outer enclosure ends, said outer sleeves being crimped to lock the tubular shell enclosure in position relative to said inner and outer conductors, the ratio of the inner diameter of said midsection of said tubular enclosure surrounding said inner conductors and inner sleeve to the outer diameter of said inner sleeve being selected to maintain the characteristic impedance of said inner and outer coaxial conductors.

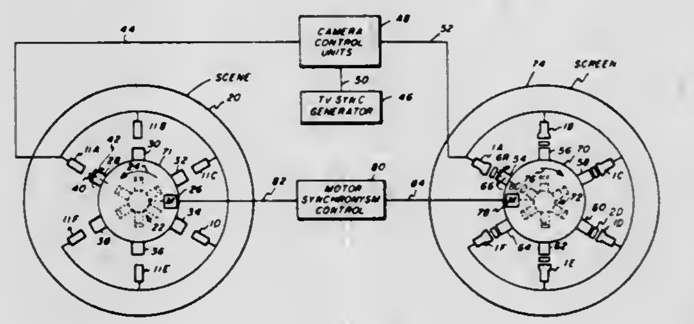
3,872,238
360 DEGREE PANORAMIC TELEVISION SYSTEM

John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1974, Ser. No. 450,125

Int. Cl. H04n *7/18*

U.S. Cl. 178—6 **4 Claims**



1. A 360° panoramic television system for taking continuous images covering a 360° scene and projecting the same on a 360° screen, the taking and projecting emanating along radii from central vertical axes respectively of said scene and screen comprising:
  - a plurality of stationary vertical, single line scan, camera tubes equally, angularly spaced and each aimed inwardly along an associated radius of said scene toward the vertical axis thereof;
  - a plurality of stationary vertical, single line scan, projectors equally, angularly spaced and each aimed inwardly along a radii of said screen toward the vertical central axis thereof;
  - amplifying and processing control until means connectd to pass video signal information from said cameras to said projectors;
  - a first optical system including a plurality of image collection optical prism and lens means and a second optical system including a plurality of image projection optical prism and lens means, each having rotatable mounting means for prism portions thereof and positioned respectively in relation to said cameras and projectors to pass images from said scene to said cameras and from said projectors to said screen, and
  - synchronized motor drive means for rotating said prism portions of optical systems in unison to produce a 360° panoramic transfer of image to said screen.

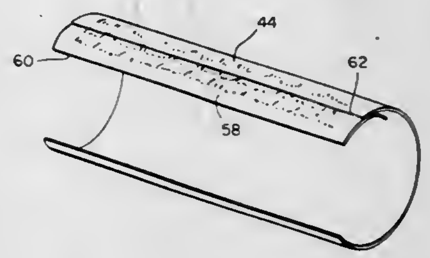
3,872,239
FACSIMILE APPARATUS AND METHOD OF OPERATION

Richard L. Nelson, New York, N.Y., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 20, 1973, Ser. No. 333,616

Int. Cl. H04n *1/08*

U.S. Cl. 178—6 **27 Claims**



18. A facsimile receiver for generating a copy in response to received signals representing the information content of an original document, said receiver comprising means for writing on a copy medium juxtaposed to said writing means, scanning means for moving said copy medium relative to said writing means along successive scanning paths, signal receiving means responsive to the signals received by said receiver for activating said writing means to reproduce the information content of the original document on said copy medium, the improvement residing in said copy medium comprising:
  - a closed loop of material moved relative to said writing means by said scanning means such that a continuous writing surface is juxtaposed to said writing means.

3,872,240
PICKUP APPARATUS FOR CAPACITIVE VIDEO DISC PLAYERS WITH TRANSMISSION LINE TUNED CIRCUIT

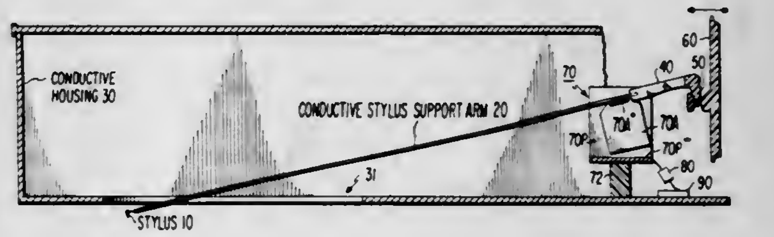
David John Carlson, Indianapolis, Ind., and Stephen Earl Hilliker, Tempe, Ariz., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,103

Claims priority, application United Kingdom, Mar. 26, 1973, 14395/73

Int. Cl. G11b *9/06*; **H04n** *5/76*

U.S. Cl. 178—6.6 R **10 Claims**



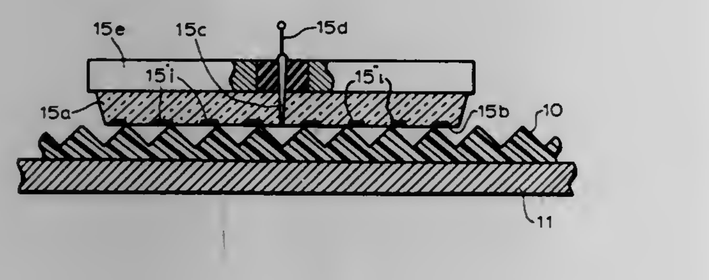
1. In a disc playback system including a stylus having a conductive electrode for establishing a variable capacitance with a disc record during playback the combination comprising:
  - a stylus support arm of conductive material providing at one end thereof support for said stylus;
  - a conductive housing for said arm having an aperture through which said one support arm end extends during disc playback;
  - means for pivotally supporting the other end of said stylus support arm within said housing;
  - means electrically coupled to said other end of said stylus support arm for capacity end loading a transmission line formed by said support arm and said housing, to form a tuned circuit including said transmission line, said capacity end loading means and said variable capacitance, said tuned circuit having a resonant frequency nominally subject to variation over a given range of frequencies in

response to the variations of said stylus-disc capacitance;
a source of oscillations at a nominal frequency in the immediate vicinity of said given range of frequencies;
means for supplying oscillations from said source to said tuned circuit;
amplitude detecting means coupled to said tuned circuit for developing signals representative of recorded information; and
wherein said conductive stylus support arm has a length greater than a quarter-wavelength and less than a half-wavelength at said oscillation frequency and at the frequencies within said given range.

3,872,241
VIDEO DISC PICKUP WITH CAPACITIVE TRACKING

Robert Adler, Northfield, and Roger W. Knitter, Hoffman Estates, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed July 12, 1973, Ser. No. 378,467
Int. Cl. G11b *9/06*
U.S. Cl. 178—6.6 A **8 Claims**

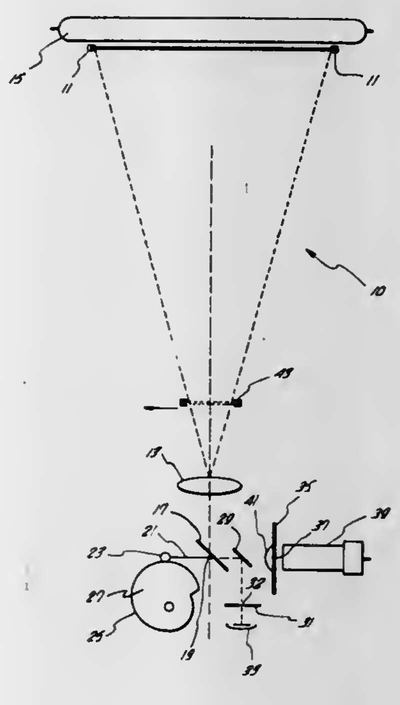


1. An electrostatic pickup for sensing undulations formed in a pattern of grooves on the surface of a record disc to constitute a spatial representation and storage of the time variations of a signal to be reproduced, which disc further includes a conductive coating, said pickup comprising:
a body of insulating material having a bearing or tracking surface with a length much greater than the pitch of the record grooves;
a probe of conductive material extending through said body transversely of and intermediate the ends of said bearing surface and projecting into the plane of said bearing surface to sense the groove being tracked, said probe having a dimension measured along the direction of the groove that is small relative to the spatial wavelength of the signal stored on said disc;
a first family of capacitive conductive elements supported by said insulating body and extending in the direction of and adapted to overlie one section of said groove pattern; and
a second family of capacitive conductive elements also supported by said body and extending in the direction of and adapted to overlie a different section of said groove pattern,
each of said capacitive conductive families of conductive elements individually exhibiting, with respect to the disc conductive coating, a capacitance having a predetermined reference value when said probe overlies the middle of a record groove being sensed but, each said family of elements exhibiting a different capacitance of a value which varies in sense and in amount in proportion to the radial displacement of said probe relative to the middle of the record groove being sensed.

3,872,242
FACSIMILE FLATBED TRANSCEIVER

Austin G. Cooley, Reno, Nev., assignor to Litton Medical Products, Inc., Elk Grove, Ill.

Filed May 4, 1973, Ser. No. 357,495
Int. Cl. H04n *1/10*
U.S. Cl. 178—6 **7 Claims**

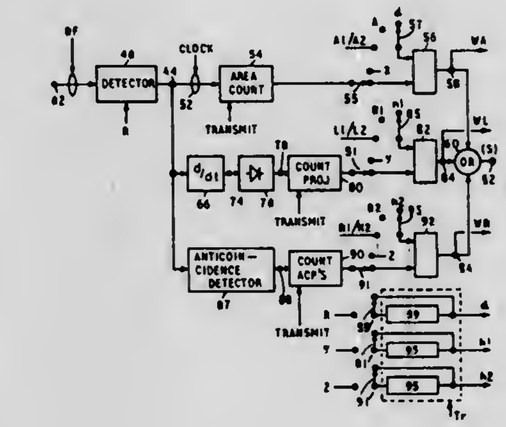


1. A facsimile transceiver comprising:
a first film station positioned adjacent a source of illumination;
an objective lens positioned in front of said first film station along a focal axis;
a movable mirror on the other side of said objective lens for reflecting light beams impinging thereon;
first means for producing light signals and projecting said light signals onto said movable mirror, said first means comprising a recorder lamp and a first aperture plate positioned in front of said recorder lamp;
second means for receiving light beams from said illuminated film station and generating signals that are a function of the light intensity received, either of said first or second means being positioned along the optic axis with respect to said movable mirror with the other of said first or second means being positioned at an angle with respect to said optic axis, said second means comprising a second aperture plate and a phototube positioned behind said second aperture plate;
a stationary mirror detachably positioned along the optic axis with respect to said movable mirror to reflect light beams between said movable mirror and said means positioned at an angle to said optic axis, said stationary mirror being removable to enable light beams to pass between said movable mirror and said means positioned along said optic axis; and
a second film station detachably positioned between said first film station and said objective lens along said optic axis.

3,872,243
METHOD AND APPARATUS FOR CHECKING MEASUREMENTS MADE IN IMAGE ANALYSIS SYSTEMS

Michael Richard Soames, Fulbourn; William Ralph Knowles, and Donald William Braggins, both of Royston, all of England, assignors to Image Analysing Computers Limited, Melbourn, Royston, Hertfordshire, England

Filed Apr. 28, 1972, Ser. No. 248,591
Claims priority, application United Kingdom, May 18, 1971, 15677/71; May 18, 1971, 15678/71
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **16 Claims**



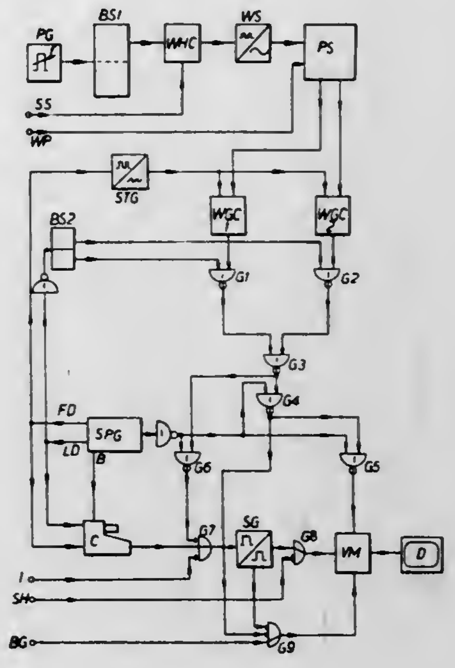
1. A method of checking measurement made by an image analysis system performing a sequence of tests on similar fields, wherein each test includes
scanning an image of a field,
generating a video signal from the scanning,
detecting the video signal amplitude excursions to produce detected signal pulses,
making measurement on the detected signal pulses, comprising, in combination, the steps of:
inserting a check field,
scanning an image of the check field to produce a video signal thereof,
making measurements on the detected signal pulses resulting from the check field content, and
comparing the results obtained from the measurements made on the detected signal pulses for the check field with values obtained for the latter when the system is known to be operating correctly.

3,872,244
TELEVISION SYSTEMS

Ian Norman Vaughan-Jones, Wilmslow, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed June 26, 1973, Ser. No. 373,619
Claims priority, application United Kingdom, July 6, 1972, 31815/72
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **6 Claims**

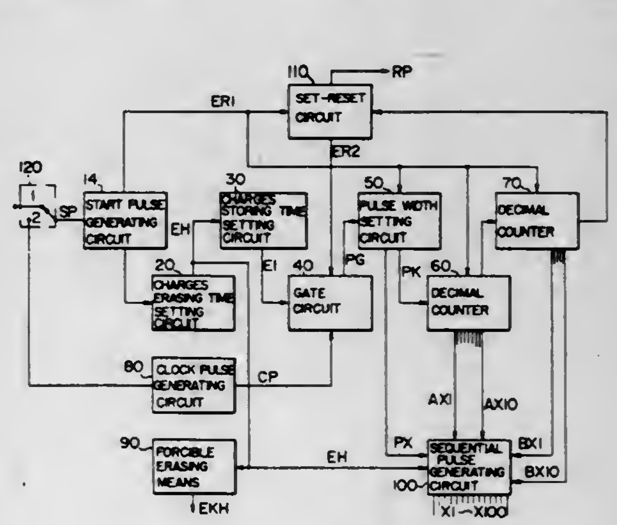
1. A television system which includes means for electronically generating a wave-motion pattern including a variable-frequency oscillator operable at a frequency approximately equal to or the same as the television system line frequency, the variable-frequency oscillator including a high-speed bidirectional counter driven by a clock pulse generator and having its output compared with that of a variable-speed counter to generate a square-wave output from which the wave-motion pattern is derived, means for gating the signals representing the pattern with video and other signals to ensure correct overlay of the various components of a displayed picture represented by the various signals, and means for controlling the shape and position of the wave-motion pattern relative to the other components of the picture.



3,872,245
PHOTOSENSOR ACTUATING DEVICE

Akio Sagawa, and Hideaki Kawakami, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1973, Ser. No. 328,094
Claims priority, application Japan, Jan. 31, 1972, 47-10576; Mar. 8, 1972, 47-23184
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.1 **3 Claims**


110
RP
SET-RESET CIRCUIT
ER1
ER2
120
SP
14
START PULSE GENERATING CIRCUIT
EH
30
CHARGES STORING TIME SETTING CIRCUIT
50
PULSE WIDTH SETTING CIRCUIT
70
DECIMAL COUNTER
20
CHARGES ERASING TIME SETTING CIRCUIT
E1
40
GATE CIRCUIT
PG
PK
60
DECIMAL COUNTER
80
CLOCK PULSE GENERATING CIRCUIT
CP
AX1
AX10
90
FORCIBLE ERASING MEANS
EH
PX
SEQUENTIAL PULSE GENERATING CIRCUIT
BX1
BX10
100
EKH
X1—X100

1. A photosensor driving system used for sequentially driving a plurality of photosensitive elements disposed in an array with output lines thereof forming a common output line connected to a common load resistor, the system comprising a plurality of pulse output lines each operationally coupled to each of said photosensitive elements, and pulse means for initially providing all of said pulse output lines with a pulse signal having a duration only sufficient to erase electric charges stored in said photosensitive elements and for providing after a predetermined period for storage of electric charges each of said photosensitive elements in a sequential order with a pulse signal having a duration only sufficient to read out optical information stored in respective ones of said photosensitive elements.

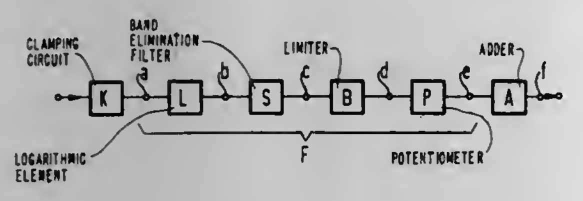
3,872,246
APPARATUS FOR ELIMINATION OF INTERFERENCE FROM VIDEO SIGNALS

Adolf Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 189,318, Oct. 14, 1971, Pat. No. 3,798,367. This application Dec. 20, 1973, Ser. No. 426,484

Int. Cl. H04n *5/21*

U.S. Cl. 178—7.2 **2 Claims**



1. An apparatus for eliminating an interference frequency, resulting from the frequency of the light illuminating the subject being photographed, from video signal transmission means having an image conversion means for receiving light from the subject and producing an electrical signal corresponding thereto, comprising:

- optical means for diverting a portion of said light from the subject prior to the reception of same by said image conversion means, said light being modulated by said interference frequency,
- means for converting said diverted light to electrical signals, logarithmic amplifier means connected to receive the output of said converting means,
- band-pass filter means connected to receive the output of said logarithmic amplifier and tuned to pass only said interference frequency and,
- electro-optical modulator means having an optical input for receiving said light from the subject and an electrical input for receiving the output of said band-pass filter, the output from said band-pass filter modulating said light for removing said interference frequency therefrom, the optical output of said modulator means being optically coupled to said image conversion means.

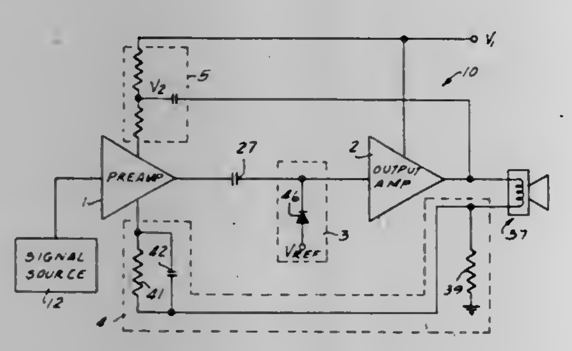
3,872,247
LOW COST OF HIGH FIDELITY HIGH POWER VARIABLE CLASS A AMPLIFIER-SPEAKER COMBINATION

Robert W. Saville, 108 Ahwahnee Rd., Lake Forest, 60045, and John C. Sanderson, III, 1400 Londen Ln., Glenview, both of Ill. 60025

Continuation-in-part of Ser. No. 145,257, May 20, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,478

Int. Cl. H03f *1/00*

U.S. Cl. 179—1 A **6 Claims**



1. An amplifier circuit in combination with and connected to a speaker having a voice coil and a speaker cone, comprising:

- an input amplifier stage for receiving input audio signals;
- an output amplifier stage having an output terminal directly connected to said voice coil of said speaker and constantly providing a current through said voice coil;
- capacitive coupling means connected between said input and output stages;
- current feedback means for direct connection to said voice coil of said speaker and connected to said input stage, said feedback means including a low ohmic resistor connected in series with said voice coil; and
- bias means connected to said capacitive coupling means and to said output stage for varying the bias on said output stage to allow a very low standby idle current while providing for the transmission of any applied signal whose peak-to-peak value is less than the supply potential, the current constantly provided through said speaker coil and the varying bias and the feedback current providing a linear acoustic response over the working range of said speaker.

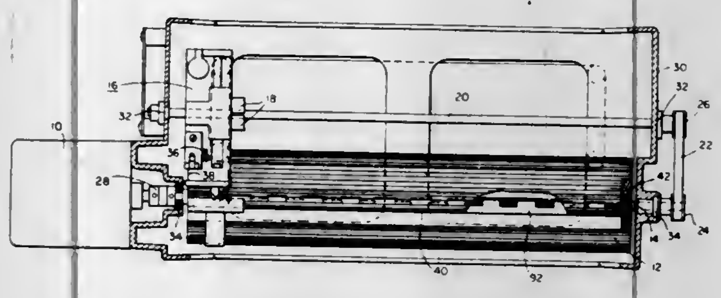
3,872,248
FACSIMILE APPARATUS

Luther R. Winters, Orlando, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 16, 1973, Ser. No. 332,927

Int. Cl. H04n *1/14*

U.S. Cl. 178—7.6 **14 Claims**



1. A facsimile system comprising:

- a document-carrying drum having at least one surface discontinuity extending parallel to the axis of said drum;
- means for mounting said drum for rotational motion about said drum axis;
- means for driving said drum through said rotational motion about said drum axis;
- a reading head;
- means for supporting said reading head for movement along the surface of said drum in a direction parallel to said axis of said drum;
- fiber optic scanning means mounted in a fixed position on said head for detecting the information content on a document carried by said drum; and
- means for biasing said head toward said drum to allow said head to ride on the document carried by said drum thereby maintaining a fixed distance between said document and said fiber optic scanning means.

3,872,249
ENCODING METHOD FOR CONVERTING MULTI-CHANNEL SOUND SIGNALS INTO 2-CHANNEL COMPOSITE SIGNALS

Susumu Takahashi; Ryosuke Ito, both of Tokyo, and Koichi Hirano, Chiba, all of Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,932

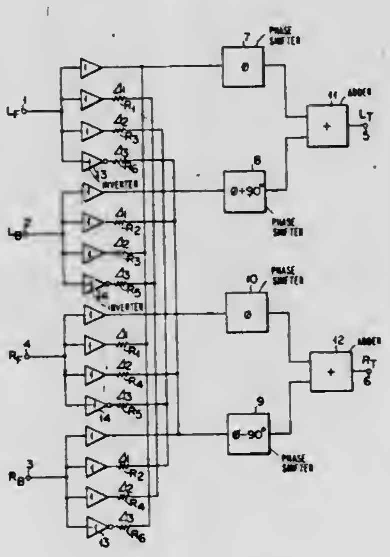
Claims priority, application Japan, Sept. 18, 1973, 48-10517

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GO **7 Claims**

1. An encoding method in which, in coupling to respective first and second channels at least first and second sound input signals associated with front channels and at least third and fourth sound input signals associated with back channels to generate first and second channel signals, said first, second,

third, and fourth sound input signals are coupled to the first and second channels with such an amplitude relation that the amplitude levels of said first and third sound input signals included in said first channel signal are greater than those of the first and third sound input signals included in the second channel signal and the amplitude levels of the second and fourth sound input signals included in said second channel are greater than those of second and fourth sound input signals included in the first channel signal, and in such a phase relation that the first and second sound input signals included in said first channel signal are in a substantially in-phase relation to the first and second sound input signals included in said second channel signal respectively and the third and fourth sound input signals included in said first channel signal is in a substantially opposite relation to the third and fourth sound input signals included in said second channel signal respectively: said encoding method comprising the steps of coupling said first sound input signal to said first channel at a relatively large amplitude level and at a reference phase shift angle and to said first channel at a relatively small amplitude level and at a phase shift angle corresponding to the reference angle plus 90°; coupling said first sound input signal to said second channel at a relatively small amplitude level and at the reference phase shift angle and to said second channel at a relatively small amplitude level and at a phase shift angle corresponding to the reference angle plus 90°; coupling said second input signal to said first channel at a relatively small amplitude level and at the reference phase shift angle and to said first channel at a relatively small amplitude level and at the phase shift angle corresponding to the reference angle minus 90°; coupling said second sound input signal to said second channel at a relatively large amplitude level and at the reference phase shift angle and to said second channel at a relatively small amplitude level and at the phase shift angle corresponding to the reference angle minus 90°; coupling said third sound input signal to said first channel at a relatively large amplitude level and at a phase shift angle corresponding to the reference angle plus 90° and to said first channel at a relatively small amplitude level and at the reference phase shift angle; coupling said third sound input signal to said second channel at a relatively small amplitude level and at the phase shift angle corresponding to the reference angle minus 90° and to said second channel at a relatively small amplitude level and at a phase shift angle displaced 180° from said reference angle; coupling said fourth sound input signal to said first channel at a relatively small amplitude level and at the phase shift angle corresponding to the reference angle plus 90° and to said first channel at a relatively small amplitude level and at the phase shift angle displaced 180° from said reference angle; and coupling said fourth sound input signal to said second channel at a relatively large amplitude level and at the phase shift angle corresponding to the reference angle minus 90° and to said second channel at a relatively small amplitude level and the reference phase shift angle.



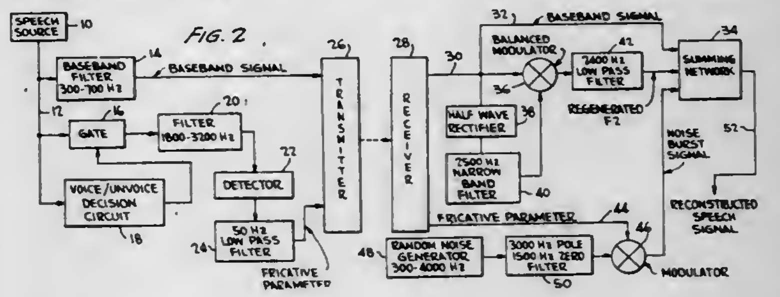
3,872,250
METHOD AND SYSTEM FOR SPEECH COMPRESSION

David C. Coulter, 9613 Pembroke Pl., Vienna, Va. 22180

Filed Feb. 28, 1973, Ser. No. 336,705

Int. Cl. G10l *1/10*

U.S. Cl. 179—1 SA **18 Claims**



1. A method of transmitting a speech signal in reduced bandwidth comprising the steps of transmitting a baseband signal having a frequency range including

- the first formant;
- receiving the baseband signal;
- regenerating the second formant from the baseband signal by producing harmonics of the pitch frequency of the baseband signal, isolating at least one of the harmonics and processing the at least one harmonic with the baseband signal; and
- combining the baseband signal with the regenerated second formant to reconstruct the speech signal.

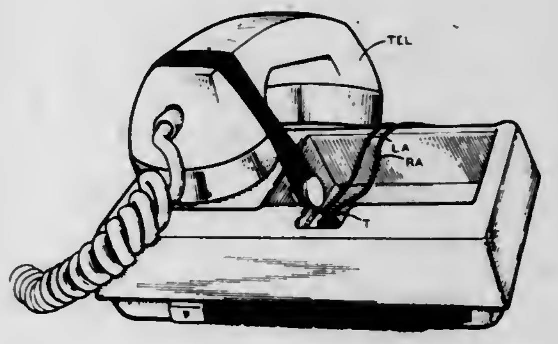
3,872,251
ELECTROCARDIOGRAPHY TRANSMITTER AND TRANSMISSION METHOD

Albert A. Auerbach, New York, N.Y.; George M. Katz, Leonia, N.J., and Sidney Steinberg, Bronx, N.Y., assignors to Medalert Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,078

Int. Cl. H04m *11/00*

U.S. Cl. 179—2 A **13 Claims**



1. Apparatus for use in transmission of electrocardiographic (EKG) signals derived from a patient, transmission being from the patient's location via a common carrier transmission means to a central location, the apparatus being normally in an inactive state, comprising an amplifier for amplifying the patient-derived EKG signals; reference signal generating means for generating a reference signal of predetermined amplitude; a frequency modulator operating at a carrier frequency within the audio range for frequency-modulating the carrrier with input signals to the modulator; a patient-operable switch momentarily operable for activating the apparatus; automatically timed switching means responsive to the momentary operation of the patient-operable switch for switching in as input signals to the modulator, the amplified EKG signals such that the amplified EKG signals and the reference signal are timewise juxtaposed; means for coupling the resultant frequency-modulated signal to the common carrier transmission means; a shut-off timing signal generator responsive to patient-operable switch for producing a shut-off timing signal having a given duration; and means responsive to the termina-

tion of the shut-off timing signal for automatically shutting off the apparatus to return it to the inactive state.

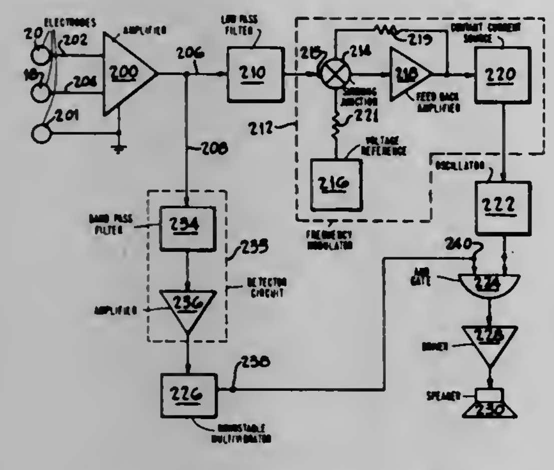
3,872,252
APPARATUS FOR MONITORING ELECTRICAL SIGNALS, EITHER ARTIFICIAL AND/OR NATURAL IN A LIVING BODY, VIA A COMMUNICATION LINK

Franklin Leonard Malchman, King of Prussia; Robert William Johnson, Levittown, and William J. Raddi, Philadelphia, all of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 7, 1973, Ser. No. 337,261

Int. Cl. H04m *11/00*

U.S. Cl. 197—2 A **16 Claims**



1. A transducer for monitoring electrical artifact signals of a living body resulting from artificial stimulation of a body part comprising:

a. sensing means connectable to the body for sensing electrical artifact signals in the body;

b. generating means for generating an electrical carrier signal;

c. output means operatively connected to the generating means and including means for producing an output signal in correspondence to the electrical carrier signal when the electrical carrier signal is coupled to the output means;

d. control means operatively connected between the generating means and the output means for normally permitting coupling to the output means of the electrical carrier signal and for modulating the the amplitude of the electrical carrier signal 100 percent in response to a control signal thereby cutting off the electrical carrier signal from the output means; and

e. channel means operatively connected to the sensing means and to the control means and including control signal producing means responsive to each sensed electrical artifact signal for providing a control signal for effecting operation of the control means to modulate the amplitude of the electrical carrier signal 100 percent.

3,872,253
SIGNAL TRANSMISSION AND SURVEILLANCE SYSTEM USING A SUBSCRIBER'S TELEPHONE LINE WITHOUT INTERFERING WITH NORMAL TELEPHONE LINE OPERATION

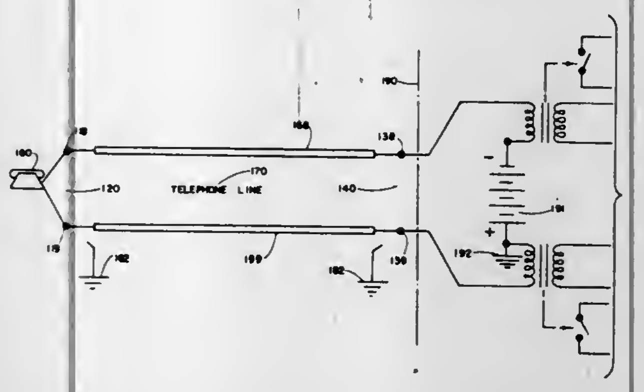
John J. Jurschak, 825 Casazza Dr., Reno, Nev. 89502

Continuation-in-part of Ser. No. 256,464, May 24, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,277

Int. Cl. H04m *11/04*

U.S. Cl. 179—5 R **10 Claims**

1. An electronic signal transmission system comprising a first unit, said first unit comprising a transmitter, a second unit, said second unit comprising a receiver matched to said transmitter, a telephone transmission line having two wires, conductive means connecting said first unit to said telephone line, conductive means cooperatively connecting said second unit to said telephone line, a telephone, a telephone exchange, said telephone line connecting said telephone and said telephone exchange, said telephone and said telephone line and said telephone exchange together defining a telephone system, said telephone exchange causing a DC bias current on said telephone line when said telephone is electrically connected to said line, said first and second units being of sufficiently high and balanced impedance to telephone system AC voltage on said line as to substantially reduce attenuation of said telephone system AC voltage and unbalancing of said line by said units, said transmitter comprising low-frequency means for modulating said telephone line in a way which is discernible to said receiver, said first unit being adapted to receive an event signal, said transmitter delivering a modulating signal current to said line in accordance with said event signal, said receiver delivering a counter-modulating signal current to said line in response to said modulating signal current, said counter-modulating signal current at least partially compensating for said modulating signal current and hence reducing voltage on said line due to said modulating signal current so as to reduce system modulation of the telephone system voltage on said line, said second unit providing an output signal related to said counter-modulating signal current, said output signal being electrically connectable to a suitable means for utilization.



3,872,254
REMOTE CONTROL SYSTEM AND APPARATUS FOR AUTOMATIC TELEPHONE ANSWERING AND RECORDING APPARATUS

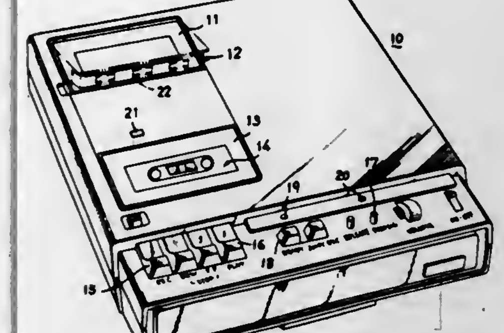
Masamichi Murata; Yuji Urayama, both of Yokohama, and Takamasa Furusawa, Shimizu, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 341,674, March 15, 1973, abandoned. This application June 4, 1973, Ser. No. 366,765

Claims priority, application Japan, Mar. 18, 1972, 47-27586; June 12, 1972, 47-68204; June 5, 1972, 47-55790; June 5, 1972, 47-55791

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 E **3 Claims**



1. A remote control system for an automatic telephone answering and recording apparatus which includes first means for recording on and reproducing from a first cassette tape an answering statement, and second means for recording on and reproducing from a second cassette tape incoming messages by callers; said system comprising:

a. answering means responsive to an incoming call arriving through a telephone line from a caller for automatically operating said first means to reproduce the answering statement previously recorded on said first cassette tape and for sending the statement through the telephone line toward the caller;

b. incoming message recording means responsive to completion of the reproduction of the answering statement by said first means for operating said second means to record on the second cassette tape incoming messages sent by the caller through the telephone line;

c. generating means for generating a plurality of kinds of pair tones comprising low tones and high tones;

d. detecting means responsive to a set of pair tones selected from the kinds of pair tones which are generated in sequence by said generating means and sent through the telephone line for producing a first control voltage only when the set of pair tones coincide with a predetermined set of pair tones;

e. first control means responsive to the first control voltage for driving said second means to rewind the second cassette tape;

f. second control means responsive to stopping of the rewinding of the second cassette tape for driving said second means to reproduce the incoming messages; after said detecting means produced the first control voltage, said detecting means producing a second control voltage in response to first digital component pair tones of the set of pair tones which first digital component pair tones are generated by said generating means with a duration shorter than a predetermined time duration and sent through the telephone line, a third control voltage in response to first digital component pair tones of the set of pair tones which first digital component pair tones are generated by said generating means with a duration longer than the predetermined time duration and sent through the telephone line, a fourth control voltage in response to second digital component pair tones of the set of pair tones which second digital component pair tones are generated by said generating means and sent through the telephone line, and a fifth control voltage in response to third component pair tones of the set of pair tones which third digital component pair tones are generated by said generating means and sent through the telephone line;

g. means responsive to the second control voltage for converting said second means to a recording mode;

h. means responsive to the third control voltage for recording a stop signal on the second cassette tape;

e. means responsive to the fourth control voltage for converting said second means to a play-back mode; and

j. means responsive to the fifth control voltage for converting said second means to a rewinding mode.

3,872,255
DIGITAL COMMUNICATIONS SYSTEM WITH TIME-FREQUENCY MULTIPLEXING

W. Franklin Nance, Oakdale, and Robert L. Shacklett, Fresno, both of Calif., assignors to NS Electronics and Vernon Creig Lenz, both of Fresno, Calif., a part interest to each

Filed May 14, 1973, Ser. No. 359,864

Int. Cl. H04b *7/18*

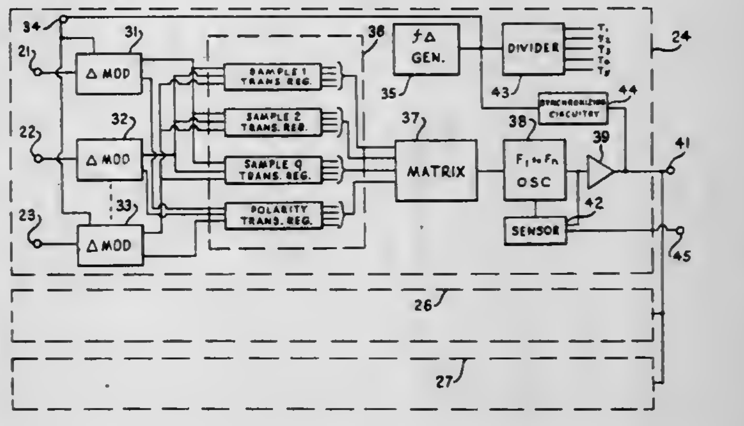
U.S. Cl. 179—15 BM **13 Claims**

1. A communication system having a plurality of inputs comprising

a plurality of first means sampling the change in signals at respective inputs simultaneously in repetitive intervals and producing for each input first pulses representing signal change and second pulses representing direction of change between successive intervals,

second means coupled to the output of said first means for combining pulses from a plurality of inputs to form binary words,

said second means including means registering and reading out said first pulses as said binary words to increase the readout time compared to sampling interval,



an address assignment matrix wired to receive said binary words, and

output means connected to said matrix for transmitting predetermined frequency bursts of energy at particular times as determined by said matrix as signals to a transmission medium that are decipherable into original input signals.

3,872,256
PCM TIME-DIVISION MULTIPLEX SWITCHING PROCEDURE

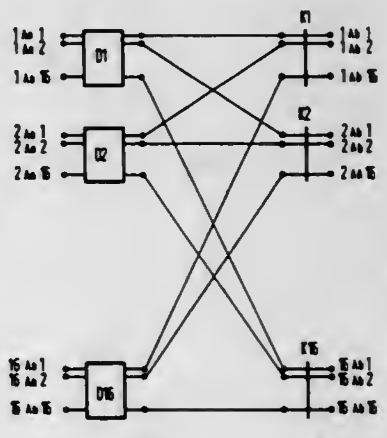
Max Schlichte, Munchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 18, 1973, Ser. No. 361,575

Claims priority, application Germany, May 26, 1972, 2225703

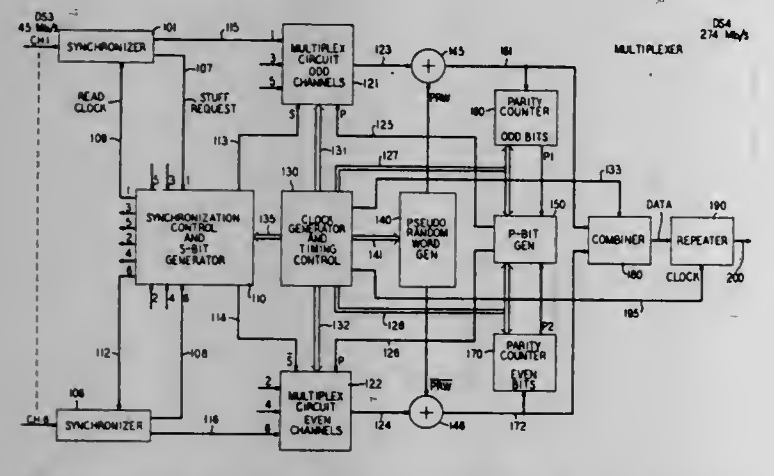
Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AQ **1 Claim**



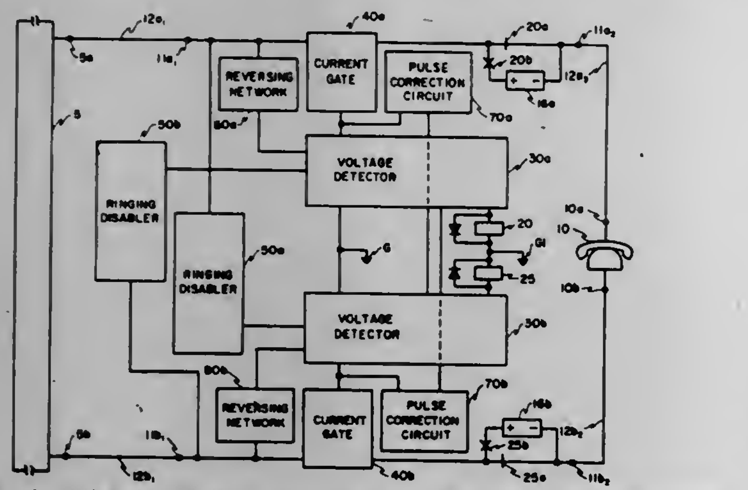
1. A method of selecting an outgoing time channel for permitting completion of a connection between incoming and outgoing time-division multiplex circuits transmitting PCM signals through a time division multiplex exchange installation having a plurality of through-connecting units each of which has low-congestion time channels, each of said through-connecting units including means for causing time channel conversion and spatial through-connection between said incoming and outgoing time division multiplex circuits, said through-connecting units being coupled to a spatial switching network to form a time-division multiplex coupling array with a time-space configuration, characterized by the steps of determining for the desired outgoing time-division multiplex circuit selected by the through-connecting unit the time channel of the available time channels which has previously been seized for the least number of outgoing connections, completing said outgoing connection over said channel determined to have previously been seized the least number of times.

3,872,257
MULTIPLEX AND DEMULTIPLEX APPARATUS FOR DIGITAL-TYPE SIGNALS
Werner Heinrich Bleickardt, and Richard Barker Robrock, II, both of Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 11, 1974, Ser. No. 450,203
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **15 Claims**



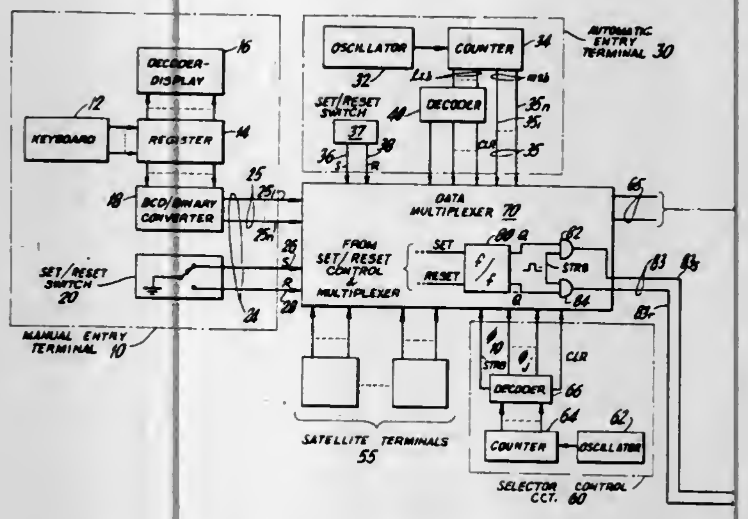
1. Apparatus for combining a plurality of input data bit streams into a single output bit stream comprising:
- means for generating a control bit of a first type in response to a first characteristic of said input data bit streams;
- means for generating a control bit of a second type in response to a second characteristic of said input data bit streams; and
- means for interleaving the data bits from said plurality of input data bit streams with said control bitis of said first and second types to produce sequential frame intervals of bits, each one of said frame intervals having a complementary pair of control bits of said first type and an equal pair of control bits of said second type at predetermined points within said frame interval.

3,872,258
VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio
Filed Jan. 28, 1974, Ser. No. 437,491
Int. Cl. H04m *3/24;* **H04b** *3/46*
U.S. Cl. 179—16 F **29 Claims**



1. A voltage booster circuit for telephone systems which comprises:
- first and second office terminals for connection to a central office;
- first and second subscriber terminals for connection to a subscriber line;
- boost voltage supply means for increasing the magnitude of direct current flow in the subscriber line;
- switching means for establishing a non-boosting path between the office terminals and the corresponding subscriber terminals, for establishing a first boosting path between one of the office terminals and the corresponding subscriber terminal through the boost voltage supply means to establish a first boosting condition, and for establishing a second boosting path between one of the office terminals and the corresponding subscriber terminal through the boost voltage supply means to establish a second boosting condition;
- current gating means for detecting the presence and absence of normal d-c operating current in each conductor of the subscriber line;
- voltage detecting means for causing the switching means to establish the first boosting path when the current gating means detects the flow of normal d-c operating current from the subscriber terminal to the corresponding office terminal in one conductor of the subscriber line and normal d-c operating voltage is detected on the same conductor, for causing the switching means to establish the second boosting path when the current from the subscriber terminal to the corresponding office terminal gating means detects normal d-c operating current in another conductor of the subscriber line and normal d-c operating voltage is detected on the same conductor, and for causing the switching means to establish the non-boosting path when the voltage on both conductors of the subscriber line is substantially less than the normal d-c operating voltage thereof or when the current gating means fails to detect normal d-c operating current in either conductor of the subscriber line; and
- means for connecting the voltage detecting means and the current gating means to each conductor of the subscriber line.

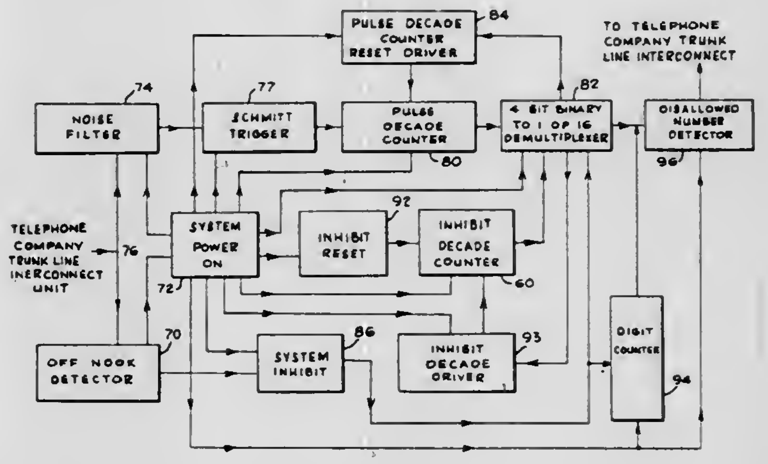
3,872,259
TRUNK TRANSITION SYSTEM
George Manos, Bridgeport, Conn.; Paul V. DeLuca, Port Washington, N.Y.; Vincent F. Santulli, Manhasset, N.Y.; and William V. Carney, Valley Stream, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,172
Int. Cl. H04q *1/18;* **H04m** *3/00*
U.S. Cl. 179—16 R **22 Claims**



1. In combination in a trunk transition system adapted to selectively implement connections between a first plurality of trunks, a second plurality of trunks and a third plurality of trunks, said second and third pluralities of trunks being ordered in one-to-one correspondence with said first plurality of trunks such that each of said first trunks may be connected to an associated one of the second or third plurality of trunks, a plurality of protective interface circuits in one-to-one correspondence with the first plurality of trunks, each of said protective interface circuits comprising first firm conduction means for connection to an associated one of said first trunks, second conduction means for connection to an associated one of said second trunks, and wire output means for connection to the associated one of the third trunks, data input entry

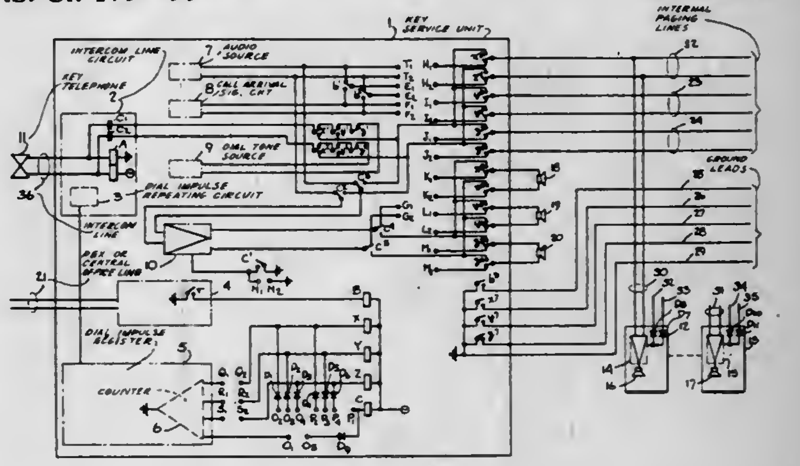
means for supplying an address identifying one of said protective interface circuits and one of said first trunks and for supplying the connection mode desired for said protective interface circuit and trunk, a plurality of trunk accessing modules, address decoding means responsive to the address supplied by said data entry means for signalling a particular one of said plurality of trunk access modules including switching means, mode implementing means responsive to the mode entered by said data entry means for signalling the mode desired by said entry means to each trunk access module, each trunk access module including switching means responsive to enabling signals from said address decoding means and said mode signalling means for selectively enabling switching means, said switching means at each of said trunk access modules connecting said first conduction means at an associated one of said protective interface circuits to either said second conduction means thereat or said wire means thereat.

3,872,260
TOLL CALL PROHIBITOR
Melvin Neal Oatis, Tustin, Calif., assignor to Telephonic Equipment Corporation, Santa Ana, Calif.
Filed Aug. 10, 1972, Ser. No. 279,713
Int. Cl. H04m *1/66*
U.S. Cl. 179—18 DA **7 Claims**


PULSE DECADE COUNTER RESET DRIVER
TO TELEPHONE COMPANY TRUNK LINE INTERCONNECT
NOISE FILTER
SCHMITT TRIGGER
PULSE DECADE COUNTER
4 BIT BINARY TO 1 OF 16 DEMULTIPLEXER
DISALLOWED NUMBER DETECTOR
TELEPHONE COMPANY TRUNK LINE INTERCONNECT UNIT
SYSTEM POWER ON
INHIBIT RESET
INHIBIT DECADE COUNTER
OFF HOOK DETECTOR
SYSTEM INHIBIT
INHIBIT DECADE DRIVER
DIGIT COUNTER

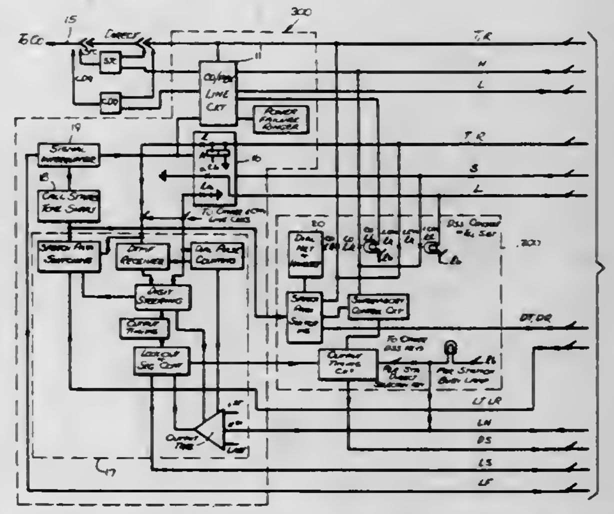
1. A combination of a telephone interconnecting means and a toll prohibiting module comprising:
- a telephone interconnect for providing pulses from said telephone;
- means for connecting said interconnect between said telephone and a central office trunk line;
- connection means between said interconnect and said toll prohibiting module;
- a relay within the circuit of said toll prohibiting module;
- detection means within said toll prohibiting module for determining when the telephone receiver is off the telephone instrument, connected within said module to activate the toll prohibiting function;
- means for providing power to said toll prohibiting module; means connected within said module to said connection means for counting the total of the respective numbers being dialed on the telephone;
- a separate means also connected within said module to said connection means from said total number counting means for counting the number of pulses from said telephone instrument which are being generated by the telephone in order to provide an indication of a discrete number being dialed; and,
- means to operate said relay to open a connection between said telephone instrument and said central office trunk in response to either a discrete number or a total of numbers from the telephone.

3,872,261
SWITCHING APPARATUS FOR USE IN A PAGING SYSTEM OF A KEY TELEPHONE SYSTEM
Tsuyoshi Shinoi, Kawasaki; Fumio Tsutsumi, Yokohama, both of Japan, and Stephen E. Kerman, Merrick, N.Y., assignors to Nippon Tsu Shin Kogyo K.K., Kawasaki-shi, Kanagawa-ken, Japan and TIE/Communications Inc., Stamford, Conn.
Filed Apr. 5, 1973, Ser. No. 348,130
Int. Cl. H04m *3/42*
U.S. Cl. 179—99 **6 Claims**



1. A switching circuit means for use in audible signal and intercom speech circuits of a key telephone system having a plurality of key telephone sets, each having an audible signal and an input terminal, an internal amplifier and a speaker; the switching circuit means comprising;
- an audio signal generating means having a first output signal connected to a first terminal means;
- a central office line circuit means having a second output signal connected to a second terminal means;
- an intercom line circuit means having a third output signal from the intercom speech circuits of the key telephone system connected to a third output terminal; and
- switching means connected between the three output terminal means and the input terminals of a preselected group of key telephone sets, the switching means disconnecting said audio signal generating means from said key telephone group in response to an output signal from one of said line circuit means and connecting the output of said line circuit means to said key telephone sets.

3,872,262
KEY TELEPHONE SYSTEM
Stephen Kerman, 1736 Poplar St., Merrick, N.Y. 11566
Filed Oct. 9, 1973, Ser. No. 404,694
Int. Cl. H04m *1/60*
U.S. Cl. 179—99 **1 Claim**



1. In a key telephone system comprising in combination a key service unit; a plurality of key telephone sets; at least one line circuit means for connecting said sets to an office line; at least one intercommunication line circuit means and intercommunication line circuit supervisory switching and control

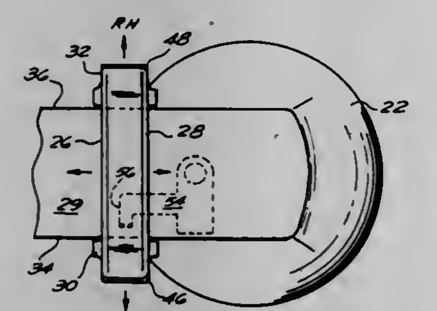
means, including register circuit means, for effecting interconnection of any one key telephone set in the system to another; and further wherein each of said key telephone sets incorporates a microphone and a loudspeaker; transmission network means; dial apparatus means; means for supplying outgoing voice representative signals generated by said microphone to said trasnsmission network means; means for supplying incoming voice representative signals, coupled to said transmission network, to said loudspeaker; and voice path switching circuit means for intercoupling said outgoing signal supplying means and said incoming signal supplying means to said transmission network and for maintaining said telephone set in its voice transmitting mode when said set is in the quiescent condition; the improvement wherein one of said key telephone sets serves all the other key telephone sets in the system as an operator attended station, said one key telephone set station additionally comprising circuit means, including a plurality of lamps, corresponding on a one-to-one basis to the plurality of other key telephone sets in the system, for indicating the status of each other key telephone set in the system; a like plurality of station selection key means and pairs of line conductor means, corresponding on a one-to-one basis to the plurality of other key telephone sets in the system, for interconnecting said operator attended station set to the plurality of other key telephone sets in the system; and means, responsive to the operation of a station selection key,

a. for automatically holding a line circuit means operatively connected to said attended station set,
b. for connecting the transmission network of said operator attended station set to the key telephone set corresponding to the operated selection key, over the corresponding pair of line conductors, and
c. for supplying a calling signal to said last mentioned key telephone set.

3,872,263
HAND-HELD DICTATE AND PLAYBACK INSTRUMENT

Leslie N. Wilder, New Rochelle, N.Y.; George L. Soltis, Shelton, Conn.; Theodore P. Nenninger, East Brunswick, N.J., and Anthony Ciaraldi, Stamford, Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,929
Int. Cl. G11b *19/16;* H01h *9/00*
U.S. Cl. 179—100.1 DR **9 Claims**



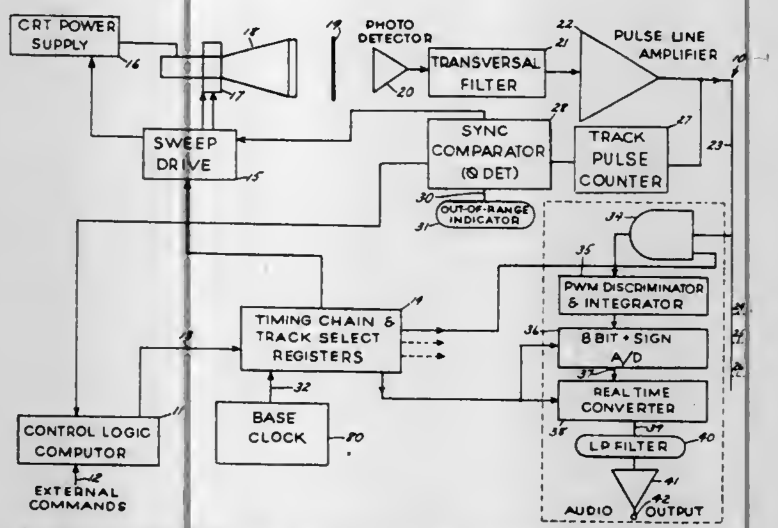
1. A hand-held dictating and playback instrument comprising:

a housing provided with microphone and speaker means,
switch elements mounted within said housing adapted to actuate associated dictation equipment to selectively place said dictation equipment in one of three operating modes,
switch means mounted on said housing to actuate said switch elements.
said switch means comprising a yoke member pivotally mounted on said housing and pivotable from a first position wherein said switch means actuates said switch elements to place said dictation equipment in a first operating mode through a second neutral position to a third position wherein said switch means actuates said switch elements to place said dictation equipment in a second operating mode,
said switch means further including a single actuating means provided with a contact segment on opposed sides of said housing with each said contact segment being slidably disposed with respect to said housing and said yoke member, each said contact segment being movable from a first neutral position to a second position wherein said switch means actuates said switch elements to place said dictation equipment in a third operating mode, and
wherein said yoke member comprises a generally U-shaped member, each of the legs of said U-shaped yoke including an aperture therethrough to receive said actuating means to pivotally connect said yoke to said housing.

3,872,264
AUDIO RESPONSE DEVICE WITH ORTHOGONAL SCAN OF MULTIPLE TRACKS ON PLAYBACK

Mitchell A. Cotter, Riverdale, N.Y., assignor to APM Corporation, Englewood, N.J.

Filed Nov. 1, 1972, Ser. No. 302,822
Int. Cl. G11b *7/02*
U.S. Cl. 179—100.3 B **3 Claims**

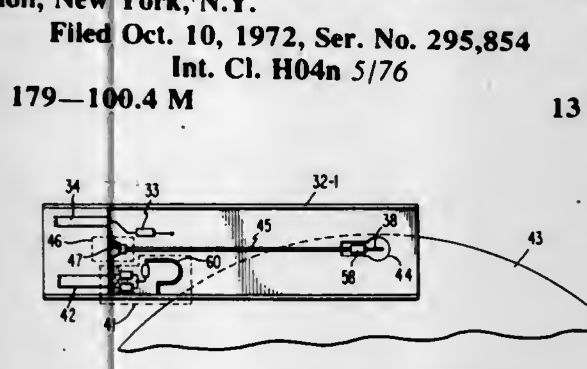


1. In a data storage and retrieval system, a data record including at least one elongated track, scanning means progressively orthogonally scanning said track and passing a radiant energy beam through energy-transmissive portions of said track, energy detector means disposed on an opposite side of said record, and pulse width modulation means receiving the output of said energy detector means; said track comprising a first undulating elongated energy-transmissive area, second and third elongated non-energy-transmissive areas bordering said first area, and a fourth rectilinear energy-transmissive area bordering one of said second and third areas; whereby orthogonal scanning of said track may create a pulse width modulated signal determined by the instantaneous orthogonal spacing between said first and fourth elongated areas.

3,872,265
VIDEO DISC TRANSMISSION LINE AND STYLUS RF RETURN SYSTEMS

Stephen Earl Hilliker, Morresville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,854
Int. Cl. H04n *5/76*
U.S. Cl. 179—100.4 M **13 Claims**



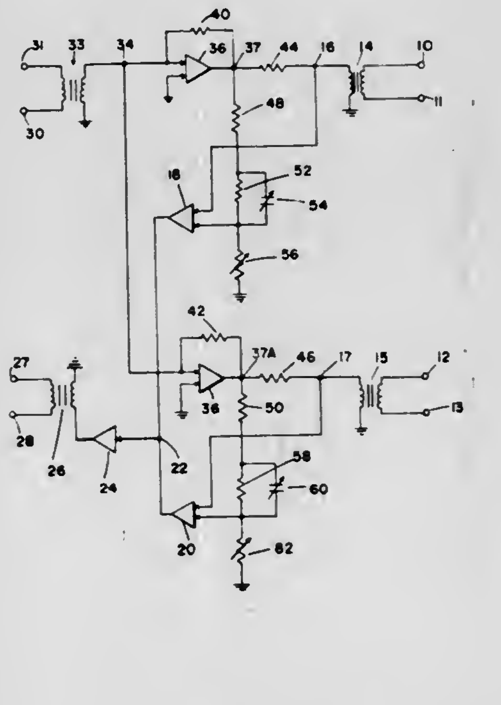
1. An information playback system for recovering information recorded on a record medium, said information playback system comprising:

pickup means for establishing a reactance subject to variations in accordance with said recorded information;
a conductive support housing;
an elongated conductive member having first and second ends and being enclosed within said conductive support housing throughout at least a major portion of its length, said first end being pivotally mounted within said support housing so as to permit relative motion between said conductive member and said enclosing support housing, and said second end being mechanically and electrically coupled to said pickup means so that said conductive member mechanically supports said pickup means in a manner permitting motion of said pickup means relative to said housing, and so that a transmission line formed due to the electrical relationship between said conductive member and said enclosing support housing is electrically connected to said pickup means in a manner establishing a tuned circuit which includes the reactance exhibited by said transmission line and the reactance established by said pickup means.

3,872,266
TELEPHONE MONITOR CIRCUIT

Vernon A. Baxter, Jr., Golden Valley, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Dec. 13, 1973, Ser. No. 424,367
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2 C **4 Claims**



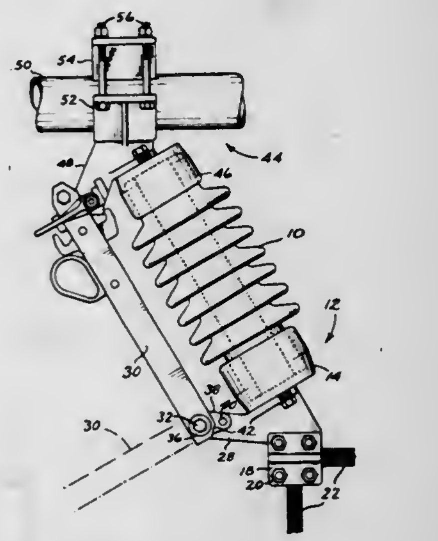
1. An electronic circuit for monitoring information carrying electrical lines with transmission and reception amplification comprising:

a first amplifying means having first and second opposite phased inputs;
a first coupling transformer between the information carrying lines and the first input to said first amplifying means; listening means connected to the output of said first amplifying means;
a second amplifying means with the input adapted to accept a transmission signal and the output connected through a resistance to said first coupling transformer; and
phase shifting means connected between the output of said second amplifying means and the second input to said first amplifying means so as to partially cancel out the signal from said second amplifying means fed back to the first amplifying means from the first coupling transformer.

3,872,267
ELECTRIC SWITCH

James A. Kerr, Rt. 4, Box 319C, Hillsboro, Oreg. 97123

Filed Oct. 9, 1973, Ser. No. 404,423
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **6 Claims**



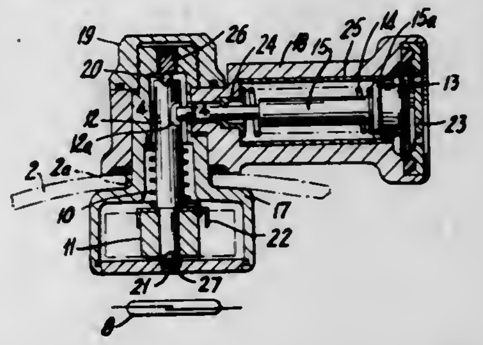
1. An electric switch, comprising:

a. an elongated electric insulator,
b. an electrically conductive infeed terminal on one end of the insulator,
c. an electrically conductive outfeed terminal on the opposite end of the insulator,
d. an elongated, electrically conductive switch arm connected pivotally to the outfeed terminal for movement between a switch-closing position engaging the infeed terminal and a switch-opening position disengaged from the infeed terminal,
e. the infeed terminal having a connector section arranged for releasable attachment to an infeed bus for supporting the switch by the bus with the switch arm movable in a plane disposed substantially parallel to the infeed bus, and
f. the outfeed terminal having a connector section arranged for releasable attachment of an outfeed conductor.

3,872,268
TIRE PRESSURE DETECTING SWITCH

Shigeki Hata, Saitama-ken, Japan, assignor to Kanto Seiki Company Limited, Omiya-shi, Saitama-ken, Japan

Filed Jan. 4, 1974, Ser. No. 430,697
Claims priority, application Japan, Jan. 20, 1973, 48-6151[U]
Int. Cl. H01h *35/24*
U.S. Cl. 200—61.22 **7 Claims**

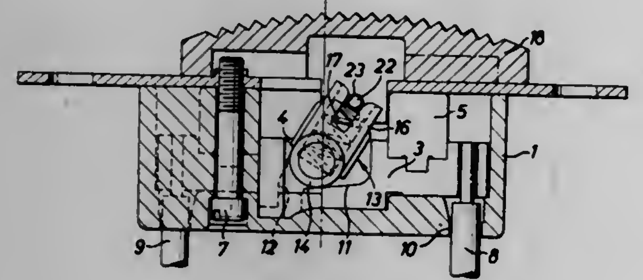


1. A tire pressure detecting device mounted on a vehicle wheel assembly including a rotatable wheel with a wheel rim carrying a tire and a stationary element supported on a wheel axle, comprising a revolving part secured to said rim for moving therewith along a circular path and a fixed part secured to said stationary element and disposed adjacent said circular path, said revolving part comprising a first housing portion extending through said wheel rim and a second housing por-

tion extending at an angle thereto at the side of said rim carrying said tire, said first and second housing portions being secured to and communicating with each other, a shaft member rotationally mounted in said first housing portion, and having an inner end portion projecting in the radial direction of said wheel, a magnet mounted on said inner end portion of said shaft member and producing a magnetic field, a spring means rotationally biasing said shaft member into an operative position, a movable member exposed on its one end to tire pressure and extending substantially tangential to said wheel rim and slidably guided in said second housing portion and being movable in response to a pressure drop in said tire, said movable member being engageable with said shaft member to lock said shaft member and said magnetic member in said inoperative position, said movable member being movable upon tire pressure drop to unlock the said shaft member to permit turning said magnetic member into said operative position under the action of said spring means, and a guide element received in said second housing for guiding said movable member and made of a material having a low coefficient of friction to insure an instantaneous response of said movable member to said tire pressure variations even under very high centrifugal forces, said fixed part comprising a switch element responsive to said magnetic field of said magnetic member while in said operative position, to produce a signal for a warning system.

3,872,269
ELECTRIC SWITCHES

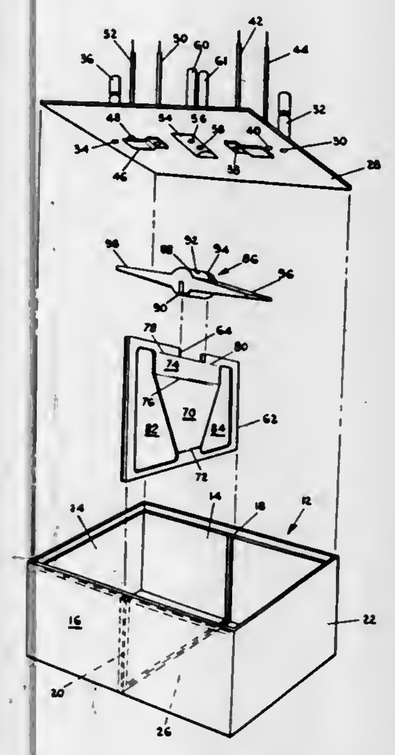
Hans Wernhard Schneider, Castle Works, High St., Old Woking, Surrey, England
Continuation of Ser. No. 315,498, Dec. 15, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,337
Claims priority, application United Kingdom, Dec. 22, 1971, 59560/71
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 AA **3 Claims**



1. An electric switch including a casing; a pair of fixed contacts mounted therein in longitudinally spaced relationship; a lever having a stem and mounted within said casing, said lever having a combined longitudinal rocking and sliding movement; a slot at one end of said stem; a moving contact in the form of a roller carried by said lever and in permanent rolling engagement with one of said fixed contacts and longitudinally movable as a result of combined rocking and sliding movement of said lever into engagement with the other fixed contact to bridge said contacts and complete an electrical circuit; a spring engaged with said stem and urging said roller into engagement with its associated fixed contact; a plate closing said casing; a longitudinally movable actuating slide coupled with said plate; a cross pin carried by said slide cooperating with said slot and locking said slide in coupled relative sliding relationship with respect to said cover, said spring acting against said cross pin, said slide being adapted to impart the rocking movement to said lever carrying said roller and at the same time compress said spring and to move said lever longitudinally through a dead center position and permit said spring to impart a quick longitudinal sliding and rocking movement to said lever and its associated roller and make or break the electrical circuit with a quick snap action.

3,872,270
PNEUMATIC FLIP-FLOP RELAY

Charles R. Bond, 2241 Boston, S.E., Grand Rapids, Mich. 49506
Filed Oct. 3, 1973, Ser. No. 403,208
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 P **25 Claims**

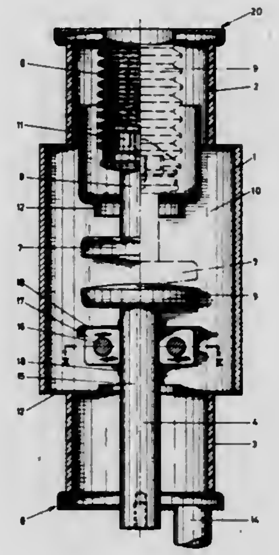


1. A bistable snap-action toggle relay comprising:
a sealed housing separated into compartments has been inserted by a diaphragm;
switch means coupled to the diaphragm and operated by buckling movement of said diaphragm;
means for applying a differential fluid pressure to opposite sides of said diaphragm to cause movement of said diaphragm between a position on one side of said housing and a position on the other side of said housing and vice versa;
said diaphragm comprising a relatively thin, stiff toggle member normally of flat planar configuration and means for resiliently buckling said toggle member laterally of the plane thereof when a force parallel to said plane is applied substantially perpendicular to an edge of said diaphragm; and
means for applying a force substantially perpendicular to said edge of said diaphragm and parallel to the plane thereof to buckle said toggle member to one side of said housing.

3,872,271
VACUUM CIRCUIT INTERRUPTOR INCLUDING A GETTERING DEVICE

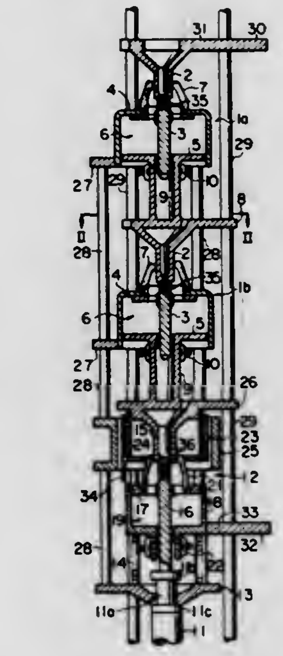
Jan Christiaan Clason, Hengelo, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands
Filed Oct. 17, 1973, Ser. No. 407,041
Claims priority, application Netherlands, Oct. 18, 1972, 7214103
Int. Cl. H01h *33/02*
U.S. Cl. 200—144 B **1 Claim**

1. A vacuum circuit interruptor comprising:
a vacuum tight housing;
a stationary rod;
stationary and movable contact members positioned within said vacuum tight housing, said stationary contact member being mounted on said stationary rod;
a gettering device arranged within said vacuum tight housing for absorbing any gases which may be released during operation of the circuit interruptor and may be introduced through leakage, in order to maintain the desired vacuum, said gettering device including an annular iron core arranged about said stationary rod;
transformer means having as its primary winding, said stationary rod and as its secondary winding, a plurality of metal sheets arranged around said annular iron core and transferring an electric current flow from the current interruptor through said primary winding to said secondary windings; and
gettering material being deposited as layers on said metal sheets so as to be heated by the electric current through said metal sheets, which act as said secondary windings.



3,872,272
CIRCUIT BREAKER

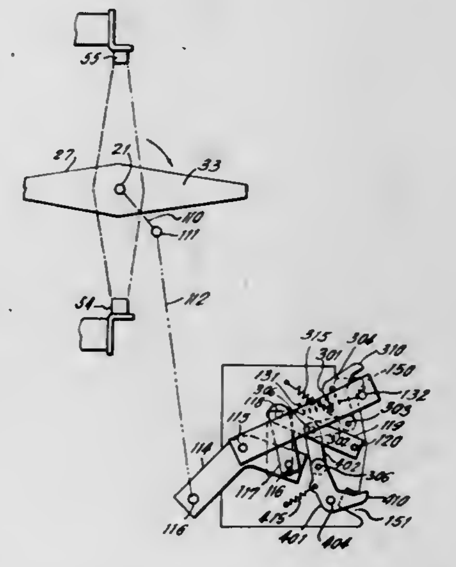
Yoshio Yoshioka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 20, 1973, Ser. No. 352,993
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **10 Claims**



1. A circuit breaker comprising:
at least two electrically series connected breaking units each comprising at least a pair of contactors performing arc-inducing breakage or detachment, compressor means for compressing an arc-extinguishing gas, and nozzle means for blowing a highly pressurized arc-extinguishing gas compressed by the compressor means against the arcs generated between the pair of contactors;
a single electromagnetic driving means including a primary coil and a shorting ring or shorting coil electromagnetically coupled to the primary coil;
current diverting means adapted to be operated by an external operating means in accordance with a breaking instruction for diverting a current to be broken into the electromagnetic driving means; and
connecting means for electrically insulatedly connecting the electromagnetic driving means and movable portions of the breaking units so that the moving portions of the breaking units can be driven.

3,872,273
SWITCHGEAR OPERATING MECHANISM OVERCENTER SPRING TOGGLE WITH LATCHED RESTRAINT

Philip C. Netzel, Milmont Park, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.
Filed Oct. 15, 1973, Ser. No. 406,473
Int. Cl. H01h *5/00*
U.S. Cl. 200—153 G **5 Claims**

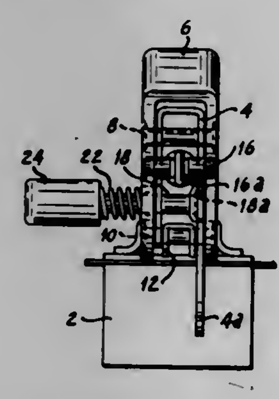


1. In switchgear having at least one movable contact and a complementary contact; operating mechanism for moving the movable contact into engagement with the complementary contact and out of engagement therewith;
said operating mechanism comprising:
an operating link connected to said movable contact and movable in one direction to cause said movable contact to engage said complementary contact and in the opposite direction to disengage the same;
a rotatable lever; a pivot for said lever; a first end of said lever being connected to said operating link;
a first toggle comprising a first toggle link connected at one end to the other end of said lever, a toggle pin for said toggle; said first toggle link being connected at its other end to said toggle pin; said first toggle having a second toggle link connected at one end to said toggle pin and pivoting stationarily at its other end;
an operating handle; said operating handle being connected at its inner end to and rotatable about the pivot of said rotatable lever;
a tension spring between the outer end of said operating handle and said toggle pin;
rotation of said operating handle to a position wherein the said spring extends between the outer end of said operating handle and the lever point on a line on one side of the toggle pin causing said first toggle to collapse in that direction and correspondingly rotate said rotatable lever thereby moving the operating link to operate the movable contact in one direction;
rotation of said operating handle to a position wherein said spring extends on the opposite side of said toggle pin thereafter causing collapse of said first toggle in the

opposite direction to operate the movable contact in an opposite direction;
and means for latching the said first toggle after it has moved in one direction to maintain the said toggle in that position;
and additional means operable by said handle when it has completed its movement in a direction to cause collapse of the toggle in an opposite direction, to release said latching means and permit collapse of said toggle in said opposite direction.

3,872,274
OFF LOCKING IN-LINE TRIGGER SWITCH

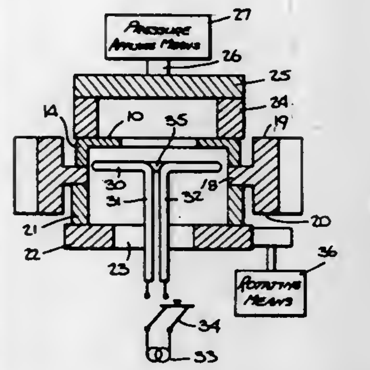
Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Division of Ser. No. 316,343, Dec. 18, 1972, Pat. No. 3,829,645. This application Mar. 5, 1974, Ser. No. 448,413
Int. Cl. H01h *3/20*
U.S. Cl. 200—157 **1 Claim**



1. A self-enclosed trigger switch for a portable electric tool affording intended operation of the tool but automatically locking it against accidental operation whenever the switch is released comprising:
an insulating housing for the switch mechanism;
a trigger mounted to said housing for limited reciprocal sliding movement between an "on" position wherein the switch is in operation and an "off" position wherein the switch is not in operation;
a frame mounting said trigger to the top of said housing;
a return spring normally biasing said trigger into its extended "off" position and being depressible into its "on" position;
and an automatically engaging off lock for said trigger comprising:
a locking recess in the left side of said trigger having a keyhole shaped first depth forming a locking slot and a larger second depth forming a clearance slot for release of the lock;
a spring-biased locking pin mounted on the left side of said frame for limited axial movement with the right end thereof extending into said recess and the left end thereof having a pushbutton that is accessible for depression by the right hand thumb of the user:
a symmetrical enlarged locking head on said right end of said locking pin disposed within said recess;
said recess having an opening extending up to the top of the trigger affording access for said enlarged locking head on assembly of the trigger switch;
said locking slot being keyhole shaped so as to have a narrow section just wide enough to receive the stem of said locking pin but not the enlarged head thereof and a wider mouth portion at the entrance to said narrow section for receiving said enlarged head whereby said enlarged head abuts both sides of side mouth to lock said trigger in its "off" position and said locking pin spring to move the stem of said pin adjacent the narrow section of said locking slot and said enlarged head into said clearance slot to allow movement of said trigger to "on" position;
and the part of said trigger defining the upper side of said locking slot being at least partly confined against said frame to strengthen said off lock.

3,872,275
FORGE WELDING WITH INDUCTION COIL HEATING

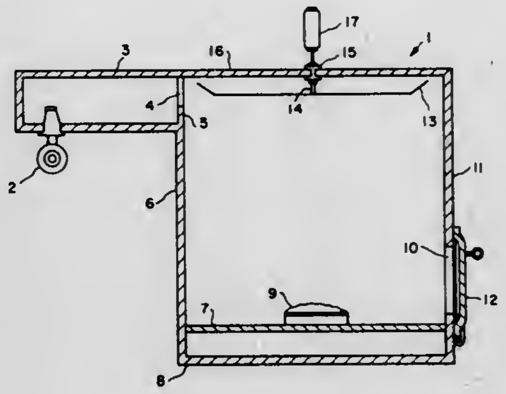
Wallace C. Rudd, Larchmont, N.Y., assignor to Thermatool Corp., Stamford, Conn.
Filed Dec. 12, 1973, Ser. No. 424,004
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.43 **14 Claims**

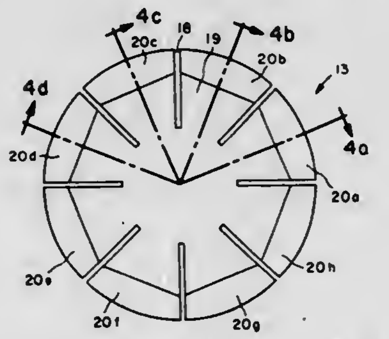


1. A method of forge welding together a first metal part at a surface thereof to a second metal part along a correspondingly shaped surface thereof at an elevated, forge welding temperature, each said surface extending around and being spaced from a predetermined point to form a closed, electrically conductive path having a pair of edges, one at one side of the path and the other at the other side of said path, the spacing between said edges on one said surface being substantially equal to the spacing between said edges on the other said surface and said surface of said first metal part being spaced from said point by substantially the same distance as said surface of said second metal part, at least one of said parts having metal extending from at least one edge of its said path in a direction away from said path, said direction being parallel to said surface of said last-mentioned one part, said method comprising placing said surface of one said part adjacent and facing said surface of the other said part to thereby provide a pair of facing surfaces; heating the metal at said facing surfaces to said forge welding temperature by inducing an alternating current in the metal at said facing surfaces with an induction coil closely adjacent said facing surfaces, said coil having a conductor extending at least partly around said point and having a shape in the circumferential direction around said point corresponding substantially to the shape in said circumferential direction of at least one said surface, the dimension of said conductor in said circumferential direction being the length thereof, the path of said current at the surface of said metal which is nearest said conductor having a predetermined width in a first direction substantially at right angles to said length dimension of said conductor and said conductor having a dimension in said first direction approximately equal to the desired dimension of said width of said path of the current flow in the metal to be heated to confine said current to a relatively narrow path in said last-mentioned metal, said current having a reference depth in said metal at said forge welding temperature at least equal to one-half the dimension, in a second direction substantially perpendicular to said first direction, of the metal intermediate said conductor and said edges of said facing surfaces which are farthest from said conductor; terminating said current when the metal at said facing surfaces reaches said forge welding temperature and while substantially all of said metal extending away from said edge of said surface of said first-mentioned one part is still at a lower temperature, said current being of a magnitude sufficient to so heat the metal at said facing surfaces to said forge welding temperature before a significant portion of said metal extending away from said last-mentioned edge reaches said forge welding temperature and being of a magnitude less than that which will cause the metal nearest said conductor to melt significantly during the time of flow of said current; and pressing said parts together at said surfaces with forge welding pressure at least when said metal at said facing surfaces has reached said forge welding temperature.

3,872,276
INCLUDING A SEMIRESONANT SLOTTED MODE STIRRER

Richard P. Corcoran, Hempstead; Alfred E. Hirtler, West Babylon, and Robert F. Mittel, Levittown, all of N.Y., assignors to North America Philips Corporation, New York, N.Y.
Filed Mar. 9, 1973, Ser. No. 339,539
Int. Cl. H05b *9/06*
U.S. 219—10.55 H **16 Claims**



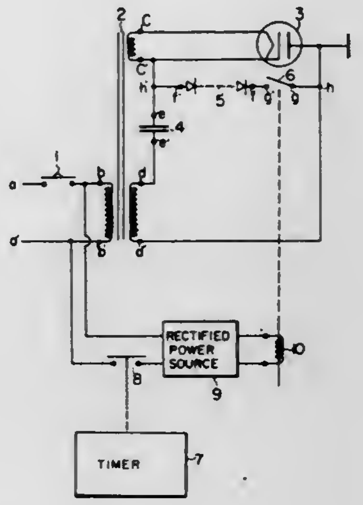


1. A microwave oven comprising a substantially closed metallic cavity adapted to hold an energy absorbing load, an aperture in a wall of said oven for coupling microwave energy into the oven cavity, means for generating and coupling microwave energy to said aperture, a field stirrer rotatably mounted in the cavity and comprising a thin metal disc having a plurality of radial slots arranged about its periphery to form a plurality of segments with the outer ends of at least some of said segments being bent out of the plane of the disc whereby said slots and segments form semiresonant elements which couple to the R.F. fields in the oven and reradiate the energy in various directions, and means for rotating said disc so that the bent ends pass near said aperture to intercept and reflect the microwave energy entering through the aperture so as to periodically change the mode pattern within the oven cavity.

3,872,277
SWITCH IN HALF-WAVE RECTIFIER CIRCUIT

Tokihide Nlu, Takatsuki, Japan, assignor to Matsushita Electric Industrial., Ltd., Osaka, Japan
Filed Aug. 10, 1973, Ser. No. 387,244
Claims priority, application Japan, Aug. 11, 1972, 47-80513; Aug. 12, 1972, 47-80953
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 B **5 Claims**

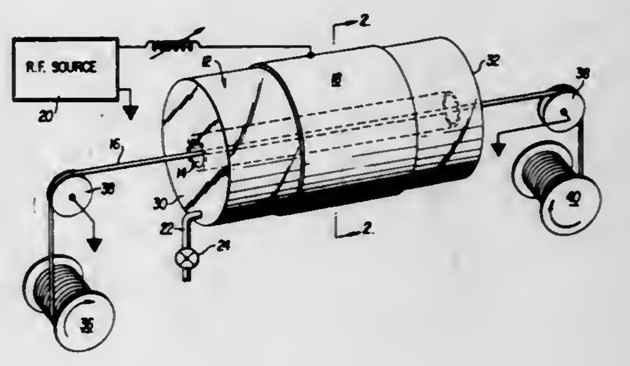
1. In an electronic oven, a circuit comprising:
a. a transformer having primary and secondary windings, said primary winding being coupled to a power source,
b. a magnetron including a heater, a cathode and an anode, said anode being connected to a first terminal of the secondary winding of said transformer,
c. a capacitor connected between a second terminal of said secondary winding and the cathode of said magnetron,
d. a rectifier having an anode and a cathode,
e. a high voltage-control switch connected in series with said rectifier, said series-connected high voltage-control switch and rectifier being connected across the cathode and anode of said magnetron, the polarity of said rectifier being such that current is conducted from the connection of said series-connected circuit to the cathode of said magnetron to the connection of said circuit to the anode of said magnetron, and



f. means operating said high voltage-control switch to open said rectifier circuit during a first predetermined time interval and close said rectifier circuit during a second predetermined time interval while said electronic oven is being used for cooking, said magnetron oscillating when said voltage-control switch is closed and not oscillating when said voltage-control switch is open.

3,872,278
METHOD FOR HEAT TREATMENT OF SUBSTRATES

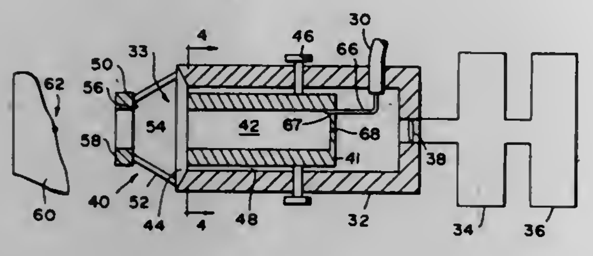
Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.
Division of Ser. No. 185,014, Sept. 30, 1971, Pat. No. 3,780,255. This application Aug. 20, 1973, Ser. No. 389,502
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **6 Claims**



1. A method for heat treating substrates comprising the steps of:
providing electrically insulative means defining a gas impervious envelope having a central passage extending therethrough;
passing the substrate through said central passage to thereby create relative movement between the substrate and said central passage; and,
generating a gaseous plasma within said envelope without generating a plasma in said central passage, said substrate being heated at least indirectly by said plasma.

3,872,279
LASER-RADIO FREQUENCY ENERGY BEAM SYSTEM

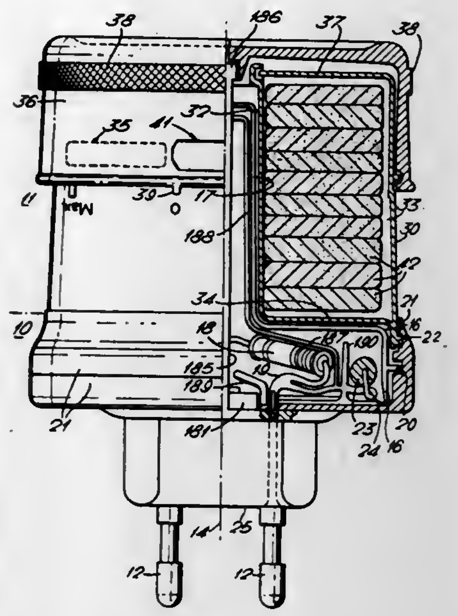
Thomas E. Fairbairn, Westland, Mich., assignor to Sirius Corporation, Toledo, Ohio
Filed Oct. 24, 1973, Ser. No. 409,167
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **6 Claims**



1. A coherent laser-radio frequency energy beam system for generating a high temperature beam and for directing the beam at a workpiece said system adapted to be used with a supply of low pressure inert gas; said system comprising:
a radio-frequency generator including a tank coil formed of a hollow, electrically conductive tube, both ends of said tube being electrically and mechanically coupled to said generator,
said inert gas being introduced into a maximum current-low voltage point of said tank coil,
said generator being for producing a single frequency coherent sine wave energy beam;
an electrically conductive nozzle having an opening at one end and an outlet orifice at said other end;
a hollow outlet tube connecting a maximum voltage-low current point of said tank coil with the interior of said nozzle;
means for generating a laser beam and for directing the laser beam into said nozzle opening;
hollow electrode means centrally mounted within said nozzle and being radially spaced-apart therefrom to define an annular gap therebetween;
said electrode for channeling a laser beam and the low pressure inert gas; said laser beam being directed from said nozzle opening through the hollow portion of said electrode means;
means for reflecting said laser beam from the hollow portion of said electrode means and for focusing said laser beam on said workpiece; and
a continuous fluid path being defined from said supply of inert gas, through said tank coil, said outlet tube, said electrode means and said annular gap;
whereby upon the application of said sine wave to said electrode means, the introduction of said inert gas into said fluid path, and the generation of said laser beam, a high temperature coherent electromagnetic energy beam is emitted from said electrode means;
said coherent electromagnetic energy beam including a laser beam portion and a R.F. energy beam emitted from said electrode means and having an annular sheath of said inert gas for surrounding and focusing said beam and having an inner gas stream for conducting the electromagnetic energy to the workpiece.

3,872,280
DEVICE FOR VAPORIZING SUBSTANCES

Cornelis Jan Van Dalen, Doorn, Netherlands, assignor to Intergadgets AG, Zug, Switzerland
Filed Apr. 25, 1973, Ser. No. 354,231
Claims priority, application Switzerland, May 2, 1972, 6529/72; May 16, 1972, 7266/72; June 22, 1972, 9396/72
Int. Cl. F22b *1/28*
U.S. Cl. 219—271 **31 Claims**



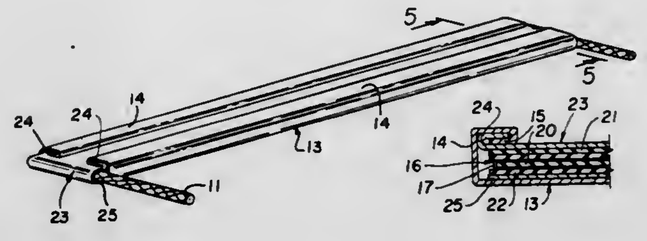
1. An electrically heated vaporizer comprising
1. a base having means for connection to an electrical power supply, the base including
a. a broad lower portion and a narrower elongated upper portion, the lower and upper portions constituting an enclosed housing, and
b. an electrical resistance heating means mounted in the enclosed housing and connected to the connection means,
2. an annular container and having an upper end and a lower end removably mounted on the base, the container having an inner and an outer wall defining therebetween a closed interior annular chamber extending substantially the length of the container,
a. the inner wall of the container fitting over the upper portion of the base,
b. annular carrier means carrying a substance to be vaporized arranged in the interior annular chamber of the container, and
c. a bell-shaped rotary member mounted on the upper end of the container,
d. the upper end of the outer wall of the container defining outlet port means for the substance vaporized by electrical heating and the rotary member defining corresponding port means arranged to be moved into register with the port means in the container wall by rotation of the rotary member whereby the latter port means may be gradually opened and closed upon said rotation.

3,872,281
BAND TYPE ELECTRIC HEATERS

John W. Krieg; Alfred Gaudio, and Victor F. Borek, all of 3575 Lawson Blvd., Oceanside, N.Y. 11572
Filed June 5, 1974, Ser. No. 476,574
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 **4 Claims**

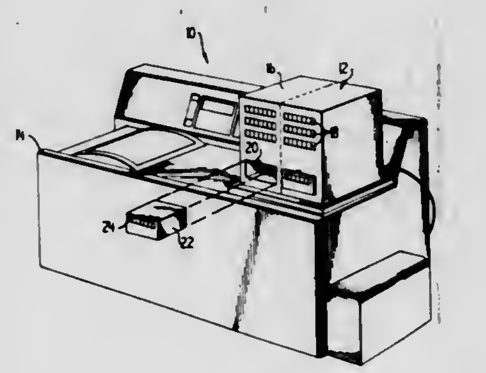
1. A band type electric heater comprising a heating unit having a generally flat elongated heating element with electrical leads means thereon, a first dielectric member abutting one side of said heating element, a second dielectric member abutting the opposite side of said heating element, a metallic heat conducting base member abutting said first dielectric

member, the opposite edges of said base member being folded in a 180° bend, a metallic heat conducting pressure band means abutting said second dielectric member, the opposite edges of said pressure band means being positioned within the folded edges of said base member and the thus interleaved edges of said base member and said pressure band means being folded back into abutment with the outer surface of said pressure band means whereby said base member and said pressure band means are interlocked along their opposite edges.



3,872,282
COPY MACHINE RECORD SYSTEM FOR COST CONTROL

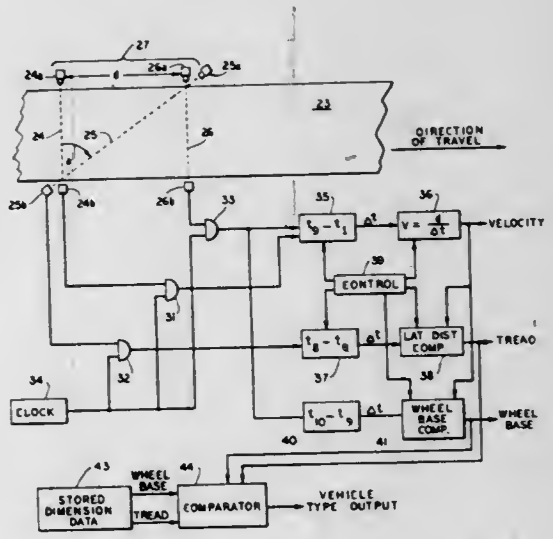
John R. Long, 7307 River Hill Rd., Oxon Hill, Md. 20021
Filed Nov. 8, 1973, Ser. No. 413,871
Int. Cl. B41l *39/02;* **G07c** *3/10*
U.S. Cl. 235—925 B **4 Claims**



1. In an accounting device used for allocating the cost of use of machines such as copying machines, computers, machine tools, printing presses, self-service gasoline pumps and the like to respective authorized users thereof, the combination comprising:
a housing;
a plurality of counters within said housing, each counter being associated with a different respective authorized user of the machine for storing a quantity which is a function of the cost of operating the machine by that authorized user;
a source of electrical power for powering said machine;
an electrical interlock disposed between said source of power and said machine for preventing use of said machine by unauthorized users;
enabling means for selectively defeating said electrical interlock to permit application of electrical power from said power source to said machine, said enabling means being actuatable by only authorized users of said machines;
at least one receptacle disposed in said housing, said one or more receptacles being adapted to receive said enabling means, the number of said receptacles being less than the number of counters disposed within said housing;
a source of electrical signals which are a function of the cost of operating said machine;
means coupled between said source of electrical signals and said plurality of electrical counters for selectively coupling said source of electrical signals which are a function of the cost of using said machine to the respective counter associated with a particular authorized user of the machine when that authorized user inserts said enabling means into said receptacle whereby said plurality of counters allocate the cost of operation of said machine on an authorized user basis;
said enabling means and said means coupled between said source of electrical signals comprising in part:
a plurality of portable cassettes at least equal in number to the number of said counters;
each cassette having a counter disposed therein; and
each of said counters being selectively connectable to said source of electrical pulses upon insertion of a different one of said cassettes into said receptacle.

3,872,283
VEHICLE IDENTIFICATION METHOD AND APPARATUS

Gerald R. Smith, and Oscar Jerome Brittingham, III, both of Atlanta, Ga., assignors to The Cadre Corporation, Atlanta, Ga.
Filed July 13, 1973, Ser. No. 378,988
Int. Cl. G06f *15/50;* **G08g** *1/015*
U.S. Cl. 235—150.2 **14 Claims**



1. Apparatus for determining the position of a vehicle as the vehicle moves along a path, comprising:
first means positioned with respect to the path for providing a first signal corresponding to the time required for the vehicle to move a predetermined distance along the path;
second means positioned with respect to the path to provide a second signal corresponding to the time required to travel between a first location normal to the direction of travel on the path and an intersection of a second location diagonal to the path; and
computing means connected to receive said first signal and said second signal and operative to provide a third signal as a function of the ratio which the second signal bears to the first signal, and which is thus a function of the lateral position of the intersection of the second location.

3,872,284

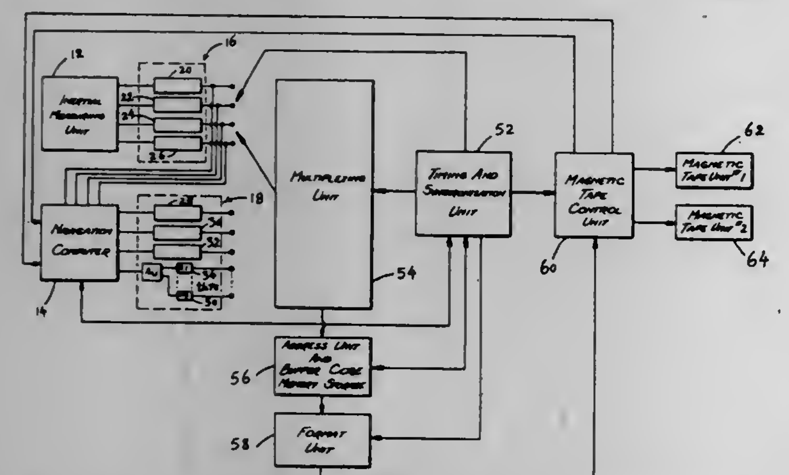
SHIPS INERTIAL NAVIGATION STORAGE AND RETRIEVAL SYSTEM (SINSARS)

Herbert L. Seligman, Brooklyn; Marvin Schwartz, Queens, and Warren Diamond, New York, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 18, 1972, Ser. No. 289,920

Int. Cl. G01c *21/20;* **G06f** *15/50*

U.S. Cl. 235—150.27 **2 Claims**



1. A ships inertial navigation storage and retrieval system comprising:

an inertial measuring unit;

a first plurality of buffer registers, said first plurality registers being connected to the output of said inertial measuring unit;

a navigation computer, said computer being connected to said inertial measuring unit for transferring inertial information from said inertial measuring unit to said navigation computer via said first plurality of buffer registers and said navigation computer having the capability of different rates of information processing and processing velocity, depth, and position information;

a second plurality of buffer registers, said second plurality of registers being connected to said navigation computer for transferring processed navigation information from said navigation computer to said second plurality of buffer registers;

a multiplexing unit, said multiplexing unit being connected to said first plurality and to said second plurality of buffer registers;

a timing and synchronization unit connected to said multiplexing unit and said first plurality and second plurality of buffer registers, and being interconnected to said navigation computer;

a memory unit connected to said multiplexing unit and interconnected to said timing and synchronization unit;

a magnetic tape control unit connected to said navigation computer, said memory unit, and said timing and synchronization unit; and

a plurality of magnetic tape units connected to said magnetic tape control unit.

3,872,285

CONTROL SYSTEM FOR SENSING THE VIBRATION AND LATERAL FORCE ON A CUTTING TOOL

Lanson Y. Shum, Delmont; Leon J. Sienkiewicz, Export, and Theodore Gogniat, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 31, 1974, Ser. No. 475,235

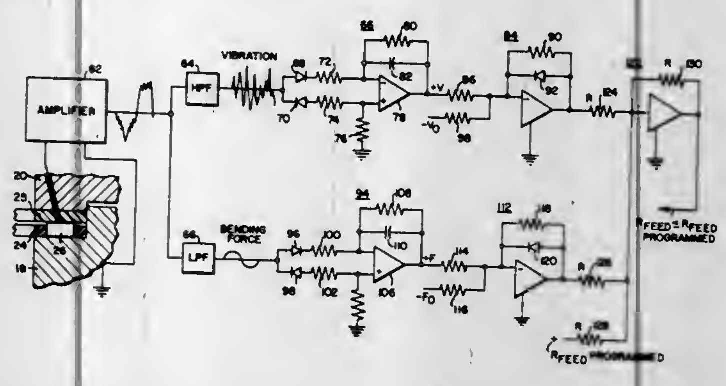
Int. Cl. B23g *11/04;* **G05b** *11/10*

U.S. Cl. 235—151.11 **5 Claims**

1. A control system for sensing the vibration and lateral force on a cutting tool supported in a chuck mounted on a machine comprising:

transducer means, mounted in proximity to said cutting tool, in response to mechanical force to produce electrical signals;

means coupled to said transducer means for separating said electrical signals into vibration and force component signals;



means for summing said vibration and force components with a programmed feed rate reference signal to produce a summed adaptive control signal which is continuously modulated in accordance with the instantaneous vibration and force experienced by the cutting tool.

3,872,286

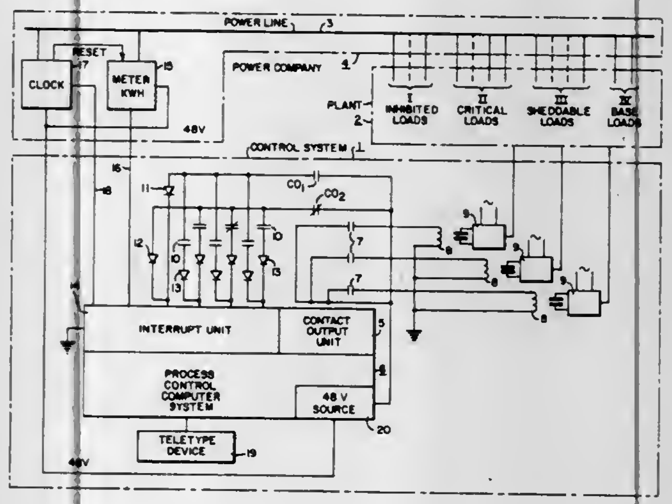
CONTROL SYSTEM AND METHOD FOR LIMITING POWER DEMAND OF AN INDUSTRIAL PLANT

Richard E. J. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1973, Ser. No. 406,067

Int. Cl. G06f *15/06;* **G05b** *15/00*

U.S. Cl. 235—151.21 **3 Claims**



1. In a control system for holding to a demand limit at the end of a billing period the power demand of an industrial plant having a plurality of interruptible loads, including means for providing an indication of power consumption of said loads during a billing period; means responsive to said means for providing an indication of power consumption for predicting a demand at the end of said billing period; means responsive to said demand predicting means for providing a demand error relative to said demand limit; means for selecting a suitable amount of power; comparator means responsive to said demand error providing means and to said power selecting means for establishing a residual error relative to said demand limit; and means responsive to the output of said comparator means for load control; the combination of:

means for setting switching constraints to at least part of said loads thereby to define among said interruptible loads and at times during said billing period, loads of controllable status and loads of non-controllable status;

said load control means including means for switching a load of a switchable amount of power in response to the sign of the output of said comparator means;

means for indicating the switching status of said loads at anytime during said billing period;

said power selecting means including priority means operative with a priority list of loads of controllable status and in accordance with the output of said switching status indicating means;

said power selecting means being operative in response to said residual error during successive decision periods within said billing period to provide a switchable amount of power from said priority list;

said switching means being operative in response to said power selecting means during such said decision period and operative in response to said constraint setting means before such said decision period; and,

wherein said demand predicting means is responsive to operation of said constraint setting means before any such said decision period.

3,872,287

METHOD OF, AND APPARATUS FOR, DETERMINING RADIATION ENERGY DISTRIBUTIONS

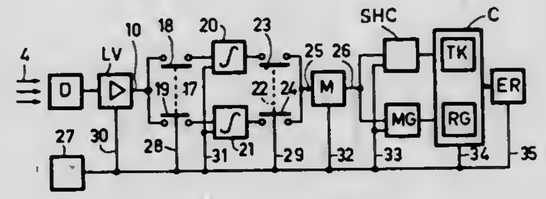
Henriecus Koeman, Amsterdam, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed July 26, 1972, Ser. No. 275,320

Claims priority, application Netherlands, July 30, 1971, 7110516

Int. Cl. G01t *1/15;* **G06g** *7/18*

U.S. Cl. 235—151.31 **7 Claims**



1. A method of measuring the individual energies of radiation quanta, comprising the steps of:

converting the radiation quanta into electrical current pulses;

integrating the current pulses to produce a stepped waveform, the step heights of which are a measure of the energies of the radiation quanta;

detecting the occurrences of steps in the stepped waveform;

at each detected step occurrence, integrating the stepped waveform over a time period preceding the step occurrence to form a first integral value;

integrating the stepped waveform over an equal time period following the step occurrence to form a second integral value; and

subtracting the first integral value from the second integral value,

whereby the differences between the first and second integral values are a measure of the individual energies of the radiation quanta.

3,872,288

DUAL DISTANCE CALCULATING AND DISPLAY APPARATUS

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 194,401, Nov. 1, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,604

Int. Cl. H03k *21/00;* **G06f** *7/52*

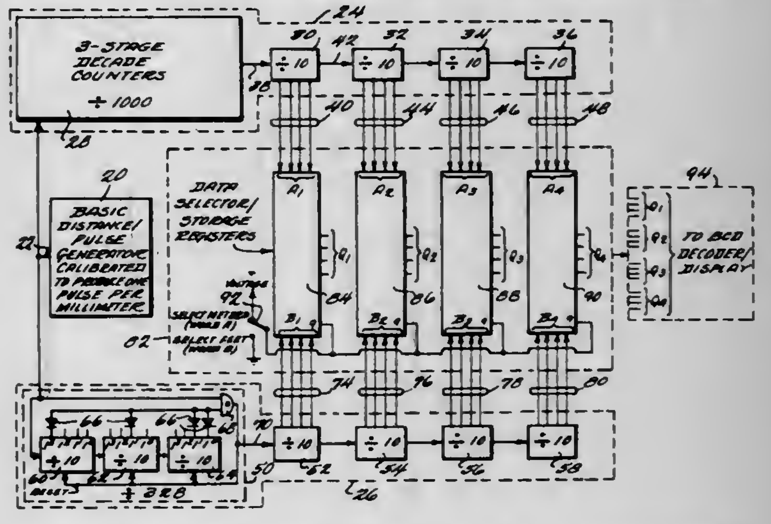
U.S. Cl. 235—151.32 **4 Claims**

1. A distance measuring device for simultaneously processing electrical distance pulses representing predetermined increments of measured distance in a plurality of processing circuits and to thereby produce a plurality of selectable outputs representing accumulated measured distance in terms of a desired selected unit of distance measure, said device comprising:

distance pulse generator means calibrated to produce said electrical distance pulses in a predetermined proportion to a measured distance,

first computation means connected to receive and process said distance pulses and to provide a first calculated digital output representing the accumulated measured distance in terms of a first predetermined unit of distance measure,

second computation means also connected to receive and process said distance pulses and to provide a second calculated digital output representing accumulated measured distance in terms of a second predetermined unit of


8-STAGE DECADE COUNTERS ÷1000
24
20
22
BASIC DISTANCE PULSE GENERATOR CALIBRATED
DATA SELECTOR/STORAGE REGISTERS
÷10
TO BCD DECODER/DISPLAY
94
82
÷16
26

distance measure which differs from said first unit of measure by other than a factor of ten, and

selection means connected to receive the calculated digital outputs of both said first computation means and said second computation means for selectively providing a desired selected one calculated digital output representing accumulated measured distance in terms of one of said first predetermined unit of distance measure and said second predetermined unit of distance measure, and

decoding and display means connected to receive said selected one calculated digital output and to decode and visually display said selected output.

3,872,289

DEVICE FOR FEEDING OUT DATA WITH CLASSIFYING FUNCTION

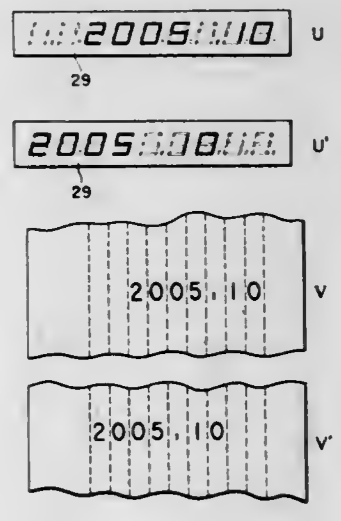
Tsuyoshi Kawanabe, Yokohama, and Minoru Machida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,588

Claims priority, application Japan, May 22, 1972, 47-51094

Int. Cl. G06k *15/00*

U.S. Cl. 235—152 **6 Claims**



1. An output device for a calculator for classifying and feeding out data comprising:

- a key board including data entry keys and instruction keys for entering instruction entry signals;
- operating means for executing an operation in accordance with the data entered by the entry keys and the instruction entered by the instruction keys;
- data storing means for storing the data entered by the entry keys and operational result produced by the operating means;
- output means having a predetermined number of output positions for feeding out the data in the storing means;
- discriminator means for discriminating a most significant digit designating signal by which the instruction signal entered by the instruction keys designates to output the data in the storing means so that the most significant digit of the data is in alignment with a first specified digit of the output digits of the output means and a least significant digit designating signal by which the instruction signal entered by the instruction keys designates to output the data in the storing means so that the least significant digit of the data is in alignment with a second specified digit of the output digits of the output means; and
- means for supplying to the output means the data in the storing means aligning the most significant digit of the data with the first specified digit of the output digits of the output means when the discriminator means discriminates the most significant digit designating signal and for supplying to the output means the data in the storing means aligning the least significant digit of the data with the second specified digit of the output digits of the output means when the discriminator means discriminates the least significant digit designating signal.

3,872,290

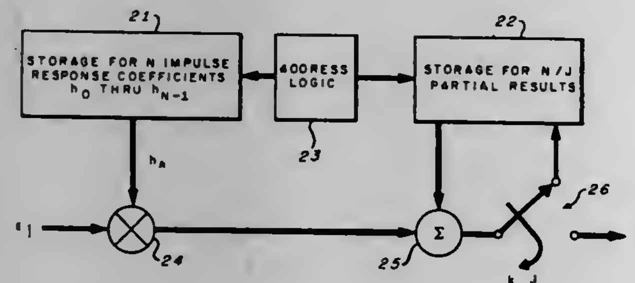
FINITE IMPULSE RESPONSE DIGITAL FILTER WITH REDUCED STORAGE

Arthur W. Crooke, Concord, and Paul H. Schottler, Acton, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,078

Int. Cl. G06f *15/34*

U.S. Cl. 235—152 **6 Claims**


21
STORAGE FOR N IMPULSE RESPONSE COEFFICIENTS h0 THRU hN-1
ADDRESS LOGIC
22
STORAGE FOR N/J PARTIAL RESULTS
23
hn
26
24
Σ
25
k J

1. A digital filter comprising
- input means for receiving input digital signals representative of sequential samples of an analog waveform to be filtered,
- first storage means for storing digital samples of the impulse response of said filter,
- convolution means coupled to said input means and said first storage means for computing the discrete partial convolution of each current input sample with respect to said impulse response samples,
- second storage means included in said convolution means for simultaneously storing a plurality of the results of said partial convolution computations, and
- output means coupled to said second storage means for providing output digital signals representative of those of said plurality of partial convolution results completed by inclusion of a current input sample, thereby providing said output digital signals representative of said filtered analog waveform.

3,872,291

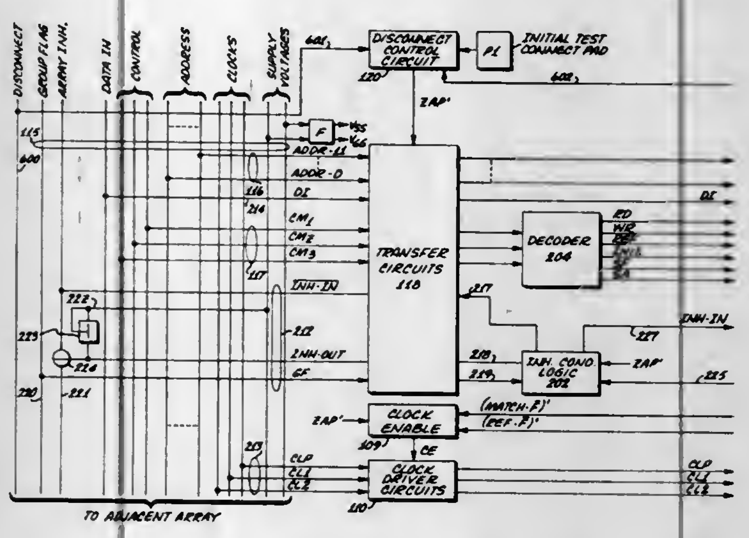
FIELD REPAIRABLE MEMORY SUBSYSTEM

John Carpenter Hunter, II, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 26, 1974, Ser. No. 454,880

Int. Cl. G11c *29/00;* **G06f** *11/00*

U.S. Cl. 235—153 AK **8 Claims**



1. A repairable store having connected thereto, from an external source, means for transmitting an address signal, means for transmitting a data signal, means for transmitting control signals, means for transmitting a disconnect signal, and adapted to receive address and control signals from said external source and to transfer data signals to and from said external source, said store comprising a plurality of basic units of store, each one of said basic units comprising:
- a bus portion including at least one address signal line, a data signal line, a control signal line, and a disconnect signal line, said bus portion interconnecting said plurality of basic units;
- a first means for storing said data signals;
- a second means for storing an address;
- third means connected to said control signal line and responsive to one of said control signals for storing at least one status signal;
- means responsive to said third storage means for selectively enabling said second storage means to store a unique address transmitted over said address signal line;
- means for controlling the transfer of data signals between said data signal line and said first storage means;
- first comparison means responsive to a comparison between address signals received over said at least one address signal line and said stored address for generating a match signal;
- second comparison means responsive to said match signal and a different one of said control signals for actuating said controlling means;
- second means for connecting said at least one address signal line to said first comparison means, for connecting said data signal line to said first storage means, and for connecting said control signal line to said third storage means and said second comparison means; and
- means for disabling said second connecting means in response to said disconnect signal and said match signal to thereby disconnect said one basic unit of store from said signal bus.

3,872,292

SONIC MEANS FOR DETECTING COMPRESSOR STALL

William H. Dawson, Jr., Waldwick, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

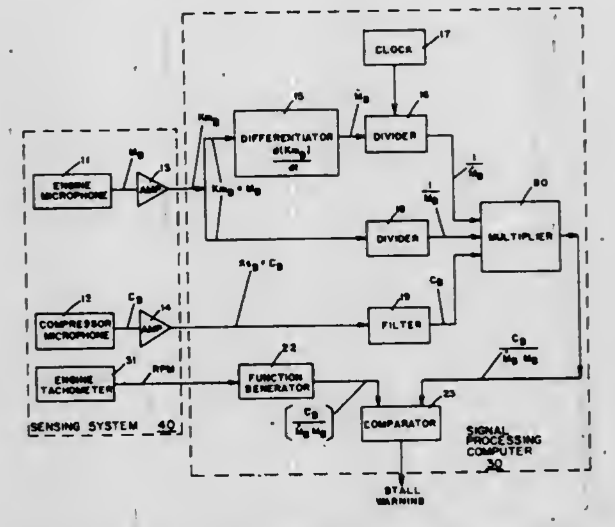
Filed July 26, 1973, Ser. No. 382,806

Int. Cl. G06g *7/70*

U.S. Cl. 235—151.3 **14 Claims**

1. A condition detection system for rotating machinery comprising:

- first and second sonic detectors located at discrete and separate locations on the machinery for generating respective first and second signals;
- a speed detector for generating a third signal indicative of the rotational speed of the machinery; and



- computer means connected to receive said first, second and third signals for producing an output signal indicative of the condition.

3,872,293

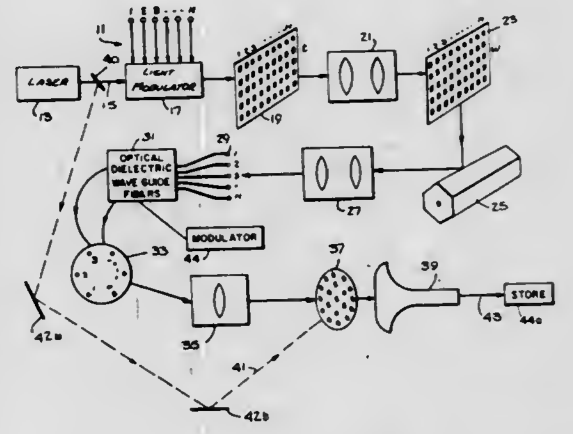
MULTI-DIMENSIONAL FOURIER TRANSFORM OPTICAL PROCESSOR

Eugene L. Green, New London, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 216,030, Jan. 7, 1972, abandoned. This application July 30, 1973, Ser. No. 384,151

Int. Cl. G06g *7/19, 9/00*

U.S. Cl. 235—181 **14 Claims**



1. A multi-dimensional optical processor for processing a time sequence of data signals from a two-dimensional input comprising:
- means for converting said data signals to light signals by modulating the amplitude and phase of a beam of light with said data signals, thus forming a modulated light beam;
- first optical means for performing an integral transform on the light signals of said modulated light beam, obtaining an output of said first optical means;
- means for re-mapping the output of said first optical means, preserving optical phase and amplitude thereof, thus obtaining re-mapped signals;
- second optical means for integral transforming said re-mapped signals, obtaining an output of said second optical means; and
- means for detecting coherently and storing the output of said second optical means.

3,872,294

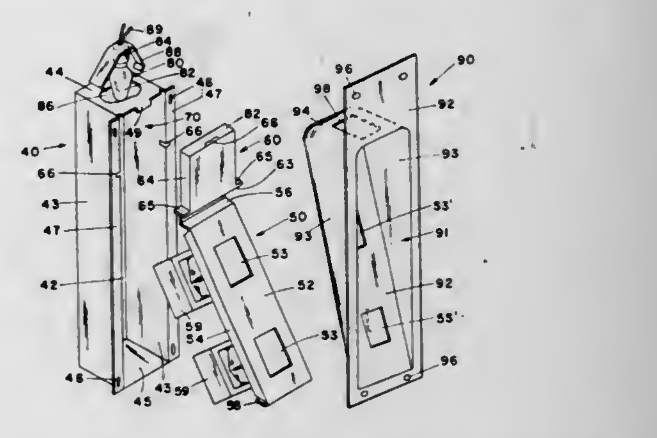
HOSPITAL BED SERVICE UNIT WITH COMBINATION NIGHT LIGHT/SWITCH LIGHT ASSEMBLY

Patrick J. O'Toole, Wisconsin Rapids, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.

Filed July 30, 1973, Ser. No. 383,820

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 S **6 Claims**



1. In combination with a hospital service unit having a leading edge with a recess therein adapted for hanging on the wall of a hospital room proximate a hospital bed, a night light and switch light assembly mounted on said leading edge of said hospital service unit, said light assembly comprising:
- a housing including a plurality of wall members including a top, bottom, and a back wall defining an open front enclosure, said housing being mounted vertically along its length within said recess in said service unit;
- a switch panel mounted in said housing, said panel being recessed behind said leading edge of said unit, one end of said panel being fixed to said back wall a distance spaced from said top wall of said housing, the other end of said panel being fixed to said bottom wall at said open front of said housing such that said panel is angularly disposed in said housing;
- a cover for said open front, said cover extending downwardly from said top wall a distance generally corresponding to the distance between said one end of said panel and said top wall, said cover, said back wall, and said top wall defining a chamber in said housing having an opening which opens downwardly along said panel and through said open front of said housing;
- lighting means in said chamber, said lighting means directing light through said opening in said chamber and over said switch panel to illuminate same and downwardly to provide night lighting for the hospital room; and
- at least one switch means mounted on said recessed panel for controlling the operation of lights or other technical facilities on said unit, said switch means being located completely behind said leading edge of said unit for protection thereby and illuminatiaon by said lighting means.

3,872,295

APPARATUS FOR INSPECTING CONFINED AREAS ADJACENT THE FLOOR

William B. Clancy, 5606 Rolling Ridge Dr. East, San Antonio, Tex. 78228

Continuation-in-part of Ser. No. 336,232, Feb. 27, 1973, Pat. No. 3,816,738. This application May 3, 1974, Ser. No. 466,532

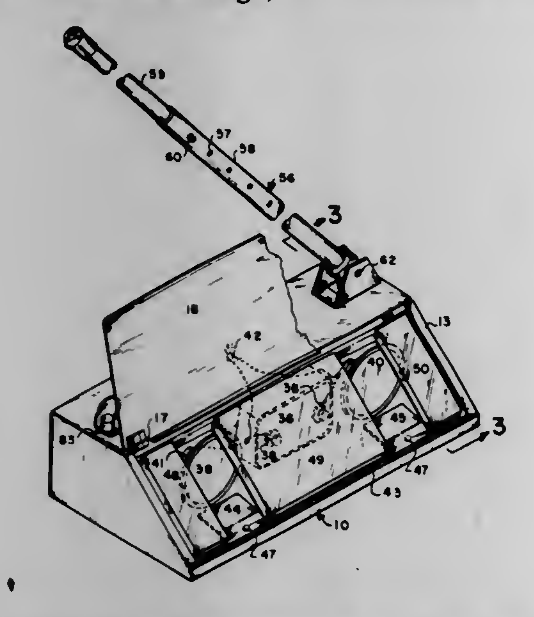
Int. Cl. F21l *1/00*

U.S. Cl. 240—2.18 **5 Claims**

1. An apparatus for inspecting confined areas adjacent the floor comprising:
   a. an outer case having a first end and a second end,
   b. a floor plate comprising the lower extremity of said outer case,
   c. multiple casters recessed in said floor plate, said casters adapted to roll along a surface supporting said floor plate adjacent the surface,

d. a tiltable mirror means flexibly supported at substantially a 45° angle on said floor plate,

e. a tilt linkage secured to said mirror means adapted to tilt said mirror means responsive to a tensioning or releasing of tension of said tilt linkage,



f. a rotatable control handle mounted on said outer case, and

g. a tilt windlass attached to said control handle and to said tilt linkage, said tilt windlass tensioning or relaxing tension of said tilt linkage responsible to rotate said control handle.

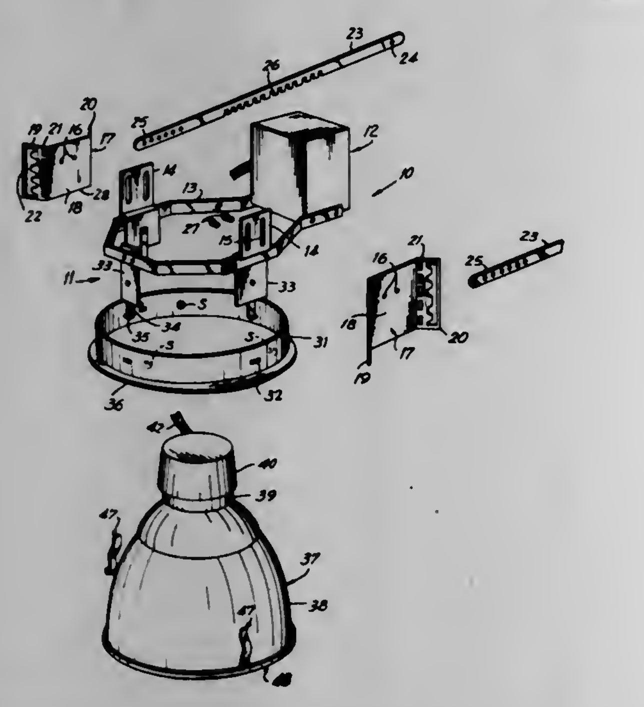
3,872,296
RECESSED LIGHTING FIXTURE

Alain Cohen, and Orfello Lalli, both of Montreal, Canada, assignors to Lightolier Incorporated, Jersey City, N.J.

Filed Apr. 18, 1974, Ser. No. 461,934

Int. Cl. F21s *1/02, 1/06, 3/06*

U.S. Cl. 240—73 BC **4 Claims**



1. A lighting fixture for a hung ceiling installation comprising a frame adapted to be mounted above the ceiling, a cylindrical bezel releasably secured to said frame, said bezel having an annular upper shoulder portion disposed above the level of the ceiling and having a lower circular flange adapted to underlie the lower surface of said ceiling, a frusto-conic, downwardly open reflector assembly releasably secured to said bezel, said reflector assembly having a depending open mouth portion, an annular rim formed on said reflector assembly surrounding said mouth portion, the outer peripheral surface of said rim fitting slidably and intimately within said bezel, stop means extending interiorly of said bezel, said stop means being disposed in the path of the upper edge of said rim to limit upward movement of said reflector assembly relative to said bezel, and a plurality of angularly spaced apart, generally vertically directed support spring members mounted on said reflector for releasably connecting said reflector to said bezel, said support spring members including a lower mounting portion secured to said reflector adjacent said rim, an upper, free end portion engaging an exterior wall of said reflector in upwardly spaced relation to said rim, a detent portion intermediate said upper and lower portions, said detent portion of said support spring members projecting a distance radially outwardly beyond said rim, said support spring members including upper and lower cam portions disposed, respectively, between said upper end and said detents, and between said detents and said lower ends, said upper cam portions being positioned and inclined to coact with said bezel to deflect said detents inwardly toward said reflector responsive to upward relative movement of said bezel and reflector, said lower cam portions, when said detents are shifted to a position above said bezel, coacting with the upper edge of said bezel to urge said rim of said reflector upwardly against said stop positions, thereby releasably to retain said reflector in said installed position.

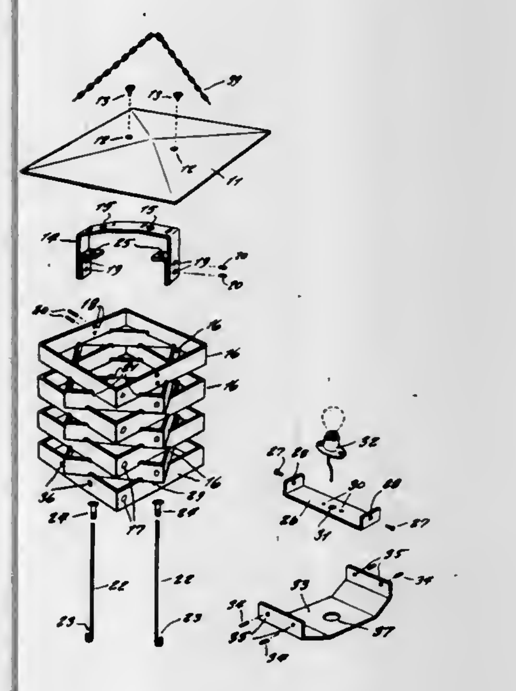
3,872,297
PATIO LITE

Raleigh E. Rohlof, R.R. No. 2, Hicksville, Ohio 43526

Filed Oct. 11, 1973, Ser. No. 405,691

Int. Cl. F21p *5/00*

U.S. Cl. 240—78 E **1 Claim**



1. In a patio light, the combination of a vertical stack of frames forming a side of a lamp, a lamp bulb centrally positioned within said stack radiating light rays, and a canopy lid over said stack, said lamp including a chain securable to an upper end thereof so to hang said lamp, and said lamp including a bottom bracket for supporting said lamp upon a pole, said lamp including a top bracket to hold said lid and stack of frames together by means of a pair of rods, each said frame being of square shape, each alternate frame being positioned having side walls vertically aligned and corners vertically aligned, and each frame between said alternate frames being horizontally obliquely turned respective thereto, light emanating apertures accordingly being formed between said vertically aligned alternate side walls.

3,872,298
HERBICIDAL OXADIAZOLIDINEDIONES

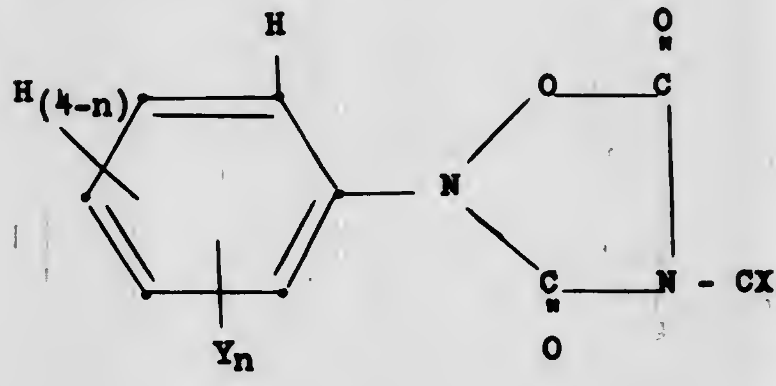
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 23, 1968, Ser. No. 707,402

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 B **6 Claims**

1. A compound of the formula



wherein X is halogen; Y is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl, halogen, lower alkoxy, nitro, lower alkylthio, lower alkylsulfoxide and lower alkylsulfone; and n is an integer from 0 to 4 provided a maximum of two Y's are selected from the group consisting of nitro when n is greater than 2.

3,872,299
PROCESS AND DEVICE FOR DEFLECTION OF A RADIATION BEAM

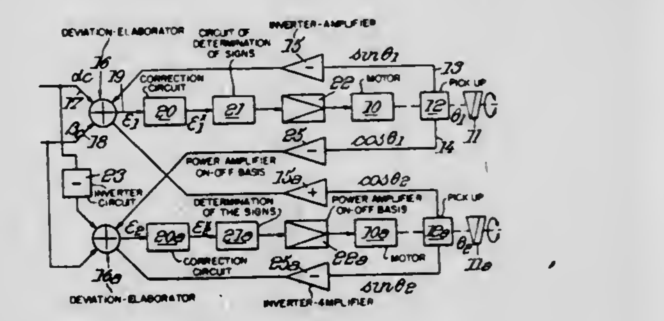
Patrick Marie Nicolas, Le Chesnay, France, assignor to Republic of France, represented by the Minister of State for National Defense Delegation Ministerielle pour l'Armement, DPAG-Bureau des Brevets et Inventions, Paris, France

Filed Nov. 6, 1973, Ser. No. 413,364

Claims priority, application France, Nov. 30, 1972, 72.42520

Int. Cl. G01j *1/20*

U.S. Cl. 250—203 **10 Claims**



1. A process for deflection of a radiation beam allowing the bringing of the deflected path of the beam into a reference direction defined by its coordinates α_C and β_C along two perpendicular directions, using two beam deflector members which move as a unit causing an angular displacement of the deflected beam about a predetermined direction perpendicular to the directions of the coordinates and whose displacement in the reverse direction and at the same speed causes a displacement of the deflected beam about the said predetermined direction or from the said predetermined direction, comprising the steps of: determining the deflected path at a given moment as defined by its coordinates α_M and β_M along the said directions of coordinates, determining the sign of a first magnitude $\alpha_C+\beta_C-(\alpha_M+\beta_M)$ and of a second magnitude $(\beta_C-\alpha_C)-(\beta_M-\alpha_M)$, moving a first deflector organ in a first direction when the first magnitude is positive and in the opposite direction when the said first magnitude is negative, and moving a second deflector organ in the said first direction when the said first magnitude is positive and in the opposite direction when the said second magnitude is negative.

3,872,300
OPTOELECTRONIC DEVICE

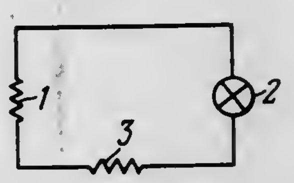
Alexandr Yakovlevich Vul, prospekt Proveschenia, 104, kv. 192; Alexandr Yakovlevich Shik, Torzhkovskaya ulitsa, 2, korpus 2, kv.34, both of Leningrad; Natalia Alexandrovna Dobryakova, ulitsa Karla Marxa, 34/30, Leningradskaya oblast; Ibragim Ibragimovich Saidashev, Yakovskaya ulitsa, 8, kv. 115, and Jury Vasilievich Shmartsev, prospekt Toreza, 9, kv. 1, both of Leningrad, all of U.S.S.R.

Filed Mar. 1, 1974, Ser. No. 447,391

Claims priority, application U.S.S.R., Mar. 3, 1973, 1895849

Int. Cl. G01j *1/32;* **G02f** *1/28;* **H01j** *39/12*

U.S. Cl. 250—205 **4 Claims**



1. An optoelectronic device comprising a photoconductor provided with two leads and made from low-resistance n-type semiconductor material with high-resistance inclusions forming n⁺n junctions at the boundaries thereof, and an emitter also provided with two leads, one being connected to one of the leads of said photoconductor and the other being connected to the second lead of said photoconductor.

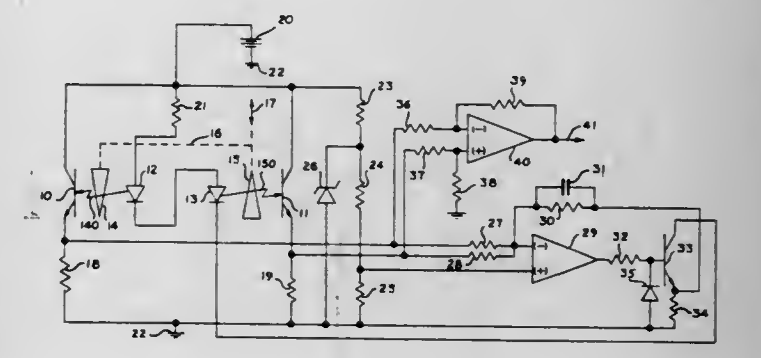
3,872,301
AUTOMATICALLY TEMPERATURE-COMPENSATED ELECTRO-OPTIC CIRCUIT

Mandred Joppich, Munich, Germany, assignor to Fritz Schwarzer GmbH, Munich, Germany

Filed Mar. 15, 1974, Ser. No. 451,611

Int. Cl. G01j *1/32;* **G01d** *5/34*

U.S. Cl. 250—205 **11 Claims**

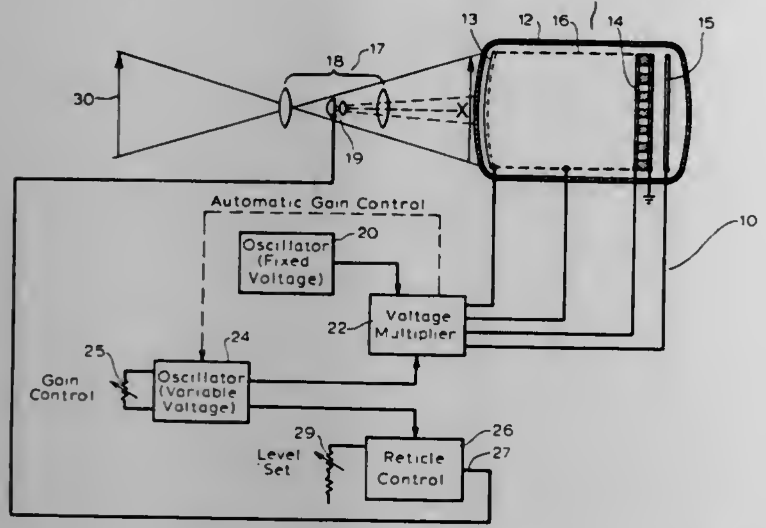


1. An electro-optic circuit for automatically temperature compensating parameter variations in said circuit resulting from ambient temperature variations, said electro-optic circuit comprising a power supply, electro-optic means for generating at least two signals, means for sensing said parameter variations by obtaining the sum and difference of said signals, means utilizing said sum of said signals for automatically controlling said generating means to maintain said signals approximately constant, and output means for utilizing said difference of said signals.

3,872,302
IMAGE INTENSIFIER SYSTEM WITH RETICLE BRIGHTNESS CONTROL

Ferdinand G. Fender, Glenview, Ill., assignor to Ni-Tec, Skokie, Ill.

Filed Mar. 20, 1974, Ser. No. 452,801
Int. Cl. G01j *1/32;* **H01j** *31/50*
U.S. Cl. 250—213 **12 Claims**



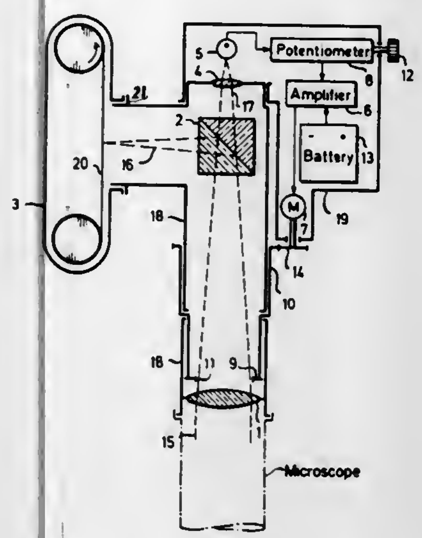
1. An image intensifier system comprising:
a cathode structure responsive to impinging radiant-energy images to develop corresponding electron images;
reticle generating means for projecting a reticle image of radiant-energy onto said cathode structure;
display means for converting said electron images to visible images;
amplifying means including a variable gain control for amplifying said electron images by a selectable gain and for focusing said amplified electron images onto said display means;
gain sensing means for sensing the gain of said amplifying means and for developing a reticle image intensity control signal having a magnitude inversely related to the gain of said amplifying means; and
means coupling said gain sensing means to said reticle generating means for applying said reticle image intensity control signal to said reticle generating means; whereby as the gain of said amplifying means varies, said reticle image intensity control signal regulates the intensity of said reticle image to maintain at said display means a visible reticle notwithstanding variations in the gain of said amplifying means.

3,872,303
DEVICE FOR AUTOMATIC EXPOSURE CONTROL IN A SURGICAL MICROSCOPE OR THE LIKE

Heinz Jakubowski, Oberkochen, and Klaus Leutwein, Essen-Heisingen, both of Germany, assignors to Carl Zeiss-Stiftung, d/b/a Carl Zeiss, Oberkochen/Wurttemberg, Germany

Filed Nov. 9, 1973, Ser. No. 414,534
Claims priority, application Germany, Nov. 18, 1972, 424988
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 P **6 Claims**

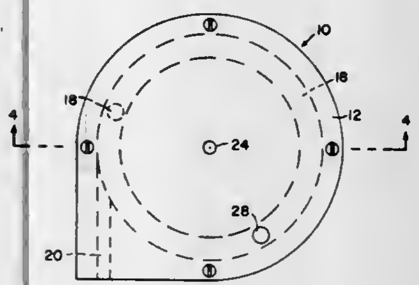
1. A self-contained unit-handling automatic-diaphragm connecting-piece assembly for selective interposition between a surgical microscope equipment and a continuously viewing camera, said assembly comprising a housing having separate means at each of two spaced openings for separable connection to such an equipment and to a selected camera body, one of said openings being on a first axis of equipment-attachment and the other of said openings being on a second axis of camera-body attachment, image-forming means mounted in said housing on said first axis, optical means including a beam-splitter mounted in said housing and so oriented with respect to said image-forming means that light entering said housing via said image-forming means is divided in part to said second axis and is further divided along a third axis, photoelectric-detector means carried by said housing and positioned for response to light directed along said third axis, amplifier means connected for response to the output of said detector means, a motor connected to drive in response to the output of said amplifier means, and a variable diaphragm carried by said housing on said first axis and coupled to said motor for varying the setting thereof, whereby exposure at an attached camera body is automatically regulated independent of camera body and for a span of field brightness as presented by an optical equipment attached at said one opening.



3,872,304
FLUID FLOW MEASURING SENSOR

Little J. Little, and Joseph A. Oddo, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,558
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **1 Claim**

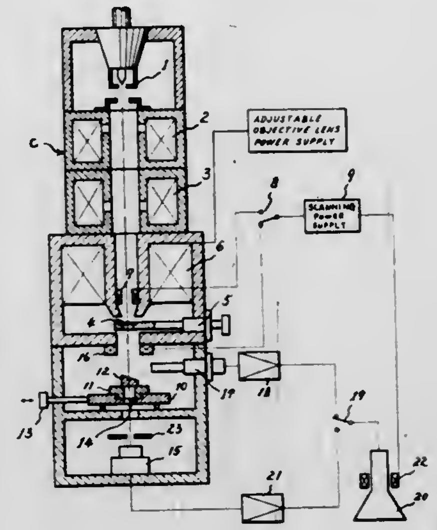


1. A fluid flow measuring sensor comprising a housing
a circular track formed in said housing,
an inlet passageway in said housing entering said track tangentially adjacent the outer wall of said track,
a slit extending completely around the inner wall of said track and communicating with a discharge passageway in said housing,
a ball in said circular track,
means for detecting movement of said ball around said circular track,
said movement detecting means comprises a light source in said housing adjacent said circular track, and
a photo sensing device in said housing adjacent said circular track and opposite said light source.

3,872,305
CONVERTIBLE SCANNING ELECTRON MICROSCOPE

Hirotami Koike, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1973, Ser. No. 419,262
Claims priority, application Japan, Dec. 6, 1972, 47-140160
Int. Cl. H01j *37/26*
U.S. Cl. 250—311 **3 Claims**



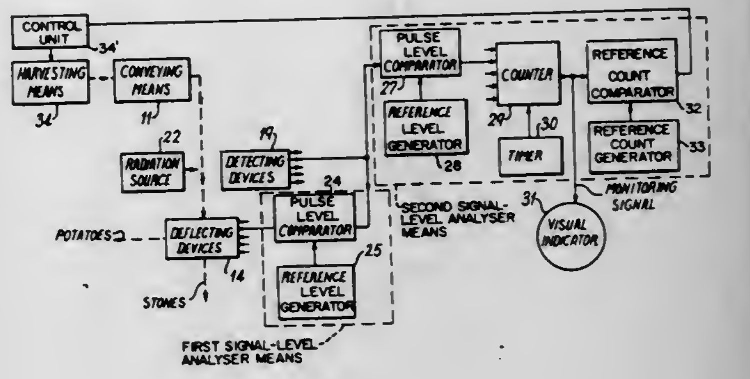
1. A convertible scanning electron microscope comprising an evacuated chamber surrounding an electron optical axis, an electron beam generating source at one end of the optical axis, a focusing lens along the axis, an objective lens following the focusing lens along the axis, a first specimen holder stage arranged to hold a transmission specimen within the objective lens, a second specimen holder stage arranged to hold a specimen spaced beyond the objective lens along the axis, a deflection system comprising a deflection means disposed along the axis between the focusing and objective lenses and a means for detecting and displaying signals detected and converting them into a scanning electron image of either the transmitted electrons from the transmission specimen or the emitted electrons from the secondary electron specimen, the said objective lens having an excitation power supply adjustable to provide an adjustable focal length such that the electron beam can be focused on the transmission specimen or alternately on the secondary electron specimen such that in a transmission scanning mode, the focusing lens and objective lens focus the electron beam upon the specimen, and the objective lens also serves as a first image forming lens, and such that in a secondary electron scanning mode, the focusing lens and objective lens serve to focus the electron beam upon the sample.

3,872,306
SEPARATING APPARATUS

John Palmer, Midlothian, Scotland, assignor to National Research Development Corporation, London, England

Filed Apr. 13, 1973, Ser. No. 350,963
Claims priority, application United Kingdom, Apr. 19, 1972, 18127/72
Int. Cl. H01j *39/12;* **G06m** *7/00*
U.S. Cl. 250—312 **11 Claims**

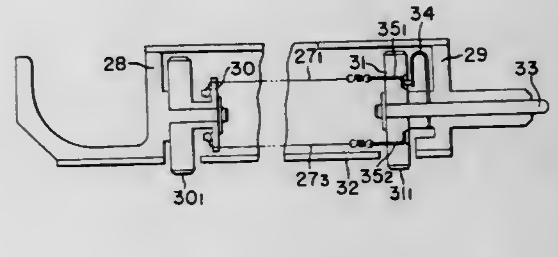
1. Apparatus for separating a mixture of bodies of different materials into at least two categories of materials, comprising:
means for supplying a mixture of bodies of different materials at a variable rate of supply;
control means for controlling the rate of supply of the said mixture;
a source of ionizing radiation arranged to produce a laterally spread beam or array of beams of radiation;
an array of radiation detecting devices positioned to receive radiation from said course;
a conveyor belt for passing said mixture of bodies in a laterally spread formation between the radiation source and said array of detecting devices;
first signal-level analyzer means adapted to analyze the output signal levels of said detecting devices for distinguishing bodies of one category from bodies of another category in dependence upon the degree of attenuation of said ionizing radiation by the different materials of the bodies;
an array of deflecting devices adapted to pass bodies of different materials in different directions under the control of said first analyzer means; and
second signal-level analyzer means connected to the outputs of said detecting devices for producing a throughput monitoring signal by combining the signal responses of said detecting devices resulting from attenuation of radiation by all bodies in the mixture, the output of said second analyzer means being connected to said control means to control said rate of supply of the mixture in dependence upon said throughput monitoring signal.



3,872,307
DISCHARGER FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kuichi Miyamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,573
Claims priority, application Japan, Feb. 21, 1972, 47-21264
Int. Cl. H01j *37/00*
U.S. Cl. 250—324 **3 Claims**



1. A discharger for use with an electrophotographic copying apparatus comprising a plurality of discharge wires, means for interchanging said discharge wires with one another for discharging, terminal receivers for holding said discharge wires, a shield member surrounding said discharge wires on three sides thereof, at least one side portion of said shield member being secured to the body of the said copying apparatus and the remaining portion of the discharger being removable with respect to the body of said copying apparatus.

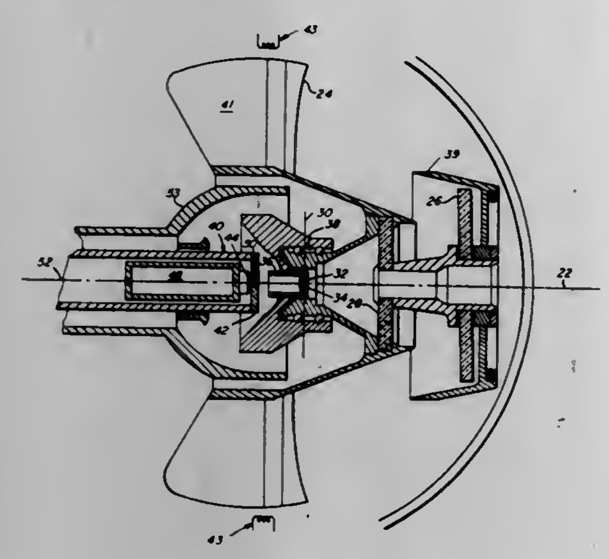
3,872,308
OPTICAL SYSTEM FOR RETICLE-TYPE INFRARED SEEKER

James E. Hopson, Wellesley, and Gordon C. MacKenzie, North Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 28, 1973, Ser. No. 401,748

Int. Cl. G02b *5/14*

U.S. Cl. 250—347 **5 Claims**



2. The optical arrangement recited in claim 1 wherein the dispersing means includes a light pipe.

3,872,309
RADIOGRAPHIC INTENSIFYING SCREENS

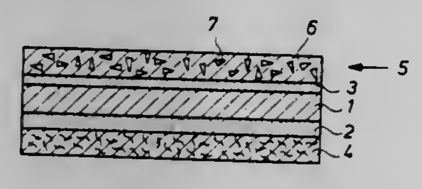
Maurice Hector De Belder, Mechelen; Romain Henri Bollen, Hove, and Robert Florent Van Esch, Mechelen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 3, 1972, Ser. No. 303,388

Claims priority, application United Kingdom, Dec. 31, 1971, 61050/71

Int. Cl. H01j *1/62*

U.S. Cl. 250—483 **26 Claims**



1. A radiographic intensifying screen combination suited for use in radiographic recording of information with a silver halide recording material, said combination comprising (1) a metallic substrate including at least one metal having an atomic number in the range of 46 to 83, and (2) at least one fluorescent substrate in working relationship with said metal and including at least one fluorescent substance having the formula:

$$M_{(w-n)} \cdot M'_n O_w X$$

wherein:

M is at least one of the metals selected from the group consisting of yttrium, lanthanum, gadolinium and lutetium,

M′ is at least one of the rare earth metals selected from the group consisting of hysprosium, erbium, europium, holmium, neodymium, praseodymium, samarium, terbium, thulium and ytterbium,

X is selected from the group consisting of sulphur and halogen,

n is 0.0002 to 0.2, and

w is 1 when X is halogen and 2 when X is sulphur.

3,872,310
DETECTION OF CORROSION BY A RADIOMETRIC TECHNIQUE

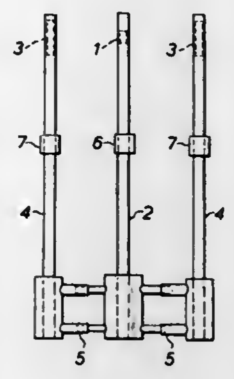
John Stuart Charlton, and John Francis Ross, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 13, 1973, Ser. No. 332,114

Claims priority, application United Kingdom, Feb. 17, 1972, 7426/72

Int. Cl. G01t *1/16*

U.S. Cl. 250—358 **1 Claim**



1. A method for the in situ monitoring or detection of corrosion in tubes which in use are subjected to a corrosive medium, by assessing the thickness of one or more tube walls in a bundle which consists of at least two parallel tubes, said method comprising emitting a radioactive emission from a plurality of tubes in a bundle in turn, detecting the emission in each of the immediately adjacent tubes, thereby measuring the absorption of radiation in each such adjacent tube, and comparing the measurement with a standard measurement representing a known thickness of the material of which the tubes are made wherein the degree of corrosion of each tube is indicated on a diagram illustrating the configuration of the bundle by markings which correspond to the amount of absorption measured.

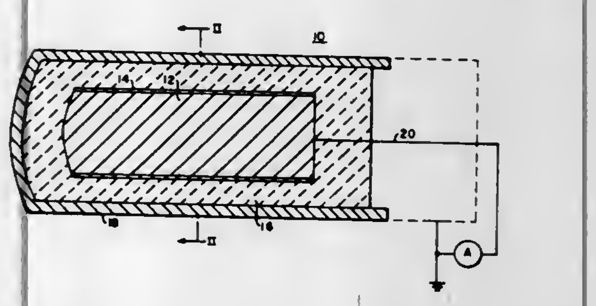
3,872,311
SELF-POWERED NEUTRON DETECTOR

Norman P. Goldstein, Delmont, Pa., and William H. Todt, Elmira Heights, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1973, Ser. No. 376,848

Int. Cl. G01t *3/00*

U.S. Cl. 250—390 **5 Claims**



1. In a self-powered neutron detector which comprises a radiation absorptive emitter core comprised of a material of high neutron cross section that spontaneously emits radiation upon capturing neutrons, which emitted radiation includes high average energy prompt electrons produced by emitted gamma ray interactions and delayed beta radiation emitted by decay of the activation product;

an insulating material encompassing the emitter core, and an outer conductive sheath about the insulating material, which outer conductive sheath is of a material which produces little radiation upon exposure to neutrons, an electrical lead-in connected to the emitter core, which lead-in is brought through the insulating material whereby the lead-in and the outer conductive sheath can be electrically connected to electron current measuring means;

the improvement wherein a thin conductive layer of low neutron cross-section and high density material is disposed substantially about the emitter core, which high density material is absorptive of the beta radiation emitted by decay of the emitter core activation product, but is substantially transmissive to the high average energy prompt electrons emitted by the emitter core.

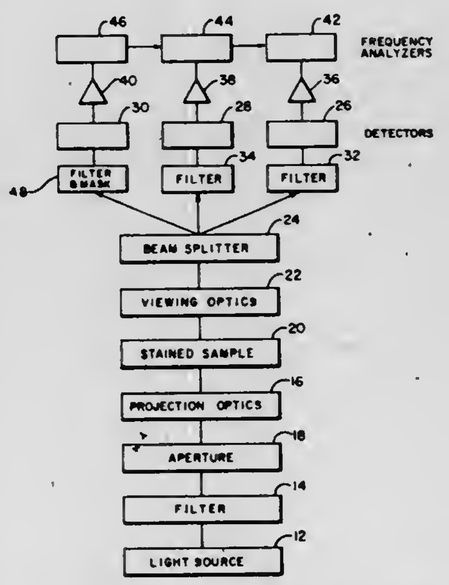
3,872,312
METHOD AND APPARATUS FOR DETECTING AND CLASSIFYING NUCLEIC ACID PARTICLES

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed July 2, 1973, Ser. No. 375,807

Int. Cl. G01t *1/16*

U.S. Cl. 250—458 **25 Claims**



1. Apparatus for detecting and classifying, in a fluid specimen, submicron-dimensioned particles containing a nucleic acid and stained with a fluorescent dye specific to said nucleic acid, said apparatus comprising,

a radiation source for providing illumination within an excitation band of said dye,

means for directing said illumination into said specimen,

means for viewing fluorescence emission produced from said dye responsively to said illumination, and

means for spatially filtering at least one of said illumination and said fluorescence emission so as to provide intensity modulation of said emission due to Brownian motion of said particles.

3,872,313
OZONE GENERATOR

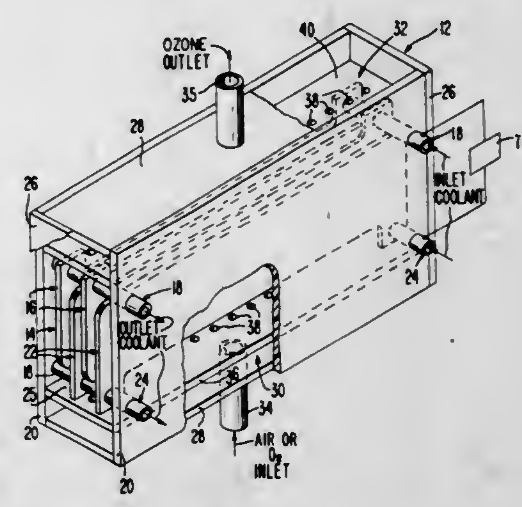
Willard F. Emigh, El Dorado Hills, and Rudi Beichel, Sacramento, both of Calif., assignors to Aerojet General Corporation, El Monte, Calif.

Filed Mar. 13, 1974, Ser. No. 450,698

Int. Cl. C01b *13/12*

U.S. Cl. 250—541 **23 Claims**

23. An ozone generator comprising: a housing; a plurality of reactor plates, each plate having a plurality of fluid passages therethrough and a coating of ceramic material covering the entire outer surface thereof to define a dielectric therefor; means mounting said reactor plates within said housing and in interleaved, spaced relationship with respect to each other with the mounting means dividing the reactor plates into two groups, said mounting means including a pair of tubular mounts for each group of reactor plates, respectively, the reactor plates being cantilevered relative to respective mounts, at least one of the mounts of each group being electrically conductive and in electrical contact with the corresponding reactor plates, said mounts being in fluid communication with the passages of corresponding reactor plates; and a refrigeration system in fluid communication with said mounts and having a refrigerant for cooling said reactor plates, the latter defining the evaporator for said refrigeration system.



3,872,314
ELECTROLUMINESCENT DEVICES AND APPARATUS INCLUDING SUCH DEVICES

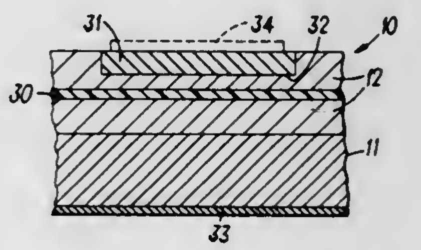
Anthony Ralph Peaker, Saddleworth, and Anthony Mottram, Romiley, both of England, assignors to Ferranti Limited, Hollinwood, Lancashire, England

Filed Jan. 16, 1974, Ser. No. 433,792

Claims priority, application United Kingdom, Jan. 18, 1973, 2703/73

Int. Cl. G02f *1/28;* **H01l** *11/00, 15/00*

U.S. Cl. 250—552 **21 Claims**



1. An electroluminescent device with a P-N junction capable of emitting electromagnetic radiation with a negative resistance characteristic comprising a body having on a suitable substrate an epitaxially deposited layer of a III-V compound semiconductor, within the layer there being provided a region of one conductivity type and a region of the opposite conductivity type with the P-N junction therebetween, the region of said one conductivity type has a current impeding portion with a small concentration of less than 5×10^{15} free charge carriers per cm.^{3}, the current impeding portion is at least two diffusion lengths of minority charge carriers away from the P-N junction, and the device also includes contact means, the arrangement being such that when an electrical potential greater than a predetermined value is applied to the contact means the P-N junction is biassed and emits electromagnetic radiation, there being a current path through the device with the current impeding portion wholly across the current path, the radiation emitted by the P-N junction causing a reduction in the current impeding action of the portion to an extent greater than the reduction caused by minority charge carrier interaction between the portion and the P-N junction, and because of the reduction in the current impeding action of the portion the P-N junction continuing to emit electromagnetic radiation so long as the magnitude of the

applied electrical potential is above a threshold value lower than the predetermined value.

3,872,315

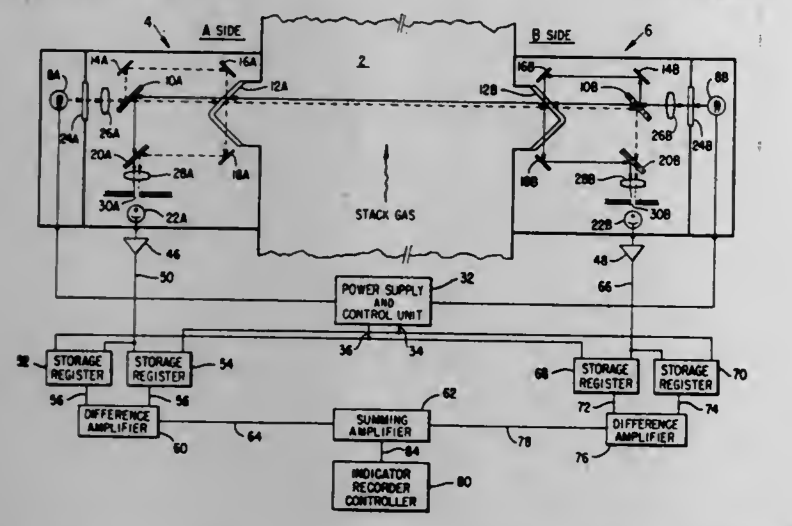
RADIATION SENSITIVE FLUID ANALYZER

Richard H. Boll, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,108

Int. Cl. G01n *21/26*

U.S. Cl. 250—575 **9 Claims**



1. In an analyzer for determining a characteristic of a fluid, in combination, a pair of symetrical transmitter-receiver units each comprising a housing, a radiation source disposed within said housing, an opening in one wall of said housing, a window closing said opening and forming a cavity having transparent walls through which radiation from the source is transmitted through the fluid to the other of the units, a phototransducer disposed within the housing, means diverting radiation from the source through the window to the phototransducer without passing through the fluid between said units, and means directing radiation received through the fluid from the other of said units through said window to said phototrandsucer, the combination further comprising means for alternately and cyclically energizing the radiation source in each of said units to cause each of said units to cyclically and alternately act as a transmitter and then as a receiver whereby the phototransducer receives radiation from the radiation source in the unit when operating as a transmitter and from the radiation source in the other of said units when operating as a receiver.

3,872,316

ENGINE AUTOMATIC CONTROL SYSTEM FOR VEHICLES INCLUDING PLURAL CLUTCH ACTUATED SWITCHES

Masaaki Kurii; Kyoshi Kobari, and Osamu Yanagi, all of Kasugai, Japan, assignors to Nippondenso Co., Ltd. Kariya-shi; Toyota Jidosha Hanbai Kabushiki Kaisha Nagaya-shi and Kabushiki Kaisha Tokai Rika Denki SeisakuSho, Azo, Shimootai all of Aichi-ken, Japan

Filed May 14, 1974, Ser. No. 469,786

Claims priority, application Japan, May 24, 1973, 48-61255

Int. Cl. H02p *9/04*

U.S. Cl. 290—38 **9 Claims**

1. An automatic control system for an internal combustion engine of a vehicle comprising:

an engine control circuit for controlling the operative condition of the engine in accordance with the driving condition of the vehicle;

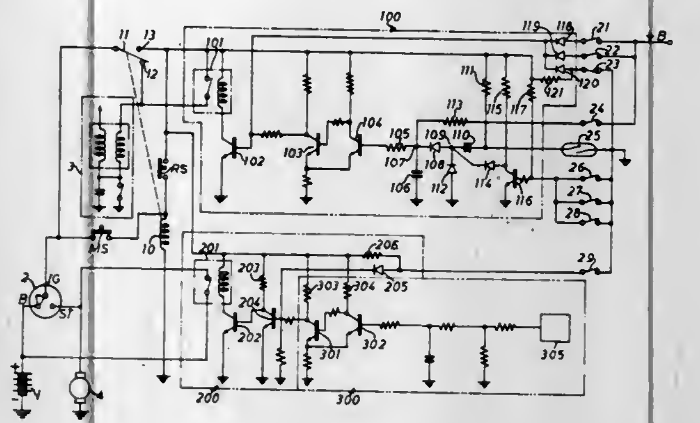
a starter energizing circuit for selectively connecting an electric source with a starter for the engine;

a starter cut-off circuit able to respond to the start of rotation of the engine caused by the starter to cut off current supply to the starter;

a first responsive means coupled with said engine control circuit to be actuated by the initial depression of a clutch pedal of the vehicle to cause the half engagement of clutch means of the vehicle so as to activate said engine control circuit and complete the operative condition of the engine;

a second responsive means coupled with said starter energizing circuit to be actuated by the final depression of the clutch pedal to cause the full disengagement of the clutch means so as to activate said starter energizing circuit; and

a third responsive means coupled with said engine control circuit for detecting the moving of the vehicle to maintain the operative condition of the engine while the vehicle is moving;



whereby when the vehicle has been brought to rest, the inoperative condition of said first and second responsive means act to cause the deactivation of said engine control circuit and automatically render the engine inoperative and the actuation of said first and second responsive means act to automatically rotate the starter of the engine by means of the activation of said starter energizing circuit under the full disengagement of the clutch means.

3,872,317

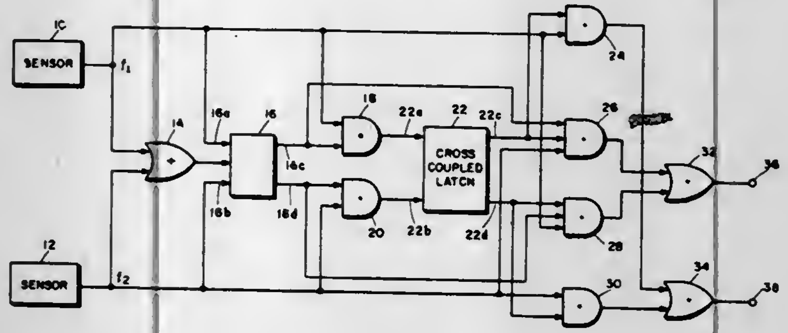
MEANS FOR SELECTING AN ADAPTIVE BRAKING SYSTEM CONTROLLING SPEED SIGNAL

Steven H. Peterson; Ralph W. Carp, and Harold E. Weissler, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 2, 1974, Ser. No. 457,317

Int. Cl. B60t *8/08*

U.S. Cl. 307—10 R **9 Claims**



1. An adaptive braking system for a wheeled vehicle comprising:

means for generating a first signal comprised of a train of pulses having a repetition frequency proportional to the speed of a first vehicle wheel;

means for generating a second signal comprised of a train of pulses having a repetition frequency proportional to the speed of a second vehicle wheel;

at least one output terminal;

latch means having first and second states for generating at said output terminal an output signal having a repetition frequency equal to the repetition frequency of a predetermined one of said first and second signals when in said first state and for generating at said output terminal an output signal having a repetition frequency equal to the repetition frequency of the other of said first and second signals when in said second state, said latch means being responsive to a predetermined sequence of consecutive pulses of said first and second trains to latch in said first state and responsive to a second predetermined sequence of consecutive pulses of said first and second signals to latch in said second state.

3,872,318

PYROELECTRIC ELEMENT OF POLYMER FILM

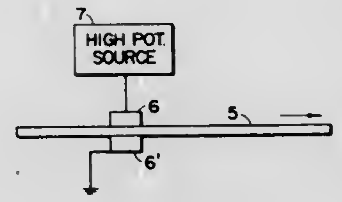
Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 242,448, April 10, 1972, Pat. No. 3,794,986. This application Oct. 30, 1973, Ser. No. 411,122

Claims priority, application Japan, Apr. 8, 1971, 46-21374; Apr. 27, 1971, 46-27159

Int. Cl. G11c *13/02*

U.S. Cl. 307—88 ET **6 Claims**



1. A process of storing signals in a pyroelectric element comprising a polymer film, which can be convered into a pyroelectric substance, having a stable non-uniform distribution of pyroelectricity along the surface of said polymer film and reproducing said signals stored in the element, which comprises generating stable polarization signals of different pyroelectricities in different local portions of the pyroelectric element and then delivering the polarization signals thus stored from the pyroelectric element as a consequence of the polarization change caused by a temperature change without eliminating the stored signals.

3,872,319

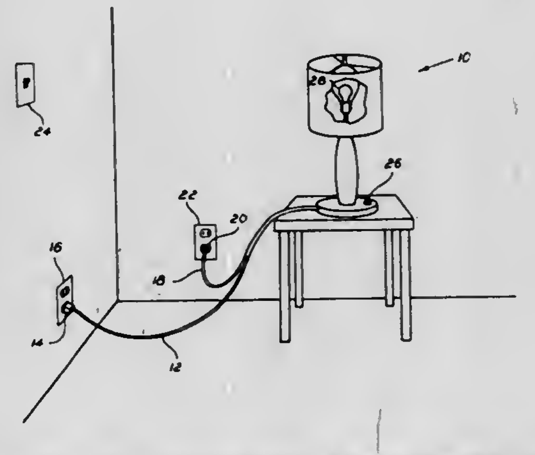
LAZY-MAN TYPE SWITCHING CIRCUIT

George E. Platzer, Jr., 31881 Staman Ct., Farmington Hills, Mich. 48024

Filed July 31, 1972, Ser. No. 276,539

Int. Cl. H01h *31/10*

U.S. Cl. 307—114 **15 Claims**



1. A remotely energizable electric lamp assembly for use in combination with a source of electrical potential in circuit with at least first and second duplex-type outlet assemblies spaced from each other, wherein said first duplex-type outlet assembly comprises at least first and second spaced outlets, wherein said second duplex-type outlet assembly comprises at least third and fourth spaced outlets, wherein at least said first outlet is in series circuit with a switch member situated electrically between said first outlet and said source, and wherein at least one of said third and fourth outlets is in a continuously closed circuit with said source, said lamp assembly comprising an electric bulb having two effective conditions one of which is an energized state and the other of which is a de-energized state, power conductor means electrically connected to said electrical bulb and adapted for electrical connection to said one of said third and fourth outlets or to said second outlet if only said first outlet of said first outlet assembly is in series circuit with said switch member, said power conductor means including switching means for at times completing an electrical circuit therethrough to said electrical bulb so as to thereby place said electrical bulb in said energized state, control means for at times causing said switching means to complete said electrical circuit through said power conductor means to said bulb and at other times causing said switching means to open said electrical circuit through said power conductor means to thereby place said electrical bulb in said de-energized state, said control means comprising control conductor means adapted for electrical connection to said first outlet of said first outlet assembly or to the other of said third and fourth outlets of said second outlet assembly if only said one of said third and fourth outlets is in a continuously closed circuit with said source, and energizable actuating means being effective whenever an electrical circuit has been completed through said switch member for causing said switching means to be switched so as to thereby change the state of said electrical bulb from a then existing one of said two effective conditions to the other of said two effective conditions and manually controlled switch means in circuit with said source and having at least two operating positions, said manually controlled switch means being effective when actuated from one of said at least two operating positions to another of said at least two operating positions to cause the state of said bulb to be changed from an existing one of said two effective conditions to another of said two effective conditions regardless of whether said circuit through said switch member is electrically open or closed, said switch means comprising at least one thyristor, said energizable actuating means comprising gating circuitry, and said manually controlled switch means being in circuit with said source and said gating circuitry.

3,872,320

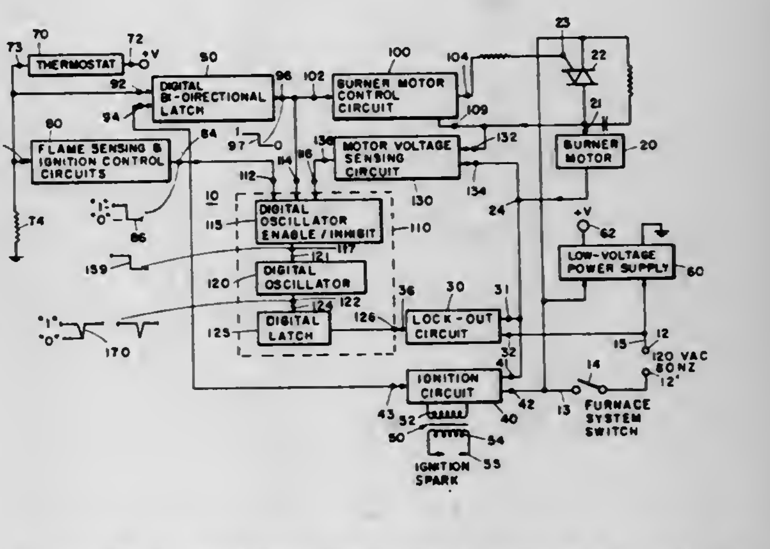
FURNACE CONTROL CIRCUIT

Joseph A. Juskewicz, Jr., Grand Rapids, Mich., assignor to Lear Siegler, Inc., Holland, Mich.

Filed Sept. 12, 1973, Ser. No. 396,545

Int. Cl. F23n *5/00*

U.S. Cl. 307—117 **10 Claims**



1. For use in a furnace installation including a burner and a source of electrical power, a furnace control system comprising:

fuel supplying means selectively coupled to said source of electrical power for supplying fuel to said burner;

selectively actuated ignition means associated with said burner for igniting fuel therefrom;

- first means coupled to said fuel supplying means for detecting when said supplying means is actuated to supply fuel to said burner;
- second means positioned in proximity to said burner for detecting a flame;
- means for generating a temperature command signal for actuating said fuel supplying means and said ignition means for actuating the furnace;
- a control circuit coupled to said first and second detecting means and to said generating means for providing a control signal in response to predetermined detected conditions indicating the existence of a failure condition including loss of power to said fuel supplying means; and
- a lockout circuit coupled from said fuel supplying means and said ignition means to said source of electrical power and further coupled to said control circuit and responsive to control signals from said control circuit to deactuate said fuel supplying means and said ignition means in the event a failure is detected.

3,872,321

INVERTER CIRCUIT EMPLOYING FIELD EFFECT TRANSISTORS

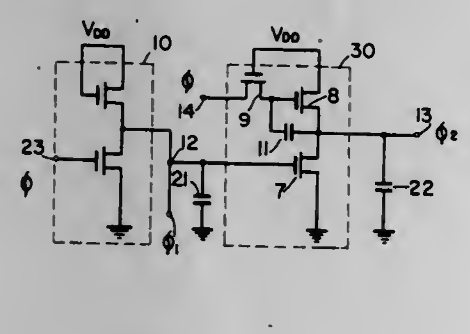
Shigeki Matsue, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,541

Claims priority, application Japan, Sept. 25, 1972, 47-95966

Int. Cl. H03k *19/08, 19/40, 23/24*

U.S. Cl. 307—205 **4 Claims**



1. A circuit arrangement comprising a first inverter circuit having an input terminal and an output terminal, a second inverter circuit having an input terminal connected to the output terminal of said first inverter circuit, a control terminal and an output terminal, means coupled to said output terminal of said first inverter circuit for delaying the output of said first inverter circuit, and a power supply, said first inverter circuit further having a first insulated-gate field effect transistor connected between one terminal of said power supply and said output terminal of said first inverter, and a first switching transistor having a control electrode and connected between said output terminal of said first inverter and the other terminal of said power supply, said control electrode of said first switching transistor being connected to said input terminal of said first inverter, said second inverter circuir further having a second insulated-gate field effect transistor being connected between said one terminal of said power supply and said output terminal of said second inverter, a third insulated-gate field effect transistor being connected between said control terminal and the gate of said second insulated-gate field effect transistor, the gate of said third insulated-gate field effect transistor being connected to said one terminal of said power supply, a second switching transistor having a control electrode and connected between said output terminal of said second inverter and said other terminal of said power supply, said control electrode of said second switching transistor being connected to said input terminal of said second inverter circuit, and a first capacitor connected between said output terminal of said second inverter circuit and the gate of said second insulated-gate field effect transistor.

3,872,322

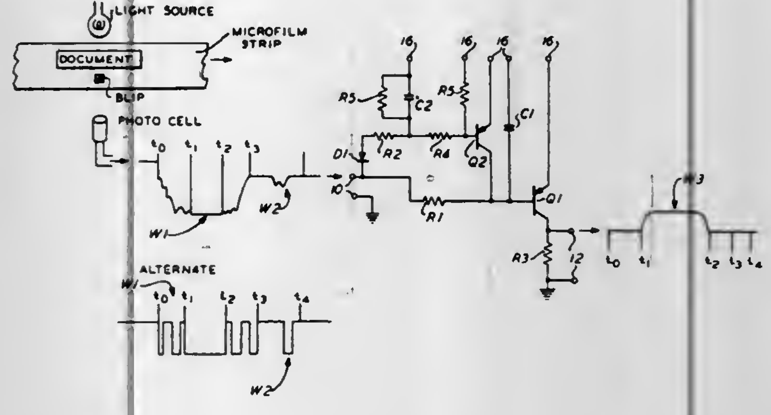
DISCRIMINATOR CIRCUIT

Hans Weigert, Woodcliff Lake, N.J., assignor to Ragen Semiconductor, Inc., Whippany, N.J.

Filed Jan. 30, 1974, Ser. No. 437,973

Int. Cl. H03k *5/20, 17/26*

U.S. Cl. 307—231 **8 Claims**



1. A discriminator circuit for receiving an irregular waveform and for providing a regular waveform, said irregular waveform potentially having false transitions during a first predetermined period of time immediately following the beginning of said waveform, having a substantially regular portion during a second predetermined period of time immediately following said first predetermined period of time, and potentially having false transitions during a third predetermined period of time immediately following said second predetermined period of time and immediately preceding the end of said irregular waveform, and said irregular waveform potentially followed by a spurious waveform during a fourth predetermined period of time immediately following the end of said irregular waveform, comprising:

- an input for receiving said irregular waveform;
- an output for providing said regular waveform;
- first electrical switch means electrically associated with said output and for being connected to a source of potential and said first electrical switch means having a first state and a second state and normally in said first state, upon said first electrical switch means being placed in said second state said first electrical switch means connecting said source of potential to said output and upon said first electrical switch means being placed in said second state said first electrical switch means disconnecting said source of potential from said output, the presence of said potential at said output providing said regular waveform;
  - a first timing circuit electrically associated with said input and said first electrical switch means and responsive to the receipt of said irregular waveform at said input to place said first electrical switch means in said first state at substantially the end of first said predetermined period whereby said potential is not provided at said output during said first predetermined period;
- second electrical switch means electrically associated with said first electrical switch means and having a first state and a second state and normally in said first state, upon said second electrical switch being placed in said second state said second electrical switch returning said first electrical switch to said first state;
- second timing means electrically associated with said input and said second electrical switch means and for placing said second electrical switch in said second state at substantially the beginning of said third period; and
- third timing means electrically associated with said second electrical switch means and for maintaining said second switch means in said second state during said third and said fourth predetermined periods whereby said potential is disconnected from said output during said third and fourth predetermined periods.

3,872,323

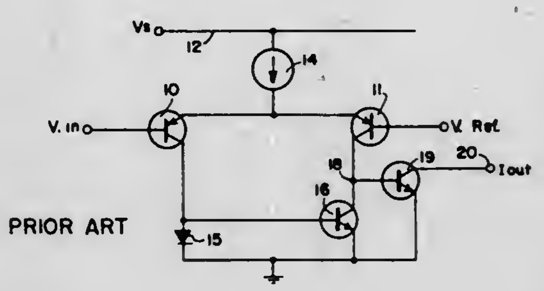
DIFFERENTIAL TO SINGLE ENDED CONVERTER CIRCUIT

Thomas M. Frederiksen, San Jose, and Don William Zobel, Santa Clara, both of Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 20, 1972, Ser. No. 219,462

Int. Cl. H03k *5/153;* **H03f** *3/14, 3/18*

U.S. Cl. 307—235 R **8 Claims**



1. A differential to single ended converter circuit for coupling to first and second signal current paths in which differentially related signal currents flow, and providing output signal current therefrom, including in combination

- semiconductor means including a single basc electrode, a single emitter electrode, and first and second collector electrodes, said semiconductor means forming a single multi-collector transistor,
- first circuit means connecting said first collector electrode to said base electrode at a junction,
- second circuit means connecting said junction and said emitter electrode in the first signal current path,
- third circuit means connecting said second collector electrode and said emitter electrode in the second signal current path, and
- output circuit means connected to said third circuit means for providing output signal current related to the signal currents in the first and second current paths.

3,872,324

LOGIC SYSTEM FOR SEQUENTIALLY TESTING THE STATES OF A SYSTEM OF CONTACTS

Poland Nahon, Paris, France, assignor to Jeumont-Schneider, Paris (Seine), France

Continuation of Ser. No. 300,328, Oct. 24, 1972, abandoned. This application June 14, 1974, Ser. No. 479,475

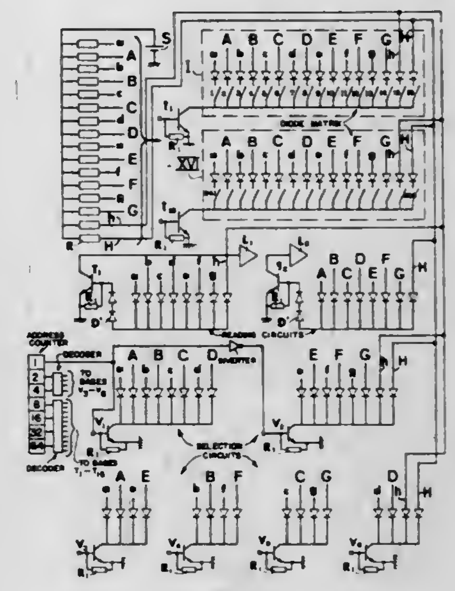
Claims priority, application France, Oct. 21, 1971, 71.37793

Int. Cl. H03k *17/00;* **G01r** *31/02*

U.S. Cl. 307—241 **1 Claim**

1. A logic circuit for testing the states of an array of contacts comprising:

- a. 2^{n+p} contacts to be tested, n and p being integers greater than 1, the contacts being tested by groups of 2^m, m being an integer less than n;
- b. a diode matrix comprising 2^n columns and 2^p rows wherein each diode is in series with one of the contacts to be tested, each column is connected to one of a plurality of 2^n bus bars, each bus bar having one end connected via a load resistance to one pole of a battery whose other pole is grounded, and each row is grounded via row switching means;
- c. 2^m reading circuits each comprising a diode logic or-circuit having 2^{n-m} inputs and a single output, each of the 2^n bus bars being connected to only one of said reading circuit inputs the output of each logic or-circuit being connected to the base of a reading transistor said reading transistor connected to an amplifier for detecting whether the reading transistor is in the conductive or non-conductive state, each such state corresponding to one of the positions of the tested contact;
- d. an address counter having 2^{n+p-m} addresses; and
- e. decoding means connected to said address counter and comprising selector circuits having diode logic or-circuit elements, said elements having outputs grounded via a selecting transistor and inputs connected to said bus bars, said decoding means grounding every input but one of each of said reading circuits and said decoding means triggering only one of said row switching means into a conducting state.



3,872,325

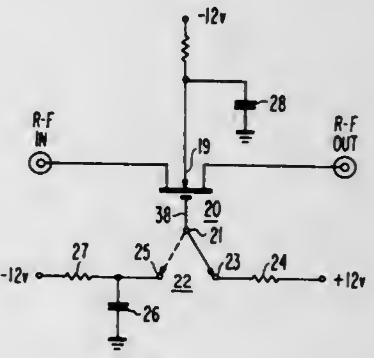
R-F SWITCHING CIRCUIT

Melvin Edward Adams, Pennsauken, and Rubin Feryszka, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,183

Int. Cl. H03k *17/60*

U.S. Cl. 307—251 **10 Claims**



1. In an electronic switching system comprising a source of at least one radio-frequency signal, utilization means for at least a portion of said radio-frequency signal, an insulated-gate field effect transistor with source and drain electrodes and a transmission channel of variable conductivity therebetween and with a gate electrode for controlling the conductivity of its transmission channel, said field-effect transistor having a source-to-drain capacitance and having a gate-to-channel capacitance including gate-to-source capacitance and gate-to-drain capacitance components thereof, means for selectably coupling said source of radio-frequency signal and said utilization means in loop including said transmission channel, means for selectably applying a first or a second potential level to said gate electrode, said first potential level being of a polarity with respect to said radio-frequency signal as applied with respect to said transmission channel to render

said transmission channel relatively conductive when applied to said gate electrode, said second potential level being of a polarity with respect to said radio-frequency signal as applied to said transmission channel to render said transmission channel relatively non-conductive when applied to said gate electrode, the improvement wherein said means for selectably applying a first or a second potential level applies said first potential level to said gate electrode at an impedance level higher for said radio-frequency signal than that presented by its gate-to-channel capacitance and applies said second potential level to said gate electrode at an impedance level lower for said radio-frequency signal than that presented by each of its said gate-to-source and gate-to-drain capacitances.

3,872,326

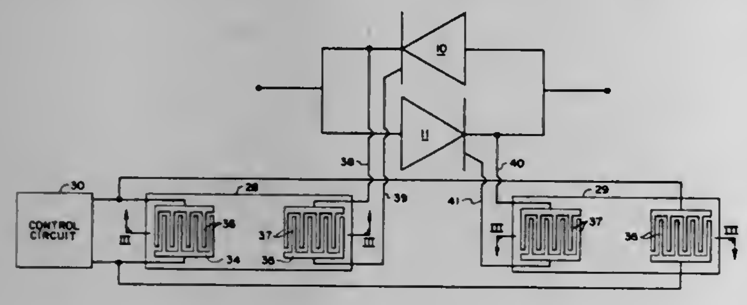
BIDIRECTIONAL SEMICONDUCTOR SWITCH WITH IMPROVED DV/DT CAPABILITY

Surinder Krishna, Ballston Lake, N.Y., and Paul R. Malmberg, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1974, Ser. No. 435,820

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 T **3 Claims**



1. A bidirectional semiconductor switch comprising:

A. two thyristors electrically connected in reverse parallel and disposed in at least one semiconductor body having first and second opposed major surfaces, (1) each said thyristor having four impurity regions of alternate carrier-type disposed alternately with a PN junction formed between adjacent regions, the two impurity regions intermediate being base regions and the two extremity impurity regions being emitter regions, and (2) metal electrical contacts spaced apart on the major surfaces of said semiconductor body and making separate ohmic contact with the two emitter regions and at least one base region of each thyristor;

B. a blocking circuit comprising at least one acoustic surface wave device for electrically isolating the thyristors from each other and from a control circuit generating control signals for the thyristors, each surface wave device comprising (1) a base member capable of propagating a surface wave and electrically insulating electrical input signals from electrical output signals, (2) at least one transmitter transducer having a grid with interdigital fingers supported on said base member and adapted to receive an electrical control signal and generate an acoustic surface wave in said base member in response to said electrical control signal, and (3) at least one receiver transducer having a grid with interdigital fingers deposited on said base member and adapted to receive an acoustic surface wave transmitted in said base member by a transmitter transducer and produce an electrical output signal in response to said acoustic surface wave; and

electrical means for separately conducting control signals from said surface wave device to the metal contacts connected to emitter and base regions of each thyristor.

3,872,327

DRIVE CIRCUIT FOR PULSE WIDTH MODULATED D.C. - D.C. CONVERTORS

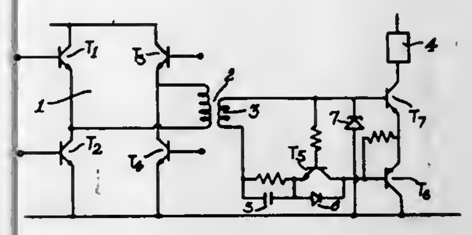
Bernhardt Siegfried Rudert, Sandton, and John Trafford Rowe Freeman, Roodepoort, both of South Africa, assignors to Inpel (Proprietary) Limited, Johannesburg, South Africa

Filed Oct. 11, 1973, Ser. No. 405,560

Claims priority, application South Africa, Oct. 16, 1972, 72/7334

Int. Cl. H03k *17/60*

U.S. Cl. 307—300 **6 Claims**



1. A method of operating a power output transistor which method comprises interrupting the emitter current of said transistor simultaneously with the base drive current and immediately thereafter allowing the collector current, due to stored charge in the base collector junction, to flow through the base and thence through a low source impedance during extraction of the said stored charge.

3,872,328

CIRCUIT ARRANGEMENT HAVING A PLURALITY OF TOUCH CONTACTS

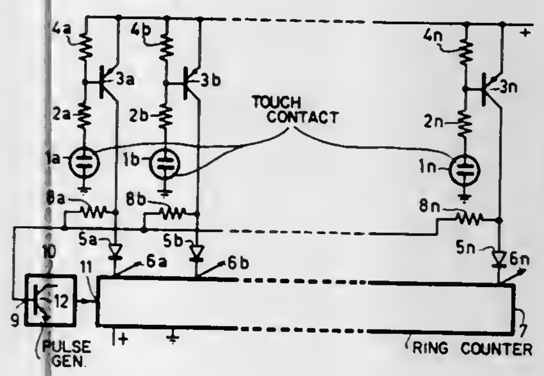
Cornelis Jozef Hulsbosch, and Tjeerd Pieter van der Zee, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,678

Claims priority, application Netherlands, Aug. 25, 1972, 7211592

Int. Cl. H03k *27/00;* **H03j** *1/00*

U.S. Cl. 307—308 **6 Claims**



1. A circuit arrangement having a plurality of touch contacts, and outputs corresponding thereto, in which in response to an instantaneous operation of one of the contacts the output corresponding thereto continously assumes an operating condition and the other outputs assume a rest condition, said circuit arrangement comprising a ring counter having outputs constituting of said outputs of the circuit arrangement, characterized by a number of gates which are each controlled by one of the contact and the corresponding output of the ring counter and are able to supply a gateoutput signal if the contact connected thereto is operated and the ring counter output connected thereto is in the rest condition, and means controlled by said gates for applying counting pulses to the ring counter if and as long as one of the said gates supplies the said gate-output signal.

3,872,329

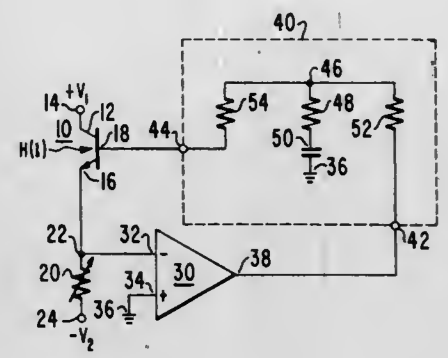
RADIATION SENSING CIRCUIT

George Bertram Dodson, III, Shirley, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,826

Int. Cl. H03k *3/42;* **G01j** *1/32*

U.S. Cl. 307—311 **10 Claims**



1. In combination:

a circuit node;

a radiation sensor having a control terminal to which a control signal may be applied for adjusting the radiation sensitivity of said sensor and having also an output current path connected to said node for supplying an output current thereto, said output current being proportional to the intensity of radiation applied to said sensor at a given control signal level applied to said control terminal;

a second current path connected to said circuit node for withdrawing from said node a fixed current level, said second current path accepting the current supplied to said node by said output current path;

circuit means for supplying said control signal to said sensor and for maintaining said circuit node at a given virtual reference voltage level, said circuit means including means responsive to any tendency for the current level in said output current path to change, for changing the value of the control signal in a sense to return the flow of current in said output current path to its original value; and low pass filter means for initially receiving said control signal produced by said circuit means, attenuating said control signal and applying the attenuated control signal to said sensor, said low pass filter means having a first and a second, higher, break frequency and providing minimum attenuation of said control signal at frequencies below said first break frequency and a fixed maximum value of attenuation of said control signal at frequencies above said second break frequency.

3,872,330

HIGH POWER ACOUSTICAL TRANSDUCER WITH ELASTIC WAVE AMPLIFICATION

Darrow L. Miller, Los Angeles, and William Y. Wells, Torrance, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 25, 1973, Ser. No. 409,534

Int. Cl. H01v *7/00*

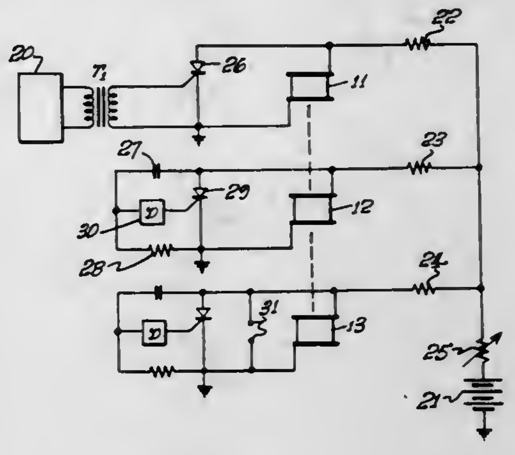
U.S. Cl. 310—8 **13 Claims**

1. A method of producing sonic or ultrasonic waves from a number of piezoelectric elements acoustically coupled, said elements being polarized for expansion and contraction along the axis of soundwave transmission comprising the steps of

charging said elements simultaneously through a high impedance from a voltage source,

discharging said elements in sequence, each element being discharged through a low impedance path, and

timing the discharge of each succeeding element after the first element has been discharged by detecting the sonic energy induced voltage produced in each element by the elastic wave progressing through said element and triggering a switch to discharge the element in which the induced voltage is detected whereby the discharge occurs in phase sequence with the elastic wave passing through it from the preceding element.



3,872,331

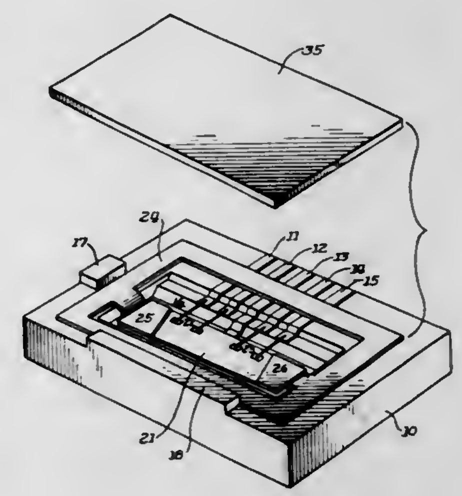
PACKAGED SURFACE WAVE SELECTIVE CIRCUIT DEVICE AND METHOD OF MAKING THE SAME

Guy N. Falco, Schaumburg, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,811

Int. Cl. H01r *7/00*

U.S. Cl. 310—9.4 **6 Claims**



4. A surface wave selective circuit device adapted for electrical and mechanical interfacing with associated circuit devices comprising:

a recessed ceramic container having a plurality of printed electrically conductive patterns including a ground plane on the bottom of the recess and conductive terminals extending from the recess along a predetermined surface of said ceramic container;

at least two distinctive reference locations located on said ceramic container providing measurement reference points for positioning a surface wave device within the recess;

a surface wave selective device, having input and output transducer terminals on an operational surface of a substrate of piezo-electric material, conductively bonded within said recess in a position providing clearance for said operational surface with the walls of said recess and with said opposed major surface electrically connected to said ground plane;

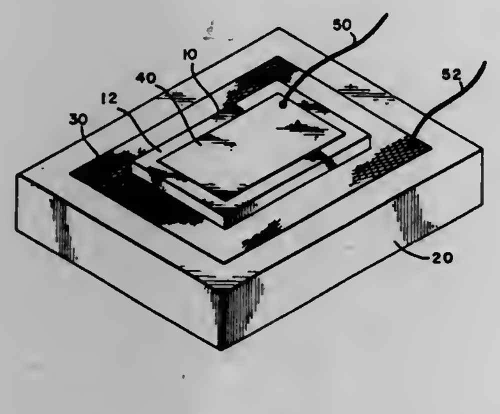
means for electrically connecting said input and output transducer terminals to said conductive terminals;

a preformed gasket in contact with said ceramic container and aligned with respect to said distinctive reference locations said gasket having inwardly extending dampening elements contacting the respective end regions of said

operational surface of said selective device to provide controlled dampening of surface waves; and
a ceramic cover plate in contact with said preformed gasket and sealed to said ceramic container to overlie said recess without contacting said surface wave selective device while permitting access to said conductive terminals to establish the required electrical connection to said surface wave selection device.

3,872,332
COMPOSITE BOND FOR ACOUSTIC TRANSDUCERS

Charles D. Butter, Eden Prairie, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 19, 1971, Ser. No. 135,287
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.7 2 Claims

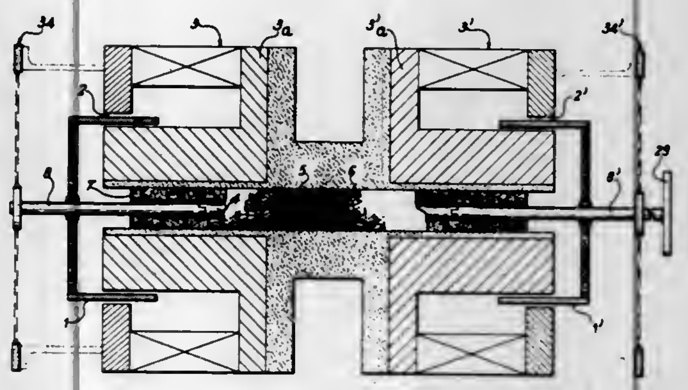


1. An acoustic device comprising:
a piezoelectric transducer having a first and a second surface and a first acoustic impedance,
an acoustic medium having a third surface and a second acoustic impedance different from the first acoustic impedance,
first electrode means attached to the first surface, a sheet-like electrically conductive metal mesh positioned between the second and third surfaces and forming a second electrode means, the electrically conductive metal mesh having a plurality of openings therein, and,
a polymerizable plastic material filling the openings of the electrically conductive metal mesh and adhering to the second and third surfaces, the electrically conductive metal mesh and the polymerizable plastic material forming a composite bond having a third acoustic impedance essentially equal to the square root of the first and second acoustic impedances, the third acoustic impedance being determined by the impedance of the electrically conductive metal mesh, the impedance of the polymerizable plastic material, and the percentage of open space in the electrically conductive metal mesh.

3,872,333
GENERATOR FOR PRODUCING RECTILINEAR VIBRATIONS AT A CONTROLLED VELOCITY ESPECIALLY FOR USE IN MOSSBAUER SPECTROMETERY

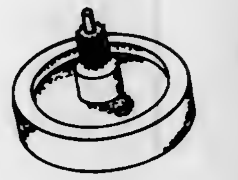
Pierre Imbert, Bures-Sur-Yvette, and Jean-Francois Lericque, Val-D'Albian, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Feb. 28, 1973, Ser. No. 336,825
Claims priority, application France, Mar. 8, 1972, 72.07977
Int. Cl. H02k *33/12*
U.S. Cl. 310—27 3 Claims

1. A generator for producing rectilinear vibrations at a controlled velocity, of the type comprising a driving unit formed by a stationary permanent magnet and by a driving electromagnetic coil which moves within the airgap of said magnet, a rod rigidly fixed to said coil and a transducer for detecting the velocity of said rod and regulating the vibrations by electronic control, said transducer being constituted by a magnetized pin placed within a stationary double solenoid having reverse windings and carried by a stationary body and one end of said pin being attached to said rod, wherein said generator essentially comprises a second rod attached to the other end of said magnetized pin and a second driving unit in which the polarity of the magnet is opposite to that of the first in order to permit pushpull operation therewith, said second rod and said second driving unit being mounted symmetrically with the first with respect to the central transverse section of said magnetized pin and said velocity transducer being fitted within said two driving units.



3,872,334
INTEGRAL ROTOR AND GEAR ASSEMBLY

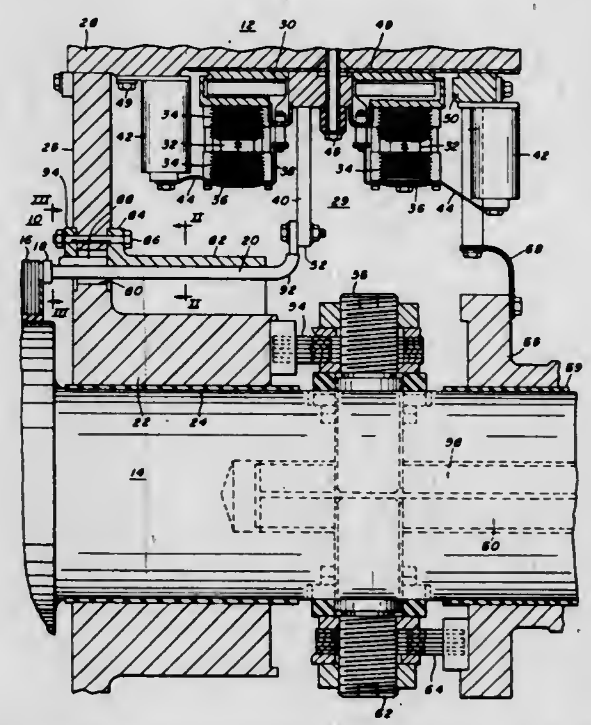
Robert J. Loubier, 3111 Covington Rd., Fort Wayne, Ind. 46704
Division of Ser. No. 244,130, April 14, 1972, Pat. No. 3,842,148. This application Apr. 18, 1974, Ser. No. 461,904
Int. Cl. H02k *7/10*
U.S. Cl. 310—43 10 Claims



1. For use in a dynamoelectric machine, an integral rotor assembly comprising a permanently magnetized rotor and a force-transmitting element formed of the same material, said material including a solidified mixture of thermoplastic and magnetic particles capable of being permanently magnetized, said magnetic particles in said rotor being oriented according to a predetermined magnetic field pattern, said thermoplastic serving as a holding matrix for said particles and also providing structural strength for said assembly, said particles being homogeneously distributed throughout said assembly except as modified by said orientation, the quantity of said particles in said assembly being sufficient to provide said rotor with a predetermined magnetic strength with said particles oriented as aforesaid, and the quantity of said thermoplastic in said assembly being sufficient to provide a predetermined structural strength for said assembly, said structural strength being of a magnitude as provides for the transmission of motive force by said force-transmitting element to or from said rotor.

3,872,335
ROTATING RECTIFIER ASSEMBLY FOR BRUSHLESS EXCITERS

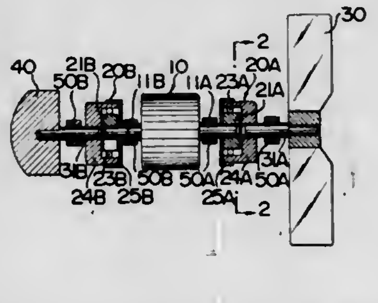
Sigrud R. Petersen, Irwin; Sui-Chun Ying, Monroeville, and August C. Mann, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1974, Ser. No. 448,859
Int. Cl. H02r *11/00*
U.S. Cl. 310—68 D 9 Claims



1. In a brushless excitation system including an alternating current exciter and a rotating rectifier assembly having a rectifier wheel supported for rotation with the exciter, said wheel having a radial web portion and a rim portion, rectifier means mounted on the rim portion of the wheel, a plurality of leads extending radially from the exciter and passing through openings in the web portion of the wheel for connection to said rectifier means, and means for supporting said leads comprising an elastic tubular member attached to the web portion of the wheel in position to encircle the leads, said tubular member extending axially over the leads and engaging the leads to support them in the radial direction.

3,872,336
FLECTRIC APPLIANCE WITH HAIR DRYER AND SHAVER

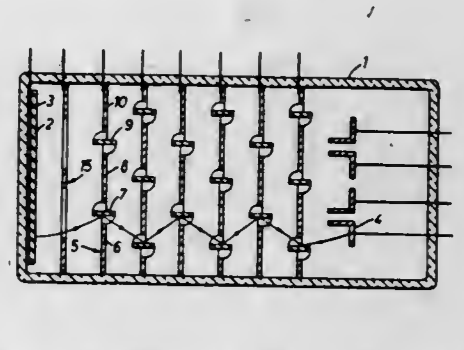
Jeunn-Wen Lin, 18-3 Lani 29 Chin Hsuch St., Tainan, and Go-Sing Lin, 4 Tzu-Hao, Hsing-shu Rd., Kaohsung Hsien, both of China
Filed Jan. 24, 1974, Ser. No. 436,196
Int. Cl. H02k *7/14*
U.S. Cl. 310—78 7 Claims



1. In combination, a shaver and hair dryer, comprising: a motor having axial, rotatable shaft means; hair dryer fan means selectively connectible with said shaft means for rotation therewith to dry hair; shaver blade means selectively connectible with said shaft means for rotation therewith to shave hair; transmission means connected between said hair dryer fan means and the shaft means and between the shaver blade means and the shaft means to alternately selectively engage and disengage said fan means and said shaft means and then said shaver blade means and shaft means; and means operatively associated with said transmission means to operate said transmission means.

3,872,337
ELECTRON MULTIPLIER FORMED BY TWISTING FINGERS IN PARALLEL PLATES

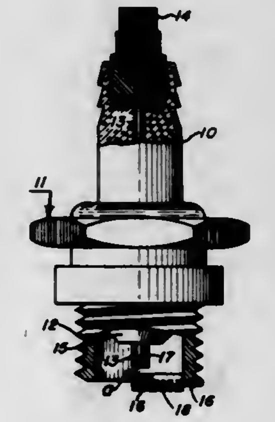
Gordon Peter Davis, Sunbury-on-Thames, and John Wardley, Hounslow, both of England, assignors to EMI Limited, Middlesex, England
Filed Feb. 21, 1974, Ser. No. 444,370
Claims priority, application United Kingdom, Feb. 27, 1973, 9747/73
Int. Cl. H01j *43/20, 39/04*
U.S. Cl. 313—95 5 Claims



1. An electron multiplier having a hermetically sealed envelope, a plurality of secondary electron emissive multiplying electrodes in said envelope, said electrodes comprising a plurality of parallel conductive plates arranged one behind the other and slit to form fingers in the planes of said plates with alternate fingers being twisted out of the planes of the plates perpendicular thereto, the twisted fingers in successive plates being staggered to form separate zigzag electron multiplying channels.

3,872,338
SPARK PLUG

Bernard Wax, 38 Highland Ave., Succasunna, N.J. 07876
Filed July 23, 1973, Ser. No. 381,758
Int. Cl. H01t *13/20, 13/46*
U.S. Cl. 313—130 2 Claims



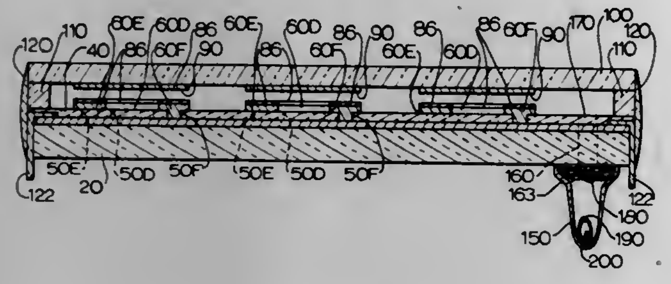
1. A spark plug comprising,
a. a core of insulating material carried by a metal shell,
b. a main electrode carried by said core,
c. a ground electrode connected to said shell and having an end portion spaced from an end portion of the main electrode
d. a non-conducting ceramic material covering the said end portion of the ground electrode, and

- e. a non-conducting ceramic material covering the said end portion of the main electrode and spaced from the covering on the end portion of the ground electrode.

3,872,339
MULTI-POSITION CHARACTER DISPLAY PANEL

Thomas C. Maloney, Bernardsvllle, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 3, 1972, Ser. No. 294,535
Int. Cl. H01j *61/28*
U.S. Cl. 313—188 **6 Claims**

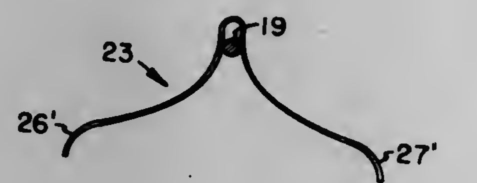


1. A display device comprising
a gas-filled panel-like envelope including a base plate and a face plate spaced therefrom,
at least one anode and one cathode electrode within said envelope,
a hole in said base plate for permitting gas to leave and enter said envelope,
a tubulation secured to said base plate and enclosing said hole,
a mass of mercury in said tubulation, and
a mass of fibrous material in said tubulation and positioned to block said hole,
said mass permitting the flow of gas and mercury vapor into said envelope through said hole, but preventing the entry of relatively large globules of mercury through said hole into said envelope.

3,872,340
HIGH TEMPERATURE LAMP STARTING AID

Byron R. Collins, Twinsburg, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 28, 1974, Ser. No. 473,743
Int. Cl. H01j *65/00*
U.S. Cl. 313—198 **9 Claims**

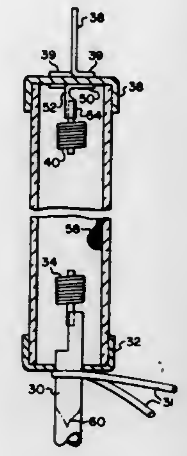


1. A high pressure metal vapor lamp comprising:
a tubular light-transmitting envelope having thermionic electrodes sealed into its ends and containing a charge of vaporizable metal and inert starting gas;
and a capacitive starting aid comprising a thermally deformable metal member electrically connected to one electrode, said member having an end disposed to lie against the envelope at room temperature in order to facilitate starting by capacitive effect, and adapted to move away from said arc tube when heated by the operation of said lamp.

3,872,341
ELECTRODE SUPPORT ELEMENT FOR CERAMIC DISCHARGE LAMP

Leo C. Werner, Cedar Grove, N.J.; Francis C. M. Lin, Flushing, N.Y., and William J. Knochel, West Orange, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1974, Ser. No. 447,618
Int. Cl. H01j *17/04*
U.S. Cl. 313—217 **7 Claims**

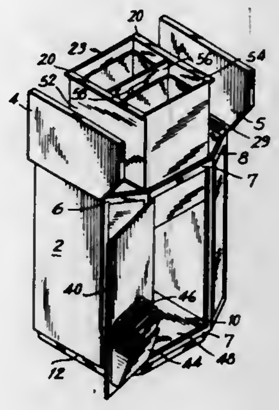


4. An improved electrode support element for a ceramic discharge lamp, said electrode support element being formed from a single strip of refractory metal and comprising:
an intermediate flat blade portion;
a pair of foot portions at one end of said blade portion extending in opposite directions away from and at right angles to said blade portion; and
a semi-tubular electrode gripping portion at the other end of said blade portion extending linearly therewith.

3,872,342
CABINET

Carolyn H. Dankert, 11 Muller Ave., Highland Falls, N.Y. 10928

Continuation-in-part of Ser. No. 200,939, Nov. 22, 1971, abandoned. This application May 1, 1972, Ser. No. 249,266
Int. Cl. A47b *81/02*
U.S. Cl. 312—290 **3 Claims**

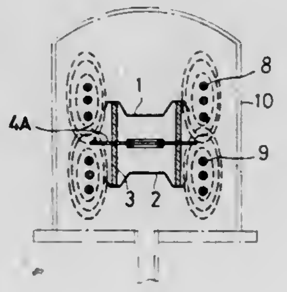


1. A cabinet of the type used in a kitchen comprising:
- a. a substantially hollow housing;
- b. storage means within said housing comprising a generally rectangular housing and a removable rectangular receptacle within said rectangular housing;
- c. said receptacle comprises a plurality of compartments, said receptacle having handle means for removing said receptacle from said housing;
- d. a top wall comprising at least two top members each pivotally secured to said housing, with at least one of said members having opened and closed positions such that with said one member in said open position, said top wall is thereby partially removed exposing said storage means to provide access to the top of said housing into said storage means, and with said one member in said closed position there is provided, from one of said members to the other of said members, a continuous and uninterrupted work surface; and
- e. shelves lying parallel to said top wall, affixed to said housing, and spaced below said top wall such that with one of said members in said open position, at least one of said shelves is accessible to said top, said receptacle has flange means for engaging said shelves, said shelves support said receptacle.

3,872,343
MULTIPLE-ELECTRODE DISCHARGE TUBE AND METHOD OF MANUFACTURING SAME

Shigeru Furuta, Tokyo, Japan, assignor to Kabushiki Kaisha Sankosha, Tokyo, Japan

Division of Ser. No. 211,917, Dec. 27, 1971, Pat. No. 3,771,205. This application Apr. 13, 1973, Ser. No. 351,170
Int. Cl. H01j *1/46, 21/10*
U.S. Cl. 313—296 **2 Claims**



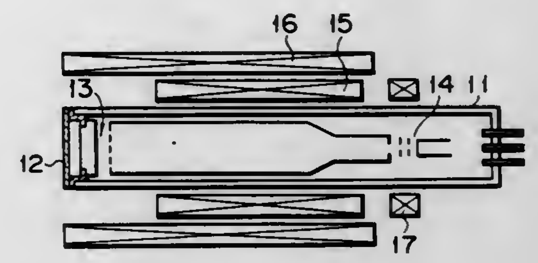
1. A multiple electrode discharge tube comprising:
a cylindrical glass envelope having a substantially uniform outer diameter;
at least one first disc-shaped electrode member positioned to extend through said envelope at a position intermediate the opposite ends of said envelope;
a plurality of second disc-shaped electrode members positioned to extend through said envelope at positions on opposite sides of said at least one first electrode member; each of said at least one first electrode members having a thickness and a diameter greater than the thickness and diameter of each of said plurality of second electrode members;
the outer edges of each of said first and second electrode members extending externally of the outer surface of said envelope and forming connecting terminals; and
said envelope being fused and rigidly secured to said electrode members at the portions thereof extending through said envelope.

3,872,344
IMAGE PICKUP TUBE

Kazuo Shimizu, and Okio Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 15, 1972, Ser. No. 289,278
Int. Cl. H01j *31/26*
U.S. Cl. 313—386 **14 Claims**

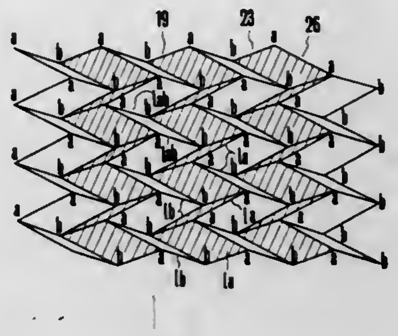
1. An image pickup tube comprising a vacuum envelope containing an electron gun, a target disposed on the front of the envelope and a signal pickup electrode, said target having an effective scanning region which is scanned by the electron beam emitted by said electron gun;
the improvement wherein:
said target comprises a first photo-conductive layer made of cadmium selenide disposed on the inner surface of the faceplate of said envelope, a second layer disposed on said first photo-conductive layer, a high resistivity layer disposed on said second layer and a transparent electrically conductive layer disposed on the outer central surface of said first photo-conductive layer corresponding to said effective scanning region; an
said signal pickup electrode is located so as to reduce the residual image on said effective scanning region of said target, said signal pickup electrode being disposed only on the edge portion of said target and not on said effective scanning region of said target, said signal pickup electrode surrounding said transparent conductive layer and being spaced from said transparent conductive layer.



3,872,345
COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara, and Akio Yamaguchi, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,938
Claims priority, application Japan, Oct. 27, 1972, 47-107203
Int. Cl. H01j *29/80*
U.S. Cl. 313—403 **7 Claims**



1. In a colour picture tube of the class comprising an evacuated envelope, a fluorescent screen disposed in said envelope, a colour selection electrode disposed to oppose said fluorescent screen and including an effective area provided with a plurality of perforations for transmitting electron beams, and an electron gun assembly, the improvement which comprises a compensating mechanism having a corrugated surface of contiguous concave-convex areas substantially constituting said effective area of said colour selection electrode for absorbing local thermal expansion of said effective area thereby preventing deformation of said effective area.

3,872,346
CHARACTER DISPLAY DISCHARGE TUBE

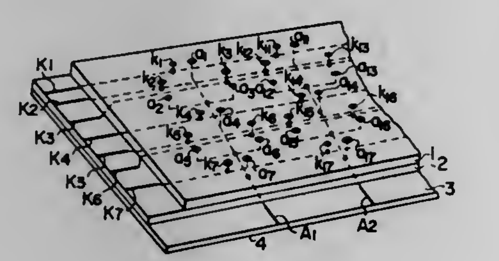
Takao Kunii, 10-9 Mukonaso-1-chome, Amagasaki, Japan

Filed July 17, 1973, Ser. No. 380,098

Claims priority, application Japan, July 20, 1972, 47-73206; Aug. 25, 1972, 47-85613

Int. Cl. H01j *7/42*

U.S. Cl. 313—514 **8 Claims**



5. A character display discharge device as defined by claim 4 wherein said multiplicity of second conductive bus bars are parallel to each other and perpendicular to said first conductive bus bar.

3,872,347
DEGAUSSING DEVICE FOR COLOUR CATHODE RAY TUBES

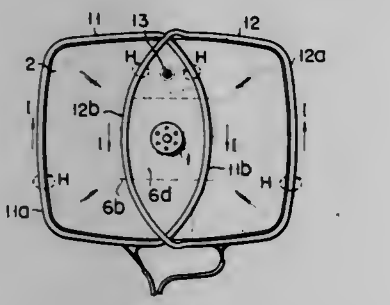
Yoshiichi Matsushima, Yokohama, and Toshiyuki Abe, Fukaya, Saitama, both of Japan, assignors to Tokyo Shibaura Electric Co., Kawasaki-shi, Japan

Filed Apr. 9, 1973, Ser. No. 349,637

Claims priority, application Japan, Apr. 14, 1972, 47-37556; Apr. 14, 1972, 47-37562; June 17, 1972, 47-60055

Int. Cl. H01f *13/00*

U.S. Cl. 315—8 **6 Claims**



1. A degaussing device for a colour television picture tube which comprises a generally funnel shaped envelope portion having a faceplate at one end thereof, said faceplate having outer side peripheral portions, and a neck section at the other end thereof, the axial direction of the picture tube being defined as a direction extending substantially centrally through the funnel shaped envelope portion from the neck section to the faceplate, and electron beam deflection means (7) provided around the outer periphery of the neck section of the picture tube, and having a forward end portion which is located closer to the faceplate than the remaining portions of the deflection means (7), comprising:

a frustum-shaped magnetic shield (6) received in the colour television picture tube and formed of a forward end portion (6*a*) magnetically connected to a shadow mask disposed adjacent to the faceplate of the colour television picture tube, a rear end portion (6*b*) set apart in the axial direction of the picture tube from the forward end portion of the electron beam deflection means (7) and an intermediate portion (6*c*) extending substantially along an inner wall of the generally funnel shaped envelope portion of the television picture tube;

degaussing coil means (**11,12**) including a pair of outer coil portions (**11***a*,**12***a*) extending opposing each other along the outer side periphery of the faceplate and a pair of inner coil portions (**11***b*,**12***b*) extending opposing each other toward the neck section which passes between said inner coil portions, said inner coil portions (**11***b*,**12***b*) being on the outside of, and adjacent to, the funnel shaped envelope portion of said tube and said inner and outer coil portions being coupled with each other to form at least one loop, parts of the inner coil portions (**11***b*,**12***b*) being disposed substantially above the edge (6*b*) of the rear opening of the magnetic shield (6) and being between the rear end portion (6*b*) of the magnetic shield (6) and the forward endc portion (6*a*) of the deflection means (7), said outer coil portions (**11***a*,**12***a*) being positioned near the forward end portion (6*a*) of the magnetic shield (6) ; and

a degaussing current source (**14**) connected to the degaussing coil means (**11,12**) to supply at least one graduately attentuating alternating current to the degaussing coil means so as to produce current flow in the outer coil portions (**11***a*,**12***a*) in a predetermined direction relative to the tube and to produce current flow in the inner coil portions (**11***b*,**12***b*) in a direction opposite to said predetermined direction to thereby prodcuce degaussing flux flow which passes through both the magnetic shield and the shadow mask.

3,872,348
SPOT POSITIONING CONTROL FOR DISPLAY TUBES

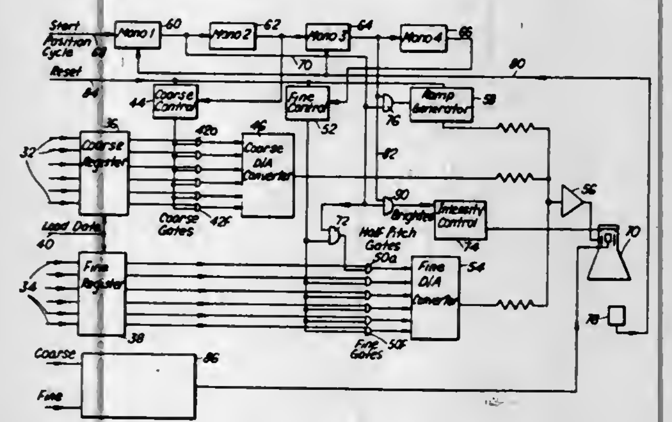
Edward T. Astley, London, England, assignor to Crosfield Electronics Limited, London, England

Filed June 18, 1973, Ser. No. 370,642

Claims priority, application United Kingdom, July 26, 1972, 34979/72

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 R **17 Claims**



7. A light-spot positioning system in which a beam is angularly deflected to cause a light spot to traverse a grating of parallel lines, the system comprising:

beam-deflecting means for progressively deflecting a beam in a required direction to progressively displace the point of intersection of the beam with the grating;

first beam-positioning means for adjusting the beam position, in the said direction, by an amount such that the beam intersection with the grating moves through a fraction of a grating pitch;

second beam-positioning means for positioning the beam so as to displace its point of intersection with the grating in the desired direction through a distance equal to an integral multiple of the grating pitch;

detecting means for sensing the intersection of the beam with a grating line;

and sequencing means whereby initially the beam is positioned at least a predetermined fraction of the grating pitch from a grating line, by progressive deflection of the beam by the beam-deflecting means until the detecting means senses the intersection of the beam with an auxiliary line preceding the grating in the direction of travel of the beam and spaced therefrom by said predetermined fraction of the grating pitch, after which the second

beam-positioning means adjusts the beam position in the said direction by a predetermined integral multiple of the grating pitch, and thereafter the beam-deflecting means progressively deflects the beam until stopped by the action of the detector means on sensing the next intersection of the beam with a grating line.

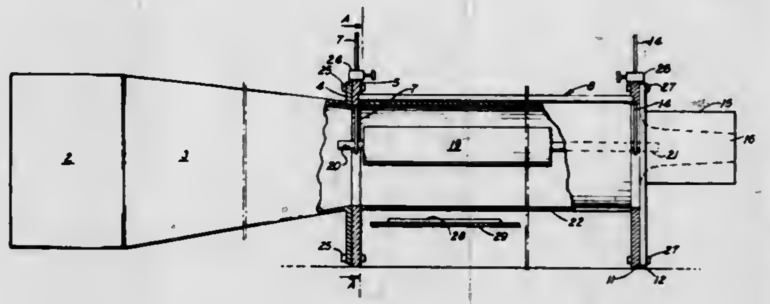
3,872,349
APPARATUS AND METHOD FOR GENERATING RADIATION

Donald M. Spero, Bethesda; Bernard J. Eastlund, Rockville, and Michael G. Ury, Bethesda, all of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 239,149, March 29, 1973,. This application Aug. 22, 1973, Ser. No. 390,659

Int. Cl. H01j *7/46, 19/80*

U.S. Cl. 315—39 **25 Claims**



1. A microwave generated plasma light source for emitting a longitudinally extending sheet of light of arbitrary length comprising

means for generating microwave energy,

means for coupling said generated microwave energy to a discharge unit,

said discharge unit comprising a longitudinally extending non-resonant microwave chamber of an arbitrary length which encloses a sealed plasma-forming medium containing envelope which extends in said longitudinal direction in said chamber,

said chamber being comprised of a first longitudinally extending elliptically shaped reflecting member which is opaque to microwaves but is light reflective on its inside surface for reflecting light emitted by said envelope and a second longitudinally extending plane member joined to said elliptically shaped reflecting member along the bottom of said reflecting member to form said chamber,

said second member being substantially opaque to microwaves but substantially transparent to said emitted light, whereby light emitted along the entire length of said envelope is reflected as a sheet of light by said elliptical reflecting member through said transparent member and out of said chamber.

3,872,350
BALLAST HAVING INTEGRAL TIME DELAY RELAY

Walter F. Powell, Danville, and Charles Grimshaw, Fulton, both of Ill., assignors to General Electric Company

Filed Mar. 20, 1973, Ser. No. 342,993

Int. Cl. H05b *39/04*

U.S. Cl. 315—104 **6 Claims**

4. A ballast for starting and operating at least one gaseous discharge lamp having spaced apart electrodes; said ballast comprising:

an elongated casing at least partially filled with a potting material;

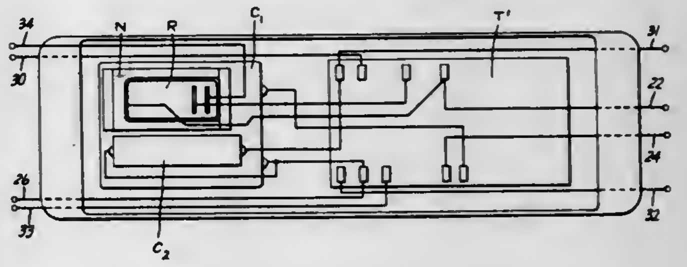
a transformer received in said casing, said transformer including a primary winding and a secondary winding inductively coupled therewith;

input circuit means for connecting said primary winding to a source of electric energy;

output circuit means for connecting at least said secondary winding to the at least one gaseous discharge lamp;

said transformer also including auxiliary windings inductively coupled to said primary winding for providing heating power for the electrodes;

a time delay relay received in said casing; said time delay relay including a heater electrically connected to one of said auxiliary windings for energization therefrom;



said time delay relay also including a switch connected in said output circuit means, said switch normally being open and moving to a closed condition upon a predetermined energization of said heater.

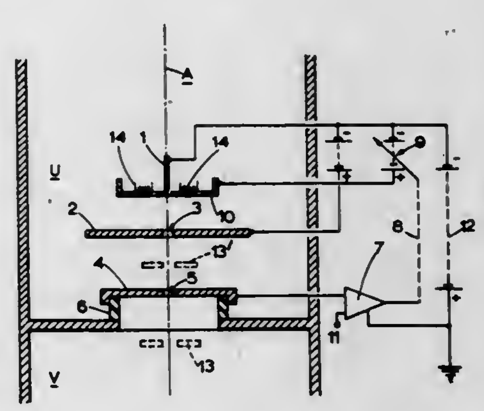
3,872,351
ELECTRON GUNS

Kenneth Charles Arthur Smith, 50 Selwyn Rd., Cambridge, and John Richard Adrian Cleaver, 27 Heath Rd., Potters Bar, Hertfordshire, both of England

Filed Apr. 24, 1973, Ser. No. 353,979

Int. Cl. H05b *39/04*

U.S. Cl. 315—107 **8 Claims**



1. A self-contained field emission electron beamforming gun assembly comprising a field emission cathode having a small-radius tip, an anode spaced from said cathode, said anode having a hole therethrough, means applying a positive electric potential to said anode with respect to said cathode whereby to cause the emergence of electrons from said tip, some of said electrons passing through said hole in the form of a beam, means for monitoring the quantity of said electrons passing through said hole, and correcting means responsive to said monitoring means, said correcting means determining the emission of electrons from said tip such as to keep said quantity of electrons passing through said hole substantially constant.

3,872,352
COLD CATHODE DISCHARGE DISPLAY APPARATUS

Rentaro Sasaki; Akinori Watanabe, both of Takasaki, and Tatsuo Ogasawara, Tokyo, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Okaya Electric Industry Co., Ltd., both of Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,423

Claims priority, application Japan, May 25, 1972, 47-051238

Int. Cl. H01j *29/70*

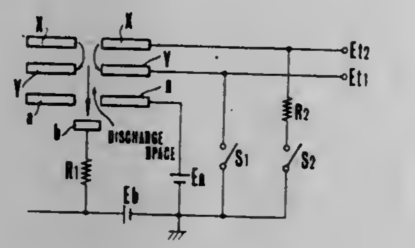
U.S. Cl. 315—169 R **6 Claims**

5. A cold cathode discharge display apparatus; a plurality of first electrodes;

second electrode having a plurality of perforations, each of which is arranged so as to substantially confront each of said first electrodes;

a plurality of third electrodes which are arranged in parallel to each other and are oriented in a first direction, each of those electrodes having a plurality of perforations substantially aligned with the corresponding said perforations of said second electrodes;

a plurality of fourth electrodes which are arranged in parallel to each other and are oriented in a second direction, each of those electrodes having a plurality of perforations substantially aligned with the corresponding said perforations of said third electrodes; and



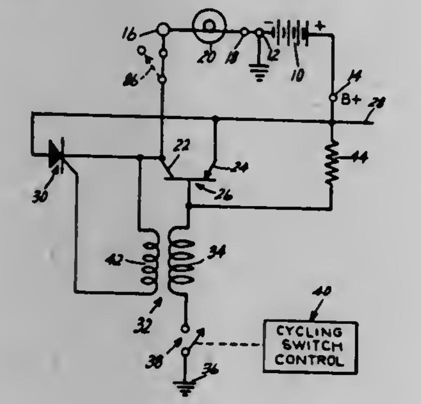
a voltage detecting means to detect the voltage change between said third electrodes and said fourth electrodes; whereby when the voltage lower than firing voltage but higher than voltage for sustaining the discharge, is applied between said first and said second electrodes and at the same time said third and said fourth electrodes which are properly selected, are energized by an electrical signal, a proper pattern is formed in display while when the voltage lower than firing voltage but higher than the discharge sustaining voltage is applied between said third electrodes and said fourth electrodes, a pattern in display may be detected.

3,872,353

ELECTRONIC FLASHER CIRCUIT

Gerald D. Smith, and Frank R. Owens, both of Indianapolis, Ind., assignors to Carson Manufacturing Company, Inc., Indianapolis, Ind.

Filed Oct. 10, 1973, Ser. No. 404,996
Int. Cl. H05b *37/00*
U.S. Cl. 315—200 A **14 Claims**



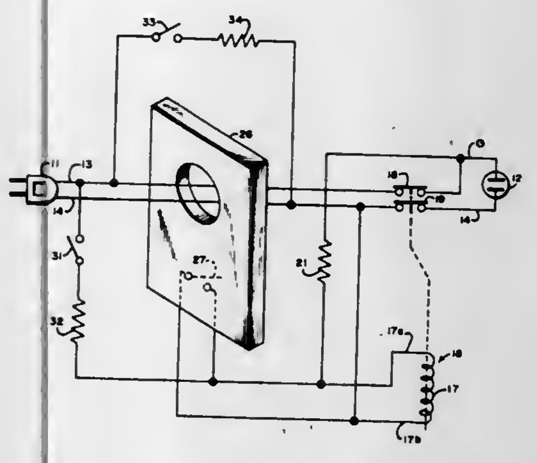
1. A circuit for use in an electronic flasher comprising first and second normally non-conductive semiconductor switching devices each having a control element and two current-conducting elements, said current-conducting elements being coupled in shunt, two flasher-lamp electrodes and two power supply electrodes series connected with said current-conducting elements of one of said switching devices, and means for applying periodic switching potentials simultaneously to both said control elements for rendering both said switching devices conductive, said first switching device having a faster response time to the application of said switching potentials than said second switching device whereby said first switching device is rendered conductive in advance of said second switching device, said first switching device requiring a predetermined potential difference across its current-conducting elements to maintain its conductive state whereby a lesser potential difference thereacross occurring in response to said second switching device becoming conductive renders said first switching device non-conductive.

3,872,354

PORTABLE GROUND FAULT INTERRUPTER

David William Nestor, Oroville, and Paul E. Wible, Alamo, both of Calif., assignors to The Rucker Company, Concord, Calif.

Filed Nov. 19, 1973, Ser. No. 416,740
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **7 Claims**



1. In a ground fault protective device, electrical contacts movable between closed and open positions for controlling the flow of current in conductors interconnecting a source and a load, a control element adapted for holding the contacts in their closed position when energized, a current limiting element connected between a first terminal of the control element and a first one of the conductors at a point on the load side of the contacts, the second terminal of the control element being connected to a second one of the conductors at a point which remains energized when the contacts are in their open position, ground fault responsive means for bypassing the control element to deenergize said element and cause the contacts to assume their open position in the event of a ground fault in the conductors, and reset switch means connected between the first terminal of the control element and the first conductor at a point on the source side of the contacts for reenergizing the control element to close the contacts when the ground fault has been eliminated.

3,872,355

FIRE DETECTION AND PROJECTION CIRCUIT AND DEVICE

Keith William Klein; Norman Thomas Swetnam, and Robert Allen Cahill, all of Simsbury, Conn., assignors to General Electric Company, Schenectady, N.Y.

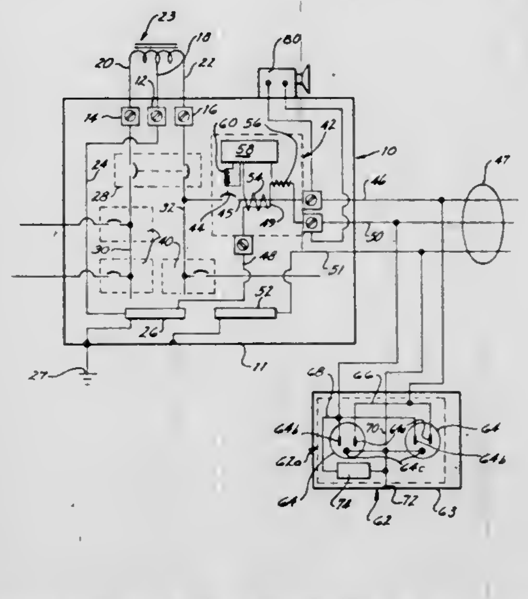
Filed Sept. 18, 1973, Ser. No. 398,492
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **6 Claims**

1. An abnormal condition detection system using conventional building electrical power distribution circuits which include a line conductor, a neutral conductor and a continuous, conductive ground circuit extending from a load center to various distributed load outlets, wherein the neutral conductor is connected to the ground circuit at a location in the vicinity of the load center, said system comprising, in combination:

A. means associated with the line and neutral conductors at a location intermediate the location of neutral conductor ground circuit connection and the load outlets for sensing a ground fault on either conductor;

B. an abnormal condition responsive detector located in the vicinity of one of the load outlets and electrically connected between the neutral conductor and the ground circuit,

1. said detector exhibiting a normally high electrical impedance until the condition to which said detector is sensitive reaches a predetermined degree of abnormality, whereupon said detector exhibits a low impedance sufficient to simulate a ground fault on the neutral conductor of sufficient magnitude to produce a response by said sensing means; and



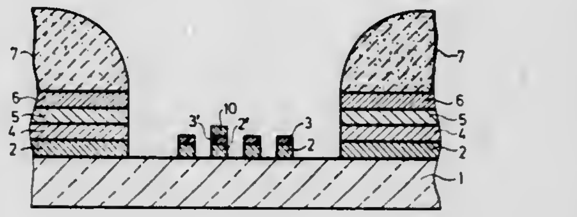
C. means responsive to said response of said sensing means for manifesting the existence of the abnormal condition.

3,872,356

THIN FILM ELECTRONIC CIRCUIT UNIT AND METHOD OF MAKING THE SAME

Gunter Kruger, Leonberg; Helmut Baum, Stuttgart, and Manfred Widmaier, Leonberg-Eltingen, all of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

Filed Oct. 30, 1972, Ser. No. 302,150
Claims priority, application Germany, Nov. 5, 1971, 2155029
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 A **4 Claims**



1. A thin film electronic circuit unit of laminate structure comprising:

a substrate of insulating material;

a film of valve metal on said substrate partially covering said substrate in a first and a second pattern, said first and second patterns being electrically connected by at least one local contiguity and respectively defining a first and a second portion of said film, said first pattern defining circuit elements and said second pattern defining both contactable areas of a circuit and also circuit connections;

a film of valve metal oxide on said first portion of said film of valve metal, said first portion of said film of valve metal being of a thickness reduced relative to said second portion of said film of valve metal by the presence of said oxide film;

a first film of copper on said second portion of said film of valve metal;

a film of diffusion barrier metal on said first film of copper;

a second film of copper above said film of diffusion barrier metal, and

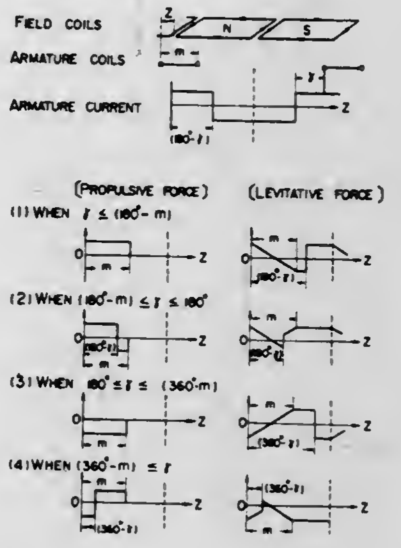
a coating of low-melting lead-tin solder on the outermost film of copper.

3,872,357

LINEAR SYNCHRONOUS MOTOR FOR HIGH-SPEED VEHICLES

Naoki Maki, Ibaraki; Hironori Okuda; Sadaharu Kawai, and Tamotsu Tatsumi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1973, Ser. No. 357,117
Claims priority, application Japan, May 8, 1972, 47-45208
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 **6 Claims**



1. A commutatorless linear synchronous motor for high-speed vehicles comprising field coils mounted on the vehicles, armature coils laid on the ground oppositely to said field coils, and means for supplying electric power to said armature coils such that both the propulsion and levitation forces are simultaneously generated for the vehicle by the cooperation of said field coils and said armature coils, said supply means controlling the phase of the armature current flowing in the armature coils such that the armature current rises up when an electrical angle γ for said armature coils is in the range expressed by the inequality

$$(180°/x - m/2 + u/2) < \gamma < (180° + 180°/x - m/2 + u/2)$$

where n is the number of phases of said armature coils, m the length of the a armature coils, u the overlapping angle, and x is 2 or n depending on whether the current in said armature coils is regulated by the full-wave control system or the half-wave control system, respectively.

3,872,358

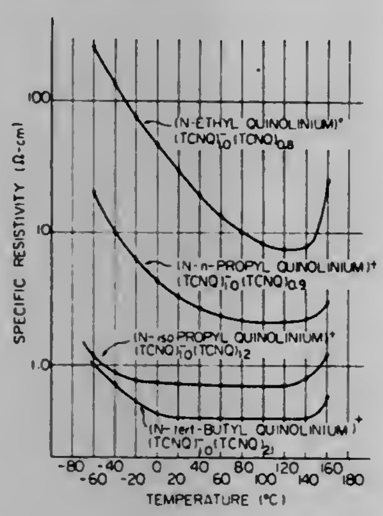
SOLID ELECTROLYTIC CAPACITOR AND SOLID ELECTROLYTE THEREFOR

Mutsuaki Murakami, and Susumu Yoshimura, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Osaka, Japan

Filed June 11, 1973, Ser. No. 368,488
Claims priority, application Japan, June 13, 1972, 47-58881
Int. Cl. H01g *9/05*
U.S. Cl. 317—230 **7 Claims**

1. An electrolytic capacitor having improved thermal stability comprising a pair of electrodes, at least one of said electrodes being composed of a film-forming metal having a dielectric film thereon, and a solid electrolyte comprising a charge transfer complex composed of 7,7,8,8-tetracyanoquinodimethane and a nitrogen-containing hetero-

cyclic compound, said complex having at N-position of the heterocyclic compound a substituent group selected from an



alkyl group containing from one to 18 carbon atoms, and a cycloalkyl group containing five to eight carbon atoms.

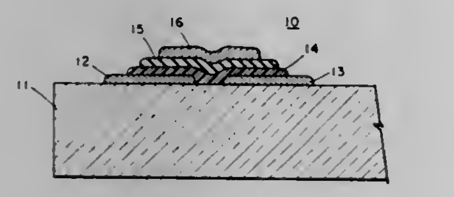
3,872,359
THIN FILM TRANSISTOR AND METHOD OF FABRICATION THEREOF

Alfred E. Feuersanger, 66 Overlook Drive, Franklin Square, N.Y. 01701

Division of Ser. No. 14,739, Feb. 24, 1970, which is a continuation of Ser. No. 723,769, April 24, 1968, abandoned. This application May 3, 1971, Ser. No. 139,841

Int. Cl. H0011 *11/14*

U.S. Cl. 357/4 3 Claims



1. A solid state device comprising:

a. an insulative substrate;

b. first and second spaced metal electrodes formed on said substrate;

c. a film of amorphous defect-nickel oxide having a resistivity not greater than 10^8 ohm-centimeters formed on said substrate, at least a portion of said film being formed in the separation between said first and second electrodes;

d. a film of insulating material of nickel oxide formed on the defect-nickel oxide film, at least a portion of the insulating film overlying a portion of the separation between said first and second electrodes, and

e. a gate electrode formed on the insulating film and overlying a portion of the separation between said first and second electrodes.

3,872,360
CAPACITORS WITH NICKEL CONTAINING ELECTRODES

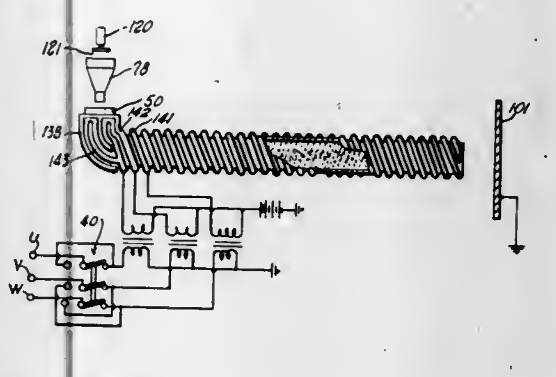
John Leo Sheard, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 8, 1973, Ser. No. 321,581

Int. Cl. H01g *1/01*

U.S. Cl. 317—258 12 Claims

1. A metallizing composition consisting essentially of finely divided noble metal(s) powder selected from the group consisting of gold, silver, platinum, palladium and mixtures thereof, an inert liquid vehicle, and a base metal diluent of one or more members selected from the group consisting of nickel and nickel-containing base metal alloys, the ratio of nickel to said noble metal being up to 1/1 by weight, the particles of said metallization being of a size such that at least 90% of said particles are not greater than 50μ.



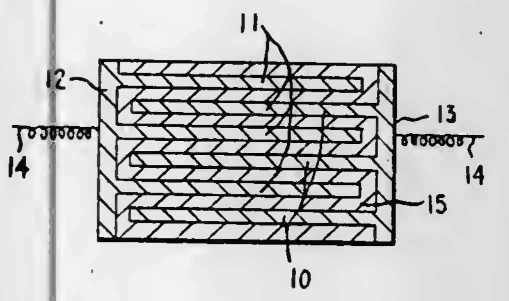
3,872,361
ELECTRODYNAMIC APPARATUS FOR CONTROLLING FLOW OF PARTICULATE MATERIAL

Senichi Masuda, 40-10-605, 1-chome, Nishigahara, Kita-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 366,655, June 4, 1973, which is a continuation of Ser. No. 151,789, June 10, 1971, which is a continuation of Ser. No. 237,822, March 24, 1972, Pat. No. 3,806,763. This application Oct. 18, 1973, Ser. No. 407,436The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl. H0b5 *5/02*

U.S. Cl. 317—262 E 4 Claims



1. Apparatus for controlling the movement of powder-like particulate material along an elongated path which is defined by surface areas of solid material that surround a longitudinal centerline of said path, and for confining the particulate material to a zone near said centerline and against substantial lateral dispersal therefrom into contact with said surface areas, said apparatus comprising:

A. a plurality of elongated electrodes, each curved along its length to be substantially concentric to said centerline, said electrodes being spaced from one another along said path by substantially uniform distances, and adjacent electrodes along said path being curved to radii about said centerline that differ no more than slightly; and

B. means for connecting each of the electrodes with only one of the several terminals of a polyphase alternating high voltage source, and with each of said electrodes connected to a different one of said terminals than the electrodes that are longitudinally adjacent to it along said path, so that a constantly varying electric field is produced by each pair of the electrodes that are so adjacent whereby particles are urged toward said centerline, and so that the several electrodes cooperate to produce a net electric field of wave-like character that urges the particles in one direction along said path.

3,872,362
ELECTRIC TRACTION SYSTEMS AND VEHICLES COMPRISING SUCH SYSTEMS

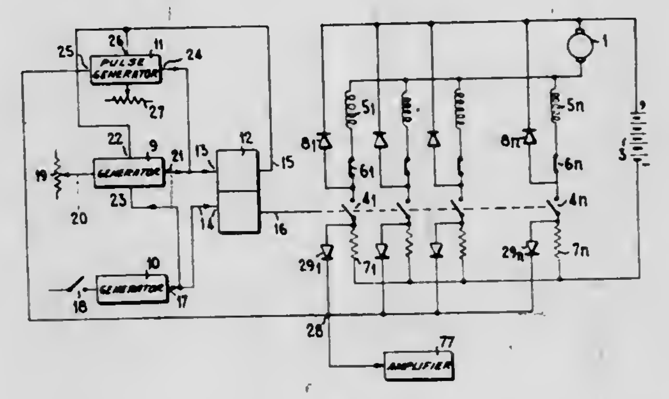
Jacques Lecoeuche, and Gerard Lacroux, both of Malakoff, France, assignors to ETS. E. Ragonot, Paris, France

Filed May 24, 1973, Ser. No. 363,336

Claims priority, application France, May 24, 1972, 72.18489

Int. Cl. H02r *5/16*

U.S. Cl. 318—139 10 Claims



1. Electric traction system comprising a separate excitation d.c. motor, an armature current control device, an excitation current control device, and between the motor armature and the d.c. supply source, several armature current switches (4-1...4-*n*) in parallel each made up of one or more transistors connected in parallel (30, 31, 32) characterized in that in order to avoid possible non-synchronization of the switches each switch is connected at one terminal to an induction coil (5-1...5-*n*) and in series with the armature of said motor, and at the other terminal with a diode (8-1...8-*n*) shunting said induction coil and armature of the motor.

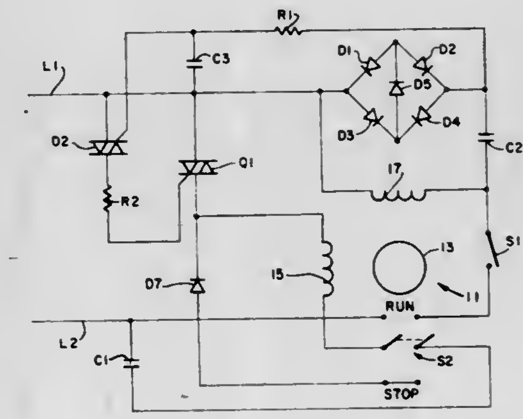
3,872,363
ELECTRIC MOTOR BRAKING SYSTEM

Thomas A. O. Gross, Concord Rd., Lincoln, Mass. 01773

Filed Mar. 11, 1974, Ser. No. 449,947

Int. Cl. H02p *3/20*

U.S. Cl. 318—212 11 Claims



1. An a.c. motor system providing dynamic braking, said system comprising:

a motor having a rotor and a stator having at least a pair of windings, said windings being displaced in phase around said stator;

switching means having a run state and a stop state, at least one of said windings being energized with a.c. in said run state to produce continued rotation of said rotor;

a braking circuit which, when energized, applies pulsating d.c. to one of said windings for braking said rotor, the pulsating component being coupled to the other of said windings while said rotor is rotating, said braking circuit being energizable only while said switching means is in said stop state; and

sensing means interconnected with said other winding and responsive to the pulsatile current component coupled thereto during braking for energizing said braking circuit as long as the amplitude of the coupled component exceeds a predetermined level and said switching means is in said stop state.

3,872,364
EXTINGUISHING ARRANGEMENT FOR THE INVERTERS OF AN ELECTRIC MOTOR

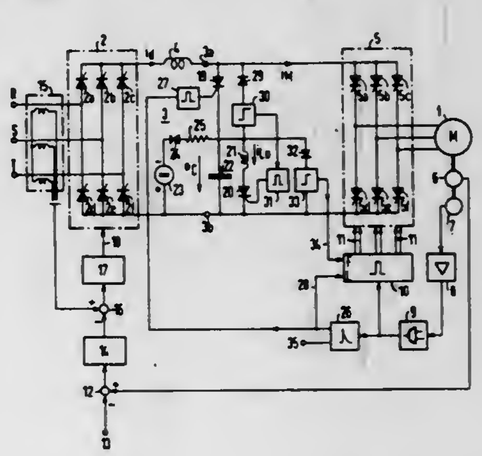
Klaus Hubner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,157

Claims priority, application Germany, Sept. 22, 1972, 2246592

Int. Cl. H02p *1/26*

U.S. Cl. 318—227 4 Claims



1. In a system including an electric machine coupled to an intermediate link converter including an inverter and control means associated therewith, an improved auxiliary extinguishing arrangement for inverter rectifiers of the inverter comprising:

a. a first controlled rectifier and a commutation capacitor in series across the intermediate link;

b. a second controlled rectifier and a reversing choke connected in series, with the series combination of said second controlled rectifier and said choke in parallel with said commutation capacitor;

c. the control means associated with said inverter providing firing pulses thereto; and

d. a first voltage detector arranged to detect the voltage at said capacitor, said voltage detector having an output coupled to said control means, said control means being responsive to be enabled by the output of said first voltage detector to permit firing pulses to be provided to the controlled rectifiers in said converter.

3,872,365
METHODS OF AND DEVICES FOR BRAKING AND INDEXING THE SPINDLE OF A MACHINE TOOL ROTATING AT HIGH SPEED

Jean-Pierre Vignaud; Claude Sebire, and Pierre Riss, all of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine), France

Filed Sept. 20, 1973, Ser. No. 399,247

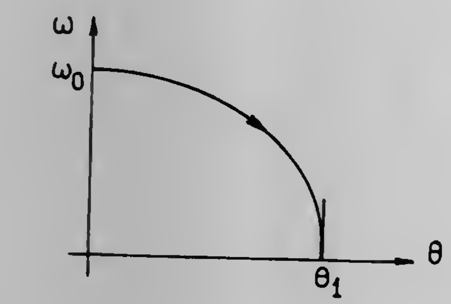
Claims priority, application France, Sept. 26, 1972, 72.34060; Aug. 3, 1973, 73.28484

Int. Cl. H02p *3/06*

U.S. Cl. 318—265 5 Claims

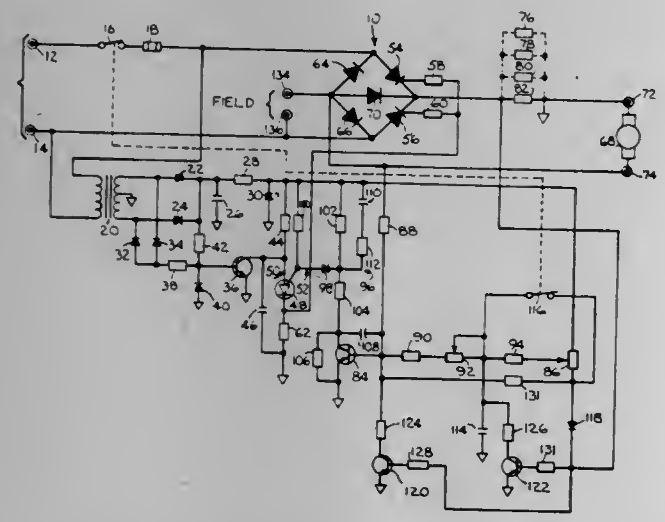
1. A method of braking and indexing a mechanical member rotating at high speed comprising triggering the starting point of a high-speed indexing phase, and monitoring a braking action at least partially according to an optimum velocity/space curve of parabolic shape during three successive phases, the first phase being along a substantially linear section of a velocity/time curve corresponding to the velocity-space curve of parabolic shape having a numerical or digital definition, the

second phase being along a linear velocity/time curve defined by a function generator and released below a certain threshold



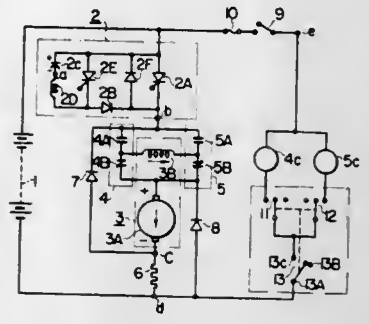
of said first phase, and the third phase being a final locking phase started in response to a predetermined final numerical information of said numerical or digital definition.

3,872,366
MOTOR CONTROL CIRCUIT
James Duncan Keith, Mount Wolf, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed May 21, 1973, Ser. No. 362,166
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **7 Claims**



1. A D.C. motor control circuit having means for applying a selectively variable reference current supplied by a reference current generating means to the base of transistor having an emitter connected to common such that as the base of said transistor becomes more positive, the collector of said transistor becomes more negative thereby accomplishing phase invertion, said collector of said transistor is connected to a gate of a programmable unijunction transistor such that as the collector of said transistor becomes lower in potential the gate of the programmable unijunction will in a like manner become lower in potential thereby causing said programmable unijunction transistor having a ramp-shaped cyclic signal provided to the anode of said programmable unijunction transistor by a ramp-shaped cyclic signal producing means to turn on earlier in the cycle, the output pulse of said programmable unijunction transistor will therefore be advanced in phase, the cathode of said programmable unijunction transistor is turned on said silicon controlled rectifier will fire during a half-cycle of an A.C. power source which is synchronized with said ramp-shaped cyclic signal resulting in a higher voltage being applied to the armature of the motor being controlled, the armature being connected to said silicon controlled rectifier, a feedback signal current is taken from the negative terminal of said armature of said motor, the positive terminal of said armature being said common, and said signal current is fed via a first resistor to the base of the said transistor thereby generating a feedback current, the armature voltage will continue to increase until the feedback current substantially equals the reference current also being fed to the base of said transistor, thereby effecting stable voltage regulation of said motor being controlled.

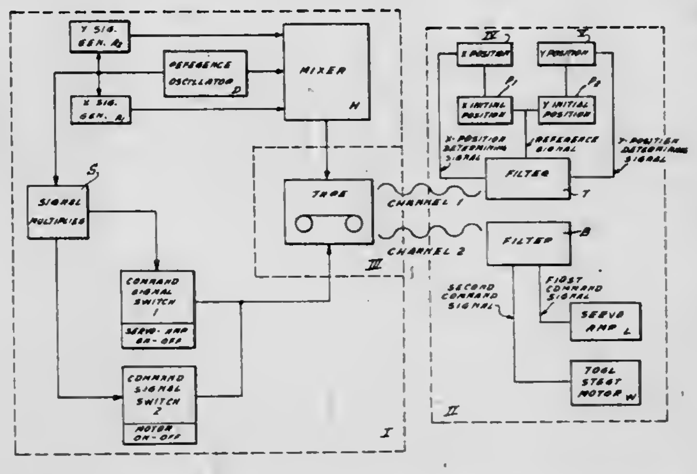
3,872,367
ELECTRIC CAR CONTROLLING DEVICE
Sigeru Kuriyama, and Hideyuki Hashimoto, both of Katsuta, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Aug. 17, 1973, Ser. No. 389,265
Claims priority, application Japan, Aug. 28, 1972, 47-85325
Int. Cl. H02p *3/08*
U.S. Cl. 318—373 **4 Claims**



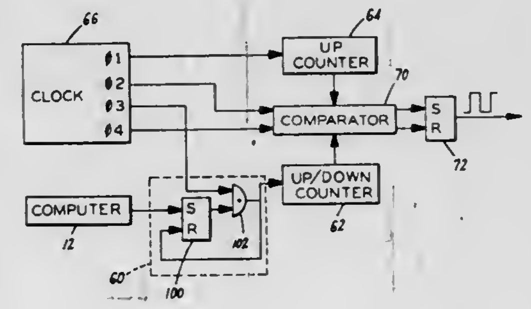
1. An electric car controlling device comprising a series-connected circuit including a direct current power supply, a semiconductor chopper circuit, a direct current electric motor circuit including a field circuit and an armature circuit of a direct current electric motor and means for changing over the polarity of said armature in said direct current electric motor relative to that of said field thereof, and a current detecting circuit; a plugging diode circuit including said current detecting circuit and arranged in opposite polarity relative to a power supply voltage for providing a parallel circuit to said armature; and circuit means for controlling the conduction and cutting off of said semiconductor chopper circuit, said circuit means including a current controller for acting on said semiconductor chopper circuit so as to confine current within a predetermined region in dependence on the current detected by said current detecting circuit, and a plugging current control circuit responsive to the output of said chopper circuit and the output current of said current detecting circuit for changing said predetermined region upon detecting the state of plugging, said plugging current control circuit including circuit means for amplifying the output current of said current detecting circuit.

3,872,368
MULTIPLEX SIGNAL PROGRAM SERVO-MECHANISM
Vincent P. Friberg, Longmeadow, Mass.; John Chesney, Roselle Park, N.J., and Richard B. Phelps, Wilbraham, Mass., assignors to General Instrument Corporation, Newark, N.J.
Filed Sept. 12, 1973, Ser. No. 396,504
Int. Cl. G05b *19/100*
U.S. Cl. 318—567 **16 Claims**

1. A servo mechanism for controlling the movement of a tool or the like comprising a transmitting stage and a receiving stage, said transmitting stage and said receiving stage being coupled by a dual channel medium, said transmitting stage comprising first and second sections, said first section comprising means generating position determining signals of a first and a second type and means for combining said first and second type position determining signals to form a first transmission signal, and said second section comprising means generating a command signal and means for converting said command signal into a second transmission signal, said medium having a first channel to carry said first transmission signal and a second channel to carry said second transmission signal, said receiving stage comprising means for segregating said first transmission signal into said first and second type position determining signals and means for moving the tool in accordance therewith, and means responsive to said command signal of said second channel to control said moving means in accordance therewith.

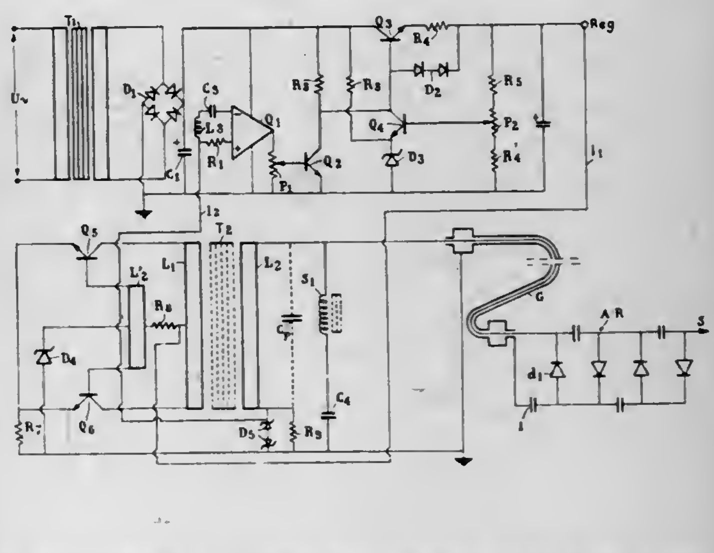


3,872,369
PULSE COUNTING PHASE MODULATION METHOD AND APPARATUS FOR CONTROLLING A SERVO-MECHANISM
Leonard G. Rich, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Continuation of Ser. No. 169,263, Aug. 5, 1971, abandoned.
This application Sept. 28, 1973, Ser. No. 401,572
Int. Cl. G05b *19/28, 1/01*
U.S. Cl. 318—603 **18 Claims**



1. Apparatus for controlling the output of a servomotor comprising: a cyclically driven digital counter having an output providing a periodic reference waveform at a frequency which is a submultiple of the digital counting rate; a digital command signal register having an input through which a single, complete digital command signal for positioning the servomotor output at one discrete position is received for temporary storage until another discrete position is commanded; input means connected with the input of the command signal register for loading new command signals into the register; comparator means connected between the digital counter and the command signal register for comparing the digital counts and the digital command signals and producing coincidence signals at each coincidence of the digital count and the digital command signals; timing means connected with the digital counter, the input means and the comparator means for stepping the digital counter, loading the command signal register and comparing the digital counts and the command signals respectively at distinctly different times; generating means connected to the comparator means and responsive to the coincidence signals for producing a periodic command signal waveform having the same period or frequency as the reference waveform and a phase relationship with the reference waveform uniquely related to the command signal in the register; the comparator means and the generating means cooperating whenever operating to continuously produce the periodic command signal waveform in response to a single and complete digital command signal stored in the command signal register; and phase responsive motor control means connected with the servomotor, the generating means and the digital counter and including a phase detector responsive to the reference waveform provided by the digital counter and the command signal waveform produced by the generating means for positioning the output of the servomotor in accordance with the phase relationship of the periodic waveforms.

3,872,370
HIGH-VOLTAGE D.C. GENERATOR, SPECIALLY FOR ENERGIZING AN ELECTROSTATIC APPARATUS
Alain Regnault, Noailles, France, assignor to Redelec, Societe a responsabilite limitee, Moulin de Pierre, France
Filed Mar. 2, 1973, Ser. No. 337,569
Claims priority, application France, Mar. 3, 1972, 72.07505; Sept. 28, 1972, 72.34310
Int. Cl. B05b *5/00*
U.S. Cl. 317—3 **10 Claims**

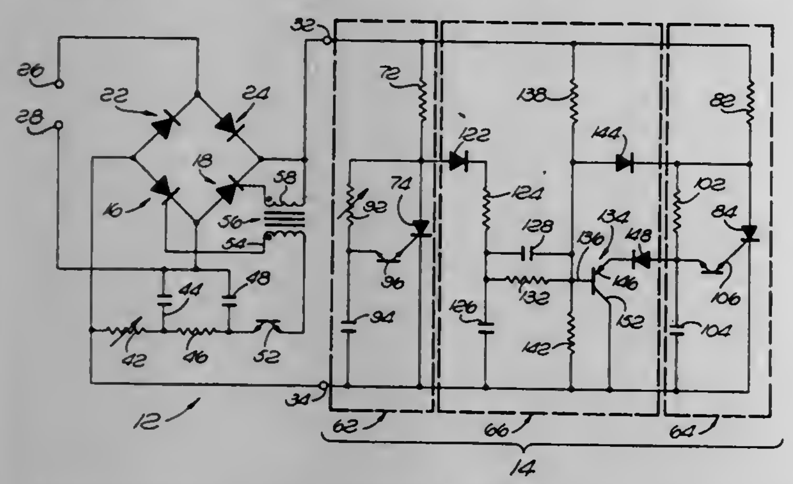


1. A high-voltage d.c. generator capable of at least a few tens of kilovolts, for energizing an electrostatic apparatus having a charge electrode, specially an electrostatic paint spraying apparatus, and electrostatic powdering apparatus, an electrostatic filtering apparatus, and the like, said generator comprising a self-oscillating circuit producing an alternating current having a frequency of at least 20,000 Hz, a single transformer located in the vicinity of said self-oscillating circuit and having a primary winding connected to the output of said self-oscillating circuit, and a secondary winding, at least one dielectric plate having deposited on both faces a plurality of conductive layers forming the respective plates of miniaturized capacitors of very low values, another plurality of miniaturized solid-state diodes, having very low self-capacities, said diodes being directly soldered to said capacitor plates to form an adder-rectifier of the type comprising a number of identical stages connected in parallel to one another, which adder-rectifier is embedded in a block of molded resin or resin compound and is incorporated in the electrostatic apparatus in a very close relationship to its charge electrode, the output of said adder-rectifier being connected directly to said charge electrode, and a flexible coaxial cable having a predetermined length, said cable connecting the secondary winding of said transformer directly to the input of said adder-rectifier.

3,872,371
POWER CONTROL SYSTEM
Albert M. Williams, Box 25262, Los Angeles, Calif. 90025
Filed Jan. 28, 1974, Ser. No. 437,269
Int. Cl. H02m *7/00*
U.S. Cl. 321—16 **3 Claims**

1. A power control system comprising: a range power control means; and a power distribution control circuit cascaded with said range power control means for distributing power which is equal to a predetermined value from said range power control means through a plurality of loads said power distribution control circuit comprising an independent section

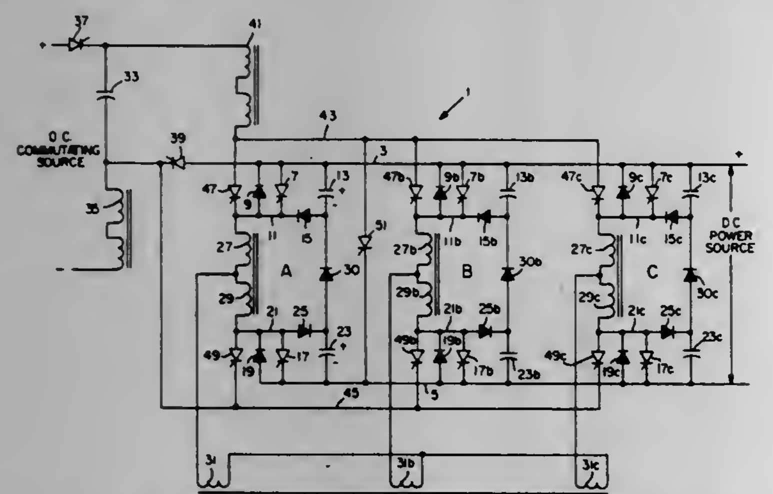
and a dependent section, each having a load, and wherein changes in power output of said independent section load in turn varies the power output of said dependent section resulting in a constant power distribution between said loads.



3,872,372

DV/DT CIRCUIT FOR USE IN D.C. LINK CONVERTERS

Robert F. Kautz, Spring Lake; Leo B. Bourgeault, Wall Township, and Robert C. Eckenfelder, Point Pleasant, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed Sept. 21, 1973, Ser. No. 399,656
Int. Cl. H02m *1/08*
U.S. Cl. 321—45 C **8 Claims**



1. A circuit for controlling the rate of change (dv/dt) of forward blocking voltage reapplied across a silicon controlled rectifier to prevent the silicon controlled rectifier from conducting after the silicon controlled rectifier is turned off, comprising a resonant inductance-capacitance network including a series connected capacitor and diode connected in parallel with the silicon controlled rectifier and an inductance connected in series with the silicon controlled rectifier, the diode being poled to conduct in the same direction as the silicon controlled rectifier, the network having a time constant to insure a rate of change (dv/dt) of voltage reapplied across the silicon controlled rectifier to prevent the silicon controlled rectifier from conducting after the silicon controlled rectifier is turned off.

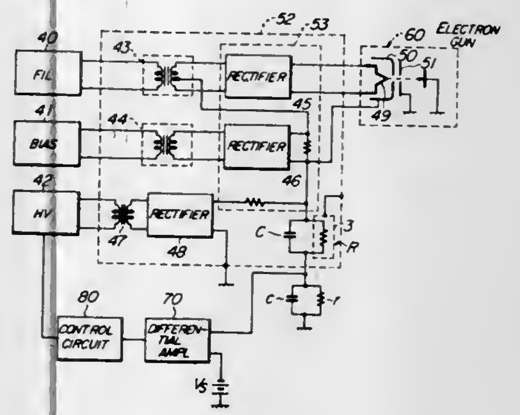
3,872,373

DC HIGH-VOLTAGE GENERATING SYSTEM

Yasushi Saito, 663 Ichige, and Sadayasu Ueno, 1030 Ichige, both of Katsuta, Japan
Filed Dec. 9, 1970, Ser. No. 96,458
Claims priority, application Japan, Dec. 10, 1969, 44-98602; July 22, 1970, 45-63607
Int. Cl. G05f *1/50*
U.S. Cl. 323—17 **4 Claims**

1. A DC high-voltage generating system including a DC high-voltage power supply, filtering means connected with said DC high-voltage power supply for smoothing the output thereof and voltage stabilizing means for said DC high-voltage generating system, said voltage stabilizing means comprising: voltage-dividing means including a high-voltage high-resistance reference resistor and a low-resistance resistor to be applied with a relatively low voltage, said voltage-dividing means being connected in series with the output terminal of said DC high-voltage power supply;

a differential amplifier which compares a voltage appearing across said low-resistance resistor with a reference voltage and which detects and amplifies the difference between said two voltages, and a DC control circuit for controlling the DC voltage generated by means of an output of said amplifier;

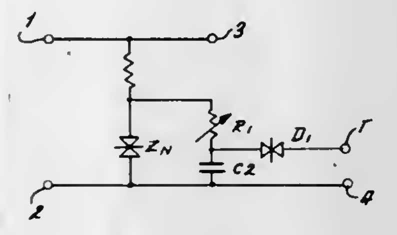


said high-voltage high-resistance reference resistor essentially consisting of a high-voltage resistor element, an insulating member wound tightly in layers over the entire outer surface of said high-voltage resistor element, and a first grounded metal case filled with an insulating fluid in which said resistor element is disposed, said high-voltage high-resistance reference resistor being disposed together with said filtering means in a second grounded metal case which is filled with an insulating oil.

3,872,374

POWER CONTROL TIMING CIRCUITS WITH POWER LINE COMPENSATION

Clarence E. Rasmussen, Euless, Tex., assignor to Electronic Control Corporation, Euless, Tex.
Continuation of Ser. No. 673,538, Oct. 4, 1967, abandoned. This application July 28, 1970, Ser. No. 64,093
Int. Cl. G05f *3/04*
U.S. Cl. 323—22 SC **8 Claims**

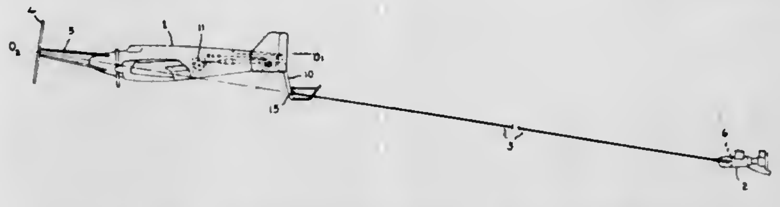


1. In a power control circuit including a source of AC line voltage, and a load and grated power control device in series across the source of AC line voltage; a line voltage compensating timing network coupled across the source of AC line voltage comprising a charging potential network including a negative impedance device and a first resistor in series for establishing a charging potential from the source of AC line voltage and a capacitive timing network having a second resistor and timing capacitor in series shunting said negative impedance device whereby the charging potential is applied to said timing capacitor, and said timing capacitor coupled to the gate of said power control device.

3,872,375

AIRBORNE ELECTROMAGNETIC PROSPECTING METHOD AND APPARATUS

Vaino Ronka, Burnaby, British Columbia, Canada, assignor to Hudson Bay Mining and Smelting Co., Limited, Toronto, Ontario, Canada
Filed Nov. 12, 1973, Ser. No. 414,923
Int. Cl. G01v *3/16*
U.S. Cl. 324—4 **10 Claims**



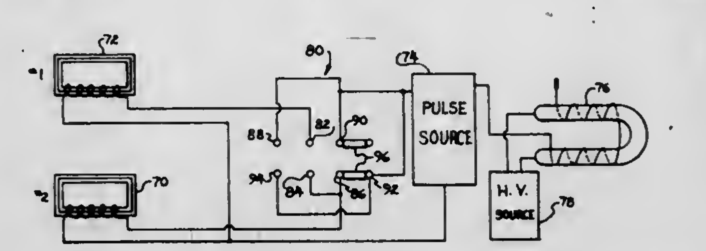
1. The method of electromagnetic prospecting which comprises:

mounting a transmitting coil on a first transport body;
mounting a receiving coil on a second transport body in coaxial alignment with the transmitting coil;
moving the first and second transport bodies along different, substantially parallel, horizontal paths at an angle to the common axis of the transmitting and receiving coils, while maintaining substantially coaxial alignment of said coils;
transmitting from the transmitting coil a primary alternating electromagnetic field thus causing a secondary electromagnetic field due to anomalies in the earth;
sensing the resultant field at the receiving coils, and
compensating for unwanted changes in the primary field due to small misalignments of said transmitting and receiving coils by maintaining a fixed distance between the receiving coil and a point on the common axis between the coils at a predetermined distance from the transmitting coil.

3,872,376

IGNITION TIMING DEVICE AND METHOD

Barry R. Kalenevitch, 5090 Franklin St., Harrisburg, Pa.
Filed Sept. 13, 1973, Ser. No. 396,898
Int. Cl. F02p *17/00*
U.S. Cl. 324—17 **6 Claims**

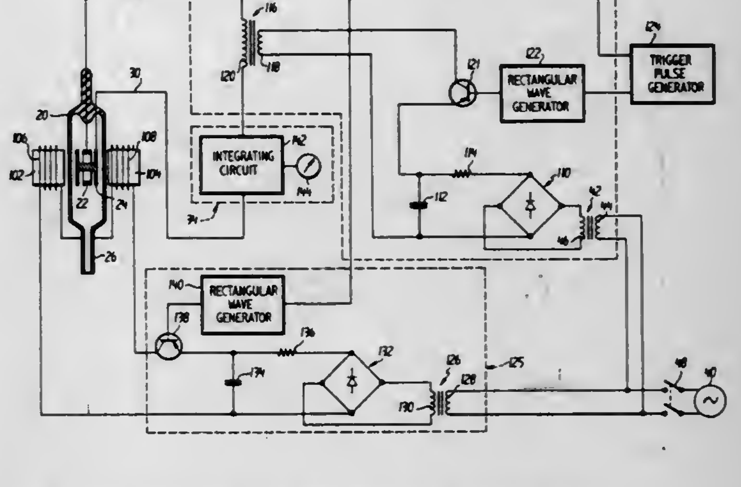


1. A device for timing and synchronizing the ignition of an internal combustion engine during operation of the engine where the engine includes a distributor having a pair of independently adjustable breaker points opened and closed by a rotatable cam so that each breaker point fires a spark plug at a given time, a fixed timing pointer and a rotatable timing mark connected with the cam for rotation therewith past the timing pointer, the invention comprising a pair of electronic signal pick-up means each associated with one conductor running from one of the sets of points in the distributor to its respective spark plug for sensing the firing of the spark plug during operation of the internal combustion engine, light source means for producing a flash of light in response to the spark plug firing signal as sensed by either or both of said pick-up means, and three position switching means joining said pick-up means and said light source means for connecting either or both of said pick-up means to said light source means so that during operation of the engine the light source means illuminates the timing pointer and timing marks upon firing of either or both of the spark plugs, depending upon the position of the switching means.

3,872,377

COLD CATHODE IONIZATION GAUGE

Katsuhiro Kageyama, and Shinhachi Utsunomiya, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan
Filed Oct. 11, 1972, Ser. No. 296,531
Int. Cl. G01n *27/62*
U.S. Cl. 324—33 **14 Claims**



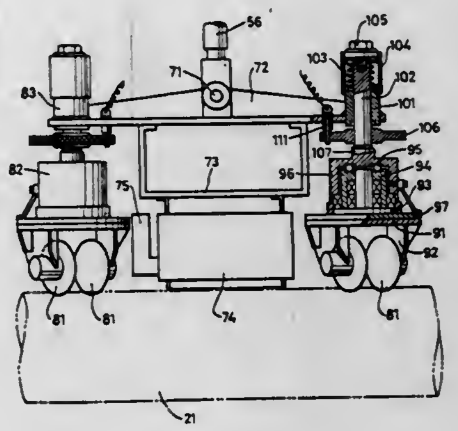
1. A cold cathode ionization gauge comprising:

an evacuated envelope;
a pair of electrodes separately disposed in the envelope;
a high voltage pulse generator for supplying a high voltage substantially rectangular pulse of a duration of substantially 10 milliseconds between said pair of electrodes;
a magnetic field generating means for applying a magnetic field along the axis of said pair of electrodes; and
a discharge current measuring circuit for measuring a discharge current flowing between the pair of electrodes.

3,872,378

APPARATUS FOR SUPPORTING AND PROPELLING MATERIAL THROUGH MAGNETIC FLAW DETECTION DEVICES

Toshio Shiraiwa, Nara, and Tatsuo Hiroshima, Minoo, both of Japan, assignors to Sumintomo Metal Industries, Limited, Osaka Japan
Continuation of Ser. No. 185,688, Oct. 1, 1971, abandoned, which is a division of Ser. No. 21,062, March 19, 1970, Pat. No. 3,670,239. This application Nov. 12, 1973, Ser. No. 414,943
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **4 Claims**



1. Apparatus for supporting and propelling a material to be inspected through a magnetic flaw detection device, comprising:

a feeding device for propelling said material;
a plurality of flaw detection devices mounted at spaced intervals along the path of travel of said material;
each of said flaw detection devices including a support structure, a shaft suspended vertically from said support structure, and a base member pivotally mounted at an

end of said shaft adjacent said material, opposite ends of said pivoted base member including a rotatable turret resiliently mounted thereto, each of said rotatable turrets including means for indexing said turret about the vertical axis thereof and a pair of spaced rollers contacting said material for guiding said material along its path of travel, whereby the angle of said rotatable turret with respect to the longitudinal axis along which said material moves determines the amount of spiral rotation of said material; and

a magnetic detection unit mounted between the ends of said pivoted base member and extending adjacent the surface of said material, said magnetic detection unit includes a magnetic yoke assembly coupled to said base member and including a spaced pair of magnetic poles mounted to extend on either side of said material and said base member includes means for resiliently mounting said magnetic detection unit and including guide rollers engaging guide channels for vertically guiding said magnetic detection unit.

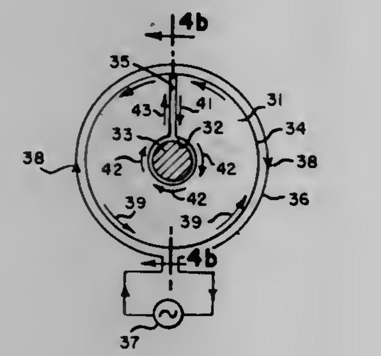
3,872,379
EDDY CURRENT TESTING APPARATUS USING SLOTTED MONOTURN CONDUCTIVE MEMBERS

Robert A. Brooks, Rye, N.Y., and John Paul Wallace, Fort Defiance, Va., assignors to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,509

Int. Cl. G01r *33/14*

U.S. Cl. 324—40 **22 Claims**



1. Eddy current testing apparatus for the non-destructive testing of objects which comprises
- a. a monoturn conductive member having an inner aperture for receiving an object to be tested and a surface encircling the aperture and spaced therefrom,
- b. a slot in said member extending from said aperture to said encircling surface,
- c. a coil encircling said encircling surface for inducing current flow therein,
- d. means for supplying alternating or pulsed current to said coil,
- e. said monoturn conductive member being designed and adapted for producing current flow around the surface of said aperture opposite in direction to current flow in said encircling surface in response to said current in said coil and thereby produce a magnetic field to induce eddy currents in an object located in the aperture,
- f. and detecting and indicating means responsive to variations in said eddy currents for indicating variations in said objects.

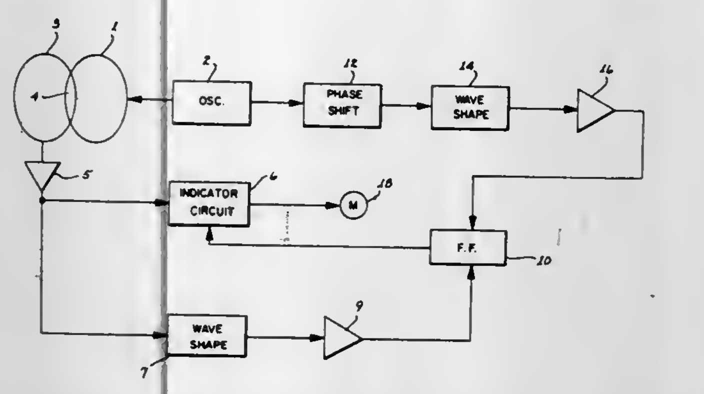
3,872,380
METAL DETECTOR DISTINGUISHING BETWEEN DIFFERENT METALS BY USING A BIAS CIRCUIT ACTUATED BY THE PHASE SHIFTS CAUSED BY THE METALS

Robert F. Gardiner, 4729 N. 7th Ave., Phoenix, Ariz. 85013

Filed Jan. 2, 1974, Ser. No. 429,958

Int. Cl. G01r *33/12*

U.S. Cl. 324—41 **3 Claims**



1. A metal detector for detecting the presence of, and distinguishing between, certain types of metallic objects, comprising: an oscillator; a transmitting coil connected to said oscillator for transmitting electromagnetic signals generated by said oscillator; a receiving coil mounted in proximity to said transmitting coil for receiving electromagnetic signals transmitted by said transmitting coil, the received electromagnetic signals being changed in amplitude and phase when a metallic object is placed in the path of said electromagnetic signal transmitted by said transmitting coil; an indicator means for providing a reading to an operator when a metallic object has been detected, said indicator means including a meter and an indicator circuit for receiving electromagnetic signals from said receiving coil and providing a DC current to said meter in response thereto, said indicator circuit responsive to biasing to reduce said DC current and reduce the meter reading; means connected to said indicator means and to said receiving coil responsive to an increase in amplitude of said received signals for increasing the reading of said indicator means; first wave shaping means connected to said receiving coil for producing a first short duration pulse; a phase shift circuit connected to said oscillator for imposing a predetermined phase shift upon electromagnetic signals generated by said oscillator; a second wave shaping means connected to said phase shift circuit for producing a second short duration pulse; and means connected to receive said first and second short duration pulses and connected to said indicator circuit for applying the biasing thereto for decreasing the reading of said meter.

3,872,381
DIGITAL TRANSMISSION SYSTEM

Hajime Yamamoto, and Kazuhiro Watanabe, both of Tokyo, Japan, assignors to Nippon Telephone and Telephone Public Corporation, Tokyo, Japan

Filed Aug. 24, 1972, Ser. No. 283,527

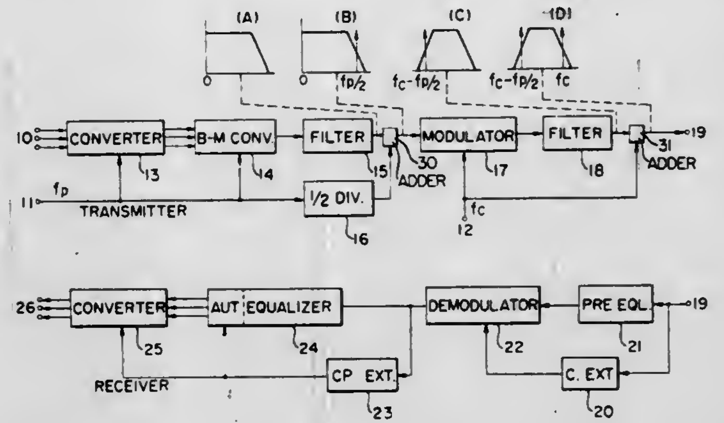
Claims priority, application Japan, Aug. 28, 1971, 46-66215

Int. Cl. H04b *1/12*

U.S. Cl. 325—42 **5 Claims**

5. In a method for digital pulse transmission of the type including transmission of a vestigial sideband or single sideband multi-level pulse modulated signal in which the level is zero at determined instants before and after the maximum level and having a clock signal and a carrier inserted at the opposite ends of the band of the modulated signal, receiving the transmitted signal and extracting the carrier from the received signal, demodulating the received signal by the carrier, extracting the clock signal from the demodulated signal, and converting the demodulated signal to a multi-level pulse signal with the extracted clock signal, the improvement comprising the steps of detecting voltages representative of the

amount of intersymbol interferences at two first points adjacent a center point of the waveform of the demodulated signal less said clock signal, said first points and center point corresponding to the instants of zero level and maximum level



respectively of the multi-level pulse signal and controlling the phase of said extracted clock signal to reduce the difference between the voltages representative of intersymbol interferences detected at said two first points to zero.

3,872,382
MAGNETIC FIELD MEASURING APPARATUS WITH FREQUENCY INDEPENDENT SENSITIVITY

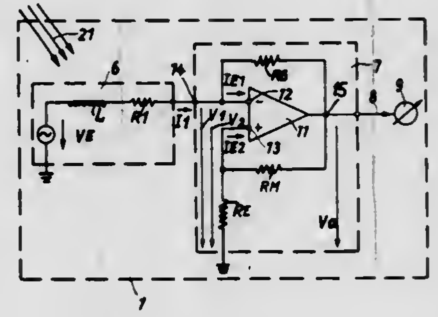
Joachim Bertram, Bremen-Osterholz, and Wilfried Meuser, Bremen, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 9, 1973, Ser. No. 350,614

Claims priority, application Germany, Apr. 22, 1972, 2219780

Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **13 Claims**



1. In a circuit arrangement for detecting very weak alternating external magnetic fields "and for measuring same with a sensitivity which is independent of the frequency of the field", including a receiver coil, having no iron core and having an inductive reactance and a natural ohmic resistance, for inductively detecting the external magnetic field, and an electronic amplifier circuit connected in series with the receiver coil, the improvement wherein the input resistance of said amplifier circuit is, in a good approximation, of the same values but of opposite sign as said natural ohmic resistance of said receiver coil.

3,872,383
VISUAL GROUND FAULT INDICATOR

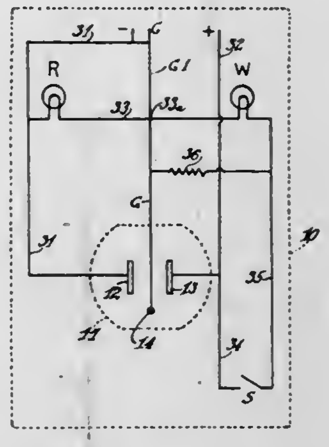
Edward Kolodziej, 5616 W. 5th Ave., Gary, Ind. 46404

Filed Dec. 7, 1973, Ser. No. 422,696

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **2 Claims**

1. A ground fault indicating receptacle comprising a frontal panel with an outlet presenting a pair of service terminals and a ground terminal, red and white signal lamps mounted in the panel, a switch also mounted in the same and operable to light the white lamp in case of a normal ground connection and the red lamp in case of an interrupted ground connection, a resistance element, a circuit for said lamps, resistance element and switch, including a ground line connected to said ground terminal, a grounded negative feed line connected to one service terminal and a positive feed line connected to the other service terminal wherein one terminal of each lamp is connected to the ground line, the other terminal of the red lamp is connected to the grounded negative feed line and said one service terminal, the other service terminal is connected to one side of the switch, the other terminal of the white lamp is connected to the other side of the switch and said resistance element interconnects said other terminal of the white lamp with the ground line.



3,872,384
ELECTRICAL WIRING, CIRCUIT, ENERGIZATION, AND RESISTANCE TEST APPARATUS

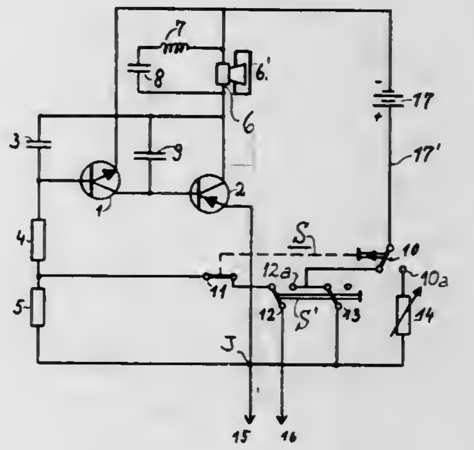
Heinz Laass, Hahn, Germany, assignor to Taco-Tafel GmbH & Co. KG, Esslingen(Neckar), Germany

Filed Feb. 6, 1974, Ser. No. 439,914

Claims priority, application Germany, Mar. 6, 1973, 2311012

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **11 Claims**



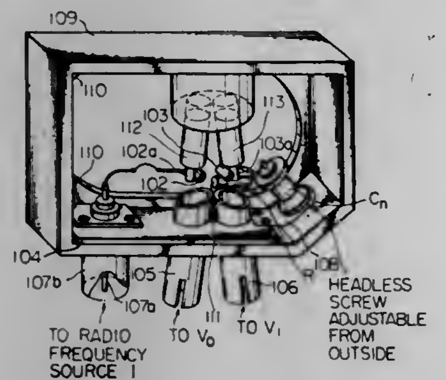
1. Industrial wiring, circuit, energization, and resistance test apparatus having acoustic output to test for line resistance, insulation resistance, or voltage levels and polarities arising in an electrical sample network comprising

a two-stage electrical oscillator-amplifier circuit (1, 2, 3, 4, 5) having two transistors (1, 2) connected in cascade, and an R/C circuit (3, 4, 5), the relative values of resistance and capacity of which affect the frequency of operation thereof, the capacitor (3) of said R/C circuit connecting the output of the second transistor (2) to the input of the first transistor (1) to provide for feedback of said oscillator circuit, said first transistor (1) having a bias circuit including a high value resistor (5) of said R/C circuit and forming a portion of the bias circuit;

audio transducer means coupled to said oscillator circuit for reproducing the tone thereof;
a source of d-c voltage (17) and a low resistance connection (17′) from said sources to the transistors (1, 2) of the oscillator circuit;
test connection means (15, 16) to which the sample circuit is connectable;
and switch means (S′) connected to said test connection means and to the oscillator circuit to selectively connect:
a. when the switch means is in one position, the test connection means (15, 16) in parallel to the resistor (5) to test the sample network for
a-1. insulation resistance between test connection means to check for insulation of an open circuit between said test connection means, the value of the total resistance being introduced by the resistor (5) and the insulation resistance connected in parallel thereto determining and controlling the pitch of the tone reproduced by the transducer means as an analog of said total resistance, or
a-2. voltage levels therein, in that introduction of a foreign voltage to the test connection means will affect the bias voltage across resistor (5) and disturb the balanced state of the oscillator circuit to change the frequency of oscillations to a different pitch whereby the level and/or polarity of the foreign voltage source can be determined; and
b. when the switch means is in another position, the test connection means (15, 16) in series with said d-c source (17) and the low resistance connection (17′) to interrupt the circuit from said source to the oscillator means unless the sample network has ZERO, or essentially ZERO or low resistance to provide an output test oscillation from the oscillator circuit, the pitch of which is indicative of the resistance of the sampling network placed in series between said source and the oscillator circuit.

3,872,385
FIXTURE FOR MEASURING PARAMETERS OF QUARTZ CRYSTAL UNITS

Issac Koga; Shigeo Kobayashi, and Isao Okamoto, all of Tokyo, Japan, assignors to Kabusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 372,165, June 21, 1973, Pat. No. 3,832,636. This application Mar. 5, 1974, Ser. No. 448,398
Claims priority, application Japan, June 28, 1972, 47-64064
Int. Cl. G01r *29/22*
U.S. Cl. 324—56 **2 Claims**


109
110
103
112
113
110
102a
103a
102
Cn
104
107b
105
107b
106
108
111
TO RADIO FREQUENCY SOURCE I
TO V0
TO V1
HEADLESS SCREW ADJUSTABLE FROM OUTSIDE

1. A fixture for measuring parameters of crystal units comprising
a. two pairs of sockets,
the first pair being adapted for inserting a crystal unit (say A) which may be freely selected from a plurality of crystal units to be tested and a crystal unit (say C) which is selected from the remainder of said plurality of crystal units, alternately,
the second pair being adapted for inserting probetips of voltmeters thereinto,
the first sockets of said two pairs are directly coupled together,
the second sockets of said two pairs are directly coupled together;
b. two probe receptacles which are connected to each other with a wedge shaped copper plate, and when probe sheaths are inserted into said receptacles, the probe-tips thereof are inserted into the sockets of second pair;
c. a circuit (say B) which is composed of a resistor in parallel with a variable capacitor (C_n), the first terminal of the circuit B being connected to said second sockets, the second terminal of the circuit B being connected to junction points of said two probe receptacles;
d. a large flat plate of copper whereto said wedge shaped copper plate, said probe receptacles and said second terminal of said circuit B are coupled for equalizing their potentials, and;
e. a connector for supplying a radio frequency current from a radio frequency source to the crystal unit to be tested which is inserted into the sockets.

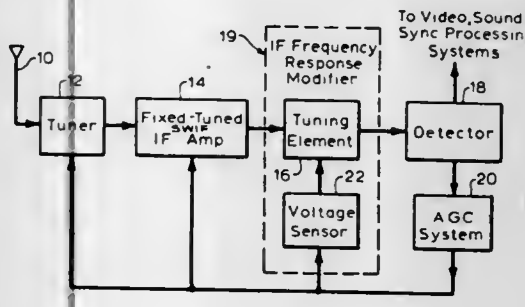
3,872,386
TEST DEVICE

Gabriel J. Luhowy, 7181 College St., Lima, N.Y. 14485
Filed May 7, 1973, Ser. No. 358,089
Int. Cl. G01r *17/02, 19/14*
U.S. Cl. 324—98 **3 Claims**

1. A measuring system comprising in combination,
a precision selectable first voltage,
a differential operation amplifier having a pair of inputs and an output with one of said inputs connected to said first voltage,
means coupled to the other of said inputs for providing an unknown input signal of a second voltage representing a predetermined condition,
a pair of light emitting diodes normally in the same one of their on-off states,
first voltage amplifying means coupled to said output and responsive to one of said polarities to change the state of one of the diodes,
second voltage amplifying means coupled to said output and responsive to the other of said polarities to change the state of the other of said diodes and calibrating means for adjusting said first voltage to retain said diodes in the one of their on-off states, wherein the first and second means comprise driving transistors of opposite conductivity type.

3,872,387
FREQUENCY RESPONSE MODIFIER FOR FIXED-TUNED IF AMPLIFIERS

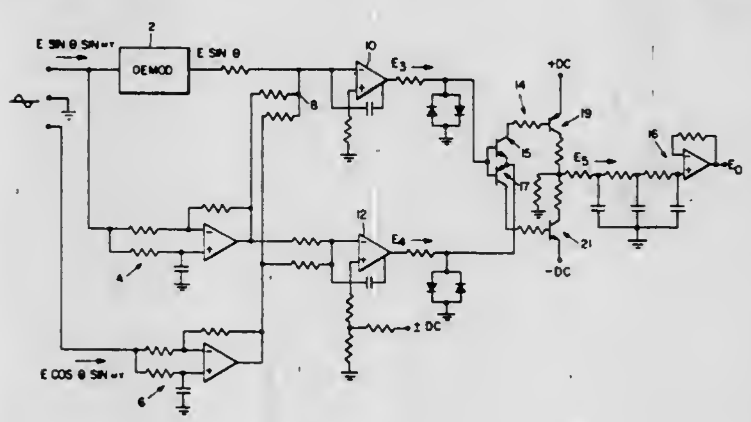
Frank G. Banach, Oak Lawn, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Sept. 29, 1972, Ser. No. 293,611
Int. Cl. H04b *1/16*
U.S. Cl. 325—427 **7 Claims**



1. In a television receiver having a fixed-tuned IF amplifier with an IF frequency response characteristic determined by a surface wave integratable filter for selectively amplifying a range of intermediate frequency components of a received television signal associated with a plurality of intermediate frequency carriers therein, a frequency response modifier, comprising:
variable bandwidth means coupled to the output of the fixed-tuned IF amplifier and having no frequency response characteristics, the first of said frequency response characteristics being relatively non-selective and wide-band over the IF frequency range and the second of said frequency response characteristics being relatively more narrow-band with a peak in its frequency response curve at or near the frequency of one of said plurality of intermediate carriers;
means for generating a variable control signal; and
selector means responsive to predetermined amplitude levels of said control signal for selecting and cascading with said fixed-tuned IF amplifier one of said frequency response characteristics associated with said variable bandwidth means, said wide-band frequency response being selected in response to a first predetermined level of the control signal and said narrowband frequency response being selected in response to a second predetermined level of said control signal.

3,872,388
RESOLVER TO DC CONVERTER

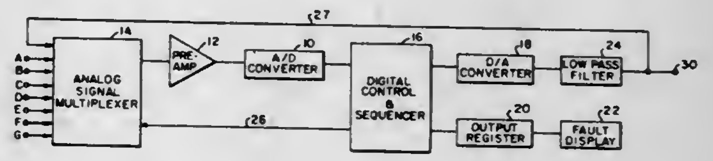
Robert L. James, Bloomfield, N.J., assignor to The Bendix Corporation, Teterboro, N.J.
Filed Aug. 31, 1972, Ser. No. 285,267
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 **7 Claims**



1. For use with a signal device of the type including an angularly displaceable element and providing two alternating signals varying as the sine and cosine of the angular displacement, a converter for converting said signals to a signal at a level corresponding linearly to the angular displacement, comprising:
means connected to the signal device and responsive to the sine and cosine signals therefrom for providing a first reference signal including a first phase shifting circuit connected to the signal device for shifting the phase of the sine signal therefrom, a second phase shifting circuit connected to the signal device for shifting the phase of the cosine signal therefrom, and means for combining the phase shifted signals for providing the first reference signal;
means connected to the signal device and to the first reference signal means and responsive to one of the signals from the signal device and to the first reference signal for providing a signal having a predetermined waveform;
means connected to the first reference signal means and responsive to the signal therefrom for providing a second reference signal; and
means connected to the predetermined waveform signal means and to the second reference signal means and responsive to the signals therefrom for providing the signal at a level corresponding linearly to the angular displacement.

3,872,389
SIGNAL PROCESSOR

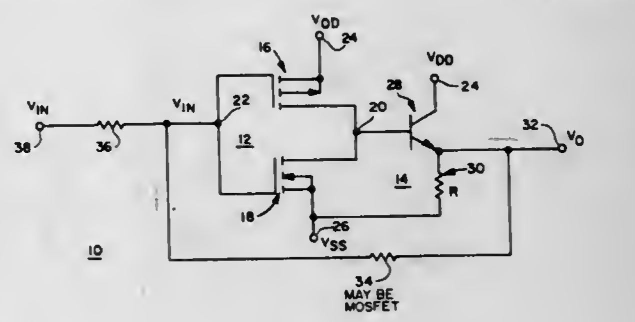
Frank G. Willard, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 12, 1974, Ser. No. 441,923
Int. Cl. G06g *7/14;* **H03k** *5/20*
U.S. Cl. 328—137 **8 Claims**



1. In a signal processor for operation with a plurality of input signals, the combination of
means for sequentially sensing each of said plurality of input signals in a desired time relationship,
means for establishing a control signal which has a predetermined numerical relationship with said plurality of input signals,
means for comparing each one of said sensed input signals with said control signal to select those input signals falling within a predetermined tolerance with said control signal, means for substituting said control signal instead of any one input signal not selected by said means for comparing.

3,872,390
CMOS OPERATIONAL AMPLIFIER WITH INTERNAL EMITTER FOLLOWER

Harold Garth Nash, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Filed Dec. 26, 1973, Ser. No. 427,752
Int. Cl. H03f *3/18*
U.S. Cl. 330—13 **6 Claims**

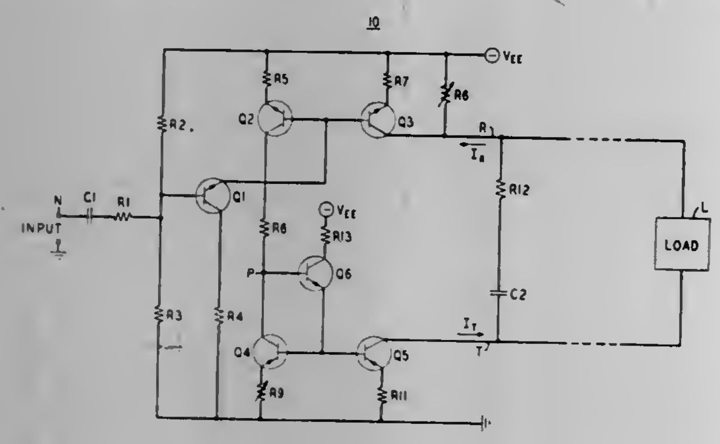


1. An integrated circuit operational amplifier comprising:
a non-switching CMOS gain circuit;
an output circuit including a bipolar transistor having its base connected to an output of said CMOS gain circuit and having its emitter connected to an output of said integrated circuit operational amplifier for providing low output impedance; and, bias means coupled to said output of said integrated circuit operational amplifier and to an input of said non-switching CMOS gain circuit for biasing said non-switching CMOS gain circuit to provide gain for said integrated circuit operational amplifier proportional to a ratio of resistors of said bias circuit means, said bias circuit means including a first resistor connected between an input of said integrated circuit operational amplifier and said input of said non-switching CMOS gain circuit and a feedback resistor connected between said output of said integrated operational amplifier and said input of said non-switching CMOS gain circuit.

3,872,391
BALANCED LINE DRIVER

James Edwin Dalley, Sherrelwood Estates, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1974, Ser. No. 433,657
Int. Cl. H03f *3/04*
U.S. Cl. 330—14 **10 Claims**

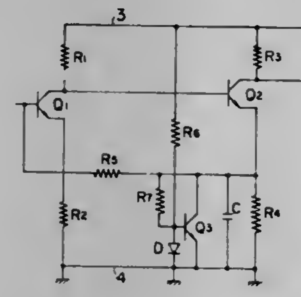


7. A driver for a balanced line comprising an input terminal, first and second transistors of a first conductivity type, means for providing substantially the same potential at the bases of said first and second transistors, means for coupling an input signal applied to said terminal to the bases of said first and second transistors, means for connecting the collector of said first transistor to one side of said balanced line, means for connecting the emitters of said first and second transistors to a first fixed potential, and means responsive to collector current of said second transistor for generating a current on the other side of said balanced line.

3,872,392
CASCADE DIRECT-COUPLED AMPLIFIER

Yoshio Sakamoto, and Shinsuke Iguchi, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 26, 1973, Ser. No. 382,693
Claims priority, application Japan, July 6, 1972, 47-74178
Int. Cl. H03f *3/04*
U.S. Cl. 330—19 **8 Claims**

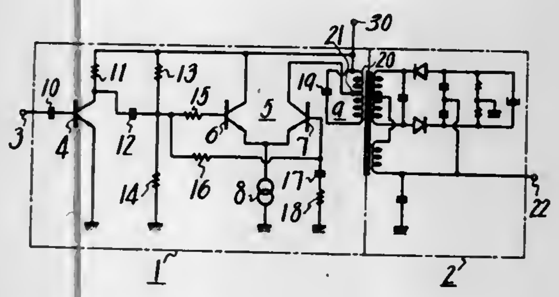


1. In a cascade direct-coupled amplifier having a supply voltage source, a first grounded-emitter transistor connected to said supply voltage source, a second grounded-emitter transistor which is connected DC-wise to said first transistor and to said supply voltage source, and a bias circuit which supplies a bias current from the emitter of said second transistor to the base of said first transistor, the improvement comprising current absorbing circuit means for providing an absorption current which varies in proportion to changes in said supply voltage source and which is connected to said emitter of said second transistor, said current absorbing circuit means including a third grounded-emitter transistor having its collector connected to the emitter of said second grounded-emitter transistor, and a resistor and a diode connected in series between said supply voltage source and ground, the base of said third transistor being connected to the point of connection of said resistor and said diode.

3,872,393
IF AMPLIFIER

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,108
Claims priority, application Japan, Dec. 26, 1972, 48-833[U]
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **5 Claims**

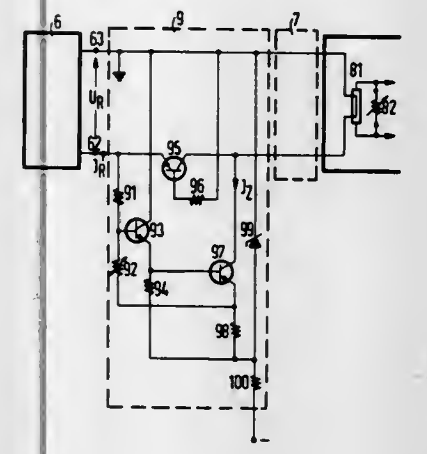


1. An IF amplifier comprising:
a. a voltage source;
b. a differential amplifier having first and second transistors whose emitter electrodes are connected to each other and to a voltage reference point through a common emitter impedance and whose collection electrodes are connected to the voltage source through a signal output means, a base electrode of said first transistor being supplied with an input signal, said differential amplifier being used as an IF final stage to which a frequency discriminator is connected;
c. attenuating means consisting of first and second resistors and a first capacitor, said first resistor being connected between the base electrodes of said first and second transistor, said second resistor and first capacitor are connected in series between a base electrode of said second transistor and voltage reference point respectively, said means being of a value to keep the differential amplifier in non-saturating condition.

3,872,394
PILOT REGULATED CARRIER FREQUENCY LINE AMPLIFIER

Peter Bartenstein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 11, 1973, Ser. No. 359,272
Claims priority, application Germany, Apr. 18, 1973, 2319784; May 19, 1972, 2224621
Int. Cl. H03f *3/66*
U.S. Cl. 330—52 **4 Claims**

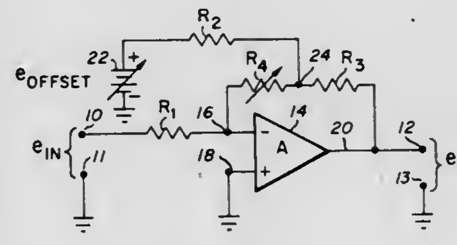


1. A pilot controlled carrier frequency line amplifier arrangement comprising: an amplifier having an input and an output; a feedback network connected between said output and said input of said amplifier and including a temperature responsive variable resistor and a heating coil for said variable resistor energizable to control the frequency pass characteristic of said arrangement; and a control circuit connected between said amplifier and said heating coil for controlling the energization of said heating coil in accordance with the magnitude of the pilot, said control circuit including a pilot evaluating means connected across said heating coil for deriving a current representing the relative value of the pilot with respect to a reference and a limiting transistor having a base, an emitter and a collector, the collector-emitter path connected across said heating coil, and a voltage divider connected in parallel with said pilot evaluating means and having a tap connected to said base of said limiting transistor for controlling the current applied to said heating coil, said control circuit further comprising an evaluating circuit connected to said pilot evaluating means and to said limiting transistor for feeding an additional current to said heating coil, said evaluating circuit including a first transistor circuit for evaluating the output voltage of said pilot evaluating means, a second temperature responsive resistor for sensing the environmental temperature of said feedback network, and a second transistor circuit connected to said first transistor circuit and to said second temperature responsive resistor and to said heating coil and controlled by said first transistor circuit and said second temperature responsive resistor to provide said additional current inversely proportional to the output voltage of said pilot evaluating means and inversely proportional to the environmental temperature sensed by said second temperature responsive resistor.

3,872,395
SIGNAL CONDITIONING CIRCUIT APPARATUS

Vard B. Holland, San Jose, Calif., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed May 5, 1971, Ser. No. 140,439
Int. Cl. H03f *1/36*
U.S. Cl. 330—86 **2 Claims**

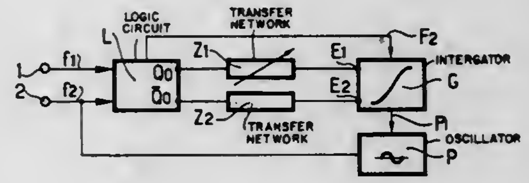


1. A signal conditioning circuit with a constant imput impedance and variable gain and offset comprising:
- first and second input terminals;
- first and second output terminals;
- an operational amplifier with first and second inputs and an output;
- said second input terminal, said second amplifier input and said second output terminal being commonly connected; a resistor coupled between said first input terminal and said first amplifier input;
- said amplifier output being coupled to said first output terminal;
- means coupled between said amplifier output and said amplifier input for feeding back a signal, said feedback means including a variable resistance and a variable potential;
- the gain of said signal conditioning circuit being a function of said resistance;
- the offset of said signal conditioning circuit being independent of said gain and a function of said potential; and
- said input impedance of said signal conditioning circuit being independent of said gain and said offset.

3,872,396
OSCILLATOR CONTROL CIRCUIT

Paul Bastide, Paris, and Robert Bonneton, Charenton, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Nov. 6, 1973, Ser. No. 413,350
Claims priority, application France, Nov. 6, 1972, 72.39206
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **11 Claims**

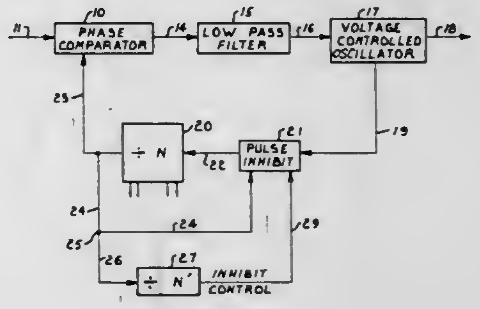


1. A control circuit for servo-controlling the frequency generated by a control oscillator in accordance with the frequency of a control signal, said circuit providing a phase-adjustable frequency control loop and comprising logic circuit means connected to receive said control signal and the output of said control oscillator for providing first and second rectangular complementary signals on respective outputs, an integrator circuit, and first and second transfer networks connecting the respective outputs of said logic circuit means to said integrator circuit, the output of said integrator circuit being connected in control of the frequency of said control oscillator, one of said first and second transfer networks having a variable impedance.

3,872,397
METHOD AND APPARATUS FOR DECREASING CHANNEL SPACING IN DIGITAL FREQUENCY SYNTHESIZERS

Charles K. Hanneman, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Nov. 7, 1973, Ser. No. 413,616
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **6 Claims**



1. In a frequency synthesizer having a phase locked loop including a phase comparator that receives a reference frequency and compares it to a feedback frequency, delivers an output signal based on that comparison, and has a voltage controlled oscillator providing a frequency output based on the output of said phase comparator, and a digital divider electrically connected between said voltage controlled oscillator and said phase comparator for providing said feedback signal to said comparator, the improvement comprising
- means for causing the digital divider to either divide by the divide ratios N or N′ thereby yielding an average ratio of $N_1 + N_2 + \ldots N_N + N'_1 + N'_2 + \ldots N'_M N''$ wherein N_1 through N_N, N'_1 through N'_M and N'' are integers and N'' equals $M + N$, said last mentioned means comprising
- means for changing said divide ratios N to N′, and
- means for averaging the divide ratios N and N′ by dividing the sum of $N_1 + N_2 \ldots N_N + N'_1 + \ldots N'_M$ by N''.

3,872,398
PROXIMITY SENSOR WITH ADJUSTABLE HYSTERESIS

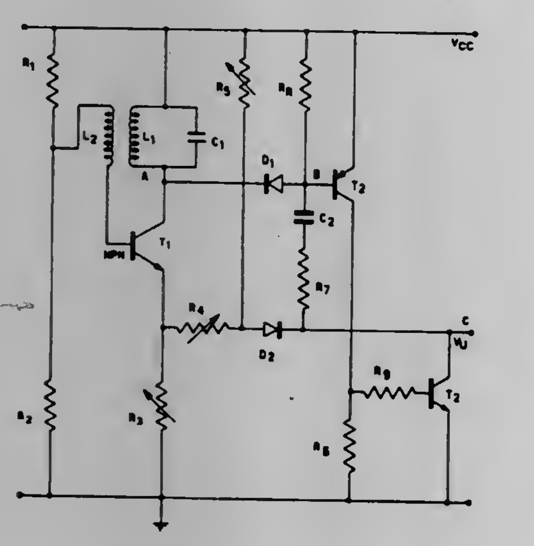
Alfredo Fausone, Ivrea, and Luigi Piglione, Cirie, both of Italy, assignors to Ing. C. Olivetti and C., S.p.A., Ivrea (Torino), Italy

Filed Sept. 25, 1973, Ser. No. 400,631

Claims priority, application Italy, Oct. 11, 1972, 70194/72

Int. Cl. G08c *21/00;* **H03b** *5/12*

U.S. Cl. 331—65 **2 Claims**



1. A proximity sensor responsive to the relative change in location of a metal element comprising:

an oscillator circuit including an inductance for inductive coupling with the metal element, a transistor amplifier and a direct current voltage source for furnishing operating voltages to the elements of the transistor, the collector of said transistor being connected to one terminal of said voltage source through said inductance, a capacitor connected across said inductance, a first resistor voltage divider connected across said source and having an intermediate point connected to the emitter of said transistor to determine the emitter resistance of said transistor, a second resistor voltage divider connected across said voltage source, the base of said transistor being regeneratively coupled to said inductance and being connected to an intermediate point of said second voltage divider, said oscillator being operable to furnish an oscillating voltage output responsive to change in location of the metal element,

a demodulating stage connected to said oscillator to supply an output voltage of amplitude determined by the oscillating voltage output of the oscillator circuit, an output stage, each of said demodulating and output stages including a transistor, a first diode connected between the base of the demodulating transistor and the collector of the oscillator transistor, the base of the output transistor being connected to the collector of the demodulating transistor, a pair of output terminals respectively connected to the collector and emitter of the output transistor, and a regenerative feedback connection between the collector of the output transistor and the base of the demodulating transistor, and,

means for adjusting the sensitivity of said oscillator circuit to relative change in location of the metal element comprising at least one variable resistance element in said first voltage divider which establishes emitter resistance of said oscillator transistor.

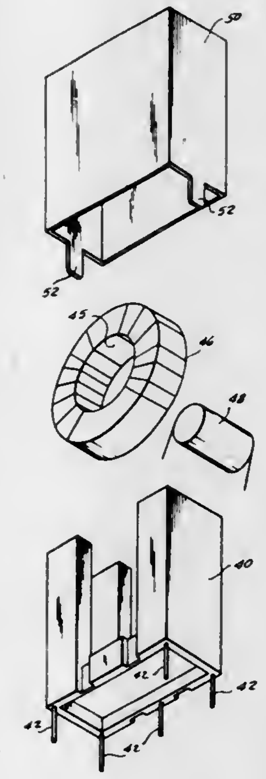
3,872,399
MODULAR L-C FILTER

Vincent P. Friberg, Longmeadow, Mass., and John Chesney, Roselle Park, N.J., assignors to General Instrument Corporation, Clifton, N.J.

Filed Apr. 12, 1974, Ser. No. 460,274

Int. Cl. H03h *7/02, 7/08*

U.S. Cl. 333—70 S **7 Claims**



1. An L-C circuit comprising a core in the shape of a toroid substantially surrounding an opening, a conductor, said conductor being wound around said core a given number of turns to define a winding, and a capacitor physically situated within the opening associated with said core and electrically connected to said conductor to form a portion of a turn around said core.

3,872,400
SEMI CONDUCTOR LASER

Karl Glausecker, Oberkirchberg, and Uwe Gnutzmann, Ulm-/Donau, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt/Main, Germany

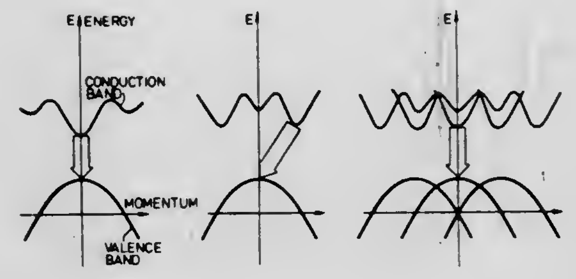
Filed July 28, 1972, Ser. No. 276,162

Claims priority, application Germany, Aug. 6, 1971, 2139436

Int. Cl. H01s *3/18;* **H01l** *3/12*

U.S. Cl. 331—94.5 H **18 Claims**

1. A semiconductor laser comprising a semiconductor body formed of a material having an indirect optical transition between its conduction band and its valence band and having at least a portion which is constructed to displace an absolute secondary minimum of its conduction band to the absolute maximum of its valence band to achieve direct optical transitions, and pumping means for applying energy to said semiconductor body to induce the emission of light from said semiconductor body.



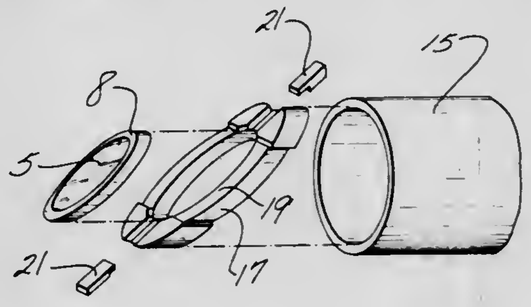
3,872,401
LASER ASSEMBLY INCLUDING A CRYSTALLINE LASER DISC WITH AN ANNULAR GLASS COATING

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 8, 1974, Ser. No. 431,798

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 E **9 Claims**



1. A crystalline laser disc having an annular lead borate glass coating capable of absorbing energy at the lasing wavelength to thereby absorb parasitic oscillations, the glass coating having an index of refraction not less than the index of refraction of the crystalline disc, the thermal expansion and contraction of the coating being sufficiently compatable with the disc to prevent the development of an undesirable stress level therein; the glass coating including barium oxide and Al_2O_3 and an effective amount of copper oxide that absorbs energy at a wavelength of about **1.06** microns.

8. A laser assembly comprising:

means for providing a source of pumping light;

means for defining a cavity having a lasing material including a housing;

means for holding a crystalline laser disc within the housing; a crystalline laser disc located within the housing for causing stimulated emission; the disc having an annular coating; the coating comprising a lead borate glass capable of absorbing energy at the lasing wave length to thereby absorb any parasitic oscillations, the glass coating having an index of refraction not less than the index of refraction of the crystalline disc, the thermal expansion and contraction of the coating being sufficiently compatable with the laser disc so as to prevent the development of undesirable stresses in the disc, the glass coating including an effective energy-absorbing amount of copper oxide that absorbs energy at the lasing wave length.

3,872,402
LASER GENERATOR HAVING A REDUCED EMISSION SPECTRUM

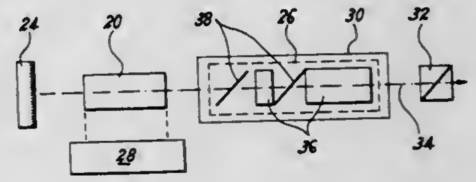
Francis Sanchez, Yerres, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sept. 20, 1973, Ser. No. 399,265

Claims priority, application France, Oct. 6, 1972, 72.35619

Int. Cl. H015 *3/08*

U.S. Cl. 331—94.5 **11 Claims**



1. A laser generator having a reduced emission spectrum and comprising a suitably excited active medium placed within a resonator, wherein said resonator is constituted by a mirror having a high coefficient of reflection and by a selective reflector assembly comprising a plurality of plates having parallel faces cut in a birefringent material in a direction parallel to the optical axis, said plates as well as their neutral lines being parallel to each other, each plate being preceded by a polarizer in which the direction of polarization makes an angle of 45° with said neutral lines.

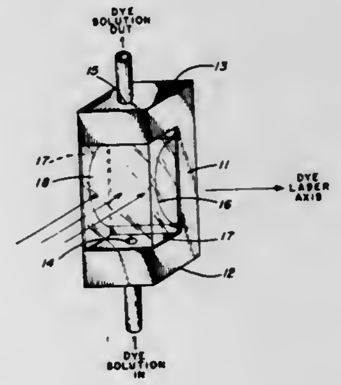
3,872,403
TRANSVERSE LAMINAR FLOW DYE LASER CELL

Herschel S. Pilloff, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 286,783, Sept. 6, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 447,456

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **2 Claims**



1. A transverse laminar flow dye laser cell for the nitrogen laser, which comprises:

- a housing;
- said housing including a base with opposite ends perpendicular with said base;
- a dye solution inlet in one end,
- a dye solution output in the opposite end;
- opposite side windows secured to said base and opposite ends;
- a top window enclosing said housing;
- a somewhat elliptical form within said housing blocking off a major portion of said cell with the greatest height of said form near the top window thereby restricting the fluid flow passage between said form and said top window and forming a line parallel with said ends while preventing turbulence.

3,872,404
SQUARE WAVE TRANSISTOR RELAXATION OSCILLATOR

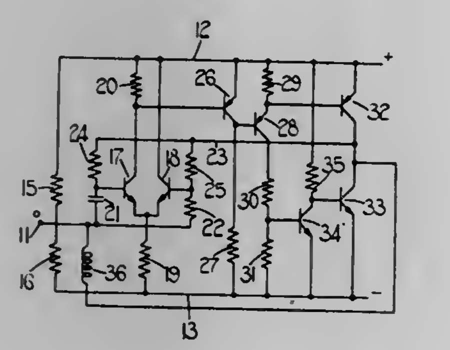
Christopher Robin Jones, Solihull; Malcolm Williams, Somerset, and Geoffrey Albert Kenyon Brunt, Alcester, all of England, assignors to C.A.V. Limited, Birmingham, England

Filed Apr. 4, 1973, Ser. No. 347,723

Claims priority, application United Kingdom, Apr. 4, 1972, 15342/72; Apr. 4, 1972, 15343/72

Int. Cl. H03k *3/28*

U.S. Cl. 331—111 **5 Claims**



1. A square wave oscillator which is driven between a first state and a second state and which includes first and second d.c. supply lines, a third supply line which is maintained at a potential between the potential of the first and second supply lines, a resistor-capacitor network, and switch means which when the oscillator is in one state connects the resistor-capacitor network between the third and first supply lines to determine the period for which the oscillator remains in said one state, the switch means serving when the oscillator is driven to its second state to connect the resistor-capacitor network between the third and second supply lines to determine the period for which the oscillator remains in its second state, said resistor-capacitor network being connected between the switch means and the third supply line and including two parallel circuits, one containing a pair of resistors in series, and the other containing a resistor and a capacitor in series, the junction of the pair of resistors, and the junction of the resistor and capacitor, providing two inputs to a comparator which controls the switching means.

3,872,405
N-GATE THYRISTOR OSCILLATOR HAVING A PARALLEL CIRCUIT OPERABLE AS A CONSTANT CURRENT CIRCUIT WHEN THE THYRISTOR IS CONDUCTIVE

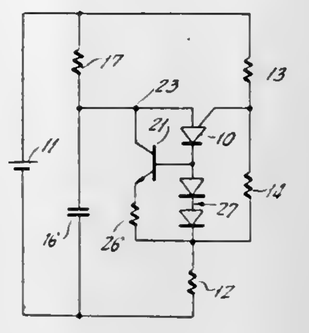
Toshiaki Gotou, and Ryuichi Saijo, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 15, 1974, Ser. No. 451,360

Claims priority, application Japan, Mar. 31, 1973, 48-37056

Int. Cl. H03k *3/35*

U.S. Cl. 331—111 **5 Claims**



1. A relaxation oscillator including an N-gate thyristor having an anode, a cathode, and a gate electrode, means for biassing said gate electrode to a predetermined gate potential, a capacitor, means for charging said capacitor to develop a voltage thereacross, and means for supplying said voltage to said anode to develop an anode potential at said anode and to render said thyristor conductive when said anode potential exceeds said gate potential, wherein the improvement comprises a parallel circuit between said anode and cathode, said circuit being operable as a constant current circuit when said thyristor is rendered conductive.

3,872,406
METHOD AND APPARATUS FOR LINEARIZING THE CHARACTERISTIC OF A SWEEP FREQUENCY GENERATOR

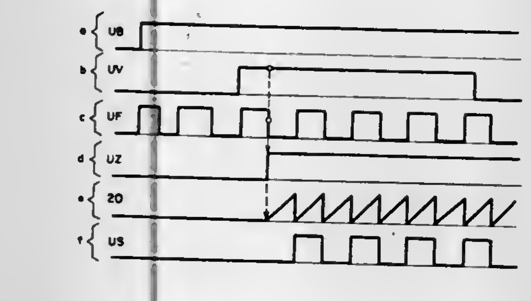
Wilhelm Grafinger, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 24, 1973, Ser. No. 400,326

Claims priority, application Germany, Sept. 27, 1972, 2247277

Int. Cl. H03b *23/00*

U.S. Cl. 331—178 **10 Claims**



1. A method for maintaining a linear frequency-time characteristic for a variable frequency oscillator controlled by a sweep generator, comprising the steps of producing a first pulse train having a pulse repetition rate proportional to the present slope of said characteristic, producing a second train of pulses having a pulse repetition rate proportional to the desired slope of said frequency-time characteristic and equal to the pulse repetition rate of the first pulse train when the present slope corresponds to the desired slope, comparing the first pulse train with the second pulse train, deriving a control voltage from said comparison, and employing said control voltage to control the operation of said sweep generator.

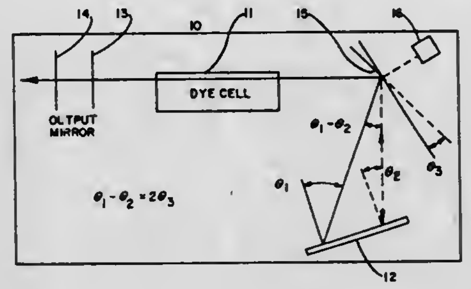
3,872,407
RAPIDLY TUNABLE LASER

Richard Swart Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 287,113

Int. Cl. H01s *3/05, 3/10*

U.S. Cl. 332—7.51 **8 Claims**



1. A rapidly tunable laser comprising;
- a laser cavity having an output mirror as a front element;
- a dispersive means fixedly mounted with respect to the laser path as a back reflective element;
- laser means positioned within said cavity for outputting a laser beam of a given wavelength and being adapted to be tuned across a given bandwidth;
- tuning means optically and movably positioned between said laser and said dispersive means so that it may be driven to cause a physical movement thereof and a corresponding movement of the laser beam;
- said dispersive means being positioned with respect to said tuning means so that when the tuning means is driven the laser beam is scanned across the fixed dispersive means thereby causing the output wavelength of the laser to change dependent upon the amount of scan.

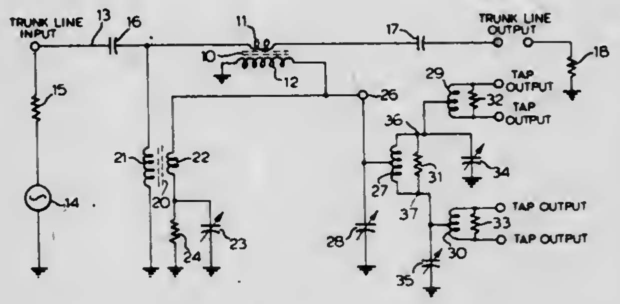
3,872,408
SIGNAL DIRECTIONAL TAP

James Park Reilly, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

Filed May 3, 1974, Ser. No. 466,664

Int. Cl. H03h *7/48*

U.S. Cl. 333—10 **9 Claims**



1. In a directional tap for tapping electronic signals from a distribution or transmission line and supplying the tapped signals to at least one subscriber, said directional tap including a directional coupler means having a current sensing transformer and a voltage sensing transformer wherein said current transformer has a primary winding connected in said distribution line and said voltage sensing transformer has a primary winding connected in shunt across said distribution line, the secondary windings of the sensing transformers being connected in parallel, the improvement comprising said current sensing transformer having a turns ratio of

$$\frac{\text{primary winding (current)}}{\text{secondary winding (current)}} = \frac{1}{N\cdot r}$$

and said voltage sensing transformer having a turns ratio of

$$\frac{\text{primary winding (voltage)}}{\text{secondary winding (voltage)}} = \frac{N}{1}$$

wherein N is the number of windings and r is the ratio Z/z in which
- z is the characteristic impedance of said distribution or transmission line and
- Z is a selected output impedance of said coupler means, and Z z.

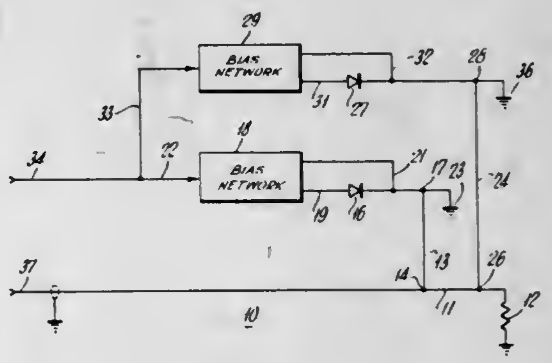
3,872,409
SHUNT LOADED LINE PHASE SHIFTER

Leonard Hatkin, Elberon, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 30, 1974, Ser. No. 465,450

Int. Cl. H01p *1/18;* **H03h** *7/18*

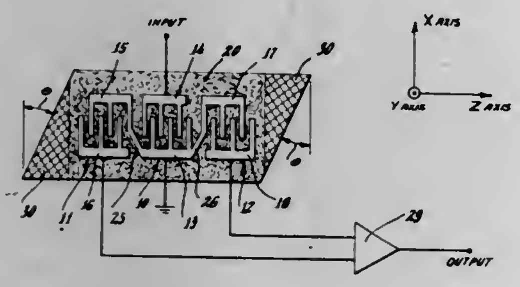
U.S. Cl. 333—31 R **10 Claims**



1. A differential phase shifter having a center operating frequency and including:
- a main transmission line having a characteristic admittance of Y_0;
- a first shunt transmission line stub having a characteristic admittance of Y_1; said first shunt transmission line stub having a first end connected to said main transmission line at a predetermined location;
- means for selectively shorting said first shunt transmission line stub at a location spaced from said first end thereof by a distance of θ_1 at said center operating frequency;
- means for shorting said first shunt transmission line stub at a location spaced from said first end thereof by a distance of $(\theta_1+2\phi_1)$ where $(\theta_1+\phi_1)$ is 90° at said center operating frequency;
- a second shunt transmission line stub having a characteristic admittance of Y_2; said second shunt transmission line stub having a first end connected to said main transmission line at a location spaced from said predetermined location by 90° at said center operating frequency;
- means for selectively shorting said second shunt transmission line stub at a location spaced from said first end thereof by a distance of θ_2 at said center operating frequency.
- means for shorting said second shunt transmission line stub at a location spaced from said first end thereof by a distance of $(\theta_2+2\phi_2)$, where $\theta_2+\phi_2)$ is 90° at said center operating frequency; and the following relationship is satisfied:

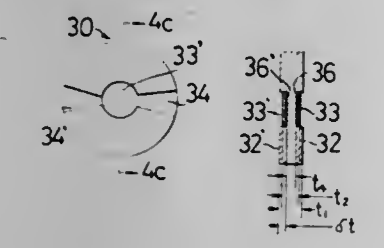
$$Y_1 \text{ Cot } \theta_1/Y_0 = Y_2 \text{ Cot } \theta_2/Y_0 /[1 + (Y_2^2 \text{ Cot}^2\theta_2/Y_0^2)].$$

3,872,410
SURFACE WAVE FILTER FOR TV IF STAGE
Joseph Zucker, Peabody, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Continuation of Ser. No. 312,080, Dec. 4, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,704
Int. Cl. H03h *9/02, 9/26, 9/32*
U.S. Cl. 333—72 **15 Claims**



1. A solid state filter comprising:
- a. an acoustic surface wave propagating medium;
- b. an input transducer having upper and lower interleaved combs of electrodes, the number, size and spacing of said electrodes being selected for predetermined trap frequencies, and responsive to an applied signal for launching bi-directional surface waves in said medium; and
- c. two output transducers each having upper and lower interleaved combs of electrodes, the number size and spacing of said electrodes being selected for predetermined trap frequencies, said output transducers symmetrically arranged about said input transducer coupled to a second and third portion of said medium and responsive to said bi-directional acoustic surface wave launched therein for producing two output signals which are 180° out of phase, said lower comb of said input transducer is electrically connected to ground potential and to both of said upper combs of said output transducers, and said output transducers have the same number of electrodes and said input transducer has three halves times the number of electrodes of either output transducer.

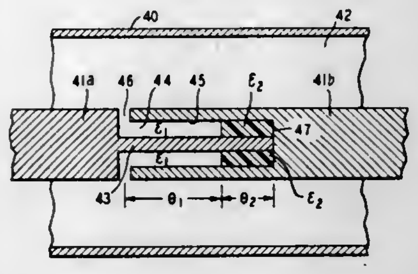
3,872,411
QUARTZ CRYSTAL RESONATOR AND A METHOD FOR FABRICATION THEREOF
Takao Watanabe; Akira Kohchi, and Toshinobu Fujii, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed Nov. 10, 1972, Ser. No. 305,363
Claims priority, application Japan, Nov. 17, 1971, 46-92274
Int. Cl. H03h *9/18;* **H01v** *7/00;* **H04r** *17/10*
U.S. Cl. 333—72 **7 Claims**



1. A quartz crystal resonator comprising, in combination, a quartz crystal plate having a density ρ_1 and a thickness t_1, said quartz crystal plate having a first major surface formed with a recess of depth δ_t, said first recess having a central portion and an elongated portion extending from said central portion and terminating at the perimeter of said first major surface, said quartz crystal plate further having a second major surface parallel to said first major surface and formed with a second recess having a depth substantially equal to the depth of said first recess, said second recess having a central portion in registry with said central portion of said first recess and an elongated portion extending from said central portions in a direction opposite to the direction of said elongated portion of said first recess, said second recess terminating at the perimeter of said second major surface; and first and second electrode layers respectively placed in said first and second recesses and having substantially the same thickness t_2 and the same density ρ_2, said depth of said first and second recesses, said thickness of said electrode layers, and said densities satisfying the inequality:

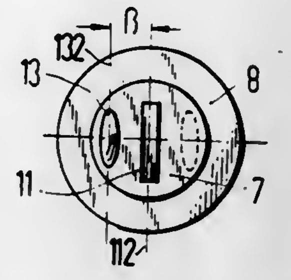
$$\delta t > \rho_2/\rho_1\ t_2.$$

3,872,412
DIELECTRIC-LOADED CHOKES
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 26, 1974, Ser. No. 464,479
Int. Cl. H01p *1/20, 3/06, 7/04*
U.S. Cl. 333—73 R **12 Claims**



1. A dielectric-loaded choke comprising:
- a length of transmission line open circuited at its input end and reactively terminated at its other end;
- a first region of said line, adjacent to the input end, being loaded by means of a first dielectric material having a dielectric constant ϵ_1;
- a second region of said line, constituting the remaining portion of said line, being loaded by means of a second dielectric material having a second dielectric constant ϵ_2, where ϵ_2 and ϵ_1 are unequal;
- the parameters of said choke, including the lengths of said two regions, and the magnitudes of ϵ_1 and ϵ_2, being proportioned to produce an input impedance to said choke that is much different at one frequency than it is at a second frequency where said two frequencies are harmonically related.

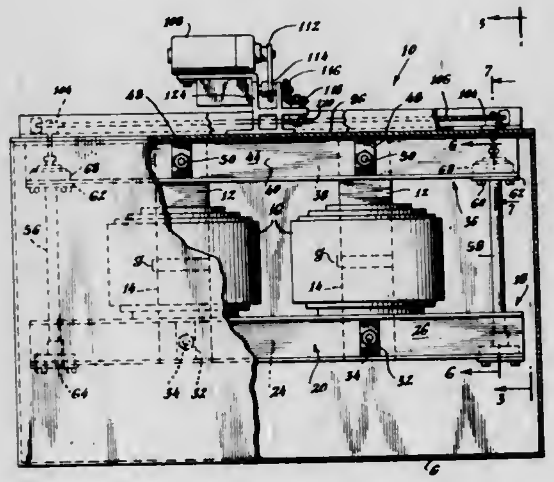
3,872,413
METHOD AND APPARATUS FOR TUNING COAXIAL-LINE SECTION RESONATORS
Guenter Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Jan. 5, 1973, Ser. No. 321,329
Claims priority, application Germany, July 24, 1972, 2236168
Int. Cl. H01p *7/04, 1/00*
U.S. Cl. 333—82 B **8 Claims**



1. A coaxial line section resonator comprising: a coaxial line section having one end short-circuited by a conductive plate,

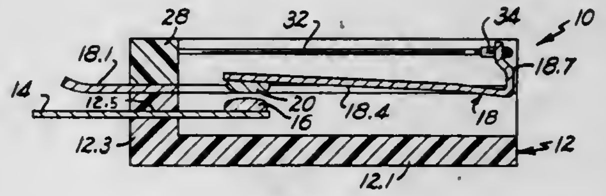
an electrically conductive field displacement body supported in the space between the conductors of said coaxial line section near said conductive plate, said field displacement body being formed integrally with a rotatable member extending from the exterior of said resonator into the space between the conductors of said coaxial line section, said field displacement body being a relatively flat body, and a second field displacement body mounted on said rotatable member, the major plane of said second field displacement body being parallel to that of the first field displacement body, said second field displacement body being arranged eccentrically to the axis of rotation of said rotatable member.

3,872,414
MOBILE, ACCURATELY MECHANICALLY VARIABLE HIGH REACTIVE POWER INDUCTOR HAVING LOW HEADROOM REQUIREMENTS SUITABLE FOR TRANSPORT ON A UTILITY VEHICLE
Richard F. Schutz, Brewster, N.Y., assignor to Hipotronics, Inc., Brewster, N.Y.
Filed Oct. 12, 1973, Ser. No. 405,840
Int. Cl. H01f *21/06*
U.S. Cl. 336—134 **5 Claims**



1. A mobile, accurately mechanically variable high reactive power inductor of the type having a magnetic core and an electrical winding magnetically coupled to the core, the magnetic core being in the form of upper and lower separable core segments separated by a gap, said high reactive power inductor being compact and suitable for transport on a utility vehicle such as a truck, railroad car or the like to a remote field location for testing large capacitive loads such as large capacitors, a group of capacitors, high voltage electrical power transmission lines, and the like, said mobile high reactive power inductor comprising:
- rigid lower frame means for supporting the lower core segment and the electrical winding magnetically coupled to the core,
- rigid upper frame means reciprocally mounted with respect to said lower frame means for supporting said upper core segment, the upper core segment thus being aligned with the lower core segment and the electrical winding and being vertically movably suspended above the lower core segment,
- linearly telescoping jack means associated with said upper and lower frame means for vertically reciprocally positioning said upper frame means above said lower frame means and, hence, for vertically reciprocally positioning the upper core segment above the lower core segment to control the gap size between the upper and lower core segments, said linearly telescoping jack means including a plurality of spaced jacks mounted between said upper frame means and said lower frame means, each jack comprising:
- a rigid outer tubular body;
- a rigid inner tubular body slidably, reciprocally mounted within said outer tubular body for telescoping movement into and out of said outer tubular body;
- packing means associated with said inner and outer tubular bodies for preventing relative horizontal movement thereof,
- jack extension means for variably adjustably moving said inner tubular body out of and into said outer tubular body in telescoping fashion to variably, adjustably increase and decrease the total length of said jack,
- for rigidly maintaining the alignment of the upper and lower core segments and the electrical winding magnetically coupled to the segments throughout the vertical range of travel of said telescoping jack means irrespective of vibration and other generally random horizontal and vertical motion which said high reactive power inductor may experience during field transport, and
- means for driving said linearly telescoping jack means to reciprocally move said upper frame means and said lower frame means to adjust the gap size between the upper and lower core segments whereby said high reactive power inductor may be operated upon a vehicle while the core segments and electrical winding are maintained in aligned relation.

3,872,415
RELAY
David E. Clarke, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 16, 1973, Ser. No. 351,750
Int. Cl. H01h *61/06*
U.S. Cl. 337—140 **7 Claims**



1. A relay comprising electrically insulating base means, a first conductive member mounted on said base means, a second conductive member formed of a single sheet of electrically conductive sheet material having a pair of spaced first portions secured to said base means, having a contact arm portion extending in cantilever relation from the remainder of said second member between said first portions of said second member and movable at its distal end between an open circuit position spaced from said first conductive member and a closed circuit position engaging said first conductive member, and having spring means integrally formed in said sheet material respectively connecting said first member portions with an opposite end of said contact arm portion of said second conductive member and normally biasing said contact arm portion to one of said circuit positions, and an actuator wire element secured between said opposite end of said contact arm portion and said base means, said actuator element being formed of a metal alloy adapted to be deformed from an original configuration to a second configuration as said contact arm portion is moved to said one circuit position by said spring bias while said metal alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original configuration and to display a relatively higher of elasticity to move said contact arm portion to the other of said circuit positions against said spring bias when said metal alloy is heated above said transition temperature.

3,872,416
FUSE ARRANGEMENT, ESPECIALLY FOR MOTOR VEHICLES

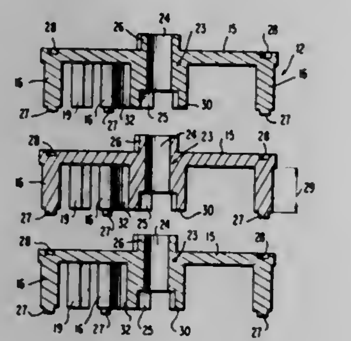
Norbert Kinasi, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuggart-Untertuerkheim, Germany

Filed May 22, 1972, Ser. No. 255,634

Claims priority, application Germany, May 22, 1971, 2125439

Int. Cl. H01h *85/02*

U.S. Cl. 337—201 **85 Claims**



1. A device for the arrangement of fuses, especially in motor vehicles, which includes a fuse carrier means, fuses exchangeably arranged in said fuse carrier means, and cable connection means, characterized in that a separate receptacle means is coordinated to said fuse carrier means, which contains the cable connection means, said fuse carrier means being insertable into said receptacle means, and said fuse carrier means being lockable in a position in the receptacle means in which the fuses are electrically connected with the corresponding cable connection means.

3,872,417
SNAP-ACTION SWITCH FOR A THERMAL TRIGGER, ESPECIALLY FOR A MOTOR PROTECTION DEVICE

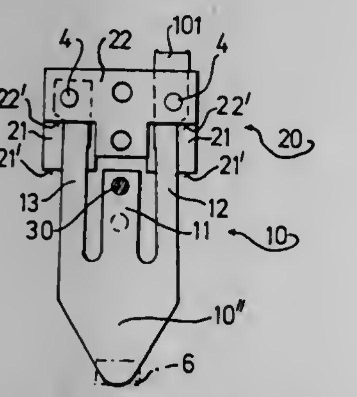
Max Hufschmid, Niedererlinsbach, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Aug. 29, 1973, Ser. No. 392,784

Claims priority, application Switzerland, Sept. 26, 1972, 14021/72

Int. Cl. H01h *37/54*

U.S. Cl. 337—365 **1 Claim**



1. A snap-action switch for a thermal trigger mechanism, especially for a motor protection device, comprising rest contacts, an elastic spring, which can be actuated by a bimetallic element for opening the contacts, at least one of the rest contacts being stationarily arranged and at least one being mounted at the elastic spring, a stop movable into the path of the elastic spring in front of its dead-center position, the improvement wherein said elastic spring comprises a substantially E-shaped spring member having a pair of outer legs and a central leg, two stationarily mounted support plates for fixedly retaining the E-shaped spring member at the ends of both of its outer legs, means for pre-biasing said outer legs towards one another substantially in the plane of the spring member, one of the support plates which is closer to said at least one stationary contact being constructed to extend along both of the outer spring legs to a position which is closer to said at least one contact mounted at the elastic spring member than is the other support plate, said central leg having a free end and moving with said free end past the support plates under the action of the bimetallic element, said spring member having a spring web carrying said at least one contact mounted thereat and said spring web being enlarged in size at the side facing away from said legs, said stop being movable into the path of said spring web.

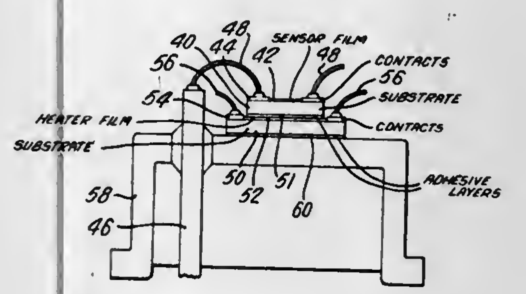
3,872,418
ELECTRICAL RELAY DEVICE

Charles T. Plough; H. Keith Eastwood, both of Beaconsfield, and Marcus Arts, Longueuil, Quebec, all of Canada, assignors to Multi-State Devices Ltd., Dorval, Province of Quebec, Canada

Filed Jan. 7, 1974, Ser. No. 431,428

Int. Cl. H01c *7/04*

U.S. Cl. 338—23 **9 Claims**



1. An electrical relay device comprising:

a. a first substrate of thermal insulative material mounted on a suitable heat conductive support;

b. a heater film deposited on said first substrate;

c. first electrical contacts mounted on said first substrate and connected to said heater film for connecting said heater film to a source of control voltage;

d. a second substrate having a mass smaller than said first substrate mounted on top of said heater film;

e. a thin film of a sensing material exhibiting a large change of impedance at a critical temperature deposited on said substrate, said second substrate being made of a single crystal material selected to optimize the electrical properties of the sensing material deposited thereon; and

f. second electrical contacts mounted on said second substrate and connected to said thin film of sensing material for connecting it to the terminals of a control circuit.

3,872,419
ELECTRICAL ELEMENTS OPERABLE AS THERMISTERS, VARISTERS, SMOKE AND MOISTURE DETECTORS, AND METHODS FOR MAKING THE SAME

Alexander J. Groves, 2625 Park Ave., Bridgeport, Conn. 06604, and Alexander J. Groves, Jr., 596 Toilsome Hill, Fairfield, Conn. 06430

Filed June 15, 1972, Ser. No. 263,192

Int. Cl. H01c *7/00, 13/00*

U.S. Cl. 338—25 **28 Claims**

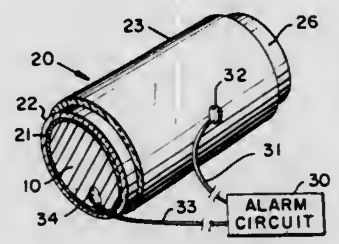
1. An electrical element comprising:

A) a metal substrate;

B) a layer of nickel aluminide deposited on the metal substrate;

C) a layer of ceramic semiconductor material comprising aluminum oxide and titanium oxide deposited on the layer of nickel aluminide and

D) a layer of conductive material forming an electrical terminal deposited on the layer of ceramic semiconductor material.



3,872,420
ROTARY POTENTIOMETER

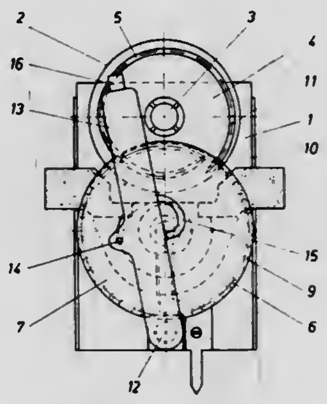
Dieter Koch, Escherde, and Peter-Josef Graf, Hildesheim, both of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Jan. 24, 1974, Ser. No. 436,209

Claims priority, application Germany, Feb. 16, 1973, 2307680

Int. Cl. H01l *9/02*

U.S. Cl. 338—162 **4 Claims**



1. In a rotary potentiometer having a drive wheel of the peg-toothed crown gear type, engaged with an approximately one-turn spiral ridge provided on a control wheel in the outer part of a disc surface thereof, said drive wheel and the potentiometer arm being rotatably mounted slightly askew to the control wheel on a carrier plate on which said control wheel is also rotatably mounted, so that by the engagement of said control wheel and said drive wheel one revolution of said control wheel will rotate said drive wheel by one tooth, said teeth of said drive wheel being in the form of evenly spaced pegs over part of the periphery of said drive wheel, the improvement which is that the electrical portion of the rotary potentiometer comprises:

a resistance element consisting essentially of a substantially semicircular segment of an annular disc, including an exposed layer of resistance material, with the legs thereof extended to form outwardly extended contact tabs provided with a metallized contact surface, said resistance element being seated on said carrier plate approximately parallel to the disc of said drive wheel with its tabs extending respectively beyond opposite edges of said carrier plate;

central connection lug means seated on said carrier plate and having an annular disc portion concentric with and within the semicircular segment of said resistance element and providing an annular contact surface and having also a strip portion extending away from said annular portion and at least for part of its length seated in a channel in said carrier plate so as to pass under said semicircular portion of said resistance element without contact therewith and providing a connection lug in the neighborhood of its extremity, and

wiper means affixed to said drive wheel for making contact with said annular contact surface of said central connection lug means and with said resistance element.

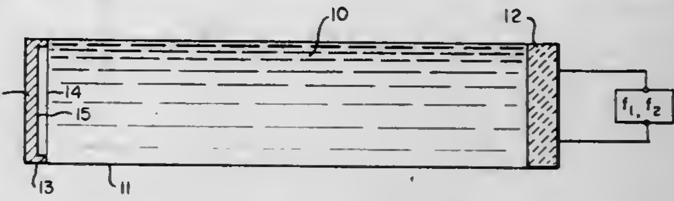
3,872,421
STANDING WAVE ACOUSTIC PARAMETRIC SOURCE

Peter H. Rogers, Reston, and Arnie Lee Van Buren, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 316,605, Dec. 19, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 408,038

Int. Cl. H04b *13/00*

U.S. Cl. 340—10 **5 Claims**



1. A device for producing omnidirectional, low frequency acoustic waves, which comprises:

a thin wall acoustic waveguide having a first and second open end;

a transducer secured to said first open end of said waveguide;

a plug of pressure release material closing said second open end of waveguide to form a resonant cavity;

a fluid filling said acoustic waveguide between said transducer and said pressure release material;

a first and second high intensity, high frequency signal producing means connected with said transducer for simultaneous operation thereof producing first and second high intensity, high frequency standing waves within said resonant cavity;

said first standing wave having a frequency higher than said second standing wave;

said pressure release material inhibiting the growth of sum frequencies and harmonics whereby a low frequency output wave is generated by a nonlinear interaction of the two high frequency standing waves in the fluid within said waveguide, and

said wall thickness is sufficiently thin that said wall is transparent to said low frequency while reflecting said first and second high frequency signals.

3,872,422
STREET TRAFFIC SIGNALLING SYSTEM

Anton Obermaier; Peter Drebinger, both of Munich, and Johann Hoisl, Ottobrunn, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 13, 1973, Ser. No. 369,725

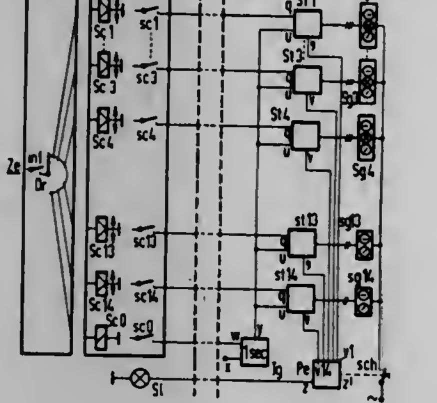
Claims priority, application Germany, June 15, 1972, 2229284

Int. Cl. G08g *1/07*

U.S. Cl. 340—41 R **3 Claims**

1. In a street traffic signalling system in which the signal light units for the traffic flow in each direction at an intersection are independently regulated under the control of a central programmer at a main station with the signal unit for each such traffic flow being controlled over a respective individual channel, the combination of an actuating switch, controlled by said programmer, for each channel at such main station, operative to transmit order signals to the associated unit, time switches, for the respective units, in the form of impulse counters adapted to be triggered in response to an order signal resulting from actuation of the cooperable actuating switch, a timing generator connected in common to the respective impulse counters of an intersection for supplying impulses thereto, said timing generator being connected to receive

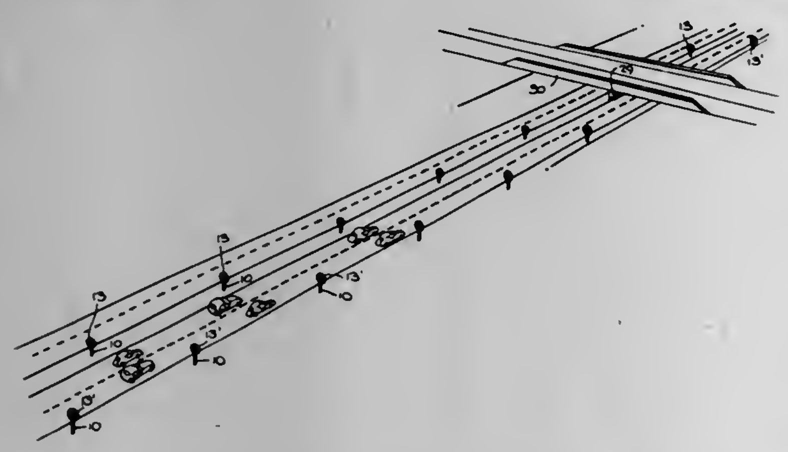
synchronizing impulses, from the main station, at selected time intervals, whereby such generator is periodically synchronized, for example, once per signalling cycle, said timing



generator including means for effecting a phase-shifting of the timing impulses upon the initiation of an order signal from the main station, for preventing improper operation of the system and false indications in a test device.

3,872,423
VEHICLE PACER SYSTEM AND A METHOD OF SPACING MOVING VEHICLES ALONG A TRAFFIC LANE OF A ROADWAY

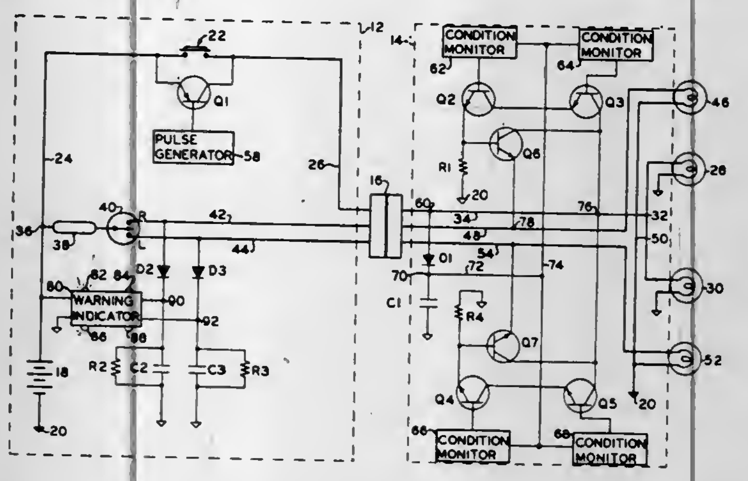
John Yeakley, Neptune, N.J., assignor to American Enterprise of Charlotte, Inc., Neptune, N.J.
Filed June 27, 1973, Ser. No. 373,918
Int. Cl. G08g *1/09*
U.S. Cl. 340—43 **17 Claims**



1. In a vehicle pacer system for spacing immediately successive vehicles apart in a traffic lane of a roadway,
- a series of signal indicating means disposed along the traffic lane in equal spacings relative to each other, said spaceing (s) corresponding to a distance equal to a multiple of vehicle length for a given speed (v) and each means having at least two indicators for visual display and a radio receiver for receiving a first signal to visually display one of said indicators and for permitting visual display of another of said indicators in response to an absence of said first signal; and
- a radio transmitter remotely located with respect to said series of signal indicating means for emitting said signal simultaneously to said radio receiver of each signal indicating means repeatedly at time intervals (t) to obtain an alternating visual display of said indicators in each signal indicating means and to obtain a visual display of said one indicator at each successive signal indicating means in a continuous corresponding to said given speed for a vehicle travelling along the traffic lane, said time intervals (t) being determined by dividing said spacing (s) in feet by said given speed (v) in feet per second, whereby successive continuous sequences of visual display of said one indicator by said series of signal indicating means enables immediately successively travelling vehicles to be spaced apart in the traffic lane at said spacing (s) of said signal indicating means.

3,872,424
APPARATUS AND METHOD FOR TRANSMITTING AUXILIARY SIGNALS ON EXISTING VEHICLE WIRING

Robert S. Enabnit, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 12, 1973, Ser. No. 406,076
Int. Cl. G08c *15/12*
U.S. Cl. 340—52 F **16 Claims**

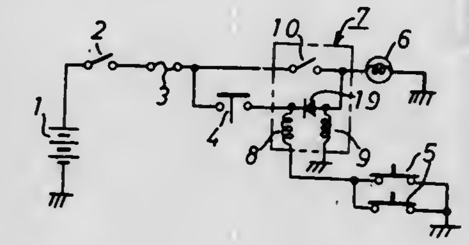


1. In combination with a vehicle electrical system including a plurality of n individual circuits, apparatus to effect power and information communication between a remote condition monitoring circuit and a warning indicator using the circuit wiring for the n individual circuits comprising:
- a. a pulse generator coupled to a first of the n individual circuits to provide short duration voltage pulses of insufficient average power to affect normal circuit operation;
- b. circuit means coupling the remote condition monitoring circuit to the first of the n circuits to accumulate the pulses and provide a continual source of DC power to the monitoring circuit;
- c. a gating circuit intercoupling the remote monitoring circuit, the first of the n circuits, and a second of the n circuits, to gate pulses from the first of the n circuits to the second of the n circuits in response to the output of the remote monitoring circuit; and
- d. circuit means coupling the warning indicator to the second of the n circuits to detect the presence of pulses and provide an input signal to the warning indicator indicative of the monitored condition as reflected in the presence or absence of pulses.

3,872,425
OPERATION INDICATING DEVICE FOR HYDRAULIC BRAKE SYSTEM

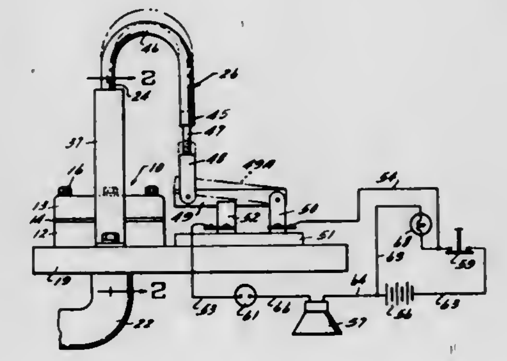
Ikuya Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Division of Ser. No. 249,769, May 3, 1972, Pat. No. 3,828,308.
This application Feb. 5, 1974, Ser. No. 439,714
Claims priority, application Japan, Oct. 13, 1971, 46-80792
Int. Cl. B60t *17/22*
U.S. Cl. 340—52 C **1 Claim**

1. A device for indicating troubles within an automobile hydraulic brake system having a master cylinder, wheel brake cylinders and hydraulic braking circuits to connect said master cylinder with said wheel brake cylinder, comprising:
- an electric source
- a key switch;
- a pilot lamp located at a convenient place;
- contact means for selectively connecting said source to said lamp through said key switch;
- normally closed pressure switch means disposed within said braking circuits to be opened in response to a pressure value at or over a predetermined one within said braking circuits;
- brake switch means normally opened and operable with a foot brake pedal on which stepping causes closing of said brake switch means, said closing being conducted after opening of said pressure switch means in normal operation thereof when pressure of said predetermined value is produced within said braking circuits;
- relay means including a first coil thereof energized by closing of said brake switch means with said pressure switch means remaining extraordinarily closed, a second coil thereof wound in an opposite direction against said first coil on an iron core on which said first coil is wound, and means including contacts interposed between said first and second coils and interlocked with said contact means for blocking current supply to said coil through said first coil, solo-energization of said first coil closing said contact means to light said pilot lamp, solo-energization of said second coil opening said contact means to turn off said pilot lamp and energization of both coils at a time with said contact means closed offsetting magnetic power generated respectively by said first and second coils to cause no effect on said contact means so as to let said pilot lamp remain lighted; and
- bi-stable locking means operated by energization of either of said coils to maintain the closed or open position of said contact means.



3,872,426
AUDIBLE EMERGENCY WARNING SIGNAL DEVICE FOR AN AIR BRAKE SYSTEM

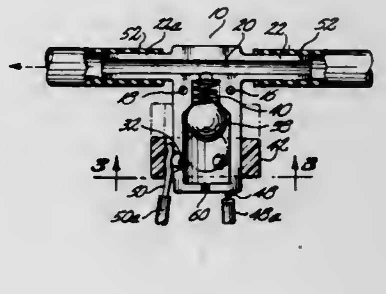
Lewis E. Greenwald, 44 Logan St., and Carl V. Greenwald, 236 W. Eight St., both of Peru, Ind. 46970
Filed Jan. 17, 1974, Ser. No. 434,016
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 C **2 Claims**



1. A warning device for an air brake system which comprises a diaphragm housing having a diaphragm cavity, a diaphragm mounted in the housing for movement in said cavity, means for connecting a main air line of the brake system to the housing in communication with the cavity on one side of the diaphragm, pressure in the line urging the diaphragm against one side of the cavity, an actuator member attached to the diaphragm and extending outwardly of the housing on the side of the diaphragm remote from the air line, a yoke overlying the housing, the actuator extending through an opening in the yoke, a compression spring mount on the actuator outside the housing and engaging the yoke, means on the actuator engaging the spring so that the spring urges the actuator member in a direction to advance the diaphragm to the other side of the cavity when the pressure in the line falls below a predetermined pressure, a switch connected to the actuator to be actuated when the diaphragm moves across the cavity, and an audible warning signal means connected to the switch to be actuated when the diaphragm is at the other side of the cavity to give an audible warning signal when the pressure in the line falls below the predetermined pressure.

3,872,427
MOTOR VEHICLE LIGHT GUARD

Richard L. Carlson, P.O. Box 680, and William L. Richardson, 33023 56th South, both of Auburn, Wash. 98002
Continuation of Ser. No. 301,709, Oct. 30, 1972,. This application Mar. 5, 1974, Ser. No. 448,332
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 D **7 Claims**



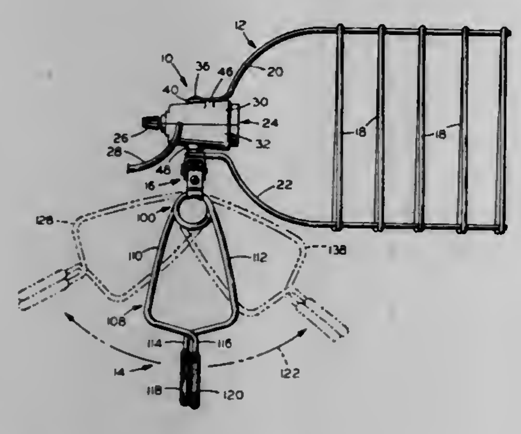
1. An improved device for use on a motor vehicle to sound an alarm if the vehicle's lights are on while the motor is off, said device being used in combination with a motor vehicle, vehicle lights, motor vehicle vacuum and an alarm wherein the improvement comprises: a tee shaped housing to include a pair of non-conductive molded parts joined together, said housing having a hollow trunk and communicating hollow laterally extending arms, and said trunk having a plurality of openings; a plurality of electrodes extending through the openings, said electrodes comprisng conductive balls extending partly inside and partly outside the housing; a non-conductive ring having interior tapered slots spaced to hold the electrodes in the openings; a conductive ball movable within the hollow trunk and contacting the electrodes; means for communicating between the hollow trunk and the motor's vacuum system to allow the vacuum to move the ball away from the electrodes; means for connecting a first electrode to the alarm; and means for connecting a second electrode to the vehicle lights.

3,872,428
ADJUSTABLE LAMPHOLDER WITH ARTICULATED SWIVEL MOUNT

Roger L. Boisvert, Blackstone, Mass., assignor to General Electric Company, New York, N.Y.
Filed Dec. 26, 1973, Ser. No. 428,191
Int. Cl. F21v *21/08*
U.S. Cl. 240—52.1 **4 Claims**

1. A lampholder comprising,
- a. an insulating lamp housing having two half shells,
- b. a lamp guard,
- c. forked attachment means extending from said lamp guard for attachment at each side of said lamp housing, said attachment means comprising a pair of tines, each having a hole therein;
- d. lampholder mounting means,
- e. and an articulated swivel joint between the mounting means and housing,

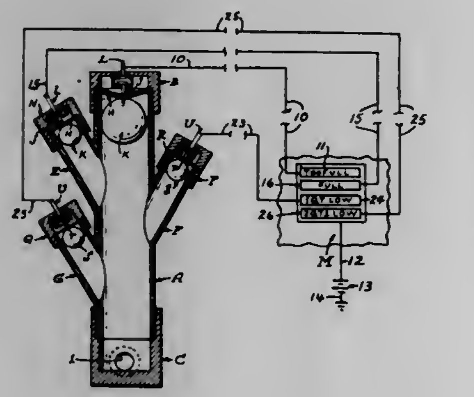
f. said articulated swivel joint including a clevis having its bight portion proximate one of the tines of said guard,
g. said clevis having a hole at the bight portion and said hole being aligned with the hole of said one tine of said forked attachment means,
h. spring means between the clevis and the mounting means,
i. an eyelet extending through said aligned holes and



holding said one tine of said attachment means, said clevis and said spring means together under spring pressure to permit swiveling of said clevis relative to said one tine of said attachment means, and
j. an assembly rivet extending through the other tine of said attachment means, through said housing and through the eyelet to hold said housing assembled and to hold said lamp guard to said housing.

3,872,429
OIL LEVEL INDICATING DEVICE FOR A CRANKCASE OR TRANSMISSION

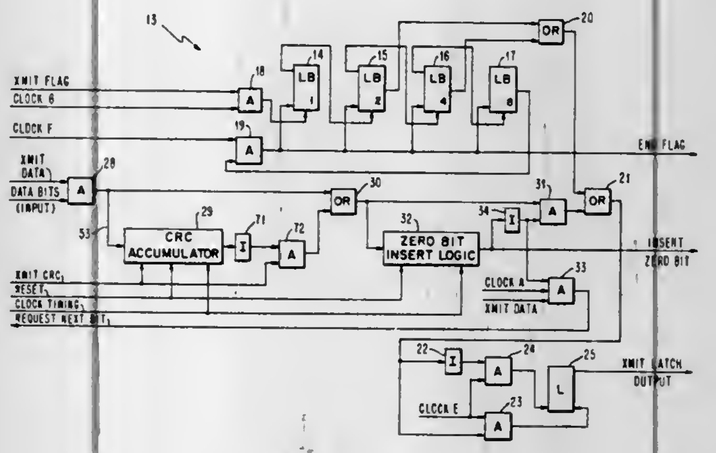
Thomas J. Arney, P.O. Box 2263, Castro Valley, Calif. 94546
Filed Sept. 10, 1973, Ser. No. 396,061
Int. Cl. B60q *1/00;* G08b *21/00*
U.S. Cl. 340—59 **4 Claims**



1. In combination:
a. a casing connectible to the oil pan of an internal combustion engine to receive oil therefrom, the casing being positioned on the oil pan so that the oil level in the oil pan will be the same as the oil level in the casing;
b. a first branch communicating with the casing at a lower elevation than the top of the casing;
c. a first float-controlled switch mounted in the upper end of said casing and a second float controlled switch mounted in the upper end of said first branch, said first switch closing an electric circuit to illuminate a first sign on the instrument panel, reading TOO FULL, when the oil level in said casing raises the float therein to actuate the switch, the communication of said first branch with the casing being at an angle to prevent said second float interfering with said first float in said casing;
d. said second switch closing an electric circuit to illuminate a second sign on the instrument panel, reading FULL, when the oil level in said casing and branch drops to a point where said first float-controlled switch opens but said second float-controlled switch remains closed.

3,872,430
METHOD AND APPARATUS OF ERROR DETECTION FOR VARIABLE LENGTH WORDS USING A POLYNOMIAL CODE

Paul Emile Boudreau, 18 Chipmunk Ln., Ridgefield, Conn. 06877; Wayne Donald Brodd, 5012 Hermitage Dr., Raleigh, N.C. 27612, and Robert Anderson Donnan, 1701 Curtis Rd., Chapel Hill, N.C. 27514
Filed Nov. 23, 1973, Ser. No. 418,351
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **6 Claims**



1. A digital data transmission system for variable length digital information fields separated by one or more unique flags;
said system comprising a transmitter and a receiver adapted to communicate over an error-prone communication medium;
said transmitter including an encoder for generating block check fields from said information fields which are represented by the polynomial R′(X) in the equation

$$R'(X)=[\text{Remainder}\,(X^{n-k}\cdot G(X)+X^{k}K_1(X)/P(X))]+K_2(X)$$

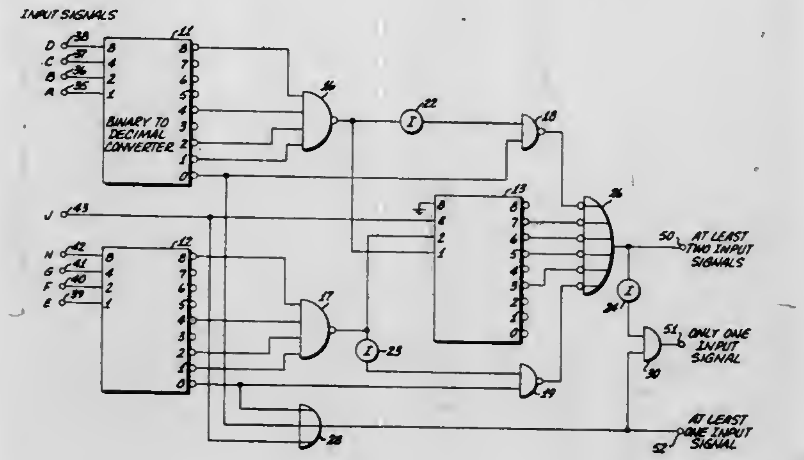
where
R′(X) is the polynomial representing the block check,
X is the dummy variable in the polynomial representation of bits,
n is the number of bits in the information and block check fields,
k is the number of bits in the information field,
G(X) is the polynomial representing the *k* information bits in the information field,
$K_1(X)$ and $K_2(X)$ are each polynomials of degree less than $n-k$ representing non-zero constants, and
P(X) is the generator polynomial of degree $n-k$;
means at said transmitter for supplying in sequence a flag, the information field, the block check field and one or more flags to said communication medium;
said receiver including a decoder for generating a block check remainder of the quantity

$$[X^{n-k}\cdot G(X)+R'(X)+X^{k}K_1(X)+E(X)]$$

multiplied by an arbitrary power of X where E(X) is a polynomial representing a received error pattern; and
means coupled to receive said block check remainder for determining whether a detectable error occurred during transmission.

3,872,431
APPARATUS FOR DETECTING DATA BITS AND ERROR BITS IN PHASE ENCODED DATA

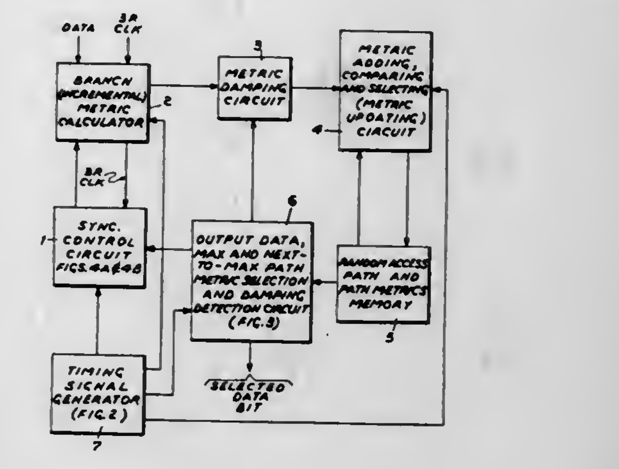
Edward R. Besenfelder, Phoenix, Ariz., and Stanley I. Friedman, Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 10, 1973, Ser. No. 423,025
Int. Cl. G11b *27/36*
U.S. Cl. 340—146.1 AX **4 Claims**


INPUT SIGNALS
D
C
B
A
J
H
G
F
E
BINARY TO DECIMAL CONVERTER
11
12
13
22
23
28
50
AT LEAST TWO INPUT SIGNALS
51
ONLY ONE INPUT SIGNAL
52
AT LEAST ONE INPUT SIGNAL

1. Apparatus for signaling the number of errors in data characters comprising:
first, and second binary-to-decimal converters each having first, second, third and fourth input leads and first, second, third, fourth and fifth output leads;
a third binary-to-decimal converter having first, second, third and fourth input leads and first, second, third and fourth output leads;
a plurality of signal input terminals, a first of said input terminals being connected to said third input lead of said third converter, each of the remainder of said input terminals being connected to a corresponding one of said input leads of said first and said second converters;
first and second logic gates each having first, second, third and fourth input leads and an output lead, said second, third, fourth and fifth output leads of said first converter each being connected to a corresponding one of said input leads of said first gate, said second, third, fourth and fifth output leads of said second converter each being connected to a corresponding one of said input leads of said second gate;
third and fourth logic gates each having first and second input leads and an output lead, said first input lead of said third gate being coupled to said output lead of said first gate, said second input lead of said third gate being connected to said first output lead of said first converter, said first input lead of said fourth logic gate being coupled to said output lead of said second gate, said second input lead of said fourth gate being connected to said first output lead of said second converter; and
a fifth logic gate having first, second, third, fourth, fifth and sixth input leads and an output lead, said output lead of said third gate being coupled to said first input lead of said fifth gate, said sixth input lead of said fifth gate being connected to said output lead of said fourth gate, said second, third, fourth and fifth output leads of said third converter each being coupled to a corresponding one of said second, third, fourth, and fifth input leads of said fifth logic gate, said output lead of said first gate being connected to said first input lead of said third converter, said output lead of said second gate being connected to said second input lead of said converter.

3,872,432
SYNCHRONIZATION CIRCUIT FOR A VITERBI DECODER

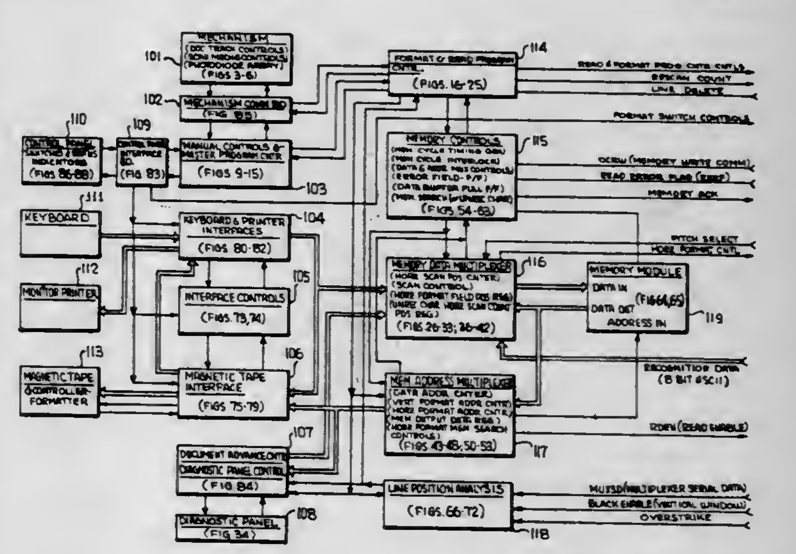
Otto Herbert Bismarck, Fords, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Apr. 10, 1974, Ser. No. 459,522
Int. Cl. G06f *11/12;* G08c *25/00;* H04l *1/10*
U.S. Cl. 340—146.1 AQ **10 Claims**


DATA
3R CLK
BRANCH (INCREMENTAL) METRIC CALCULATOR
2
3
METRIC DAMPING CIRCUIT
METRIC ADDING, COMPARING AND SELECTING (METRIC UPDATING) CIRCUIT
4
3R CLK
6
SYNC. CONTROL CIRCUIT FIGS. 4A & 4B
1
OUTPUT DATA, MAX AND NEXT-TO-MAX PATH METRIC SELECTION AND DAMPING DETECTION CIRCUIT (FIG. 3)
RANDOM ACCESS PATH AND PATH METRICS MEMORY
5
TIMING SIGNAL GENERATOR (FIG. 2)
7
SELECTED DATA BIT

1. A synchronization circuit for a Viterbi decoder comprising:
a source of path metrics for a Viterbi code, each of said path metrics being updated sequentially in response to input Viterbi code data;
first means coupled to said source to determine a maximum path metric and a next-to-maximum path metric from said updated path metrics;
second means coupled to said first means to determine the spread between said maximum and said next-to-maximum path metrics; and
third means coupled to said second means responsive to said spread between said maximum and said next-to-maximum path metrics to select output code data from said source and to maintain said selected output code data in an in-phase condition and in an insync condition with respect to said input code data.

3,872,433
OPTICAL CHARACTER RECOGNITION SYSTEM

Thomas G. Holmes, Melbourne; Harrison B. Lidkea, Satellite Beach, and Kenneth L. Seib, Melbourne, all of Fla., assignors to Optical Business Machines, Inc., Melbourne, Fla.
Filed June 7, 1973, Ser. No. 367,881
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 AH **22 Claims**


101
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113
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117
118
119
MECHANISM
MECHANISM CONTROLS (FIG. 85)
KEYBOARD
MONITOR PRINTER
MAGNETIC TAPE CONTROLLER FORMATTER
INTERFACE CONTROLS
MAGNETIC TAPE INTERFACES (FIGS 75-79)
DOCUMENT ADVANCE CNTRL
DIAGNOSTIC PANEL CONTROL (FIG 84)
DIAGNOSTIC PANEL (FIG 34)
(FIGS. 16-25)
MEMORY CONTROLS
(FIGS 43-48, 50-53)
LINE POSITION ANALYSIS (FIGS. 66-72)
READ & FORMAT PROG CNTR CNTLS
RESCAN COUNT
LINE DELETE
FORMAT SWITCH CONTROLS
RDEN (READ ENABLE)
MUTSD (MULTIPLEXER SERIAL DATA)
BLACK ENABLE (VERTICAL WINDOW)
OVERSTRIKE

1. In an optical character recognition system of the type in which optical images of data characters to be read from data documents are converted to electronic signals for automatic processing and recognition, and wherein said system in capable of ignoring all characters on a data document other than

those located in prescribed data fields, a method characterized in that data field marks are not required on said data documents to designate said prescribed data fields, said method being further characterized by a format load mode wherein a format conditioning document, which is separate and apart from data documents to be read and which contains format marks which designate the locations of said prescribed data fields, is processed to identify said prescribed data fields in each of a series of data documents to be read during a read mode, said method including the steps of:

- in said format load mode, detecting the locations of said format marks on said format conditioning document;
- in said format load mode, storing the locations of data fields designated by the format marks detected on said format conditioning document; and
- in said read mode, automatically and successively reading each data document in said series, said reading including the steps of:
  - during the reading of each data document, retrieving the stored data field locations; and
  - processing only those data characters on each data document which are located in data fields which correspond to the retrieved data field locations.

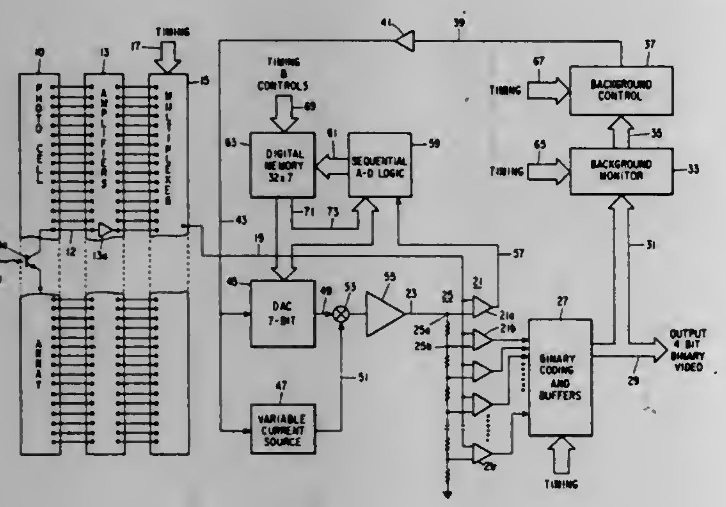
3,872,434
DYNAMIC SAMPLE-BY-SAMPLE AUTOMATIC GAIN CONTROL

Dale R. Duvall, Fort Worth; Marion W. Neff, Arlington, and Paul D. Lawson, Irving, all of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Dec. 5, 1973, Ser. No. 421,814

Int. Cl. G06k *9/02*

U.S. Cl. 340—146.3 AG **5 Claims**



1. In an optical reader having a scanned photocell array producing a multiplexed analog signal stream by cyclically sampling the signals on channels leading from the cells in said array, the combination which comprises:

- a. memory means to store digital coded words, one word for each said channel with each word representative of the relative response of a given channel,
- b. a multibit analog-to-digital converter to which said stream is applied,
- c. gain control means for said converter including means cyclically scanning said memory means in synchronism with the multiplexing of said signal channels to generate a stream of gain control voltage levels each level being dependent upon the word stored in memory for a given channel at the time the signal from said given channel passes to said converter to provide a multiplexed digital stream at the output of said converter which is independent of the differences in response of said channels to the same field of view, and
- d. said converter having a voltage ladder to which said gain control voltages are applied and a plurality of differential amplifiers each connected at one input thereof to receive said signal stream and with connections between a second input thereof at spaced points along said ladder.

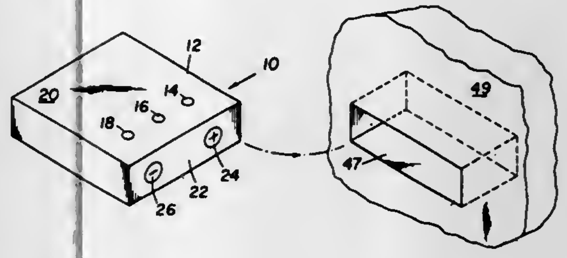
3,872,435
OPTO-ELECTRONIC SECURITY SYSTEM

Victor L. Cestaro, 19 Allegheny Dr. West, Farmingville, N.Y. 11738

Filed May 18, 1973, Ser. No. 361,807

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 MD **18 Claims**



1. An opto-electronic security system for controling locking means, comprising

- key means for producing distinct signal trains and transmitting said signal trains as light signals in accordance with a predetermined code combination, and
- lock means for receiving the light signals,
- said lock means comprising alarm means and decoding means electrically connected to said locking means and said alarm means for decoding the light signals in a predetermined manner whereby when the decoded signals compare with the predetermined code combination said locking means is actuated and opened and when the decoded signals do not compare with the predetermined code combination said locking means is maintained closed and the alarm means is activated.

3,872,436
ELECTRICAL SIGNAL TRANSMITTING SYSTEM

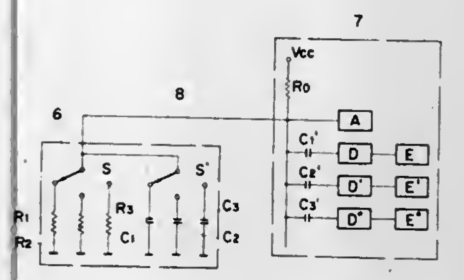
Takaomi Yoshida, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Seisakusho, Aichi Pref., Japan

Filed May 21, 1973, Ser. No. 362,635

Claims priority, application Japan, May 23, 1972, 47-50399

Int. Cl. H04q *1/45, 1/18*

U.S. Cl. 340—147 PC **10 Claims**



1. A method for transmitting electrical signals between a transmitter and a receiver through a single signal line, comprising:

- coupling a DC voltage discriminating means and plural condenser-grounded type oscillating circuits to the receiver end of said single signal line;
- selectively closing and opening differently valued resistive dividing paths between the transmitter end of said signal line and ground to vary the amplitude of a DC voltage signal on said single signal line;
- selectively opening and closing differently valued capacitive paths between the transmitter end of said single signal line and ground;
- producing from a given said oscillating circuit, upon selective closure of a uniquely corresponding one of said capacitive paths in said transmitter, an AC signal on said single signal line; and
- detecting in said transmitter, by said AC and DC signals on said single signal line, which of said paths of said transmitter have been selected.

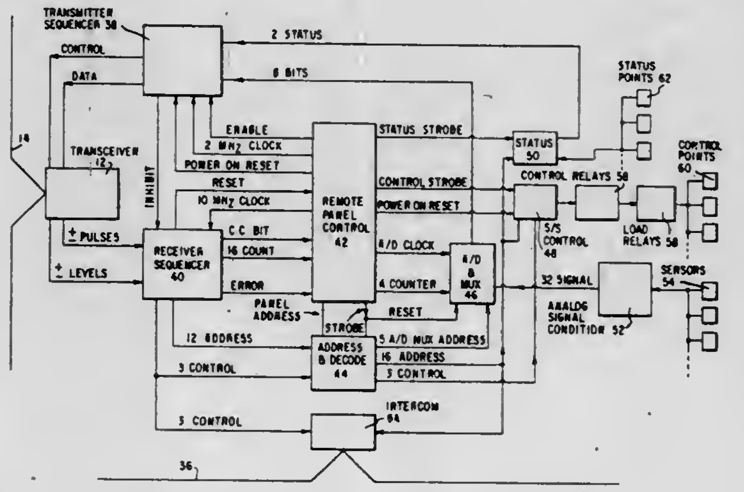
3,872,437
SUPERVISORY CONTROL SYSTEM

Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 314, 304, Dec. 12, 1972, abandoned, and Ser. No. 314,306, Dec. 12, 1972, , and Ser. No. 314,307, Dec. 12, 1972. This application Jan. 18, 1974, Ser. No. 434,708

Int. Cl. H04b *1/16;* **H04q** *1/00*

U.S. Cl. 340—147 SY **23 Claims**



17. A supervisory control system comprising

- a central control station;
- a plurality of remote stations; and
- transmission line means connecting said central control station with said remote stations,
- said central control station and said remote stations each including transmitter means for transmitting messages via said transmission line means in a biphase code with each bit having a bit time with a transition between first and second levels near the center thereof, and
- said central control station and said remote stations each including receiver means for receiving messages from said transmitter means via said transmission line means, said receiver means including means for generating pulse signals in accordance with transitions of each bit of said transmitted messages and level signals in accordance with said first and second levels of each bit of said transmitted messages, data means, means for supplying said level signals to said data means, and timing means responsive to said pulse signals to supply data pulses to said data means to control passing of said level signals into said data means whereby the bits of said transmitted messages are self-clocked into said data means.

3,872,438
CREDIT CARD AND CREDIT CARD IDENTIFICATION SYSTEM FOR AUTOMATIC VENDING EQUIPMENT

William E. Cuttill, 907 Newport Dr., Fenton, Mich. 48430, and Vilma M. Wagner, 1081 W. Yale, Flint, Mich. 48503

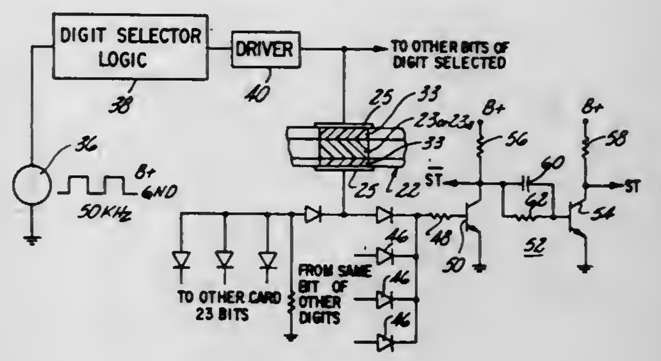
Filed May 4, 1973, Ser. No. 357,509

Int. Cl. G06f *7/00;* **G11b** *23/00*

U.S. Cl. 340—149 A **6 Claims**

1. A vending machine system for dispensing products to a purchaser without the attendance continuous of sales personnel, comprising:

- a credit identification card;
- a first plurality of indicia of relatively high dielectric constant mounted in said card;
- a second plurality of indicia of relatively low dielectric constant mounted in said card in a predetermined pattern with said first plurality;
- means for sensing the electrical time constant characteristics of said indicia and providing a binary code output representative thereof;



- means for manually selecting a digital code memorized and known by the purchaser to be identical to the code represented by the pattern on said card;
- means for converting the digital code to a binary code;
- means for comparing said two binary codes; and
- enabling means responsive to coincidence between said two codes to enable the operation of said vending machine.

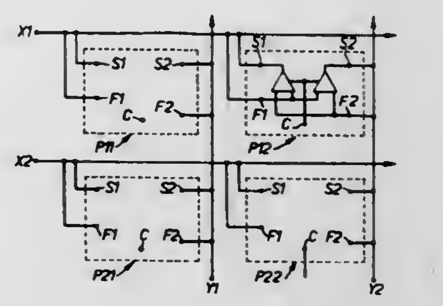
3,872,439
ELECTRONIC SWITCHING CIRCUIT FOR BIDIRECTIONAL TRANSFER

Hassan Paddy Abdel Salam, 80 Vicarage Ct., London, W-8, England

Filed Feb. 1, 1970, Ser. No. 438,767

Int. Cl. H04q *3/00*

U.S. Cl. 340—166 R **10 Claims**



1. Analog electronic switching means establishing selective bidirectional signal transfer between a first and a second signal terminal, said switching means including signal amplifier means controllable between a first condition in which said amplifier means provides coupling between said signal terminals to deliver at said second signal terminal a signal current having a magnitude proportional to the difference between the magnitudes of the signal potentials at said first and said second signal terminals and to deliver at said first signal terminal a signal current having a magnitude proportional to the difference between the magnitudes of the signal potentials at said second and said first signal terminals and a second condition in which signal coupling between said signal terminals is inhibited.

3,872,440
HOSPITAL COMMUNICATION SYSTEM

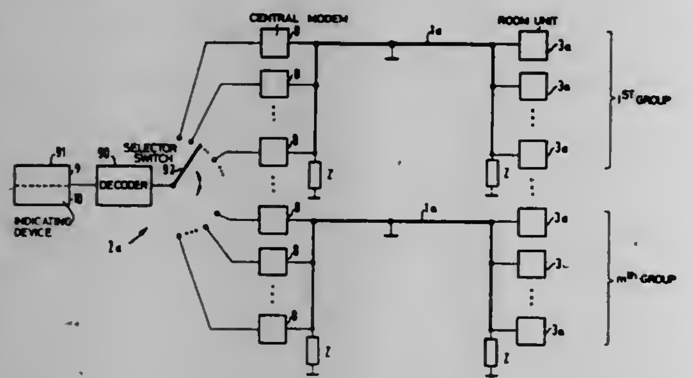
Leo Benz; Dieter Klein, both of Munich; Manfred Bauer, Neubiberg; Albert Figel, and Rolf Treutlin, both of Munich, all of Germany, assignors to Alois Zettler Elektrotechnische Fabrik GmbH, Munich, Germany

Continuation of Ser. No. 376,561, July 5, 1973, abandoned. This application July 10, 1974, Ser. No. 487,171

Claims priority, application Germany, July 10, 1972, 2223797

Int. Cl. H04q *5/00*

U.S. Cl. 340—171 R **26 Claims**



1. Communication system for hospitals and the like, said system transmitting communications signals between sub-units of room units and a central station over a common high-frequency line, each of said room units having a characteristic frequency assigned thereto which serves both as a room unit address signal and a carrier for the address signals of the sub-units, said system including:

- a receiving device coupled to said high-frequency line for receiving communications signals from said room units; and
- means said receiving device to the respective characteristic frequencies assigned to said room units in timed sequence.

3,872,441
SYSTEMS FOR TESTING ELECTRICAL DEVICES

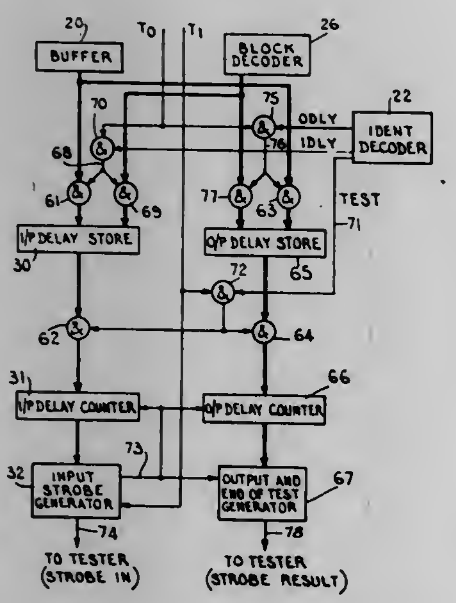
George William Cailow, Dukinfield, England, assignor to International Computers Limited, Putney, London, England

Filed Nov. 29, 1972, Ser. No. 310,426

Claims priority, application United Kingdom, Dec. 1, 1971, 55734/71

Int. Cl. G06f *1/04*

U.S. Cl. 340—172.5 **2 Claims**



1. In a dynamic circuit testing device having a plurality of test connections such as pins or the like connectable respectively to different portions of an electrical circuit to be tested, apparatus for controlling the time occurrence of signals associated with the test comprising:

- a buffer means for registering applied characters in succession, said characters including identifier characters and data characters wherein at least some of the data characters represent increments of time associated with said test;
- a decoder means responsive to an identifier character for generating at least first and second control signals;
- a signal delay store;
- first gating means responsive to said first control signal for permitting the passage of a data character representing an increment of time from said buffer means to said signal delay store;
- generating means for generating a strobe signal at a predetermined time after the receipt of data character representing an increment of time, said predetermined time being related to the increment of time represented by the received data character; and
- second gating means responsive to said second control signal for permitting passage of a data character representing an increment of time from said signal delay store to said generating means.

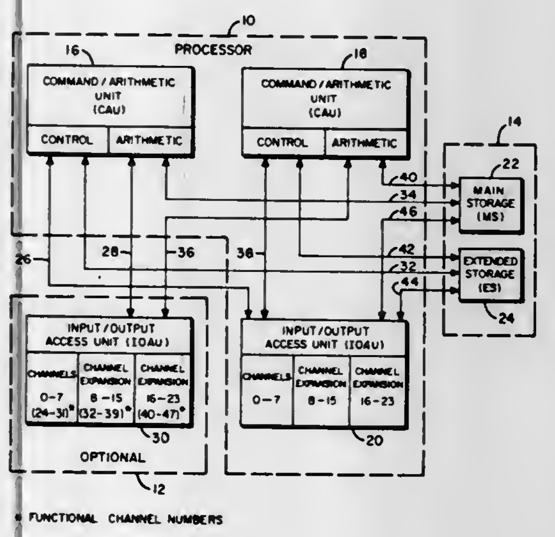
3,872,442
SYSTEM FOR CONVERSION BETWEEN CODED BYTE AND FLOATING POINT FORMAT

John A. Boles, Rosemount; Charles M. Chu, St. Paul; Peter B. Criswell, Bethel, and Aron Rolnitzky, Burnsville, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,150

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **20 Claims**



1. Data format conversion apparatus for use in an electronic digital computer for converting coded byte string data word formats and floating-point data formats, said computer being of the type including receiving means having storage means for receiving and at least temporarily storing a digital data word representing a numerical quantity expressed as a floating-point number in a first data format of a first numerical capacity during its conversion to an equivalent numerical value expressed as a floating-point number in a second data format, said first data format including a first manifestation indicative of the characteristic representing the power of the number base of said data word in said first format, second manifestations indicative of the mantissa for representing the numerical value of the data word expressed in said first data format, and third manifestations indicative of the arithmetic sign in said first data format; arithmetic means having input means coupled to said storage means; output means; and instruction control means responsive to one of a set of conversion instruction words for developing control signals for said arithmetic means during the entire conversion period, the improvement comprising:

- branch control means in said arithmetic means including means for effecting AND and OR logic functions connected to receive as inputs thereto said control signals and selected signals from said receiving means;
- branch designator flip-flop means coupled to said branch control means adapted to be set and cleared in a predetermined sequence governed by said branch control means for converting said first manifestation to a fourth manifestation indicative of the characteristic representing the power of the number base of said data word in said second format, for converting said second manifestations indicative of the mantissa for representing the numerical value of said data word expressed in said first data format to fifth manifestations indicative of the mantissa for representing the numerical value of said data word expressed in said second data format, and for converting said third manifestation indicative of the arithmetic sign in said first data format to sixth manifestations indicative of the arithmetic sign in said second data format; and
- means for providing said fourth, fifth and sixth manifestations to said output means.

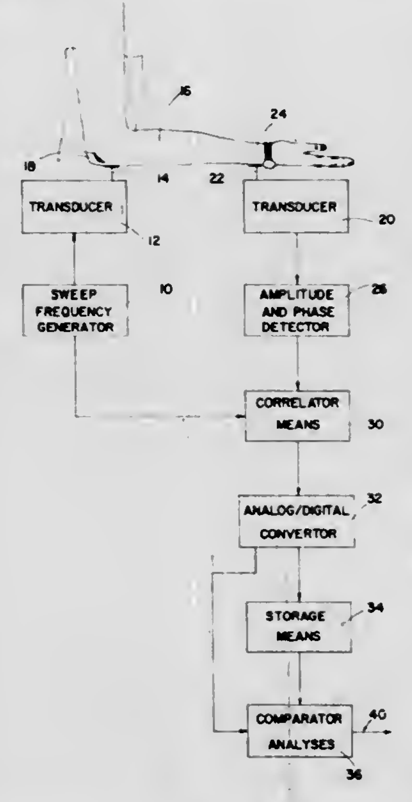
3,872,443
INDIVIDUAL IDENTIFICATION APPARATUS AND METHOD USING FREQUENCY RESPONSE

James H. Ott, Akron, Ohio, assignor to Novar Electronics Corporation, Barberton, Ohio

Filed Jan. 26, 1973, Ser. No. 326,832

Int. Cl. G06f *1/00*

U.S. Cl. 340—172.5 **10 Claims**



1. A method for comparing a subsequently interrogated person to a previously interrogated person as an aid in identifying individual persons, the method comprising:

- a. applying sinusoidal physical vibration sonic wave energy to the human body of a first person;
- b. detecting frequency response characteristics of at least a portion of said human body of said first person by detecting the frequency response of at least said portion to said applied wave energy;
- c. storing data representing said characteristics;
- d. subsequently applying sinusoidal physical vibration sonic wave energy to the human body of a subsequent person;
- e. detecting frequency response characteristics of the body of said subsequent person by detecting the frequency response of at least said portion to said applied wave energy; and
- f. comparing said characteristics of said first person with said characteristics of said subsequent person to determine whether said characteristics are within preselected tolerances of each other

wherein the frequency response characteristics which are detected comprise a transfer function between corresponding body parts of each said body.

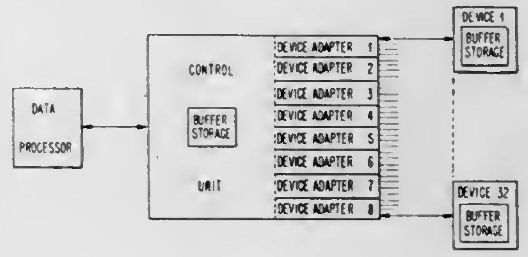
3,872,444
TERMINAL CONTROL UNIT

James Leonard Cleveland, Kingston; Richard Alfred Jones, Redhook; Theodore Edwin Larson, Saugerties; Kenneth Rogers McNary, Hyde Park, and James Theodore Zahorsky, Saugerties, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,269

Int. Cl. G06f *3/04, 3/12, 3/14*

U.S. Cl. 340—172.5 **16 Claims**



1. In a data processing system comprising a data processor and a terminal control unit having a plurality of attached terminal devices with said data processor transmitting a control message to said terminal control unit directing that a data word message be transferred between designated terminal devices including a word selection designation designating which words of the data word message are to be selected for transfer and said terminal control unit being responsive to said control message for controlling the selective transfer of said data word message between the designated terminal devices without further accessing said data processor, said terminal control unit comprising:

- means for receiving the control message from said data processor,
- means responsive to said control message receiving means for producing a first address signal for addressing a first one of said plurality of terminal devices,
- first signalling means for signalling said first terminal device to transfer a data word message to said terminal control unit,
- said data word message being formatted into fields of data words with the beginning of a field being identified by a field control word followed by associated data words up to but not including the next field control word, the field control word defining the field characteristics for all the data words contained in the field including identification of the field as being protected from operator modification or unprotected and available for operator modification,
- storage means for storing the data word message received from said first terminal device,
- means responsive to said control message receiving means for producing a transfer control signal indicating which words of the data word message are to be selected for transfer from the storage means of said terminal control unit,
- means for cyclically examining the data word message stored in said storage means a word at a time,
- said examining means being effective to produce a first signal when the word under examination is a field control word, a second signal when the word under examination is a data word and being further effective when the word under examination is a field control word to produce a third signal when the field of data words following the field control word is a protected field and a fourth signal

when the field of data words following the field control word is an unprotected field,

modifier means responsive to the signals produced by said examining means and said transfer control signal for selectively modifying the data words of each field,

means responsive to said control message receiving means for producing a second address signal for addressing a second one of said plurality of terminal devices,

second signalling means for signalling said second terminal device that a data word message is to be transferred from said terminal control unit, and

means for transferring the data word message from the storage means of said terminal control unit to said second terminal device.

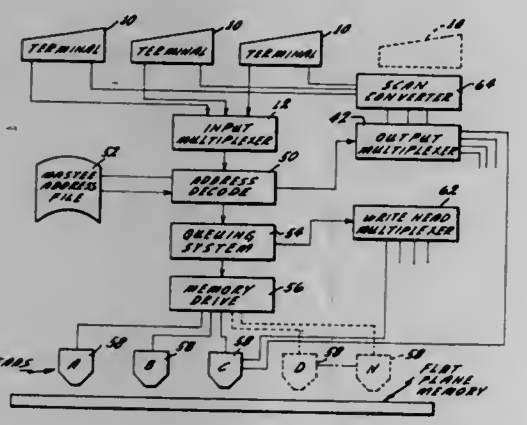
3,872,445
AUTOMATED DATA LIBRARY SYSTEM INCLUDING A FLAT PLANE MEMORY

Edmund M. Pease, Glendale, Calif., assignor to Xynetics, Inc., Canoga Park, Calif.

Filed May 11, 1973, Ser. No. 359,534

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 38 Claims



1. An automated data library system including the storage of information in at least one central location and for retrieving the stored information in accordance with requests for particular stored information from a plurality of terminals, including

first means including a plurality of terminals, a transmission medium connected to a central location of stored information, means connected to the terminals and the said medium for transmitting requests for particular stored information at the central location and receiving information from the central location in accordance with the requests,

second means located at said central location for storing information at a plurality of fixed location in a stationary plane and with the area of the plane memory of a particular size to provide the particular information at particular locations within the area of the plane and with the plane memory maintained stationary from before requests for particular stored information until after the retrieval of stored information in response to those particular requests,

third means including at least one sensor for retrieving the information stored at the pluralities of fixed locations in the stationary plane memory,

fourth means providing a number of X-Y positioners complementing the number of sensors included in the third means and with the X-Y positioners coupled to the sensors to provide movement of the sensors along a plane parallel to the plane of the plane memory to the plurality of fixed locations in the stationary plane memory, and

fifth means coupled to the first means and the fourth means to control the fourth means to provide X-Y movement of at least the one sensor in accordance with requests for particular stored information at particular locations to retrieve the particular stored information at the particular locations for transmission back to the terminals.

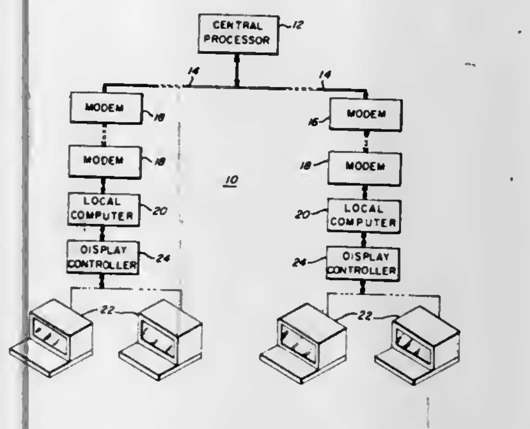
3,872,446
VISUAL DISPLAY SYSTEM

Derek Chambers, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 143,343, May 14, 1971,. This application May 7, 1973, Ser. No. 358,212

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 10 Claims



1. Apparatus for generating a visual display of characters on a cathode ray tube in a raster;

said generated characters being formed from a dot matrix comprising means for generating a plurality of rows of characters each of which generated characters comprises a plurality of horizontal slices each of which slices comprises a plurality of dots such that each of said generated characters is comprised of a plurality of dots;

means for sweeping the electron beam of said cathode ray tube across the screen in a raster pattern such that said electron beam is normally blanked;

means for unblanking said electron beam in accordance with a predetermined instruction sequence such that a display of said characters is generated; and

means for displacing certain of said generated dots from their normal character positions such that an enhanced character display is produced, said displacing means operating independently of said electron beam sweeping means.

3,872,447
COMPUTER CONTROL SYSTEM USING MICROPROGRAMMING AND STATIC/DYNAMIC EXTENSION OF CONTROL FUNCTIONS THRU HARDWIRED LOGIC MATRIX

Giancarlo Tessera, Milan, and Ferruccio Zulian, Cornaredo (Milan), both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Apr. 2, 1973, Ser. No. 347,316

Claims priority, application Italy, Apr. 7, 1972, 22889/72

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 8 Claims

1. A microprogrammed digital electronic data processing system comprising:

a microprogram control unit comprising a microprogram store for storing a sequence of microinstructions with individual microinstructions at respective address locations in said store;

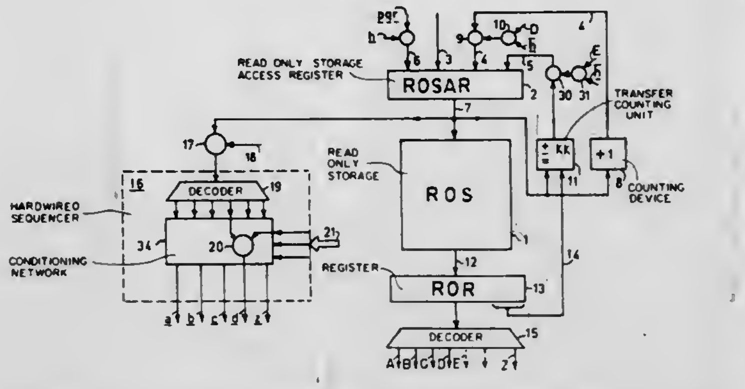
a loadable address register for storing an address code and addressing said microprogram store;

read out means responsive to a said stored address code for reading out a said microinstruction from said store;

an output register for storing a said microinstruction read out from said microprogram store;

a first decoder for decoding the content of said output register as a set of microcommands; and

hardwired sequencer means having a set of inputs and a set of outputs, said hardwired sequencer means including gate means responsive to one of said microcommands for coupling said address code from said loadable address register to said set of inputs of said hardwired sequencer means, said hardwired sequencer means further including conversion means for converting said address code to a set of additional microcommands on said set of outputs of said hardwired sequencer means.



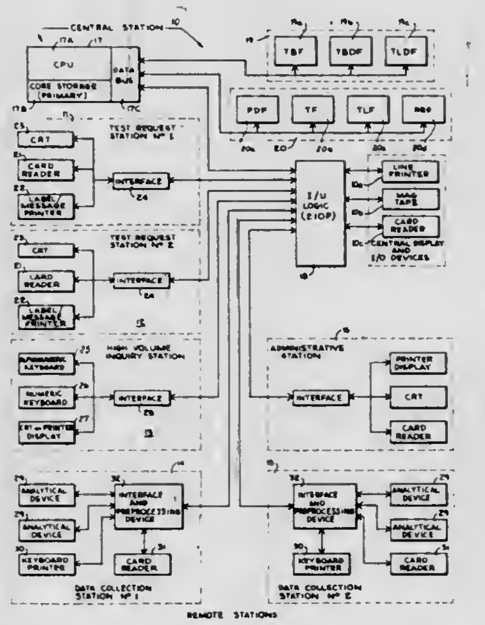
3,872,448
HOSPITAL DATA PROCESSING SYSTEM

Baker A. Mitchell, Jr., Houston, Tex., assignor to Community Health Computing, Inc., Houston, Tex.

Filed Dec. 11, 1972, Ser. No. 313,684

Int. Cl. G06f *15/06, 15/42*

U.S. Cl. 340—172.5 2 Claims



1. An automatic data processing system for handling medical and patient records on an in-line basis during daily functioning of a hospital comprising: a central station including data processing apparatus for storage and processing of medical and patient records, said data processing apparatus providing for storage of separate files which may be individually accessed for record storage or retrieval, said separate files including a Patient Description File for storing descriptive data on patients of said hospital, a Test Library File for storing data concerning pathological tests available at said hospital, a Transaction File for relatively short term storing of patient and test data being acted on, and a Past Results File for storing past patient test data; at least one test request station including a test request device for permitting an operator to enter a test request into said Transaction File for a particular test on a particular patient specimen, and a readout device for providing readout of data in said Transaction File, interface means connecting the test request device and the readout device to said Transaction File, at least one data collection station including at least one analytical device for performing a test, and interface means for permitting data collected at said data collection station to be transferred to said Transaction File and means for automatically transferring completed transaction data in said Transaction File into said Past Result File at preselected intervals of time.

3,872,449
FIRE DETECTOR AND METHOD EMPLOYING ASSYMETRICAL INTEGRATOR

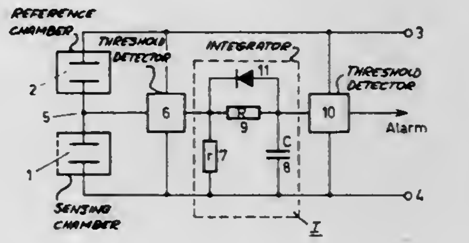
Andreas Scheidweiler, Stafa, Switzerland, assignor to Cerberus AG., Mannedorf, Switzerland

Filed Mar. 8, 1974, Ser. No. 449,287

Claims priority, application Switzerland, Mar. 30, 1973, 4621/73

Int. Cl. G08b *17/12*

U.S. Cl. 340—228.1 11 Claims



1. Method to indicate occurrence of a fire having means generating a signal indicative of fire comprising

detecting a first threshold level of said fire indication signal, and providing a first signal representative of the fire indication signals having exceeded said first threshold level;

integrating rise in the level of said first signal with a first integration time constant, and drop in level of the first signal with a second integration time constant which is small with respect to said first integration time constant; and detecting when the integrated signal reaches a second threshold value, and thereupon providing an alarm signal.

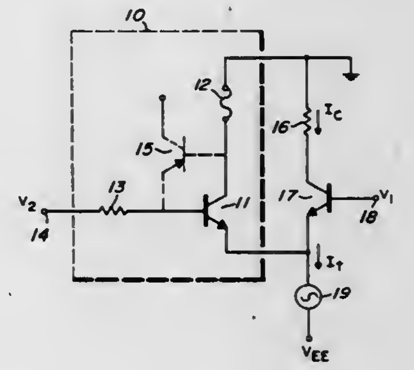
3,872,450
FUSIBLE LINK MEMORY CELL FOR A PROGRAMMABLE READ ONLY MEMORY

Thomas Linn Reynolds, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,454

Int. Cl. G11c *17/00*

U.S. Cl. 340—173 SP 6 Claims



1. An integrated circuit personalizable or programmable read only memory comprising:

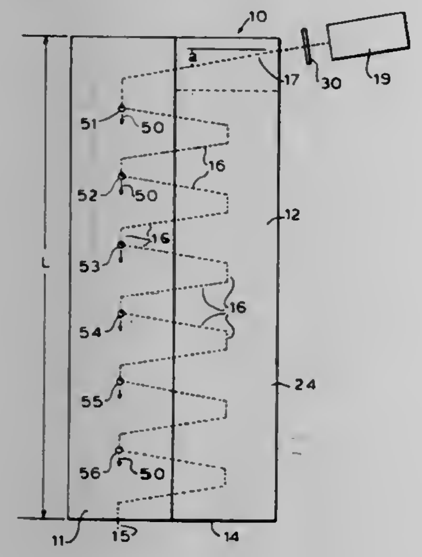
a. a plurality of interconnected storage cells and means for accessing the plurality of storage cells;

b. the plurality of storage cells each including a first bipolar transistor having a fusible element connected to its collector terminal; and

c. the accessing means connected to the plurality of cells being responsive for opening predetermined fusible elements.

3,872,451
LIGHT OPTIC DATA HANDLING SYSTEM

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif.
Filed Apr. 1, 1974, Ser. No. 456,548
Int. Cl. G11c *11/42, 13/04*
U.S. Cl. 340—173 LM **9 Claims**

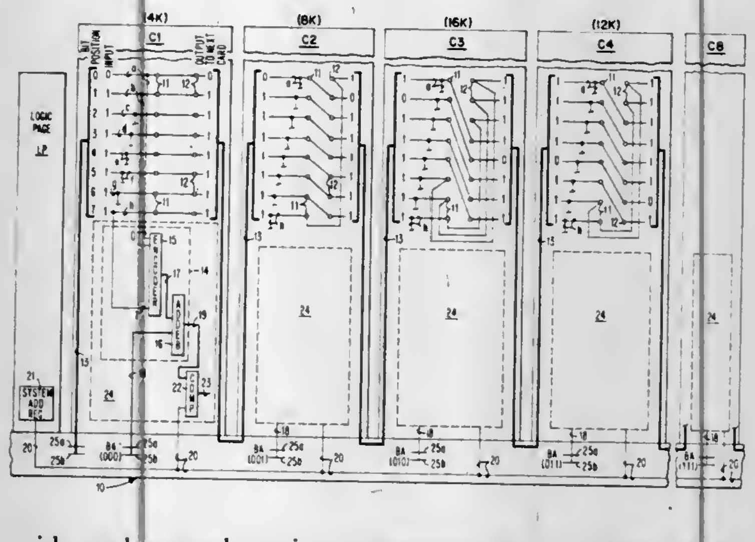


1. An optical system for use in a data handling system, comprising:
- a. a source of light and means for directing light therefrom along a primary optical path while undergoing a series of total internal reflections within said system and to establish an availability of said light at a plurality of predetermined light output positions in said system for an electrically controlled redirecting of said light along a selected one of a plurality of secondary optical paths stemming from said positions;
- b. said means including an array of light reflecting interfaces of first and second light conducting media, each said interface presenting a length dimension;
- c. said interfaces each angularly oriented so as to establish an optical relationship one with respect to the other and the path of light from said source for providing a series of 360° primary optical paths for said light, each 360° path displaced one with respect to the other in a side-by-side relationship in the direction of said length dimension;
- d. a plurality of electro optic light reflection control means each provided with electrode means for extending the influence of an electrical potential thereto;
- e. said control means supported in an optical light reflection control relationship with said 360° primary optical paths at each of said light output positions in the system; and
- f. means for selectively frustrating internal light reflections and thereby effect a redirecting of said light away from a selected one of said light output positions to one of said plurality of secondary optical paths upon the extending of said influence to a corresponding one of said control means.

3,872,452
FLOATING ADDRESSING SYSTEM AND METHOD

Edward H. Stoops, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 17, 1974, Ser. No. 461,576
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **13 Claims**

1. Floating addressing system, comprising
a plurality of addressable units having different numbers of addresses constituting integral multiples of a predetermined basic number,
each of said units having a similar preselected number of pins representing floating address inputs and an identical number of pins representing floating address outputs, each set of input and output pins being arranged in low to high order sequence,
means for applying a preselected coded signal to the input pins of a first one of said units,
means connecting each input pin in each unit with that particular one of the output pins on the same unit that is indicative of the number of addresses such unit has, each of said particular output pins being displaced a similar predetermined number of places toward the high order position indicative of the number of said multiples of said basic number of addresses in said same unit to cause the coded input signal to be shifted toward the high order position said predetermined number of places and provide end around carries to generate any low order positions,
means connecting the output pins of each unit always with the same corresponding associated input pins in the succeeding unit,
encoding means for each unit for encoding the floating address input to that particular unit to provide for such unit an encoded output assigned address indicative of the number of multiples of said basic number of addresses that precedes that particular unit,
comparator means associated with each unit for comparing the encoded assigned address with a selectable address corresponding to that of the unit to be selected to provide an output signal when the selectable address equals the encoded assigned address, and
means for conveying the selectable address in parallel to each such comparator means.

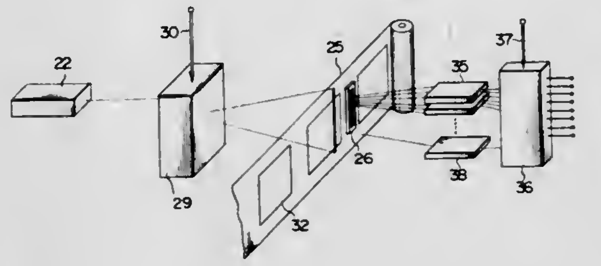


3,872,453
INFORMATION RETRIEVAL SYSTEM

Katsuji Tsukamoto; Nobuichi Ikeno, and Keiji Okada, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Sept. 18, 1973, Ser. No. 398,429
Claims priority, application Japan, Sept. 18, 1972, 47-93963
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **10 Claims**

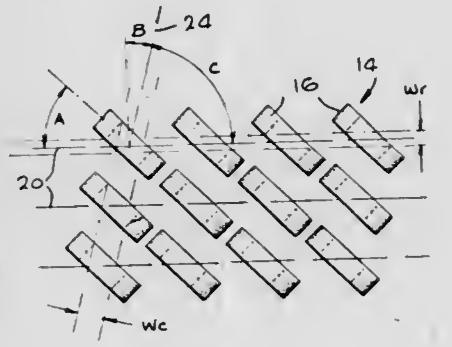
1. An information retrieval system which comprises a recording medium for optically storing pieces of information, the pieces of information including a plurality of characters; optical means for scanning the recording medium, which has information stored therein, by a beam of light modulated according to the respective characters of a prescribed series of characters for retrieval and generating signals denoting bright or dark shades of light according to whether or not coincidence is established between the respective characters of said prescribed series and some of the characters designating all the pieces of information stored in the recording medium; photoelectric conversion means having a plurality of

members to generate an electric signal denoting coincidence or noncoincidence upon receipt of a signal indicating a bright or dark shade of light; and a logic processing circuit for logically processing a signal delivered from said photoelectric conversion means and generating a retrieval signal showing whether or not the prescribed series of characters for retrieval are included in the characters designating the respective pieces of information stored in the recording medium, the logic processing circuit including AND gates whose first input terminals are successively supplied with output signals from the members of the photoelectric conversion means and shift registers which successively receive and store output signals from the AND gates in a number corresponding to each character of the prescribed series; the output terminals of the shift registers being connected to the second input terminals of the successively following AND gates whereby when the last character of the prescribed series is retrieved, signals resulting from the retrieval of all the characters thereof are generated through the output terminals of the AND gates.



3,872,454
SKEWED CORE MATRIX

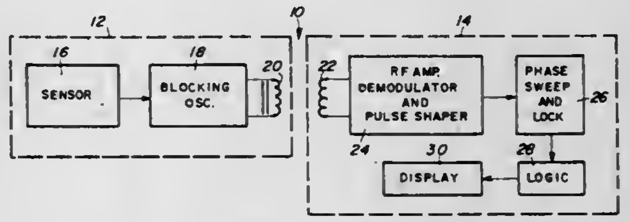
Michael F. Boice, Torrance, and Niels Krag, Pacific Palisades, both of Calif., assignors to Electronics Memories & Magnetics Corporation, Hawthorne, Calif.
Filed Dec. 13, 1973, Ser. No. 424,296
Int. Cl. G11c *5/02, 11/06*
U.S. Cl. 340—174 M **4 Claims**



1. A magnetic core memory comprising:
a support;
a plurality of magnetic cores arranged in substantially straight rows and columns on the support, with the axes of the columns oriented at an angle less than 90° and more than 45° to the axes of the rows, each core having a hole and each core oriented with the axis of its hole angled at least several degrees from both the column axis and from the row axis on which the core lies; and
a plurality of wires extending through the cores along the axes of the rows and along the axes of the columns.

3,872,455
PHYSIOLOGICAL MEASUREMENT DISPLAY SYSTEM

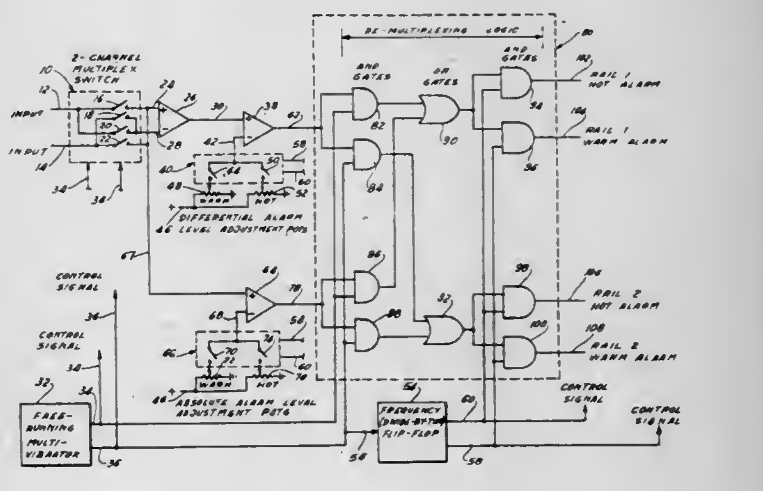
Charles H. Fuller, Carson, and Carl E. Herring, Huntington Beach, both of Calif., assignors to Monitron Industries, Inc., Huntington Beach, Calif.
Continuation-in-part of Ser. Nos. 199,675, Nov. 17, 1971, and Ser. No. 200,368, Nov. 18, 1971, and Ser. No. 199,847, Nov. 18, 1971, and Ser. No. 199,979, Nov. 18, 1971. This application Nov. 13, 1972, Ser. No. 306,253
Int. Cl. G08c *19/26*
U.S. Cl. 340—189 M **42 Claims**



1. A system for transmitting and receiving signals corresponding to a physiological parameter of a subject, comprising:
a sensing element adapted to detect a desired physiological parameter of the subject;
a transmitter adapted to transmit radio frequency signals modulated in accordance with signals that correspond to the detected physiological parameter, and
a receiver unit adapted to inductively receive said transmitted signals, said receiver unit including demodulator means for producing a train of pulses at a frequency corresponding to the frequency of modulation of said radio frequency siganls;
phase lock circuit means adapted to generate a range of frequencies that overlaps said frequency of modulation, said phase lock circuit means being connected to receive and compare the pulses developed at the output of said demodulator with said range of frequencies, whereby said phase lock circuit means locks onto, and thereafter generates output pulses at a rate corresponding to, said frequency of modulation; and
means responsive to said output pulses for measuring the burst rate of the received radio frequency signals to indicate the magnitude of said physiological parameter.

3,872,456
TWO-LEVEL MULTIPLEX ALARM MONITOR FOR HOT BOX DETECTOR SYSTEM

Arthur J. Glazar, Kings Park, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.
Filed Mar. 6, 1974, Ser. No. 448,668
Int. Cl. G08b *21/00;* **B61k** *9/06*
U.S. Cl. 340—231 **7 Claims**


2-CHANNEL MULTIPLEX SWITCH
DE-MULTIPLEXING LOGIC
AND GATES
OR GATES
AND GATES
RAIL 1 HOT ALARM
RAIL 1 WARM ALARM
RAIL 2 HOT ALARM
RAIL 2 WARM ALARM
DIFFERENTIAL ALARM LEVEL ADJUSTMENT POTS
ABSOLUTE ALARM LEVEL ADJUSTMENT POTS
CONTROL SIGNAL
FREE-RUNNING MULTI-VIBRATOR
FREQUENCY DIVIDER FLIP-FLOP
INPUT

1. A two-level alarm monitor for use with a hot box detector system having a first sensor and a second sensor each associ-

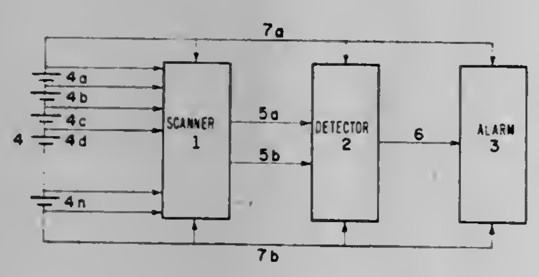
ated with a rail of a track and each adapted to generate an output electrical signal responsive to the heat generated by a bearing passing on its associated rail, said alarm monitor comprising:

a. means connected to the outputs of said sensors for alternately obtaining the difference between (1) said first sensor signal and said second sensor signal and (2) said second sensor signal and said first sensor signal;
b. first comparator means interconnected to said aforementioned means for comparing the difference between said sensor signals alternately to (1) a first predetermined signal level and (2) a second predetermined signal level;
c. second comparator means connected to the outputs of said sensors for alternately comparing (1) the output of said first sensor and (2) the output of said second sensor to (3) a third predetermined level and (4) a fourth predetermined level; and,
d. demultiplexing means connected to said first and second comparators for generating an alarm signal in the event (1) the difference between said sensor signals exceeds one or both of said first or second predetermined levels and/or (2) one or both of said sensor output signals exceeds one or both of said third or fourth predetermined levels.

3,872,457
BATTERY MONITOR

John S. Ray, 138 Belfast Dr., San Antonio, Tex. 48209, and James D. King, San Antonio, Tex., assignors to said Ray, by said King

Filed July 31, 1972, Ser. No. 276,389
Int. Cl. G08b *21/00*
U.S. Cl. 340—249 **3 Claims**



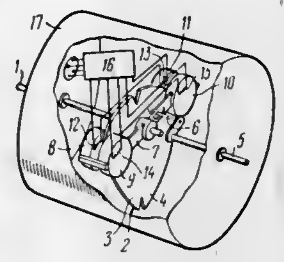
1. A battery monitor system for multi-cell batteries comprising:

continuous scanner means for sequentially and repeatedly establishing contact across individual cells of the battery;
detector means coupled to said scanner means for evaluating the electrical condition of the cell being connected to said scanner means;
means for comparing the electrical condition of the cell with a preselected range of voltages, said comparing means emitting an electrical signal when said electrical condition is outside said predetermined range; and
alarm means controlled by said electrical signal for producing an alarm signal upon receiving said electrical signal from said comparing means; said scanner means includes a pulse generator generating uniformly timed pulses;
a counter means for counting said uniformly timed pulses, said counter means having outputs equal in number to the number of cells to be monitored; and
a group of relays actuated by one of said output counter means, said relays being operable to provide individual electrical connections to one of said battery cells.

3,872,458
CRANE BOOM-OUT TRANSMITTER

Savely Solomonovich Schedrovitsky, 13 Parkovaya ulitsa, 25, korpus 1, kv. 12; Leonid Fomich Goncharevich, Dmitrovskoe shosse, 145, korpus 3, kv. 36; Karl Vladimirovich Pruss, ulitsa Usacheva 29, kv. 132; Alexei Pavlovich Lebedev, Kursovoi pereulok, 1, kv. 58, all of Moscow, and Valentin Nikolaevich Gontar, ulitsa Revoljutsii 31, kv. 5, Topki Kemerovskoi oblasti, all of U.S.S.R.

Filed Jan. 2, 1973, Ser. No. 320,682
Claims priority, application U.S.S.R., Dec. 31, 1971, 1,732,412
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 C **4 Claims**



1. A crane boom radius transmitter comprising: a first input shaft coupled to a crane boom and rotating the boom angle changes; a second input shaft coaxial with said first shaft and mechanically coupled with said crane boom and rotating as the boom length changes; a boom radius-to-electric signal converter having a movable member and means for converting the angle of rotation of said movable member into an electric signal, said converter being mechanically linked with said first and second input shafts; said movable member being mechanically coupled with said first input shaft and being made in the form of a screen comprising two sections; said means for converting the angle of rotation of said movable member into an electric signal coupled to said screen and including an inductively coupled detector and a sine-wave generator; two pairs of windings positioned in magnetically coupled cores and effecting the inductive coupling between said detector and said sine-wave generator; said pair of windings each having a primary winding incorporated in the circuit of said sine-wave generator and a secondary winding incorporated in the circuit of said detector; said cores being mechanically linked with said second shaft and moving relative to said screen when said second shaft is rotated; a first section of said screen having a profile defined by a variable radius curve and being arranged with regard to said cores of said first pair of windings so that said first section is constantly in the working gap of said magnetically coupled cores and, while moving, it alters the magnetic coupling therebetween; a second section of said screen having a profile defined by said curve of a variable radius and being arranged relative to said cores of said second pair of windings such that it constantly, while moving, is arranged in the working gap of said magnetically coupled cores, thereby altering the magnetic coupling therebetween in an inverse manner to the alteration of the magnetic coupling between said first pair of windings, thus altering said electric signal.

3,872,459
BURGLAR AND WARNING ALARM AND SYSTEM

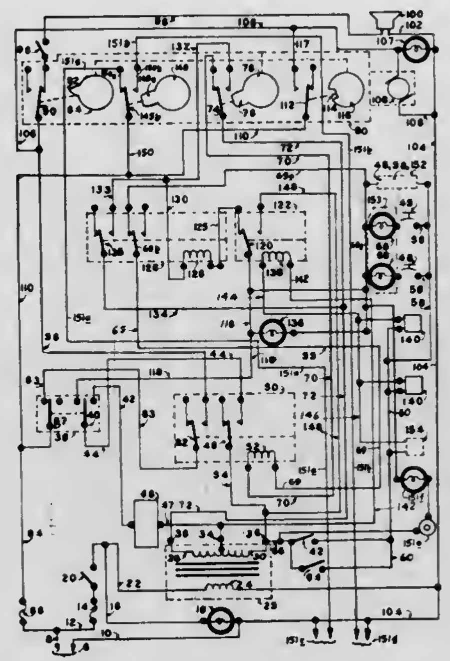
Ralph H. Curtis, 1106 S. Beacon, Muncie, Ind. 47302

Continuation-in-part of Ser. No. 237,965, March 24, 1972. This application June 4, 1973, Ser. No. 366,647
Int. Cl. G08b *13/08*
U.S. Cl. 340—276 **12 Claims**

1. A warning and alarm system, comprising:

a plurality of sensing devices to monitor a certain happening;

each sensing device having operatively associated therewith electrical circuitry whose energization is related to the actuation of the respective sensing device;
and a panel or grouping of monitoring indicator means, each respectively operatively associated with a certain one of said sensing devices, and with the certain respective said electrical circuitry associated with a respective sensing device, designating to the user the particular sensing device which is in the area or place of a happening being monitored by said system;

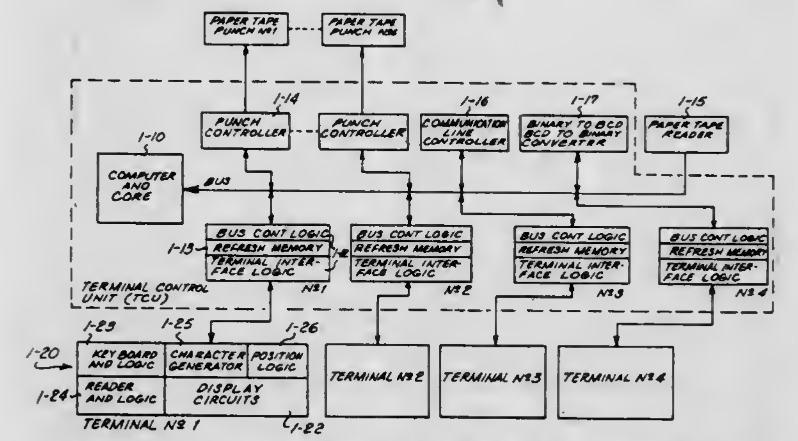


in a combination in which relays exclusively of normally-closed type are provided in the said circuitry to transfer power, during a said happening, to the said monitoring indicator means and thereby energizing the same to provide the specified operativity thereof;
and in which the sensing devices are of at least two different sets, and in which a happening-actuation of a sensing device of one of the sets will actuate the respective monitoring indicator means thereof irrespective of whether a sensing device of another of the sets has been actuated.

3,872,460
VIDEO LAYOUT SYSTEM

Walter G. Fredrickson, Indialantic; Albert W. Heitmann, Melbourne, and Howard A. Thraikill, Indialantic, all of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Apr. 13, 1973, Ser. No. 350,707
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **11 Claims**



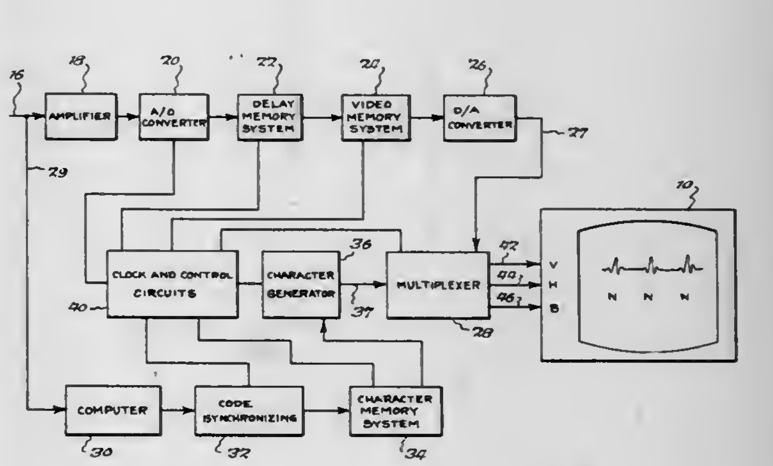
1. In a video layout system for fitting prepared text in a desired layout for driving typesetting equipment, the combination comprising

- a terminal including
  - means for reading stored text and layout instructions,
  - a keyboard for selecting alphanumeric characters in the text to be displayed and for selecting layout instructions for the displayed text,
  - video display means for displaying the text and layout instructions,
  - character generating means responsive to read and keyboarded characters for driving said video display means,
  - position logic means responsive to layout instructions that were read and to keyboarded layout instructions for controlling the positioning of the displayed text elements by said video display means, and
  - means for encoding the read and keyboarded characters and layout instructions in digital data formats;
- a terminal control unit including
  - means for temporarily storing encoded data from said terminal,
  - computer means responsive to the data stored in said storing means for processing said data in accordance with said layout instructions,
  - means for transferring the processed data to said terminal for driving said character generating means and position logic means therewith to effect corresponding changes in the layout of the displayed text; and
  - means for at will storing a coded format representative of the changed layout in the displayed text for driving the typesetting equipment.

3,872,461
WAVEFORM AND SYMBOL DISPLAY SYSTEM

Norman A. Jarosik, Tonawanda, and Benjamin H. Weppner, Snyder, both of N.Y., assignors to Mennen-Greatbatch Electronics, Inc., Clarence, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,904
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 AD **31 Claims**

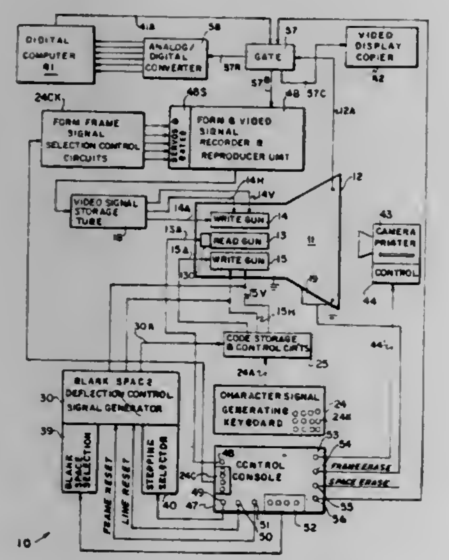


1. In combination:

a. display means of the type having a display trace sweep for providing a visual image in response to signals applied thereto;
b. input means adapted to be coupled to a signal representing information;
c. means connected to said input means for examining said information signal and for providing a signal representation of a symbol selected according to the nature of said information signal; and
d. signal applying means connected to said input means and to said means providing said signal representation of a symbol for applying said information signal and said signal representation to said display means for providing visual images of said information signal and said symbol simultaneously on said display means in corresponding relation to each other.

3,872,462
FORM FILLING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 225,173, Aug. 27, 1962, and a continuation-in-part of Ser. No. 325,934, Jan. 22, 1972,. This application Feb. 16, 1973, Ser. No. 333,119
Int. Cl. H01j *29/70*
U.S. Cl. 340/324 A **16 Claims**

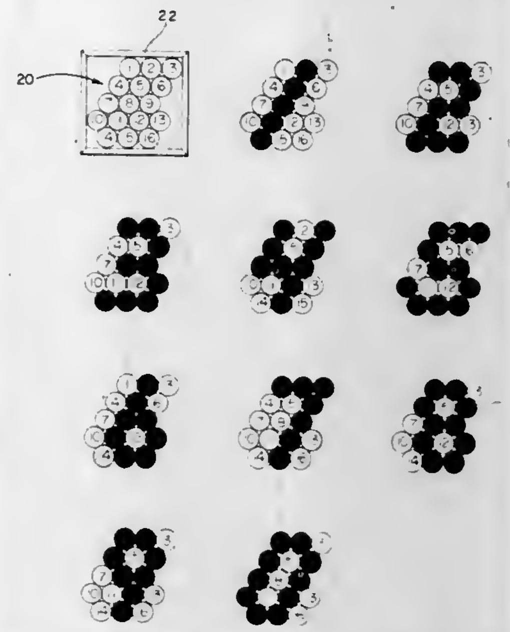


1. A system for generating forms comprising:
a viewing screen,
first means for generating an image on said screen of a form containing fixed information and having locations indicated therein where it is desired to provide variable information,
second means for generating images of characters on said screen,
third means for electrically controlling said second means to generate selected character images along selected portions of said screen defining said locations of said form where it is desired to provide variable information so as to generate a composite monitorable image on said screen composed of said fixed and variable information, and
fourth means for scanning the information defined by said composite image and generating information defining said fixed and variable information in another form.

3,872,463
ALPHANUMERIC DISPLAY SYSTEM

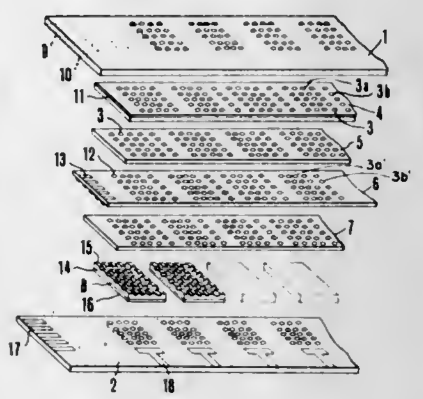
James M. Lapeyre, 13 Richmond Pl., New Orleans, La. 70115
Continuation of Ser. No. 244,425, April 17, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,499
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 **14 Claims**

1. An alphanumeric display system comprising in combination:
an array of at least 16 electrically energizable, light-emitting elements; and
means for energizing selected combinations of said elements to form numerals, letters and other symbols;
said array consisting of four horizontal rows each including at least three of said elements and one row including at least four of said elements, all arranged in nested relation so as to form plural element columns inclined with respect to said horizontal rows at an angle of about 60° both to the right and to the left as seen by the viewer.



3,872,464
COLD CATHODE DISCHARGE TYPE DISPLAY APPARATUS WITH INTEGRAL MEMORY

Rentaro Sasaki; Akinori Watanabe, both of Takasaki; Mamoru Ikegame, and Tatsuo Ogasawara, both of Tokyo, all of Japan, assignors to Oki Electric Industry Co., Ltd., and Okaya Electric Industry Co., Ltd., both of Tokyo, Japan
Filed Oct. 26, 1973, Ser. No. 409,973
Claims priority, application Japan, Nov. 1, 1972, 47-125410
Int. Cl. G09f *9/32*
U.S. Cl. 340—343 **3 Claims**



1. In a cold cathode discharge type display apparatus of the class wherein letters are displayed by a plurality of display sections each including a group of discharge display cells which are arranged in a matrix, the improvement which comprises an additional group of discharge code cells which are disposed close to but whose discharge space is isolated from said group of discharge display cells of each display section, said additional discharge code cells of each display section being used to store a binary code of a letter subsequently to be displayed in said discharge display cells.

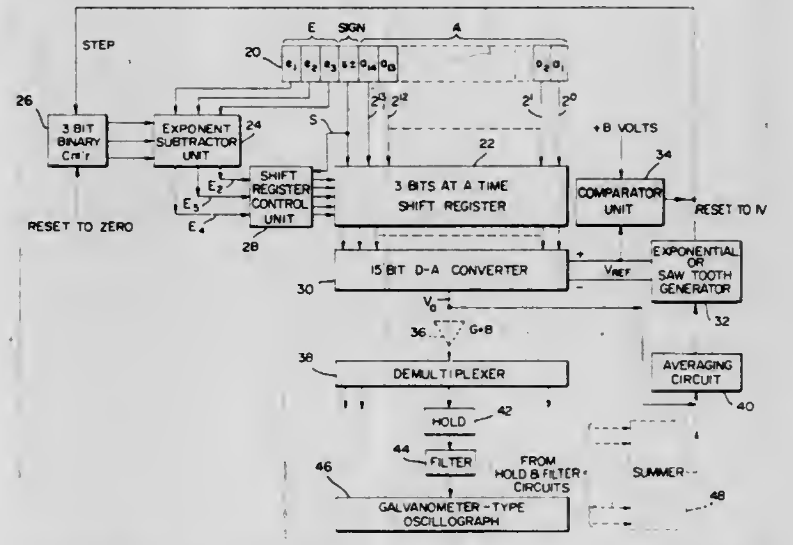
3,872,465
SEISMIC PLAYBACK/MONITOR SYSTEM

Robert J. Loofbourrow, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation of Ser. No. 113,844, Feb. 9, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 354,969
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **14 Claims**

1. A method for providing analog signals V_o, suitable for making a visible display, in accordance with the following equation:

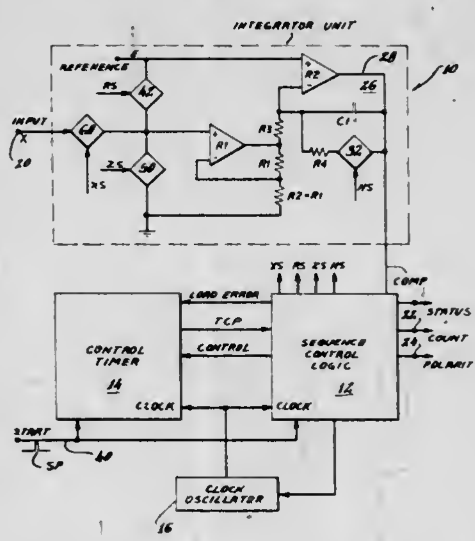
$$e_{in} = \pm AG^{-E}$$

wherein e_{in} represents the amplitude of a particular analog signal among a wide dynamic range of analog signals, A represents a matissa, G represents a radix of the number system used, and E represents an exponent and wherein G is a constant, which comprises; providing digital signals forming a digital word for each analog signal in said range of analog signals, some of said signals in a digital word represent A and some represent E; generating a periodic analog reference signal V_{ref} which has maximum and minimum signal levels; generating a digital signal corresponding to a number K, changing said K digital signal so as to change the value of the number K each time V_{ref} reaches its maximum level; combining the digital signals corresponding to K and E to produce another digital signal corresponding to (K - E); shifting the position of the digital signals corresponding to the term A in accordance with the K - E digital signal to produce another digital signal representing a modified A; combining the analog signal V_{ref} and the signal representing a modified A to produce an analog signal V_o for each digital word; averaging each of the analog signals V_o developed from each digital word; and producing said analog signal V_{ref} as a function of the analog signals V_o so averaged.



3,872,466
INTEGRATING ANALOG-TO-DIGITAL CONVERTER HAVING DIGITALLY-DERIVED OFFSET ERROR COMPENSATION AND BIPOLAR OPERATION WITHOUT ZERO DISCONTINUITY

Ivar Wold, Medfield, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.
Filed July 19, 1973, Ser. No. 380,690
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **33 Claims**



1. An analog-to-digital converter comprising:
an integrator arranged to produce ramp signals at rates corresponding to the magnitude of signals applied to the input thereof, the ramp direction being determined by the polarity of the applied signal;
means to condition said integrator to start integrating from a predetermined output datum level at a start time;
means to supply reference signals of opposite effective polarity for application to the input of said integrator;
clock means for producing clock pulses and successive timing control pulses following said start time;
switch means for applying signals to the input of said integrator;
first means to operate said switch means at said start time to apply to said integrator one of said reference signals in a given polarity to cause said integrator to ramp away from said datum level for a first time period as measured by said clock means;
second means to operate said switch means subsequent to said first time period to apply to the input of the integrator one of said reference signals of polarity opposite to said given polarity to cause said integrator to ramp back towards said datum level during a second time period;
a comparator coupled to the output of said integrator for producing a compare signal when said integrator output returns to said datum level, thereby signalling the end of said second time period;
third means responsive to the development of said compare signal at the end of said second time period for activating said switch means to apply to said integrator input for a third time period a composite signal including one of said reference signals and the unkown analog signal which is to be converted to a digital signal, said third time period being terminated upon the occurrence of a first one of said timing control pulses;
means operable at the termination of said third time period for applying to the input of said integrator one of said reference signals of polarity opposite to that of said composite signal, thereby to ramp said integrator output back towards said datum level during a fourth time period; and
digitizing means coupled to the output of said comparator and to said clock means for producing an output digital signal representing the number of clock pulses occurring between the appearance of a second one of said timing control pulses and the development by said comparator of a compare signal signalling the end of said fourth time period.

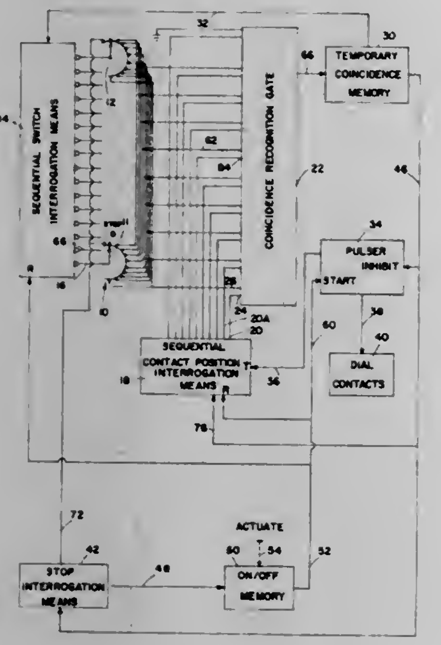
3,872,467
AUTOMATIC DIALER

Leander Bruce Daniels, and James W. Azbell, both of Columbus, Ohio, assignors to MI^2, Columbus, Ohio
Filed Mar. 21, 1973, Ser. No. 343,428
Int. Cl. G08c *1/00*
U.S. Cl. 340—364 **9 Claims**

1. An automatic dialer having a manually selectable dial address code and comprising:
- a. A plurality of single pole switches each having a selector with at least ten manually selectable positions, the corresponding positions of each switch being interconnected to form a unified output, each switch settable at positions corresponding to the numbers in the dial address code;
- b. a switch interrogation means for sequentially applying a first selected logic level to each one of said selectors;
- c. a position interrogation means having a plurality of outputs for sequentially applying a second selected logic level at each of its outputs;
- d. a pair of dialing contacts, and pulser clock means for simultaneously periodically operating said pair of dialing contacts and triggering the advance of said position interrogation means;
- e. a coincidence recognition gate having a plurality of pairs of inputs, one input of each pair connected to a different one of at least nine of said unified switch output and the other inputs of each pair connected to a different one of the output of said position interrogation means said rec-

ognition gate providing a third output logic level for triggering the advance of said switch interrogation means, for resetting said position interrogation means and for temporarily inhibiting said pulser means all in response to the coincidence of said first logic level from said switch interrogation means and a second logic level from said position interrogation means; and

f. logic circuit means for initiating operation of said pulser prior to interrogation of the switch positions and for resetting said switch interrogation means after dialing is completed, including
   1. an on/off memory means including a flip-flop having a first state corresponding to a stop dialing instruction and a second state corresponding to a start dialing instruction, its output being connected for resetting said switch interrogation means in response to a stop state;



32
30
TEMPORARY COINCIDENCE MEMORY
66
SEQUENTIAL SWITCH INTERROGATION MEANS
COINCIDENCE RECOGNITION GATE
62
64
22
44
34
PULSER INHIBIT
START
40
DIAL CONTACTS
SEQUENTIAL CONTACT POSITION INTERROGATION MEANS
36
18
76
72
ACTUATE
42
60
54
48
52
STOP INTERROGATION MEANS
ON/OFF MEMORY

   2. digital logic gates having inputs connected to said on/off memory means, said temporary coincidence memory, and said pulser and an output connected to the reset of said position interrogation means and to said enabling gate for preventing reset of said position interrogation means when said on/off memory means is in a stop state, for resetting said position interrogation means when simultaneously said on/off memory is in its start state said temporary coincidence memory is actuated and said dialer contacts are closed and for resetting said position interrogation means when said on/off memory switches from a stop state to a start state.

3,872,468

KEYBOARD FOR CALCULATING, ACCOUNTING AND OTHER OFFICE MACHINES

Nicolo Giolitti; Dante Daly, and Lorenzo Bertino, all of Ivrea, Turin, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

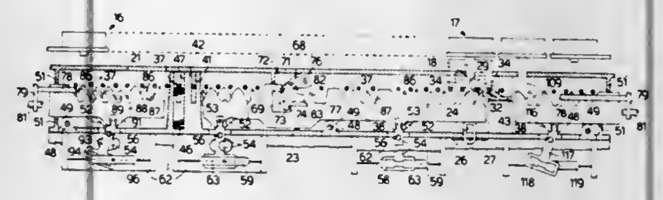
Filed Apr. 24, 1973, Ser. No. 354,052

Claims priority, application Italy, Apr. 28, 1972, 68316

Int. Cl. H04l ***15/06***

U.S. Cl. 340—365 R **8 Claims**

1. Keyboard for calculating, accounting and other office machines, comprising a series of depressible keys, a group of shiftable code bars normally located in a rest position, mounting means for shiftably mounting said code bars in two working possitions located at opposite sides with respect to said rest position and equidistant therefrom, a series of setting elements each one operable by depressing a corresponding key of said series of keys for causing said code bars to be selectively shifted from said rest position to one of said working positions to define a code combination corresponding to the depressed key, and restoring means for restoring said code bars from the reached working position to the rest position upon releasing the depressed key, whereby the force required to depress any key is constant and indipendent of the working positions reached by said code bars.



3,872,469

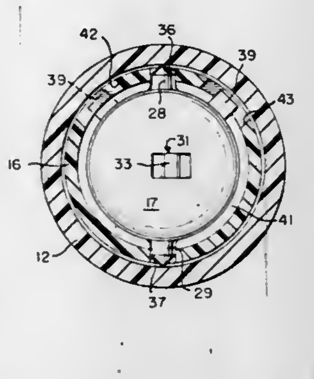
MAGNETICALLY ACTUATED INDICATOR

Eugene F. Loughran, Jr., Oakville, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,493

Int. Cl. G08b ***23/00***

U.S. Cl. 340—373 **7 Claims**



1. An electromagnetic device to indicate the presence of either a first condition or a second condition in a system, said device comprising:
- a first housing structure;
- a second housing structure movable back and forth in one direction with respect to said first housing structure and partially enclosed by said first housing structure and comprising, a rotatable member having integral stub axles to pivot approximately 170° between a first rest position to indicate said first condition and a second rest position to indicate said second condition in said system and comprising an elongated bar permanent magnet secured within and extending substantially diametrically across said rotatable member, an electromagnet comprising a coil and an elongated ferromagnetically soft core adjacent said permanent magnet whereby a magnetic field produced in said core by said coil interacts with said permanent magnet to rotate said rotatable member, and first and second juxtaposed units, said first juxtaposed unit comprising an open-ended receptacle for said rotatable member and said second juxtaposed unit comprising a cover fitting over said receptacle to enclose said rotatable member and having a transparent surface conforming to the surface of said rotatable member, at least one of said juxtaposed members having journal recesses open at the side facing the other of said juxtaposed members to receive said stub axles, said other of said juxtaposed members being positioned with respect to said recesses to capture said stub axles therein whereby said rotatable member is able to pivot between said first and second rest positions and remain in either of said rest positions, said second juxtaposed member comprising stop surfaces to engage said promontory stop at the ends of its range of travel;
- permanent magnetic means affixed to said first housing structure;
- and spring biasing means pressing on said first and second housing structures to bias said core away from said permanent magnet, said second housing structure being

movable against said spring bias to bring said core sufficiently close to said permanent magnet to induce a predetermined magnetic field in said core to attract said rotatable member to a predetermined one of its rest positions.

3,872,470

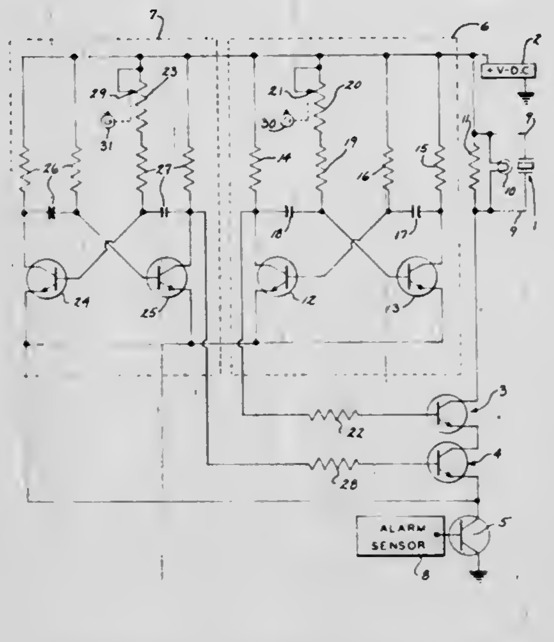
AUDIBLE SIGNAL GENERATING APPARATUS HAVING SELECTIVELY CONTROLLED AUDIBLE OUTPUT

Richard D. Hoerz, and Donald J. Propp, both of Madison, Wis., assignors to Airco Inc., New York, N.Y.

Filed Apr. 18, 1973, Ser. No. 352,145

Int. Cl. G08b ***19/00***

U.S. Cl. 340—384 E **15 Claims**



1. An audible signal generating circuit comprising a power source means, an electro-acoustical crystal transducer having a natural resonant frequency and generating an audible output of predetermined pitch and amplitude in response to electrical excitation at said resonant frequency and of a different pitch and lower amplitude in response to electrical excitation at a frequency above and below said resonant frequency, a nonsinusoid signal generator means establishing a periodic signal including a fundamental frequency and a plurality of harmonic frequencies and having an adjustable repetition rate selection means to selectively establish the output repetition rate of the signal generator and thereby select said fundamental frequency and harmonic frequencies, and a switch means coupling the transducer to the power source means and having an input means connected to said signal generator to selectively energize said transducer at the selected repetition rate and thereby establish an audible signal of a related pitch and of an amplitude which varies inversely with the difference between said resonant frequency and said fundamental frequency.

3,872,471

PULSING BELL HAVING RECTIFIER CIRCUIT

Nicholas W. F. Bird, and Chang-Whan Kim, both of Owen Sound, Ontario, Canada, assignors to General Signal Corporation, Rochester, N.Y.

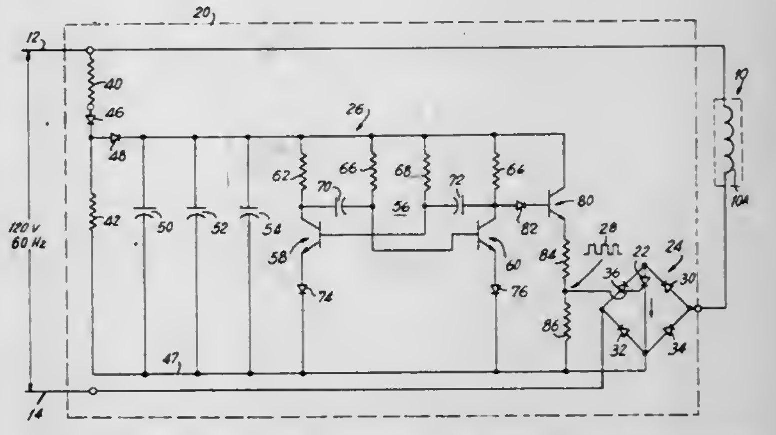
Filed May 21, 1973, Ser. No. 362,643

Int. Cl. G08b ***3/10***

U.S. Cl. 340—384 R **8 Claims**

1. A unitary alarm indicating device adapted to be intermittently operated from an AC power supply, comprising:

a. an actuator device including a housing therefore,
b. an actuator circuit enclosed within said actuator housing, said actuator circuit including,
   1. a control device having an anode, cathode and gate,
   2. an electronic triggering circuit for producing a series of square wave pulses for effectuating intermittent operation of said actuator, said triggering circuit having its output connected to the gate of said control device, and



   3. a rectifier circuit connecting said AC power supply to the anode and cathode of said control device.

3,872,472

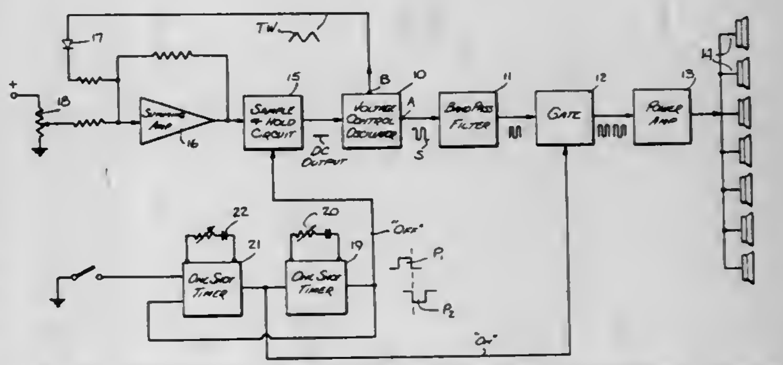
ULTRASONIC SYSTEM FOR REPELLING NOXIOUS FAUNA

Robert G. Moschgat, Shunnock Woods, North Stonington, Conn. 06359

Filed Dec. 11, 1973, Ser. No. 423,759

Int. Cl. A01m ***29/00;*** **G10k** ***10/00***

U.S. Cl. 340—384 E **11 Claims**



1. An electronic system for permanently repelling rodents and other forms of noxious fauna, said system comprising:

A. means including a voltage-controlled oscillator to produce an ultrasonic signal whose frequency lies in a range above the human hearing range to which the fauna are highly sensitive;
B. at least one ultrasonic transducer,
C. means intermittently to apply said signal from said oscillator to said transducer for brief intervals whereby pulses of ultrasonic energy are radiated by the transducer; and
D. means to apply to said oscillator during said intervals held voltages having random values, said oscillator thus generating a signal of ultrasonic pulses having random frequencies such that rodents and other noxious fauna are unable to acquire deafness immunity.

3,872,473

MONITORING APPARATUS

Hans Melgaard, Minneapolis, and Nile E. Plapp, Bloomington, both of Minn., assignors to Despatch Industries, Inc., Minneapolis, Minn.

Filed Oct. 23, 1973, Ser. No. 408,722

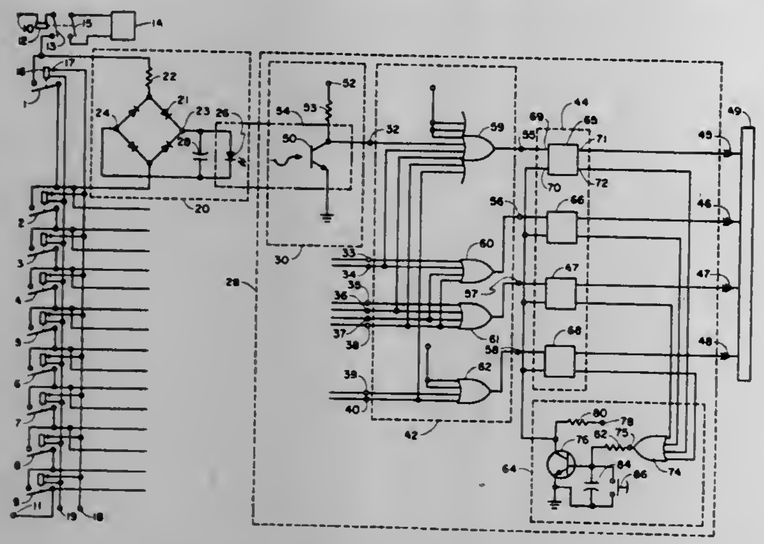
Int. Cl. G08b ***19/00***

U.S. Cl. 340—415 **8 Claims**

1. A monitoring system for determining which relay contact is the first to drop out of a circuit having a plurality of relay contacts connected in series across a voltage source, the system comprising:
- a plurality of detectors for sensing the dropping out of the relay contacts and for producing output signals in response thereto, with a separate detector associated with and connected in parallel across each relay contact, each detector producing an optical detector output signal in

response to the dropping out of its associated relay in response to the dropping out of its associated relay contact; and

binary logic means electrically isolated from the relay contacts and detectors, and having photo receiving de-



vices for receiving the optical detector output signals from the detectors through an optical connection and for responding to the detector output signals by producing a binary display signal indicative of which relay contact was the first to drop out.

3,872,474

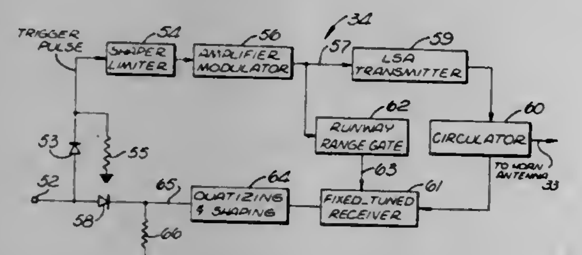
AIRPORT GROUND SURVEILLANCE SYSTEM

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,089

Int. Cl. G01s *9/04*

U.S. Cl. 343—5 LS **9 Claims**



1. A system for airport surface traffic control on at least one runway, comprising:

a plurality of low-power pulsed transmit-receive radar devices spaced along a line parallel to and laterally offset from said runway, each of said devices having a transmit-receive pattern extending over a discrete portion of said runway and each being responsive to timing pulses to transmit corresponding short microwave pulses contemporaneously;

a timing pulse generator for generating timing pulses of a first polarity at a predetermined PRF;

transmission line means connected from said pulse timing generator to supply said pulses to said radar devices serially in a predetermined order, the time of arrival of said timing pulses at each of said radar devices being determined by the length of said transmission line thereto from said timing pulse generator;

reception means within each of said radar devices for receiving echo signals corresponding to said microwave pulses and for sending said echo signals in a second polarity into said transmission line; and

display means connected to said transmission line at a point removed from said radar devices and connected to be synchronized by said timing pulse generator and to visually display the positional data represented by said echo signals.

3,872,475

METHOD AND APPARATUS FOR MEASURING DISTANCE TO MOVING TARGET

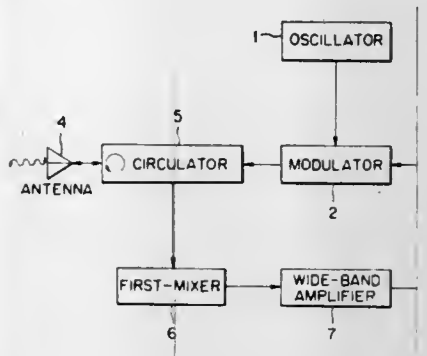
Teruo Yamanaka, Nagoya, and Kazuo Sato, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

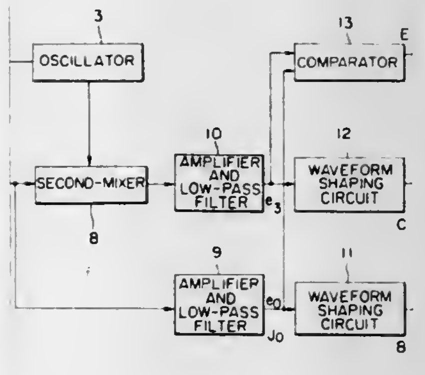
Filed Dec. 29, 1972, Ser. No. 319,472

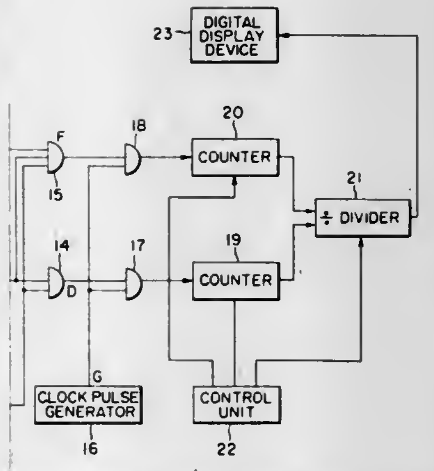
Claims priority, application Japan, Dec. 31, 1971, 47-2476

Int. Cl. G01s *9/24*

U.S. Cl. 343—14 **13 Claims**







1. A distance measuring method utilizing transmitted and reflected frequency-modulated continuous waves comprising, mixing a transmitted wave and a reflected wave so as to derive a low frequency wave,

separating a first Doppler signal from said low frequency wave, separating a fundamental wave component and harmonic wave components from said low frequency wave, and separating additional Doppler signals therefrom, and selecting at least two Doppler signals from said first and additional Doppler signals which are different in phase from each other,

detecting a reference time of one of said selected Doppler signals in one period,

detecting a time when the intensities of said selected Doppler signals are equal to each other in one period,

detecting a time interval between said reference time and said time when the intensities of said selected Doppler signals are equal to each other in one period,

calculating a ratio between said time interval and a period of said selected Doppler signals thereby measuring a distance to a target.

3,872,476

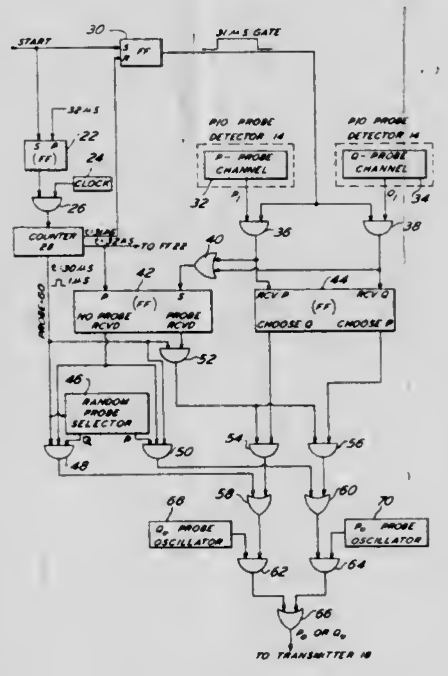
FRUIT REDUCTION BY PROBE SELECTION

Oscar Shames, Cherry Hill, N.J.; James L. Hinds, Telford, Pa.; Michael G. Raditz, Furlong, Pa., and Gerald J. Palatucci, Warminster, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,694

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 LC **5 Claims**



1. A probe selector comprising:

clock means for producing periodic signals;

counter means responsive to a START signal for counting said periodic signals and for producing at least three counting interval signals T_1, T_2 and T_3;

gate generator means responsive to said START signal and to said signal T_2 for producing a gate signal of predetermined duration;

first means responsive to a P probe and to said gate signal for producing a signal P_1;

second means responsive to a Q probe and to said gate signal for producing a signal Q_1;

first memory means responsive to said P_1 signal or to said Q_1 signal for storing said signals and for generating a choose-Q signal when said P_1 signal is stored and for generating a choose-P signal when said Q_1 signal is stored;

second memory means responsive to said P_1 signal or to said Q_1 signal for registering the occurrence of said P_1 signal or said Q_1 signal and for producing a probe-received signal upon such occurrence, said second memory means being also responsive to said counting interval signal T_3 and arranged to register the occurrence of said signal T_3 and to produce a NO-probe-received signal upon registration of said signal T_3;

first gate means responsive to said probe received signal and to said signal T_1 for producing a signal X;

second gate means responsive to said signal X and to said signal choose-Q for producing a signal Y;

third gate means responsive to said signal X and to said signal choose-P for producing a signal Z;

probe selector means for producing a signal Q′ and a signal P′ on a mutually exclusive and random basis;

fourth gate means responsive to said Q′, to said NO-probe-received signal, and to said signal T_1 for producing a signal A;

fifth gate means responsive to said signal P′, to said NO-probe-received signal, and to said signal T_1 for producing a signal B.

3,872,477

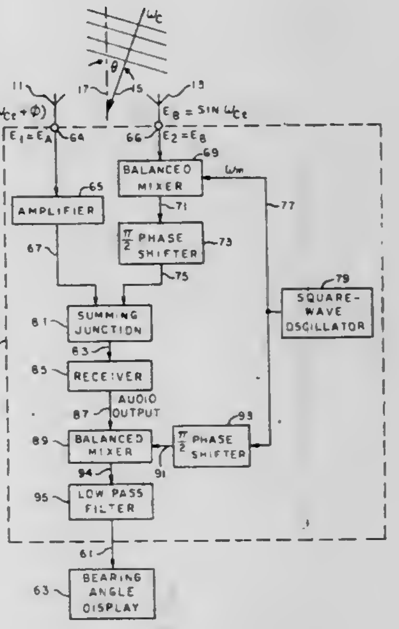
DIRECTION FINDING TECHNIQUES EMPLOYING ELECTRONIC PHASE MODULATION

John P. King, Mountain View, Calif., assignor to ESL Incorporated, Sunnyvale, Calif.

Filed July 19, 1972, Ser. No. 273,151

Int. Cl. G01s *3/02, 5/04*

U.S. Cl. 343—120 **23 Claims**



1. A method of determining a bearing signal of an electromagnetic energy wavefront relative to two receiving antennas, comprising the steps of:

modulating an electrical signal from one of said antennas with a modulating signal of constant frequency in order to generate a pair of sidebands with carrier suppressed,

adding the modulated signal to an electrical signal from the other of said antennas to form a composite signal, and

generating an error signal proportional to the degree of phase or amplitude modulation of said composite signal and thereby also proportional to the bearing angle of said electromagnetic energy wavefront, said error signal generation including the steps of:

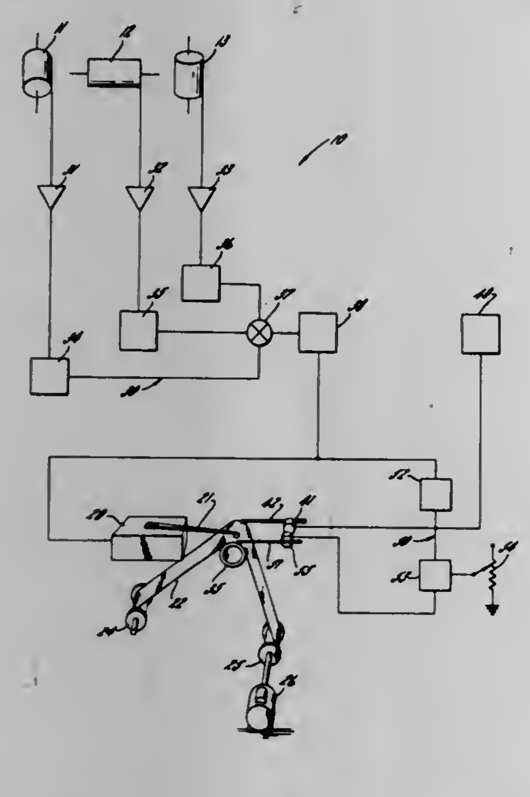
applying the composite signal to an antenna input of a frequency modulation responsive radio receiver, thereby detecting the degree of phase modulation of said composite signal, and

utilizing an audio output of said receiver for indicating the bearing angle.

3,872,478
THREE DIMENSIONAL SEISMOGRAPH

Spencer W. Lucole, Evanston, Ill., assignor to Nitro-Nobel A.B., Stockholm, Sweden

Filed June 14, 1974, Ser. No. 479,420
Int. Cl. G01d *9/32*
U.S. Cl. 346—7 **3 Claims**

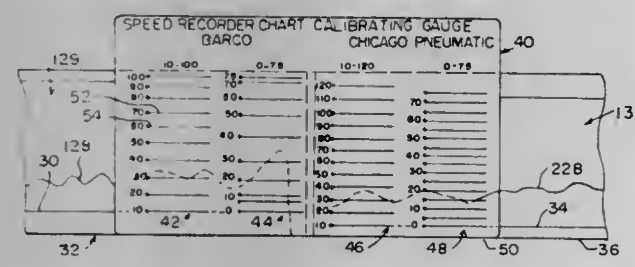


1. A seismograph comprising, in combination, three linear velocity transducers having shock responsive axes disposed at relative right angles, each of said transducers being capable of developing an electrical signal proportional to the energy of a velocity wave component acting along the respective axis of the transducer, a strip recorder having a stylus driven by an actuator which moves the stylus proportionally to an electrical signal received by said actuator, and an electric circuit coupling said transducers and said recorder actuator, said circuit including means for squaring the signals from the transducers, algebraically summing the squared signals, taking the square root of the summed signals to produce a resultant velocity signal, and applying said resultant velocity signal to the recorder actuator.

3,872,479
METHOD AND APPARATUS FOR RECORDING AND RETRIEVING RAILROAD LOCOMOTIVE SPEED DATA

William K. Ramsey, 253 Christine Dr., Decatur, Ill. 62526

Filed June 1, 1972, Ser. No. 258,858
Int. Cl. G07c *23/00*
U.S. Cl. 346—1 **7 Claims**



1. An improved method of recording and retrieving locomotive speed data utilizing a common elongated tape record medium which accomodates and is compatible with a plurality of different kinds of locomotive speed recorders that differ from each other in that they respectively produce a speed plot on said elongated tape record medium based on different speed scales or speed scale orientations, said method comprising:

installing said common elongated tape record medium on any given one of said plurality of different kinds of locomotive speed recorders;

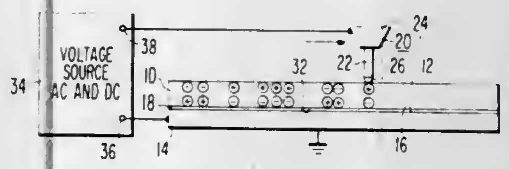
producing a speed plot on said elongated tape record medium of the speed conditions experienced by said locomotive in accordance with the characteristics of said given one of said plurality of different kinds of locomotive speed recorders; and,

retrieving the speed recorded by said given locomotive speed recorder on said elongated tape record medium by utilizing an overlay having a plurality of separate sets of speed calibration indicia, each set of which respectively corresponds to one of said plurality of different kinds of locomotive speed recorders, said overlay and said tape record medium each being provided with alignable registration means for registering the appropriate set of said separate sets of speed calibration indicia on said overlay with said speed plot to provide the user thereof with a readout of the speed information represented by said speed plot.

3,872,480
METHOD OF ELECTROSTATIC RECORDING ON ELECTRICALLY INSULATING FILMS BY NON-WETTING ELECTRICALLY CONDUCTIVE LIQUIDS

Rudolf Succo Engelbrecht, Langnau A.A., Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,093
Int. Cl. G03g *13/10*
U.S. Cl. 346—74 ES **13 Claims**



1. A method of electrostatic recording on an electrically insulating film comprising the steps of:

wetting a probe with an electrically conductive liquid that is non-wetting on said film,

applying a source of voltage between one major surface of said film and said probe, and

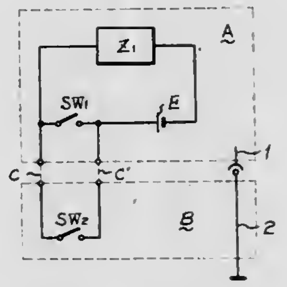
applying relative motion between said probe and the other major surface of said film so that said liquid comes into only non-wetting contact with selected areas of said opposite major surface, said liquid adhering only to said probe and moving therewith, whereby to apply electrostatic charges to said selected areas.

3,872,481
REMOTE CONTROL OF CAMERA BUILT-IN LIGHT MEASURING DEVICE

Koichiro Watanabe, Funabashi, and Akihiro Arai, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 31, 1973, Ser. No. 393,394
Claims priority, application Japan, Sept. 7, 1972, 47-103641
Int. Cl. G03b *17/00, 17/38*
U.S. Cl. 354—23 **2 Claims**

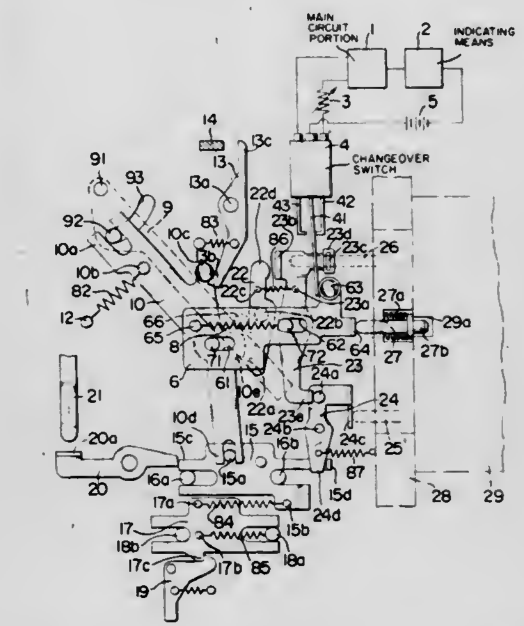
1. A switching device of an electric circuit for light measuring used with a photographic camera to be utilized for photometric indication or automatic exposure control, comprising a first switch arranged within a camera body to activate said electric circuit for light measuring and a second switch arranged outside the camera body in parallel circuit relationship with the first switch, so that the second switch is operative to activate said electric circuit for light measuring within the camera body so that operation of light measuring may be remote controlled.



3,872,482
MEASURING SYSTEM SWITCHING MEANS FOR SINGLE LENS REFLEX CAMERA

Kazuhiro Akiyama, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya-shi, Japan

Filed Nov. 9, 1973, Ser. No. 414,445
Claims priority, application Japan, Dec. 4, 1972, 47-121764
Int. Cl. G03b *7/20*
U.S. Cl. 354—46 **23 Claims**



1. In a single lens reflex camera including a full-aperture measuring circuit and a stopped-down measuring circuit, a switch means for selectively energizing one of said circuits comprising:

a changeover switch means selectively closing one of said circuits,

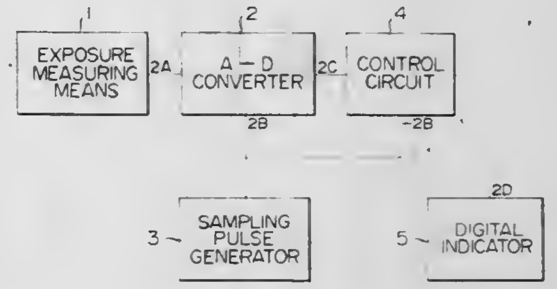
a movable pin provided on the lens mount of the camera so as to be moved by the lens barrel of a stopped-down measuring type lens from a first position to a second position, said movable pin being associated with said changeover switching means so as to close said full-aperture measuring circuit and open said stopped-down measuring circuit when the movable pin is in said first position and open both said full-aperture measuring circuit and said stopped-down measuring circuit when the movable pin is in said second position, and

a manually operable stop-down pin provided in the camera so as to be manually moved from a first position in which the aperture of the lens is fully open to a second position in which the aperture of the lens is stopped down, said stop-down pin being associated with said changeover switching means so as to close said full-aperture measuring circuit when the stop-down pin is in the first position and open said full-aperture measuring circuit and close said stopped-down measuring circuit when the stop-down pin is in said second position.

3,872,483
DEVICE FOR INDICATING DIGITAL EXPOSURE INFORMATION IN THE VIEWFINDER OF A CAMERA

Saburo Numata, Urawa; Iwao Sagara, and Hirohisa Shishikura, both of Tokyo, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omija-shi and Oki Electric Industry Co., Ltd., Tokyo, both of Japan

Filed July 29, 1974, Ser. No. 492,909
Claims priority, application Japan, July 28, 1973, 48-85167
Int. Cl. G01j *1/00*
U.S. Cl. 354—53 **5 Claims**

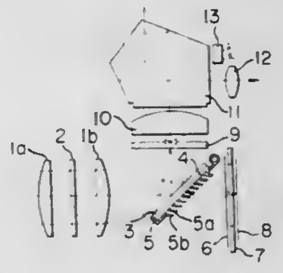


1. A device for indicating digital exposure information in the viewfinder of a camera comprising an exposure measuring means including a photodetector to receive light from the object to be photographed and generating an analogue output corresponding to the amount of light received by the photodetector, an A-D converter connected with the exposure measuring means for converting said analogue output to a digital output, a sampling pulse generating means connected with the A-D converter for giving sampling pulses to the A-D converter to determine the sampling intervals of A-D conversion of the A-D converter, a digital information indicating means including light emitting segments arranged in the shape of numerals for indicating exposure information in a digital form, and a control circuit connected with said A-D converter, said sampling pulse generating means and said digital information indicating means for converting the digital output from the A-D converter to a signal for selectively energizing said light emitting segments to indicate the digital output in a digital form, the period of said sampling pulses being equal to or longer than 0.2 second.

3,872,484
METERING DEVICE FOR A SINGLE LENS REFLEX CAMERA

Teiji Hashimoto, Kawasaki; Takehiko Kiyohara, Zama; Takashi Uchiyama; Tokuichi Tsunekawa, both of Yokohama; Masamichi Kakunodate, and Soichi Nakamoto, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1974, Ser. No. 471,188
Claims priority, application Japan, May 24, 1973, 48-58370
Int. Cl. G03b *7/08, 19/12*
U.S. Cl. 354—59 **3 Claims**

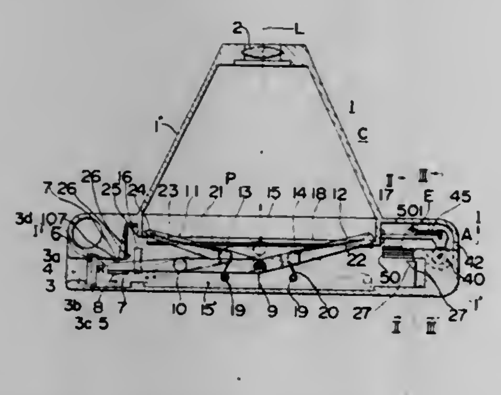


1. A metering device for a single lens reflex camera having a movable mirror therewithin, said device comprising a metering element held on the back side of said movable mirror, and an incident light direction restricting structure formed on the

light-sensing surface of said metering element, said restricting structure being inclined with respect to the light-sensing surface of said metering element so that it may intercept direct light from the picture-taking lenses of the camera in raised raised position of said movable mirror so as to permit only the reflected light from the surface of a film or of a shutter curtain to be passed to said metering element.

3,872,485
AUTO-PROCESS CAMERA HAVING SELECTIVELY INSERTABLE SELF DEVELOPING FILM SHEETS

Yoshio Asano, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kangawa, Japan
Filed Nov. 6, 1973, Ser. No. 413,306
Claims priority, application Japan, Nov. 6, 1972, 47-111514
Int. Cl. G03b *17/50*
U.S. Cl. 354—83 **7 Claims**



1. An auto-process camera comprising

a body forming a main camera interior and a lens housing portion,

a rectangular entrance provided in the side of the body through which at least one sheet of film protected by a light-proof envelope is slidably inserted into the camera interior as far as a set position in light-proof condition, the envelope being automatically broken off upon insertion of film into the camera interior,

a means for sealing the entrance of the body to prevent light from entering into the camera interior in normal condition, and permitting insertion of film into the camera interior,

a means for holding and automatically advancing sheets of film in succession from the set position to a foremost position for exposure thereof through the lens,

a means operating cooperatively with said holding and advancing means to permit introduction of film from the entrance of the body to the set position, and

a means for automoatically removing successively exposed sheets of film from the camera.

3,872,486
PHOTOGRAPHIC APPARATUS EMPLOYING VARIABLE PRESSURE PLATE STRUCTURE

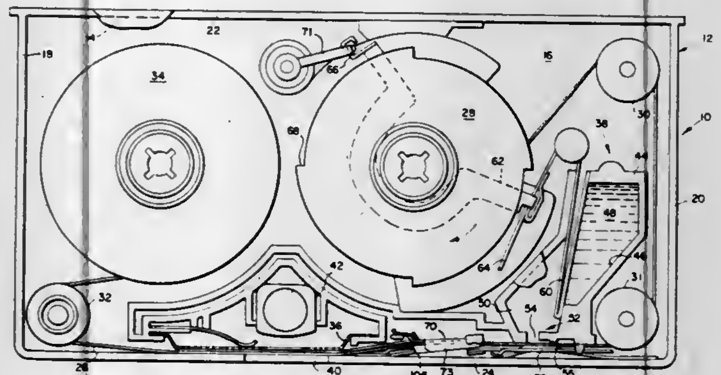
Peter A. Scibilia, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 19, 1973, Ser. No. 426,127
Int. Cl. G03b *17/50*
U.S. Cl. 354—88 **15 Claims**

1. A photographic film handling cassette for use with other apparatus for first exposing a strip of photographic film material and for subsequently projecting images recorded on such film strip, said casette comprising:

a housing for retaining such film strip, said housing including an opening for exposing progressive incremental sections of such film strip;

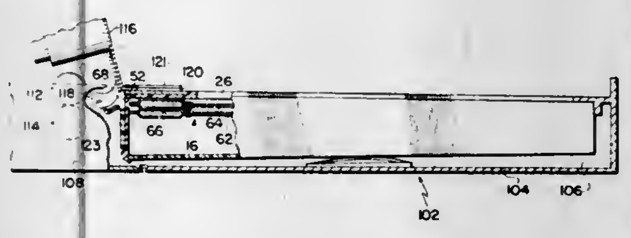
means responsive to drive means of such other apparatus for advancing such film along a given path within said housing, said given path traversing said opening with one surface of such film strip facing inwardly of said housing;

a pressure plate assembly located within said housing at said opening for supporting substantially the full width of such incremental sections in a predetermined focal location as such sections are progressively located in said opening, said pressure plate assembly including a plate having an aperture extending therethrough and terminating in at least a pair of laterally spaced apart surfaces configured for engaging the longitudinal margins of such film strip and a displaceable member mounted for displacement between a first position wherein one surface of said member complements said laterally spaced apart surfaces to provide a substantially smooth support for substantially the entire width of such film strip where it is disposed across such predetermined focal location to facilitate exposure operations and a second position wherein said member does not serve to cover said aperture to facilitate projection operations.



3,872,487
PHOTOGRAPHIC FILM ASSEMBLAGE AND APPARATUS

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 213,989, Dec. 30, 1971, Pat. No. 3,748,984. This application July 30, 1973, Ser. No. 383,777
Int. Cl. G03b *17/52*
U.S. Cl. 354—86 **17 Claims**



1. Photographic apparatus for use with a photographic film assemblage of the type including a film container housing at least one film unit and having a withdrawal slot at one end thereof through which the film unit may be extracted from the container and an end cap coupled to the container for movement between an initial closed position in which the end cap is in alignment with and in closing relation to the withdrawal slot and an open position in which the end cap is out of alignment with the withdrawal slot, the end cap being configured to include a portion extending outwardly from the container when the end cap is located in the initial closed position, said photographic apparatus comprising:

a housing;

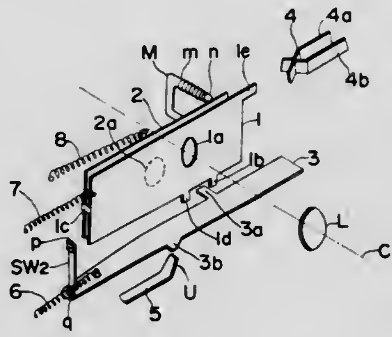
means defining a fixed exposure position within said housing wherein such a film container is adapted to be located to expose film units held in the film container;

means associated with said housing for receiving and supporting such a film container at said fixed exposure position with the end cap on the film container located in the initial closed position; and

means mounted on said housing for movement relative to such a film container supported at said fixed exposure position for engaging the portion of the end cap extending outwardly from the film container and moving the end cap from the initial closed position to the open position.

3,872,488
ELECTRONIC SHUTTER MEANS

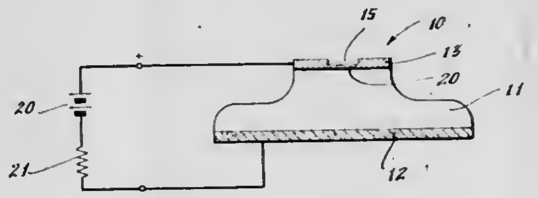
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co. Ltd., Nakanuma, Minami Ashigara-shi, Kanagawa, Japan
Filed June 4, 1974, Ser. No. 476,193
Claims priority, application Japan, June 4, 1973, 48-62683
Int. Cl. G03b *9/64, 9/40*
U.S. Cl. 354—246 **2 Claims**



1. In a guillotine type electronic shutter comprising a first curtain, a cocking means, which, when moved to set position, moves said first curtain to a cocked position, a second curtain, which is moved to a cocked position by said first curtain, and an electromagnetic means, which is actuated by an electronic shutter control circuit to temporarily retain said second curtain in a cocked position upon return of said cocking means from said set position, an electronic shutter means comprising a clamp means, which may engage said first curtain when said first curtain is moved to said cocked position, and retain said first curtain in said cocked position upon start of return of said cocking means from said set position, and a mechanical means, which is provided between said first curtain and said cocking means, and which is actuated to forcibly disengage said first curtain from said clamp means, after said cocking means has returned a certain distance from said set position, whereby exposure time determined by said control circuit is shortened by a certain time.

3,872,489
ELECTRON EMISSION FROM A COLD CATHODE

Arno K. Hagenlocher, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Feb. 22, 1973, Ser. No. 335,273
Int. Cl. H01l *3/08*
U.S. Cl. 357—15 **7 Claims**



1. A cold cathode electron emitter using double injection space-charge limited current, comprising:

a single semiconductor body, said single body consisting of a homogeneous P-type wide bandgap material;

first and second conductor plates mounted on opposite sides of said single semiconductor body, said second plate being formed with an aperture defining an electron emitting surface of said single semiconductor body;

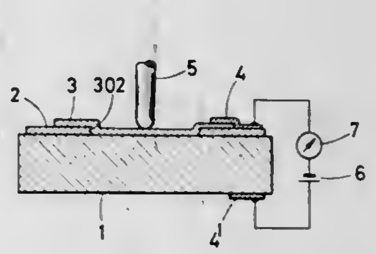
a thin layer of work function reducing material coated on said electron emitting surface;

bias voltage means connected across said plates, said voltage at said second plate being more positive than said voltage at said first plate; and

said single semiconductor body having a thickness measured between said plates, a lifetime and a thermal carrier concentration and said bias means having a magnitude such that said single semiconductor body and said means produce double injection space-charge limited current within said single semiconductor body in which electrons are injected from said first plate and holes are injected from said second plate to excite electrons into the conduction band of said single semiconductor body.

3,872,490
MECHANICAL - ELECTRICAL SEMICONDUCTOR TRANSDUCER WITH RECTIFYING TIN OXIDE JUNCTION

Kazuhiro Higashi, Takatsuki; Isao Taguchi, and Nobuaki Miura, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Feb. 26, 1971, Ser. No. 119,337
Claims priority, application Japan, Nov. 16, 1970, 45-114087; Jan. 20, 1971, 46-1515
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—15 **25 Claims**



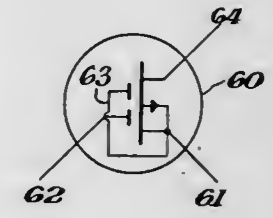
1. A semiconductive mechanical-electrical transducer comprising:

a semiconductor composite including a semiconductor substrate formed of Si, Ge, or GaAs; and a film of tin oxide deposited on said semiconductor substrate and forming a barrier having a rectifying characteristic therebetween; and

means for applying mechanical force to said composite.

3,872,491
ASYMMETRICAL DUAL-GATE FET

John W. Hanson, Salt Lake City, Utah, and John D. MacDougall, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Mar. 8, 1973, Ser. No. 339,270
Int. Cl. H01l *5/06, 19/00*
U.S. Cl. 357—23 **1 Claim**



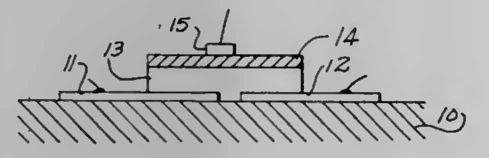
1. A dual gate field effect transistor comprising a semiconductor body of one conductivity type; spaced first, second and third low resistivity regions of the opposite conductivity type lying within said body and adjacent to a common surface of said body, said spaced regions constituting the source, the virtual source-drain and the drain regions respectively, a first conductive channel region being defined by the space be-

tween said source and said virtual source-drain; a second channel region being defined by the space between said virtual source-drain and said drain, said second channel region containing a greater concentration of dopant impurities of said opposite type than said first channel region, or said first channel region containing a greater concentration of dopant impurities of said one type than said second channel, or both; an insulating layer covering at least the portions of said surface adjacent to said first and second channels; a first gate electrode on said insulating layer extending over said first channel; a second gate electrode on said insulating layer extending over said second channel; a metal conductor making ohmic connection between an undoped region in said body and said low resistivity source region and being further connected to said second gate electrode; and a protective outer package having first, second and third electrical terminals accessible external to said package, said terminals being connected internal to said package with said source, said first gate electrode and said drain, respectively, such that with a zero bias voltage applied between said first gate and said source, said second channel is more conductive than said first channel.

3,872,492
RADIATION HARDENED FIELD EFFECT TRANSISTOR

Lionel Robbins, Orchard Lake, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed July 26, 1972, Ser. No. 275,138
Int. Cl. H01l *5/06, 11/14*
U.S. Cl. 357—23 **21 Claims**



1. A radiation hardened field effect transistor including a semiconductor element, a source and a drain at spaced apart points along the semiconductor element, a gate for the semiconductor element for controlling current through the semiconductor element between the source and drain and an insulator between the gate and the semiconductor element, wherein said insulator comprises an amorphous non-oxidic insulating semiconductor material comprising a saturated cross-linked alloy glass selected from the group consisting of chalcogenides, arsenides and phosphides having substantially no deep traps so that charges caused by external radiation are not trapped therein and internal fields due to such charges are substantially immediately neutralized in said insulator.

3,872,493
SELECTIVE IRRADIATION OF JUNCTIONED SEMICONDUCTOR DEVICES

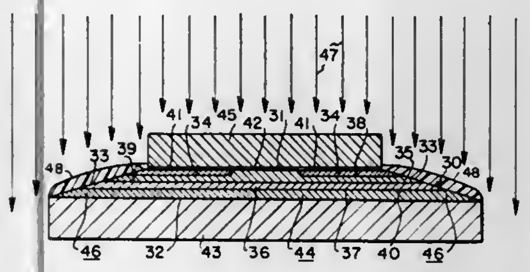
John S. Roberts, Export, and Michael W. Cresswell, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1972, Ser. No. 283,684
Int. Cl. H01l *11/10, 15/00*
U.S. Cl. 357—29 **6 Claims**

1. A thyristor device comprising:

a. a silicon semiconductor body having a blocking PN junction therein; and

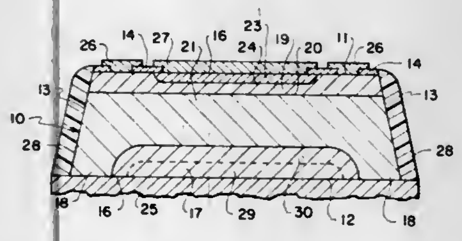
b. a peripheral portion of the body having been irradiated with radiation means and a bulk portion of the body having been nonirradiated with said radiation means by masking said bulk portion against irradiation to increase the blocking voltage across the body without substantively increasing the forward voltage drop across the body.



3,872,494
FIELD-CONTOURED HIGH SPEED, HIGH VOLTAGE TRANSISTOR

John R. Davis, Jr., Export, Pa., and Surinder Krishna, Ballston Lake, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1974, Ser. No. 440,934
Int. Cl. H01l *11/06*
U.S. Cl. 357—34 **5 Claims**



1. A transistor having high voltage and high speed capability comprising:

A. a semiconductor body having first and second opposed major surfaces, a resistivity therethrough or at least about 30 ohm-cm and a thickness of at least about 100 microns;

B. an emitter region of a given conductivity type positioned in the body adjoining selected internal portions of the first major surface;

C. a collector region of conductivity type the same as the emitter region positioned in the body adjoining the second major surface and comprising a first collector portion and a second collector portion;

D. said first collector portion adjoining selected internal portions of the second major surface and having a surface impurity concentration at the second major surface greater than about 8×10^{18} atoms/cm³.

E. said second collector portion adjoining selected peripheral portions of the second major surface contiguously around the first collector portion and adjoining the first collector portion interior of the body at said internal portions, and having a resistivity therethrough of greater than 30 ohm-cm;

F. said second collector portion at said internal portions having a substantially uniform thickness of at least about 30 microns and a reach-through voltage less than the avalanche breakdown voltage thereof, and said second collector portion at said peripheral portions having a thickness at least 20 percent greater than the thickness of second collector portion at said internal portions and having a width at the second major surface greater than the width of the second collector portion at said internal portions;

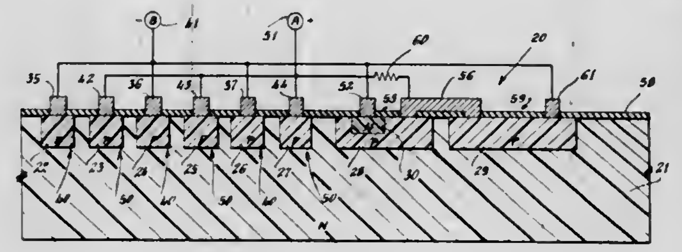
G. a base region of conductivity type opposite from the emitter and collector regions positioned at least partially interior of the body between the emitter region and the second collector portion of collector region and forming separate PN junctions therewith, and having a minority carrier diffusion length at least on the order of magnitude greater than the thickness of the base region at the internal portions of the body; and

H. metal contacts affixed to the major surfaces of the body to make separate ohmic contact with emitter, collector and base regions.

3,872,495
NEGATIVE IMPEDANCE CONVERTER

William L. Geller, and Jeremiah P. McCarthy, both of Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed June 11, 1973, Ser. No. 369,043
Int. Cl. H01l *19/00*
U.S. Cl. 357—48 **5 Claims**



1. A semiconductor negative impedance converter module having only an input and an output terminal comprising:

a. a semiconductor substrate of a first conductivity type;

b. first, second, and third regions of a second conductivity type formed completely within such substrate, said first and second regions each having outer dimensions defining a continuous volume of material of said second conductivity type and said regions being separated within said substrate;

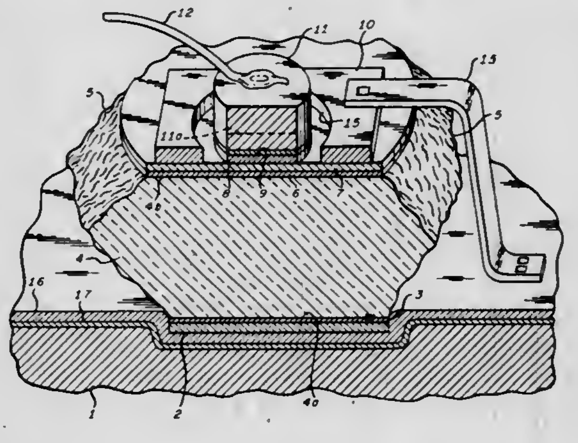
c. a fourth region of said first conductivity type formed within said third region, said fourth region having outer dimensions defining a continuous volume of material of said first conductivity type; and

d. first, second, third and fourth spaced electrodes conductively contacting said first, second, third and fourth regions respectively.

3,872,496
HIGH FREQUENCY DIODE HAVING SIMULTANEOUSLY FORMED HIGH STRENGTH BONDS WITH RESPECT TO A DIAMOND HEAT SINK AND SAID DIODE

Curtis N. Potter, Holliston, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,960
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—81 **5 Claims**



1. In a high frequency semiconductor device,

diamond heat conductor means having first and second opposed substantially parallel flat polished surfaces,

first and second high electrical and thermal conductivity metal layers bonded separately to said respective first and second opposed substantially parallel flat polished surfaces,

massive heat sink means bonded to said first metal layer,

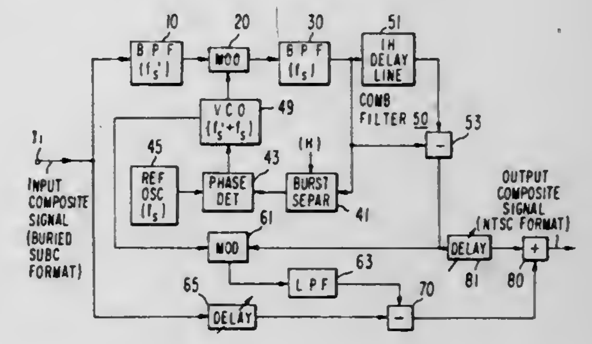
preformed apertured plate means bonded to said second metal layer simultaneously with the bonding of said massive heat sink means to said first metal layer, and

active semiconductor means bonded substantially concentrically within said aperture to said second metal layer within said aperture.

3,872,497
SIGNAL TRANSLATING APPARATUS FOR COMPOSITE SIGNAL SUBJECT TO JITTER

John Gordon Amery, and Robert Warren Jorgenson, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,036
Int. Cl. H04n *9/12*
U.S. Cl. 358—4 **15 Claims**



1. A color image signal translating system comprising, in combination:

means for providing an input composite signal including (a) a signal representative of the chrominance of a color image and occupying only a given frequency band, and (b) a signal representative of the luminance of said color image and including a first luminance signal portion occupying said given frequency band and additional luminance signal portions having frequencies outside said given frequency band; said first luminance signal portion including signal components normally subject to occupancy of only a first plurality of regularly spaced spectral locations extending over said given frequency band, and said chrominance signal including signal components normally subject to occupancy of only a second plurality of spectral locations interleaved with said first plurality; said composite signal providing means being subject to abnormal operation causing spurious variations of the frequencies of said signal components about said normally occupied spectral locations;

a source of oscillations

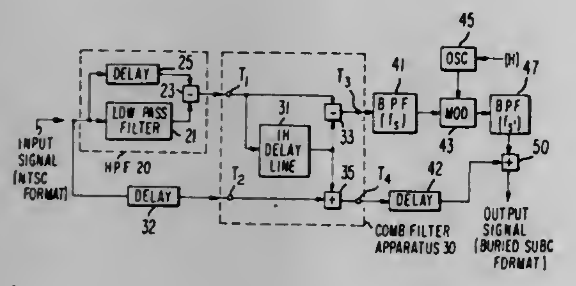
means for varying the frequency of the oscillations provided by said source about a nominal value in synchronism with said spurious variations during abnormal operation of said composite signal providing means;

means for heterodyning oscillations provided by said source with at least the portion of said composite signal occupying said given frequency band;

means for deriving an output from said heterodyning means inclusive of a frequency shifted chrominance signal occupying a frequency band different from said given frequency band, and a frequency shifted luminance signal portion corresponding to said first luminance signal portion and sharing said different frequency band;

and a comb filter responsive to said output derived from said heterodyning means for passing said frequency shifted chrominance signal to the substantial exclusion of said frequency shifted luminance signal portion.

3,872,498
COLOR INFORMATION TRANSLATING SYSTEMS
Dalton Harold Pritchard, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 13, 1973, Ser. No. 350,777
Claims priority, application Great Britain, Apr. 19, 1972, 18036/72
Int. Cl. H04n *9/02*
U.S. Cl. 358—21 **25 Claims**



1. In a color image signal translating system, the combination comprising:

means for developing signals representative of only the chrominance of said color image and occupying only a given frequency band;

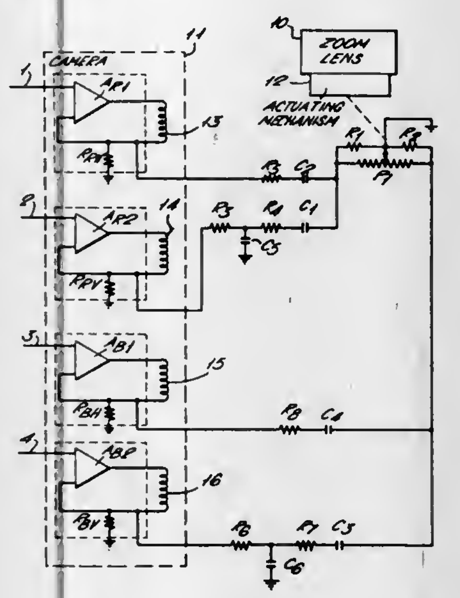
means for developing signals representative of only the luminance of said color image and occupying a band of frequencies inclusive of said given frequency band as well as a band of frequencies lower than and adjacent to said given frequency band;

means for processing the luminance representative signals developed by said luminance representative signal developing means to effect signal component removal at a plurality of spectral locations regularly spaced throughout said given frequency band while passing substantially all signal components thereof falling within said lower frequency band;

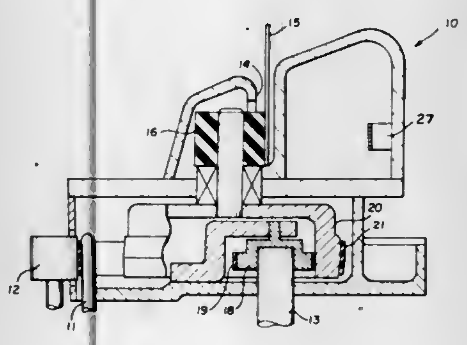
comb filter means responsive to the chrominance representative signals developed by said chrominance representative signal developing means for substantially confining said chrominance representative signals to components at said plurality of regularly spaced spectral locations; and means for combining the outputs of said luminance representative signal processing means and said comb filter means to form a composite signal inclusive of luminance representative signal components falling within said lower frequency band and in which luminance representative signal components and chrominance representative signal components share said given frequency band in substantially non-overlapping, interleaved relationship.

3,872,499
TELEVISION PICTURE CORRECTION
Eric Douglas McConnell, and Joseph Colin Whitehouse, both of Leicester, England, assignors to The Rank Organisation Limited, London, England
Filed Aug. 2, 1973, Ser. No. 384,946
Claims priority, application United Kingdom, Aug. 25, 1972, 39774/72
Int. Cl. H04n *9/10*
U.S. Cl. 358—51 **11 Claims**

1. In a television camera having a zoom lens, a plurality of pickup tubes arranged to receive colour separation images and scan control means for controlling the scan of each pickup tube to form a raster of a given size the improvement which comprises means providing a signal representing the value of an operational parameter of the zoom lens and compensating circuit means for receiving said signal and modifying said scan control means to alter the raster size of at least one said pickup tube under control of said signal whereby the rasters in the pickup tubes maintain the same size relative to each other irrespective of changes in said operational parameter of the zoom lens.



3,872,500
TWO-SPEED DRIVE FOR LINEAR ADAPTER FOR CASSETTE TAPE RECORDER
Albert F. Wild, Rochester, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.
Filed May 21, 1973, Ser. No. 362,428
Int. Cl. G11b *23/94;* **G06k** *7/08*
U.S. Cl. 360—2 **5 Claims**



1. A two-speed drive for a linear adapter for a cassette tape recorder having a capstan, a pinch roller, and a driven take-up shaft, said drive comprising:

a. a drive wheel having a central opening for fitting over said take-up shaft to turn with said take-up shaft;

b. a pulley driven by said drive wheel;

c. an endless belt passing around said pulley and over said capstan between said capstan and said pinch roller to regulate the speed of said pulley when said pinch roller presses said belt against the capstan;

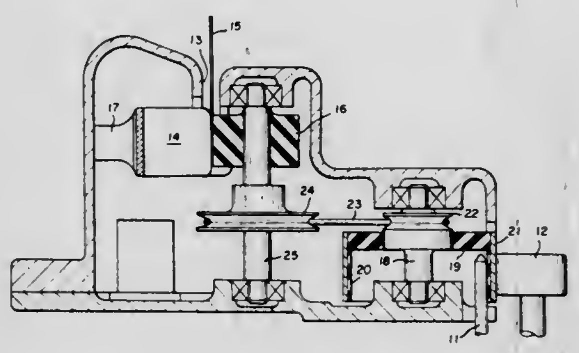
d. means for tensioning and guiding said belt over said capstan;

e. a friction roller coaxial with said pulley and turning with said pulley at a regulated speed when said pinch roller presses said belt against said capstan and at a faster speed when said pinch roller is clear of said belt and said capstan;

f. a linear drive slot approximately tangent to said friction roller; and

g. means for pressing a linear recording element against said friction roller for traversing said slot.

3,872,501
DRIVE FOR A LINEAR PLAY ADAPTER FOR A CASSETTE TAPE RECORDER
Donald F. McPherson, Hilton, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.
Filed May 24, 1973, Ser. No. 363,320
Int. Cl. G11b *25/04, 23/04*
U.S. Cl. 360—2 **10 Claims**



1. A drive for an adapter removably insertable in a tape recorder having a capstan and a pinch roller, said drive comprising:

a. a driven element including a shaft rotatably supported on said adapter;

b. a resilient elastomeric hub fixed to said shaft and extending radially outwardly from said shaft;

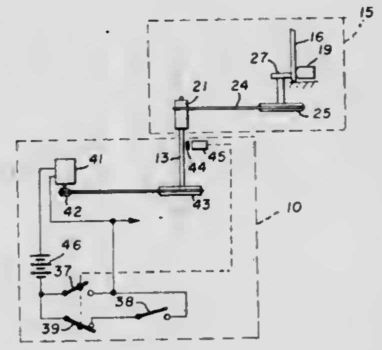
c. a substantially rigid cylindrical sleeve secured to the periphery of said elastomeric hub and extending axially from said elastomeric hub;

d. a layer of friction material on the inside of said axial extent of said cylindrical sleeve;

e. drive means turned by said driven element for operating said adapter; and

f. said elastomeric hub and said cylindrical sleeve being configured so said sleeve is engaged by said pinch roller to press said friction material aganist a substantial length of said capstan with said sleeve providing uniform and unyielding control of the speed transfer from said capstan and said elastomeric hub flexing to accommodate any discontinuity of said capstan and said pinch roller relative to said shaft while transmitting true capstan speed without variation.

3,872,502
SIMULTANEOUS CARD AND CASSETTE RECORDER SYSTEM
Albert F. Wild, Rochester, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.
Filed May 24, 1973, Ser. No. 363,321
Int. Cl. G11b *5/00, 25/04*
U.S. Cl. 360—2 **5 Claims**



1. A simultaneous card and cassette recorder system comprising:

a. a tape recorder for said cassette, said recorder having a capstan for a tape drive for said cassette, a magnetic head for tracking said tape in said cassette, switches and amplifier circuitry;

b. an adapter for said card, said adapter being configured to be superposed over the region normally occupied by said cassette in said recorder so that said cassette and said adapter can both be operably placed on said recorder simultaneously;

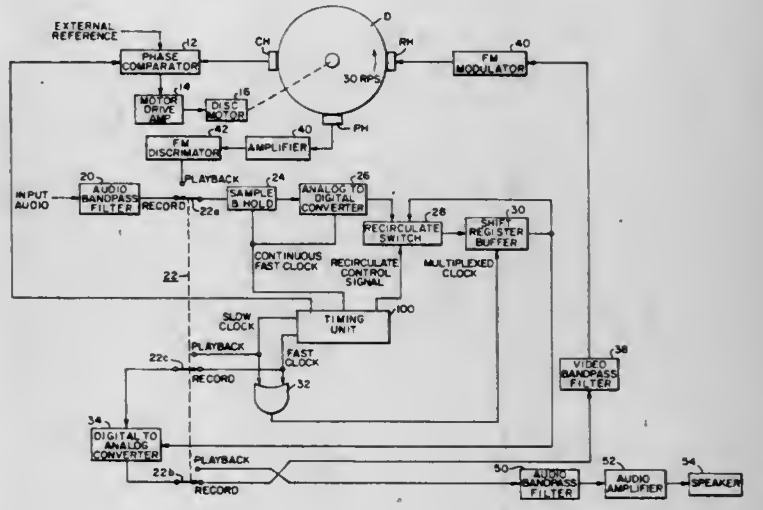
c. said capstan extending through said cassette region and into the region of said adapter superposed over said cassette region;

d. means driven by said capstan in said adapter for moving said card through said adapter:

e. a magnetic head in said adapter for tracking a path on said card; and

f. said switches being arranged for connecting said magnetic head of said recorder and said magnetic head of said adapter selectively with said amplifier circuitry for recording or playing said card or said cassette, or simultaneously recording or playing both said card and said cassette.

3,872,503
ELIMINATION OF TRANSIENTS IN PROCESSING SEGMENTS OF AUDIO INFORMATION
Harold B. Shutterly, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 23, 1974, Ser. No. 435,782
Int. Cl. G11b *5/00*
U.S. Cl. 360—8 **5 Claims**



1. In a method of segmenting a continuous signal to permit the subsequent reconstruction of the continuous signal without introducing transients developed during processing of the segmented signals, the steps of:

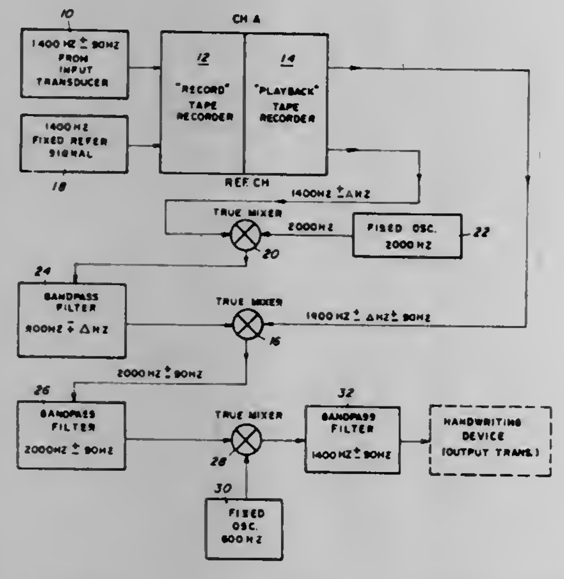
dividing a continuous signal into discrete segments, each of said segments being comprised of the plurality of signal samples, and

repeating one or more of the last signal samples of a signal segment as the first signal samples of the next signal segment, the number of signal samples repeated corresponding to a time duration greater than the time duration of transients introduced during the processing of the segmented signals.

3,872,504
APPARATUS FOR REDUCING THE WOW AND FLUTTER OF A RECORDING MECHANISM
Donald K. Belcher, Springfield, Va., assignor to Signa-Signer, Inc., Fairfax, Va.
Filed Dec. 6, 1972, Ser. No. 312,656
Int. Cl. G11b *5/02, 5/43*
U.S. Cl. 360—27 **7 Claims**

1. In a recording and reproducing system, a means for

compensation for the wow and flutter frequencies introduced by the recording and reproducing equipment comprising,
- an output transducer,
- a first means for producing a first signal including a first signal component, an information bearing input signal and said wow and flutter frequencies,
- recording equipment for transcribing said information bearing signal on a first channel,



- a playback means for producing a first output signal from said first channel corresponding to said first signal and the output of said playback means being connected to said first mixer means,
- a second means for producing a second signal including a second signal component opposite in sense to said first signal component, and
- a first mixer means combining said first and second signals so that said first and second signal components substantially cancel each other prior to reception of said information bearing input signal by said output transducer.

3,872,505
AUTOMATIC CARTRIDGE CHANGER

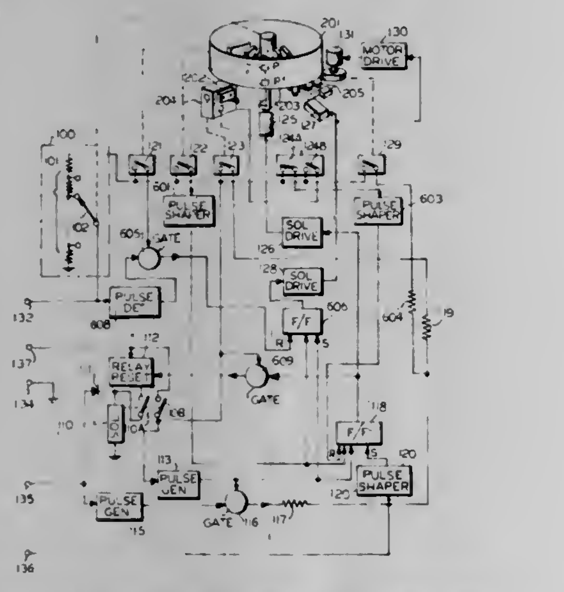
Tetsuo Hino; Eiji Minami; Isao Kozu, and Hidetoshi Kurihara, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 14, 1972, Ser. No. 262,470

Claims priority, application Japan, June 16, 1971, 46-43467; June 16, 1971, 46-43487

Int. Cl. G11b *5/00*

U.S. Cl. 360—92 **7 Claims**



1. An automatic cartridge changer comprising:
- a rotary tray having a plurality of compartments for storing a plurality of cartridges, each of said compartments having a numerical code;
- a tape player having a magnetic head and a tape moving means for the playback of said cartridges;
- a tray driving means coupled to said rotary tray for rotating said rotary tray;
- an index means engageable with said rotary tray for restricting rotation of said rotary tray so as to position a selected compartment at a first position;
- a cartridge exchanging means for transporting a cartridge from said first position to a second position so as to engage said cartridge with said tape player and to play back said cartridge by said magnetic head;
- a selecting means which operates in a step-wise manner to advance numerical codes when supplied with a voltage from an electric power source and stops its operation so as to select a numerical code when the voltage thereto from the electric power source is disconnected;
- a switch connected between said selecting means and the power source for controlling the supply of electric power to said selecting means;
- a first voltage coder coupled to said selecting means for producing a first voltage corresponding to the numerical code selected by said selecting means;
- a second voltage coder coupled to said rotary tray for producing a second voltage corresponding to the numerical code of the selected compartment of said rotary tray when the selected compartment is positioned at said first position;
- a voltage comparator for comparing the value of said first voltage of said first voltage coder with that of said second voltage of said second voltage coder;
- a cartridge exchange detecting switch operatively coupled to said rotary tray for detecting the termination of the restoring of said cartridge by said cartridge exchanging means; and
- a control means operatively coupled and receiving a first input signal relating to the termination of the restoring of said cartridge by said cartridge exchanging means for actuating said tray driving means, and also receiving a second input signal, relating to the termination of the rotation of said rotary tray to a selected position, for initiating said index means,

whereby said rotary tray can be automatically rotated for selecting a next cartridge to be played back in response to the temrination of the playback of said cartridge and, if necessary, a cartridge to be played back can be manually selected by manually operating said switch.

3,872,506
APPARATUS FOR AUTOMATICALLY PLAYING BACK INFORMATION IN CASSETTES

Marcel Jules Helene Staar, 479 Avenue Louise, Brussels, Belgium

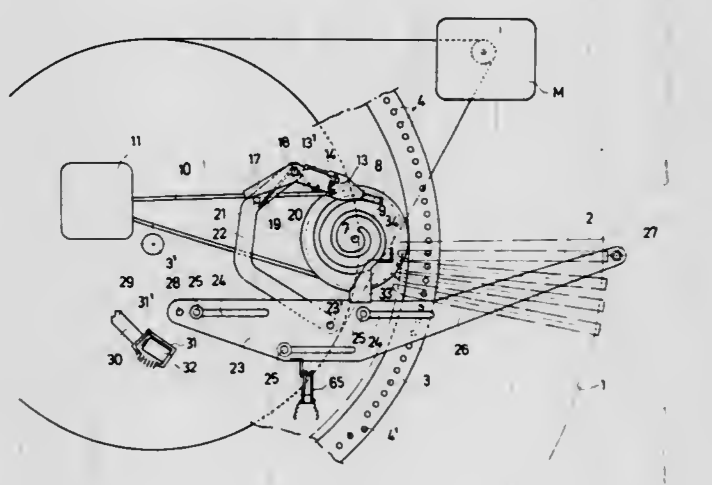
Filed Sept. 7, 1971, Ser. No. 177,987

Claims priority, application Belgium, Sept. 7, 1970, 755810

Int. Cl. G11b *5/00*

U.S. Cl. 360—92 **8 Claims**

1. In an apparatus for automatically playing back adapted to automatically select recordings stored in cassettes comprising: a stationary circular magazine having a plurality of radially extending cassettes disposed therein; a turntable centrally located in said magazine, a playback device mounted on said turntable, said playback device and said magazine being in substantially coplanar relationship; means for rotating said turntable so as to sequentially convey the playback device into correspondence with a predetermined one of said cassettes; a selector device, said selector device comprising means for determining a selection and controlling the operation of the apparatus, counting and locating means, reading cells for determining the position of said counting and locating means, and a driving motor controlled by said selector device for positioning the playback apparatus in sequential order opposite the cassettes disposed thereabout, said turntable having marks thereon forming said counting and locating means of said selector device.



3,872,507
ROTATING AIR BEARING HEAD WITH SHAPED CONTROL SLOTS

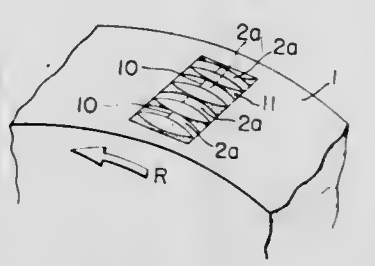
Kazuhiko Sano, and Shoji Omiya, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Feb. 2, 1973, Ser. No. 328,957

Claims priority, application Japan, Feb. 4, 1972, 47-13073; Mar. 17, 1972, 47-27752; Mar. 17, 1972, 47-27753; Mar. 17, 1972, 47-27784; Apr. 14, 1972, 47-44890[U]; May 16, 1972, 47-57417[U]

Int. Cl. G11b *5/60, 5/22*

U.S. Cl. 360—102 **6 Claims**



1. A device of the type in which a plurality of magnetic heads are juxtaposed in spaced apart relation in the direction of the axis of rotation of a rotary drum on the outer peripheral surface thereof, and a magnetic tape is wrapped around said rotary drum and is spaced apart therefrom through a thin air layer so that signals may be reecorded on and reproduced from said magnetic tape upon rotation of said rotary drum at high speed, the improvement wherein on both sides of each of said plurality of magnetic heads said outer peripheral surface of said rotary drum is provided with recesses along the length of said magnetic head, the bottom of said recesses being lower than said outer peripheral surface of said rotary drum and the leading edges of said recesses being lower than said outer peripheral surface of said rotary drum, and the bottom of said recesses becoming gradually shallower toward the trailing edges.

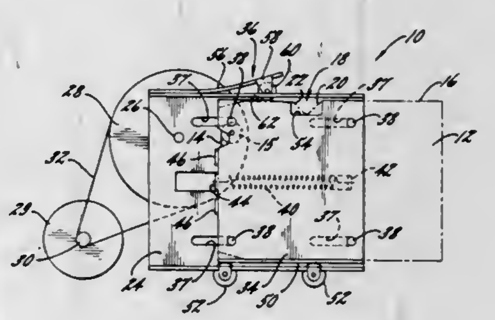
3,872,508
RETENTION ROLLER HOLDING MECHANISM FOR TAPE CARTRIDGE PLAYBACK APPARATUS

Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium

Filed Jan. 24, 1973, Ser. No. 326,528

Int. Cl. G11b *5/00*

U.S. Cl. 360—137 **7 Claims**



1. A playback mechanism for a magnetic tape contained in a cartridge having the tape exposed in the forward end face thereof and having a V-shaped slot in a lateral face, said mechanism comprising
- a housing for receiving the cartridge which is inserted inwardly forward end face first into an operative position, resilient retention means inclduing a roller and means resiliently on the housing to act generally perpendicularly to and toward said lateral face of the cartridge to enter the V shaped slot for holding the cartridge in its operative position, and
- an element and means slidablly mounted said element on said housing and said element being engaged and moved by the cartridge from a first to a second position as the cartridge is inserted inwardly into its operative position, said element having a surface means substantially aligned with said lateral face of the cartridge at the forward end thereof which is engaged by said roller for holding said roller out of contact with the forward face of the cartridge and substantial engagement with a forward portion of the lateral face of the cartridge as the cartridge is inserted while allowing said roller to enter said V shaped slot when the cartridge approaches its operative position to resiliently hold the cartridge in its operative position.

3,872,509
CASSETTE TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

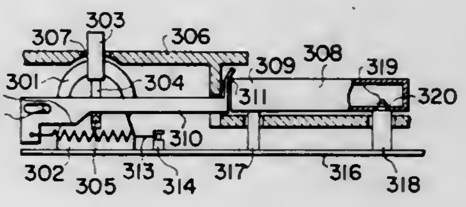
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 11, 1970, Ser. No. 71,592

Claims priority, application Japan, Sept. 19, 1969, 44-76031

Int. Cl. G11b *27/20*

U.S. Cl. 360—137 **1 Claim**



1. In a cassette type magnetic recording and reproducing machine comprising:
- a. a cassette support;
- b. means for indicating the amount of progress of the tape in a cassette; and
- c. means, interposed between the cassette support and the indicating means, for automatically zero resetting the indicating means directly upon relative movement of the

cassette with respect to the playing position of the cassette tape in the machine, said means for automatically zero resetting including means for detecting insertion of the cassette into the machine and means for zero resetting when the cassette is removed from the playing position of the tape, said detecting means including means for ensuring that the cassette is correctly positioned in the playing position of the tape.

3,872,510

MAGNETIC TAPE CLEANING AND TENSIONING APPARATUS

Lloyd Krudop Childress, Jr., and John Allen Church, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1973, Ser. No. 364,768

Int. Cl. G11b *5/00, 15/43;* **B08b** *1/02*

U.S. Cl. 360—137 **2 Claims**

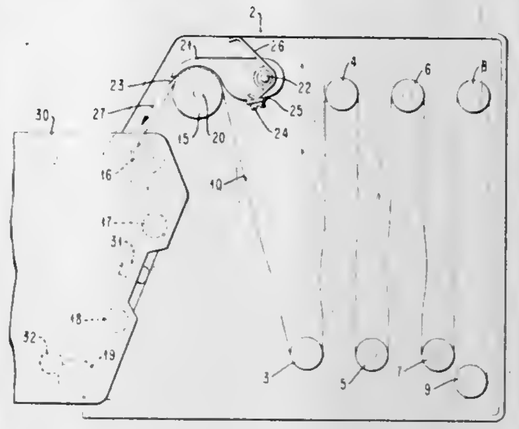
1. A magnetic tape handling apparatus comprising:

a magnetic tape loop;

a tape loop driver providing movement of said tape loop;

a roller positioned upstream from said driver over which a first surface of said tape loop passes, said roller freely rotating with movement of said tape loop over said roller; and

a magnetic tape cleaning and tensioning pad including a number of layers of relatively porous polyester fibers, said fibers being substantially randomly arranged, relatively highly dispersed and substantially continuous filaments bonded at a number of junctions of said filaments, said pad positioned adjacent to and biased toward said roller, said pad engaging a second surface of said tape loop, whereby a first portion of said tape loop is pressed between said pad and said roller, said pad cleaning said second surface of said tape loop and said pad providing tension in a second portion of said tape loop between said roller and said driver substantially solely by friction between said second surface and said pad.



DESIGNS

MARCH 18, 1975

234,474

SPORTS BOOT

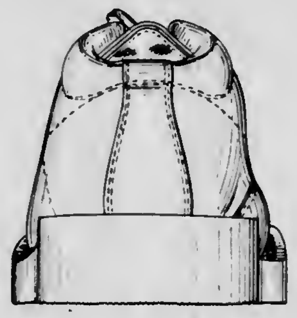
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,681

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—276



234,475

SALE STAND

Karl Heinz Markus, Hamburg, Germany, assignor to Markus & Walsh, Norderstedt, Germany

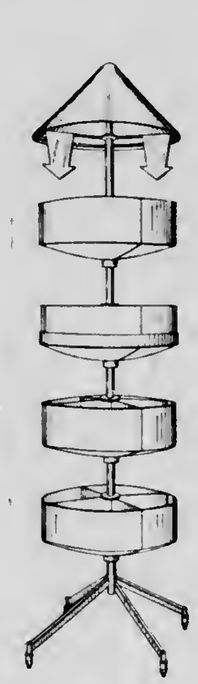
Filed Feb. 14, 1973, Ser. No. 332,355

Claims priority, application Germany Sept. 5, 1972

Term of patent 3½ years

Int. Cl. D6—*04*

U.S. Cl. D6—24



234,476

STOOL

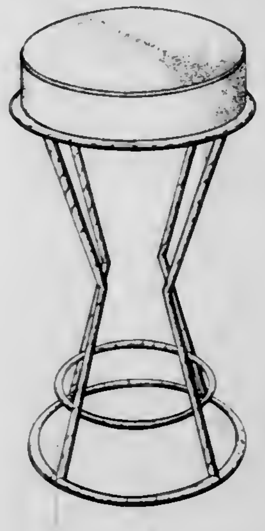
Irving M. Rosen, White Plains, N.Y., assignor to The Pace Collection Inc., New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,391

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—35



234,477

STOOL

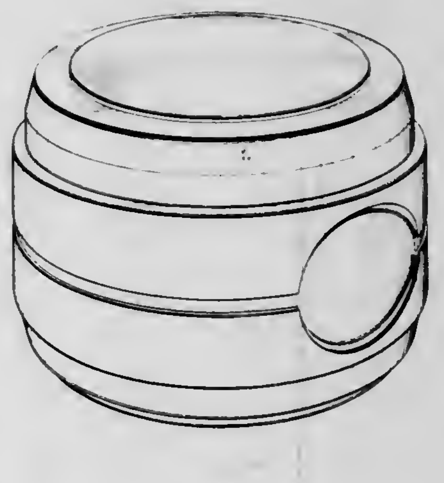
William F. Lockhardt, Jr., Durham, Alfred M. Norton, Jr., Nashua, Dana P. Powers, Amherst, and Richard J. Norton, Nashua, N.H., assignors to The Maine Manufacturing Company, Nashua, N.H.

Filed Apr. 23, 1973, Ser. No. 353,798

Term of patent 14 years

Int. Cl. D6—*01*

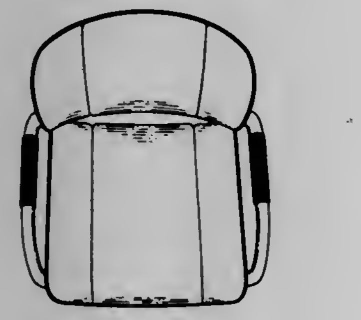
U.S. Cl. D6—36



234,478
SIDE ARM CHAIR

Earl H. Koepke, Rte. 1, Scenic Drive, Sturgis, Mich. 49091
Filed Dec. 13, 1972, Ser. No. 314,605
Term of patent 14 years
Int. Cl. D6—*01*

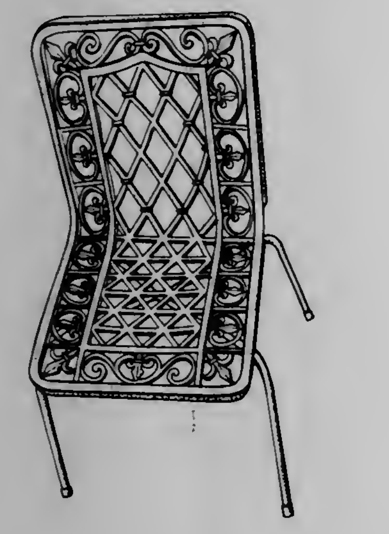
U.S. Cl. D6—56



234,479
CHAIR

Raymond Eugene Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L., Arbent, France
Filed Feb. 28, 1973, Ser. No. 336,780
Claims priority, application France Sept. 5, 1972
Term of patent 7 years
Int. Cl. D6—*01*

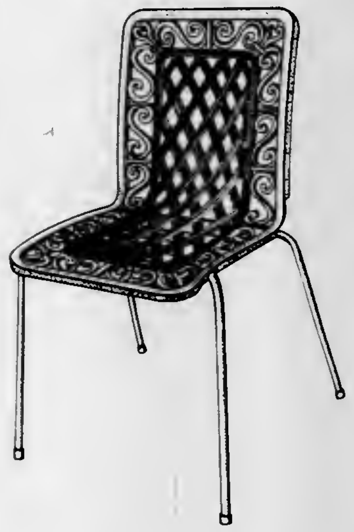
U.S. Cl. D6—74



234,480
CHAIR

Raymond Eugene Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L., Arbent, France
Filed Feb. 28, 1973, Ser. No. 336,782
Claims priority, application France Sept. 5, 1972
Term of patent 7 years
Int. Cl. D6—*01*

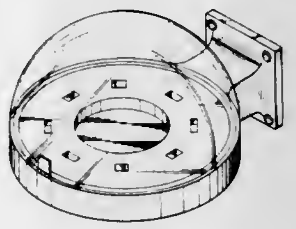
U.S. Cl. D6—74



234,481
TOOTHBRUSH HOLDER

Lorraine McLeod, Houston, Tex.
(2730 Lafferty, Apt. 235, Pasadena, Tex. 77503)
Filed Feb. 25, 1974, Ser. No. 445,082
Term of patent 14 years
Int. Cl. D4—*03*

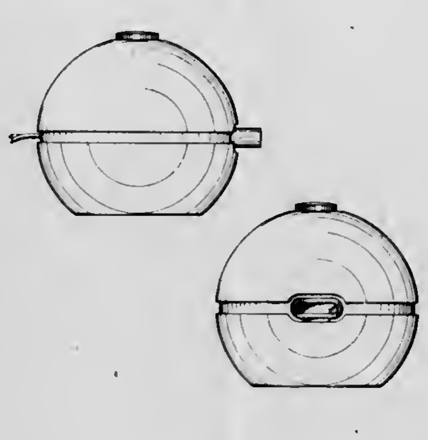
U.S. Cl. D6—94



234,482
DISPENSER FOR HEATING A CREAM, A FOAM, AND THE LIKE

Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 8, 1972, Ser. No. 251,554
Term of patent 14 years
Int. Cl. D6—*06*

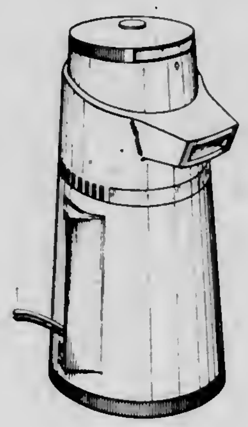
U.S. Cl. D6—95



234,483
DISPENSER FOR HEATING CREAMS, FOAMS, LOTIONS AND THE LIKE

George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 6, 1974, Ser. No. 467,329
Term of patent 14 years
Int. Cl. D9—*01*

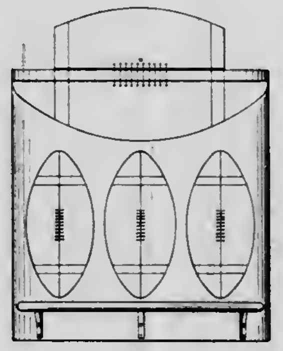
U.S. Cl. D6—95



234,484
BAR OR THE LIKE

Cecilio I. Lazo de la Vega, P.O. Box 554, Valdosta, Ga. 31601
Filed July 12, 1972, Ser. No. 271,029
Term of patent 14 years
Int. Cl. D6—*04*

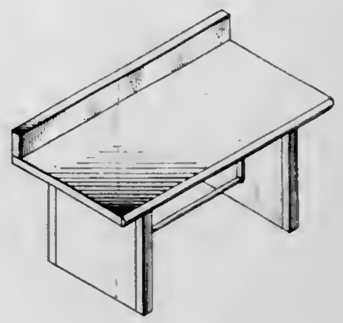
U.S. Cl. D6—144



234,485
WORK BENCH

Ronald E. Isles, 623 S. Pine St., Brea, Calif. 92621
Filed May 14, 1973, Ser. No. 360,140
Term of patent 14 years
Int. Cl. D6—*03*

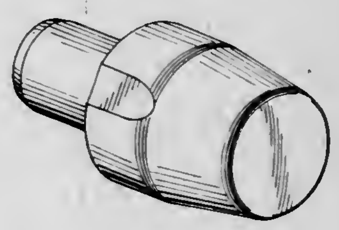
U.S. Cl. D6—156



234,486
LOCKING LUG NUT

Arthur Duane Hale, Sr., 74 Eastfield, Rolling Hills, Calif. 90274
Filed Sept. 20, 1973, Ser. No. 398,965
Term of patent 14 years
Int. Cl. D8—*08*

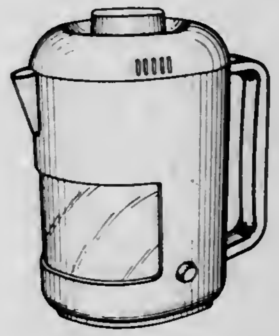
U.S. Cl. D8—273



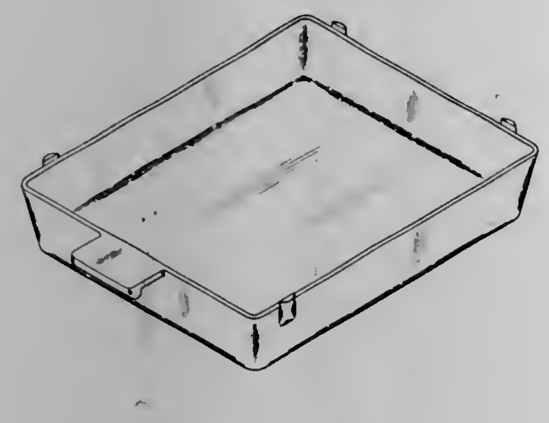
234,487
COFFEEMAKER

Franz Alban Stuetzer, Muhlheim am Main, and Klaus Mayer, Offenbach am Main, Germany, assignors to Rowenta-Werke, G.m.b.H.
Filed Aug. 13, 1973, Ser. No. 388,503
Claims priority, application Germany Feb. 16, 1973
Term of patent 14 years
Int. Cl. D7—*02*

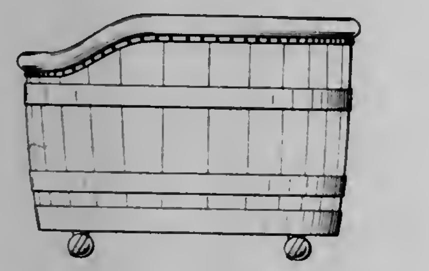
U.S. Cl. D7—62



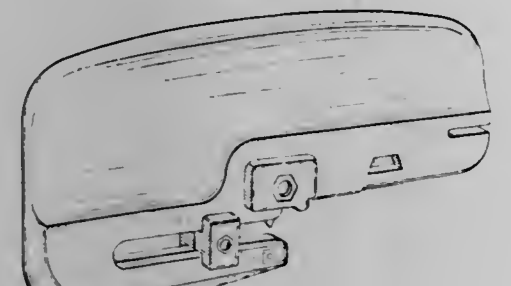
234,488
COOKING UTENSIL
Hubert J. Wiebe, 1926 Mentor 67213, and Max V. Gearheart, 1320 Summitlawn Court 67212, both of Wichita, Kans.
Filed Aug. 20, 1973, Ser. No. 390,070
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



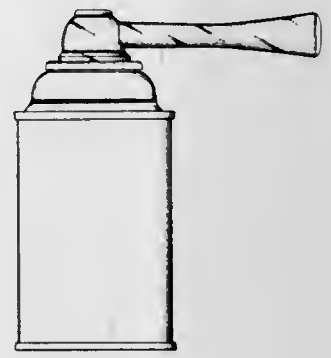
234,489
CONTAINER FOR FIREWOOD AND THE LIKE
James M. Shaw, Rte. 1, Box 213,
Catoosa, Okla. 74015
Filed July 20, 1973, Ser. No. 381,158
Term of patent 14 years
Int. Cl. D7—*08;* D6—*01;* D11—*02*
U.S. Cl. D7—212



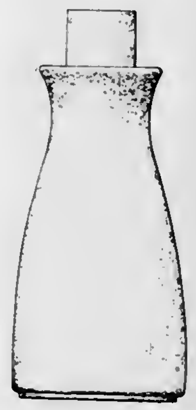
234,490
LAMINATE TRIMMER
Peter Barlow, Napier St., Sheffield S11 8HB, England
Filed July 6, 1973, Ser. No. 377,082
Claims priority, application Great Britain Mar. 21, 1973
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



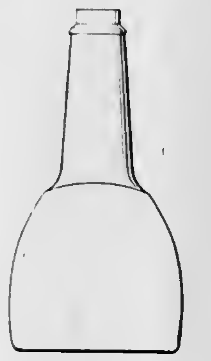
234,491
AEROSOL CONTAINER
Carol Schafer, 4022 Ingraham St.,
Los Angeles, Calif. 90017
Filed Dec. 22, 1969, Ser. No. 20,585
Term of patent 14 years
The term of this patent subsequent to May 18, 1986, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—9



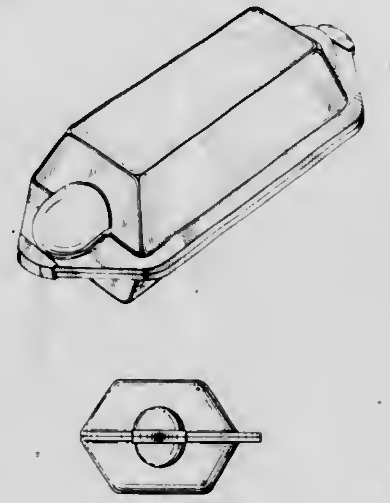
234,492
BOTTLE OR THE LIKE
Ronald A. Peterson, Scarsdale, N.Y., assignor to Richardson-Merrell Inc., New York, N.Y.
Filed May 31, 1973, Ser. No. 365,186
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116



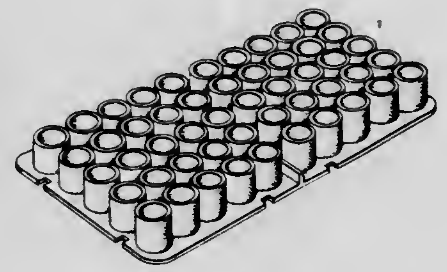
234,493
BOTTLE
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens Illinois, Inc., Toledo, Ohio
Filed Mar. 16, 1973, Ser. No. 342,164
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—137



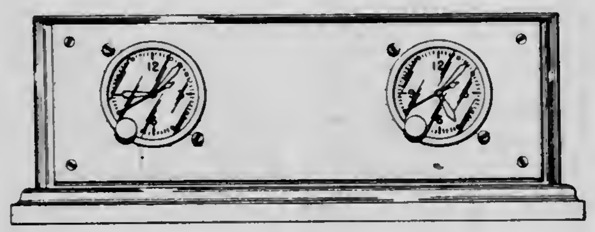
234,494
PACKAGING CONTAINER FOR FOOD OR THE LIKE
Ernst Theodore Theimer, Rumson, and Donald Joseph Roslonski, Bricktown, N.J., assignors to National Electro-Cook Corporation, Brunswick, N.J.
Filed Jan. 4, 1973, Ser. No. 320,876
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



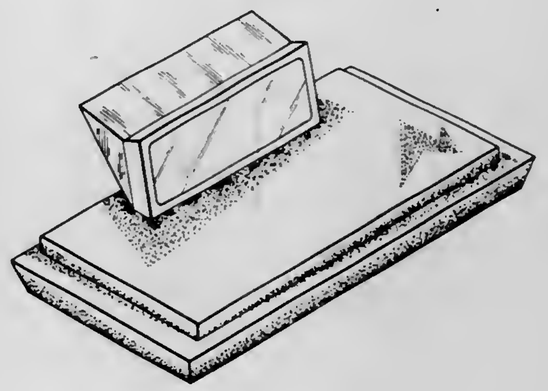
234,495
AMMUNITION TRAY
William J. Minneman, Clayton, Ohio, assignor to MTM Molded Products Company, Dayton, Ohio
Filed June 18, 1973, Ser. No. 371,132
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D9—187



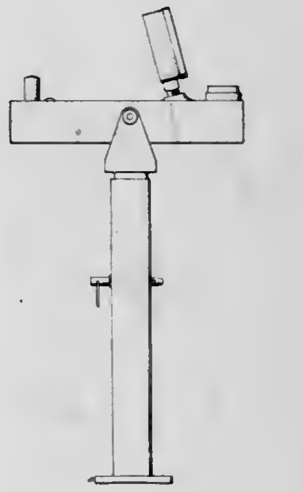
234,496
TIME COMPARISON CLOCK
Ephriam (John) Johnson, 1 Newbury St.,
Auburn, Maine 04210
Filed June 15, 1972, Ser. No. 263,383
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—14



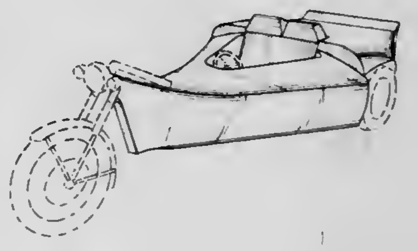
234,497
DIGITAL DESK CLOCK
James S. Carlyle, Santa Clara, Calif., assignor to American Micro-Systems, Incorporated, Santa Clara, Calif.
Filed Oct. 10, 1972, Ser. No. 295,925
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



234,498
HYDRAULIC WEIGHING SCALE
Richard C. Etchison, Rte. 6, Box 342,
Anderson, Ind. 46011
Filed Apr. 16, 1973, Ser. No. 351,346
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—87

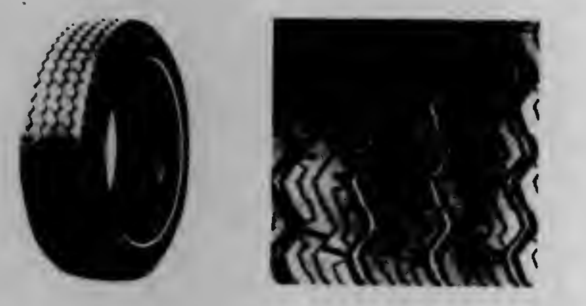


234,499
VEHICLE BODY
Henry Altepeter, 1014 S. 10th Ave.,
St. Charles, Ill. 60134
Filed Nov. 8, 1973, Ser. No. 414,176
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



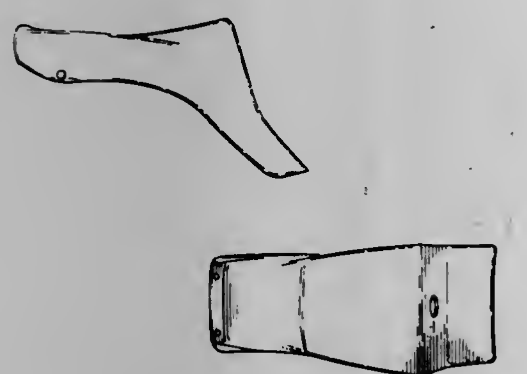
234,500
TIRE

Masafumi Kawakami and Shigehiro Hashegawa, Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 29, 1973, Ser. No. 327,547
Claims priority, application Japan Oct. 28, 1972
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



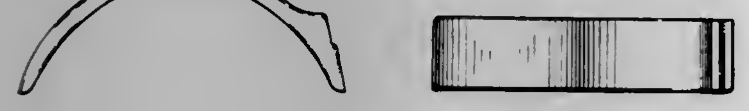
234,501
MOTORCYCLE FENDER

Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 13, 1973, Ser. No. 397,131
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—186



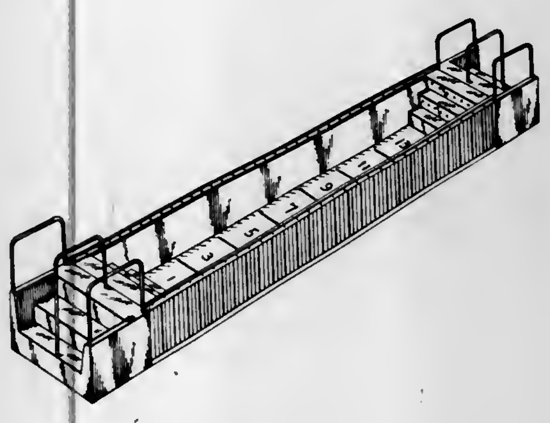
234,502
MOTORCYCLE FENDER

Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 13, 1973, Ser. No. 397,132
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—186



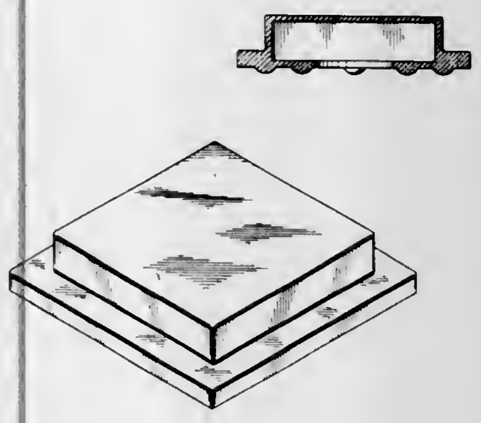
234,503
POOL FOR ELEMENTARY SWIMMING CLASSES

Claude W. Ahrens, West Highway 6, Grinnell, Iowa 50112
Filed Apr. 6, 1973, Ser. No. 348,510
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 G



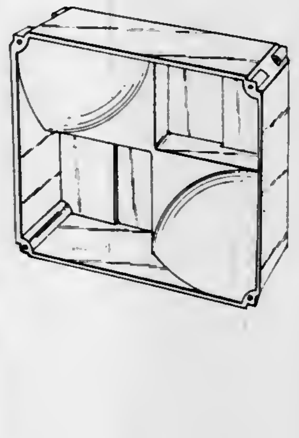
234,504
HOLLOW CERAMIC THREE DIMENSIONAL WALL TILE

William M. Groff, 1045 Halifax Road, Jacksonville, Fla. 32216
Filed Aug. 17, 1972, Ser. No. 281,470
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



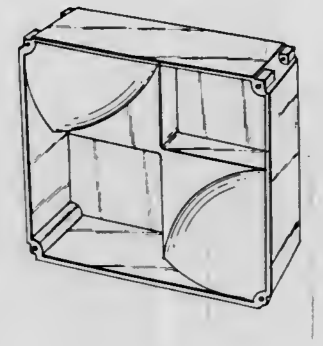
234,505
BUILDING BLOCK OR THE LIKE

Roland Spellier, Waterfohr 3, Lemgo, Germany
Filed Mar. 7, 1973, Ser. No. 338,787
Claims priority, application Germany Sept. 7, 1972
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



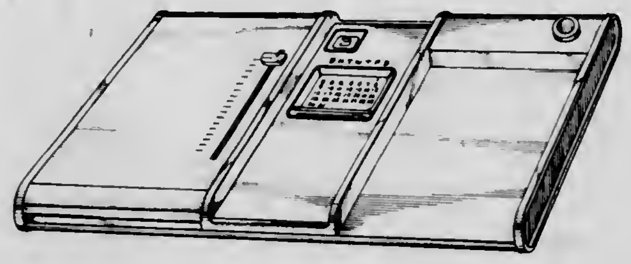
234,506
BUILDING BLOCK OR THE LIKE

Roland Spellier, Waterfohr 3, Lemgo, Germany
Filed Mar. 7, 1973, Ser. No. 338,788
Claims priority, application Germany Sept. 7, 1972
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



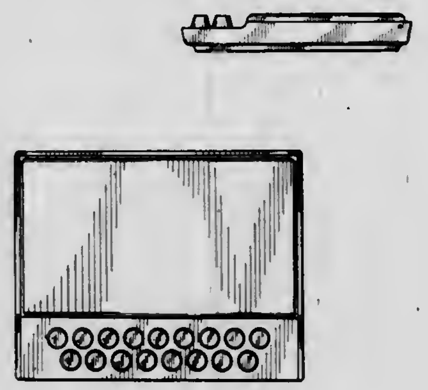
234,507
DESK SET

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,619
Claims priority, application Japan Mar. 6, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



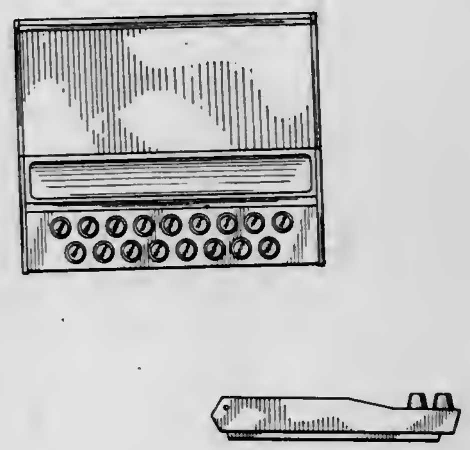
234,508
PUSH BUTTON TELEPHONE LIST FINDER

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,620
Claims priority, application Japan Mar. 8, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



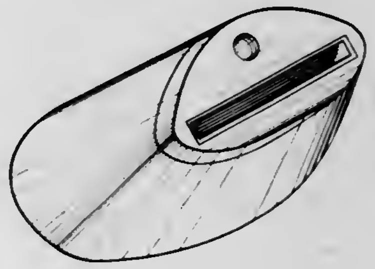
234,509
PUSH BUTTON TELEPHONE LIST FINDER

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,692
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



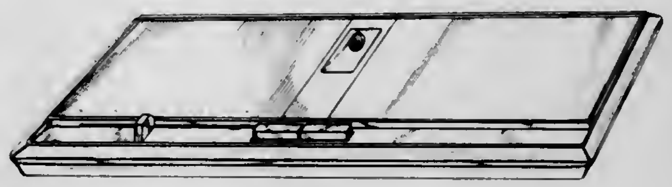
234,510
COMBINED MEMO HOLDER AND PEN STAND

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,694
Claims priority, application Japan Mar. 17, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



234,511
DESK SET

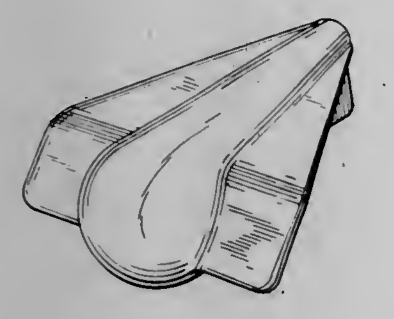
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,751
Claims priority, application Japan Mar. 1, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



234,512
TROLLING SINKER

William E. Evans, 524 N. 28th St.,
Milwaukee, Wis. 53208
Filed Mar. 26, 1974, Ser. No. 454,884
Term of patent 14 years
Int. Cl. D22—*05*

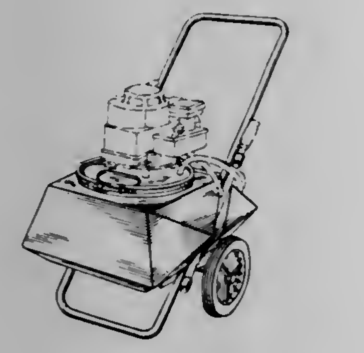
U.S. Cl. D22—30



234,513
UTILITY SPRAYER

William J. Kommers, Sioux City, Iowa, assignor to The Broyhill Co., Dakota City, Nebr.
Filed July 5, 1973, Ser. No. 376,411
Term of patent 14 years
Int. Cl. D23—*01*

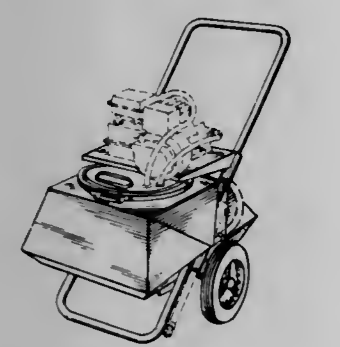
U.S. Cl. D23—18



234,514
UTILITY SPRAYER

William J. Kommers, Sioux City, Iowa, and Clarence E. Stewart, South Sioux City, Nebr., assignors to The Broyhill Co., Dakota City, Nebr.
Filed July 25, 1973, Ser. No. 382,443
Term of patent 14 years
Int. Cl. D23—*01*

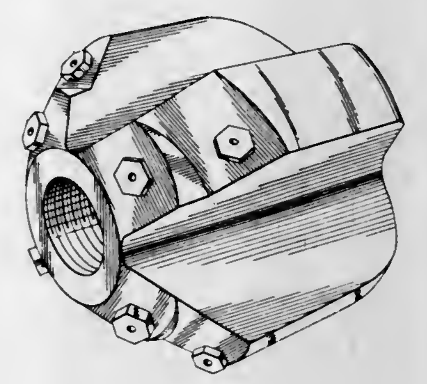
U.S. Cl. D23—18



234,515
NOZZLE

Philip C. Masters, Ashland, Ohio, assignor to McNeal Corporation, Akron, Ohio
Filed Mar. 1, 1973, Ser. No. 337,065
Term of patent 14 years
Int. Cl. D23—*01*

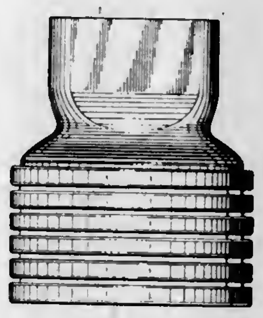
U.S. Cl. D23—34



234,516
DOWN SPOUT ADAPTER

Marty E. Sixt, Iowa City, Iowa, assignor to Advance Drainage Systems, Inc., Columbus, Ohio
Filed Mar. 29, 1973, Ser. No. 345,876
Term of patent 14 years
Int. Cl. D23—*01*

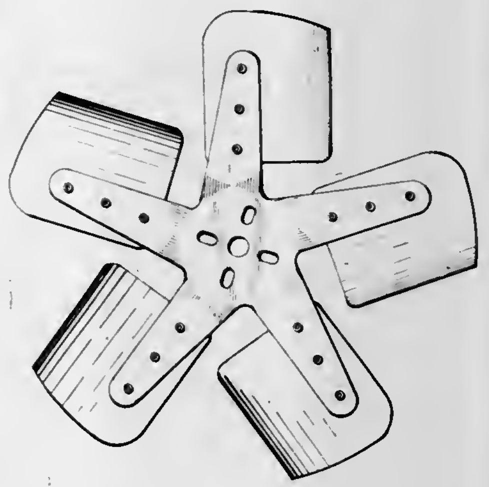
U.S. Cl. D23—45



234,517
FAN

Bern M. Bonifant, Tacoma, Wash., assignor to Flex-A-Lite Corporation, Tacoma, Wash.
Filed Sept. 7, 1973, Ser. No. 395,278
Term of patent 14 years
Int. Cl. D23—*04*

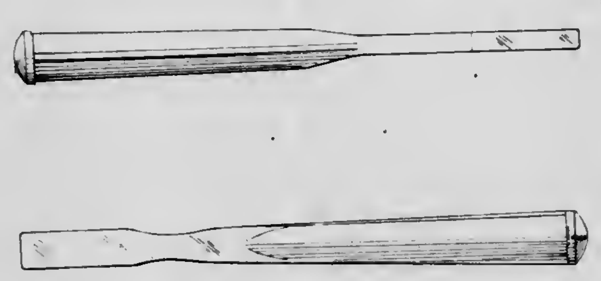
U.S. Cl. D23—165



234,518
COMBINATION TOOTH BRUSH HANDLE AND DENTAL FLOSS DISPENSER

Irvin V. Gerlich, West Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co., Des Moines, Iowa
Filed Nov. 16, 1972, Ser. No. 307,139
Term of patent 14 years
Int. Cl. D24—*04*

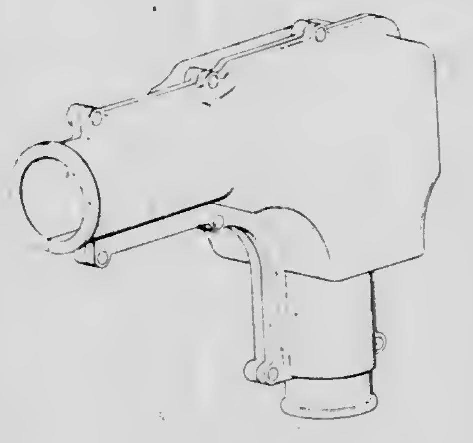
U.S. Cl. D24—1 D



234,519
SPLICE ENCLOSURE OR THE LIKE

Edward F. Rynk, Linden, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Nov. 29, 1973, Ser. No. 420,007
Term of patent 14 years
Int. Cl. D13—*03*

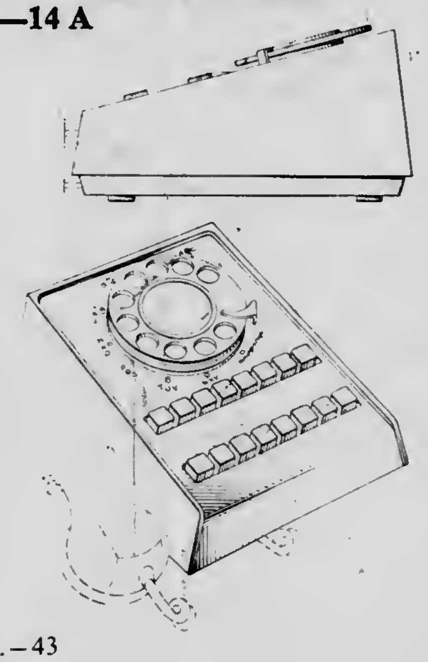
U.S. Cl. D26—1 C



234,520
BASE FOR A TELEPHONE SET

Paul Marchese, Greenwich, Conn., assignor to TIE/communications, Inc., Stamford, Conn.
Filed Apr. 4, 1974, Ser. No. 458,016
Term of patent 14 years
Int. Cl. D14—*03*

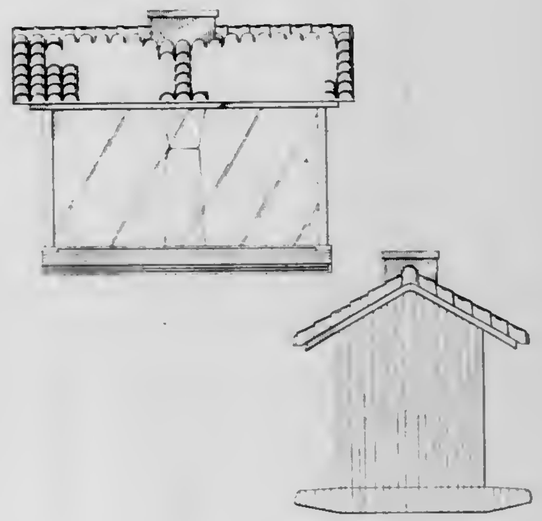
U.S. Cl. D26—14 A



234,521
BIRD FEEDER

James C. Fry, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed May 18, 1973, Ser. No. 361,774
Term of patent 14 years
Int. Cl. D30—*03*

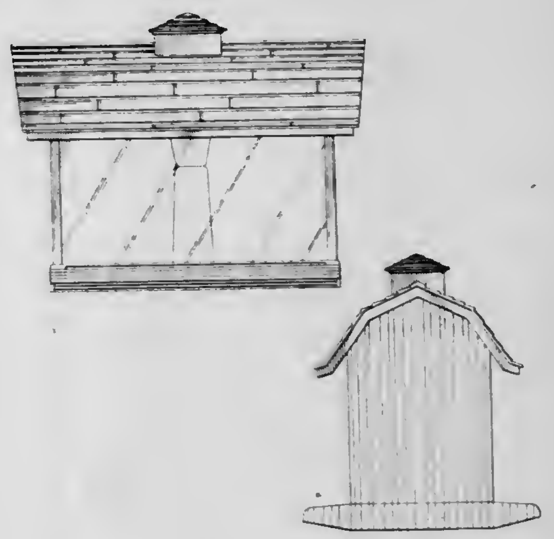
U.S. Cl. D30—13



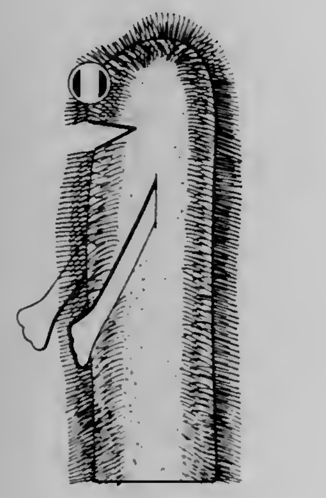
234,522
BIRD FEEDER

James C. Fry, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed May 18, 1973, Ser. No. 361,798
Term of patent 14 years
Int. Cl. D30—*03*

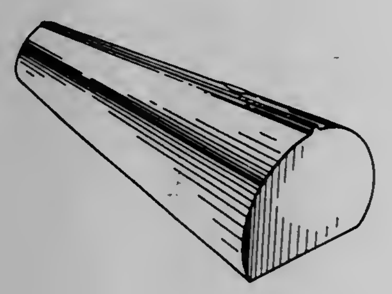
U.S. Cl. D30—13



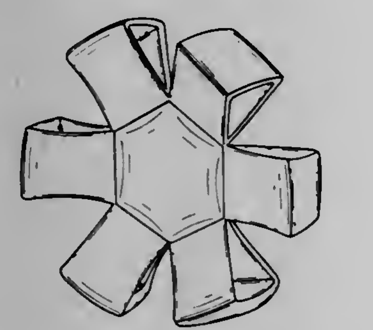
234,523
HAND PUPPET
Tomoji Ohnuki, 18–4 Suwada 2-chome,
Ichikawa, Japan
Filed May 12, 1972, Ser. No. 252,962
Claims priority, application Japan Jan. 28, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



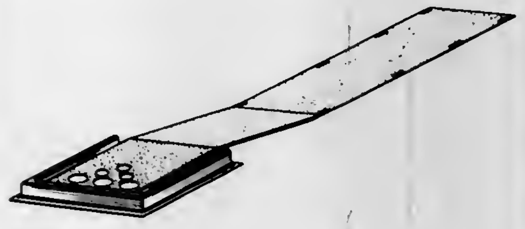
234,524
GOLF PUTTER HEAD
Eugene R. Leander, Rockford, Ill., assignor to
Pro Enterprises, Ltd., Rockford, Ill.
Filed Jan. 8, 1973, Ser. No. 321,955
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



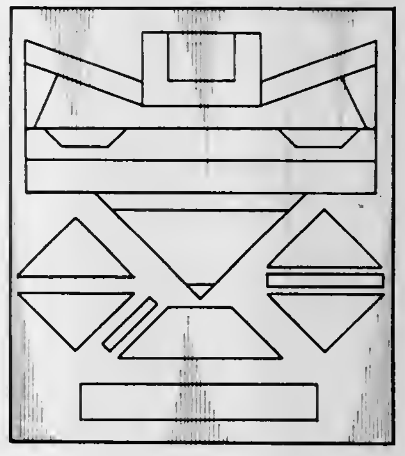
234,525
STUFFED TOY
William J. Maloney II, East Aurora, N.Y., assignor to
The Quaker Oats Company, Chicago, Ill.
Filed July 9, 1973, Ser. No. 377,523
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



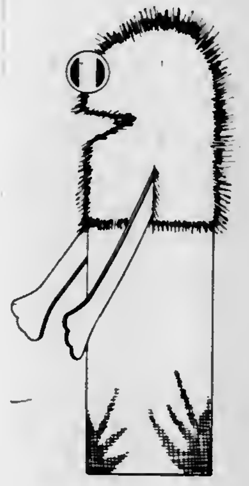
234,526
PORTABLE GOLF GAME TARGET
Walter Zawacki, 3927 Porpoise Drive SE.,
St. Petersburg, Fla. 33705
Filed May 24, 1972, Ser. No. 256,634
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 NN



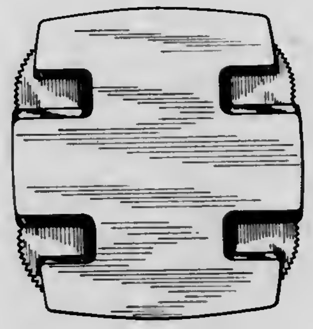
234,527
DART GAME BOARD
James W. Sowerbrower, Alexandria, Va.
(3713 Nile Road, Davidsonville, Md. 21035)
Filed Mar. 7, 1973, Ser. No. 338,937
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



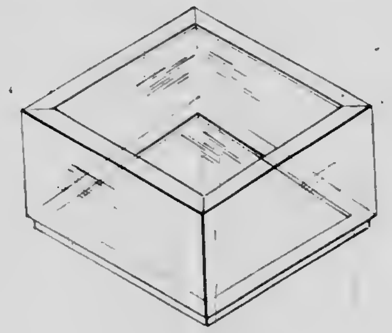
234,528
HAND PUPPET
Tomoji Ohnuki, 18–4 Suwada 2-chome,
Ichikawa, Japan
Filed July 17, 1972, Ser. No. 272,187
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



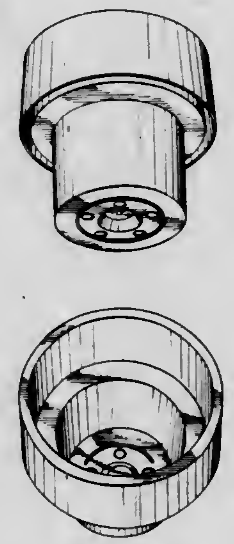
234,529
WRIST MOUNTED TENNIS SCORE RECORDER
William R. Trager, Mission Hills, Kans., assignor to
Ade Tennis, Inc., Kansas City, Mo.
Filed Feb. 20, 1973, Ser. No. 333,755
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—5 MM



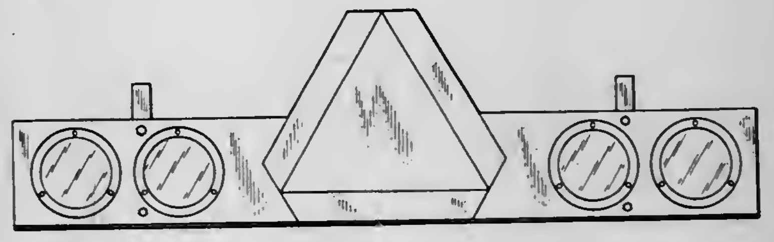
234,530
PLANTER
Simon V. Waitzman, Brooklyn, N.Y., assignor to
Colonial Mirror and Glass Corporation
Filed May 9, 1973, Ser. No. 358,716
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



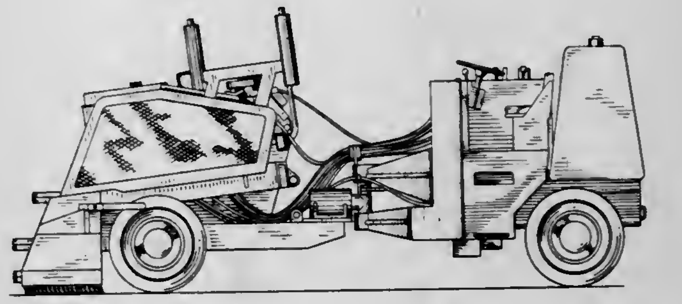
234,531
FLOWER POT
Rodney Dennis Bufton, Chapelfields, England, assignor to
The Lucas Electrical Company Limited, Birmingham,
England
Filed June 21, 1973, Ser. No. 372,101
Claims priority, application Great Britain Dec. 21, 1972
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



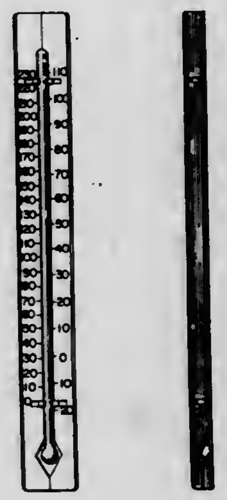
234,532
SLOW MOVING EQUIPMENT SAFETY LIGHT
Elmer P. Reicherts, R.R. 1, Clear Lake, Iowa 50428
Filed June 22, 1973, Ser. No. 372,790
Term of patent 14 years
Int. Cl. D26—*06;* D29—*02*
U.S. Cl. D48—32 R



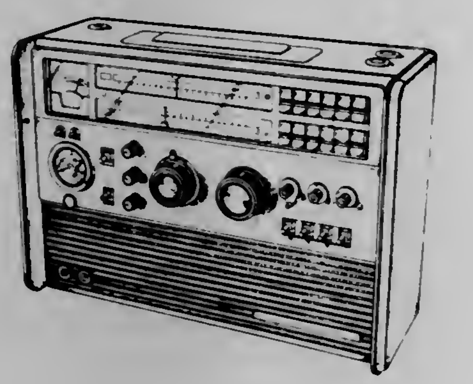
234,533
SURFACE CLEANING AND SCARIFYING MACHINE
Paul W. Kimzey, St. Louis Park, Keith N. Krier, Minneapolis, and John N. Polivka, Hopkins, Minn., assignors
to Tennant Company, Minneapolis, Minn.
Filed Aug. 2, 1973, Ser. No. 385,086
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D49—9.1



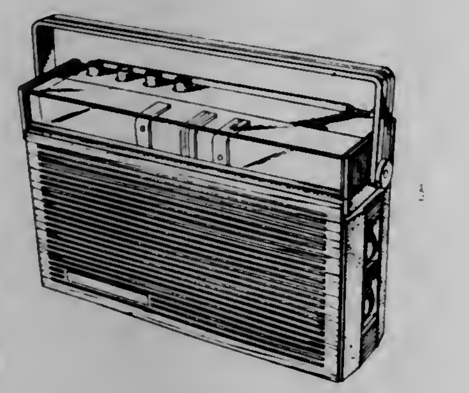
234,534
THERMOMETER
Gilbert Davidson, Newton, Mass., assignor to American
Science & Engineering, Inc., Cambridge, Mass.
Filed July 10, 1969, Ser. No. 18,167
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—58



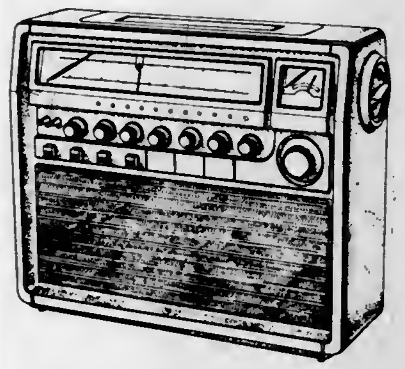
234,535
RADIO RECEIVER
Masaaki Miyamoto and Kazumasa Takenaka, Moriguchi-shi, Osaka, Ken Kawamura, Katano-shi, Osaka, and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 15, 1973, Ser. No. 388,668
Claims priority, application Japan Feb. 20, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



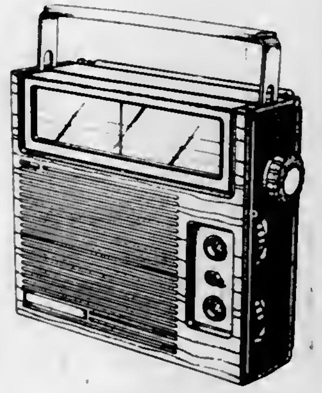
234,536
PORTABLE RADIO
Shuhei Taguchi, Moriguchi-shi, Osaka, and Benito Mishiro, Sakai-shi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 16, 1973, Ser. No. 389,073
Claims priority, application Japan Feb. 16, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



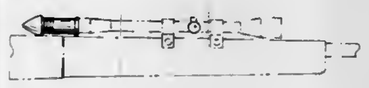
234,537
RADIO RECEIVER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 22, 1973, Ser. No. 390,635
Claims priority, application Japan Apr. 11, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

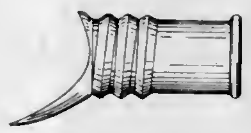


234,538
PORTABLE RADIO
Takeyoshi Kawano, Kyoto, and Hiroshi Hirasa, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 22, 1973, Ser. No. 390,636
Claims priority, application Japan Apr. 11, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

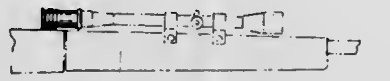


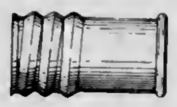
234,539
TELESCOPIC SIGHT EYE PROTECTOR
Frank Jack Marchetti, 16 W 101 Timber Trails Drive, Elmhurst, Ill. 60126
Filed Sept. 4, 1973, Ser. No. 393,946
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



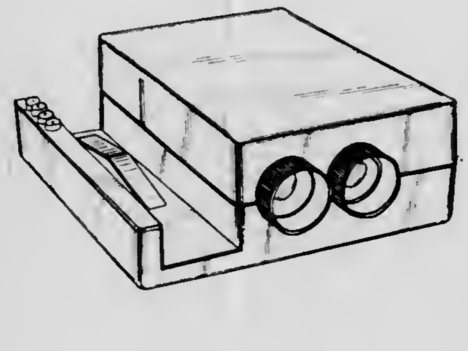


234,540
TELESCOPIC SIGHT EYE PROTECTOR
Frank Jack Marchetti, 16 W 101 Timber Trails Drive, Elmhurst, Ill. 60126
Filed Sept. 6, 1973, Ser. No. 394,777
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

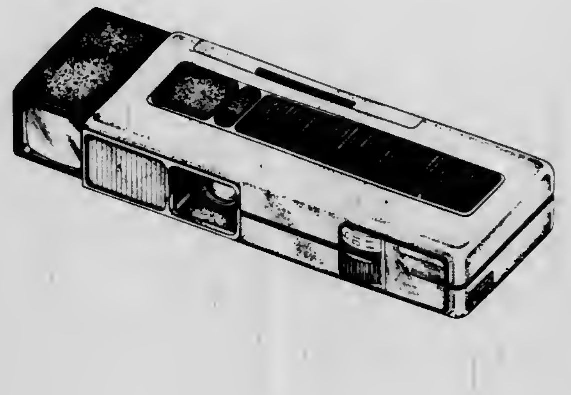




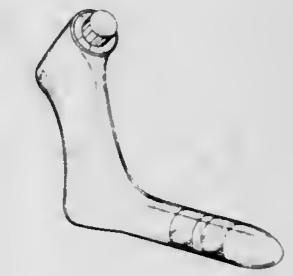
234,541
SLIDE PROJECTOR
Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed June 6, 1973, Ser. No. 367,470
Claims priority, application Germany Dec. 11, 1972
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 J

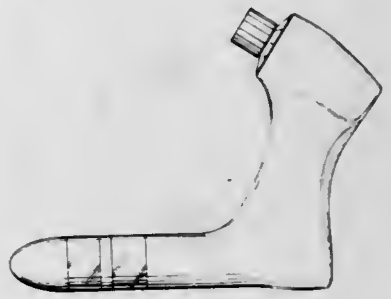


234,542
PHOTOGRAPHIC CAMERA
Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 4, 1973, Ser. No. 403,438
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B

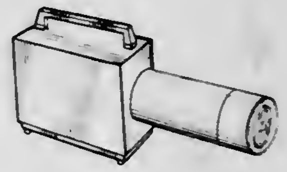


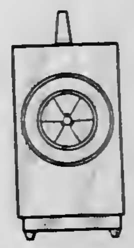
234,543
MUSCLE TONE STIMULATION DEVICE
Milton E. Foster, Palos Verdes Peninsula, Calif., assignor to Techni Med Inc., Torrance, Calif.
Filed Nov. 24, 1972, Ser. No. 309,252
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D83—1 T





234,544
X-RAY APPARATUS
Vitislav Yakovlevich Bobov, Bolsheokhtinsky prospekt 12, kv. 42; Ernest Mikhailovich Belopolsky, Naberezhnaya Lazareva 20, kv. 32; Genrikh Leivovich Troyansky, prospekt Energetikov, 54 korpus 1, kv. 160, and Avrum Lvovich Farberg, ulitsa B. Ozernaya 86, kv. 1, all of Leningrad, U.S.S.R.
Filed Mar. 26, 1973, Ser. No. 345,196
Term of patent 7 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 H

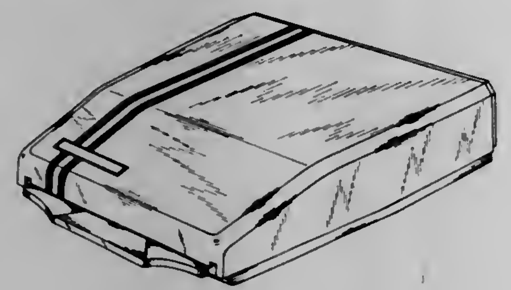




234,545
TYPEWRITER CARRYING CASE

Alejandro De Tomaso, % Ghia S.p.A., Via A. Da Montefeltro 5, and Thom Tjaarda, Str. Ponteverde 12, both of Turin, Italy

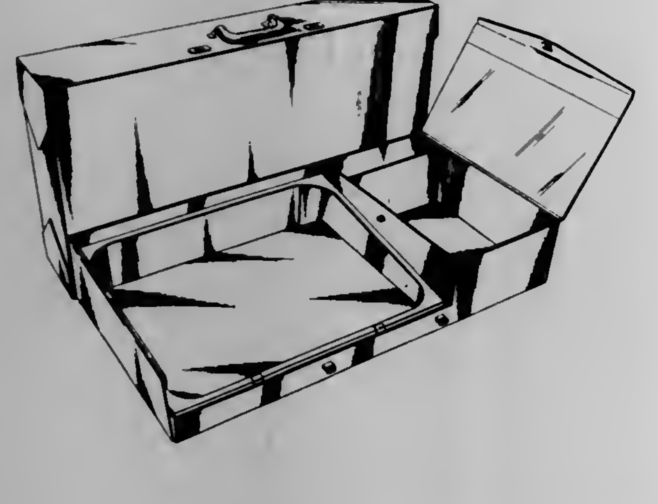
Filed Oct. 25, 1972, Ser. No. 300,549
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



234,546
CARRYING CASE

Jefferson Freeman, Pound Ridge, and Stephen L. Doppelt, Orangeburg, N.Y., assignors to Xerox Corporation, Stamford, Conn.

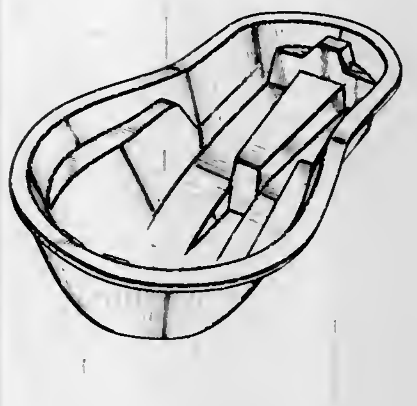
Filed Feb. 28, 1973, Ser. No. 336,649
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



234,547
HYDROTHERAPY BATH TUB

Michel Nicollet, 6 Oberlin St., 6700 Strasbourg, France

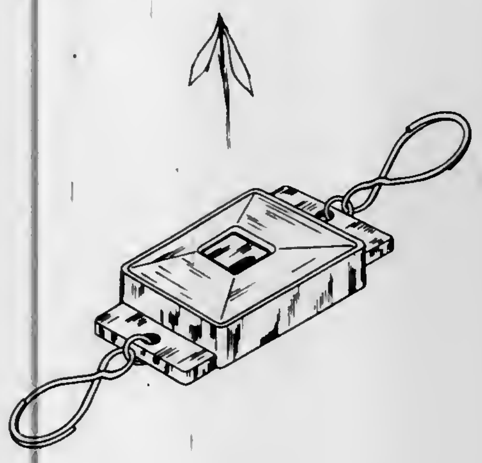
Filed Aug. 21, 1973, Ser. No. 389,627
Claims priority, application France Feb. 22, 1973
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D83—1 C



234,548
KEY HOLDER

Alwin J. Stahel, New Brighton, Minn., assignor to Teraco, Inc., Midland, Tex.

Filed May 21, 1973, Ser. No. 362,188
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—8



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TO WHOM
PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ehrenreich & Cie.: *See—*
  - Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
- A.H.M. Machines Limited: *See—*
  - Jones, William Leslie, 3,871,437.
- A. L. Hansen Mfg. Co.: *See—*
  - Miller, Kenneth J., 3,871,198.
  - Miller, Kenneth J., 3,871,267.
- A/SE Ramussen: *See—*
  - Thastrup, Ove, 3,871,400.
- A-1010, by said Erna Plasser, heir: *See—*
  - Plasser, Franz, deceased; and Theurer, Josef, 3,871,299.
- AB Husqvarna Borstfabrik: *See—*
  - Berglund, Jan, 3,871,131.
- AB Volvo Penta: *See—*
  - Perldal, Karl Lennart, 3,871,199.
- Abbott, Donald W., to Windtie Corporation. Device for holding down mobile homes. 3,871,142, Cl. 52-23.000.
- Abdou, Mohamed; and Buchta, Karl, to Boehringer Ingelheim G.m.b.H. Synthetic nutrient medium for microorganisms and method of use. 3,871,967, Cl. 195-100.000.
- Abe, Nobuyoshi: *See—*
  - Kubo, Shigenaga; and Abe, Nobuyoshi, 3,871,894.
- Abe, Takashi: *See—*
  - Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; Abe, Takashi; and Yonekura, Michimasa, 3,871,975.
- Abe, Toshiyuki: *See—*
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- Abel, Gunther. Apparatus for taking floating and solid materials out of channels. 3,872,006, Cl. 210-158.000.
- Abernathy, William D. Wall frame construction method. 3,871,061, Cl. 29-431.000.
- Abu Aktiebolag: *See—*
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- ACF Industries, Incorporated: *See—*
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,188.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,189.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,190.
- Ackley, Edward M., to R. W. Hartnett Company. Capsule orienting apparatus and method of spin printing. 3,871,295, Cl. 101-426.000.
- Acquaviva, Thomas: *See—*
  - Kukucka, William P.; and Acquaviva, Thomas, 3,871,643.
- Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for traversing a workpiece with a working head. 3,871,062, Cl. 29-470.000.
- Adams, James E.: *See—*
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- Adams, Melvin Edward; and Feryszka, Rubin, to RCA Corporation. R-F switching circuit. 3,872,325, Cl. 307-251.000.
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- Adams, William Kiger; and Anderson, James Alan, to Stauffer Chemical Company. Aqueous based release composition. 3,872,038, Cl. 260-13.000.
- Addressograph-Multigraph Corporation: *See—*
  - Mabrouk, Saied Abd-Elrahman, 3,871,761.
- Adler, Robert; and Knitter, Roger W., to Zenith Radio Corporation. Video disc pickup with capacitive tracking. 3,872,241, Cl. 178-6.60A.
- Adler, Stanford L., to Technicon Instruments Corporation. Method for preparing smears of biological liquids. 3,871,895, Cl. 117-3.000.
- Adomaitis, Domas, to Continental Can Company, Inc. Bottom structure for plastic containers. 3,871,541, Cl. 215-1.00C.
- Adwest Engineering Limited: *See—*
  - Millard, Barry J.; and Jenvey, Leslie R., 3,871,469.
- Aerojet General Corporation: *See—*
  - Emigh, Willard F.; and Beichel, Rudi, 3,872,313.
  - Schell, William J., 3,872,014.
- Afshar, Gossem Hekmat. Turbine clocks. 3,871,167, Cl. 58-14.000.
- Ageev, Leonid Matveevich: *See—*
  - Vydrin, Vladimir Nikolaevich; Ageev, Leonid Matveevich; and Gustov, Vladimir Alexandrovich, 3,871,221.
- Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
  - Louis, Claude Camille, 3,871,218.
- Agfa-Gevaert: *See—*
  - Smolderen, Albert Emiel, 3,871,595.
- Agfa-Gevaert, N.V.: *See—*
  - De Belder, Maurice Hector; Bollen, Romain Henri; and Van Esch, Robert Florent, 3,872,309.
- Ahlstone, Arthur G., to Vetco Offshore Industries, Inc. Casing hanger and packoff apparatus. 3,871,449, Cl. 166-183.000.
- Aikawa, Hiroshi: *See—*
  - Ito, Naganori; and Aikawa, Hiroshi, 3,871,680.
- Air Preheater Company, Inc., The: *See—*
  - Finnemore, Harlan E., 3,871,442.
- Air Products and Chemicals, Inc.: *See—*
  - Moody, Burton E., 3,871,839.
- Airco Inc.: *See—*
  - Hoerz, Richard D.; and Propp, Donald J., 3,872,470.
- Aizawa, Tatsuo: *See—*
  - Torii, Saburo; Miyazaki, Takaaki; and Aizawa, Tatsuo, 3,872,046.
- Ajinomoto Co., Inc.: *See—*
  - Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, 3,872,110.
  - Kubota, Koji; Yoshihara, Yasuhiko; and Okada, Hiroshi, 3,871,960.
  - Nakazawa, Hidetsugu; Enei, Hitoshi; Kubota, Koji; and Okumura, Shinji, 3,871,958.
  - Okutsu, Masaru; and Yamazaki, Akihiro, 3,872,083.
  - Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, 3,872,142.
  - Tobe, Sadanobu; Hirose, Yoshiteru; Nakamura, Yoshihiro; and Mitsugi, Koji, 3,871,963.
  - Yasuda, Naohiko; Ariyoshi, Yasuo; and Toi, Koji, 3,872,099.
- Akiyama, Kazuhiro, to Fuji Photo Optical Co., Ltd. Measuring system switching means for single lens reflex camera. 3,872,482, Cl. 354-46.000.
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  - Madsen, Rud Erik, 3,872,015.
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  - Andersen, John V., 3,871,899.
- Akzona Incorporated: *See—*
  - Hewett, Colin Leslie; and Savage, David Samuel, 3,872,091.
- Al-Dabbagh, Adam M.; and Dudzik, Leonard J., to Unarco Industries, Inc. Safety connector for knock-down racks. 3,871,525, Cl. 211-176.000.
- Albany International Corporation: *See—*
  - Romanski, Eric R.; Horn, J. Drew; and Dutt, William H., 3,871,946.
- Albert Klein KG: *See—*
  - Bastgen, Wendel, 3,871,285.
- Albright & Wilson Limited: *See—*
  - Ely, Christopher Scott, 3,872,059.
- Aldrich, William E., to Warnaco, Inc. Hosiery finishing process for treating fabrics containing spandex yarn. 3,871,909, Cl. 117-138.80N.
- Alexander, Albert H. D., to Oil Base, Inc. Water loss additive for sea water mud comprising an alkaline earth oxide or hydroxide, starch and polyvinyl alcohol. 3,872,018, Cl. 252-8.50A.
- Alexander, George F.: *See—*
  - Krolak, Ronald L.; Gianessi, Albert; and Alexander, George F., 3,871,462.
- Allen, Charles W.: *See—*
  - Wells, Ronald K.; and Allen, Charles W., 3,871,261.
- Allen, Connie A.: *See—*
  - Motter, James W.; and Allen, Connie A., 3,872,231.
- Allen, John W., to Stanray Corporation. Connection diaphragms between articulated cars. 3,871,276, Cl. 105-8.00R.
- Allen, John W. Box car end and liner. 3,871,279, Cl. 105-410.000.
- Allied Chemical Corporation: *See—*
  - Polk, Donald E.; and Morris, Robert C., 3,871,836.
  - Schevey, William R.; and Kremers, Frank J., 3,871,929.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Claesson, Harry, 3,871,202.
- Almhults Bruk AB: *See—*
  - Nyman, Sven, 3,871,416.
- Alois Zettler Elektrotechnische Fabrik GmbH: *See—*
  - Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, 3,872,440.
- Alpert, Selwyn: *See—*
  - Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, 3,871,298.
- Aluminum Company of America: *See—*
  - Butcher, Louis M., Jr., 3,871,980.
- AMC Corporation: *See—*
  - Gresham, John T., 3,872,058.
- American Air Filter Company, Inc.: *See—*
  - Smith, Tom R.; and Rivers, Richard D., 3,871,849.

- American Chain & Cable Company, Inc.: *See—*
  - Wentz, Edward A.; and Shinnick, David M., 3,871,511.
- American Cyanamid Company: *See—*
  - Feins, Irvin Ralph; and Bornfriend, Robert Alan, 3,872,030.
  - Kim, Oh-Kil, 3,872,063.
- American Enterprise of Charlotte, Inc.: *See—*
  - Yeakley, John, 3,872,423.
- American Hospital Supply Corporation: *See—*
  - Mueller, Floyd F.; Aulik, Clarence J.; and Zeman, Paul R., 3,871,637.
- American Optical Corporation: *See—*
  - Day, Christopher C., 3,871,363.
- Amery, John Gordon; and Jorgenson, Robert Warren, to RCA Corporation. Signal translating apparatus for composite signal subject to jitter. 3,872,497, Cl. 358-4.000.
- Ametek, Inc.: *See—*
  - Thompson, Bruce, 3,871,667.
- Ammco Tools, Inc.: *See—*
  - Mitchell, Wallace F., 3,871,066.
- AMP Incorporated: *See—*
  - Carter, Clyde Thomas, 3,871,736.
  - Dechelette, Helen, 3,871,738.
  - Folk, Kenneth Foster, 3,871,072.
  - Herrmann, Henry Otto, Jr., 3,871,735.
  - Swengel, Robert Charles, Sr.; Lemke, Timothy Allen; and Villiard, Frederick Phillip, 3,872,236.
- Anaconda Company, The: *See—*
  - Langenberg, Earl G., 3,871,932.
- Analog Devices, Incorporated: *See—*
  - Wold, Ivar, 3,872,466.
- Ancker, Fred H., to Union Carbide Corporation. Apparatus for producing substantially uniform calendered material. 3,871,808, Cl. 425-367.000.
- Andersen Corporation: *See—*
  - Peterson, Kenneth L., 3,871,428.
- Andersen, John V., to Aktieselskabet For Kantor Kemi. Duplicator stencil. 3,871,899, Cl. 117-35.500.
- Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, to Haldor Topsoe A/S; and Fluor Corporation. Process for catalytic steam cracking. 3,872,179, Cl. 260-683.00R.
- Andersen, Leonard Morgansen. Device for salvaging metal objects and salvaging method. 3,871,315, Cl. 114-51.000.
- Anderson, Edward William, to Smiths Industries Limited. Distance or speed measuring apparatus for land-vehicles. 3,871,235, Cl. 73-510.000.
- Anderson Electric Corporation: *See—*
  - Lyons, Ellis E.; and Turner, William F., 3,871,056.
- Anderson, Gordon H., to King-Seely Thermos Co. Discharge chute for vibratory finishing machine. 3,871,135, Cl. 51-163.000.
- Anderson, James Alan: *See—*
  - Adams, William Kiger; and Anderson, James Alan, 3,872,038.
- Anderson, Leslie T., to EMCO Limited. Water spout. 3,871,406, Cl. 137-801.000.
- Anderson, Norman Richard: *See—*
  - Dorrell, Robert Francis; and Anderson, Norman Richard, 3,871,737.
- Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, to Societe Anonyme dite: Aquitaine Total Organico. Process for automated regulation of sulphur production units. 3,871,831, Cl. 23-255.00R.
- Andrews, Ronald A., to United States of America, Navy. Optical waveguide display panel. 3,871,747, Cl. 350-160.00R.
- Anemaet, John M., to Dennison Manufacturing Co. Development electrode. 3,871,329, Cl. 118-637.000.
- Anesi, Mario; Macri, Salvatore; and Wynn, John P., to Ansan Tool and Manufacturing Co., Inc. Coin chute with improved calipering and latching mechanism. 3,871,504, Cl. 194-55.000.
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  - Schexnayder, Isby L., Jr.; and Angers, John W., 3,871,162.
- Anglada, Leonard R.: *See—*
  - Dye, John F.; Binard, William J.; and Anglada, Leonard R., 3,871,230.
- Anikanov, Nikolai Ivanovich: *See—*
  - Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,871,638.
- Animal Fair, Inc.: *See—*
  - Grooms, George V., 3,871,128.
- Ansan Tool and Manufacturing Co., Inc.: *See—*
  - Anesi, Mario; Macri, Salvatore; and Wynn, John P., 3,871,504.
- Anschutz, Erhard; and Gotz, Walter, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Cutting tool. 3,871,092, Cl. 29-95.00R.
- Antonioni, Rinaldo, to Hatala, Andrew A., a part interest. Tape dispenser. 3,871,940, Cl. 156-353.000.
- Antonius, Vinnemann: *See—*
  - Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, 3,871,415.
- Anzai, Takanori: *See—*
  - Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
- APM Corporation: *See—*
  - Cotter, Mitchell A., 3,872,264.
- Appleton, Arthur I. Light socket with auxiliary contact. 3,871,732, Cl. 339-91.00L.
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  - Watanabe, Koichiro; and Arai, Akihiro, 3,872,481.
- Arai, Akio, to Kabushiki Kaisha Ricoh. Method of forming colored copied image. 3,871,879, Cl. 96-1.200.
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  - Hikida, Ryotara; Hayashi, Yasutake; and Arakawa, Hideo, 3,871,715.
  - Kuniya, Keiichi; and Arakawa, Hideo, 3,871,834.
- Arbter, Conrad. Upright folding apparatus for clothing articles. 3,871,561, Cl. 223-37.000.
- Archifar Industrie Chimiche del Trentino S.p.A.: *See—*
  - Pasqualucci, Carmine Renato; Bonfanti, Giovanni; Giovanni, Sesto San; and Cignarella, Giorgio, 3,872,088.
- Arckifar Industrie Chimiche Del Trentino S.p.A.: *See—*
  - Pasqualucci, Carmine Renato; and Zucco, Giuseppe, 3,871,966.
- Arctic Enterprises, Inc.: *See—*
  - Dehnert, Douglas K., 3,871,460.
  - Lund, Jerome E., 3,871,675.
- Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, to Ajinomoto Co., Inc. Method of preparing hydrohalides of aspartic anhydride. 3,872,110, Cl. 260-346.80R.
- Ariyoshi, Yasuo: *See—*
  - Yasuda, Naohiko; Ariyoshi, Yasuo; and Toi, Koji, 3,872,099.
- Arizona Chemical Company: *See—*
  - Thorpe, Susan Dale; Davis, Curry Beach; and Wheelus, Charles Glenn, 3,872,073.
- Arlot, Pierre: *See—*
  - Grebier, Gerard; and Arlot, Pierre, 3,871,920.
- Armbrust, Herbert: *See—*
  - Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, 3,872,134.
- Armstrong Cork Company: *See—*
  - Murray, Jay P.; and Wasson, Kenneth L., 3,871,150.
- Arney, Thomas J. Oil level indicating device for a crankcase or transmission. 3,872,429, Cl. 340-59.000.
- Arts, Marcus: *See—*
  - Plough, Charles T.; Eastwood, H. Keith; and Arts, Marcus, 3,872,418.
- Arx, Georg Von: *See—*
  - Spillman, Kurt; and Arx, Georg Von, 3,871,287.
- Asahi Glass Company, Ltd.: *See—*
  - Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, 3,871,746.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Konno, Tsugio, 3,871,950.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Watanabe, Koichiro; and Arai, Akihiro, 3,872,481.
- Asai, Shin-ichiro: *See—*
  - Horiie, Shigeki; Kurematsu, Susumu; and Asai, Shin-ichiro, 3,872,068.
- Asano, Yoshio, to Fuji Photo Film Co., Ltd. Auto-process camera having selectively insertable self developing film sheets. 3,872,485, Cl. 354-83.000.
- Asgar, Kamal; and Reichman, Steven H. Dental Amalgam. 3,871,876, Cl. 75-169.000.
- Aspro, Incorporated: *See—*
  - Jeffers, Ellis E., 3,871,249.
- Astley, Edward T., to Crosfield Electronics Limited. Spot positioning control for display tubes. 3,872,348, Cl. 315-10.000.
- Astra Plastique: *See—*
  - Bereziat, Andre, 3,871,545.
- Astratronics, Inc.: *See—*
  - Castonguay, Leon H., 3,871,473.
- Attema, Gijsbertus, to Researchcentrum Ogemat N.V. System for the installation of electric wiring in a building. 3,871,729, Cl. 339-21.00R.
- Attenburrow, David J., to Reed International Limited. Invalid transfer device. 3,871,036, Cl. 5-81.00R.
- Atwood, Gilbert R.; Blake, Robert J.; Butwell, Kenneth F.; and Dunnery, David A., to Union Carbide Corporation. Separation of potassium ions from sodium ions using alkanolamines. 3,872,212, Cl. 423-184.000.
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  - Mueller, Floyd F.; Aulik, Clarence J.; and Zeman, Paul R., 3,871,637.
- Automatic Helium Balloon Systems, Inc.: *See—*
  - Elson, Edward E.; and Goldsmith, Aaron, 3,871,422.
- Automation Development Corporation: *See—*
  - White, Frank F., 3,871,288.
- Automation Industries, Inc.: *See—*
  - Koerber, Marvin A., 3,872,041.
- Automobiles Peugeot: *See—*
  - Piniot, Daniel, 3,871,681.
- Autotrol Corporation: *See—*
  - Torpey, Wilbur N., 3,871,999.
- Avant Incorporated: *See—*
  - Mayer, Simon E., 3,871,119.
- Avellar, Karl B.; and Ross, James A., to Westinghouse Electric Corporation. Method and apparatus for addressing FFT processor. 3,871,577, Cl. 235-156.000.
- Avon Products, Inc.: *See—*
  - Kinney, James F.; and Gadzala, Antoni Edward, 3,871,818.

- Axelrod, Herbert R. Pet toy. 3,871,334, Cl. 119-29.500.
- Azarowics, Edward N., to Bioteknika International Inc. Microbial degradation of petroleum. 3,871,956, Cl. 195-2.000.
- Azbell, James W.: *See—*
  - Daniels, Leander Bruce; and Azbell, James W., 3,872,467.
- B. F. Goodrich Co., The: *See—*
  - Workman, Robert E., 3,871,049.
- Baba, Hajime: *See—*
  - Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; Abe, Takashi; and Yonekura, Michimasa, 3,871,975.
- Babcock & Wilcox Company, The: *See—*
  - Boll, Richard H., 3,872,315.
  - Craven, Donald R., 3,871,246.
- Bachmann, Horst; and Kossler, Hans Joachim, to Langenstein & Schemann Aktiengesellschaft. Screw forging press. 3,871,225, Cl. 72-452.000.
- Bachmann, Rudolf: *See—*
  - Baum, Guenter; Bachmann, Rudolf; and Sliwka, Wolfgang, 3,872,023.
- Badische Anilin- & Fabrik Aktiengesellschaft: *See—*
  - Baum, Guenter; Bachmann, Rudolf; and Sliwka, Wolfgang, 3,872,023.
- Badische Anilin & Soda-Fabrik Aktiengesellschaft: *See—*
  - Bosche, Horst; and Soenksen, Uwe, 3,872,170.
  - Dimroth, Peter; Redeker, Joerg; and Lotsch, Wolfgang, 3,872,077.
  - Fischer, Adolf; Behrendt, Siegfried; and Menck, Bernd-Heinrich, 3,871,864.
  - Hamprecht, Gerhard; Koenig, Karl-Heinz; and Bolz, Gerhard, 3,872,167.
  - Merz, Gerhard; Gehrig, Heinz; and Chorbacher, Wilhelm, 3,872,217.
  - Nienburg, Hans Juergen; and Kummer, Rudolf, 3,871,970.
  - Schenk, Walter; Dahlinger, Roland; and Stockburger, Dieter, 3,872,165.
  - Spoor, Herbert; and Demmler, Kurt, 3,871,908.
  - Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, 3,872,134.
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  - Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
- Bahler, Peter, to Ciba-Geigy AG. Carton. 3,871,568, Cl. 229-14.00R.
- Bailey Meter Company: *See—*
  - Flais, Louis R.; and Gentle, Ralph G., 3,871,981.
- Bakay, Bohdan. Method and apparatus for transporting discretely samples to be analyzed in a gel. 3,871,826, Cl. 23-230.00R.
- Baker, Jeffrey A., to FMC Corporation. Skimming apparatus for clarification tanks. 3,872,005, Cl. 210-141.000.
- Baker Oil Tools, Inc.: *See—*
  - Crowe, Talmadge L., 3,871,447.
- Bakerdrill, Inc.: *See—*
  - Curington, Alfred R.; and Roscoe, Theodore J., Jr., 3,871,486.
- Balkhanova, Galina Fedorovna: *See—*
  - Kachalova, Revekka Vulfovna; Nemtsov, Mark Semenovich; and Balkhanova, Galina Fedorovna, 3,872,216.
- Ballek, William. Knockdown ladder with removable rungs. 3,871,481, Cl. 182-151.000.
- Balsam, Philip J., to Beattie Development Company. Optical mold forming means. 3,871,610, Cl. 249-102.000.
- Banach, Frank G., to Zenith Radio Corporation. Frequency response modifier for fixed-tuned IF amplifiers. 3,872,387, Cl. 325-427.000.
- Bando, Yasuo: *See—*
  - Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, 3,872,148.
- Bardy, Andrew. Walking-rollerskate device. 3,871,672, Cl. 280-11.210.
- Barish, Thomas. Two-power-path bevel gearing for high loads and high speeds. 3,871,248, Cl. 74-665.00P.
- Barker, Allan: *See—*
  - Wood, Frank Chiltern; and Barker, Allan, 3,871,968.
- Barker, Gerald Vivian: *See—*
  - Stewart, Rex George; Barker, Gerald Vivian; and Hoare, John Leonard, 3,871,820.
- Barkis, Edward; and Sirmans, Ronnie Lee, to Standard Oil Company. Extruded polypropylene print bands for polypropylene leno fabric. 3,871,910, Cl. 117-138.80E.
- Barlow, Gordon A.: *See—*
  - Breslow, Jeffrey D.; Barlow, Gordon A.; Burck, Joseph M.; and Morrison, Howard J., 3,871,659.
- Barnes, Hubert L., to Crysdyn Corporation. Process for producing metal sulphide crystals. 3,872,222, Cl. 423-561.000.
- Barnett, Allan E.: *See—*
  - Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., 3,871,997.
- Barrett, James H., Jr. Battery plate forming apparatus. 3,871,919, Cl. 136-82.000.
- Barry, Martin J.; and Nobles, Elon J., to Edward J. Cabic, a part interest. Apparatus for applying heating and cooling media to mold plate. 3,871,811, Cl. 425-407.000.
- Barsby, Alan, to Marshall-Fowler Limited. Vibrating roller. 3,871,788, Cl. 404-117.000.
- Bartenstein, Peter, to Siemens Aktiengesellschaft. Pilot regulated carrier frequency line amplifier. 3,872,394, Cl. 330-52.000.
- Barthelemy, Pierre: *See—*
  - Penasse, Lucien; and Barthelemy, Pierre, 3,872,085.
- Bartl, Herbert: *See—*
  - Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, 3,871,964.
- Bartlett, Janeth: *See—*
  - Haney, Thomas Albert; Bruno, Gerald Anthony; and Bartlett, Janeth, 3,872,226.
- Bartlett, Sidney Charles Leddra. Swimming pool covers. 3,871,033, Cl. 4-172.130.
- Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; Hewitt, Graham; and Taylor, Michael Victor, to Glaxo Laboratories Limited. Certain disulfide derivatives of 2-azetidinones. 3,872,086, Cl. 260-239.00A.
- BASF Aktiengesellschaft: *See—*
  - Fabian, Wolfgang, 3,872,103.
  - Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, 3,872,070.
- Bassett, Alvin Lee. Auxiliary compartment for a lunch box. 3,871,523, Cl. 206-542.000.
- Bastgen, Wendel, to Albert Klein KG. Incinerator device and a method of processing residuals in waste water, liquefied sewage and sludge. 3,871,285, Cl. 110-8.00R.
- Bastide, Paul; and Bonneton, Robert, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Oscillator control circuit. 3,872,396, Cl. 331-1.00A.
- Batram, Stephen Douglas: *See—*
  - Mulcahy, Joseph Aloysius; Jones, Harry Joseph; and Batram, Stephen Douglas, 3,871,533.
- Battelle Development Corporation: *See—*
  - Maringer, Robert E.; and Mobley, Carroll E., 3,871,439.
- Batzer, Hans: *See—*
  - Habermeier, Juergen; Baumann, Dieter; Porret, Daniel; and Batzer, Hans, 3,872,097.
- Bauer, Gail Ann. Hair piece and method of forming and attaching. 3,871,389, Cl. 132-53.000.
- Bauer, Kurt: *See—*
  - Hoff, Dieter; and Bauer, Kurt, 3,872,227.
- Bauer, Manfred: *See—*
  - Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, 3,872,440.
- Baum, Guenter; Bachmann, Rudolf; and Sliwka, Wolfgang, to Badische Anilin- & Fabrik Aktiengesellschaft. Microcapsules having walls made of copolymer of methylmethacrylate and acetylacetates of mono(meth) acrylates of aliphatic diols. 3,872,023, Cl. 252-316.000.
- Baum, Helmut: *See—*
  - Kruger, Gunter; Baum, Helmut; and Widmaier, Manfred, 3,872,356.
- Baumann, Dieter: *See—*
  - Habermeier, Juergen; Baumann, Dieter; Porret, Daniel; and Batzer, Hans, 3,872,097.
- Baut, Jacques; and Journee, Paul. Auto windscreen-wiper blades. 3,871,050, Cl. 15-250.320.
- Baxter, Vernon A., Jr., to Magnetic Controls Company. Telephone monitor circuit. 3,872,266, Cl. 179-175.20C.
- Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, to Etat Francais. Percussion fuses with a tilting rotor for gyratory projectiles. 3,871,297, Cl. 102-79.000.
- Bayer Aktiengesellschaft: *See—*
  - Breer, Karl; and Nadolski, Klaus, 3,871,556.
  - Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,872,095.
  - Hoff, Dieter; and Bauer, Kurt, 3,872,227.
  - Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, 3,871,964.
  - Kútzbach, Carl, 3,871,962.
  - Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,872,185.
  - Meiser, Werner; Metzger, Carl; Buchel, Karl Heinz; and Plempel, Manfred, 3,872,117.
  - Winter, Gerhard, 3,871,874.
  - Wohlfarth, Arnon, 3,871,626.
- Beam, Robert James: *See—*
  - Vaughn, Walter Lee; and Beam, Robert James, 3,872,039.
- Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., to International Business Machines Corporation. Data recorder and verifier. 3,871,576, Cl. 234-35.000.
- Beatrice Foods Company: *See—*
  - Dian, Walter; and Wrobel, Charles V., 3,871,710.
- Beattie Development Company: *See—*
  - Balsam, Philip J., 3,871,610.
  - Beattie, John O., 3,871,803.
- Beattie, John O., to Beattie Development Company. Apparatus for producing an optical molding plaque. 3,871,803, Cl. 425-175.000.
- Beatty, Theodore R.; and Vourlis, Harry, to Union Carbide Corporation. Flat alkaline cell construction and method for assembling the same. 3,871,921, Cl. 136-111.000.
- Beaudout, Henri. Directional device. 3,871,108, Cl. 33-349.000.
- Becattini, Angiolo; and Sassi, Pietro Angelo. Arrangement in a drafting machine for precise measurement of angles. 3,871,101, Cl. 33-79.00R.
- Bechtloff, Gert, to Friedrick Kocks GmbH. Load take-up apparatus for lifting devices. 3,871,697, Cl. 294-81.0SF.
- Beckman Instruments, Inc.: *See—*
  - Houser, Edwin A.; and Schwindt, Bernell W., 3,871,444.

Bedague, Pierre; Marchand, Pierre; Parc, Guy; and Roux, Fernand, to Institut Francais du Petrole, des Carburants et Carburants. Method for lubricating 2-stroke engines and rotary engines. 3,871,837, Cl. 44-58.000.

Behrend, Volkmar, to Orenstein & Koppel AG. Fluid motor drive for lifting device such as a winch with accumulated pressure starting after brake release. 3,871,714, Cl. 303-10.000.

Behrendt, Siegfried: *See—*
Fischer, Adolf; Behrendt, Siegfried; and Menck, Bernd-Heinrich, 3,871,864.

Behrenz, Wolfgang: *See—*
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,872,185.

Beichel, Rudi: *See—*
Emigh, Willard F.; and Beichel, Rudi, 3,872,313.

Belcher, Donald K., to Signa-Signer, Inc. Apparatus for reducing the wow and flutter of a recording mechanism. 3,872,504, Cl. 360-27.000.

Belcher, Ronald; Townshend, Alan; and Bogdanski, Stanley. Molecular emission cavity analysis. 3,871,768, Cl. 356-87.000.

Bell, George Richard, to Johns-Manville Corporation. Filter aid materials dispersible in organic liquids. 3,872,016, Cl. 210-500.000.

Bell Telephone Laboratories, Incorporated: *See—*
Bleickardt, Werner Heinrich; and Robrock, Richard Barker, II, 3,872,257.
Dalley, James Edwin, 3,872,391.
Gloge, Detlef Christoph; and Smith, Peter William, 3,871,935.
Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, 3,871,742.
Seidel, Harold, 3,872,412.
Slana, Matthew Francis, 3,871,424.

Bellina, Russell F., to du Pont de Nemours, E. I., and Company. Amino-oxime acetamide-0-carbamates as antihypertensives. 3,872,169, Cl. 260-558.00A.

Bellis, Harold Edward, to du Pont de Nemours, E. I., and Company. Production of dichloroethylene using melt chlorination process. 3,872,174, Cl. 260-654.00R.

Belot, Michel: *See—*
Charbonney, Adrien Maurice, deceased; Perucchi, Norbert; Belot, Michel; and Giger, Urs, 3,871,171.

Belsdorf, Manfred: *See—*
Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.

Bender, Louis. Pill dispenser with pill actuated time indicator. 3,871,551, Cl. 221-8.000.

Bendix Corporation, The: *See—*
James, Robert L., 3,872,388.
Kautz, Robert F.; Bourgeault, Leo B.; and Eckenfelder, Robert C., 3,872,372.
Peterson, Steven H.; Carp, Ralph W.; and Weissler, Harold E., 3,872,317.

Benjamin, Le Roy. Picture and lamp holding bracket assembly. 3,871,609, Cl. 248-496.000.

Bennett, Robert A. Unitary molded swabs. 3,871,375, Cl. 128-269.000.

Benton, William J.; and Quigley, Joseph R. Polyurethane liquid crystal dispersion system and devices. 3,872,050, Cl. 260-37.00N.

Bentsen, Louis J., to Honeywell Inc. Air flow amplifier. 3,871,396, Cl. 137-85.000.

Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, to Alois Zettler Elektrotechnische Fabrik GmbH. Hospital communication system. 3,872,440, Cl. 340-171.00R.

Bereziat, Andre, to Astra Plastique. Closure devices for containers. 3,871,545, Cl. 215-249.000.

Berg, Joseph E., to Precision Thin Film Corporation. Validated drop test apparatus. 3,871,208, Cl. 73-12.000.

Berg, Leif; and Nes, Ragnar Jonas, to Ingeniorene Lund, Mohr & Giaever-Enger. Apparatus for counteracting a tilting of a ships's hull during loading and unloading. 3,871,320, Cl. 114-121.000.

Berg, Thorval L.: *See—*
Burke, John A.; and Berg, Thorval L., 3,871,665.

Bergey, John M. Solid state watch display switch. 3,871,170, Cl. 58-50.00R.

Berglund, Jan, to AB Husqvarna Borstfabrik. Self-watering plant pots or receptacles. 3,871,131, Cl. 47-38.100.

Bergman, Samuel, to Lawrence Peska Associates, Inc. Reflective animal collar and leash. 3,871,336, Cl. 119-106.000.

Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, to Boehringer Mannheim G.m.b.H. Substituted purineribofuranoside-3,5-cyclophosphate compounds and process for their preparation. 3,872,082, Cl. 260-211.50R.

Bergwerksverband GmbH: *See—*
Queiser, Horst; Schwarz, Horst; and Schroter, Hans-Jurgen, 3,871,841.

Beriger, Ernst, to Ciba-Geigy Corporation. O-alkyl-s-alkyl-s-[1,2-bis-(alkoxyalkoxy, benzloxy,alkylamino carbonyl ethyl]. 3,872,184, Cl. 260-942.000.

Berkowitz, Sidney; and Mesiah, Raymond, to FMC Corporation. Preparation of sodium dichloroisocyanurate dihydrate composition. 3,872,118, Cl. 260-248.00C.

Berlich, Bodo, to Danfoss A/S. Rotary and orbiting piston machine with internal shaft. 3,871,798, Cl. 418-39.000.

Bernhoft, Gerald W.; and Miller, David A., to Koehring Company. Control for mobile construction machine. 3,871,537, Cl. 214-140.000.

Berry, James Simmons, Jr., to Reynolds Metals Company. Transmission of pot line control signals. 3,871,984, Cl. 204-228.000.

Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Process for preparation of terpene flavorants and novel intermediates therefor. 3,872,172, Cl. 260-601.00R.

Berthoux, Jean; and Schwachhofer, Ghislain, to Progil. Process of manufacturing para-tert-butyl-phenol. 3,872,173, Cl. 260-624.00E.

Bertino, Lorenzo: *See—*
Giolitti, Nicolo; Daly, Dante; and Bertino, Lorenzo, 3,872,468.

Bertram, Joachim; and Meuser, Wilfried, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Magnetic field measuring apparatus with frequency independent sensitivity. 3,872,382, Cl. 324-43.00R.

Berz, Max; and Berz, Wolfgang, to Berz, Wolfgang. Dust filter arrangement. 3,871,846, Cl. 55-303.000.

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Berz, Max; and Berz, Wolfgang, 3,871,846.

Besenfelder, Edward R.; and Friedman, Stanley I., to Honeywell Information Systems Inc. Apparatus for detecting data bits and error bits in phase encoded data. 3,872,431, Cl. 340-146.1AX.

Bessiere, Pierre Etienne, to Labavia S.G.E. Transmissions of vehicles equipped with a retarder. 3,871,466, Cl. 180-70.00P.

Bessiere, Pierre Etienne, to Labavia - S.G.E. Vehicle brake installations. 3,871,497, Cl. 192-3.0TR.

Bessinger, Walter L.: *See—*
Koenig, Elmer A.; Conklin, Robert M.; Bessinger, Walter L.; and Russell, Jack A., 3,871,156.

Bethlehem Steel Corporation: *See—*
Singleton, Alan H., 3,872,025.

Bibring, Herve E.; Seibel, Georges P.; and Rabinovitch, Maurice, to Office National d'Etudes et de Recherches Aerospatiales. Refractory composite alloys containing rod-like and/or platelet-like lamellae. 3,871,835, Cl. 29-191.200.

Biddle, Milburn Emmett. Rain wheel. 3,871,582, Cl. 239-233.000.

Biewinga, Siewert Gerrit Jan, to Hoogovens Ijmuiden B.V. Burning device for burning ore pellets and similar bodies. 3,871,631, Cl. 266-21.000.

Bigelow-Sanford, Inc.: *See—*
Norris, Alan H., 3,871,948.

Bigras, Jean: *See—*
Ratte, Jacques; and Bigras, Jean, 3,872,205.

Bildner, Heinz. Radial ski having a profiled running surface. 3,871,671, Cl. 280-11.13E.

Binard, William J.: *See—*
Dye, John F.; Binard, William J.; and Anglada, Leonard R., 3,871,230.

Binder, Dieter: *See—*
Hromatka, Otto; and Binder, Dieter, 3,872,089.

Bindrum, Irmgard: *See—*
Brandt, Wilhelm; and Bindrum, Irmgard, 3,871,903.

Bio-Medical Sciences, Inc.: *See—*
Pickett, Charles G.; and Khattab, Ghazi, 3,871,232.

Bioteknika International Inc.: *See—*
Azarowics, Edward N., 3,871,956.

Bird, Nicholas W. F.; and Kim, Chang-Whan, to General Signal Corporation. Pulsing bell having rectifier circuit. 3,872,471, Cl. 340-384.00R.

Biro, Carl: *See—*
Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, 3,871,298.

Birum, Herbert L., Jr. Partition device. 3,871,153, Cl. 52-624.000.

Bishop, Wayne C., to FMC Corporation. Skimming blade. 3,872,017, Cl. 210-525.000.

Bismarck, Otto Herbert, to International Telephone and Telegraph Corporation. Synchronization circuit for a viterbi decoder. 3,872,432, Cl. 340-146.1AQ.

Bivins, Jim. Combination ear plug and ear plug retainer. 3,871,372, Cl. 128-152.000.

Black and Decker Manufacturing Company, The: *See—*
Grieb, Dale Christian, 3,871,069.

Blackwelder, Maurice W., to Owens-Illinois, Inc. Dressing ring for tubular expanded polystyrene cooling mandrel. 3,871,802, Cl. 425-72.000.

Blaimschein, Gottfried: *See—*
Kralowetz, Bruno; and Blaimschein, Gottfried, 3,871,223.

Blake, Robert J.: *See—*
Atwood, Gilbert R.; Blake, Robert J.; Butwell, Kenneth F.; and Dunnery, David A., 3,872,212.

Blanchard, Eugene J.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,871,817.

Bland, Maria A., administratrix: *See—*
Bland, Reginald B., deceased, 3,871,179.

Bland, Reginald B., deceased (by Bland, Maria A., administratrix). Stirling cycle engine with catalytic regenerator. 3,871,179, Cl. 60-526.000.

Blank, Wallace J.; and Watson, Thomas H., to Oshkosh Truck Company. Heavy duty truck suspension. 3,871,677, Cl. 280-104.50A.

Blaser, Alfred, to W. R. Grace & Co. Apparatus and method for wrapping confectionery articles. 3,871,155, Cl. 53-28.000.

Blaupunkt-Werke GmbH: *See—*
Koch, Dieter; and Graf, Peter-Josef, 3,872,420.

Bleickardt, Werner Heinrich; and Robrock, Richard Barker, II, to Bell Telephone Laboratories, Incorporated. Multiplex and demultiplex apparatus for digital-type signals. 3,872,257, Cl. 179-15.0BS.

Bliss, Robert A, to Hoerner Waldorf Corporation. Game carton. 3,871,654, Cl. 273-136.00C.

Block Engineering, Inc.: *See—*
Hirschfeld, Tomas, 3,872,312.

Blumberg, Baruch S.: *See—*
Coller, John A.; Millman, Irving; and Blumberg, Baruch S., 3,872,225.

Blumberg, Willy: *See—*
Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.

Boboli, Fdyta; Malasnicki, Wladyslaw Longin; Kowalski, Mieczyslaw; and Pazgan, Andrzej, to Instytut Przemyslu Organiczego. Process for the preparation of a mixture of n-octyltin chlorides which is entirely free from tri-n-octyltin chloride. 3,872,143, Cl. 260-429.700.

Bobrick Corporation, The: *See—*
Brinton, William, 3,871,593.

Boden, Philip; Crook, Peter John; Hall, Michael Edgar; and Riley, Stephen Philip, to Fibreglass Limited. A foamed reaction product of a resale with a sulfonated novolac. 3,872,033, Cl. 260-2.50F.

Boehm, Walter: *See—*
Daubach, Ewald; Windel, Hermann; Boehm, Walter; Weiser, Dieter; and Herrmann, Manfred, 3,872,056.

Boehringer Ingelheim G.m.b.H.: *See—*
Abdou, Mohamed; and Buchta, Karl, 3,871,967.
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; and Hoefke, Wolfgang, 3,872,121.

Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, 3,872,147.
Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,872,127.
Rieper, Helmut; Kruger, Gerd; Keck, Johannes; Noll, Klaus-Reinhold; and Kahling, Joachin, 3,872,090.

Boehringer, John Randall. Peak flow meter-expiratory flow rate. 3,871,364, Cl. 128-2.080.

Boehringer Mannheim G.m.b.H.: *See—*
Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.

Boenisch, Dietmar. Apparatus for mixing materials. 3,871,623, Cl. 259-2.000.

Bogardus, E. Hal; Peressini, Peter P.; and Reith, Timothy M., to International Business Machines Corporation. Method of manufacturing a semiconductor device. 3,871,067, Cl. 29-571.000.

Bogdanski, Stanley: *See—*
Belcher, Ronald; Townshend, Alan; and Bogdanski, Stanley, 3,871,768.

Boggs, Roger L., to Caterpillar Tractor Co. Track roller with replaceable coiled tread. 3,871,719, Cl. 305-28.000.

Bohm, Harald; and Heffler, Jochen, to Licentia Patent-Verwaltungs G.m.b.H. Gas diffusion electrode for electrochemical cells. 3,871,922, Cl. 136-120.0FC.

Boice, Michael F.; and Krag, Niels, to Electronics Memories & Magnetics Corporation. Skewed core matrix. 3,872,454, Cl. 340-174.00M.

Boisvert, Roger L., to General Electric Company. Adjustable lampholder with articulated swivel mount. 3,872,428, Cl. 240-52.100.

Bolduc, Lee R.; and Dickhudt, Eugene A., to Population Research Incorporated. Dispensing instrument and method. 3,871,374, Cl. 128-235.000.

Boles, John A.; Chu, Charles M.; Criswell, Peter B.; and Rolnitzky, Aron, to Sperry Rand Corporation. System for conversion between coded byte and floating point format. 3,872,442, Cl. 340-172.500.

Boll, Richard H., to Babcock & Wilcox Company, The. Radiation sensitive fluid analyzer. 3,872,315, Cl. 250-575.000.

Bollen, Romain Henri: *See—*
De Belder, Maurice Hector; Bollen, Romain Henri; and Van Esch, Robert Florent, 3,872,309.

Bolliger, Edwin, to J. Bobst & Fils S.A. Platen press structure. 3,871,292, Cl. 100-215.000.

Bolton, Robert Benjamin. Tracked walking gear. 3,871,277, Cl. 105-31.000.

Bolz, Gerhard: *See—*
Hamprecht, Gerhard; Koenig, Karl-Heinz; and Bolz, Gerhard, 3,872,167.

Bomer, Bruno: *See—*
Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, 3,871,964.

Bonapace, Mario J. Knife sharpener and edge straightener. 3,871,141, Cl. 51-358.000.

Bond, Charles R. Pneumatic flip-flop relay. 3,872,270, Cl. 200-83.00P.

Bond, Herbert M., to Buckbee-Mears Company. Plastic lenses and method of making same. 3,872,042, Cl. 260-23.0AR.

Bonfanti, Giovanni: *See—*
Pasqualucci, Carmine Renato; Bonfanti, Giovanni; Giovanni, Sesto San; and Cignarella, Giorgio, 3,872,088.

Bonham, Arthur R. Musical instrument employing time division multiplexing techniques to control a second musical instrument. 3,871,247, Cl. 84-1.160.

Bonneton, Robert: *See—*
Bastide, Paul; and Bonneton, Robert, 3,872,396.

Boom, Abraham A., to Celanese Corporation. Method for heat treatment of substrates. 3,872,278, Cl. 219-121.00P.

Booth, Charles Lawrence, to du Pont de Nemours, E. I., and Company. Process for packaging a semiconductor chip. 3,871,068, Cl. 29-590.000.

Booth, Charles Rockwell: *See—*
Holm-Hansen, Osmund; and Booth, Charles Rockwell, 3,871,767.

Bordenca, Carl: *See—*
Dorschner, Kenneth P.; and Bordenca, Carl, 3,871,863.

Borek, Victor F.: *See—*
Krieg, John W.; Gaudio, Alfred; and Borek, Victor F., 3,872,281.

Borner, Gerhard: *See—*
Stieringer, Albert; and Borner, Gerhard, 3,871,756.

Bornfriend, Robert Alan: *See—*
Feins, Irvin Ralph; and Bornfriend, Robert Alan, 3,872,030.

Bosche, Horst; and Soenksen, Uwe, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Continuous manufacture of an aqueous choline chloride solution. 3,872,170, Cl. 260-567.60M.

Bosse, Robert W., to Groov-Pin Corporation. Locking self-tapping threaded stud insert assembly and method. 3,871,429, Cl. 151-14.00R.

Boudal, Pierre B., to Ets. Lardenois S.A. Roller for setting and treating the hair. 3,871,391, Cl. 132-85.000.

Boudreau, Paul Emile; Brodd, Wayne Donald; and Donnan, Robert Anderson. Method and apparatus of error detection for variable length words using a polynomial code. 3,872,430, Cl. 340-146.1AL.

Boultinghouse, Ace: *See—*
Procop, Alex J.; and Boultinghouse, Ace, 3,871,754.

Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for the preparation of phenols by oxidation of aromatic aldehydes. 3,872,156, Cl. 260-479.00R.

Bourgeault, Leo B.: *See—*
Kautz, Robert F.; Bourgeault, Leo B.; and Eckenfelder, Robert C., 3,872,372.

Boustany, Kamel, to Monsanto Company. Diazacyclodiones. 3,872,061, Cl. 260-79.50B.

Boutin, Pierre, to Ceraver. Total hip prosthetic apparatus made of nonporous alumina. 3,871,031, Cl. 3-1.000.

Bouvet, Claude; and Terrien, Michel Eugene, to Republic of France, DPAGA-Bureau des Brevets & Inventions, represented by the Minister of State for National Defense, Delegation Ministerielle Pour l'Armement. Launcher for extendible and retractable bridge structure. 3,871,045, Cl. 14-1.000.

Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, to Western Electric Company, Incorporated. Loading of compliant tape. 3,871,936, Cl. 156-238.000.

Boyle, Joseph R. Energy absorbing device. 3,871,636, Cl. 267-140.000.

Bradshaw, William W., Jr.: *See—*
Johnston, Ambrose G.; Howard, Guy W.; and Bradshaw, William W., Jr., 3,871,335.

Braggins, Donald William: *See—*
Soames, Michael Richard; Knowles, William Ralph; and Braggins, Donald William, 3,872,243.

Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company B.V. Clutch bearings. 3,871,724, Cl. 308-233.000.

Brandt, Wilhelm; and Bindrum, Irmgard, to Hoechst Aktiengesellschaft. Metallized shaped body of macromolecular material. 3,871,903, Cl. 117-71.00R.

Branlard, Paul; and Modiano, Jacques, to Distugil. Preparation of polychloroprene for use in adhesives. 3,872,043, Cl. 260-23.70H.

Brattle Instrument Corporation: *See—*
Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,871,360.

Braun Aktiengesellschaft: *See—*
Roth, Johann, 3,871,760.

Braun, Ben. Writing pens. 3,871,776, Cl. 401-256.000.

Breau, George. Animal litter disposal unit. 3,871,331, Cl. 119-1.000.

Brech, Heinz, to Orenstein & Koppel AG. Excavating wheel construction. 3,871,118, Cl. 37-189.000.

Breer, Karl; and Nadolski, Klaus, to Bayer Aktiengesellschaft. Machine for filling moulds or cavities with a free-flowing mixture of reaction components. 3,871,556, Cl. 222-132.000.

Brekken, Roger A., to Minnesota Mining and Manufacturing Company. Biaxially oriented polyethylene terephthalate film having a surface suitable for writing thereon. 3,871,947, Cl. 161-116.000.

Breslow, Jeffrey D.; Barlow, Gordon A.; Burck, Joseph M.; and Morrison, Howard J., to Marvin Glass & Associates. Board game apparatus. 3,871,659, Cl. 273-134.0AD.

Breyer, Frederick: *See—*
Harper, John D.; Breyer, Frederick; and Wagner, Richard C., 3,871,185.
Harper, John D.; Breyer, Frederick; and Wagner, Richard, 3,871,190.

Breysse, Jacques; Marin, Gilbert Joseph; and Lefort, Marcel, to Rhone-Polenc S.A. Process for obtaining trimethylvinylsilane by liquid-liquid extraction. 3,872,145, Cl. 260-448.20E.

Bridgeford, Douglas J., to Tee-Pak, Inc. Process for plasticizing and partially drying tubular film casings for edible products. 3,872,196, Cl. 264-37.000.

Bridger, Andrew; Dakss, Mark L.; Zemon, Stanley; and Stone, Samuel M., to GTE Laboratories Incorporated. Optical fiber connector. 3,871,744, Cl. 350-96.00C.

Bridwell, Harold C.: *See—*
Wilder, Arthur G.; and Bridwell, Harold C., 3,871,840.

Brink, Edwin H., deceased (by Brink, Robert R., Administrator), to FMC Corporation. Seed tablet. 3,871,132, Cl. 47-57.600.

Brink, Robert R., Administrator: *See—*
Brink, Edwin H., deceased, 3,871,132.

Brinton, William, to Bobrick Corporation, The. Toilet tissue dispensing mandrel. 3,871,593, Cl. 242-55.200.
Bristol-Myers Company: *See—*
Juby, Peter Frederick; and Hudyma, Thomas William, 3,872,122.
Naito, Takayuki; and Nakagawa, Susumu, 3,872,079.
British Hovercraft Corporation Limited: *See—*
Crago, William Arthur; and Emmerson, Derek Martin, 3,871,113.
British Steel Corporation: *See—*
Topham, Frederick William, 3,871,973.
Brittingham, Oscar Jerome, III: *See—*
Smith, Gerald R.; and Brittingham, Oscar Jerome, III, 3,872,283.
Britton, John C. Method of making multiple-glazed units. 3,872,198, Cl. 264-45.000.
Broadwin, Samuel M. Laboratory freeze dryer. 3,871,107, Cl. 34-92.000.
Brockmuller, Friedrich Franz: *See—*
Kuckhermann, Gustav; Feldkamper, Richard; Paul, Walter; and Brockmuller, Friedrich Franz, 3,871,270.
Brodd, Wayne Donald: *See—*
Boudreau, Paul Emile; Brodd, Wayne Donald; and Donnan, Robert Anderson, 3,872,430.
Brokke, Mervin E.; and Teach, Eugene G., to Stauffer Chemical Company. Substituted anilide carbamates. 3,872,157, Cl. 260-479.00C.
Brooks, Robert A.; and Wallace, John Paul, to Magnetic Analysis Corporation. Eddy current testing apparatus using slotted monoturn conductive members. 3,872,379, Cl. 324-40.000.
Brougham, George D. Adjustable sighting device for archery bow. 3,871,105, Cl. 33-265.000.
Brown, Charles L., to United States of America, Navy. Hydraulic and lubricating oil composition. 3,872,048, Cl. 252-33.400.
Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., to General Tire and Rubber Company, The. Corrective heating of pneumatic tires. 3,872,208, Cl. 264-346.000.
Brown, James R. Underground pipe warning and identification system. 3,871,536, Cl. 214-138.00R.
Brown, Kenneth H.: *See—*
Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,872,162.
Brown, Larry P., to Cities Service Oil Company. Production of crude oil facilitated by injection, of carbon dioxide. 3,871,451, Cl. 166-267.000.
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., to ACF Industries, Incorporated. Apparatus for controlling and modulating engine functions. 3,872,188, Cl. 261-39.00A.
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., to ACF Industries, Incorporated. Apparatus for controlling and modulating engine functions. 3,872,189, Cl. 261-39.00A.
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., to ACF Industries, Incorporated. Apparatus for controlling and modulating engine functions. 3,872,190, Cl. 261-39.00A.
Browne, Frank L.: *See—*
Philibert, Robert A.; and Browne, Frank L., 3,871,091.
Brownfield, Russell B. KT conduit with companion coupling. 3,871,692, Cl. 285-390.000.
Brownlee, Merrel F. Add-on enclosure for campers and trailers. 3,871,700, Cl. 296-26.000.
Brunel, Andre: *See—*
Pigeroulet, Jean; and Brunel, Andre, 3,871,344.
Bruno, Gerald Anthony: *See—*
Haney, Thomas Albert; Bruno, Gerald Anthony; and Bartlett, Janeth, 3,872,226.
Bruno, Joseph S.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,871,817.
Brunswick Corporation, The: *See—*
Crossman, Phillip E.; Kenrick, Robert C.; and LeMieux, Robert W., 3,871,585.
Hager, James R., 3,871,349.
Nunes, John, 3,871,925.
Snyder, Richard H., 3,871,324.
Brunt, Geoffrey Albert Kenyon: *See—*
Jones, Christopher Robin; Williams, Malcolm; and Brunt, Geoffrey Albert Kenyon, 3,872,404.
Bruss, Horst: *See—*
Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
Brych, Alfred, to Saft-Societe Des Accumulateurs Fixes Et De Traction. High energy lithium type electrochemical cells. 3,871,915, Cl. 136-6.0LN.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-trityl-imidazoles and their production. 3,872,095, Cl. 260-309.000.
Buchel, Karl Heinz: *See—*
Meiser, Werner; Metzger, Carl; Buchel, Karl Heinz; and Plempel, Manfred, 3,872,117.
Buchholz, Peter: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,871,470.
Buchmann, Rudolf C., to Pont-A-Mousson S.A. Machine for enclosing expanded plastic material for moulding parts. 3,871,801, Cl. 425-4.00R.
Buchta, Karl: *See—*
Abdou, Mohamed; and Buchta, Karl, 3,871,967.
Buckbee-Mears Company: *See—*
Bond, Herbert M., 3,872,042.
Bucker, Edward R.: *See—*
Mohan, Raam R.; Byrd, George H., Jr.; Nixon, James; and Bucker, Edward R., 3,871,957.
Buckman Laboratories, Inc.: *See—*
Fenyes, Joseph G. E.; and Flanagan, Kenneth J., 3,872,186.
Buffalo Forge Company: *See—*
Habdo, Robert T.; and Burger, William P., 3,871,795.
Buisson, Marc Francois Bernard; and Quillevere, Herve Alain, to Societe Nationale d'Etude et de Construction de Moteurs d'. Jet engines. 3,871,174, Cl. 60-261.000.
Bullard, Herbert L.: *See—*
Pace, Henry A.; St. Cyr, David R.; and Bullard, Herbert L., 3,872,064.
Bundschuh, Robert L.; and Martin, Lionel C., to Pedicar Corporation. Transmission for occupant-propelled vehicles. 3,871,243, Cl. 74-357.000.
Bunker Ramo Corporation: *See—*
Dorrell, Robert Francis; and Anderson, Norman Richard, 3,871,737.
Bunn, Thomas C., Jr. Ski safety device. 3,871,674, Cl. 280-11.35N.
Burck, Joseph M.: *See—*
Breslow, Jeffrey D.; Barlow, Gordon A.; Burck, Joseph M.; and Morrison, Howard J., 3,871,659.
Burg, Karlheinz: *See—*
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 3,872,182.
Burger, William P.: *See—*
Habdo, Robert T.; and Burger, William P., 3,871,795.
Burke, John A.; and Berg, Thorval L., to Greene, Tweed & Co., Inc. Rod wiper assembly. 3,871,665, Cl. 277-24.000.
Burke, Noel I., to Tee-Pak, Inc. Method of sulfoalkylating polyhydric alcohols and the corresponding product. 3,872,060, Cl. 260-79.30R.
Burke, Noel I., to Tee-Pak, Inc. Acetal addition to viscose or amglose xanthate solutions for the manufacture of crosslinked shaped articles. 3,872,206, Cl. 264-188.000.
Burr, John F.: *See—*
Jamison, Will B.; Burr, John F.; and Hadi, Homayoun, 3,871,302.
Burroughs Corporation: *See—*
Maloney, Thomas C., 3,872,339.
Bursk, Max Hubert. Walking beam conveyor. 3,871,534, Cl. 214-83.300.
Burton, Arthur; Naylor, Arthur John; and Handforth, John Anthony, to Imperial Chemical Industries Limited. Decorative wallcovering. 3,871,907, Cl. 117-76.00P.
Bushnell, Sherman W., Jr. Extendible stable working platform. 3,871,478, Cl. 182-63.000.
Busse, Rido. Ashtray. 3,871,387, Cl. 131-235.00R.
Butcher, Louis M., Jr., to Aluminum Company of America. Method for improving the wettability of a sheet material. 3,871,980, Cl. 204-164.000.
Butler, James W. Mechanical connections. 3,871,779, Cl. 403-52.000.
Butter, Charles D., to Honeywell Inc. Composite bond for acoustic transducers. 3,872,332, Cl. 310-9.700.
Butti, Adriano; and Prino, Giuseppe, to Crinos Industria Farmacobiologica S.p.A. Salts of amino-acids with polysulfuric esters of natural gly-copeptides and process for preparing same. 3,872,075, Cl. 260-112.00R.
Buttner, Artur; and Rambausek, Hugo, to Heidelberger Druckmaschinen Aktiengesellschaft. Driving device for intermittently revolving feeding cylinder in printing and paper processing machines. 3,871,645, Cl. 271-270.000.
Butwell, Kenneth F.: *See—*
Atwood, Gilbert R.; Blake, Robert J.; Butwell, Kenneth F.; and Dunnery, David A., 3,872,212.
Byck, Joseph S., to Union Carbide Corporation. Antimicrobial hydroxy quinoline, ethylene-acrylic polymer compositions. 3,872,128, Cl. 260-286.00R.
Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich. Heat exchange apparatus. 3,871,407, Cl. 138-38.000.
Byrd, George H., Jr.: *See—*
Mohan, Raam R.; Byrd, George H., Jr.; Nixon, James; and Bucker, Edward R., 3,871,957.
C.A.V. Limited: *See—*
Jones, Christopher Robin; Williams, Malcolm; and Brunt, Geoffrey Albert Kenyon, 3,872,404.
Cadre Corporation, The: *See—*
Smith, Gerald R.; and Brittingham, Oscar Jerome, III, 3,872,283.
Cahill, Robert Allen: *See—*
Klein, Keith William; Swetnam, Norman Thomas; and Cahill, Robert Allen, 3,872,355.
Cailow, George William, to International Computers Limited. Systems for testing electrical devices. 3,872,441, Cl. 340-172.500.
Calvin, Frank F., Sr. Screen apparatus for air inlet. 3,871,844, Cl. 55-306.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See—*
Ratte, Jacques; and Bigras, Jean, 3,872,205.
Canadian Industries Limited: *See—*
Jones, Elwyn David; and Scuffell, Derek Edgar, 3,871,269.

Canadian Patents and Development Limited: *See—*
Carlsson, David J.; Suprunchuk, Tony; and Wiles, David M., 3,871,901.
Cane Machinery & Engineering Company, Inc.: *See—*
Willett, Harold A., 3,871,256.
Cangardel, Jean. Candle for producing a colored flame. 3,871,815, Cl. 431-126.000.
Canon Kabushiki Kaisha: *See—*
Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
Inoue, Shozo; and Kurahashi, Akira, 3,871,081.
Inoue, Shozo, 3,871,766.
Kawanabe, Tsuyoshi; and Machida, Minoru, 3,872,289.
Miyamoto, Kuichi, 3,872,307.
Cante, Charles J.: *See—*
Lavo, Harry F.; and Cante, Charles J., 3,871,130.
Cappeli, Quido A., to Danker & Wohlk, Inc. Mold member for contact lens construction. 3,871,813, Cl. 425-469.000.
Carborundum Company, The: *See—*
Marin, Glenn R., 3,871,934.
Cardwell, William Thomas; Hawke, Francis Murray; and Gibson, Peter Gordon, to Charcon Tunnels Limited. Arcuate tunnel lining segments. 3,871,183, Cl. 61-45.00R.
Carl Freduenburg, Firma: *See—*
Franz, Dietmar; Schoneberger, Willi; and Upper, Gerd, 3,871,666.
Carl Zeiss-Stiftung, a/k/a Carl Zeiss: *See—*
Jakubowski, Heinz; and Leutwein, Klaus, 3,872,303.
Carlson, David John; and Hilliker, Stephen Earl, to RCA Corporation. Pickup apparatus for capacitive video disc players with transmission line tuned circuit. 3,872,240, Cl. 178-6.60R.
Carlson, Richard L.; and Richardson, William L. Motor vehicle light guard. 3,872,427, Cl. 340-52.00D.
Carlsson, David J.; Suprunchuk, Tony; and Wiles, David M., to Canadian Patents and Development Limited. Photostabilization of polymers. 3,871,901, Cl. 117-47.00A.
Carmassi, Michel: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, 3,871,831.
Carney, William V.: *See—*
Manos, George; DeLuca, Paul V.; Santulli, Vincent F.; and Carney, William V., 3,872,259.
Carp, Ralph W.: *See—*
Peterson, Steven H.; Carp, Ralph W.; and Weissler, Harold E., 3,872,317.
Carpenter, David M., to Coats Company, Inc., The. Adaptor for tire changing stands. 3,871,433, Cl. 157-1.240.
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Carson Manufacturing Company, Inc.: *See—*
Smith, Gerald D.; and Owens, Frank R., 3,872,353.
Carter, Clyde Thomas, to AMP Incorporated. Connectors providing interconnection between closely spaced conductors and widely spaced terminals. 3,871,736, Cl. 339-221.00R.
Carter, James L.: *See—*
Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., 3,871,997.
Casey, William J. Game apparatus. 3,871,650, Cl. 273-87.00R.
Castillo, Adolfo: *See—*
Jureit, John Calvin; Castillo, Adolfo; and Rionda, Carlos, 3,871,213.
Castonguay, Leon H., to Astratronics, Inc. Switch. 3,871,473, Cl. 180-104.000.
Caterpillar Tractor Co.: *See—*
Boggs, Roger L., 3,871,719.
Krolak, Ronald L.; Gianessi, Albert; and Alexander, George F., 3,871,462.
Unruh, Dale H.; and Yates, Jan B., 3,871,635.
Cavil, David T., to Outboard Marine Corporation. Capacitive discharge ignition system for internal combustion engines. 3,871,348. Cl. 123-148.00E.
Celanese Corporation: *See—*
Boom, Abraham A., 3,872,278.
Davis, Howard J.; and Lee, Leonard A., 3,872,001.
Cellarius, Hans Joerg: *See—*
Sturm, Elmar; Cellarius, Hans Joerg; and Vogel, Christian, 3,872,126.
Centre National De Recherches Metallurgiques: *See—*
Denis, Etienne Marie; and Holper, Roland, 3,871,871.
Century Wheels, Inc.: *See—*
Morgan, Paul A., 3,871,596.
Ceraver: *See—*
Boutin, Pierre, 3,871,031.
Cerberus AG.: *See—*
Scheidweiler, Andreas, 3,872,449.
Cesca, Sebastiano: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,872,069.
Cestaro, Victor L. Opto-electronic security system. 3,872,435, Cl. 340-147.0MD.
Chadfield, Robert; and Lang, Frank J., to Federal Package Corporation. Double-wall jar. 3,871,543, Cl. 215-13.00R.
Chamberlin, Thomas A.: *See—*
Kochanny, Gerald L., Jr.; and Chamberlin, Thomas A., 3,872,176.
Chambers, Charles W., Jr., to Lorain Products Corporation. Voltage booster circuit for telephone systems. 3,872,258, Cl. 179-16.00F.
Chambers, Derek, to Raytheon Company. Visual display system. 3,872,446, Cl. 340-172.500.
Champion International, Corporation: *See—*
Ottinger, Lester V., 3,872,199.
Chandler, James P.: *See—*
Tomlinson, Patrick W.; Chandler, James P.; and Scott, Mark W., 3,871,474.
Chapman, Charles C., to Phillips Petroleum Company. Apparatus for purifying HF. 3,871,969, Cl. 202-234.000.
Chapman, Charles C., to Phillips Petroleum Company. Production of ethyl fluoride for hf alkylation. 3,872,181, Cl. 260-683.490.
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Charcon Tunnels Limited: *See—*
Cardwell, William Thomas; Hawke, Francis Murray; and Gibson, Peter Gordon, 3,871,183.
Charlton, John Stuart; and Ross, John Francis, to Imperial Chemical Industries Limited. Detection of corrosion by a radiometric technique. 3,872,310, Cl. 250-358.000.
Chauvier, Jean-Marie, to Solvay & Cie. Polymerization reactor having a closed upper chamber portion of reduced diameter and polymerization process therein. 3,871,830, Cl. 23-285.000.
Chemcut Corporation: *See—*
Goffredo, Daniel L.; and Dunkelberger, John Alfred, Jr., 3,871,914.
Chemical Construction Corporation: *See—*
Villiers-Fisher, John F.; and Coles, Edward T., 3,871,172.
Chemische Werke Huels Aktiengesellschaft: *See—*
Witte, Helmut; and Seeliger, Wolfgang, 3,872,096.
Chemix Corporation: *See—*
Marshall, Arthur R., 3,871,627.
Cherdron, Egon; Forster, Hans-Joachim; Potencsik, Istvan; and Haerter, Manfred, to Gebruder Giulini GmbH. Phosphate purification process. 3,872,215, Cl. 423-309.000.
Chesney, John: *See—*
Friberg, Vincent P.; Chesney, John; and Phelps, Richard B., 3,872,368.
Friberg, Vincent P.; and Chesney, John, 3,872,399.
Chiappe, Wayne T., to Continental Can Company, Inc. Push-in easy opening container. 3,871,550, Cl. 220-339.000.
Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Maeshima, Haruko; and Izuo, Nobuhiko, to Tanabe Seiyaku Co., Ltd. Fermentative production of d-alanine. 3,871,959, Cl. 195-29.000.
Chicago Bridge & Iron Company: *See—*
Walker, James Donald, 3,872,003.
Chikama, Toshio, to Kabushiki Kaisha Machida Seisakusho. Endoscope. 3,871,365, Cl. 128-5.000.
Childress, Lloyd Krudop, Jr.; and Church, John Allen, to International Business Machines Corporation. Magnetic tape cleaning and tensioning apparatus. 3,872,510, Cl. 360-137.000.
Chipman, Gary R.: *See—*
Culbertson, George S.; Chipman, Gary R.; and Karll, Robert E., 3,872,019.
Chizat, Francois: *See—*
Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, 3,872,156.
Chorbacher, Wilhelm: *See—*
Merz, Gerhard; Gehrig, Heinz; and Chorbacher, Wilhelm, 3,872,217.
Christensen Diamond Products Company: *See—*
Wilder, Arthur G.; and Bridwell, Harold C., 3,871,840.
Christensen, Robert F.: *See—*
Wilson, Johnnie; and Christensen, Robert F., 3,871,125.
Christmann, Harold F.; and Teel, Paul H., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation catalysts and their method of preparation. 3,872,027, Cl. 252-430.000.
Chrysler Corporation: *See—*
Tomlinson, Patrick W.; Chandler, James P.; and Scott, Mark W., 3,871,474.
Chu, Charles M.: *See—*
Boles, John A.; Chu, Charles M.; Criswell, Peter B.; and Rolnitzky, Aron, 3,872,442.
Church, John Allen: *See—*
Childress, Lloyd Krudop, Jr.; and Church, John Allen, 3,872,510.
Ciaraldi, Anthony: *See—*
Wilder, Leslie N.; Soltis, George L.; Nenninger, Theodore P.; and Ciaraldi, Anthony, 3,872,263.
Ciarico, Anthony J., to Kendall Company, The. Flow measuring device. 3,871,231, Cl. 73-215.000.
Ciba-Geigy AG: *See—*
Bahler, Peter, 3,871,568.
Habermeier, Juergen; Baumann, Dieter; Porret, Daniel; and Batzer, Hans, 3,872,097.
Koller, Stefan; Zink, Rudolf; Reichel, Dieter; and Voltz, Jacques, 3,872,132.
Martin, Henry; Rohr, Otto; and Pissiotas, Georg, 3,872,104.
Meyer, Hans-Rudolf, 3,872,094.
Reinert, Gerhard; and Kleemann, Alois, 3,871,898.
Ciba-Geigy Corporation: *See—*
Beriger, Ernst, 3,872,184.
Cseh, Georg; and Muller, Willy, 3,872,078.
Sturm, Elmar; Cellarius, Hans Joerg; and Vogel, Christian, 3,872,126.
Weis, Claus; and Fischer, Hanspeter, 3,872,141.

- Ciecior, Heinrich; and Kessler, Rolf Emil, to Singer Company, The. Adjustable eccentric for sewing machines. 3,871,311, Cl. 112-200.000.
- Cignarella, Giorgio: *See—*
    - Pasqualucci, Carmine Renato; Bonfanti, Giovanni; Giovanni, Sesto San; and Cignarella, Giorgio, 3,872,088.
- Cioffi, William F. Safety book match cover. 3,871,517, Cl. 206-108.000.
- Cities Service Oil Company: *See—*
    - Brown, Larry P., 3,871,451.
- Citizen Watch Company Limited: *See—*
    - Miyamoto, Konoe; and Ohsuga, Atsushi, 3,871,095.
- Claassen, George R., to PPG Industries, Inc. Apparatus for press bending glass sheets. 3,871,857, Cl. 65-273.000.
- Claesson, Harry, to Allmanna Svenska Elektriska Aktiebolaget. Forging press. 3,871,202, Cl. 72-60.000.
- Clancy, William B. Apparatus for inspecting confined areas adjacent the floor. 3,872 295, Cl. 240-2.180.
- Clarke, David E., to Texas Instruments Incorporated. Relay. 3,872,415, Cl. 337-140.000.
- Clarke, Henry C. N. Laparoscopy instruments and method for suturing and ligation. 3,871,379, Cl. 128-326.000.
- Clarke, Ralph H.; Clarke, Wesley James; and Mays, Steven L., to Clarke's Sheet Metal, Inc. Industrial air filter. 3,871,845, Cl. 55-284.000.
- Clarke, Wesley James: *See—*
    - Clarke, Ralph H.; Clarke, Wesley James; and Mays, Steven L., 3,871,845.
- Clarke's Sheet Metal, Inc.: *See—*
    - Clarke, Ralph H.; Clarke, Wesley James; and Mays, Steven L., 3,871,845.
- Clason, Jan Christiaan, to Hazemeijer B.V. Vacuum circuit interruptor including a gettering device. 3,872,271, Cl. 200-144.00B.
- Clatworthy, Edward Frederick: *See—*
    - Smith, Darrell Franklin, Jr.; and Clatworthy, Edward Frederick, 3,871,928.
- Clave, Marcel: *See—*
    - Clave, Serge; and Clave, Marcel, 3,871,741.
- Clave, Serge; and Clave, Marcel. Compact optical system permitting instantaneous increase in magnification without refocussing. 3,871,741, Cl. 350-37.000.
- Cleaver, John Richard Adrian: *See—*
    - Smith, Kenneth Charles Arthur; and Cleaver, John Richard Adrian, 3,872,351.
- Clemence, Francois: *See—*
    - Le Martret, Odile; and Clemence, Francois, 3,872,124.
- Clerk, Ernest Joscelyn. Antifriction device for boat hulls. 3,871,318, Cl. 114-67.00A.
- Cleveland, James Leonard; Jones, Richard Alfred; Larson, Theodore Edwin; McNary, Kenneth Rogers; and Zahorsky, James Theodore, to International Business Machines Corporation. Terminal control unit. 3,872,444, Cl. 340-172.500.
- Coats Company, Inc., The: *See—*
    - Carpenter, David M., 3,871,433.
- Cohen, Alain; and Lalli, Orfelio, to Lightolier Incorporated. Recessed lighting fixture. 3,872,296, Cl. 240-73.0BC.
- Coker, John Norman; and Power, Basil Dixon. Vacuum seals. 3,871,668, Cl. 277-180.000.
- Coleco Industries, Inc.: *See—*
    - Zimmers, Melvin; and Gerber, Gary A., 3,871,655.
- Coles, Edward T.: *See—*
    - Villiers-Fisher, John F.; and Coles, Edward T., 3,871,172.
- Coller, John A.; Millman, Irving; and Blumberg, Baruch S., to United States of America, Health, Education and Welfare. Process of viral diagnosis and reagent. 3,872,225, Cl. 424-1.000.
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- Collins, Delmas E., to Jones-Zylon, Inc. Container device for dispensing liquids. 3,871,555, Cl. 222-131.000.
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- Coltrinari, Enzo L.: *See—*
    - Hazen, Wayne C.; and Coltrinari, Enzo L., 3,872,209.
- Combustion Engineering, Inc.: *See—*
    - Schukei, Glen Elwin, 3,871,176.
- Comer, William Timmey: *See—*
    - Kreighbaum, William Eugene; and Comer, William Timmey, 3,872,130.
- Commissariat A L'Energie Atomique: *See—*
    - Imbert, Pierre; and Lericque, Jean-Francois, 3,872,333.
    - Sanchez, Francis, 3,872,402.
- Community Health Computing, Inc.: *See—*
    - Mitchell, Baker A., Jr., 3,872,448.
- Compagnie des Montres Longines Francillon S.A.: *See—*
    - Maire, Pierre-Andre; and Portmann, Hubert, 3,871,168.
- Compagnie Industrielle Des Piles Electriques "Cipel": *See—*
    - Viescou, Claude, 3,871,918.
- Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
    - Bastide, Paul; and Bonneton, Robert, 3,872,396.
    - Rocton, Lucien, 3,872,233.
- Conacher, Philip, Jr., to E. I. de Pont de Nemours and Company. Non-discoloring painted polyurethane. 3,871,911, Cl. 117-138.80D.
- Conklin, Robert M.: *See—*
    - Koenig, Elmer A.; Conklin, Robert M.; Bessinger, Walter L.; and Russell, Jack A., 3,871,156.
- Connolly, John F., to Standard Oil Company. Electrochemical adiponitrile process. 3,871,976, Cl. 204-73.00A.
- Consolidation Coal Company: *See—*
    - Jamison, Will B.; Burr, John F.; and Hadi, Homayoun, 3,871,302.
    - Jamison, Will B., 3,871,707.
- Container Corporation of America: *See—*
    - Skaggs, Boyd T., 3,871,572.
- Continental Can Company, Inc.: *See—*
    - Adomaitis, Domas, 3,871,541.
    - Chiappe, Wayne T., 3,871,550.
    - Irland, Lewis F.; and Nicholson, John B., 3,871,552.
    - Peyser, Harry A.; 3,871,544.
    - Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,872,162.
    - Szatkowski, Richard R., 3,871,521.
- Control Data Corporation: *See—*
    - Schrader, George Frederick, 3,871,064.
- Cook, Forrest W.: *See—*
    - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,188.
    - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,189.
    - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,190.
- Cook Paint & Varnish Company: *See—*
    - Dickert, Eugene A., 3,872,034.
- Cook, Rodney G. Animal Trap. 3,871,124, Cl. 43-88.000.
- Cooley, Austin G., to Litton Medical Products, Inc. Facsimile flatbed transceiver. 3,872,242, Cl. 178-6.000.
- Cooley, Richard F., to Owens-Illinois, Inc. Laser assembly including a crystalline laser disc with an annular glass coating. 3,872,401, Cl. 331-94.50E.
- Cooper, Abraham. Dental restoration jig. 3,871,804, Cl. 425-175.000.
- Cooper, Christopher C.: *See—*
    - O'Neil, Francis P.; Krauss, Ferd A.; Sambenedetto, Vincent; and Cooper, Christopher C., 3,871,594.
- Cooper, Jamshed Rustom; and Svendsen, Walter W., to Longyear Company. Wire line soil sampler apparatus. 3,871,487, Cl. 175-248.000.
- Corbett, Roger Patrick: *See—*
    - Legge, Morris James; Phipps, John Alastair; and Corbett, Roger Patrick, 3,871,580.
- Corcoran, Richard P.; Hirtler, Alfred E.; and Mittel, Robert F., to North America Philips Corporation. Including a semiresonant slotted mode stirrer. 3,872,276, Cl. 219-10.55H.
- Core, William Roger. Safety lock for cabinet doors and the like. 3,871,693, Cl. 292-67.000.
- Costantini, Michel: *See—*
    - Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, 3,872,156.
- Cotrel, Yves Paul Charles. Device for pulling the rachis. 3,871,366, Cl. 128-75.000.
- Cotter, Mitchell A., to APM Corporation. Audio response device with orthogonal scan of multiple tracks on playback. 3,872,264, Cl. 179-100.30B.
- Coulter, David C. Method and system for speech compression. 3,872,250, Cl. 179-1.0SA.
- Courant, Jacques, to Societe Zenith-Aviation. Fluid-tight and separable coupling, liquid-filling devices for reservoirs. 3,871,404, Cl. 137-614.030.
- Coutin, Pierre Fernand. Retractable jettisoning ejector for aircrafts. 3,871,604, Cl. 244-137.00R.
- Crabbe, Pierre, to Syntex (U.S.A.) Inc. Difluoromethylene substituted prostaglandin intermediates. 3,872,107, Cl. 260-343.300.
- Crabbe, Pierre, to Syntex (U.S.A.) Inc. 9-Hydroxy prosta-5-cis, 11,13-trans-trienoic acids and derivatives thereof. 3,872,149, Cl. 260-468.00D.
- Cragar Industries, Inc.: *See—*
    - Richter, Roy E., 3,871,708.
- Crago, William Arthur; and Emmerson, Derek Martin, to British Hovercraft Corporation Limited. Navigation training simulators. 3,871,113, Cl. 35-10.200.
- Craven, Donald R., to Babcock & Wilcox Company, The. Machine tools. 3,871,246, Cl. 74-665.0GD.
- Crawford, Thomas G.; and Kearse, William E., to Westinghouse Electric Corporation. Composite structure and high speed bobbin. 3,871,601, Cl. 242-118.320.
- Cresswell, Michael W.: *See—*
    - Roberts, John S.; and Cresswell, Michael W., 3,872,493.
- Crew, Wynn D., to Microtech Press Inc. Reader-selector instrument for ultra-high reduction microfilm. 3,871,759, Cl. 353-95.000.
- Cri-Dan: *See—*
    - Nann, Erwin S., 3,871,252.
- Crinos Industria Farmacobiologica S.p.A.: *See—*
    - Butti, Adriano; and Prino, Giuseppe, 3,872,075.
- Crippa, Jean-Pierre, to Les Produits Associes, SA. Reservoir for a liquid pump including means for initially forcing liquid into the pump. 3,871,560, Cl. 222-325.000.
- Crippen, Monte D.; and Mentz, Bernardus J., to Hooker Chemical & Plastics Corp. Luggin tip block assembly and use in electrolytic cells. 3,871,985, Cl. 204-231.000.

- Crippen, Monte D.: *See—*
    - Harke, Cyril J.; and Crippen, Monte D., 3,871,988.
- Criswell, Peter B.: *See—*
    - Boles, John A.; Chu, Charles M.; Criswell, Peter B.; and Rolnitzky, Aron, 3,872,442.
- Criswell, Thomas R.: *See—*
    - Klanderman, Bruce H.; and Criswell, Thomas R., 3,872,140.
- Critchfield, Robert E. Coin-operated clock alarm. 3,871,502, Cl. 194-9.00T.
- Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., to Pfizer Inc. Polyamines as antiviral agents in animals. 3,872,171, Cl. 260-584.00R.
- Crook, James D.: *See—*
    - Miller, Laurence B.; and Crook, James D., 3,871,538.
- Crook, Peter John: *See—*
    - Boden, Philip; Crook, Peter John; Hall, Michael Edgar; and Riley, Stephen Philip, 3,872,033.
- Crooke, Arthur W.; and Schottler, Paul H., to Sperry Rand Corporation. Finite impulse response digital filter with reduced storage. 3,872,290, Cl. 235-152.000.
- Crosfield Electronics Limited: *See—*
    - Astley, Edward T., 3,872,348.
- Cross, Charles, to Robertshaw Controls Company. Supervisory control system. 3,872,437, Cl. 340-147.0SY.
- Crossman, Phillip E.; Kenrick, Robert C.; and LeMieux, Robert W., to Brunswick Corporation, The. Air bed. 3,871,585, Cl. 239-553.300.
- Crowe, Talmadge L., to Baker Oil Tools, Inc. Tubing hanger setting tool. 3,871,447, Cl. 166-120.000.
- Crowley, Walter A. Skirt for air cushion vehicle. 3,871,476, Cl. 180-127.000.
- Crysdyn Corporation: *See—*
    - Barnes, Hubert L., 3,872,222.
- Cseh, Georg; and Muller, Willy, to Ciba-Geigy Corporation. Disazo pigments, processes for their manufacture and use. 3,872,078, Cl. 260-176.000.
- Culbertson, George S.; Chipman, Gary R.; and Karll, Robert E., to Standard Oil Company. Oil-soluble lubricant bi-functional additives from mannich condensation products of oxidized olefin copolymers, amines and aldehydes. 3,872,019, Cl. 252-51.50A.
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- Curington, Alfred R.; and Roscoe, Theodore J., Jr., to Bakerdrill, Inc. Continuous coring system and apparatus. 3,871,486, Cl. 175-100.000.
- Curtis, Ralph H. Burglar and warning alarm and system. 3,872,459, Cl. 340-276.000.
- Cutler-Hammer, Inc.: *See—*
    - Piber, Earl T., 3,872,274.
- Cuttill, William E.; and Wagner, Vilma M. Credit card and credit card identification system for automatic vending equipment. 3,872,438, Cl. 340-149.00A.
- Cwielong, Heinrich: *See—*
    - Georg, Werner; Cwielong, Heinrich; and Mertens, Wilfried, 3,871,513.
- Czarnetzky, Edward J.: *See—*
    - Forest, Joseph G.; and Czarnetzky, Edward J.; 3,871,949.
- Dacey, Dennis N.: *See—*
    - Jackson, George W.; Dacey, Dennis N.; and Jackson, Paul W., 3,871,354.
- Dahill, Robert T., Jr., to Givaudan Corporation. Cis 6-hydroxyhexenoate. 3,872,160, Cl. 260-484.00R.
- Dahlinger, Roland: *See—*
    - Schenk, Walter; Dahlinger, Roland; and Stockburger, Dieter, 3,872,165.
- Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
    - Yamagishi, Fumiaki; and Kitagawa, Kenro, 3,872,020.
- Daikin Kogyo Co., Ltd.: *See—*
    - Ukaji, Rokuo; and Shiomi, Toshio, 3,872,210.
- Dail, Elwood C. Foot actuated press. 3,871,055, Cl. 29-267.000.
- Dailly, Georges Paul; and Lefebvre, Raymond Marcel. Automatic central buffer couplings for rail vehicles. 3,871,531, Cl. 213-100.00W.
- Daimler-Benz Aktiengesellschaft: *See—*
    - Kinasi, Norbert, 3,872,416.
    - Senft, Ernst; and Von der Ohe, Manfred, 3,871,467.
- Daishowa Seiki Co., Ltd.: *See—*
    - Kitaguchi, Ryoichi, 3,871,498.
- Dakss, Mark L.: *See—*
    - Bridger, Andrew; Dakss, Mark L.; Zemon, Stanley; and Stone, Samuel M., 3,871,744.
- Dalley, James Edwin, to Bell Telephone Laboratories, Incorporated. Balanced line driver. 3,872,391, Cl. 330-14.000.
- Dalpak Corporation, The: *See—*
    - Long, Donald V., 3,871,271.
- Daly, Dante: *See—*
    - Giolitti, Nicolo; Daly, Dante; and Bertino, Lorenzo, 3,872,468.
- Dandois, Joseph E.: *See—*
    - Kalogerson, Thomas A.; and Dandois, Joseph E., 3,871,341.
- Danfoss A/S: *See—*
    - Berlich, Bodo, 3,871,798.
    - Larsen, Peder, 3,871,397.
- Daniels, Leander Bruce; and Azbell, James W., to MI^2. Automatic dialer. 3,872,467, Cl. 340-364.000.
- Daniels, Peter J. L., to Schering Corporation. Process for the preparation of garamine and intermediates produced thereby. 3,872,080, Cl. 260-210.00R.
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    - Cappeli, Quido A., 3,871,813.
- Dankert, Carolyn H. Cabinet. 3,872,342, Cl. 312-290.000.
- Das, Nalini R.; and Strain, Edwin H., to Raytheon Company. Electric ignition system. 3,871,814, Cl. 431-66.000.
- Data Service of America, Inc.: *See—*
    - Fletcher, John H., 3,871,229.
- Daubach, Ewald; Windel, Hermann; Boehm, Walter; Weiser, Dieter; and Herrmann, Manfred. Manufacture of phenol/formaldehyde resins. 3,872,056, Cl. 260-49.000.
- David, Harry, to Hauni-Werke Korber & Co., KG. Apparatus for building a tobacco stream. 3,871,385, Cl. 131-84.00B.
- Davidson, Donald L.; and Romanowich, Donald K., to Spruce Falls Power and Paper Company Limited. Pulpwood ejector. 3,871,512, Cl. 198-128.000.
- Davidson, Harley R.: *See—*
    - Davis, Austin L.; and Davidson, Harley R., 3,871,490.
- Davidson, Samuel L.; Heidenreich, William C.; and Hunter, Phillip, to Delhi Manufacturing Company. Boat structure. 3,871,043, Cl. 9-6.000.
- Davis, Austin L.; and Davidson, Harley R. Weighing and printing apparatus. 3,871,490, Cl. 177-10.000.
- Davis, Curry Beach: *See—*
    - Thorpe, Susan Dale; Davis, Curry Beach; and Wheelus, Charles Glenn, 3,872,073.
- Davis, Gordon Peter; and Wardley, John, to EMI Limited. Electron multiplier formed by twisting fingers in parallel plates. 3,872,337, Cl. 313-95.000.
- Davis, Howard J.; and Lee, Leonard A., to Celanese Corporation. Removal of heavy metal pollutants from aqueous media. 3,872,001, Cl. 210-58.000.
- Davis, John R., Jr.; and Krishna, Surinder, to Westinghouse Electric Corporation. Field-contoured high speed, high voltage transistor. 3,872,494, Cl. 357-34.000.
- Dawson, Stuart Bruce: *See—*
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- Dawson, William H., Jr., to United States of America, Navy. Sonic means for detecting compressor stall. 3,872,292, Cl. 235-151.300.
- Day, Christopher C., to American Optical Corporation. Pacer diagnostic instrument. 3,871,363, Cl. 128-2.06R.
- Day, David John, to Rank Organisation Limited, The. Anamorphotic optical objective. 3,871,748, Cl. 350-181.000.
- De la Cierva, Juan J. Device for the mechanical stabilization of the alignment of instruments. 3,871,236, Cl. 74-5.220.
- Dean, J. Thomas. Bracket placer. 3,871,098, Cl. 32-66.000.
- De Beider, Maurice Hector; Bollen, Romain Henri; and Van Esch, Robert Florent, to Agfa-Gevaert, N.V. Radiographic intensifying screens. 3,872,309, Cl. 250-483.000.
- De Brabander, Jean; to Velcro S.A. Process for the industrial manufacture of fabrics, strips or ribbons and the so manufactured products. 3,871,933, Cl. 156-88.000.
- De Bucs, Eugen Szabo: *See—*
    - Henkel, Hans-Joachim; De Bucs, Eugen Szabo; and Koch, Christian, 3,871,838.
- Dechelette, Helen, to AMP Incorporated. Fuse contacts. 3,871,738. Cl. 339-256.00C.
- DeChristopher, Phillip J.: *See—*
    - Duchene, Joseph R.; and DeChristopher, Phillip J., 3,871,974.
- Decker, Gerd: *See—*
    - Geiger, Istvan; and Decker, Gerd, 3,871,351.
- Degenkolbe, Adolf: *See—*
    - Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
- Deggendorfer Werft und Eisenbau GmbH: *See—*
    - Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,871,445.
- Dehnert, Douglas K., to Arctic Enterprises, Inc. Snowmobile frame. 3,871,460, Cl. 180-5.00R.
- De Hollander, William R.; and Nivas, Yogesh, to General Electric Company. Sintering uranium oxide in the reaction products of hydrogen-carbon dioxide mixtures. 3,872,022, Cl. 252-301.10R.
- De Jong, Maarten Cornelis: *See—*
    - Gutowski, Antoni Pawel; and De Jong, Maarten Cornelis, 3,871,110.
- Delbag Luftfiler GmbH: *See—*
    - Neumann, Gerhard Max, 3,871,851.
- Delhi Manufacturing Company: *See—*
    - Davidson, Samuel L.; Heidenreich, William C.; and Hunter, Phillip, 3,871,043.
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    - DeLong, Leon B., 3,871,181.
- DeLong, Leon B., to DeLong Corporation. Method of forming an enclosure in a body of water. 3,871,181, Cl. 61-34.000.
- Deltrol Corp.: *See—*
    - Donner, Verne P., 3,871,615.
- DeLuca, Paul V.: *See—*
    - Manos, George; DeLuca, Paul V.; Santulli, Vincent F.; and Carney, William V., 3,872,259.
- DeMattie, David A.; and Fago, Anthony. Battery housing with handle for stacking. 3,871,924, Cl. 136-166.000.
- Demmler, Kurt: *See—*
    - Spoor, Herbert; and Demmler, Kurt, 3,871,908.
- Den Bleyker, John R.: *See—*
    - Egtvedt, Robert B.; Den Bleyker, John R.; and Zwiep, Theodore C., 3,871,306.

Denis, Etienne Marie; and Holper, Roland, to Centre National De Recherches Metallurgiques. Monitoring and control of pig iron refining. 3,871,871, Cl. 75-60.000.
Denki Kagaku Kogyo K.K.: *See—*
  Horiie, Shigeki; Kurematsu, Susumu; and Asai, Shin-ichiro, 3,872,068.
Dennison Manufacturing Co.: *See—*
  Anemaet, John M., 3,871,329.
Depauw, Richard A.; and Hawkins, Robert W., to International Harvester Company. Removable concave for an axial flow-type combine and adjusting means therefor. 3,871,384, Cl. 130-27.00T.
Der Estephanian, Estephan. Window opening protective grill. 3,871,151, Cl. 52-507.000.
Dergazarian, Thomas E.: *See—*
  Staudacher, Gerald R.; Dergazarian, Thomas E.; and Lane, George A., 3,871,684.
Desnos, Monique: *See—*
  Malen, Charles; Desnos, Monique; and Poignani, Jean-Claude, 3,872,102.
Despatch Industries, Inc.: *See—*
  Melgaard, Hans; and Plapp, Nile E., 3,872,473.
Dettoni, Giorgio, to Officine Meccaniche Agudio S.p.A. Suspension apparatus for endless monocable and bicable aerial ropeways with clamp control. 3,871,304, Cl. 104-178.000.
Deuterium Corporation: *See—*
  Spevack, Jerome S., 3,872,223.
Devitt, Lloyd Raymond. Automatic slack adjuster for air brakes. 3,871,495, Cl. 188-79.50K.
Dial, Darrell D.; and von Bose, Robert J., to Halliburton Company. Integral coupler centering device. 3,871,529, Cl. 213-21.000.
Dialysis Systems Limited: *See—*
  Shaldon, Stanley, 3,871,913.
Diamagnetics, Inc.: *See—*
  Hughes, George F., 3,871,664.
Diamond International Corporation: *See—*
  Lord, Henry A., 3,871,586.
Diamond, Warren: *See—*
  Seligman, Herbert L.; Schwartz, Marvin; and Diamond, Warren, 3,872,284.
Dian, Walter; and Wrobel, Charles V., to Beatrice Foods Company. Wide flange bicycle hub. 3,871,710, Cl. 301-105.00B.
Dickert, Eugene A., to Cook Paint & Varnish Company. Phenolic foam. 3,872,034, Cl. 260-2.5AM.
Dickhudt, Eugene A.: *See—*
  Bolduc, Lee R.; and Dickhudt, Eugene A., 3,871,374.
Dictaphone Corporation: *See—*
  Wilder, Leslie N.; Soltis, George L.; Nenninger, Theodore P.; and Ciaraldi, Anthony, 3,872,263.
Didde-Glaser, Inc.: *See—*
  Glaser, Donald A., 3,871,280.
Dieckmann, Steffen F., to Hercules Incorporated. Esters of brominated dipentaerythritol. 3,872,155, Cl. 260-476.00R.
Diemme S.N.C.: *See—*
  Melandri, Rino, 3,871,272.
Dierks & Sohne: *See—*
  Langenberg, Hartmut, 3,871,446.
Dierssen, Gunther H., to Minnesota Mining and Manufacturing Company. Process for producing a parallel overgrowth for use as an epitaxial thin film laser. 3,871,912, Cl. 117-201.000.
Dietz, Earl D.; and Wengert, Paul R., to Owens-Illinois, Inc. Method of melting glass in a platinum container in a controlled atmosphere. 3,871,853, Cl. 65-32.000.
Digital Equipment Corporation: *See—*
  Van De Goor, Adrianus J.; and Hughes, Leonard B., 3,871,578.
Dimroth, Peter; Redeker, Joerg; and Lotsch, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Azo pigments form a 1-aminoanthraquinone diazo component and a phthalimidacetoacetanilide coupling. 3,872,077, Cl. 260-152.000.
Distugil: *See—*
  Branlard, Paul; and Modiano, Jacques, 3,872,043.
Dively, Robert C., to Environmental Products Inc. Aerating apparatus having ballast means therefor. 3,871,581, Cl. 239-16.000.
Dobryakova, Natalia Alexandrovna: *See—*
  Vul, Alexandr Yakovlevich; Shik, Alexandr Yakovlevich; Dobryakova, Natalia Alexandrovna; Saidashev, Ibragim Ibragimovich; and Shmartsev, Jury Vasilievich, 3,872,300.
Dockner, Toni: *See—*
  Spaenig, Hermann; Dockner, Toni; and Karn, Helmut, 3,872,166.
Dockree, Basil Frederick, to Gabine Precision Tubes Limited. Pipe connections and connectors therefor. 3,871,687, Cl. 285-53.000.
Dodge, Marlow W. Snubber for the dagger board of a sailboat. 3,871,322, Cl. 114-127.000.
Dodson, George Bertram, III, to RCA Corporation. Radiation sensing circuit. 3,872,329, Cl. 307-311.000.
Dohmeier, Hans Otto, to Dome Inventions Limited. Protective chains. 3,871,431, Cl. 152-243.000.
Dome Inventions Limited: *See—*
  Dohmeier, Hans Otto, 3,871,431.
Dominguez-Burguette, Mario, to Minnesota Mining and Manufacturing Company. Integral composite element useful in electrostatic clutch or brake devices. 3,871,944, Cl. 161-42.000.
Domke, Klaus; Lau, Peter; and Glas, Willi, to Fr. Hesser Maschinenfabrik AG. Bag packaging apparatus with protective atmosphere. 3,871,157, Cl. 53-110.000.
Donnan, Robert Anderson: *See—*
  Boudreau, Paul Emile; Brodd, Wayne Donald; and Donnan, Robert Anderson, 3,872,430.
Donner, Verne P., to Deltrol Corp. Solenoid operated wedge gate valve. 3,871,615, Cl. 251-129.000.
Dorosz, Adolph S.; Schaefer, Hans F., Jr.; and Sprague, Gordon V., Jr., to USM Corporation. Workpieces moving apparatus. 3,871,532, Cl. 214-1.0BB.
Dorr-Oliver Incorporated: *See—*
  Wall, Clarence J., 3,872,211.
Dorre, Erhard, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Ceramic reinforced helmet. 3,871,026, Cl. 2-6.000.
Dorrell, Robert Francis; and Anderson, Norman Richard, to Bunker Ramo Corporation. Socket contact with conductive elastomer contacting surface. 3,871,737, Cl. 339-255.00R.
Dorschner, Kenneth P.; and Bordenca, Carl, to SCM Corporation. Phytocidal compositions containing n-heterocylic ethers. 3,871,863, Cl. 71-88.000.
Doughty, Joseph B., to Westvaco Corporation. Lignin amines as asphalt emulsifiers. 3,871,893, Cl. 106-277.000.
Dow Chemical Company, The: *See—*
  Kochanny, Gerald L., Jr.; and Chamberlin, Thomas A., 3,872,176.
  Staudacher, Gerald R.; Dergazarian, Thomas E.; and Lane, George A., 3,871,684.
  Vaughn, Walter Lee; and Beam, Robert James, 3,872,039.
  Winn, William D.; and Dunn, James L., Jr., 3,871,821.
Downing, James H.; and Kaiser, Robert H., to Union Carbide Corporation. Method for promoting metallurgical reactions in molten metal. 3,871,872, Cl. 75-61.000.
Drebinger, Peter: *See—*
  Obermaier, Anton; Drebinger, Peter; and Hoisl, Johann, 3,872,422.
Dresser Industries, Inc.: *See—*
  Jett, Marion B.; and Spriggs, Dennis M., 3,871,450.
  Young, James Whitehurst, 3,871,193.
Drew, John, to SCM Corporation. Turpentine recovery by steam distilling woodchips while they are immersed. 3,871,951, Cl. 162-14.000.
Duchene, Joseph R.; and DeChristopher, Phillip J., to Richardson Chemical Company, The. Alkaline bright zinc plating. 3,871,974, Cl. 204-55.00R.
Dudzik, Leonard J.: *See—*
  Al-Dabbagh, Adam M.; and Dudzik, Leonard J., 3,871,525.
Duhaut, Pierre; and Miquel, Jean, to Societe Francaise Des Produits Pour Catalyse. Reforming process using platinum-indium-thallium or indium catalyst. 3,871,995, Cl. 208-138.000.
Dujardin, Esther: *See—*
  Michel-Wolwertz, Marie-Rose; Dujardin, Esther; and Sironval, Cyrille, 3,871,888.
Dumazet, Eugene, to Societe Ethylene Plastique. Device for suppressing the ignition or explosion of escaping combustible gases under high pressure. 3,871,458, Cl. 169-45.000.
Duncan, Robert C.; and Smith, Grace L., to Procter & Gamble Company, The. Absorbent bandage. 3,871,378, Cl. 128-290.000.
Dunegan, Gerald W. Body temperature and heat rate measurement system. 3,871,362, Cl. 128-2.06F.
Dunkelberger, John Alfred, Jr.: *See—*
  Goffredo, Daniel L.; and Dunkelberger, John Alfred, Jr., 3,871,914.
Dunlop Company Limited, The: *See—*
  Kilshaw, John Arthur, 3,871,649.
Dunn, Howard E., to Phillips Petroleum Company. Nickel complex catalyst compositions. 3,872,026, Cl. 252-429.00B.
Dunn, James L., Jr.: *See—*
  Winn, William D.; and Dunn, James L., Jr., 3,871,821.
Dunnery, David A.: *See—*
  Atwood, Gilbert R.; Blake, Robert J.; Butwell, Kenneth F.; and Dunnery, David A., 3,872,212.
du Pont de Nemours, E. I., and Company: *See—*
  Bellina, Russell F., 3,872,169.
  Bellis, Harold Edward, 3,872,174.
  Booth, Charles Lawrence, 3,871,068.
  Hertler, Walter Raymond, 3,871,885.
  Nunn, Gary Franklin, 3,871,164.
  Pazos, Jose F., 3,872,057.
  Schmiegel, Walter Werner, 3,872,065.
  Sheard, John Leo, 3,872,360.
  Smart, Bruce E., 3,872,066.
Dupraz, Carol A.: *See—*
  Goodman, Henry G., Jr.; Dupraz, Carol A.; and Lourigan, George H., 3,871,822.
Durst, Jack R.; and Ganske, Warren L., to Pillsbury Company, The. Food composition having a nut-like texture and method for producing the same. 3,872,229, Cl. 426-62.000.
Durst S.p.A. Fabbrica Macchine ed Apparecchi Fototecnici: *See—*
  Pramstraller, Wilmut, 3,871,765.
Dutt, William H.: *See—*
  Romanski, Eric R.; Horn, J. Drew; and Dutt, William H., 3,871,946.
Duvall, Dale R.; Neff, Marion W.; and Lawson, Paul D., to Recognition Equipment Incorporated. Dynamic sample-by-sample automatic gain control. 3,872,434, Cl. 340-146.3AG.
Dyachkov, Fedor Nikolaevich: *See—*
  Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.

Dye, John F.; Binard, William J.; and Anglada, Leonard R., to Kendall Company, The. Flow measuring apparatus. 3,871,230, Cl. 73-215.000.
Dynabrade Inc.: *See—*
  Welsch, Walter N., 3,871,138.
E. C. Chemical Industries & Co., Ltd.: *See—*
  Hamada, Kenzo; Uchiyama, Hiroshi; Sugi, Jiro; and Kamada, Osamu, 3,872,000.
E. I. de Pont de Nemours and Company: *See—*
  Conacher, Philip, Jr., 3,871,911.
E. R. Squibb & Sons, Inc.: *See—*
  Haney, Thomas Albert; Bruno, Gerald Anthony; and Bartlett, Janeth, 3,872,226.
Ealding, Cyril John, to Imperial Chemical Industries Limited. Foamed olefin polymer wallpaper. 3,871,897, Cl. 117-15.000.
Eastlund, Bernard J.: *See—*
  Spero, Donald M.; Eastlund, Bernard J.; and Ury, Michael G., 3,872,349.
Eastman Kodak Company: *See—*
  Jones, Cynthia G., 3,871,887.
  Klanderman, Bruce H.; and Criswell, Thomas R., 3,872,140.
Eastwood, H. Keith: *See—*
  Plough, Charles T.; Eastwood, H. Keith; and Arts, Marcus, 3,872,418.
Eaton Stamping Company: *See—*
  Hamman, Lyle J., 3,871,350.
Eaton, William Joseph. Aircraft wheel construction. 3,871,709, Cl. 301-63.0DS.
Ebauches S.A.: *See—*
  Charbonney, Adrien Maurice, deceased; Perucchi, Norbert; Belot, Michel; and Giger, Urs, 3,871,171.
Eckenfelder, Robert C.: *See—*
  Kautz, Robert F.; Bourgeault, Leo B.; and Eckenfelder, Robert C., 3,872,372.
Eden, John W. Self-propelled golf bag cart. 3,871,464, Cl. 180-19.00S.
Eder, Heinz, to Hottinger Baldwin Messtechnik GmbH. Dynamometer apparatus. 3,871,216, Cl. 73-141.00A.
Eduard Kuesters Maschinenfabrik: *See—*
  Verboom, Hermann, 3,871,290.
Edward J. Cabic: *See—*
  Barry, Martin J.; and Nobles, Elon J., 3,871,811.
Egtvedt, Robert B.; Den Bleyker, John R.; and Zwiep, Theodore C., to Wolverine World Wide, Inc. Feed control. 3,871,306, Cl. 112-121.110.
Ehrlich, Josef. Steering drive mechanisms. 3,871,461, Cl. 180-6.200.
Eikema, Eduard Theodoor Jasper: *See—*
  Rijnten, Hendrik Theodorus; and Eikema, Eduard Theodoor Jasper, 3,872,028.
Eisenhardt, Fred W. Scalper unit. 3,871,161, Cl. 56-121.460.
Eldex Laboratories, Incorporated: *See—*
  McNeill, Robert M., 3,871,426.
Electronic Control Corporation: *See—*
  Rasmussen, Clarence E., 3,872,374.
Electronics Memories & Magnetics Corporation: *See—*
  Boice, Michael F.; and Krag, Njels, 3,872,454.
Elektroschmelzwerk Kempten GmbH: *See—*
  Kratel, Gunter; Stohr, Gunter; Wiebke, Gunter; and Frey, Volker, 3,872,214.
Elliesen, Wolfgang; and Fehrs, Hellmuth, to Joh. Friedrich Behrens. Fastener driver tools. 3,871,566, Cl. 227-130.000.
Ellingson, Chester W., Jr. Door bottom weather sealing structure. 3,871,133, Cl. 49-308,000.
Ellion, M. Edmund; and Mahaffy, Dwight A., to Hughes Aircraft Company. Hydrazine gas generator.. 3,871,828, Cl. 23-281.000.
Elson, Edward E.; and Goldsmith, Aaron, to Automatic Helium Balloon Systems, Inc. Dual balloon valve. 3,871,422, Cl. 137-231.000.
Ely, Christopher Scott, to Albright & Wilson Limited. Polymeric sealants. 3,872,059, Cl. 260-79.100.
EMCO Limited: *See—*
  Anderson, Leslie T., 3,871,406.
Emhart: *See—*
  Trahan, Albert J., 3,871,856.
EMI Limited: *See—*
  Davis, Gordon Peter; and Wardley, John, 3,872,337.
Emigh, Willard F.; and Beichel, Rudi, to Aerojet General Corporation. Ozone generator. 3,872,313, Cl. 250-541.000.
Emmerson, Derek Martin: *See—*
  Crago, William Arthur; and Emmerson, Derek Martin, 3,871,113.
Enabnit, Robert S., to Goodyear Tire & Rubber Company, The. Apparatus and method for transmitting auxiliary signals on existing vehicle wiring. 3,872,424, Cl. 340-52.00F.
Endicott, Donald L., to McDonnell Douglas Corporation. Particulate separator. 3,872,012, Cl. 210-297.000.
Endo Laboratories, Inc.: *See—*
  Fliedner, Leonard J., Jr., 3,872,113.
Enei, Hitoshi: *See—*
  Nakazawa, Hidetsugu; Enei, Hitoshi; Kubota, Koji; and Okumura, Shinji, 3,871,958.
Eneman, Melvin: *See—*
  Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, 3,871,298.
Energy Conversion Devices, Inc.: *See—*
  Robbins, Lionel, 3,872,492.
Engel, Andreas Hermann; Herziger, Gerd Bernd; and Tschudi, Theodor Heinrich, to Turlabor AG. Apparatus for determining the diameters of small particles. 3,871,769, Cl. 356-102.000.
Engelbach, Heinz: *See—*
  Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
  Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, 3,872,134.
Engelbrecht, Rudolf Succo, to RCA Corporation. Method of electrostatic recording on electrically insulating films by non-wetting electrically conductive liquids. 3,872,480, Cl. 346-74.0ES.
Engelhardt, Albrecht: *See—*
  Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, 3,872,147.
Engh, James T.: *See—*
  Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
Engineered Metal Products Company, Inc.: *See—*
  Wunsche, Edgar, 3,871,632.
English, William P. Coating chamber. 3,871,328, Cl. 118-629.000.
Enthone, Inc.: *See—*
  Fadgen, Earl J., Jr.; and Hajdu, Juan, 3,871,889.
Environmental Products Inc.: *See—*
  Dively, Robert C., 3,871,581.
Epifantsev, Alexei Grigorievich: *See—*
  Kazansky, Vasily Mikhailovich; Epifantsev, Alexei Grigorievich; Roschektaev, Vladimir Lavrentievich; and Kramer, Jury Adamovich, 3,871,070.
Eppler, Richard Andrew; and O'Conor, Eugene F., to SCM Corporation. Composition and process for glazing ceramic ware. 3,871,890, Cl. 106-48.000.
Epstein, Paul: *See—*
  Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,871,360.
Erect-A-Tabe, Inc.: *See—*
  Gile, Verne L., 3,871,436.
Ernesto Lendaro: *See—*
  Marasco, Carmelo, 3,871,040.
Erokhov, Veniamin Kuzmich: *See—*
  Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.
ESB Incorporated: *See—*
  Malchman, Franklin Leonard; Johnson, Robert William; and Raddi, William J., 3,872,252.
ESL Incorporated: *See—*
  King, John P., 3,872,477.
Espinosa, Dominador: *See—*
  Espinosa, Rene J.; and Espinosa, Dominador, 3,871,483.
Espinosa, Rene J.; and Espinosa, Dominador. Vehicular drainage system. 3,871,483, Cl. 184-1.500.
Establissement Wanderfield & Co.: *See—*
  Filter, Walther, 3,871,417.
Estes, Ardie Victor. Word game apparatus. 3,871,660, Cl. 273-135.00D.
Estruco, Jose. Method of protection for slopes and crests of rivers, channels, and the like. 3,871,182, Cl. 61-38.000.
Etat Francais: *See—*
  Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, 3,871,297.
Ethyl Corporation: *See—*
  Lenane, Denis L., 3,871,850.
  Lowrance, Byron R.; and Mangham, Jesse Roger, 3,872,224.
  Shepard, Lawrence H., 3,872,144.
ETS. E. Ragonot: *See—*
  Lecoeuche, Jacques; and Lacroux, Gerard, 3,872,362.
Ets. Lardenois S.A.: *See—*
  Boudal, Pierre B., 3,871,391.
Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., to International Flavors & Fragrances Inc. Esters of 3-furanthiols. 3,872,111, Cl. 260-347.200.
Ex-Cell-O Corporation: *See—*
  Halvorsen, Robert M., 3,871,063.
Exxon Research and Engineering Company: *See—*
  Mohan, Raam R.; Byrd, George H., Jr.; Nixon, James; and Bucker, Edward R., 3,871,957.
  Nelson, Richard L., 3,872,239.
  Shaw, David H., 3,871,991.
  Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., 3,871,997.
  Sinfelt, John Henry, 3,871,996.
  Winters, Luther R., 3,872,248.
Eyre, John Richard; Way, Kenneth Richard; and Kielty, David Neil, to International Standard Electric Corporation. Joint for coaxial cable end. 3,872,237, Cl. 174-88.00C.
F. Korbel and Brothers, Inc.: *See—*
  Randrup, Benjamin F., 3,871,515.
Fabian, Wolfgang, to BASF Aktiengesellschaft. Manufacture of deep-shade 3,4,9,10-perylenetetracarboxylic acid dianhydride pigments. 3,872,103, Cl. 260-333.000.
Fabricacion de Maquinas: *See—*
  Martin, John, 3,871,858.
Facit-Halda Aktiebolag: *See—*
  Petersson, Leif Gunnar, 3,871,508.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,871,457.
Fadgen, Earl J., Jr.; and Hajdu, Juan, to Enthone, Inc. Activator solutions, their preparation, and use in electroless plating of surfaces. 3,871,889, Cl. 106-1.000.
Fago, Anthony: *See—*
DeMattie, David A.; and Fago, Anthony, 3,871,924.
Faigenbaum, Roy D., deceased: *See—*
Greczin, John; and Faigenbaum, Roy D., deceased, 3,871,194.
Faigenbaum, Sylvia, executrix: *See—*
Greczin, John; and Faigenbaum, Roy D., deceased, 3,871,194.
Fairbairn, Thomas E., to Sirius Corporation. Laser-radio frequency energy beam system. 3,872,279, Cl. 219-121.00P.
Falco, Guy N., to Zenith Radio Corporation. Packaged surface wave selective circuit device and method of making the same. 3,872,331, Cl. 310-9.400.
Falgayrettes, Michel; Pontier, Robert; and Sauvage, Michel. Method and a device for combating sodium fires. 3,871,459, Cl. 169-49.000.
Famulus Elektrogerate Gesellschaft m.b.H.: *See—*
Heyek, Gerhard, 3,871,080.
Farah, Basil S.; and Kasprzak, Henry A., to Textron, Inc. Method for preparing urea urethane polymer particles. 3,872,049, Cl. 260-33.6UB.
Farhwerke Hoechst Aktiengesellschaft: *See—*
Koenig, Wolfgang; Geiger, Rolf; and Wissmann, Hans, 3,872,074.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Furrer, Harald; and Lohaus, Gerhard, 3,872,109.
Farmer, Gary W. Inflatable vehicle construction. 3,871,042, Cl. 9-1.00A.
Farris, James D.: *See—*
Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., 3,872,208.
Fath, Joseph; and Gottesman, Roy T., to Tenneco Chemicals Inc. Flame-retardant polyurethane compositions. 3,872,053, Cl. 260-45.70P.
Fath, Joseph, to Tenneco Chemicals, Inc. Aryloxyalkyl haloalkyl phosphates. 3,872,187, Cl. 260-951.000.
Faubl, Hermann: *See—*
Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 3,872,171.
Fausone, Alfredo; and Piglione, Luigi, to Ing. C. Olivetti and C., S.p.A. Proximity sensor with adjustable hysteresis. 3,872,398, Cl. 331-65.000.
Federal Mfg. Co.: *See—*
Fee, David C.; and Hammernik, William F., 3,871,425.
Federal-Mogul Corporation: *See—*
Ladin, Eli M., 3,871,093.
Repella, James A., 3,871,669.
Federal Package Corporation: *See—*
Chadfield, Robert; and Lang, Frank J., 3,871,543.
Fee, David C.; and Hammernik, William F., to Federal Mfg. Co. Bottling method and apparatus. 3,871,425, Cl. 141-5.000.
Fehrs, Hellmuth: *See—*
Elliesen, Wolfgang; and Fehrs, Hellmuth, 3,871,566.
Feins, Irvin Ralph; and Bornfriend, Robert Alan, to American Cyanamid Company. Mix-mulling process for improved hydrotreating catalyst and resulting product. 3,872,030, Cl. 252-465.000.
Feldkamper, Richard: *See—*
Kuckhermann, Gustav; Feldkamper, Richard; Paul, Walter; and Brockmuller, Friedrich Franz, 3,871,270.
Feldman, Marshall H. Self-closing safety container for medicinal tablets. 3,871,522, Cl. 206-540.000.
Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Anschutz, Erhard; and Gotz, Walter, 3,871,092.
Dorre, Erhard, 3,871,026.
Felix, Willi, to Jos. Hunkeler AG Fabrik Fur Graphische Maschinen. Method of automatically producing a continuously processable multicopy writing surface assembly, and apparatus for performance thereof. 3,871,639, Cl. 270-52.000.
Felker, Paul J. Method of forming tire treads with elongated traction-augmenting elements. 3,872,207, Cl. 264-277.000.
Fender, Ferdinand G., to Ni-Tec. Image intensifier system with reticle brightness control. 3,872,302, Cl. 250-213.000.
Fenske, Joseph G. Vehicle hitch. 3,871,535, Cl. 214-86.00A.
Fenton, G. Donald, to United States Steel Corporation. Apparatus for length stabilization of a cable. 3,871,205, Cl. 72-128.000.
Fenyes, Joseph G. E.; and Flanagan, Kenneth J., to Buckman Laboratories, Inc. 3-Acetrl-4-Hydroxybenxyl Phosphonates. 3,872,186, Cl. 260-946.000.
Feola, John A.: *See—*
Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., 3,872,208.
Ferranti Limited: *See—*
Peaker, Anthony Ralph; and Mottram, Anthony, 3,872,314.
Vaughan-Jones, Ian Norman, 3,872,244.
Ferranti-Packard Limited: *See—*
Winrow, Donald; and Smith, Charles Norman, 3,871,945.
Ferraris, Giuseppe: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,872,069.
Ferrco Engineering Limited: *See—*
Mulcahy, Joseph Aloysius; Jones, Harry Joseph; and Batram, Stephen Douglas, 3,871,533.
Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Apparatus for producing corrugations on screens of fully-filled cables. 3,871,207, Cl. 72-194.000.
Ferris, F. Donald: *See—*
Keith, W. Gill; and Ferris, F. Donald, 3,871,829.
Ferro Corporation: *See—*
Hervey, John D.; and Smith, Waymon G., 3,872,044.
Feryszka, Rubin: *See—*
Adams, Melvin Edward; and Feryszka, Rubin, 3,872,325.
Feuersanger, Alfred E. Thin film transistor and method of fabrication thereof. 3,872,359, Cl. 317-235.00R.
Fiala, Ernst: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,871,470.
Fibra-Sonics, Inc.: *See—*
Murry, Edward J., 3,871,395.
Fibreglass Limited: *See—*
Boden, Philip; Crook, Peter John; Hall, Michael Edgar; and Riley, Stephen Philip, 3,872,033.
Fidelity Union Trust Company: *See—*
Frey, Wolfgang; and Schoenauer, Wolfgang, 3,872,137.
Field, Donald E.; and Griffith, James R., to United States of America, Navy. Fluorinated epoxy resins containing polytetrafluoroalkylene fillers. 3,872,045, Cl. 260-31.20R.
Field, Donald E.: *See—*
Leonard, Joseph T.; and Field, Donald E., 3,871,281.
Fielding, Ivor R.; and Poppe, Wassily; to Standard Oil Company. Polypropylene composition. 3,872,052, Cl. 260-42.460.
Figel, Albert: *See—*
Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, 3,872,440.
Filter, Walther, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft; and Establissement Wanderfield & Co. Fork link for use in the heddle frame linkage of a weaving machine. 3,871,417, Cl. 139-88.000.
Finger, John F., to Sioux Steam Cleaner Corp. Liquid-barrier gas vent. 3,871,398, Cl. 137-253.000.
Finnemore, Harlan E., to Air Preheater Company, Inc., The. Lifting arrangement. 3,871,442, Cl. 165-8.000.
Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel F., 3,872,177.
Halasa, Adel Farhan, 3,872,072.
Fischer, Adolf; Behrendt, Siegfried; and Menck, Bernd-Heinrich, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,871,864, Cl. 71-91.000.
Fischer, Finn: *See—*
Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,872,179.
Fischer, Hanspeter: *See—*
Weis, Claus; and Fischer, Hanspeter, 3,872,141.
Fischer, James R.: *See—*
Sweeny, Keith H.; Fischer, James R.; Lung, Charles A.; and Wilson, Elmer M., 3,871,906.
Fish, John G., to Texas Instruments Incorporated. Method of etching films made of polyimide based polymers. 3,871,930, Cl. 156-3.000.
Fish, Warren H., to Whirlpool Corporation. Vacuum cleaner filter. 3,871,847, Cl. 55-372.000.
Fives Lille-Cail: *See—*
Pietryka, Joseph, 3,871,441.
Flais, Louis R.; and Gentle, Ralph G., to Bailey Meter Company. In-situ oxygen detector. 3,871,981, Cl. 204-195.00S.
Flanagan, Kenneth J.: *See—*
Fenyes, Joseph G. E.; and Flanagan, Kenneth J., 3,872,186.
Fleckenstein, Erwin; and Mohr, Reinhard, to Hoechst Aktiengesellschaft. 3-Amino-1h-pyrazolo(3,4-b)pyridines. 3,872,133, Cl. 260-296.00H.
Fletcher, John H., to Data Service of America, Inc. Drop sensing apparatus. 3,871,229, Cl. 73-204.000.
Fliedner, Leonard J., Jr., to Endo Laboratories, Inc. Hydroxy- and acetoxy-phthalaldehydric acid, O-(substituted) oximes. 3,872,113, Cl. 260-240.00G.
Fliege, Werner: *See—*
Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, 3,872,070.
Floyd Rush Corporation: *See—*
Lassiter, Rush E., 3,871,291.
Fluor Corporation: *See—*
Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,872,179.
FMC Corporation: *See—*
Baker, Jeffrey A., 3,872,005.
Berkowitz, Sidney; and Mesiah, Raymond, 3,872,118.
Bishop, Wayne C., 3,872,017.
Brink, Edwin H., deceased, 3,871,132.
Homeier, Ronald F., 3,871,510.
Folk, Kenneth Foster, to AMP Incorporated. Method and apparatus for varying the relative length of a plurality of leads by forming bights in selected leads. 3,871,072, Cl. 29-628.000.
Fontana, Ludovico. Hooking suspension system. 3,871,698, Cl. 294-83.00R.
Foote Mineral Company: *See—*
Smith, William Novis, Jr., 3,872,220.
Foreman, Leonard: *See—*
Waxgiser, Martin A.; and Foreman, Leonard, 3,871,197.
Forest, Joseph G.; and Czarnetzky, Edward J. Fermentation control-containing laminate. 3,871,949, Cl. 161-165.000.

Foris, Stephen, Jr.: *See—*
Manowitz, Milton; Walter, Goerge R.; and Foris, Stephen, Jr., 3,871,860.
Form/Space Corporation: *See—*
Rudin, Melvin, 3,871,144.
Forschungsinstitut fur Orthopadie-Technik: *See—*
Karas, Wolfgang, 3,871,032.
Forster, Hans-Joachim: *See—*
Cherdron, Egon; Forster, Hans-Joachim; Potencsik, Istvan; and Haerter, Manfred, 3,872,215.
Foster, Eric: *See—*
Pryce, William; and Foster, Eric, 3,871,253.
Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,871,927.
Fournet, Louis: *See—*
Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, 3,871,297.
Fowler, Wyland L.: *See—*
Perry, Donald S.; Fowler, Wyland L.; Shattuck, Richard E.; and Mueller, Hans W., 3,871,507.
Fox, Ronald Denis: *See—*
Garrett, Kenneth John; and Fox, Ronald Denis, 3,871,492.
Fr. Hesser Maschinenfabrik AG: *See—*
Domke, Klaus; Lau, Peter; and Glas, Willi, 3,871,157.
Francois, Maurice, to Trefilunion. Lattice for the reinforcement of tubular concrete elements. 3,871,410, Cl. 138-175.000.
Frank, Robert G., to PPG Industries, Inc. Apparatus for roll-press forming heat-softened glass sheets. 3,871,855, Cl. 65-245.000.
Franz, Dietmar; Schoneberger, Willi; and Upper, Gerd, to Carl Freduenburg, Firma. Shaft packing. 3,871,666, Cl. 277-59.000.
Fraser, George L.: *See—*
Last, Arthur W.; and Fraser, George L., 3,871,867.
Frederiksen, Thomas M.; and Zobel, Don William, to Motorola, Inc. Differential to single ended converter circuit. 3,872,323, Cl. 307-235.00R.
Fredrickson, Walter G.; Heitmann, Albert W.; and Thraikill, Howard A., to Harris-Intertype Corporation. Video layout system. 3,872,460, Cl. 340-324.0AD.
Freeman, John Trafford Rowe: *See—*
Rudert, Bernhardt Siegfried; and Freeman, John Trafford Rowe, 3,872,327.
Frey, Volker: *See—*
Kratel, Gunter; Stohr, Gunter; Wiebke, Gunter; and Frey, Volker, 3,872,214.
Frey, Wolfgang; and Schoenauer, Wolfgang, to Fidelity Union Trust Company. Anthraquinone compounds. 3,872,137, Cl. 260-374.000.
Friberg, Vincent P.; Chesney, John; and Phelps, Richard B., to General Instrument Corporation. Multiplex signal program servo-mechanism. 3,872,368, Cl. 318-567.000.
Friberg, Vincent P.; and Chesney, John, to General Instrument Corporation. Modular l-c filter. 3,872,399, Cl. 333-70.00S.
Fried, John H.: *See—*
Patterson, John W.; and Fried, John H., 3,872,139.
Siddall, John E.; and Fried, John H., 3,872,101.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Bertram, Joachim; and Meuser, Wilfried, 3,872,382.
Friedman, Stanley I.: *See—*
Besenfelder, Edward R.; and Friedman, Stanley I., 3,872,431.
Friedrick Kocks GmbH: *See—*
Bechtloff, Gert, 3,871,697.
Fritsch, Werner: *See—*
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,872,081.
Fritz Schwarzer GmbH: *See—*
Joppich, Mandred, 3,872,301.
Frost, Wade W., to Oxford Industries, Inc. Shirt front assembly, method and apparatus. 3,871,309, Cl. 112-121.290.
Fuchs, Friedrich: *See—*
Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, 3,872,070.
Fuji Photo Film Co., Ltd.: *See—*
Asano, Yoshio, 3,872,485.
Hayashi, Takao; Kato, Hajime; and Ishige, Sadao, 3,871,900.
Kanda, Masao; and Watanabe, Akio, 3,871,326.
Oshima, Shigeru, 3,872,488.
Fuji Photo Optical Co., Ltd.: *See—*
Akiyama, Kazuhiro, 3,872,482.
Numata, Saburo; Sagara, Iwao; and Shishikura, Hirohisa, 3,872,483.
Fuji Spinning Co., ltd.: *See—*
Takahasi, Takemitsu; Yamazaki, Keigi; and Tanaka, Hirosi, 3,871,938.
Fujii, Toshinobu: *See—*
Watanabe, Takao; Kohchi, Akira; and Fujii, Toshinobu, 3,872,411.
Fujinami, Hiroshi; and Takagi, Katuyuki, to Nippon Soken, Inc. Electronic ignition timing control circuit for internal combustion engine. 3,871,342, Cl. 123-117.00R.
Fujiwara, Tadamaro: *See—*
Nagai, Masashi; Miwa, Kazuhito; Tsunetsugu, Masakazu; and Fujiwara, Tadamaro, 3,871,343.
Fukuchi, Shuzo; Shimizu, Noboru; and Ohara, Takashi, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for the manufacture of alkylaminoalkyl acrylates. 3,872,161, Cl. 260-486.00R.
Fukuda, Kazuo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, 3,872,148.
Fukuda, Noboru; and Otani, Yutaka, to Olympus Optical Co., Ltd. Guiding tube for the insertion of an admissible medical implement into a human body. 3,871,358, Cl. 128-2.00M.
Fulenwider, John E., to GTE Laboratories Incorporated. Optical cross-point switching matrix for an optical communications system. 3,871,743, Cl. 350-96.0WG.
Fuller, Charles H.; and Herring, Carl E., to Monitron Industries, Inc. Physiological measurement display system. 3,872,455, Cl. 340-189.00M.
Funk, Eldon E. Portable well pipe puller. 3,871,618, Cl. 254-30.000.
Funken Co., Ltd.: *See—*
Iwako, Hiroyuki, 3,871,625.
Furrer, Harald; and Lohaus, Gerhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Substituted 2-pyrones. 3,872,109, Cl. 260-343.500.
Furukawa, Kaoru; Isukamoto, Chiaki; and Nagai, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Polyamide composition having decreased gel-forming property in molten state. 3,872,055, Cl. 260-45.70P.
Furusawa, Takamasa: *See—*
Murata, Masamichi; Urayama, Yuji; and Furusawa, Takamasa, 3,872,254.
Furuta, Shigeru, to Kabushiki Kaisha Sankosha. Multiple-electrode discharge tube and method of manufacturing same. 3,872,343, Cl. 313-296.000.
Furuuchi, Shigemasa: *See—*
Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, 3,871,746.
Fusion Systems Corporation: *See—*
Spero, Donald M.; Eastlund, Bernard J.; and Ury, Michael G., 3,872,349.
G. S. Blakeslee & Co.: *See—*
Vilen, Erik O.; and Zygas, Vytas, 3,871,725.
G. T. Schjeldahl Company: *See—*
Menke, James A.; and Witherow, Robert G., 3,871,603.
Gabano, Jean-Paul; and Jumel, Yves, to Saft-Societe Des Accumulateurs Fixes Et De Traction. Negative active substance for a storage cell. 3,871,917, Cl. 136-26.000.
Gabine Precision Tubes Limited: *See—*
Dockree, Basil Frederick, 3,871,687.
Gadzala, Antoni Edward: *See—*
Kinney, James F.; and Gadzala, Antoni Edward, 3,871,818.
GAF Corporation: *See—*
Hort, Eugene V., 3,872,100.
Wallace, William E., 3,872,131.
Gail, Josef. Method of and apparatus for spreading fertilizer. 3,871,587, Cl. 239-662.000.
Galle, Edward L.: *See—*
Sinner, Joseph M.; Galle, Edward L.; Kolosky, Joseph F.; and Mikkelson, Marvin O., 3,872,230.
Galya, William; and Huffield, Jack E. Sewing machine fabric-cutting device. 3,871,308, Cl. 112-122.000.
Gandon, Louis; and Lemarinel, Robert, to "Le Nickel". Process for the production of high-purity metals from nickeliferous mattes. 3,871,978, Cl. 204-113.000.
Ganske, Warren L.: *See—*
Durst, Jack R.; and Ganske, Warren L., 3,872,229.
Garceau, David S.; and Knoke, Silas J., to Lear Siegler, Inc. Bed frame. 3,871,039, Cl. 5-181.000.
Garcia, Mary E.; and Piekarski, Sophie A. Tip cat apparatus including elevated tee. 3,871,651, Cl. 273-95.00F.
Gardiner, Frances R.: *See—*
Murray, Jerome L.; and Gardiner, Frances R., 3,871,518.
Gardiner, Robert F. Metal detector distinguishing between different metals by using a bias circuit actuated by the phase shifts caused by the metals. 3,872,380, Cl. 324-41.000.
Gardner, Samuel: *See—*
Wright, Donald; and Gardner, Samuel, 3,872,153.
Garmon, Ivan E., to Hoerner Waldorf Corporation. Shipping tray. 3,871,570, Cl. 229-31.00R.
Garrett, Kenneth John; and Fox, Ronald Denis, to Humphrey Thompson Enterprises Limited. Vehicle chock. 3,871,492, Cl. 188-32.000.
Gaspar, Noel J.: *See—*
King, Lawrence F.; Gaspar, Noel J.; and Pasternak, Israel S., 3,871,992.
Gates Rubber Company, The: *See—*
Schnackenberg, Werner D.; and Lane, James M., III, 3,871,240.
Gaudio, Alfred: *See—*
Krieg, John W.; Gaudio, Alfred; and Borek, Victor F., 3,872,281.
Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,871,817.
Gavagan, James A.: *See—*
Romanzi, Louis, Jr.; and Gavagan, James A., 3,871,090.
Gebr. Hofmann KG: *See—*
Hegenbart, Horst, 3,871,106.
Himmler, Gunther; Ohms, Klaus-Peter; and Gruber, Peter-Max, 3,871,210.
Gebruder Giulini GmbH: *See—*
Cherdron, Egon; Forster, Hans-Joachim; Potencsik, Istvan; and Haerter, Manfred, 3,872,215.
Gebruder Hischmann Maschinenfabrik: *See—*
Porr, Karl-Heinz, 3,871,111.

- Gehrig, Heinz: *See—*
  - Merz, Gerhard; Gehrig, Heinz; and Chorbacher, Wilhelm, 3,872,217.
- Geiger, Istvan; and Decker, Gerd, to Volkswagenwerk Aktiengesellschaft. Cylinder arrangement having a combustion and a precombustion chamber therein and a separate fuel supply or dosing means therefor. 3,871,351, Cl. 123-32.0SP.
- Geiger, Rolf: *See—*
  - Koenig, Wolfgang; Geiger, Rolf; and Wissmann, Hans, 3,872,074.
- Geisthoff, Hubert, to Jean Waltersheid GmbH. Device for connecting a tractor with an agricultural implement. 3,871,463, Cl. 180-14.00B.
- Geller, William L.; and McCarthy, Jeremiah P., to GTE Laboratories Incorporated. Negative impedance converter. 3,872,495, Cl. 357-48.000.
- General Company Limited: *See—*
  - Iomiyama, Yoshimichi; Yamahata, Takashi; and Yasuda, Tomoya, 3,871,065.
- General Dynamics Corporation: *See—*
  - Poulsen, Peter D., 3,871,739.
- General Electric Company: *See—*
  - Boisvert, Roger L., 3,872,428.
  - Collins, Byron R., 3,872,340.
  - De Hollander, William R.; and Nivas, Yogesh, 3,872,022.
  - Jones, Allen G., 3,871,443.
  - Keith, W. Gill; and Ferris, F. Donald, 3,871,829.
  - Klein, Keith William; Swetnam, Norman Thomas; and Cahill, Robert Allen, 3,872,355.
  - Leunig, Carl V., 3,871,806.
  - Powell, Walter F.; and Grimshaw, Charles, 3,872,350.
  - Shaw, Harvey P., 3,872,054.
  - Slayton, Curtis R., 3,871,800.
  - Woods, Lee O., 3,871,939.
- General Foods Corporation: *See—*
  - Lavo, Harry F.; and Cante, Charles J., 3,871,130.
- General Instrument Corporation: *See—*
  - Friberg, Vincent P.; Chesney, John; and Phelps, Richard B., 3,872,368.
  - Friberg, Vincent P.; and Chesney, John, 3,872,399.
  - Miner, Carroll R., 3,871,237.
- General Signal Corporation: *See—*
  - Bird, Nicholas W. F.; and Kim, Chang-Whan, 3,872,471.
  - Philibert, Robert A.; and Browne, Frank L., 3,871,091.
- General Tire and Rubber Company, The: *See—*
  - Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., 3,872,208.
  - Henley, Virgil E.; and Kovalchik, Steve, Jr., 3,871,942.
  - Strong, Grant F., 3,871,816.
- Gentle, Ralph G.: *See—*
  - Flais, Louis R.; and Gentle, Ralph G., 3,871,981.
- GeoResources, Inc.: *See—*
  - Musgrove, Ralph E., 3,872,002.
- Georg, Werner; Cwielong, Heinrich; and Mertens, Wilfried, to Gewerkschaft Eisenhutte Westfalia. Drive stations. 3,871,513, Cl. 198-203.000.
- George, Flint R.: *See—*
  - Vann, Roy R.; and George, Flint R., 3,871,448.
- Georgii, Hans Christer, to Gorghild Georgii. Stiffening means for structural elements. 3,871,149, Cl. 52-404.000.
- Gerat, Jean; and Gerbet, Georges, to Societe Nouvelle de Roulements. Machines for manufacturing bearing races by rolling. 3,871,204, Cl. 72-117.000.
- Gerber, Gary A.: *See—*
  - Zimmers, Melvin; and Gerber, Gary A., 3,871,655.
- Gerber Scientific Instrument Company, The: *See—*
  - Rich, Leonard G., 3,872,369.
- Gerbet, Georges: *See—*
  - Gerat, Jean; and Gerbet, Georges, 3,871,204.
- Geren, Gerald S.: *See—*
  - Glass, Earl J.; and Geren, Gerald S., 3,871,115.
- Gerth, William Valentine. Chesterfield bed mechanism. 3,871,035, Cl. 5-13.000.
- Gesslein, Georg. Baby carriage. 3,871,701, Cl. 296-28.00B.
- Gewerkschaft Eisenhutte Westfalia: *See—*
  - Georg, Werner; Cwielong, Heinrich; and Mertens, Wilfried, 3,871,513.
- Geyer, Paul, to Uniroyal, Inc. Extruder and roller-die combination. 3,871,810, Cl. 425-374.000.
- GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
  - Kralowetz, Bruno; and Blaimschein, Gottfried, 3,871,223.
- Gianessi, Albert: *See—*
  - Krolak, Ronald L.; Gianessi, Albert; and Alexander, George F., 3,871,462.
- Gianessi, Matilde. Method for accelerating the growth and increasing the yield of microorganisms. 3,871,961, Cl. 195-37.000.
- Gibson, James Donald MacKay, to I.W.S. Nominee Company Limited. Apparatus for use in dyeing textile materials. 3,871,195, Cl. 68-198.000.
- Gibson, Peter Gordon: *See—*
  - Cardwell, William Thomas; Hawke, Francis Murray; and Gibson, Peter Gordon, 3,871,183.
- Giddings & Lewis, Inc.: *See—*
  - Siebert, William R., 3,871,721.
- Gidon Industries, Inc.: *See—*
  - Wright, Peter C.; and Kirsch, Donald L., 3,871,690.
- Giebel, Joseph L.; and Temple, Ernest E., to Mine Safety Appliances Company. Self-cocking explosively actuated cable cutter. 3,871,321, Cl. 114-221.00A.
- Giger, Urs: *See—*
  - Charbonney, Adrien Maurice, deceased; Perucchi, Norbert; Belot, Michel; and Giger, Urs, 3,871,171.
- Gilbu, Agnar, to Owens-Corning Fiberglas Corporation. Reinforced synthetic pipe wall construction. 3,871,409, Cl. 138-174.000.
- Gile, Verne L., to Erect-A-Tabe, Inc. Trapezoidal door for closing the trapezoidal opening of a building structure. 3,871,436, Cl. 160-188.000.
- Gillem, Maurice F.: *See—*
  - Tiedeman, George T.; and Gillem, Maurice F., 3,872,051.
- Gillette Company, The: *See—*
  - Nissen, Warren I.; and Perry, Roger L., 3,871,073.
  - Nissen, Warren I.; and Perry, Roger L., 3,871,077.
  - Pentney, Harry, 3,871,075.
  - Perry, Roger L., 3,871,076.
  - Pomfret, Edward E.; and Welsh, Norman C., 3,871,074.
- Giolitti, Nicolo; Daly, Dante; and Bertino, Lorenzo, to Ing. C. Olivetti & C., S.p.A. Keyboard for calculating, accounting and other office machines. 3,872,468, Cl. 340-365.00R.
- Giovanni, Sesto San: *See—*
  - Pasqualucci, Carmine Renato; Bonfanti, Giovanni; Giovanni, Sesto San; and Cignarella, Giorgio, 3,872,088.
- Gipson, Robert M., to Jefferson Chemical Company, Inc. Amino alcohols. 3,872,116, Cl. 260-247.70A.
- Girling Limited: *See—*
  - Mathias, Christopher Neil, 3,871,493.
  - Taft, Philip Augustus; and Dawson, Stuart Bruce, 3,871,678.
- Givaudan Corporation: *See—*
  - Bertele, Erhard; and Schudel, Peter, 3,872,172.
  - Dahill, Robert T., Jr., 3,872,160.
  - Manowitz, Milton; Walter, Goerge R.; and Foris, Stephen, Jr., 3,871,860.
- Glas, Willi: *See—*
  - Domke, Klaus; Lau, Peter; and Glas, Willi, 3,871,157.
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  - Glausecker, Karl; and Gnutzmann, Uwe, 3,872,400.
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  - Shum, Lanson Y.; Sienkiewicz, Leon J.; and Gogniat, Theodore, 3,872,285.
- Golay, Roland: *See—*
  - Mariaux, Sady; and Golay, Roland, 3,871,642.
- Gold, Nicholas, to Polaroid Corporation. Photographic film assemblage and apparatus. 3,872,487, Cl. 354-86.000.
- Goldenstein, John E., to Philip Morris Incorporated. Conversion of cigarette vending machines to hold outsized cigarette packages. 3,871,059, Cl. 29-427.000.
- Goldsmith, Aaron: *See—*
  - Elson, Edward E.; and Goldsmith, Aaron, 3,871,422.
- Goldstein, Norman P.; and Todt, William H., to Westinghouse Electric Corporation. Self-powered neutron detector. 3,872,311, Cl. 250-390.000.
- Golovinov, Mikhail Fedotovich: *See—*
  - Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.
- Goncharevich, Leonid Fomich: *See—*
  - Schedrovitsky, Savely Solomonovich; Goncharevich, Leonid Fomich; Pruss, Karl Vladimirovich; Lebedev, Alexei Pavlovich; and Gontar, Valentin Nikolaevich, 3,872,458.
- Gontar, Valentin Nikolaevich: *See—*
  - Schedrovitsky, Savely Solomonovich; Goncharevich, Leonid Fomich; Pruss, Karl Vladimirovich; Lebedev, Alexei Pavlovich; and Gontar, Valentin Nikolaevich, 3,872,458.
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- Goodyear Tire & Rubber Company, The: *See—*
  - Enabnit, Robert S., 3,872,424.
  - Henderson, James Neil; and Shaheen, Frank G., 3,872,071.
  - Hewitt, John H.; and Johnson, Ernest D., 3,871,514.
  - Hunter, Edward E., 3,871,327.
  - Keck, Max H., 3,872,183.
  - Lawrence, John P., 3,872,062.
  - Neugroschl, Ernest J., 3,871,212.
  - Pace, Henry A.; St. Cyr, David R.; and Bullard, Herbert L., 3,872,064.
  - Paul, David H.; and Rosey, Joseph A., 3,872,201.
  - Wasko, Elmer J., 3,871,941.
  - Woodling, Gerald L., 3,871,303.
- Gorghild Georgii: *See—*
  - Georgii, Hans Christer, 3,871,149.
- Gossel, Helmut: *See—*
  - Schaum, Helmut; and Gossel, Helmut, 3,871,971.
- Gotoh, Hideyuki. Culturing of pearls. 3,871,333, Cl. 119-4.000.
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- Gottesman, Roy T.: *See—*
  - Fath, Joseph; and Gottesman, Roy T., 3,872,053.
- Gotz, Walter: *See—*
  - Anschutz, Erhard; and Gotz, Walter, 3,871,092.
- Gournelle, Maurice Paul. Semi-automatic distributor of doses of viscous products. 3,871,558, Cl. 222-181.000.
- Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich. Apparatus for dividing a stream of printed newspapers into portions. 3,871,638, Cl. 270-32.000.
- Graf, Hermann: *See—*
  - Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,871,445.
- Graf, Peter-Josef: *See—*
  - Koch, Dieter; and Graf, Peter-Josef, 3,872,420.
- Grafinger, Wilhelm, to Siemens Aktiengesellschaft. Method and apparatus for linearizing the characteristic of a sweep frequency generator. 3,872,406, Cl. 331-178.000.
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- Green, Edward Howard, Jr.: *See—*
  - Green, Edward Howard; and Green, Edward Howard, Jr., 3,871,337.
- Green, Eugene L., to United States of America, Navy. Multidimensional fourier transform optical processor. 3,872,293, Cl. 235-181.000.
- Green, Ralph W., to Milaca Mills, Inc. Tennis panty. 3,871,030, Cl. 2-238.000.
- Greene, Tweed & Co., Inc.: *See—*
  - Burke, John A.; and Berg, Thorval L., 3,871,665.
- Greenwald, Carl V.: *See—*
  - Greenwald, Lewis E.; and Greenwald, Carl V., 3,872,426.
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- Grenier, George D. Infant carrier. 3,871,562, Cl. 224-6.000.
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  - Field, Donald E.; and Griffith, James R., 3,872,045.
- Grimshaw, Charles: *See—*
  - Powell, Walter F.; and Grimshaw, Charles, 3,872,350.
- Grisar, J. Martin; Parker, Roger A.; and Kariya, Takashi, to Richard-Merrell Inc. Derivatives of 1,3-benzodioxole-2-carboxylic acid. 3,872,105, Cl. 260-340.500.
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- Grooms, George V., to Animal Fair, Inc. Eye construction for soft stuffed toys. 3,871,128, Cl. 46-165.000.
- Groov-Pin Corporation: *See—*
  - Bosse, Robert W., 3,871,429.
- Grose, Ansel B. Fuel control valve. 3,871,403, Cl. 137-436.000.
- Gross, Thomas A. O. Electric motor braking system. 3,872,363, Cl. 318-212.000.
- Grosso, Attilio: *See—*
  - Grosso, Vincenzo; and Grosso, Attilio, 3,871,357.
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- Groves, Alexander J., Jr.: *See—*
  - Groves, Alexander J.; and Groves, Alexander J., Jr., 3,872,419.
- Gruber, Peter-Max: *See—*
  - Himmler, Gunther; Ohms, Klaus-Peter; and Gruber, Peter-Max, 3,871,210.
- Gruppo Lepetit S.p.A: *See—*
  - White, Richard J.; and Lancini, Giancarlo, 3,871,965.
- GTE Laboratories Incorporated: *See—*
  - Bridger, Andrew; Dakss, Mark L.; Zemon, Stanley; and Stone, Samuel M., 3,871,744.
  - Fulenwider, John E., 3,871,743.
  - Geller, William L.; and McCarthy, Jeremiah P., 3,872,495.
  - Hagenlocher, Arno K., 3,872,489.
  - Zucker, Joseph, 3,872,410.
- GTE Sylvania Incorporated: *See—*
  - Smith, James Thomas, 3,872,193.
- Gunter, Feier: *See—*
  - Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, 3,871,415.
- Gustov, Vladimir Alexandrovich: *See—*
  - Vydrin, Vladimir Nikolaevich; Ageev, Leonid Matveevich; and Gustov, Vladimir Alexandrovich, 3,871,221.
- Gutlhuber, Friedrich; *See—*
  - Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,871,445.
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- Haag-Streit AG: *See—*
  - Papritz, Hans; and Hagi, Kurt, 3,871,753.
- Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Method for providing a liquid crystalline film. 3,871,904, Cl. 117-72.000.
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- Hadi, Homayoun: *See—*
  - Jamison, Will B.; Burr, John F.; and Hadi, Homayoun, 3,871,302.
- Haede, Werner: *See—*
  - Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,872,081.
- Haerter, Manfred: *See—*
  - Cherdron, Egon; Forster, Hans-Joachim; Potencsik, Istvan; and Haerter, Manfred, 3,872,215.
- Hagenlocher, Arno K., to GTE Laboratories Incorporated. Electron emission from a cold cathode. 3,872,489, Cl. 357-15.000.
- Hager, James R., to Brunswick Corporation. RFI suppression spark plug. 3,871,349, Cl. 123-169.0EL.
- Hagi, Kurt: *See—*
  - Papritz, Hans; and Hagi, Kurt, 3,871,753.
- Hahn, Russell J. High speed food measuring and/or forming machine. 3,871,085, Cl. 17-32.000.
- Hajdu, Juan: *See—*
  - Fadgen, Earl J., Jr.; and Hajdu, Juan, 3,871,889.
- Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polymerization catalyst. 3,872,177, Cl. 260-665.00R.
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- Halcon International, Inc.: *See—*
  - Schmidt, John P., 3,872,164.
- Haldor Topsoe A/S: *See—*
  - Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,872,179.

- Hall, Michael Edgar: *See—*
  - Boden, Philip; Crook, Peter John; Hall, Michael Edgar; and Riley, Stephen Philip, 3,872,033.
- Halliburton Company: *See—*
  - Dial, Darrell D.; and von Bose, Robert J., 3,871,529.
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- Hamman, Lyle J., to Eaton Stamping Company. Recoil starter. 3,871,350, Cl. 123-185.00A.
- Hammann, Ingeborg: *See—*
  - Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,872,185.
- Hammer, Ilse M. Disposable nursing container. 3,871,542, Cl. 215-11.00E.
- Hammer, James R.: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
- Hammernik, William F.: *See—*
  - Fee, David C.; and Hammernik, William F., 3,871,425.
- Hamprecht, Gerhard; Koenig, Karl-Heinz; and Bolz, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of o-sulfamidobenzoic acids. 3,872,167, Cl. 260-518.00R.
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- Hance, Allen P. Security screen for window. 3,871,434, Cl. 160-91.000.
- Hand, William C., to Luxo Lamp Corporation. Carton for lamp and the combination thereof. 3,871,520, Cl. 206-320.000.
- Handforth, John Anthony: *See—*
  - Burton, Arthur; Naylor, Arthur John; and Handforth, John Anthony, 3,871,907.
- Hanegafuchi Boseki Kabushiki Kaisha: *See—*
  - Matsunaga, Hirotsugu, 3,871,196.
- Haney, Thomas Albert; Bruno, Gerald Anthony; and Bartlett, Janeth, to E. R. Squibb & Sons, Inc. Tc-99m albumin aggregates with stannous tin and denatured albumin. 3,872,226, Cl. 424-1.000.
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- Harada, Kenichi, to Olympus Optical Company Limited. Lens system having magnification ×1. 3,871,749, Cl. 350-215.000.
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  - Fredrickson, Walter G.; Heitmann, Albert W.; and Thraikill, Howard A., 3,872,460.
- Harris, Nicholas D., to Morton-Norwich Products, Inc. Process for preparing chloromethylated polystyrene-divinylbenzene copolymer. 3,872,067, Cl. 260-80.780.
- Harrison, John W.: *See—*
  - Lowry, Robert D.; and Harrison, John W., 3,872,194.
- Harrison, Kenneth S., to Mohasco Industries, Inc. Chair with projecting headrest and hardware therefor. 3,871,705, Cl. 297-61.000.
- Harrison, William M. Water flood process in clay-bearing subsurface formations. 3,871,454, Cl. 166-275.000.
- Hartmann, Gerhard: *See—*
  - Schmidt, Peter; Kizler, Harald; and Hartmann, Gerhard, 3,871,338.
- Haseba, Shigeru, to Kobe Steel Ltd. Method for removing harmful components from exhaust gases. 3,872,213, Cl. 423-213.700.
- Hasegawa, Tsuneo; and Nakahara, Kiyoharu. Apparatus for removing acid gas from waste gas. 3,871,987, Cl. 204-263.000.
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  - Kuriyama, Sigeru; and Hashimoto, Hideyuki, 3,872,367.
- Hashimoto, Kinro: *See—*
  - Todani, Yoshihiro; Sugi, Nagatoshi; and Hashimoto, Kinro, 3,872,036.
- Hashimoto, Mitsuru, to Kabushiki Kaisha Ricoh. Electrophotographic photoconductive layer comprising an organic photoconductor and a dicyanomethylene-indenothiophene sensitizer. 3,871,883, Cl. 96-1.500.
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- Hatala, Andrew A.: *See—*
  - Antonioni, Rinaldo, 3,871,940.
- Hatfield, John D., to Owens-Illinois, Inc. Plastic jacket for containers. 3,871,699, Cl. 294-87.200.
- Hatkin, Leonard, to United States of America, Army. Shunt loaded line phase shifter. 3,872,409, Cl. 333-31.00R.
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- Hauni-Werke Korber & Co., KG: *See—*
  - David, Harry, 3,871,385.
- Hawke, Francis Murray: *See—*
  - Cardwell, William Thomas; Hawke, Francis Murray; and Gibson, Peter Gordon, 3,871,183.
- Hawkins, Robert W.: *See—*
  - Depauw, Richard A.; and Hawkins, Robert W., 3,871,384.
- Hayashi, Makoto; and Hinata, Masanori, to Sumitomo Electric Industries, Ltd. Continuous hydrostatic extrusion-drawing apparatus. 3,871,201, Cl. 72-60.000.
- Hayashi, Shintaro: *See—*
  - Waku, Shigeru; Hayashi, Shintaro; Shibata, Hiroyuki; and Kawashima, Takehisa, 3,871,745.
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- Hayashi, Yasutake: *See—*
  - Hikida, Ryotara; Hayashi, Yasutake; and Arakawa, Hideo, 3,871,715.
- Hayashibara Biochemical Laboratories, Incorporated: *See—*
  - Hijiya, Hiromi; and Shiosaka, Makoto, 3,871,892.
  - Hijiya, Hiromi; and Shiosaka, Makoto, 3,872,228.
- Hazelett Strip-Casting Corporation: *See—*
  - Petry, Charles J., 3,871,905.
- Hazemeijer B.V.: *See—*
  - Clason, Jan Christiaan, 3,872,271.
- Hazen Research, Inc.: *See—*
  - Hazen, Wayne C.; and Coltrinari, Enzo L., 3,872,209.
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- Heffler, Jochen: *See—*
  - Bohm, Harald; and Heffler, Jochen, 3,871,922.
- Hegenbart, Horst, to Gebr. Hofmann KG. Methods and apparatuses for dynamic axle angle measurement on motor vehicles. 3,871,106, Cl. 33-203.130.
- Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
  - Buttner, Artur; and Rambausek, Hugo, 3,871,645.
- Heidenreich, William C.: *See—*
  - Davidson, Samuel L.; Heidenreich, William C.; and Hunter, Phillip, 3,871,043.
- Heilprin, Laurence B.; Nordquist, George; and Krupen, Philip, to United States of America, Army. Electrostatic proximity fuse. 3,871,296, Cl. 102-70.20P.
- Heim Universal Corporation: *See—*
  - McCloskey, Albert R., 3,871,722.
- Heinsohn, Howard H., Jr.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,872,111.
- Heitmann, Albert W.: *See—*
  - Fredrickson, Walter G.; Heitmann, Albert W.; and Thraikill, Howard A., 3,872,460.
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- Henson, Rudy D.: *See—*
  - Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., 3,872,208.
- Hepp, K. Kevin; and Price, James H., to Owens-Illinois, Inc. Child-resistant closure. 3,871,662, Cl. 215-223.000.
- Hercules Incorporated: *See—*
  - Dieckmann, Steffen F., 3,872,155.
- Herndon, John W., to United States of America, Navy. 360 Degree panoramic television system. 3,872,238, Cl. 178-6.000.
- Heron, John R.: *See—*
  - Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., 3,871,824.
- Heros, Ricardo J., to Richards Manufacturing Company. Myringotomy drain tube. 3,871,380, Cl. 128-350.00R.
- Herring, Carl E.: *See—*
  - Fuller, Charles H.; and Herring, Carl E., 3,872,455.
- Herrmann, Henry Otto, Jr., to AMP Incorporated. Shielded high voltage connector. 3,871,735, Cl. 339-177.00R.
- Herrmann, Manfred: *See—*
  - Daubach, Ewald; Windel, Hermann; Boehm, Walter; Weiser, Dieter; and Herrmann, Manfred, 3,872,056.
- Hertler, Walter Raymond, to du Pont de Nemours, E. I., and Company. Crystalline photo-polymerizable composition. 3,871,885, Cl. 96-35.100.
- Hervey, John D.; and Smith, Waymon G., to Ferro Corporation. Thermoplastic screen process inks. 3,872,044, Cl. 260-30.80R.
- Herziger, Gerd Bernd: *See—*
  - Engel, Andreas Hermann; Herziger, Gerd Bernd; and Tschudi, Theodor Heinrich, 3,871,769.
- Hesse, Kurt, to Staff KG. Connecting device for current distributor rails. 3,871,730, Cl. 339-21.00R.
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  - Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; Hewitt, Graham; and Taylor, Michael Victor, 3,872,086.
- Hewitt, John H.; and Johnson, Ernest D., to Goodyear Tire & Rubber Company, The. Safety brake apparatus for belt conveyor. 3,871,514, Cl. 198-232.000.
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- Hidaka, Mikio: *See—*
  - Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, 3,872,148.
- Higashi, Kazuhiro; Taguchi, Isao; and Miura, Nobuaki, to Omron Tateisi Electronics Co. Mechanical - electrical semiconductor transducer with rectifying tin oxide junction. 3,872,490, Cl. 357-15.000.
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- Hilliker, Stephen Earl: *See—*
  - Carlson, David John; and Hilliker, Stephen Earl, 3,872,240.
- Hillman, Edwin K. Wind velocity and direction apparatus. 3,871,220, Cl. 73-189.000.
- Hilton, John Leslie, to Plessey Handel Und Investments A.G. Exchangeable crimping jaw unit. 3,871,224, Cl. 72-413.000.
- Himmele, Walter: *See—*
  - Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, 3,872,070.
- Himmler, Gunther; Ohms, Klaus-Peter; and Gruber, Peter-Max, to Gebr. Hofmann KG. Vibration testing apparatus with preload control. 3,871,210, Cl. 73-67.000.
- Hinai, Masakatsu: *See—*
  - Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,871,927.
- Hinata, Masanori: *See—*
  - Hayashi, Makoto; and Hinata, Masanori, 3,871,201.
- Hinds, James L.: *See—*
  - Shames, Oscar; Hinds, James L.; Raditz, Michael G.; and Palatucci, Gerald J., 3,872,476.
- Hino, Tetsuo; Minami, Eiji; Kozu, Isao; and Kurihara, Hidetoshi, to Matsushita Electric Industrial Co., Ltd. Automatic cartridge changer. 3,872,505, Cl. 360-92.000.
- Hintsch, Otto, to Sulzer Brothers Ltd. Weaving machine having component warp beams. 3,871,418, Cl. 139-100.000.
- Hipotronics, Inc.: *See—*
  - Schutz, Richard F., 3,872,414.
- Hirai, Kentaro: *See—*
  - Takamizawa, Akira; Hirai, Kentaro; Oikawa, Hiroshi; and Inazu, Kunihei, 3,872,123.
- Hiramatsu, Yoshio: *See—*
  - Tsukamoto, Kunio; Suzuki, Yasushi; Izumi, Akihiro; and Hiramatsu, Yoshio, 3,872,087.
- Hirano, Koichi: *See—*
  - Takahashi, Susumu; Ito, Ryosuke; and Hirano, Koichi, 3,872,249.
- Hirokawa, Koichi: *See—*
  - Kagari, Yoshiharu; and Hirokawa, Koichi, 3,871,294.
- Hirose, Yoshiteru: *See—*
  - Tobe, Sadanobu; Hirose, Yoshiteru; Nakamura, Yoshihiro; and Mitsugi, Koji, 3,871,963.
- Hiroshi Hukuba: *See—*
  - Kaburaki, Yasuo; and Kobayashi, Kiyoshi, 3,871,047.
- Hiroshima Kasei, Ltd.: *See—*
  - Tokito, Takao; and Kawamoto, Yasushige, 3,872,200.
- Hiroshima, Tatsuo: *See—*
  - Shiraiwa, Toshio; and Hiroshima, Tatsuo, 3,872,378.
- Hirschfeld, Tomas, to Block Engineering, Inc. Method and apparatus for detecting and classifying nucleic acid particles. 3,872,312, Cl. 250-458.000.
- Hirtler, Alfred E.: *See—*
  - Corcoran, Richard P.; Hirtler, Alfred E.; and Mittel, Robert F., 3,872,276.
- Hirzy, John William, to Monsanto Company. Trimellitates. 3,872,154, Cl. 260-475.00N.
- Hishida, Iwao. Mouldable synthetic resin colouring material and application apparatus thereof. 3,871,629, Cl. 259-191.000.
- Hitachi, Ltd.: *See—*
  - Igarashi, Osamu; and Hohsho, Yukio, 3,871,797.
  - Kuniya, Keiichi; and Arakawa, Hideo, 3,871,834.
  - Kuriyama, Sigeru; and Hashimoto, Hideyuki, 3,872,367.
  - Maki, Naoki; Okuda, Hironori; Kawai, Sadaharu; and Tatsumi, Tamotsu, 3,872,357.
  - Sagawa, Akio; and Kawakami, Hideaki, 3,872,245.
  - Sakamoto, Yoshio; and Iguchi, Shinsuke, 3,872,392.
  - Teranishi, Tsugutomo; and Takita, Osami, 3,872,011.
  - Yamazaki, Eiichi; and Yamaguchi, Akio, 3,872,345.
  - Yoshioka, Yoshio, 3,872,272.
- Hitachi Shipbuilding and Engineering Company, Ltd.: *See—*
  - Nagai, Masashi; Miwa, Kazuhito; Tsunetsugu, Masakazu; and Fujiwara, Tadamaro, 3,871,343.
- Hoare, John Leonard: *See—*
  - Stewart, Rex George; Barker, Gerald Vivian; and Hoare, John Leonard, 3,871,820.
- Hoechst Aktiengesellschaft: *See—*
  - Brandt, Wilhelm; and Bindrum, Irmgard, 3,871,903.
  - Fleckenstein, Erwin; and Mohr, Reinhard, 3,872,133.
  - Schaum, Helmut; and Gossel, Helmut, 3,871,971.
  - Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 3,872,182.
  - Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,872,081.
- Hoechst Aktiengesellshaft: *See—*
  - Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, 3,872,114.
- Hoefke, Wolfgang: *See—*
  - Kummer, Werner; Stahle, Helmut; Koppe, Herbert; and Hoefke, Wolfgang, 3,872,121.
- Hoerner Waldorf Corporation: *See—*
  - Bliss, Robert A, 3,871,654.
  - Garmon, Ivan E., 3,871,570.
- Hoerz, Richard D.; and Propp, Donald J., to Airco Inc. Audible signal generating apparatus having selectively controlled audible output. 3,872,470, Cl. 340-384.00E.
- Hoff, Dieter; and Bauer, Kurt, to Bayer Aktiengesellschaft. Formulation for oral administration of penicillins having improved taste properties. 3,872,227, Cl. 424-271.000.
- Hoffman-La Roche Inc.: *See—*
  - Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,872,129.
  - Hromatka, Otto; and Binder, Dieter, 3,872,089.
- Hoffman, William W.: *See—*
  - Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 3,872,171.
- Hoffmann La-Roche Inc.: *See—*
  - Leimgburger, Willy; and Weigele, Manfred, 3,871,825.
  - Rosen, Perry, 3,872,076.
- Hohsho, Yukio: *See—*
  - Igarashi, Osamu; and Hohsho, Yukio, 3,871,797.
- Hoisl, Johann: *See—*
  - Obermaier, Anton; Drebinger, Peter; and Hoisl, Johann, 3,872,422.
- Holkestad, Howard P.; and Ordner, Raymond G., to J. L. Marsh Incorporated. Antitheft packaging device. 3,871,516, Cl. 206-45.310.
- Holland, Floyd H., to Phillips Petroleum Company. Container for plurality of immiscible liquids. 3,872,007, Cl. 210-170.000.
- Holland, Vard B., to United States of America, America as represented by the National Aeronautics and Space Administration. Signal conditioning circuit apparatus. 3,872,395, Cl. 330-86.000.
- Hollingsead-Pryor Enterprises, Inc.: *See—*
  - Hollingsead, Robert A.; and Pryor, Clyde Robert, 3,871,937.
- Hollingsead, Robert A.; and Pryor, Clyde Robert, to Hollingsead-Pryor Enterprises, Inc. Method of forming a gasket. 3,871,937, Cl. 156-244.000.
- Hollman, George A. Bowling glove. 3,871,029, Cl. 2-161.00A.
- Holm-Hansen, Osmund; and Booth, Charles Rockwell, to Science Applications, Inc. Apparatus for determining luminescence. 3,871,767, Cl. 356-215.000.
- Holmes, Thomas G.; Lidkea, Harrison B.; and Seib, Kenneth L., to Optical Business Machines, Inc. Optical character recognition system. 3,872,433, Cl. 340-146.3AH.

- Holper, Roland: *See—*
  - Denis, Etienne Marie; and Holper, Roland, 3,871,871.
- Holsopple, Herman L.: *See—*
  - Orr, Byron Reid, 3,871,027.
- Homeier, Ronald F., to FMC Corporation. Magnetic conveyor structure. 3,871,510, Cl. 198-41.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Miura, Kimio, 3,871,468.
- Honeywell Inc.: *See—*
  - Bentsen, Louis J., 3,871,396.
  - Butter, Charles D., 3,872,332.
- Honeywell Information Systems Inc.: *See—*
  - Besenfelder, Edward R.; and Friedman, Stanley I., 3,872,431.
  - Hunter, John Carpenter, II, 3,872,291.
  - Praeger, Eberhardt P.; and Stanton, Richard P., 3,871,733.
- Honeywell Information Systems Italia: *See—*
  - Tessera, Giancarlo; and Zulian, Ferruccio, 3,872,447.
- Honig, Joseph. Device for teaching the addition of fractions. 3,871,114, Cl. 35-31.00D.
- Hood, Robert Burns: *See—*
  - Guy, Kenneth Ronald; and Hood, Robert Burns, 3,871,791.
- Hoogovens Ijmuiden B.V.: *See—*
  - Biewinga, Siewert Gerrit Jan, 3,871,631.
  - Overdijk, Willem B.; and Steen, Adam, 3,871,869.
- Hooker Chemical Corporation: *See—*
  - Robota, Stephen; and Mershon, Francis P., 3,872,175.
- Hooker Chemical & Plastics Corp.: *See—*
  - Crippen, Monte D.; and Mentz, Bernardus J., 3,871,985.
- Hooker Chemicals & Plastics Corporation: *See—*
  - Harke, Cyril J.; and Crippen, Monte D., 3,871,988.
- Hooper, Roy L. Combination lawn mower and edger. 3,871,160, Cl. 56-16.900.
- Hope Kabushiki Kaisha: *See—*
  - Murata, Masahiro, 3,871,673.
- Hopson, James E.; and MacKenzie, Gordon C., to Raytheon Company. Optical system for reticle-type infrared seeker. 3,872,308, Cl. 250-347.000.
- Horger, Georg, to NCR Corporation. Encapsulation process by simple coacervation using inorganic polymers. 3,872,024, Cl. 252-316.000.
- Horiie, Shigeki; Kurematsu, Susumu; and Asai, Shin-ichiro, to Denki Kagaku Kogyo K.K. Process for preparing block copolymer resin. 3,872,068, Cl. 260-83.700.
- Horn, J. Drew: *See—*
  - Romanski, Eric R.; Horn, J. Drew; and Dutt, William H., 3,871,946.
- Hornby, John Alfred, to John (Huntingdon) Limited. Filling cakes. 3,871,274, Cl. 99-450.800.
- Hort, Eugene V., to GAF Corporation. Process for the preparation of 1,3-bis(2-pyrrolidonyl) butane. 3,872,100, Cl. 260-326.250.
- Horton, Robert A., to Precision Metalsmiths, Inc. Apparatus for forming ceramic shell molds. 3,871,440, Cl. 164-165.000.
- Hosaka, Akio; and Matsui, Shunji, to Nissan Motor Company, Limited. Actuator of motor vehicle safety device. 3,871,472, Cl. 180-103.000.
- Hosterman, Harry L., to Portage Newspaper Supply Co. Paper trimmer apparatus. 3,871,259, Cl. 83-429.000.
- Hottinger Baldwin Messtechnik GmbH: *See—*
  - Eder, Heinz, 3,871,216.
- Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 3-Substituted-4-aryl isoquinolines. 3,872,125, Cl. 260-283.00R.
- Houser, Edwin A.; and Schwindt, Bernell W., to Beckman Instruments, Inc. Water quality analysis system with multicircuit single shell heat exchanger. 3,871,444, Cl. 165-101.000.
- Howard, Guy W.: *See—*
  - Johnston, Ambrose G.; Howard, Guy W.; and Bradshaw, William W., Jr., 3,871,335.
- Howell, Stephen L.: *See—*
  - Robinson, John W.; and Howell, Stephen L., 3,871,262.
- Hromatka, Otto; and Binder, Dieter, to Hoffman-La Roche Inc. Substituted thienodiazepines. 3,872,089, Cl. 260-239.30T.
- Hsieh, Chin-Yuan. Beverage making apparatus. 3,871,273, Cl. 99-286.000.
- Huber, Max; and Schutz, Gerhard, to Sulzer Brothers, Ltd. Mixing apparatus and method. 3,871,624, Cl. 259-4.000.
- Hubner, Klaus, to Siemens Aktiengesellschaft. Extinguishing arrangement for the inverters of an electric motor. 3,872,364, Cl. 318-227.000.
- Huck, Charles Mason, to Sybron Corporation. Eye wash station. 3,871,554, Cl. 222-96.000.
- Hudson Bay Mining and Smelting Co., Limited: *See—*
  - Ronka, Vaino, 3,872,375.
- Hudswell Yates Developments Limited: *See—*
  - Long, Terence, 3,871,781.
- Hudyma, Thomas William: *See—*
  - Juby, Peter Frederick; and Hudyma, Thomas William, 3,872,122.
- Huffield, Jack E.: *See—*
  - Galya, William; and Huffield, Jack E., 3,871,308.
- Hufschmid, Max, to Sprecher & Schuh AG. Snap-action switch for a thermal trigger, especially for a motor protection device. 3,872,417, Cl. 337-365.000.
- Hughes Aircraft Company: *See—*
  - Ellion, M. Edmund; and Mahaffy, Dwight A., 3,871,828.
  - Moulin, Norbert L., 3,871,057.
- Hughes, George F., to Diamagnetics, Inc. Phonograph stylus. 3,871,664, Cl. 274-38.000.
- Hughes, Leonard B.: *See—*
  - Van De Goor, Adrianus J.; and Hughes, Leonard B., 3,871,578.
- Hughes, Richard Swart, to United States of America, Navy. Rapidly tunable laser. 3,872,407, Cl. 332-7.510.
- Hughes, Robert T.; and Matthews, R. Hurley. Four way hydrant valve. 3,871,614, Cl. 251-104.000.
- Hulsbosch, Cornelis Jozef; and van der Zee, Tjeerd Pieter, to U.S. Philips Corporation. Circuit arrangement having a plurality of touch contacts. 3,872,328, Cl. 307-308.000.
- Humphrey Thompson Enterprises Limited: *See—*
  - Garrett, Kenneth John; and Fox, Ronald Denis, 3,871,492.
- Hunt, Robert F.: *See—*
  - Lee, Charles A.; and Hunt, Robert F., 3,871,953.
- Hunt, William G. Automatic transmission fluid control apparatus. 3,871,402, Cl. 137-383.000.
- Hunter, Edward E., to Goodyear Tire & Rubber Company, The. Dip tank with vapor condensing seal. 3,871,327, Cl. 118-69.000.
- Hunter, John Carpenter, II, to Honeywell Information Systems Inc. Field repairable memory subsystem. 3,872,291, Cl. 235-153.0AK.
- Hunter, Phillip: *See—*
  - Davidson, Samuel L.; Heidenreich, William C.; and Hunter, Phillip, 3,871,043.
- Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, to Bayer Aktiengesellschaft. Water-insoluble peptide materials. 3,871,964, Cl. 195-63.000.
- Hurn Brothers Engineering Limited: *See—*
  - Hurn, James, 3,871,258.
- Hurn, James, to Hurn Brothers Engineering Limited. Wood working apparatus. 3,871,258, Cl. 83-255.000.
- Hydro Flame Corporation: *See—*
  - Jackson, George W.; Dacey, Dennis N.; and Jackson, Paul W., 3,871,354.
- Hydronautics, Incorporated: *See—*
  - Roseman, Donald P.; Martin, Milton; and Miller, Eugene R., 3,871,323.
- Hygro Dynamics Industries, Inc.: *See—*
  - Habinger, Max, 3,871,752.
- Hyster Company: *See—*
  - Schwab, Delmar G.; and Ott, James I., 3,871,266.
- I-T-E Imperial Corporation: *See—*
  - Netzel, Philip C., 3,872,273.
- I.W.S. Nominee Company Limited: *See—*
  - Gibson, James Donald MacKay, 3,871,195.
- Idstein, Walter, to Kalle Aktiengesellschaft. Apparatus for treatment of metal strip with a liquid. 3,871,982, Cl. 204-207.000.
- Igarashi, Osamu; and Hohsho, Yukio, to Hitachi, Ltd. Fuel pump for automobiles. 3,871,797, Cl. 417-423.000.
- Igel, John J.: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
- Iglehart, Hilary H.; and Lassiter, Richard C., to Trojan Automatic Scaffold, Inc. Automatic scaffolding for laying brick. 3,871,154, Cl. 52-749.000.
- Iguchi, Shinsuke: *See—*
  - Sakamoto, Yoshio; and Iguchi, Shinsuke, 3,872,392.
- Ikeda, Seiichiro, to Yuasa Battery Company Limited. Storage battery. 3,871,923, Cl. 136-162.000.
- Ikegame, Mamoru: *See—*
  - Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,872,464.
- Ikeno, Nobuichi: *See—*
  - Tsukamoto, Katsuji; Ikeno, Nobuichi; and Okada, Keiji, 3,872,453.
- Illinois Tool Works Inc.: *See—*
  - Lindeman, Richard Jay, 3,871,152.
  - Pestka, John August; and Lindeman, Richard Jay, 3,871,241.
- Image Analysing Computers Limited: *See—*
  - Soames, Michael Richard; Knowles, William Ralph; and Braggins, Donald William, 3,872,243.
- Imbert, Pierre; and Lericque, Jean-Francois, to Commissariat A L'Energie Atomique. Generator for producing rectilinear vibrations at a controlled velocity especially for use in Mossbauer spectrometery. 3,872,333, Cl. 310-27.000.
- Imperial Chemical Industries Limited: *See—*
  - Burton, Arthur; Naylor, Arthur John; and Handforth, John Anthony, 3,871,907.
  - Charlton, John Stuart; and Ross, John Francis, 3,872,310.
  - Ealding, Cyril John, 3,871,897.
  - Wright, Donald; and Gardner, Samuel, 3,872,153.
- Inamura, Kiyonari. Apparatus for displaying isodose curves of radiation with program for digital computer coupled thereto determined in relation to source of radiation. 3,871,579, Cl. 235-198.000.
- Inazu, Kunihei: *See—*
  - Takamizawa, Akira; Hirai, Kentaro; Oikawa, Hiroshi; and Inazu, Kunihei, 3,872,123.
- Industrie Pirelli Societa per Azioni: *See—*
  - Ferrentino, Antonio, 3,871,207.
- Ing. C. Olivetti and C., S.p.A.: *See—*
  - Fausone, Alfredo; and Piglione, Luigi, 3,872,398.
  - Giolitti, Nicolo; Daly, Dante; and Bertino, Lorenzo, 3,872,468.
- Ingeniorene Lund, Mohr & Giaever-Enger: *See—*
  - Berg, Leif; and Nes, Ragnar Jonas, 3,871,320.
- Inoue, Shozo; and Kurahashi, Akira, to Canon Kabushiki Kaisha. Cleaning equipment for electrophotography. 3,871,081, Cl. 15-256.510.

- Inoue, Shozo, to Canon Kabushiki Kaisha. Image exposure device. 3,871,766, Cl. 355-66.000.
- Inoue, Tosihiro: *See—*
  - Nakatomi, Shunsuke; Kohtoku, Yasuhiko; and Inoue, Tosihiro, 3,872,180.
- Inpel (Proprietary) Limited: *See—*
  - Rudert, Bernhardt Siegfried; and Freeman, John Trafford Rowe, 3,872,327.
- Institut de Bio-Endrocrinologie, Inc.: *See—*
  - Leblanc, Alcide, 3,871,832.
- Institut Francais du Petrole, des Carburants et Carburants: *See—*
  - Bedague, Pierre; Marchand, Pierre; Parc, Guy; and Roux, Fernand, 3,871,837.
- Instytut Przemyslu Organiczego: *See—*
  - Boboli, Fdyta; Malasnicki, Wladyslaw Longin; Kowalski, Mieczyslaw; and Pazgan, Andrzej, 3,872,143.
- Integral Process Systems, Inc.: *See—*
  - Harper, John D.; Breyer, Frederick; and Wagner, Richard C., 3,871,185.
  - Harper, John D.; Breyer, Frederick; and Wagner, Richard, 3,871,190.
  - Wagner, Richard C., 3,871,186.
- Intergadgets AG: *See—*
  - Van Dalen, Cornelis Jan, 3,872,280.
- International Business Machines Corporation: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
  - Bogardus, E. Hal; Peressini, Peter P.; and Reith, Timothy M., 3,871,067.
  - Childress, Lloyd Krudop, Jr.; and Church, John Allen, 3,872,510.
  - Cleveland, James Leonard; Jones, Richard Alfred; Larson, Theodore Edwin; McNary, Kenneth Rogers; and Zahorsky, James Theodore, 3,872,444.
  - Stoops, Edward H., 3,872,452.
- International Computers Limited: *See—*
  - Cailow, George William, 3,872,441.
- International Flavors & Fragrances Inc.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,872,111.
  - Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., 3,872,031.
- International Harvester Company: *See—*
  - Depauw, Richard A.; and Hawkins, Robert W., 3,871,384.
- International Nickel Company, Inc., The: *See—*
  - Smith, Darrell Franklin, Jr.; and Clatworthy, Edward Frederick, 3,871,928.
- International Standard Electric Corporation: *See—*
  - Eyre, John Richard; Way, Kenneth Richard; and Kielty, David Neil, 3,872,237.
- International Telephone and Telegraph Corporation: *See—*
  - Bismarck, Otto Herbert, 3,872,432.
  - Goodman, David S., 3,871,728.
  - Levine, Arnold M., 3,872,474.
  - Vogt, Harald; and Moller, Walter, 3,871,799.
- Interpace Corporation: *See—*
  - Valiela, Jose, 3,871,293.
- Interscience Technology Corporation: *See—*
  - Pacela, Allan F., 3,871,359.
- Inudow, Isao: *See—*
  - Kanemaru, Toyonosuke; Shimada, Toshio; and Inudow, Isao, 3,872,032.
- Iomiyama, Yoshimichi; Yamahata, Takashi; and Yasuda, Tomoya, to General Company Limited. Thermal printing process. 3,871,065, Cl. 117-36.800.
- Irland, Lewis F.; and Nicholson, John B., to Continental Can Company, Inc. Container with easy opening end unit. 3,871,552, Cl. 222-83.000.
- Irwin Industries, Inc.: *See—*
  - Romanzi, Louis, Jr.; and Gavagan, James A., 3,871,090.
- Isaacson, Max, to Vibrodyne, Inc. Vibratory apparatus with improved motor actuated door mechanism for closing the discharge outlet. 3,871,136, Cl. 51-163.000.
- Ishida, Michiyasu, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for traversing a workpiece with a working head. 3,871,567, Cl. 228-32.000.
- Ishida, Michiyasu: *See—*
  - Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, 3,871,062.
- Ishida, Toyotaka: *See—*
  - Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,871,165.
- Ishige, Sadao: *See—*
  - Hayashi, Takao; Kato, Hajime; and Ishige, Sadao, 3,871,900.
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  - Furukawa, Kaoru; Isukamoto, Chiaki; and Nagai, Hiroshi, 3,872,055.
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  - Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.
- Ito, Hirotaka: *See—*
  - Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,871,165.
- Ito, Naganori; and Aikawa, Hiroshi, to Nissen Motor Company, Limited. Vehicle suspension system. 3,871,680, Cl. 280-124.00F.
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  - Takahashi, Susumu; Ito, Ryosuke; and Hirano, Koichi, 3,872,249.
- Iura, Yukihide: *See—*
  - Nishino, Atsushi; Iura, Yukihide; Kubo, Masayoshi; and Tateisi, Motosi, 3,872,013.
- Iwako, Hiroyuki, to Funken Co., Ltd. Continuous flow jet mixer. 3,871,625, Cl. 259-8.000.
- Iwaoka, Yasuhiko: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Izumi, Akihiro: *See—*
  - Tsukamoto, Kunio; Suzuki, Yasushi; Izumi, Akihiro; and Hiramatsu, Yoshio, 3,872,087.
- Izuo, Nobuhiko: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Maeshima, Haruko; and Izuo, Nobuhiko, 3,871,959.
- J. Bobst & Fils S.A.: *See—*
  - Bolliger, Edwin, 3,871,292.
  - Mariaux, Sady; and Golay, Roland, 3,871,642.
- J & L Engineering Company, Inc.: *See—*
  - Schexnayder, Isby L., Jr.; and Angers, John W., 3,871,162.
- J. L. Marsh Incorporated: *See—*
  - Holkestad, Howard P.; and Ordner, Raymond G., 3,871,516.
- Jackson Communication Corporation: *See—*
  - Jackson, Richard L., 3,871,621.
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  - Jackson, George W.; Dacey, Dennis N.; and Jackson, Paul W., 3,871,354.
- Jackson, Richard L., to Jackson Communication Corporation. Cable chute. 3,871,621, Cl. 254-134.3PA.
- Jackson, Richard R. Humidifying gas. 3,871,373, Cl. 128-193.000.
- Jacob, Jean: *See—*
  - Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, 3,871,297.
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- Jacobs, Dennis Y. Fish lure. 3,871,122, Cl. 43-42.270.
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  - Gritz, Darrell D., 3,871,792.
- Jakob, Horst, to Prestil. Method and apparatus for manufacturing slide fastener elements. 3,871,420, Cl. 139-116.000.
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- Janome Sewing Machine Co.: *See—*
  - Hanyu, Susumu, 3,871,310.
- Japan Carboxylic Acids Co., Ltd.: *See—*
  - Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, 3,872,142.
- Japanese Geon Co. Ltd., The: *See—*
  - Todani, Yoshihiro; Sugi, Nagatoshi; and Hashimoto, Kinro, 3,872,036.
- Japanese National Railways: *See—*
  - Matsui, Kazumi; Umemori, Takashi; Shibata, Yutake; and Yamamura, Kinzo, 3,871,727.
- Jarosik, Norman A.; and Weppner, Benjamin H., to Mennen-Greatbatch Electronics, Inc. Waveform and symbol display system. 3,872,461, Cl. 340-324.0AD.
- Jay R. Smith Mfg. Co.: *See—*
  - Weigel, Hugo K., 3,871,034.
- Jean Waltersheid GmbH: *See—*
  - Geisthoff, Hubert, 3,871,463.
- Jeffers, Ellis E., to Aspro, Incorporated. Lock-up differential including speed-responsive inhibiting means. 3,871,249, Cl. 74-711.000.
- Jefferson Chemical Company, Inc.: *See—*
  - Gipson, Robert M., 3,872,116.
- Jenkins, Otto L., to Smitty's Easy Tow, a part interest. Device for loading and carrying boats on pickup trucks. 3,871,540, Cl. 214-450.000.
- Jenny, Jean Paul Joseph: *See—*
  - Pierron, Claude Raymond; Jenny, Jean Paul Joseph; and Zuccaro, Robert, 3,871,028.
- Jensen, Kenneth D., to Midland-Ross Corporation. Hydraulically operated brake pressure modulator. 3,871,717, Cl. 303-21.0AF.

- Jenvey, Leslie R.: *See—*
  - Millard, Barry J.; and Jenvey, Leslie R., 3,871,469.
- Jetsew, Inc.: *See—*
  - Rockerath, John L.; and Schreck, Harold J., 3,871,312.
- Jett, Marion B.; and Spriggs, Dennis M., to Dresser Industries, Inc. Dual string circulating valve. 3,871,450, Cl. 166-224.00R.
- Jeumont-Schneider: *See—*
  - Nahon, Poland, 3,872,324.
- Joerns Furniture Company: *See—*
  - O'Toole, Patrick J., 3,872,294.
- Joh. Friedrich Behrens: *See—*
  - Elliesen, Wolfgang; and Fehrs, Hellmuth, 3,871,566.
- Johansson, Roy Ingvar Mendel; and Lagerqvist, Roy S. G., to Volvo Flygmotor Aktiebolag. Device for positively retaining a ball-shaped bearing member in a mating bearing seat. 3,871,782, Cl. 403-122.000.
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- John (Huntingdon) Limited: *See—*
  - Hornby, John Alfred, 3,871,274.
- Johns-Manville Corporation: *See—*
  - Bell, George Richard, 3,872,016.
- Johnson, Ernest D.: *See—*
  - Hewitt, John H.; and Johnson, Ernest D., 3,871,514.
- Johnson & Johnson: *See—*
  - Krzewinski, Henrietta K., 3,871,369.
- Johnson, Robert William: *See—*
  - Malchman, Franklin Leonard; Johnson, Robert William; and Raddi, William J., 3,872,252.
- Johnson, Thomas P.; and van Berkum, Wilmer T. Device for fixation of preparturient vaginal prolapse. 3,871,368, Cl. 128-127.000.
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- Jones, Elwyn David; and Scuffell, Derek Edgar, to Canadian Industries Limited. Bag severing machine. 3,871,269, Cl. 93-13.000.
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- Jones, Harry Joseph: *See—*
  - Mulcahy, Joseph Aloysius; Jones, Harry Joseph; and Batram, Stephen Douglas, 3,871,533.
- Jones, Richard Alfred: *See—*
  - Cleveland, James Leonard; Jones, Richard Alfred; Larson, Theodore Edwin; McNary, Kenneth Rogers; and Zahorsky, James Theodore, 3,872,444.
- Jones, William Leslie, to A.H.M. Machines Limited. Machine guards. 3,871,437, Cl. 160-202.000.
- Jones-Zylon, Inc.: *See—*
  - Collins, Delmas E., 3,871,555.
- Joppich, Mandred, to Fritz Schwarzer GmbH. Automatically temperature-compensated electro-optic circuit. 3,872,301, Cl. 250-205.000.
- Jorgenson, Robert Warren: *See—*
  - Amery, John Gordon; and Jorgenson, Robert Warren, 3,872,497.
- Jos. Hunkeler AG Fabrik Fur Graphische Maschinen: *See—*
  - Felix, Willi, 3,871,639.
- Jossa, Louis J.: *See—*
  - Keijzer, Johan H.; Jossa, Louis J.; Renders, Herman E. A.; and Oancea, Alexandru, 3,871,679.
- Jouffret, Michel: *See—*
  - Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, 3,872,156.
- Journee, Paul: *See—*
  - Baut, Jacques; and Journee, Paul, 3,871,050.
- Juby, Peter Frederick; and Hudyma, Thomas William, to Bristol-Myers Company. 11 H-Pyrimido[4,5-b][1,4]benzodiazepines. 3,872,122, Cl. 260-256.40F.
- Jumel, Yves: *See—*
  - Gabano, Jean-Paul; and Jumel, Yves, 3,871,917.
- Jureit, John Calvin; Castillo, Adolfo; and Rionda, Carlos. Test stand for trusses. 3,871,213, Cl. 73-94.000.
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- Juskewicz, Joseph A., Jr., to Lear Siegler, Inc. Furnace control circuit. 3,872,320, Cl. 307-117.000.
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  - Simon, Ernest M., 3,871,619.
- Kaburaki, Yasuo; and Kobayashi, Kiyoshi, to Hiroshi Hukuba. Floor cleaner. 3,871,047, Cl. 15-42.000.
- Kabusai Denshin Denwa Kabushiki Kaisha: *See—*
  - Koga, Issac; Kobayashi, Shigeo; and Okamoto, Isao, 3,872,385.
- Kabushiki Kaisha Daikin Seisakusho: *See—*
  - Kazuma, Adachi, 3,871,499.
- Kabushiki Kaisha Hasegawa Haguruma: *See—*
  - Sugimoto, Kuniyoshi, 3,871,191.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
  - Tominaga, Hiroyoshi, 3,871,178.
- Kabushiki Kaisha Machida Seisakusho: *See—*
  - Chikama, Toshio, 3,871,365.
- Kabushiki Kaisha Meidensha: *See—*
  - Watanabe, Takao; Kohchi, Akira; and Fujii, Toshinobu, 3,872,411.
- Kabushiki Kaisha Ricoh: *See—*
  - Arai, Akio, 3,871,879.
  - Hashimoto, Mitsuru, 3,871,883.
  - Kagari, Yoshiharu; and Hirokawa, Koichi, 3,871,294.
  - Robillard, Jean Jules Achille, 3,871,886.
- Kabushiki Kaisha Sankosha: *See—*
  - Furuta, Shigeru, 3,872,343.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
  - Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, 3,872,316.
- Kabushiki Kaisha Tokai Rika Seisakusho: *See—*
  - Yoshida, Takaomi, 3,872,436.
- Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
  - Hikida, Ryotara; Hayashi, Yasutake; and Arakawa, Hideo, 3,871,715.
- Kabushiki Kaisha Toyota Cluo Kenkyusho: *See—*
  - Yamanaka, Teruo; and Sato, Kazuo, 3,872,475.
- Kachalova, Revekka Vulfovna; Nemtsov, Mark Semenovich; and Balkhanova, Galina Fedorovna. Method for producing phosphate catalyst. 3,872,216, Cl. 423-313.000.
- Kagari, Yoshiharu; and Hirokawa, Koichi, to Kabushiki Kaisha Ricoh. Duplicator master feed using decimal code to set copy count. 3,871,294, Cl. 101-132.500.
- Kageyama, Katsuhiro; and Utsunomiya, Shinhachi, to Tokyo Shibaura Electric Company, Ltd. Cold cathode ionization gauge. 3,872,377, Cl. 324-33.000.
- Kahling, Joachin: *See—*
  - Rieper, Helmut; Kruger, Gerd; Keck, Johannes; Noll, Klaus-Reinhold; and Kahling, Joachin, 3,872,090.
- Kahn, Henry, to KG Company. Method for cleaning cavities with a combined fluid delivering and aspirating instrument. 3,871,099, Cl. 32-40.00R.
- Kaiser, Robert H.: *See—*
  - Downing, James H.; and Kaiser, Robert H., 3,871,872.
- Kakunodate, Masamichi: *See—*
  - Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
- Kalenevitch, Barry R. Ignition timing device and method. 3,872,376, Cl. 324-17.000.
- Kalert, Ralph E.: *See—*
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,188.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,189.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,190.
- Kalle Aktiengesellschaft: *See—*
  - Idstein, Walter, 3,871,982.
  - Marx, Gerhard; and Kramer, Gunter, 3,871,641.
  - Wiedemann, Wolfgang, 3,871,882.
- Kallenborn, John, to PPG Industries, Inc. Apparatus for winding glass strands. 3,871,592, Cl. 242-18.00G.
- Kalnin, Igor Martynovich: *See—*
  - Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.
- Kalogerson, Thomas A.; and Dandois, Joseph E., to Optimizer Control Corporation. Speed controlled ignition retarder. 3,871,341, Cl. 123-117.00R.
- Kamada, Isao: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Kamada, Osamu: *See—*
  - Hamada, Kenzo; Uchiyama, Hiroshi; Sugi, Jiro; and Kamada, Osamu, 3,872,000.
- Kamen, Dean L. Control device for a monitor supervising a patient. 3,871,361, Cl. 128-2.05R.
- Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Composite thin film optical device. 3,871,742, Cl. 350-96.0WG.
- Kanda, Kenzi: *See—*
  - Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, 3,871,166.
- Kanda, Masao; and Watanabe, Akio, to Fuji Photo Film Co., Ltd. Coating material recovering device for air knife type coating apparatus. 3,871,326, Cl. 118-63.000.
- Kanehisa, Takashi: *See—*
  - Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, 3,871,206.
- Kaneko, Takashi: *See—*
  - Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, 3,871,062.
- Kanemaru, Toyonosuke; Shimada, Toshio; and Inudow, Isao, to Nippon Carbon Co. Ltd. Process for the preparation of graphite fluoride. 3,872,032, Cl. 260-2.00H.

- Kanengieter, Glenn G.; and Peterson, Daniel E., to Owatonna Manufacturing Company, Inc. Stack former and compacting structure. 3,871,163, Cl. 56-344.000.
- Kansai Paint Company Limited: *See—*
  - Matsudaira, Tadashi; and Namiki, Minoru, 3,871,896.
- Kanto Seiki Company Limited: *See—*
  - Hata, Shigeki, 3,872,268.
- Kao Soap Co., Ltd.: *See—*
  - Ogata, Yuzuru, 3,872,138.
- Kappers Company Inc.: *See—*
  - Middleman, David, 3,871,564.
- Karas, Wolfgang, to Forschungsinstitut fur Orthopadie-Technik. Artificial hydraulic ankle joint. 3,871,032, Cl. 3-1.200.
- Kariya, Takashi: *See—*
  - Grisar, J. Martin; Parker, Roger A.; and Kariya, Takashi, 3,872,105.
- Karl M. Reich Maschinenfabrik: *See—*
  - Schwarz, Heinz, 3,871,405.
- Karll, Robert E.: *See—*
  - Culbertson, George S.; Chipman, Gary R.; and Karll, Robert E., 3,872,019.
- Karn, Helmut: *See—*
  - Spaenig, Hermann; Dockner, Toni; and Karn, Helmut, 3,872,166.
- Kasprzak, Henry A.: *See—*
  - Farah, Basil S.; and Kasprzak, Henry A., 3,872,049.
- Kataoka, Hiroshi, to Kataoka Machine Product Co., Ltd. Winding tension control system. 3,871,598, Cl. 242-75.510.
- Kataoka Machine Product Co., Ltd.: *See—*
  - Kataoka, Hiroshi, 3,871,598.
- Kathawala, Faizulla G., to Sandoz-Wander, Inc. 1-Substituted-5,6-dihydro-pyrrolo(3,2,1-ij)quinazolin-3(3H)-ones. 3,872,119, Cl. 260-251.00A.
- Kato, Hajime: *See—*
  - Hayashi, Takao; Kato, Hajime; and Ishige, Sadao, 3,871,900.
- Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, to Mitsubishi Rayon Co. Ltd. Process and an apparatus for continuously casting a sheet and the like. 3,872,197, Cl. 264-40.000.
- Kato, Tetsuya: *See—*
  - Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, 3,872,142.
- Katz, George M.: *See—*
  - Auerbach, Albert A.; Katz, George M.; and Steinberg, Sidney, 3,872,251.
- Kaufman, Martin H.; and Roy, Edward M., to United States of America, Navy. Wet process for compounding polymer-solids compositions. 3,872,192, Cl. 264-3.00B.
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- Kawai, Sadaharu: *See—*
  - Maki, Naoki; Okuda, Hironori; Kawai, Sadaharu; and Tatsumi, Tamotsu, 3,872,357.
- Kawakami, Hideaki: *See—*
  - Sagawa, Akio; and Kawakami, Hideaki, 3,872,245.
- Kawamoto, Yasushige: *See—*
  - Tokito, Takao; and Kawamoto, Yasushige, 3,872,200.
- Kawanabe, Tsuyoshi; and Machida, Minoru, to Canon Kabushiki Kaisha. Device for feeding out data with classifying function. 3,872,289, Cl. 235-152.000.
- Kawashima, Takehisa: *See—*
  - Waku, Shigeru; Hayashi, Shintaro; Shibata, Hiroyuki; and Kawashima, Takehisa, 3,871,745.
- Kawawa, Takaho: *See—*
  - Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
- Kayabakogyokabushikikaisha: *See—*
  - Koga, Ryosuke; and Nonome, Kazuhiro, 3,871,265.
- Kazansky, Vasily Mikhailovich; Epifantsev, Alexei Grigorievich; Roschektaev, Vladimir Lavrentievich; and Kramer, Jury Adamovich. Method for making winding of smooth-core armature. 3,871,070, Cl. 29-598.000.
- Kazuma, Adachi, to Kabushiki Kaisha Daikin Seisakusho. Device for preventing improper disengagement of multiple-disc clutch. 3,871,499, Cl. 192-70.290.
- Kearse, William E.: *See—*
  - Crawford, Thomas G.; and Kearse, William E., 3,871,601.
- Keck, Johannes: *See—*
  - Rieper, Helmut; Kruger, Gerd; Keck, Johannes; Noll, Klaus-Reinhold; and Kahling, Joachin, 3,872,090.
- Keck, Max H., to Goodyear Tire & Rubber Company, The. Copolyester resin containing anion attractive groups. 3,872,183, Cl. 260-860.000.
- Keenan, Bernard J., Jr., to Sun Oil Company of Pennsylvania. Laser beam drill. 3,871,485, Cl. 175-16.000.
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- Kehr, Clifton L.; and Wszolek, Walter R. Polyene carbamates. 3,872,151, Cl. 260-471.00C.
- Kehr, Clifton L.; and Wszolek, Walter R. Terminally unsaturated liquid polyene having internally unreactive carbon-to-carbon unsaturation. 3,872,152, Cl. 260-471.00C.
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- Keith, W. Gill; and Ferris, F. Donald, to General Electric Company. Calciner with baffle means. 3,871,829, Cl. 23-279.000.
- Kellert, Paul H. Cement spray gun with remote air injection. 3,871,583, Cl. 239-302.000.
- Kelly, Wilfred H., Jr. Lift truck mast. 3,871,494, Cl. 187-95.000.
- Kendall Company, The: *See—*
  - Ciarico, Anthony J., 3,871,231.
  - Dye, John F.; Binard, William J.; and Anglada, Leonard R., 3,871,230.
- Kennecott Copper Corporation: *See—*
  - Last, Arthur W.; and Fraser, George L., 3,871,867.
- Kenrick, Robert C.: *See—*
  - Crossman, Phillip E.; Kenrick, Robert C.; and LeMieux, Robert W., 3,871,585.
- Kerman, Stephen. Key telephone system. 3,872,262, Cl. 179-99.000.
- Kerman, Stephen E.: *See—*
  - Shinoi, Tsuyoshi; Tsutsumi, Fumio; and Kerman, Stephen E., 3,872,261.
- Kern, Rudolf: *See—*
  - Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 3,872,182.
- Kerr, James A. Electric switch. 3,872,267, Cl. 200-48.00R.
- Kerr, John W.: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
- Kerr, Raymond W. Closure assembly for hollow drum type containers. 3,871,549, Cl. 220-288.000.
- Keskitalo, Tage Oskar: *See—*
  - Widegren, Lars Harald; and Keskitalo, Tage Oskar, 3,871,427.
- Kessler, Rolf Emil: *See—*
  - Ciecior, Heinrich; and Kessler, Rolf Emil, 3,871,311.
- KG Company: *See—*
  - Kahn, Henry, 3,871,099.
- Khattab, Ghazi: *See—*
  - Pickett, Charles G.; and Khattab, Ghazi, 3,871,232.
- Kheifets, Rafail Efimovich: *See—*
  - Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,871,638.
- Kichiji, Hiroshi: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Kielty, David Neil: *See—*
  - Eyre, John Richard; Way, Kenneth Richard; and Kielty, David Neil, 3,872,237.
- Kiener, Volker: *See—*
  - Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, 3,872,070.
- Kilshaw, John Arthur, to Dunlop Company Limited, The. Matched set of golf clubs. 3,871,649, Cl. 273-77.00A.
- Kim, Chang-Whan: *See—*
  - Bird, Nicholas W. F.; and Kim, Chang-Whan, 3,872,471.
- Kim, Oh-Kil, to American Cyanamid Company. Polymerization process. 3,872,063, Cl. 260-80.00C.
- Kimball International, Inc.: *See—*
  - Robinson, John W.; and Howell, Stephen L., 3,871,262.
- Kimura, Takahiko: *See—*
  - Onoda, Mineo; and Kimura, Takahiko, 3,871,200.
- Kinasi, Norbert, to Daimler-Benz Aktiengesellschaft. Fuse arrangement, especially for motor vehicles. 3,872,416, Cl. 337-201.000.
- Kinetics Container Corporation: *See—*
  - Wharton, Paul B., Jr., 3,871,569.
- King, Arthur S. Apparatus for flocculation of dissolved substances. 3,871,989, Cl. 204-299.000.
- King, James D.: *See—*
  - Ray, John S.; and King, James D., 3,872,457.
- King, John O., Jr. Break-off tool. 3,871,563, Cl. 225-103.000.
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  - Hanneman, Charles K., 3,872,397.
- King-Seely Thermos Co.: *See—*
  - Anderson, Gordon H., 3,871,135.
- Kinney, James F.; and Gadzala, Antoni Edward, to Avon Products, Inc. Promoting color change in human hair with a dialdehyde compound and a nitrogen containing compound. 3,871,818, Cl. 8-10.200.
- Kirsch, Donald L.: *See—*
  - Wright, Peter C.; and Kirsch, Donald L., 3,871,690.
- Kirschner, Peter; and Rauer, Heinz Gunter, to Volkswagenwerk Aktiengesellschaft. Apparatus for static level regulation of a vehicle. 3,871,682, Cl. 280-124.00F.
- Kissinger, Curtis D., to Panaflight Corporation. Circular wing aircraft. 3,871,602, Cl. 244-13.000.
- Kitagawa, Kenro: *See—*
  - Yamagishi, Fumiaki; and Kitagawa, Kenro, 3,872,020.
- Kitaguchi, Ryoichi, to Daishowa Seiki Co., Ltd. Tapping attachment. 3,871,498, Cl. 192-48.910.
- Kitahara, Haruyoshi: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi;

  Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
Kitai, Kiysohi, to Seiko Koki Kabushiki Kaisha. Intermittent motion mechanism. 3,871,238, Cl. 74-112.000.
Kiyohara, Takehiko: *See—*
  Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
Kizler, Harald: *See—*
  Schmidt, Peter; Kizler, Harald; and Hartmann, Gerhard, 3,871,338.
Klanderman, Bruce H.; and Criswell, Thomas R., to Eastman Kodak Company. Liquid crystalline compositions and method. 3,872,140, Cl. 252-408.000.
Klassy, Donald F.: *See—*
  Grout, Edward C.; and Klassy, Donald F., 3,872,004.
Kleemann, Alois: *See—*
  Reinert, Gerhard; and Kleemann, Alois, 3,871,898.
Klein, Dieter: *See—*
  Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, 3,872,440.
Klein, Keith William; Swetnam, Norman Thomas; and Cahill, Robert Allen, to General Electric Company. Fire detection and projection circuit and device. 3,872,355, Cl. 317-18.00D.
Klevecz, Robert R. Process for automated production of synchronous mammalian cells. 3,871,955, Cl. 195-1.800.
Knitter, Roger W.: *See—*
  Adler, Robert; and Knitter, Roger W., 3,872,241.
Knochel, William J.: *See—*
  Werner, Leo C.; Lin, Francis C. M.; and Knochel, William J., 3,872,341.
Knoke, Silas J.: *See—*
  Garceau, David S.; and Knoke, Silas J., 3,871,039.
Knorr-Bremse GmbH: *See—*
  Wurth, Hans-Jorg, 3,871,718.
Knowles, William Ralph: *See—*
  Soames, Michael Richard; Knowles, William Ralph; and Braggins, Donald William, 3,872,243.
Kobari, Kyoshi: *See—*
  Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, 3,872,316.
Kobayashi, Ikuya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Operation indicating device for hydraulic brake system. 3,872,425, Cl. 340-52.00C.
Kobayashi, Kiyoshi: *See—*
  Kaburaki, Yasuo; and Kobayashi, Kiyoshi, 3,871,047.
Kobayashi, Kunio: *See—*
  Sugimoto, Keiichi; Kobayashi, Kunio; Nishijima, Kouji; and Morimoto, Shiro, 3,872,115.
Kobayashi, Shigeo: *See—*
  Koga, Issac; Kobayashi, Shigeo; and Okamoto, Isao, 3,872,385.
Kobe Steel Ltd.: *See—*
  Haseba, Shigeru, 3,872,213.
  Yamauchi, Takeshi, 3,871,313.
Koch, Christian: *See—*
  Henkel, Hans-Joachim; De Bucs, Eugen Szabo; and Koch, Christian, 3,871,838.
Koch, Dieter; and Graf, Peter-Josef, to Blaupunkt-Werke GmbH. Rotary potentiometer. 3,872,420, Cl. 338-162.000.
Koch, Werner, to Sandoz Ltd. Coumarinimides. 3,872,106, Cl. 260-343.20R.
Kochanny, Gerald L., Jr.; and Chamberlin, Thomas A., to Dow Chemical Company, The. Preparation of 1,1,1-trichloroethane. 3,872,176, Cl. 260-658.00R.
Kodaira, Kazuo: *See—*
  Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; Abe, Takashi; and Yonekura, Michimasa, 3,871,975.
Koehring Company: *See—*
  Bernhoft, Gerald W.; and Miller, David A., 3,871,537.
Koeman, Henriecus, to U. S. Philips Corporation. Method of, and apparatus for, determining radiation energy distributions. 3,872,287, Cl. 235-151.310.
Koenig, Elmer A.; Conklin, Robert M.; Bessinger, Walter L.; and Russell, Jack A., to Sherwood Medical Industries Inc. Pelletized medicament dispensing system. 3,871,156, Cl. 53-59.00R.
Koenig, Karl-Heinz: *See—*
  Hamprecht, Gerhard; Koenig, Karl-Heinz; and Bolz, Gerhard, 3,872,167.
Koenig, Robert W. Folding truck bumper. 3,871,695, Cl. 293-73.000.
Koenig, Wolfgang; Geiger, Rolf; and Wissmann, Hans, to Farbwerke Hoechst Aktiengesellschaft. Method for the animalysis of activated esters in the presence of N-hydroxy compounds as catalysts. 3,872,074, Cl. 260-112.500.
Koerber, Marvin A., to Automation Industries, Inc. Thermoplastic film. 3,872,041, Cl. 260-23.0XA.
Koga, Issac; Kobayashi, Shigeo; and Okamoto, Isao, to Kabusai Denshin Denwa Kabushiki Kaisha. Fixture for measuring parameters of quartz crystal units. 3,872,385, Cl. 324-56.000.
Koga, Ryosuke; and Nonome, Kazuhiro, to Kayabakogyokabushikikaisha. Hydraulic cylinder assembly for telescopic boom. 3,871,265, Cl 91-189.000.
Kogelnik, Herwig Werner: *See—*
  Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, 3,871,742.
Kohchi, Akira: *See—*
  Watanabe, Takao; Kohchi, Akira; and Fujii, Toshinobu, 3,872,411.
Kohtoku, Yasuhiko: *See—*
  Nakatomi, Shunsuke; Kohtoku, Yasuhiko; and Inoue, Tosihiro, 3,872,180.
Koide, Tohru: *See—*
  Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,871,165.
Koike, Hirotami, to Nihon Denshi Kabushiki Kaisha. Convertible scanning electron microscope. 3,872,305, Cl. 250-311.000.
Kolb, William A.; and Papinchak, Michael J., to United States Steel Corporation. Method and apparatus for controlling the injection of flux into a steelmaking vessel as a function of pressure differential. 3,871,633, Cl. 266-35.000.
Koller, Stefan; Zink, Rudolf; Reichel, Dieter; and Voltz, Jacques, to Ciba-Geigy AG. Process for the manufacture of signal dyes of the cationic series. 3,872,132, Cl. 260-296.00B.
Kolm, Henry H.; and Thornton, Richard D., to Massachusetts Institute of Technology. Stabilization and ride control of suspended vehicles propelled by a linear motor. 3,871,301, Cl. 104-148.0SS.
Kolodziej, Edward. Visual ground fault indicator. 3,872,383, Cl. 324-51.000.
Kolosky, Joseph F.: *See—*
  Sinner, Joseph M.; Galle, Edward L.; Kolosky, Joseph F.; and Mikkelson, Marvin O., 3,872,230.
Komoto, Robert G.: *See—*
  Collman, James P.; Winter, Stanley R.; and Komoto, Robert G., 3,872,168.
Koninklijke Machinefabriek Stork B.V.: *See—*
  Lameris, Herman Johannes, 3,871,789.
Konno, Tsugio: *See—*
  Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Konno, Tsugio, 3,871,950.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, to Boehringer Ingelheim GmbH. 1-Phenoxy-2-hydroxy-3-alkylamino-propanes. 3,872,147, Cl. 260-465.00E.
Koppe, Herbert: *See—*
  Kummer, Werner; Stahle, Helmut; Koppe, Herbert; and Hoefke, Wolfgang, 3,872,121.
Korff, William S. Putting green. 3,871,661, Cl. 273-178.00B.
Kornylak, Andrew T. Silicone putty retarder. 3,871,501, Cl. 193-35.00A.
Korst, James J.: *See—*
  Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 3,872,171.
Kossler, Hans Joachim: *See—*
  Bachmann, Horst; and Kossler, Hans Joachim, 3,871,225.
Kovalchik, Steve, Jr.: *See—*
  Henley, Virgil E.; and Kovalchik, Steve, Jr., 3,871,942.
Kowalski, Mieczyslaw: *See—*
  Boboli, Fdyta; Malasnicki, Wladyslaw Longin; Kowalski, Mieczyslaw; and Pazgan, Andrzej, 3,872,143.
Koyano, Takayuki: *See—*
  Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
Kozak, Theodore F., to Union Carbide Corporation. Combination absorbent dressing and flexible cooling device. 3,871,376, Cl. 128-275.100.
Kozu, Isao: *See—*
  Hino, Tetsuo; Minami, Eiji; Kozu, Isao; and Kurihara, Hidetoshi, 3,872,505.
Krag, Niels: *See—*
  Boice, Michael F.; and Krag, Niels, 3,872,454.
Kralowetz, Bruno; and Blaimschein, Gottfried, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft. Swaging machine. 3,871,223, Cl. 72-402.000.
Kramer, Gunter: *See—*
  Marx, Gerhard; and Kramer, Gunter, 3,871,641.
Kramer, Jury Adamovich: *See—*
  Kazansky, Vasily Mikhailovich; Epifantsev, Alexei Grigorievich; Roschektaev, Vladimir Lavrentievich; and Kramer, Jury Adamovich, 3,871,070.
Kramm, Carl H.; and Lee, Roger E., to RLK Research Inc. Plastic hone stone retainer. 3,871,140, Cl. 51-338.000.
Kratel, Gunter; Stohr, Gunter; Wiebke, Gunter; and Frey, Volker, to Elektroschmelzwerk Kempten GmbH. Process for the treatment of waste gases from the separation of boron. 3,872,214, Cl. 423-298.000.
Krauss, Ferd A.: *See—*
  O'Neil, Francis P.; Krauss, Ferd A.; Sambenedetto, Vincent; and Cooper, Christopher C., 3,871,594.
Kreighbaum, William Eugene; and Comer, William Timmey, to Mead Johnson & Company. 1-Hydroxyisoquinolones. 3,872,130, Cl. 260-289.00R.
Kremers, Frank J.: *See—*
  Schevey, William R.; and Kremers, Frank J., 3,871,929.
Krenzer, John, to Velsicol Chemical Corporation. Herbicidal oxadiazolidinediones. 3,872,298, Cl. 260-307.00B.
Krieg, John W.; Gaudio, Alfred; and Borek, Victor F. Band type electric heaters. 3,872,281, Cl. 219-535.000.
Krise, George W. Coin box and lock mechanism. 3,871,284, Cl. 109-59.000.
Krishna, Surinder; and Malmberg, Paul R., to Westinghouse Electric Corporation. Bidirectional semiconductor switch with improved dV/dt capability. 3,872,326, Cl. 307-252.00T.
Krishna, Surinder: *See—*
  Davis, John R., Jr.; and Krishna, Surinder, 3,872,494.

Krolak, Ronald L.; Gianessi, Albert; and Alexander, George F., to Caterpillar Tractor Co. Vehicle main frame. 3,871,462, Cl. 180-9.500.
Kronenberg, Marvin L., to Union Carbide Corporation. Nonaqueous cell utilizing a 3me20x-based electrolyte. 3,871,916, Cl. 136-6.0LN.
Krotkov, Vladimir Nikolaevich: *See—*
  Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.
Kruger, Gerd: *See—*
  Rieper, Helmut; Kruger, Gerd; Keck, Johannes; Noll, Klaus-Reinhold; and Kahling, Joachin, 3,872,090.
Kruger, Gunter; Baum, Helmut; and Widmaier, Manfred, to Robert Bosch, GmbH. Thin film electronic circuit unit and method of making the same. 3,872,356, Cl. 317-101.00A.
Krupen, Philip: *See—*
  Heilprin, Laurence B.; Nordquist, George; and Krupen, Philip, 3,871,296.
Kruse, Robert O.: *See—*
  Carrington, Henry A.; and Kruse, Robert O., 3,871,084.
Krzewinski, Henrietta K., to Johnson & Johnson. Self-adhesive surgical apparel and method. 3,871,369, Cl. 128-132.00D.
Kubo, Masayoshi: *See—*
  Nishino, Atsushi; Iura, Yukihide; Kubo, Masayoshi; and Tateisi, Motosi, 3,872,013.
Kubo, Shigenaga; and Abe, Nobuyoshi, to Nippon Chemical Industrial Co., Ltd. Coated chromate pigment compositions and process for producing the same. 3,871,894, Cl. 106-302.000.
Kubota, Koji; Yoshihara, Yasuhiko; and Okada, Hiroshi, to Ajinomoto Co., Inc. Method of producing l-lysine by fermentation. 3,871,960, Cl. 195-29.000.
Kubota, Koji: *See—*
  Nakazawa, Hidetsugu; Enei, Hitoshi; Kubota, Koji; and Okumura, Shinji, 3,871,958.
Kuckhermann, Gustav; Feldkamper, Richard; Paul, Walter; and Brockmuller, Friedrich Franz. Bag-making machinery. 3,871,270, Cl. 93-27.000.
Kuest, Johnnie. Sheetrock lift and scaffold. 3,871,477, Cl. 182-63.000.
Kuhn, Karl Walter, to Societe d'Etudes de Machines Thermiques. Method of making a cooled valve for heat engine and valve obtained thereby. 3,871,339, Cl. 123-41.410.
Kuklok, Gerhard: *See—*
  Wanetzky, Erwin; and Kuklok, Gerhard, 3,871,630.
Kukucka, William P.; and Acquaviva, Thomas, to Xerox Corporation. Sorter control. 3,871,643, Cl. 271-173.000.
Kummer, Rudolf: *See—*
  Nienburg, Hans Juergen; and Kummer, Rudolf, 3,871,970.
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; and Hoefke, Wolfgang, to Boehringer Ingelheim G.m.b.H. 2-(Phenyl-amino-2-imidazolines and salts thereof. 3,872,121, Cl. 260-256.40N.
Kummer, Werner: *See—*
  Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, 3,872,147.
Kunii, Takao. Character display discharge tube. 3,872,346, Cl. 313-514.000.
Kuniya, Keiichi; and Arakawa, Hideo, to Hitachi, Ltd. Carbon-fiber-reinforced aluminum composite material. 3,871,834, Cl. 29-183.000.
Kunz, John W. Upholstery element. 3,871,089, Cl. 24-90.00B.
Kupperman, Dennis I.: *See—*
  Kupperman, Sam; and Kupperman, Dennis I., 3,871,605.
Kupperman, Sam; and Kupperman, Dennis I., to R B Toy Development Co. Toy parachute. 3,871,605, Cl. 244-155.00R.
Kurahashi, Akira: *See—*
  Inoue, Shozo; and Kurahashi, Akira, 3,871,081.
Kuraray Co., Ltd.: *See—*
  Shimizu, Tohru; Yasui, Teruo; and Nakamura, Sieshiro, 3,872,163.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
  Murayama, Naohiro, 3,872,318.
  Watanabe, Tetsuya; and Suzuki, Noboru, 3,871,305.
Kureka Kagaku Kogyo Kabushiki Kaisha: *See—*
  Yoshikawa, Shinsuke; and Sawa, Yuji, 3,872,203.
Kurematsu, Kazuhiko: *See—*
  Matsumoto, Shoichi; and Kurematsu, Kazuhiko, 3,871,884.
Kurematsu, Susumu: *See—*
  Horiie, Shigeki; Kurematsu, Susumu; and Asai, Shin-ichiro, 3,872,068.
Kurihara, Hidetoshi: *See—*
  Hino, Tetsuo; Minami, Eiji; Kozu, Isao; and Kurihara, Hidetoshi, 3,872,505.
Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, to Nippondenso Co., Ltd.; Toyota Jidosha Hanbai Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Engine automatic control system for vehicles including plural clutch actuated switches. 3,872,316, Cl. 290-38.000.
Kuriyama, Sigeru; and Hashimoto, Hideyuki, to Hitachi Ltd. Electric car controlling device. 3,872,367, Cl. 318-373.000.
Kuster, Jurgen; and Schlosser, Hermann, to Seitz-Werke GmbH. Device for controlling the working speed of bottle treating machines, preferably filling machines in bottle treating installations. 3,871,509, Cl. 198-37.000.
Kutzbach, Carl, to Bayer Aktiengesellschaft. Penicillin acylase. 3,871,962, Cl. 195-62.000.
Kyoei Zoki Kabushiki Kaisha: *See—*
  Hayashi, Takeshi, 3,871,332.
L. E. Sauer Machine Co.: *See—*
  Sauer, Louis E., 3,871,777.
La-Z-Boy Chair Company: *See—*
  Shoemaker, Edwin J.; Ruble, Harold P.; and White, David B., 3,871,704.
Laass, Heinz, to Taco-Tafel GmbH & Co. KG. Electrical wiring, circuit, energization, and resistance test apparatus. 3,872,384, Cl. 324-51.000.
Labavia S.G.E.: *See—*
  Bessiere, Pierre Etienne, 3,871,466.
  Bessiere, Pierre Etienne, 3,871,497.
Labbe, Francis Auguste Maurice, to Molins Limited. Cigarette making machines, 3,871,386, Cl. 131-84.00B.
Laboratories Grifols S/A: *See—*
  Lucas, Victor Grifols, 3,871,574.
Lachut, Frank J., to Owens-Corning Fiberglas Corporation. All glass reinforced tire construction. 3,871,432, Cl. 152-354.000.
LaCoursiere, Peter A., Jr.: *See—*
  LaCoursiere, Peter A., Sr.; and LaCoursiere, Peter A., Jr., 3,871,731.
LaCoursiere, Peter A., Sr.; and LaCoursiere, Peter A., Jr. Cage for removably enclosing coupled electrical plugs. 3,871,731, Cl. 339-75.00P.
Lacroux, Gerard: *See—*
  Lecoeuche, Jacques; and Lacroux, Gerard, 3,872,362.
Ladin, Eli M., to Federal-Mogul Corporation. Process for making split-ring ball bearings. 3,871,093, Cl. 29-148.40A.
Ladney, Michael, Jr. Method of constructing mold for forming plastic foam parts. 3,871,060, Cl. 29-428.000.
Lafosse, Claude, to Saint Gobain Industries. Method for blowing hollow articles of plastic materials. 3,872,202, Cl. 264-89.000.
Lagerqvist, Roy S. G.: *See—*
  Johansson, Roy Ingvar Mendel; and Lagerqvist, Roy S. G., 3,871,782.
Lalli, Orfelio: *See—*
  Cohen, Alain; and Lalli, Orfelio, 3,872,296.
Lameris, Herman Johannes, to Koninklijke Machinefabriek Stork B.V. Vertical rotatable centrifugal pump. 3,871,789, Cl. 415-112.000.
LaMers, Herbert, to R. A. Jones & Company, Inc. Labeling apparatus. 3,871,597, Cl. 242-75.300.
Lancini, Giancarlo: *See—*
  White, Richard J.; and Lancini, Giancarlo, 3,871,965.
Lane, George A.: *See—*
  Staudacher, Gerald R.; Dergazarian, Thomas E.; and Lane, George A., 3,871,684.
Lane, James M., III: *See—*
  Schnackenberg, Werner D.; and Lane, James M., III, 3,871,240.
Lang, Frank J.: *See—*
  Chadfield, Robert; and Lang, Frank J., 3,871,543.
Langbein, Adolf: *See—*
  Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,872,127.
Langenberg, Earl G., to Anaconda Company, The. Method of connecting insulated conductors. 3,871,932, Cl. 156-49.000.
Langenberg, Hartmut, to Dierks & Sohne. Mixer cooler. 3,871,446, Cl. 165-109.000.
Langenstein & Schemann Aktiengesellschaft: *See—*
  Bachmann, Horst; and Kossler, Hans Joachim, 3,871,225.
Langlois, Christian, to Regie Nationale des Usines Renault. Dynamic balancing machine. 3,871,234, Cl. 73-460.000.
Lannen Sokeri Oy: *See—*
  Nisula, Pentti Samuel, 3,871,255.
Lapeyre, James M. Alphanumeric display system. 3,872,463, Cl. 340-336.000.
Larralde, Edward; and Robinson, Glen, to Vetco Offshore Industries, Inc. Method and apparatus for the control of a weight suspended from a floating vessel. 3,871,622, Cl. 254-172.000.
Larsen, Peder, to Danfoss A/S. Valve combination for an oil burner installation. 3,871,397, Cl. 137-115.000.
Larson, Martin E.; and White, Irvin M., to Outboard Marine Corporation. Instrument mount. 3,871,606, Cl. 248-27.000.
Larson, Michael B.: *See—*
  Lorenz, Marilyn J.; and Larson, Michael B., 3,871,657.
Larson, Theodore Edwin: *See—*
  Cleveland, James Leonard; Jones, Richard Alfred; Larson, Theodore Edwin; McNary, Kenneth Rogers; and Zahorsky, James Theodore, 3,872,444.
Lassiter, Richard C.: *See—*
  Iglehart, Hilary H.; and Lassiter, Richard C., 3,871,154.
Lassiter, Rush E., to Floyd Rush Corporation. Apparatus for processing garbage. 3,871,291, Cl. 100-93.00P.
Last, Arthur W.; and Fraser, George L., to Kennecott Copper Corporation. Roast-flotation process for upgrading molybdenite flotation concentrates. 3,871,867, Cl. 75-2.000.
Lau, Peter: *See—*
  Domke, Klaus; Lau, Peter; and Glas, Willi, 3,871,157.
Lavo, Harry F.; and Cante, Charles J., to General Foods Corporation. Plant husbandry. 3,871,130, Cl. 47-9.000.
Lawrence, John P., to Goodyear Tire & Rubber Company, The. Imide additives for sulfur vulcanizable polymers. 3,872,062, Cl. 260-79.50B.
Lawrence Peska Associates, Inc.: *See—*
  Bergman, Samuel, 3,871,336.
  Manly, Frank W., Jr., 3,872,235.
  Shaw, Milton C., 3,871,658.

- Lawson, Paul D.: *See—*
  - Duvall, Dale R.; Neff, Marion W.; and Lawson, Paul D., 3,872,434.
- "Le Nickel": *See—*
  - Gandon, Louis; and Lemarinel, Robert, 3,871,978.
  - Rey, Maurice, 3,871,873.
- Lear Siegler, Inc.: *See—*
  - Garceau, David S.; and Knoke, Silas J., 3,871,039.
  - Juskewicz, Joseph A., Jr., 3,872,320.
- Lebedev, Alexei Pavlovich: *See—*
  - Schedrovitsky, Savely Solomonovich; Goncharevich, Leonid Fomich; Pruss, Karl Vladimirovich; Lebedev, Alexei Pavlovich; and Gontar, Valentin Nikolaevich, 3,872,458.
- Leblanc, Alcide, to Institut de Bio-Endrocrinologie, Inc. Test tube rack. 3,871,832, Cl. 23-259.000.
- Leblanc, Jean, to Societe Industrielle Generale De Mecanique Appliquee S.I.G.M.A. Correction device for the delivery per revolution of a distributing injection pump and pump equipped with this device. 3,871,794, Cl. 417-282.000.
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  - Bohm, Harald; and Heffler, Jochen, 3,871,922.
  - Glausecker, Karl; and Gnutzmann, Uwe, 3,872,400.
  - Queiser, Horst; Schwarz, Horst; and Schroter, Hans-Jurgen, 3,871,841.
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  - Holmes, Thomas G.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,872,433.
- Lightolier Incorporated: *See—*
  - Cohen, Alain; and Lalli, Orfelio, 3,872,296.
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  - Werner, Leo C.; Lin, Francis C. M.; and Knochel, William J., 3,872,341.
- Lin, Go-Sing: *See—*
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  - Pestka, John August; and Lindeman, Richard Jay, 3,871,241.
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  - Linn, Donald F.; and Wishart, George L., 3,871,500.
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- MacDougall, John D.: *See—*
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- Machida, Minoru: *See—*
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  - Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., 3,872,120.
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  - Brooks, Robert A.; and Wallace, John Paul, 3,872,379.
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  - Baxter, Vernon A., Jr., 3,872,266.
- Mahaffy, Dwight A.: *See—*
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- Maloney, Thomas C., to Burroughs Corporation. Multi-position character display panel. 3,872,339, Cl. 313-188.000.
- Mangham, Jesse Roger: *See—*
  - Lowrance, Byron R.; and Mangham, Jesse Roger, 3,872,224.
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- Mann, August C.: *See—*
  - Petersen, Sigrud R.; Ying, Sui-Chun; and Mann, August C., 3,872,335.
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  - Bedague, Pierre; Marchand, Pierre; Parc, Guy; and Roux, Fernand, 3,871,837.
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  - Long, John B.; and Stricklin, John B., Jr., 3,871,588.
- Marsack, Warren S. Towel rack for use on beaches. 3,871,526, Cl. 211-178.000.
- Marshall, Arthur R., to Chemix Corporation. Chemical mixer. 3,871,627, Cl. 259-64.000.
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  - Barsby, Alan, 3,871,788.
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- Martin, Lionel C.: *See—*
  - Bundschuh, Robert L.; and Martin, Lionel C., 3,871,243.
- Martin, Milton: *See—*
  - Roseman, Donald P.; Martin, Milton; and Miller, Eugene R., 3,871,323.
- Martinkovic, Paul Steve: *See—*
  - Mosshart, Crockett; and Martinkovic, Paul Steve, 3,871,720.
- Marvin Glass & Associates: *See—*
  - Breslow, Jeffrey D.; Barlow, Gordon A.; Burck, Joseph M.; and Morrison, Howard J., 3,871,659.
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  - Licitis, Gunars, 3,871,112.
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- Massachusetts Institute of Technology: *See—*
  - Kolm, Henry H.; and Thornton, Richard D., 3,871,301.
  - Pratt, George W., Jr.; and McMullin, Paul G., 3,871,215.
- Master Fence Fittings Inc.: *See—*
  - Lening, George O., 3,871,134.
- Masuda, Senichi. Electrodynamic apparatus for controlling flow of particulate material. 3,872,361, Cl. 317-262.00E.

- Masuda, Yasutoshi: *See—*
  - Yamanaka, Masami; and Masuda, Yasutoshi, 3,871,491.
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  - Hosaka, Akio; and Matsui, Shunji, 3,871,472.
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  - Murakami, Mutsuaki; and Yoshimura, Susumu, 3,872,358.
  - Nishino, Atsushi; Iura, Yukihide; Kubo, Masayoshi; and Tateisi, Motosi, 3,872,013.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Hino, Tetsuo; Minami, Eiji; Kozu, Isao; and Kurihara, Hidetoshi, 3,872,505.
  - Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, 3,871,206.
  - Sano, Kazuhiko; and Omiya, Shoji, 3,872,507.
  - Sekine, Yoichi, 3,871,972.
  - Yoshii, Tetsuji, 3,872,509.
- Matsushita Electric Industrial., Ltd.: *See—*
  - Niu, Tokihide, 3,872,277.
- Matthews, R. Hurley: *See—*
  - Hughes, Robert T.; and Matthews, R. Hurley, 3,871,614.
- Maurer, Robert A., III. Bicycle travel simulator. 3,871,648, Cl. 272-73.000.
- Maurice, Jacques: *See—*
  - Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, 3,871,831.
- Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See—*
  - Seiler, Wolfgang; and Schmidt, Ulrich, 3,871,827.
- Maxwell, James D.: *See—*
  - Quick, Jerry L.; and Maxwell, James D., 3,871,219.
- Maxwell Manufacturing Co.: *See—*
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- Mayer, Simon E., to Avant Incorporated. Laminated identification card. 3,871,119, Cl. 40-2.200.
- Mayers, Bernard J.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,872,111.
- Mays, Steven L.: *See—*
  - Clarke, Ralph H.; Clarke, Wesley James; and Mays, Steven L., 3,871,845.
- McCargar, Joseph V.: *See—*
  - Schimmeyer, Werner K.; Wood, Norman J.; and McCargar, Joseph V., 3,871,527.
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  - Geller, William L.; and McCarthy, Jeremiah P., 3,872,495.
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  - Mack, Walter Edward, 3,871,796.
- McDonald, Lee E. Tongue-thrust correction appliance. 3,871,370, Cl. 128-136.000.
- McDonnell Douglas Corporation: *See—*
  - Endicott, Donald L., 3,872,012.
- McFarland, Philip J.: *See—*
  - Rambauske, Werner R.; and McFarland, Philip J., 3,871,751.
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  - Stanislawski, Melvern B.; and McKinney, Daniel F., 3,871,352.
- McKnight, Audrey M. Cleaning composition. 3,872,021, Cl. 252-121.000.
- McMullin, Paul G.: *See—*
  - Pratt, George W., Jr.; and McMullin, Paul G., 3,871,215.
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- McNary, Kenneth Rogers: *See—*
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- Mecklenborg, Richard A., to Singer Company, The. Focusing roll and displacement prisms. 3,871,750, Cl. 350-286.000.
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  - Lee, Jin W., 3,871,383.
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  - Jarosik, Norman A.; and Weppner, Benjamin H., 3,872,461.
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  - Robota, Stephen; and Mershon, Francis P., 3,872,175.
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  - Georg, Werner; Cwielong, Heinrich; and Mertens, Wilfried, 3,871,513.
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  - Berkowitz, Sidney; and Mesiah, Raymond, 3,872,118.
- Metzger, Carl: *See—*
  - Meiser, Werner; Metzger, Carl; Buchel, Karl Heinz; and Plempel, Manfred, 3,872,117.
- Meuser, Wilfried: *See—*
  - Bertram, Joachim; and Meuser, Wilfried, 3,872,382.
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  - Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.
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  - Jensen, Kenneth D., 3,871,717.

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  - Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.
- Mikkelson, Marvin O.: *See—*
  - Sinner, Joseph M.; Galle, Edward L.; Kolosky, Joseph F.; and Mikkelson, Marvin O., 3,872,230.
- Milaca Mills, Inc.: *See—*
  - Green, Ralph W., 3,871,030.
- Miles Machinery Company: *See—*
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  - Bernhoft, Gerald W.; and Miller, David A., 3,871,537.
- Miller, Edward A. Model airplanes and method of making same. 3,871,126, Cl. 46-78.000.
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  - Roseman, Donald P.; Martin, Milton; and Miller, Eugene R., 3,871,323.
- Miller, Kenneth J., to A. L. Hansen Mfg. Co. Door lock means. 3,871,198, Cl. 70-146.000.
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  - Coller, John A.; Millman, Irving; and Blumberg, Baruch S., 3,872,225.
- Millmaster Onyx Corporation: *See—*
  - Merianos, John J.; and Adams, Phillip, 3,871,861.
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- Milnes, Harold Barry, to Pilkington Brothers Limited. Manufacture of flat glass ribbons on a molten metal bath. 3,871,854, Cl. 65-65.00A.
- Minami, Eiji: *See—*
  - Hino, Tetsuo; Minami, Eiji; Kozu, Isao; and Kurihara, Hidetoshi, 3,872,505.
- Minami, Nobuyoshi, both of: *See—*
  - Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.
- Mine Safety Appliances Company: *See—*
  - Giebel, Joseph L.; and Temple, Ernest E., 3,871,321.
  - Smith, Wayne L., 3,871,848.
- Miner, Carroll R., to General Instrument Corporation. Tuner drive assembly with inertial fine tune stabilizer. 3,871,237, Cl. 74-10.540.
- Miner Enterprises, Inc.: *See—*
  - Ray, Michael W., 3,871,530.
- Minnesota Mining and Manufacturing Company: *See—*
  - Brekken, Roger A., 3,871,947.
  - Dierssen, Gunther H., 3,871,912.
  - Dominguez-Burguette, Mario, 3,871,944.
  - Mikelsons, Valdis, 3,871,881.
  - Olson, Craig W., 3,871,123.
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  - Mino, Masayuki; and Seino, Kuniki, 3,871,878.
- Miquel, Jean: *See—*
  - Duhaut, Pierre; and Miquel, Jean, 3,871,995.
- Misima, Yusi, to Shimazaki Mixing Equipment Co., Ltd. Combination pumping apparatus. 3,871,268, Cl. 92-13.300.
- Mita Industrial Company, Ltd.: *See—*
  - Torii, Saburo; Miyazaki, Takaaki; and Aizawa, Tatsuo, 3,872,046.
- Mitchell, Baker A., Jr., to Community Health Computing, Inc. Hospital data processing system. 3,872,448, Cl. 340-172.500.
- Mitchell, Wallace F., to Ammco Tools, Inc. Combined cutter and grinder attachment for lathe. 3,871,066, Cl. 29-560.000.
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  - Hamada, Kenzo; Uchiyama, Hiroshi; Sugi, Jiro; and Kamada, Osamu, 3,872,000.
- Mitsubishi Gas Chemical Co., Ltd.: *See—*
  - Yoshikawa, Yoshio; and Suzumori, Takeo, 3,872,221.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  - Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, 3,871,062.
  - Ishida, Michiyasu, 3,871,567.
- Mitsubishi Rayon Co. Ltd.: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Mitsugi, Koji: *See—*
  - Tobe, Sadanobu; Hirose, Yoshiteru; Nakamura, Yoshihiro; and Mitsugi, Koji, 3,871,963.
- Mitsui Mining & Smelting Co., Ltd.: *See—*
  - Nagahama, Tatsuya, 3,872,010.
- Mitsui Toatsu Chemicals Inc.: *See—*
  - Yoshikawa, Shinsuke; and Sawa, Yuji, 3,872,203.
- Mittel, Robert F.: *See—*
  - Corcoran, Richard P.; Hirtler, Alfred E.; and Mittel, Robert F., 3,872,276.
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- Miura, Kimio, to Honda Giken Kogyo Kabushiki Kaisha. Course controlling device for a vehicle. 3,871,468, Cl. 180-79.20R.
- Miura, Nobuaki: *See—*
  - Higashi, Kazuhiro; Taguchi, Isao; and Miura, Nobuaki, 3,872,490.
- Miwa, Kazuhito: *See—*
  - Nagai, Masashi; Miwa, Kazuhito; Tsunetsugu, Masakazu; and Fujiwara, Tadamaro, 3,871,343.
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- Miyamoto, Kuichi, to Canon Kabushiki Kaisha. Discharger for electrophotographic copying apparatus. 3,872,307, Cl. 250-324.000.
- Miyata, Yoshibumi: *See—*
  - Ukyo, Akira Nohara; Umetani, Tomonobu; Miyata, Yoshibumi; and Sanno, Yasushi, 3,872,108.
- Miyauchi, Toshiyuki; and Ohtsuka, Kunio, to Nissan Jidosha Kabushiki Kaisha. Hydraulic control circuit for vehicle automatic transmission. 3,871,250, Cl. 74-869.000.
- Miyazaki, Takaaki: *See—*
  - Torii, Saburo; Miyazaki, Takaaki; and Aizawa, Tatsuo, 3,872,046.
- MI^2 : *See—*
  - Daniels, Leander Bruce; and Azbell, James W., 3,872,467.
- Mobil Oil Corporation: *See—*
  - Morrison, Roger A., 3,871,993.
- Mobley, Carroll E.: *See—*
  - Maringer, Robert E.; and Mobley, Carroll E., 3,871,439.
- Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., to United States of America, Agriculture. Process for the preparation of 1,3-dialkanoyl hexahydropyrimidine. 3,872,120, Cl. 260-251.00R.
- Modiano, Jacques: *See—*
  - Branlard, Paul; and Modiano, Jacques, 3,872,043.
- Moffatt, John G.: *See—*
  - Jones, Gordon H.; Ranganathan, Ramachandran S.; and Moffatt, John G., 3,872,084.
  - Jones, Gordon H.; and Moffatt, John G., 3,872,098.
- Mohan, Raam R.; Byrd, George H., Jr.; Nixon, James; and Bucker, Edward R., to Exxon Research and Engineering Company. Use of microorganisms to disperse and degrade oil spills. 3,871,957, Cl. 195-2.000.
- Mohasco Industries, Inc.: *See—*
  - Harrison, Kenneth S., 3,871,705.
- Mohr, Reinhard: *See—*
  - Fleckenstein, Erwin; and Mohr, Reinhard, 3,872,133.
- Molino, Angelo R. Duct joining means. 3,871,688, Cl. 285-189.000.
- Molins Limited: *See—*
  - Labbe, Francis Auguste Maurice, 3,871,386.
- Moller, Walter: *See—*
  - Vogt, Harald; and Moller, Walter, 3,871,799.
- Mollohan, Kenneth L.; and Makhlouf, Joseph M., to PPG Industries, Inc. Wax-containing powder coatings. 3,872,040, Cl. 260-21.000.
- Monitron Industries, Inc.: *See—*
  - Fuller, Charles H.; and Herring, Carl E., 3,872,455.
- Monroe Belgium N.V.: *See—*
  - Keijzer, Johan H.; Jossa, Louis J.; Renders, Herman E. A.; and Oancea, Alexandru, 3,871,679.
- Monsanto Company: *See—*
  - Boustany, Kamel, 3,872,061.
  - Hirzy, John William, 3,872,154.
- Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Organic photoconductor for electrophotography. 3,871,880, Cl. 96-1.500.
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- Moore, Robert C.: *See—*
  - Munnerlyn, Charles R.; and Moore, Robert C., 3,871,772.
- Moran, Jack L. Nonskidding blocks. 3,871,620, Cl. 254-133.00R.
- Morgan, Paul A., to Century Wheels, Inc. Magazine for storing an information tape. 3,871,596, Cl. 242-71.200.
- Morimoto, Shiro: *See—*
  - Sugimoto, Keiichi; Kobayashi, Kunio; Nishijima, Kouji; and Morimoto, Shiro, 3,872,115.
- Morris, Robert C.: *See—*
  - Polk, Donald E.; and Morris, Robert C., 3,871,836.
- Morrison, Howard J.: *See—*
  - Breslow, Jeffrey D.; Barlow, Gordon A.; Burck, Joseph M.; and Morrison, Howard J., 3,871,659.
- Morrison, Roger A., to Mobil Oil Corporation. Upgrading the octane value of naphtha employing a crystalline aluminosilicate zeolite which has a high silica to alumina ratio wherein aluminum is incorporated into the crystal latice of the zeolite. 3,871,993, Cl. 208-135.000.
- Morton-Norwich Products, Inc.: *See—*
  - Harris, Nicholas D., 3,872,067.

Moschgat, Robert G. Ultrasonic system for repelling noxious fauna. 3,872,472, Cl. 340-384.00E.
Mosshart, Crockett; and Martinkovic, Paul Steve, to Uniroyal, Inc. Traction tread band. 3,871,720, Cl. 305-51.000.
Motorenfabrik Hatz KG: *See—*
  Hatz, Ernst; and Oertel, Erhard, 3,871,345.
Motorola, Inc.: *See—*
  Frederiksen, Thomas M.; and Zobel, Don William, 3,872,323.
  Nash, Harold Garth, 3,872,390.
  Reynolds, Thomas Linn, 3,872,450.
  Weber, Howard F., 3,871,347.
Motter, James W.; and Allen, Connie A., to Toroid Corporation. System for determining electrode length. 3,872,231, Cl. 13-13.000.
Mottram, Anthony: *See—*
  Peaker, Anthony Ralph; and Mottram, Anthony, 3,872,314.
Moulin, Norbert L., to Hughes Aircraft Company. Tool and method for insertion and removal of electrical connector interface seals. 3,871,057, Cl. 29-427.000.
Mounier, Bruce A. Gun barrel and firing mechanism for impact-actuated underwater guns. 3,871,120, Cl. 42-1.00L.
Mueller, Floyd F.; Aulik, Clarence J.; and Zeman, Paul R., to American Hospital Supply Corporation. Stirrup assembly for examination table. 3,871,637, Cl. 269-328.000.
Mueller, Hans W.: *See—*
  Perry, Donald S.; Fowler, Wyland L.; Shattuck, Richard E.; and Mueller, Hans W., 3,871,507.
Muhlegger, Klaus: *See—*
  Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.
Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, to A. Ehrenreich & Cie. Forked universal joint member. 3,871,192, Cl. 64-17.00R.
Mulcahy, Joseph Aloysius; Jones, Harry Joseph; and Batram, Stephen Douglas, to Ferrco Engineering Limited. Rod bundling and stacking apparatus. 3,871,533, Cl. 214-6.0FS.
Muller, Willy: *See—*
  Cseh, Georg; and Muller, Willy, 3,872,078.
Multi-State Devices Ltd.: *See—*
  Plough, Charles T.; Eastwood, H. Keith; and Arts, Marcus, 3,872,418.
Mundy, William L., to O'Fallon Investment Company. Cutting tool for the continuous machining of metals and the method of making same. 3,871,251, Cl. 76-101.00A.
Munezawa, Takuro: *See—*
  Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, 3,872,142.
Munnerlyn, Charles R.; and Moore, Robert C., to Tropel, Inc. Eye examining instrument aligning means and method therefor. 3,871,772, Cl. 356-153.000.
Munsingwear, Inc.: *See—*
  Scott, Rollo L.; and Overby, Robert F., 3,871,307.
Murakami, Mutsuaki; and Yoshimura, Susumu, to Matsushita Electric Industrial Company. Solid electrolytic capacitor and solid electrolyte therefor. 3,872,358, Cl. 317-230.000.
Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, to Teijin Limited; and Teijin Seiki Co., Ltd. Device for imparting false twists on a filamentary yarn. 3,871,166, Cl. 57-77.450.
Murakami, Yuetsu: *See—*
  Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,871,927.
Murata, Masahiro, to Hope Kabushiki Kaisha. Ski boot heel binding. 3,871,673, Cl. 280-11.35T.
Murata, Masamichi; Urayama, Yuji; and Furusawa, Takamasa, to Victor Company of Japan, Ltd. Remote control system and apparatus for automatic telephone answering and recording apparatus. 3,872,254, Cl. 179-6.00E.
Murata, Noboru, to OKI Electric Industry Co., Ltd. Method and apparatus for detecting cracks in unhulled grains. 3,871,774, Cl. 356-201.000.
Murata, Rikizo, to Olympus Optical Company, Limited. Device for simultaneously manufacturing a plurality of fiber bundles. 3,871,591, Cl. 242-18.00G.
Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pyroelectric element of polymer film. 3,872,318, Cl. 307-88.0ET.
Murray, Jay P.; and Wasson, Kenneth L., to Armstrong Cork Company. Remodeling ceiling clip. 3,871,150, Cl. 52-498.000.
Murray, Jerome L.; and Gardiner, Frances R. Hygienic douche system. 3,871,518, Cl. 206-219.000.
Murry, Edward J., to Fibra-Sonics, Inc. Ultrasonic/chemical cleaner for contact lenses. 3,871,395, Cl. 134-107.000.
Murtland, Delbert Lyle. Electrical conducting fluid tight tubular assembly. 3,871,734, Cl. 339-94.00M.
Murvall, Ake Eugen, to Abu Aktiebolag. Nut locking devices. 3,871,785, Cl. 403-259.000.
Musgrove, Ralph E., to GeoResources, Inc. Process for extracting phosphate from solutions. 3,872,002, Cl. 210-59.000.
Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, to Asahi Glass Company, Ltd. Liquid crystal cell. 3,871,746, Cl. 350-160.0LC.
Myasaka, Katsuhiko: *See—*
  Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.

N. V. Hollandse Metallurgische Industrie Billiton: *See—*
  Middelhoek, Servaas, 3,872,136.
N. V. Hollandse Signaalapperten: *See—*
  Schulte, Anthonius Maria; and Van Der Wal, Uilko, 3,871,778.
Nadelson, Jeffrey: *See—*
  Houlihan, William J.; and Nadelson, Jeffrey, 3,872,125.
Nadolski, Klaus: *See—*
  Breer, Karl; and Nadolski, Klaus, 3,871,556.
Nagahama, Tatsuya, to Mitsui Mining & Smelting Co., Ltd. Flotation machine. 3,872,010, Cl. 210-219.000.
Nagai, Hiroshi: *See—*
  Furukawa, Kaoru; Isukamoto, Chiaki; and Nagai, Hiroshi, 3,872,055.
Nagai, Masashi; Miwa, Kazuhito; Tsunetsugu, Masakazu; and Fujiwara, Tadamaro, to Hitachi Shipbuilding and Engineering Company, Ltd. Recycle engine apparatus. 3,871,343, Cl. 123-119.00A.
Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; Abe, Takashi; and Yonekura, Michimasa. Electrolytic process for production of perfluorocyclohexane derivatives. 3,871,975, Cl. 204-59.00F.
Nagata, Yasunori: *See—*
  Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,871,165.
Nahon, Poland, to Jeumont-Schneider. Logic system for sequentially testing the states of a system of contacts. 3,872,324, Cl. 307-241.000.
Naito, Takayuki; and Nakagawa, Susumu, to Bristol-Myers Company. Semisynthetic derivatives of tobramycin. 3,872,079, Cl. 260-210.0AB.
Nakagawa, Susumu: *See—*
  Naito, Takayuki; and Nakagawa, Susumu, 3,872,079.
Nakahara, Kiyoharu: *See—*
  Hasegawa, Tsuneo; and Nakahara, Kiyoharu, 3,871,987.
Nakai, Yoshio: *See—*
  Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
Nakajyo, Jiro: *See—*
  Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, 3,871,166.
Nakamoto, Soichi: *See—*
  Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
Nakamura, Akio: *See—*
  Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, 3,871,206.
Nakamura, Sieshiro: *See—*
  Shimizu, Tohru; Yasui, Teruo; and Nakamura, Sieshiro, 3,872,163.
Nakamura, Takashi: *See—*
  Sato, Takayuki; Ota, Hideo; Yokoyama, Jiro; and Nakamura, Takashi, 3,871,411.
Nakamura, Yoshihiro: *See—*
  Tobe, Sadanobu; Hirose, Yoshiteru; Nakamura, Yoshihiro; and Mitsugi, Koji, 3,871,963.
Nakatomi, Shunsuke; Kohtoku, Yasuhiko; and Inoue, Tosihiro, to UBE Industries, Ltd. Method for producing isopentene. 3,872,180, Cl. 260-683.00D.
Nakazawa, Hidetsugu; Enei, Hitoshi; Kubota, Koji; and Okumura, Shinji, to Ajinomoto Co., Inc. Biological method of producing serine and serinol derivatives. 3,871,958, Cl. 195-29.000.
Nambu, Shuya: *See—*
  Masaki, Kenji; and Nambu, Shuya, 3,871,214.
Namiki, Minoru: *See—*
  Matsudaira, Tadashi; and Namiki, Minoru, 3,871,896.
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  Zuckerman, Arie Jeremy, 3,871,954.
Naylor, Arthur John: *See—*
  Burton, Arthur; Naylor, Arthur John; and Handforth, John Anthony, 3,871,907.
NCR Corporation: *See—*
  Horger, Georg, 3,872,024.
Neff, Marion W.: *See—*
  Duvall, Dale R.; Neff, Marion W.; and Lawson, Paul D., 3,872,434.
Nelboeck-Hochstetter, Michael: *See—*
  Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.
Nelson, Philip E.: *See—*
  Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., 3,871,824.
Nelson, Richard L., to Exxon Research and Engineering Company. Facsimile apparatus and method of operation. 3,872,239, Cl. 178-6.000.

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  Kachalova, Revekka Vulfovna; Nemtsov, Mark Semenovich; and Balkhanova, Galina Fedorovna, 3,872,216.
Nenninger, Theodore P.: *See—*
  Wilder, Leslie N.; Soltis, George L.; Nenninger, Theodore P.; and Ciaraldi, Anthony, 3,872,263.
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  Berg, Leif; and Nes, Ragnar Jonas, 3,871,320.
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Netzel, Philip C., to I-T-E Imperial Corporation. Switchgear operating mechanism overcenter spring toggle with latched restraint. 3,872,273, Cl. 200-153.00G.
Neugroschl, Ernest J., to Goodyear Tire & Rubber Company, The. System and method for monitoring quality characteristics of a moving web. 3,871,212, Cl. 73-88.00A.
Neumann, Gerhard Max, to Delbag Luftfiler GmbH. Filter pack. 3,871,851, Cl. 55-521.000.
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  Reamey, Herbert K.; and Newman, Jerry F., 3,871,986.
Ni-Tec: *See—*
  Fender, Ferdinand G., 3,872,302.
Nichols, Frank R., deceased (by Nichols, Pauline Harris, executrix). Vehicle with vertically movable power wheels. 3,871,465, Cl. 180-24.020.
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  Nichols, Frank R., deceased, 3,871,465.
Nichols, William Lee, to Norlin Music, Inc. Method of making seamless tubular bell section. 3,871,094, Cl. 29-169.500.
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  Irland, Lewis F.; and Nicholson, John B., 3,871,552.
Nicolas, Patrick Marie, to Republic of France, represented by the Minister of State for National Defense Delegation Ministerielle pour l'Armement, DPAG-Bureau des Brevets et Inventions. Process and device for deflection of a radiation beam. 3,872,299, Cl. 250-203.000.
Niemeyer, Heinrich, to Westfalia Separator AG. Centrifugal separator having valve in passageway beneath distributor foot. 3,871,575, Cl. 233-20.00A.
Nienburg, Hans Juergen; and Kummer, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Working up hydroformylation mixtures. 3,871,970, Cl. 203-6.000.
Nihon Denshi Kabushiki Kaisha: *See—*
  Koike, Hirotami, 3,872,305.
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  Miura, Ichiro; and Suzuki, Hiroshi, 3,871,102.
Nikiforov, Arnold Serafimovich: *See—*
  Zaderei, Nikolai Nikolaevich; Nikiforov, Arnold Serafimovich; and Ushankov, Evgeny Petrovich, 3,871,689.
Nikkel, Willem A., to Westvaco Corporation. Panel counting, collecting and gating method. 3,871,539, Cl. 214-152.000.
Nink, Horst: *See—*
  Schuller, Karl-Heinz; and Nink, Horst, 3,871,891.
Nippon Carbon Co. Ltd.: *See—*
  Kanemaru, Toyonosuke; Shimada, Toshio; and Inudow, Isao, 3,872,032.
Nippon Chemical Industrial Co., Ltd.: *See—*
  Kubo, Shigenaga; and Abe, Nobuyoshi, 3,871,894.
Nippon Electric Company, Limited: *See—*
  Gotou, Toshiaki; and Saijo, Ryuichi, 3,872,405.
  Matsubara, Itsuo; and Sakaguchi, Mitsuhito, 3,871,740.
  Matsue, Shigeki, 3,872,321.
Nippon Kokan Kabushiki Kaisha: *See—*
  Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
Nippon Oil company, Limited: *See—*
  Takāse, Shinji; and Yamazi, Takahiko, 3,872,029.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
  Fukuchi, Shuzo; Shimizu, Noboru; and Ohara, Takashi, 3,872,161.
Nippon Soken, Inc.: *See—*
  Fujinami, Hiroshi; and Takagi, Katuyuki, 3,871,342.
Nippon Telegraph & Telephone Public Corporation: *See—*
  Matsubara, Itsuo; and Sakaguchi, Mitsuhito, 3,871,740.
  Tsukamoto, Katsuji; Ikeno, Nobuichi; and Okada, Keiji, 3,872,453.
  Waku, Shigeru; Hayashi, Shintaro; Shibata, Hiroyuki; and Kawashima, Takehisa, 3,871,745.
Nippon Telephone and Telephone Public Corporation: *See—*
  Yamamoto, Hajime; and Watanabe, Kazuhiro, 3,872,381.
Nippon Tsu Shin Kogyo K.K.: *See—*
  Shinoi, Tsuyoshi; Tsutsumi, Fumio; and Kerman, Stephen E., 3,872,261.
Nippondenso Co., Ltd.: *See—*
  Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, 3,872,316.
  Yamamoto, Yushi, 3,871,175.
Nishijima, Kouji: *See—*
  Sugimoto, Keiichi; Kobayashi, Kunio; Nishijima, Kouji; and Morimoto, Shiro, 3,872,115.
Nishimura, Hiromichi: *See—*
  Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, 3,871,746.

Nishino, Atsushi; Iura, Yukihide; Kubo, Masayoshi; and Tateisi, Motosi, to Matsushita Electric Industrial Company. Bactericidal water purifier for dechlorinated water. 3,872,013, Cl. 210-317.000.
Nishizawa, Junichi. Pattern generator apparatus. 3,871,764, Cl. 355-18.000.
Nishizawa, Shunichi: *See—*
  Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, 3,871,062.
Nissan Jidosha Kabushiki Kaisha: *See—*
  Miyauchi, Toshiyuki; and Ohtsuka, Kunio, 3,871,250.
Nissan Motor Company, Limited: *See—*
  Hosaka, Akio; and Matsui, Shunji, 3,871,472.
  Masaki, Kenji; and Nambu, Shuya, 3,871,214.
  Otani, Syuichi, 3,871,683.
Nissen Motor Company, Limited: *See—*
  Ito, Naganori; and Aikawa, Hiroshi, 3,871,680.
Nissen, Warren I.; and Perry, Roger L., to Gillette Company, The. Shaving system with a fixed edge between the blade edge and the guard. 3,871,073, Cl. 30-34.200.
Nissen, Warren I.; and Perry, Roger L., to Gillette Company, The. Razor with movable guard and concurrently movable blade platform. 3,871,077, Cl. 30-63.000.
Nisula, Pentti Samuel, to Lannen Sokeri Oy. Device for cutting peat band rolls. 3,871,255, Cl. 83-155.000.
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  Lucole, Spencer W., 3,872,478.
Niu, Tokihide, to Matsushita Electric Industrial., Ltd. Switch in half-wave rectifier circuit. 3,872,277, Cl. 219-10.55B.
Nivas, Yogesh: *See—*
  De Hollander, William R.; and Nivas, Yogesh, 3,872,022.
Nixon, James: *See—*
  Mohan, Raam R.; Byrd, George H., Jr.; Nixon, James; and Bucker, Edward R., 3,871,957.
Nobles, Elon J.: *See—*
  Barry, Martin J.; and Nobles, Elon J., 3,871,811.
Noll, Klaus-Reinhold: *See—*
  Rieper, Helmut; Kruger, Gerd; Keck, Johannes; Noll, Klaus-Reinhold; and Kahling, Joachin, 3,872,090.
Nonome, Kazuhiro: *See—*
  Koga, Ryosuke; and Nonome, Kazuhiro, 3,871,265.
Nordquist, George: *See—*
  Heilprin, Laurence B.; Nordquist, George; and Krupen, Philip, 3,871,296.
Noren, John Paul: *See—*
  Pulk, Elgas; and Noren, John Paul, 3,871,628.
Norlin Music, Inc.: *See—*
  Nichols, William Lee, 3,871,094.
Norris, Alan H., to Bigelow-Sanford, Inc. Non-woven carpet material with resilient backing. 3,871,948, Cl. 161-154.000.
North America Philips Corporation: *See—*
  Corcoran, Richard P.; Hirtler, Alfred E.; and Mittel, Robert F., 3,872,276.
Northern Electric Company Limited: *See—*
  Pryce, William; and Foster, Eric, 3,871,253.
Novak, Arthur F.: *See—*
  Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., 3,872,120.
Novar Electronics Corporation: *See—*
  Ott, James H., 3,872,443.
NS Electronics: *See—*
  Nance, W. Franklin; and Shacklett, Robert L., 3,872,255.
Nuclear Data, Inc.: *See—*
  von Behrens, Wieland E.; and Oates, Gordon C., 3,871,770.
Numata, Saburo; Sagara, Iwao; and Shishikura, Hirohisa, to Fuji Photo Optical Co., Ltd.; and Oki Electric Industry Co., Ltd. Device for indicating digital exposure information in the viewfinder of a camera. 3,872,483, Cl. 354-53.000.
Nunes, John, to Brunswick Corporation. Method of conditioning 18–8 stainless steel. 3,871,925, Cl. 148-12.00E.
Nunn, Gary Franklin, to du Pont de Nemours, E. I., and Company. Splicing apparatus. 3,871,164, Cl. 57-22.000.
Nyman, Sven, to Almhults Bruk AB. Arrangement for weaving with a half-closed shed in a loom. 3,871,416, Cl. 139-72.000.
Nystrom, Roy B.: *See—*
  Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, 3,871,298.
Oancea, Alexandru: *See—*
  Keijzer, Johan H.; Jossa, Louis J.; Renders, Herman E. A.; and Oancea, Alexandru, 3,871,679.
Oates, Gordon C.: *See—*
  von Behrens, Wieland E.; and Oates, Gordon C., 3,871,770.
Oatis, Melvin Neal, to Telephonic Equipment Corporation. Toll call prohibitor. 3,872,260, Cl. 179-18.0DA.
Obermaier, Anton; Drebinger, Peter; and Hoisl, Johann, to Siemens Aktiengesellschaft. Street traffic signalling system. 3,872,422, Cl. 340-41.00R.
O'Conor, Eugene F.: *See—*
  Eppler, Richard Andrew; and O'Conor, Eugene F., 3,871,890.
Oddo, Joseph A.: *See—*
  Little, Little J.; and Oddo, Joseph A., 3,872,304.
Odom, Donald M. Self-contained demountable dump bed. 3,871,706, Cl. 298-1.00A.
Oertel, Erhard: *See—*
  Hatz, Ernst; and Oertel, Erhard, 3,871,345.
O'Fallon Investment Company: *See—*
  Mundy, William L., 3,871,251.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
  Bibring, Herve E.; Seibel, Georges P.; and Rabinovitch, Maurice, 3,871,835.
Officine Meccaniche Agudio S.p.A.: *See—*
  Dettoni, Giorgio, 3,871,304.
Ogasawara, Tatsuo: *See—*
  Sasaki, Rentaro; Watanabe, Akinori; and Ogasawara, Tatsuo, 3,872,352.
  Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,872,464.
Ogata, Yuzuru, to Kao Soap Co., Ltd. Process for the preparation of quaternary ammonium salts. 3,872,138, Cl. 260-404.000.
Ogden, Bruce Robert. Display board. 3,871,608, Cl. 248-223.000.
Ogle, Robert. Wire insulation stripper. 3,871,078, Cl. 30-90.100.
Ohara, Takashi: *See—*
  Fukuchi, Shuzo; Shimizu, Noboru; and Ohara, Takashi, 3,872,161.
Ohdan, Kyoji: *See—*
  Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, 3,872,148.
Ohms, Klaus-Peter: *See—*
  Himmler, Gunther; Ohms, Klaus-Peter; and Gruber, Peter-Max, 3,871,210.
Ohnishi, Toshiyuki, to Tokyo Shibaura Electric Co., Ltd. Ice making device. 3,871,189, Cl. 62-353.000.
Ohsawa, Mitsuo, to Sony Corporation. If amplifier. 3,872,393, Cl. 330-30.00D.
Ohsuga, Atsushi: *See—*
  Miyamoto, Konoe; and Ohsuga, Atsushi, 3,871,095.
Ohtsuka, Kunio: *See—*
  Miyauchi, Toshiyuki; and Ohtsuka, Kunio, 3,871,250.
Oikawa, Hiroshi: *See—*
  Takamizawa, Akira; Hirai, Kentaro; Oikawa, Hiroshi; and Inazu, Kunihei, 3,872,123.
Oil Base, Inc.: *See—*
  Alexander, Albert H. D., 3,872,018.
Okada, Hiroshi: *See—*
  Kubota, Koji; Yoshihara, Yasuhiko; and Okada, Hiroshi, 3,871,960.
Okada, Keiji: *See—*
  Tsukamoto, Katsuji; Ikeno, Nobuichi; and Okada, Keiji, 3,872,453.
Okajima, Kiyonori: *See—*
  Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
Okamoto, Isao: *See—*
  Koga, Issac; Kobayashi, Shigeo; and Okamoto, Isao, 3,872,385.
Okaya Electric Industry Co., Ltd.: *See—*
  Sasaki, Rentaro; Watanabe, Akinori; and Ogasawara, Tatsuo, 3,872,352.
  Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,872,464.
OKI Electric Industry Co., Ltd.: *See—*
  Murata, Noboru, 3,871,774.
  Numata, Saburo; Sagara, Iwao; and Shishikura, Hirohisa, 3,872,483.
  Sasaki, Rentaro; Watanabe, Akinori; and Ogasawara, Tatsuo, 3,872,352.
  Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,872,464.
Okuda, Hironori: *See—*
  Maki, Naoki; Okuda, Hironori; Kawai, Sadaharu; and Tatsumi, Tamotsu, 3,872,357.
Okumura, Shinji: *See—*
  Nakazawa, Hidetsugu; Enei, Hitoshi; Kubota, Koji; and Okumura, Shinji, 3,871,958.
Okutsu, Masaru; and Yamazaki, Akihiro, to Ajinomoto Co., Inc. Nucleoside-5'-diphosphate ethanolamines and method of producing the same. 3,872,083, Cl. 260-211.50R.
Olin Corporation: *See—*
  Sakowski, Walter J., 3,872,219.
Olschewski, Armin: *See—*
  Brandenstein, Manfred; and Olschewski, Armin, 3,871,724.
Olsen, Frederick C.: *See—*
  Paramonoff, Elpidifor; and Olsen, Frederick C., 3,871,233.
Olson, Craig W., to Minnesota Mining and Manufacturing Company. Shock-absorbing fly leader. 3,871,123, Cl. 43-42.720.
Olson, John W., Jr. Automotive refrigeration compressor module. 3,871,793, Cl. 417-273.000.
Olympia Werke AG: *See—*
  Theilen, Rolf, 3,871,505.
Olympus Optical Co., Ltd.: *See—*
  Fukuda, Noboru; and Otani, Yutaka, 3,871,358.
  Harada, Kenichi, 3,871,749.
  Murata, Rikizo, 3,871,591.
Omiya, Shoji: *See—*
  Sano, Kazuhiko; and Omiya, Shoji, 3,872,507.
Omron Tateisi Electronics Co.: *See—*
  Higashi, Kazuhiro; Taguchi, Isao; and Miura, Nobuaki, 3,872,490.
O'Neil, Francis P.; Krauss, Ferd A.; Sambenedetto, Vincent; and Cooper, Christopher C., to Yoder Company, The. Recoiler paper stuffer. 3,871,594, Cl. 242-56.00R.
Onishi, Hiroshi: *See—*
  Yano, Tsuyoshi; Onishi, Hiroshi; and Tanaka, Inahide, 3,872,204.
Onoda Cement Co., Ltd.: *See—*
  Yano, Tsuyoshi; Onishi, Hiroshi; and Tanaka, Inahide, 3,872,204.
Onoda, Mineo; and Kimura, Takahiko, to Sumitomo Electric Industries, Ltd. Method and apparatus for producing sintered metal product. 3,871,200, Cl. 72-41.000.
Optical Business Machines, Inc.: *See—*
  Holmes, Thomas G.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,872,433.
Optimizer Control Corporation: *See—*
  Kalogerson, Thomas A.; and Dandois, Joseph E., 3,871,341.
Ordner, Raymond G.: *See—*
  Holkestad, Howard P.; and Ordner, Raymond G., 3,871,516.
Orenstein & Koppel AG: *See—*
  Behrend, Volkmar, 3,871,714.
  Brech, Heinz, 3,871,118.
Orr, Byron Reid, to Holsopple, Herman L., a part interest. Combination burp pad and bib. 3,871,027, Cl. 2-49.00R.
Oshima, Shigeru, to Fuji Photo Film Co. Ltd. Electronic shutter means. 3,872,488, Cl. 354-246.000.
Oshkosh Truck Company: *See—*
  Blank, Wallace J.; and Watson, Thomas H., 3,871,677.
Ota, Hideo: *See—*
  Sato, Takayuki; Ota, Hideo; Yokoyama, Jiro; and Nakamura, Takashi, 3,871,411.
Otani, Syuichi, to Nissan Motor Company Limited. Vehicle safety belt tightener. 3,871,683, Cl. 280-150.0SB.
Otani, Yutaka: *See—*
  Fukuda, Noboru; and Otani, Yutaka, 3,871,358.
Otis Engineering Corporation: *See—*
  Sizer, Phillip S.; and Young, Carter R., 3,871,456.
Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, to Matsushita Electric Industrial Co., Ltd. Continuous rotary press. 3,871,206, Cl. 72-190.000.
O'Toole, Patrick J., to Joerns Furniture Company. Hospital bed service unit with combination night light/switch light assembly. 3,872,294, Cl. 240-2.00S.
Ott, James H., to Novar Electronics Corporation. Individual identification apparatus and method using frequency response. 3,872,443, Cl. 340-172.500.
Ott, James I.: *See—*
  Schwab, Delmar G.; and Ott, James I., 3,871,266.
Ottinger, Lester V., to Champion International, Corporation. Method of manufacturing a foamed urethane structural product having high and low density portions. 3,872,199, Cl. 264-46.400.
Outboard Marine Corporation: *See—*
  Cavil, David T., 3,871,348.
  Larson, Martin E.; and White, Irvin M., 3,871,606.
Overby, Robert F.: *See—*
  Scott, Rollo L.; and Overby, Robert F., 3,871,307.
Overdijk, Willem B.; and Steen, Adam, to Hoogovens Ijmuiden B.V. Process for pressing briquettes from powdered substances more particularly from fine-grained fluorspar and briquettes thus obtained. 3,871,869, Cl. 75-53.000.
Owatonna Manufacturing Company, Inc.: *See—*
  Kanengieter, Glenn G.; and Peterson, Daniel E., 3,871,163.
Owatonna Tool Company: *See—*
  Steinberg, Richard W., 3,871,553.
Owens-Corning Fiberglas Corporation: *See—*
  Gilbu, Agnar, 3,871,409.
  Lachut, Frank J., 3,871,432.
Owens, Frank R.: *See—*
  Smith, Gerald D.; and Owens, Frank R., 3,872,353.
Owens-Illinois, Inc.: *See—*
  Blackwelder, Maurice W., 3,871,802.
  Cooley, Richard F., 3,872,401.
  Dietz, Earl D.; and Wengert, Paul R., 3,871,853.
  Hatfield, John D., 3,871,699.
  Hepp, K. Kevin; and Price, James H., 3,871,662.
  Pei, Yu K., 3,871,852.
Oxford Industries, Inc.: *See—*
  Frost, Wade W., 3,871,309.
Pace, Henry A.; St. Cyr, David R.; and Bullard, Herbert L., to Goodyear Tire & Rubber Company, The. Liquid hydrocarbon derived resin. 3,872,064, Cl. 260-80.700.
Pacela, Allan F., to Interscience Technology Corporation. Impedance measuring system. 3,871,359, Cl. 128-2.10Z.
Pacesetter Systems, Inc.: *See—*
  Mann, Alfred E., 3,871,382.
Palatucci, Gerald J.: *See—*
  Shames, Oscar; Hinds, James L.; Raditz, Michael G.; and Palatucci, Gerald J., 3,872,476.
Palencher, Jacques, to Lebocey Industrie. Device for producing a false selvedge on a fabric as well as weaving looms provided with such a device. 3,871,414, Cl. 139-54.000.
Palmer, John, to National Research Development Corporation. Separating apparatus. 3,872,306, Cl. 250-312.000.
Pan-Nova, Inc.: *See—*
  Greenwood, Robert C., 3,871,503.
Panaflight Corporation: *See—*
  Kissinger, Curtis D., 3,871,602.
Papa, Anthony J.; and Proops, William R., to Union Carbide Corporation. N-(2-hydroxyethyl)-ethyleneimines as catalysts for polyisocyanurate foam formation. 3,872,035, Cl. 260-2.5AW.
Papinchak, Michael J.: *See—*
  Kolb, William A.; and Papinchak, Michael J., 3,871,633.
Papritz, Hans; and Hagi, Kurt, to Haag-Streit AG. Ophthalmological fixation lamp assembly. 3,871,753, Cl. 351-37.000.

Paramonoff, Elpidifor; and Olsen, Frederick C., to Standun, Inc. Fluid pressure monitoring device. 3,871,233, Cl. 73-389.000.
Parc, Guy: *See—*
  Bedague, Pierre; Marchand, Pierre; Parc, Guy; and Roux, Fernand, 3,871,837.
Parish Manufacturing Inc.: *See—*
  Smith, Gary W.; and Lemcke, George A., 3,871,559.
Parker, Roger A.: *See—*
  Grisar, J. Martin; Parker, Roger A.; and Kariya, Takashi, 3,872,105.
Paroz, Andre: *See—*
  Schwaar, Edouard; and Paroz, Andre, 3,871,169.
Pasqualucci, Carmine Renato; and Zucco, Giuseppe, to Arckifar Industrie Chimiche Del Trentino S.p.A. Process for the production of antibiotics. 3,871,966, Cl. 195-80.00R.
Pasqualucci, Carmine Renato; Bonfanti, Giovanni; Giovanni, Sesto San; and Cignarella, Giorgio, to Archifar Industrie Chimiche del Trentino S.p.A. Method for the production of d(-)-α-aminobenzylpenicillin directly from natural penicillins. 3,872,088, Cl. 260-239.100.
Pasternak, Israel S.: *See—*
  King, Lawrence F.; Gaspar, Noel J.; and Pasternak, Israel S., 3,871,992.
Patigalia, Edward N., to United States of America, Army. Method of weighing solid material wetted by a non-reactive liquid. 3,871,489, Cl. 177-1.000.
Patterson, John W.; and Fried, John H., to Syntex (U.S.A.) Inc. 15 Deoxy PGE$_2$. 3,872,139, Cl. 260-468.00D.
Paul, David H.; and Rosey, Joseph A., to Goodyear Tire & Rubber Company, The. Method of curing foam inflated tires. 3,872,201, Cl. 264-55.000.
Paul, Walter: *See—*
  Kuckhermann, Gustav; Feldkamper, Richard; Paul, Walter; and Brockmuller, Friedrich Franz, 3,871,270.
Pazgan, Andrzej: *See—*
  Boboli, Fdyta; Malasnicki, Wladyslaw Longin; Kowalski, Mieczyslaw; and Pazgan, Andrzej, 3,872,143.
Pazos, Jose F., to du Pont de Nemours, E. I., and Company. Polymers coupled by nitroso groups. 3,872,057, Cl. 260-75.0TN.
Peaker, Anthony Ralph; and Mottram, Anthony, to Ferranti Limited. Electroluminescent devices and apparatus including such devices. 3,872,314, Cl. 250-552.000.
Pease, Edmund M., to Xynetics, Inc. Automated data library system including a flat plane memory. 3,872,445, Cl. 340-172.500.
Pedicar Corporation: *See—*
  Bundschuh, Robert L.; and Martin, Lionel C., 3,871,243.
Pei, Yu K., to Owens-Illinois, Inc. Method of making glass-ceramic matrix using closed tubes. 3,871,852, Cl. 65-4.000.
Pelto, Clarence H. Telescoping stairway. 3,871,479, Cl. 182-86.000.
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Pentney, Harry, to Gillette Company, The. Safety razor with a plural strip blade magazine. 3,871,075, Cl. 30-40.100.
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  Sampey, Harry R., 3,872,288.
Peressini, Peter P.: *See—*
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Perldal, Karl Lennart, to AB Volvo Penta. Boat lock. 3,871,199, Cl. 70-252.000.
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Perry, Roger L., to Gillette Company, The. Razor having a stationary guard and an axially shiftable guard. 3,871,076, Cl. 30-60.500.
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  Nissen, Warren I.; and Perry, Roger L., 3,871,073.
  Nissen, Warren I.; and Perry, Roger L., 3,871,077.
Perucchi, Norbert: *See—*
  Charbonney, Adrien Maurice, deceased; Perucchi, Norbert; Belot, Michel; and Giger, Urs, 3,871,171.
Pestka, John August; and Lindeman, Richard Jay, to Illinois Tool Works Inc. Take-up pulley. 3,871,241, Cl. 74-242.11R.
Petersen, Sigrud R.; Ying, Sui-Chun; and Mann, August C., to Westinghouse Electric Corporation. Rotating rectifier assembly for brushless exciters. 3,872,335, Cl. 310-68.00D.
Peterson, Daniel E.: *See—*
  Kanengieter, Glenn G.; and Peterson, Daniel E., 3,871,163.
Peterson, Kenneth L., to Andersen Corporation. Method for reducing the occurrence of bowing in wooden window rails. 3,871,428, Cl. 144-323.000.
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Petersson, Leif Gunnar, to Facit-Halda Aktiebolag. Tabular device for an office machine. 3,871,508, Cl. 197-176.000.
Petro-Tex Chemical Corporation: *See—*
  Christmann, Harold F.; and Teel, Paul H., 3,872,027.
Petry, Charles J., to Hazelett Strip-Casting Corporation. Method of forming a protective, flexible, insulating coating for covering the metal casting surface of a flexible casting belt. 3,871,905, Cl. 117-75.000.
Peyser, Harry A., to Continental Can Company, Inc. Child-proof closure cap. 3,871,544, Cl. 215-225.000.
Pfarrwaller, Erwin, to Sulzer Brothers Ltd. Deflecting beam for warp threads in a weaving machine. 3,871,419, Cl. 139-114.000.
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Pfizer Inc.: *See—*
  Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 3,872,171.
  Scanio, Charles J. V., 3,871,977.
Pflum, August S. Combination drapery support. 3,871,082, Cl. 16-87.200.
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  Friberg, Vincent P.; Chesney, John; and Phelps, Richard B., 3,872,368.
Philibert, Robert A.; and Browne, Frank L., to General Signal Corporation. Clamping device. 3,871,091, Cl. 24-243.00R.
Philip Morris Incorporated: *See—*
  Goldenstein, John E., 3,871,059.
Phillipps, Patrick G.: *See—*
  Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,871,360.
Phillips Petroleum: *See—*
  Tabler, Donald C., 3,872,178.
Phillips Petroleum Company: *See—*
  Chapman, Charles C., 3,871,969.
  Chapman, Charles C., 3,872,181.
  Dunn, Howard E., 3,872,026.
  Holland, Floyd H., 3,872,007.
Phipps, Arthur L. Foam extrusion die. 3,871,812, Cl. 425-466.000.
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  Legge, Morris James; Phipps, John Alastair; and Corbett, Roger Patrick, 3,871,580.
Piber, Earl T., to Cutler-Hammer, Inc. Off locking in-line trigger switch. 3,872,274, Cl. 200-157.000.
Pickett, Charles G.; and Khattab, Ghazi, to Bio-Medical Sciences, Inc. Thermometer construction. 3,871,232, Cl. 73-356.000.
Piekarski, Sophie A.: *See—*
  Garcia, Mary E.; and Piekarski, Sophie A., 3,871,651.
Pierre, Bernard: *See—*
  Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, 3,871,297.
Pierron, Claude Raymond; Jenny, Jean Paul Joseph; and Zuccaro, Robert, to Plymatic. Method of assembling neck accessories to clothing articles and articles thus obtained. 3,871,028, Cl. 2-143.000.
Pietryka, Joseph, to Fives Lille-Cail. Dummy bar for continuous casting. 3,871,441, Cl. 164-274.000.
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Piglione, Luigi: *See—*
  Fausone, Alfredo; and Piglione, Luigi, 3,872,398.
Pile, Benjamin D., to United States of America, Army. Collapsible tripod support. 3,871,607, Cl. 248-171.000.
Pilkington Brothers Limited: *See—*
  Milnes, Harold Barry, 3,871,854.
Pilloff, Herschel S., to United States of America, Navy. Transverse laminar flow dye laser cell. 3,872,403, Cl. 331-94.500.
Pillsbury Company, The: *See—*
  Durst, Jack R.; and Ganske, Warren L., 3,872,229.
  Sinner, Joseph M.; Galle, Edward L.; Kolosky, Joseph F.; and Mikkelson, Marvin O., 3,872,230.
Piniot, Daniel, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Vehicle suspension device capable of correcting the trim of the vehicle. 3,871,681, Cl. 280-124.00F.
Pissiotas, Georg: *See—*
  Martin, Henry; Rohr, Otto; and Pissiotas, Georg, 3,872,104.
Pitney-Bowes, Inc.: *See—*
  Montillier, Jean-Pierre, 3,871,880.
  Schrempp, Ernst, 3,871,763.
Plapp, Nile E.: *See—*
  Melgaard, Hans; and Plapp, Nile E., 3,872,473.
Plasser, Franz, deceased (A-1010, by said Erna Plasser, heir); and Theurer, Josef. Method and apparatus for lining and leveling track. 3,871,299, Cl. 104-7.00B.
Plastic Coatings Limited: *See—*
  Legge, Morris James; Phipps, John Alastair; and Corbett, Roger Patrick, 3,871,580.
Platzer, George E., Jr. Lazy-man type switching circuit. 3,872,319, Cl. 307-114.000.
Playart Limited: *See—*
  Tong, Duncan, 3,871,129.
Plempel, Manfred: *See—*
  Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,872,095.
  Meiser, Werner; Metzger, Carl; Buchel, Karl Heinz; and Plempel, Manfred, 3,872,117.
Plessey Handel Und Investments A.G.: *See—*
  Hilton, John Leslie, 3,871,224.
Plessey Incorporated: *See—*
  Godber, Geoffrey Allan, 3,871,931.
Plokhov, Viktor Ivanovich: *See—*
  Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.

- Plough, Charles T.; Eastwood, H. Keith; and Arts, Marcus, to Multi-State Devices Ltd. Electrical relay device. 3,872,418, Cl. 338-23.000.
- Plume, Robert W., to Travel Products, Inc. Upholstery attachment hardware. 3,871,041, Cl. 5-353.100.
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  - Pierron, Claude Raymond; Jenny, Jean Paul Joseph; and Zuccaro, Robert, 3,871,028.
- Poignani, Jean-Claude: *See—*
  - Malen, Charles; Desnos, Monique; and Poignani, Jean-Claude, 3,872,102.
- Polaroid Corporation: *See—*
  - Gold, Nicholas, 3,872,487.
  - Scibilia, Peter A., 3,872,486.
  - Wright, Joseph H., 3,871,755.
- Polk, Donald E.; and Morris, Robert C., to Allied Chemical Corporation. Cutting blades made of or coated with an amorphous metal. 3,871,836, Cl. 29-194.000.
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  - MacLeod, Alastair Cameron, 3,872,037.
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  - Buchmann, Rudolf C., 3,871,801.
  - Meyniel, Jean-Pierre; and Roulle, Jean-Louis, 3,871,807.
- Pontier, Robert: *See—*
  - Falgayrettes, Michel; Pontier, Robert; and Sauvage, Michel, 3,871,459.
- Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, to United States of America, Army. Detached lever timing movement for mechanical time fuze. 3,871,298, Cl. 102-84.000.
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  - Fielding, Ivor R.; and Poppe, Wassily, 3,872,052.
- Population Research Incorporated: *See—*
  - Bolduc, Lee R.; and Dickhudt, Eugene A., 3,871,374.
- Porr, Karl-Heinz, to Gebruder Hischmann Maschinenfabrik. Device for drying moist material to be ground. 3,871,111, Cl. 34-173.000.
- Porret, Daniel: *See—*
  - Habermeier, Juergen; Baumann, Dieter; Porret, Daniel; and Batzer, Hans, 3,872,097.
- Porta Systems Corp.: *See—*
  - Manos, George; DeLuca, Paul V.; Santulli, Vincent F.; and Carney, William V., 3,872,259.
- Portage Newspaper Supply Co.: *See—*
  - Hosterman, Harry L., 3,871,259.
- Portmann, Hubert: *See—*
  - Maire, Pierre-Andre; and Portmann, Hubert, 3,871,168.
- Potencsik, Istvan: *See—*
  - Cherdron, Egon; Forster, Hans-Joachim; Potencsik, Istvan; and Haerter, Manfred, 3,872,215.
- Potter, Curtis N., to Sperry Rand Corporation. High frequency diode having simultaneously formed high strength bonds with respect to a diamond heat sink and said diode. 3,872,496, Cl. 357-81.000.
- Poulsen, Peter D., to General Dynamics Corporation. System for protection from laser radiation. 3,871,739, Cl. 350-1.000.
- Powell, Walter F.; and Grimshaw, Charles, to General Electric Company. Ballast having integral time delay relay. 3,872,350, Cl. 315-104.000.
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  - Coker, John Norman; and Power, Basil Dixon, 3,871,668.
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  - Claassen, George R., 3,871,857
  - Frank, Robert G., 3,871,855.
  - Kallenborn, John, 3,871,592.
  - Mollohan, Kenneth L.; and Makhlouf, Joseph M., 3,872,040.
  - Shaw, Hugh E., Jr., 3,871,773.
  - Zick, Warren H., 3,871,866.
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- Pramstraller, Wilmut, to Durst S.p.A. Fabbrica Macchine ed Apparecchi Fototecnici. Device for adjusting focal distance of a photographic enlarging apparatus. 3,871,765, Cl. 355-18.000.
- Pratt, George W., Jr.; and McMullin, Paul G., to Massachusetts Institute of Technology. Opto-electronic apparatus to generate a pulse-modulated signal indicative of the mechanical state of a system. 3,871,215, Cl. 73-136.00A.
- Pray, Percy E. Multi-purpose bearing mount. 3,871,723, Cl. 308-15.000.
- Precision Metalsmiths, Inc.: *See—*
  - Horton, Robert A., 3,871,440.
- Precision Thin Film Corporation: *See—*
  - Berg, Joseph E., 3,871,208.
- Prestil: *See—*
  - Jakob, Horst, 3,871,420.
- Price, James H.: *See—*
  - Hepp, K. Kevin; and Price, James H., 3,871,662.
- Prino, Giuseppe: *See—*
  - Butti, Adriano; and Prino, Giuseppe, 3,872,075.
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- Pritchard, Dalton Harold, to RCA Corporation. Color information translating systems. 3,872,498, Cl. 358-21.000.
- Procop, Alex J.; and Boultinghouse, Ace, to Target Systems Corporation. Film projector and cartridge apparatus. 3,871,754, Cl. 352-29.000.
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  - Duncan, Robert C.; and Smith, Grace L., 3,871,378.
- Progil: *See—*
  - Berthoux, Jean; and Schwachhofer, Ghislain, 3,872,173.
- Proops, William R.: *See—*
  - Papa, Anthony J.; and Proops, William R., 3,872,035.
- Propp, Donald J.: *See—*
  - Hoerz, Richard D.; and Propp, Donald J., 3,872,470.
- Pruss, Karl Vladimirovich: *See—*
  - Schedrovitsky, Savely Solomonovich; Goncharevich, Leonid Fomich; Pruss, Karl Vladimirovich; Lebedev, Alexei Pavlovich; and Gontar, Valentin Nikolaevich, 3,872,458.
- Pryce, William; and Foster, Eric, to Northern Electric Company Limited. Slitting of an electrically charged tape. 3,871,253, Cl. 83-8.000.
- Pryor, Clyde Robert: *See—*
  - Hollingsead, Robert A.; and Pryor, Clyde Robert, 3,871,937.
- Puleo, Salvatore J. Automatic satin ball machine. 3,871,158, Cl. 53-214.000.
- Pulk, Elgas; and Noren, John Paul, to Stabilator AB. Conveying and mixing arrangement, particularly for powdered and/or particulate masses. 3,871,628, Cl. 259-165.000.
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  - Glassmeyer, John J., 3,871,702.
- Purdue Research Foundation: *See—*
  - Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., 3,871,824.
- Puritan-Bennett Corporation: *See—*
  - Weigl, James, 3,871,371.
- Putman, Richard E. J., to Westinghouse Electric Corporation. Control system and method for limiting power demand of an industrial plant. 3,872,286, Cl. 235-151.210.
- Quantz, James Bland. High production nutcracking apparatus. 3,871,275, Cl. 99-571.000.
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- Quick Jerry L.; and Maxwell, James D., to Maxwell Manufacturing Co. Trolling speed indicator. 3,871,219, Cl. 73-184.000.
- Quigley, Joseph R.: *See—*
  - Benton, William J.; and Quigley, Joseph R., 3,872,050.
- Quillevere, Herve Alain: *See—*
  - Buisson, Marc Francois Bernard; and Quillevere, Herve Alain, 3,871,174.
- R. A. Jones & Company, Inc.: *See—*
  - LaMers, Herbert, 3,871,597.
- R B Toy Development Co.: *See—*
  - Kupperman, Sam; and Kupperman, Dennis I., 3,871,605.
- R. W. Hartnett Company: *See—*
  - Ackley, Edward M., 3,871,295.
- Rabinovitch, Maurice: *See—*
  - Bibring, Herve E.; Seibel, Georges P.; and Rabinovitch, Maurice, 3,871,835.
- Raddi, William J.: *See—*
  - Malchman, Franklin Leonard; Johnson, Robert William; and Raddi, William J., 3,872,252.
- Raditz, Michael G.: *See—*
  - Shames, Oscar; Hinds, James L.; Raditz, Michael G.; and Palatucci, Gerald J., 3,872,476.
- Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., to Continental Can Company, Inc. Stabilized ethylenically unsaturated beta-hydroxy esters prepared from a polyepoxide and acrylic or methacrylic acid. 3,872,162, Cl. 260-486.00B.
- Radscheit, Kurt: *See—*
  - Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,872,081.
- Radutsky, Grigory Avramovich: *See—*
  - Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,871,638.
- Ragen Semiconductor, Inc.: *See—*
  - Weigert, Hans, 3,872,322.
- Rambausek, Hugo: *See—*
  - Buttner, Artur; and Rambausek, Hugo, 3,871,645.
- Rambauske, Werner R.; and McFarland, Philip J., to Raytheon Company. Catoptric lens arrangement. 3,871,751, Cl. 350-293.000.
- Rameau, Jean, to Regie Nationale Des Usines Renault; and Societe Dite Des Automobiles Peugeot. Arrangement for driving a fluid-circulating pump. 3,871,790, Cl. 415-219.00C.
- Ramsey, William K. Method and apparatus for recording and retrieving railroad locomotive speed data. 3,872,479, Cl. 346-1.000.
- Randrup, Benjamin F., to F. Korbel and Brothers, Inc. Conveyor device. 3,871,515, Cl. 198-287.000.
- Rands, Steve A. Multiple-compliant-bristle, self-centering self-sizing rotary abrasive hone. 3,871,139, Cl. 51-334.000.
- Ranganathan, Ramachandran S.: *See—*
  - Jones, Gordon H.; Ranganathan, Ramachandran S.; and Moffatt, John G., 3,872,084.

- Rank Organisation Limited, The: *See—*
  - Day, David John, 3,871,748.
  - McConnell, Eric Douglas; and Whitehouse, Joseph Colin, 3,872,499.
- Rank Xerox Limited: *See—*
  - Van Der Vlasakker, Wilhelmus, 3,871,762.
- Rase, Howard F.; and Maddox, Larry A. Hydrodesulfurization of heavy hydrocarbon feedstocks with nonstoichiometric titanium carbide catalyst support. 3,871,998, Cl. 208-216.000.
- Rasmussen, Clarence E., to Electronic Control Corporation. Power control timing circuits with power line compensation. 3,872,374, Cl. 323-22.0SC.
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- Rauenbusch, Erich: *See—*
  - Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, 3,871,964.
- Rauer, Heinz Gunter: *See—*
  - Kirschner, Peter; and Rauer, Heinz Gunter, 3,871,682.
- Raulerson, Sidney W. Marine drive system. 3,871,325, Cl. 115-34.00R.
- Ravve, Abraham: *See—*
  - Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,872,162.
- Ray, John S.; and King, James D., to said Ray, by said King. Battery monitor. 3,872,457, Cl. 340-249.000.
- Ray, John S.: *See—*
  - Ray, John S.; and King, James D. (assors. to said Ray, by said King), 3,872,457.
- Ray, Michael W., to Miner Enterprises, Inc. Sway follower assembly for railway car coupler. 3,871,530, Cl. 213-69.000.
- Raymond Lee Organization, Inc., The: *See—*
  - Swanson, Joe B., 3,871,180.
- Raytheon Company: *See—*
  - Chambers, Derek, 3,872,446.
  - Das, Nalini R.; and Strain, Edwin H., 3,871,814.
  - Hopson, James E.; and MacKenzie, Gordon C., 3,872,308.
  - Rambauske, Werner R.; and McFarland, Philip J., 3,871,751.
  - Saponara, Domenick, 3,871,356.
- RCA Corporation: *See—*
  - Adams, Melvin Edward; and Feryszka, Rubin, 3,872,325.
  - Amery, John Gordon; and Jorgenson, Robert Warren, 3,872,497.
  - Carlson, David John; and Hilliker, Stephen Earl, 3,872,240.
  - Dodson, George Bertram, III, 3,872,329.
  - Engelbrecht, Rudolf Succo, 3,872,480.
  - Hilliker, Stephen Earl, 3,872,265.
  - Pritchard, Dalton Harold, 3,872,498.
  - Stave, Frederick Roland, 3,871,663.
- Reamey, Herbert K.; and Newman, Jerry F., to Reynolds Metals Company. Joint ramming cement for electrolytic reduction cell cathodes. 3,871,986, Cl. 204-243.00R.
- Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., to Purdue Research Foundation. Method of aseptically connecting a fitting to an aseptic storage tank. 3,871,824, Cl. 21-58.000.
- Recognition Equipment Incorporated: *See—*
  - Duvall, Dale R.; Neff, Marion W.; and Lawson, Paul D., 3,872,434.
- Redeker, Joerg: *See—*
  - Dimroth, Peter; Redeker, Joerg; and Lotsch, Wolfgang, 3,872,077.
- Redelec, Societe a responsabilite limitee: *See—*
  - Regnault, Alain, 3,872,370.
- Reed International Limited: *See—*
  - Attenburrow, David J., 3,871,036.
- Rees, J. Samuel. Apparatus for selectively guarding a rotary blade. 3,871,260, Cl. 83-478.000.
- Reflector Hardware Corporation: *See—*
  - Lopatka, Dale R., 3,871,435.
- Regel, Erik K.: *See—*
  - Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,872,095.
- Regie Nationale des Usines Renault: *See—*
  - Langlois, Christian, 3,871,234.
  - Piniot, Daniel, 3,871,681.
  - Rameau, Jean, 3,871,790.
  - Vignaud, Jean-Pierre; Sebire, Claude; and Riss, Pierre, 3,872,365.
- Regnault, Alain, to Redelec, Societe a responsabilite limitee. High-voltage D.C. generator, specially for energizing an electrostatic apparatus. 3,872,370, Cl. 317-3.000.
- Reichel, Dieter: *See—*
  - Koller, Stefan; Zink, Rudolf; Reichel, Dieter; and Voltz, Jacques, 3,872,132.
- Reichman, Steven H.: *See—*
  - Asgar, Kamal; and Reichman, Steven H., 3,871,876.
- Reilly, James Park, to Lindsay Specialty Products Limited. Signal directional tap. 3,872,408, Cl. 333-10.000.
- Reinert, Gerhard; and Kleemann, Alois, to Ciba-Geigy AG. Process for the optical brightening of organic fibre material. 3,871,898, Cl. 117-33.50T.
- Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, to Badische Anilin & Soda-Frabrik Aktiengesellschaft. Separation of anthraquinone from a mixture of its vapor with a carrier gas. 3,872,135, Cl. 260-369.000.
- Reith, Timothy M.: *See—*
  - Bogardus, E. Hal; Peressini, Peter P.; and Reith, Timothy M., 3,871,067.
- Renard, Charles J.; and Rifken, Louis L. Portable luggage or load carrier. 3,871,676, Cl. 280-35.000.
- Renaud, Henri. Method of preparing a corrosion-resistant and ductile iron alloy with a high aluminum content. 3,871,868, Cl. 75-53.000.
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  - Keijzer, Johan H.; Jossa, Louis J.; Renders, Herman E. A.; and Oancea, Alexandru, 3,871,679.
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- Rennerfelt, Sven Beinhard. Shaft coupling. 3,871,786, Cl. 403-300.000.
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  - Bouvet, Claude; and Terrien, Michel Eugene, 3,871,045.
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  - Nicolas, Patrick Marie, 3,872,299.
- Researchcentrum Ogemat N.V.: *See—*
  - Attema, Gijsbertus, 3,871,729.
- Rey, Maurice, to "Le Nickel"; and "Societe Miniere et Metallurgique de Penarroya". Method for producing nickel by segregation of its oxide ores. 3,871,873, Cl. 75-82.000.
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  - Berry, James Simmons, Jr., 3,871,984.
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- Reynolds, Thomas Linn, to Motorola, Inc. Fusible link memory cell for a programmable read only memory. 3,872,450, Cl. 340-173.0SP.
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  - Breysse, Jacques; Marin, Gilbert Joseph; and Lefort, Marcel, 3,872,145.
- Rhone-Poulenc S.A.: *See—*
  - Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, 3,872,156.
- Rich, Leonard G., to Gerber Scientific Instrument Company, The. Pulse counting phase modulation method and apparatus for controlling a servo-mechanism. 3,872,369, Cl. 318-603.000.
- Richard-Merrell Inc.: *See—*
  - Grisar, J. Martin; Parker, Roger A.; and Kariya, Takashi, 3,872,105.
- Richards Manufacturing Company: *See—*
  - Heros, Ricardo J., 3,871,380.
  - Treace, Harry T., 3,871,377.
- Richardson Chemical Company, The: *See—*
  - Duchene, Joseph R.; and DeChristopher, Phillip J., 3,871,974.
- Richardson, William L.: *See—*
  - Carlson, Richard L.; and Richardson, William L., 3,872,427.
- Richmond, Rex E.; and Spector, George. Fluid filled insoles. 3,871,117, Cl. 36-43.000.
- Richter, Roy E., to Cragar Industries, Inc. Custom wheel assembly. 3,871,708, Cl. 301-9.0DN.
- Ridlen, Charles W. Control device for a hydrostatic transmission. 3,871,177, Cl. 60-431.000.
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- Rifken, Louis L.: *See—*
  - Renard, Charles J.; and Rifken, Louis L., 3,871,676.
- Rijnten, Hendrik Theodorus; and Eikema, Eduard Theodoor Jasper, to Lever Brothers Company. Process for the preparation of partially sulfided metallic supported catalysts. 3,872,028, Cl. 252-439.000.
- Riley, Stephen Philip: *See—*
  - Boden, Philip; Crook, Peter John; Hall, Michael Edgar; and Riley, Stephen Philip, 3,872,033.
- Rionda, Carlos: *See—*
  - Jureit, John Calvin; Castillo, Adolfo; and Rionda, Carlos, 3,871,213.
- Riss, Pierre: *See—*
  - Vignaud, Jean-Pierre; Sebire, Claude; and Riss, Pierre, 3,872,365.
- Ritzerfeld, Gerhard. Variable-mode rotary duplicator. 3,871,640, Cl. 271-9.000.
- Rivers, Richard D.: *See—*
  - Smith, Tom R.; and Rivers, Richard D., 3,871,849.
- RLK Research Inc.: *See—*
  - Kramm, Carl H.; and Lee, Roger E., 3,871,140.
- Roart Plastics, Inc.: *See—*
  - Smith, Robert L., 3,872,234.
- Robbins, Lionel, to Energy Conversion Devices, Inc. Radiation hardened field effect transistor. 3,872,492, Cl. 357-23.000.
- Robert Bosch, GmbH: *See—*
  - Kruger, Gunter; Baum, Helmut; and Widmaier, Manfred, 3,872,356.
  - Schmidt, Peter; Kizler, Harald; and Hartmann, Gerhard, 3,871,338.
- Robert Bosch Photokino GmbH: *See—*
  - Stieringer, Albert; and Borner, Gerhard, 3,871,756.
- Roberts, John S.; and Cresswell, Michael W., to Westinghouse Electric Corporation. Selective irradiation of junctioned semiconductor devices. 3,872,493, Cl. 357-29.000.
- Robertshaw Controls Company: *See—*
  - Cross, Charles, 3,872,437.

Robertson, Neil George Douglas, to Wiggins Teape Research & Development Limited. Manufacture of non-woven fibrous material from a foamed furnish. 3,871,952, Cl. 162-101.000.
Robillard, Jean Jules Achille, to Kabushiki Kaisha Ricoh. Photochromic copying method. 3,871,886, Cl. 96-48.00R.
Robinson, Glen: *See—*
Larralde, Edward; and Robinson, Glen, 3,871,622.
Robinson, John W.; and Howell, Stephen L., to Kimball International, Inc. Electronic organ having delayed fill in. 3,871,262, Cl. 84-1.170.
Robota, Stephen; and Mershon, Francis P., to Hooker Chemical Corporation. Catalytic process for preparing alkyl chlorides. 3,872,175, Cl. 260-657.000.
Robrock, Richard Barker, II: *See—*
Bleickardt, Werner Heinrich; and Robrock, Richard Barker, II, 3,872,257.
Rockerath, John L.; and Schreck, Harold J., to Jetsew, Inc. Sewing machine material feed mechanism. 3,871,312, Cl. 112-203.000.
Rockwell International Corporation: *See—*
Keith, James Duncan, 3,872,366.
Miller, Darrow L.; and Wells, William Y., 3,872,330.
Rocton, Lucien, to Compagnie Industrielle Des Telecommunications CIT-ALCATEL. Sealed connection device for a cable. 3,872,233, Cl. 174-23.00R.
Roesch, Egon: *See—*
Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.
Rogen, Gerhard: *See—*
Russold, Maximilian; Sidan, Heribert; and Rogen, Gerhard, 3,871,634.
Rogers, Peter H.; and Van Buren, Arnie Lee, to United States of America, Navy. Standing wave acoustic parametric source. 3,872,421, Cl. 340-10.000.
Rohlof, Raleigh E. Patio lite. 3,872,297, Cl. 240-78.00E.
Rohr, Otto: *See—*
Martin, Henry; Rohr, Otto; and Pissiotas, Georg, 3,872,104.
Rolls-Royce (1971) Limited: *See—*
Guy, Kenneth Ronald; and Hood, Robert Burns, 3,871,791.
Rolnitzky, Aron: *See—*
Boles, John A.; Chu, Charles M.; Criswell, Peter B.; and Rolnitzky, Aron, 3,872,442.
Romanowich, Donald K.: *See—*
Davidson, Donald L.; and Romanowich, Donald K., 3,871,512.
Romanski, Eric R.; Horn, J. Drew; and Dutt, William H., to Albany International Corporation. Novel high temperature resistant fabrics. 3,871,946, Cl. 161-88.000.
Romanzi, Louis, Jr.; and Gavagan, James A., to Irwin Industries, Inc. Safety belt buckle. 3,871,090, Cl. 24-230.0AV.
Ronka, Vaino, to Hudson Bay Mining and Smelting Co., Limited. Airborne electromagnetic prospecting method and apparatus. 3,872,375, Cl. 324-4.000.
Rosch, Gunter: *See—*
Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, 3,872,114.
Roschektaev, Vladimir Lavrentievich: *See—*
Kazansky, Vasily Mikhailovich; Epifantsev, Alexei Grigorievich; Roschektaev, Vladimir Lavrentievich; and Kramer, Jury Adamovich, 3,871,070.
Roscoe, Theodore J., Jr.: *See—*
Curington, Alfred R.; and Roscoe, Theodore J., Jr., 3,871,486.
Rose, Morton Jessup. Method and device for anti-theft securing of a space. 3,871,282, Cl. 109-31.000.
Roseman, Donald P.; Martin, Milton; and Miller, Eugene R., to Hydronautics, Incorporated. Close-coupled towing linkage. 3,871,323, Cl. 114-235.00A.
Rosen, Perry, to Hoffmann-La Roche Inc. 16-Diazoketones of the androstane, pregnane, estrane, and 19-norpregnane series. 3,872,076, Cl. 260-141.000.
Rosenthal Stemag Technische Keramik AG: *See—*
Schuller, Karl-Heinz; and Nink, Horst, 3,871,891.
Rosey, Joseph A.: *See—*
Paul, David H.; and Rosey, Joseph A., 3,872,201.
Roslonski, Donald J. Cold compress device. 3,871,381, Cl. 128-400.000.
Ross, James A.: *See—*
Avellar, Karl B.; and Ross, James A., 3,871,577.
Ross, John Francis: *See—*
Charlton, John Stuart; and Ross, John Francis, 3,872,310.
Rossmy, Gerd, to Th. Goldschmidt AG. Process of removing sulfate groups from organopolysiloxanes. 3,872,146, Cl. 260-448.20E.
Rostrup-Nielsen, Jens: *See—*
Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,872,179.
Roth, Johann, to Braun Aktiengesellschaft. Guiding the film in movie projectors. 3,871,760, Cl. 353-95.000.
Roulle, Jean-Louis: *See—*
Meyniel, Jean-Pierre; and Roulle, Jean-Louis, 3,871,807.
Roussel Uclaf: *See—*
Le Martret, Odile; and Clemence, Francois, 3,872,124.
Penasse, Lucien; and Barthelemy, Pierre, 3,872,085.
Teutsch, Jean Georges, 3,872,092.
Roux, Fernand: *See—*
Bedague, Pierre; Marchand, Pierre; Parc, Guy; and Roux, Fernand, 3,871,837.
Roux, Marcel: *See—*
Bayard, Jean Claude; Fournet, Louis; Jacob, Jean; Pierre, Bernard; and Roux, Marcel, 3,871,297.

Rovinski, Robert S.: *See—*
Leinkram, Charles Z.; and Rovinski, Robert S., 3,871,902.
Roy, Edward M.: *See—*
Kaufman, Martin H.; and Roy, Edward M., 3,872,192.
Royal Industries, Inc.: *See—*
Stevenson, Billy E.; and Rumsey, Thomas R., 3,871,475.
Ruble, Harold P.: *See—*
Shoemaker, Edwin J.; Ruble, Harold P.; and White, David B., 3,871,704.
Rucker Company, The: *See—*
Miley, David C., 3,871,217.
Nestor, David William; and Wible, Paul E., 3,872,354.
Rudd, Wallace C., to Thermatool Corp. Forge welding with induction coil heating. 3,872,275, Cl. 219-10.430.
Rudert, Bernhardt Siegfried; and Freeman, John Trafford Rowe, to Inpel (Proprietary) Limited. Drive circuit for pulse width modulated D.C. - D.C. convertors. 3,872,327, Cl. 307-300.000.
Rudin, Melvin, to Form/Space Corporation. Modular environment structuring apparatus. 3,871,144, Cl. 52-36.000.
Rumsey, Thomas R.: *See—*
Stevenson, Billy E.; and Rumsey, Thomas R., 3,871,475.
Russell, Jack A.: *See—*
Koenig, Elmer A.; Conklin, Robert M.; Bessinger, Walter L.; and Russell, Jack A., 3,871,156.
Russold, Maximilian; Sidan, Heribert; and Rogen, Gerhard, to Steirische Guszstahlwerke Aktiengesellschaft. Spring assembly. 3,871,634, Cl. 267-9.00B.
Rusterholz, Otto. Method and apparatus for pneumatically conveying discrete amounts of particulate material. 3,871,711, Cl. 302-26.000.
Rutledge, James E. Apparatus for de-shelling crustaceans. 3,871,086, Cl. 17-73.000.
Sabre, Daniel R. Rock drilling. 3,871,488, Cl. 175-406.000.
Saco-Lowell Corporation: *See—*
Savageau, Richard J.; and West, Paul B., 3,871,087.
Saft-Societe Des Accumulateurs Fixes Et De Traction: *See—*
Brych, Alfred, 3,871,915.
Gabano, Jean-Paul; and Jumel, Yves, 3,871,917.
Grebier, Gerard; and Arlot, Pierre, 3,871,920.
Sagara, Iwao: *See—*
Numata, Saburo; Sagara, Iwao; and Shishikura, Hirohisa, 3,872,483.
Sagawa, Akio; and Kawakami, Hideaki, to Hitachi, Ltd. Photosensor actuating device. 3,872,245, Cl. 178-7.100.
Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, to Hoechst Aktiengesellshaft. Benzofurane derivatives, process for their manufacture and their use as optical brighteners. 3,872,114, Cl. 260-240.00D.
Saidashev, Ibragim Ibragimovich: *See—*
Vul, Alexandr Yakovlevich; Shik, Alexandr Yakovlevich; Dobryakova, Natalia Alexandrovna; Saidashev, Ibragim Ibragimovich; and Shmartsev, Jury Vasilievich, 3,872,300.
Saijo, Ryuichi: *See—*
Gotou, Toshiaki; and Saijo, Ryuichi, 3,872,405.
St. Cyr, David R.: *See—*
Pace, Henry A.; St. Cyr, David R.; and Bullard, Herbert L., 3,872,064.
Saint Gobain Industries: *See—*
Lafosse, Claude, 3,872,202.
Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, to Ajinomoto Co., Inc.; and Japan Carboxylic Acids Co., Ltd. Method of purifying alkali metal soaps of synthetic fatty acids. 3,872,142, Cl. 260-418.000.
Saito, Yasushi; and Ueno, Sadayasu. Dc high-voltage generating system. 3,872,373, Cl. 323-17.000.
Sakaguchi, Mitsuhito: *See—*
Matsubara, Itsuo; and Sakaguchi, Mitsuhito, 3,871,740.
Sakamoto, Eiichi: *See—*
Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
Sakamoto, Yoshio; and Iguchi, Shinsuke, to Hitachi, Ltd. Cascade direct-coupled amplifier. 3,872,392, Cl. 330-19.000.
Sakowski, Walter J., to Olin Corporation. Process for manufacturing of chlorinated lime solution. 3,872,219, Cl. 423-474.000.
Salam, Hassan Paddy Abdel. Electronic switching circuit for bidirectional transfer. 3,872,439, Cl. 340-166.00R.
Sambenedetto, Vincent: *See—*
O'Neil, Francis P.; Krauss, Ferd A.; Sambenedetto, Vincent; and Cooper, Christopher C., 3,871,594.
Sambos, Wilbert Gus. Pocketed catcher and projector. 3,871,653, Cl. 273-96.00R.
Sampey, Harry R., to Pentron Industries, Inc. Dual distance calculating and display apparatus. 3,872,288, Cl. 235-151.320.
Sanchez, Francis, to Commissariat a l'Energie Atomique. Laser generator having a reduced emission spectrum. 3,872,402, Cl. 331-94.500.
Sanderson, John C., III: *See—*
Saville, Robert W.; and Sanderson, John C., III, 3,872,247.
Sandoz Ltd.: *See—*
Koch, Werner, 3,872,106.
Sandoz-Wander, Inc.: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,872,125.
Kathawala, Faizulla G., 3,872,119.
Sanno, Yasushi: *See—*
Ukyo, Akira Nohara; Umetani, Tomonobu; Miyata, Yoshibumi; and Sanno, Yasushi, 3,872,108.

Sano, Kazuhiko; and Omiya, Shoji, to Matsushita Electric Industrial Co., Ltd. Rotating air bearing head with shaped control slots. 3,872,507, Cl. 360-102.000.
Sansui Electric Co., Ltd.: *See—*
Takahashi, Susumu; Ito, Ryosuke; and Hirano, Koichi, 3,872,249.
Santulli, Vincent F.: *See—*
Manos, George; DeLuca, Paul V.; Santulli, Vincent F.; and Carney, William V., 3,872,259.
Saponara, Domenick, to Raytheon Company. Gas range grate. 3,871,356, Cl. 126-215.000.
Sarem, Amir M., to Union Oil Company of California. Mobility controlled caustic flooding process for reservoirs containing dissolved divalent metal cations. 3,871,452, Cl. 166-270.000.
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Sasaki, Rentaro; Watanabe, Akinori; and Ogasawara, Tatsuo, to Oki Electric Industry Co., Ltd.; and Okaya Electric Industry Co., Ltd. Cold cathode discharge display apparatus. 3,872,352, Cl. 315-169.00R.
Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, to Oki Electric Industry Co., Ltd.; and Okaya Electric Industry Co., Ltd. Cold cathode discharge type display apparatus with integral memory. 3,872,464, Cl. 340-343.000.
Sassi, Pietro Angelo: *See—*
Becattini, Angiolo; and Sassi, Pietro Angelo, 3,871,101.
Sato, Akio: *See—*
Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,871,165.
Sato, Hideki: *See—*
Nemoto, Hidetaro; Kawawa, Takaho; Sato, Hideki; Sakamoto, Eiichi; Koyano, Takayuki; and Anzai, Takanori, 3,871,870.
Sato, Kazuo: *See—*
Yamanaka, Teruo; and Sato, Kazuo, 3,872,475.
Sato, Naotake: *See—*
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, 3,872,110.
Sato, Takayuki; Ota, Hideo; Yokoyama, Jiro; and Nakamura, Takashi, to Satosen Company Limited. Seamless screen pipes. 3,871,411, Cl. 138-178.000.
Satosen Company Limited: *See—*
Sato, Takayuki; Ota, Hideo; Yokoyama, Jiro; and Nakamura, Takashi, 3,871,411.
Sauer, Louis E., to L. E. Sauer Machine Co. Clamping means for split rotary anvil and the like. 3,871,777, Cl. 403-20.000.
Sauri, Richard. Safety and escape mechanism. 3,871,480, Cl. 182-100.000.
Sauvage, Michel: *See—*
Falgayrettes, Michel; Pontier, Robert; and Sauvage, Michel, 3,871,459.
Savage, David Samuel: *See—*
Hewett, Colin Leslie; and Savage, David Samuel, 3,872,091.
Savageau, Richard J.; and West, Paul B., to Saco-Lowell Corporation. Can changing apparatus for a textile sliver coiler. 3,871,087, Cl. 19-159.00A.
Saville, Robert W.; and Sanderson, John C., III. Low cost of high fidelity high power variable class a amplifier-speaker combination. 3,872,247, Cl. 179-1.00A.
Sawa, Yuji: *See—*
Yoshikawa, Shinsuke; and Sawa, Yuji, 3,872,203.
Sawabu, Hitoshi: *See—*
Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Konno, Tsugio, 3,871,950.
Scanio, Charles J. V., to Pfizer Inc. Electrolytic process for the manufacture of alpha-ketoglutarate esters. 3,871,977, Cl. 204-78.000.
Schaefer, Hans F., Jr.: *See—*
Dorosz, Adolph S.; Schaefer, Hans F., Jr.; and Sprague, Gordon V., Jr., 3,871,532.
Schaefer, Theodore S. Dolly and method of using it to hang a door. 3,871,054, Cl. 29-267.000.
Schaum, Helmut; and Gossel, Helmut, to Hoechst Aktiengesellschaft. Extractive recovery of a manganese acetate catalyst from residue recovered from distillation of an acetic acid feed produced by the oxidation of acetaldehyde. 3,871,971, Cl. 203-43.000.
Schedrovitsky, Savely Solomonovich; Goncharevich, Leonid Fomich; Pruss, Karl Vladimirovich; Lebedev, Alexei Pavlovich; and Gontar, Valentin Nikolaevich. Crane boom-out transmitter. 3,872,458, Cl. 340-267.00C.
Scheidweiler, Andreas, to Cerberus AG. Fire detector and method employing assymetrical integrator. 3,872,449, Cl. 340-228.100.
Schell, William J., to Aerojet-General Corporation. Membrane separation apparatus. 3,872,014, Cl. 210-232.000.
Schenk, Walter; Dahlinger, Roland; and Stockburger, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of vinyl sulfonates and vinylsulfonic acid from carbyl sulfate. 3,872,165, Cl. 260-513.00R.
Schering Corporation: *See—*
Daniels, Peter J. L., 3,872,080.
Schettl, Myron D.: *See—*
Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
Schevey, William R.; and Kremers, Frank J., to Allied Chemical Corporation. Polymeric etch resist strippers and method of using same. 3,871,929, Cl. 156-2.000.

Schexnayder, Isby L., Jr.; and Angers, John W., to J & L Engineering Company, Inc. Sugar cane harvester. 3,871,162, Cl. 56-14.300.
Schiff, Charles M.: *See—*
Gressard, Charles F.; and Schiff, Charles M., 3,871,244.
Schimmeyer, Werner K.; Wood, Norman J.; and McCargar, Joseph V., to Westinghouse Electric Corporation. Ram tensioning device. 3,871,527, Cl. 212-3.000.
Schinzel, Erich: *See—*
Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, 3,872,114.
Schirtzinger, Joseph F., to Sea-Log Corporation. Position and anchoring system for off-shore drilling platform. 3,871,184, Cl. 61-46.500.
Schlichte, Max, to Siemens Aktiengesellschaft. PCM time-division multiplex switching procedure. 3,872,256, Cl. 179-15.0AQ.
Schlosser, Hermann: *See—*
Kuster, Jurgen; and Schlosser, Hermann, 3,871,509.
Schmermund, Alfred. Web cutting device. 3,871,257, Cl. 83-285.000.
Schmidt, Heinz: *See—*
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 3,872,182.
Schmidt, John P., to Halcon International, Inc. Preparation of glyocol acetates. 3,872,164, Cl. 260-497.00R.
Schmidt-Kastner, Gunter: *See—*
Huper, Fritz; Rauenbusch, Erich; Schmidt-Kastner, Gunter; Bomer, Bruno; and Bartl, Herbert, 3,871,964.
Schmidt, Peter; Kizler, Harald; and Hartmann, Gerhard, to Robert Bosch GmbH. Method and apparatus to reduce noxious components in the exhaust emissions of internal combustion engines. 3,871,338, Cl. 123-32.0EA.
Schmidt, Ulrich: *See—*
Seiler, Wolfgang; and Schmidt, Ulrich, 3,871,827.
Schmiegel, Walter Werner, to du Pont de Nemours, E. I., and Company. Vulcanizable fluoroelastomer composition. 3,872,065, Cl. 260-80.760.
Schnackenberg, Werner D.; and Lane, James M., III, to Gates Rubber Company, The. Power transmission belts. 3,871,240, Cl. 74-234.000.
Schneider, Adolf, to Siemens Aktiengesellschaft. Apparatus for elimination of interference from video signals. 3,872,246, Cl. 178-7.200.
Schneider, Guenter, to Siemens Aktiengesellschaft. Method and apparatus for tuning coaxial-line section resonators. 3,872,413, Cl. 333-82.00B.
Schneider, Hans Wernhard. Electric switches. 3,872,269, Cl. 200-67.0AA.
Schnitzler, Franz-Dieter: *See—*
Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
Schoenauer, Wolfgang: *See—*
Frey, Wolfgang; and Schoenauer, Wolfgang, 3,872,137.
Schoneberger, Willi: *See—*
Franz, Dietmar; Schoneberger, Willi; and Upper, Gerd, 3,871,666.
Schottler, Paul H.: *See—*
Crooke, Arthur W.; and Schottler, Paul H., 3,872,290.
Schrader, George Frederick, to Control Data Corporation. Moire fringe pattern with thermal matching to aluminum or other materials. 3,871,064, Cl. 29-475.000.
Schreck, Harold J.: *See—*
Rockerath, John L.; and Schreck, Harold J., 3,871,312.
Schreier, Donald R. Random selector switch and game. 3,871,652, Cl. 273-94.00R.
Schrempp, Ernst, to Pitney-Bowes, Inc. Photo-conductive material handling device. 3,871,763, Cl. 355-16.000.
Schroter, Hans-Jurgen: *See—*
Queiser, Horst; Schwarz, Horst; and Schroter, Hans-Jurgen, 3,871,841.
Schudel, Peter: *See—*
Bertele, Erhard; and Schudel, Peter, 3,872,172.
Schukei, Glen Elwin, to Combustion Engineering, Inc. Large sodium valve actuator. 3,871,176, Cl. 60-326.000.
Schuller, Karl-Heinz; and Nink, Horst, to Rosenthal Stemag Technische Keramik AG. Method for the production of highly wear-resistant ceramic material. 3,871,891, Cl. 106-65.000.
Schulte, Anthonius Maria; and Van Der Wal, Uilko, to N. V. Hollandse Signaalapperten. Mechanism for coupling two objects. 3,871,778, Cl. 403-52.000.
Schultze, Edward F.: *See—*
Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,871,455.
Schutz, Gerhard: *See—*
Huber, Max; and Schutz, Gerhard, 3,871,624.
Schutz, Richard F., to Hipotronics, Inc. Mobile, accurately mechanically variable high reactive power inductor having low headroom requirements suitable for transport on a utility vehicle. 3,872,414, Cl. 336-134.000.
Schwaar, Edouard; and Paroz, Andre, to Tavre Marc & Co. S.A. Timepiece. 3,871,169, Cl. 58-42.500.
Schwab, Delmar G.; and Ott, James I., to Hyster Company. Hydraulic cylinder phasing system. 3,871,266, Cl. 91-412.000.
Schwachhofer, Ghislain: *See—*
Berthoux, Jean; and Schwachhofer, Ghislain, 3,872,173.
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, to Volkswagenwerk Aktiengesellschaft. Safety belt tensioning device. 3,871,470, Cl. 180-82.00C.
Schwartz, Marvin: *See—*
Seligman, Herbert L.; Schwartz, Marvin; and Diamond, Warren, 3,872,284.

- Schwarz, Heinz, to Karl M. Reich Maschinenfabrik. Spring-less control valve for a percussion machine driven by pressure fluid. 3,871,405, Cl. 137-624.270.
- Schwarz, Horst: *See—*
  - Queiser, Horst; Schwarz, Horst; and Schroter, Hans-Jurgen, 3,871,841.
  - Queiser, Horst; and Schwarz, Horst, 3,871,842.
- Schwindt, Bernell W.: *See—*
  - Houser, Edwin A.; and Schwindt, Bernell W., 3,871,444.
- Scibilia, Peter A., to Polaroid Corporation. Photographic apparatus employing variable pressure plate structure. 3,872,486, Cl. 354-88.000.
- Science Applications, Inc.: *See—*
  - Holm-Hansen, Osmund; and Booth, Charles Rockwell, 3,871,767.
- SCM Corporation: *See—*
  - Dorschner, Kenneth P.; and Bordenca, Carl, 3,871,863.
  - Drew, John, 3,871,951.
  - Eppler, Richard Andrew; and O'Conor, Eugene F., 3,871,890.
- Scott, Mark W.: *See—*
  - Tomlinson, Patrick W.; Chandler, James P.; and Scott, Mark W., 3,871,474.
- Scott, Richard Nelson. Optical apparatus for determining deviations from a predetermined form of a surface. 3,871,771, Cl. 356-114.000.
- Scott, Rollo L.; and Overby, Robert F., to Munsingwear, Inc. Placket forming machine. 3,871,307, Cl. 112-121.150.
- Scuffell, Derek Edgar: *See—*
  - Jones, Elwyn David; and Scuffell, Derek Edgar, 3,871,269.
- Sea-Log Corporation: *See—*
  - Schirtzinger, Joseph F., 3,871,184.
- Sebire, Claude: *See—*
  - Vignaud, Jean-Pierre; Sebire, Claude; and Riss, Pierre, 3,872,365.
- Seeliger, Wolfgang: *See—*
  - Witte, Helmut; and Seeliger, Wolfgang, 3,872,096.
- Seib, Kenneth L.: *See—*
  - Holmes, Thomas G.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,872,433.
- Seibel, Georges P.: *See—*
  - Bibring, Herve E.; Seibel, Georges P.; and Rabinovitch, Maurice, 3,871,835.
- Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Dielectric-loaded chokes. 3,872,412, Cl. 333-73.00R.
- Seiko Koki Kabushiki Kaisha: *See—*
  - Kitai, Kiysohi, 3,871,238.
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- Seino, Kuniki: *See—*
  - Mino, Masayuki; and Seino, Kuniki, 3,871,878.
- Seitz-Werke GmbH: *See—*
  - Kuster, Jurgen; and Schlosser, Hermann, 3,871,509.
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- Servillat, Gabriel, to Verdol S.A. Reversible verdol jacquards. 3,871,412, Cl. 139-1.00E.
- Servo Corporation of America: *See—*
  - Glazar, Arthur J., 3,872,456.
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- Shacklett, Robert L.: *See—*
  - Nance, W. Franklin; and Shacklett, Robert L., 3,872,255.
- Shaheen, Frank G.: *See—*
  - Henderson, James Neil; and Shaheen, Frank G., 3,872,071.
- Shaldon, Stanley, to Dialysis Systems Limited. Cleaning of dialyser compartments and blood lines of artificial kidney machine. 3,871,913, Cl. 134-22.00R.
- Shames, Oscar; Hinds, James L.; Raditz, Michael G.; and Palatucci, Gerald J., to United States of America, Navy. Fruit reduction by probe selection. 3,872,476, Cl. 343-6.5LC.
- Shattuck, Richard E.: *See—*
  - Perry, Donald S.; Fowler, Wyland L.; Shattuck, Richard E.; and Mueller, Hans W., 3,871,507.
- Shaw, David H., to Exxon Research and Engineering Company. Temporarily immiscible dewaxing. 3,871,991, Cl. 208-33.000.
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- Shepard, John C.: *See—*
  - Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,871,455.
- Shepard, Lawrence H., to Ethyl Corporation. Organoaluminum compounds and their preparation. 3,872,144, Cl. 260-448.00A.
- Sherwood Medical Industries Inc.: *See—*
  - Koenig, Elmer A.; Conklin, Robert M.; Bessinger, Walter L.; and Russell, Jack A., 3,871,156.
- Shibata, Hiroyuki: *See—*
  - Waku, Shigeru; Hayashi, Shintaro; Shibata, Hiroyuki; and Kawashima, Takehisa, 3,871,745.
- Shibata, Yutake: *See—*
  - Matsui, Kazumi; Umemori, Takashi; Shibata, Yutake; and Yamamura, Kinzo, 3,871,727.
- Shik, Alexandr Yakovlevich: *See—*
  - Vul, Alexandr Yakovlevich; Shik, Alexandr Yakovlevich; Dobryakova, Natalia Alexandrovna; Saidashev, Ibragim Ibragimovich; and Shmartsev, Jury Vasilievich, 3,872,300.
- Shimada, Toshio: *See—*
  - Kanemaru, Toyonosuke; Shimada, Toshio; and Inudow, Isao, 3,872,032.
- Shimazaki Mixing Equipment Co., Ltd.: *See—*
  - Misima, Yusi, 3,871,268.
- Shimizu, Kazuo; and Yoshida, Okio, to Tokyo Shibaura Electric Co., Ltd. Image pickup tube. 3,872,344, Cl. 313-386.000.
- Shimizu, Noboru: *See—*
  - Fukuchi, Shuzo; Shimizu, Noboru; and Ohara, Takashi, 3,872,161.
- Shimizu, Tohru; Yasui, Teruo; and Nakamura, Sieshiro, to Kuraray Co., Ltd. Method of preparing 1,4-diacyloxy-2-butenes. 3,872,163, Cl. 260-491.000.
- Shinnick, David M.: *See—*
  - Wentz, Edward A.; and Shinnick, David M., 3,871,511.
- Shinoi, Tsuyoshi; Tsutsumi, Fumio; and Kerman, Stephen E., to Nippon Tsu Shin Kogyo K.K.; and TIE/Communications Inc. Switching apparatus for use in a paging system of a key telephone system. 3,872,261, Cl. 179-99.000.
- Shiomi, Toshio: *See—*
  - Ukaji, Rokuo; and Shiomi, Toshio, 3,872,210.
- Shionogi & Co., Ltd.: *See—*
  - Takamizawa, Akira; Hirai, Kentaro; Oikawa, Hiroshi; and Inazu, Kunihei, 3,872,123.
- Shiosaka, Makoto: *See—*
  - Hijiya, Hiromi; and Shiosaka, Makoto, 3,871,892.
  - Hijiya, Hiromi; and Shiosaka, Makoto, 3,872,228.
- Shiraiwa, Toshio; and Hiroshima, Tatsuo, to Sumintomo Metal Industries, Limited. Apparatus for supporting and propelling material through magnetic flaw detection devices. 3,872,378, Cl. 324-37.000.
- Shishikura, Hirohisa: *See—*
  - Numata, Saburo; Sagara, Iwao; and Shishikura, Hirohisa, 3,872,483.
- Shmartsev, Jury Vasilievich: *See—*
  - Vul, Alexandr Yakovlevich; Shik, Alexandr Yakovlevich; Dobryakova, Natalia Alexandrovna; Saidashev, Ibragim Ibragimovich; and Shmartsev, Jury Vasilievich, 3,872,300.
- Shoemaker, Edwin J.; Ruble, Harold P.; and White, David B., to La-Z-Boy Chair Company. High-low back for chair. 3,871,704, Cl. 297-61.000.
- Shoemaker, Kent P. Railroad grain door. 3,871,278, Cl. 105-378.000.
- Shriver, Charles R. Safety device for lawnmowers. 3,871,159, Cl. 56-11.300.
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- Shuster, Edward J.: *See—*
  - Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., 3,872,031.
- Shutterly, Harold B., to Westinghouse Electric Corporation. Elimination of transients in processing segments of audio information. 3,872,503, Cl. 360-8.000.
- Sidan, Heribert: *See—*
  - Russold, Maximilian; Sidan, Heribert; and Rogen, Gerhard, 3,871,634.
- Siddall, John E.; and Fried, John H., to Zoecon Corporation. Synthesis of α, β-unsaturated compounds. 3,872,101, Cl. 260-326.50E.
- Siebert, William R., to Giddings & Lewis, Inc. Pre-loaded hydrostatic way bearing. 3,871,721, Cl. 308-5.000.
- Siemens Aktiengesellschaft: *See—*
  - Bartenstein, Peter, 3,872,394.
  - Grafinger, Wilhelm, 3,872,406.
  - Henkel, Hans-Joachim; De Bucs, Eugen Szabo; and Koch, Christian, 3,871,838.
  - Hubner, Klaus, 3,872,364.
  - Obermaier, Anton; Drebinger, Peter; and Hoisl, Johann, 3,872,422.
  - Schlichte, Max, 3,872,256.
  - Schneider, Adolf, 3,872,246.
  - Schneider, Guenter, 3,872,413.
- Sienkiewicz, Leon J.: *See—*
  - Shum, Lanson Y.; Sienkiewicz, Leon J.; and Gogniat, Theodore, 3,872,285.
- Signa-Signer, Inc.: *See—*
  - Belcher, Donald K., 3,872,504.
- Simmons, Harold W. Power saw precision stain gauge. 3,871,103, Cl. 33-174.00R.

- Simon, Ernest M., to K-P Manufacturing Co., Inc. Hydraulic jack base structure. 3,871,619, Cl. 254-93.00R.
- Simpson, Harold H.: *See—*
  - Lentine, Frank N.; and Simpson, Harold H., 3,871,589.
- Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., to Exxon Research & Engineering Company. Novel hydrocarbon conversion catalyst and reforming use thereof. 3,871,997, Cl. 208-139.000.
- Sinfelt, John H.: *See—*
  - Tauster, Samuel J.; and Sinfelt, John H., 3,871,994.
- Sinfelt, John Henry, to Exxon Research & Engineering Company. Reforming with a single platinum group metal. 3,871,996, Cl. 208-139.000.
- Singer Company, The: *See—*
  - Ciecior, Heinrich; and Kessler, Rolf Emil, 3,871,311.
  - Mecklenborg, Richard A., 3,871,750.
- Singleton, Alan H., to Bethlehem Steel Corporation. Production and utilization of synthesis gas. 3,872,025, Cl. 252-373.000.
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- Sinteral Corporation: *See—*
  - Storchheim, Samuel, 3,871,877.
- Sioux Steam Cleaner Corp.: *See—*
  - Finger, John F., 3,871,398.
- Sirius Corporation: *See—*
  - Fairbairn, Thomas E., 3,872,279.
- Sirmans, Ronnie Lee: *See—*
  - Barkis, Edward; and Sirmans, Ronnie Lee, 3,871,910.
- Sironval, Cyrille: *See—*
  - Michel-Wolwertz, Marie-Rose; Dujardin, Esther; and Sironval, Cyrille, 3,871,888.
- Sizer, Phillip S.; and Young, Carter R., to Otis Engineering Corporation. Methods of treating wells. 3,871,456, Cl. 166-298.000.
- Skaggs, Boyd T., to Container Corporation of America. Angle lock end folder. 3,871,572, Cl. 229-40.000.
- SKF Industrial Trading and Development Company B.V.: *See—*
  - Brandenstein, Manfred; and Olschewski, Armin, 3,871,724.
- Skildum, John D. Method and device for inhibiting the corrosion of metallic surfaces. 3,871,823, Cl. 21-2.50B.
- Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock vehicle brake systems. 3,871,716, Cl. 303-21.00F.
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- Slack, Robert W. Exercise apparatus. 3,871,646, Cl. 272-67.000.
- Slana, Matthew Francis, to Bell Telephone Laboratories, Incorporated. Apparatus for realigning electrical connector terminal pins. 3,871,424, Cl. 140-147.000.
- Slayton, Curtis R., to General Electric Company. Hermetically sealed compressor suction tube assembly. 3,871,800, Cl. 418-248.000.
- Sliwka, Wolfgang: *See—*
  - Baum, Guenter; Bachmann, Rudolf; and Sliwka, Wolfgang, 3,872,023.
- Smart, Bruce E., to du Pont de Nemours, E. I., and Company. Perfluoromethylenecyclopropane and polymers thereof. 3,872,066, Cl. 260-80.760.
- Smith, Charles Norman: *See—*
  - Winrow, Donald; and Smith, Charles Norman, 3,871,945.
- Smith, Darrell Franklin, Jr.; and Clatworthy, Edward Frederick, to International Nickel Company, Inc., The. Heat treatment of nickel alloys. 3,871,928, Cl. 148-142.000.
- Smith, Gary W.; and Lemcke, George A., to Parish Manufacturing Inc. Milk dispenser container. 3,871,559, Cl. 222-183.000.
- Smith, Gerald D.; and Owens, Frank R., to Carson Manufacturing Company, Inc. Electronic flasher circuit. 3,872,353, Cl. 315-200.00A.
- Smith, Gerald R.; and Brittingham, Oscar Jerome, III, to Cadre Corporation, The. Vehicle identification method and apparatus. 3,872,283, Cl. 235-150.200.
- Smith, Grace L.: *See—*
  - Duncan, Robert C.; and Smith, Grace L., 3,871,378.
- Smith, James Thomas, to GTE Sylvania Incorporated. Process for producing powdered superalloys. 3,872,193, Cl. 264-8.000.
- Smith, Kenneth Charles Arthur; and Cleaver, John Richard Adrian. Electron guns. 3,872,351, Cl. 315-107.000.
- Smith, Lester L. Folding door hardware. 3,871,083, Cl. 16-159.000.
- Smith, Peter William: *See—*
  - Gloge, Detlef Christoph; and Smith, Peter William, 3,871,935.
- Smith, Robert L., to Roart Plastics, Inc. Electrical cable pedestal structure. 3,872,234, Cl. 174-38.000.
- Smith, Tom R.; and Rivers, Richard D., to American Air Filter Company, Inc. Disposable carbon filter. 3,871,849, Cl. 55-484.000.
- Smith, Waymon G.: *See—*
  - Hervey, John D.; and Smith, Waymon G., 3,872,044.
- Smith, Wayne L., to Mine Safety Appliances Company. Air filter with bags. 3,871,848, Cl. 55-374.000.
- Smith, William Novis, Jr., to Foote Mineral Company. Process for the production of lithium chloride. 3,872,220, Cl. 423-499.000.
- Smiths Industries Limited: *See—*
  - Anderson, Edward William, 3,871,235.
- Smitty's Easy Tow: *See—*
  - Jenkins, Otto L., 3,871,540.
- Smolderen, Albert Emiel, to Agfa-Gevaert. Automatic winding and cutting apparatus for webs. 3,871,595, Cl. 242-56.00A.
- Smrt, Thomas J. Spraying apparatus. 3,871,557, Cl. 222-162.000.
- Snamprogetti, S.p.A.: *See—*
  - Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,872,069.
- Snyder, Richard H., to Brunswick Corporation. Outboard propulsion unit exhaust discharge system. 3,871,324, Cl. 115-17.000.
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  - Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, 3,871,831.
- Societe Anonyme dite: Potain Poclain Materiel: *See—*
  - Senelet, Bernard C., 3,871,685.
- Societe Anonyme Sabatier S.A.: *See—*
  - Lhermet, Yves J., 3,871,423.
- Societe d'Etudes de Machines Thermiques: *See—*
  - Kuhn, Karl Walter, 3,871,339.
- Societe Dite Des Automobiles Peugeot: *See—*
  - Rameau, Jean, 3,871,790.
- Societe en nom collectif Science Union et Cie, Societe Francais de Recherche Medicale: *See—*
  - Malen, Charles; Desnos, Monique; and Poignani, Jean-Claude, 3,872,102.
- Societe Ethylene Plastique: *See—*
  - Dumazet, Eugene, 3,871,458.
- Societe Francaise Des Produits Pour Catalyse: *See—*
  - Duhaut, Pierre; and Miquel, Jean, 3,871,995.
- Societe Industrielle Generale De Mecanique Appliquee S.I.G.M.A.: *See—*
  - Leblanc, Jean, 3,871,794.
  - Pigeroulet, Jean; and Brunel, Andre, 3,871,344.
- Societe Industrielle Generale de Mechanique Appliquee S.I.G.M.A.: *See—*
  - Vuaille, Andre, 3,871,346.
- "Societe Miniere et Metallurgique de Penarroya": *See—*
  - Rey, Maurice, 3,871,873.
- Societe Nationale d'Etude et de Construction de Moteurs d': *See—*
  - Buisson, Marc Francois Bernard; and Quillevere, Herve Alain, 3,871,174.
- Societe Nouvelle de Roulements: *See—*
  - Gerat, Jean; and Gerbet, Georges, 3,871,204.
- Societe Zenith-Aviation: *See—*
  - Courant, Jacques, 3,871,404.
- Soenksen, Uwe: *See—*
  - Bosche, Horst; and Soenksen, Uwe, 3,872,170.
- Solar, James M.: *See—*
  - Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., 3,872,120.
- Soltis, George L.: *See—*
  - Wilder, Leslie N.; Soltis, George L.; Nenninger, Theodore P.; and Ciaraldi, Anthony, 3,872,263.
- Solvay & Cie: *See—*
  - Chauvier, Jean-Marie, 3,871,830.
- Sony Corporation: *See—*
  - Ohsawa, Mitsuo, 3,872,393.
- Southard, Benny S. Tree stand. 3,871,482, Cl. 182-187.000.
- Spaenig, Hermann; Dockner, Toni; and Karn, Helmut. Improvement in the recovery of glyoxylic acid. 3,872,166, Cl. 260-526.00R.
- Sparling, John H.: *See—*
  - Thomas, William Burnie, 3,871,392.
- Spatz Corporation: *See—*
  - Spatz, Walter B., 3,871,390.
- Spatz, Walter B., to Spatz Corporation. Cosmetic applicator. 3,871,390, Cl. 132-83.00R.
- Spector, George: *See—*
  - Richmond, Rex E.; and Spector, George, 3,871,117.
- Spero, Donald M.; Eastlund, Bernard J.; and Ury, Michael G., to Fusion Systems Corporation. Apparatus and method for generating radiation. 3,872,349, Cl. 315-39.000.
- Sperry Rand Corporation: *See—*
  - Boles, John A.; Chu, Charles M.; Criswell, Peter B.; and Rolnitzky, Aron, 3,872,442.
  - Crooke, Arthur W.; and Schottler, Paul H., 3,872,290.
  - Potter, Curtis N., 3,872,496.
- Spevack, Jerome S. Means for improving thermal control in dual temperature systems. 3,871,833, Cl. 23-260.000.
- Spevack, Jerome S., to Deuterium Corporation. Improvements in dual temperature exchange process. 3,872,223, Cl. 423-580.000.
- Spillman, Kurt; and Arx, Georg Von, to Von Roll AG. Combustion grate structure. 3,871,287, Cl. 110-8.00R.
- Spoor, Herbert; and Demmler, Kurt, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Production of urethane group containing coatings by curing with ionizing radiation. 3,871,908, Cl. 117-93.310.
- Sprague Electric Company: *See—*
  - Hanson, John W.; and MacDougall, John D., 3,872,491.
- Sprague, Gordon V., Jr.: *See—*
  - Dorosz, Adolph S.; Schaefer, Hans F., Jr.; and Sprague, Gordon V., Jr., 3,871,532.
- Sprague, Michael Jolyon: *See—*
  - Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, 3,872,134.
- Sprecher & Schuh AG: *See—*
  - Hufschmid, Max, 3,872,417.
- Sprenger, Wolfgang: *See—*
  - Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter;

  - Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
- Spriggs, Dennis M.: *See—*
  - Jett, Marion B.; and Spriggs, Dennis M., 3,871,450.
- Spruce Falls Power and Paper Company Limited: *See—*
  - Davidson, Donald L.; and Romanowich, Donald K., 3,871,512.
- Sta-Rite Industries, Inc.: *See—*
  - Grout, Edward C.; and Klassy, Donald F., 3,872,004.
- Staar, Marcel Jules Helene. Apparatus for automatically playing back information in cassettes. 3,872,506, Cl. 360-92.000.
- Staar, S.A.: *See—*
  - Staar, Theophiel Clement Jozef Lodewijk, 3,872,508.
- Staar, Theophiel Clement Jozef Lodewijk, to Staar, S.A. Retention roller holding mechanism for tape cartridge playback apparatus. 3,872,508, Cl. 360-137.000.
- Stabilator AB: *See—*
  - Pulk, Elgas; and Noren, John Paul, 3,871,628.
- Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, to Hoechst Aktiengesellschaft. Digitoxigenin rhamnoside cyclocarbonates. 3,872,081, Cl. 260-210.500.
- Staff KG: *See—*
  - Hesse, Kurt, 3,871,730.
- Stahle, Helmut: *See—*
  - Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, 3,872,147.
  - Kummer, Werner; Stahle, Helmut; Koppe, Herbert; and Hoefke, Wolfgang, 3,872,121.
- Standard Oil Company: *See—*
  - Barkis, Edward; and Sirmans, Ronnie Lee, 3,871,910.
  - Connolly, John F., 3,871,976.
  - Culbertson, George S.; Chipman, Gary R.; and Karll, Robert E., 3,872,019.
  - Fielding, Ivor R.; and Poppe, Wassily, 3,872,052.
- Standun, Inc.: *See—*
  - Paramonoff, Elpidifor; and Olsen, Frederick C., 3,871,233.
- Stanislawski, Melvern B.; and McKinney, Daniel F. Arrow rest accessory for archery bow. 3,871,352, Cl. 124-41.00A.
- Stanley Works, The: *See—*
  - Gutowski, Antoni Pawel; and De Jong, Maarten Cornelis, 3,871,110.
  - Hildebrandt, William J., 3,871,100.
- Stanray Corporation: *See—*
  - Allen, John W., 3,871,276.
- Stanton, Richard P.: *See—*
  - Praeger, Eberhardt P.; and Stanton, Richard P., 3,871,733.
- Stargell, Donald E., to Van Dorn Company. Method of making folded can ends and folded can end product. 3,871,314, Cl. 113-121.00C.
- Starostin, Jury Stepanovich: *See—*
  - Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Krotkov, Vladimir Nikolaevich; Dyachkov, Fedor Nikolaevich; Plokhov, Viktor Ivanovich; Golovinov, Mikhail Fedotovich; Erokhov, Veniamin Kuzmich; and Starostin, Jury Stepanovich, 3,871,407.
- Stat S.n.c. di Accatino & C.: *See—*
  - Accatino, Augusto, 3,871,703.
- Staudacher, Gerald R.; Dergazarian, Thomas E.; and Lane, George A., to Dow Chemical Company, The. Gas generator. 3,871,684, Cl. 280-150.0AB.
- Stauffer Chemical Company: *See—*
  - Adams, William Kiger; and Anderson, James Alan, 3,872,038.
  - Brokke, Mervin E.; and Teach, Eugene G., 3,872,157.
- Stave, Frederick Roland, to RCA Corporation. Record contact spindle. 3,871,663, Cl. 274-10.00S.
- Steen, Adam: *See—*
  - Overdijk, Willem B.; and Steen, Adam, 3,871,869.
- Steffens, G. Walter. Blade arrangements for meat cutters. 3,871,590, Cl. 241-282.200.
- Stegmeier, William J. Reusable ledger board with a nail-loosening means. 3,871,147, Cl. 52-127.000.
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- Steigelman, James Q., to W. M. Chace Company. Process for producing a composite metallic article. 3,871,926, Cl. 148-12.00E.
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- Steinberg, Sidney: *See—*
  - Auerbach, Albert A.; Katz, George M.; and Steinberg, Sidney, 3,872,251.
- Steinhagen, Horst G., to Twin Disc, Incorporated. Variable speed drive. 3,871,239, Cl. 74-199.000.
- Steirische Guszstahlwerke Aktiengesellschaft: *See—*
  - Russold, Maximilian; Sidan, Heribert; and Rogen, Gerhard, 3,871,634.
- Stendel, Wilhelm: *See—*
  - Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,872,185.
- Stevenson, Billy E.; and Rumsey, Thomas R., to Royal Industries, Inc. Motor vehicle security system and security method. 3,871,475, Cl. 180-113.000.
- Stewart, Rex George; Barker, Gerald Vivian; and Hoare, John Leonard, to Wool Research Organization of New Zealand (Inc.). Wool scouring. 3,871,820, Cl. 8-139.000.
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- Stobb, Anton R., to Stobb, Inc. Sheet stacker with jogger. 3,871,644, Cl. 271-198.000.
- Stobb, Inc.: *See—*
  - Stobb, Anton R., 3,871,644.
- Stockburger, Dieter: *See—*
  - Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
  - Schenk, Walter; Dahlinger, Roland; and Stockburger, Dieter, 3,872,165.
- Stockhaus, Klaus: *See—*
  - Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,872,127.
- Stohr, Gunter: *See—*
  - Kratel, Gunter; Stohr, Gunter; Wiebke, Gunter; and Frey, Volker, 3,872,214.
- Stone, Samuel M.: *See—*
  - Bridger, Andrew; Dakss, Mark L.; Zemon, Stanley; and Stone, Samuel M., 3,871,744.
- Stoops, Edward H., to International Business Machines Corporation. Floating addressing system and method. 3,872,452, Cl. 340-173.00R.
- Storchheim, Samuel, to Sinteral Corporation. Producing aluminum powder compacts. 3,871,877, Cl. 75-214.000.
- Strain, Edwin H.: *See—*
  - Das, Nalini R.; and Strain, Edwin H., 3,871,814.
- Stricklin, John B., Jr.: *See—*
  - Long, John B.; and Stricklin, John B., Jr., 3,871,588.
- "Strolee" of California, a division of U.S. Industries, Inc.: *See—*
  - Vogler, Paul A., 3,871,783.
- Strong, Grant F., to General Tire & Rubber Company, The. Drive mechanism for passing continuous strip through an oven. 3,871,816, Cl. 432-59.000.
- Sturm, Elmar; Cellarius, Hans Joerg; and Vogel, Christian, to Ciba-Geigy Corporation. 1-(Chloroalkylthio-carbonyl)-decahydroquinolines. 3,872,126, Cl. 260-283.00S.
- Sturm, Hans-Juergen: *See—*
  - Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, 3,872,134.
- Sugi, Jiro: *See—*
  - Hamada, Kenzo; Uchiyama, Hiroshi; Sugi, Jiro; and Kamada, Osamu, 3,872,000.
- Sugi, Nagatoshi: *See—*
  - Todani, Yoshihiro; Sugi, Nagatoshi; and Hashimoto, Kinro, 3,872,036.
- Sugimoto, Keiichi; Kobayashi, Kunio; Nishijima, Kouji; and Morimoto, Shiro, to Takeda Chemical Industries, Ltd. Cephalosporins. 3,872,115, Cl. 260-243.00C.
- Sugimoto, Kuniyoshi, to Kabushiki Kaisha Hasegawa Haguruma. Geared Type Shaft Coupling. 3,871,191, Cl. 64-9.00R.
- Sulzer Brothers Ltd.: *See—*
  - Hintsch, Otto, 3,871,418.
  - Huber, Max; and Schutz, Gerhard, 3,871,624.
  - Pfarrwaller, Erwin, 3,871,419.
  - Pfarrwaller, Erwin, 3,871,421.
  - Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, 3,871,415.
- Sumintomo Metal Industries, Limited: *See—*
  - Shiraiwa, Toshio; and Hiroshima, Tatsuo, 3,872,378.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Hayashi, Makoto; and Hinata, Masanori, 3,871,201.
  - Matsui, Kazumi; Umemori, Takashi; Shibata, Yutake; and Yamamura, Kinzo, 3,871,727.
  - Onoda, Mineo; and Kimura, Takahiko, 3,871,200.
- Sumrell, Gene: *See—*
  - Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., 3,872,120.
- Sun Oil Company (Delaware): *See—*
  - Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,871,455.
- Sun Oil Company of Pennsylvania: *See—*
  - Keenan, Bernard J., Jr., 3,871,485.
- Sunnett, George: *See—*
  - Wood, James; and Sunnett, George, 3,871,408.
- Suprunchuk, Tony: *See—*
  - Carlsson, David J.; Suprunchuk, Tony; and Wiles, David M., 3,871,901.
- Suzuki, Hiroshi: *See—*
  - Miura, Ichiro; and Suzuki, Hiroshi, 3,871,102.
- Suzuki, Noboru: *See—*
  - Watanabe, Tetsuya; and Suzuki, Noboru, 3,871,305.
- Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, to Teikoku Hormone Mfg. Co., Ltd. Naphthisoxazolyl alkanoic acids and their derivatives. 3,872,093, Cl. 260-307.00D.
- Suzuki, Yasushi: *See—*
  - Tsukamoto, Kunio; Suzuki, Yasushi; Izumi, Akihiro; and Hiramatsu, Yoshio, 3,872,087.
- Suzumori, Takeo: *See—*
  - Yoshikawa, Yoshio; and Suzumori, Takeo, 3,872,221.
- Svendsen, Walter W.: *See—*
  - Cooper, Jamshed Rustom; and Svendsen, Walter W., 3,871,487.
- Svensson, Jon-Erik. Device for locking two concentrically positioned and axially displaceable members. 3,871,780, Cl. 403-104.000.

- Swanson, Glenda A.: *See—*
  - Swanson, H. Damon; and Swanson, Glenda A., 3,871,330.
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- Swanson, Joe B., to Raymond Lee Organization, Inc., The, a part interest. Water desalinization system. 3,871,180, Cl. 60-648.000.
- Sweeny, Keith H.; Fischer, James R.; Lung, Charles A.; and Wilson, Elmer M., to United States of America, Interior. Process for making particulate self-destructing pesticidal compositions. 3,871,906, Cl. 117-75.000.
- Swengel, Robert Charles, Sr.; Lemke, Timothy Allen; and Villiard, Frederick Phillip, to AMP Incorporated. Bonded wire i interconnection system. 3,872,236, Cl. 174-68.500.
- Swetnam, Norman Thomas: *See—*
  - Klein, Keith William; Swetnam, Norman Thomas; and Cahill, Robert Allen, 3,872,355.
- Sybron Corporation: *See—*
  - Huck, Charles Mason, 3,871,554.
  - Lentine, Frank N.; and Simpson, Harold H., 3,871,589.
- Syd W. Collier Co. Ltd.: *See—*
  - Collier, Sidney Wellington, 3,871,051.
- Syntex (U.S.A.) Inc.: *See—*
  - Crabbe, Pierre, 3,872,107.
  - Crabbe, Pierre, 3,872,149.
  - Guzman, Angel; and Marx, Michael, 3,871,979.
  - Jones, Gordon H.; Ranganathan, Ramachandran S.; and Moffatt, John G., 3,872,084.
  - Jones, Gordon H.; and Moffatt, John G., 3,872,098.
  - Patterson, John W.; and Fried, John H., 3,872,139.
- Szarvasi, Etienne, to Lipha, Lyonnaise Industrielle Pharmaceutique. Tetrahydrofurfuryl aminoesters. 3,872,112, Cl. 260-347.500.
- Szatkowski, Richard R., to Continental Can Company, Inc. Shockproof container and method for making same. 3,871,521, Cl. 206-524.000.
- Szpytman, Jack J. Watercraft. 3,871,317, Cl. 114-66.50R.
- Tabler, Donald C., to Phillips Petroleum. Catalyst and process for double-bond isomerization. 3,872,178, Cl. 260-666.000.
- Taco-Tafel GmbH & Co. KG: *See—*
  - Laass, Heinz, 3,872,384.
- Taft, Philip Augustus; and Dawson, Stuart Bruce, to Girling Limited. Suspension units for vehicles. 3,871,678, Cl. 280-124.00F.
- Taguchi, Isao: *See—*
  - Higashi, Kazuhiro; Taguchi, Isao; and Miura, Nobuaki, 3,872,490.
- Takada, Takezo, to Takata Kojyo Co., Ltd. Automatic locking safety belt retraction reel. 3,871,599, Cl. 242-107.200.
- Takagi, Katuyuki: *See—*
  - Fujinami, Hiroshi; and Takagi, Katuyuki, 3,871,342.
- Takagi, Tatsuya; and Takagi, Teruya. Pipe joint. 3,871,691, Cl. 285-321.000.
- Takagi, Teruya: *See—*
  - Takagi, Tatsuya; and Takagi, Teruya, 3,871,691.
- Takahashi, Susumu; Ito, Ryosuke; and Hirano, Koichi, to Sansui Electric Co., Ltd. Encoding method for converting multi-channel sound signals into 2-channel composite signals. 3,872,249, Cl. 179-1.0GQ.
- Takahasi, Takemitsu; Yamazaki, Keigi; and Tanaka, Hirosi, to Fuji Spinning Co., ltd. Process of making leather like sheet material. 3,871,938, Cl. 156-246.000.
- Takamizawa, Akira; Hirai, Kentaro; Oikawa, Hiroshi; and Inazu, Kunihei, to Shionogi & Co., Ltd. Certain thiamine disulfide compounds. 3,872,123, Cl. 260-256.50B.
- Takase, Shinji; and Yamazi, Takahiko, to Nippon Oil company, Limited. Catalyst for the conversion of hydrocarbon, a method for the preparation of the catalyst. 3,872,029, Cl. 252-453.000.
- Takata Kojyo Co., Ltd.: *See—*
  - Takada, Takezo, 3,871,599.
- Takeda Chemical Industries, Ltd.: *See—*
  - Sugimoto, Keiichi; Kobayashi, Kunio; Nishijima, Kouji; and Morimoto, Shiro, 3,872,115.
  - Ukyo, Akira Nohara; Umetani, Tomonobu; Miyata, Yoshibumi; and Sanno, Yasushi, 3,872,108.
- Taketa, Jun A., to Taketa, Phyllis. Mold with removable and replaceable core and cavity inserts. 3,871,611, Cl. 249-102.000.
- Taketa, Phyllis: *See—*
  - Taketa, Jun A., 3,871,611.
- Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Polishing device for a vehicle. 3,871,046, Cl. 15-21.00D.
- Takeuchi Tekko Kabushiki Kaisha: *See—*
  - Takeuchi, Shigeo, 3,871,046.
- Taki, Yasuo: *See—*
  - Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, 3,871,206.
- Takita, Osami: *See—*
  - Teranishi, Tsugutomo; and Takita, Osami, 3,872,011.
- Tal, Aharon. Tensiometer. 3,871,211, Cl. 73-73.000.
- Tamai, Katsumi: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Tanabe Seiyaku Co., Ltd.: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Maeshima, Haruko; and Izuo, Nobuhiko, 3,871,959.
- Tanaka, Hirosi: *See—*
  - Takahasi, Takemitsu; Yamazaki, Keigi; and Tanaka, Hirosi, 3,871,938.
- Tanaka, Inahide: *See—*
  - Yano, Tsuyoshi; Onishi, Hiroshi; and Tanaka, Inahide, 3,872,204.
- Tanzer, John. Method of re-attaching convenience closure device. 3,871,548, Cl. 220-243.000.
- Tapecon, Inc.: *See—*
  - McPherson, Donald F., 3,872,501.
  - Wild, Albert F., 3,872,500.
  - Wild, Albert F., 3,872,502.
- Target Systems Corporation: *See—*
  - Procop, Alex J.; and Boultinghouse, Ace, 3,871,754.
- Tarutani, Masaaki: *See—*
  - Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.
- Tashjian, Harry J.: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
- Tateisi, Motosi: *See—*
  - Nishino, Atsushi; Iura, Yukihide; Kubo, Masayoshi; and Tateisi, Motosi, 3,872,013.
- Tatsumi, Tamotsu: *See—*
  - Maki, Naoki; Okuda, Hironori; Kawai, Sadaharu; and Tatsumi, Tamotsu, 3,872,357.
- Tauster, Samuel J.; and Sinfelt, John H. Aromatization process. 3,871,994, Cl. 208-137.000.
- Tavre Marc & Co. S.A.: *See—*
  - Schwaar, Edouard; and Paroz, Andre, 3,871,169.
- Taylor, David Hutton: *See—*
  - Vold, Ingebret Hadland; and Taylor, David Hutton, 3,871,188.
- Taylor, Julian S. Gate valve disc. 3,871,616, Cl. 251-175.000.
- Taylor, Michael Victor: *See—*
  - Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; Hewitt, Graham; and Taylor, Michael Victor, 3,872,086.
- Teach, Eugene G. Ether and sulfide meta-substituted anilides and their utility as herbicides. 3,871,865, Cl. 71-98.000.
- Teach, Eugene G.: *See—*
  - Brokke, Mervin E.; and Teach, Eugene G., 3,872,157.
- Technicon Instruments Corporation: *See—*
  - Adler, Stanford L., 3,871,895.
- Tee-Pak, Inc.: *See—*
  - Bridgeford, Douglas J., 3,872,196.
  - Burke, Noel I., 3,872,060.
  - Burke, Noel I., 3,872,206.
- Teel, Paul H.: *See—*
  - Christmann, Harold F.; and Teel, Paul H., 3,872,027.
- Teijin Limited: *See—*
  - Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, 3,871,166.
- Teijin Seiki Co., Ltd.: *See—*
  - Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, 3,871,166.
- Teikoku Hormone Mfg. Co., Ltd.: *See—*
  - Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi, both of; Tarutani, Masaaki; Miki, Tokutaro, both of; and Myasaka, Katsuhiko, 3,872,093.
  - Tsukamoto, Kunio; Suzuki, Yasushi; Izumi, Akihiro; and Hiramatsu, Yoshio, 3,872,087.
- Teleflex Incorporated: *See—*
  - Gressard, Charles F.; and Schiff, Charles M., 3,871,244.
- Telephonic Equipment Corporation: *See—*
  - Oatis, Melvin Neal, 3,872,260.
- Telesco, Donald W. Stringed musical instrument. 3,871,263, Cl. 84-271.000.
- Tellez, Arturo O. Adjustable height baseball batter dummy. 3,871,647, Cl. 273-26.00A.
- Temple, Ernest E.: *See—*
  - Giebel, Joseph L.; and Temple, Ernest E., 3,871,321.
- Tenneco Chemicals Inc.: *See—*
  - Fath, Joseph; and Gottesman, Roy T., 3,872,053.
  - Fath, Joseph, 3,872,187.
- Teranishi, Tsugutomo; and Takita, Osami, to Hitachi, Ltd. Condensed water dechlorination apparatus. 3,872,011, Cl. 210-269.000.
- Termet, Pierre. Cartridge-fired apparatus for driving fasteners and the like. 3,871,565, Cl. 227-10.000.
- Terrien, Michel Eugene: *See—*
  - Bouvet, Claude; and Terrien, Michel Eugene, 3,871,045.
- Tessera, Giancarlo; and Zulian, Ferruccio, to Honeywell Information Systems Italia. Computer control system using microprogramming and static/dynamic extension of control functions thru hardwired logic matrix. 3,872,447, Cl. 340-172.500.
- Tetrahedron Associates, Incorporated: *See—*
  - Zimmerman, Merritt A., 3,871,340.
- Teunissen, Willem: *See—*
  - Vissers, Bastiaan; and Teunissen, Willem, 3,871,438.
- Teutsch, Jean Georges, to Roussel Uclaf. Novel $\Delta^{9,11}$-Gonadiene-5α-ols. 3,872,092, Cl. 260-239.55C.
- Teutsch, Theo: *See—*
  - Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
- Texaco Inc.: *See—*
  - Loofbourrow, Robert J., 3,872,465.
- Texas Instruments Incorporated: *See—*
  - Clarke, David E., 3,872,415.
  - Fish, John G., 3,871,930.

- Textron, Inc.: *See—*
  - Farah, Basil S.; and Kasprzak, Henry A., 3,872,049.
- Th. Goldschmidt AG: *See—*
  - Rossmy, Gerd, 3,872,146.
- Th. Kieserling & Albrecht: *See—*
  - Lorenz, Horst, 3,871,222.
- Thastrup, Ove, to A/SE Ramussen. Stop valves. 3,871,400, Cl. 137-363.000.
- Thegerstrom, Stig Rune, to Thegerstroms Rostfria AB. Device for treating articles arranged in containers with organic solvents. 3,871,394, Cl. 134-46.000.
- Thegerstroms Rostfria AB: *See—*
  - Thegerstrom, Stig Rune, 3,871,394.
- Theilen, Rolf, to Olympia Werke AG. No-print key control. 3,871,505, Cl. 197-16.000.
- Thermatool Corp.: *See—*
  - Rudd, Wallace C., 3,872,275.
- Thermo King Corporation: *See—*
  - Vold, Ingebret Hadland; and Taylor, David Hutton, 3,871,188.
- Theurer, Josef: *See—*
  - Plasser, Franz, deceased; and Theurer, Josef, 3,871,299.
- Thijssen, Henricus Alexis Cornelis. Apparatus for the separation and treatment of solid particles from a liquid suspension. 3,872,009, Cl. 210-178.000.
- Thomas & Betts Corporation: *See—*
  - Luongo, Albert Michael, 3,871,071.
- Thomas, Henry A. Oil mist lubrication and oil immersion system. 3,871,484, Cl. 184-6.260.
- Thomas, William Burnie, to Sparling, John H., a part interest. Dental floss holder. 3,871,392, Cl. 132-89.000.
- Thompson, Bruce, to Ametek, Inc. Pressure sealed bonnet packing ring. 3,871,667, Cl. 277-115.000.
- Thompson, Neale. Collapsible bicycle crate. 3,871,546, Cl. 217-38.000.
- Thor Dahl, Inc.: *See—*
  - Whitman, Nelson, 3,871,573.
- Thorens, Jean-Jacques, legal representative: *See—*
  - Charbonney, Adrien Maurice, deceased; Perucchi, Norbert; Belot, Michel; and Giger, Urs, 3,871,171.
- Thornsbury, Ed. Equalizer beam bushing press. 3,871,053, Cl. 29-252.000.
- Thornton, Richard D.: *See—*
  - Kolm, Henry H.; and Thornton, Richard D., 3,871,301.
- Thorpe, Susan Dale; Davis, Curry Beach; and Wheelus, Charles Glenn, to Arizona Chemical Company. Process for the preparation of crystallization-resistant disproportionated rosin. 3,872,073, Cl. 260-106.000.
- Thraikill, Howard A.: *See—*
  - Fredrickson, Walter G.; Heitmann, Albert W.; and Thraikill, Howard A., 3,872,460.
- Tidwell, Carl E., Jr. Nail turning apparatus. 3,871,227, Cl. 72-476.000.
- TIE/Communications Inc.: *See—*
  - Shinoi, Tsuyoshi; Tsutsumi, Fumio; and Kerman, Stephen E., 3,872,261.
- Tiedeman, George T.; and Gillern, Maurice F., to Weyerhaeuser Company. Adhesives containing metal powders. 3,872,051, Cl. 260-38.000.
- Tohe, Sadanobu; Hirose, Yoshiteru; Nakamura, Yoshihiro; and Mitsugi, Koji, to Ajinomoto Co., Inc. Microbial protease and preparation thereof. 3,871,963, Cl. 195-62.000.
- Todani, Yoshihiro; Sugi, Nagatoshi; and Hashimoto, Kinro, to Japanese Geon Co. Ltd., The. Process for preparation of rubber composition. 3,872,036, Cl. 260-5.000.
- Todt, William H.: *See—*
  - Goldstein, Norman P.; and Todt, William H., 3,872,311.
- Toi, Koji: *See—*
  - Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, 3,872,110.
  - Yasuda, Naohiko; Ariyoshi, Yasuo; and Toi, Koji, 3,872,099.
- Tokito, Takao; and Kawamoto, Yasushige, to Hiroshima Kasei, Ltd. Method of producing foamable pellets. 3,872,200, Cl. 264-54.000.
- Tokyo Shibaura Electric Co.: *See—*
  - Matsushima, Yoshiichi; and Abe, Toshiyuki, 3,872,347.
- Tokyo Shibaura Electric Company, Ltd.: *See—*
  - Kageyama, Katsuhiro; and Utsunomiya, Shinhachi, 3,872,377.
  - Matsumoto, Shoichi; and Kurematsu, Kazuhiko, 3,871,884.
  - Ohnishi, Toshiyuki, 3,871,189.
  - Shimizu, Kazuo; and Yoshida, Okio, 3,872,344.
- Tominaga, Hiroyoshi, to Kabushiki Kaisha Komatsu Seisakusho. Variable output pump control circuit using a remote control. 3,871,178, Cl. 60-443.000.
- Tomlinson, Patrick W.; Chandler, James P.; and Scott, Mark W., to Chrysler Corporation. Electric automatic door locking system. 3,871,474, Cl. 180-112.000.
- Tong, Duncan, to Playart Limited. Toy car with auxiliary drive wheels. 3,871,129, Cl. 46-244.00R.
- Topham, Frederick William, to British Steel Corporation. Electroplating of iron and coating substrates with an iron-aluminum coating. 3,871,973, Cl. 204-28.000.
- Torii, Saburo; Miyazaki, Takaaki; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Sulfonated phenol (sulfo) phthalein. 3,872,046, Cl. 260-327.00S.
- Torii, Soichi, to Torii Winding Machine Co., Ltd. Shuttle arrangement for a circular loom for a tape yarn. 3,871,413, Cl. 139-13.000.
- Torii Winding Machine Co., Ltd.: *See—*
  - Torii, Soichi, 3,871,413.
- Tornell, Charles B. Picture frame. 3,871,121, Cl. 40-152.100.
- Toroid Corporation: *See—*
  - Motter, James W.; and Allen, Connie A., 3,872,231.
- Torpey, Wilbur N., to Autotrol Corporation. Removal of pollutants from waste-water. 3,871,999, Cl. 210-16.000.
- Townshend, Alan: *See—*
  - Belcher, Ronald; Townshend, Alan; and Bogdanski, Stanley, 3,871,768.
- Toyo Boseki Kabushiki Kaisha: *See—*
  - Furukawa, Kaoru; Isukamoto, Chiaki; and Nagai, Hiroshi, 3,872,055.
- Toyota Jidosha Hanbai Kabushiki Kaisha: *See—*
  - Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, 3,872,316.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Kobayashi, Ikuya, 3,872,425.
  - Yamanaka, Teruo; and Sato, Kazuo, 3,872,475.
- Trahan, Albert J., to Emhart. Self-aligning baffle and blowhead assembly. 3,871,856, Cl. 65-261.000.
- Travel Products, Inc.: *See—*
  - Plume, Robert W., 3,871,041.
- Treace, Harry T., to Richards Manufacturing Company. Evacuator apparatus. 3,871,377, Cl. 128-278.000.
- Trebron Holdings Ltd.: *See—*
  - Hamy, Norbert, 3,871,146.
- Trefilunion: *See—*
  - Francois, Maurice, 3,871,410.
- Trenkle, Robert Walter: *See—*
  - Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., 3,872,031.
- Treutlin, Rolf: *See—*
  - Benz, Leo; Klein, Dieter; Bauer, Manfred; Figel, Albert; and Treutlin, Rolf, 3,872,440.
- Trivett, Junior Albert. Portable bed. 3,871,038, Cl. 5-121.000.
- Trojan Automatic Scaffold, Inc.: *See—*
  - Iglehart, Hilary H.; and Lassiter, Richard C., 3,871,154.
- Tropel, Inc.: *See—*
  - Munnerlyn, Charles R.; and Moore, Robert C., 3,871,772.
- Trutzschler & Co.: *See—*
  - Trutzschler, Hermann, 3,871,712.
- Trutzschler, Hermann, to Trutzschler & Co. Shaft for depositing fiber flocks. 3,871,712, Cl. 302-59.000.
- Tschudi, Theodor Heinrich: *See—*
  - Engel, Andreas Hermann; Herziger, Gerd Bernd; and Tschudi, Theodor Heinrich, 3,871,769.
- Tsukamoto, Katsuji; Ikeno, Nobuichi; and Okada, Keiji, to Nippon Telegraph and Telephone Public Corporation. Information retrieval system. 3,872,453, Cl. 340-173.0LM.
- Tsukamoto, Kunio; Suzuki, Yasushi; Izumi, Akihiro; and Hiramatsu, Yoshio, to Teikoku Hormone Mfg. Co., Ltd. Process for production of 1,3-disubstituted azetidine derivatives. 3,872,087, Cl. 260-239.00A.
- Tsunekawa, Tokuichi: *See—*
  - Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
- Tsunetsugu, Masakazu: *See—*
  - Nagai, Masashi; Miwa, Kazuhito; Tsunetsugu, Masakazu; and Fujiwara, Tadamaro, 3,871,343.
- Tsutsumi, Fumio: *See—*
  - Shinoi, Tsuyoshi; Tsutsumi, Fumio; and Kerman, Stephen E., 3,872,261.
- Turlabor AG: *See—*
  - Engel, Andreas Hermann; Herziger, Gerd Bernd; and Tschudi, Theodor Heinrich, 3,871,769.
- Turner, Frederick Henry. Buoyant vessels. 3,871,319, Cl. 114-74.00A.
- Turner, William F.: *See—*
  - Lyons, Ellis E.; and Turner, William F., 3,871,056.
- Twin Disc, Incorporated: *See—*
  - Steinhagen, Horst G., 3,871,239.
- UBE Industries, Ltd.: *See—*
  - Nakatomi, Shunsuke; Kohtoku, Yasuhiko; and Inoue, Tosihiro, 3,872,180.
  - Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, 3,872,148.
- Uchijima, Katsuo: *See—*
  - Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, 3,871,746.
- Uchiyama, Hiroshi: *See—*
  - Hamada, Kenzo; Uchiyama, Hiroshi; Sugi, Jiro; and Kamada, Osamu, 3,872,000.
- Uchiyama, Noboru: *See—*
  - Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, 3,872,110.
- Uchiyama, Takashi: *See—*
  - Hashimoto, Teiji; Kiyohara, Takehiko; Uchiyama, Takashi; Tsunekawa, Tokuichi; Kakunodate, Masamichi; and Nakamoto, Soichi, 3,872,484.
- Ueno, Sadayasu: *See—*
  - Saito, Yasushi; and Ueno, Sadayasu, 3,872,373.
- Ueno, Tadaomi: *See—*
  - Kato, Tetsuji; Tamai, Katsumi; Kamada, Isao; Kichiji, Hiroshi; Nakai, Yoshio; Kitahara, Haruyoshi; Iwaoka, Yasuhiko; Okajima, Kiyonori; and Ueno, Tadaomi, 3,872,197.
- Ukaji, Rokuo; and Shiomi, Toshio, to Daikin Kogyo Co., Ltd. Process for recovering antimony value out of spent catalyst. 3,872,210, Cl. 423-87.000.

- Ukihashi, Hiroshi: *See—*
  - Muto, Ryujiro; Furuuchi, Shigemasa; Ukihashi, Hiroshi; Uchijima, Katsuo; and Nishimura, Hiromichi, 3,871,746.
- Ukyo, Akira Nohara; Umetani, Tomonobu; Miyata, Yoshibumi; and Sanno, Yasushi, to Takeda Chemical Industries, Ltd. Novel chromone derivatives and the production thereof. 3,872,108, Cl. 260-345.200.
- Ullmer, Richard J.: *See—*
  - Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; Ullmer, Richard J.; and Kerr, John W., 3,871,576.
- Umemori, Takashi: *See—*
  - Matsui, Kazumi; Umemori, Takashi; Shibata, Yutake; and Yamamura, Kinzo, 3,871,727.
- Umemura, Sumio; Ohdan, Kyoji; Bando, Yasuo; Hidaka, Mikio; and Fukuda, Kazuo, to UBE Industries, Ltd. Catalytic ammoxidation of propylene or isobutylene. 3,872,148, Cl. 260-465.300.
- Umetani, Tomonobu: *See—*
  - Ukyo, Akira Nohara; Umetani, Tomonobu; Miyata, Yoshibumi; and Sanno, Yasushi, 3,872,108.
- Unarco Industries, Inc.: *See—*
  - Al-Dabbagh, Adam M.; and Dudzik, Leonard J., 3,871,525.
- Underhill, John V., II. Alignment sighting device. 3,871,104, Cl. 33-262.000.
- Underwood, William George Elphinstone: *See—*
  - Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; Hewitt, Graham; and Taylor, Michael Victor, 3,872,086.
- Union Carbide Corporation: *See—*
  - Ancker, Fred H., 3,871,808.
  - Atwood, Gilbert R.; Blake, Robert J.; Butwell, Kenneth F.; and Dunnery, David A., 3,872,212.
  - Beatty, Theodore R.; and Vourlis, Harry, 3,871,921.
  - Byck, Joseph S., 3,872,128.
  - Downing, James H.; and Kaiser, Robert H., 3,871,872.
  - Goodman, Henry G., Jr.; Dupraz, Carol A.; and Lourigan, George H., 3,871,822.
  - Kozak, Theodore F., 3,871,376.
  - Kronenberg, Marvin L., 3,871,916.
  - Papa, Anthony J.; and Proops, William R., 3,872,035.
- Union Oil Company of California: *See—*
  - Sarem, Amir M., 3,871,452.
  - Sarem, Amir M., 3,871,453.
- Uniroyal, Inc.: *See—*
  - Geyer, Paul, 3,871,810.
  - Mosshart, Crockett; and Martinkovic, Paul Steve, 3,871,720.
- United Kingdom Atomic Energy Authority: *See—*
  - Wood, Frank Chiltern; and Barker, Allan, 3,871,968.
- U.S. Industrial Tool & Supply Co.: *See—*
  - Wellin, Martin, 3,871,203.
- United States of America
  - Agriculture: *See—*
    - Harper, Robert J., Jr.; Bruno, Joseph S.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,871,817.
    - Mod, Robert R.; Magne, Frank C.; Sumrell, Gene; Novak, Arthur F.; and Solar, James M., 3,872,120.
  - America as represented by the National Aeronautics and Space Administration: *See—*
    - Holland, Vard B., 3,872,395.
  - Army: *See—*
    - Hatkin, Leonard, 3,872,409.
    - Heilprin, Laurence B.; Nordquist, George; and Krupen, Philip. 3,871,296.
    - Leinkram, Charles Z.; and Rovinski, Robert S., 3,871,902.
    - Little, Little J.; and Oddo, Joseph A., 3,872,304.
    - Patigalia, Edward N., 3,871,489.
    - Pile, Benjamin D., 3,871,607.
    - Popovitch, Dragolyoub; Nystrom, Roy B.; Eneman, Melvin; Biro, Carl; and Alpert, Selwyn, 3,871,298.
  - Health, Education and Welfare: *See—*
    - Coller, John A.; Millman, Irving; and Blumberg, Baruch S., 3,872,225.
  - Interior: *See—*
    - Sweeny, Keith H.; Fischer, James R.; Lung, Charles A.; and Wilson, Elmer M., 3,871,906.
  - Navy: *See—*
    - Andrews, Ronald A., 3,871,747.
    - Brown, Charles L., 3,872,048.
    - Dawson, William H., Jr., 3,872,292.
    - Field, Donald E.; and Griffith, James R., 3,872,045.
    - Green, Eugene L., 3,872,293.
    - Herndon, John W., 3,872,238.
    - Hughes, Richard Swart, 3,872,407.
    - Kaufman, Martin H.; and Roy, Edward M., 3,872,192.
    - Leonard, Joseph T.; and Field, Donald E., 3,871,281.
    - Marcus, Henry J., 3,872,158.
    - Marcus, Henry J., 3,872,159.
    - McKenna, Ronald F., 3,871,173.
    - Pilloff, Herschel S., 3,872,403.
    - Rogers, Peter H.; and Van Buren, Arnie Lee, 3,872,421.
    - Seligman, Herbert L.; Schwartz, Marvin; and Diamond, Warren, 3,872,284.
    - Shames, Oscar; Hinds, James L.; Raditz, Michael G.; and Palatucci, Gerald J., 3,872,476.
    - Weiss, Ray Franklin, 3,871,228.
- U.S. Philips Corporation: *See—*
  - Hulsbosch, Cornelis Jozef; and van der Zee, Tjeerd Pieter, 3,872,328.
  - Koeman, Henriecus, 3,872,287.
  - Skoyles, Derek Robert, 3,871,716.
- United States Steel Corporation: *See—*
  - Fenton, G. Donald, 3,871,205.
  - Kolb, William A.; and Papinchak, Michael J., 3,871,633.
- University of Southampton: *See—*
  - Legge, Morris James; Phipps, John Alastair; and Corbett, Roger Patrick, 3,871,580.
- Unruh, Dale H.; and Yates, Jan B., to Caterpillar Tractor Co. Suspension hydraulic roll stabilizer with leveling. 3,871,635, Cl. 267-11.000.
- Upper, Gerd: *See—*
  - Franz, Dietmar; Schoneberger, Willi; and Upper, Gerd, 3,871,666.
- Urayama, Yuji: *See—*
  - Murata, Masamichi; Urayama, Yuji; and Furusawa, Takamasa, 3,872,254.
- Ury, Michael G.: *See—*
  - Spero, Donald M.; Eastlund, Bernard J.; and Ury, Michael G., 3,872,349.
- Ushankov, Evgeny Petrovich: *See—*
  - Zaderei, Nikolai Nikolaevich; Nikiforov, Arnold Serafimovich; and Ushankov, Evgeny Petrovich, 3,871,689.
- Uskokovic, Milan Radoje: *See—*
  - Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,872,129.
- USM Corporation: *See—*
  - Dorosz, Adolph S.; Schaefer, Hans F., Jr.; and Sprague, Gordon V., Jr., 3,871,532.
  - Meyer, Engelbert A., 3,871,430.
- Utsunomiya, Shinhachi: *See—*
  - Kageyama, Katsuhiro; and Utsunomiya, Shinhachi, 3,872,377.
- Vaida, Peter P. Level vial. 3,871,109, Cl. 33-379.000.
- Valiela, Jose, to Interpace Corporation. Apparatus for printing on ceramics tableware. 3,871,293, Cl. 101-41.000.
- Van Dorn Company: *See—*
  - Stargell, Donald E., 3,871,314.
- van Berkum, Wilmer T.: *See—*
  - Johnson, Thomas P.; and van Berkum, Wilmer T., 3,871,368.
- Van Buren, Arnie Lee: *See—*
  - Rogers, Peter H.; and Van Buren, Arnie Lee, 3,872,421.
- Van Dalen, Cornelis Jan, to Intergadgets AG. Device for vaporizing substances. 3,872,280, Cl. 219-271.000.
- Van De Goor, Adrianus J.; and Hughes, Leonard B., to Digital Equipment Corporation. Data processing system for multiplying and intergerizing floating point numbers. 3,871,578, Cl. 235-164.000.
- Vanderlinden, Pierre. Aseptic disposable mule or slipper. 3,871,116, Cl. 36-11.500.
- Van Der Vlasakker, Wilhelmus, to Rank Xerox Limited. Blade cleaning system. 3,871,762, Cl. 355-15.000.
- Van Der Wal, Uilko: *See—*
  - Schulte, Anthonius Maria; and Van Der Wal, Uilko, 3,871,778.
- van der Zee, Tjeerd Pieter: *See—*
  - Hulsbosch, Cornelis Jozef; and van der Zee, Tjeerd Pieter, 3,872,328.
- Vandesande, Georges: *See—*
  - Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, 3,871,831.
- Van Esch, Robert Florent: *See—*
  - De Belder, Maurice Hector; Bollen, Romain Henri; and Van Esch, Robert Florent, 3,872,309.
- Van Horn, James. Bracket support structure. 3,871,784, Cl. 403-236.000.
- Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., to Brattle Instrument Corporation. Timing biological imaging, measuring, and therapeutic timing systems. 3,871,360, Cl. 128-2.05R.
- Vann, Roy R.; and George, Flint R., to Vann Tool Company, Inc. Packer actuated vent assembly. 3,871,448, Cl. 166-128.000.
- Vann Tool Company, Inc.: *See—*
  - Vann, Roy R.; and George, Flint R., 3,871,448.
- Vaughan-Jones, Ian Norman, to Ferranti Limited. Television systems. 3,872,244, Cl. 178-6.800.
- Vaughn, Walter Lee; and Beam, Robert James, to Dow Chemical Company, The. Cellulosic materials internally sized with low molecular weight copolymers of alpha, beta-ethylenically unsaturated hydrophobic monomers and ammoniated carboxylic acid comonomers. 3,872,039, Cl. 260-17.4ST.
- Velcro S.A.: *See—*
  - De Brabander, Jean, 3,871,933.
- Velsicol Chemical Corporation: *See—*
  - Krenzer, John, 3,872,298.
- Verboom, Hermann, to Eduard Kuesters Maschinenfabrik. Method for treating paper. 3,871,290, Cl. 100-39.000.
- Verdol S.A.: *See—*
  - Servillat, Gabriel, 3,871,412.
- Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
  - Filter, Walther, 3,871,417.
- Vetco Offshore Industries, Inc.: *See—*
  - Ahlstone, Arthur G., 3,871,449.
  - Larralde, Edward; and Robinson, Glen, 3,871,622.
- Vibrodyne, Inc.: *See—*
  - Isaacson, Max, 3,871,136.

- Victor Company of Japan, Ltd.: *See—*
  - Murata, Masamichi; Urayama, Yuji; and Furusawa, Takamasa, 3,872,254.
- Viescou, Claude, to Compagnie Industrielle Des Piles Electriques "Cipel". Negative electrode for electrochemical generator. 3,871,918, Cl. 136-30.000.
- Vignaud, Jean-Pierre; Sebire, Claude; and Riss, Pierre, to Regie Nationale Des Usines Renault. Methods of and devices for braking and indexing the spindle of a machine tool rotating at high speed. 3,872,365, Cl. 318-265.000.
- Vilen, Erik O.; and Zygas, Vytas, to G. S. Blakeslee & Co. Self leveling mechanism for tray cart. 3,871,725, Cl. 312-71.000.
- Villiard, Frederick Phillip: *See—*
  - Swengel, Robert Charles, Sr.; Lemke, Timothy Allen; and Villiard, Frederick Phillip, 3,872,236.
- Villiers-Fisher, John F.; and Coles, Edward T., to Chemical Construction Corporation. Process with fluidized combustor and fluidized heat exchanger for air. 3,871,172, Cl. 60-39.020.
- Vissers, Bastiaan; and Teunissen, Willem. Process for regenerating resin-bonded foundry sand. 3,871,438, Cl. 164-5.000.
- Vock, Manfred Hugo: *See—*
  - Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., 3,872,031.
- Vogel, Christian: *See—*
  - Sturm, Elmar; Cellarius, Hans Joerg; and Vogel, Christian, 3,872,126.
- Vogel, Ludwig: *See—*
  - Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
- Vogler, Paul A., to "Strolee" of California, a division of U.S. Industries, Inc. Connecting device for load bearing members. 3,871,783, Cl. 403-205.000.
- Vogt, Harald; and Moller, Walter, to International Telephone and Telegraph Corporation. Rotary-piston motor with improved cylinder chamber moving seals. 3,871,799, Cl. 418-178.000.
- Vold, Ingebret Hadland; and Taylor, David Hutton, to Thermo King Corporation. Demountable transportation refrigeration unit. 3,871,188, Cl. 62-298.000.
- Volkswagenwerk Aktiengesellschaft: *See—*
  - Geiger, Istvan; and Decker, Gerd, 3,871,351.
  - Kirschner, Peter; and Rauer, Heinz Gunter, 3,871,682.
  - Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,871,470.
- Vollmer, Arthur C.: *See—*
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,188.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,189.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,190.
- Voltz, Jacques: *See—*
  - Koller, Stefan; Zink, Rudolf; Reichel, Dieter; and Voltz, Jacques, 3,872,132.
- Volvo Flygmotor Aktiebolag: *See—*
  - Johansson, Roy Ingvar Mendel; and Lagerqvist, Roy S. G., 3,871,782.
- Von Roll AG: *See—*
  - Spillman, Kurt; and Arx, Georg Von, 3,871,287.
- von Behrens, Wieland E.; and Oates, Gordon C., to Nuclear Data, Inc. Hydrodynamic focusing method and apparatus. 3,871,770, Cl. 356-103.000.
- von Bose, Robert J.: *See—*
  - Dial, Darrell D.; and von Bose, Robert J., 3,871,529.
- Von der Ohe, Manfred: *See—*
  - Senft, Ernst; and Von der Ohe, Manfred, 3,871,467.
- Von Luders, Kirill. Exchangeable keyboard for ball typewriters. 3,871,506, Cl. 197-98.000.
- Vourlis, Harry: *See—*
  - Beatty, Theodore R.; and Vourlis, Harry, 3,871,921.
- Vuaille, Andre, to Societe Industrielle Generale de Mechanique Appliquee S.I.G.M.A. Device for controlling the delivery per revolution of an internal combustion engine injection pump. 3,871,346, Cl. 123-140.0FG.
- Vul, Alexandr Yakovlevich; Shik, Alexandr Yakovlevich; Dobryakova, Natalia Alexandrovna; Saidashev, Ibragim Ibragimovich; and Shmartsev, Jury Vasilievich. Optoelectronic device. 3,872,300, Cl. 250-205.000.
- Vydrin, Vladimir Nikolaevich; Ageev, Leonid Matveevich; and Gustov, Vladimir Alexandrovich. Continuous strip rolling mill. 3,871,221, Cl. 72-205.000.
- W. M. Chace Company: *See—*
  - Steigelman, James Q., 3,871;926.
- W. R. Grace & Co.: *See—*
  - Blaser, Alfred, 3,871,155.
  - Lowry, Robert D.; and Harrison, John W., 3,872,194.
- Wada, Mitsuru: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Maeshima, Haruko; and Izuo, Nobuhiko, 3,871,959.
- Wagner, Richard: *See—*
  - Harper, John D.; Breyer, Frederick; and Wagner, Richard, 3,871,190.
- Wagner, Richard C., to Integral Process Systems, Inc. Apparatus and method for refrigerating articles. 3,871,186, Cl. 62-64.000.
- Wagner, Richard C.: *See—*
  - Harper, John D.; Breyer, Frederick; and Wagner, Richard C., 3,871,185.
- Wagner, Vilma M.: *See—*
  - Cuttill, William E.; and Wagner, Vilma M., 3,872,438.
- Wagner, William, to Watsco, Inc. Disconnectable supply conduit for hair spray systems. 3,871,584, Cl. 239-307.000.
- Waku, Shigeru; Hayashi, Shintaro; Shibata, Hiroyuki; and Kawashima, Takehisa, to Nippon Telegraph & Telephone Public Corporation. Visual information storage and display device. 3,871,745, Cl. 350-150.000.
- Walcker, Jake J. Fuel system for internal combustion engine. 3,872,191, Cl. 261-145.000.
- Walker, James Donald, to Chicago Bridge & Iron Company. High-oxygen treatment of waste with selective oxygen recirculation. 3,872,003, Cl. 210-63.000.
- Wall, Clarence J., to Dorr-Oliver Incorporated. Calcination of high moisture content phosphate rock. 3,872,211, Cl. 423-167.000.
- Wallace, Henry J. Rolled steel products and a method of making the same. 3,871,058, Cl. 29-403.000.
- Wallace, John Paul: *See—*
  - Brooks, Robert A.; and Wallace, John Paul, 3,872,379.
- Wallace, William E., to GAF Corporation. Method of preparing quinophthalone dyes. 3,872,131, Cl. 260-289.0QP.
- Wallshein, Melvin. Orthodontic spring clip. 3,871,096, Cl. 32-14.00A.
- Walter, Goerge R.: *See—*
  - Manowitz, Milton; Walter, Goerge R.; and Foris, Stephen, Jr., 3,871,860.
- Walter J. Kreske: *See—*
  - Quick, Elwyn B., 3,871,143.
- Walther, Gerhard: *See—*
  - Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,872,127.
- Wanetzky, Erwin; and Kuklok, Gerhard, to Leybold-Heraeus-Verwaltung GmbH. Apparatus for sintering pressed powder elements containing hydrocarbons. 3,871,630, Cl. -.
- Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, to Deggendorfer Werft und Eisenbau GmbH. Reaction apparatus for carrying out exothermic and endothermic chemical processes with radial flow of a heat exchange medium. 3,871,445, Cl. 165-107.000.
- Wardley, John: *See—*
  - Davis, Gordon Peter; and Wardley, John, 3,872,337.
- Warnaco, Inc.: *See—*
  - Aldrich, William E., 3,871,909.
- Warnecke, Rolf: *See—*
  - Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,871,470.
- Wasko, Elmer J., to Goodyear Tire & Rubber Company, The. Apparatus used in bonding a precured tread on a tire casing. 3,871,941, Cl. 156-394.000.
- Wasson, Kenneth L.: *See—*
  - Murray, Jay P.; and Wasson, Kenneth L., 3,871,150.
- Watanabe, Akinori: *See—*
  - Sasaki, Rentaro; Watanabe, Akinori; and Ogasawara, Tatsuo, 3,872,352.
  - Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,872,464.
- Watanabe, Akio: *See—*
  - Kanda, Masao; and Watanabe, Akio, 3,871,326.
- Watanabe, Kazuhiro: *See—*
  - Yamamoto, Hajime; and Watanabe, Kazuhiro, 3,872,381.
- Watanabe, Koichiro; and Arai, Akihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Remote control of camera built-in light measuring device. 3,872,481, Cl. 354-23.000.
- Watanabe, Takao; Kohchi, Akira; and Fujii, Toshinobu, to Kabushiki Kaisha Meidensha. Quartz crystal resonator and a method for fabrication thereof. 3,872,411, Cl. 333-72.000.
- Watanabe, Tetsuya; and Suzuki, Noboru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for use in quenching and absorbing gas emanating from a waste incinerator. 3,871,305, Cl. 110-119.000.
- Waters, Paul F.: *See—*
  - Hadermann, Albert F.; Waters, Paul F.; and Woo, Jung Woo, 3,871,990.
- Watsco, Inc.: *See—*
  - Wagner, William, 3,871,584.
- Watson, Clarence V. Holding tank for campers. 3,871,399, Cl. 137-344.000.
- Watson, Robert George. Grain hopper structure. 3,871,148, Cl. 52-197.000.
- Watson, Thomas H.: *See—*
  - Blank, Wallace J.; and Watson, Thomas H., 3,871,677.
- Watts, John D. Surface finishing and plating apparatus. 3,871,983, Cl. 204-209.000.
- Wax, Bernard. Spark plug. 3,872,338, Cl. 313-130.000.
- Waxgiser, Martin A.; and Foreman, Leonard. Combination safe. 3,871,197, Cl. 70-63.000.
- Way, Kenneth Richard: *See—*
  - Eyre, John Richard; Way, Kenneth Richard; and Kielty, David Neil, 3,872,237.
- Weaver, Richard L. Cylindrical core assembly for silo construction. 3,871,612, Cl. 249-184.000.
- Weber, Howard F., to Motorola, Inc. Constant dwell ignition system. 3,871,347, Cl. 123-148.00E.
- Wedrall, Edwin J. Underwater timer and release device. 3,871,044, Cl. 9-9.000.
- Weigel, Hugo K., to Jay R. Smith Mfg. Co. Face plate gasket. 3,871,034, Cl. 4-252.00R.
- Weigele, Manfred: *See—*
  - Leimgburger, Willy; and Weigele, Manfred, 3,871,825.

- Weigert, Hans, to Ragen Semiconductor, Inc. Discriminator circuit. 3,872,322, Cl. 307-231.000.
- Weigl, James, to Puritan-Bennett Corporation. Respiration supply and control. 3,871,371, Cl. 128-145.800.
- Weimann, Gunter: *See—*
  - Bergmeyer, Hans Ulrich; Nelboeck-Hochstetter, Michael; Michal, Gerhard; Muhlegger, Klaus; Weimann, Gunter; and Roesch, Egon, 3,872,082.
- Weis, Claus; and Fischer, Hanspeter, to Ciba-Geigy Corporation. 1-Alkoxycarboxylic acid derivatives for the regulation of plant growth. 3,872,141, Cl. 260-413.000.
- Weiser, Dieter: *See—*
  - Daubach, Ewald; Windel, Hermann; Boehm, Walter; Weiser, Dieter; and Herrmann, Manfred, 3,872,056.
- Weiss, Ray Franklin, to United States of America, Navy. Permeable membrane gas saturometer. 3,871,228, Cl. 73-19.000.
- Weissler, Harold E.: *See—*
  - Peterson, Steven H.; Carp, Ralph W.; and Weissler, Harold E., 3,872,317.
- Wellin, Martin, to U.S. Industrial Tool & Supply Co. Tubular fastener setting power tool. 3,871,203, Cl. 72-114.000.
- Wells, Ronald K.; and Allen, Charles W., to Wells, Ronald K. Method of tuning an electronic keyboard instrument in pure scale and apparatus therefor. 3,871,261, Cl. 84-1.010.
- Wells, William Y.: *See—*
  - Miller, Darrow L.; and Wells, William Y., 3,872,330.
- Welsch, Walter N., to Dynabrade Inc. Die grinder. 3,871,138, Cl. 51-170.0PT.
- Welsh, Norman C.: *See—*
  - Pomfret, Edward E.; and Welsh, Norman C., 3,871,074.
- Wengert, Paul R.: *See—*
  - Dietz, Earl D.; and Wengert, Paul R., 3,871,853.
- Wentz, Edward A.; and Shinnick, David M., to American Chain & Cable Company, Inc. Sorter system induction means. 3,871,511, Cl. 198-103.000.
- Weppner, Benjamin H.: *See—*
  - Jarosik, Norman A.; and Weppner, Benjamin H., 3,872,461.
- Werner, Leo C.; Lin, Francis C. M.; and Knochel, William J., to Westinghouse Electric Corporation. Electrode support element for ceramic discharge lamp. 3,872,341, Cl. 313-217.000.
- Wesley, Edwin M. Dandelion picker tool. 3,871,696, Cl. 294-50.600.
- West, Paul B.: *See—*
  - Savageau, Richard J.; and West, Paul B., 3,871,087.
- Western Electric Company, Incorporated: *See—*
  - Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,871,936.
- Westfalia Separator AG: *See—*
  - Niemeyer, Heinrich, 3,871,575.
- Westinghouse Electric Corporation: *See—*
  - Avellar, Karl B.; and Ross, James A., 3,871,577.
  - Crawford, Thomas G.; and Kearse, William E., 3,871,601.
  - Davis, John R., Jr.; and Krishna, Surinder, 3,872,494.
  - Goldstein, Norman P.; and Todt, William H., 3,872,311.
  - Krishna, Surinder; and Malmberg, Paul R., 3,872,326.
  - Petersen, Sigrud R.; Ying, Sui-Chun; and Mann, August C., 3,872,335.
  - Putman, Richard E. J., 3,872,286.
  - Roberts, John S.; and Cresswell, Michael W., 3,872,493.
  - Schimmeyer, Werner K.; Wood, Norman J.; and McCargar, Joseph V., 3,871,527.
  - Shum, Lanson Y.; Sienkiewicz, Leon J.; and Gogniat, Theodore, 3,872,285.
  - Shutterly, Harold B., 3,872,503.
  - Werner, Leo C.; Lin, Francis C. M.; and Knochel, William J., 3,872,341.
  - Willard, Frank G., 3,872,389.
- Westvaco Corporation: *See—*
  - Doughty, Joseph B., 3,871,893.
  - Nikkel, Willem A., 3,871,539.
- Weyerhaeuser Company: *See—*
  - Tiedeman, George T.; and Gillem, Maurice F., 3,872,051.
- Wharton, Franklin Eugene. Dental floss applicator. 3,871,393, Cl. 132-92.00A.
- Wharton, Franklin Eugene. Container closure. 3,871,547, Cl. 220-287.000.
- Wharton, Paul B., Jr., to Kinetics Container Corporation. Divider for a container. 3,871,569, Cl. 229-15.000.
- Wheelus, Charles Glenn: *See—*
  - Thorpe, Susan Dale; Davis, Curry Beach; and Wheelus, Charles Glenn, 3,872,073.
- Whirlpool Corporation: *See—*
  - Fish, Warren H., 3,871,847.
  - Linstromberg, William J., 3,871,242.
- Whistler, Harold J.: *See—*
  - Whistler, Lawrence V., Jr.; Whistler, Lawrence V., III; and Whistler, Harold J., 3,871,254.
- Whistler, Lawrence V., Jr.; Whistler, Lawrence V., III; and Whistler, Harold J. Means for piercing and stripping thick material. 3,871,254, Cl. 83-139.000.
- Whistler, Lawrence V., III: *See—*
  - Whistler, Lawrence V., Jr.; Whistler, Lawrence V., III; and Whistler, Harold J., 3,871,254.
- White, Clarence E., to White Welding & Mfg. Inc. Door lock safety release means. 3,871,694, Cl. 293-92.000.
- White, David B.: *See—*
  - Shoemaker, Edwin J.; Ruble, Harold P.; and White, David B., 3,871,704.
- White, Frank F., to Automation Development Corporation. Automatic bar handling system. 3,871,288, Cl. 100-2.000.
- White, Irvin M.: *See—*
  - Larson, Martin E.; and White, Irvin M., 3,871,606.
- White, Richard J.; and Lancini, Giancarlo, to Gruppo Lepetit S.p.A. Production of rifamycin B. 3,871,965, Cl. 195-80.00R.
- White Welding & Mfg. Inc.: *See—*
  - White, Clarence E., 3,871,694.
- Whitehouse, Joseph Colin: *See—*
  - McConnell, Eric Douglas; and Whitehouse, Joseph Colin, 3,872,499.
- Whitman, Nelson, to Thor Dahl, Inc. Process and agents for opening paper constructions. 3,871,573, Cl. 229-85.000.
- Wible, Paul E.: *See—*
  - Nestor, David William; and Wible, Paul E., 3,872,354.
- Widegren, Lars Harald; and Keskitalo, Tage Oskar. Device for felling timber. 3,871,427, Cl. 144-34.00E.
- Widmaier, Manfred: *See—*
  - Kruger, Gunter; Baum, Helmut; and Widmaier, Manfred, 3,872,356.
- Wiebke, Gunter: *See—*
  - Kratel, Gunter; Stohr, Gunter; Wiebke, Gunter; and Frey, Volker, 3,872,214.
- Wiedemann, Wolfgang, to Kalle Aktiengesellschaft. Electrophotographic recording material. 3,871,882, Cl. 96-1.500.
- Wigal, Voorhis F. Rate controlling device. 3,871,496, Cl. 188-268.000.
- Wiggins Teape Research & Development Limited: *See—*
  - Robertson, Neil George Douglas, 3,871,952.
- Wild, Albert F., to Tapecon, Inc. Two-speed drive for linear adapter for cassette tape recorder. 3,872,500, Cl. 360-2.000.
- Wild, Albert F., to Tapecon, Inc. Simultaneous card and cassette recorder system. 3,872,502, Cl. 360-2.000.
- Wilder, Arthur G.; and Bridwell, Harold C., to Christensen Diamond Products Company. Abrasive particles encapsulated with a metal envelope of allotriomorphic dentrites. 3,871,840, Cl. 51-295.000.
- Wilder, Leslie N.; Soltis, George L.; Nenninger, Theodore P.; and Ciaraldi, Anthony, to Dictaphone Corporation. Hand-held dictate and playback instrument. 3,872,263, Cl. 179-100.1DR.
- Wiles, David M.: *See—*
  - Carlsson, David J.; Suprunchuk, Tony; and Wiles, David M., 3,871,901.
- Wilhite, George W. Bale measuring device. 3,871,289, Cl. 100-4.000.
- Wilkinson, Alvin H. Load control apparatus for cranes. 3,871,528, Cl. 212-39.00R.
- Willard, Frank G., to Westinghouse Electric Corporation. Signal processor. 3,872,389, Cl. 328-137.000.
- Willemsen, Hans: *See—*
  - Muhr, Heinrich; Sprenger, Wolfgang; Schnitzler, Franz-Dieter; Degenkolbe, Adolf; Willemsen, Hans; Bruss, Horst; Blumberg, Willy; and Belsdorf, Manfred, 3,871,192.
- Willett, Harold A., to Cane Machinery & Engineering Company, Inc. Sugar cane conveyor and cutter for cut windrowed cane. 3,871,256, Cl. 83-355.000.
- Williams, Albert M. Power control system. 3,872,371, Cl. 321-16.000.
- Williams, James W. External swivel connections for corrugating machine. 3,871,809, Cl. 425-370.000.
- Williams, Malcolm: *See—*
  - Jones, Christopher Robin; Williams, Malcolm; and Brunt, Geoffrey Albert Kenyon, 3,872,404.
- Willington, Frederick Lane. Incontinence pads. 3,871,037, Cl. 5-91.000.
- Wilson, Elmer M.: *See—*
  - Sweeny, Keith H.; Fischer, James R.; Lung, Charles A.; and Wilson, Elmer M., 3,871,906.
- Wilson, Johnnie; and Christensen, Robert F. Mechanical fly swatter. 3,871,125, Cl. 43-135.000.
- Windel, Hermann: *See—*
  - Daubach, Ewald; Windel, Hermann; Boehm, Walter; Weiser, Dieter; and Herrmann, Manfred, 3,872,056.
- Windtie Corporation: *See—*
  - Abbott, Donald W., 3,871,142.
- Winkley, Jerry H.: *See—*
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,188.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,189.
  - Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,872,190.
- Winn, William D.; and Dunn, James L., Jr., to Dow Chemical Company, The. Package dye process. 3,871,821, Cl. 8-149.100.
- Winrow, Donald; and Smith, Charles Norman, to Ferranti-Packard Limited. Magnetically actuable element. 3,871,945, Cl. 161-44.000.
- Winter, Gerhard, to Bayer Aktiengesellschaft. Purification of vanadium-containing $TiCl_4$ by heating with $TiCl_3 0.33\ AlCl_3$. 3,871,874, Cl. 75-84.500.
- Winter, Stanley R.: *See—*
  - Collman, James P.; Winter, Stanley R.; and Komoto, Robert G., 3,872,168.
  - Collman, James P.; and Winter, Stanley R., 3,872,218.
- Winters, Luther R., to Exxon Research and Engineering Company. Facsimile apparatus. 3,872,248. Cl. 178-7.600.
- Wishart, George L.: *See—*
  - Linn, Donald F.; and Wishart, George L., 3,871,500.

- Wissmann, Hans: *See—*
  - [illegible] Wolfgang; Geiger, Rolf; and Wissmann, Hans, 3,872,074.
- Wistuba, Hermann; Sprague, Michael Jolyon; Engelbach, Heinz; Armbrust, Herbert; and Sturm, Hans-Juergen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of anthraquinone. 3,872,134, Cl. 260-369.000.
- Wistuba, Hermann: *See—*
  - Reinicke, Helmut; Stockburger, Dieter; Teutsch, Theo; Vogel, Ludwig; Wistuba, Hermann; and Engelbach, Heinz, 3,872,135.
- Witherow, Robert G.: *See—*
  - Menke, James A.; and Witherow, Robert G., 3,871,603.
- Witte, Helmut; and Seeliger, Wolfgang, to Chemische Werke Huels Aktiengesellschaft. 2-Aminoalkyl-substituted cyclic imido esters and process for the preparation thereof. 3,872,096, Cl. 260-307.00F.
- Wohlfarth, Arnon, to Bayer Aktiengesellschaft. Vessel for pneumatically mixing powdered or granular material. 3,871,626, Cl. 259-36.000.
- Wold, Ivar, to Analog Devices, Incorporated. Integrating analog-to-digital converter having digitally-derived offset error compensation and bipolar operation without zero discontinuity. 3,872,466, Cl. 340-347.0NT.
- Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, to Sulzer Brothers Limited. Jacquard mechanism. 3,871,415, Cl. 139-59.000.
- Wolters, Ernst: *See—*
  - Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 3,872,182.
- Wolverine World Wide, Inc.: *See—*
  - Egtvedt, Robert B.; Den Bleyker, John R.; and Zwiep, Theodore C., 3,871,306.
- Wong, Walter C. Auxiliary system for decelerating vehicle. 3,871,471, Cl. 180-82.00R.
- Woo, Jung Woo: *See—*
  - Hadermann, Albert F.; Waters, Paul F.; and Woo, Jung Woo, 3,871,990.
- Wood, Frank Chiltern; and Barker, Allan, to United Kingdom Atomic Energy Authority. Multistage evaporators. 3,871,968, Cl. 202-173.000.
- Wood, James; and Sunnett, George. Oil suction and discharge hose. 3,871,408, Cl. 138-137.000.
- Wood, Norman J.: *See—*
  - Schimmeyer, Werner K.; Wood, Norman J.; and McCargar, Joseph V., 3,871,527.
- Woodall Industries Inc.: *See—*
  - Woodrich, Kenneth H., 3,871,316.
- Woodling, Gerald L., to Goodyear Tire & Rubber Company, The. Transportation system. 3,871,303, Cl. 104-173.000.
- Woodrich, Kenneth H., to Woodall Industries Inc. Catamaran. 3,871,316, Cl. 114-61.000.
- Woods, Lee O., to General Electric Company. Process for mounting terminal means. 3,871,939, Cl. 156-293.000.
- Wool Research Organization of New Zealand (Inc.): *See—*
  - Stewart, Rex George; Barker, Gerald Vivian; and Hoare, John Leonard, 3,871,820.
- Workman, Robert E., to B. F. Goodrich Co., The. Window wiper assembly. 3,871,049, Cl. 15-250.040.
- Wright, Dale W., to Miles Machinery Company. Chuck apparatus for clamping varied sized workpieces to be machined. 3,871,670, Cl. 279-2.00R.
- Wright, Donald; and Gardner, Samuel, to Imperial Chemical Industries Limited. Process for the production of unsaturated organic compounds. 3,872,153, Cl. 260-475.00N.
- Wright, Joseph H., to Polaroid Corporation. Photographic film handling cassette and apparatus. 3,871,755, Cl. 352-130.000.
- Wright, Peter C.; and Kirsch, Donald L., to Gidon Industries, Inc. Pipe clamp. 3,871,690, Cl. 285-226.000.
- Wrisberg, Johannes: *See—*
  - Andersen, Kjeld Jorn; Fischer, Finn; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,872,179.
- Wrobel, Charles V.: *See—*
  - Dian, Walter; and Wrobel, Charles V., 3,871,710.
- Wszolek, Walter R.: *See—*
  - Kehr, Clifton L.; and Wszolek, Walter R., 3,872,150.
  - Kehr, Clifton L.; and Wszolek, Walter R., 3,872,151.
  - Kehr, Clifton L.; and Wszolek, Walter R., 3,872,152.
- Wunsch, Gerd; Kiener, Volker; Fuchs, Friedrich; Himmele, Walter; and Fliege, Werner, to BASF Aktiengesellschaft. Dibromobutyl phosphoronitride esters. 3,872,070, Cl. 260-927.00N.
- Wunsche, Edgar, to Engineered Metal Products Company, Inc. Modular divisible barrel-shaped shell for metallurgical furnaces. 3,871,632, Cl. 266-35.000.
- Wurth, Hans-Jorg, to Knorr-Bremse GmbH. Brake control device for railway vehicles. 3,871,718, Cl. 303-22.00R.
- Wynn, John P.: *See—*
  - Anesi, Mario; Macri, Salvatore; and Wynn, John P., 3,871,504.
- Xerox Corporation: *See—*
  - Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 3,871,904.
  - Kukucka, William P.; and Acquaviva, Thomas, 3,871,643.
- Xynetics, Inc.: *See—*
  - Pease, Edmund M., 3,872,445.
- Yamada, Shigeki: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Maeshima, Haruko; and Izuo, Nobuhiko, 3,871,959.
- Yamagishi, Fumiaki; and Kitagawa, Kenro, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Detergent compositions. 3,872,020, Cl. 252-89.000.
- Yamaguchi, Akio: *See—*
  - Yamazaki, Eiichi; and Yamaguchi, Akio, 3,872,345.
- Yamahata, Takashi: *See—*
  - Iomiyama, Yoshimichi; Yamahata, Takashi; and Yasuda, Tomoya, 3,871,065.
- Yamamoto, Hajime; and Watanabe, Kazuhiro, to Nippon Telephone and Telephone Public Corporation. Digital transmission system. 3,872,381, Cl. 325-42.000.
- Yamamoto, Yushi, to Nippondenso Co., Ltd. Secondary air supply system for an internal combustion engine. 3,871,175, Cl. 60-307.000.
- Yamamura, Kinzo: *See—*
  - Matsui, Kazumi; Umemori, Takashi; Shibata, Yutake; and Yamamura, Kinzo, 3,871,727.
- Yamanaka, Masami; and Masuda, Yasutoshi, to Yamato Scale Company, Limited. Axle load meter. 3,871,491, Cl. 177-45.000.
- Yamanaka, Teruo; and Sato, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toyota Cluo Kenkyusho. Method and apparatus for measuring distance to moving target. 3,872,475, Cl. 343-14.000.
- Yamasaki, Makoto: *See—*
  - Murakami, Shiro; Kanda, Kenzi; Nakajyo, Jiro; and Yamasaki, Makoto, 3,871,166.
- Yamashita, Takashi: *See—*
  - Saito, Hideomi; Yamashita, Takashi; Munezawa, Takuro; and Kato, Tetsuya, 3,872,142.
- Yamatani, Tetsuo: *See—*
  - Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Sato, Naotake; and Toi, Koji, 3,872,110.
- Yamato Scale Company, Limited: *See—*
  - Yamanaka, Masami; and Masuda, Yasutoshi, 3,871,491.
- Yamauchi, Takeshi, to Kobe Steel, Ltd. Method for increasing the strength of a multiple-layer shell type cylindrical presssure vessel. 3,871,313, Cl. 113-120.00S.
- Yamazaki, Akihiro: *See—*
  - Okutsu, Masaru; and Yamazaki, Akihiro, 3,872,083.
- Yamazaki, Eiichi; and Yamaguchi, Akio, to Hitachi, Ltd. Colour picture tubes. 3,872,345, Cl. 313-403.000.
- Yamazaki, Keigi: *See—*
  - Takahasi, Takemitsu; Yamazaki, Keigi; and Tanaka, Hirosi, 3,871,938.
- Yamazi, Takahiko: *See—*
  - Takase, Shinji; and Yamazi, Takahiko, 3,872,029.
- Yanagi, Osamu: *See—*
  - Kurii, Masaaki; Kobari, Kyoshi; and Yanagi, Osamu, 3,872,316.
- Yano, Tsuyoshi; Onishi, Hiroshi; and Tanaka, Inahide, to Onoda Cement Co., Ltd. Method for continuously manufacturing shaped gypsum articles. 3,872,204, Cl. 264-102.000.
- Yasuda, Naohiko; Ariyoshi, Yasuo; and Toi, Koji, to Ajinomoto Co., Inc. Method of producing active amino acid esters. 3,872,099, Cl. 260-326.400.
- Yasuda, Tomoya: *See—*
  - Iomiyama, Yoshimichi; Yamahata, Takashi; and Yasuda, Tomoya, 3,871,065.
- Yasui, Teruo: *See—*
  - Shimizu, Tohru; Yasui, Teruo; and Nakamura, Sieshiro, 3,872,163.
- Yates, Jan B.: *See—*
  - Unruh, Dale H.; and Yates, Jan B., 3,871,635.
- Yeakley, John, to American Enterprise of Charlotte, Inc. Vehicle pacer system and a method of spacing moving vehicles along a traffic lane of a roadway. 3,872,423, Cl. 340-43.000.
- Ying, Sui-Chun: *See—*
  - Petersen, Sigrud R.; Ying, Sui-Chun; and Mann, August C., 3,872,335.
- Yoder Company, The: *See—*
  - O'Neil, Francis P.; Krauss, Ferd A.; Sambenedetto, Vincent; and Cooper, Christopher C., 3,871,594.
- Yodogawa Steel Works Ltd.: *See—*
  - Yokota, Reizo, 3,871,875.
- Yokota, Reizo, to Yodogawa Steel Works Ltd. Flux composition and a centrifugal casting process using the same. 3,871,875, Cl. 75-94.000.
- Yokoyama, Jiro: *See—*
  - Sato, Takayuki; Ota, Hideo; Yokoyama, Jiro; and Nakamura, Takashi, 3,871,411.
- Yokozeki, Makoto: *See—*
  - Otoda, Ichizo; Nakamura, Akio; Kanehisa, Takashi; Taki, Yasuo; and Yokozeki, Makoto, 3,871,206.
- Yonekura, Michimasa: *See—*
  - Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; Abe, Takashi; and Yonekura, Michimasa, 3,871,975.
- Yonenaga, Tasushi: *See—*
  - Adachi, Motoharu; Nishizawa, Shunichi; Ishida, Michiyasu; Kaneko, Takashi; and Yonenaga, Tasushi, 3,871,062.
- Yoshida, Okio: *See—*
  - Shimizu, Kazuo; and Yoshida, Okio, 3,872,344.
- Yoshida, Takaomi, to Kabushiki Kaisha Tokai Rika Seisakusho. Electrical signal transmitting system. 3,872,436, Cl. 340-147.0PC.
- Yoshihara, Yasuhiko: *See—*
  - Kubota, Koji; Yoshihara, Yasuhiko; and Okada, Hiroshi, 3,871,960.
- Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Cassette type magnetic recording and reproducing apparatus. 3,872,509, Cl. 360-137.000.

- Yoshikawa, Shinsuke; and Sawa, Yuji, to Kureka Kagaku Kogyo Kabushiki Kaisha; and Mitsui Toatsu Chemicals Inc. Method for producing biaxially stretched receptacles by blow molding. 3,872,203, Cl. 264-94.000.
- Yoshikawa, Yoshio; and Suzumori, Takeo, to Mitsubishi Gas Chemical Co., Ltd. Method for producing anhydrous sodium hydrosulphite using sodium formate, formic acid or formic acid ester. 3,872,221, Cl. 423-515.000.
- Yoshimura, Susumu: *See—*
  - Murakami, Mutsuaki; and Yoshimura, Susumu, 3,872,358.
- Yoshino, Masatsugu: *See—*
  - Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Konno, Tsugio, 3,871,950.
- Yoshioka, Yoshio, to Hitachi, Ltd. Circuit breaker. 3,872,272, Cl. 200-148.00A.
- Young, Carter R.: *See—*
  - Sizer, Phillip S.; and Young, Carter R., 3,871,456.
- Young, James Whitehurst, to Dresser Industries, Inc. Spring load system for drill string shock absorbers. 3,871,193, Cl. 64-23.000.
- Yuasa Battery Company Limited: *See—*
  - Ikeda, Seiichiro, 3,871,923.
- Zaderei, Nikolai Nikolaevich; Nikiforov, Arnold Serafimovich; and Ushankov, Evgeny Petrovich. Device for sealing a high-temperature conduit. 3,871,689, Cl. 285-189.000.
- Zahorsky, James Theodore: *See—*
  - Cleveland, James Leonard; Jones, Richard Alfred; Larson, Theodore Edwin; McNary, Kenneth Rogers; and Zahorsky, James Theodore, 3,872,444.
- Zax, Grigory Iosifovich: *See—*
  - Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,871,638.
- Zeile, Karl: *See—*
  - Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; and Engelhardt, Albrecht, 3,872,147.
- Zeman, Paul R.: *See—*
  - Mueller, Floyd F.; Aulik, Clarence J.; and Zeman, Paul R., 3,871,637.
- Zemon, Stanley: *See—*
  - Bridger, Andrew; Dakss, Mark L.; Zemon, Stanley; and Stone, Samuel M., 3,871,744.
- Zenith Radio Corporation: *See—*
  - Adler; Robert; and Knitter, Roger W., 3,872,241.
  - Banach, Frank G., 3,872,387.
  - Falco, Guy N., 3,872,331.
- Zepell, Nathan A. Mechanical writing instrument. 3,871,775, Cl. 401-31.000.
- Zick, Warren H., to PPG Industries, Inc. Herbicide and method for controlling weeds. 3,871,866, Cl. 71-106.000.
- Zimmerman, Merritt A., to Tetrahedron Associates, Incorporated. Rotary valve internal combustion engine. 3,871,340, Cl. 123-80.0BA.
- Zimmers, Melvin; and Gerber, Gary A., to Coleco Industries, Inc. Convertible game table assembly. 3,871,655, Cl. 273-123.00R.
- Zink, Rudolf: *See—*
  - Koller, Stefan; Zink, Rudolf; Reichel, Dieter; and Voltz, Jacques, 3,872,132.
- Zobel, Don William: *See—*
  - Frederiksen, Thomas M.; and Zobel, Don William, 3,872,323.
- Zodrow, Rudolf. Bottle labeling machine. 3,871,943, Cl. 156-521.000.
- Zoecon Corporation: *See—*
  - Siddall, John E.; and Fried, John H., 3,872,101.
- Zuccaro, Robert: *See—*
  - Pierron, Claude Raymond; Jenny, Jean Paul Joseph; and Zuccaro, Robert, 3,871,028.
- Zucco, Giuseppe: *See—*
  - Pasqualucci, Carmine Renato; and Zucco, Giuseppe, 3,871,966.
- Zucker, Joseph, to GTE Laboratories Incorporated. Surface wave filter for tv if stage. 3,872,410, Cl. 333-72.000.
- Zuckerman, Arie Jeremy, to National Research Development Corporation. Cell lines and virus culture. 3,871,954, Cl. 195-1.100.
- Zulian, Ferruccio: *See—*
  - Tessera, Giancarlo; and Zulian, Ferruccio, 3,872,447.
- Zwickel, Friedrich: *See—*
  - Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,871,936.
- Zwiep, Theodore C.: *See—*
  - Egtvedt, Robert B.; Den Bleyker, John R.; and Zwiep, Theodore C., 3,871,306.
- Zygas, Vytas: *See—*
  - Vilen, Erik O.; and Zygas, Vytas, 3,871,725.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Albert, Rudolf, Firma: *See—*
  - Pechstein, Fred. Re. 28,366.
- Arth, Glen E., D. Johnston, and L. H. Sarett, to Merck & Co., Inc. Ring a unsaturated-20-oxo-11,17-bis-oxygenated 16-methyl steroids of the pregnane series. Re. 28,369, 3–18–75, Cl. 260—397.450.
- Bonarrigo, Joseph F., Jr. Grate bar assembly for a rock crusher. Re. 28,368, 3–18–75, Cl. 241—88.4.
- Braue, Charles E., to Data Appliance Corp. Pressure operated layered electrical switch and switch array. Re. 28,365, 3–18–75, Cl. 200—86.
- Corazza, Marshall L., to Scott Paper Co. International Airport. Method for forming foam articles. Re. 28,364, 3–18–75, Cl. 264—51.
- Data Appliance Corp.: *See—*
  - Braue, Charles E. Re. 28,365.
- Johnston, David: *See—*
  - Arth, Glen E., Johnston, and Sarett. Re. 28,369.
- McDonald, Alexander D.: *See—*
  - Rich, Frank D., Jr., and McDonald. Re. 28,367.
- Merck & Co., Inc.: *See—*
  - Arth, Glen E., Johnston, and Sarett. Re. 28,369.
- Pechstein, Fred, to Rudolf Albert Firma. Atomizing pump. Re. 28,366, 3–18–75, Cl. 239—333.
- Rich, F. D., Housing Corp.: *See—*
  - Rich, Frank D., Jr., and McDonald. Re. 28,367.
- Rich, Frank D., Jr., and A. D. McDonald, to F. D. Rich Housing Corp. Building. Re. 28,367, 3–18–75, Cl. 52—79.
- Sarett, Lewis H.: *See—*
  - Arth, Glen E., Johnston, and Sarett. Re. 28, 369.
- Scott Paper Co. International Airport: *See—*
  - Corazza, Marshall L. Re. 28,364.

LIST OF PLANT PATENTEES

- Cobia, Barnell L., to B. L. Cobia, Inc. Cactaceae plant. 3,690, 3–18–75, Cl. 88.
- Cobia, Barnell L., to B. L. Cobia, Inc. Cactaceae plant family. 3,693. 3–18–75, Cl. 88.
- Cobia, B. L., Inc.: *See—*
  - Cobia, Barnell L. 3,690.
  - Cobia, Barnell L. 3,693.
- Framptons Nurseries Ltd.: *See—*
  - Machin, Barrie J. 3,691.
  - Machin, Barrie J. 3,692.
- Machin, Barrie J. to Framptons Nurseries Ltd. Chrysanthemum plant. 3,691, 3–18–75, Cl. 78.
- Machin, Barrie J., to Framptons Nurseries Ltd. Chrysanthemum plant. 3,692, 3–18–75, Cl. 78.

LIST OF DESIGN PATENTEES

- Ade Tennis, Inc.: *See—*
  - Trager, William R. 234,529.
- Advance Drainage Systems, Inc.: *See—*
  - Sixt, Marty E. 234,516.
- Ahrens, Claude W. Pool for elementary swimming classes. 234,503, 3–18–75, Cl. D13—1.
- Altepeter, Henry. Vehicle body. 234,499, 3–18–75, Cl. D12—85.
- American Micro-Systems, Inc.: *See—*
  - Carlyle, James S. 234,497.
- American Science & Engineering, Inc.: *See—*
  - Davidson, Gilbert. 234,534.
- Barlow, Peter. Laminate trimmer. 234,490, 3–18–75, Cl. D8—98.
- Belopolsky, Ernest M.: *See—*
  - Bobov, Vitislav Y., Belopolsky, Troyansky, and Farberg. 234,544.
- Bobov, Vitislav Y., E. M. Belopolsky, G. L. Troyansky, and A. L. Farberg. X-ray apparatus. 234,544, 3–18–75, Cl. D83—1.
- Bonifant, Bern M., to Flex-A-Lite Corp. Five blade fan. 234,517, 3–18–75, Cl. D23—165.
- Broyhill Co., The: *See—*
  - Kommers, William J. 234,513.
  - Kommers, William J., and Stewart. 234,514.
- Bufton, Rodney D., to The Lucas Electrical Co. Ltd. Flower pot. 234,531, 3–18–75, Cl. D35—3.
- Carl Mfg. Co. Ltd.: *See—*
  - Mori, Chuzo. 234,507.
  - Mori, Chuzo. 234,508.
  - Mori, Chuzo. 234,509.
  - Mori, Chuzo. 234,510.
  - Mori, Chuzo. 234,511.
- Carlyle, James S., to American Micro-Systems, Inc. Digital desk clock. 234,497, 3–18–75, Cl. D10—15.
- Colonial Mirror and Glass Corp.: *See—*
  - Waltzman, Simon V. 234,530.
- Corbin Gentry, Inc.: *See—*
  - Hanagan, Michael W. 234,501.
  - Hanagan, Michael W. 234,502.
- Davidson, Gilbert, to American Science & Engineering, Inc. Thermometer. 234,534, 3–18–75, Cl. D52—7.
- Den-Tal-Ez Mfg. Co.: *See—*
  - Gerlich, Irvin V. 234,518.
- De Tomaso, Alejandro, and T. Tjaarda. Typewriter carrying case. 234,545, 3–18–75, Cl. D87—1.
- Doppelt, Stephen L.: *See—*
  - Freeman, Jefferson, and Doppelt. 234,546.
- Etchison, Richard C. Hydraulic weighing scale. 234,498, 3–18–75. Cl. D10—87.
- Evans, William E. Trolling sinker. 234,512, 3–18–75, Cl. D22—30.
- Famolare, Inc.: *See—*
  - Famolare, Joseph P., Jr. 234,474.
- Famolare, Joseph P., Jr., to Famolare, Inc. Sports boot. 234,474, 3–18–75, Cl. D2—276.
- Farberg, Avrum L.: *See—*
  - Bobov, Vitislav Y., Belopolsky, Troyansky, and Farberg. 234,544.
- Flex-A-Lite Corp.: *See—*
  - Bonifant, Bern M. 234,517.
- Foster, Milton E., to Techni Med Inc. Muscle tone stimulation device. 234,543, 3–18–75, Cl. D83—1.
- Freeman, Jefferson, and S. L. Doppelt, to Xerox Corp. Carrying case. 234,546, 3–18–75, Cl. D87—1.
- Fry, James C., to Rubbermaid Inc. Bird feeder. 234,521, 3–18–75, Cl. D30—13.
- Fry, James C., to Rubbermaid Inc. Bird feeder. 234,522, 3–18–75, Cl. D30—13.
- Gearheart, Max V.: *See—*
  - Wiebe, Hubert J., and Gearheart. 234,488.
- Gerlich, Irvin V., to Den-Tal-Ez Mfg. Co. Combination tooth brush handle and dental floss dispenser. 234,518, 3–18–75, Cl. D24—1.
- Glaberson, Martin, to Warner-Lambert Co. Dispenser for heating a cream, a foam, and the like. 234,482, 3–18–75, Cl. D6—95.
- Groff, William M. Hollow ceramic three dimensional wall tile. 234,504, 3–18–74, Cl. D18—2.
- Grosfillex, Raymond, to Grosfillex S.A.R.L. Chair. 234,479, 3–18–74, Cl. D6—74.
- Grosfillex, Raymond, to Grosfillex S.A.R.L. Chair. 234,480 3–18–75, Cl. D6—74.
- Grosfillex S.A.R.L.: *See—*
  - Grosfillex, Raymond. 234,479.
  - Grosfillex, Raymond. 234,480.
- Hale, Arthur D., Sr., Locking lug nut. 234,486, 3–18–75. Cl. D8—273.
- Hanagan, Michael W., to Corbin Gentry, Inc., Motorcycle fender. 234,501, 3–18–75, Cl. D12—186.
- Hanagan, Michael W., to Corbin Gentry, Inc. Motorcycle fender. 234,502, 3–18–75, Cl. D12—186.
- Harkus, Karl H., to Markus & Walsh. Sale stand. 234,475, 3–18–75, Cl. D6—24.
- Hasegawa, Shighiro: *See—*
  - Kawakami, Masafumi, and Hasegawa. 234,500.
- Hirasa, Hiroshi: *See—*
  - Kawano, Takeyoshi, and Hirasa. 234,538.
- Honeywell Inc.: *See—*
  - Quinn, Peter T. 234,542.
- Isles, Ronald E. Work bench. 234,485, 3–18–75, Cl. D6—156.
- Johnson, Ephriam J. Time comparison. 234,496, 3–18–75, Cl. D10—14.
- Kawakami, Masafumi, and S. Hasegawa, to Sumitomo Rubber Industries, Ltd. Tire. 234,500, 3–18–75, Cl. D12—143.
- Kawamura, Ken: *See—*
  - Miyamoto, Masaaki, Takenaka, Kawamura, and Koda. 234,535.
- Kawano, Takeyoshi, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 234,537, 3–18–75, Cl. D56—4.
- Kawano, Takeyoshi, and H. Hirasa, to Matsushita Electric Industrial Co., Ltd. Portable radio. 234,538, 3–18–75, Cl. D56—4.

- Kimzey, Paul W., K. N. Krier, and J. N. Polivka, to Tennant Co. Surface cleaning and scarifying machine. 234,533, 3–18–75, Cl. D49—9.1.
- Koda, Hironosuke: *See—*
  - Miyamoto, Masaaki, Takenaka, Kawamura, and Koda. 234,535.
- Koepke, Earl H. Side arm chair. 234,478, 3–18–75, Cl. D6—56.
- Kommers, William J., to The Broyhill Co. Utility sprayer. 234,513, 3–18–75, Cl. D23—18.
- Kommers, William J., and C. E. Stewart, to The Broyhill Co. Utility sprayer. 234,514, 3–18–75, Cl. D23—18.
- Krier, Keith N.: *See—*
  - Kimzey, Paul W., Krier, and Polivka. 234,533.
- Lazo de la Vega, Cecilio I. Bars or the like. 234,484, 3–18–75, Cl. D6—144.
- Leander, Eugene R., to Pro Enterprises, Ltd. Golf putter. 234,524, 3–18–75, Cl. D34—5.
- Lockhardt, William F., A. M. Norton, Jr., D. P. Powers, and R. J. Norton, to The Maine Mfg. Co. Stool. 234,477, 3–18–75, Cl. D6—36.
- Lucas Electrical Co. Ltd., The: *See—*
  - Bufton, Rodney D. 234,531.
- MTM Molded Products Co.: *See—*
  - Minneman, William J. 234,495.
- Maloney, William J. II, to The Quaker Oats Co. Stuffed toy. 234,525, 3–18–75, Cl. D34—4.
- Maine Mfg. Co., The: *See—*
  - Lockhardt, William F., Norton, Powers, and Norton. 234,477.
- Marchese, Paul, to TIE/Communications, Inc. Base for a telephone set. 234,520, 3–18–75, Cl. D26—14.
- Marchetti, Frank J. Telescopic sight eye protector. 234,539, 3–18–75, Cl. D57—1.
- Marchetti, Frank J. Telescopic sight eye protector. 234,540, 3–18–75, Cl. D57—1.
- Markus & Walsh: *See—*
  - Harkus, Karl H. 234,475.
- Masters, Philip C., to McNeil Corp. Nozzle. 234,515, 3–18–75, Cl. D23—34.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Kawano, Takeyoshi. 234,537.
  - Kawano, Takeyoshi, and Hirasa. 234,538.
  - Miyamoto, Masaaki, Takenaka, Kawamura, and Koda. 234,535.
  - Taguchi, Shuhei, and Mishiro. 234,536.
- Mayer, Klaus: *See—*
  - Stuetzer, Franz A., and Mayer. 234,487.
- McLeod, Lorraine. Toothbrush holder. 234,481, 3–18–75, Cl. D6—94.
- McNeil Corp.: *See—*
  - Masters, Philip C. 234,515.
- Minneman, William J., to MTM Molded Products Co. Ammunition tray. 234,495, 3–18–75, Cl. D9—187.
- Mishiro, Benito: *See—*
  - Taguchi, Shuhei, and Mishiro. 234,536.
- Miyamoto, Masaaki, K. Takenaka, K. Kawamura, and H. Koda, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 234,535, 3–18–75, Cl. D56—4.
- Mori, Chuzo, to Carl Mfg. Co. Ltd. Desk set. 234,507, 3–18–75, Cl. D19—75.
- Mori, Chuzo, to Carl Mfg. Co. Ltd. Push button telephone list finder. 234,508. 3–18–75, Cl. D19—76.
- Mori, Chuzo, to Carl Mfg. Co. Ltd. Push button telephone list finder. 234,509, 3–18–75, Cl. D19—76.
- Mori, Chuzo, to Carl Mfg. Co. Ltd. Combined memo holder and pen stand. 234,510, 3–18–75, Cl. D19—78.
- Mori, Chuzo, to Carl Mfg. Co. Ltd. Desk set. 234,511, 3–18–75, Cl. D19—78.
- National Electro-Cook Corp.: *See—*
  - Theimer, Ernst T., and Roslonski. 234,494.
- Nicollet, Michel. Hydrotherapy bath tub. 234,547, 3–18–75, Cl. D83—1.
- Norton, Alfred M., Jr.: *See—*
  - Lockhardt, William F., Norton, Powers, and Norton. 234,477.
- Norton, Richard J.: *See—*
  - Lockhardt, William F., Norton, Powers, and Norton. 234,477.
- Ohnuki, Tomoji. Hand puppet. 234,523, 3–18–74, Cl. D34—4.
- Ohnuki, Tomoji. Hand puppet. 234,528, 3–18–75, Cl. D34—4.
- Owens Illinois, Inc.: *See—*
  - Schweizer, Peter L. 234,493.
- Pace Collection Inc., The: *See—*
  - Rosen, Irving M. 234,476.
- Peterson, Ronald A., to Richardson-Merrell Inc. Bottle or the like. 234,492, 3–18–75, Cl. D9—116.
- Polivka, John N.: *See—*
  - Kimzey, Paul W., Krier, and Polivka. 234,533.
- Powers, Dana P.: *See—*
  - Lockhardt, William F., Norton, Powers, and Norton. 234,477.
- Pro Enterprises, Ltd.: *See—*
  - Leander, Eugene R. 234,524.
- Quaker Oats Co., The: *See—*
  - Maloney, William J. II. 234,525.
- Quinn, Peter T., to Honeywell Inc. Photographic camera. 234,542, 3–18–75, Cl. D61—1.
- Reicherts, Elmer P. Slow moving equipment safety light. 234,532, 3–18–75, Cl. D48—32.
- Richardson-Merrell Inc.: *See—*
  - Peterson, Ronald A. 234,492.
- Rollei-Werke Franke & Heidecke: *See—*
  - Sobotta, Reinhard. 234,541.
- Rosen, Irving M., to The Pace Collection Inc. Stool. 234,476, 3–18–75, Cl. D6—35.
- Roslonski, Donald J.: *See—*
  - Theimer, Ernst T., and Roslonski. 234,494.
- Rowenta-Werke, GmbH: *See—*
  - Stuetzer, Franz A., and Mayer. 234,487.
- Rubbermaid Inc.: *See—*
  - Fry, James C. 234,521.
  - Fry, James C. 234,522.
- Rynk, Edward F., to Thomas & Betts Corp. Splice enclosure or the like. 234,519, 3–18–75, Cl. D26—1.
- Schafer, Carol. Aerosol container. 234,491, 3–18–75, Cl. D9—9.
- Schick, George L., to Warner-Lambert Co. Dispenser for heating creams, foams, lotions, and the like. 234,483, 3–18–75, Cl. D6—95.
- Schweizer, Peter L., to Owens Illinois, Inc. Bottle. 234,493, 3–18–75, Cl. D9—137.
- Shaw, James M. Container for firewood and the like. 234,489, 3–18–75, Cl. D7—212.
- Sixt, Marty E., to Advance Drainage Systems, Inc. Down spout adapter. 234,516, 3–18–75, Cl. D23—45.
- Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Slide projector. 234,541, 3–18–75, Cl. D61—1.
- Sowerbrower, James W. Dart game board. 234,527, 3–18–75, Cl. D34—5.
- Spellier, Roland. Building block. 234,505, 3–18–75, Cl. D18—2.
- Spellier, Roland. Building block. 234,506, 3–18–75, Cl. D18—2.
- Stahel, Alwin J., to Texaco, Inc. Key holder. 234,548, 3–18–75, Cl. D87—8.
- Stewart, Clarence E.: *See—*
  - Kommers, William J., and Stewart. 234,514.
- Stuetzer, Franz A., and K. Mayer, to Rowenta-Werke, GmbH. Coffeemaker. 234,487, 3–18–75, Cl. D7—62.
- Sumitomo Rubber Industries, Ltd.: *See—*
  - Kawakami, Masafumi, and Hasegawa. 234,500.
- TIE/Communications, Inc.: *See—*
  - Marchese, Paul. 234,520.
- Taguchi, Shuhei, and B. Mishiro, to Matsushita Electric Industrial Co., Ltd. Portable radio. 234,536, 3–18–75, Cl. D56—4.
- Takenaka, Kazumasa: *See—*
  - Miyamoto, Masaaki, Takenaka, Kawamura, and Koda. 234,535.
- Techni Med Inc.: *See—*
  - Foster, Milton E. 234,543.
- Tennant Co.: *See—*
  - Kimzey, Paul W., Krier, and Polivka. 234,533.
- Texaco, Inc.: *See—*
  - Stahel, Alwin J. 234,548.
- Theimer, Ernst T., and D. J. Roslonski, to National Electro-Cook Corp. Packaging container for food or the like. 234,494, 3–18–75, Cl. D9—182.
- Thomas & Betts Corp.: *See—*
  - Rynk, Edward F. 234,519.
- Tjaarda, Thom: *See—*
  - De Tomaso, Alejandro, and Tjaarda. 234,545.
- Trager, William R., to Ade Tennis, Inc. Wrist mounted tennis score recorder. 234,529, 3–18–75, Cl. D34—5.
- Troyansky, Genrikh L.: *See—*
  - Bobov, Vitislav Y., Belopolsky, Troyansky, and Farberg. 234,544.
- Waltzman, Simon V., to Colonial Mirror and Glass Corp. Planter. 234,530, 3–18–75, Cl. D35—3.
- Warner-Lambert Co.: *See—*
  - Glaberson, Martin. 234,482.
  - Schick, George L. 234,483.
- Wiebe, Hubert J., and M. V. Gearheart. Cooking utensil. 234,488, 3–18–75, Cl. D7—95.
- Xerox Corp.: *See—*
  - Freeman, Jefferson, and Doppelt. 234,546.
- Zawacki, Walter. Portable golf game target. 234,526, 3–18–75, Cl. D34—5.

CLASSIFICATION OF PATENTS

ISSUED MARCH 18, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
6	3,871,026
49R	3,871,027
143	3,871,028
161A	3,871,029
238	3,871,030
CLASS 3	
1	3,871,031
1.2	3,871,032
CLASS 4	
172.13	3,871,033
252R	3,871,034
CLASS 5	
13	3,871,035
81R	3,871,036
91	3,871,037
121	3,871,038
181	3,871,039
353.1	3,871,041
CLASS 8	
10.2	3,871,818
17	3,871,817
130.1	3,871,819
139	3,871,820
149.1	3,871,821
187	3,871,822
CLASS 9	
1A	3,871,042
6	3,871,043
9	3,871,044
CLASS 13	
13	3,872,231
CLASS 14	
1	3,871,045
CLASS 15	
21D	3,871,046
42	3,871,047
159A	3,871,048
250.04	3,871,049
250.32	3,871,050
256.51	3,871,081
321	3,871,051
328	3,871,052
CLASS 16	
87.2	3,871,082
159	3,871,083
CLASS 17	
21	3,871,084
32	3,871,085
73	3,871,086
CLASS 19	
159A	3,871,087
CLASS 21	
2.5B	3,871,823
58	3,871,824
CLASS 23	
230M	3,871,825
230R	3,871,826
254R	3,871,827
255R	3,871,831
259	3,871,832
260	3,871,833
279	3,871,829
281	3,871,828
285	3,871,830
CLASS 24	
81B	3,871,088
90B	3,871,089
230AV	3,871,090
243R	3,871,091
CLASS 29	
95R	3,871,092
148.4A	3,871,093
169.5	3,871,094
178	3,871,095
183	3,871,834
191.2	3,871,835
194	3,871,836
252	3,871,053
267	3,871,054
	3,871,055
283	3,871,056
403	3,871,058
427	3,871,057
	3,871,059
428	3,871,060
431	3,871,061
470	3,871,062
470.5	3,871,063
475	3,871,064
560	3,871,066
571	3,871,067
590	3,871,068
596	3,871,069
598	3,871,070
628	3,871,071
	3,871,072
CLASS 30	
34.2	3,871,073
40.1	3,871,074
	3,871,075
60.5	3,871,076
63	3,871,077
90.1	3,871,078
294	3,871,079
346.51	3,871,080
CLASS 32	
14A	3,871,096
27	3,871,097
40R	3,871,099
66	3,871,098
CLASS 33	
42	3,871,100
79R	3,871,101
166	3,871,102
174R	3,871,103
203.13	3,871,106
262	3,871,104
265	3,871,105
349	3,871,108
379	3,871,109
	3,871,110
CLASS 34	
92	3,871,107
173	3,871,111
CLASS 35	
8A	3,871,112
10.2	3,871,113
31D	3,871,114
35E	3,871,115
CLASS 36	
11.5	3,871,116
43	3,871,117
CLASS 37	
189	3,871,118
CLASS 40	
2.2	3,871,119
152.1	3,871,121
CLASS 42	
1L	3,871,120
CLASS 43	
42.27	3,871,122
42.72	3,871,123
88	3,871,124
135	3,871,125
CLASS 44	
58	3,871,837
CLASS 46	
78	3,871,126
93	3,871,127
165	3,871,128
244R	3,871,129
CLASS 47	
9	3,871,130
38.1	3,871,131
57.6	3,871,132
CLASS 48	
107	3,871,838
197R	3,871,839
CLASS 49	
308	3,871,133
425	3,871,134
CLASS 51	
163	3,871,135
	3,871,136
166R	3,871,137
170PT	3,871,138
295	3,871,840
334	3,871,139
338	3,871,140
358	3,871,141
CLASS 52	
23	3,871,142
36	3,871,144
60	3,871,145
79	Re.28,367
	3,871,146
127	3,871,147
197	3,871,148
309	3,871,143
404	3,871,149
498	3,871,150
507	3,871,151
543	3,871,152
624	3,871,153
749	3,871,154
CLASS 53	
28	3,871,155
59R	3,871,156
110	3,871,157
214	3,871,158
CLASS 55	
66	3,871,841
179	3,871,842
259	3,871,843
284	3,871,845
303	3,871,846
306	3,871,844
372	3,871,847
374	3,871,848
484	3,871,849
486	3,871,850
521	3,871,851
CLASS 56	
11.3	3,871,159
14.3	3,871,162
16.9	3,871,160
121.46	3,871,161
328R	3,871,040
344	3,871,163
CLASS 57	
22	3,871,164
34HS	3,871,165
77.45	3,871,166
CLASS 58	
14	3,871,167
23R	3,871,168
42.5	3,871,169
50R	3,871,170
116R	3,871,171
CLASS 60	
39.02	3,871,172
258	3,871,173
261	3,871,174
307	3,871,175
326	3,871,176
431	3,871,177
443	3,871,178
526	3,871,179
648	3,871,180
CLASS 61	
34	3,871,181
38	3,871,182
45R	3,871,183
46.5	3,871,184
CLASS 62	
63	3,871,185
64	3,871,186
196	3,871,187
298	3,871,188
353	3,871,189
380	3,871,190
CLASS 64	
9R	3,871,191
17R	3,871,192
23	3,871,193
CLASS 65	
4	3,871,852
32	3,871,853
65A	3,871,854
245	3,871,855
261	3,871,856
273	3,871,857
304	3,871,858
CLASS 66	
9A	3,871,194
CLASS 68	
198	3,871,195
203	3,871,196
CLASS 70	
63	3,871,197
146	3,871,198
252	3,871,199
CLASS 71	
40	3,871,859
67	3,871,860
	3,871,861
	3,871,862
88	3,871,863
91	3,871,864
98	3,871,865
106	3,871,866
CLASS 72	
41	3,871,200
60	3,871,201
	3,871,202
114	3,871,203
117	3,871,204
128	3,871,205
190	3,871,206
194	3,871,207
205	3,871,221
238	3,871,222
402	3,871,223
413	3,871,224
452	3,871,225
456	3,871,226
476	3,871,227
CLASS 73	
12	3,871,208
19	3,871,228
49.1	3,871,209
67	3,871,210
73	3,871,211
88A	3,871,212
94	3,871,213
116	3,871,214
136A	3,871,215
141A	3,871,216
143	3,871,217
155	3,871,218
184	3,871,219
189	3,871,220
204	3,871,229
215	3,871,230
	3,871,231
356	3,871,232
389	3,871,233
460	3,871,234
510	3,871,235
CLASS 74	
5.22	3,871,236
10.54	3,871,237
112	3,871,238
199	3,871,239
234	3,871,240
242.11R	3,871,241
357	3,871,243
421A	3,871,242
491	3,871,244
579E	3,871,245
665GD	3,871,246
665P	3,871,248
711	3,871,249
869	3,871,250
CLASS 75	
2	3,871,867
53	3,871,868
	3,871,869
58	3,871,870
60	3,871,871
61	3,871,872
82	3,871,873
84.5	3,871,874
94	3,871,875
169	3,871,876
214	3,871,877
CLASS 76	
101A	3,871,251
CLASS 82	
25	3,871,252
CLASS 83	
8	3,871,253
139	3,871,254
155	3,871,255
255	3,871,258
285	3,871,257
355	3,871,256
429	3,871,259
478	3,871,260
CLASS 84	
1.01	3,871,261
1.16	3,871,247
1.17	3,871,262
271	3,871,263
CLASS 85	
30	3,871,264
CLASS 91	
189	3,871,265
412	3,871,266
CLASS 92	
13.3	3,871,268
24	3,871,267
CLASS 93	
13	3,871,269
27	3,871,270
35VL	3,871,271
CLASS 96	
1R	3,871,878
1.2	3,871,879
1.5	3,871,880
	3,871,881
	3,871,882
	3,871,883
1.6	3,871,884
35.1	3,871,885
48R	3,871,886
67	3,871,887
88	3,871,888
CLASS 99	
276	3,871,272
286	3,871,273
450.8	3,871,274
571	3,871,275
CLASS 100	
2	3,871,288
4	3,871,289
39	3,871,290
93P	3,871,291
215	3,871,292
CLASS 101	
41	3,871,293
132.5	3,871,294
426	3,871,295
CLASS 102	
70.2P	3,871,296
79	3,871,297
84	3,871,298
CLASS 104	
7B	3,871,299
130	3,871,300
148SS	3,871,301
153	3,871,302
173	3,871,303
178	3,871,304
CLASS 105	
8R	3,871,276
31	3,871,277
378	3,871,278
410	3,871,279
CLASS 106	
1	3,871,889
48	3,871,890
65	3,871,891
126	3,871,892
277	3,871,893
302	3,871,894
CLASS 109	
29	3,871,281
31	3,871,282
56	3,871,283
59	3,871,284
CLASS 110	
8R	3,871,285
	3,871,286
	3,871,287
119	3,871,305
CLASS 112	
121.011	3,871,306
121.15	3,871,307
121.29	3,871,309
122	3,871,308
158F	3,871,310
200	3,871,311
203	3,871,312
CLASS 113	
120S	3,871,313
121C	3,871,314
CLASS 114	
51	3,871,315
61	3,871,316
66.5R	3,871,317
67A	3,871,318
74A	3,871,319
121	3,871,320
127	3,871,322
221A	3,871,321
235A	3,871,323
CLASS 115	
17	3,871,324
34R	3,871,325
CLASS 117	
3	3,871,895
6	3,871,896
15	3,871,897
33.5T	3,871,898
35.5	3,871,899
36.8	3,871,065
	3,871,900
47A	3,871,901
49	3,871,902
71R	3,871,903
72	3,871,904
75	3,871,905
	3,871,906
76P	3,871,907
93.31	3,871,908
138.8D	3,871,911
138.8E	3,871,910
138.8N	3,871,909
201	3,871,912
CLASS 118	
63	3,871,326
69	3,871,327
412	3,871,280
629	3,871,328
637	3,871,329
CLASS 119	
1	3,871,330
	3,871,331
3	3,871,332
4	3,871,333
29.5	3,871,334
82	3,871,335
106	3,871,336
CLASS 123	
8.47	3,871,337
32EA	3,871,338
32SP	3,871,351
41.41	3,871,339
80BA	3,871,340
117R	3,871,341
	3,871,342
119A	3,871,343
139AF	3,871,345
139ST	3,871,344
140FG	3,871,346
148E	3,871,347
	3,871,348
169EL	3,871,349
185A	3,871,350
CLASS 124	
41	3,871,352
CLASS 126	
59.5	3,871,353
110R	3,871,354
127	3,871,355
215	3,871,356

263	3,871,357
CLASS 128	
2M	3,871,358
2.05R	3,871,360
	3,871,361
2.06F	3,871,362
2.06R	3,871,363
2.08	3,871,364
2.1Z	3,871,359
5	3,871,365
75	3,871,366
78	3,871,367
127	3,871,368
132D	3,871,369
136	3,871,370
145.8	3,871,371
152	3,871,372
193	3,871,373
235	3,871,374
269	3,871,375
275.1	3,871,376
278	3,871,377
290	3,871,378
326	3,871,379
350R	3,871,380
400	3,871,381
419PS	3,871,383
419P	3,871,382
CLASS 130	
27T	3,871,384
CLASS 131	
84B	3,871,385
	3,871,386
235R	3,871,387
CLASS 132	
9	3,871,388
53	3,871,389
83R	3,871,390
85	3,871,391
89	3,871,392
92A	3,871,393
CLASS 134	
22R	3,871,913
46	3,871,394
107	3,871,395
109	3,871,914
CLASS 136	
6LN	3,871,915
	3,871,916
26	3,871,917
30	3,871,918
82	3,871,919
86A	3,871,920
111	3,871,921
120FC	3,871,922
162	3,871,923
166	3,871,924
CLASS 137	
85	3,871,396
115	3,871,397
231	3,871,422
253	3,871,398
344	3,871,399
363	3,871,400
381	3,871,401
383	3,871,402
436	3,871,403
614.03	3,871,404
624.27	3,871,405
801	3,871,406
CLASS 138	
38	3,871,407
137	3,871,408
174	3,871,409
175	3,871,410
178	3,871,411
CLASS 139	
1E	3,871,412
13	3,871,413
54	3,871,414
59	3,871,415
72	3,871,416
88	3,871,417
100	3,871,418
114	3,871,419
116	3,871,420
122R	3,871,421
CLASS 140	
93B	3,871,423
147	3,871,424
CLASS 141	
5	3,871,425
130	3,871,426
CLASS 144	
34E	3,871,427
323	3,871,428
CLASS 148	
12E	3,871,925
	3,871,926
121	3,871,927
142	3,871,928
CLASS 151	
14R	3,871,429
41.75	3,871,430
CLASS 152	
243	3,871,431
354	3,871,432
CLASS 156	
2	3,871,929
3	3,871,930
7	3,871,931
49	3,871,932
88	3,871,933
94	3,871,934
158	3,871,935
238	3,871,936
244	3,871,937
246	3,871,938
293	3,871,939
353	3,871,940
394	3,871,941
400	3,871,942
521	3,871,943
CLASS 157	
1.24	3,871,433
CLASS 160	
91	3,871,434
135	3,871,435
188	3,871,436
202	3,871,437
CLASS 161	
42	3,871,944
44	3,871,945
88	3,871,946
116	3,871,947
154	3,871,948
165	3,871,949
178	3,871,950
CLASS 162	
14	3,871,951
101	3,871,952
274	3,871,953
CLASS 164	
5	3,871,438
87	3,871,439
165	3,871,440
274	3,871,441
CLASS 165	
8	3,871,442
11	3,871,443
101	3,871,444
107	3,871,445
109	3,871,446
CLASS 166	
120	3,871,447
128	3,871,448
183	3,871,449
224R	3,871,450
267	3,871,451
270	3,871,452
	3,871,453
275	3,871,454
288	3,871,455
298	3,871,456
CLASS 169	
20	3,871,457
45	3,871,458
49	3,871,459
CLASS 174	
19	3,872,232
23R	3,872,233
38	3,872,234
52R	3,872,235
68.5	3,872,236
88C	3,872,237
CLASS 175	
16	3,871,485
100	3,871,486
248	3,871,487
406	3,871,488
CLASS 177	
1	3,871,489
10	3,871,490
45	3,871,491
CLASS 178	
6	3,872,238
	3,872,239
	3,872,242
6.6A	3,872,241
6.6R	3,872,240
6.8	3,872,243
	3,872,244
7.1	3,872,245
7.2	3,872,246
7.6	3,872,248
CLASS 179	
1GQ	3,872,249
1SA	3,872,250
1A	3,872,247
2A	3,872,251
	3,872,252
5R	3,872,253
6E	3,872,254
15AQ	3,872,256
15BM	3,872,255
15BS	3,872,257
16F	3,872,258
16R	3,872,259
18DA	3,872,260
99	3,872,261
	3,872,262
100.1DR	3,872,263
100.3B	3,872,264
100.4M	3,872,265
175.2C	3,872,266
CLASS 180	
5R	3,871,460
6.2	3,871,461
9.5	3,871,462
14B	3,871,463
19S	3,871,464
24.02	3,871,465
70P	3,871,466
73C	3,871,467
79.2R	3,871,468
	3,871,469
82C	3,871,470
82R	3,871,471
103	3,871,472
104	3,871,473
112	3,871,474
113	3,871,475
127	3,871,476
CLASS 182	
63	3,871,477
	3,871,478
86	3,871,479
100	3,871,480
151	3,871,481
187	3,871,482
CLASS 184	
1.5	3,871,483
6.26	3,871,484
CLASS 187	
95	3,871,494
CLASS 188	
32	3,871,492
78	3,871,493
79.5K	3,871,495
268	3,871,496
CLASS 192	
3TR	3,871,497
48.91	3,871,498
70.29	3,871,499
111A	3,871,500
CLASS 193	
35A	3,871,501
CLASS 194	
9T	3,871,502
13	3,871,503
55	3,871,504
CLASS 195	
1.1	3,871,954
1.8	3,871,955
2	3,871,956
	3,871,957
29	3,871,958
	3,871,959
	3,871,960
37	3,871,961
62	3,871,962
	3,871,963
63	3,871,964
80R	3,871,965
	3,871,966
100	3,871,967
CLASS 197	
16	3,871,505
98	3,871,506
151	3,871,507
176	3,871,508
CLASS 198	
37	3,871,509
41	3,871,510
103	3,871,511
128	3,871,512
203	3,871,513
232	3,871,514
287	3,871,515
CLASS 200	
48R	3,872,267
61.22	3,872,268
67AA	3,872,269
83P	3,872,270
86	Re.28,365
144B	3,872,271
148A	3,872,272
153G	3,872,273
157	3,872,274
CLASS 202	
173	3,871,968
234	3,871,969
CLASS 203	
6	3,871,970
43	3,871,971
CLASS 204	
2	3,871,972
28	3,871,973
55R	3,871,974
59F	3,871,975
73A	3,871,976
78	3,871,977
113	3,871,978
158R	3,871,979
164	3,871,980
195S	3,871,981
207	3,871,982
209	3,871,983
228	3,871,984
231	3,871,985
243R	3,871,986
263	3,871,987
284	3,871,988
299	3,871,989
301	3,871,990
CLASS 206	
45.31	3,871,516
108	3,871,517
219	3,871,518
223	3,871,519
320	3,871,520
524	3,871,521
540	3,871,522
542	3,871,523
CLASS 208	
33	3,871,991
125	3,871,992
135	3,871,993
137	3,871,994
138	3,871,995
139	3,871,996
	3,871,997
216	3,871,998
CLASS 210	
16	3,871,999
54	3,872,000
58	3,872,001
59	3,872,002
63	3,872,003
127	3,872,004
141	3,872,005
158	3,872,006
170	3,872,007
178	3,872,009
219	3,872,010
232	3,872,008
	3,872,014
269	3,872,011
297	3,872,012
317	3,872,013
346	3,872,015
500	3,872,016
525	3,872,017
CLASS 211	
45	3,871,524
176	3,871,525
178	3,871,526
CLASS 212	
3	3,871,527
39R	3,871,528
CLASS 213	
21	3,871,529
69	3,871,530
100W	3,871,531
CLASS 214	
1BB	3,871,532
6FS	3,871,533
83.3	3,871,534
86A	3,871,535
138R	3,871,536
140	3,871,537
141	3,871,538
152	3,871,539
450	3,871,540
CLASS 215	
1C	3,871,541
11E	3,871,542
13R	3,871,543
223	3,871,662
225	3,871,544
249	3,871,545
CLASS 217	
38	3,871,546
CLASS 219	
10.43	3,872,275
10.55B	3,872,277
10.55	3,872,276
121P	3,872,278
	3,872,279
271	3,872,280
535	3,872,281
CLASS 220	
243	3,871,548
287	3,871,547
288	3,871,549
339	3,871,550
CLASS 221	
8	3,871,551
CLASS 222	
83	3,871,552
95	3,871,553
96	3,871,554
131	3,871,555
132	3,871,556
162	3,871,557
181	3,871,558
183	3,871,559
325	3,871,560
CLASS 223	
37	3,871,561
CLASS 224	
6	3,871,562
CLASS 225	
103	3,871,563
CLASS 226	
1	3,871,564
CLASS 227	
10	3,871,565
130	3,871,566
CLASS 228	
32	3,871,567
CLASS 229	
14R	3,871,568
15	3,871,569
31R	3,871,570
39R	3,871,571
40	3,871,572
85	3,871,573
CLASS 233	
11	3,871,574
20A	3,871,575
CLASS 234	
35	3,871,576
CLASS 235	
92SB	3,872,282
150.2	3,872,283
150.27	3,872,284
151.11	3,872,285
151.21	3,872,286
151.3	3,872,292
151.31	3,872,287
151.32	3,872,288
152	3,872,289
	3,872,290
153AK	3,872,291
156	3,871,577
164	3,871,578
181	3,872,293
198	3,871,579
CLASS 239	
3	3,871,580
16	3,871,581
233	3,871,582
302	3,871,583
307	3,871,584
333	Re.28,366
553.3	3,871,585
569	3,871,586
662	3,871,587
673	3,871,588
CLASS 240	
2S	3,872,294
2.18	3,872,295
52.1	3,872,428
73BC	3,872,296
78E	3,872,297
CLASS 241	
88.4	Re.28,368
102	3,871,589
282.2	3,871,590
CLASS 242	
18G	3,871,591
	3,871,592
55.2	3,871,593
56A	3,871,595
56R	3,871,594
71.2	3,871,596
75.3	3,871,597
75.51	3,871,598
107.2	3,871,599
107.4	3,871,600
118.32	3,871,601
CLASS 244	
13	3,871,602
125	3,871,603
137R	3,871,604
155R	3,871,605
CLASS 248	
27	3,871,606
171	3,871,607
223	3,871,608
496	3,871,609
CLASS 249	
102	3,871,610
	3,871,611
184	3,871,612
CLASS 250	
203	3,872,299
205	3,872,300
	3,872,301
213	3,872,302
214P	3,872,303
231R	3,872,304
311	3,872,305
312	3,872,306
324	3,872,307
347	3,872,308
358	3,872,310
390	3,872,311
458	3,872,312
483	3,872,309
541	3,872,313
552	3,872,314
575	3,872,315
CLASS 251	
1	3,871,613
104	3,871,614
129	3,871,615
175	3,871,616
CLASS 252	
8.5A	3,872,018
33.4	3,872,048
51.5A	3,872,019
89	3,872,020
121	3,872,021
301.1R	3,872,022
316	3,872,023
	3,872,024
373	3,872,025
408	3,872,140
429B	3,872,026
430	3,872,027
439	3,872,028
453	3,872,029
465	3,872,030
522	3,872,031
CLASS 254	
29R	3,871,617
30	3,871,618
93R	3,871,619
133R	3,871,620
134.3PA	3,871,621
172	3,871,622
CLASS 259	
2	3,871,623
4	3,871,624
8	3,871,625
36	3,871,626
64	3,871,627
165	3,871,628
191	3,871,629
CLASS 260	
2H	3,872,032
2.5AM	3,872,034
2.5AW	3,872,035
2.5F	3,872,033
5	3,872,036
8	3,872,037
13	3,872,038
17.4ST	3,872,039
21	3,872,040
23AR	3,872,042
23XA	3,872,041
23.7H	3,872,043
30.8R	3,872,044
31.2R	3,872,045
33.4R	3,872,047
33.6UB	3,872,049
37N	3,872,050
38	3,872,051
42.46	3,872,052
45.7P	3,872,053
	3,872,055
45.7R	3,872,054
49	3,872,056
75TN	3,872,057
77.5AM	3,872,058
79.1	3,872,059
79.3R	3,872,060
79.5B	3,872,061
	3,872,062
80C	3,872,063
80.7	3,872,064
80.76	3,872,065
	3,872,066
80.78	3,872,067
83.7	3,872,068
85.3R	3,872,069
94.3	3,872,071
94.7H	3,872,072
106	3,872,073
112R	3,872,075
112.5	3,872,074
141	3,872,076
152	3,872,077

176	3,872,078
210AB	3,872,079
210R	3,872,080
210.5	3,872,081
211.5R	3,872,082
	3,872,083
	3,872,084
	3,872,098
234	3,872,085
239A	3,872,086
	3,872,087
239.1	3,872,088
239.3D	3,872,090
239.3T	3,872,089
239.5	3,872,091
239.55C	3,872,092
240D	3,872,114
240G	3,872,113
243C	3,872,115
247.2B	3,872,117
247.7A	3,872,116
248C	3,872,118
251A	3,872,119
251R	3,872,120
256.4F	3,872,122
256.4N	3,872,121
256.5B	3,872,123
268PH	3,872,124
283R	3,872,125
283S	3,872,126
285	3,872,127
286R	3,872,128
288R	3,872,129
289QP	3,872,131
289R	3,872,130
296B	3,872,132
296H	3,872,133
307B	3,872,298
307D	3,872,093
	3,872,094
307F	3,872,096
309	3,872,095
309.5	3,872,097
326.25	3,872,100
326.4	3,872,099
326.5E	3,872,101
327B	3,872,102
327S	3,872,046
333	3,872,103
340.5	3,872,105
343.2R	3,872,106
343.3	3,872,107
343.5	3,872,109
345.2	3,872,108
346.8R	3,872,110
347.2	3,872,111
347.5	3,872,112
369	3,872,134
	3,872,135
374	3,872,137
404	3,872,138
413	3,872,141
418	3,872,142
429.7	3,872,143
448A	3,872,144
448.2E	3,872,145
	3,872,146
465E	3,872,147
465.3	3,872,148
468D	3,872,139
	3,872,149
468E	3,872,150
471C	3,872,151
	3,872,152
475N	3,872,153
	3,872,154
476R	3,872,155
479C	3,872,157
479R	3,872,156
483	3,872,158
484P	3,872,159
484R	3,872,160
486B	3,872,162
486R	3,872,161
491	3,872,163
497R	3,872,164
513R	3,872,165
518R	3,872,167
526R	3,872,166
539R	3,872,168
558A	3,872,169
567.6M	3,872,170
584R	3,872,171
601R	3,872,172
624E	3,872,173
654R	3,872,174
657	3,872,175
658R	3,872,176
665R	3,872,177
666	3,872,178
683D	3,872,180
683R	3,872,179
683.49	3,872,181
830R	3,872,182
860	3,872,183
927N	3,872,070
942	3,872,184
944	3,872,185
946	3,872,186
951	3,872,187
CLASS 261	
39A	3,872,188
	3,872,189
	3,872,190
145	3,872,191
CLASS 264	
3B	3,872,192
8	3,872,193
22	3,872,194
35	3,872,195
37	3,872,196
40	3,872,197
46.4	3,872,199
46.6	3,872,198
51	Re.28,364
54	3,872,200
55	3,872,201
89	3,872,202
94	3,872,203
102	3,872,204
175	3,872,205
188	3,872,206
277	3,872,207
346	3,872,208
CLASS 266	
20	3,871,630
21	3,871,631
35	3,871,632
	3,871,633
CLASS 267	
9B	3,871,634
11	3,871,635
140	3,871,636
CLASS 269	
328	3,871,637
CLASS 270	
32	3,871,638
52	3,871,639
CLASS 271	
9	3,871,640
42	3,871,641
138	3,871,642
173	3,871,643
198	3,871,644
270	3,871,645
CLASS 272	
67	3,871,646
73	3,871,648
CLASS 273	
26A	3,871,647
77A	3,871,649
87R	3,871,650
94R	3,871,652
95F	3,871,651
96R	3,871,653
123R	3,871,655
131AD	3,871,657
131B	3,871,656
133	3,871,658
134AD	3,871,659
135D	3,871,660
136C	3,871,654
178B	3,871,661
CLASS 274	
10S	3,871,663
38	3,871,664
CLASS 277	
24	3,871,665
59	3,871,666
115	3,871,667
180	3,871,668
182	3,871,669
CLASS 279	
2R	3,871,670
CLASS 280	
11.13E	3,871,671
11.21	3,871,672
11.35N	3,871,674
11.35T	3,871,673
28	3,871,675
35	3,871,676
104.5A	3,871,677
124F	3,871,678
	3,871,679
	3,871,680
	3,871,681
	3,871,682
150AB	3,871,684
150SB	3,871,683
150.5	3,871,685
446B	3,871,686
CLASS 285	
53	3,871,687
189	3,871,688
	3,871,689
226	3,871,690
321	3,871,691
390	3,871,692
CLASS 290	
38	3,872,316
CLASS 292	
67	3,871,693
92	3,871,694
CLASS 293	
73	3,871,695
CLASS 294	
50.6	3,871,696
81SF	3,871,697
83R	3,871,698
87.2	3,871,699
CLASS 296	
26	3,871,700
28B	3,871,701
36	3,871,702
97H	3,871,703
CLASS 297	
61	3,871,704
	3,871,705
CLASS 298	
1A	3,871,706
CLASS 299	
11	3,871,707
CLASS 301	
9DN	3,871,708
63DS	3,871,709
105B	3,871,710
CLASS 302	
26	3,871,711
59	3,871,712
CLASS 303	
6C	3,871,713
10	3,871,714
21AF	3,871,717
21BE	3,871,715
21F	3,871,716
22R	3,871,718
CLASS 305	
28	3,871,719
51	3,871,720
CLASS 307	
10R	3,872,317
88ET	3,872,318
114	3,872,319
117	3,872,320
205	3,872,321
231	3,872,322
235R	3,872,323
241	3,872,324
251	3,872,325
252T	3,872,326
300	3,872,327
308	3,872,328
311	3,872,329
CLASS 308	
5	3,871,721
6C	3,871,722
15	3,871,723
233	3,871,724
CLASS 310	
8	3,872,330
9.4	3,872,331
9.7	3,872,332
27	3,872,333
43	3,872,334
68D	3,872,335
78	3,872,336
CLASS 312	
71	3,871,725
195	3,871,726
290	3,872,342
CLASS 313	
95	3,872,337
130	3,872,338
188	3,872,339
198	3,872,340
217	3,872,341
296	3,872,343
386	3,872,344
403	3,872,345
514	3,872,346
CLASS 315	
8	3,872,347
10	3,872,348
39	3,872,349
104	3,872,350
107	3,872,351
169R	3,872,352
200A	3,872,353
CLASS 317	
3	3,872,370
18D	3,872,354
	3,872,355
101A	3,872,356
230	3,872,358
258	3,872,360
262E	3,872,361
CLASS 318	
135	3,872,357
139	3,872,362
212	3,872,363
227	3,872,364
265	3,872,365
331	3,872,366
373	3,872,367
567	3,872,368
603	3,872,369
CLASS 321	
16	3,872,371
45C	3,872,372
CLASS 323	
17	3,872,373
22SC	3,872,374
CLASS 324	
4	3,872,375
17	3,872,376
33	3,872,377
37	3,872,378
40	3,872,379
41	3,872,380
43R	3,872,382
51	3,872,383
	3,872,384
56	3,872,385
98	3,872,386
CLASS 325	
42	3,872,381
427	3,872,387
CLASS 328	
133	3,872,388
137	3,872,389
CLASS 330	
13	3,872,390
14	3,872,391
19	3,872,392
30D	3,872,393
52	3,872,394
86	3,872,395
CLASS 331	
1A	3,872,396
	3,872,397
65	3,872,398
94.5E	3,872,401
94.5H	3,872,400
94.5	3,872,402
	3,872,403
111	3,872,404
	3,872,405
178	3,872,406
CLASS 332	
7.51	3,872,407
CLASS 333	
10	3,872,408
31R	3,872,409
70S	3,872,399
72	3,872,410
	3,872,411
73R	3,872,412
82B	3,872,413
CLASS 336	
134	3,872,414
CLASS 337	
140	3,872,415
201	3,872,416
365	3,872,417
CLASS 338	
23	3,872,418
25	3,872,419
162	3,872,420
CLASS 339	
8R	3,871,727
14R	3,871,728
21R	3,871,729
	3,871,730
75P	3,871,731
91L	3,871,732
91R	3,871,733
94M	3,871,734
177R	3,871,735
221R	3,871,736
255R	3,871,737
256C	3,871,738
CLASS 340	
10	3,872,421
41R	3,872,422
43	3,872,423
52C	3,872,425
	3,872,426
52D	3,872,427
52F	3,872,424
59	3,872,429
146.1AL	3,872,430
146.1AQ	3,872,432
146.1AX	3,872,431
146.3AG	3,872,434
146.3AH	3,872,433
147MD	3,872,435
147PC	3,872,436
147SY	3,872,437
149A	3,872,438
166R	3,872,439
171R	3,872,440
172.5	3,872,441
	3,872,442
	3,872,443
	3,872,444
	3,872,445
	3,872,446
	3,872,447
	3,872,448
173LM	3,872,451
	3,872,453
173SP	3,872,450
173R	3,872,452
174M	3,872,454
189M	3,872,455
228.1	3,872,449
231	3,872,456
249	3,872,457
267C	3,872,458
276	3,872,459
324AD	3,872,460
	3,872,461
324A	3,872,462
336	3,872,463
343	3,872,464
347DA	3,872,465
347NT	3,872,466
364	3,872,467
365R	3,872,468
373	3,872,469
384E	3,872,470
	3,872,471
	3,872,472
415	3,872,473
CLASS 343	
5LS	3,872,474
6.5LC	3,872,476
14	3,872,475
120	3,872,477
CLASS 346	
1	3,872,479
7	3,872,478
74ES	3,872,480
CLASS 350	
1	3,871,739
3.5	3,871,740
37	3,871,741
96WG	3,871,742
	3,871,743
96C	3,871,744
150	3,871,745
160LC	3,871,746
160R	3,871,747
181	3,871,748
215	3,871,749
286	3,871,750
293	3,871,751
318	3,871,752
CLASS 351	
37	3,871,753
CLASS 352	
29	3,871,754
130	3,871,755
140	3,871,756
CLASS 353	
7	3,871,757
19	3,871,758
95	3,871,759
	3,871,760
CLASS 354	
23	3,872,481
46	3,872,482
53	3,872,483
59	3,872,484
83	3,872,485
86	3,872,487
88	3,872,486
246	3,872,488
CLASS 355	
11	3,871,761
15	3,871,762
16	3,871,763
18	3,871,764
	3,871,765
66	3,871,766
CLASS 356	
87	3,871,768
102	3,871,769
103	3,871,770
114	3,871,771
153	3,871,772
200	3,871,773
201	3,871,774
215	3,871,767
CLASS 357	
4	3,872,359
15	3,872,489
	3,872,490
23	3,872,491
	3,872,492
29	3,872,493
34	3,872,494
48	3,872,495
81	3,872,496
CLASS 358	
4	3,872,497
21	3,872,498
51	3,872,499
CLASS 360	
2	3,872,500
	3,872,501
	3,872,502
8	3,872,503
27	3,872,504
92	3,872,505
	3,872,506
102	3,872,507
137	3,872,508
	3,872,509
	3,872,510
CLASS 401	
31	3,871,775
256	3,871,776
CLASS 403	
20	3,871,777
52	3,871,778
	3,871,779
104	3,871,780
121	3,871,781
122	3,871,782
205	3,871,783
236	3,871,784
259	3,871,785
300	3,871,786
CLASS 404	
48	3,871,787
117	3,871,788
CLASS 415	
112	3,871,789
219C	3,871,790
CLASS 416	
193	3,871,791
CLASS 417	
38	3,871,792
273	3,871,793
282	3,871,794
360	3,871,795
423	3,871,796
	3,871,797
CLASS 418	
39	3,871,798
178	3,871,799
248	3,871,800
CLASS 423	
24	3,872,209
87	3,872,210
167	3,872,211
184	3,872,212
213.7	3,872,213
298	3,872,214
309	3,872,215
313	3,872,216
338	3,872,217
371	3,872,136
417	3,872,218
474	3,872,219
499	3,872,220
515	3,872,221
561	3,872,222
580	3,872,223
645	3,872,224
CLASS 424	
1	3,872,225
	3,872,226
271	3,872,227
340	3,872,104
CLASS 425	
4R	3,871,801
72	3,871,802
175	3,871,803
	3,871,804
245NS	3,871,805
247	3,871,806
326R	3,871,807
367	3,871,808
370	3,871,809
374	3,871,810
407	3,871,811
466	3,871,812
469	3,871,813
CLASS 426	
19	3,872,228
62	3,872,229
98	3,872,230
CLASS 431	
66	3,871,814
126	3,871,815
CLASS 432	
59	3,871,816

CLASSIFICATION OF DESIGNS

D2—	276	234,474
D6—	24	234,475
	35	234,476
	36	234,477
	56	234,478
	74	234,479
		234,480
	94	234,481
	95	234,482
		234,483
	144	234,484
	156	234,485
D7—	62	234,487
	95	234,488
	212	234,489
D8—	98	234,490
	273	234,486
D9—	9	234,491
	116	234,492
	137	234,493
	182	234,494
	187	234,495
D10—	14	234,496
	15	234,497
	58	234,534
	87	234,498
D12—	85	234,499
	143	234,500
	186	234,501
		234,502
D13—	1G	234,503
D18—	2B	234,504
	R	234,505
		234,506
D19—	75	234,507
	76	234,508
		234,509
	78	234,510
		234,511
D22—	30	234,512
D23—	18	234,513
		234,514
	34	234,515
	45	234,516
	165	234,517
D24—	1D	234,518
D26—	C	234,519
	14A	234,520
D30-	13	234,521
		234,522
D34—	4R	234,523
		234,525
		234,528
	5GH	234,524
	MM	234,529
	NN	234,526
	SS	234,527
D35—	3A	234,530
		234,531
D48—	32R	234,532
D49—	9.1	234,533
D56—	4B	234,535
		234,536
		234,537
		234,538
D57—	1E	234,539
		234,540
D61—	B	234,542
	J	234,541
D83—	C	234,547
	H	234,544
	T	234,543
D87—	R	234,545
		234,546
	8	234,548

CLASSIFICATION OF PLANTS

P. —	78	3,691
P. —		3,692
P. —	88	3,693

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,871,056
	3,871,739
	3,872,231
	3,872,304
4 :	3,871,083
	3,871,097
	3,871,117
	3,871,220
	3,871,347
	3,871,434
	3,871,647
	3,871,686
	3,872,291
	3,872,380
	3,872,390
	3,872,431
	3,872,450
5 :	3,871,124
	3,871,986
6 :	3,871,044
	3,871,052
	3,871,057
	3,871,064
	3,871,078
	3,871,094
	3,871,134
	3,871,139
	3,871,141
	3,871,144
	3,871,147
	3,871,151
	3,871,179
	3,871,180
	3,871,184
	3,871,208
	3,871,217
	3,871,228
	3,871,233
	3,871,248
	3,871,283
	3,871,355
	3,871,359
	3,871,371
	3,871,382
	3,871,390
	3,871,393
	3,871,401
	3,871,422
	3,871,426
	3,871,444
	3,871,449
	3,871,452
	3,871,453
	3,871,475
	3,871,479
	3,871,503
	3,871,515
	3,871,522
	3,871,527
	3,871,538
	3,871,547
	3,871,562
	3,871,570
	3,871,582
	3,871,593
	3,871,597
	3,871,609
	3,871,622
	3,871,653
	3,871,728
	3,871,734
	3,871,754
	3,871,767
	3,871,775
	3,871,783
	3,871,787
	3,871,792
	3,871,809
	3,871,826
	3,871,828
	3,871,829
	3,871,865
	3,871,906
	3,871,937
	3,871,955
	3,872,008
	3,872,012
	3,872,014
	3,872,021
	3,872,022
	3,872,084
	3,872,098
	3,872,101
	3,872,139
	3,872,157
	3,872,158
	3,872,159
	3,872,168
	3,872,191
	3,872,192
	3,872,195
	3,872,218
	3,872,255
	3,872,260
	3,872,313
	3,872,323
	3,872,330
	3,872,354
	3,872,371
	3,872,395
	3,872,407
	3,872,429
	3,872,445
	3,872,451
	3,872,454
	3,872,455
	3,872,474
	3,872,477
8 :	3,871,240
	3,871,607
	3,871,709
	3,871,759
	3,872,016
	3,872,209
	3,872,391
9 :	Re.28,367
	3,871,091
	3,871,100
	3,871,110
	3,871,130
	3,871,137
	3,871,176
	3,871,229
	3,871,243
	3,871,263
	3,871,375
	3,871,520
	3,871,655
	3,871,667
	3,871,674
	3,871,722
	3,871,763
	3,871,803
	3,871,811
	3,871,856
	3,871,880
	3,871,889
	3,871,948
	3,871,977
	3,871,983
	3,872,030
	3,872,171
	3,872,199
	3,872,211
	3,872,259
	3,872,293
	3,872,352
	3,872,355
	3,872,369
	3,872,419
	3,872,430
	3,872,469
	3,872,472
10 :	3,871,068
	3,871,911
	3,872,057
	3,872,065
	3,872,066
	3,872,155
	3,872,169
	3,872,174
11 :	3,871,286
	3,871,296
	3,871,696
12 :	3,871,053
	3,871,104
	3,871,120
	3,871,122
	3,871,213
	3,871,247
	3,871,264
	3,871,325
	3,871,383
	3,871,584
	3,871,650
	3,871,863
	3,871,951
	3,872,073
	3,872,238
	3,872,248
	3,872,433
	3,872,460
13 :	3,871,227
	3,871,260
	3,871,309
	3,871,481
	3,871,563
	3,871,646
	3,871,844
	3,871,910
	3,872,235
	3,872,283
14 :	3,871,979
15 :	3,871,471
16 :	3,871,042
	3,871,289
	3,871,477
	3,871,502
	3,871,706
17 :	3,871,054
	3,871,066
	3,871,082
	3,871,099
	3,871,112
	3,871,115
	3,871,132
	3,871,152
	3,871,173
	3,871,177
	3,871,185
	3,871,186
	3,871,187
	3,871,190
	3,871,198
	3,871,230
	3,871,231
	3,871,241
	3,871,246
	3,871,267
	3,871,276
	3,871,322
	3,871,337
	3,871,384
	3,871,395
	3,871,396
	3,871,424
	3,871,435
	3,871,436
	3,871,462
	3,871,483
	3,871,504
	3,871,521
	3,871,525
	3,871,530
	3,871,541
	3,871,544
	3,871,550
	3,871,552
	3,871,557
	3,871,569
	3,871,596
	3,871,605
	3,871,611
	3,871,615
	3,871,635
	3,871,659
	3,871,676
	3,871,692
	3,871,710
	3,871,719
	3,871;725
	3,871,732
	3,871,737
	3,871,757
	3,871,784
	3,871,859
	3,871,925
	3,871,939
	3,871,976
	3,872,003
	3,872,005
	3,872,019
	3,872,052
	3,872,060
	3,872,162
	3,872,196
	3,872,206
	3,872,241
	3,872,247
	3,872,298
	3,872,302
	3,872,331
	3,872,350
	3,872,387
	3,872,478
	3,872,479
18 :	3,871,039
	3,871,242
	3,871,262
	3,871,367
	3,871,389
	3,871,510
	3,871,559
	3,871,663
	3,871,816
	3,872,026
	3,872,130
	3,872,240
	3,872,265
	3,872,334
	3,872,353
	3,872,383
	3,872,426
	3,872,459
	3,872,497
19 :	3,871,142

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,871,368
20 : 3,871,159
3,871,280
3,871,651
3,871,989
3,872,397
21 : 3,871,702
3,871,800
3,871,806
3,871,849
3,872,208
22 : 3,871,043
3,871,086
3,871,162
3,871,209
3,871,256
3,871,291
3,871,484
3,871,656
3,871,817
3,872,120
3,872,144
3,872,463
23 : 3,871,121
3,871,331
3,871,586
24 : Re.28,368
3,871,069
3,871,323
3,871,443
3,871,511
3,871,564
3,871,577
3,871,614
3,871,726
3,871,769
3,871,890
3,871,902
3,871,990
3,872,048
3,872,151
3,872,152
3,872,282
3,872,349
3,872,403
25 : 3,871,073
3,871,076
3,871,077
3,871,119
3,871,143
3,871,205
3,871,215
3,871,237
3,871,301
3,871,329
3,871,360
3,871,363
3,871,373
3,871,403
3,871,457
3,871,473
3,871,532
3,871,573
3,871,733
3,871,743
3,871,744
3,871,751
3,871,755
3,872,129
3,872,194
3,872,290
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PLANT PATENTS

12 : 3,693

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Frederick B. Dent, Secretary
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Vol. 932 Number 4

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 25, 1975

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE
March 25, 1975 Volume 932 Number 4

CONTENTS

Page
Patent and Trademark Notices
- Removal from Register 1242
- Patent Suits 1242

Patent Notices
- Certificates of Correction for the Week of March 25, 1975 1244
- Dedication 1244
- Disclaimers 1244
- Erratum 1244

Condition of Patent Applications 1245
Reissue Patents Granted (28,370) 1247
Plant Patents Granted (3,694) 1251
Patents Granted
- General and Mechanical (3,872,511) 1253
- Chemical (3,873,265) 1504
- Electrical (3,873,756) 1631

Design Patents Granted (234,549) 1713
Index of Patentees . . . . . PI 1
Indices of Reissues, Plants and Designs . . . . . PI 46
Classification of
- Patents (Including Reissues) . . . . . PI 49
- Designs and Plants . . . . . PI 52

Geographical Index of Residence of Inventors
- Patents (Including Reissues) . . . . . PI 53
- Designs and Plants . . . . . PI 55

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PATENT AND TRADEMARK OFFICE NOTICES

Removal From Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on November 18, 1974, to Mr. Andrew G. Pullos at 714–716 Bank of America Bldg., 12 South First St., San Jose, Calif. 95113, the last post office address furnished by him to the Committee on Enrollment. No reply was received within the period of thirty days therein set. Accordingly, his name is being removed from the Register of Attorneys.

LUTRELLE F. PARKER,
Feb. 25, 1975. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,847,313, E. E. Ellies, METHOD OF TREATING FRESH MEATS, **filed** Nov. 8, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–1094, *Tee-Pak, Inc.* v. *St. Regis Paper Co.* Stipulation and order settling and dismissing case with prejudice, Oct. 23, 1974.

2,895,950, V. K. Krieble, COMPOSITIONS CONTAINING HYDROPEROXIDE POLYMERIZATION CATALYST AND ACRYLATE ACID DIESTER, **filed** July 18, 1974, D.C. Tenn. (Memphis), Doc. C–74–395, *Locite Corporation* v. *Accrabond Corporation and Landon Max Dula.*

2,895,950, V. K. Krieble, COMPOSITIONS CONTAINING HYDROPEROXIDE POLYMERIZATION CATALYST AND ACRYLATE ACID DIESTER; **3,046,262,** same, ACCELERATED ANAEROBIC CURING COMPOSITIONS, **filed** Apr. 7, 1972, D.C., S.D.N.Y., Doc. 72–C–1464, *Loctite Corp.* v. *B. Jadow and Sons Inc.* Filed judgment by consent in favor of the plaintiff. Defendant has infringed said patents as indicated and the order of discontinuance is vacated, May 23, 1974. **Same, filed** Mar. 7, 1973, D.C., S.D.N.Y., Doc. 73–C–996, *Loctite Corp.* v. *Toagosei Chemical Industry Co. Ltd.* Filed order of voluntary dismissal pursuant to Rule 41(a)(1), June 6, 1973.

3,046,262. (See 2,895,950.)

3,212,431, H. A. Raab, METHOD OF BALING; **3,212,432,** same, BALING SYSTEM; **3,212,433,** same, BALING STRUCTURE AND CONTROLS THEREFOR; **3,511,174,** same, FLUID OPERABLE SYSTEM FOR BALING EQUIPMENT, **filed** June 12, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1425, *East Chicago Machine Tool Corporation* v. *Maren Engineering Corporation.* Final judgment by consent dismissing with prejudice plaintiff's complaint for patent infringement as to all defendants; Patents 3,212,431 and '432 declared invalid and Patents 3,212,431, '433 and 3,511,174 declared unenforceable by judgment on Count I of counterclaims of Maren and Air Conveying; Count II (Antitrust) of said counterclaims dismissed with prejudice; on Count III (Unfair Competition) of said counterclaims, plaintiff enjoined from asserting the four patents in suit against anyone in respect of the product of Maren of Air Conveying; no order on remaining issues resolved by agreement; plaintiff's appeal dismissed, July 29, 1974.

3,212,432. (See 3,212,431.)

3,212,433. (See 3,212,431.)

3,213,736, W. B. Keeton, CUTTER FOR PICTURE FRAME MATS, **filed** Nov. 4, 1974, D.C., S.D. Miss. (Jackson), Doc. J74–264–(N), *William R. Reedy and Robert D. Parker* v. *Homer B. Molpus.*

3,253,292, A. M. Herschensohn, HAIR BRUSHES, **filed** Nov. 4, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–3196 AAH, *Arthur M. Herschensohn, Corona Hair Net Corporation and The Bobby Company* v. *Paris Associates, Inc.*

3,320,090, L. Graubart, PHENOXY-POLYURETHANE MAGNETIC TAPE BINDER, **filed** Nov. 5, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–2349–ACW, *Ampex Corporation* v. *Memorex Corporation.*

3,329,468, R. D. Beith, WHEEL STRUCTURE, **filed** Oct. 8, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2498, *E-T Industries, Inc.* v. *Ansen Automotive Eng'g and Grand Automotive Speed Center, Inc.* Judgment order, plaintiff is owner of patent. Judgment on the plaintiff's claim for patent infringement is entered for the plaintiff. Judgment dismissing E-T's unfair competition and trademark dilution claims is entered for defendants with prejudice. Judgment dismissing all claims of defendants is entered for the plaintiff with prejudice, Oct. 31, 1974.

3,368,280, Friedman and Richman, DENTAL TOOL; **3,589,012,** B. Richman, TIP FOR ULTRASONIC DENTAL INSTRUMENT, **filed** Oct. 31, 1974, D.C., S.D. Fla. (Miami), Doc. 74–1406, *Litton Medical Products, Inc.* v. *Johnson & Johnson Inc. and Key Pharmaceuticals Inc.*

3,412,427, Flusfeder and Palmer, APPARATUS FOR MANUFACTURING DISC RECORDS; **3,702,479,** same, **filed** Aug. 8, 1974, D.C.N.J. (Trenton), Doc. C–74–1215, *Lened, Inc.* v. *Valley Metallurgical Processing Company Incorporated.*

3,454,280, Harrison and Broughton, GOLF BALLS HAVING COVERS OF ETHYLENE-UNSATURATED MONOCARBOXYLIC ACID COPOLYMER COMPOSITIONS, **filed** Sept. 19, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2318, *Dunlop Holdings Limited* v. *Ram Golf Corporation.* Enter memorandum opinion and order setting forth findings of fact and conclusions of law that the defendant's defense of prior invention under 35 U.S.C. Section 102(g) has been established, and plaintiff's Patent 3,454,280 is void. Leave granted defendant to file, as it sees fit, any proposed additional findings of fact or other proposed amendments, if any, to this opinion within 10 days pursuant to Rule 52(b) FRCP, Nov. 8, 1974.

3,488,039, F. Ekman, FILTER BED FOR DUST COLLECTOR, **filed** Nov. 13, 1974, D.C., N.D. Ohio (Cleveland), Doc. C–74–1036, *Environeering, Inc.* v. *Ford Motor Company.*

3,511,174. (See 3,212,431.)

3,537,114, F. J. Mis, BED FRAME ASSEMBLY, **filed** Nov. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3200, *Harris-Hub Company, Inc.* v. *Interlake, Inc.*

3,570,393, F. R. Schy, TACO SHELL FORMING AND COOKING APPARATUS, **filed** Nov. 5, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV74–3208–MML, *Daniel T. Stickle* v. *Khyber Food Products, Inc. et al.*

3,585,707, R. C. Stevens, METHOD OF MAKING TUBULAR PRODUCTS, **filed** Nov. 14, 1974, D.C. Mass. (Boston), Doc. CA 74–5198–F, *Cordis Corporation* v. *C. R. Bard, Inc.*

3,589,012. (See 3,368,280.)

3,640,310, G. Erlich, MULTIPORT VALVE, **filed** Nov. 11, 1974, D.C. C.D. Calif. (Los Angeles), Doc. CV–74–3328, *Hayward Manufacturing Co., Inc.* v. *KDI American Products.*

3,644,681, D. E. Rice, CORDLESS TELEPHONE SYSTEM, **filed** Nov. 11, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–516, *Bison Enterprises, Ltd.* v. *Fonetron, Inc.*

3,657,513, L. Howard, ELECTRICAL HEATING CABLES, **filed** Nov. 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3283, *Delta-Therm, Inc.* v. *Easy Heat-Wirekraft Div. of MSP Industries Corp.*

3,702,749. (See 3,412,427.)

3,750,882, G. W. Hays, AUTOMATIC GRADER, **filed** Nov. 1, 1973, D.C., S.D.N.Y., Doc. 73–C–4713, *Technical Development Corp.* v. *AMF Industries, Inc.* Opinion—AMF's motion to transfer this action to the United States District Court for the Eastern District of Virginia is granted, Nov. 7, 1974.

3,823,049, J. Vetrovec, REINFORCED WEB MAKING MACHINE, **filed** Nov. 1, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–3166–JWC, *Bruck Industries, Inc.* v. *Jan Vetrovec, Henry T. Chen, doing business as Oriental Trading Center.*

3,827,428, Hon and Hon, BIPOLAR ELECTRODE STRUCTURE FOR MONITORING FETAL HEARTBEAT AND THE LIKE, **filed** Oct. 17, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–2971, *Corometrics Medical Systems, Inc.* v. *Berkeley Bio-Engineering, Inc.*

Re. 25,942, E. N. Reynolds, SPRINKLER HEAD, **filed** Sept. 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2231–DWW, *Elmer N. Reynolds and Rain-O-Mat Sprinklers, Inc.* v. *Zurn Industries, Inc., doing business as Hays Mfg.* Filed stipulation and order of dismissal without prejudice, entered Nov. 15, 1974.

Re. 26,667, E. G. Sarbo, FOOT COVER AND METHOD OF MANUFACTURING THE SAME, **filed** Oct. 9, 1973, D.C., W.D.N.C. (Statesville), Doc. ST–C–73–24, *Wayne-Gossard Corporation* v. *Moretz Hosiery Mills, Inc.* Judgment hereby restraining and enjoining defendant from manufacturing, using or selling Styles Nos. 2444, 2445, 2446, 2447, 2448 and 2480, or any other knitted shoe-top length foot covers embodying the invention claimed in Claims 4 and 5 of said reissue, Nov. 1, 1974.

D. 226,607, W. J. Lawrence, BATHTUB, **filed** Apr. 17, 1973, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL)74–111–C–NCR, *Gruber Systems, Inc. and Synthetic Innovations, Inc.* v. *Marmoreal Products et al.* Final judgment and decree permanently enjoining defendant from making, selling or using bathtub or molds as covered by said design, or any infringement thereof, Oct. 10, 1974.

D. 226,997, W. H. Oliver, SOFA OR SIMILAR ARTICLE; **D. 227,834,** same, **filed** Aug. 16, 1973, D.C., W.D. Wash. (Seattle), Doc. 497–73C2, *William H. Oliver* v. *Ronald Morse, Jane Doe Morse, Robert Clayton and Simply Sofas & Things, Inc.* Patent designs are declared invalid and not infringed, Sept. 23, 1974.

D. 227,834. (See D. 226,997.)

D. 231,170, R. P. Carter, NIGHT STAND; **D. 231,172,** same, TRIPLE DRESSER; **D. 231,881,** same, BED HEADBOARD, **filed** Apr. 16, 1974, D.C., W.D. Va. (Roanoke), Doc. 74–64, *The Lane Company, Inc.* v. *Coleman Furniture Corporation.* Stipulation of dismissal by and between the parties to the action, that, pursuant to Rule 41(a)(1)(ii), FRCP, the action shall be and is hereby dismissed, Nov. 11, 1974.

D. 231,172. (See D. 231,170.)

D. 231,881. (See D. 231,170.)

Certificates of Correction for the Week of Mar. 25, 1975

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Dedications

Reissue No. 24,992.—*Ernest E. Ellies,* Wilmette, Ill. METHOD OF TREATING FRESH MEATS. Patent dated May 30, 1961. Dedication filed Dec. 18, 1974, by the assignee, *Tee-Pak, Inc.*

Hereby dedicates to the Public all of the term of said patent subsequent to Oct. 23, 1974.

3,326,694.—*Stanley I. Skelskie,* Brockton, Mass. PROCESS FOR MAKING CRANBERRY SAUCE. Patent dated June 20, 1967. Dedication filed Jan. 13, 1975, by the assignee, *Ocean Spray Cranberries, Inc.*

Hereby dedicates to the Public all claims thereof, for the remainder of the term of said patent.

3,369,801.—*Harlan G. Hartman,* Rochester, N.Y. SILVER RECOVERY UNIT. Patent dated Feb. 20, 1968. Dedication filed Jan. 9, 1975, by the assignee, *Eastman Kodak Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,474,153.—*Joseph P. Henry,* South Charleston, and *Loy A. Wilkinson,* Charleston, W. Va. DEHYDROGENATION OF ETHYLBENZENE TO STYRENE. Patent dated Oct. 21, 1969. Dedication filed Dec. 27, 1974, by the assignee, *Union Carbide Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,547,108.—*Stanley V. Seiffert,* Seattle, Wash. COMBINATION DEFIBRILLATOR AND HEARTBEAT MONITORING SYSTEM. Patent dated Dec. 15, 1970. Dedication filed Jan. 15, 1975, by the assignee, *Physio-Control Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,349,937.—*Alan A. Duff,* North Springfield, and *Norman G. Hayward,* Alexandria, Va. TITRATION APPARATUS. Patent dated Oct. 31, 1967. Disclaimer filed Nov. 18, 1974, by the assignee, *Cooke Engineering Company.*

Hereby enters this disclaimer to claims 4, 6, 7 and 8 of said patent.

3,540,174.—*George R. Birkemeier* and *Hollis C. Scott,* Portland, Oreg. DOME STRUCTURES. Patent dated Nov. 17, 1970. Disclaimer filed, Oct. 23, 1974, by the assignee, *Timber Structures, Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

3,555,013.—*Hisao Yamamoto,* Nishinomiya-shi, *Shigeho Inaba,* Takarazuka-shi, *Tadashi Okamoto,* Ashiya-shi, *Toshiyuki Hirohashi,* Kobe, *Kikuo Ishizumi,* Minoo-shi, *Michihiro Yamamoto,* Takarazuka-shi, *Isamu Maruyama,* Minoo-shi, *Kazuo Mori,* Kobe, *Tsuyoshi Kobayashi,* Minoo-shi, and *Takahiro Izumi,* Takarazuka-shi, Japan. PROCEDURE FOR PREPARING 1,4-BENZODIAZEPINE-2-ONE DERIVATIVES. Patent dated Jan. 12, 1971. Disclaimer filed Jan. 16, 1975, by the assignee, *Sumitomo Chemical Company, Ltd.*

Hereby enters this disclaimer to all of the claims of said patent.

3,555,360.—*Sung Chuel Lee,* Bridgeport, and *Clifford E. Brockway,* North Haven, Conn. PHASE CONTROLLED GROUND FAULT CIRCUIT INTERRUPTER. Patent dated Jan. 12, 1971. Disclaimer filed Aug. 21, 1974, by the assignee, *Harvey Hubbell, Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 of said patent.

3,589,660.—*Bruce P. Dunckel,* Stone Mountain, Ga. LIGHTING FIXTURE HANGER. Patent dated June 29, 1971. Disclaimer filed Dec. 23, 1974, by the assignee, *National Service Industries, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

Erratum

All reference to the identification number T930,027 for the Defensive Publication of Robert L. McBrayer, disclosing Bacteria-Inhibiting Urethane Foams, appearing on Page 373 in the OFFICIAL GAZETTE of October 10, 1972, should be deleted since this Defensive Publication was issued under the number T903,027.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 1, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-4-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-11-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-13-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-1-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-24-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-5-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-22-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	12-18-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-3-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-5-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-2-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-74

Expiration of patents: The patents within the range of numbers indicated below expire during March 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,825,064 to 2,828,486, inclusive
Plant Patents	Numbers 1,686 to 1,693, inclusive

REISSUE PATENTS

GRANTED MARCH 25, 1975

ERRATA

For CLASS	See PATENT NO.
173–164	28,371
166–278	28,372
72–60	28,373
178–6.6	28,375
260–257	28,377

REISSUES

MARCH 25, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

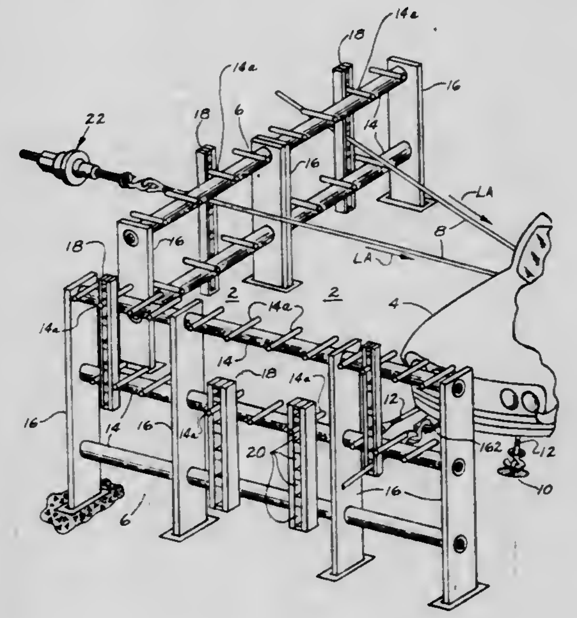
28,370
METHOD OF AND APPARATUS FOR REPAIRING DEFORMED YIELDABLE STRUCTURES

Anastacio V. Sanchez, 10775 Foothill Blvd.,
Cupertino, Calif. 95014

Original No. 3,673,842 dated July 4, 1972, Ser. No. 14,558, Feb. 26, 1970. Application for reissue Aug. 27, 1973, Ser. No. 391,642

Int. Cl. B21d ***1/12***

U.S. Cl. 72—293 **21 Claims**



13. Apparatus for repairing a deformed yieldable structure comprising, in combination:

cable guide means positioned for repairing a deformed yieldable structure, said cable guide means comprising guide members, each of said guide members having a plurality of guide slots for receiving and guiding cables simultaneously along a plurality of different planes;

a plurality of cables received by one of said guide members to be guided along various lines of action;

means adapted for engagement with the deformed yieldable structure and secured to said cables; and

adjustable tension means connected to each of said cables for applying tension to the cables respectively to urge said means secured thereto into engagement with the deformed yieldable structure.

28,371
PIPE HANDLING APPARATUS

Roy L. Van Winkle, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Original No. 3,446,284, dated May 27, 1969, Ser. No. 667,957, Sept. 15, 1967. Application for reissue Nov. 12, 1970, Ser. No. 88,623, which is a division of abandoned reissue application Ser. No. 888,182, Dec. 12, 1969

Int. Cl. E21b ***19/16***

U.S. Cl. 173—164 **4 Claims**

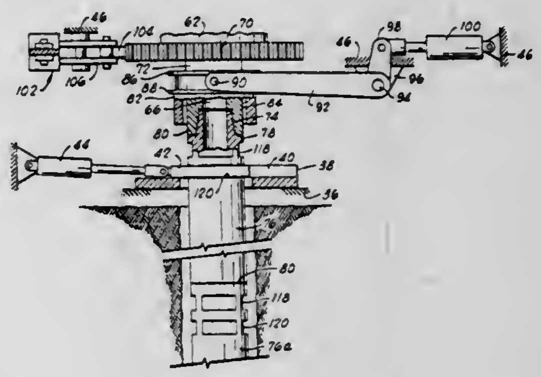
1. Apparatus for unscrewing selected threaded connections between sections of pipe and the like wherein each pipe section has flats on the exterior thereof, said apparatus comprising:

rotating means engageable with one of the pipe sections for rotating the pipe, said rotating means including a chuck member slidingly mounted thereon, said chuck member having an opening extending coaxially therethrough with respect to the axis of said pipe;

moving means for displacing said rotating means and pipe along the axis of said pipe;

wrench means adapted to be positioned in the flats and sized to be received within said opening in engagement with said chuck member;

chuck actuating means for moving said chuck member into engagement with said wrench means holding said wrench means in said flats connecting said one pipe section and rotating means for common rotation; and



slip means movable into holding engagement with the flats on said one pipe section, whereby the rotating means is rotated to break the connection between said one pipe section and the rotating means, and said slip means being movable into holding engagement with the flats on the subjacent pipe section upon movement of said pipe sections by said moving means, whereby rotation of the rotating means rotates said one pipe section engaged by the wrench means and unthreads the connection between the pipe sections;

wherein said wrench means includes a plurality of wrench dogs pivotally mounted on and rotatable with said rotating means and receivable in the opening in said chuck member, said dogs having a lug portion engageable with the flats on the pipe section in response to movement of said chuck member relatively toward the pipe section.

28,372
METHOD FOR PLACING GRAVEL PACKS

Derry D. Sparlin, Ponca City, Okla., and William C. Bond, Casper, Wyo., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Original No. 3,498,380, dated Mar. 3, 1970, Ser. No. 811,678, Mar. 28, 1969, which is a continuation-in-part of application Ser. No. 647,597, June 21, 1967. Application for reissue Mar. 13, 1974, Ser. No. 450,952

Int. Cl. E21b ***43/04***

U.S. Cl. 166—278 **13 Claims**

1. A method of treating a wellbore comprising injecting into the wellbore opposite a permeable formation a slurry *consisting essentially* of from 10 to 25 pounds solid particulate matter having a size of from 20 to 100 mesh per one gallon of carrier liquid having a viscosity of from 50 to 2000 centipoises to create a permeable deformable

plastic deposit of said particulate matter against the formation face, thereby minimizing migration of sand and other granular materials into the wellbore from the permeable formation when the well is placed in service.

28,373

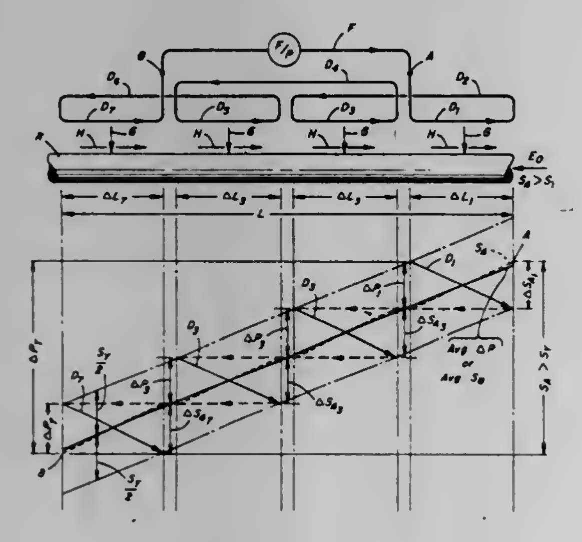
APPARATUS AND METHOD FOR CONTINUOUS MATERIAL FEEDING AND DEFORMATION

Francis Joseph Fuchs, Jr., Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,667,267, dated June 6, 1972, Ser. No. 876,940, Nov. 14, 1969, which is a continuation-in-part of application Ser. No. 794,488, Jan. 28, 1969. Application for reissue Jan. 4, 1974, Ser. No. 430,851

Int. Cl. B21c *1/20, 33/00*

U.S. Cl. 72—60 **77 Claims**



1. A method for the continuous extrusion of wire from a rod of indefinite length, said method comprising:
   - a. producing a stream of fluid having an alternate-reverse flow pattern;
   - b. applying the steam of fluid to spaced lengths along the rod:
     - i. to produce viscous drag force which advances and develops axial stresses in the rod, and
     - ii. to produce normal pressures in the rod which increase in the direction of advancement of the rod, the difference at any point along the rod between the axial stress and normal pressure not exceeding the yield strength of said rod, and
   - c. passing the rod through an extrusion die to produce a wire.

28,374

CHEMILUMINESCENT INSTRUMENT

Alex D. Colvin and Alan Warnick, Oak Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Original No. 3,746,514, dated July 17, 1973, Ser. No. 146,927, May 26, 1971. Application for reissue Dec. 17, 1973, Ser. No. 425,641

Int. Cl. G01n *27/68*

U.S. Cl. 23—254 R **14 Claims**

12. A reaction chamber for a chemiluminescent reaction comprising

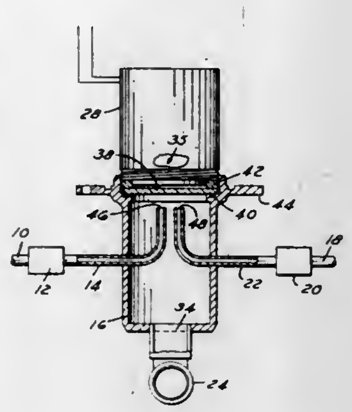
a housing having an opening at one end,

a light transmitting means sealingly mounted in the opening of the housing,

a sample conduit extending into said housing and having an opening for admitting a sample gas into the housing, said opening being proximate to the inner surface of the light transmitting means,

a reactant conduit extending into said housing and having an opening for admitting a reactant gas into the housing *separate from said sample conduit,* and

an exhaust outlet formed in said housing at a location that is remote from said sample conduit opening and said reactant conduit opening.



28,375

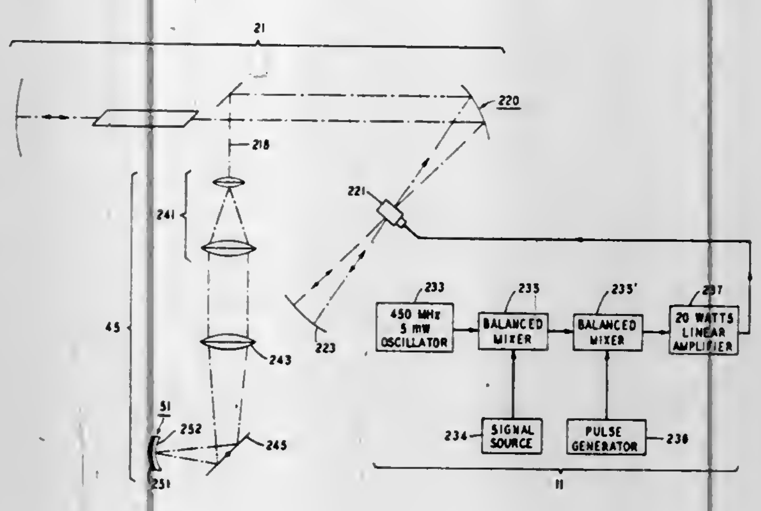
RECORDING AND DISPLAY METHOD AND APPARATUS

Dan Maydan, Short Hills, Melvin Irwin Cohen, Berkeley Heights, and Robert Eugene Kerwin, Westfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,720,784, dated Mar. 13, 1973, Ser. No. 115,029, Feb. 12, 1971. Application for reissue Jan. 23, 1974, Ser. No. 435,821

Int. Cl. G11b *7/00, 11/02*

U.S. Cl. 178—6.6 R **27 Claims**



26. Apparatus for forming in a radiation absorbing film on a transparent substrate a pictorial image frame comprising a multitude of small discrete holes, and displaying the image frame, said apparatus comprising:

a source of modulated coherent radiation for forming pulses of coherent radiation;

means for causing said pulses to scan the film in raster-like fashion to form an aggregate of holes in the film, the aggregate of holes forming an image frame, the holes being separated by approximately the diamester of the largest hole formed in said film as measured from the centers of adjacent holes;

means for varying the energy of each pulse in that range for which the area of the hole formed by the pulse increases with increasing energy whereby a gray scale is provided; and

means for projecting light through the entire frame to view the image.

28,376

CHEMILUMINESCENT PROCESS

Alan Warnick and Alex D. Colvin, Oak Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Original No. 3,746,513, dated July 17, 1973, Ser. No. 146,929, May 26, 1971. Application for reissue Dec. 17, 1973, Ser. No. 425,643

Int. Cl. G01n *27/68*

U.S. Cl. 23—232 R **16 Claims**

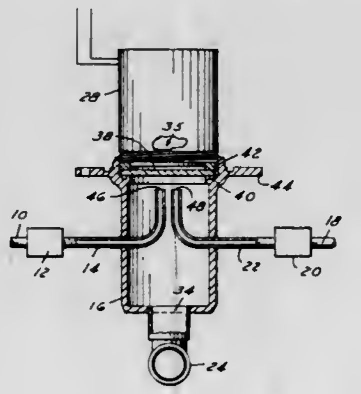
1. A process for determining the concentration of a gaseous constituent in a gaseous sample mixture by measuring the [chemiluminescent] *chemiluminescence* of a reaction between the constituent and a gaseous reactant in a reaction chamber comprising

introducing the gaseous sample mixture into the reaction chamber with substantially laminar flow at a location proximate to light transmitting means forming at least a portion of a wall of the reaction chamber,

separately introducing a gaseous reactant capable of producing chemiluminescence when reacting with the constituent into the reaction chamber *at a location proximate to the point of introduction of the gaseous sample mixure,*

drawing the gaseous mixture *of sample and reactant* away from the location at which it is introduced into the reaction chamber, and

measuring the chemiluminescence transmitted through the light transmitting means that is produced by the reaction between the constituent and the reactant.



28,377

SELECTED 5-SUBSTITUTED-5-PHENYLALKYL BARBITURIC ACIDS

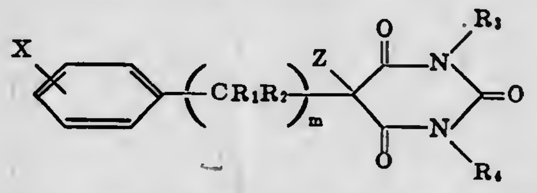
Carlos M. Samour, Wellesley, and Julius A. Vida, Boston, Mass., by The Kendall Co., Walpole, Mass., assignee

No Drawing. Original No. 3,784,547, dated Jan. 8, 1974, Ser. No. 181,543, Sept. 17, 1971, which is a continuation-in-part of abandoned application Ser. No. 88,193, Nov. 9, 1970. Application for reissue Jan. 24, 1974, Ser. No. 436,159

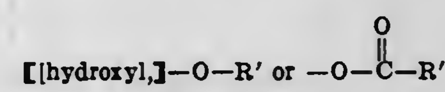
Int. Cl. C07d *51/20*

U.S. Cl. 260—257 **17 Claims**

1. A compound having the formula



wherein m is 1 or 2; R_1 and R_2 are independently selected hydrogen, methyl or ethyl, with the provisos that the radical $\leftarrow CR_1R_2 \rightarrow_m$ can contain no more than one ethyl group or two methyl groups, that when m is 1 said radical contains at least one hydrogen and that when m is 2 said radical contains at least two hydrogens; R_3 and R_4 are independently selected hydrogen or methyl, or R_3 and R_4 are both methoxymethyl or acetoxymethyl; X is hydrogen, chlorine, —NO_2 or methoxy; and Z is



$$[\text{[hydroxyl,]}]—O—R' \text{ or } —O—\overset{\overset{O}{\|}}{C}—R'$$

wherein R' is alkyl having 1 to 3 carbon atoms, or —$OSi(R'')_3$ wherein R'' is methyl or ethyl.

28,378

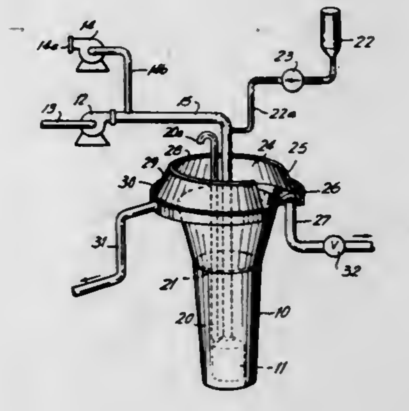
APPARATUS FOR EFFECTING PURIFICATION OF LIQUIDS BY FLOTATION

Sven Elis Ake Svantesson, Bromma, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Original No. 3,799,345, dated Mar. 26, 1974, Ser. No. 223,197, Feb. 3, 1972. Application for reissue July 18, 1974, Ser. No. 489,565

Int. Cl. B01d *43/00;* **B01f** *3/04*

U.S. Cl. 210—109 **8 Claims**



1. In apparatus for effecting purification of liquid, the combination of
   - a. a flotation tank,
   - b. a body of liquid to be purified in said tank,
   - c. a vessel, [The]
   - d. means for introducing under pressure to the bottom of said vessel for upward flow therein a mixture of air and liquid,
   - c. means for discharging a solution of air and the liquid from the top of said vessel to the body of liquid in said flotation tank at a zone thereof below its liquid surface which is at a depth at least as great as the depth of said vessel to maintain the air and liquid in said vessel at a definite pressure,
   - f. said vessel being so constructed and formed that air, at the definite pressure prevailing therein, will dissolve in the liquid and form the solution of air and the liquid during their upward flow in the vessel,
   - g. said discharging means providing an [obstructed] *unobstructed* path in which the solution of air and the liquid flows from the top of said vessel to said zone in said body of liquid in said flotation tank without any significant change in pressure, and
   - h. means for removing undissolved air from the top of said vessel to the atmosphere so that only a solution of air and the liquid will flow from the top of said vessel to said flotation tank in the path of flow provided by said discharging means.

28,379

ELECTROCHEMICAL PROCESS OF COATING USING A FLUIDIZED BED

John Rayner Backhurst, Allendale, Martin Fleischmann, Chandlersford, and Francis Goodridge and Raymond Ernest Plimley, Newcastle-upon-Tyne, England, assignors to National Research Development Corporation, London, England

No Drawing. Original No. 3,654,098, dated Apr. 4, 1972, Ser. No. 725,920, May 1, 1968. Application for reissue Aug. 20, 1973, Ser. No. 389,685, which is a continuation-in-part of abandoned application Ser. No. 639,803, May 19, 1967

Claims priority, application Great Britain, May 24, 1966, 23,070/66; May 9, 1967, 21,557/67

Int. Cl. C23b *5/00, 5/60;* **B01k** *3/00*

U.S. Cl. 204—20 **15 Claims**

1. A method of producing particles having thereon a metal surface [of substantially uniform shape] which comprises:

(a) providing an electrochemical cell which includes a cathodic chamber containing a quantity of [substantially uniform] electroplatable particles forming a static bed at the base of said chamber, said base incorporating means for producing uniform flow of liquid across the area of said chamber upon upward flow of liquid through the chamber,

(b) causing liquid electrolyte to enter said chamber at the base thereof,

(c) causing said liquid electrolyte entering said chamber to flow through said base means and flow upwardly in said chamber in a vertical direction at a velocity that causes said static bed of particles to expand to a substantially uniform depth by levitation of said particles so that the resulting fluidised bed occupies a volume [about 50%] greater than said static bed.

(d) arranging for electrode means to contact particles in said fluidised bed, and

(e) passing electric current through said cell via said electrode means so as to cathodically deposit metal on said particles.

PLANT PATENTS

GRANTED MARCH 25, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,694

LILAC PLANT

Leonard K. Slater, Agincourt, Ontario, Canada, assignor of a fractional part interest to Sheridan Nurseries Ltd.

Filed June 15, 1973, Ser. No. 370,463

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—66 **1 Claim**

1. A new and distinct variety of *Syringa vulgaris* hybrid French Lilac plant, characterized in that the mature plant is about six feet high, well rounded; and in that its flowers are large, with large florets, and of a deep purple-red colour.

3,695

LILAC PLANT

Leonard K. Slater, Agincourt, Ontaria, Canada, assignor of a fractional part interest to Sheridan Nurseries Ltd.

Filed June 18, 1973, Ser. No. 371,057

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—66 **1 Claim**

1. A new and distinct variety of *Syringa vulgaris* hybrid French Lilac plant, characterized in that the mature plant is about five to six feet high and about five feet wide; and in that its flowers are white and very large when compared with other French Lilac hybrid plants, with large florets, and tight flowers spikes that are well formed.

3,696

CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, Chichester, England, assignor to Frampton Nurseries Limited, Worthing, England

Filed July 23, 1973, Ser. No. 381,669

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as shown and described, characterized particularly as to novelty by the unique combination of a white color; small, hard and crisp pompon-like flowers, the production of a flowering shoot from a majority of the leaf axils above the compost level following a pinch; and good, uniform flowering regardless of whether the apical flower on each shoot is disbudded.

PATENTS

GRANTED MARCH 25, 1975

ERRATA

For CLASS	See PATENT NO.
128–152	3,872,559
123–41.31	3,872,835
222–407	3,872,837
242–107.4	3,872,849
117–72	3,872,937
220–270	3,872,999
235–92	3,873,019
241–275	3,873,047
105–476	3,873,053
273–131	3,873,101
214–84	3,873,130
316–20	3,873,169
204–129.46	3,873,512
423–242	3,873,532
358–21	3,873,760
323–6	3,873,910

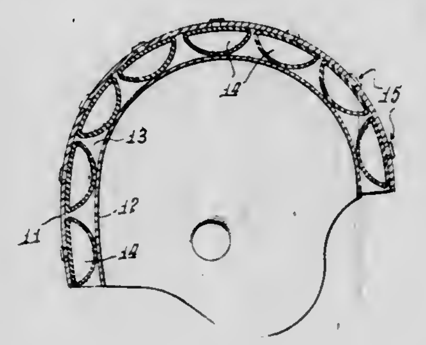
PATENTS

GRANTED MARCH 25, 1975

GENERAL AND MECHANICAL

3,872,511
PROTECTIVE HEADGEAR

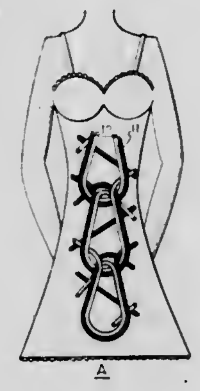
Charles E. Nichols, Chicago, Ill., assignor to Angelo C. Larcher, Chicago, Ill.
Filed Mar. 11, 1974, Ser. No. 449,972
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **9 Claims**



1. In a protective headgear adapted to fit over a hard shell football helmet, said assembly comprising a substantially rigid shell shaped to fit over the standard football helmet and of a size to be spaced away from said helmet, spaced apart resilient cushions attached to and arranged over substantially the entire inner surface of said shell, and a neck on each resilient cushion each engageable in an aperture in the shell for retaining said cushions in place, said cushions having substantial contact with said helmet and being adapted to partially or wholly collapse when the shell is subjected to severe impact.

3,872,512
LADY'S PANELLED UNDERGARMENT AND METHOD OF MAKING SAME

Vincent F. Ambrosiani, Wyomissing, Pa., assignor to VF Corporation, Reading, Pa.
Filed Nov. 20, 1973, Ser. No. 417,629
Int. Cl. A41b *9/10*
U.S. Cl. 2—73 **2 Claims**



1. A lady's panelled skirted type undergarment of warp-knit fabric in the category of slips, underskirts and the like comprising

a. a plurality of panels of warp-knit fabric,

b. said panels being joined by seams therebetween to form a garment having front and back and top and bottom portions,

c. each of said fabric panels having columns of loops comprising the wales thereof disposed in substantially parallel relation,

d. the open ends of the loops in each panel being directed toward the top portion of the garment to minimize interfabric friction,

whereby the panelled undergarment when worn with outer garments is substantially free of the tendency to ride-up or twist during active movements of the wearer,

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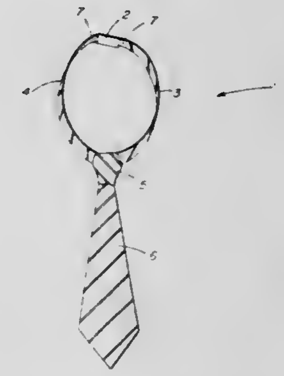
3,872,513
PULL AWAY SAFETY NECKWEAR

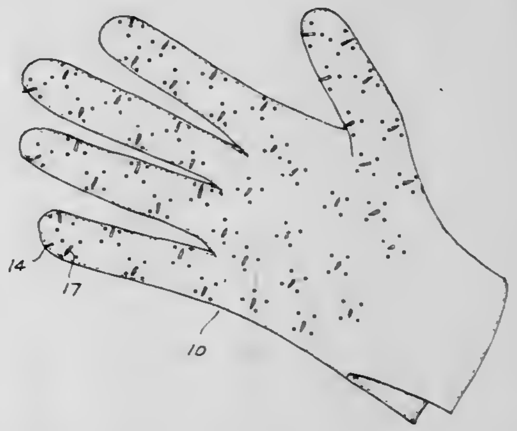
Gerald P. Beaudin, Jr., 769 Mt. Vista La., Webster, N.Y. 14580, and Dale E. McClain, 150 Prentiss Way, Henrietta, N.Y. 14467
Filed Dec. 22, 1972, Ser. No. 317,523
Int. Cl. A41d *25/16*
U.S. Cl. 2—155 **21 Claims**



1. Neckwear having a front neckwear portion and a neckband portion comprising a first neckband section and a second neckband section, and a connecting member suitable for joining together one end of said first neckband section and one end of said second neckband section, said connecting member being comprised of a male section and a female section joined together in a releasably engageable manner whereby said sections are completely separable from a pull upon the first neckwear portion.

3,872,514
DEFENSIVE GLOVE

Emanuel Liebelt, Beulah, N. Dak., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 19, 1974, Ser. No. 443,455
Int. Cl. A41d *19/00*
U.S. Cl. 2—159 **2 Claims**



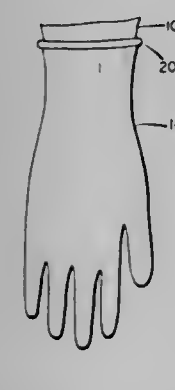
1. A glove which may be worn for conventional purposes and for purposes of self-defense, said glove fitted with a plurality of pointed metal pieces that project from the palm side of the glove,

said glove formed of an internal and an external layer of flexible covering material joined together by fastening means,
each said metal piece formed of a pointed shank joined to a generally flat head, the plane of which head is generally perpendicular to the axis of the shank,
each said metal piece mounted in the glove with the head located between the internal and the external layer of covering material of the palm side of the glove, with the shank projecting through a hole in the external layer of covering material on the palm side of the glove,
said metal pieces each held in place by the hole in the external layer of flexible covering material and by the fastening means that join the internal layer and external layer of flexible covering material.

3,872,515
RUBBER GLOVES

Kenneth G. Miner, Homer Township, Midland County; Jack L. Boone, Midland, and Wilfred F. Talbot, Jerome Township, Midland County, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 17, 1973, Ser. No. 389,276
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **2 Claims**

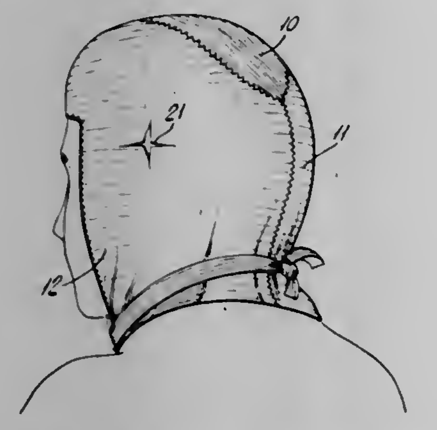


1. A silicone rubber glove having a hand portion of thin wall section to cling closely to the wearer's hand and transmit a maximum of touch sensitivity therethrough and having an open end cuff portion, the hand portion having an inner surface with a lubricity imparting quantity of a dusting powder embedded therein.

3,872,516
DISPOSABLE HEAD COVERING GARMENT

William H. Bird, Lavallette, and Richard F. Caffrey, Maplewood, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 29, 1973, Ser. No. 346,232
Int. Cl. A42b *1/04*
U.S. Cl. 2—202 **2 Claims**

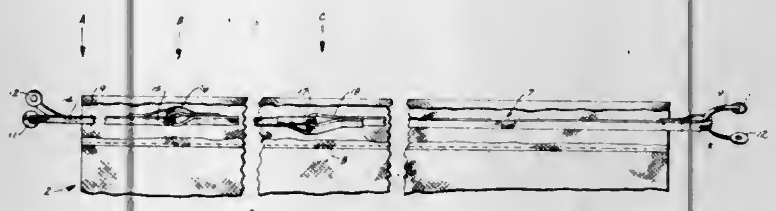


1. A surgical hood made from a nonwoven fabric comprising a crown portion which is generally a teardrop shape, two side panels, each having a top edge, a back edge, and an elongated lower edge, the top edge of each of the side panels being secured to the crown portion, the back edges of each of the panels being secured to the back edge of the other panel, the elongated portions of the side panels being of sufficient length to overlap each other under the chin of the wearer and be secured at the back of the neck of the wearer, the material of the cap being an oriented nonwoven fabric which has a machine direction strength of at least 20 pounds per three ply 1 inch width and a cross machine direction strength of 2 to 3 pounds per three ply 1 inch width, with the machine direction strength of the fabric being in the direction of the length of the elongated lower edge.

3,872,517
BRIDAL VEIL

Mathiel Miller, c/o Mrs. Burgess, 20620 E. Chapman, Orange, Calif. 92669

Filed Apr. 2, 1973, Ser. No. 346,776
Int. Cl. A42b *1/06*
U.S. Cl. 2—207 **6 Claims**

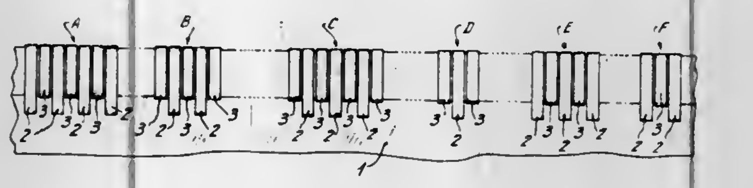


1. A veil arranged to be attachable to a frame, comprising at least one panel of veil material, a tubular hem along a portion of the edge of the veil, a drawstring extending through the hem for gathering the material along the hem, the drawstring including a plurality of sections joined by severable connections at least one of which is located within the hem when the panel is ungathered along the drawstring, the drawstring initially being long enough to extend beyond the ends of the hem when the material is in a flat ungathered condition, said severable connections being adapted to be severed after said panel of veil material has been gathered to shorten the drawstring length and permit a fastener to be attached to the drawstring via the connection that has been exposed by the gathering of the veil.

3,872,518
RETAINERS FOR BELTS OR STRAPS

Raymond Zaoui, 17 rue Le Vau, Paris, France

Filed Nov. 9, 1973, Ser. No. 414,259
Claims priority, application France, May 29, 1973, 73.19441
Int. Cl. A41f *9/00*
U.S. Cl. 2—236 **8 Claims**

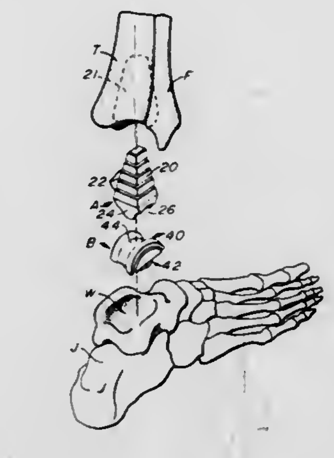


1. An article of clothing provided with a plurality of loop shaped retainers for a belt, each retainer comprising at least two adjacent strips of different lengths secured to said article in adjacent, laterally spaced relation only in the region of their ends and defining apertures of at least two different widths for receiving belts of varied width, each of said retainers having one end portion secured along a common line with respect to the corresponding end portions of the other retainers.

3,872,519
TOTAL ANKLE PROSTHESIS

Nicholas J. Giannestras, 1707 E. McMillan, Cincinnati, Ohio 45206, and Giacomo J. Sammarco, 5811 Marlborough Dr., Cincinnati, Ohio 45230

Filed Apr. 4, 1974, Ser. No. 457,804
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **9 Claims**

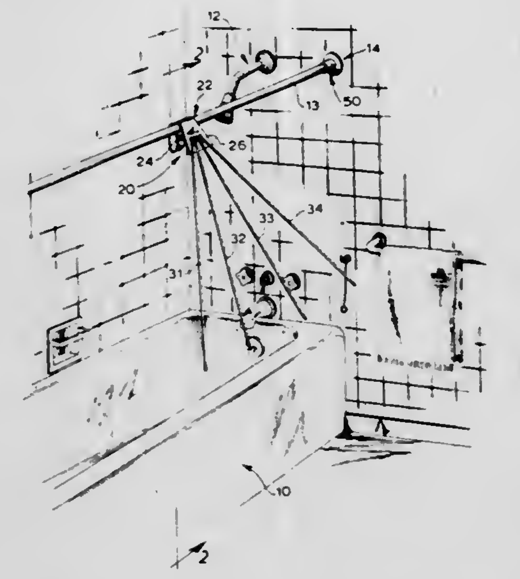


1. An ankle prosthesis comprising a tibial member and a talar member, wherein the talar member includes an upper bearing surface characterized by a central, elongate, arcuate channel having upstanding wing portions on opposite sides thereof, and wherein the tibial member includes a complementary, lower bearing surface characterized by a central depending rib having wing portions on opposite sides thereof; the bearing surface of said talar member being shaped so as to impart limited lateral rotation thereto as it is moved from a central, neutral position to a position of extension with respect to the tibial member, and to impart limited medial rotation thereto as it is moved from a central, neutral position to a position of flexion with respect to said tibial member; said tibial and talar members each including means for attachment to bone structures and providing for substantial articulation thereof.

3,872,520
CURTAIN SUPPORT

William Tyconik, R.R. No. 2, Maple, Ontario, Canada

Filed Jan. 14, 1974, Ser. No. 432,820
Claims priority, application Canada, Nov. 16, 1973, 186027
Int. Cl. A47k *3/14, 3/22*
U.S. Cl. 4—154 **13 Claims**

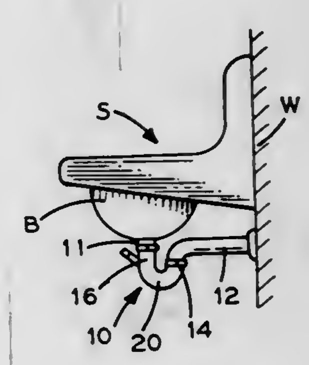


1. A curtain support for use in conjunction with a generally horizontal rail non-rotatably supported and having a curtain hanging therefrom and which support comprises:
a mounting member intended for supported nonrotatable disposition over such a rail; and a plurality of elongated arms movably mounted on said mounting member so as to extend therefrom and to be movable between a closed position in which said arms are disposed essentially alongside each other and an open position in which said arms mutually diverge in fan-like orientation from said mounting member,
whereby, when said mounting member is in such supported nonrotatable disposition over a said rail having a curtain hanging therefrom, said arms in said open position thereof engage such a curtain to limit movement of such curtain.

3,872,521
DRAIN TRAP AND CLEANER

Harry Friedman, 58-26 203rd St., Bayside, N.Y. 11364

Filed June 4, 1973, Ser. No. 366,844
Int. Cl. A47k *11/10*
U.S. Cl. 4—255 **8 Claims**



8. In combination, a drain trap comprising a curved tubular elbow member and cleaning means mounted on said elbow member for cleaning said trap, said cleaning means comprising scraping means moveably mounted within said elbow member, said scraping means comprising an elongated resilient strap member for conforming to the curvature of said elbow member upon movement of said strap member relative to said elbow member, and a plurality of split, partially circular scraper members mounted in spaced relation and transversely relation on said strap member, said scraper members having their outer surface portions disposed adjacent opposed inner surface portions of said elbow member and having contours complementary to the curvature of said elbow member at various points along the extent thereof, and handle means at one end of said strap member for manually reciprocating said cleaning means relative to said elbow member.

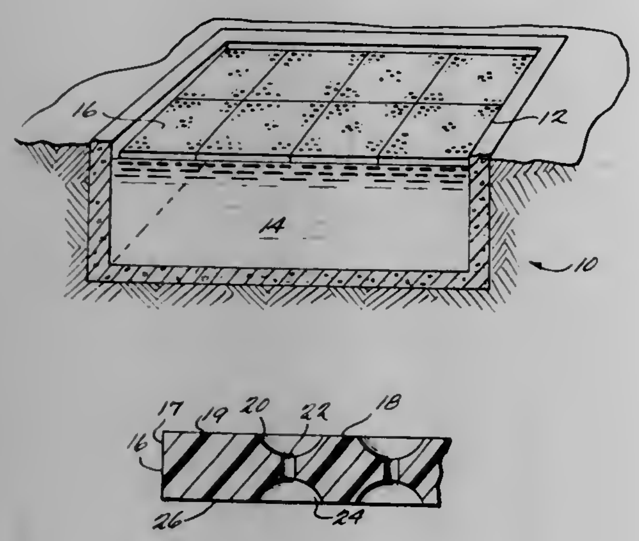
3,872,522
PROTECTIVE COVER FOR POOLS

Robert Br. Bennett, and Charlotte S. Bennett, both of 1415 N.W. 11th Rd., P.O. Box 14068, Gainesville, Fla. 32604

Filed Nov. 12, 1973, Ser. No. 415,243
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 **10 Claims**

1. A protective covering for a pool of liquid comprising a plurality of panels each having at least two substantially parallel surfaces and a predetermined thickness, at least one of said surfaces having formed therein a plurality of indentations, said indentations having a depth that is less than said predeter-

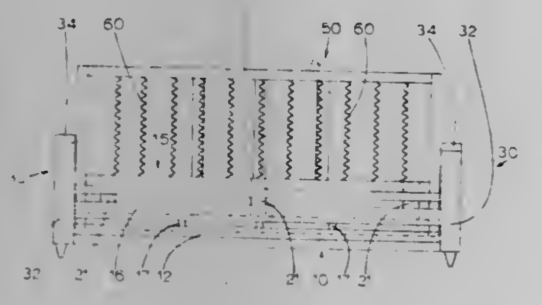
mined thickness, said panels being constructed from a material having a density that is less than that of the liquid of the



pool so that each of said panels will be buoyant when placed on the liquid.

3,872,523
SOFA BED

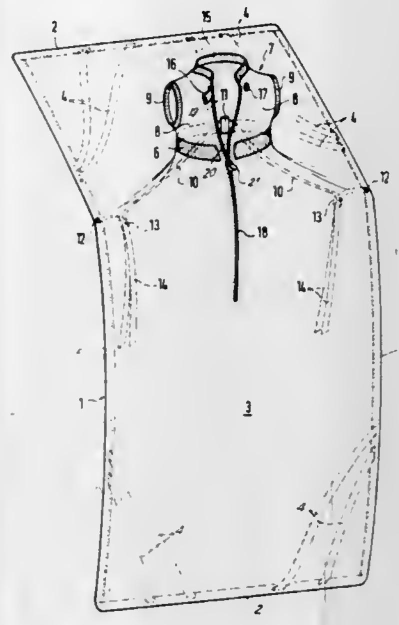
Larry R. Garza, 302 Burgess Dr., Greer, S.C. 24651
Filed May 4, 1973, Ser. No. 357,226
Int. Cl. A47c *17/16*
U.S. Cl. 5—43 **17 Claims**



1. A sofa bed comprising:
a. a base;
b. a seat support section located atop said base, said seat support section having a width less than the width of said base;
c. a back support member located to the rear of and above said seat support section, said back support member being elongated in the direction of length of the sofa bed; and
d. a back received atop and pivotally secured to said elongated back support member intermediate the height of said back, said back extending rearwardly above said member in the upright position and engaging a portion of said sofa bed at an opposite end thereof, said back being pivotal forward to provide a bed.

3,872,524
BABY COVER

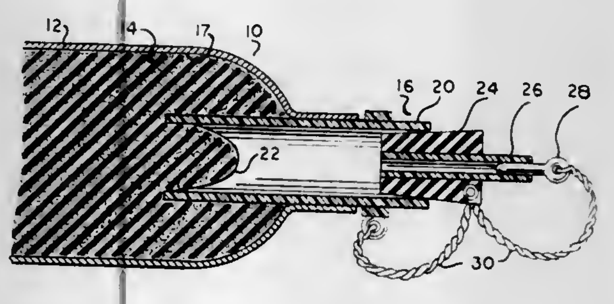
Paul Hummel, Heidenheim/Brenz, Germany, assignor to C. F. Ploucquet, Heidenheim/Brenz, Germany
Filed Sept. 14, 1973, Ser. No. 397,246
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C **2 Claims**



2. A cover as defined in claim 1, said first members having a pair of spaced longitudinal edges, and a pair of spaced transverse edges extending between said longitudinal edges; and wherein said connecting portion is located closer to one than to the other of said transverse edges.

3,872,525
INFLATABLE FOAM PAD

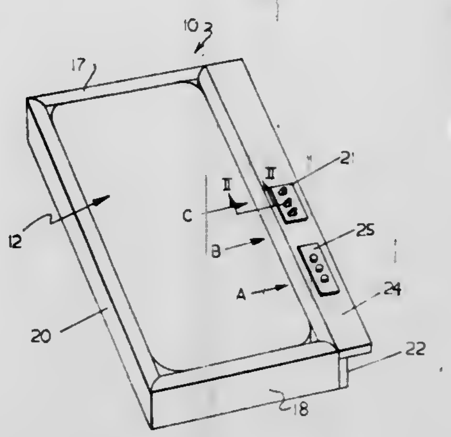
James M. Lea, 9682 Rainier Ave. South, Seattle, Wash. 98118, and Neil P. Anderson, 3105 N. 29th St., Tacoma, Wash. 98407
Filed Jan. 10, 1972, Ser. No. 216,702
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 R **8 Claims**



1. A pad comprising: a resilient foamed open-celled material, having a density of from about 0.5 to 1.5 pounds per cubic foot; a pair of taut skins, of reinforcing fabric coated with flexible fluid tight material, covering and bonded to the foamed material to form an envelope with the surface of the skins that extend beyond the foamed material joined together; and a first valve communicating with the inside of the envelope through which a fluid may be introduced, removed or retained, said valve having a diameter sized to the thickness of the foamed material to permit rapid movement of fluid therethrough, and a second smaller valve within the first valve comprising an extended flexible tube having a stopper to allow for fine adjustment of the fluid flow therethrough.

3,872,526
VIBRATORY WATER BED

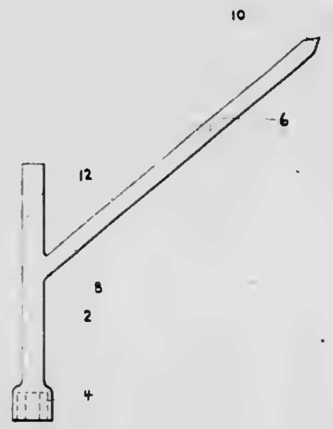
Paul J. Betts, Muskegon, Mich., assignor to Inter Dyne, Spring Lake, Mich.
Filed Nov. 29, 1973, Ser. No. 419,910
Int. Cl. A47c *27/08;* **A61g** *7/04*
U.S. Cl. 5—348 WB **12 Claims**



1. A vibrating water bed comprising:
a fluid-filled container forming a mattress;
a planar sheet of relatively thick flexible material;
rigid support means positioned in contact with said mattress and including an aperture and means for securing said sheet of flexible material to said support means to cover such aperture wherein said sheet engages a portion of said mattress;
a vibrating motor; and
means mounting said vibrating motor directly to said sheet to transmit vibrations to said sheet.

3,872,527
LUG NUT WRENCH TOOL

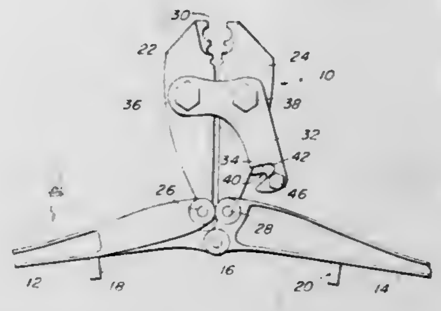
Robert L. Tregoning, 920 N. Market St., Frederick, Md. 21701
Filed Jan. 10, 1973, Ser. No. 322,387
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 G **1 Claim**



1. An automotive tool comprising a straight bar having at one end a socket for a lug-nut and having at an intermediate point along its length an outwardly directed member extending at an angle to the longitudinal axis of the bar and terminating at a distance from a plane through said socket perpendicular to the axis of the bar greater than the distance from said plane to said point, said member having a wedge-shaped end for removal of the hub cap, said bar extending on the opposite side of such point from such socket by a distance at least as great as the width of the normal human hand.

3,872,528
COMPOUND LEVERAGE TOOL

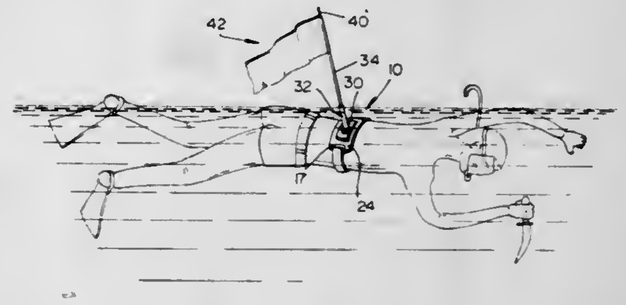
Thomas M. Porter, Concord, Mass., assignor to H. K. Porter, Inc., Somerville, Mass.
Filed Nov. 7, 1973, Ser. No. 413,640
Int. Cl. B25b *7/22*
U.S. Cl. 7—5.3 **11 Claims**



1. In a compound leverage tool of the type having a pair of handles pivotally connected to each other, a pair of jaw members each having a front side, a rear side, and a side edge pivotally connected to the handles and a pair of plates to which the jaw members are separately pivotally connected: an improvement (permitting such a tool to perform a shearing operation) including a pair of straps extending outwardly from and along a side edge of one of the jaw members, means for pivotally connecting the straps to the jaw members one to the front sides thereof and the other to the rear sides thereof to allow an inner surface of one strap to overlap the side edge when the handles are closed thereby performing a shearing operation, and means near the side edge for limiting the separation between the straps to inhibit the strap and the jaw member performing the shearing operation from spreading away from each other.

3,872,529
WARNING DEVICE

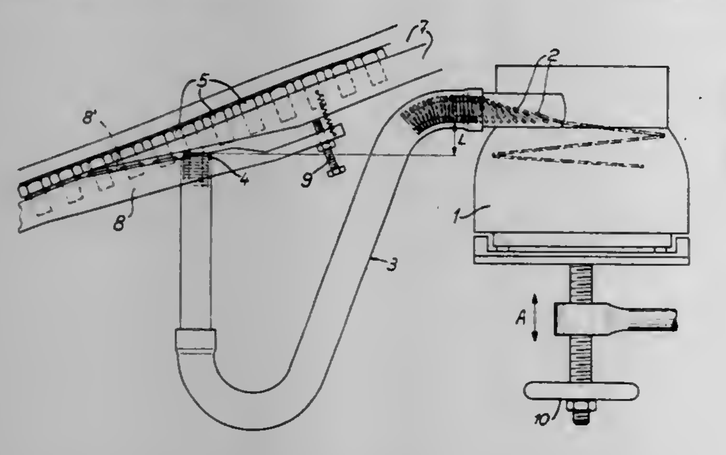
Richard A. Wainwright, 9704 Kensington Pky., Kensington, Md. 20795
Filed June 28, 1973, Ser. No. 374,790
Int. Cl. B63b *21/52*
U.S. Cl. 9—9 **7 Claims**



1. A warning device comprising a belt for securing said device to the waist of a swimmer's body, a mid-section portion releasably connected to said belt, an upstanding rigid rod, an up-right flexible member mounted on said mid-section portion for receiving said upstanding rigid rod to hold said rigid rod perpendicular to said swimmer's body, a warning device connected to the upper end of said rigid rod, said rigid rod maintaining said warning signal above the water level while the swimmer is in a horizontal position so that the warning signal may be seen by approaching marine vehicles.

3,872,530
APPARATUS FOR THE AUTOMATIC FITTING OF A CAPTIVE MEMBER ON A MECHANICAL PART

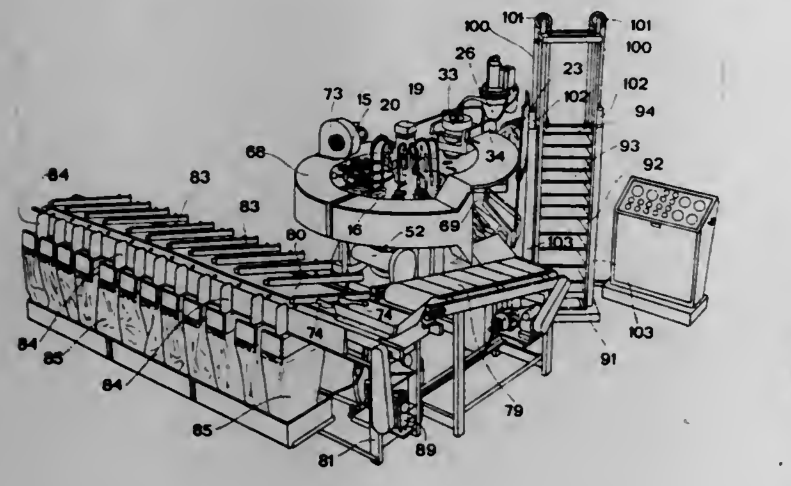
Heinz Festerling, Hannover, Germany, assignor to Weltpat Anstalt, Vaduz/Liechtenstein
Filed May 22, 1973, Ser. No. 362,766
Claims priority, application Switzerland, Aug. 16, 1972, 12110/72
Int. Cl. B23p *19/08*
U.S. Cl. 10—155 A **7 Claims**



1. Apparatus for automatically fitting captive members on mechanical parts comprising:
- a. means for forming a vertical pile of said captive members and for presenting them one by one and for forming a pick-up station situated at the top of the vertical pile;
- b. an inclined slideway passing over said pick-up station and one end of each mechanical part being engaged in said slideway so that as said parts slide theredown the other end of each mechanical part in turn passes said pick-up station and engages and picks-up the top most captive member of the pile thereof, and
- c. guide rack means embracing said pick-up station and inclined with respect to said slideway for causing each captive member upon becoming engaged on the other end of a corresponding mechanical part to be moved along said guide rack means and to be progressively moved towards said one end of the corresponding mechanical part as the part continues moving down said slideway.

3,872,531
DEVICE FOR CONTINUOUS HALF-AUTOMATIC PRODUCTION OF CORK SOLES FOR FOOTWEARS

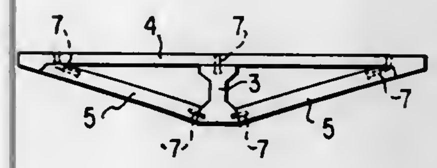
Eduardo Torrents, Via Isorni 14, 21040 Morazzone, Italy
Filed Nov. 26, 1973, Ser. No. 418,820
Claims priority, application Italy, Nov. 24, 1972, 32065/72
Int. Cl. A43d
U.S. Cl. 12—1 A **9 Claims**



1. Device for continuos half-automatic production of cork soles for footwears, provided with a core consisting of thermoplastic material, obtained by injection of thermoplastic material between the two edges of the plant, wherein there are provided:
- a. a table of circular configuration, rotating trip-wise about its axis and on the edge of which there are journalled, radially and movable mould holders, consisting of two rectangular structures, in each of which there are placed the two halves of a mould having the shape of the plant to be reproduced, the lower structure of the mould and mould holder being provided axially with three through-holes the median hole of which is slightly projecting from the plane of the mould for the fastening therein of the opening arranged on the lower edge of the plant, whilst the upper structure of the mould holder is connected to the piston of a double acting cylinder, determing the opening and the closing of the mould holder itself;
- b. an injection apparatus, disposed sideways of the rotary table, and including a hopper, a plasticizing cylinder and a pair of nozzles mounted on a nozzle holding head, journalled to the piston of a vertical double acting cylinder;
- c. an apparatus for the regulation of the quantity of thermoplastic material to be injected in the two edges of the plant, consisting of a disc rotating trip-wise in compliance with the rotary table and provided with so many rings as the moulds being adjustable, said rings actuating a limit switch disposed at one end, whilst the opposite limit swith is actuated by a stationary ring;
- d. an apparatus for stripping some heads comprising a double acting cylinder, connected to strippers and a switch controlling the return of said strippers;
- e. an apparatus for the ejection of the obtained cork soles, disposed before che injection apparatus and at the opening of the mould holder and including a pair of strippers fastened onto a movable plate, actuated by a double acting cylinder and coinciding with the three through-holes, drilled in the lower portion of the mould and mould holder;
- f. a belt conveyor, selecting the various sizes of the plants, distribution them in the containers, and
- g. a shelf containing some plants, subdivided according to the various sizes and the support surfaces of which are moved trip-wise in compliance with the rotation of the table.

3,872,532
PREFABRICATED BRIDGE

Friedrich Cornelius, Lutherstrasse 11, Ludenscheid, and Erich Pulpanek, Lunen, both of Germany, assignors to said Cornelius, by said Pulpanek
Filed Mar. 15, 1973, Ser. No. 341,470
Int. Cl. E04c *3/02*
U.S. Cl. 14—17 **6 Claims**

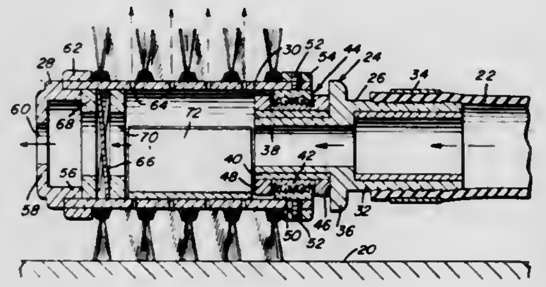


1. A bridge, capable of being constructed at the situs of use of prefabricated members and resting at its ends on bridge support means, comprising:
- at least one longitudinal main beam, having substantially parallel top and bottom portions, said beam being resistant to torsional deformation;
- means structurally cooperating with said main beam and said bridge support means for stabilizing said beam against axial pivotal movement and for supporting said beam in a statically determinate manner;

- inclined lateral support webs having their bottom edges connected to the bottom portion of said main beam said support webs abutting longitudinally to form a substantially continuous structural web; and
- a plurality of parallel slab deck members forming the decking of the bridge, transversely mounted on the top portion of said main beam, the ends of said deck members being connected to the top edges of said inclined lateral support webs.

3,872,533
SWIMMING POOL CLEANER WITH ROTARY SCRUBBING ACTION

Lester M. Proffit, 14836 Polk St., Sylmar, Calif. 91342
Continuation-in-part of Ser. No. 254,185, May 17, 1972, Pat. No. 3,776,464. This application Aug. 31, 1973, Ser. No. 393,611
Int. Cl. E04h *3/20;* **B08b** *3/02*
U.S. Cl. 15—1.7 **12 Claims**

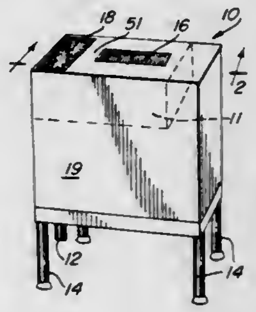


1. A pool cleaner for attachment to the discharge end of a flexible water supply hose disposed within a pool, said pool cleaner including an elongated hollow body defining a center axis and including opposite inlet and outlet end portions and a central portion disposed therebetween, said outlet end portion including water outlet means and said inlet end portion including water inlet means adapted for connection with the outlet end of said hose, said central portion of said body including discharge openings spaced thereabout for discharging water from within said central portion outwardly of the latter, and water flow throttling means disposed within said central portion and movable, by an imbalance of gravity forces acting thereon, to a position in a lower portion of said body to throttle the discharge of water from the lower discharge openings in said central portion, whereby the aggregate thrust forces acting on said body as a result of water being discharged from said discharge openings will be in a downward direction to thus maintain said cleaner in a position at least closely adjacent the bottom of the associated pool, said central portion of said body being journaled from said inlet end portion thereof, said body including rotary torque developing means functioning, in response to water being discharged from said body, to impart rotary motion of said central portion relative to said inlet end portion.

3,872,534
GOLF CLUB HEAD WASHING APPARATUS

Charles R. Hoag, Glenview, Ill., assignor to Wittek Golf Range Supply Co., Inc., Chicago, Ill.
Filed Nov. 15, 1973, Ser. No. 416,111
Int. Cl. A63b *57/00;* **A46b** *13/02*
U.S. Cl. 15—21 B **4 Claims**

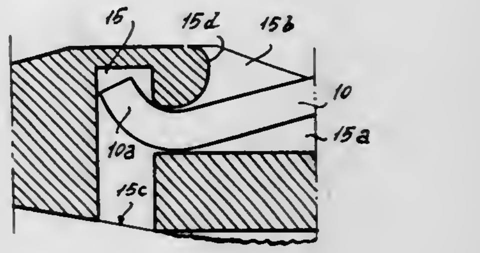
1. A golf club washing apparatus comprising:
- a. a cabinet having first and second compartments,
- b. motor-driven rotary cleaning brushes rotatably mounted on axes in horizontal spaced parallel relation in the first compartment,
- c. first and second access areas above the first and second compartments,
- d. water and splash sealing brushes mounted in the first access area in said first compartment,
- e. U-shaped, short bristle cleaning brushes mounted in the second compartment, and



- f. a pair of flat, short bristle cleaning brushes mounted in the second compartment one on each side of said U-shaped cleaning brushes.

3,872,535
SUPPORT FOR WINDSHIELD WIPER BLADES

Dario Arman, Piazza adriano 15, Torino, Italy
Filed Feb. 12, 1973, Ser. No. 331,647
Claims priority, application Italy, Mar. 20, 1972, 67879/72
Int. Cl. B60s *1/04, 1/40*
U.S. Cl. 15—250.42 **2 Claims**



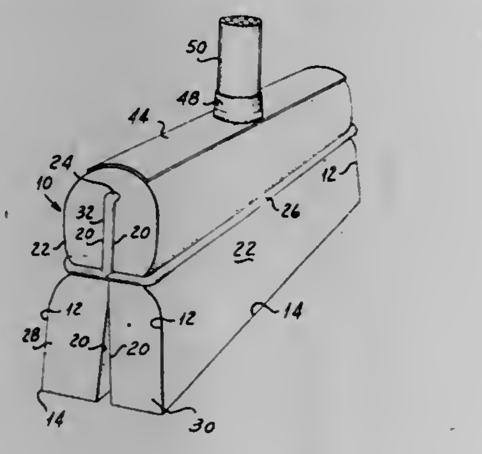
1. In a support for windshield wiper blades for motor vehicles having a central metallic arcuate rod with curved terminals and a pair of plastic rocker arms connected to the central rod, the improvement consisting of a hollow seat in the central portion of each of said rocker arms shaped as a T and composed of two interconnected cavities provided therein and substantially normal to each other with an intermediate fit entry for movably retaining within one of said cavities of said seat said terminals of said arcuate rod, said terminals being curved away from the rocker arms and toward the arcuate rod and said rod having a substantially rectangular cross-section.

3,872,536
REVERSIBLE SPONGE RUBBER MOP, BRUSH OR DUSTER

Herbert A. Siemund, 2800 Lake Shore Dr., Apt. 3201, Chicago, Ill. 60657
Filed Oct. 16, 1973, Ser. No. 406,847
Int. Cl. A47l *13/25, 13/46*
U.S. Cl. 15—244 CH **8 Claims**

1. In a device of the type including a resilient sponge member, means to maintain the sponge member in a folded relation with end portions of the folded member providing a pair of projecting sponge leg portions, and a handle connected to the device whereby an operator may manipulate the device and thereby the folded sponge member to cause the pair of projecting leg portions to effect a cleaning action on a work surface; the means to maintain the sponge member in said folded relation including an improvement comprising a retainer cage including a supporting element for said folded sponge member, said supporting element being arranged in juxtaposition to an inner side surface of the folded member at

a mid portion of the folded member intermediate the projecting leg portions of the sponge member, and holder means arranged in a cooperative compressive relation to outer side surfaces of the pair of projecting leg portions of the sponge member in such a manner as to maintain the projecting leg portions in an operative relation, the supporting element being affixed to the holder means so as to carry and adjustably position the holder means relative to the outer side surfaces of the projecting leg portions upon an adjustment in the position of the supporting element relative to the inner side surface of the folded member; and means interconnecting the supporting element and thereby the holder means to said handle to effect the adjustment in the position of the supporting element and thereby the relative position of the holder means affixed to the supporting element, said interconnecting means extending through the sponge member and including releasable coupling means operative upon actuation of the handle in one sense to position and secure the supporting element in said juxtaposition relative to the inner side surface at the mid portion of the folded member, and the holder means being thereupon positioned in said cooperative relation so as to cause the projecting leg portions to be maintained in said operative relation to effect the cleaning action on said work surface upon the manipulation of the handle by the operator, and said releasable coupling means being operative upon actuation of the handle by the operator in another sense to disconnect the handle from the supporting element, thereupon the supporting element and the holder means affixed to the supporting element may be positioned relative to said inner and outer side surfaces of the folded sponge member so as to release the pair of projecting leg portions from being maintained in said operative relation by the holder means.



3,872,537
WINDSCREEN WIPER

Angelo Bianchi, Lugano, Switzerland, assignor to Trapez Anstalt, Vaduz, Liechtenstein

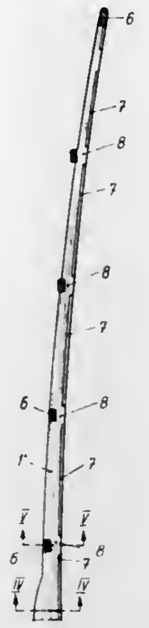
Filed Feb. 7, 1974, Ser. No. 440,305

Claims priority, application Switzerland, Feb. 12, 1973, 2050/73

Int. Cl. B60s *1/38, 1/40*

U.S. Cl. 15—250.42 **19 Claims**

1. A windscreen wiper composed of three components, said three components comprising a holder, a flexible wiper blade detachably secured at the holder, and an attachment element for securing the holder at a movable wiper arm of the windshield wiper and which attachment element is hingedly connected at the central region of the holder, said holder and said attachment element being fabricated of plastic and each formed as a onepiece element, said holder possessing two adjacently arranged curved elements defining a space therebetween, connecting bridge means for interconnecting said curved elements with one another at different locations along the length thereof, the height of said curved elements increasing from the ends towards the central region thereof, each curved element having a lower edge and equipped with at least one flange extending along said lower edge, said wiper blade having lateral arranged recess means, said flange of each curved element extending into said laterally arranged recess means of the wiper blade in order to retain an upper part of said wiper blade in the space between the curved elements.



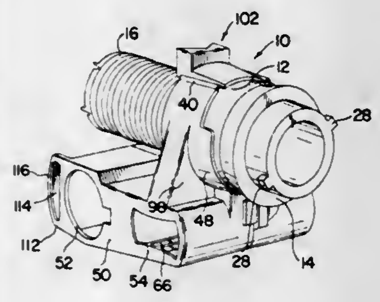
3,872,538
TOOL STORAGE RACK

Darwin S. Crouser, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Dec. 10, 1973, Ser. No. 423,075

Int. Cl. A47l *9/00*

U.S. Cl. 15—323 **15 Claims**



1. A tool storage rack for use with a floor care appliance having a suction hose means, the combination including;

a. a one-piece tool storage means including living hinge means;

b. said one-piece tool storage means being folded to form a first surface;

c. one of said floor care appliance and said suction hose including a second surface, and

d. said first surface complementary to said second surface for conforming thereto so as to be closely abuttingly mounted thereon so that said one-piece tool storage means is fixed to one of said floor care appliance and said suction hose means.

3,872,539
HAND-HELD CLEANING DEVICE UTILIZING AIR FLOW AND BROOM ACTION

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Feb. 12, 1973, Ser. No. 331,859

Int. Cl. A47l *5/24*

U.S. Cl. 15—344 **16 Claims**

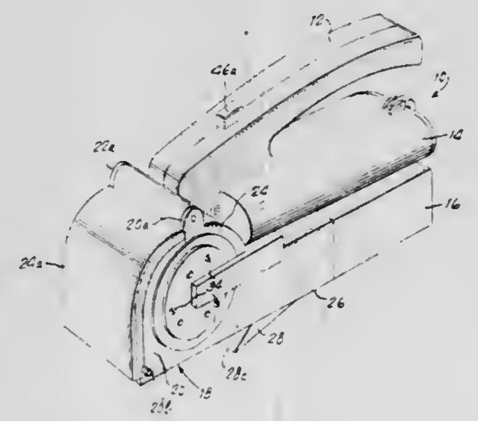
1. A hand-held cleaning device comprising:

a housing having a handle adapted to be gripped by the hand of a user and having means defining a hollow motor chamber, said means comprising a top wall, a pair of side walls transversely spaced from each other and a bottom wall with means defining a downwardly facing intake opening therein and a dust cup communicating with the motor chamber for collecting dust taken in through said intake opening;

a motor having a rotatable shaft, and support means for securing the motor to the housing, with the motor and its shaft located within the motor chamber and extending transversely therein between the side walls of the motor chamber, with said motor and shaft disposed above said downwardly facing intake opening in the bottom wall of the motor chamber;

a cup-shaped spinner secured only to the motor shaft to rotate therewith about a common axis of rotation, said spinner cupping the motor and extending transversely between the side walls of the motor chamber over the motor, but clearing the motor, the motor support and the walls defining the motor chamber so that the spinner can rotate freely with the motor shaft within said motor chamber free of contact with any stationary part of the device; and

a plurality of blades and means for securing the blades to the spinner, with the blades extending radially outwardly of the spinner and extending transversely between the side walls of the motor chamber, all of the blades on the spinner being shorter than the distance between the spinner and the plane of the intake opening so that each blade terminates before it can reach the intake opening, said blades extending radially outwardly of the spinner said blades causing air turbulence in the vicinity of the intake opening, to thereby raise dust particles from nearby surfaces by said air turbulence, said spinner rotating in a direction causing the blades to strike dust particles that they encounter and to move such dust particles toward the dust cup for collection therein, whereby no element rotating with the spinner contacts any surface which is in the plane of the intake opening.



3,872,540
SWEEPER PICKUP HEAD

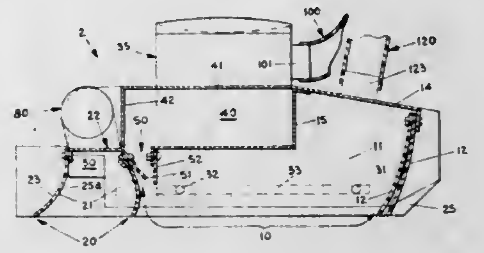
Thomas S. Block, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Aug. 7, 1973, Ser. No. 386,313

Int. Cl. A47l *5/14*

U.S. Cl. 15—345 **30 Claims**

1. A surface cleaning apparatus including a pickup head, said apparatus comprising: said pickup head having a first chamber and a second chamber, said second chamber being adjacent said first chamber; said first chamber being open at the bottom; air delivery means in flow communication with said first chamber of said first and second chambers only; air exhaust means in flow communication with said first chamber; said second chamber being open at the bottom and including sealing means at the periphery of said second chamber for generally sealing said second chamber from said first chamber and from the atmosphere when said pickup head is in an operative position whereby the flow of air through said second chamber is normally minimal; a secondary exhaust line operably joining said second chamber to said exhaust means at a point substantially downstream from said first chamber whereby when said pickup head passes over a deviation in the surface being cleaned, air and dust escaping out of said first chamber are generally captured in said second chamber and exhausted through said secondary exhaust line.



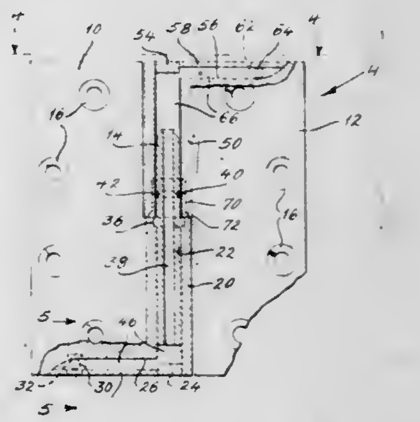
3,872,541
HINGE CAPABLE OF TRANSMITTING PRESSURIZED AIR

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Apr. 15, 1974, Ser. No. 461,096

Int. Cl. E05d *11/00*

U.S. Cl. 16—137 **9 Claims**



1. A hinge comprising first and second leaves having aligned knuckles, a hinge pin sealed in the knuckle of the first leaf and projected therefrom into the knuckle of the second leaf for holding the leaves together while allowing them to pivot relative to each other, the leaves having fluid channels therein which are in communication so that a pressurized fluid can be transmitted from one leaf to the other.

3,872,542
PALLET BOX

Robert H. Bitney, 10649 Morengo Dr., Cupertino, Calif. 95014

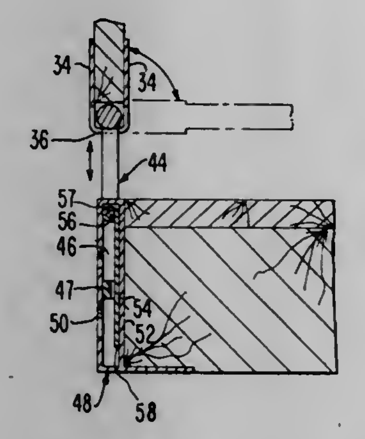
Division of Ser. No. 157,517, June 28, 1971, Pat. No. 3,747,794. This application May 10, 1973, Ser. No. 359,149

Int. Cl. E05d *1/06*

U.S. Cl. 16—171 **1 Claim**

1. A self-locking, extensible hinge for a pallet box having a base and a number of sides comprising: a yoke having a bar secured to one end thereof; an elongated, transversely U-shaped connecting member having a bight and a transversely U-shaped opening through the bight, said connecting member adapted to be coupled to the lower margin of one of said sides, said bar being rotatably received within said connecting member and supported at its ends on said bight, said yoke including a pair of spaced rigid members extending through the opening in the bight; said bar being secured to said rigid members at one end of the yoke, and a crosspiece secured to said members at the opposite end of the yoke, a hollow housing adapted to be secured to the base including an aperture through which

the members extend so that the crosspiece is disposed interiorly of the housing, a plate shiftably mounted within the housing, movable into and out of an interlocking relationship with the crosspiece, means biasing the plate into said interlocking relationship normally prevent movement of the crosspiece with respect to the housing when the crosspiece is at a location remote from said aperture, said housing having a tool-receiving opening aligned with the plate to move the latter out of said relationship and to thereby permit movement of the crosspiece to a position proximate the aperture, and means preventing a complete withdrawal of the crosspiece from the housing.



3,872,543
SNUBBING RING AND HOLDER FOR SAUSAGE CASING FILLING MACHINES

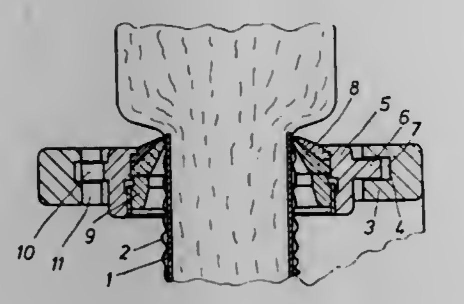
Herbert Niedecker, Am Ellerhand 6, 6243 Falkenstein (Taunus), Germany

Continuation-in-part of Ser. No. 250,129, May 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 132,464, April 8, 1971, Pat. No. 3,748,690. This application Jan. 15, 1973, Ser. No. 323,669

Claims priority, application Germany, Jan. 27, 1972, 2203695

Int. Cl. A22c *11/00*

U.S. Cl. 17—33 **5 Claims**



1. In an apparatus for filling a packaging tubing comprising a filling tube about which empty packaging tubing closed at one end is intended to be telescoped, a snubbing ring surrounding said tube and provided with a lip to snub said tubing against said tube as it moves over said tube under the force of filling material supplied to said tubing through said tube, and an element holding said snubbing ring in predetermined longitudinal position along said tube, the improvement which comprises providing said holding element and said snubbing ring with an annular engaging groove and flange with radial clearance therebetween, said snubbing ring thus being held against longitudinal displacement but being capable of radial displacement, whereby said snubbing ring will freely center itself about said filling tube so that said lip exerts a uniform snubbing action about said tubing.

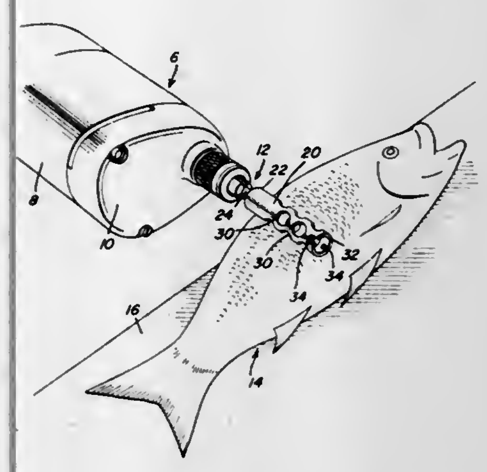
3,872,544
POWER DRIVEN FISH SCALER

Frederick W. Lange, 112 East Shaw St., Charlotte, Mich. 48813

Filed Apr. 13, 1973, Ser. No. 351,032

Int. Cl. A22c *25/02*

U.S. Cl. 17—64 **8 Claims**



1. A power operated manually controllable fish scaling device comprising, a portable prime mover providing a source of power and having conveniently grippable and usable handle means provided with a power delivering and take-off chuck and capable of being manipulatively held in one hand of the user, and a readily applicable and removable rotatable scale dislodging and removing tool, said tool comprising an elongated member having an axial shank at one end drivingly connected to said chuck, said member being rigid and shaft-like, cylindrical in transverse section and having a plurality of distributively arranged individual circular holes drilled therethrough at right angles to the longitudinal axis of said member, the marginal edges at the respective inwardly facing portions of said holes being sharp and providing scaling and scraping edges.

3,872,545
FLAX DECORTICATOR

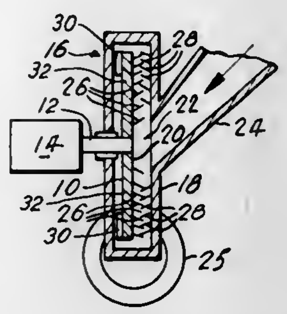
Heino Altosaar, Baie D'Urfe, Quebec, Canada, assignor to Domitar Limited, Montreal, Quebec, Canada

Filed Sept. 24, 1973, Ser. No. 400,405

Claims priority, application Canada, Oct. 6, 1972, 153498

Int. Cl. D01b *1/24*

U.S. Cl. 19—26 **9 Claims**



1. A decorticator comprising: a pair of surfaces in face-to-face relationship, a plurality of projections extending from one of said surfaces and a second plurality of projections extending from the other of said pair of surfaces, means for rotating one of said surfaces relative to the other of said surfaces, said plurality and said second plurality of projections being arranged on said surfaces in concentric rows in intermeshing overlapping relationship so that said plurality and said second plurality of projections do not interfere with one another as said surfaces are relatively rotated, each of said plurality of projections on said rotated surface sloping rearwardly relative to said direction of rotation and each of said projections on the other of said surfaces sloping forwardly in the direction of rotation all of said projections sloping radially outwardly relative to the axis of said relative rotation, a central aperture through said other surface concentric with said axis forming an inlet to the space between said surfaces.

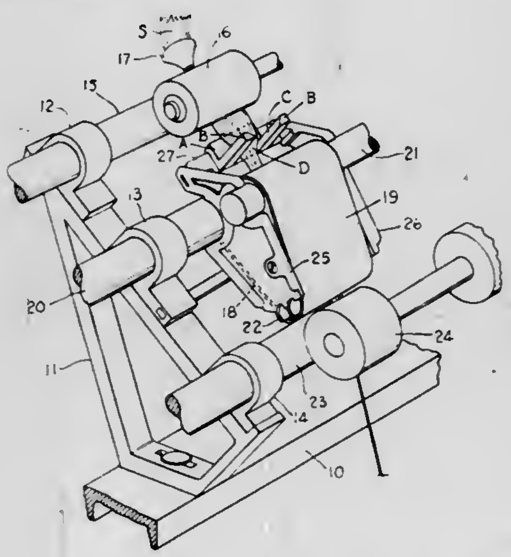
3,872,546
SLIVER GUIDE FOR SPINNING FRAME CRADLE ASSEMBLY

George A. Slinger, Greenville, S.C., assignor to Progressive Engineering, Inc., Rockland, Mass.

Filed Sept. 4, 1973, Ser. No. 393,969

Int. Cl. D01h *5/70*

U.S. Cl. 19—291 **2 Claims**



1. For use in a top roll cradle having a flat bar carried between a pair of spaced side members which support a pair of opposed apron members having an entrance nip defined by an entrance between said apron members, said bar being positioned above and closely adjacent said entrance nip, a sliver guide comprising a substantially U-shaped bracket, a pair of transversely spaced standards carried by said bracket extending upwardly therefrom, a pair of opposed inner converging surfaces each carried by a respective standard condensing and guiding a sliver into the entrance nip between the apron members, said guide being constructed of molded flexible plastic, said bracket having opposed, inner flat surfaces defining an opening therein for receiving said flat bar, said flat surfaces resiliently biased toward each other so that said bar is received therebetween in resilient frictional clamping engagement, and said standards defining an opening at the top therebetween for receiving said sliver laid therein, whereby the guides may be easily replaced when damaged or when a different size is indicated.

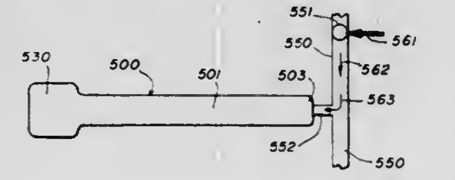
3,872,547
ONE-PIECE CABLE TIE

Jack E. Caveney, Chicago, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Aug. 25, 1970, Ser. No. 66,770

Int. Cl. B65d *63/00*

U.S. Cl. 24—16 PB **41 Claims**



29. An integral one-piece molded cable tie to be tensioned about a bundle of wires and the like, said cable tie comprising an elongated flexible strap, a row of first abutments disposed on one longitudinal surface of said strap and arranged transversely with respect thereto, a frame integral with one end of said strap and including an end wall and an abutment wall, said frame having an entry surface and an exit surface and a strap-receiving opening extending therethrough, a pawl disposed within said frame in said strap-receiving opening, a hinge interconnecting said frame and the end of said pawl disposed toward said entry surface, said abutment wall having a strap-bearing surface disposed toward said pawl and defining therewith a strap-receiving throat, and at least one second abutment on said pawl arranged transversely with respect thereto and disposed toward said abutment wall and shaped to engage said row of first abutments on said strap, the outermost free end of said strap disposed away from said frame carrying the only irregularity resulting from the connection point used during filling of the mold for molding said cable tie, said strap being deformable into a loop encircling a bundle of wires with the free end of said strap extending into said strap-receiving throat and through the opening in said frame and therebeyond, any irregularity on the outermost end of said strap being so positioned as to cause no interference with normal operation of the cable tie, said row of first abutments being disposed toward said second abutment as said strap is tensioned about the bundle of wires to a tensioned condition, release of said strap causing at least one of said first abutments firmly to engage said second abutment and to place the outermost end of said strap carrying any irregularity to position to be severed, any force tending to withdraw said strap from within said strap-receiving throat in a strap-withdrawal direction serving to move the associated one of said first abutments into more firm engagement with said second abutment more firmly to grip said strap between said strap-bearing surface and said pawl, whereby to prevent inadvertent withdrawal of said strap from said frame and thus to lock said strap in its tensioned condition about the bundle of wires.

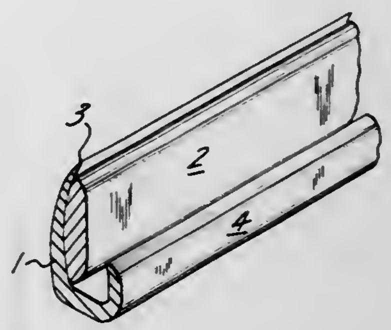
3,872,548
SEALANT

Earl Ruskin Bryant, Orchard Lake; Russell Leo Sears, St. Clair Shores, and Martin Samuel Katz, Livonia, all of Mich., assignors to Inmont Corporation, New York, N.Y.

Division of Ser. No. 217,698, Dec. 3, 1971, abandoned. This application July 5, 1973, Ser. No. 376,656

Int. Cl. A44b *21/00;* **C08c** *11/04;* **C08f** *19/08*

U.S. Cl. 24—73 HS **2 Claims**



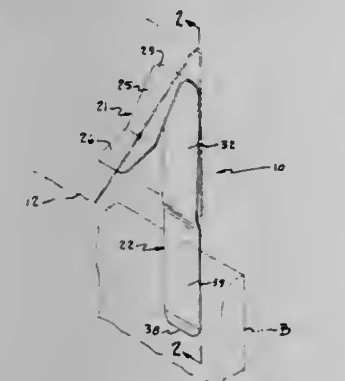
1. A sealant clip comprising
- a. L-shaped flexible, resilient holder means wherein the long and short parallel arms of the L are thin, resilient and inwardly biased so as to render the holder means capable of being clipped on and, by its own resilience, remaining clipped to a flanged joint between two surfaces,
- b. sealant strip means attached to the interior of the holder means in such a manner that the holder means resiliently holds the strip means against the joint,
- c. the holder means having a softening point above that of the sealant strip means,

wherein the sealant strip means comprises a non-hardening blend of;

15-50% blocked SBR
5-40% vinyltoluene copolymer having a melting point between 75° and 125°C.
0-75% filler.

3,872,549
DROP CLOTH HOLDER

Charles M. Elyea, Box 85, Belvidere, Ill. 72523
Filed Nov. 29, 1973, Ser. No. 419,983
Int. Cl. A44b *21/00;* B05b *15/04*
U.S. Cl. 24—73 B **3 Claims**

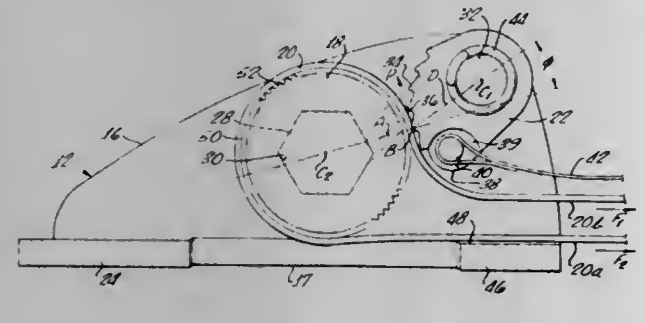


1. A drop cloth holder adapted for holding a flexible drop cloth contiguous to a wall above a baseboard or the like, including:

a first leg having upper and lower ends;
a second leg having upper and lower ends;
means interconnecting the upper ends of said legs;
the second leg comprising a leaf spring which, between said upper and lower ends, is arched in a direction toward the first leg, is longer than the first leg and they are interconnected to form generally an inverted J-shape;
the lower end of the second leg adapted for slipping between the wall and the baseboard or the like and thereby at least partially flattening the leaf spring so that it is tensioned and resiliently urges the upper end of the second leg toward the wall; and
the first leg having a downwardly and outwardly extending section at the lower end thereof extending outwardly in a direction away from the second leg to provide a finger grip portion for pulling the upper end of the second leg away from the wall so that the flexible drop cloth may be inserted therebetween.

3,872,550
SAFETY BELT WEBBING ADJUSTOR

Elmer Chensheng Yang, Anaheim, Calif., assignor to Pacific Scientific Company, Anaheim, Calif.
Filed Nov. 8, 1973, Ser. No. 414,169
Int. Cl. A44b *11/12*
U.S. Cl. 221—170 **1 Claim**

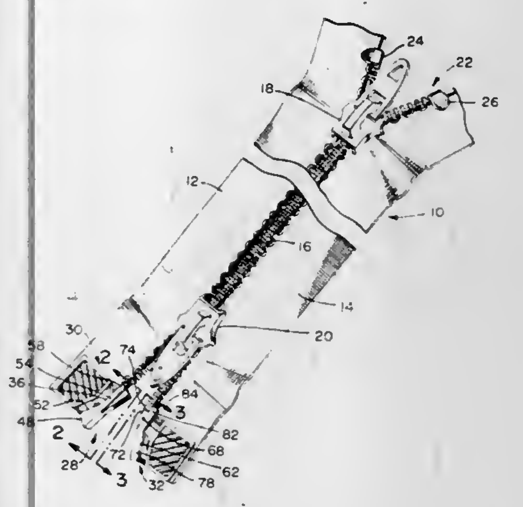


1. A safety belt webbing adjustor comprising:

a frame member having two spaced, upwardly extending support flanges;
a cylindrical spool rigidly mounted between said support flanges for guiding the movement of said webbing through said frame member, the cylindrical surface of said spool being grooved to better grip the webbing;
a wedge member having a generally teardrop shaped cross section pivotally mounted between said flanges adjacent said spool;
an elongated coil spring concealed within said wedge member connected between the wedge member and the frame member for biasing said wedge member in contact with said spool to restrain the movement of said webbing in one direction, in a manner such that an increasing load on the webbing increases the wedging action;
a holding bar extending between said flanges adjacent said spool and positioned to insure that the webbing is held in contact with approximately 270° of the surface of the spool as it passes from the holding bar to the wedge member; and
a release tab attached to said wedge member centrally with respect to said frame flanges to pivot said wedge member away from said spool to allow movement of said webbing in said one direction.

3,872,551
SLIDE FASTENER HAVING SEPARATING END STOP

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.
Filed July 6, 1973, Ser. No. 377,000
Int. Cl. A44b *19/36*
U.S. Cl. 24—205.11 R **9 Claims**

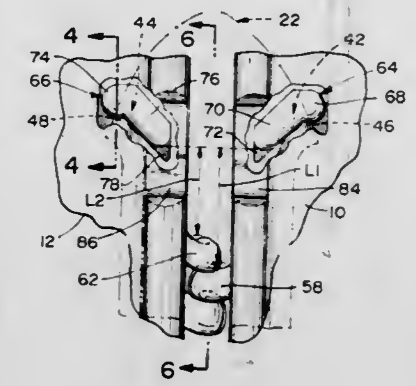


1. A slide fastener comprising

first and second tapes having inner edges and carrying interengaging elements along the inner thereof;
a slider having side wall means and movable to control engagement of said interengaging elements; said slider having a Y-shaped channel therethrough defined by said side wall means;
separating end stop means at one end of said first and second tapes for limiting movement of said slider and permitting separation of said first and second tapes; said end stops means formed of first and second components secured to said first and second tapes, respectively, and having spaced outer surfaces contoured to contact said side wall means of said slider as said slider is moved in a direction toward the one end and along said first and second components to pivotally move said first and second components relative to and toward each other to stress said tapes, said stress on said tapes causing said outer surfaces of said first and second components to bear against said side wall means of said slider to move said slider in another direction away from the one end and along said first and second components;
said first component including an elongate leg having an inner surface; a wedge extending from said inner surface and having a groove therein;
said second component including an elongate leg having an inner surface; a tongue extending from said inner surface of said second component to be received in said groove of said first component as said slider is moved along said first and second components;
said elongate leg of said first component having an end;
a terminal interengaging element on said first tape spaced from said end; and
said second component including a guide tooth extending from said elongate leg to be received in said space between said end of said elongate leg of said first component and said terminal interengaging element of said first tape to align said first and second components as said slider is moved along said first and second components.

3,872,552
SLIDE FASTENERS AND METHOD OF MAKING THE SAME

David V. Hofius, Meadville, Pa., assignor to Textron Inc., Providence, R.I.
Filed Sept. 28, 1972, Ser. No. 293,183
Int. Cl. A44f *19/36*
U.S. Cl. 24—205.11 F **12 Claims**

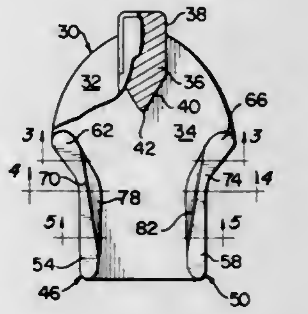


1. A slide fastener comprising

first and second tapes each having a cord at an inner edge;
first and second fastener element means carried by said cords along the inner edges of said first and second tapes, respectively;
slider means having a nose end and a tail end and receiving said first and second fastener element means to control interengagement thereof, said slider means having between its ends a pair of channels, said pair of channels at the nose end of said slider means having diverging throats therein; and
first and second stop members secured to said first and second tapes, respectively, at said inner edges to engage said slider means to limit movement thereof, said stop members projecting above the surface of said tapes and having bodies with legs extending obliquely toward said inner edges of said first and second tapes, each one of said legs being received in its respective one of said throats of said slider means such that said slider means with the legs of said stop members in the diverging throats thereof prevents splaying of said tapes when said slider means engages said stop members during interengagement of said first and second fastener element means by movement of said slider means to close said slide fastener, and shoulders extending from said legs and having a thickness less than the thickness of said bodies whereby said shoulders facilitate installation of said slider means and guide said slider means to said bodies of said first and second stop members when said slider means is moved to close said slide fastener, each shoulder having an edge that is aligned with the adjacent edge of its associated leg so as to form a common edge between said shoulder and its associated leg and said common edge extending obliquely toward said inner edges.

3,872,553
SLIDER FOR SLIDE FASTENERS

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.
Filed Sept. 18, 1972, Ser. No. 289,854
Int. Cl. A44b *19/26*
U.S. Cl. 24—205.15 R **2 Claims**

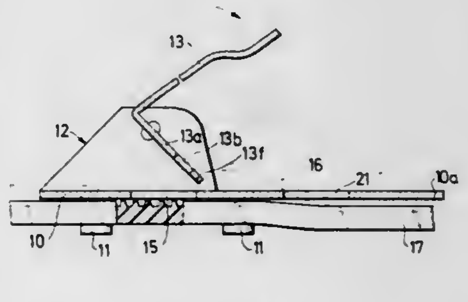


1. A slider for a slide fastener having filamentary coupling elements attached to a pair of carrier tapes by stitching threads, the slider comprising

a main body having a pair of spaced, parallel wing members and a longitudinal center line,
a pair of flanges extending respectively from opposite lateral edges of each of said pair of wing members toward each other to define a channel for slidably receiving said carrier tapes,
each of said flanges having a first portion substantially parallel to said center line,
each of said flanges having a second portion diverging outwardly from said center line,
each of said flanges having an elbow joining said first portion and said second portion, and
a single canted planar surface disposed on the inside of each of said flanges at said elbow and extending onto both of said first and second portions thereof, each of said canted planar surfaces forming a chamfer of said elbow and defining a plane obliquely angled with respect to said center line such that said canted planar surfaces permit slider movement without causing binding or wearing of the stitching threads.

3,872,554
CLOSURE FOR ARTICLES OF CLOTHING, VALISES, POCKETS OR THE LIKE WITH OVERLAPPING CLOSURE PARTS

Gunther Wolfertz, Wuppertal; Friedhelm Kramer, Ennepetal-Milspe, and Paul Hillringhaus, Wuppertal, all of Germany, assignors to Firma Schaeffer-Homberg GmbH, Wuppertal-Barmen, Germany
Filed Jan. 19, 1973, Ser. No. 325,160
Claims priority, application Germany, Jan. 20, 1972, 2202565; Oct. 24, 1972, 2252051; Oct. 24, 1972, 2252052; Oct. 28, 1972, 2252950; Dec. 15, 1972, 7245841
Int. Cl. A44b *11/00*
U.S. Cl. 24—206 B **6 Claims**



1. A closure for a pair of overlapping members comprising:

a longitudinally-extending rail secured to one of said members and provided with a row of indexing formations;

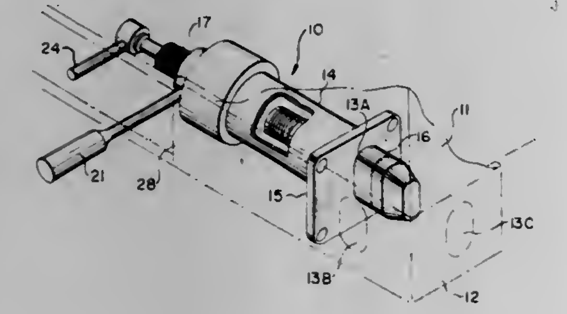
a slide longitudinally shiftable along said rail and secured to the other of said members, said slide having a pair of codirectionally projecting lateral supports and a bottom interconnecting said supports, said bottom being provided with an opening affording access to said formations; a closure flap pivotally mounted between said supports and comprising a pair of angularly bent arms including a relatively short arm provided with a projection for locking said slide to said rail at one of said formations, and a manually actuatable relatively long arm for displacement of said flap, said short arm being provided with a window over a major part of the width of said slide between said supports; and

a cover strip overlying said rail and said bottom of said slide and concealing same while passing through said window in said short arm.

3,872,555
FREIGHT CONTAINER COUPLER

Robert O. Link, Alexandria, Va., and David W. Smith, Glenarm, Md., assignors to Value Engineering Company, Alexandria, Va.

Filed May 12, 1972, Ser. No. 252,668
Int. Cl. B65j *1/22*
U.S. Cl. 24—221 R **2 Claims**



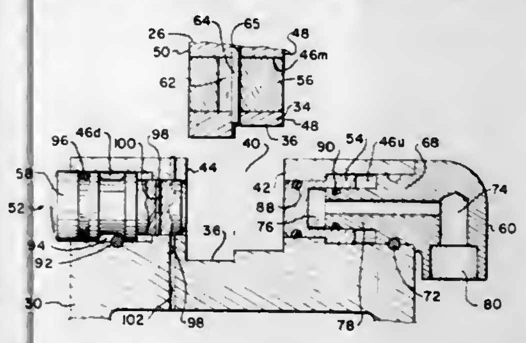
1. A freight container coupler for coupling to an adjacent container comprising a housing adapted to be mounted in the corner of a freight container, a bolt lock assembly axially displaceable within said housing, a bolt lock on the end of said bolt lock assembly and pivotable between locking and unlocking positions, means on said housing for extending said bolt lock assembly with respect to said housing to project the bolt lock outwardly of the container so that the bolt lock is engageable in an opening in an adjacent container and for retracting said bolt lock assembly, means on said bolt lock assembly for pivoting said bolt lock between said locking and unlocking positions to lock an adjacent container, at least a portion of said bolt lock assembly projecting outwardly of said housing and the projecting portion being threaded, means drivingly engaging said threaded portion of the bolt lock assembly for extending and retracting said assembly, said bolt lock assembly having an axial bore therethrough, a bolt lock rod rotatably positioned within said bore, said bolt lock being on the end of the bolt lock rod within said housing, the other end of said bolt lock rod extending outwardly of the threaded portion of said bolt lock assembly and having a bolt lock lever thereon.

3,872,556
GAS OPERATED QUICK DISCONNECT COUPLING

Richard H. Frost, Littleton, Colo., assignor to Frost Engineering Development Corporation, Englewood, Colo.

Filed Jan. 5, 1973, Ser. No. 321,514
Int. Cl. B64d *17/30, 17/38*
U.S. Cl. 24—230 A **10 Claims**

1. A gas operated quick disconnect coupling which comprises, in combination, a first connector having one end adapted for connection to a strap and its other end bifurcated to define a pair of transversely spaced sections with a gap therebetween, said sections having transversely extending openings therethrough arranged in aligned coaxial relation to one another on opposite sides of said gap, a first section of said pair having the side thereof remote from said gap fitted with means for connecting the opening therein to a source of pressure fluid; a connector element adapted to be releasably coupled to a second connector and having an end thereof sized for insertion into said gap between said first connector sections, said connector element having a transversely extending opening in said end axially alignable with the openings through said first connector sections and cooperating therewith to define a bolt passage; bolt forming means mounted within said bolt passage for movement therein between a locking position for locking said connector element to said first connector and an unlocking position for releasing said connector element from said first connector, said bolt forming means comprising a piston member in said opening in the first section responsive to the introduction of fluid pressure therebehind for limited axial movement within said first section from a locking position to an unlocking position, a shuttle trunnion coextensive with and slidably retained in the opening in said connector element for axial movement therein between an extended locking position wherein one end of said trunnion projects into the opening in said first section and a retracted unlocking position wherein the entire trunnion is totally contained within said connector element opening, and a slide block slidably mounted in the opening in said second section of said pair for axial movement therein between an extended locking position wherein one end of said slide block is partially housed within the opening in said connector element and a retracted unlocking position wherein said slide block is entirely removed from said connector element, the lengths of said bolt forming piston, shuttle trunnion, and slide block being such that movement of said piston to its unlocking position effects positioning of said shuttle trunnion and slide block to their respective retracted unlocking positions thereby releasing said connector element and the second connector coupled therewith from the first connector.



3,872,557
PROCESS FOR CONDITIONING SUPERFICIALLY DYED FABRICS

Jose Benzaquen, Caseros, Argentina, assignor to Benzaquen, Sociedad Anonima, Industrial, Comercial, Immobiliaria y Financiera, Buenos Aires, Argentina

Filed Dec. 1, 1972, Ser. No. 311,261

Claims priority, application Argentina, June 12, 1972, 242496; Aug. 8, 1972, 243491; Aug. 8, 1972, 243492; Aug. 10, 1972, 243533

Int. Cl. D06c *11/00*
U.S. Cl. 26—28 **7 Claims**

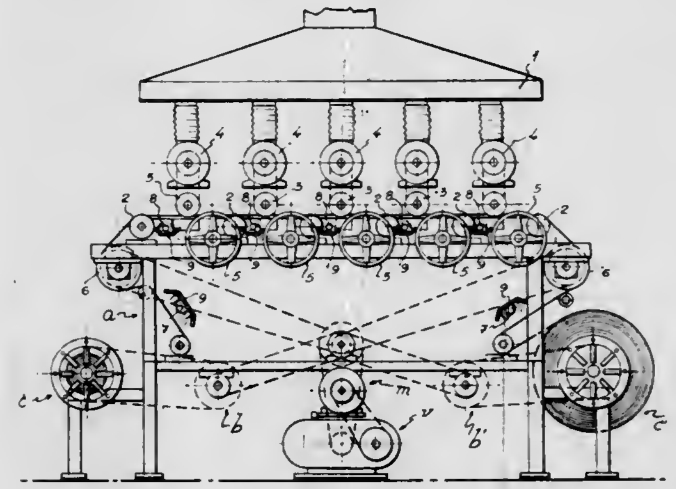
1. A method for conditioning fabric, including coarse fabrics, denims and cottons, which comprise the steps of:

i. continuously moving a length of said fabric comprising substantially superficially dyed fibers;

ii. said moving fabric characterized in having a substantially low longitudinal tension;

iii. contacting the surface of said fabric with a plurality of simultaneously rotating and transversely moving abrasion means to loosen and superficially raise the fibrils of said fabric in response to the simultaneous rotation and transverse movement of the abrasion means and with a minimum removal of fiber or fiber particles;

iv. the velocity of the fabric and the abrasion means being different; and



v. the contact area between the fabric surface and the abrasion means being substantially small to provide a fabric having a change in tonality and a plush surface without damaging the basic fiber structure of said superficially dyed fibers.

3,872,558
METHOD OF HEAT-SETTING TWISTED POLYCARBONAMIDE YARN

Climaco Alberto Gomez, Colonial Heights; Marvin Dennis Lewis, Richmond, and Ian Charles Twilley, Chester, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,207
Int. Cl. D02g *1/02*
U.S. Cl. 28—74 P **5 Claims**

1. The method of heat-setting twisted polycarbonamide continuous filament carpet yarn comprising

twisting the yarn, then

skeining the yarn, then

tumbling said yarn as skeins at a selected yarn temperature of between about 100° and 240°F. for about 2 to 30 minutes, said selected temperature being controlled to within ± 15°F., then

conditioning said skeins of said yarn, then

backwinding said yarn, then

tufting said yarn into a fabric, then

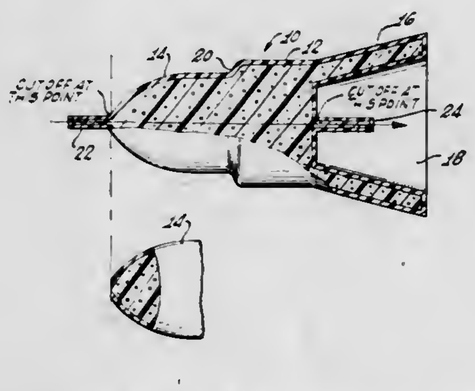
dyeing said fabric with hot, wet agitation,

said yarn in said fabric having excellent twist retention and entangled, locked tuft tips when said tufts have been cut.

3,872,559
EAR PLUG

Charles Leight, 5356 W. Pico Blvd., Los Angeles, Calif. 90019

Filed Jan. 11, 1973, Ser. No. 322,749
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **6 Claims**



1. A unitary, resilient ear plug which includes:

a cylindrical body portion;

a generally conical end portion connected to a first end of said body portion coaxially therewith and forming an extension thereof;

a hollow flared portion comprising a wall connected to a second end of said body portion and forming an extension thereof, said flared portion opening in a direction away from said body portion and defining a recess coaxial with said body portion and adapted to receive the tip of a finger whereby said body and end portions of said plug may be urged into position in an ear canal, said flared portion being so sized and positioned that a single thickness thereof may be grasped for removal of said plug from an ear canal;

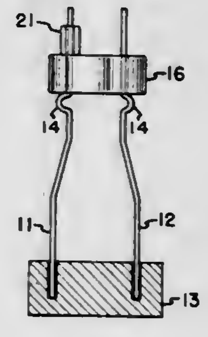
said body, end, and flared portions comprising a single, unitary structure formed of a self-skinning, resilient, open cell, sponge material having a skin covering the surface thereof; and

a first vent opening in said skin covering on said conical end portion and a second vent opening in said skin covering on said second end of said body portion, said first and second vent openings permitting venting of an ear canal through said open cell foam material when said plug is positioned in the canal.

3,872,560
METHOD OF FORMING BEADED LEAD-IN WIRES FOR LAMPS

John J. Bock, Solon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed July 26, 1973, Ser. No. 382,761
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.16 **5 Claims**

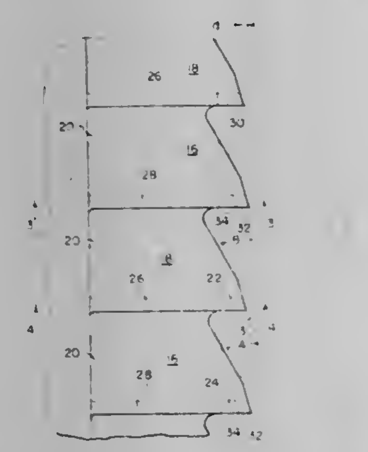


1. A method of making beaded lead-in wires, comprising the steps of providing a plurality of lead-in wires to be beaded together, shaping at least one of said wires to provide a lateral U-shaped offset immediately below where the bead is desired, supporting the wires in substantially parallel spaced-apart relationship with at least one offset extending outwardly below the desired bead location, placing a ring of vitreous material around the lead-in wires so as to rest on said offset, and heating the ring so that it forms a bead sealed to the lead-in wires.

3. A method of making beaded lead-in wires, comprising the steps of providing a plurality of lead-in wires to be beaded together, shaping at least one of said wires to provide a lateral offset immediately below where the bead is desired, supporting the wires in substantially parallel spaced-apart relationship with at least one offset extending outwardly below the desired bead location, placing a ring of vitreous material around the lead-in wires so as to rest on said offset, placing a sleeve of vitreous material over one of the lead-in wires so as to rest on top of said ring, and heating the ring so that it forms a bead sealed to the lead-in wires, whereby during said step of heating the sleeve becomes sealed to the bead.

3,872,561
METAL CUTTING AND FINISHING TOOL

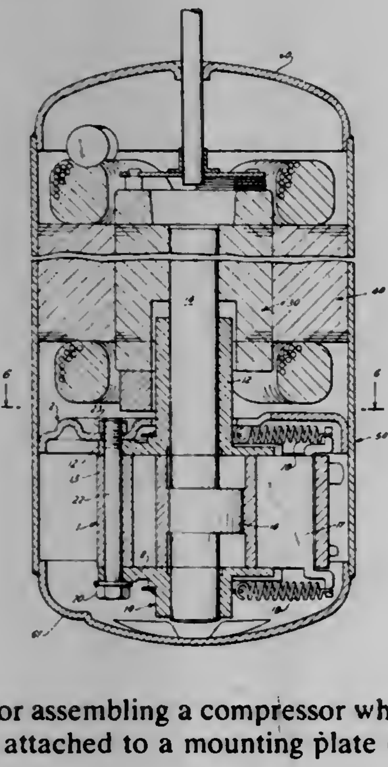
Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 297,514, Oct. 13, 1972, Pat. No. 3,792,524.
Filed Feb. 7, 1974, Ser. No. 440,429
Int. Cl. B26d *1/04, 1/00*
U.S. Cl. 29—95.1 6 Claims



1. An elongate multitooth metal cutting and finishing blade adapted to accurately form arcuate blind slots, comprising a blade body, a plurality of cutting teeth along a longitudinal edge thereof, the cutting teeth including cutting edges lying in a plane generally perpendicular to the plane of the blade body, the side surfaces of the teeth including narrow land portions of predetermined length and width which are substantially extensions of side surface areas of the body and the length dimension of each land portion extends substantially perpendicular to the plane including the cutting teeth, the land portions being interconnected by web portions of thinner cross section than the land portions, the width of the land portions being substantially less than the width of the web portions so that the blade may be bent into an arcuate configuration and the web and land portions permitting the cutting edge to accurately assume the predetermined arcuate path.

3,872,562
METHOD OF COMPRESSOR ASSEMBLY

Clarence V. Pestel, Louisville, Ky., assignor to Fedders Corporation, Edison, N.J.
Filed Oct. 15, 1973, Ser. No. 406,274
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 R 6 Claims

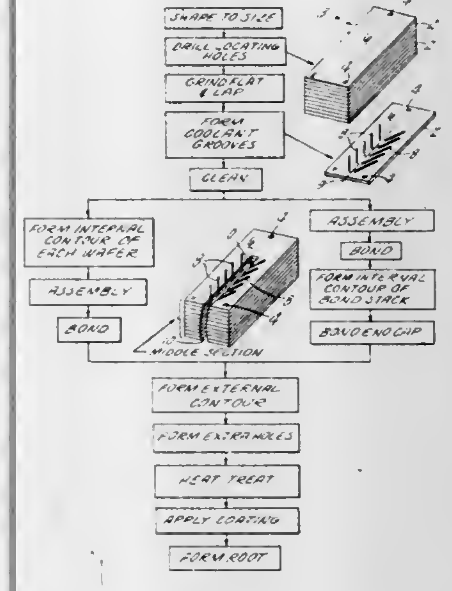


1. A method for assembling a compressor wherein the compressor pump is attached to a mounting plate comprising:

a. attaching a compressor pump to a mounting plate, said mounting plate being adapted for attachment within a compressor can;
b. fitting a stator within the compressor can;
c. providing means on said can aligned with said stator, for attachment of said mounting plate;
d. inserting said mounting plate with said compressor pump attached into said compressor can such that the shaft of said compressor pump is within the opening of said stator;
e. aligning said shaft within said stator with an aligning mandrel; and
f. firmly attaching said mounting plate to said can.

3,872,563
METHOD OF BLADE CONSTRUCTION

William H. Brown, North Palm Beach, and Bruce T. Brown, Riviera Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 13, 1972, Ser. No. 306,134
Int. Cl. B23p *15/04*
U.S. Cl. 29—156.8 H 12 Claims

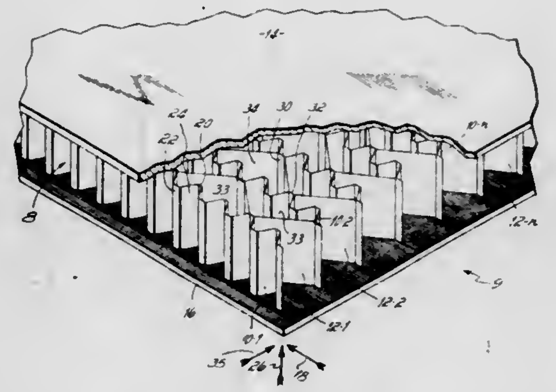


1. In a method of making a finished blade from a plurality of wafers, the steps of:

1. selecting a plurality of oversized wafers of approximately the same area so as to form a block big enough for the size of the finished blade;
2. forming coolant grooves on at least one mating surface of a plurality of said wafers which do not intersect the edge of said wafers;
3. forming internal openings in a plurality of said wafers to form a longitudinal internal passage in the finished blade;
4. intersecting said coolant grooves with said internal openings to form the inner ends of said coolant grooves;
5. stacking said wafers together;
6. bonding said stack of wafers together;
7. forming an external contour on said wafers to form the external surface of the finished blade;
8. intersecting said coolant grooves with said external surface to form the outer ends of said coolant grooves.

3,872,564
CELLULAR CORE

Paul Eugene Myers, and Omer L. Carroll, both of Middletown, Ohio, assignors to Aeronca, Inc., Middletown, Ohio
Continuation of Ser. No. 2,829, Jan. 14, 1970, abandoned. This application Jan. 18, 1972, Ser. No. 218,849
Int. Cl. B32b *15/04*
U.S. Cl. 29—191 12 Claims



1. In a structural member of the type comprising a metal cellular core sandwiched between two parallel metal skin sheets, the improvement which comprises:

a cellular core formed of interconnected corrugated metal ribbons comprising

a plurality of identical interconnected core cells, all of which are identically configured, arranged in a matrix pattern and defining a core plane having a specified height, each of said identical core cells established by directly connecting, only at corrugation nodes, alternated and interleaved first and second type ribbons having respectively large corrugations and small corrugations, each of said identical cells being defined by

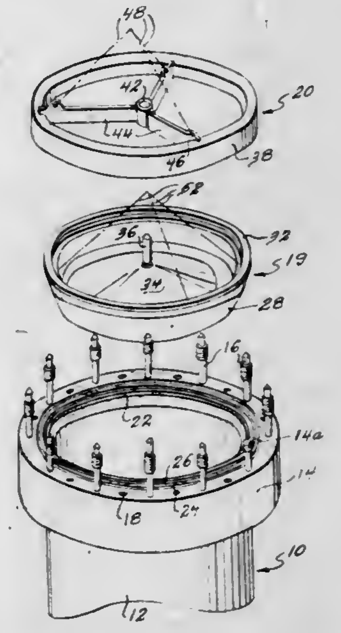
a. a single large corrugation of said first type ribbon having two relatively large flat rectangular sections separated by a relatively small flat intermediate rectangular section angled with respect to said large sections, said both sections having a height measured normal to said core plane which is equal to the height of said cellular core,
b. an integral number, in excess of one, of small corrugations of said second type ribbon, each corrugation having three flat interconnecting rectangular sections with the height of each section equal to the height of said cellular core, adjacent ones of said three interconnecting sections being angled relative to each other, and the area of any one of said rectangular sections of the corrugations of said second type ribbon being less than the area of said large rectangular sections of the corrugations of said first type ribbon, and
c. said alternated and interleaved interconnected ribbons of said first and second type forming a plurality of identical cells, each of said identical cells being of generally triangular configuration, each of said skin sheets being secured to the edges of said ribbons, between which edges the core height is measured, to orient the axes of the core cells perpendicularly to the plane of said skin sheets.

3,872,565
REACTOR VESSEL SEAL SERVICE FIXTURE

William C. Ritz, Greensburg, and Glenn E. Otterman, St. Dravosburg, both of Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed May 9, 1974, Ser. No. 468,323
Int. Cl. B23p *19/00, 19/02*
U.S. Cl. 29—200 P 6 Claims

1. Apparatus for the placement of a seal into a previously prepared location on the surface of a member comprising:

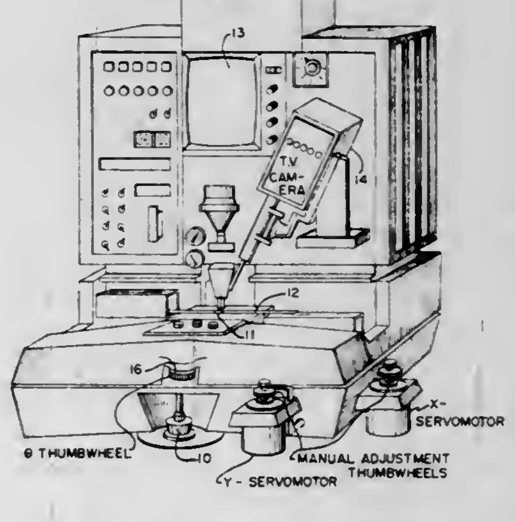
a. movable fixture means having a receptacle to accommodate said seal;
b. pivoted means in said receptable rotatable between a first position retaining said seal within said receptacle and a second position pushing said seal out of said receptacle;
c. means for moving said fixture means carrying said seal with said pivoted means in said first position into contact with said surface;



d. means insuring alignment of said receptacle with said previously prepared location as said fixture moves into contact with said surface; and
e. means responsive to the making of said contact for moving said pivoted means into said second position thereby causing said seal to move out of said receptacle into said previously prepared location.

3,872,566
MULTIPLEXED INTEGRATED CIRCUIT CHIP BONDING SYSTEM

Donald G. Pedrotti, Cupertino, Calif., assignor to GCA Corporation, Sunnyvale, Calif.
Filed Feb. 27, 1974, Ser. No. 446,403
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 5 Claims



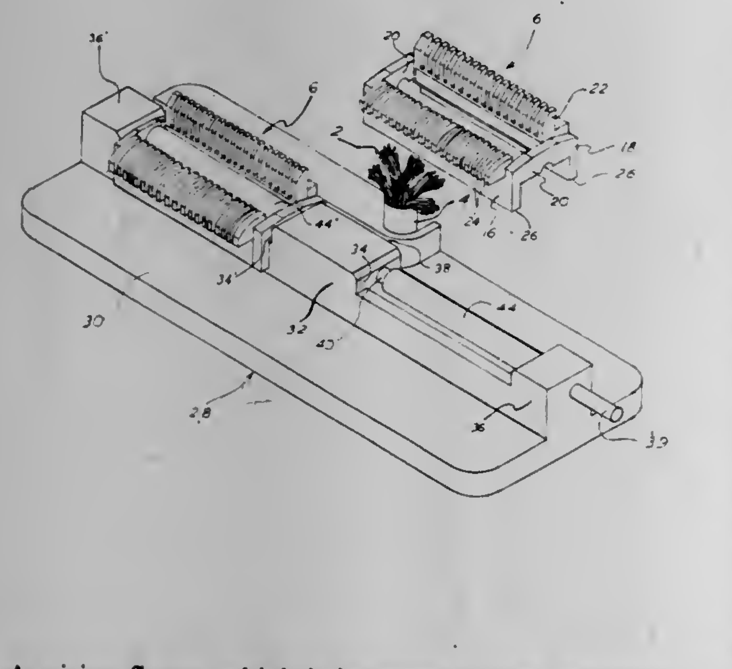
1. A multiplexed integrated circuit chip bonding system having a plurality of individual automatic bonding stations each station having a T.V. camera and means for aligning bonding pads on a die to correct for die misalignment said aligning means including X, Y and θ means for correspondingly moving said pad whereupon the automatic station bonds all required wires on the pads of the die said system comprising: a multiplex master control station including a plurality of

grouped T.V. monitors respectively corresponding to said T.V. cameras of said automatic stations and including manual control means operable by a single operator in conjunction with one of said grouped T.V. monitors for selectively aligning said bonding pad in a selected and remote automatic bonding station; means for coupling said manual control means to said X, Y, and θ means for each automatic bonding station for operating such X, Y and θ means including sequencing means responsive to the completion of alignment at one automatic station to couple said manual control means to the next automatic station which is ready for alignment.

3,872,567
WIRE LOCATING JIG AND FIXTURE

Carmen Achille Cea, and John James Tucci, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 26, 1974, Ser. No. 454,885
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 MW **6 Claims**



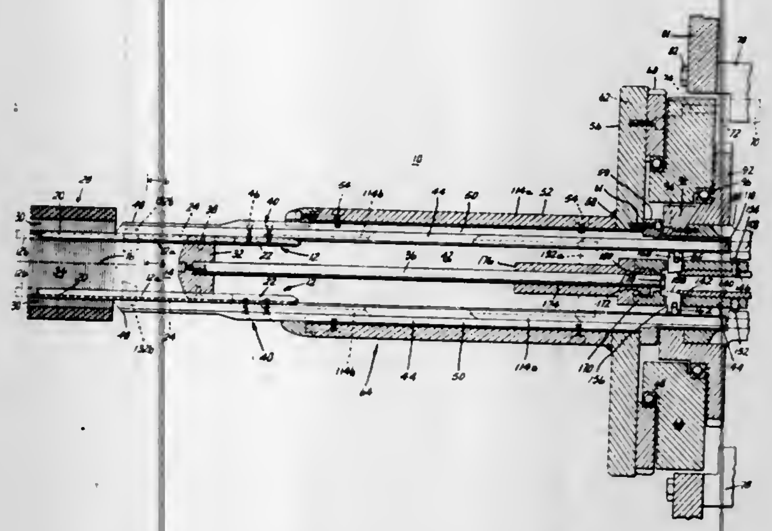
1. A wiring fixture which is intended for use with first and second wiring jigs which are identical to each other, each of said jigs comprising a frame member having a central opening and having parallel side rails on each side of said central opening, said side rails having aligned wire positioning means thereon for locating wires in parallel side-by-side relationship with portions of said wires extending across said central opening, said wiring fixture comprising:

- a frame member,
- first and second wire locating guides, each of said guides comprising a cylinder having at least two sets of wire locating indicia thereon, each of said sets of indicia occupying a portion of the surface of said cylinder which extends for substantially the full length of said cylinder and which extends angularly partially around said cylinder,
- said cylinders being supported on said frame in coaxial relationship,
- first and second wire jig supporting means on said frame for supporting said wire jigs thereon in surrounding relationship to said cylinders with the said side rails of said cylinder extending parallel to the axis of said cylinders, and
- means for rotating said cylinders whereby, upon placement of said jigs on said wire jig supporting means and rotation of said cylinders to position desired sets of said indicia opposite to said openings in said wire jigs, wires can be positioned in said jigs in accordance with said indicia.

3,872,568
SHORT STROKE DYNAMOELECTRIC MACHINE COIL AND WEDGE INSERTING APPARATUS

Charles W. Morr, Fort Wayne, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Apr. 17, 1974, Ser. No. 461,612
Int. Cl. H02k *15/06, 15/08*
U.S. Cl. 29—205 D **17 Claims**

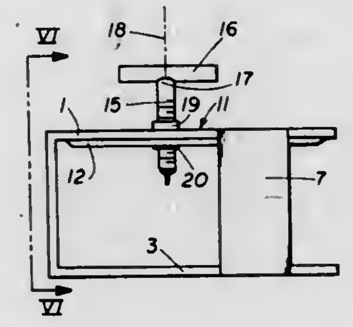


1. In apparatus for inserting prewound coils and slot wedges into the slots of an internally slotted dynamoelectric machine stator core member, said apparatus including a plurality of elongated, axially extending parallel blade elements defining a bore having an axis and having outer surfaces, said blade elements being spaced about said bore and defining radially and axially extending spaces therebetween, said blade elements having distal ends and rear portions, the outer surfaces of said distal ends being adapted to engage the inner ends of the teeth of a stator core member which define said slots with the spaces between said blade elements being in axial alignment with and communicating with respective slots, a plurality of elongated, axially extending, parallel slot wedge guide elements respectively in axial and radial alignment with said blade elements and defining first wedge guide slots therebetween respectively in axial and radial alignment with said blade element spaces and in axial alignment with said stator core member slots, said guide elements respectively abutting the outer surfaces of the rear portions of said blade elements and having forward ends which are spaced rearwardly from said distal ends of said blade elements and also having rear portions, a coil stripper member mounted for axial movement in said bore, first means for moving said stripper member axially through said bore within said blade elements, means extending rearwardly from said rear portions of said wedge guide members for receiving slot wedges and having a plurality of elongated, axially extending, second wedge guide slots formed therein adapted respectively to receive slot wedges at a first location, said second wedge guide slots being respectively in axial alignment with said first wedge guide slots and communicating therewith, and means for pushing said slot wedges axially forwardly toward said distal ends of said blade elements from said first location through said first and second wedge guide slots and into said core member slots; the improvement wherein said pushing means comprises first means for pushing said slot wedges forwardly from said first location through said second wedge guide slots to a second location in said first wedge guide slots spaced rearwardly from said forward ends of said wedge guide elements, second means spaced axially forwardly from said first pushing means for pushing said slot wedges forwardly from said second location through said first wedge guide slots and into said stator core slots, and second means for moving said first and second pushing means forwardly simultaneously whereby a first group of slot wedges are pushed from said second location into said stator core slots as a second group of slot wedges are pushed from said first location to said second location.

3,872,569
FAUCET HANDLE REMOVING TOOL

Lee Lane, Edna, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 27, 1974, Ser. No. 455,116
Int. Cl. B25b *27/02*
U.S. Cl. 29—257 **1 Claim**



1. A faucet handle removing tool for removing a faucet handle, said faucet handle removing tool comprising

- a top plate having a slot formed therethrough,
- a bottom plate having a cutout extending from one edge thereof to proximity with the opposite edge thereof and tapering from a maximum width at the one edge to a point in substantially V-configuration, the cutout extending along the length of the slot;
- support members affixing the top and bottom plates in substantially parallel spaced relation;
- a first guard projection extending along the length of the slot in proximity with one edge thereof on one surface of the top plate;
- a second guard projection extending along the length of the slot in proximity with the opposite edge thereof on the other surface of the top plate;
- a bolt passing through the slot substantially perpendicular to the top plate and having a pressure bar affixed to the end thereof farthest from the one surface of the top plate and extending perpendicular to the axis of the bolt;
- a first nut threadedly coupled to the bolt and abutting the one surface of the top plate and the first guard projection; and
- a second nut threadedly coupled to the bolt and abutting the other surface of the top plate and the second guard projection with the top plate between the nuts.

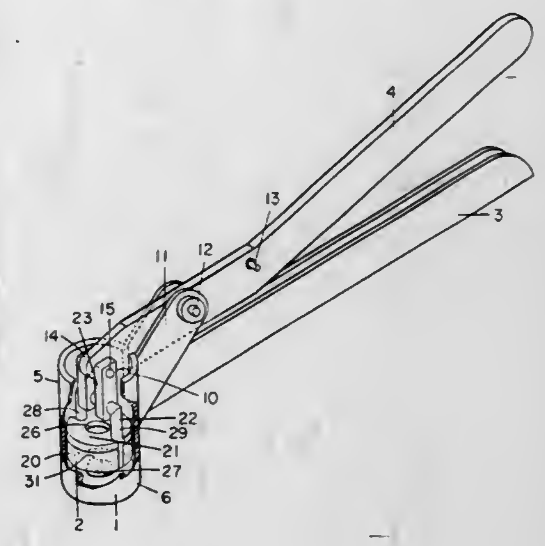
3,872,570
FASTENER APPLYING TOOL

Valentin L. Crosa, Montevideo, Uruguay, assignor to H. K. Porter Company, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1973, Ser. No. 412,131
Claims priority, application Uruguay, Nov. 13, 1972, 19154
Int. Cl. B25b *27/14*
U.S. Cl. 29—267 **9 Claims**

1. A tool for applying a fastener having rod engaging tongues to a rod comprising:

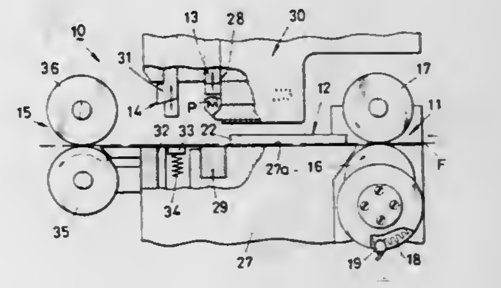
- a support structure;
- a rod clamping assembly connected to said structure and movable relative to said structure;
- means for producing said relative movement;
- a release means connected to said structure and adapted to cooperate with said clamping assembly to release a said rod when gripped thereby; and
- means biasing said clamping assembly, in opposition to said relative movement, into cooperation with said release means; wherein
- said structure is adapted to cooperate with a said fastener and, upon operation of said means to produce said relative motion, to move said fastener along a said rod when engaged by said clamping assembly, wherein the clamping assembly comprises:
  - a housing having an opening permitting projection of a said rod into said housing;
  - a split clamp member captively disposed in said housing and defining a rod engaging opening; and
  - a resilient means to bias said split clamp member into engagement with a said rod projecting through said opening and said rod engaging opening,
  - said split clamp member is in an interference fit between said housing and said rod and said rod is gripped by said clamping assembly.



3,872,571
METHOD OF AND APPARATUS FOR FINISHING SLIDING CLASP FASTENERS

Hisashi Douri, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

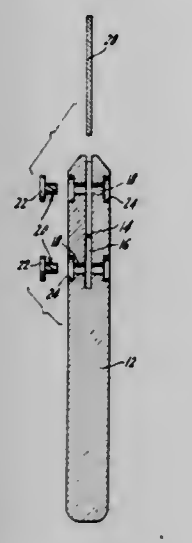
Filed July 25, 1973, Ser. No. 382,455
Claims priority, application Japan, July 28, 1972, 47-76261
Int. Cl. B23p *11/00, 19/04*
U.S. Cl. 29—408 **10 Claims**



1. In the production of measured lengths of sliding clasp fastener units having bottom end stops from a continuous fastener chain comprised of a pair of opposed stringer tapes carrying along their respective longitudinal edges two rows of continuously meshed fastener elements, an improved process which comprises holding the fastener chain closely adjacent the longitudinal edges of its stringer tapes along which the rows of fastener elements are secured, feeding the fastener chain intermittently in a horizontal path of movement for a distance corresponding to a selected length of an individual product fastener, discontinuing the feeding of the fastener chain, applying a bottom end stop to the fastener chain adjacent a leading end thereof, and cutting the fastener chain at a point forwardly beyond said bottom end stop.

3,872,572
METHOD OF ASSEMBLING KNIFE HANDLE AND BLADE

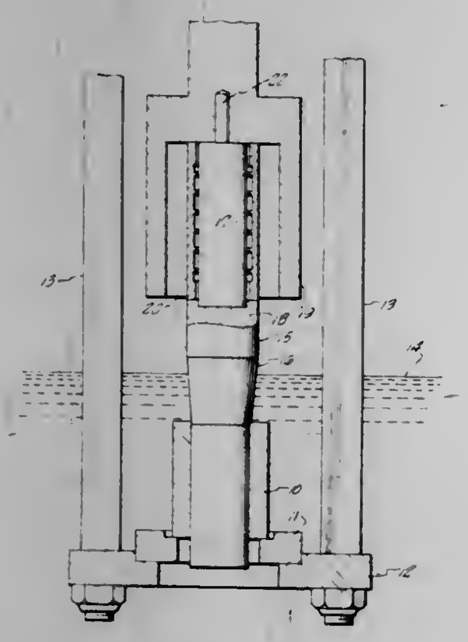
Jerome S. Hahn, 70 Schmitt Blvd., Farmingdale, N.Y. 11735
Division of Ser. No. 177,328, Sept. 2, 1971, abandoned. This application Mar. 8, 1973, Ser. No. 339,174
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.1 **1 Claim**



1. A method of assembling a plastic knife handle and a knife blade having a blade tang formed at one end thereof, which comprises the steps of molding the knife handle and forming a blade tang-receiving socket therein, forming vent holes in the walls of said tang-receiving socket, heating said blade tang, inserting said heated blade tang into said tang-receiving socket, said insertion generating gases within said tang-receiving socket which are vented through said vent holes and plugging said vent holes after said gases have dissipated.

3,872,573
PROCESS AND APPARATUS FOR MAKING HEAT RECOVERABLE COMPOSITE COUPLINGS

Paul E. Nichols, Sunnyvale, and Charles L. Martin, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Dec. 19, 1973, Ser. No. 426,336
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 **17 Claims**



1. A process for making a heat recoverable composite coupling suitable for joining cylindrical substrates comprising:

cooling a metallic compression sleeve, said sleeve being expandable in its cooled state and recoverable upon heating;

inserting an expansion means into the cooled sleeve to cause outward expansion;

inserting a composite coupling insert into the cooled, expanded sleeve by means of an insert pilot rod, said pilot rod connected to a force means contiguous with said expansion means and engaging the inner surface of said insert whereby the insert is piloted into the expanded sleeve immediately after expansion;

removing the expansion means and pilot rod from the expanded heat recoverable insert coupling, whereby said coupling is ready for use to join cylindrical substrates.

5. An apparatus for making a heat recoverable composite coupling comprising:

a sleeve support member for supporting a metallic compression sleeve, said sleeve being expandable in its cooled state and recoverable upon heating;

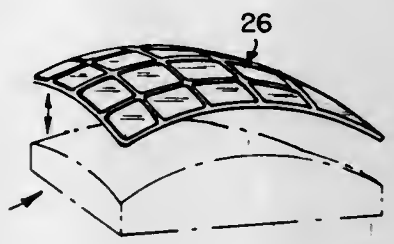
a cooling means for cooling said metallic compression sleeve;

an expansion means for causing the cooled metallic compression sleeve to expand;

a means for inserting a composite coupling insert into said metallic compression sleeve, said means comprising a pilot means contiguous with the expansion means, connected to a force means, and capable of engaging the inner surface of said composite coupling insert, whereby said insert is piloted into the sleeve, immediately upon expansion.

3,872,574
METHOD OF FABRICATING A GLASS LAMPSHADE

Howard L. Worden, P.O. Box 519, Granger, Wash. 98932
Filed Aug. 13, 1973, Ser. No. 387,929
Int. Cl. B23p *23/00*
U.S. Cl. 29—469 **2 Claims**



1. A method of constructing a lamp shade or the like comprising:

Fabricating a plurality of segments of the shade by the steps of:

placing a form which represents a segment of the completed shape upon a supporting surface,

placing a plurality of discrete pieces upon the segment of the form,

securing the discrete pieces to each other to form a rigid segment of the shade,

removing the segment of the shade from the segment of the mold,

securing a plurality of segments of the shade to each other to form a complete shade.

3,872,575
OPTICAL TRANSDUCER SCALE

Charles Benjamin Lee, Minnetonka, and Franz Ucko, Saint Paul, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Mar. 25, 1974, Ser. No. 454,350
Int. Cl. G02b *27/00*
U.S. Cl. 29—475 **8 Claims**

1. A method for forming an optical grating having the thermal expansion characteristics of a preselected material, comprising the steps of

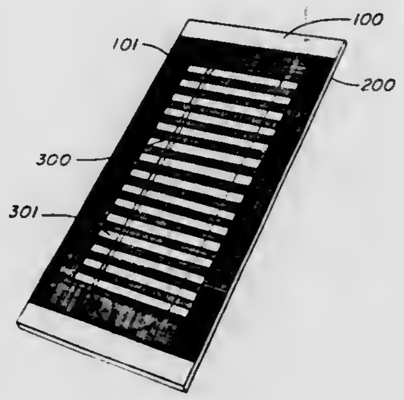
a. forming a flat plate of material having the thermal expansion characteristics of the preselected material;

b. cutting a slot of preselected width piercing the plate;

c. forming a thin flat sheet wider in a first direction than the slot, whose elongation per unit length per unit tension perpendicular to the first direction is substantially greater than for the plate along the direction of its slot, said sheet having a transparent layer;

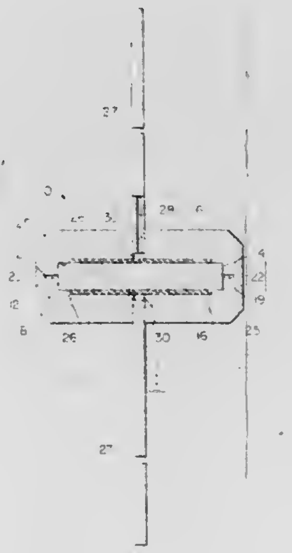
d. forming on the sheet a plurality of slits generally lying in the first direction which form the desired grating pattern, and

e. bonding the sheet to the plate in a position situating at least a portion of each slit within the slot.



3,872,576
INLINE FILTER CONSTRUCTION

Lambert H. Mott, P.O. Drawer L, Farmington, Conn. 06032
Filed Apr. 1, 1974, Ser. No. 456,608
Int. Cl. B23k *5/08*
U.S. Cl. 29—471.7 **5 Claims**



1. The process of fabricating a filter comprising the steps of

a. providing two disk shaped sides each containing a large recess, a smaller shallower recess, and a central bore,

b. placing a porous filter disk in the large recess and clamping the sides about the filter disk with a clearance between the sides,

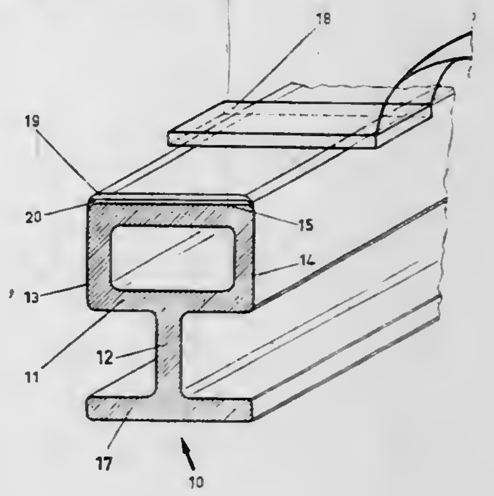
c. circumferentially welding the sides forming a filter body,

d. allowing the weld to cool and contract clamping and sealing the filter disk within the filter body, and

e. unclamping the sides and fixing tubing lengths in the central bores of the filter body sides.

3,872,577
METHOD OF MANUFACTURE OF A CONDUCTOR RAIL

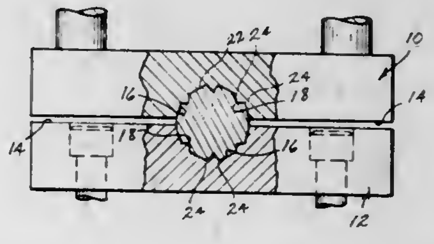
Tibor Kugler, Thayngen, and Hans Wolfhart Rieger, Beringen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Filed July 27, 1972, Ser. No. 275,519
Claims priority, application Switzerland, July 29, 1971, 11215/71
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 **8 Claims**



1. A method of manufacturing a composite conductor rail consisting of a body of aluminum or an aluminum alloy having a layer of steel, comprising the steps of heating a preformed steel sheet so that one side is at least partly liquified, contacting the liquified side of the steel sheet with said body, and carrying away heat from the steel sheet during said contacting step whereby the steel sheet forms a layer on said body.

3,872,578
METHOD OF CONNECTING A ROTATING MEMBER TO A SHAFT

William L. Ullom, Wabash, Ind., assignor to The Cyclone Seeder Company, Inc., Urbana, Ind.
Filed May 6, 1974, Ser. No. 466,997
Int. Cl. B23p *19/02*
U.S. Cl. 29—525 **3 Claims**



1. A method of forming a connection between a shaft having a first diameter and an axis and a cooperating part having a bore therein defined by a circular inner face, comprising the steps:

a. providing opposing forming dies with one such die having a part-circular groove therein, said groove being interrupted by a plurality of parallel teeth extending longitudinally of the groove,

b. placing said shaft at its first diameter between said dies in alignment with said groove,

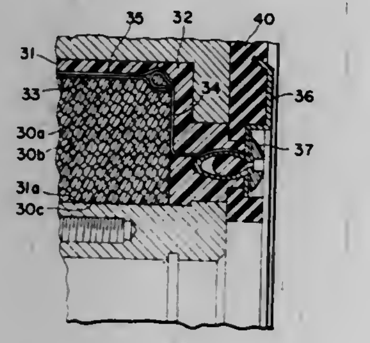
c. causing said dies to clamp said shaft from diametrically opposite sides with said teeth deforming said shaft and displacing the material thereof to impact form a plurality of protruding ridges on the shaft, said ridges generally paralleling the axis of the shaft and defining grooves in said shaft therebetween, the transverse dimension across said shaft at said ridges exceeding said first shaft diameter and the diameter of said cooperating part bore, and

d. fitting said shaft and cooperating part together with the ridges of the shaft lockingly engaging the inner face of said cooperating part bore.

3,872,579
METHOD OF MAKING ELECTROLYTIC CAPACITORS
George S. Papadopoulos, Sanford, N.C., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.
Filed Apr. 11, 1973, Ser. No. 350,001
Int. Cl. H01g *13/04*
U.S. Cl. 29—570 4 Claims

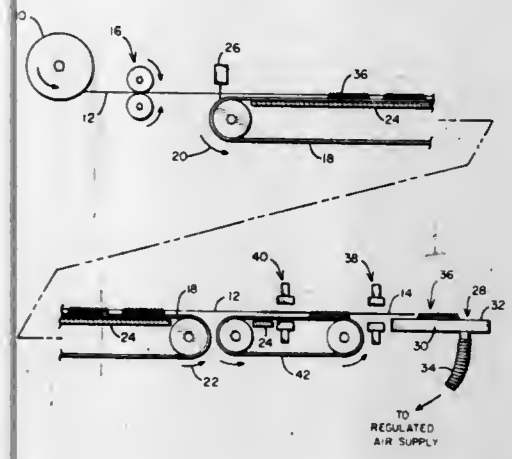
1. A method of manufacturing electrolytic capacitors including the steps of assembling a capacitor structure including separated electrodes at least one of which is an oxide-coated film-forming electrode into a container for electrodes to constitute a capacitor assembly, impregnating the capacitor structure with a solution including dimethylformamide as at least part of the solvent thereof and ionogen providing material consisting of a number of acids of film-forming anions as the ionogen of the solution where said number is at least one, sealing the container, and subjecting said sealed capacitor assembly to heat-aging for reducing prominently the direct-current leakage, the dissipation factor and effective series resistance thereof, the method further including the step of electrically aging the capacitor assembly after impregnation but before the heat-aging step.

3,872,580
METHOD OF MAKING AN ELECTROMAGNETIC DRIVE
Ferdinand W. Fisher, and Clifton D. Sweet, Jr., both of Danville, Ky., assignors to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 417,457, Nov. 19, 1973, Pat. No. 3,833,871. This application Apr. 12, 1974, Ser. No. 460,622
Int. Cl. H02k *5/00*
U.S. Cl. 29—596 7 Claims



1. The method of manufacturing an electromagnetic coupling for transmitting torque between a driving member and a driven member in response to the energization state of the coupling comprising the steps of:
- providing a mounting member having an annular recess therein;
- providing an annular coil of insulated electrically conductive material having an inner periphery no greater than the diameter of an inner periphery of the annular recess of said mounting member;
- pressing said coil onto the inner periphery of the recess of said mounting member to remove a portion of the electrical insulation of said coil from the inner periphery of said coil to thereby provide electrical contact between said coil and said mounting member;
- connecting electrical lead means to said coil for conducting electrical energy between said lead means and said mounting member; and
- providing an electric energy means connected to said lead means to switchably energize said coil and effect torque transmission between the driving member and the driven member.

3,872,581
CORE PATCH STRINGING METHOD
Ronald A. Beck, Bloomington, and Dennis L. Breu, Stillwater, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Division of Ser. No. 401,469, Sept. 27, 1973, Pat. No. 3,849,861. This application July 1, 1974, Ser. No. 484,648
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 2 Claims



1. A method for stringing magnetic core arrays comprising the steps of:

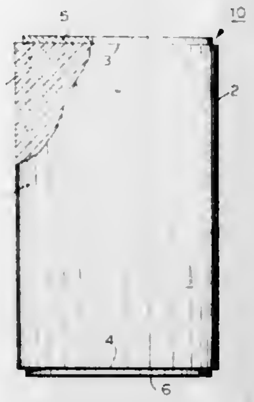
a. locating a core patch having a plurality of toroidal shaped cores mounted thereon, on edge, with the apertures of said cores aligned along a plurality of rows and columns at a work station;

b. manually threading a first end of each of a plurality of wires individually through the apertures of a respective one of said columns;

c. clamping said first end of said plurality of wires to maintain them in a taut condition; and

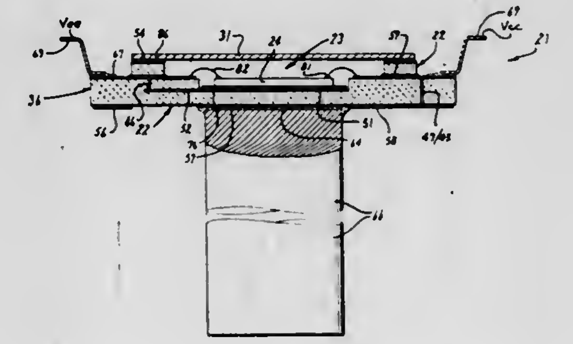
d. sliding said core patch away from said work station along said plurality of wires for an extended, predetermined distance.

3,872,582
PROCESS FOR MAKING A VOLTAGE DEPENDENT RESISTOR
Michio Matsuoka; Gen Itakura; Atsushi Iga, and Takeshi Masuyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 27, 1973, Ser. No. 428,737
Claims priority, application Japan, Dec. 29, 1972, 47-483610; Dec. 29, 1972, 47-483619; Apr. 13, 1973, 48-4842488; June 15, 1973, 48-4868066
Int. Cl. H01c *1/14, 17/00*
U.S. Cl. 29—621 5 Claims



1. A process for making a voltage dependent resistor comprised of a zinc oxide sintered body which itself has voltage dependent properties, said process comprising: (1) providing a formed body of powder mixture comprising, as a major part, zinc oxide and the remainder being an additive; (2) coating on the side surface of said body a paste having a solid ingredient composition of at least one member selected from the group consisting of a) more than 50 mole percent of silicon dioxide (SiO_2) and less than 50 mole percent of bismuth oxide (Bi_2O_3), b) the same composition as that of said additive, c) more than 30 mole percent of antimony oxide (Sb_2O_3) and less than 70 mole percent of bismuth oxide (Bi_2O_3), and d) more than 50 mole percent of indium oxide (In_2O_3) and less than 50 mole percent of bismuth oxide (Bi_2O_3); (3) sintering said coated body; and (4) applying two electrodes to the opposite end surfaces of said sintered body.

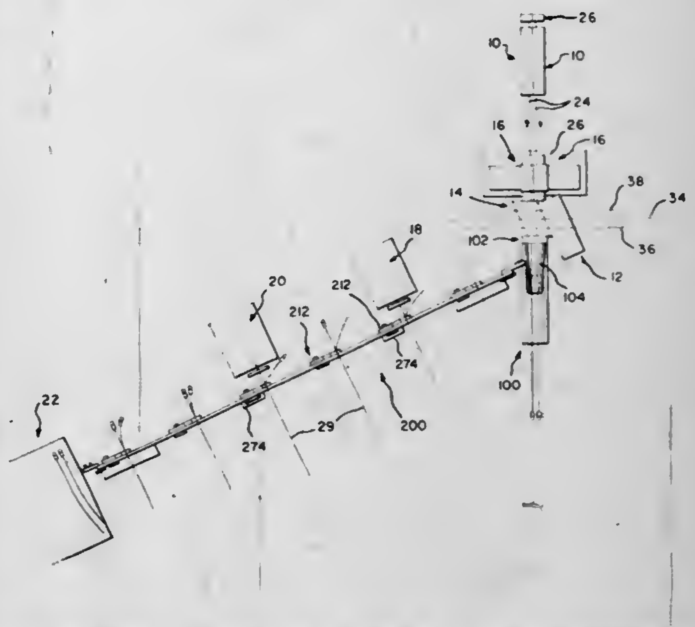
3,872,583
LSI CHIP PACKAGE AND METHOD
Robert J. Beall, San Jose, and John J. Zasio, Sunnyvale, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.
Division of Ser. No. 270,448, July 10, 1972,. This application Apr. 5, 1973, Ser. No. 348,239
Int. Cl. H05k *3/22*
U.S. Cl. 29—624 10 Claims



1. In a method for fabricating an LSI package, forming a plurality of green ceramic parts, forming by use of metallized paint a metallized pattern on each of said parts with at least one of the parts having a pattern of spaced leads extending from an inner region of the part to an outer region of the part, placing a ceramic slurry between the parts for fastening said parts together and for filling voids in the patterns on the parts, firing said parts to form a unitary ceramic base having a planar surface with the inner extremities of said pattern being in close proximity to said surface, securing relatively rigid leads to the outer extremities of the pattern and securing a cooling stud to said base in a region opposite said planar surface.

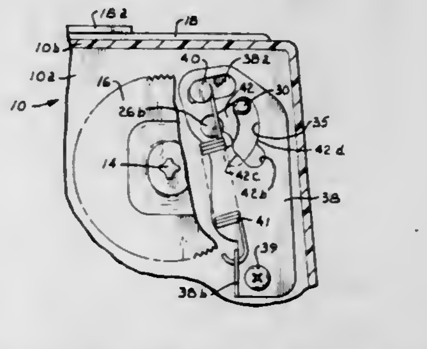
3,872,584
METHOD AND APPARATUS FOR PROCESSING A PLURALITY OF WIRE LEADS
Joseph James Chick, Mechanicsburg; Thomas Joseph Bozek, Jr., Harrisburg, and James Woodrow Hammond, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 27, 1974, Ser. No. 446,553
Int. Cl. H01r *9/00, 43/04*
U.S. Cl. 29—630 A 22 Claims

3. An apparatus for processing a plurality of wire leads comprising:
- cutting means operable to cut a plurality of supply wire leads, which extend away from a source of supply, to form an additional plurality of wire leads which still extend away from the source of supply, said plurality of cut and supply wire leads having opposed trailing and leading ends, respectively;
- stripping means operable to strip insulation from the opposed trailing and leading ends to form bared trailing and leading ends;
- applying means operable to apply terminals or the like to one or more of the bared leading ends;
- feeding means operable to independently measure and feed each of said plurality of supply wire leads past the cutting means after terminals or the like have been applied to one or more of the bared leading ends;
- a plurality of spaced apart additional work operation performing means operable to perform additional work operations on one or more of the bared trailing ends when said ends are positioned adjacent said last mentioned means; and



- conveying means operable to convey and to sequentially position one or more bared trailing ends of said cut wire leads adjacent said plurality of spaced apart additional work operation performing means whereby additional work operations are performed on said one or more bared trailing ends.

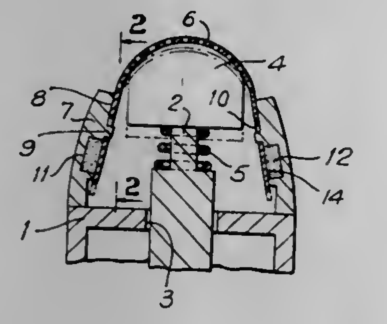
3,872,585
CAN OPENER HAVING A REMOVABLE HAND LEVER RELEASABLY RETAINED BY A PIVOTAL LATCH
Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed May 17, 1974, Ser. No. 470,913
Int. Cl. B67b *7/38*
U.S. Cl. 30—4 R 9 Claims



1. In a can opener having an upright frame, a rotary feed wheel and means for rotating said feed wheel, the combination therewith of:
- a hand lever carrying a cutting element thereon;
- a pin member extending from said hand lever, said pin member removably insertable in an aperture in said frame and rotatable therein to pivotally mount said hand lever on said frame;
- a latch member supported on said frame for movement between a latching position wherein the inserted pin member is engagingly retained in said frame aperture and a release position wherein said pin member is removable from said frame aperture; and
- a stud extending from one of said hand lever and said latch member, the selective pivotal movement of said hand lever effecting engagement between said stud and the other of said hand lever and said latch member to move said latch member from the latching position to the release position.

3,872,586
MOUNTING STRUCTURE FOR COMB OF DRY SHAVER

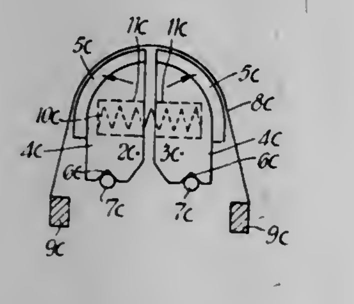
Isao Oguchi, Okaya, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Mar. 27, 1973, Ser. No. 345,411
Claims priority, application Japan, Mar. 27, 1972, 47-36044
Int. Cl. B26b *14/04*
U.S. Cl. 30—43.91 **8 Claims**



1. An improvement in a dry shaver including a vibrating cutter, a comb engaging said cutter slidably and a case having side and end walls defining a compartment into which the end portions of said comb fit, wherein said improvement comprises magnetic means for holding said comb slidably and removably against said side walls.

3,872,587
ELECTRIC SHAVER WITH LONGITUDINALLY SPLIT CUTTER

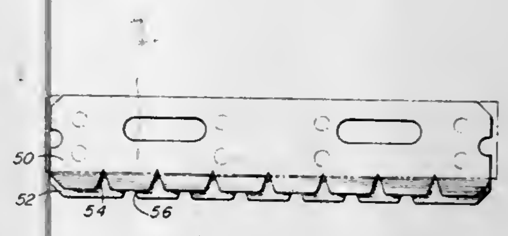
Roger Paul Wellinger, Neuchatel, Switzerland, assignor to The Gillette Company, Boston, Mass.
Filed July 20, 1972, Ser. No. 273,479
Claims priority, application United Kingdom, July 27, 1971, 35174/71; July 27, 1971, 35179/71; July 27, 1971, 35180/71
Int. Cl. B26b *19/04*
U.S. Cl. 30—43.92 **30 Claims**



22. An electric shaver comprising:
at least two movably mounted members having respective masses (M_1,M_2), at least one of said members comprising a movable inner cutter cooperating with an outer foil and the other of said members comprising a counterweight;
drive means including a motor coupled to and reciprocatingly driving said two members respectively in antiphase;
support means including mountings coupled to and resiliently supporting each of said at least two members, each mounting including a spring, the spring constants (K_1,K_2) of the mounting springs being selected in relation to the masses (M_1,M_2) of the respective members so that $\sqrt{K_1/M_1}$ is substantially equal to $\sqrt{K_2/M_2}$, so that the at least two members have substantially the same natural frequency of reciprocation and the counterweight compensates for vibrations, said cutter and counterweight being supported and driven such that the centre of mass of the counterweight reciprocates on a path substantially collinear with the path of reciprocation of the centre of mass of the cutter;
said motor being operable under power to drive both of said movable members substantially continuously at a frequency of reciprocation substantially equal to said natural frequency.

3,872,588
RAZOR BLADE WITH SPACED CUTOUT PORTIONS ALONG THE CUTTING EDGE

Herman Bogaty, Short Hills, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 8, 1974, Ser. No. 431,652
Int. Cl. B26b *21/22, 21/54*
U.S. Cl. 30—50 **7 Claims**



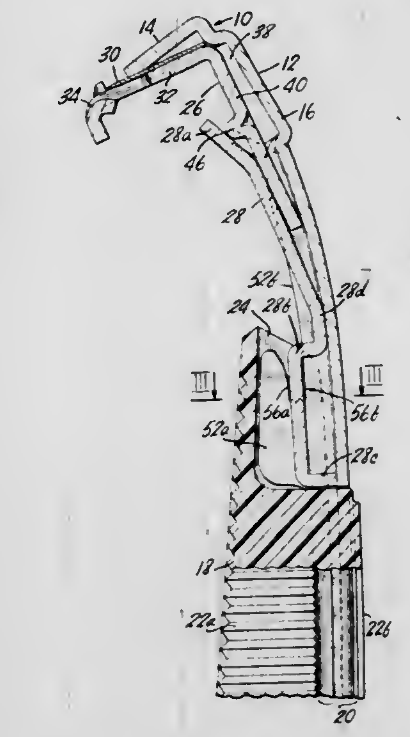
1. A shaving unit comprising:
a. a first razor blade including a cutting edge having a plurality of spaced cut-out portions therealong, and
b. a second razor blade including a cutting edge spaced upwardly and inwardly from the first blade cutting edge, the second blade cutting edge having a plurality of spaced cut-out portions therealong, and the cut-out portions along the second blade cutting edge being out of phase with the cut-out portions along the first blade cutting edge.

6. In a shaving system including a shaving unit and a safety razor, the combination comprising:
said shaving unit including:
a first razor blade having a cutting edge,
a second razor blade having a cutting edge spaced upwardly and inwardly from the first blade cutting edge, the second blade cutting edge having a plurality of spaced cut-out portions therealong, and
a spacer member for vertically separating said first and second razor blades, said spacer member having a forward surface located rearwardly of the second blade cutting edge, and the cut-out portions of the second blade cutting edge extending rearwardly to at least the forward surface of said spacer member; and
said safety razor including a cap portion for abutting engagement with the said second razor blade.

3,872,589
INJECTOR RAZOR AND HEAD ASSEMBLY

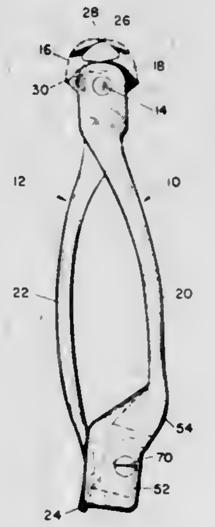
Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,605
Int. Cl. B26b *21/24*
U.S. Cl. 30—62 **9 Claims**

1. In combination, in an injector-type razor, a head member having a forwardly extending cap and a downwardly extending rear wall including forwardly extending side flanges each defining an upwardly opening generally U-shaped notch, a blade support member nestable with said head member and having a forwardly extending blade seat cooperative with said cap to support a blade in cutting position and a spring element biasing said blade support member into such nesting relation with said head member, said spring element having an upper portion resiliently engaging said blade support member, a middle portion having side lugs each seated in one said head member notch and a rearwardly extending base portion abutting said head member rear wall.



3,872,590
ELECTRICIANS TOOLS

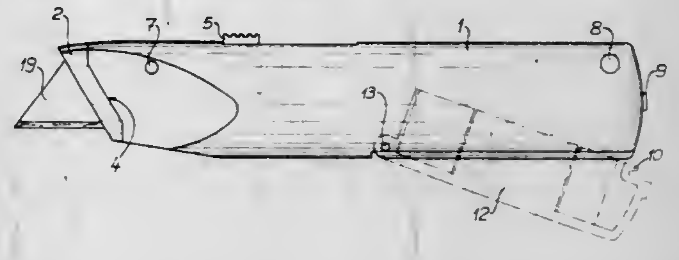
James L. Hill, 7012 Azalea St., Bakersfield, Calif. 93306
Filed May 20, 1974, Ser. No. 471,307
Int. Cl. 7 *5.1;4;3 R*
U.S. Cl. 30—90.6 **10 Claims**



1. In an electrician's insulation stripping tool of the plier class wherein a pair of members pivoted to one another at an immediate point along their length, are shaped such that each is formed at one end into a jaw that cooperates with the jaw of the other and such that each is formed at its other end into one of a pair of handles which handles, when squeezed together, cause said members to pivot such that said jaws are squeezed in a direction intending to close them, the improvement which comprises:
said jaws being formed into a pair of pinch blades that close upon one another along a line that is substantially parallel to the axis of said pivot;
at least one of said jaws being notched at a point along the length of its pinch blade to receive a conductor wire, the jaw being sharpened around the periphery of said notch to form a cutter for insulation associated with a wire disposed in said notch one of said members is formed with a flat outer surface at the side away from the other of said pair of members in the region from its jaw to the pivot;
said one of said jaws being formed with the inner edge of said notch lying substantially in the plane containing said flat surface whereby said surface can serve as a gauge for location of a wire to be stripped when the notch is hidden from the inner's view.

3,872,591
KNIFE HANDLE

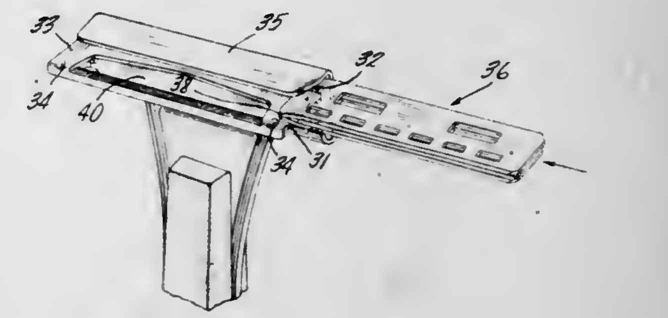
Michel Quenot, Besancon, France
Filed Nov. 19, 1973, Ser. No. 417,103
Claims priority, application France, Nov. 27, 1972, 72.42087
Int. Cl. B26b *1/08, 5/00*
U.S. Cl. 30—162 **10 Claims**



1. A hollow knife handle comprising first and second elongate shell members secured together generally edge-to-edge to define therebetween a blade-receiving cavity, in which the first member has at one end a slot-like aperture and an integral oval shaped female portion extending continuously around said aperture and defining a nose end of the handle, said slot-like aperture communicating with and being in alignment with said blade receiving cavity, and the second member has a male end part inserted in said aperture to cooperate with the oval portion to define therein a blade outlet slot.

3,872,592
TWIN BLADE INJECTOR UNIT

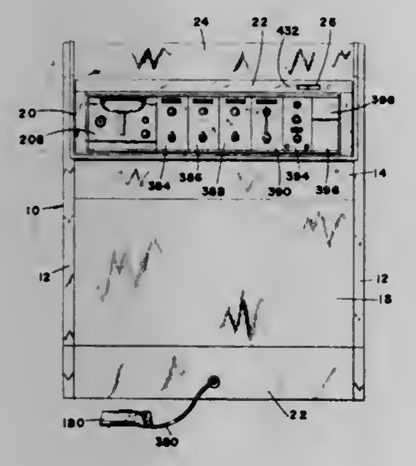
Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Jan. 30, 1974, Ser. No. 437,859
Int. Cl. B26b *21/54, 21/22*
U.S. Cl. 30—346.58 **8 Claims**



1. A safety razor injector blade unit adapted to be inserted in and fit a single edge injector razor, said unit comprising two thin blades each with a forward cutting edge and an intervening thin spacer, said blades and spacer being permanently secured together, the cutting edge of each blade extending for substantially the entire overall length of the respective blade, said unit having a first end adapted to be the advance end of the unit in insertion in the razor, the spacer occupying the major portion of the length of the unit but terminated short of said first end and the blade cutting edges, whereby upon insertion of the unit in a razor the corresponding ends of the blades may flex toward each other.

3,872,593
DENTAL CONSOLE

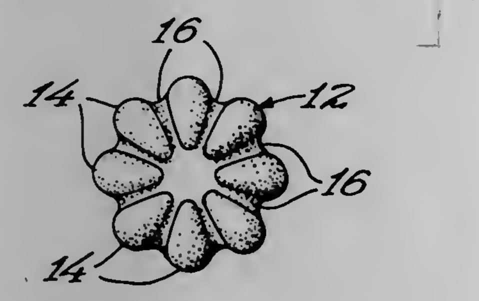
Henry M. Thornton, Jr., York; George H. Stram, Hellam, and Richard E. Plowman, York, all of Pa., assignors to Dentsply Research Development Corporation, Wilmington, Del.
Filed Oct. 20, 1965, Ser. No. 498,547
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **42 Claims**



1. A dental equipment stand arranged to support a plurality of different dental instruments connectable to said stand and requiring dental utilities comprising at least air and water, said stand comprising in combination, supporting frame means; a plurality of control modules each having sub-frames, control valves connectable to sources of dental utilities and operable to control the supply thereof to an individual dental instrument when connected to each of said subframes for support thereby, and support means for a dental instrument interconnected to each sub-frame; and means detachably connecting said module sub-frames to said supporting frame means in selective compact side-by-side and interchangeable assembled relationship suitable to the greatest convenience for a dentist or attendant.

3,872,594
ROTARY BURNISHERS

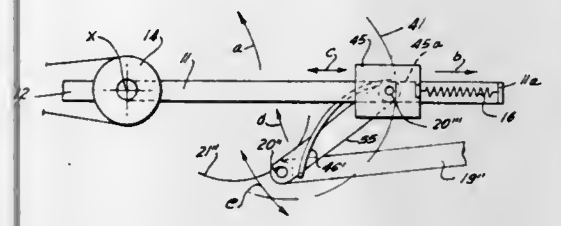
Jerome M. Gerteisen, 117 N. Black Eagle Dr., Mankato, Minn. 56001
Filed Jan. 21, 1974, Ser. No. 435,239
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 **2 Claims**



1. A burnishing tool for use on dental castings comprising a shank portion and a head portion, aligned along a longitudinal axis, said shank portion shaped to fit in a dental handpiece for rotation about said axis, and said head portion formed from a rounded solid steel member having a plurality of flutes arranged generally parallel to said axis about the circumference of said head, said flutes being rounded and smooth.

3,872,595
TRACING APPARATUS FOR A NON-CIRCULAR TEMPLATE

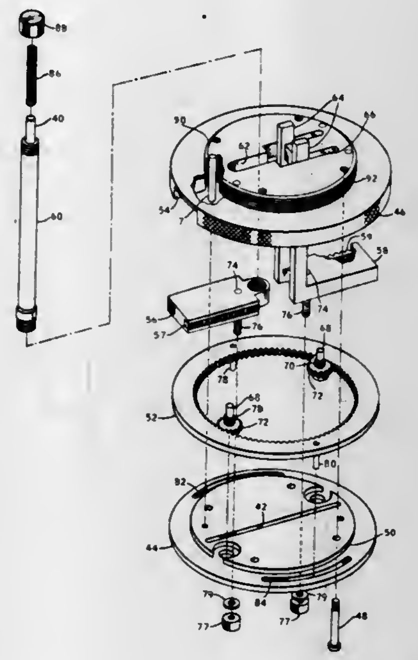
Herbert Harlin, 7533 Eutingen Baden, Germany
Continuation of Ser. No. 38,705, May 19, 1970, abandoned. This application Apr. 17, 1973, Ser. No. 351,958
Int. Cl. B43l *13/10*
U.S. Cl. 33—23 H **8 Claims**



1. A tracing apparatus comprising non-circular control track means having a control track; first tracing means movable along a predetermined path defined by said control track; drive means for moving said first tracing means along said predetermined path; a template having a non-circular track extending along said path but at least partly deviating therefrom; second tracing means mounted on said first tracing means for movement therewith along said predetermined path, and also for movement relative to said first tracing means, said second tracing means engaging said track of said template so that said second tracing means moves relative to said first tracing means at least where said track of said template deviates from said path; and guided means connected with said second tracing means for movement therewith and being guided by the same to move in accordance with the shape of said track of said template.

3,872,596
CUTTER PATH SIMULATOR WITH ADJUSTABLE PEN HOLDER

James A. Pardubsky, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Sept. 18, 1974, Ser. No. 507,035
Int. Cl. B43l *9/00, 11/00*
U.S. Cl. 33—27 L **4 Claims**

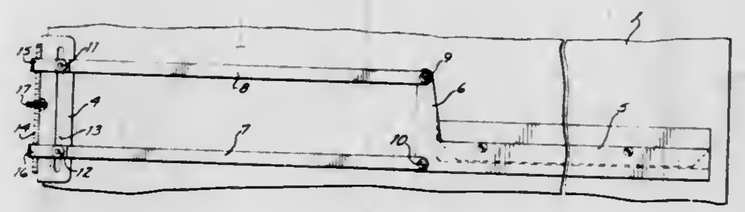


1. A cutter path simulator comprising:
a plotter having an arm movable in two dimensions under numerical control;
a head adapted to be secured to said arm;

a variable speed motor within said head to rotate a drum about an axis perpendicular to the plane of said arm movement;
a pen holder within said drum extending parallel to said axis holding a pen adapted to draw overlapping circles as said drum is rotated and said arm is moved;
said pen holder including a first and second slide movable toward and away from the drum axis of rotation;
said first slide including support means for a marking pen; said second slide including a member having a mass substantially equal to said support means and pen;
gear means interconnecting said slides and an indicator means whereby said slides may be simultaneously moved toward and away from said axis and with indicator means indicating the distance between said pen and said axis; and
locking means for locking said slides with said pen at a selected distance from said axis.

3,872,597
PERSPECTIVE MACHINE

Wayne W. Tennant, 121 Wutzke Ave., Garden Grove, Calif.
Filed Dec. 10, 1973, Ser. No. 423,233
Int. Cl. B43l *13/14*
U.S. Cl. 33—77 **4 Claims**

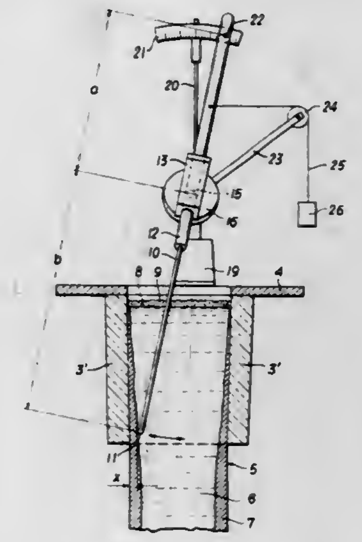


1. A perspective machine comprising a straight edge, a pair of spaced arms means pivotaly securing one end of said arms to the straight edge, a clamp, having a slot therein, means pivotally securing each of said arms to the clamp, said means pivotally securing said arms to the clamp extending through the slot, and adjustable means extending through each of said arms to move said arms relative to each other.

3,872,598
APPARATUS FOR MEASURING THE WALL THICKNESS OF A SOLIDIFYING CASE BODY IN CASTING HOT LIQUID METAL IN A MOULD

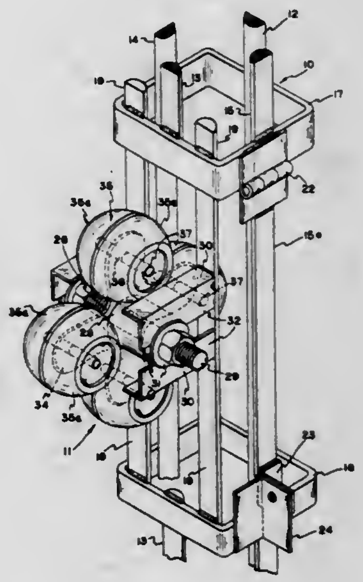
Ernst Bachner; Herbert Bumberger, and Rudolf Hoscher, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Aug. 25, 1972, Ser. No. 283,848
Claims priority, application Austria, Sept. 14, 1971, 7958/71
Int. Cl. G01b *5/06;* **B22c** *19/00*
U.S. Cl. 33—169 R **4 Claims**

1. An apparatus for measuring the wall thickness of a solidifying cast shell formed in casting hot liquid metal into a mould, comprising
a heat resistant sensor rod having a melting point higher than the melting point of steel and being substantially unwetted by liquid metals,
holding means for pivotally holding said sensor rod above the mould in such a manner that it may be introduced into the mould from above and adjusted so that one end touches at least one inner wall of the solidifying cast shell,
means for indicating the change in pivotal displacement of said one end of said sensor rod as the shell is formed, and
means for maintaining said sensor rod in continuous contact with the one wall of the shell so that the thickness of the shell is continuously measured during continuous casting of a bar shell.



3,872,599
BENT EMPTY CAN DETECTOR AND METHOD

Herbert M. Vandre, Rochelle, Ill., assignor to Gel Monte Corporation, San Francisco, Calif.
Filed Jan. 8, 1973, Ser. No. 321,685
Int. Cl. G01b *3/46, 5/12*
U.S. Cl. 33—174 R **2 Claims**



1. Apparatus for detecting dimensionally defective cans having open ends that are out-of-round, comprising down-

wardly extending guide means for gravity movement of cans in single file with the cans disposed with their axes parallel and extending substantially perpendicular to the direction of movement, and detecting means at a detecting station for introducing and removing a gauging member into the open end of each properly dimensioned can as the train moves downwardly, the configuration and dimensions of the gauging member being such that it moves freely through the open end of each properly dimensioned can but resists movement into an out-of-round open end of a dimensionally defective can, said detecting means comprising a rotatable wheel, shaft means for rotatably mounting said wheel adjacent one side of the guide means whereby the wheel is free to rotate about the axis of the shaft means, said shaft axis being horizontal and at right angles to the direction of movement of the cans and at right angles to the axes of the cans, a plurality of circumferentially spaced gauging members carried by said wheel, said gauging members being generally spherically shaped and dimensioned to fit within the mouth of a usable can, the disposition of said wheel and said gauging members with respect to the path of movement of the cans being such that as the cans move downwardly into the region of the wheel the gauging members successively move into and out of the cans, the gauging members comprising generally spherically shaped rollers that are journalled to the wheel for rotation about axes parallel to the axis of rotation of the wheel.

3,872,600

GAUGES AND THE LIKE

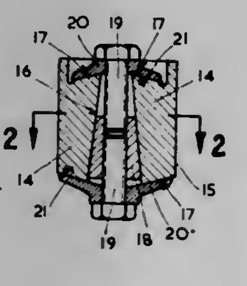
Konstantine George Siminsky, 33 Wongal Cres., Beecroft, New South Wales, Australia

Filed Aug. 29, 1972, Ser. No. 284,539

Claims priority, application Australia, Aug. 30, 1971, 6090/71

Int. Cl. G01b *3/46*

U.S. Cl. 33—178 R **10 Claims**



1. An adjustable plug gauge comprising:

a. an array of gauge elements grouped about a single axis, each of said gauge elements having a working surface, a backing surface opposite said working surface which is inclined relative to said axis, and two end shoulders which mutually converge in the direction of said working surface,

b. a tapered adjustment and guiding member co-axial with said array and engaging said backing surfaces, and

c. adjustment and clamping means for enabling selected axial displacement of said adjustment guiding member relative to said array, said adjustment and clamping means comprising stems extending co-axially from each end of said guiding member and integral therewith, at least one of said stems being threaded, internally tapered abutments on said stems, the abutment on said one stem being axially movable therealong, and a clamping nut on said one stem.

3,872,601

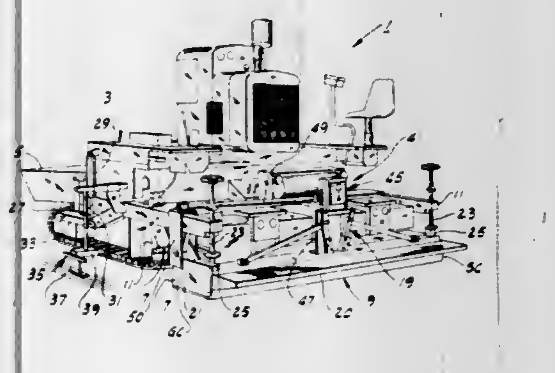
APPARATUS FOR SENSING TWISTING OF A PAVING MACHINE SCREED

Luther B. Burgin, Poplar Bluff, Mo., assignor to Burgin Electronic Grade Control, Inc., Poplar Bluff, Mo.

Filed July 5, 1973, Ser. No. 376,611

Int. Cl. E01c *19/00*

U.S. Cl. 33—185 V **11 Claims**



1. Apparatus for sensing twisting of an elongate element of a road-making machine, such as a screed of a paving machine, said machine having means for changing the angle of each end of the element relative to a road surface; said apparatus comprising a sensor adapted to be mounted on said element for sensing twist in said element, said sensor comprising means for generating a signal in response to said element twisting from a predetermined twist angle, said signal adapted to effect energization of said means for changing the angle of one end of the element thereby to restore the element to its predetermined twist angle, said signal generating means being rigidly secured to and being movable with said element at a first location on said element adjacent the trailing edge of the element generally equidistant between the ends of the element, and said sensor further comprising a nonrotary twist reference arm having one end thereof rigidly secured to and movable with said element at a second location on the element adjacent the leading edge of the element adjacent one end thereof, said twist reference arm extending obliquely relative to said element between said first and said second locations, the other end of said twist reference arm constituting its free end being operatively connected to said signal-generating means whereby a change in screed twist causes relative vertical movement between said signal-generating means and said twist reference arm and thereby generates a signal upon the twist of the element deviating from said predetermined twist angle.

3,872,602

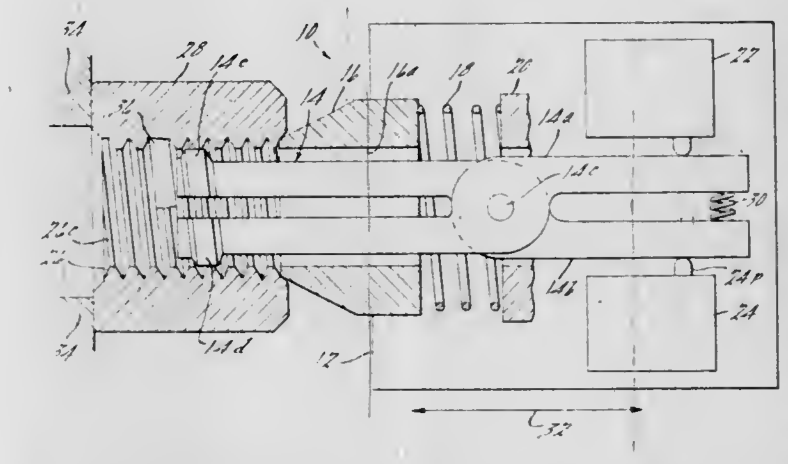
GAUGE

William Edward Kennedy, Grosse Pointe Woods, and Willard Leslie Belcher, Southgate, both of Mich., assignors to Microdot, Inc., Greenwich, Conn.

Filed Aug. 24, 1973, Ser. No. 391,299

Int. Cl. G01b *3/48*

U.S. Cl. 33—199 R **16 Claims**



1. In a gauge for checking a threaded part for a defective thread a slide movable toward and away from a support, a spring pressed bushing on said slide for locating and clamping said part on said support, the central bore of said bushing having a diameter equal to the minor diameter of the thread to be gauged, a probe supported on said slide with a pair of spring biased thread contacting surfaces which mate with the surface of the bore, spring means urging said bushing over said thread contacting surfaces when the latter is out of engagement with the thread of a part, and sensing means operated by said probe for disclosing any difference in the diameter of said thread from that of the bore after said part is accurately located and clamped and said probe is advanced from said bore into said thread.

3,872,603

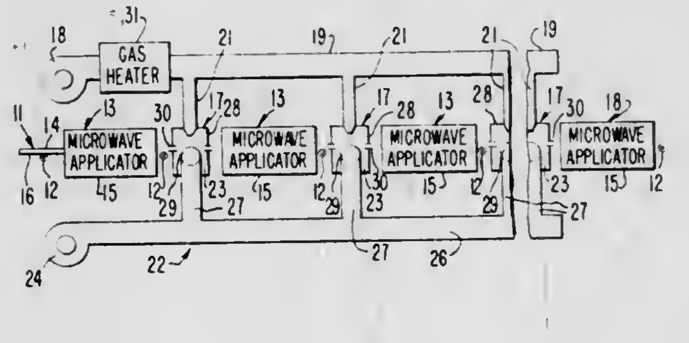
APPARATUS FOR DRYING MATERIALS EMPLOYING SPACED MICROWAVE HEATING AND TRANSVERSE-FLOW MOISTURE FLUSHING STATIONS

Norman H. Williams, San Francisco, Calif., and Henry W. Schuette, Portland, Oreg., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 701,691, Jan. 30, 1968, abandoned. This application Dec. 5, 1973, Ser. No. 422,127

Int. Cl. B01k *5/00*

U.S. Cl. 34—1 **5 Claims**



1. Apparatus for treating material with microwave energy, said apparatus comprising means for moving said material along a predetermined path; a plurality of microwave devices located in spaced-apart relation with respect to each other along said path, each microwave device being adapted to subject said material to microwave energy as said material is moved along said path; a plurality of gas discharge devices disposed along said path at locations intermediate the locations of at least some of said microwave devices, each gas discharge device being spaced-apart from the microwave device closest thereto, and each gas discharge device being adapted to direct a flow of gas to impinge upon said material as said material is moved along said path, the velocity of said gas being sufficient to break up and remove any moisture layer that may form on the surface of said material; and means for extracting the gas discharged by said gas discharge devices after said gas has impinged upon said material, said extraction means being adapted so that the gas directed onto said material at each of said intermediate locations is caused to flow across the surface of said material transversely to the path of said material before said gas is extracted, each gas discharge device being spaced far enough from each adjacent microwave device that moisture on the surface of said material can be sufficiently removed by the transverse gas stream so that the moisture which collects in each microwave device will not be sufficient to detectably reduce the rate of heating of said material.

3,872,604

PROCESS OF TREATING LAUNDRY IN LAUNDRY DRIERS

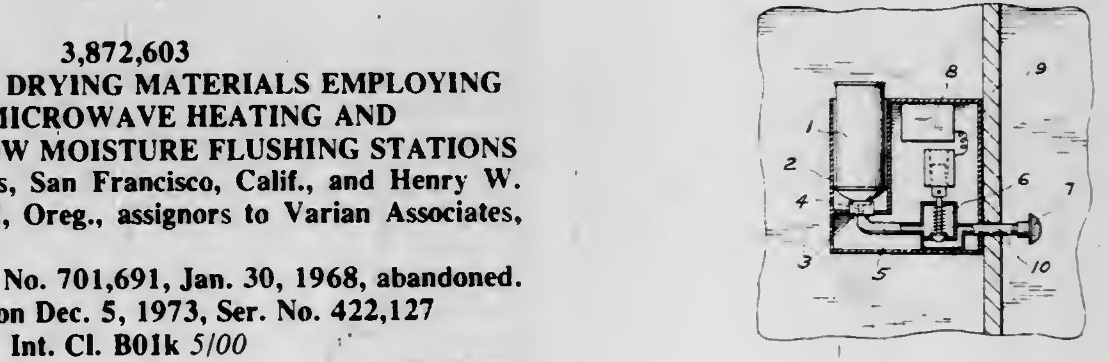
Herbert Keller, Ludwigshafen/Rhein, Germany, assignor to Joh. A. Benckiser GmbH, Ludwigshafen/Rhein, Germany

Filed Apr. 12, 1974, Ser. No. 460,528

Claims priority, application Germany, Apr. 13, 1973, 2318596

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **12 Claims**



1. In a process of subjecting laundry to a finishing treatment, the improvement which consists in the steps of

a. predrying the laundry to a moisture content between about 5 percent and about 70 percent subsequently to the rinsing step,

b. spraying upon the predried laundry a composition containing at least one conventional agent for treating laundry to improve its properties, and

c. completing drying.

3,872,605

Patent Not Issued For This Number

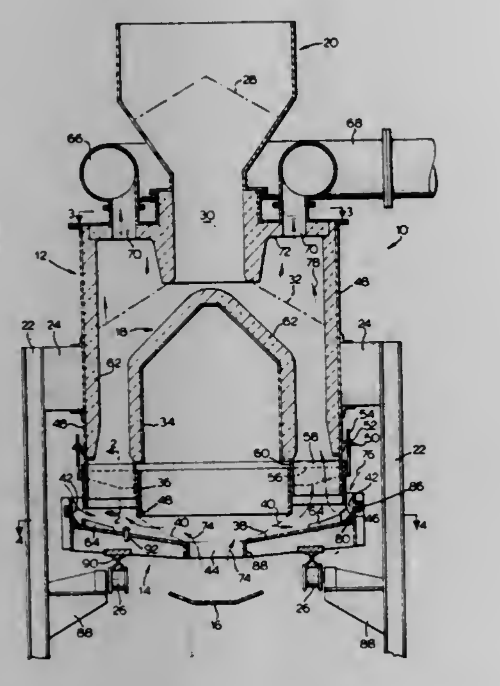
3,872,606
TURNTABLE FEEDER AND COOLER APPARATUS

George E. Kashul, 42 Felicity Dr., Scarborough, Ontario, Canada

Filed Nov. 26, 1973, Ser. No. 419,117

Int. Cl. F26b *17/12*

U.S. Cl. 34—166 **9 Claims**



1. Apparatus for feeding particulate material downwardly from an inlet to an outlet, comprising:
- a circular enclosure having a vertical wall and a material inlet situated in the upper region of said enclosure;
- an upwardly facing cone closed at its upper end and centrally located within said enclosure, and supported above the bottom portion thereof so that an annular passageway for said material is formed past said cone from the top region to the bottom portion of said enclosure;
- a sleeve depending downwardly beneath said cone;
- a turntable below the lower end of said sleeve to form the bottom of said enclosure, said turntable being mounted for rotation independently of said cone and sleeve;
- said turntable having a central opening therein, disposed beneath said cone and sleeve; the diameter of said central opening being less than the diameter of said sleeve, and the diameter of said turntable being greater than the diameter of said enclosure;
- the upper surface of said turntable being sloped downwardly and inwardly from the outer periphery thereof to the periphery of said central opening; and
- drive means to driving said turntable for rotation below said cone and sleeve.

3,872,607
HAIR DRIER

Benedikt Klaus, Lenzkirch, Black Forest, Germany, assignor to Kadus Werk Ludwig Kegel KG, Lenzkirch/Black Forest, Germany

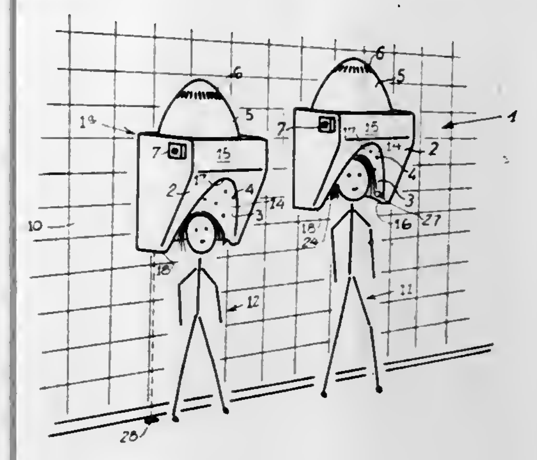
Filed July 18, 1973, Ser. No. 380,399

Claims priority, application Germany, July 20, 1972, 2235702

Int. Cl. A45d *20/25*

U.S. Cl. 34—99 **8 Claims**

1. A hair drying apparatus comprising,
- at least one cubicle comprising a substantially rectangular housing having a top, side walls, a back wall and a front wall provided with a downwardly facing arched opening, the top of the arch being spaced below the upper edge of the front wall,
- said housing being open at its bottom,
- means for mounting said housing substantially upright for vertically adjustable movements on a support,
- a downwardly concave perforated lining within the housing extending from about the opening in the front wall, with the lining extending upwardly from the arch of the opening, then toward the rear wall and downwardly in parallel spaced relation thereto,
- means for delivering a stream of hot air to the rear surface of said lining,



- the space within said lining being of a depth which is greater than that of a person's head,
- whereby a person may enter within the concavity of the liner upright through said front wall opening and be subjected to streams of hot air directed against the head including the forehead and back of the neck and head.

3,872,608
TEACHING MACHINE

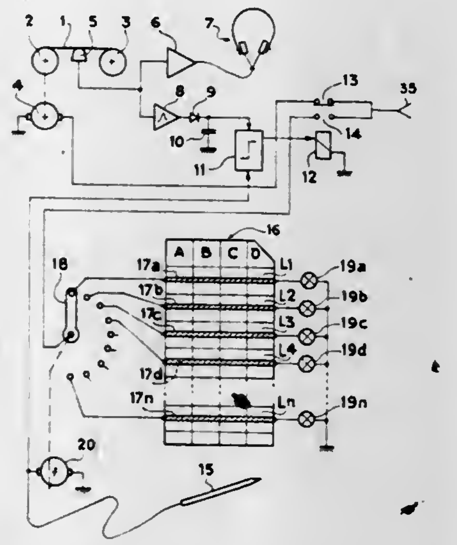
Jacques Laplume, Le Plessis-Robinson, France, assignor to Societe D'Etudes Techniques et D'Enterprises Generales (SODETEG), Le Pressis-Robinson, France

Filed June 27, 1973, Ser. No. 374,106

Claims priority, application France, June 30, 1972, 72.23765

Int. Cl. G09b *7/02*

U.S. Cl. 35—9 A **7 Claims**



1. A teaching machine comprising:
- programming means provided with a movable recording medium storing a series of instructions each calling for one of several alternative responses by a student, transducer means for successively communicating said instructions to the student, drive means for intermittently advancing said recording medium from one instruction to the next, an energizing circuit for said drive means, and electronic switch means in said energizing circuit responsive to signals from said recording medium for stopping said drive means upon completed transmission of any instruction to said transducer means;
- a holder for a perforable card displaying a multiplicity of areas divided into a plurality of rows each corresponding to one of said instructions, each area within a row being correlated with a respective response to the corresponding instruction;
- a plurality of conductors on said holder positioned to underlie said card in alignment with respective rows thereof;
- selector means provided with a plurality of operating positions for respectively energizing said conductors by way of said switch means upon a stopping of said drive means;
- a plurality of indicators connected to said conductors for energization in the respective operating positions of said selector means;
- a conductive marker operable by the student to perforate said card at any area of a row identified by an energized indicator to make contact with the underlying conductor, thereby registering the student's response on the card; and
- stepping means for said selector means connected to said marker for actuation by an energized conductor contacted thereby, said marker being connected to said switch means for reversing same concurrently with actuation of said stepping means to restart said drive means.

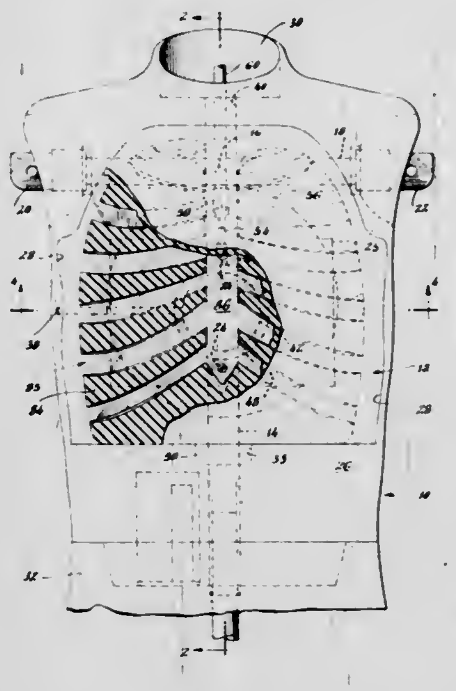
3,872,609
RESUSCITATION TRAINING DUMMY

Joseph G. Smrcka, Norwalk, Conn., assignor to Alderson Research Laboratories, Inc., Stamford, Conn.

Filed Nov. 26, 1973, Ser. No. 419,145

Int. Cl. G09b *23/32*

U.S. Cl. 35—17 **13 Claims**



11. In a dummy torso for first aid training having a main body member simulating at least the back and shoulder areas of a human and a movable chest member, the improvement which comprises: said chest member being formed of a relatively hard, resilient simulated rib cage molded within a relatively softer simulated flesh, said rib cage being positioned to be manually detected through said flesh by a trainee to teach proper hand placement.

3,872,610
MATHEMATICS TEACHING APPARATUS

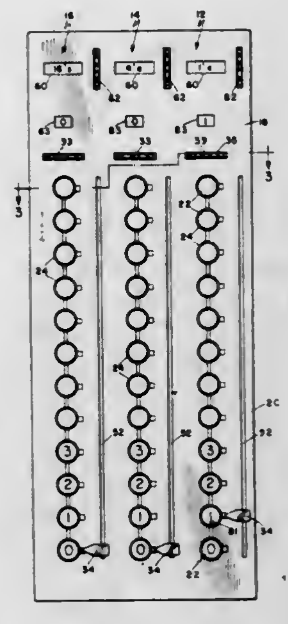
Matt J. Dumovich, 2151 Illion St., San Diego, Calif. 92110

Filed Nov. 21, 1973, Ser. No. 418,066

Int. Cl. G09b *19/02*

U.S. Cl. 35—30 **6 Claims**

1. Apparatus for teaching mathmatical concepts and developing skills comprising:
- a frame having a display panel,
- a plurality of number columns on said display panel,
- said number columns comprising a plurality of vertically aligned openings,
- one of a series of integers in number sequence commencing with the number zero associated with each of said openings,



- a plurality of pointers mounted for vertical movement adjacent each of said number columns to designate a specific associated integer in said number column,
- a column contents indicator operatively connected with said pointers to display the integer corresponding to the current column total content as designated by the pointer position.

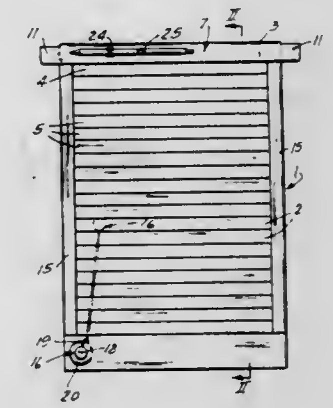
3,872,611
WRITING GUIDE FOR TRAINING PURPOSES AND USE BY THE BLIND

Henry S. Kuhn, 609 Austin Ave., Park Ridge, Ill. 60068

Filed Apr. 4, 1974, Ser. No. 457,826

Int. Cl. G09b *21/00*

U.S. Cl. 35—38 **10 Claims**



1. A writing guide comprising a generally planar structure, the upper face of which forms the surface on which may be disposed a paper sheet to be written on, said structure having sufficient rigidity to permit its use as a supporting member of such a paper sheet during writing operations thereon, the upper face of said structure having a series of parallel edges, extending horizontally across at least the central portion of said structure and defining respective writing lines, each of such edges forming an abutment at the writing line defined thereby, disposed to impart a distinct resistance to movement of a writing instrument, applied to such a paper sheet, in a downward direction below such writing line, and a line-marker having a paper-engageable portion of a size to be operatively disposed on such a writing line, a retaining cord

having one end operatively attached to said line marker and the other end to a cord retracting mechanism, including a housing carried by said guide structure at the bottom portion thereof, whereby said cord and retracting mechanism are operable to urge said marker, when the latter is disposed on such a paper sheet, in a direction toward the adjacent abutment, whereby the latter may oppose such retractive forces, and means on said marker and said guide structure providing a magnetic attraction and thus a retaining action therebetween.

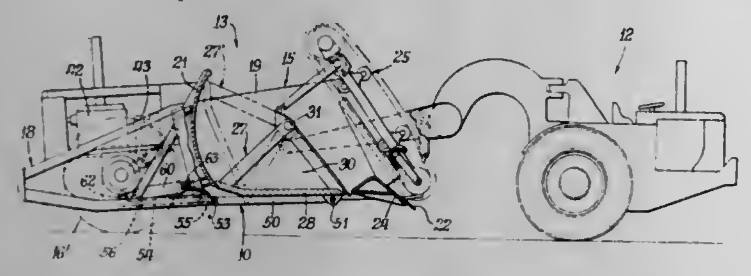
3,872,612
DUMP LINKAGE FOR REAR POWERED ELEVATING SCRAPER

James E. Gee, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 19, 1973, Ser. No. 416,956

Int. Cl. E02f *3/62*

U.S. Cl. 37—8 **12 Claims**



5. The invention of claim 1 further including elevator means for assisting in the loading of material into said bowl means, said elevator means being disposed proximate said cutting edge means and extending laterally across said bowl means in opposed relation to said rear wall.

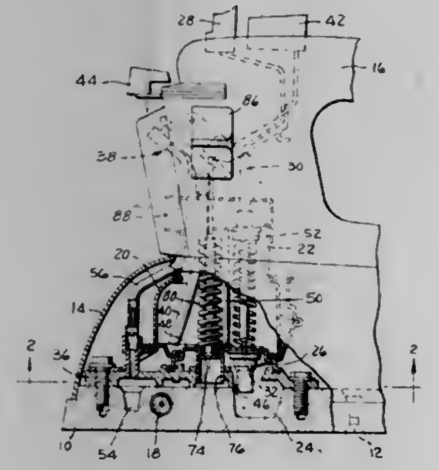
3,872,613
SELF-CLEANING SURGE IRON

William E. Davidson, Ontario, and Wendell C. Walker, Alta Loma, both of Calif., assignors to General Electric Company, Bridgeport, Conn.

Filed May 14, 1974, Ser. No. 469,794

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **15 Claims**



1. In a steam iron having a fill opening to a water tank and a steam generating soleplate with soleplate ports therein, the improvement in means to purge the iron of water and steam and separately supply a surge of steam comprising,

a substantially large opening in said tank,

dump means operable to open and close said opening to suddenly empty the tank into a first distributing passage means to purge the iron,

a main generator fed from said tank by a water valve and connected to said first distributing passage means for directly supplying steam to exit ports,

a separate generator,

second circuitous passage means within the first distributing passage means connecting the separate generator to exit ports, and

means operative to selectively inject water into the separate generator where it completely flashes into steam in the circuitous passage to increase the normal steam through exit ports.

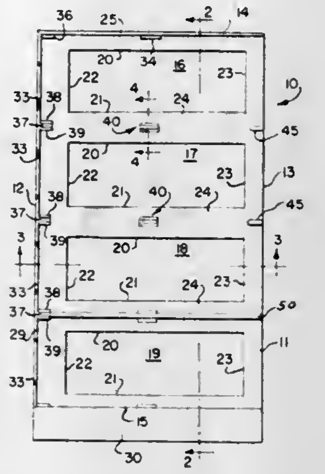
3,872,614
RACK FOR DIAGNOSTIC DIFFUSION PLATES

Lamont J. Seitz, 9302 Candlewood Dr., Huntington Beach, Calif. 92646, and Stephen G. Hauser, 4133 Aleman Dr., Tarzana, Calif. 91356

Continuation of Ser. No. 297,114, Oct. 12, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,076

Int. Cl. G09f *11/00*

U.S. Cl. 40—64 R **6 Claims**



1. In a disposable rigid plastic rack for receiving a plurality of diagnostic diffusion plates, each having external longitudinal flanges, said rack comprising:

a. a substantially planar elongate rectangular base presenting side and end edges;

b. a plurality of four elongate rectangular openigns of substantially equal dimensions arranged in side-by-side relationship in said base, each of said openings having elongate side edges substantially parallel to the end edges of said base and end edges substantially parallel to the elongate side edges of said base;

c. end walls integral with and upstanding from the end edges of said base;

d. a side wall integral with said base a side edge thereof and including interrupted portions upstanding from said base;

e. an integral and upstanding plate positioning block on said base substantially midway the side edge of each opening and spaced from a side edge of each said opening, said blocks having inner edges spaced from said base a distance substantially corresponding to the thickness of a plate flange; each said block adjacent each opening cooperating with said base to define a compartment adapted to receive one of the plates, each of said compartments having an entry for a plate at the side remote from said side wall;

f. integral rib upstanding from said base and which includes one of said plate positioning blocks between the side edges of two adjacent said compartments one of said adjacent compartments being an end compartment; said rib being substantially parallel to the side edges of said compartments and extending substantially the full length of said side edges; said rib cooperating with said plate positioning blocks to receive two of said plates in side-by-side relationship transverse to the side edges of said compartments;

g. reinforcing ribs depending from the underside of said base along portions of the periphery and between the side edges of said compartments which do not have said upstanding rib; and

h. a plurality of pairs of relatively short substantially equally spaced apart ribs depending from teh underside of said base, at least one pair of said ribs being positioned at each of two opposite corners of each said compartments, each of said pair of ribs forming a channel substantially parallel to the side edges of said compartments, and each channel being in alignment with a channel formed by another pair of said ribs at said opposite corner of said compartment whereby the rack by means of these depending ribs is adapted to engage a shaft mechanism on a cooperating diagnostic plate viewer.

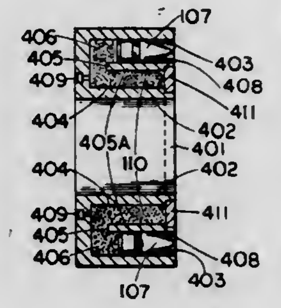
3,872,615
AMMUNITION AND WEAPON SYSTEMS

Andrew J. Grandy, 2707 Grant Ave., North Hills, Pa. 19038

Division of Ser. No. 239,595, March 30, 1972,. This application Sept. 17, 1973, Ser. No. 397,529

Int. Cl. F42b *25/00*

U.S. Cl. 42—49 R **63 Claims**



1. A unitary cluster of cartridge capsules comprising,

a multiple cavity container having a plurality of adjacently arranged cartridge capsule portions, each cartridge capsule portion having an elongated cylindrical chamber defining a forward barrel portion for slidably receiving a corresponding projectile and a pressure chamber portion aligned with and rearward of its barrel portion,

a respective propellant capsule chamber integral with and laterally offset from each elongated chamber,

metering orifice means for fluidly communicating each capsule propellant chamber with its corresponding pressure chamber, and

a primer carried by each propellant chamber for igniting respective capsule propellant charges.

3,872,616
FISHING DEVICE

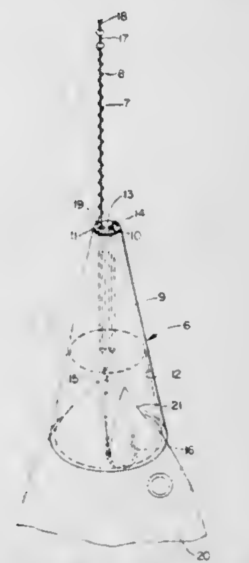
Maurice D. Poland, 720 N.W. 140th Ter., Miami, Fla. 33168

Filed Mar. 22, 1974, Ser. No. 453,961

Int. Cl. A01k *97/14*

U.S. Cl. 43—5 **9 Claims**

1. A fishing device comprising an elongated body having a first end and a second end, said body having a cavity opening outwardly of said first end, a nonelastic strand having end portions extending longitudinally through said body, a first means anchoring one of said end portions to said second end of the body, a second means connecting said other end portion to a fishing line, and a third means slidably connecting a fishing lure to the intermediate portion of said strand, said strand being of a length such that the fish lure is normally disposed beyond said first end of the body, and said cavity being of a size such that when a fish caught on the lure exerts a pull on the fishing line and the strand end connected thereto, the mouth of the fish will be drawn into said cavity and confined thereby to retain the lure in engagement with the mouth of the fish.



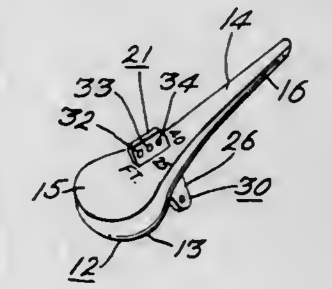
3,872,617
TROLLING SINKER

Victor J. Zalonis, 9 Holiday Ave., Hatfield, Pa. 19440

Filed May 31, 1973, Ser. No. 365,703

Int. Cl. A01k *95/00*

U.S. Cl. 43—43.13 **5 Claims**



1. A sinker for attachment to a fishing line adjacent the lure for determining the depth of the lure comprising an elongated weighted body which is generally teardrop shape in plan and having a rounded bottom surface and a substantially flat top surface which constitutes a planing surface, said body having an enlarged forward portion with the center of gravity of the sinker located therein and a tapering tail portion extending rearwardly beyond the center of gravity, a lug projecting upwardly from said upper surface and being elongated along the longitudinal center plane of said sinker, means in said lug providing for attachment of said fishing line to said sinker at different selected distances rearwardly of the center of gravity of said sinker whereby the pitch attitude of said sinker when at rest positions said upper planing surface inclined rearwardly and upwardly relative to the horizontal, and means projecting from the rounded bottom surface of said sinker affording attachment of the lure to said sinker whereby when said sinker is pulled through the water the inclined pitch of the upper surface causes the sinker to seek a predetermined depth in the water.

3,872,618
APPARATUS AND METHOD FOR RETRIEVING A FISH HOOK

Harry Petersen, Jr., Waterloo, Iowa

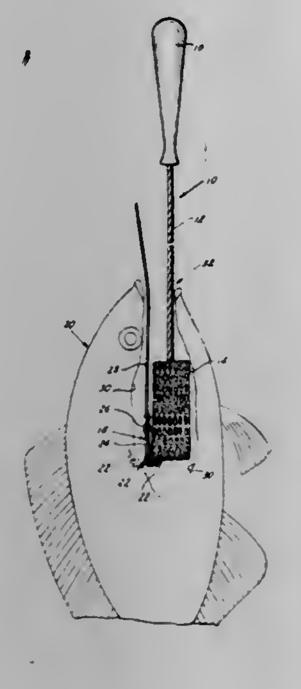
Filed May 6, 1974, Ser. No. 467,381

Int. Cl. A01k *97/00*

U.S. Cl. 43—53.5 **7 Claims**

6. A method of retrieving a nulti-barbed pronged fish hook embedded within the innards of a fish, comprising the steps of: forming a mass of flexible material into a wad capable of snaring and retaining a hold on a barbed prong of a fish hook,

inserting the wad into the gullet of the fish into snaring or enmeshing engagement with one of the barbed prongs on the fish hook,

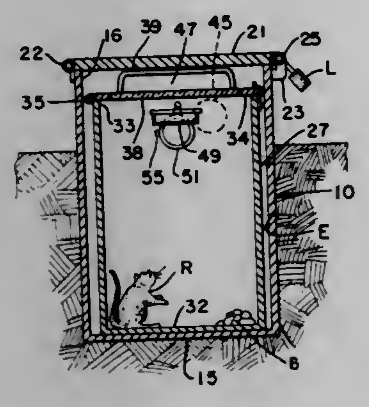


imposing a pulling force on the wad to reverse the position of the hook and loosen it from engagement with the flesh of the fish, and

withdrawing the wad from the gullet with the snared hook.

3,872,619
RAT TRAP

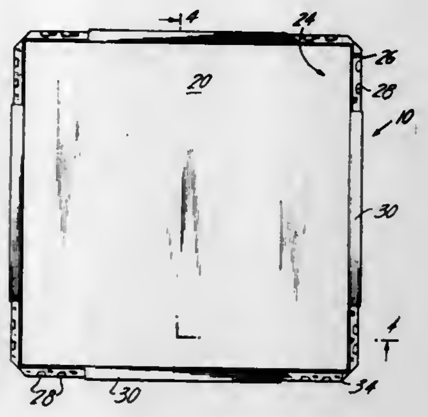
Ivy McIlwain, 440 Lamont St. N.W., Washington, D.C. 20010
Filed Jan. 9, 1974, Ser. No. 431,841
Int. Cl. A01m *23/16*
U.S. Cl. 43—60 **15 Claims**



1. A rat trap for luring and capturing live rats and the like, comprising an outer housing having a top and bottom and normally fixedly embedded in the ground and having at least one opening through the side thereof near the surface of the ground, a removable container having a top and bottom and telescoped within the outer housing and having at least one opening through the side thereof in registry with the opening in the outer housing, whereby rats and the like are enabled to enter the container through said openings, said openings through the sides of the housing and container spaced upwardly from the bottom thereof a distance sufficient to prevent rats in the container from exiting through the opening, closures on said container and outer housing normally preventing removal of said container from said outer housing and preventing rats in the container from leaving the container, and said container being removable from said outer housing for disposal of rats and the like trapped therein, as desired.

3,872,620
PANEL CONSTRUCTION TOY

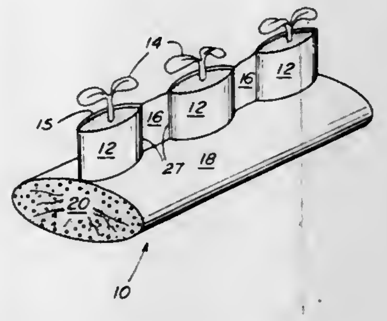
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed July 28, 1970, Ser. No. 58,957
Int. Cl. A63h *33/10*
U.S. Cl. 46—31 **5 Claims**



1. A panel member adapted for abutment with members similar thereto and including a top wall member having a depending skirt portion extending at least partially therearound, ledge portions adapted to receive coupling members thereon positioned at spaced intervals around said skirt portion and extending approximately perpendicularly therefrom, and beveled sidewall members placed intermediate of said ledge portions and extending outwardly from said top wall member to a terminus proximate the outermost edge of said ledge portion, said beveled side wall members being thus adapted for juxtapositioning with like walls of similar panel members upon the abutment of such similar panel members.

3,872,621
HORTICULTURAL CELL SYSTEM

George Greenbaum, 790 Boylston St., Boston, Mass. 02199
Filed Aug. 2, 1973, Ser. No. 384,921
Int. Cl. A01g *31/00*
U.S. Cl. 47—1.2 **11 Claims**



1. A horticultural cell system, comprising:

a belt of sheet material folded along a fold line longitudinally into two layers, with the free edges of the sheet material substantially parallel, said layers being sealed to one another along lines of seals extending only partially across the width of said belt toward said fold line, said lines of seals being spaced apart longitudinally of said belt to form a series of cells;

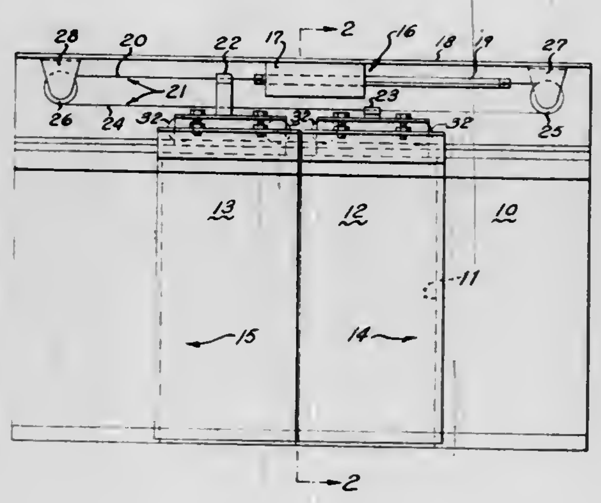
said cells having an approximately oval cross-section when filled with soil and each having an open mouth formed between the edges of said layers;

portions of said layers adjacent to said fold line forming a continuous tube portion common to and in communication with each of said cells, whereby the root systems of plants disposed in said cells may extend into said tube portion

said tube portion having a greater cross-sectional area than said cells, and forming a supporting base to hold the system upright, said seals serving to maintain the cross-sectional form of the system against lateral pressure of soil contained therein.

3,872,622
AUTOMATIC DRIVE FOR SLIDING DOORS

Kurt Berk, Hoesel, Germany, assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 26, 1973, Ser. No. 335,866
Claims priority, application Germany, Mar. 7, 1972, 2210828
Int. Cl. E05f *17/60, 15/14*
U.S. Cl. 49—118 **10 Claims**



1. A drive for at least a pair of sliding doors comprising an electrical linear motor having a fixed stator and a movable armature, first and second pulleys mounted adjacent to the sliding door, flexible means attached to opposite ends of said armature member and extending around said first and second pulleys, said flexible means when attached to said armature and extending around said first and second pulleys having first and second portions which move in opposite directions upon energization of said linear motor, said armature when moved in a first direction upon energization of said linear motor effecting movement of said first portion of said flexible means in said first direction and effecting movement of said second portion of said flexible means in a second direction opposite said first direction, first connecting means connecting one of said sliding doors to said first portion of said flexible means, second connecting means connecting another of said sliding doors to said second portion of said flexible means to enable movement of said armature in said first direction to effect movement of said one door in said first direction and movement of said other door in said second direction to effect opening of the doors, and means for adjusting each of said first and second pulleys in three planes to control the tension on said flexible means and control the alignment of said first and second pulleys relative to each other.

3,872,623
ENTRANCE DOOR CONSTRUCTION FOR HANDBALL AND RACQUETBALL COURTS

Charles A. Spaulding, Jr., 13600 Clayton Rd., Manchester, Mo. 63011
Filed Mar. 25, 1974, Ser. No. 454,101
Int. Cl. E06b *7/34*
U.S. Cl. 49—169 **10 Claims**

1. An entrance structure for a playing court comprising:

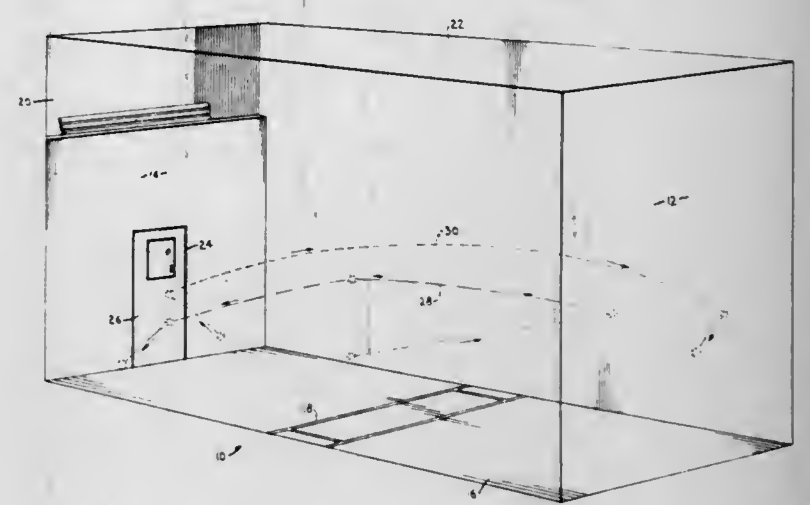
an entrance door adapted to be received within an opening in a wall of said court;

means for mounting said door in said opening for movement between open and closed dispositions,

said door being provided with a storage compartment therein, and having an inside surface facing the court when the door is closed;

a closure member on the inside of said door normally closing said compartment and movable to an open position permitting free access to said compartment,

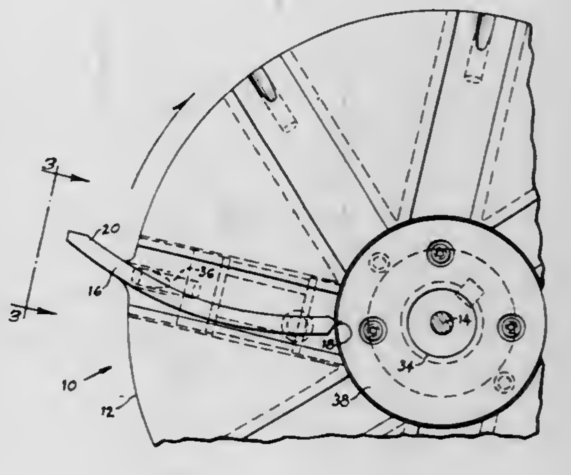
said member having an outside surface flush with said inside surface of the door when the member is in its normal position closing said compartment, whereby to preclude interference with the action of a ball played off the door; and



a latch mechanism in said door having manually operable actuating means in said compartment accessible from the court side of the door when said member is moved to its open position, whereby the door may be opened and closed and yet the actuating means is not exposed from the court side.

3,872,624
CURVED VANE FOR THROWING WHEELS

Kannusami S. Ramaswamy, Knoxville, Tenn., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,925
Int. Cl. B24c *5/06*
U.S. Cl. 51—9 **2 Claims**

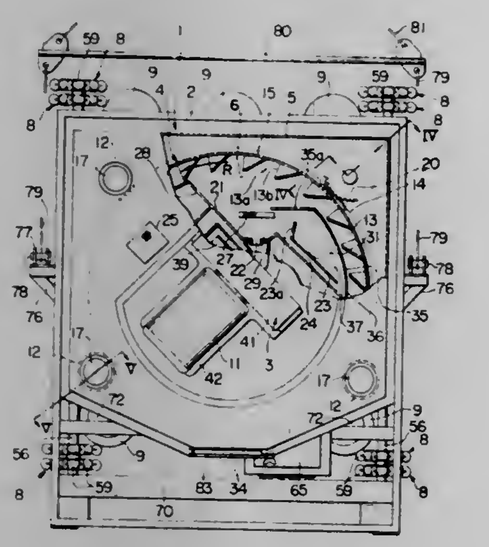


1. In a centrifugal throwing wheel of the type including a rotatable runnerhead having a plurality of vanes mounted thereon for throwing particles therefrom; the improvement comprising a throwing vane being curved continuously forwardly in the direction of rotation, the curve of said vane defining an arc of a circle extending substantially from an innermost tip to an outermost tip of said vane; the curve of said vane being further defined by an angle formed between a radius extending from the center of rotation through the outermost tip of said vane and a line tangential to said curve at the outermost tip, said angle being substantially 31° and 40 minutes.

3,872,625
PENDULOUS BLASTING APPARATUS

Toyoji Fuma, Toyokawa, and Hitosi Takeda, Toyohashi, both of Japan, assignors to Sintokogio, Ltd., Nogoya Aichi-ken, Japan

Filed Dec. 21, 1973, Ser. No. 427,337
Claims priority, application Japan, June 11, 1973, 48-65625
Int. Cl. B24c *3/06, 9/00*
U.S. Cl. 51—9 M **6 Claims**



1. A pendulous blasting apparatus comprising:

a packaged blasting means adapted to be suspended by a rope on a blast cleaning surface including an opening, a centrifugal projecting means adapted to project abrasives through said opening to a vertical or inclined blast cleaning surface and sealing members made of rubber or synthetic resin and provided around said opening and adapted to surround said blast cleaning surface for preventing the jumping out of the abrasives projected to said blast cleaning surface;

an abrasive recovery means mounted on said packaged blasting means integral therewith and including an abrasive storage hopper adapted to hold the abrasives which fall after finishing the cleaning operation and dust resulting from said cleaning operation; a doughnut-shaped rotary bucket means having a plurality of buckets adapted to continuously scoop up and recover the abrasives and dust in said abrasive storage hopper and a separating chamber arranged at the top of said abrasive recovery means and adapted to receive the abrasives and dust recovery by said buckets for separting the abrasives from the dust by applying an air suction to said abrasives and dust so that the separated abrasives are supplied to said centrifugal projecting means, said doughnut-shaped rotary bucket means having an outer periphery thereof, a flat portion and gear teeth protruding radially from said flat portion, and including a rotary driving means having a pinion for rotationally driving said rotary bucket means by meshing with said gear teeth and receiving rollers adapted to rotatably support said rotary bucket means by engaging with said flat portion and also adapted, when said blasting apparatus is inclined, to be in contact with the sides of said gear teeth for preventing the movement in the axial direction of said rotary bucket means;

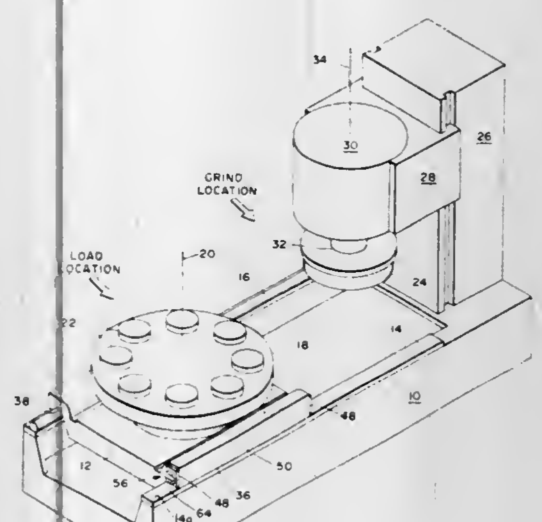
electromagnets provided on said packaged blasting means for bringing said sealing members into tight contact with said blast cleaning surface; and

wheels permitting free travel on the blast cleaning surface and for moving said packaged blasting means along said blast cleaning surface.

3,872,626
GRINDING MACHINE WITH TILTING TABLE

Philip H. White, Claremont, N.H., assignor to Cone-Blanchard Machine Company, Windsor, Vt.

Filed May 2, 1973, Ser. No. 356,418
Int. Cl. B24b *5/04, 41/02*
U.S. Cl. 51—129 **3 Claims**



1. Machine tool apparatus for grinding a workpiece and having a base, first and second spaced apart and parallel rail-like slide means on said base, and table means for supporting said workpiece on a surface normally exactly transverse to a first axis and supported on said slide means for movement between a load location and a grind location, said apparatus further comprising a rounded slide surface on said second slide means, a correspondingly rounded slide surface on said table means slidably and pivotably seated on said second slide means, with the roundnesses of said engaged surface being configured for rotation of said table means, and retractable lifting means for engaging and selectively lifting said table means from said first slide means at said grind location, thereby to rotate said table means upward about said second slide means and to offset said table surface selectively from said first axis.

3,872,627
WIDE BELT SANDING MACHINE WITH IMPROVED DUST COLLECTOR

Gordon L. Schuster, Minneapolis, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

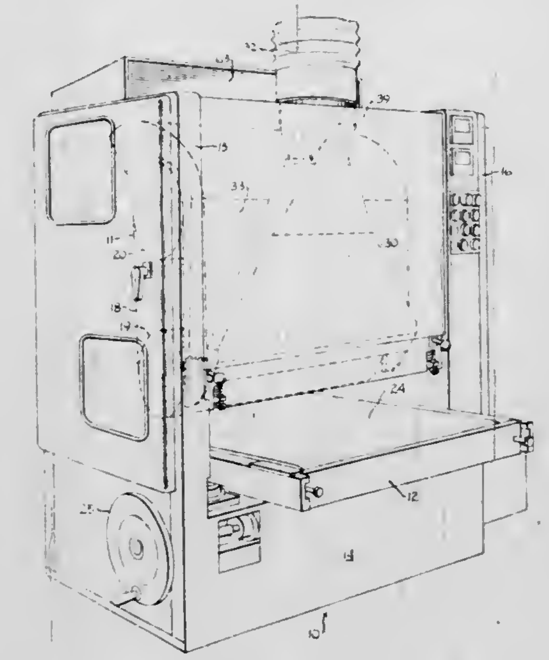
Filed Feb. 7, 1974, Ser. No. 440,391
Int. Cl. B24b *21/18, 55/06*
U.S. Cl. 51—135 R **24 Claims**

17. In an abrading machine having an abrading head with a power driven endless abrasive belt trained over a belt tensioning roll and held against the work being abraded by a backup member engaging the back of the belt, improved dust collecting means for carrying off dust and products of abrasion incident to operation of the machine, said dust collecting means comprising:

A. an air supply duct overlying a stretch of the abrasive belt and having its inlet adjacent to the belt tensioning roll and its outlet opening to a zone adjacent to the backup member;

B. a suction duct connectable with a source of suction and having its mouth contiguous to the outlet of the air supply duct to draw air, dust and products of abrasion from said zone; and

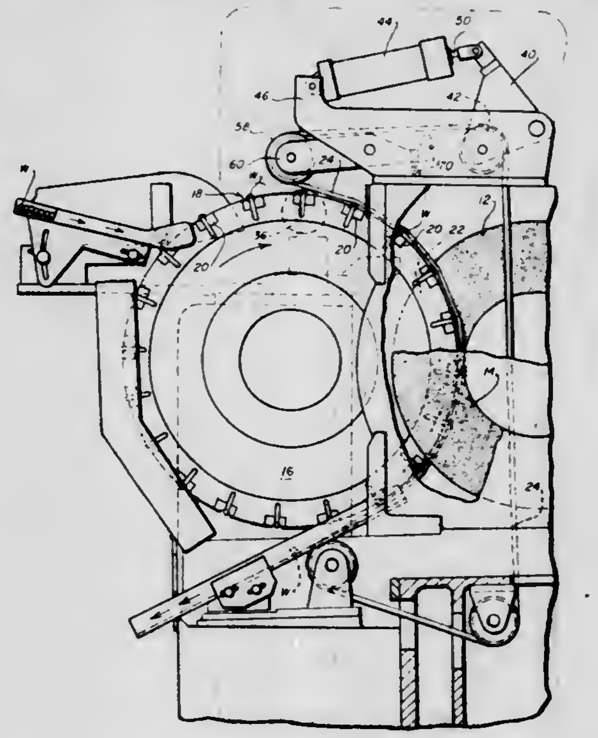
C. closure means coacting with the abrasive belt to restrict access to said zone and thereby minimize the possibility of air entering said zone except through the air supply duct.



3,872,628
DISC GRINDING MACHINE

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Dec. 3, 1973, Ser. No. 421,221
Int. Cl. B24b *7/00, 47/20*
U.S. Cl. 51—215 HM **8 Claims**



1. A disc grinding machine comprising a rotary work carrier, mounted for rotation about a selected axis of rotation, including a plurality of work holding stations for receiving workpieces from a conveyor or the like and for feeding the received workpieces through a grinding zone whereby at least one face of the received workpieces will be ground to size,

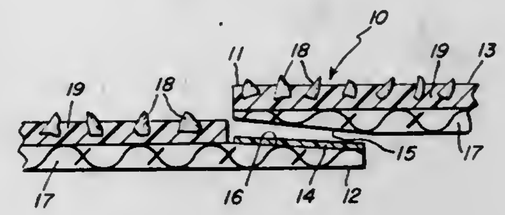
locator means selectively located so that when a workpiece is received in one of said workholding stations and axially displaced in a selected direction the received workpiece will abut against said locator means thereby becoming properly axially located, and

means for conjointly displacing a received workpiece incrementally axially towards and into forceful engagement with said locator means and urging the received workpiece radially inwardly towards said axis of rotation against the work holding station.

3,872,629
SPLICING OF COATED ABRASIVE MATERIALS

John F. Malloy, Waterford, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of Ser. No. 34,105, May 4, 1970, abandoned. This application May 15, 1971, Ser. No. 253,570
Int. Cl. C08g *51/12, 41/00*
U.S. Cl. 51—295 **7 Claims**

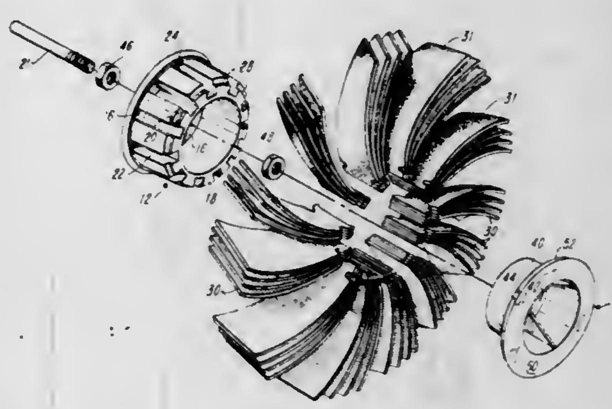


1. A coated abrasive having its ends joined together by dry, heat-activatable, preformed adhesive film comprising the reaction product of a composition comprising in admixture a hydroxyl terminated polyurethane-polyester having a hydroxyl number of from about 2 to about 15 and a component having available free isocyanate groups, the available isocyanate groups in the composition being present in the amount of from about 0.24 grams to about 8.5 grams per 100 grams (solid) of said polyurethane-polyester, said adhesive film being only partially cured so that it can be subsequently tackified and softened with application of heat in the range of from 175°F to 350°F for from 5 to 1 second, respectively.

3,872,630
SANDING AND BUFFING WHEEL

Frank F. Ali, 2973 Pascal Dr., Fairborn, Ohio 45324

Filed Dec. 26, 1972, Ser. No. 318,682
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 **11 Claims**

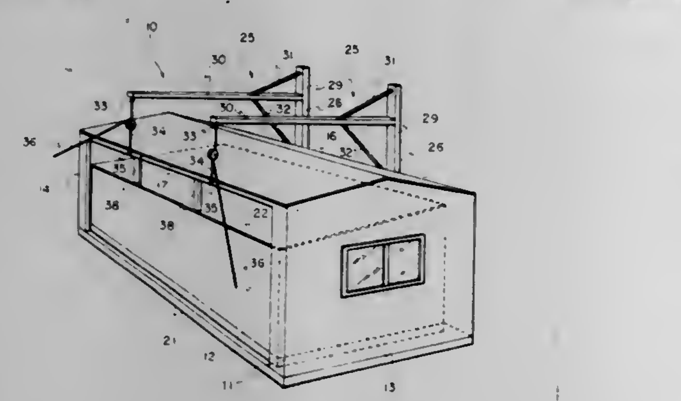


1. A sanding or buffing device comprising a cup-shaped hub, strip-like elements anchored at one end to and projected generally radially from said hub, said strip-like elements being arranged in groups spaced circumferentially of said hub and being abrasively surfaced in the portions to be applied to the surfaces to be sanded or buffed, the strip-like elements of each group having their inner end portions clustered and slip fit to said hub and their outer end portions projected in a relatively spaced relation and curved in a direction away from that direction in which the hub is turned to advance said strips to engagement with a surface to be sanded or buffed, the projected portions of said strip-like elements having the characteristic of flexing yet being substantially self-sustaining in the spaced position they are caused to assume, means formed in the base of said cup-shaped hub for mounting said device to a driving medium, each of said strip-like elements having a similar generally rectangular elongate shape and the groups

thereof being substantially spaced, with the strip-like elements of each group being arranged to fan outwardly of said hub, and said strip-like elements being contained against movement in a sense longitudinally of said cup-shaped hub by a cup-shaped cap frictionally attached by a telescoping mount thereof to one end of said hub.

3,872,631
EXPANSIBLE MODULAR STRUCTURE WITH SUPPLEMENTAL STRUCTURAL SUPPORT

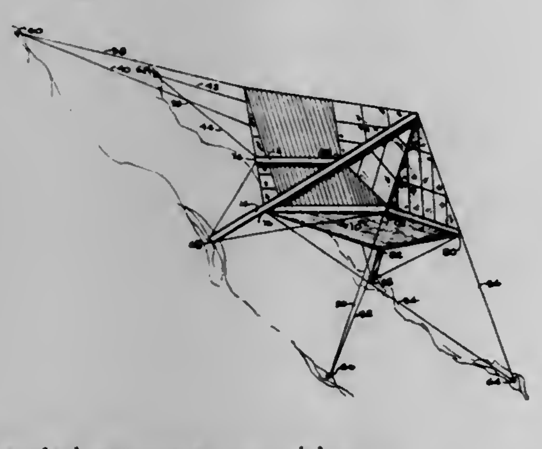
William M. Nowell, 1704 Scales St., Raleigh, N.C. 27608
Filed June 13, 1974, Ser. No. 478,913
Int. Cl. E04b *1/346, 7/16*
U.S. Cl. 52—67 **5 Claims**



1. An expansible building structure comprising: a generally rectangular shaped base module having three generally structurally supportive walls and one generally open side; a roof supported by said three supportive walls and by a bridge means on said generally open side, said bridge being so sized as to support less span than the length of said opening; a generally rectangular shaped expansible module having four structurally supportive walls and being so sized as to be disposed within the interior of said base module; shoring means disposed between said expansible module and said bridge when said last mentioned module is disposed within said base module whereby said bridge can be relatively rigidly supported when in such nestled position; and removable, exteriorly attached support means holding said bridge in relatively fixed, nonsagging position upon removal of said shoring means during expansive movement of said expansible module relative to said base module.

3,872,632
SUSPENDED STRUCTURE

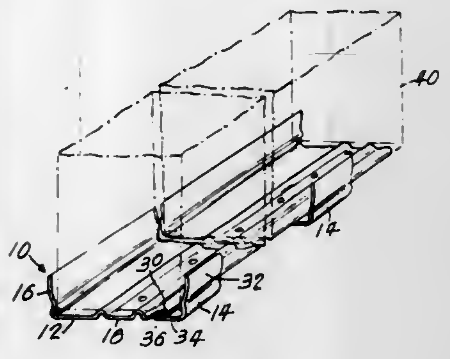
Richard W. Snibbe, 139 E. 18th St., New York, N.Y. 10003
Filed June 12, 1973, Ser. No. 369,382
Int. Cl. E04b *7/14*
U.S. Cl. 52—73 **7 Claims**



1. Suspended structure comprising:
a. upper and lower platform means each having forward and rearward portions;
b. compression frame means inclined at an acute angle from the vertical attached to forward portion of the upper platform means and the rearward portion of the lower platform means;
c. upper and lower spaced apart anchoring means;
d. upper tension cable means attached to the upper anchoring means in pairs, one member of each pair being attached approximate the apex of the compression frame means the other members crossing each other and being attached to opposite rearward portions of the upper platform means; and
e. lower tension cable means attached to the lower anchoring means in pairs, one member of each pair being attached to the apex of the compression frame means and the forward portion of the lower platform means, the other members crossing and being attached to opposite rearward portions of the lower platform means.

3,872,633
PARTITION MOUNTING

Heino Altosaar, Baie D'Urfe, Quebec, and Samuel P. Meiel, Roxboro, Quebec, both of Canada, assignors to Domtar Limited, Montreal, Canada
Filed Sept. 24, 1973, Ser. No. 400,404
Claims priority, application Canada, Oct. 26, 1972, 154952
Int. Cl. E04b *2/74;* E04f *19/00*
U.S. Cl. 52—127 **6 Claims**



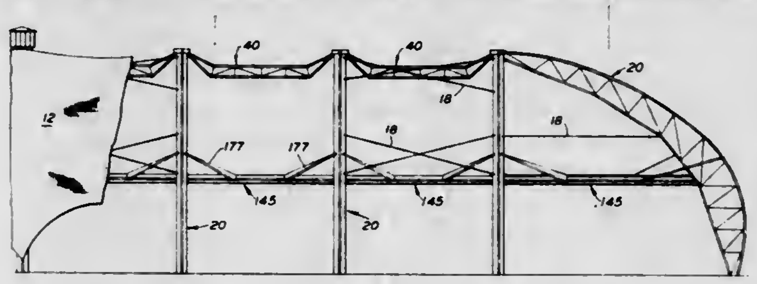
1. A runner structure for demountable walls comprising an elongated L-shaped runner member having a pair of substantially mutually perpendicular flanges, gripping means adjacent the free end of one of said flanges of said runner member, a plurality of L-shaped locking elements each having a pair of substantially mutually perpendicular flanges, second gripping means adjacent the free end of one of said flanges of each of said locking elements, said second gripping means adapted to cooperate with said gripping means on said first runner member to connect each of said locking elements with said runner member, said gripping means and said second gripping means being formed by reversed folded sections at the free ends of said one flange of said runner member and of said one flange of said locking elements respectively and said reverse fold sections of at least one of said runner member of said locking element is in face to face relationship with its respective one of said flanges, each of said locking elements being less than one foot long, adjacent of said locking elements being spaced apart to permit access for a decoupling tool.

3,872,634
RIGID FRAME, TENSIONED FABRIC STRUCTURE

Norman R. Seaman, Sarasota, Fla., assignor to Seaman Corporation, Millersburg, Ohio
Continuation-in-part of Ser. No. 276,899, July 31, 1972, abandoned. This application June 20, 1973, Ser. No. 370,028
Int. Cl. E04b *1/347, 1/32*
U.S. Cl. 52—222 **38 Claims**

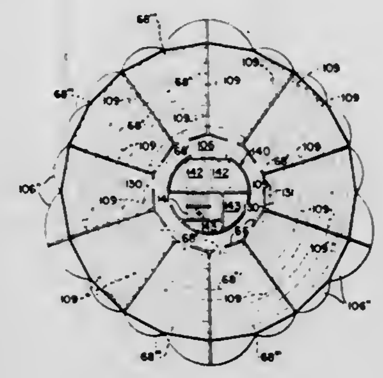
1. A tensioned fabric structure having a rigid frame comprising, a plurality of curvilinear truss members forming a domed framework and each having a generally polygonal cross section, each said truss member being supported at its lower end on a foundation and connected at its upper end to

at least one other of said truss members, each said truss member having a lower upright curved haunch portion connecting with a relatively flattened upper curved portion, a fabric membrane supported on and covering over said framework, said membrane having warp yarns running horizontally and fill yarns running vertically of said structure, and cable means extending between the bases of said truss members and attached to said membrane between said truss members for tensioning said membrane to form a stable structure.



3,872,635
MULTI-UNIT BUILDING CONSTRUCTION

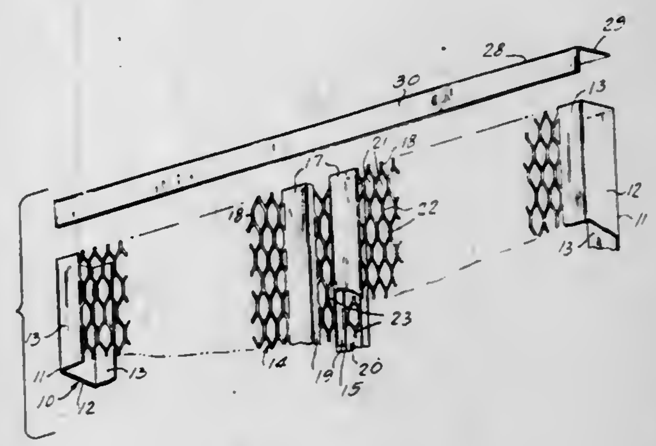
Oleg V. Miram, 759 Flood Bldg., San Rafael, Calif. 94102
Division of Ser. No. 134,623, April 16, 1971, Pat. No. 3,724,157. This application Aug. 21, 1972, Ser. No. 282,401
Int. Cl. E04b *5/02, 5/43*
U.S. Cl. 52—227 **4 Claims**



1. A building structure on a foundation comprising a plurality of overhead panels and a plurality of wall panels, each of said overhead panels and each of said wall panels having parallel major surfaces bonded by two rectilinear opposite edges and two other opposite edges;
a. said overhead panels being arranged with their major surfaces in common planes and with one rectilinear edge of each in selected juxtaposition to a rectilinear edge of a further one of said plurality of overhead panels, one of said rectilinear edges of each of said wall panels being arranged in selected juxtaposition to a different pair of juxtaposed rectilinear edges of said overhead panels, said rectilinear edges of said overhead panels having planar surfaces forming a ridge thereon projecting over the rectilinear edge of said one of said wall panels juxtaposed thereto, and a quantity of grout interconnecting each of the juxtaposed edges of said overhead and wall panels;
b. said major surfaces of said overhead panels forming pie-shaped sections of upper and lower common circular annular surfaces with said two rectilinear opposite edges of said overhead panels extending radially of said annular surfaces and said two other opposite edges of said overhead panels forming inner and outer boundaries of said annular surfaces, and said wall panels extending radially of said annular surfaces;
c. each of said overhead panels being provided with a tubular opening passing therethrough from one rectilinear edge to the other in an arcuate path, the tubular openings through adjacent overhead panels being in alignment with each other to form a portion of a spiral passageway; and
d. a continuous flexible tension member slidably received in and passing through said passageway portion, said tension member being permanently fixed at each of its ends under tension.

3,872,636
LIGHT WEIGHT LOAD BEARING METAL STRUCTURAL PANEL

Joseph A. Nicosia, River Forest, Ill., assignor to Robert A. Pacenti, Berwyn, Ill.
Filed May 7, 1973, Ser. No. 358,071
Int. Cl. E04c *5/04*
U.S. Cl. 52—364 **12 Claims**



1. A light weight high strength compression and tension load sustaining structural panel unit formed from sheet metal and especially suitable to be fabricated in 4 feet width by 8 to 10 feet length and 2 inches thickness, comprising:
spaced coextensive generally U-shaped load supporting side channel bars provided with web portions defining side edges of the panel unit and each bar having two solid marginal flanges extending inwardly of the unit and lying in respective parallel opposite face planes of the unit and providing bearing and nailing surfaces of substantial and about equal width;
a single intermediate load carrying bar of rugged channel beam multi-flange cross section coextensive with and substantially spaced from and midway between said side bars and being of no greater than about three times the width of said side bar marginal flanges;
said intermediate bar having:
- a pair of spaced apart oppositely extending coplanar solid bearing and nailing surface flanges, the distances between the remote edges of said pair of flanges being about three times the width of one of said marginal flanges, and said pair of flanges lying in one of said face planes of the unit and coplanar with the marginal flanges in said one face plane;
- a solid bearing and nailing surface web flange at least as wide as one of said marginal flanges lying in the other of said face planes and coplanar with the marginal flanges in said other face plane; and
- respective angularly extending side wall flanges rigidly connecting and spacing the adjacent edges of said web flange and the proximal edges of the pair of flanges; and open mesh body portions of the unit connecting the marginal flanges of said side bars in said one face plane with the respective distal edges of the adjacent ones of said pair of flanges of said intermediate bar and thereby maintaining the side bars and the intermediate bar in substantially fixed spaced relation.

3,872,637

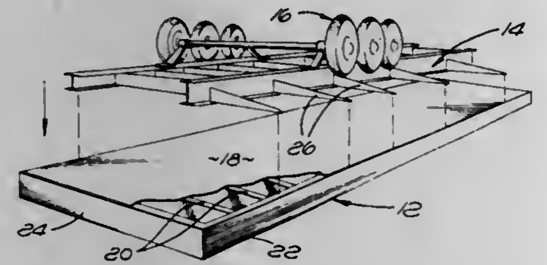
MOBILE HOME CONSTRUCTION

Donald J. Murphy, Los Angeles, Calif., assignor to Firstline Corporation, Los Angels, Calif.

Filed Apr. 12, 1974, Ser. No. 460,413

Int. Cl. B62d *29/00*

U.S. Cl. 52—408 **4 Claims**



1. A mobile home construction comprising:

a body including a beamed floor structure of wooden floor joists;

a frame of integral steel-beam configuration, as for receiving wheels, said frame affixed to support said body by engaging said beamed floor structure; and

a composite flexible laminated undersiding disposed between said beamed floor structure and said frame affixed to said frame, said undersiding including, in bonded relationship, a plastic imperforate film, at least one layer of paper-like fiber, a matrix of glass fibers, and an asphalt-like layer for receiving said glass fibers and bonded with said layer of paper-like fiber, to provide a composite, said composite being affixed to provide said imperforate film facing said frame.

3,872,638

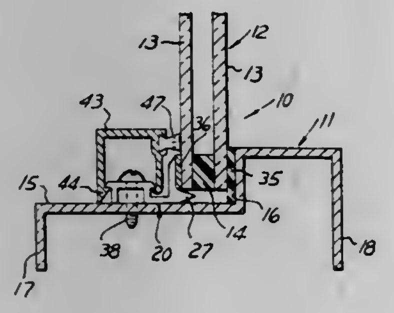
GLAZING BLOCK

Joseph Di Fazio, Warren, Mich., assignor to Acorn Building Components, Inc., Detroit, Mich.

Filed Oct. 15, 1973, Ser. No. 406,156

Int. Cl. E06b *3/58*

U.S. Cl. 52—476 **7 Claims**



1. In a framed panel construction including a frame component having a frame base portion arranged outwardly of a peripheral edge portion of a panel, and having an inwardly directed shoulder portion for abutting against a face portion of the panel adjacent said peripheral edge portion, a glazing block comprising:

a base initially slidably arranged upon said frame base portion said base having a lower surface positioned toward said frame base portion and an upper surface positioned away from said frame base portion,

an integral, inwardly directed flange parallel to said shoulder portion for engaging the opposite face of the panel opposing said shoulder portion for clamping the panel therebetween;

a scre receiving opening extending through said base from the upper surface of the block to the lower surface of the block, with the opening at said upper surface being approximately the diameter of a preselected screw and the opening being widened along its length to a maximum width in a direction towards the shoulder portion and thereby being wider at said lower surface;

and a fastening screw extending through said opening initially at an acute angle to the shoulder portion and initially penetrating into said base portion and then being tilted into, and completely screwed into the base portion in, roughly parallelism with the shoulder portion for forceably sliding the block and the flange towards the panel and shoulder portion and clamping the panel between the flange and shoulder portion.

3,872,639

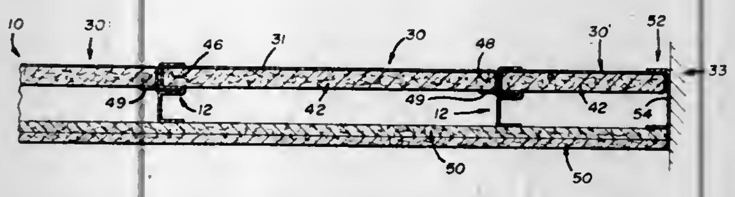
FIRE-RESISTANT SHAFT WALL

John H. Crumbaugh, Des Plaines, and Maurice J. Marchello, Hickory Hills, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Nov. 1, 1973, Ser. No. 411,935

Int. Cl. E04b *2/78*

U.S. Cl. 52—495 **6 Claims**



1. A dry-assembled wall, one side of which has the minimum fire hazard classification, comprising

a plurality of spaced-apart, elongate studs having longitudinal axes which are substantially parallel, each stud comprising a web portion having side margins, and a panel support member formed as a double fold protruding from one face of the web portion intermediate the side margins, the opposite face of the web portion being provided with a pocket defined by the inner surface of said double fold, and

a plurality of metal pans, each pan extending between two adjacent and spaced-apart studs, respectively, the pans being disposed on one exposed side of the wall,

said pans each comprising a generally flat sheet and two opposing side margins, one of said side margins being disposed adjacent to and in contact with one of the panel support members, the other of said side margins having a portion inserted within one of said pockets.

3,872,640

PREFABRICATED STRUCTURAL UNIT BODY AND STRUCTURES THEREOF

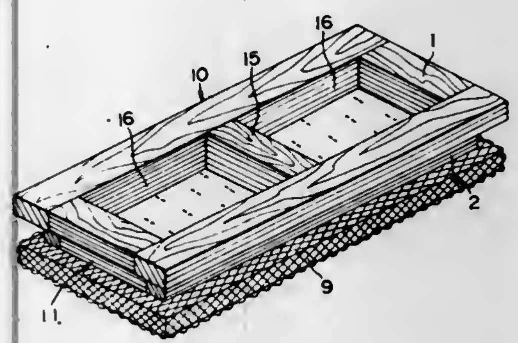
Naomitsu Megumi, Funabashi, Japan, assignor to Tokyo Plywood Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1973, Ser. No. 409,090

Claims priority, application Japan, Nov. 8, 1972, 47-111394

Int. Cl. E04c *2/30, 1/10*

U.S. Cl. 52—586 **12 Claims**



1. A prefabricated structural unit body having heat-resistant, sound-resistant, and moisture barrier properties comprising a first frame body, a second frame body joined to said first frame body, common openings in said first and second frame bodies, said second frame body being smaller than said first frame body and being arranged on the latter to form a step and thereby dfine a stepped frame body, a planar base material, a felt-like material disposed on said planar base material, a dampproof planar material disposed over said felt-like material, a metllic net-like material disposed over said dampproof planar material, fasteners extending between said planar base material and said metallic net-like material for fastening said materials together to thereby define an assembly unit, and means joining said assembly unit to said stepped frame body, said assembly unit being larger than said second frame body, whereby there is formed a circumferential groove defined by said step on said stepped frame body and the outer portions of said assembly unit.

3,872,641

CONSTRUCTIONAL ELEMENT

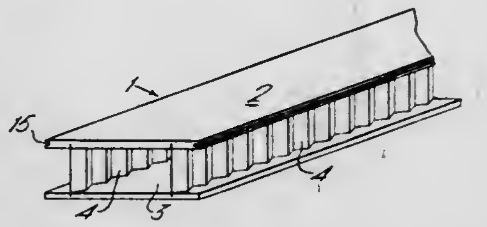
Johan Caspar Falkenberg, Fjordveten 59c, N-1322 Hovick, Norway

Filed Jan. 30, 1973, Ser. No. 327,924

Claims priority, application Norway, June 29, 1972, 2328/72; Jan. 31, 1972, 228/72

Int. Cl. F04c *2/26*

U.S. Cl. 52—618 **7 Claims**



1. A construction element comprising two parallel plates of nailable material and at least one web element disposed between and perpendicular to said plates for interconnecting said plates in spaced apart relationship, said web element comprising an elongated sinuous metal sheet having a plurality of spaced teeth lying in the same plane as said sheet and extending outwardly of opposite side edges thereof, said teeth along one of said edges being in transverse alignment with the teeth along the other of said edges, said sheet having transverse, parallel and spaced sharp bends extending throughout its width and into said teeth, each said teeth having at least two sharp reverse bends extending likewise through the width of said sheet thereby forming teeth of Z-shaped cross-section.

3,872,642

ASSEMBLING DEVICE FOR TWO TUBULAR PROFILES

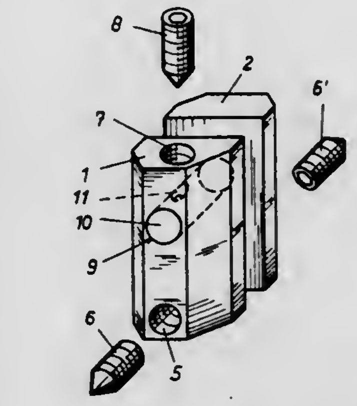
Andre Felix, 1030 Bussigny, Vaud, Switzerland

Filed Apr. 2, 1974, Ser. No. 457,263

Claims priority, application Switzerland, Apr. 3, 1973, 4763/73

Int. Cl. E04b *1/40*

U.S. Cl. 52—758 C **2 Claims**



1. Assembling device for two tubular profiles provided with a longitudinal slot on at least one side, characterized in that it comprises two prismatic elements each intended for insertion into one of the two profiles to be assembled, blocking means for these two elements in the profiles, a rod rigidly fixed with one of said elements engaging into a bore of the other element by traversing the longitudinal slots of the two profiles to be assembled and locking means for the rod in said other element.

3,872,643

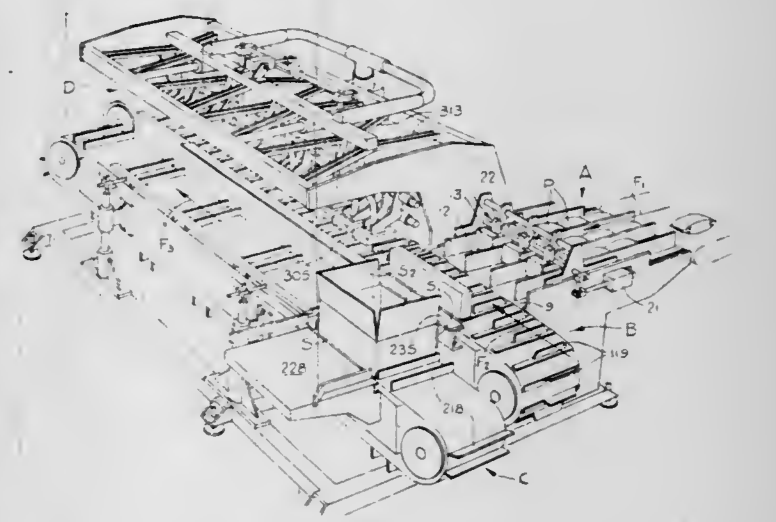
METHOD FOR PACKING ARTICLES IN A CARTON

Robert B. Johnson, Santa Clara, and Louis F. Robert, Belmont, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

Division of Ser. No. 310,336, Nov. 29, 1972, Pat. No. 3,834,115. This application Apr. 3, 1974, Ser. No. 457,460

Int. Cl. B65b *35/44*

U.S. Cl. 53—26 **9 Claims**



1. A method for packing articles in a carton comprising the steps of

moving a first plurality and layer of articles and a second plurality and layer of articles along a first flight path in tandem,

moving only said first layer of articles from and transversely to said first flight path and along a second flight path while simultaneously holding back said second layer of articles,

moving cartons along a third flight path, parallel to said second flight path,

removing said first layer of articles from said second flight path,

depositing said first layer of articles in a respective one of said cartons, and

repeating all of the above said moving, removing and depositing steps to deposit said second layer of articles on said first layer of articles in a respective one of said cartons.

3,872,644

APPARATUS FOR PACKAGING RANDOM-SIZED ARTICLES

Giorgio A. M. Giraudi, and Nino Imperiale, both of Milan, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

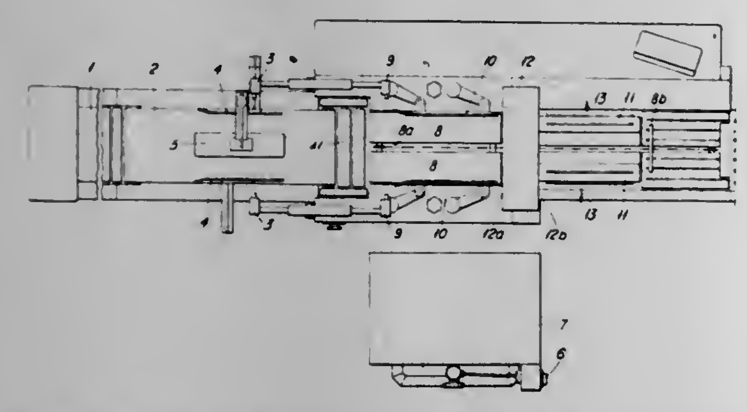
Division of Ser. No. 372,885, June 22, 1973,. This application Aug. 2, 1974, Ser. No. 494,139

Int. Cl. B65b *57/10*

U.S. Cl. 53—52 **9 Claims**

1. Apparatus for packaging articles in bags and including a bag-filling station, means for feeding random sized articles towards said filling station, classifying means responsive to at

least two dimensions of the article and means operatively linked to said classifying means for determining the size of bag



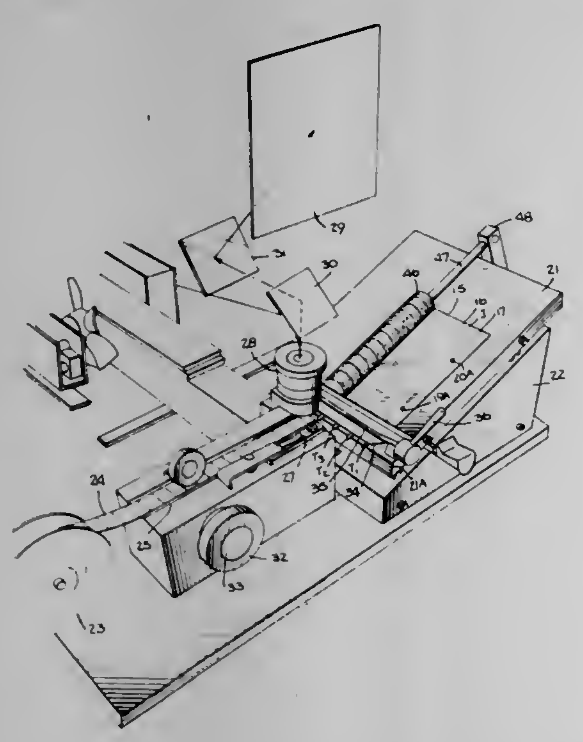
on the basis of simultaneous assessment of those two dimensions.

3,872,645
READER-FILLER MACHINE FOR MICROFICHE JACKETS

Isidore Dorman, Whitestone, N.Y., assignor to NB Jackets Company, a Division of Bell & Howell Company, Chicago, Ill.

Filed Mar. 12, 1974, Ser. No. 450,399
Int. Cl. B65b ***43/26***

U.S. Cl. 53—123 **15 Claims**



1. A machine for cutting a relatively thin microfilm strip into sections and for inserting these secctions into the chambers of a protective jacket, each chamber having an inwardly-displaced film entry slot adjacent the front end of the jacket, said apparatus comprising:

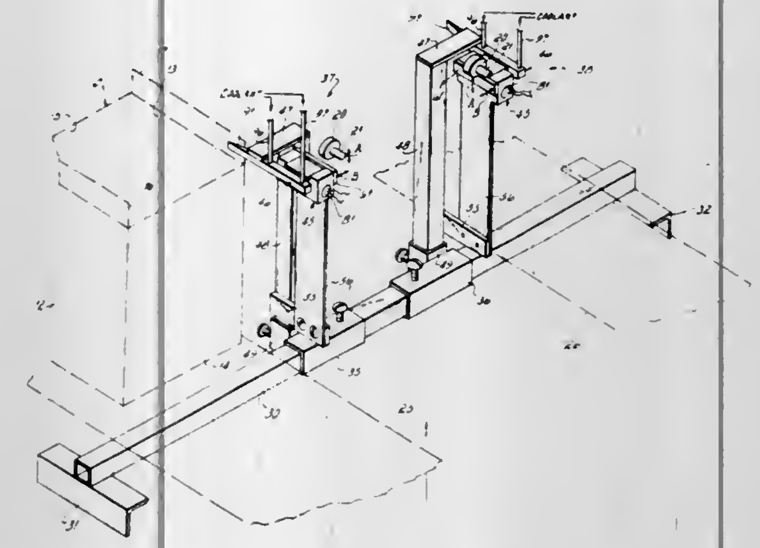
a. a platform for supporting said jacket,
b. a film advancing mechanism including a trackway for advancing the film strip toward said platform, said platform being inclined relative to said trackway,
c. retractable clamping means on said platform for engaging said jacket and to deflect the front end thereof downwardly whereby the entry slots on the jacket are more accessible to an advancing film,
d. means to index the position of said platform relative to said trackway to register the film strip in said trackway with successive entry notches on said jacket, whereby a section of said strip may be inserted into a particular chamber, and
e. a cutter interposed between said platform and said trackway to sever the inserted section from said strip, the tail end of said section being free relative to the deflected front end of said jacket.

3,872,646
CARTON DATING APPARATUS

John A. Johnson, New Richmond, Ohio, assignor to Cedar Sales Company, Cincinnati, Ohio

Filed Oct. 12, 1973, Ser. No. 405,909
Int. Cl. B65b ***61/02***

U.S. Cl. 53—131 **41 Claims**



1. In carton filling and sealing apparatus of the type having reciprocating closure forming means for forming an end closure on cartons successively conveyed thereto, said end closure including a rib formed from a plurality of panels disposed in adjacent parallel planes, dating apparatus for applying indicia to at least one of said panels comprising:

anvil means,
dater block means having indicia applying means aligned with and normally spaced from said anvil means,
said anvil means and said dater block means being mounted for relative movement toward and away from each other, said filling and sealing apparatus having means for moving at least one of said panels between said anvil means and said dater block means, and
means connected to said closure forming means for moving one of said anvil means and said dater block means toward and away from the other in response to movement of said closure forming means toward and away from successive cartons, so as to apply a date to one of said panels when said panel is between said anvil means and said dater block means.

3,872,647
CARTON LOADER

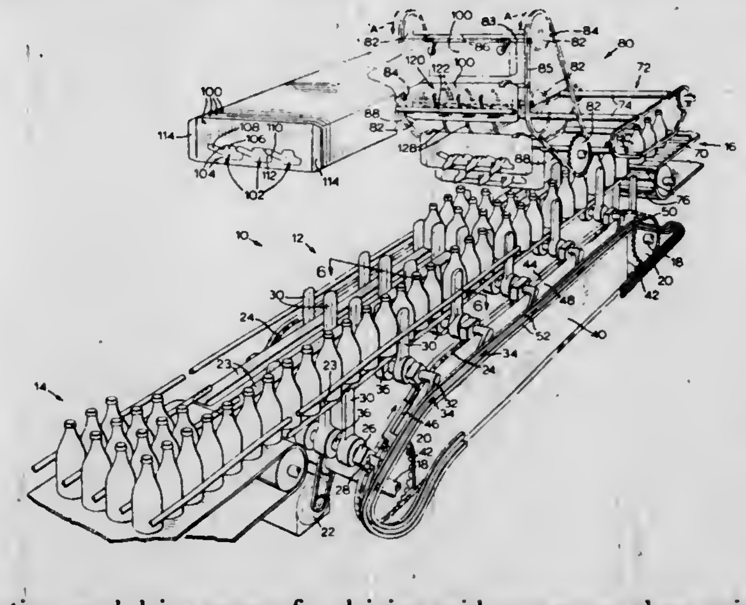
Marinus J. M. Langen, 21 Chilcot Ave., and Jacobus J. Langen, 10 Ringway Cres., both of Rexdale, Ontario, Canada

Division of Ser. No. 343,724, March 22, 1973, Pat. No. 3,845,852. This application Dec. 6, 1973, Ser. No. 422,348
Int. Cl. B65b ***35/54***

U.S. Cl. 53—157 **1 Claim**

1. In a carton loading machine wherein containers are arranged in a plurality of side by side rows prior to loading into a carton, said containers being continuously driven through a divider locating station wherein a divider panel is transferred from a dispensor which is adapted to dispense divider panels one by one into the path of a transfer mechanism, the improvement of divider positioning means for locating a divider panel between predetermined rows of containers, said divider positioning means comprising divider panel engaging means for engaging a divider panel disposed in a plane extending normal to the path of travel of the containers and located above said path of travel, and endless conveyor means for simultaneously conveying said divider panel means along an endless path, guide means for guiding said conveyor means in

at least a portion of said path which is straight and angularly inclined downwardly towards said path of travel in the direction of travel of said containers through said divider locating station, and drive means for driving said conveyors along said guide means at a linear speed which is greater than the speed of said containers through said station to locate said divider panels between predetermined adjacent rows of containers.

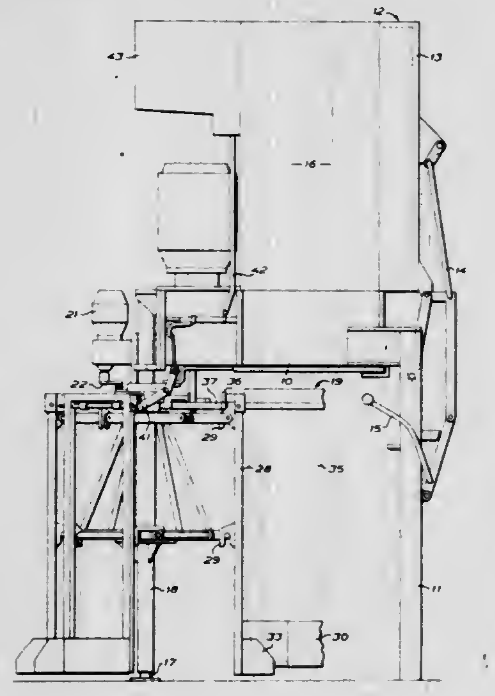


3,872,648
DISPOSER WITH A SACKING DEVICE

Nils Gosta Sigvard Ishammar, Manstigen, 5 S-216 18, Malmo, Sweden

Filed Nov. 2, 1973, Ser. No. 412,529
Claims priority, application Sweden, Nov. 7, 1972, 14375/72
Int. Cl. B65b ***1/22***

U.S. Cl. 53—126 **3 Claims**



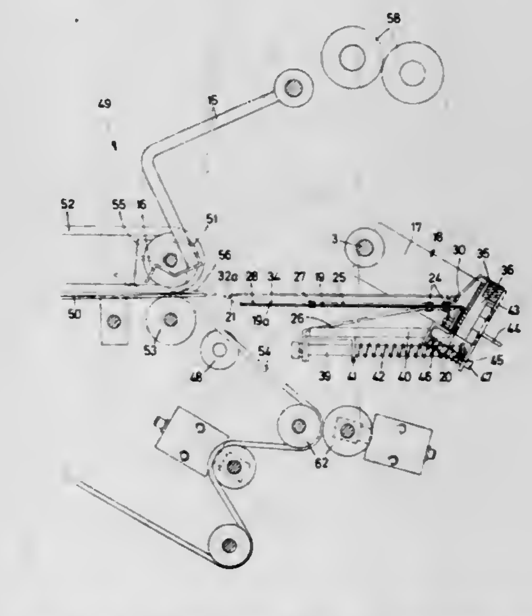
1. A disposer with a sacking device, comprising
a bin for receiving the refuse to be disintegrated,
a milling apparatus arranged at the lower end of the bin for disintegration of the refuse received thereby,
a number of individual stands for carrying each a sack mounted in an open position, a transport device,
meanns supporting said sack stands on said transport device for limited vertical movement in relation to the transport device, said sack stands being movable one at a time by means of the transport device to a position below the milling apparatus to receive disintegrated refuse discharged therefrom, shaking means,
means for operatively connecting the stands one at a time with said shaking means, said means being engaged and disengaged by the movement of a sack stand to and from the position below the milling apparatus, respectively, for shaking vertically the sack stand and a sack carried thereby in relation to the transport device when in said position,
and with said means operatively connecting the sack stands with the shaking means comprising a cam rail connected with the shaking means to be imparted thereby a reciprocating movement vertically, and a roller on each sack stand arranged to roll onto the rail by the movement of the sack stand to said position below the milling apparatus in order that the sack stand shall rest with at least part of its weight on said rail.

3,872,649
ENVELOPE FILLING MACHINE

Walter Wimmer, Olten, Switzerland, assignor to Vigotec Ag., Muri, Switzerland

Filed Dec. 3, 1973, Ser. No. 421,091
Int. Cl. B65b ***43/26***

U.S. Cl. 53—187 **5 Claims**



4. An envelope filling machine comprising an insertion device including a unit for positioning the letter contents before the insertion procedure, the positioning unit being designed as an insertion pocket closed at one end, an envelope feed device, a carrier plate having two laterally mounted opener points, opposite each of which there is arranged a retainer means of the envelope feed device and between which a feed plate is attached.

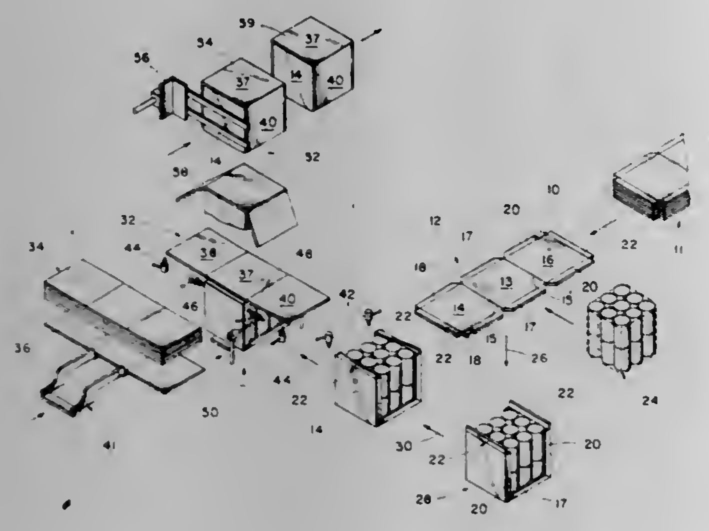
3,872,650
PACKAGING MACHINE USING TWO BLANK CARTON SYSTEM

James L. Vickers, Harbert, Mich., assignor to Stone Container Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 285,211, Aug. 31, 1972, Pat. No. 3,817,018, which is a continuation-in-part of Ser. No. 57,945, July 24, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,124
Int. Cl. B65b ***11/18***

U.S. Cl. 53—207 **28 Claims**

1. A machine for forming a sealed package containing lading from a generally rectangular blank of paperboard material and a sheet of material, the blank including a center panel and alternate hingedly connected side panels and flanges hinged along the longitudinal edges of the center and side panels and along the ends of the side panels, said apparatus having a setup station for a blank having the lading supported adjacent the center panel of the blank, first means for folding the blank into a generally U-shaped formation partially surrounding the lading with the center panel forming an end wall and the side panels forming two side walls of the formation, second means for folding the flanges along each longitudinal edge of the blank to a position generally perpendicular to the associated side walls and end wall, third means for folding the end flanges to a position generally perpendicular to the associated side walls, fourth means for positioning the sheet, fifth means for folding the sheet of material into a U-shaped formation partially around the lading with the margin of the sheet positioned overlying the flanges of the blank and sixth means for securing the flanges of the blank to the margin of the sheet.



3,872,651

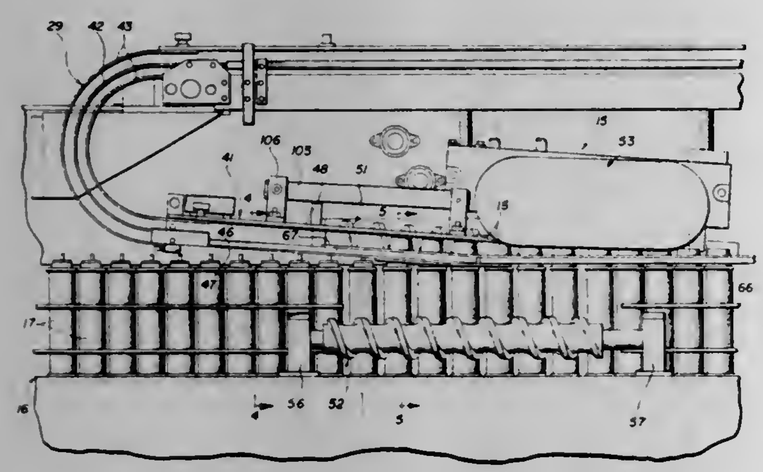
OVERCAP PLACER

George E. Leonard, Davenport, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Dec. 10, 1973, Ser. No. 423,104

Int. Cl. B65b *7/28;* **B67b** *5/00*

U.S. Cl. 53—319 **14 Claims**



1. Apparatus for placing overcaps onto the tops of aerosol cans which comprises, a converyer for supporting cans in an upright position and conveying same along a rectilinear path, a first worm and guide rail unit for engaging said cans and spacing same and rotating along the horizontal and parallel to the path of the cans, means moving overcaps along a guide track, a second worm and guide rail unit for engaging said caps and spacing same and rotating along an axis inclined to the horizontal and parallel to the path of the overcaps, said worm and guide rail units being synchronized to bring the overcaps into position on the top of the cans, and means applying a downward force on said overcaps to seat same as they are brought together.

3,872,652

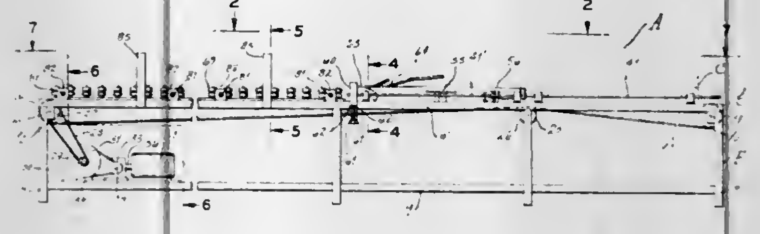
GLUING MACHINE

Victor LaBantschnig, and Victor Robert Diestel, both of Saint Louis, Mo., assignors to Orchard Container Corporation, Saint Louis, Mo.

Filed Nov. 2, 1973, Ser. No. 412,115

Int. Cl. B65b *7/26*

U.S. Cl. 53—376 **4 Claims**



1. For use with containers having a foldable top closure with an edge flap, a gluing machine for presenting said top closure in container closing condition and for securing said top closure edge flap to a side wall of said container comprising an elongated rigid frame, a conveyor provided on said frame and substantially co-extensive therewith, said conveyor having a feed end for receiving a container with the top closure in open condition and a discharge end for discharging said containers in closed condition, means for operating said conveyor, elongated rigid guide members disposed on opposite sides of said conveyor adjacent the feed end thereof, an adhesive dispensing unit provided on one side of said frame and comprising an adhesive discharge nozzle located at a height above said frame for dispensing adhesive onto one side wall of the container, control means for activating said adhesive dispensing unit during a predetermined period of travel of a container, said control means comprising a trip arm located in the path of travel of the container, a normally open switch engaged to said trip arm, normally closed valve means whereby upon engagement of said trip arm by a container said switch will be closed and said valve means open for emission of adhesive against said one side wall of the container, said adhesive dispensing unit being located adjacent the end of said elongated guide members remote from said feed end, guide elements provided adjacent said adhesive dispensing unit for engaging the said one side wall of said container above the applied adhesive, there being top closure directing means presented downstream of said guide elements, said directing means comprising a mounting bar located spacedly above said conveyor to permit movement of a closed container thereunder, a first directing member formed of rod stock and fixed at its forward end to said bar and progressing rearwardly in a direction toward the feed end of said conveyor in elevated relationship to said conveyor having a forward portion substantially axially parallel with the path of travel of the conveyor and its rearward portion extending upwardly, rearwardly, and laterally outwardly toward the side of said conveyor opposite that upon which said adhesive dispensing unit is mounted for engaging the normally upper side of the container top closure for cammingly directing same downwardly into folded or container-closed condition, and a second directing member of relatively reduced length with respect to said first directing member being fixed at its forward end to said bar laterally of said first directing member and having a forward portion axially parallel to the forward portion of said first directing member and a rearward portion turned relatively abruptly laterally and slightly upwardly into overlying relationship with respect to the forward portion of said first directing member for cooperating with the latter in maintaining the closure in closed condition, a flat guide section located adjacent said conveyor immediately rearwardly of said bar for engaging said top closure edge flap to urge same against the applied adhesive on said one side wall, and means downstream of said directing means for retaining said container-closed condition during travel to the discharge end.

3,872,653

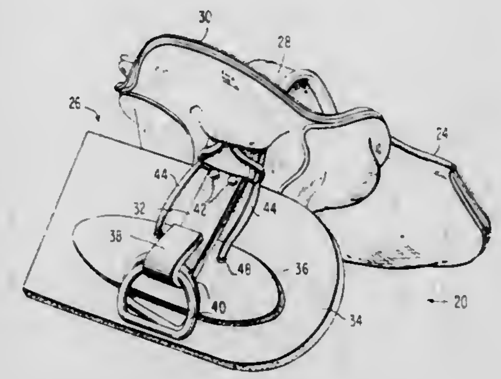
APPARATUS

James A. Thompson, Rt. 32, Box 500, Terre Haute, Ind. 47803

Filed Dec. 12, 1973, Ser. No. 426,676

Int. Cl. B68c *1/00*

U.S. Cl. 54—44 **3 Claims**



1. Apparatus for use by a rider in riding an animal comprising:

a first cushion member, said first cushion member including a first attachment ring adapted for attachment thereto of a cinch strap first end, said first cushion member including a second attachment ring adapted for attachment thereto of a stirrup strap to suspend a stirrup therefrom; a second cushion member, said second cushion member including a third attachment ring adapted for attachment thereto of a cinch strap second end, said second cushion member including a fourth attachment ring adapted for attachment thereto of a stirrup strap to suspend a stirrup therefrom; and

a support member joining said first cushion member to said second cushion member and permitting placement of said apparatus on an animal with said attachment rings positioned for attachment thereto of a cinch strap to hold said apparatus on the animal and stirrup straps for receipt of the feet of a rider on the animal; each cushion member including a first semi-flexible pad fixedly connected to said support member, a second semi-flexible pad, and tying means for adjustably connecting said second semi-flexible pad to said support member, and each cushion member further including a cover substantially enclosing said first and second semi-flexible pads and having an outer side with an outer layer of a soft, flexible, tough, tear-resistant material and a soft, flexible inner layer and a soft, flexible inner side.

3,872,654

MOBILE LEAF SHREDDING AND BAGGING MACHINE

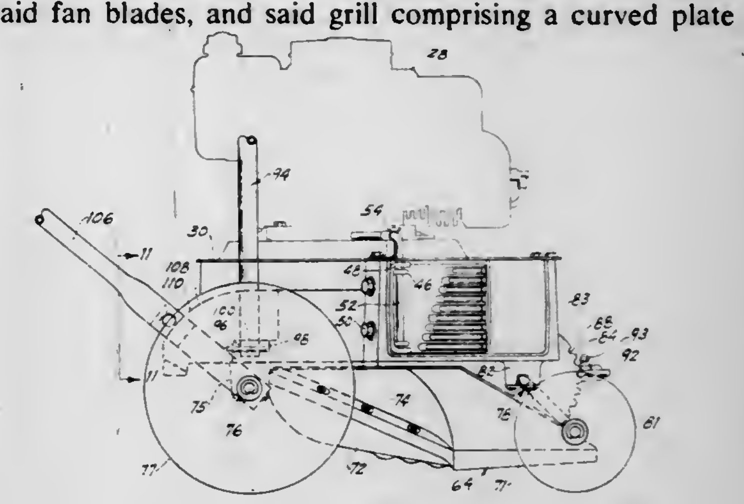
Richard B. Brundage; John A. Palmer, and Donald L. Blachly, all of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1973, Ser. No. 404,149

Int. Cl. A01d *43/00*

U.S. Cl. 56—13.1 **12 Claims**

1. In a leaf shredding machine, casing means forming a chamber having horizontal top and bottom walls and a curved vertical sidewall, a central inlet opening in said bottom wall for receiving leaves, and an outlet opening in said curved sidewall for discharging shredded leaves, a vertical shaft fan centrally journalled in said top wall, said fan having a pluralilty of blades with vertically extending outer edges in spaced relationship with said curved sidewall, a breaker grilll spanning said outlet opening and being detachably connected to the sidewall of said chamber, said grill including an arcuate portion having its center of curvature substantially on the fan axis and being arranged to be closely swept by the outer edges of said fan blades, and said grill comprising a curved plate having a series of elongated vertically spaced bars and intervening slots extending horizontally across said outlet opening.



3,872,655

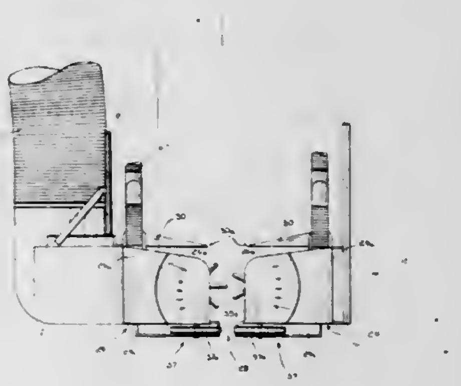
PNEUMATIC TOBACCO HARVESTER

William E. Davis, Sr., Rt. 1, Box 32, Seven Springs, N.C. 28578

Filed Dec. 14, 1972, Ser. No. 315,001

Int. Cl. A01d *45/16*

U.S. Cl. 56—27.5 **17 Claims**



16. The material handling apparatus of claim 12 wherein said pneumatic conveyor system comprises: a fan unit disposed adjacent said cylinder and including air inlet and outlet openings therein; and intermediate air duct system extending between the air inlet of said fan unit and the inner cylindrical wall structure of said cylinder; a separator air duct chamber housing a substantial portion of the outer wall structure of said cylinder and communicatively connected with the intermediate air duct system disposed adjacent the inner cylindrical wall structure of the cylinder, wherey air may conveniently be directed from said cylinder chamber through the openings in said cylinder wall and on into said intermediate air duct system; and a connecting air duct system interconnected between said cylinder chamber and said header unit for conveying the material received by said header unit to said cylinder chamber.

3,872,656

SAFETY SHUTTER DOOR ASSEMBLY FOR ROTARY LAWNMOWER GRASS CATCHER CHUTE

Einar S. Dahl, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

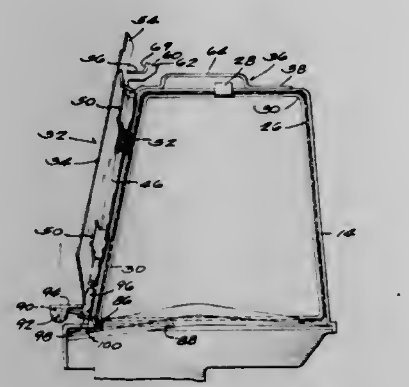
Filed Aug. 27, 1973, Ser. No. 391,934

Int. Cl. A01d *55/18*

U.S. Cl. 56—202 **8 Claims**

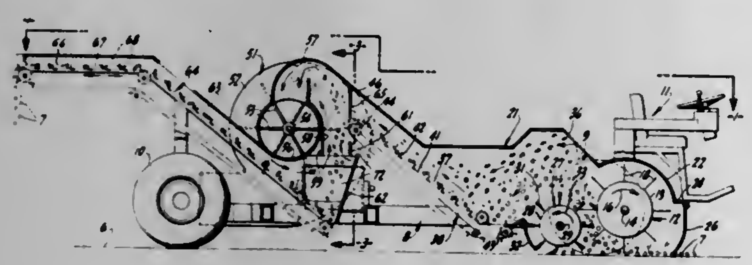
1. A rotary mower having a blade housing with a grass clipping discharge chute having an outlet, a rotary cutter

blade located in said housing, an engine supported on said blade housing and located laterally inwardly from said discharge chute, a grass clipping collection bag having a mouth adapted for attachment to said discharge chute outlet, means for releasably attaching said collection bag mouth to said discharge chute outlet, a door pivotally mounted on said blade housing about a generally vertical axis for movement between a closed position wherein said door covers said discharge chute outlet and an open position wherein said collection bag can be attached to said discharge chute outlet and said door is interposed said engine and said collection bag and is thereby protected by said collection bag from engagement with obstructions exterior of the mower during moving.



3,872,657
HARVESTER PICK-UP

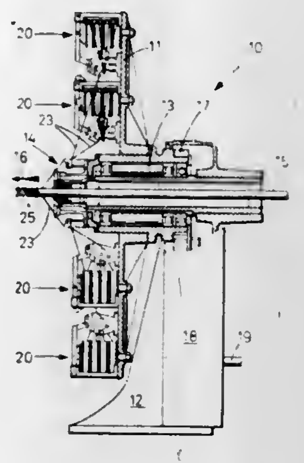
Barry Ramacher, Stockton, and Marvin L. Pack, Linden, both of Calif., assignors to Ramacher Manufacturing Company, Linden, Calif.
Filed July 20, 1973, Ser. No. 381,150
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **3 Claims**



1. A harvester pick-up comprising:
a. a mobile frame;
b. a primary brush rotatably mounted on said frame transversely at the leading end thereof, said primary brush including tines;
c. a secondary brush rotatably mounted on said frame behind and parallel to said primary brush, said secondary brush including a drum and a plurality of fingers projecting from said drum and interleaved with said tines, said secondary brush being smaller in diameter than said primary brush in order to direct the material emergent from said brushes in a rearwardly inclined trajectory;
d. means for contra-rotating said brushes in directions such that the bottom portion of said primary brush moves rearwardly along the ground and the bottom portion of said secondary brush moves forwardly along the ground;
e. deflector means mounted on said frame and spaced above said brushes for intercepting and deflecting in a rearward direction the material lifted from the ground and propelled upwardly and rearwardly by said brushes;
f. a conveyor mounted on said frame and extending rearwardly from a location adjacent the after portion of said secondary brush to a discharge location removed therefrom.

3,872,658
APPARATUS FOR APPLYING FILAMENTARY MATERIAL TO A WORKPIECE

Max Ostermann, Wuppertal-Barmen, Germany, assignor to W. & M. Ostermann, Wuppertal, Germany
Filed Feb. 13, 1974, Ser. No. 442,126
Claims priority, application Germany, Feb. 16, 1973, 2307765
Int. Cl. B65h *81/08*
U.S. Cl. 57—13 **9 Claims**



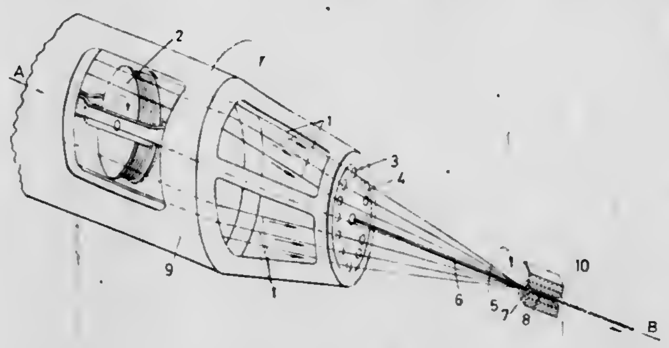
1. In an apparatus for applying filamentary material to a workpiece, a combination comprising output means from which filamentary material is pulled off under tension to be applied to the workpiece; supply means carrying a supply of the filamentary material and being rotatable in response to withdrawal of such material which is being furnished to said output means; braking means displaceable between a first and a second operative mode in which it respectively permits and prevents rotation of said supply means and withdrawal of the filamentary material from the same; loop-forming means permanently tending to move from an inoperative position to an operative position in which it forms a storage loop from a length of said filamentary material intermediate said output means and said supply means, said loop-forming means being responsive with movement to said operative position to a displacement of said braking means into said first mode and causing displacement of said braking means back into said second mode as a consequence of the formation of the loop, whereby said output means can withdraw filamentary material only from said loop until said length of filamentary material is used up and said loop-forming means is moved to said inoperative position; and release means for displacing said braking means into said first mode in automatic response to movement of said loop-forming means toward said inoperative position.

3,872,659
METHOD AND APPARATUS FOR PRODUCTION OF TUBULAR STRAND AND ROPE

Robert Edward Campbell; Cyril Duncan Ralph Sherwin, and Charles Leslie Turner, all of Doncaster, England, assignors to British Ropes Limited, Doncaster, England
Filed Apr. 24, 1972, Ser. No. 247,158
Claims priority, application United Kingdom, Apr. 26, 1971, 11436/71
Int. Cl. D01h *7/00*
U.S. Cl. 57—33 **7 Claims**

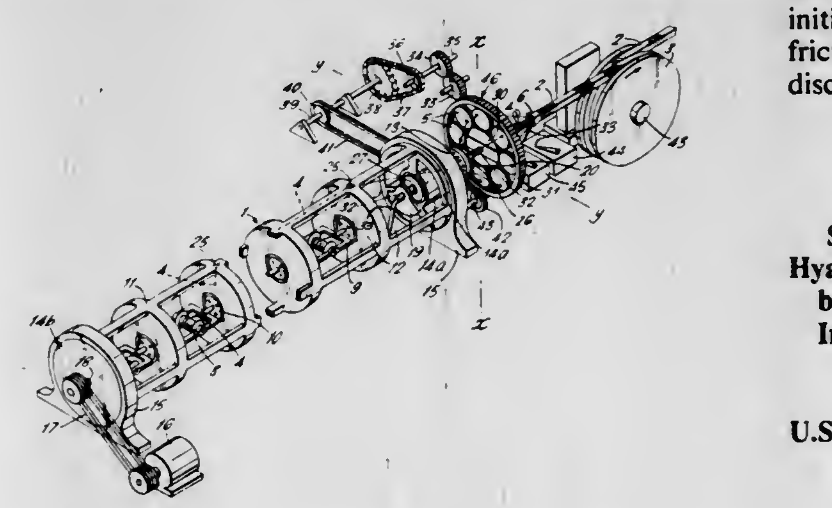
1. A method of forming a tubular wire-strand or tubular wire-rope or tubular core for wire-rope by leading a plurality of round filaments, all of the same material, onto a rigid member having a circular transverse section with a portion thereof tapering in the direction of movement of the filaments passing through a circular annular die coaxial relative to the rigid member comprising the steps of: centrally supporting the filaments on the rigid member against inward collapse until the filaments are in mutual contact, compressing the filaments radially inwardly by means of the die to cause plastic flow at

the points of mutual contact of the filaments; and centrally supporting the filaments, during at least the initial part of the compression, by supporting the filaments on the tapering portion of the rigid member.



3,872,660
METHODS OF, AND APPARATUS FOR, THE MANUFACTURE OF STRANDED CABLES

George Edward Gallagher-Daggitt, Abingdon, England, assignor to Science Research Council, London, England
Filed Nov. 23, 1973, Ser. No. 418,176
Claims priority, application United Kingdom, Nov. 24, 1972, 54479/72
Int. Cl. D07b *1/22*
U.S. Cl. 57—58.3 **11 Claims**

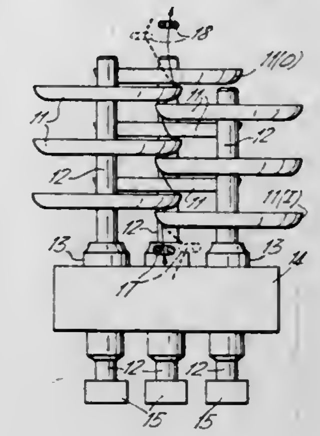


5. Apparatus for manufacturing stranded cable having a non-circular cross-section, comprising means for drawing separate strands through a plurality of spaced-apart guides, means constraining said guides to move around a predetermined non-circular path transverse to the general line of drawing and defining a shape corresponding generally to the desired non-circular cross-section of the cable, die means provided with a die opening corresponding to said non-circular cross-section of the cable and located and arranged such that the strands pass through said opening after passage through said guides, and means for moving said guides around said path.

3,872,661
TEXTILE APPARATUS

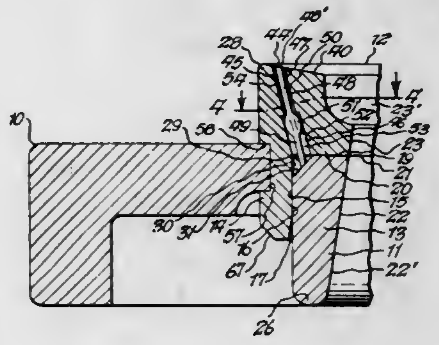
Ronald Spencer Eaves, MacClesfield, England, assignor to Ernest Scragg & Sons Limited, Maxxlesfield, England
Filed Sept. 10, 1973, Ser. No. 396,114
Claims priority, application United Kingdom, Sept. 8, 1972, 41896/72
Int. Cl. D02g *1/08*
U.S. Cl. 57—77.4 **9 Claims**

1. In a friction false-twisting device, a combination comprising a plurality of parallel equiangularly spaced shafts; and a plurality of sets of rotary discs each having a rim portion, said sets each being mounted on one of said shafts and the discs of each set being spaced axially of the associated shaft, the discs of all sets overlapping one another and forming a zig-zag spiralling path in which a strand to be false-twisted can travel from an initial to a terminal disc of said plurality with a substantially pure rolling motion over each disc rim portion in succession and at an angle inclined to the plane of rotation of the respective disc, at least the rim portion of at least said initial disc being of material which has a lesser coefficient of friction with the strand than the rim portions of others of said discs.



3,872,662
SPINNING AND TWISTING RING CONSTRUCTION

Hyatt B. Atwood, Buffalo, and James N. McLean, Tonawanda, both of N.Y., assignors to Herr Manufacturing Company, Inc., Tonawanda, N.Y.
Filed Sept. 26, 1972, Ser. No. 292,340
Int. Cl. D01h *7/62*
U.S. Cl. 57—120 **5 Claims**



1. A spinning ring comprising an annular body portion, a lubricant groove in said body portion, a bearing surface on said body portion, and conduit means for effecting communication between said lubricant groove and said surface, said conduit means including a bore proximate said surface and a counterbore remote from said surface, and pin means including a first pin portion of lesser diameter than said bore in said bore for providing a lubricant channel therewith, and a second pin portion in said counterbore, said second pin portion being of a larger size than said bore to prevent said pin means from moving outwardly toward said bearing surface and said second pin portion being of a configuration so as to permit communication between said bore and said counterbore.

3,872,663

SYSTEM FOR MOUNTING THE OUTER HAIR SPRING END OF A WATCH MOVEMENT

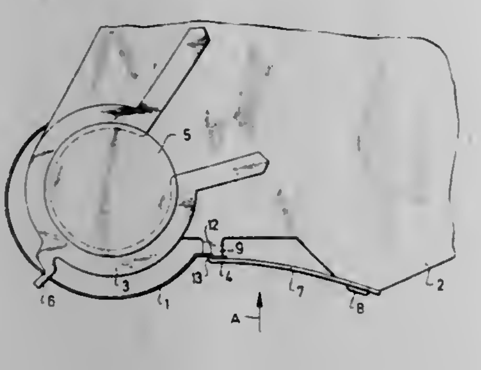
Heinz Meitinger, Mutlangen, Germany, assignor to Bifora-Uhren J. Bidlingmaier GmbH, Schwabisch Gmund, Germany

Filed Jan. 2, 1974, Ser. No. 429,580

Claims priority, application Germany, Jan. 11, 1973, 2301147

Int. Cl. G04b *17/32*

U.S. Cl. 58—115 **2 Claims**



1. In a time keeping instrument movement: A frequency standard comprising a balance driven in oscillation about a balance shaft and a hair spring having one end connected to said shaft and the other end connected to a part of the movement frame, a clamping spring being fastened with one of its ends at said frame while its other end is biased against said frame part, said other hair spring end being clamped between said biased clamping spring end and said frame part wherein said frame part has a step shaped configuration and said biased clamping spring part has a hook shaped configuration complementary with respect to said step so as to deform the said clamped hair spring end when the same is positioned for the first time between said hook and said step.

3,872,664

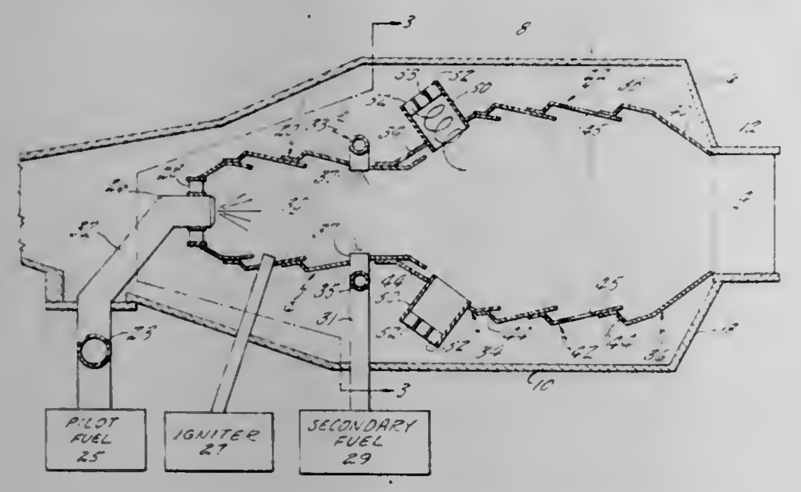
SWIRL COMBUSTOR WITH VORTEX BURNING AND MIXING

Robert P. Lohmann, South Windsor, and Stanley J. Markowski, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 15, 1973, Ser. No. 406,771

Int. Cl. F02c *3/00*

U.S. Cl. 60—39.65 **27 Claims**



12. A combustor including a main combustion chamber, a pilot combustion chamber connected at the upstream end thereof for directing a hot gas flow thereinto, means for forming and directing a plurality of swirling jets of air each swirling individually about its own axis into the upstream end of said main combustion chamber and hot gas flow so as to establish intimate contact with the hot gas flow from said pilot combustion chamber, means for directing a fuel into said main combustion chamber for mixing with the hot gas flow and intermixing swirling jets of air.

3,872,665

UNDERWATER PULSE JET MOTOR

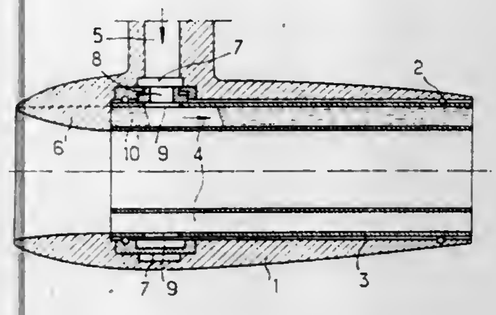
Philippe Jarry, Sevres, France, assignor to Le Moteur Moderne, Boulogne Billancourt, France

Filed Jan. 22, 1974, Ser. No. 435,603

Claims priority, application France, Feb. 9, 1973, 73.04711

Int. Cl. B63h *11/02*

U.S. Cl. 60—221 **10 Claims**



1. An underwater pulse jet motor comprising a stator, a rotor mounted for rotation within the stator and provided at its periphery with longitudinally extending ducts having open upstream and downstream ends, a closing segment fixed with respect to the stator and closing off the upstream ends of said ducts successively during rotation of the rotor, a stator providing an injection orifice at the location of said segment, a pressurised gas source for supplying pressurised gas to the injection orifice, each of the ducts in the rotor having an injection aperture which comes into register with the said injection orifice when the upstream end of the said duct is closed off by the closing segment, said injection orifice and injection openings being disposed downstream of the upstream ends of the ducts whereby when the pressurised gas is supplied into the injection openings a buffer of pressurised water is formed between the closing segment and the injection openings.

3,872,666

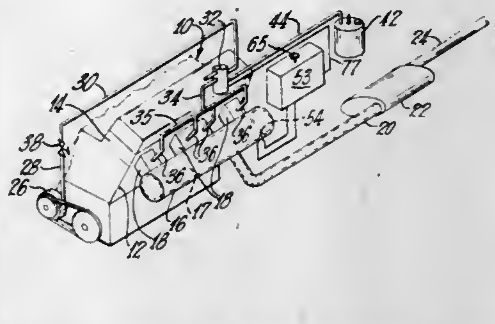
METHOD, SYSTEM AND APPARATUS FOR CONTROLLING TEMPERATURES OF EXHAUST GASES IN EMISSION CONTROL SYSTEMS

David R. Bentley, Temperance, Mich., assignor to Questor Corporation, Toledo, Ohio

Filed Oct. 4, 1972, Ser. No. 294,951

Int. Cl. F01n *3/14*

U.S. Cl. 60—277 **25 Claims**



1. The method of controlling temperatures of exhaust gases emitted from an internal combustion engine into a passage in which oxidation is occurring of unburned constituents in the exhaust gases including sensing the temperature of the exhaust gases in the passage by a temperature sensor, activating the sensor at a predetermined high temperature of the exhaust gases, and flowing a quenching liquid upon activation of the sensor into the exhaust gases to reduce the temperatures of the gases.

3,872,667

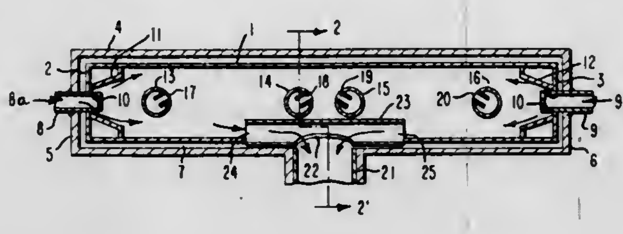
THERMAL-EXHAUST GAS REACTOR

Iver Theodore Rosenlund, Kenneth Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1973, Ser. No. 332,505

Int. Cl. F01n *3/10*

U.S. Cl. 60—282 **4 Claims**



1. In a thermal exhaust gas reactor comprising an elongated reactor chamber having walls, ends and a longitudinal axis, and an outer shell enclosing the reactor chamber and separated therefrom by an insulation space, the reactor chamber being enclosed except for exhaust gas inlets, and a reaction-product outlet,

the improvement which comprises

- i. air inlets, at both chamber ends, separate from the exhaust gas inlets, and
- ii. at least one of said exhaust gas inlets extending into the reactor chamber as a pipe closed at the end which extends into the reactor chamber except for an axial slot, said pipe having guide vanes therein flush with the axial slot, at least one of the vanes being positioned to change the direction of the flow of exhaust gas from axial to cross-axial flow.

3,872,668

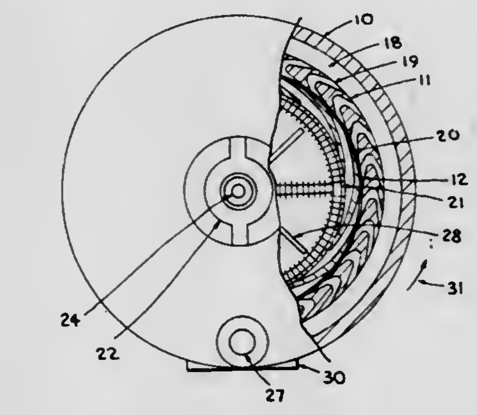
COMPRESSING CENTRIFUGE WITH COOLING

Michael Eskeli, 6220 Orchid Ln, Dallas, Tex. 75230

Filed Apr. 12, 1972, Ser. No. 243,239

Int. Cl. F01d *1/24, 5/08*

U.S. Cl. 60—337 **8 Claims**



1. A compressing centrifuge for compressing a gaseous fluid comprising:

- a. a casing for containing said fluid and for providing support for rotor shafts and bearings; said casing having respective inlet and outlet ports for receiving said gaseous fluid to be compressed and for discharging the compressed fluid;
- b. a first rotor shaft for power input needed to effect rotation of a primary rotor; said first shaft being journalled for rotation in bearings supported in said casing; said first shaft having first and second longitudinally extending cooling fluid passageways for conveying a cooling fluid therethrough;
- c. a primary rotor for subjecting said gaseous fluid to a centrifugal force field; said primary rotor being mounted on said first shaft so as to rotate in unison with said first shaft; said primary rotor having an internal space with internal vanes defining respective cavities within said primary rotor for ensuring that any fluid within said primary rotor rotates with the same rotational speed as said primary rotor; said primary rotor being equipped with means for introducing the fluid to be compressed at the center of the primary rotor and having suitable restricted discharge passageways adjacent the periphery for discharging the compressed said gaseous fluid; said discharge passageways being smaller in cross sectional dimensions than the minimum cross sectional dimensions of the associated cavity for ensuring that the fluid within the respective cavities of the rotating primary rotor will be subjected to centrifugation and centrifugal compression for effecting at the periphery of the rotor and upstream of the discharge passageways a compressed fluid having a second pressure that is higher than the pressure at the inlet to said primary rotor;
- d. a cooling means disposed interiorly of said primary rotor so as to rotate in conjunction therewith; said cooling means comprising at least a peripherally disposed cooling passageway and respective radially extending passageways that are connected at their respective ends with said cooling fluid passageways in said first shaft so as to effect passage of said cooling fluid through said first passageway, through said cooling means in heat exchange relationship with the compressed gaseous fluid of said primary rotor and back to said second passageway for discharge of the heated cooling fluid; said cooling means having sufficient cooling surface to effect in conjunction with predetermined design conditions of inlet and outlet temperatures and flow rates of said cooling fluid nearly isothermal centrifugal compression of said fluid in said primary rotor;
- e. a second shaft journalled for rotation in bearings supported by said casing; said second shaft being adapted for conveying power from said secondary rotor;
- f. a second rotor mounted for rotation on said second shaft for absorbing and converting to useful work a large portion of the kinetic energy of the fluid being discharged from its compressed fluid state through the discharge passageways of said primary rotor; said secondary rotor being fixed to said secondary shaft so as to rotate in unison therewith and to transmit power thereto; said secondary rotor having suitable vane means for absorbing energy from the fluid stream as it leaves the discharge passageways of said primary rotor; said secondary rotor being adapted to rotate in the same direction as said primary rotor.

3,872,669

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Harold R. Ward, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

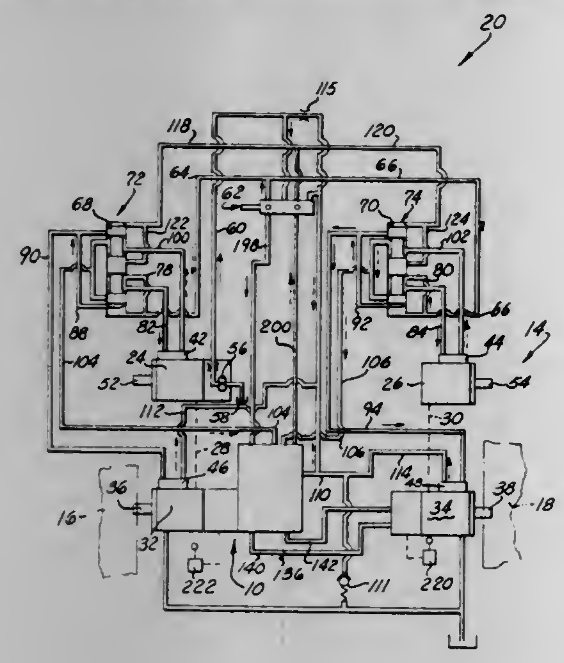
Continuation-in-part of Ser. No. 285,729, Sept. 1, 1972, Pat. No. 3,795,107. This application Jan. 14, 1974, Ser. No. 433,086

Int. Cl. F16h *39/46*

U.S. Cl. 60—395 **14 Claims**

1. An apparatus comprising first and second hydrostatic transmissions for transmitting drive forces to support surface engaging drive elements of a vehicle, said first and second hydrostatic transmissions each including a reversible variable displacement pump unit having forward and reverse operating conditions, a variable displacement motor unit, and means for conducting fluid between said pump and motor units, pump controller means for effecting operation of said pump units between the forward and reverse operating conditions and for varying the effective displacements of said pump units, motor controller means for varying the effective displacements of said motor units between an initial operating condition in which said motor units have relatively large effective displacements and a second operating condition in which said motor units have relatively small effective displacements, speed and direction control means for effecting operation of said pump

controller means to operate said pump units between the forward and reverse operating conditions and for effecting operation of said pump and motor controller means to vary the displacements of said pump and motor units and the speeds at which said first and second hydrostatic transmissions are effective to drive the support surface engaging drive elements of the vehicle, and steering control means for effecting operation of only said pump controller means to operate one of said pump units between the forward and reverse operating conditions while maintaining the operating condition of the associated one of said motor units substantially constant at a condition other than said initial operating condition.



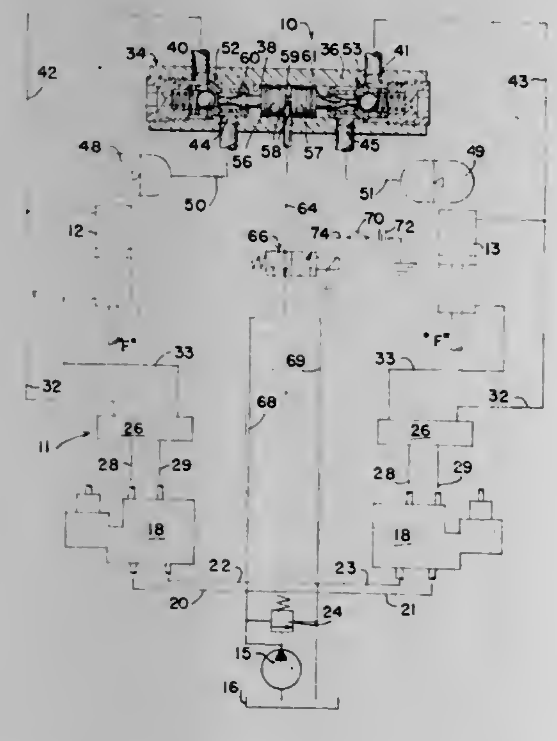
3,872,670
SELECTIVELY ACTUATABLE SHOCK ABSORBING SYSTEM FOR AN IMPLEMENT CONTROL CIRCUIT

Joseph E. Dezelan; John A. Junck, both of Juliet, and Walter I. Nelson, Decatur, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed May 2, 1973, Ser. No. 356,362

Int. Cl. F15b *1/02*

U.S. Cl. 60—413 **6 Claims**



1. A hydraulic system for selectively holding an implement or the like in a fixed position and for selectively providing shock absorbing means for the implement comprising:

a hydraulic motor;

a source of fluid pressure;

first control valve means comprising lock valve means disposed in a motor control circuit between said source of fluid pressure and said hydraulic motor for selectively directing said fluid to and from said motor; and

shock absorbing means comprising fluid accumulator means and control means including second control valve means independent of said first control valve means including pilot operated lock valve means disposed between said fluid accumulator means and said hydraulic motor and operated by a pilot control circuit independent of said motor control circuit and including a two-position selector valve for selectively communicating said fluid accumulator means with said motor.

3,872,671
CONTROL DEVICE FOR A HYDRAULIC DRIVE MOTOR

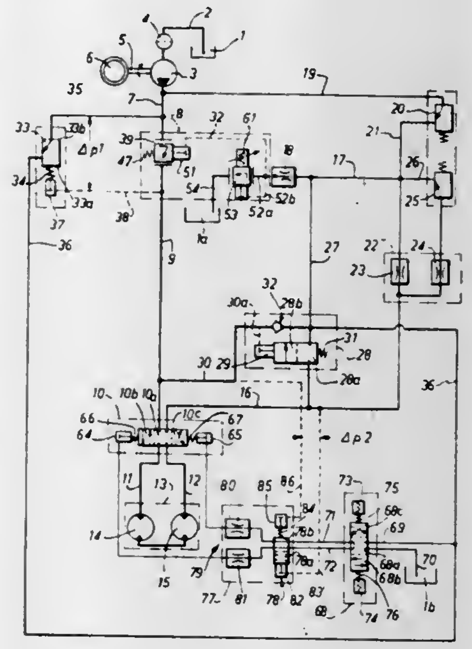
August Verlinde, Fournes en Weppes, France, assignor to Verlinde S.A., Loos, France

Filed May 11, 1973, Ser. No. 359,407

Claims priority, application France, May 23, 1972, 72.19588

Int. Cl. F15b *11/16*

U.S. Cl. 60—460 **6 Claims**



1. Control device for a hydraulic drive motor or screw jack having an installation in open circuit and a reservoir including a constant delivery pump, a safety valve for the pump to guard against excess pressure, a return towards the reservoir for said safety valve, the pump being connected to an inlet aperture of a main distributor controlling the drive motor, a controllable throttle valve between the pump and the main distributor, the pressure differential across this throttle valve acting on a control valve to allow the (return to) outflow towards the reservoir of an amount of the delivery of the pump by a return, a braking unit for the (hydraulic fluid feeding) exhaust pressure down stream of the drive motor and a control means for the throttle valve, the improvement consisting of a single common pipe receiving the returns of the installation and connected to the reservoir, said common pipe including a fixed throttle valve to maintain a predetermined pressure in the circuit, an outlet for said fixed throttle valve including a pressure regulator discharging to the reservoir and creating a regulated pressure up stream there of without influencing the outflow across the pressure regulator, means for actuating said pressure regulator, a manually adjustable remote speed control driving said last means, said regulated pressure actuating the control means for the controllable throttle valve between the pump and the main distributor.

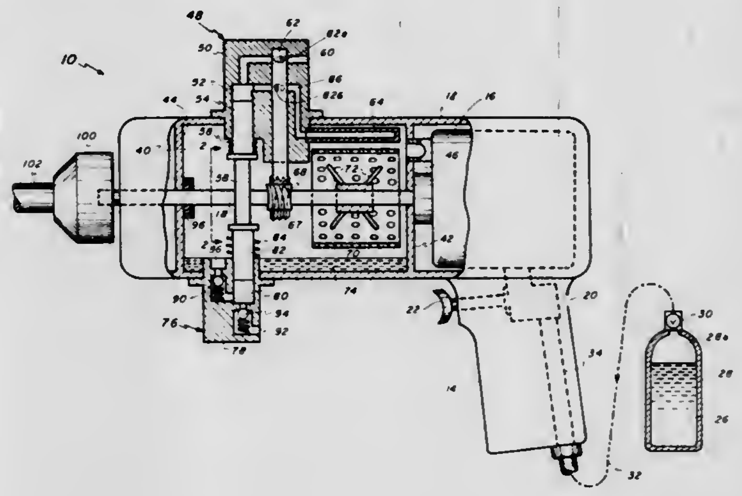
3,872,672
AMMONIA DRIVEN UNDERWATER MOTOR

Charles R. Rein, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1973, Ser. No. 408,028

Int. Cl. F01k *25/06*

U.S. Cl. 60—649 **11 Claims**



1. A motive device for operation within a surrounding water medium from a source of ammonia gas, said device comprising:

motor means, including a rotary output shaft and having gas inlet and exhaust ports, for producing rotation of said shaft;

a rigid housing defining a closed chamber, connected to said exhaust port, for receiving spent ammonia gas from said motor means;

water metering means, mounted on said housing and operatively associated with said motor means, for introducing predetermined amounts of water from said medium into said chamber for absorbing said spent ammonia gas; and water expelling pump means, mounted on said housing and operatively associated with said motor means, for expelling ammonia laden water from said chamber into said surrounding water medium.

3,872,673
ACCUMULATION POWER STATION

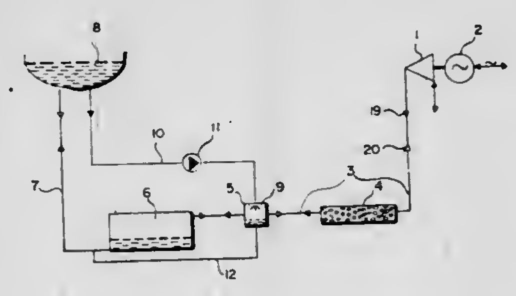
Peter Heinrich Erwin Margen, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Feb. 1, 1973, Ser. No. 328,687

Claims priority, application Sweden, Feb. 10, 1972, 1612/72

Int. Cl. F01b *29/04;* **F01k** *25/02*

U.S. Cl. 60—650 **6 Claims**



1. Accumulation power station comprising an electric motor, an air compressor driven by the motor, a storage space for the compressed air generated by the compressor, an air turbine which is driven during peak-load periods by compressed air from the storage space, and an electric generator driven by the air turbine, characterized therein by a regenerative heat exchanger which accumulates the heat produced when air is compressed while the compressed air storage space is being charged, and which gives off the accumulated heat to the compressed air when the compressed air storage space is being discharged, and a cooler for the compressed air arranged between the heat exchanger and the compressed air storer.

3,872,674
DEVICE FOR REGULATING THE OPERATION OF TWO HYDRAULIC MOTORS MOUNTED IN SERIES

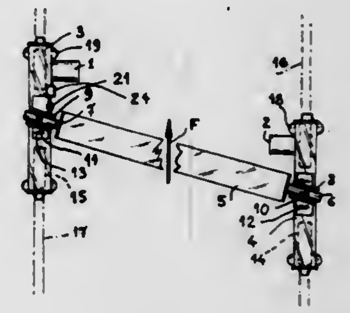
Auguste P. Verlinde, Fournes en Weppes, France, assignor to Verlinde S.A., Loos, France

Filed Apr. 12, 1973, Ser. No. 350,582

Claims priority, application France, Apr. 20, 1972, 72.14936

Int. Cl. F15b *11/22*

U.S. Cl. 60—706 **7 Claims**



1. Device for regulating the operation of two mechanically independent hydraulic motors mounted in series each motor movable along predetermined trojectories for driving one side of a movable machine, a longitudinal axis for said machine, said axis and said trajectories intersecting at a predetermined angle comprising a control circuit for fluid under pressure for the motors, derivation circuit means connected above and below the motor that is first fed with fluid under pressure as determined by the direction of the circulation of the fluid under pressure, said derivation circuit means including an adjustable throttle controlling the flow of fluid in said derivation circuit means, an element connecting said trojectories at said angle with said axis and feeler means engaging said element for actuating said throttle according to any change of said angle upon advance or delay of the first fed motor said derivation circuit means thus feeding the second motor with greater or lesser flow of fluid under pressure than that to the first fed motor whereby said second motor maintains the same relative position with respect to said first motor and said angle is returned to its predetermined value.

3,872,675
PROPULSION INSTALLATIONS FOR BOATS, MORE PARTICULARLY FOR HIGH-SPEED LAUNCHES

Felix Amiot, 2, rue Georges leygues (16e), Paris, France

Filed Sept. 15, 1972, Ser. No. 289,264

Claims priority, application France, Jan. 13, 1972, 72.01106

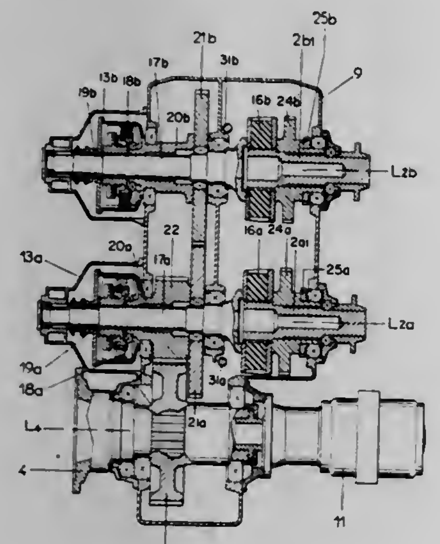
Int. Cl. F01b *21/00*

U.S. Cl. 60—718 **7 Claims**

1. A propulsion installation, comprising:

a power unit; a reduction gear mechanism, a primary input shaft of the reduction gear mechanism drivingly connected with said power unit; an output shaft of the reduction gear mechanism arranged to drive propulsion means; wherein the improvement comprises the provision of:

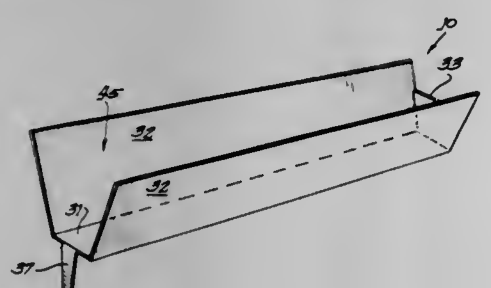
an auxiliary engine; a secondary input shaft of the reduction gear mechanism arranged to be driven by the auxiliary engine; means to decouple the said output shaft from the primary input shaft; said reduction gear mechanism including means to drivingly connect the secondary power input shaft to the output shaft with such output shaft decoupled from the primary input shaft; and means including a freewheel device to drivingly connect the secondary power input shaft to the primary input shaft for starting of the power unit, said freewheel device permitting transmission of torque from the secondary power input shaft to the primary power input shaft to rotate a shaft of the power unit in the direction in which such shaft is rotated for starting of the power unit in which the power unit comprises only two engine units, and in which the said means within the reduction gear mechanism for drivingly connecting the said secondary power input shaft successively with each primary input shaft comprises a transmission mechanism comprising a rocking support; a pair of driving gearwheels mounted on the rocking support, means to rock the support between three positions;



and a pair of starter gear wheels arranged to be driven to drive their respective primary input shafts during starting of respective engines units; the rocking support when in a first said position thereof having a first of said pair of driving gearwheels in driving engagement with a first of said starter gearwheels, when in a third said position thereof having a second of said pair of driving gearwheels in driving engagement with a second of said starter gearwheels, and when in a second and intermediate position thereof having both of said pair of driving gearwheels out of engagement with said starter gearwheels.

3,872,676
SOIL PROTECTOR FROM SIPHON WATER

Tom Nagao, Rt. 2A, Box 214, Tremonton, Utah 84337
Filed Nov. 8, 1973, Ser. No. 414,125
Int. Cl. E92b *7/00; 9/04*
U.S. Cl. 61—12 **1 Claim**



1. A soil protector device for protecting an irrigation trough and the like from siphon water directed thereinto from a siphon tube having one end of the tube disposed in a main water feed channel with the opposite end of the tube forming a water discharge end and adapted to discharge water into the irrigation trough, the protector device comprising, in combination:

a smooth elongated rectangularly shaped flat bottom surface member having an inlet edge, a discharge edge, and opposed longitudinally extending side edges;

a pair of flat longitudinally extending spaced apart side wall members, each side wall member associated with an opposite side edge of the bottom surface, each side wall member having a bottom edge and a top edge, each bottom edge of each side wall member completely extending along the associated side edge of the bottom surface and affixed thereto in a watertight manner, each side wall member extending upwardly and diverging outwardly from the interior surface of said bottom surface;

a flat inverted truncated triangularly shaped end wall member having the truncated apex edge thereof affixed to the inlet edge of the bottom surface with the end wall member projecting upwardly therefrom at about a ninety degree angle to said bottom surface, the end wall member having opposed outwardly diverging side wall edges adapted to engage the adjacent edge portions of the side wall members to thus define a closed water inlet end for the protector device;

the angle of divergence of the side edges of the end wall member being equal to the angle of divergence of the side wall members from the bottom surface such that the side edges of the end wall member are disposed inwardly of and adjacent the associated end edges of the side wall members;

the top edge of the end wall member terminating beneath the top edges of the side wall members to define an open topped tube receiving inlet and prevent backflow of the water from the irrigation ditch;

a flat rectangularly elongated anchor member having one end affixed centrally of the discharge edge of said bottom surface with the opposite edge projecting outwardly and downwardly therefrom at an angle of approximately ninety degrees relative to the bottom surface;

the bottom surface, side wall members, end wall member, and anchoring member all integrally formed relative to each other and manufactured of a unitary blank of sheet metal material having a uniform thickness throughout and then they are bent into their respective positions to define the protector device; and

the protector device adapted to be longitudinally placed into an end of an irrigation ditch with the discharge end opening into the ditch and with said anchor inserted into the soil to positively secure the protector device in position.

3,872,677
MINERAL MINING INSTALLATIONS

Horst Linke, Altluenen; Bernard Holtrup, Werne a/d Lippe, and Herbert Beyer, Werne, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany
Filed Apr. 10, 1973, Ser. No. 349,879
Claims priority, application Germany, Apr. 20, 1972, 2219272
Int. Cl. E21d *23/00*
U.S. Cl. 61—45 D **16 Claims**

1. A mineral mining installation comprising:

a. a scraper-chain conveyor;

b. a drive station for the conveyor located at one end of the conveyor, said drive station having a frame with a rotatable drum and means for driving said drum;

c. a series of movable roof support chocks disposed along the goaf side of the conveyor;

d. a first roof support chock disposed at the goaf side of the frame;

e. means for connecting said first chock to said frame;

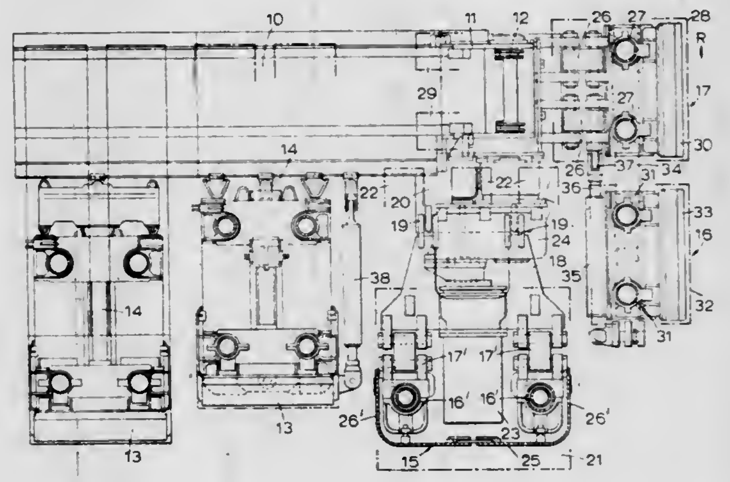
f. a second roof support chock disposed at the end of said frame;

g. means for connecting said second chock to said frame;

h. a further chock disposed at the goaf side of the second chock;

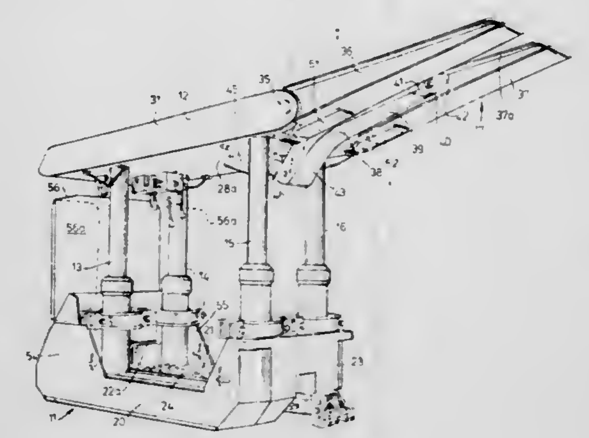
i. shifting means connected between the second and further chocks; and

j. guide means connected between the second and further chocks.



3,872,678
MINE ROOF SUPPORTS

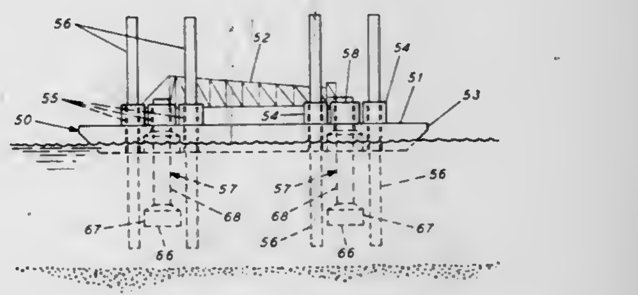
Peter Shuttleworth, The Paddock, Eastgate, Hornsea, Yorkshire, England
Filed July 9, 1973, Ser. No. 377,305
Claims priority, application United Kingdom, July 14, 1972, 33001/72
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **22 Claims**



1. A mine roof support comprising, in combination, a base, a rigid canopy, hydraulic props between said base and said rigid canopy serving to support said rigid canopy above said base and to afford vertical displacement of said rigid canopy relative to said base, a canopy extension, comprising two spaced parallel beams, a common pivot pin hingedly independently connecting the beams to the rigid canopy for angular adjustment relative thereto and for individual replacement, a lever arm comprising a double arm lever separating pivotally supported relative to said rigid canopy by the common pivot pin between the two arms in a position protected by both said rigid canopy and the two beams, said double arm lever having one arm extending between the two beams to locate and support the canopy extension relative to said rigid canopy, said one arm having a cross-link member disposed remote from said common pivot pin extending transversely between the two beams and supporting the two beams, and lever arm control means acting between said rigid canopy and the second arm of said boule arm lever for locating the said lever arm and thereby said canopy extension relative to said rigid canopy.

3,872,679
APPARATUS AND METHOD FOR REDUCING THE FORCES ON EXTENDIBLE LEGS OF A FLOATING VESSEL

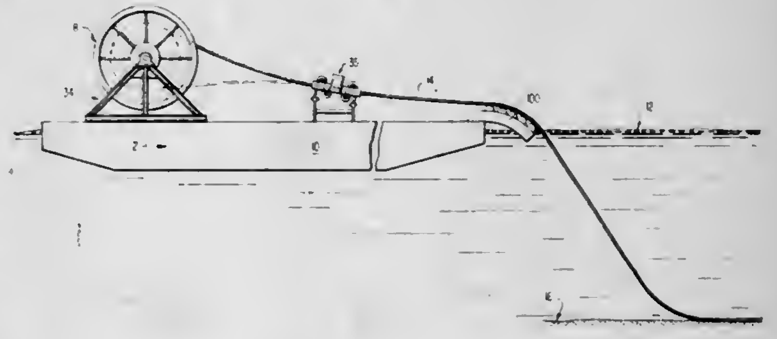
William Fischer, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 21, 1973, Ser. No. 427,175
Int. Cl. E02b *17/00;* **B63b** *35/00*
U.S. Cl. 61—46.5 **12 Claims**



6. A method of reducing destructive forces on a set of supporting main legs of a vessel floating on a body of water while said main legs are lowered into a position in contact with the underwater bottom comprising the steps of: lowering into said water a set of supporting main legs to a position above said underwater bottom so as to avoid contact with said underwater bottom; extending a semi-submersible controllably buoyant means operatively and adjustably connected to said vessel into said body of water; increasing the buoyancy of said means to raise said vessel to a predetermined height; positioning said main legs into a platform supporting position in contact with said underwater bottom; and retracting said semi-submersible controllably buoyant means to said vessel.

3,872,680
METHOD AND APPARATUS FOR LAYING PIPELINES

William B Nicholson, Metairie, and Benjamin C. Tisdale, Jefferson Parish, both of La., assignors to Brown & Root, Inc., Houston, Tex.
Filed Aug. 31, 1973, Ser. No. 393,298
Int. Cl. F16l *1/00;* **B65h** *17/46*
U.S. Cl. 61—72.3 **6 Claims**



2. A method of laying a pipeline wound on a reel on the floor of a body of water, comprising the steps of:

rotatably and movably supporting said reel on a floating vessel such that said reel is movable between the bow and stern of said vessel,

positioning the reel adjacent the stern of said vessel, and

unwinding the pipeline from said reel into the body of water in a substantially straight line as said vessel is moved forwardly.

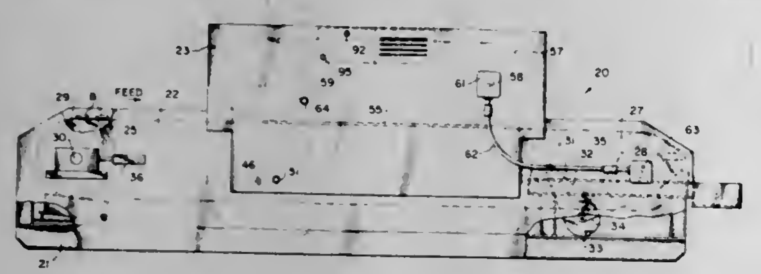
3,872,681
TEMPERATURE MODIFYING METHOD UTILIZING A DOUBLE CONVEYOR CONTACT FREEZER

Howard L. Bierley, Chambersburg, and Phares B. Witmer, III, Greencastle, both of Pa., assignors to Frick Company, Waynesboro, Pa.

Division of Ser. No. 385,765, Aug. 6, 1973,. This application May 21, 1974, Ser. No. 472,018

Int. Cl. F25d *13/06*

U.S. Cl. 62—63 **4 Claims**



1. The method of freezing products comprising the steps of: providing a first generally horizontal conveyor located in engagement with an open top trough, continuously introducing liquid refrigerant into said trough so that one surface of said conveyor is in direct heat exchange relationship with said liquid refrigerant, continuously discharging liquid refrigerant along substantially the entire length of said trough, providing a second generally horizontally disposed conveyor in predetermined spaced relationship to said first conveyor, providing a pair of spaced weir means along one surface of said second conveyor, continuously introducing liquid refrigerant onto said second conveyor between said weir means to cause said liquid refrigerant to overflow said weir means, driving said first and second conveyors at substantially the same speed, and introducing the product to be frozen between said conveyors so that said conveyors engage opposite sides of said product.

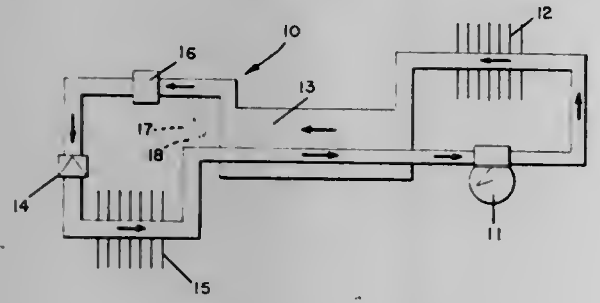
3,872,682
CLOSED SYSTEM REFRIGERATION OR HEAT EXCHANGE

Hugh Thomas Shook, West Covina, Calif., assignor to Northfield Freezing Systems, Inc., Northfield, Minn.

Filed Mar. 18, 1974, Ser. No. 451,729

Int. Cl. F25b *9/00*

U.S. Cl. 62—114 **11 Claims**



1. A closed cycle heat exchange process using a mixture of refrigerants, which comprises the steps of:

- a. compressing a mixture of refrigerant components comprising carbon dioxide, at least two of said refrigerant components (1) being substantially immiscible when both are in a liquid state and (2) having different boiling points;
- b. passing said compressed mixture through a condensing stage to condense the higher boiling component of said two components;
- c. passing the resulting partially condensed mixture through a cooling zone to condense the lower boiling component of said two components, whereby two immiscible liquids are obtained;
- d. blending said two immiscible liquids in a homogenizing zone to obtain a generally uniform mixture;
- e. expanding and converting at least said lower boiling component to a gaseous state in a closed evaporating zone;
- f. evaporating said higher boiling component, thereby obtaining said mixture of refrigeration components of step (a) for recycling of said mixture of refrigeration components in accordance with said closed cycle heat exchange process.

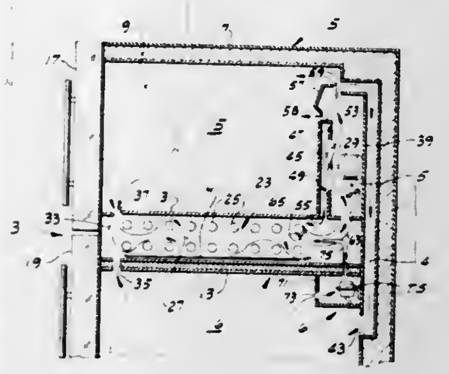
3,872,683
REFRIGERATION DEFROST SYSTEM

Bobby D. Blanton, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 6, 1973, Ser. No. 394,949

Int. Cl. F25d *21/02*

U.S. Cl. 62—140 **11 Claims**



1. A defrost system for refrigeration apparatus having cooling means for absorbing heat from a refrigerated zone, said cooling means being subject to frost buildup, said refrigeration apparatus having a flow path for the intake of air from said refrigerated zone and for passage of the air over said cooling means to chill the air and for the discharge of the chilled air into the refrigerated zone, and a blower for forcing the air through said path; said system comprising a heater for removing frost from said cooling means, and means for initiating operation of the heater in response to buildup of frost on the cooling means, said initiating means comprising a conduit providing communication between said flow path on the discharge side of the blower and said cooling means, one end of said conduit being in close proximity to a portion of said cooling means, said blower forcing air through said conduit for outflow of air from said one end thereof and for impingement of said outflow on said portion of the cooling means, means for sensing air temperature adapted to energize said heater upon sensing a predetermined depressed temperature of the air, and means for causing air from said refrigerated zone to flow through at least a portion of said conduit when there is less than a predetermined buildup of frost on said cooling means, said last mentioned means responsive to restriction of said one end of the conduit by buildup of frost on said cooling means to direct a flow of chilled air onto said sensing means for lowering the air temperature sensed thereby to said predetermined depressed temperature, this last-said means including a passage for directing said flow of chilled air onto said sensing means.

3,872,684
WATER VAPOR COOLING SYSTEM FOR AIR COOLED CONDENSER COILS

John L. Scott, 3216 Southwest Dr., Wichita Falls, Tex. 76305

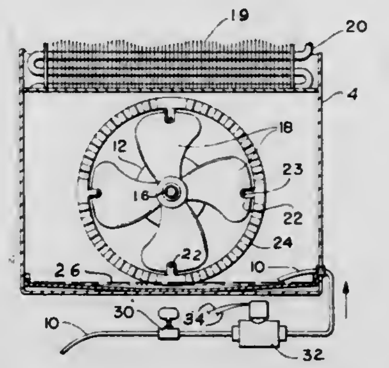
Filed Feb. 25, 1974, Ser. No. 445,495

Int. Cl. F25d *17/00*

U.S. Cl. 62—181 **3 Claims**

1. In combination with an air conditioner having an air cooled condenser coil;

- a. a blower fan having radial blades to direct air through the condenser coil,
  - 1. said radial blades of said fan being apertured near the respective outer ends thereof,
- b. an annular ring,
  - 1. said ring having radial flutes formed therein,
  - 2. inwardly extending, apertured lugs formed on said annular ring at spaced intervals around the inner diameter thereof so the apertures in said lugs will register with the apertures in said radial blades of said fan,
  - 3. fastening means passing through the apertures to connect said apertured lugs on said ring to the apertured blades of said fan,



- c. the lower portion of the housing being adapted to entrap water on the surface thereof,
- d. a conduit leading from a water supply to direct water onto the upper surface of the lower portion of the housing of the air conditioner,
- e. a water control metering valve within the said conduit,
- f. said radial flutes formed on said ring dip into the water in the lower portion of the air conditioner housing to cause the water to be broken into mist, when the fluted ring is rotated, to direct the mist into the air stream leading through said condenser coil.

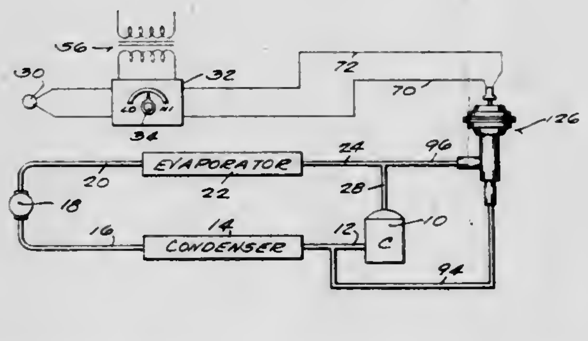
3,872,685
EVAPORATOR TEMPERATURE CONTROL FOR REFRIGERATION SYSTEMS

Alan A. Matthis, Milwaukee, Wis., assignor to Controls Company of America, Schiller Park, Ill.

Continuation-in-part of Ser. No. 341,912, March 16, 1973, abandoned. This application Jan. 15, 1974, Ser. No. 433,831

Int. Cl. F25b *41/04*

U.S. Cl. 62—196 **4 Claims**



1. A control for regulating the temperature in a space refrigerated by a system including a compressor, condenser, an expansion valve, and an evaporator, the compressor discharging hot compressed refrigerant to the condenser where it is condensed and the refrigerant flow to the evaporator is regulated by the expansion valve, the evaporator outlet being connected to the compressor inlet,

- an electrically operated control valve located between the evaporator and the compressor and operative to control evaporator pressure and thus temperature independently of the expansion valve,
- a temperature sensing thermistor located in the refrigerated space at a point at which the temperature is to be controlled,
- an electric circuit including the thermistor and the control valve and an electric bridge circuit having the thermistor electrically connected in one branch of the bridge,
- means for adjusting the resistance of said one branch whereby the temperature setting of the control may be adjusted to determine the temperature maintained at the thermistor,
- said bridge circuit being operative to develop a control signal which is amplified and supplied to the control valve to cause the control valve to be actuated to control evaporator pressure solely as function of the temperature at the thermistor and as a result the evaporator pressure is compensated for presence of frost on the evaporator or other restriction upon heat transfer.

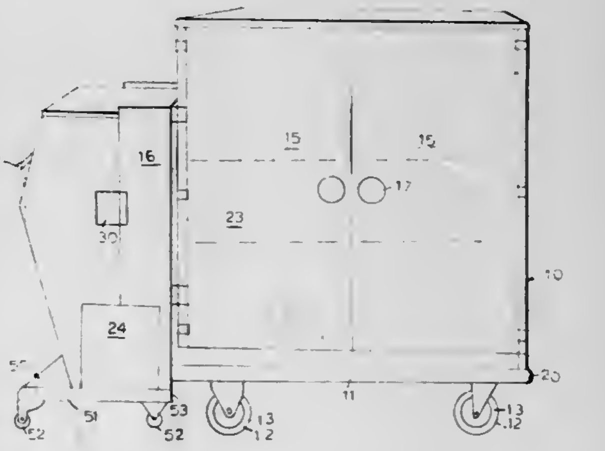
3,872,686
REFRIGERATOR DIETARY MODULE

James H. Patrie, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed June 19, 1973, Ser. No. 371,484

Int. Cl. F25d *15/00*

U.S. Cl. 62—237 **2 Claims**



1. In combination, a dietary module and a refrigeration unit, said dietary module comprising a cabinet and four floor engaging wheels supporting said cabinet,

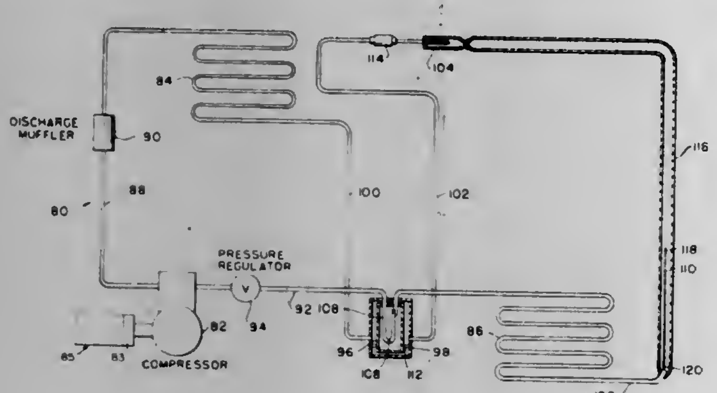
- doors swingably connected to said cabinet,
- an opening in one end of said cabinet,
- a first and a second access door swingably connected to each side of said opening,
- a self contained refrigeration unit,
- floor engaging wheels supporting said refrigeration unit,
- an opening in one end of said refrigeration unit,
- said access doors on said dietary module being adapted to swing open to a position generally parallel to each other providing a space therebetween to receive an end of said self contained refrigeration unit with said opening in said refrigeration unit communicating with the inside of said cabinet,
- and means on said refrigeration unit adapted to force refrigerated air into said module whereby food adapted to be disposed in said module is cooled,
- and first clamping means on said access doors and second clamping means on the sides of said refrigeration unit for clamping said self contained refrigeration unit to said doors whereby said refrigeration unit and said dietary module are held together in rigid relation and can be moved about a floor on said floor engaging wheels.

3,872,687
VEHICLE AIR CONDITIONING SYSTEM
Edward W. Bottum, Brighton, and Richard C. Kozinski, Highland Park, both of Mich., assignors to Refrigeration Research, Inc., Brighton, Mich., by said Edward W. Bottum and Chrysler Corp., Highland Park, Mich., by said Richard C. Kozinski

Division of Ser. No. 841,032, July 11, 1969, Pat. No. 3,766,748. This application Oct. 15, 1973, Ser. No. 406,252

Int. Cl. F25b *43/00*

U.S. Cl. 62—243 **1 Claim**



1. In combination with a vehicle, an air conditioning system comprising a compressor, an evaporator and a condenser connected in operative relationship, said vehicle including an engine, said engine being drivingly connected to the compressor, capillary tube refrigerant expansion means between the condenser and evaporator, said capillary tube refrigerant expansion means comprising a capillary tube connected at one end to the low pressure side of the system leading to the evaporator, a protective tube of larger diameter around said capillary tube, one end of said protective tube being adjacent to the evaporator and being closed, the other end of said protective tube being connected to the high pressure side of the system adjacent to the condenser, said capillary tube terminating short of said other end, a suction accumulator between the evaporator and compressor whereby the system effectively operates when the compressor operates at variable speeds, the condenser is subjected to variable ambient temperatures, and the evaporator is subjected to a variable load, heat exchange means provided on said suction accumulator, said heat exchange means comprising a jacket around the suction accumulator and spaced therefrom to provide for flow of refrigerant thcrcaround in heat exchange relationship therewith, and means connecting said heat exchange means between said condenser and capillary tube refrigerant expansion means to provide heat exchange between the refrigerant from the condenser and the refrigerant from the evaporator in the suction accumulator.

3,872,688
REFRIGERATION APPARATUS DIVIDER WALL MOUNTING MEANS
Harry Lucian Tillman, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

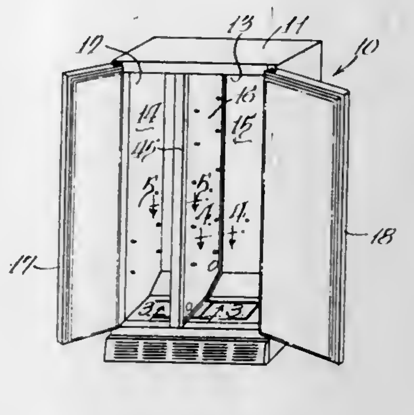
Filed June 13, 1974, Ser. No. 478,880

Int. Cl. F25d *23/00*

U.S. Cl. 62—329 **18 Claims**

1. In a side-by-side refrigerator-freezer appliance having a cabinet defining an interior space and including a bottom wall portion and a vertical rear wall portion, a vertical divider separating said interior space into an above-freezing compartment and a laterally adjacent below-freezing compartment and defining a bottom edge portion and a rear edge portion, means for mounting said divider to said cabinet comprising

an elongated track member extending horizontally across said cabinet bottom wall portion and vertically along said cabinet rear wall portion, said track member having wall means embracing said bottom edge portion and rear edge portion of the divider, means forming a longitudinally extending channel subjacent said bottom edge portion of the divider and rearwardly of said rear edge portion of the divider, passage means for conducting water such as condensate from said channel for delivery into the above-freezing compartment, and insulation means substantially filling at least the vertically extending portion of said channel.

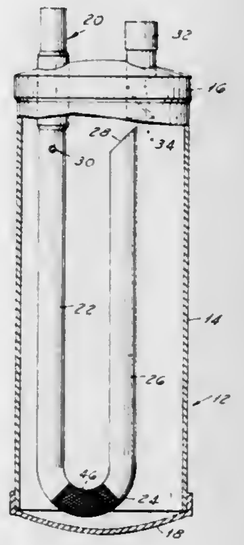


3,872,689
SUCTION ACCUMULATOR
Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed May 2, 1974, Ser. No. 466,202

Int. Cl. F25b *43/00*

U.S. Cl. 62—503 **3 Claims**



1. In a suction accumulator for the compressor of a refrigeration system, said accumulator comprising a casing having an inlet and an outlet, a conduit within the casing having an open end adjacent the upper portion of the casing and having a portion extending from said open end to a point adjacent the bottom of the casing and thence to the casing outlet, said conduit having a metering opening adjacent the bottom of the casing, said conduit acting to draw gas through said open end thereof and draw liquid at a controlled rate through said metering opening therein and expel both the gas and the liquid into the casing outlet, the improvement comprising a radially inwardly directed recess in a wall portion of said conduit adjacent the bottom of the casing, said metering opening being located within said recess, and a sleeve-shaped strainer element received on said conduit and positioned adjacent the bottom of the casing in a location where a portion of said strainer element overlies said recess so as to filter fluid flowing through said strainer before it passes through said metering opening.

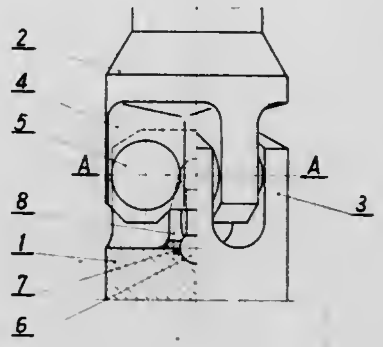
3,872,690
UNIVERSAL TYPE SPINDLE COUPLING
Jan Salajczyk, Bytom, Poland, assignor to Huta "Zygmunt", Bytom, Poland

Filed June 26, 1973, Ser. No. 373,798

Claims priority, application Poland, July 5, 1972, 156502

Int. Cl. F16d *3/18*

U.S. Cl. 64—9 R **7 Claims**



1. In a synchronous universal-type rotatable spindle coupling embodying a pair of axially elongated articulated joint spindle components each having an axis and a joint coupling head 1,2 provided with a plurality of axially extending angularly spaced complementally interfitting arms 3, 4, said arms being universally coupled together in substantially a clearance-free manner by means of bearing inserts 5 interengaging respectively spaced apart radially juxtaposed surfaces of said interfitting arms, the improvement wherein:

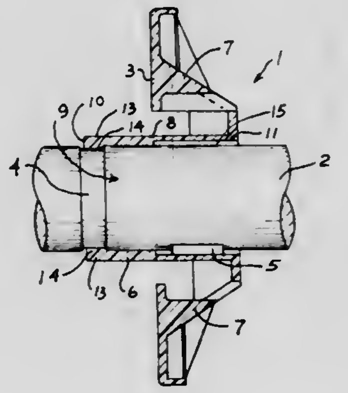
at least one of said spindle components is mounted with at least part of its axial length and head free to move transversely of its axis and axial rotation when in operative use.

3,872,691
ROTATING METAL SHAFT AND PLASTIC SLEEVE MOUNTING
Eugene F. Hildebrandt, Ferguson, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 29, 1973, Ser. No. 345,891

Int. Cl. F16d *3/14*

U.S. Cl. 64—27 R **1 Claim**



1. A two piece device intended for simultaneous rotation, comprising:

a solid, metal shaft having an annular channel formed in it, a pair of protrusions formed from said metal shaft, said protrusions lying on diametrically opposite sides of said shaft and extending outwardly from an outer surface of said shaft, said protrusions being spaced from said channel, each of said protrusions including a pair of splines, each of said splines having an outboard face; and

a plastic cylindrical sleeve mounted on said shaft, said sleeve having a first end, a second end, and an axial opening in said sleeve between said first and said second ends, said first end having clasp means integrally formed in it, said sleeve further having a first pair and a second pair of grooves through it on diametrically opposite sides of said sleeve along the first end of said sleeve, said groove pairs having a portion of the total surface area of the sleeve between respective pairs of said grooves, said clasp means including a lug extending radially inwardly of said axial opening from each of said portions of said sleeve between respective ones of said groove pairs, the effective diameter of said axial opening being less than the outer diameter of said shaft along at least that portion of said sleeve having said clasp means formed in it, said lugs being engagable in said channel to position said sleeve axially with respect to said shaft, the engagement of said lugs and said channel providing a light frictional drag which is insufficient to prevent all rotational slippage of said sleeve on said shaft during rotation of said shaft in either clockwise or counterclockwise directions, said second end of said sleeve having a pair of keyways formed in it, said keyways extending radially outwardly from said axial opening, said keyways being oversized with respect to said protrusions such that said individual ones of said keyways engage respective ones of said protrusions in the mounted position of said sleeve, the outboard face of respective ones of the spline pairs forming said protrusions adapted to abut said keyways in two relative positions of said sleeve with respect to said shaft, thereby limiting rotational movement of said sleeve.

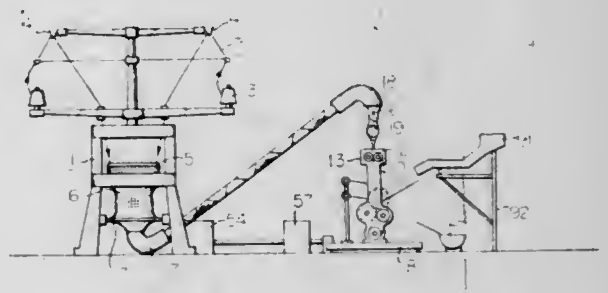
3,872,692
AUTOMATIC DOFFING SYSTEM FOR A CIRCULAR KNITTING MACHINE
Yoshiaki Miyagawa, and Yukio Tanaka, both of Takatsuki, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Sept. 6, 1973, Ser. No. 394,740

Claims priority, application Japan, Aug. 9, 1973, 48-88798

Int. Cl. D04b *15/88*

U.S. Cl. 66—151 **11 Claims**



1. In a circular knitting machine provided with a cylinder which is revolving in carrying out the knitting operation, and a pair of delivery rollers which are continuously downwardly delivering a continuous knitted fabric from a knitting mechanism, and a main driving motor for driving said knitting machine, an apparatus for continuously taking up said knitted fabric comprising,

a turn table disposed outside said knitting machine,

a driving mechanism for driving said turn table so that its rotations are synchronized with and in the same direction as the rotations of said cylinder, during the normal knitting operation,

a take-up means mounted on said turn table and driven by the turning motion of said turn table for winding said knitted fabric on a spindle,

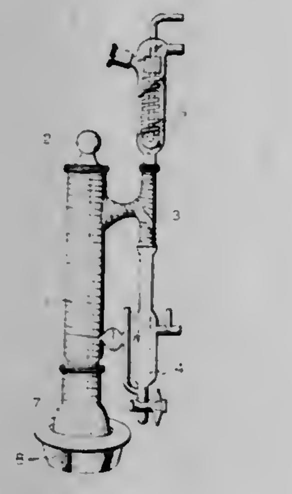
means for transporting said delivered knitted fabric from said delivery rollers to said take-up means,

a mechanism for automatically doffing a fully packaged roll of said knitted fabric formed on said take-up means as said cylinder continues to revolve in carrying out the knitting operation, and means for automatically supplying a fresh spindle to said take-up means.

3,872,693
LABORATORY APPARATUS FOR TREATING COTTON AND COTTON-BLEND TEXTILES WITH ORGANIC SOLVENT VAPORS

Norton A. Cashen, Metairie, and Austin C. F. Mason, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 22, 1974, Ser. No. 453,913
Int. Cl. D06c *1/04*
U.S. Cl. 68—6 **1 Claim**



1. A laboratory apparatus for treating fabric samples with vapors, the apparatus comprising:

a. a vapor-curing chamber comprising a cylindrical tube having top and bottom apertures, the top aperture being a standard female joint of dimensions which permit the passage of a fabric and holder, the bottom aperture being a standard male joint of dimensions compatible with those of a round bottomed flask onto which it would fit; the vapor-curing chamber having an upper and a lower side arm of about one-fourth the diameter of the said vapor-curing chamber, both arms being extended at right angles to the chamber; the said upper side arm extending a short distance thereafter to form a T, said T being tubular and open at each end, to describe an upper and a lower aperture of the crosspiece of the said T; the said upper aperture being a female standard taper joint to fit thereinto a cold-finger type condenser, the said lower aperture being a ball joint extending downward; the said lower side-arm extending a shorter distance outward than the distance of the upper side-arm and terminating outward as a socket joint, and the other end routing through the vapor chamber downward, to allow the distillate to return;

b. a ground glass standard taper stopper to close the upper aperture of the vapor-curing chamber when apparatus is in operation;

c. a cold-finger type condenser to fit onto the upper arm of the upper side arm;

d. an automatic solvent separator which adapts to the side arms of the vapor-curing chamber at the ball and socket joints, said automatic solvent separator comprising a solvent-separator chamber which received the condensed water and other solvent to form a two-layer system of solvents therein; said solvent separator chamber extending downward to form the right arm of a Y, the stem of which Y being provided with a stopcock, the left arm of which extends upward to end in an open syphon-breaker aperture, said left arm having a socket joint which recycles the desired solvent back into the said vapor-curing chamber; said solvent separator chamber having a high, small-diameter tube extending perpendicularly to the right, to drain off the unwanted water; said small diameter tube also having an upward extension which also serves as a syphon-breaker; the said socket joint extending from the left arm of said Y being lower than the axis of the said small diameter tube which extends to the right;

e. clamps to secure said socket joints;

f. a rigid, stainless steel, fabric sample holder, said holder comprising a vertical straight shaft terminating at each end in a coiled configuration, the plannar configuration of each coil being perpendicular to the said vertical straight shaft; said rigid, stainless steel, fabric sample holder being of a dimension compatible to the inner dimensions of the said vapor-curing chamber of (a) and comprising a means of supporting a fabric sample hung thereonto;

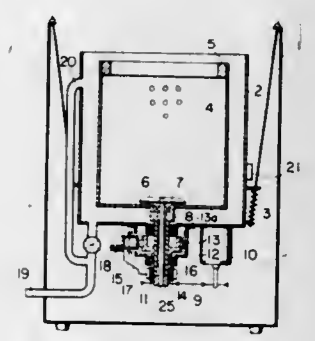
g. a round-bottomed flask with ground glass standard taper joint compatible with the bottom aperture of the said vapor-curing chamber of (a) and being of a volumetric capacity compatible with the requirements of the entire apparatus; and

h. a heating mantle, a source of energy to actuate the mantle, an ice-cold source of water for the cold-finger condenser, supporting brackets and clamps to provide the apparatus with adequate rigidity.

3,872,694
WASHING MACHINE

Tamotu Sikamori, and Haruyuki Kaito, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1973, Ser. No. 359,513
Claims priority, application Japan, May 12, 1972, 47-46352
Int. Cl. D06f *23/04, 33/02*
U.S. Cl. 68—12 R **7 Claims**

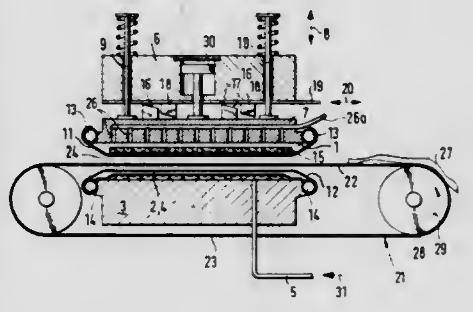


1. A washing machine comprising basket means for receiving articles to be washed, said means being rotatably mounted in a water tank, pulsating means provided for said basket means, pole change motor means for driving said basket means and pulsating means, the number of poles of said motor means being adjustable to control the motor means speed in three steps, clutch means for transmitting driving power from the motor means to the basket means during drying operation of the washing machine, brake means for holding said basket means stationary during washing and rinsing operations of the washing machine, means for operating said clutch means during drying operation of the machine so as to transmit the power from said motor means to the basket means, means for releasing said brake means during drying operation, and switch means for selecting the number of poles of said motor means corresponding to a maximum number or an intermediate number during washing and rinsing operations of the machine.

3,872,695
WRINGER

Josef Busek, Gartenstrasse 16 D-8190 Wolfratshausen, Germany

Filed Oct. 5, 1973, Ser. No. 404,004
Claims priority, application Germany, Oct. 9, 1972, 2249369
Int. Cl. C14b *17/00*
U.S. Cl. 69—47 **8 Claims**



1. A device for wringing flat articles of irregular thickness, having a stationary lower pressure member; a movable upper pressure member oriented towards the stationary presssure member; means for moving the movable pressure member towards and away from the stationary pressure member; an expansible membrane secured to the stationary pressure member and having a face oriented towards the movable pressure member; means for expanding the membrane by liquid pressure for pressing the membrane face against the flat article situated between the two pressure members; a conveyor belt extending between the pressure members for positioning the flat article therebetween, the conveyor belt being structured to allow liquid pressed from the article to flow parallel to the belt faces; the improvement comprising: a first web affixed to said stationary pressure member and extending over said membrane and said stationary pressure member, said first web having a web face oriented towards said conveyor belt; and a second web affixed to and extending over said movable pressure member, said second web having a web face oriented towards said conveyor belt; said first and second webs being of a porous, essentially non-absorbent structure for providing a drainage of the liquid, pressed from the flat article, within each said web in a direction parallel to said web faces.

3,872,696
COMBINATION LOCK AND FAIL-SAFE LATCH FOR EXIT DOORS

Arthur V. Geringer, 5424 Geyser Ave., Tarzana, Calif. 91356

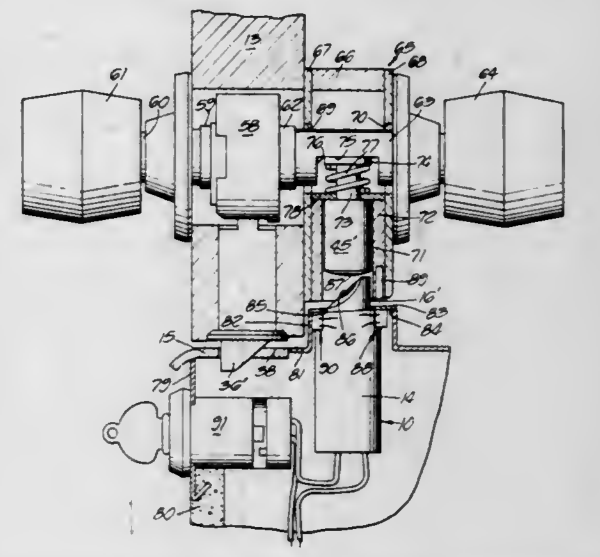
Filed Oct. 15, 1973, Ser. No. 406,570
Int. Cl. E05b *63/14, 59/00, 47/02*
U.S. Cl. 70—145 **17 Claims**

1. Fail-safe locking means for a door element supported for movements to opened and closed positions with respect to an associated door frame element comprising:

a. first and second bolt means each mounted on one of said elements, each of said bolt means being operable between an extended and retracted position in relation to the other of said elements;

b. manual actuating means on one of said elements for said first and second bolt means including:
   an accessible outside member operable to move one of said bolt means to its retracted position, and
   an accessible inside member operable to move both of said bolt means to retractable positions; and

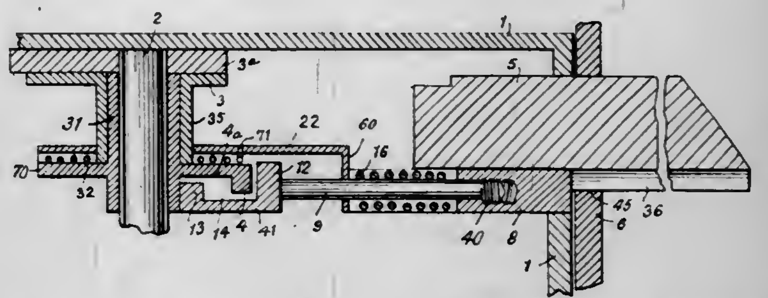
c. electrically controlled means operably associated with one of said bolt means, and upon energization retaining said elements against relative movement from a closed to opened position by said outside member, but upon deenergization permitting relative opening movement of said elements in response to the actuation of the other of said bolt means to its retracted position by said outside member.



3,872,697
LOCK MECHANISM

John F. Wellekens, 51 E. 42nd St., New York, N.Y. 10036

Filed Dec. 5, 1973, Ser. No. 421,943
Int. Cl. E05b *55/00, 9/08*
U.S. Cl. 70—370 **5 Claims**



1. In a lock mechanism, a housing, a bolt therein slidable relatively to the housing, means for normally positioning the bolt with one of its ends projecting in a first position and for a relatively short distance beyond the housing, a sensing bar arranged alongside of and contiguous to the bolt, said sensing bar being slidable relatively to the bolt and to the housing, spring means for causing the positioning of the sensing bar with one of its ends located at and adjacent to the projected end of the bolt while the bolt is in its first position, means including a spring biased rotor for slidably moving the bolt from its first position to a further projected position, cooperating stop elements on the bolt-moving means and on the sensing bar for holding the bolt moving means inoperative while the bolt and sensing bar are in the first position, one of said stop elements being an arcuate flange on the rotor, a second stop element on the sensing bar to limit outward movement thereof and the stop elements on the sensing bar being spaced flanges between which the arcuate flange passes when the sensing bar is in a retracted position, said co-operating stop means being separable to permit the advancement of the bolt by the bolt-moving means under the urge of its spring when the sensing bar is maintained in a retracted position by its contact against a door striker plate.

4. In a lock, a fixed mounting plate, a cup disposed against said plate, a filler fitted within the cup, fastening means extending from the plate and entering into the cup, said fastening means including studs bearing nuts, a lock cylinder carried by the filler, said cylinder carrying a latch having a retractible part extended behind the base of the cup to hold the lock cylinder against displacement, the fastening means being covered and concealed by the filler and the nuts being spaced apart and located to guide parts of the latch between them

when the lock cylinder has the latch inserted between said nuts.

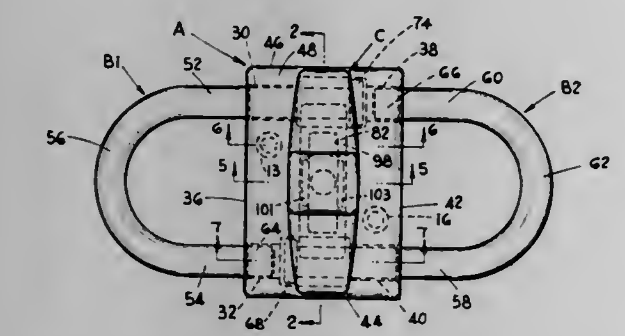
3,872,698
DOUBLE ENDED LOCKABLE KEY HOLDER

Irving Feinberg, Saddle Brook, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Elmwood Park, N.J.

Filed Oct. 10, 1973, Ser. No. 405,118

Int. Cl. A47g *29/10*

U.S. Cl. 70—459 **8 Claims**



1. A device comprising: a housing:

first and second substantially J-shaped shackles slidably supported by the housing and each movable independently of the other in directions parallel to the axes of the legs of the shackles between a closed position and an open position, the shackles being movable in opposite directions from their respective closed positions to reach their respective open positions; and

a manually operable locking member engageable with the shackles connected to the housing and movable with respect thereto for locking either one or both of the shackles in closed position.

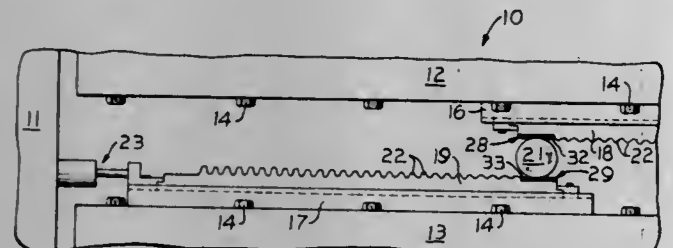
3,872,699
ANTI-SKID ASSEMBLY FOR ROLLING MACHINES

Donald Edward Blue, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 24, 1974, Ser. No. 463,457

Int. Cl. B21h *5/02*

U.S. Cl. 72—88 **6 Claims**



1. In a rolling machine for forming a peripheral configuration on a rotatably supported cylindrical workpiece and having a housing with upper and lower guide means defined thereon, a pair of powered slide members respectively movable along said guide means transversely of the workpiece, and a pair of forming racks mounted upon said slide members for substantially simultaneous movement in opposite directions and having forming projections arranged for tangential engagement with the workpiece, the improvement comprising an anti-skid assembly for assuring proper rotation of the workpiece as it is initially engaged by the forming projections, the anti-skid assembly including a pad of abrasive, oil resistant and resilient material secured to a leading end of each forming rack, the pads being spaced apart from each other by a preselected distance to assure common interference engagement with the workpiece, the pads having a preselected length along the forming axis of the racks in order to bring the workpiece up to a desired rate of rotation commensurate with the lineal speed of the racks prior to its engagement with the forming projections.

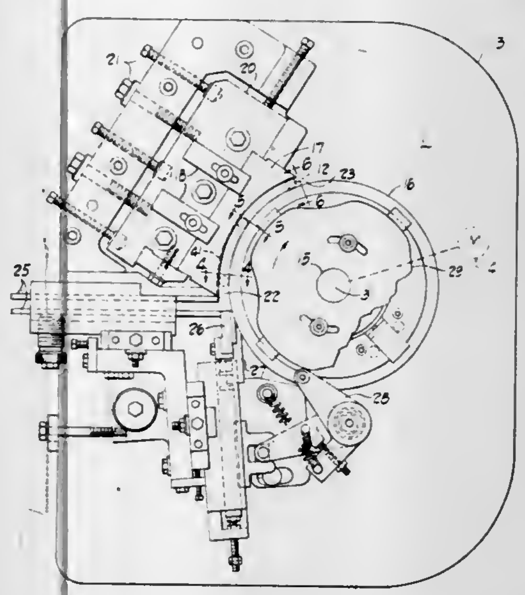
3,872,700
LOCK THREAD DIE SET AND METHOD

Ronald J. Matej, Parma, Ohio, assignor to Prutton Corporation, Cleveland, Ohio

Filed June 18, 1973, Ser. No. 371,274

Int. Cl. B21h *3/06*

U.S. Cl. 72—91 **25 Claims**



18. The method of forming a split crest locking thread on a workpiece using a first and a second die, comprising the steps of:

establishing a first thread form section and a lock thread form section on the working surface of the first die and the first thread form section on the second die,

relatively moving the dies with a circular cross-section workpiece therebetween to form thereon a thread of said first thread form by progressively deforming material from the workpiece to form the root of the thread and the material being moved into two gradually converging rows to form a thread crest,

and relatively moving the dies with the workpiece therebetween to cause said lock thread form section to contact the workpiece and keep the converging rows from closing and instead to spread the rows into two diverging rows at the crest of part of the workpiece thread.

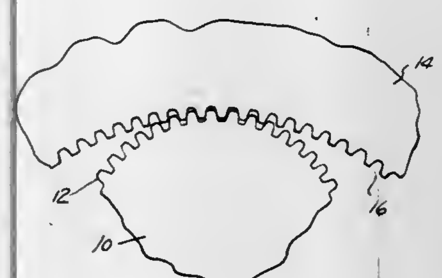
3,872,701
METHOD FOR ROLL FINISHING SPUR GEARS

Richard W. Tersch, Grosse Pointe Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 9, 1973, Ser. No. 404,774

Int. Cl. B21h *5/02*

U.S. Cl. 72—102 **7 Claims**



1. The method of finish rolling a cylindrical pinion member which comprises supporting it in tight mesh with a conjugate internally toothed hardened steel die member with the axes of work pieces and die parallel, driving one of the members directly in rotation and thereby driving the other member as a result of the meshed engagement between the members, and applying pressure of metal deforming intensity between the teeth of the members by relatively moving said members toward each other along a path perpendicular to the axes of both of said members to deform the metal of the teeth of the work gear members to a form conjugate to the form of the teeth on the hardened steel die member.

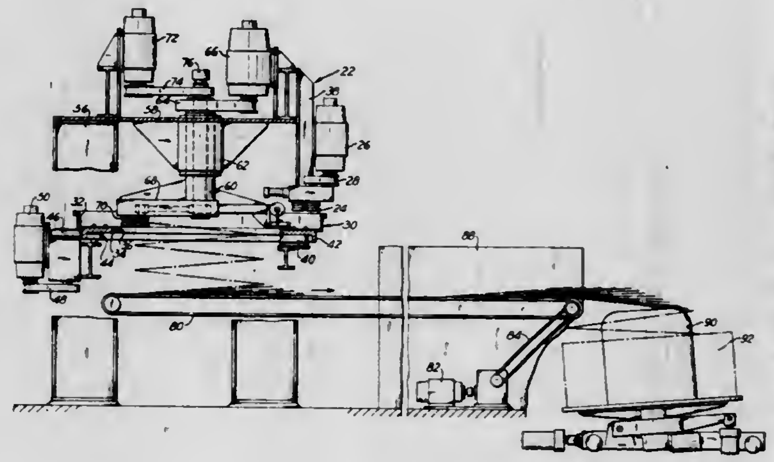
3,872,702
COILING ELONGATED MATERIALS

Jesse C. Bittman, and Ralph B. Long, Jr., both of Cuyahoga Falls, Ohio, assignors to Wean United, Inc., Pittsburgh, Pa., by said Jesse C. Bittman Jesse

Continuation-in-part of Ser. No. 381,308, July 20, 1973, abandoned. This application Nov. 8, 1973, Ser. No. 414,002

Int. Cl. B21f *3/04*

U.S. Cl. 72—145 **10 Claims**



1. In a method coiling elongated material such as bar, rod, wire, tubing, shapes, and the like, wherein during the coiling the convolutions are reformed in a manner that the material is not subject to any objectionable torsional forces about its major axis, the steps of:

subjecting the elongated material while at its original form to a working force to bend the material in a manner to change its form into succeeding convolutions, and wherein the convolutions as they are formed are urged into a circular path defined by their diameters, and

while said bending is being performed on said material causing said working force to orbit about the axes of formations of said formed convolutions so that the convolutions emerge as free non-rotating bodies.

6. In an apparatus for coiling elongated material such as bar, rod, wire, shapes, tubing and the like, wherein during the coiling the convolutions are reformed in a manner that the material is not subject to any objectionable torsional forces about its major axis,

means subjecting the elongated material while in its original form to a working force to bend the material in a manner to change its form into succeeding convolutions, and wherein the convolutions as they are formed are urged into a circular path defined by their diameters, and

means while said bending is being performed on said material for causing said working force to orbit about the axes of formations of said formed convolutions so that the convolutions emerge as free non-rotating bodies.

3,872,703
EXTRUSION

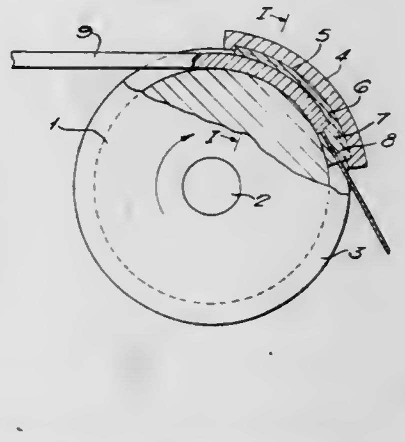
Derek Green, Lytham Saint Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 14, 1973, Ser. No. 388,163

Claims priority, application United Kingdom, Sept. 5, 1972, 41133/72

Int. Cl. B21c *23/00*

U.S. Cl. 72—262 **4 Claims**



1. An extrusion apparatus comprising first and second members defining an elongate passageway therebetween, said first and second members being movable one relative to the other in the direction of the length of the passageway, an abutment member fixed relative to the second member projecting into and blocking the passageway, means defining at least one die orifice leading from the passageway adjacent the abutment member, said orifice extending from said passageway to a point outside said apparatus whereby material fed to said apparatus is extruded therethrough, the amount of the surface area of the passageway defined by the first member which is movable towards the abutment member being greater than the amount of the surface area of the passageway defined by the second member, whereby material fed into the passageway is moved by frictional drag with the surface of the passageway in the first member towards the abutment member and is thereby extruded through the die orifice, and in which said second member is provided with a further portion projecting into and extending over a length of the passageway in front of said abutment member and having a width substantially equal to the width of the passageway and being of lesser depth than the abutment member.

3,872,704
METHOD FOR MANUFACTURING GRAIN-ORIENTED ELECTRICAL STEEL SHEET AND STRIP IN COMBINATION WITH CONTINUOUS CASTING

Tatsuo Ohya; Eizo Sakuma; Minoru Motoyoshi; Masafumi Okamoto, and Kiyoshi Tanaka, all of Himeji-shi, Hyogo-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,496

Claims priority, application Japan, Dec. 24, 1971, 46-471413

Int. Cl. B21b *3/02*

U.S. Cl. 72—364 **1 Claim**

1. A method for manufacturing grain-oriented electrical steel and strip having excellent and stabilized magnetic characteristics in the rolling direction by continuous casting, comprising heating a continuous cast steel slab containing 0.005 – 0.060 percent of carbon, not more than 4.0 percent of silicon, 0.030 – 0.090 percent of manganese and 0.010 – 0.030 percent of sulfur to a temperature from 1250° to 1350°C, hot rolling the slab continuously under the condition that the material is kept for 30 – 200 seconds in the temperature range between 1200° and 950°C, and then cold rolling and annealing the sheet.

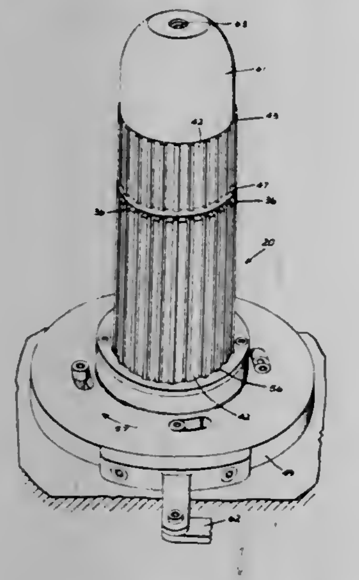
3,872,705
APPARATUS FOR MANUFACTURING SLOTTED CORE STRUCTURES

Eugene C. Bair, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 197,269, Nov. 10, 1971, Pat. No. 3,762,041. This application Sept. 19, 1973, Ser. No. 398,691

Int. Cl. B21b *41/02*

U.S. Cl. 72—393 **7 Claims**



1. Apparatus for shaping a plurality of angularly spaced apart restricted axially extending slot entrance surfaces along a generally cylindrical bore of a laminated magnetic core, said apparatus comprising: a tool carrier, a plurality of tools supported for movement relative to the carrier and angularly spaced apart to correspond to a predetermined angular spacing between restricted slot entrances of the laminated magnetic core; and cam means for urging the tools to a dwell position relative to the carrier and for substantially simultaneously moving said plurality of tools along predetermined paths from the dwell position thereof into force transmitting contact with surface regions of restricted slot entrance surfaces of the magnetic core positioned adjacent thereto and along the generally cylindrical bore; said tools being provided with axially extending core engaging surfaces for shaping the axially extending restricted core slot entrance surfaces so that the slot entrance will have a predetermined axially extending opening of uniform width.

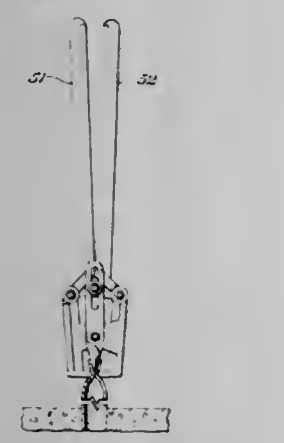
3,872,706
TOOL FOR SEALING END OF TUBING

Jess Miller, 1206 Valley View, Arlington, Tex. 76013

Filed Jan. 10, 1974, Ser. No. 432,354

Int. Cl. B21d *7/024*

U.S. Cl. 72—409 **7 Claims**



1. A tool for crimping a tube at a position close to but spaced from an end thereof and for forming an open ended trough portion at said end, comprising:

a pair of movable members including jaw members with crimping means adapted to be moved apart for receiving the end of a tube and to be moved together for crimping the tube at a position close to but spaced from its end,

a pair of handles coupled to said members for moving said jaw portions and said crimping means apart and together, and

a mandrel carried by said tool and having an end portion located between said jaw portions for insertion into the end of the tube to maintain the end of the tube open when it is being crimped.

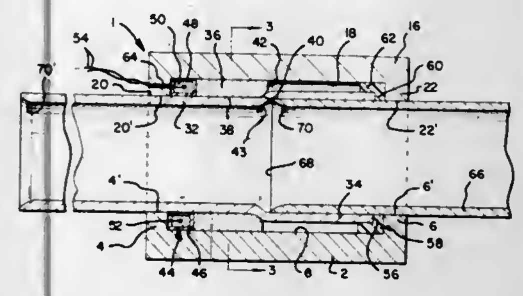
3,872,707
CRIMPED CONNECTION FOR FLARED END CONDUIT

William Franklin Broske, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 184,547, Sept. 28, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 404,087

Int. Cl. B21d *51/00*

U.S. Cl. 72—430 **2 Claims**



1. A subassembly for crimping a first conduit having a flared end portion onto a second conduit partially inserted into the flared end portion of the first conduit, which comprises;

a. a chamber having first and second ends adapted to fit over the area of insertion between the first and second conduits;

b. a die reciprocally mounted in and confined by the chamber, said die encircling the first conduit adjacent its flared end portion;

c. propellant means for driving the die longitudinally over the flared end portion and compressing said portion radially inwardly, said propellant means positioned between the die and the first end of said chambers;

d. detonating means for detonating the propellant means; and

e. a malleable, annular cap positioned on the second conduit between the flared end portion of the first conduit and the second end of the chamber, said cap capable of being radially deformable by said die upon detonation of the propellant means.

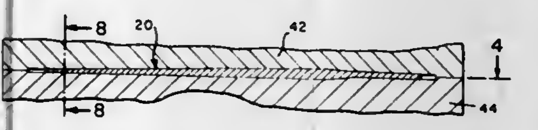
3,872,708
DIES FOR MANUFACTURING DISPOSABLE SCALPEL HANDLE

Clinton M. Cummings, Southbury, Conn., assignor to Acme United Corporation, Bridgeport, Conn.

Division of Ser. No. 306,322, Nov. 14, 1972, Pat. No. 3,817,077. This application June 25, 1973, Ser. No. 372,992

Int. Cl. B21d *37/14*

U.S. Cl. 72—470 **1 Claim**



1. A press-swaging die comprising two cooperating mold members said mold members each comprising:

A. a product surface-producing zone incorporating alternating transverse grooves and ridges, with the grooves of one of said mold members in substantially juxtaposed spaced relationship to the ridges of the other of said mold members

B. a flash-preventing zone
   a. surrounding the entire periphery of the product surface-producing zone, and
   b. defining a substantially flat surface laterally extending in a plane substantially parallel to said grooves; and

C. said mold members being dimensioned to define, at their closest approach during the molding cycle, a spacing between said flash preventing zones for avoiding press-swaging contact between said, flash preventing zones,

whereby no flash is produced during the swaging operation since said flash-preventing zone eliminates excess material flow which otherwise would result in flash production.

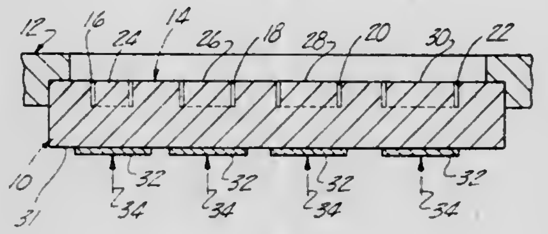
3,872,709
FRACTURE RESISTANCE TESTING METHOD

Victor H. Pagano, Rochester, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 7, 1974, Ser. No. 440,405

Int. Cl. G01n *3/30*

U.S. Cl. 73—12 **12 Claims**



1. A method for testing of short transverse direction fracture resistance in a specimen plate: said method comprising the steps of forming at least one annular groove in one face of a specimen plate to define at least one island; applying shock load to the other face of the specimen plate in areas thereof registering with each island; and ascertaining fractures developed in each island due to the shock load.

3,872,710
APPARATUS FOR MEASURING THE INDEX OF FILTERABILITY OF A LIQUID

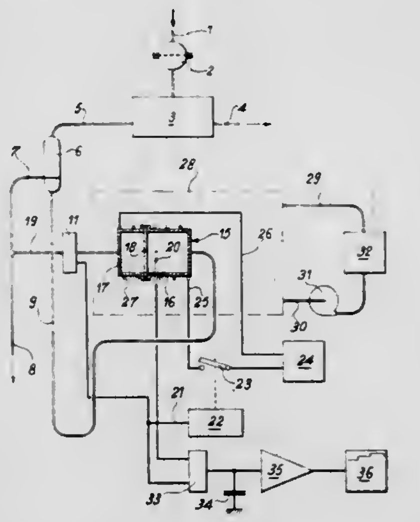
Bernard Louvel, Buros, France, assignor to Entreprise De Recherches Et D'Activites Petrolieres (ELF), Paris, France

Filed Feb. 16, 1973, Ser. No. 332,740

Claims priority, application France, Feb. 28, 1972, 72.06718

Int. Cl. G01n *25/02*

U.S. Cl. 73—17 R **11 Claims**



1. An apparatus for measuring the index and progressive variation of filterability of a liquid and especially a gas oil, wherein said apparatus comprises a distributor for delivering liquid under a standardized pressure into a test cell which is divided into two sections by a calibrated filter, a temperature-sensing element placed in the flowing stream of liquid in the vicinity of the filter, a flow meter for measuring the flow rate across the filter, a system for detecting the stoppage or drop in rate of flow of the liquid within the flow meter and delivering an electrical signal, an element for heating said cell which is controlled by the signal delivered by the flow detector and a unit for cooling said cell, said liquid distributor including a constant-level drum mounted above the cell, said distributor further comprising a feed pipe which passes through a prefilter for the retention of impurities and a coalescer for the removal of water in suspension in the liquid to be tested.

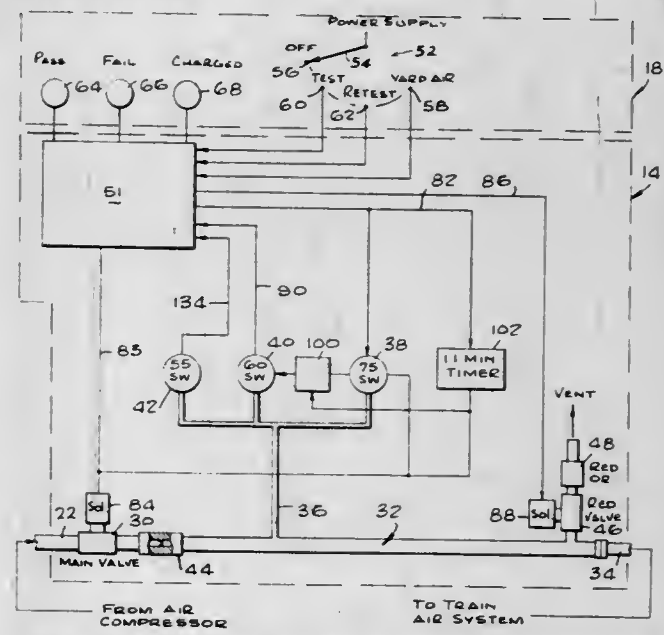
3,872,711
REMOTE TESTING SYSTEM FOR RAILROAD AIR BRAKES

William W. Atkinson, Moraga, and Albert Leathem, El Cerrito, both of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Feb. 1, 1974, Ser. No. 438,848

Int. Cl. G01m *3/02*

U.S. Cl. 73—39 **5 Claims**



1. In a railroad yard testing system for automatically charging and testing the air systems of trains of a variety of lengths by charging the train air brake system to a high pressure and then determining whether the pressure undergoes a predetermined leakage-caused reduction during a leakage-test period, the improvement of apparatus for automatically charging the train air system from a yarn air supply comprising:

a coupling assembly for coupling the yard air supply to the head end of a train air system, including an orifice means for providing a pressure drop during air flow and a solenoid valve operable to disconnect the air supply from the air system;

a first pressure transducer operable to generate a signal when the pressure in the system rises beyond a predetermined level;

means coupled to the first pressure transducer, for maintaining the solenoid valve open until said predetermined pressure is reached;

a timer coupled to the solenoid valve and operable to keep the valve open regardless of pressure, during a predetermined time period after the timer is placed in an operable state;

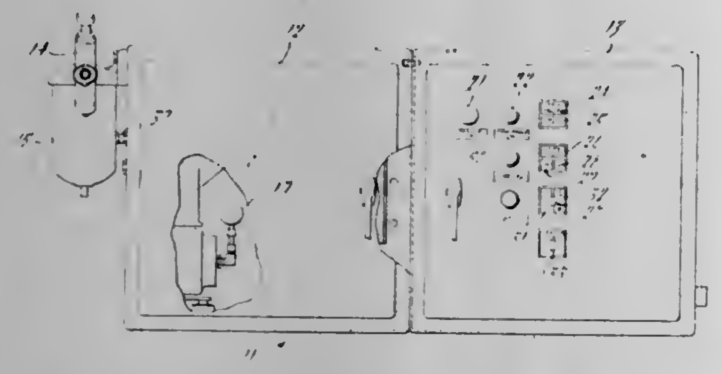
starting means for placing the first transducer and timer in operable states; and means respective to the pressure at the coupling assembly reaching a predetermined level after said predetermined time period, for initiating a pressure reduction and testing cycle, whereby to assure that the entire train air supply has been adequately charged regardless of train length, by measuring air pressure only at the head end of the train.

3,872,712
DYNAMIC AIR FLOW COMPARATOR SYSTEM
James T. Westervelt, Livonia, and Philip E. Swis, Mt. Clemens, both of Mich., assignors to The Cross Company, Fraser, Mich.

Continuation-in-part of Ser. No. 199,930, Nov. 18, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,691

Int. Cl. G01m *3/26*

U.S. Cl. 73—40 **23 Claims**



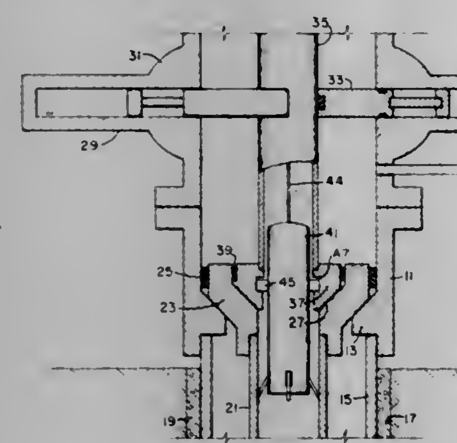
1. In a leak detector unit, means for rapidly pre-filling a workpiece for a predetermined time, means maintaining a test pressure after pre-filling has been accomplished, a flowmeter detecting the flow rate to said workpiece while maintaining said test pressure, said pre-filling means including a fill regulator, a fill and test sequence valve connected between said fill regulator and flowmeter and said workpiece, an adjustable fill timer moving said valve from a first position connecting said fill regulator to said workpiece to a second position connecting said flowmeter to said workpiece, a fill, test and vent sequence valve between said fill and test sequence valve and said workpiece, and an adjustable test timer activatable by said fill timer for shifting said fill, test and vent sequence valve from a first position connecting said fill and test sequence valve to said workpiece to a second position venting said workpiece, whereby said workpiece will be pre-filled until said fill timer shifts the fill and test sequence valve and will thereafter be tested until said test timer shifts the fill, test and vent sequence valve.

3,872,713
CASING SEAL TESTER FOR SUBSEA COMPLETIONS
William T. Ilfrey; John D. McLain, and William W. Todd, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 31, 1973, Ser. No. 328,225

Int. Cl. G01m *3/36, 3/14*

U.S. Cl. 73—40.5 R **5 Claims**



1. Apparatus for testing an annular seal disposed between the exterior of a tubular member and a subsea wellhead or similar assembly from which the tubular member is suspended which comprises:

a. means for isolating the bore of the inner tubular member from the space directly above the annular seal;

b. means for applying pressure to the top of the annular seal to increase the differential pressure acting across the seal without pressurizing the bore of the inner tubular member; and

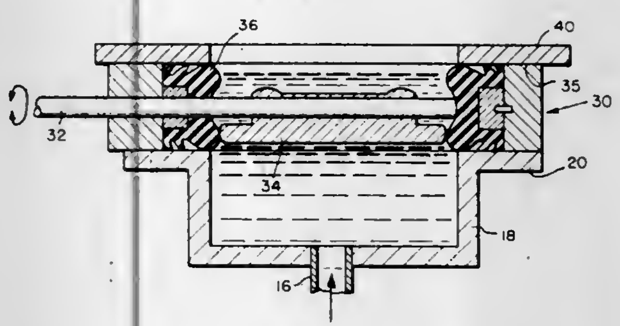
c. means extending within the inner tubular member for monitoring a physical property of that portion of the inner tubular member situated below the annular seal to detect any changes in the monitored property indicative of a change in external pressure acting on the inner tubular member in response to increasing the differential pressure across the seal.

3,872,714
METHOD AND APPARATUS FOR TESTING A VALVE
William L. Carlson, Jr., St. Cloud, Minn., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 29, 1974, Ser. No. 437,553

Int. Cl. G01n *3/08*

U.S. Cl. 73—46 **17 Claims**



1. A method of testing a valve for leakage comprising:

placing a first liquid whose boiling point is slightly higher than the ambient temperature of the surroundings on one side of the valve,

placing a second liquid on the other side of the valve,

increasing the pressure of said first liquid to a predetermined amount, and

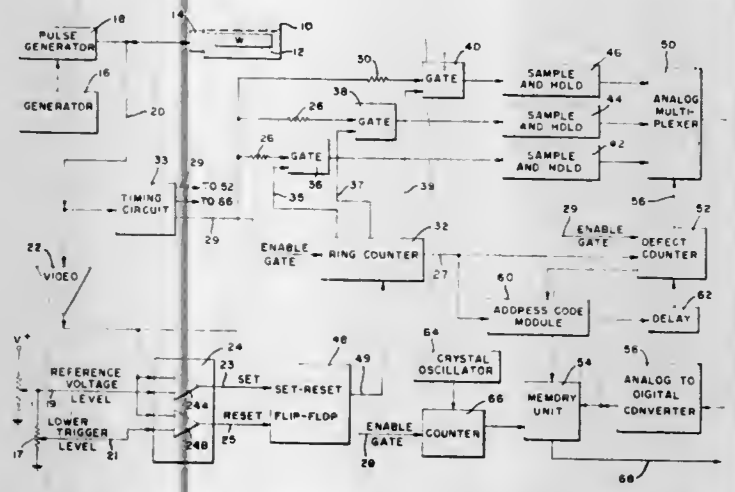
observing said second liquid for bubbles caused by leakage of said first liquid.

3,872,715
ULTRASONIC PULSE-ECHO GATE CIRCUIT
Richard J. Pittaro, Stamford, Conn., assignor to Krautkramer-Branson, Incorporated, Stamford, Conn.

Filed Feb. 13, 1974, Ser. No. 441,978

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.9 **20 Claims**



1. A circuit for an ultrasonic nondestructive test apparatus comprising:

transducer means adapted to be coupled to a workpiece for transmitting an ultrasonic search beam into the workpiece and for receiving echo signals therefrom arising from defects intercepted by said beam;

means coupled for receiving said defect responsive echo signals and for providing defect responsive output signals;

gate means including a plurality of gates coupled for receiving said output signals, one of said gates being open and the remaining gates being closed;

means coupled to said gate means for causing an open gate to close and a closed gate to open responsive to the receipt of a respective one of said output signals, and

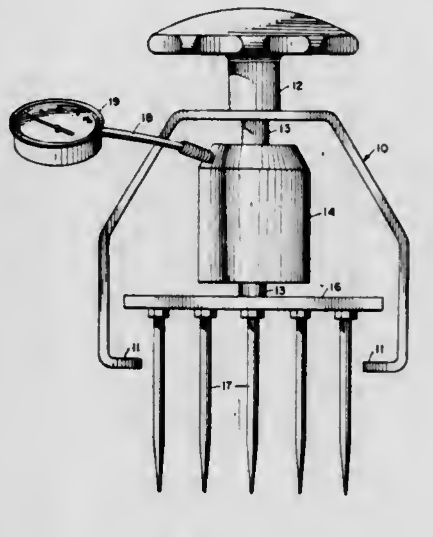
means coupled to each of said gates for receiving the information provided by said output signals and conducted through said gate means.

3,872,716
MEASURING THE TENDERNESS OF MEAT
Leo J. Hansen, Clarendon Hills, Ill., assignor to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 37,728, May 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 776,234, Nov. 15, 1968, , which is a continuation-in-part of Ser. No. 705,722, Feb. 15, 1968,. This application June 21, 1973, Ser. No. 372,008The portion of the term of this patent subsequent to July 20, 1988, has been disclaimed.

Int. Cl. G01n *3/42, 33/12*

U.S. Cl. 73—81 **1 Claim**



1. In a process for testing a raw meat body for measuring its tenderness upon cooking wherein said raw meat contains fibers extending in a known direction, the steps comprising: orienting a probe having a plurality of parallel needles at an angle of 45° to the direction of elongation of said fibers when said meat is raw and said body is mounted in suspension and held firmly in its orginal form against substantial distortion during penetration; forcing said needles to penetrate said raw body to a predetermined depth while maintaining said angle of alignment between said needles and the direction of elongation of said fibers; and measuring the maximum penetration resistance of the raw meat to the insertion of said needles, whereby the measurement includes a composite force representative of the penetration resistance of both the meat fiber and the connective tissue.

3,872,717
SOIL TESTING METHOD AND APPARATUS
Nathaniel S. Fox, 3820 Foxhill Drive, S.E., Marietta, Ga. 30060

Filed Jan. 3, 1972, Ser. No. 214,730

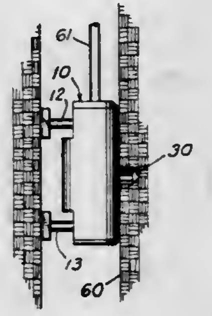
Int. Cl. G01n *33/24*

U.S. Cl. 73—84 **7 Claims**

7. A method of conducting on-the-site soil penetration measurements in a preformed test bore hole, said method including the steps of:

a. lowering soil penetration means to a predetermined depth in a preformed test bore hole;

b. applying pressure to an area of the soil walls in the test bore hole adjacent said predetermined depth;



c. effecting a penetration laterally into the walls of the soil of said preformed test bore hole at said predetermined depth;

d. measuring the distance of said penetration; and

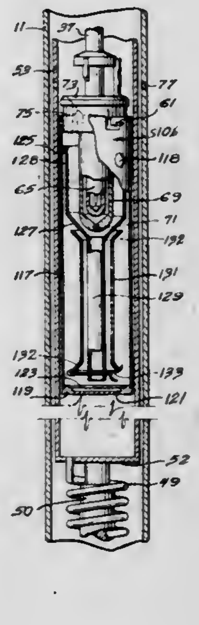
e. measuring the force required to effect said penetration.

3,872,718
MULTIPURPOSE SAMPLER DEVICE FOR LIQUID METAL
Paul A. Nelson, Wheaton; Verne M. Kolba, Plainfield, and John T. Holmes, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,129

Int. Cl. G01n *1/10, 17/00*

U.S. Cl. 73—86 **10 Claims**

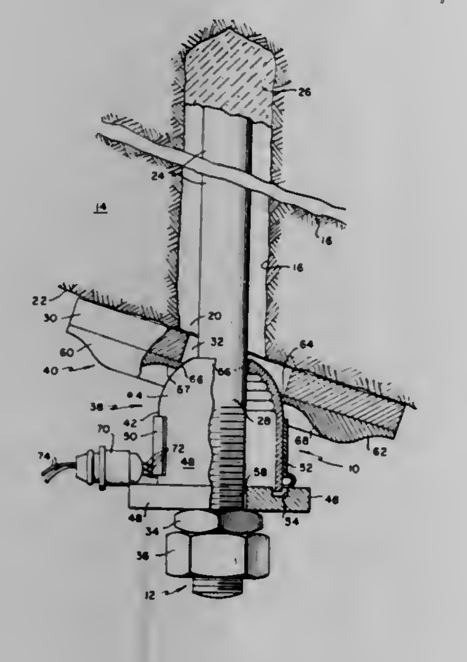


1. A multipurpose sampler device for use in the examination of liquid metals comprising an elongated, vertical casing having removable suspension means for supporting a detachable insert within the upper portion of said casing; heater means surrounding said casing for establishing an isothermal zone in the upper portion around said insert and a heating zone in the lower portion thereof; port means for passing entering liquid-metal flow through said heating and isothermal zones into the top of said insert; and a helical coil of tubing in flow communication with said insert for discharging liquid metal therefrom, said tubing extending through said heating zone in heat exchange contact with said flow of entering liquid metal.

3,872,719
ROCK BOLT TENSION LOAD CELL

Michael J. Beus, Spokane, and Earl L. Phillips, Newman Lake, both of Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 24, 1973, Ser. No. 409,104
Int. Cl. G01b *7/16*
U.S. Cl. 73—88 F **5 Claims**



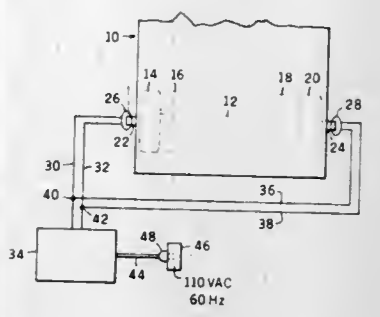
1. An arrangement for measuring stress in an enlongated element affixed to a substance subject to deformation, said substance having an external surface and an internal surface wherein one end of said element is fixedly anchored and a portion thereof projects from said substance such that an opposite end of said element is situated beyond said external surface, including a bearing means slackly fitted on said element and adapted to be maintained in pressured contact with said external surface by pressure applying means engaging said element adjacent said opposite end thereof and settable by adjustments thereof on said element, an improvement in said arrangement comprising resilient means having connections to a strain signal detecting and indicating apparatus and operable in response to strain developed therein to affect the signal detected and indicated by said apparatus, a resilient structure comprising a shell-like body with which said resilient means are rigidly bound, said shell-like body having a convex portion at one end and a rim portion at an opposite end, and a planar part which is engaged by said rim portion and in contact with said pressure applying means, and a further means slackly fitted on said element adjacent said bearing means and having a concave portion and a planar portion, said planar portion contacting said bearing means and said concave portion contacting said convex portion of said shell-like body, whereby adjustments of said pressure applying means produces a force acting through said planar part, said shell-like body, and said further means which maintains said bearing means in pressured contact with said external surface.

3,872,720
ASSEMBLY LINE METHOD FOR TESTING ANTI-SKID INSTALLATIONS

Joseph E. Fleagle, Overland, and Richard C. Bueler, Des Peres, both of Mo., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Jan. 14, 1974, Ser. No. 433,275
Int. Cl. G01m *17/00*
U.S. Cl. 73—121 **7 Claims**

1. A method for testing vehicle skid control installations comprising at least one sensor installed in each axle of the vehicle for sensing wheel velocity data including rates of change in that velocity, a logic system connected for interpreting the data sensed by the sensor and for commanding brake control functions as required in response to the data interpreted by the logic system, the method including the steps of: activating the skid control installation to be tested by applying electrical and fluid power thereto;



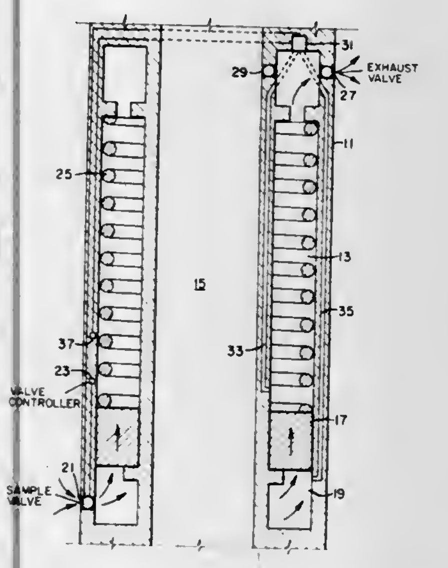
placing an induction coil adjacent each sensor to be tested; connecting the coil to receive a selected electrical input signal for simulating selected conditions in the sensor; and

altering the selected signal for controlling the selected conditions.

3,872,721
DOWNHOLE GAS DETECTOR SYSTEM

William T. Ilfrey, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 28, 1973, Ser. No. 336,568
Int. Cl. E21b *47/06*
U.S. Cl. 73—151 **9 Claims**



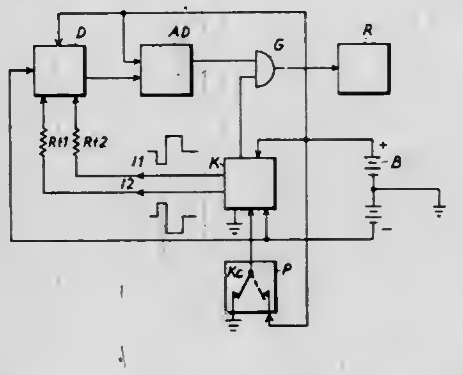
9. A method of continuously performing a subsurface test for the presence of gas in drilling fluid during the course of a drilling operation conducted from a floating vessel wherein a drill string extends downwardly from the vessel into a well extending beneath the earth's surface comprising:

a. positioning a tubular member having an expansible sample chamber in the wall thereof in the drill string and near its lower end;
b. circulating drilling fluid through the drill string so as to create a pressure differential between the interior and exterior thereof;
c. employing the said differential pressure to expand and contract the sample chamber so as to admit, isolate, expand and discharge a fluid sample therefrom without interrupting the drilling operation;
d. monitoring the pressure behavior of the expanding sample and generating a surface detectable signal whenever the pressure volume behavior of the fluid sample is indicative of the presence of gas in the drilling fluid; and
e. reinitiating the expansion and contraction cycle and continuing the same without intervention from the earth's surface.

3,872,722
LOW DRAIN PULSE GENERATOR

Stig Ingvar Karlsson, Karlskrona, Sweden, assignor to AB Svensk Varmematning, C.B.-System, Bromma, Sweden

Continuation-in-part of Ser. No. 256,925, May 25, 1972, Pat. No. 3,812,713. This application Dec. 3, 1973, Ser. No. 421,107
Claims priority, application Sweden, Dec. 8, 1972, 16037/72
Int. Cl. G01k *17/10*
U.S. Cl. 73—193 R **1 Claim**



1. An apparatus for measuring the thermal properties of a flowing fluid comprising: temperature dependent elements for generating, in response to a voltage pulse applied to each of said elements; first and second electric currents which are proportional to the temperature at first and second regions of said flowing fluid; differential means for generating the difference current of the first and second electric currents which represents the temperature difference between said two regions; analog-to-digital conversion means for converting said difference current into a first pulse train with a pulse repetition rate proportional to the amplitude of said difference current; a volumeter means for measuring a predetermined volume of the flowing fluid and including a first means which is activated each time a predetermined volume has been measured; pulse generating means (K) controlled by said first means in said volumeter means for transmitting said voltage pulse to said temperature dependent elements for each volume indication; a gating means having a first input connected to said analog-to-digital conversion means and a second input connected to an output of said pulse generating means;; a D.C. voltage source connected as a supply voltage to said pulse generating means; and said pulse generating means including a first and a second monostable flip-flip each of which has a trigger input and an inverting and a non-inverting output, the trigger input of said first flip-flop being connected to the output of said volumeter means and the trigger input of said second flip-flop being connected to the inverting output of said first flip-flop, the non-inverting output of said first flip-flop being connected to the second input of said gating means, a pulse generating circuit for generating a voltage pulse having a predetermined duration and having two inputs and an output, said inputs each being connected to the same outputs of each of said flip-flops, and output transformer means, connected to the output of said pulse generating circuit, for transmitting to each of said temperature dependent elements the voltage pulse generated by said pulse generating circuit.

3,872,723
METHOD AND APPARATUS FOR MEASURING THE AVERAGE LIQUID FLOW OF A RECIPROCATORY PUMP

Ulrich Busch, Karlsruhe, Germany, assignor to Hewlett-Packard GmbH, Boblingen, Germany

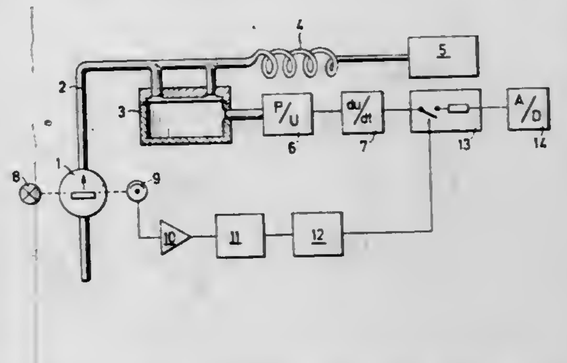
Filed Dec. 19, 1973, Ser. No. 426,416
Claims priority, application Germany, Dec. 28, 1972, 2263768
Int. Cl. G01f *13/00*
U.S. Cl. 73—194 R **12 Claims**

1. Apparatus for measuring the liquid flow rate pumped by a cyclically operable, reciprocating pump having feed and return strokes, especially for use with gradient elution by a liquid chromatographic device, said apparatus comprising: liquid storage means and liquid flow resistant means connected

to the output of said pump,

said liquid storage means having a volume substantially proportional to the pressure applied thereto by the liquid being pumped; and a capacitance C defined by the change in volume with said applied pressure;

said liquid flow resistant means having a resistance R to the flow of liquid;



wherein the RC time constant resulting from the product of said resistance and capacitance is greater than the cycle time of said reciprocating pump;

means for sensing the variations in pressure exerted on said liquid storage means by the liquid being pumped;

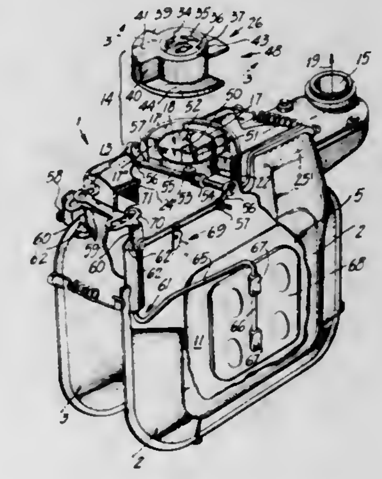
timing means for producing timing signals related to the return stroke of said reciprocating pump; and

signal processing means responsive to the outputs of said sensing means and said timing means for producing a signal representative of said variations in pressure during at least a portion of the return stroke of said pump, said last named signal being indicative of the flow rate of the pumped liquid.

3,872,724
GAS METERS

Jorge Passeri, Buenos Aires, Argentina, assignor to Galileo Argentina, Comercial, Industrial Y Financiera, Sociedad Anonima, Buenos Aires, Argentina

Filed Dec. 20, 1972, Ser. No. 317,086
Claims priority, application Argentina, Dec. 21, 1971, 239724
Int. Cl. G01f *3/20*
U.S. Cl. 73—267 **2 Claims**



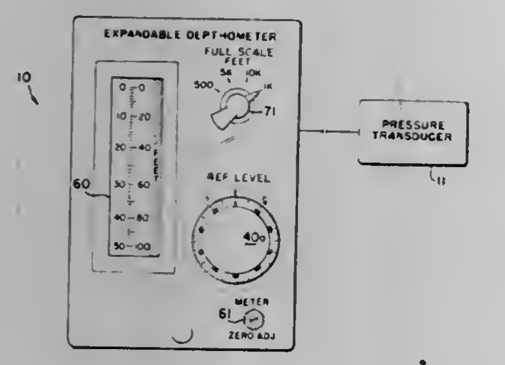
1. In a gas meter comprising a gas-tight casing having two measuring chambers defined therein; a gas inlet and a gas outlet; two diaphragms, one diaphragm being movably mounted in each chamber to define four subchambers; rotary valve means for controlling the flow of gas into and out of said subchambers; means for receiving linear movement from said diaphragms, converting the linear movement into rotary movement and applying the rotary movement to said rotary

valve means; and means for indicating the quantity of gas flowing from said inlet to said outlet in response to movement of said diaphragms, the improvement conprising means for varying the relative angular position between said rotary valve means and the means for applying rotary movement to said valve means, said means for varying the relative angular position are a connector member having a portion for receiving said means for applying rotary movement to said valve means, said connector member being angularly movable with respect to said rotary valve means and adapted to be secured thereto in a selected relative position.

3,872,725
EXPANDABLE DEPTHOMETER

Thomas Wojewski, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,385
Int. Cl. G01f *23/18;* **G01l** *9/02*
U.S. Cl. 73—300 **4 Claims**



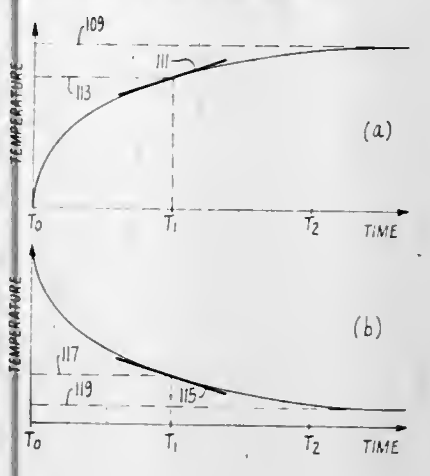
1. A depthometer having an expandable scale comprising: means for generating a signal proportional to ambient pressure;
  - means coupled to the generating means, for providing a visual readout in response to the proportional signal;
  - means joined to the generating means and the providing means for setting a signal representative of a variable reference datum level from which relative depth readings are observed on the providing means;
  - means coupled to the setting means for varying its impedance to ensure the zeroing of the providing means, such zeroing being necessitated by the varying length of leads joining the generating means to the providing means; and means coupled to the generating means for passing a low impedance said proportional signal to the providing means;
  - means joined to the setting means and the providing means for feeding said signal representative of the variable reference datum level to the providing means;
  - means connected to the generating means, the providing means and the setting means for selecting a range scale for the providing means from which the visual readouts of the relative depth readings are observed; and
  - means connected to all the aforerecited means for supplying power thereto.

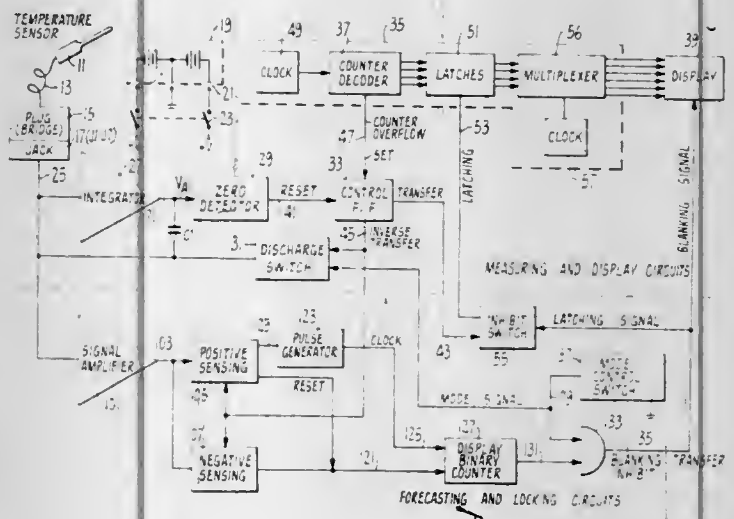
3,872,726
ELECTRONIC DIGITAL READ-OUT CIRCUIT FOR A CLINICAL THERMOMETER

Ludwig Kauffeld, San Diego, and Perry V. Holst, Chula Vista, both of Calif., assignors to Diatek, Inc., San Diego, Calif.

Filed Jan. 19, 1972, Ser. No. 218,787
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **18 Claims**

1. In an electronic instrument having an input for receiving from a transducer a voltage that is proportional to a condition such as temperature that is being sensed by the transducer, electronic circuits comprising:
  - means including an integrating capacitor for integrating said voltage from a transducer, said integrating means being connected to said input for charging said capacitor an amount proportional to the magnitude of said voltage from the transducer,
  - a free running binary counter having an output signal each cycle of the counter upon its reaching a predetermined count, said counter connected so that the periods between each of successive output signals are exactly the same,
  - means connected to said integrating means for providing a discharge path for said capacitor,





  - means for connecting said discharge means to said capacitor in response to each of said counter output signals,
  - means responsive to the voltage across said capacitor for disconnecting said discharge means and for immediately beginning charging of said capacitor responsive to said input voltage when the capacitor voltage reaches a certain predetermined minimum,
  - means for detecting the count of said binary counter upon operation of said discharge disconnecting means when said voltage reaches said predetermined minimum level, whereby the detected count of said counter is a measure of the capacitor discharge time and is proportional to the input voltage being measured.

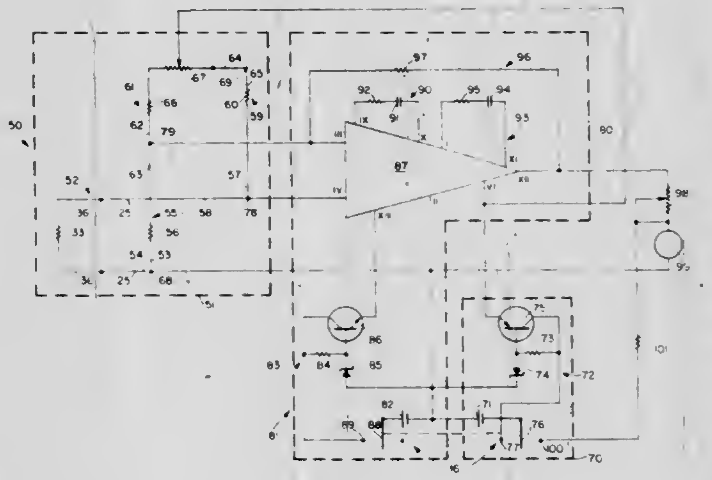
3,872,727
DISPOSABLE ELECTRICAL THERMOMETER SYSTEM AND COMPONENTS

Gene A. Johnson, 907 Campus Ave., Santa Ana, Calif. 92373

Filed Aug. 10, 1972, Ser. No. 279,621
Int. Cl. G01k *7/20*
U.S. Cl. 73—362 AR **2 Claims**

1. In a thermometer system including a detachable temperature probe containing a temperature sensitive element, a resistance bridge circuit, a fixed potential source, an amplifier, and an ammeter, the improvement comprising:

- a. said temperature probe being inexpensive and disposable and including:
  - i. an elongated tube,
  - ii. a plug mounted on the first end of said tube and having a cross sectional shape adapted to limit its insertion into a socket to a single orientation and a pair of grooves along its length,
  - iii. a metal cap mounted on the second end of said tube and being filled with an electrically insulating solid material comprising a cured adhesive material having metal powder distributed throughout it adapted to increase its heat conductivity while remaining electrically insulating,
  - iv. a temperature sensitive element consisting of a short metal sensing wire having a selected total resistance at a predetermined temperature, a stable substantially linear, small resistance change per unit temperature change of less than 1% per degree centigrade, having a length which is less than the diameter of said tube and being embedded in said solid material in said cap, and
  - v. a pair of insulated lead wires connected to the opposite ends of said sensing wire and extending through said elongated tube and said plug whose grooves are adapted to receive said lead wires;

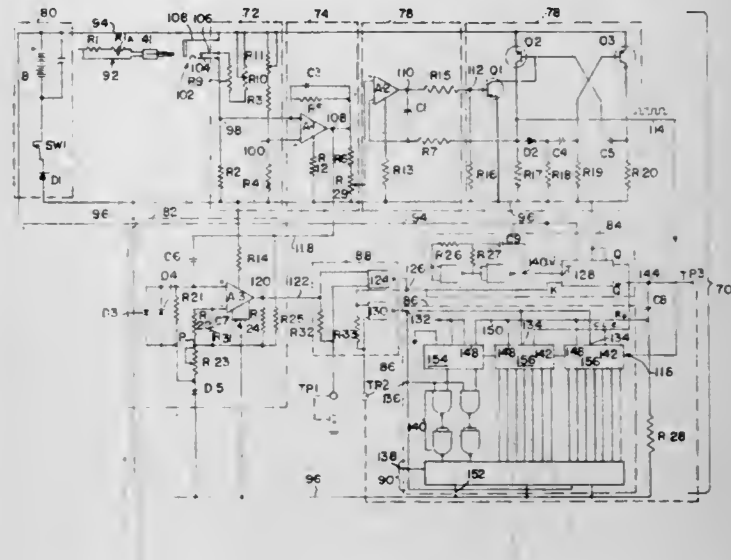


- b. said resistance bridge circuit having a first arm comprising said sensing wire, a second and third arm each joined at one end by means of said plug to opposite ends of said first arm and a fourth arm opposing said first arm and joined at opposite ends to the other ends of the second and third arms, each of said second, third and fourth arms comprising a resistance element having a selected fixed resistance substantially stable with respect to temperature change and said fourth arm having a variable resistance adapted to balance said bridge at said predetermined temperature;
- c. said fixed potential source being connected across the junctions between said first and second arms and between said third and fourth arms;
- d. said amplifier being a differential amplifier circuit connected across the junctions between said first and third arms and between said second and fourth arms and being adapted to amplify the current flow resulting from the resistance change in said first arm caused by a temperature change by a factor of at least 300; and
- e. said ammeter being connected to the output of said amplifier circuit and adapted to indicate the magnitude of said current flow in said first arm and thereby indicate the temperature sensed by said sensing wire.

3,872,728
ELECTRONIC TEMPERATURE MEASURING INSTRUMENT

Michael F. Joyce, and George M. Balmes, both of 1321 Birchwood Ave., Chicago, Ill. 60626

Filed Oct. 10, 1972, Ser. No. 296,076
Int. Cl. G01k *7/20*
U.S. Cl. 73—362 AR **15 Claims**



1. A portable, battery-powered clinical thermometer apparatus adapted for repeated measurement and display of the temperature of a patient, said apparatus comprising, in combination, temperature detecting means including a resistor having substantialy the same change of resistance for each unit of temperature change, control signal generating means for generating a control signal having a magnitude which is a function of the resistance of said temperature detecting means, pulse generating means for generating a plurality of discrete electrical pulses at a rate proportional to the magnitude of said control signal, means for counting the number of said pulses occurring within a predetermined time, display means for displaying the number of said pulses counted during said predetermined time, rate detecting means coupled to said control signal generating means and independent of said pulse generating means and said counting means for detecting the instantaneous rate at which the temperature measured by said temperature detecting means is changing in response only to said control signal generating means, and display control means coupled between said rate detecting means and said display means for rendering said display means operative in response to said rate detecting means only when said instantaneous rate of temperature change reaches a predetermined value, whereby the number of pulses occurring and being counted during said predetermined time bears a proportional and substantially linear relation to the resistance of said temperature response means and the number of pulses displayed indicates the true temperature of the patient.

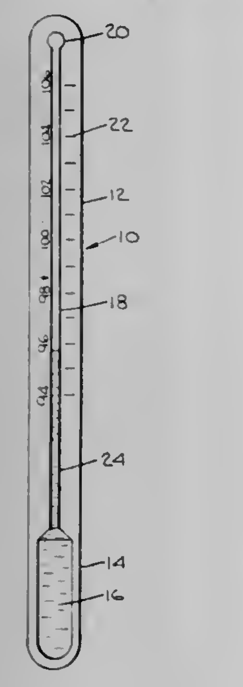
3,872,729
CONSTRICTIONLESS THERMOMETER PROVIDED WITH ADHESIVE

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,378
Int. Cl. G01k *5/22*
U.S. Cl. 73—371 **4 Claims**

1. In a thermometer of the type comprising a thermometer bulb, an expansible liquid in said bulb, and a capillary extending from the bulb, with said expansible fluid flowing from the

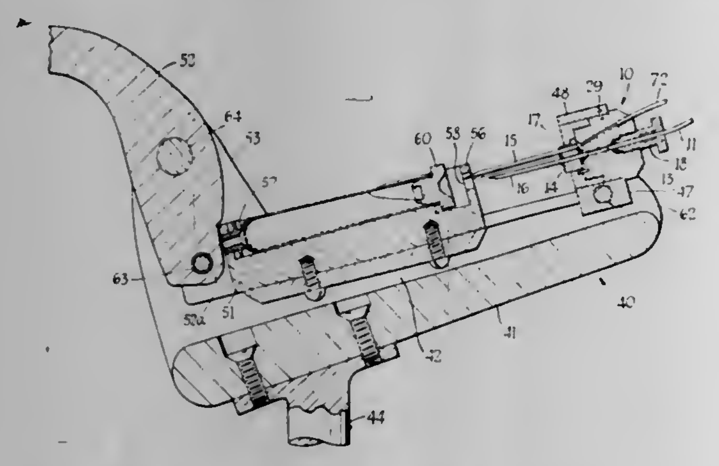
bulb into the capillary during warming of the thermometer, the improvement comprising: at least a portion of the capillary



having a coating of adhesive material, said material having an affinity for said liquid.

3,872,730
SAMPLING APPARATUS

Michael Andrew Ringrose, and John Ronald Coy, both of London, England, assignors to Becton, Dickinson and Company, Rutherford, N.J.
Filed Mar. 7, 1973, Ser. No. 339,023
Claims priority, application United Kingdom, Mar. 10, 1972, 11413/72
Int. Cl. A61j *1/06;* **G01n** *1/10*
U.S. Cl. 73—421 B **12 Claims**



1. A method of withdrawin a sample of fluid from a container which is sealed by a cap formed from a material which can be readily pierced by a sampling needle and which will reseal the aperture formed by the sampling needle when the sampling needle is withdrawn, comprising the steps of:

venting the container through the cap while maintaining the container in substantially upright position before the sampling needle passes through the cap, whereby the pressure in the container is approximately equalized with atmospheric pressure;

inserting a sampling needle through the cap and into the container;

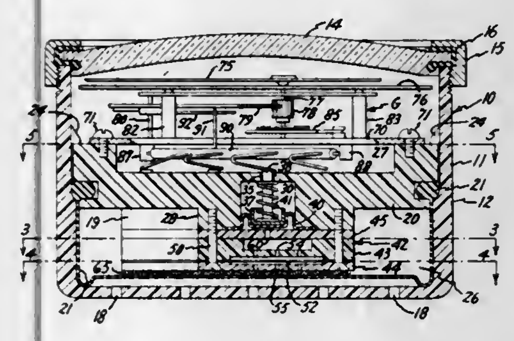
tilting the container subsequent to venting of the container so that the fluid is positioned adjacent the cap and the sampling needle extends into the fluid;

withdrawing a sample of fluid from the container by applying suction to the sampling needle; and

withdrawing the sampling needle through the cap, whereby the cap wipes the sampling needle as it is withdrawn and thereafter reseals the container.

3,872,731
MINIATURIZED AUTOMATIC DECOMPRESSION COMPUTER

Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 9, 1973, Ser. No. 404,435
Int. Cl. G01f *23/14;* **G06g** *5/00*
U.S. Cl. 73—432 R **5 Claims**



1. A decompression meter for use in diving excursions which comprises,

a. ambient pressure-sensing means including an ambient-pressure gas chamber;

b. computer means comprising a time-constant gas chamber having a pressure port and a gas diffusion membrane separating the time-constant gas chamber from the ambient-pressure gas chamber for measuring continuously the uptake and release of gas of human tissues under fluctuating hyperbaric ambient pressures; and,

c. indicator means including a gauge operatively associated with the computer means for indicating the appropriate decompression schedule in terms of hyperbaric pressures and time intervals,

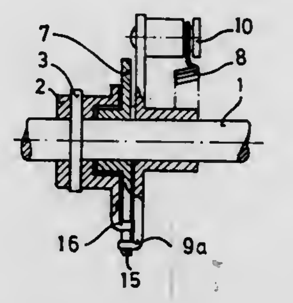
said gauge including an indicator and a mechanical assembly operative to actuate the indicator in response to fluctuation in gas pressure in the time-constant gas chamber comprising,

1. pressure-responsive means comprising a resilient diaphragm fluid-tightly closing the time-constant gas chamber pressure port and a piston for reciprocating motion toward and away from the time-constant gas chamber in response to changes in gas pressure in the time-constant gas chamber,
2. gear means including a pinion gear fixed to the indicator and a rack in driving engagement with the pinion gear,
3. lever means in driving engagement with the rack and driven engagement with the pressure-responsive means.

3,872,732
DEVICE FOR MOVING THE PISTON ROD OF A PISTON PUMP

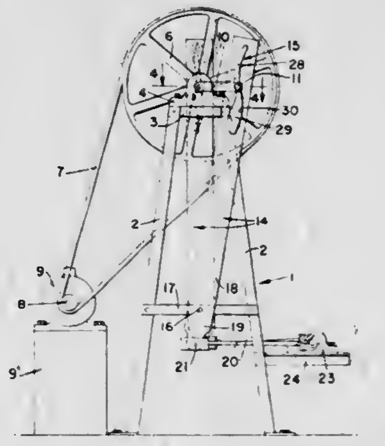
Heinz Dzaack, Enebyberg, and Hans Krook, Sollentuna, both of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden
Filed Feb. 28, 1974, Ser. No. 446,744
Claims priority, application Sweden, Feb. 28, 1973, 7302785
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **2 Claims**

1. Device for moving the piston rod of a piston pump, wherein a piston driving rod is axially movable between two stops, at least one of said stops being movable for obtaining different piston strokes, characterized in, that it comprises an alternatively in two directions of rotation driven shaft, provided with a driving disc, a connecting disc, journalled on said shaft and resiliently engaged to said driving disc and a driven disc journalled on said axis and engaged to said rod so as to move the rod axially when rotated with said shaft, said driven disc being engaged to said connecting disc by means of a spring connected between said driven disc and a mounting which is fixed in relation to the rotation of said shaft.



3,872,733
MOTION TRANSMITTING APPARATUS

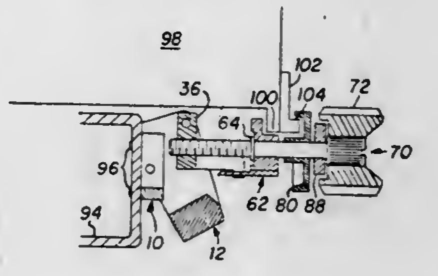
James C. Sanderson, 1440 Lafayette Blvd., N.W., Roanoke, Va. 24017
Filed Apr. 16, 1974, Ser. No. 461,364
Int. Cl. F16h *21/14*
U.S. Cl. 74—66 **9 Claims**



1. A motion transmitting apparatus including, a drive shaft, a pulley fixed to said drive shaft, power means connected to said pulley to rotate said drive shaft, a pair of crank arms carried by said drive shaft, a pair of rock levers each having a minor section and a major section with an intermediate pivot point, the free end of each said major section disposed adjacent one said crank arm, each said lever major section provided with an elongated cam slot bounded by a continuous cam track, each said cam slot having an upper and a lower curved section with said lower curved sections defining a substantially greater slot width than said upper curved sections, drive means on each said crank arm disposed through one said slot and engaging said respective lever cam track whereby rotation of said drive shaft causes said crank arm drive means to revolve about said drive shaft while said major and minor lever sections oscillate about said pivot point whereby, said drive means engages juxtaposed portions of said upper cam tracks and alternately but one side of said lower cam tracks at a time as said crank arm drive means rotates and travels within said slot upper and lower curved sections respectively, a connecting rod having one end pivotally attached to each said lever minor sections, a power shaft including a pair of cranks and each said crank joined to the other end of said connecting rods whereby, said oscillation of said lever minor sections causes said connecting rods to reciprocate and said power shaft to rotate.

3,872,734
HOLD-DOWN/EXTRACTION APPARATUS

William C. Riethmeier, Yorba Linda, Calif., assignor to Rockwell International Corporation, Dallas, Tex.
Division of Ser. No. 243,173, April 12, 1972, Pat. No. 3,756,087. This application Aug. 24, 1973, Ser. No. 391,391The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **5 Claims**



1. Apparatus for inserting a module into and removing it from an opening by applying forces to one end thereof with respect to the opening and comprising, in combination:

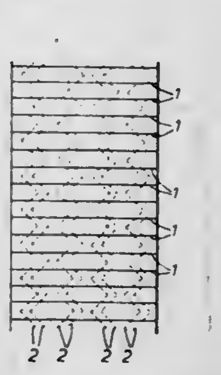
force means for attachment at one end to a module to be inserted and extracted and for attachment at the other end to a pivotal connection, an imaginary line between the points of attachment forming a reference vector;

mounting means for attachment to a structure defining an opening into which the module is to be inserted and extracted from; and

pivotal means connecting said force means to mounting means whereby insertion forces on a module move said pivotal means to a first position wherein the reference vector has a substantial component perpendicular to the base of the opening and extraction forces on a module move said pivotal means to a second position, displaced in space with respect to said first position, wherein the reference vector is substantially parallel with the base of the opening.

3,872,735
POWER TRANSMITTING BELTING MATERIAL

Josef Hnatek, Hoxter, Germany, assignor to Hoxtersche Gummifaden-Fabrik Emil Arntz KG, Hoxter, Weser, Germany
Continuation of Ser. No. 62,902, Aug. 11, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 246,084
Claims priority, application Germany, Aug. 16, 1969, 1941821
Int. Cl. F16g *1/00, 5/00*
U.S. Cl. 74—231 R **6 Claims**

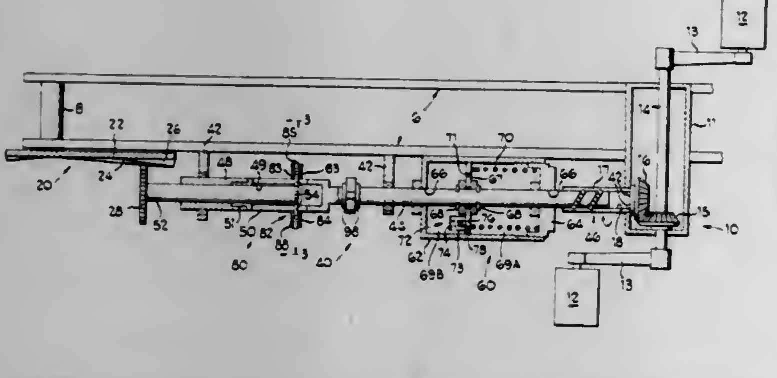


1. In combination with a molded power transmitting belt structure, a belting material comprising

a strip of woven fabric having warp threads extending substantially longitudinally in the belt structure, and weft threads extending tranversely in the belt structure, said warp threads being substantially finer than said weft threads and crimped so as to be capable of elastic elongation by at least 90% of its original length whereby the fabric in the belt structure is capable of a relatively high elastic elongation in its longitudinal direction accompanied by substantially zero contraction in its transverse direction.

3,872,736
CYCLE TRANSMISSION

Michael P. Houvouras, 5351 W. Giddings, Chicago, Ill. 60630
Filed Mar. 16, 1973, Ser. No. 341,948
Int. Cl. F16h *5/52*
U.S. Cl. 74—337 **3 Claims**

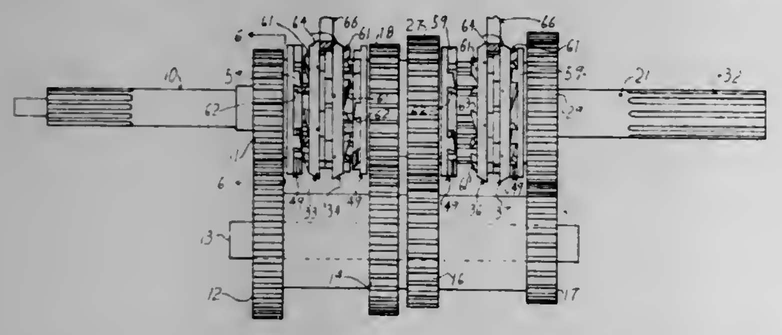


3. A transmission for a cycle having at least two wheels, a supporting frame and means for receiving power input, said transmission comprising:

a. variable gear assembly connected to one of said wheels and having variable speed ratios; and
b. transmission means drivingly interconnected between said means for receiving power input and said variable gear assembly and including torque sensing means for sensing a change in the torque input and for varying the torque output of said gear assembly in response thereto; and
c. said torque sensing means includes a dashpot to minimize variations in torque input.

3,872,737
SELECTOR FOR A TRANSMISSION

Dalton A. Thomas, Childersburg, Ala., assignor to Hazel Beasley Thomas; Woodford R. Thompson, Jr.; Carter, Hugh P.; William K. Murray and J. Reese Murray, all of Birmingham, Ala., a part interest to each
Continuation-in-part of Ser. No. 254,862, May 19, 1972, Pat. No. 3,780,840. This application Oct. 26, 1973, Ser. No. 410,020
Int. Cl. F16g *1/18*
U.S. Cl. 74—339 **14 Claims**

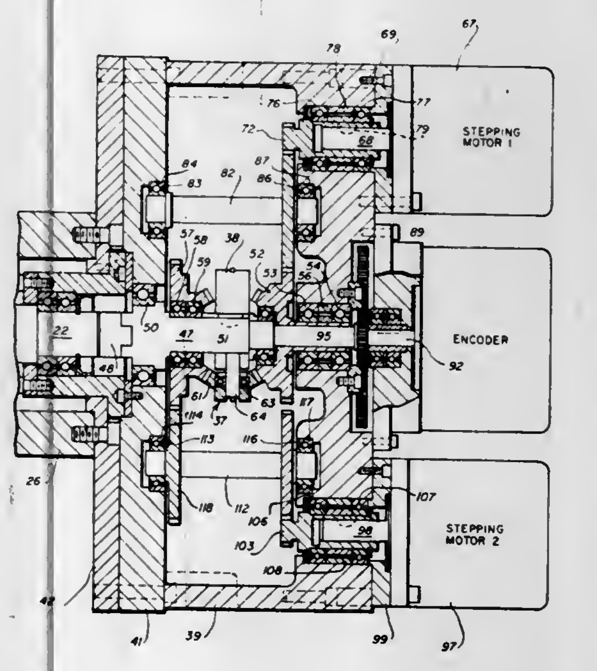


1. In a selector for a transmission having a rotatable shaft-like member and at least one pair of power transmitting rotary members mounted for rotation about an axis which is common with the axis of rotation of said shaft-like member with means operatively connecting said rotary members in driving relation with each other:

a. a selector element for each said rotary member mounted non-rotatably on said shaft-like member adjacent a side of each said rotary member,
b. at least one connector element rotatable with each rotary member of said pair of rotary members at the side thereof adjacent said selector element with each said selector element and the connector rotatable with the adjacent rotary member being adapted for relative axial movement,
c. means to urge said selector element and the connector element rotatable with the adjacent rotary member axially away from each other,
d. at least one cooperating connector element carried by each said selector element disposed to engage and rotate with said connector element which is rotatable with the rotary member adjacent thereto upon relative axial movement of said selector element and the adjacent connector element rotatable with the rotary member toward each other and disposed to disengage said connector element which is rotatable with the rotary member adjacent thereto upon relative axial movement of said selector element and the adjacent connector element rotatable with the rotary member away from each other,
e. actuator means disposed to impart relative axial movement between each said selector element and the connector element rotatable with the rotary member adjacent thereto so that adjacent connector elements are movable into engagement with and rotate with each other until said actuator means is shifted and said cooperating connector element carried by said selector element moves to a position in advance of said connector element rotatable with said rotary member, and
f. depressable means urging at least one of said adjacent connector elements toward the other of said adjacent connector elements so that said one connector element is depressed upon engagement with said other of said adjacent connector elements while the connector element of said adjacent connector elements which is carried by said selector element is rotating at a speed greater than the speed of rotation of the connector element of said adjacent connector elements which is rotatable with said rotary member.

3,872,738
MACHINE TOOL

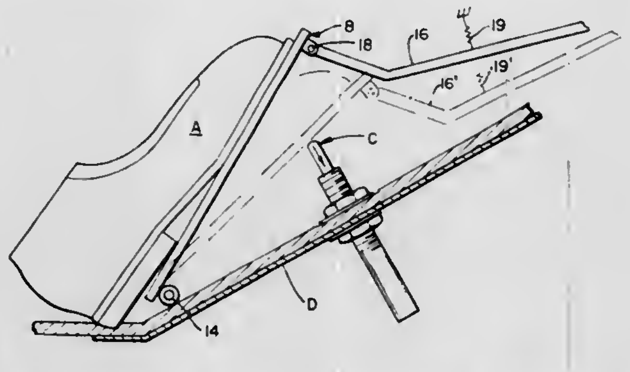
Ralph E. Price, and Robert E. Bricker, both of Waynesboro, Pa., assignors to Landis Tool Company, Waynesboro, Pa.
Filed Sept. 24, 1973, Ser. No. 399,888
Int. Cl. F16h *1/18, 35/06*
U.S. Cl. 74—424.8 B **3 Claims**



1. A machine tool comprising
a machine element including a feed screw,
means for displacing said machine element including
first stepping motor means including a drive shaft, second stepping motor means including a drive shaft, means for interconnecting said drive shafts and said feed screw having
means for rotating said feed screw in a first direction at a rate directly related to the combined rates of rotation of said drive shafts when said drive shafts rotate in a first direction, and
means for rotating said feed screw in said first direction at a rate directly related to the difference between the rates of rotation of said drive shafts when one of said drive shafts is rotated in said first direction at a first rate and the second of said drive shafts is rotated in a second reverse direction at a second rate less than said first rate,
means for selectively and conjointly rotating said first and second stepping motor means in said first direction to advance said machine element at a first speed, and
means for selectively rotating said first stepping motor means in said first direction at said first rate and for selectively rotating said second stepping motor means in said second direction at said second rate, said first and second rates being selected so that said machine element will be advanced at a second slower speed.

3,872,739
THROTTLE RESISTOR

Roger Paul Hudson, 4575 Mont Taylor, Santa Rosa, Calif. 95404, and Jack Michael Trione, 1606 San Raman Way, Santa Rosa, Calif. 95405
Filed Feb. 15, 1974, Ser. No. 443,000
Int. Cl. G05g *1/14*
U.S. Cl. 74—513 **3 Claims**

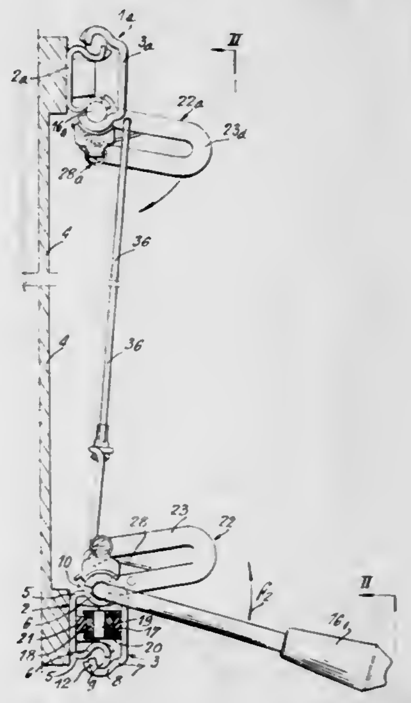


1. In combination with an automobile accelerator having a preselected path for depression between an unaccelerated position and an accelerated position, and a first spring bias for biasing said automobile accelerator pedal from said fully depressed position to said undepressed position, the improvement comprising: a plunger having a preselected upper stroke and a fully depressed position; a second spring bias for biasing said plunger to said upper stroke and yielding to permit plunger depression upon exertion of a force greater than the bias provided by said first and second spring bias; means for mounting said plunger to the floorboard of said automobile with said plunger protruding towards said automobile accelerator pedal; and, means for adjusting the elevation of said plunger relative to said automobile floorboard to provide said automobile accelerator pedal with increased resistance at a preselected point along the arcuate path of said accelerator foot pedal.

3,872,740
DEVICE FOR SUPPORTING, GUIDING AND ADJUSTING MOBILE SEATS, OR VEHICLE SEATS AND THE LIKE

Maurice Claude Cousin, Flers, France, assignor to A. & M. Cousin & Cie Etablissements Cousin Freres, Le Bois de Flers, Flers, Orne, France
Filed Sept. 24, 1973, Ser. No. 400,208
Claims priority, application France, Oct. 6, 1972, 72.35597
Int. Cl. G05g *5/06*
U.S. Cl. 74—533 **8 Claims**

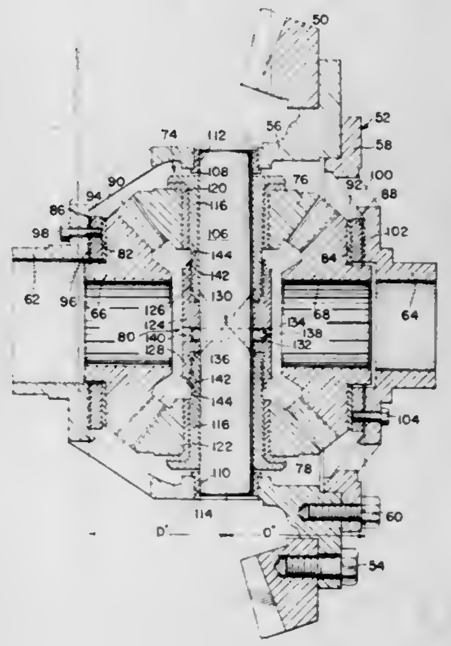
1. Device for supporting, guiding and adjusting mobile seats comprising at least a slide constituted by two complementary adapted sectional elements delimiting two hollow parallel rails containing guiding and sliding elements, the guiding and sliding components placed in one of the rails are constituted by a ball and by a cylindrical rod extending outsidely of the sectional elements for forming operational and control means



for a lock movably placed in one of the sectional elements and comprising a protuberance designed to be engaged, under action of a resilient component permanently working on the lock, in one of various notches provided in the other sectional element.

3,872,741
DIFFERENTIAL GEAR ASSEMBLY

Donald R. Berchtold, and Charles F. Gebhardt, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 8, 1973, Ser. No. 386,716
Int. Cl. F16h *1/40, 1/44*
U.S. Cl. 74—713 **5 Claims**



1. A differential gear assembly for differentially coupling an input shaft with a pair of driven axle shafts, comprising
a ring gear arranged in rotatable engagement with the input shaft,
a differential housing secured for rotation with the ring gear and forming openings on opposite sides thereof in axial alignment with the ring gear for receiving the axle shafts,
bevel gears respectively secured for rotation with the axle shafts,

bearing means interacting between each bevel gear and the housing around the respective openings to provide selected spacing between the bevel gears and to allow movement of the bevel gears relative to the housing, and a pinion assembly including a pair of pinion gears each arranged in meshing engagement with the bevel gears, a shaft supporting the pinion gears and mounted on the housing by bushing means permitting limited movement of the pinion assembly, adjustable means being mounted on the shaft for securing the pinion gears in selected spaced apart relation.

5. A differential gear assembly for differentially coupling an input shaft with a pair of driven axle shafts, comprising

bevel gears respectively secured for rotation with the axle shafts,

a housing rotatably supporting the bevel gears by means of bearings, the housing and bearings establishing the axial spacing between the bevel gears while allowing relative radial movement of the bevel gears,

a pinion assembly including a pair of pinion gears each arranged in meshing engagement with the bevel gears and adjustable means for securing the pinion gears in spaced apart relation.

a ring gear engaged with the input shaft, and

means securing the pinion assembly for rotation with the ring gear while allowing limited movement of the pinion assembly whereby a common pitch cone center may be established and more accurately maintained for the meshing pinion gears and bevel gears during operation of the differential gear assembly.

3,872,742
POWER DRIVEN ROTARY TOOL

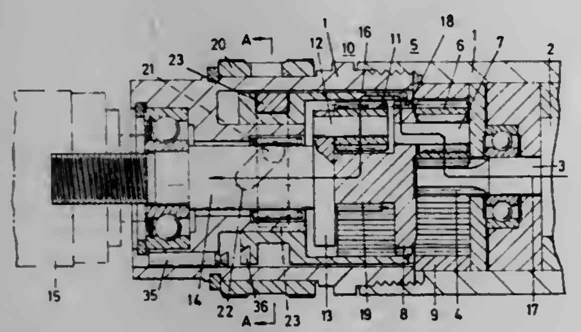
Ronald Frederick States, London, England, assignor to Desoutter Brothers Limited, London, England

Filed Apr. 25, 1973, Ser. No. 354,164

Claims priority, application United Kingdom, May 24, 1972, 24489/72

Int. Cl. F16h *57/10*

U.S. Cl. 74—785 **6 Claims**



1. A power driven rotary tool provided with two stages of epicyclic gears in tandem upon a common axis, each gear comprising a sun gear wheel, a system of planetary gears supported for rotation upon a planet carrier and an internal gear around the planet gears, characterised in that the internal gear around one of the gears is mounted so as to be rotatable and movable longitudinally of said common axis whilst remaining in engagement with its associated planet gears, said longitudinal movement being between the one extreme position where it engages abutment means which prevents rotation of the internal gear relative to the casing of the tool, and the other extreme position where the teeth on the internal gear engage teeth in one of the planet carriers, so that the latter and the internal gear rotate together, thereby providing a low and high speed rotation of the output shaft of the tool respectively.

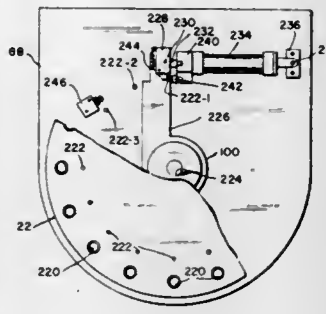
3,872,743
REMOVABLE ATTACHMENT FOR AUTOMATING MILLING MACHINES

David Edward DeCaussin, Van Nuys, Calif., assignor to Fadal Engineering Company, Inc., North Hollywood, Calif.

Division of Ser. No. 329,111, Feb. 2, 1973,. This application Jan. 14, 1974, Ser. No. 433,394

Int. Cl. B23b *29/32*

U.S. Cl. 74—817 **4 Claims**



1. A system for sequentially operating an indexing device comprising:

a horizontally located indexing device having a plurality of pins located on the bottom-most portion of said device and aligned on a circumference and in which said indexing device is free to rotate about a centrally located shaft,

an arm member pivotally mounted for limited rotation about said centrally located shaft and having a ratchet member for sequentially engaging one of said indexing pins in a driving relationship in one direction only,

an expandable driving member pivotally attached to a base member at one end and pivotally attached to the periphery of said arm member at the other end for rotating said arm member in first one direction when expanded and a second direction when retracted and in which an indexing pin is held in a locking relationship between said arm member and said expandable driving member only when said driving member is fully retracted.

3,872,744
SELF-EMPTYING PUNCHING TOOL

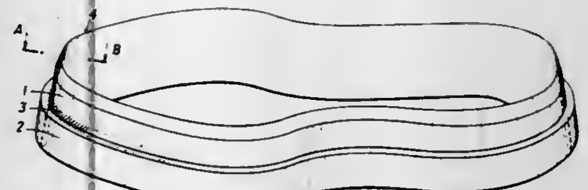
Emil Fauth, Sandhausen, Germany, assignor to Firma Emil Fauth, Sandhausen near Heidelberg, Germany

Filed Aug. 21, 1972, Ser. No. 282,324

Claims priority, application Germany, Aug. 24, 1971, 2142234

Int. Cl. C22b *3/02*

U.S. Cl. 76—107 C **5 Claims**



1. In a self-emptying punching tool for clicking shoe parts or cutting textile fabrics, including a body portion consisting of an elongated strip formed in an endless configuration extending longitudinally completely about an area enclosed by said strip, said strip including an inner wall facing toward said enclosed area, and an endless cutting edge extending longitudinally along said strip on one side of said inner wall, the improvement wherein said strip consists essentially of a single continuous strip of prehardened, finish-ground steel having two ends joined together to form said endless configuration with said inner wall tapering to extend from said cutting edge outwardly away from said enclosed area with the area enclosed by said strip progressively increasing in size from the side of said inner wall at which said cutting edge is located to the side of said inner wall opposite said cutting edge, said strip being essentially composed of cold-formed material stretched longitudinally in a progressively increasing manner commencing from said knife edge, said knife edge consisting essentially of unstretched material which has been retained in its original circumferential length.

3. A method for producing a self-emptying punching tool comprising the steps of forming a prehardened and finish-ground elongated strip of steel having a knife edge on one side thereof into a continuous endless configuration which completely encloses an area about which said formed strip is shaped to circumferentially extend, and mechanically cold forming said endless strip to effect longitudinal stretching of said strip in a progressively increasing manner commencing from said knife edge while maintaining said knife edge in its original circumferential length, said cold-forming being effected while said strip is in said prehardened and finish-ground condition to form said strip into a configuration with the inner wall of said endless strip tapering from said knife edge outwardly relative to said enclosed area such that said enclosed area increases progressively from the side of said inner wall at which said knife edge is formed to the side of said inner wall opposite said knife edge.

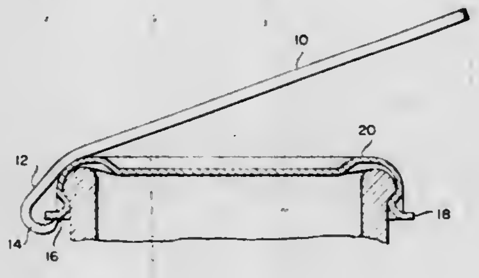
3,872,745
OPENER TOOL

Roberto Cavazos Garza, and John Martin, both of Monterrey, N.L., Mexico, assignors to Vidriera Monterrey, S.A., Monterrey, N.L., Mexico

Filed May 31, 1974, Ser. No. 475,121

Int. Cl. B67b *7/16*

U.S. Cl. 81—3.46 R **2 Claims**



1. An opening tool for closures of the general crown type comprising:

a first elongated flat handle portion;

a second relatively short flat extension of said handle portion extending integrally therefrom at an obtuse angle;

a third portion integral with said second and of substantially the same width, said third portion being U-shaped in cross-section and terminating in a relatively thin edge, the distance between said edge and the junction of said first and second portions being such that said edge can engage under the closure to be removed when the said junction is positioned on the immediately adjacent portion of the closure overlying the rim of the container, so that forcing said flat portion down flush with the upper surface of the closure stresses the closure in hoop tension to enlarge its internal diameter sufficiently to permit removal by hand.

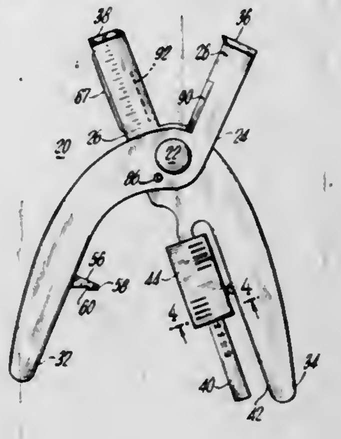
3,872,746
ADJUSTABLE WIRE STRIPPER

James M. Wittes, Linden, and Louis A. Netta, North Brunswick, both of N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Apr. 24, 1974, Ser. No. 463,754

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.5 R **20 Claims**



1. An adjustable wire stripper for removing insulation from an electrical conductor or the like comprising: a first jaw member having a first end and a second end; a second jaw member having a first end and a second end; pivot means coupling said first jaw member to said second jaw member; first stripping means disposed adjacent said first jaw member first end; second stripping means disposed adjacent said second jaw member first end; said first and said second stripping means being movable towards and away from one another upon corresponding movement of said first jaw member and said second jaw member about said pivot means; cam means comprising a surface planarly orientated at an oblique angle to the longitudinal axis of said cam means and coupled to said second jaw member; and cam engaging means transversely extending from and coupled to said first jaw member; one of said cam means and said cam engaging means being slidably movable in discrete steps along its associated jaw member toward and away from said second end of its associated jaw member so that said cam engaging means is caused to cooperatively engage selective portions of said cam means to control the extent of closure of said first and said second stripping means upon corresponding movement of said first and said second jaw members.

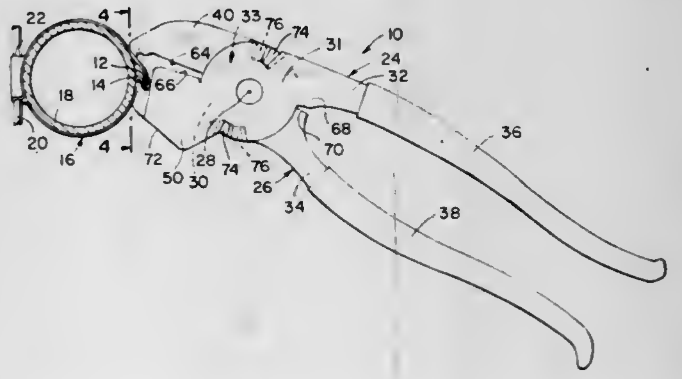
3,872,747
HAND TOOL FOR INSTALLING WIRE FABRIC FENCE CLAMPS

Peter A. Basile, Edison, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,357

Int. Cl. B25b *7/02*

U.S. Cl. 81—426 **8 Claims**

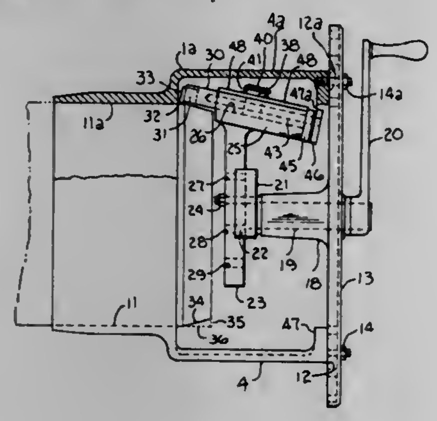


1. A hand tool for installing wire fabric fence clamps comprising: first and second members, said first and second members being pivotally connected together for rotation about a

common axis between a closed condition and an open condition, said first and second members forming a pair of opposed handle portions and a pair of opposed jaw portions, said pair of handle portions extending rearwardly from said common axis, said pair of jaw portions extending forwardly from said common axis, one of said pair of jaw portions terminating in an elongated projection extending toward said other of said jaw portions and being adapted to cooperate with an aperture provided proximate one terminal end of a wire fabric fence clamp, the other of said pair of jaw portions being tapered in the direction of said elongated projection to define a transversely extending terminal edge disposed parallel to said common axis whereby said other of said pair of jaw portions is adapted to cooperate with a hook-shaped portion provided in another terminal end of said fence clamp, said transversely extending terminal edge including a substantially centrally disposed protrusion extending therefrom toward the extremity of said elongated projection, the extremities of said elongated projection and said protrusion being spaced from one another and being substantially equally longitudinally spaced from said common axis when said pair of opposed jaw portions are in said closed condition.

3,872,748
TOOL FOR BEVELLING PLASTIC PIPE

Bengt G. Bjalme, and Thomas G. Brown, both of Erie, Pa., assignors to Reed Manufacturing Company, Erie, Pa.
Filed Apr. 9, 1973, Ser. No. 348,962
Int. Cl. B23b *5/16*
U.S. Cl. 82—4 C **3 Claims**

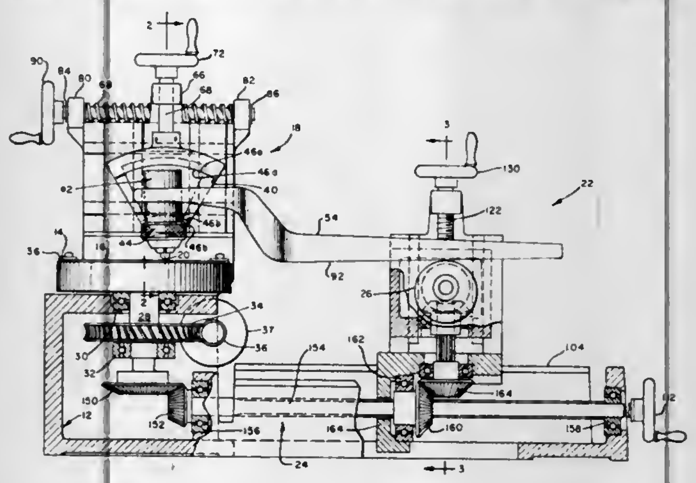


1. A tool for bevelling a plastic pipe and comprising means for gripping the outer surface of the pipe with the end to be bevelled outside the gripping means, a frame radially outside and axially beyond said pipe end and fixed to said gripping means, a crank shaft journaled in said frame on the axis of the pipe and having a crank arm between the pipe end and the frame with a tool head fixed to the crank arm and rotatable thereby in a fixed plane normal to said axis, a guideway in the tool head inclined to said axis at the angle of the desired bevel, a tool in said guideway slidable in said guideway having a cutting edge presented to the pipe end, means for rotating the crank shaft, and tool drive means in thrust relation between said tool and said tool head and means to actuate said tool drive means for advancing the tool along said guideway into the pipe end for cutting the bevel.

3,872,749
RULING ENGINE FOR GENERATING DIES TO MOLD ANAMORPHIC FRESNEL OPTICS

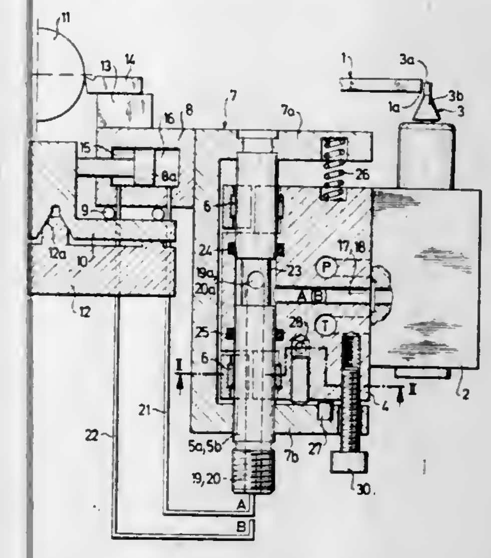
William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 2, 1973, Ser. No. 320,611
Int. Cl. B23b *3/28*
U.S. Cl. 82—12 **7 Claims**

1. Apparatus comprising:
- means for mounting a cutting tool;
- means for mounting a work piece having a substantially flat work surface in operative relation with said cutting tool;
- means for effecting relative motion between said work piece and said cutting tool;
- first means for automatically varying the cutting angle of said cutting tool with respect to said work piece responsive to said relative motion to cause said cutting tool to generate an anamorphic shaped groove in said work piece;
- second means for varying said cutting angle independent of said first means; and
- third means for varying said cutting angle independent of said first and second means.



3,872,750
COPY CONTROL FOR USE IN TOOL MACHINES

Hubert Bernd, Partenstein, and Friedel Liedhegener, Lohr am Main, both of Germany, assignors to G. L. Rexroth GmbH, Lohr am Main, Germany
Filed Apr. 20, 1973, Ser. No. 353,136
Claims priority, application Germany, Apr. 22, 1972, 2219792
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 A **5 Claims**

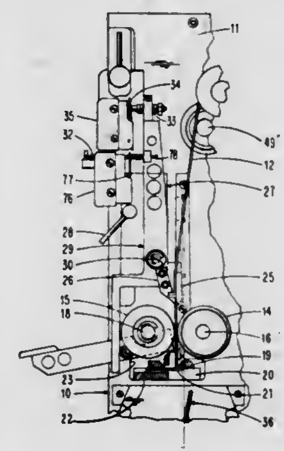


1. In a copy control for use in tool machines, a combination comprising a template having a contour to be copied; a tracing device for tracing the contour of said template and comprising a carriage mounted for movement normal to a plane of said template, said template and said device being shiftable with reference to each other for different tracing operations; an elongated contact member on said carriage of said tracing device for contacting said template, said contact member comprising two portions of which one has a cylindrical contact face and the other has a conically divergent contact face so that contact faces of different diameters may individually engage said template and trace the contour thereof; a fluid-operated cylinder and piston unit connected with said carriage for displacing the same in direction longitudinally of said contact member towards said template; adjustable fluid control means for controlling the amount of said displacement; a biasing spring permanently tending to move said carriage

opposite to said direction; and a stop for preventing said carriage from moving in said direction beyond a limited distance.

3,872,751
COUNTING MEANS FOR MATERIAL CUTTING APPARATUS

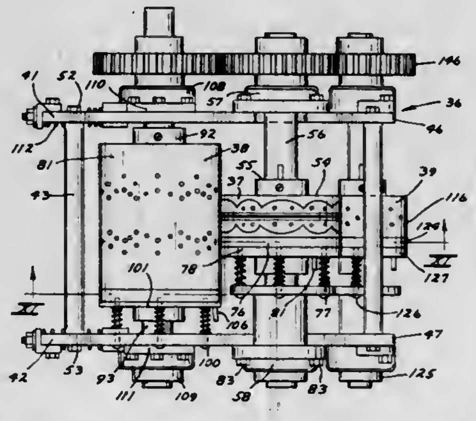
Volker Schmidt, R.R. No. 7, Todds Rd., Lexington, Ky. 40502
Filed May 15, 1973, Ser. No. 360,411
Int. Cl. B26d *7/28*
U.S. Cl. 83—69 **13 Claims**



6. An apparatus for cutting a strip of material into segments of a selected length including:
- means to feed the strip of material past a cutting position;
- means to cut the fed material at the cutting position once during each cycle;
- means to supply a signal once during each cycle;
- counting means to count each time that a signal is received from said signal supplying means;
- and means to connect said signal supplying means to said counting means to supply the signal to said counting means from said signal supplying means only during each cycle in which the thickness of the segment of the strip of material to be cut is within the predetermined thickness range whereby said counting means counts only each cycle in which the thickness of the segment of the strip of material to be cut is within the predetermined thickness range.

3,872,752
SNACK CUTTER

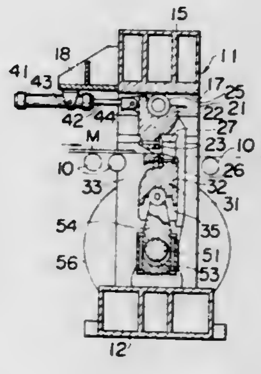
Richard H. Remde, Minneapolis, and Stanley G. Liedman, Anoka, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Apr. 27, 1973, Ser. No. 355,233
Int. Cl. B26d *7/06*, *1/56*; **B26f** *1/08*
U.S. Cl. 83—100 **8 Claims**



1. Apparatus for cutting a continuous ribbon of shaped dough suitable for frying to form a chip type snack, said apparatus comprising:
- first roll means including a pair of spaced continuous cutting ridges extending around said roll means, said cutting ridges each comprising a series of connected arcs, the connection of said arcs of the first ridge being opposite the connection of said arcs of the second ridge, the connections of said first and second ridges being pointed toward each other;
- second roll means disposed adjacent said first roll means, said cutting ridges impinging against said second roll means; means for rotatably driving said first and second roll means whereby a continuous sheet of dough may be moved between said rotating roll means to cut said dough sheet into a continuous shaped ribbon and waste sheet.

3,872,753
FLYING SHEAR

Koreyasu Takubo, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan
Filed June 18, 1973, Ser. No. 370,758
Int. Cl. B23d *25/06*
U.S. Cl. 83—317 **10 Claims**



1. A flying shear comprising a frame; an upper knife holder mounted on said frame for free movement forward and backward therein, intermediate members between the top surface of the upper knife holder and the frame through which the knife holder contacts the frame, said upper knife holder having oscillating arms extending downward along the respective ends thereof and having guiding portions therealong, a lower knife holder vertically movable along the guiding portions of the oscillating arms of said upper knife holder and oscillating back and forth with said upper knife holder, said knife holders having opposed edges having cutting blades thereon, an oscillating means coupled to said upper knife holder for oscillating said upper knife holder forward and backward; and a driving means coupled to said lower knife holder for vertically reciprocating said lower knife holder toward and away from said upper knife holder.

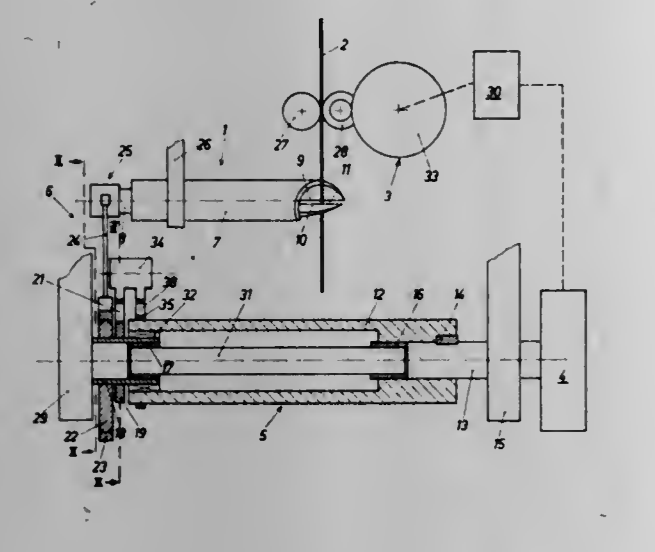
3,872,754
APPARATUS FOR CUTTING AN ENDLESS, CONTINUOUSLY FED ELONGATED ELEMENT INTO DESIRED LENGTHS

Eduard Haas, Parkring 10, Vienna 1, Austria
Filed Mar. 14, 1974, Ser. No. 451,082
Claims priority, application Austria, Mar. 14, 1973, 22760/73
Int. Cl. B26d *5/20*
U.S. Cl. 83—355 **10 Claims**

1. In an apparatus for cutting a flexible elongated element into lengths, which comprises a cutting mechanism including intermittently operable cutting means, means for continuously feeding the flexible elongated element to the cutting means, a drive for operating the cutting means, and a mechanical transmission between the drive and the cutting means, the mechanical transmission including

1. an elongated rotatable element elastically deformable under torsion and having two ends,
   a. one of the ends of the rotatable element being fixedly connected to the drive for rotation thereby,

2. a locking means connected to the other end of the rotatable element and operable to prevent rotation of the other end thereof while the one end is rotated by the drive



whereby the rotatable element is subjected to torsion when the locking means is operated, and

3. means for intermittently releasing the locking means to permit rotation of the other end of the rotatable element.

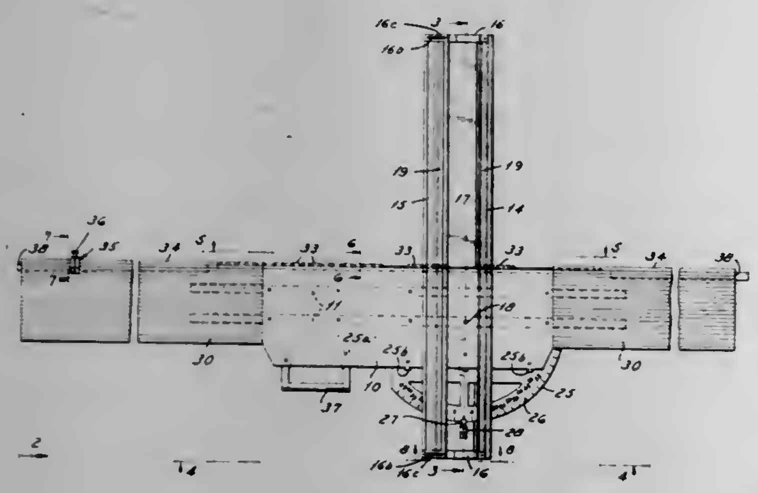
3,872,755
SAW TABLE

Walter G. Marsh, Birmingham; Melvin K. Mercier, Detroit, and James J. Rhoades, Westland, all of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Filed July 16, 1973, Ser. No. 379,329

Int. Cl. B27b *5/20, 9/04*

U.S. Cl. 83—471.3 **6 Claims**



1. In a saw table, the combination comprising
a table for supporting a workpiece,
means defining a track,
said track having guide means for guiding a portable saw,
means for pivotally supporting said track about an axis extending through said table in spaced relation to said table such that the saw blade is supported in spaced relation to the table as the saw is moved along the track,
means for locking said track in angularly determined position with respect to said table,
said table including a plurality of backstops along one edge thereof, said backstops being slidably engaged with said table such that they can be moved to support the track and accommodate the angular movement of the track with respect to said table.

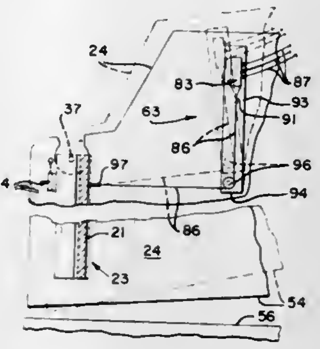
3,872,756
RAKE ANGLE AND RELATED STROKE CONTROL FOR A SHEAR OR THE LIKE

Eugene W. Pearson, Orinda, Calif., assignor to Canron, Inc., Oakland, Calif.

Filed June 18, 1973, Ser. No. 371,069

Int. Cl. B26d *7/26*

U.S. Cl. 83—522 **5 Claims**



1. Rake angle and related stroke control for a machine such as a shear or the like wherein a pair of angularly relatable tool components cooperate to perform an operation on work, said rake angle and related stroke control comprising:
means for adjusting the angular relationship between said angularly related tool components;
stroke adjustment means for determining the extent of cooperation between said tool components in performing an operation on work; and
relating means for associating said stroke adjustment means to the angular adjustment between said cooperating tool components to obtain a desired extent of cooperation at a desired angular relationship between said components: said relating means including graphical means mounted in proximity to said stroke adjustment means, said stroke adjustment means, said stroke adjustment means including adjustable stop means for determining the extent of cooperation between said tool component and an indicator carried by said adjustable stop means for movement over said graphical means to indicate the prevailing extent of cooperation between said tool components for any angular relationship therebetween and any position of said stop means.

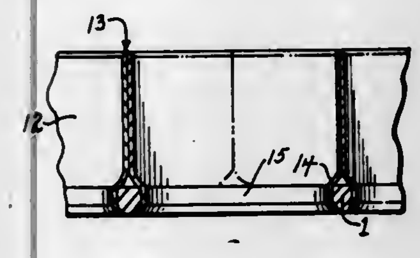
3,872,757
IMPROVED BISCUIT CUTTER AND METHOD OF MAKING SAME

Charles D. Hargadon, 13803 Shelbyville Rd., U.S. 60, Louisville, Ky. 40223

Filed Nov. 2, 1973, Ser. No. 412,306

Int. Cl. B26f *1/14*

U.S. Cl. 83—691 **10 Claims**



1. A biscuit cutter comprising:
A. a base means having a pair of laterally spaced end portions with a sheet-like body portion extending longitudinally from one end portion to the other and secured to both, and a multiplicity of uniformly spaced cooperative cup-receiving holes formed in said body portion;

B. a multiplicity of individual nestable cutter cup means: each cutter cup means having:
a. peripheral first wall member means including at least two straight sides, each wall member means terminating in an upper end, wherein said upper ends of said first wall member means define a first opening of selected configuration to said cutter cup,
b. tapered second wall means carried by selected first wall member means to taper inwardly from the lower ends of said first wall member means to define a neck at the end of said cup opposite said upper end which neck has a diameter less than the mean diameter of said first opening and is adapted to be received by a selected base hole when the cup is assembled upon said base;
C. means for releasably securing said neck to the base so a portion of at least one straight side of each cup is disposed generally parallel to and in contiguous relation with a portion of at least one straight side of an adjacent cup and so that the upper ends of straight sides of said cups disposed generally in contiguous relation are likewise in contiguous relation along the length thereof and said upper ends of said cups are in generally the same plane, so that a cutting edge is formed by the upper ends of the straight sides of adjacent cup members; and
D. means bonding a portion of adjacent cups together along a portion of the contiguous straight sides of the cups.

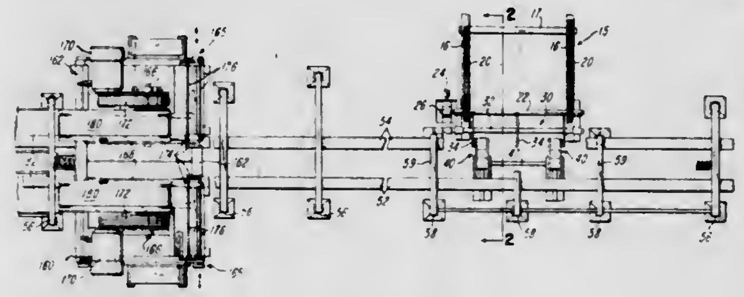
3,872,758
SAWMILL

George W. Hartzell, and Robert J. Gunnerman, both of Piqua, Ohio, assignors to Hertzell Industries, Inc., Piqua, Ohio

Continuation-in-part of Ser. No. 152,751, June 14, 1971, Pat. No. 3,747,455. This application Jan. 10, 1973, Ser. No. 322,537The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl. B27b *7/00, 29/08*

U.S. Cl. 83—708 **9 Claims**



1. An improved sawmill adapted for efficiently cutting a successive supply of logs, comprising a set of elongated parallel spaced tracks, frame means supporting said tracks in horizontally spaced positions, a first carriage unit, said first carriage unit including a first set of wheels spaced longitudinally relative to said tracks and engaging said tracks in longitudinally spaced relation to provide said first carriage unit with both lateral and longitudinal stability, said first set of wheels supporting said first carriage unit for independent longitudinal linear movement on said tracks, a second carriage unit, said second carriage unit including a second set of wheels spaced longitudinally relative to said tracks and also engaging said tracks in longitudinally spaced relation to provide said second carriage unit with both lateral and longitudinal stability, said second set of wheels supporting said second carriage unit for longitudinal linear movement along said tracks independent of said first carriage unit, means connecting said first and second carriage units and providing for adjusting the space between said carriage units relative to said tracks, said carriage units including means supporting a set of horizontally disposed opposing dog members adapted to engage opposite ends of each log, means associated with at least one of said carriage units for moving said carriage units along said tracks, laterally adjustable cutting means positioned adjacent the path of said carriage for cutting the log, drive means on at least one of said carriage units for rotating the corresponding said dog member through 360° for positioning the log at an initial cutting position, and control means for actuating said drive means to produce precisely 90° rotation of the log from said initial cutting position.

3,872,759
MICROTOMES

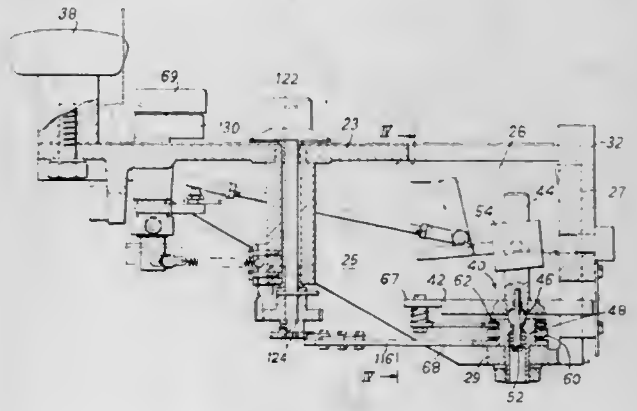
Brian Laurence Jackson, Histon, England, assignor to Kent Cambridge Medical Limited, Cambridge, England

Filed Mar. 8, 1974, Ser. No. 449,480

Claims priority, application United Kingdom, Mar. 12, 1973, 11793/73

Int. Cl. G01n *1/06*

U.S. Cl. 83—718 **10 Claims**



1. A microtome of the kind set forth, in which the ratchet and pawl mechanism comprises a ratchet wheel rotatably mounted on one of the relatively movable members and arranged so that rotation of the ratchet wheel in one sense through a pre-set angle effects a correspondingly pre-set decrease in the separation between the knife and specimen holder, a lever assembly pivotally mounted on the same member and carrying a pawl which engages the ratchet wheel during pivotal movement of the lever assembly in one sense to effect rotation in the said sense of the ratchet wheel, a trip element mounted on the other of the relatively movable members so as to engage the lever assembly during relative movement of the members in one direction thereby to cause rotation of the lever assembly in the said sense, a stop element mounted on the first-mentioned one of the relatively movable members and positioned to engage the lever assembly to stop, at a predetermined point, rotation thereof by the trip element, the lever assembly including means for reducing, during part of the rotation of the lever assembly immediately before its engagement with the stop element, the speed of rotation of the ratchet wheel effected by a given speed of relative movement between the relatively movable members.

3,872,760
TOOL AND METHOD OF USING SAME

George J. Desnoyers, Jr., 3 Mohawk St., Cohoes, N.Y. 12047

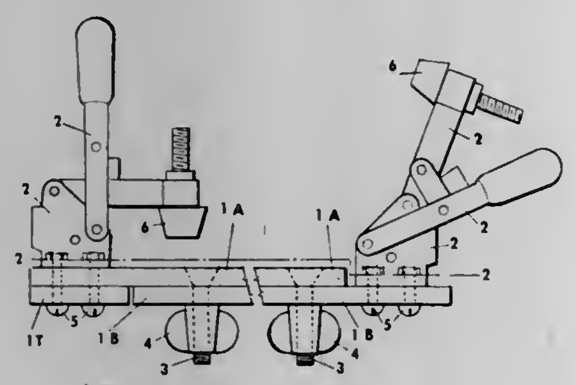
Filed July 12, 1973, Ser. No. 378,515

Int. Cl. B26d *7/02*

U.S. Cl. 83—743 **1 Claim**

1. A sawing guide tool to increase the speed and accuracy of an individual or identically repeated sawing operation on a suitably sawable flat or substantially flat material, said tool comprising a pair of completely flat metal strips being one on top of the other, which, when together can become longitudinally extensible, one of said metal strips having a lengthwise slot in which a set screw on the other strip may become positioned, tightly clamping said two flat metal strips together to obtain a given lengthwise dimension of said pair of metal strips, and a quick closing clamp mounted on one end of one of one of said flat metal strips, to temporarily hold the tool tightly against the work to be sawed, one clamping element of said quick closing clamp gripping the opposite surface of the

flat piece to be sawed, in order to firmly guide the proper direction of the saw as it moves closely along against said pair of completely flat metal strips until the sawing operation has been completed.

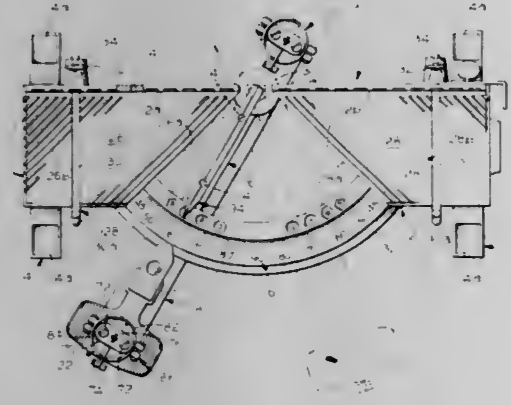


3,872,761

MITRE BOX WITH IMPROVED INDEXING MEANS

Antoni P. Gutowski, New Britain, and Donald P. Ryan, Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Dec. 3, 1973, Ser. No. 421,430
Int. Cl. B27g *5/02*
U.S. Cl. 83—767 **4 Claims**



1. A mitre box particularly adapted for use in cutting the ends of pieces of material at predetermined angles comprising:

a. a base formed of non-metallic material operable for supporting thereon the piece of material to be cut, said base including an arcuate-shaped member consisting of a raised portion having indicia provided thereon denoting a multiplicity of different values of angular measurement and a flange portion extending outwardly of said raised portion forming a shoulder therebetween;

b. swivel assembly means supported on said base for movement relative thereto, said swivel assembly means including a swivel having one end thereof pivotably mounted on said base and having first and second openings formed therein in spaced relation relative to each other adjacent to the free end of said swivel, a detent pin supported on said swivel for movement between an extended position and a retracted position relative thereto, a detent arm supported on said swivel for pivotal movement relative thereto having one end thereof cooperatively associated with said detent pin and operable for moving said detent pin from said extended position to said retracted position thereof, and a spring having one end thereof seated against said swivel and the other end thereof seated against said detent arm operable for imparting a biasing force to said detent arm to move said detent pin to said extended position thereof;

c. locking means operable for detachably locking said swivel assembly means in aligned relation relative to any given one of said multiplicity of different values of angular measurement, said locking means including a locking member, a clamping member and tightening means, said locking member including a first leg portion and a second leg portion formed integrally with said first leg portion and extending outwardly therefrom so as to provide substantially a right angle therebetween, said first leg portion of said locking member being positioned in said first opening in said swivel so as to be movable therewithin between a first position wherein said second leg portion of said locking member is in locking engagement with said flange portion of said arcuate member of said base and a second position wherein said second leg portion of said locking member is spaced from said flange portion of said arcuate member of said base, said clamping member including a first leg portion and a second leg portion formed integrally with said first leg portion and extending outwardly therefrom so as to provide substantially a right angle therebetween, said clamping member being mounted on said swivel so as to be movable relative thereto with said first leg portion of said clamping member in engagement with said swivel at a point adjacent to said first and second openings in said swivel and with said second leg portion of said clamping member in engagement with said second leg portion of said locking member so as to be operable to selectively apply a bearing force thereto causing said second leg portion of said locking member when said bearing force is applied thereto by said second leg portion of said clamping member to be positioned in locking engagement with said flange portion of said arcuate member of said base and said first leg portion of said locking member to move between said second position and said first position thereof, said tightening means including a fastener supported in said second opening inn said swivel so as to extend therethrough and having one end thereof affixed to said second leg portion of said clamping member, said tightening means further including means threadedly engaged on said fastener at the other end thereof operable through the tightening and loosening thereof to cause said second leg portion of said clamping member to selectively apply said bearing force to said second leg portion of said locking member;

d. upright assembly means supported on said swivel assembly means for movement therewith, said upright assembly means including a pair of upright assemblies with one of said pair of upright assemblies being supported at one end of said swivel and the other of said pair of upright assemblies supported at the other end of said swivel, said upright assembly means further including guide means supported on said pair of upright assemblies operable for guiding a cutting instrument during a cuttting operation; and

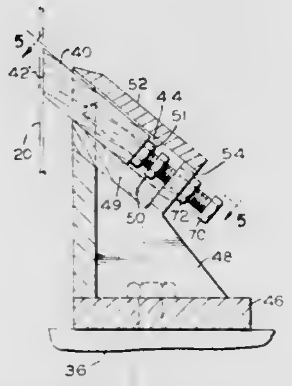
e. indexing means including an indexing plate means to precise dimensions from metallic material supported on said base between said base and swivel and having means formed thereon cooperable with said swivel assembly means for establishing a very accurate angle of cut, said means of said indexing plate cooperable with said swivel assembly means comprising a plurality of spaced openings formed therethrough cooperable with said detent pin of said swivel assembly means when said detent pin is in said extended position thereof to cause said swivel to be locked to said indexing plate, said indexing means further including adjustment means formed on said indexing plate operable for adjusting the position of said indexing plate relative to said base and pointer means mounted on said swivel assembly means for movement therewith operable for identifying the given one of said multiplicity of different values of angular measurement with which said swivel assembly means is aligned, said pointer means comprising an indexing pointer fixedly mounted on said swivel with the major axis of said indexing pointer coincident with the major axis of said swivel.

3,872,762

BAND SAW SYSTEM

William R. McKillip, Portland, Oreg., and Donald L. Mason, Fair Oaks, Calif., assignors to R. Hoe & Co., Inc., Portland, Oreg.

Filed Sept. 4, 1973, Ser. No. 394,087
Int. Cl. B26d *1/54*
U.S. Cl. 83—820 **3 Claims**



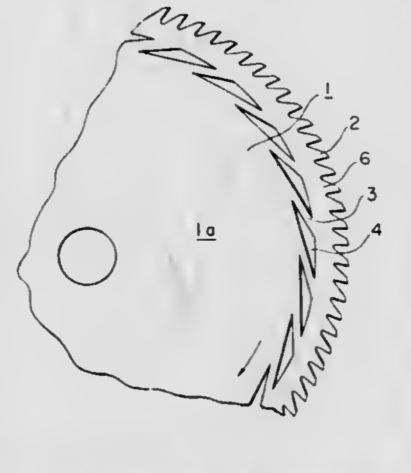
1. In a band saw guide,
a holder having a guideway and stop means at one end of the guideway,
the guideway comprising a socket open at the end thereof remote from the stop means,
a saw guide block slidable in the guideway and extending out of the socket when the saw guide block is in an operating position,
the saw guide block having a guide face remote from the stop means for engaging a saw band and a pair of parallel tapped bores,
a pair of adjustment screws screwed into tapped bores in the saw guide block, the heads of the adjustment screws engaging the stop means when the saw guide block means is in the operating position thereof,
and a pair of jam nuts on the adjustment screws and engaging the block to lock the screws in adjusted positions.

3,872,763

CIRCULAR SAW

Isao Kayahara, Tokyo, Japan, assignor to Ihara Koatsu Tsugite Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1974, Ser. No. 436,308
Claims priority, application Japan, Feb. 16, 1973, 48-18339
Int. Cl. B27b *33/08*
U.S. Cl. 83—835 **2 Claims**



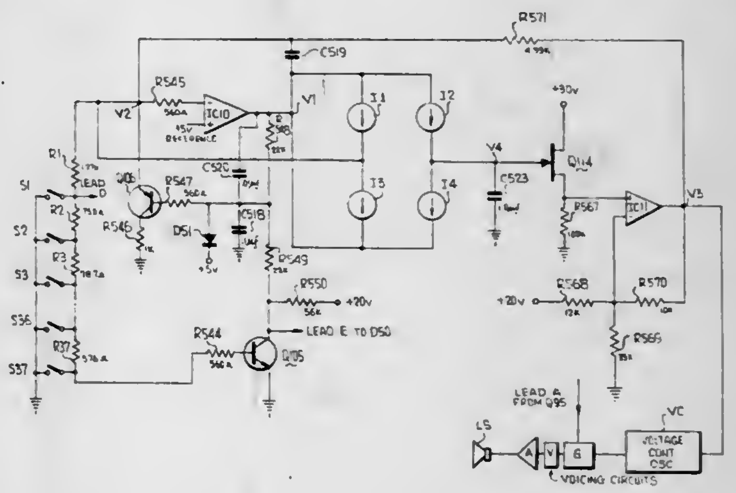
1. In a circular saw having a blade in the form of a disc made up of a circular inside portion, a peripheral edge portion having a small radial width and carrying cutting teeth about its entire periphery, and means interconnecting said inside portion and said edge portion in a manner to prevent substantial heat transfer from said edge portion to said inside portion:
the improvement wherein said interconnecting means comprises a series of narrow strips integral with and interconnecting said inside portion and said edge portion and disposed in an annular arrangement with equal spacings therebetween, said strips being inclined substantially in a circumferential direction of said peripheral edge portion and being defined between apertures formed in said disc so as to leave said strips between said inside portion and said edge portion.

3,872,764

SAMPLE AND HOLD CIRCUIT FOR AN ELECTRIC ORGAN

Walter Munch, Jr., Ft. Thomas, Ky.; Dale M. Uetrecht, Cincinnati, Ohio, and Richard L. Studer, Villa Hills, Ky., assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 15, 1973, Ser. No. 370,283
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.01 **18 Claims**



1. An electric organ, comprising a resistance, an array of keys of said organ, means responsive to actuation of selected keys of said array of keys for grounding selected parts of said resistance, said resistance having a preselected variable voltage ungrounded point of reference, means including a feedback circuit for maintaining the voltage of said preselected point of reference constant when any of said keys is actuated by feeding back current through said resistance in amplitude sufficient to maintain said voltage of said preselected point of reference constant, said feedback circuit including a storage capacitor shunt connected to ground at a location between said point of reference and a load point, a feedback resistance connected between said load point and said point of reference, and a voltage tone signal oscillator responsive to the voltage of said load point.

3,872,765

CHORD SELECTION APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT

Toshiyuki Amaya, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 27, 1973, Ser. No. 429,002
Claims priority, application Japan, Dec. 28, 1972, 47-1372
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.01 **3 Claims**

1. A chord selection apparatus for an electronic musical instrument comprising:

a. first and second ring-counters for generating in synchronism count outputs at output terminals thereof in consecutive order,

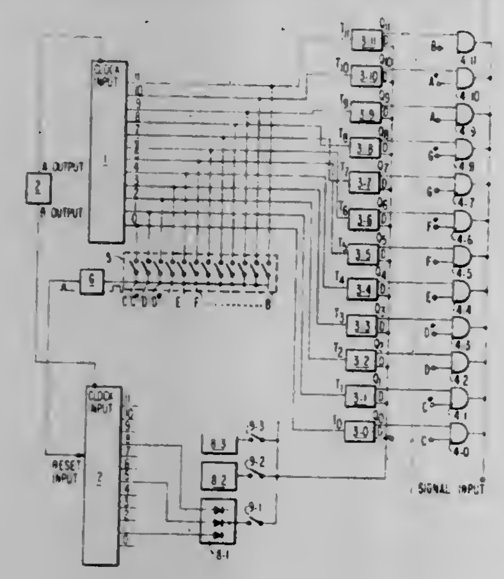
b. a plurality of registers enabled by signals from the output terminals of said first ring-counter,

c. a plurality of key-tone selection switches connected to the output terminals of said first ring-counter,

d. means for shifting the synchronous timing of said second ring-counter with respect to said first ring-counter, when any one of said key-tone switches is closed, the shift in timing being a function of the closed key-tone switch,

e. a plurality of chord matrices connected to the output terminals of said second ring-counter, each of said chord matrices corresponding to a certain chord,

f. a plurality of chord pattern selection switches for selecting any one of said chord matrices and applying the output thereof to all of said registers, said registers providing an output upon the coincidence of signals from said first ring-counter and one of said chord matrices, and



g. a plurality of signal gates corresponding to each tone scale and opened in response to the outputs of said registers.

3,872,766

SYNCHRONIZING-PULSE GENERATING DEVICE FOR AN APPARATUS FOR CONTROLLING THE AUTOMATIC MUSICAL PERFORMANCE OF A KEYED INSTRUMENT

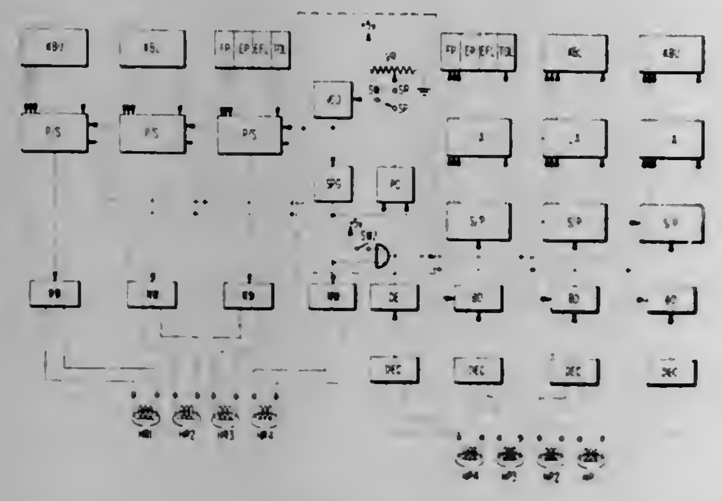
Tutomu Fukui, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,852

Claims priority, application Japan, Dec. 20, 1972, 47-127987

Int. Cl. G10f *5/00*

U.S. Cl. 84—115 **4 Claims**



1. A synchronizing pulse generating device for use in an apparatus for automatically controlling the playing of a keyed instrument including reproducing means for reproducing a composite recorded synchronizing pulse signal and a recorded clock pulse signal and for reproducing a recorded serial keying signal; variable clock-pulse generating means for generating a clock pulse; serial-to-parallel signal converting means for converting the reproduced serial keying signal into a parallel-signal group in response to the receipt of a clock pulse from said clock-pulse generating means; and latching circuit means sequentially operated by successive synchronizing pulses for sequentially storing as output signals thereof the parallel-signal group from said serial-to-parallel signal converting means, said synchronizing pulse generating device comprising:

a. synchronizing-pulse detecting means connected to said reproducing means for discriminating said recorded synchronizing pulse signal;

b. synchronizing-pulse generating means for receiving the clock pulses from said clock-pulse generating means as a counting input, and for receiving from said synchronizing pulse detecting means the reproduced synchronizing pulse signal as a reset input, to generate a phase-corrected synchronizing pulse signal; and

c. phase comparator means connected to said reproducing means and to said clock-pulse generating means for producing an error voltage for controlling the frequency of said variable clock-pulse generating means, said synchronizing pulse signal being synchronized with said serial keying signal and with said clock pulse signal, for reading out the parallel-signal group stored in said latching means.

3,872,767

MUSICAL INSTRUMENT WITH PIANO KEYBOARD

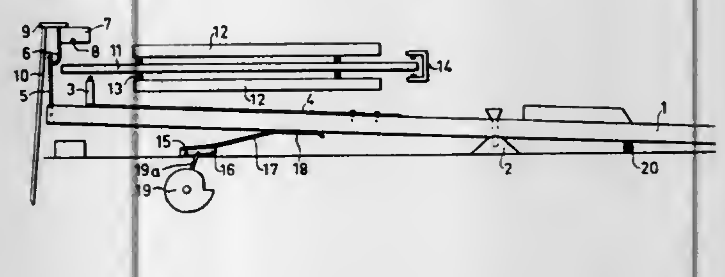
Gunnar Sjostrand, Atvidaberg, and Einar Jansson, Motala, both of Sweden, assignors to Musikindustriell Forskning Mifo AB, Linkoping, Sweden

Continuation of Ser. No. 304,876, Nov. 8, 1972,. This application Jan. 28, 1974, Ser. No. 437,084

Claims priority, application Sweden, Nov. 9, 1971, 14293/71

Int. Cl. G10c *3/18*

U.S. Cl. 84—255 **2 Claims**



1. A musical instrument of the kind having a piano keyboard comprising:

- an elongate tone generating vibratory element for each key of the keyboard,
- damping means for each said vibratory element comprising a soft, flexible, elongate member,
- damping control means common to all said keys and selectively movable between damping and non-damping positions,
- means for selectively moving said elongate damping elements into or out of contact with the respectively associated tone generating elements,
- said last-named means including first means connectiong a first end portion of each said elongate damping member to a respective key and second means for connecting the opposite end portion of said elongate damping member to said damping control means,
- actuation of said damping control means being effective to move all said elongate damping members out of contact with their respective tone generating elements and actuation of any key being effective to move only the associated damping member out of contact with its associated tone generating element.

3,872,768

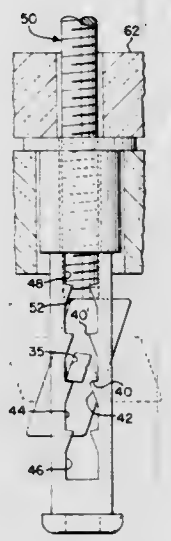
FASTENING DEVICE

Richard John Ernst, Elk Grove Village, and George Anton Neumayer, Deerfield, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 20, 1973, Ser. No. 426,831

Int. Cl. F16b *37/04*

U.S. Cl. 85—3 R **21 Claims**



1. A fastener device including a body member and toggle member, the body having a flange at one end and an elongated portion at the other end, the elongated portion of the body including a pair of opposing slots each slot having a plurality of constrictions formed therein to reduce the transverse dimension of the slot in a plurality of longitudinally spaced positions along the length of the body, the toggle member being elongated and including a pair of bosses received in the opposing slots to retain the toggle in the body member, camming means cooperating between the constrictions and the bosses permitting the toggle to move longitudinally of the body member in the direction toward the flange when the toggle is in a position longitudinally of the body but substantially restricting movement of the toggle in the opposite direction when the toggle is in a position transverse the body, means to retain the toggle at the uppermost extremity of the body against free longitudinal movement and in a position longitudinal of the body, the toggle element having a threaded aperture extending transversely thereof allowing the toggle to be retained in a position transverse to the body when associated with a mating screw member, means to rotate the toggle from its original longitudinal disposition to the transverse position, the bosses having a dimension greater than the transverse dimension of the slot in the vicinity of the abutments when the toggle is in a position transverse the body to retain the toggle in the transverse position at a predetermined level on the body portion.

3,872,769

CARTRIDGE ACTUATED FLAME SYSTEM

Thomas H. Rosling, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

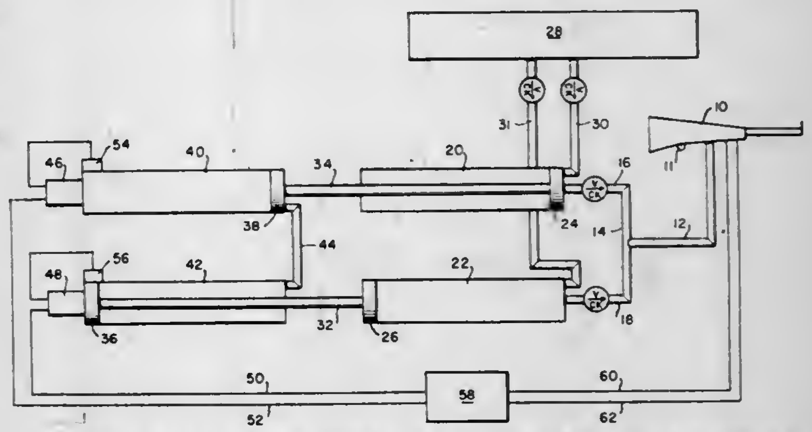
Filed July 23, 1973, Ser. No. 381,829

Int. Cl. F41h *9/00*

U.S. Cl. 89—1 A **8 Claims**

1. A fluid-ejecting system comprising:

- means for holding a fluid;
- first and second cylinders connected to the fluid holding means;
- means within said cylinders for withdrawing fluid from the fluid holding means into the first cylinder and simultaneously forcing fluid out of the second cylinder when, and only when, fluid is flowing into the first cylinder; and
- ejection means connected to said cylinders and having a barrel member for releasing from the system the fluid being forced out of either of said cylinders and for aiming the released fluid.



3,872,770

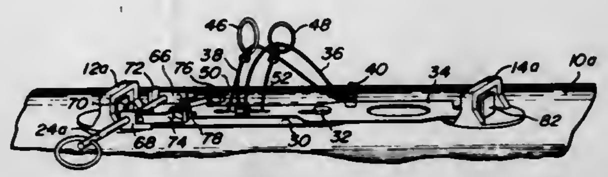
ARMING SYSTEM SAFETY DEVICE

Charles H. McGuire, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 9, 1973, Ser. No. 349,521

Int. Cl. B64d *1/04*

U.S. Cl. 89—1.5 D **8 Claims**



1. An arming system safety device for an airborne weapon having a plurality of mounting brackets engageable by a plurality of ejector hooks of an aircraft and a fuze that is activated by an arming lanyard which is withdrawn upon release of the weapon, comprising, retaining means slidable relative to said mounting brackets for movement to a first position for retaining said arming lanyard and to a second position for allowing said lanyard to be withdrawn, said retaining means being engaged by any one of said plurality of ejector hooks in said first position when said weapon is mounted to the aircraft, said retaining means being movable to said second position only upon disengagement of said brackets by all of said plurality of ejector hooks.

3,872,771

AUTOMATIC FIREARM WITH GAS ACTUATED BREECH MECHANISM

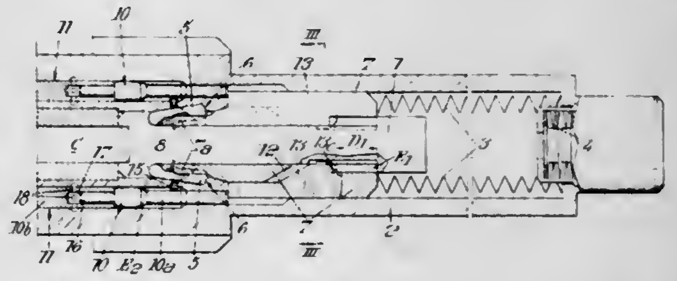
Bernard Pierre, Lyon; Lucien Segas, Rueil; Georges Simon, Saint-Germain-du-Puy, and Rene Volle, Bourges, all of France, assignors to ETAT Francais, Paris, France

Filed Oct. 9, 1973, Ser. No. 404,199

Claims priority, application France, Oct. 10, 1972, 72.35764

Int. Cl. F41d *5/04*

U.S. Cl. 89—190 **9 Claims**



1. Automatic firearm with a gas-operated breech mechanism and comprising: a breech block with alternating longitu-

dinal movement, urged towards its closed position by at least one return spring; at least one retractable bolt for temporarily immobilizing this breech block in its closed position; an actuating part with alternating longitudinal motion, partially enveloping said breech block and possessing, with respect to the latter, a degree of longitudinal sliding freedom enabling said actuating part, when it is an extreme forward position, to block said retractable bolt in active position; and at least one gas-actuated mechanism in the barrel of the firearm and comprising a movable actuating unit sliding longitudinally and capable of causing, in the course of retraction, at a first phase, the withdrawal of said actuating part with respect to the breech block and the release of the retractable bolt, then, in a second phase occurring after the withdrawal of said boot and before the actuating part has completed its possible withdrawal stroke with respect to the breech block, withdrawal of said breech block, said actuating part of the breech mechanism comprising at least one longitudinal housing open towards the front and laterally towards the inside and towards the outside of the firearm, in which is mounted an actuating slider free to be displaced towards the front with respect to said actuating part but in rearward abutment by thrust of a rear support surface against the bottom of said housing, said actuating slider comprising,

forwardly, a front stop surface projecting forwardly at the periphery of an actuating part and occurring on the withdrawal path of the corresponding movable actuating unit, and, at its side oriented towards the inside of the firearm, a protuberance projecting in the direction of the breech block through the inner lateral opening of the housing of the slider concerned, said protuberance comprising a rear engagement notch adapted to come into contact with a rear shoulder fast to the breech block and situated, when the slider is in the extreme forward position, behind said engagement notch at a distance from the latter at least equal to the withdrawal stroke which the actuating part of the breech mechanism must traverse to free the bolt from the breech block.

3,872,772
ELECTRO-HYDRAULIC ACTUATOR

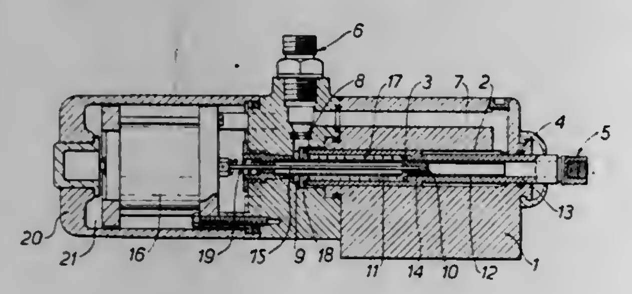
Ronald Bernard Walters, Wembley, England, assignor to Sperry Rand Limited, London, England

Filed Sept. 18, 1973, Ser. No. 398,412

Claims priority, application United Kingdom, Sept. 29, 1972, 45080/72

Int. Cl. F15b *13/044*

U.S. Cl. 91—47 **2 Claims**



1. An electro-hydraulic actuator comprising a body having a bore, a piston working within said bore, and provided with a piston rod, a system pressure gallery arranged for the application of system pressure to the annular area between the piston and the piston rod, and a gallery for applying pressure to the other end of the piston, said last-mentioned pressure applying gallery communicating with said pressure system gallery through a fixed orifice, an outlet tube secured to said body adjacent said other end of said piston and having a sharpened edge on an end thereof, a flapper in the form of a disc bearing on said tube edge and forming a variable orifice therewith, a solenoid means in said body controlling said flapper, a feedback spring interposed between said other end of said piston and said flapper, a tank outlet open to said outlet tube,

said piston having a closed end bore, the face of said disc opposite to the outlet tube being provided with a pressure balancing tube of the same outside diameter as the sharpened edge of the outlet tube and working in said bore in said piston, said flapper disc having a passage opening on opposite sides thereof to said outlet tube and said pressure balancing tube, respectively, the pressure in said last-mentioned bore being equalized to the tank outlet pressure by means of said passage through said flapper disc.

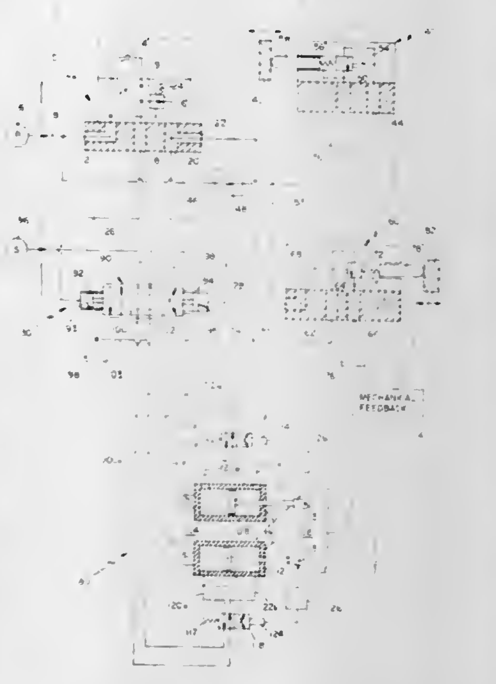
3,872,773
POSITION CONTROLLING

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Filed Aug. 9, 1972, Ser. No. 279,004

Int. Cl. F15b *13/16*

U.S. Cl. 91—388 **20 Claims**



1. A fluid system for controlling the position of an output according to the position of an input, said system comprising: a first variable flow control valve including a sensor arranged for sensing the position of said input and operative for generating a a first fluid pressure signal having a magnitude dependent on and varying according to said sensed position

- a second variable flow control valve connected to said first valve and including a sensor arranged for sensing the position of said output, said second control valve being operative for generating a second fluid pressure signal having a magnitude dependent on and varying according to said sensed position of said output and said first fluid pressure signal;
- an output position controller connected to said output and said second control valve, said controller being responsive to said second fluid pressure signal and operative for changing the position of said output in response to changes in said second fluid pressure signal; and,
- an inlet valve having a fixed orifice, a piloted variable orifice in series with said fixed orifice, an inlet adapted for connection to a fluid source and arranged for directing flow from said source through said fixed orifice, a first flow conduit extending from intermediate said fixed and variable orifices to a first outlet, a second flow conduit for directing flow from the downstream side of said variable conduit to a second outlet, each of said first and second outlets being connected to said controller, and first and second pilot flow conduits extending from opposite sides of a pilot piston of said variable orifice to, respectively, the upstream and downstream sides of said fixed orifice.

3,872,774
DISCONNECTING VALVE MECHANISM FOR A SERVO-TEERING SYSTEM OF VEHICLES

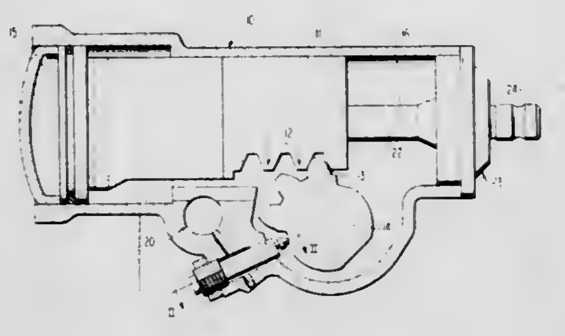
Hans-Joachim M. Forster; Klaus Katz, both of Stuttgart, and Anton Scheuter, Aichschiess, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 15, 1971, Ser. No. 198,915

Claims priority, application Germany, Nov. 14, 1970, 2056066

Int. Cl. F15b *13/04*, *15/20*

U.S. Cl. 91—400 **23 Claims**



1. An installation for disconnecting the servo force in a vehicle power steering unit, comprising: a housing, a working piston disposed in said housing dividing same into two working pressure spaces, a steering shaft operated by said working piston, passage means for interconnecting said two working pressure spaces, a pair of normally closed by-pass valve means disposed in said interconnecting means and opening into the same working pressure space with each by-pass valve means having an actuating means in said same working pressure space for opening said interconnecting means to said same working pressure space upon actuation, and means movable by said steering shaft for maintaining said by-pass valve means in said normally closed position and for opening one of said by-pass valve means when said working piston is in one end position and for opening the other of said pair of by-pass valve means when said piston is in the opposite end position, whereby said by-pass valve means, in their respective by-pass position, communicate with said interconnecting means to disconnect the servo force in the steering unit.

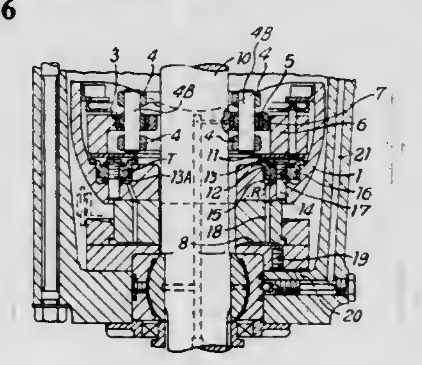
3,872,775
SWASH-PLATE BEARINGS FOR AXIAL PISTON PUMPS OR MOTORS

Robert Cecil Clerk, Edison House, Fullerton Rd., Glenrothes, Fife, Scotland

Filed Sept. 25, 1973, Ser. No. 400,690

Int. Cl. F01b *13/04*

U.S. Cl. 91—486 **4 Claims**



1. In an axial piston pump/motor having a rotary swash-plate, a stationary swash-plate carrier tiltable about an axis, and a fluid pressure source, the improvement comprising a series of axially floating hydrostatic bearing pads disposed in said swash-plate carrier for supporting said swash-plate, said bearing pads being pressurized from pump/motor working pressure via impedances to apply hydraulic pressure beneath said swash-plate so as to balance forces experienced by said swash-plate during operation, a first group of said pads being biased into engagement with said swash-plate to maintain a slight upward thrust thereon under conditions of minimum pump/motor working pressure, and a second group of said pads being biased out of engagement with said swash-plate at low pump/motor working pressure to reduce shear drag, the pads of said first and second groups being disposed on both sides of a plane bisecting said carrier and normal to said tilt axis.

3,872,776
MISSILE LAUNCHER

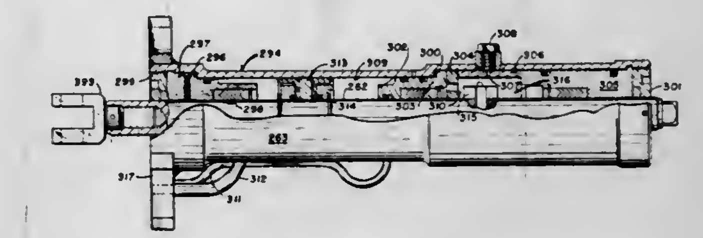
Sverre Kongelbeck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 97,686, Dec. 14, 1970, Pat. No. 3,742,813.

This application May 4, 1973, Ser. No. 357,137

Int. Cl. F15b *15/22*

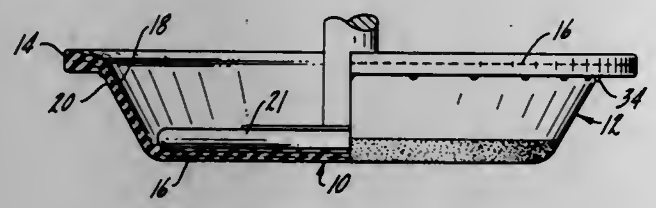
U.S. Cl. 92—12 **1 Claim**



1. An actuator comprising:
- a cylindrical housing;
- a piston rod movable in the cylindrical housing;
- forward and aft bearings at respective ends of the cylindrical housing for holding the piston rod in a substantially axial position within said housing, each of the forward and aft bearings having a central aperture therein through which the piston rod extends externally of the housing, said aft bearing being positioned within said cylindrical housing;
- a separator ring abutting a portion of the cylindrical housing substantially medially of its length for separating the housing into first and second chambers, the chambers being sealed from each other, the piston rod extending axially through a central aperture in the separator ring;
- a liquid of predetermined viscosity in the second chamber; an actuator piston on the piston rod and disposed within the first chamber;
- a buffer piston on the piston rod and disposed within the second chamber; a spacer sleeve within the second chamber and extending between the separator ring and the aft bearing and in abutting engagement therewith, the spacer sleeve being substantially cylindrical in conformation and being of a smaller diameter than the cylindrical housing, and the buffer piston being of a smaller diameter than the sleeve, a reduced liquid passage being defined between the interior surface of the sleeve and the buffer piston;
- closer means secured to said housing for holding said aft bearing, spacer sleeve, and separator ring in assembled position; and,
- means for introducing gas under pressure into the first chamber at one side or the other of the actuator piston, movement of the piston rod by action of gas acting on the actuator piston acting to displace the buffer piston within the second chamber, thereby causing the liquid in said second chamber to flow in the reduced liquid passage between the sleeve and the buffer piston for effecting a buffering action on the piston rod.

3,872,777
DIAPHRAGM

Victor Mastis, Hinsdale, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.
Filed May 30, 1973, Ser. No. 365,122
Int. Cl. F01b *19/00;* **F16j** *3/00*
U.S. Cl. 92—101 **2 Claims**



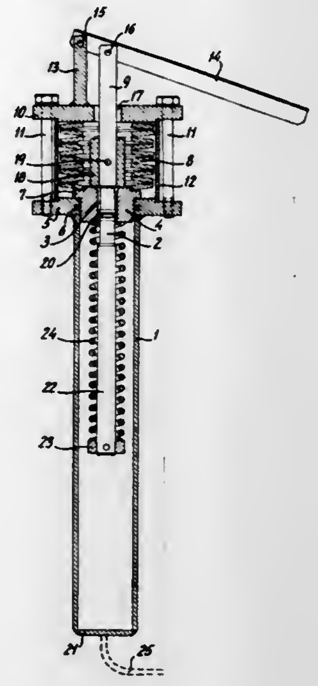
1. A cup-shaped diaphragm of fabric reinforced resilient material for use in an actuator having a housing and a piston member adapted to engage a diaphragm, said diaphragm having an annular outer lip adapted to engage a housing, an annular conic wall merging with said lip and a body portion merging with said annular conic wall at a zone of merger thereof, said annular conic wall and said body portion together forming a concave element, and a plurality of independent spaced fingers each of generally circular cross section extending from said body portion and being integral therewith and said annular conic wall of said concave element, said fingers being arranged in a plurality of rows circumferentially spaced from one another, a first of said rows being positioned adjacent the zone of merger of said body portion with said annular conic wall, said fingers of said first row having one side shorter than another side thereof, a second of said rows being positioned adjacent said zone of merger of said conic wall opposite said first row, said fingers of said second row having one side shorter than another side thereof, a third of said rows being positioned within and being integral with said zone of merger, said fingers of said third row having equal sides, said fingers of said first and second rows being generally aligned radially with respect to said body portion and said conic wall and said fingers of said third row being misaligned with respect to said fingers of said first and second rows.

3,872,778
HYDRAULIC ACTUATOR

Palle Hein Christiansen, Naestved, Denmark, assignor to Nordisk Ventilator Co., A/S, Naestved, Denmark
Filed Aug. 15, 1973, Ser. No. 388,667
Claims priority, application Denmark, Aug. 21, 1972, 4141/72
Int. Cl. F16j *15/16*
U.S. Cl. 92—165 R **3 Claims**

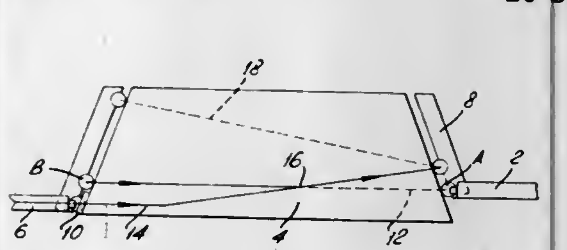
1. In a hydraulic actuator having a fluid-containing cylinder, a cover fixed at one end of said cylinder and incorporating a bore, a plunger passing with a leakproof sealing through said bore and being displaceable between two extreme positions by varying the fluid volume in the cylinder, a plunger rod connected rigidly to said plunger and a lever coupled to said plunger rod and being journalled to be pivotable relative to the cylinder through a predetermined angle of rotation, wherein the improvement comprises

a. the length of the bore is at least equal to the maximum axial travel of the plunger;
b. the diameter of the bore differs at every point and in any position from that of the plunger by an amount exceeding twice the possible lateral movement of the plunger at that point caused by a rocking movement of the plunger rod; and
c. the leakproof sealing between the bore and the plunger is effected by an O-ring, a diameter of which forms an axis of rotation for the plunger rod, thereby enabling a rocking movement on the plunger rod during axial displacement of the plunger and the lever to be connected directly and pivotably to the plunger rod and journalled at a point of rotation stationary relative to the cylinder.



3,872,779
MANUFACTURE OF CIGARETTE FILTERS

Norman Walter Jackson, Sussex, England, assignor to Molins Limited, London, England
Filed Feb. 21, 1974, Ser. No. 444,425
Claims priority, application United Kingdom, Feb. 26, 1973, 9315/73
Int. Cl. B65g *29/00;* **A24c** *5/50*
U.S. Cl. 93—1 C **20 Claims**



1. A method of arranging rod-like articles in which at least two endwise-moving streams of rod-like articles are caused to move around a conical surface along separate paths which merge and progress spirally towards the lesser diameter end of said surface, the articles in said streams being staggered so as to intercalate as they merge.

3,872,780
TRIPLE WALL CHIMNEY PIPE ASSEMBLY

Theodore Zanias, Anaheim, Calif., assignor to American Metal Products Corporation, Los Angeles, Calif.
Filed Apr. 3, 1974, Ser. No. 457,606
Int. Cl. E04h *17/02*
U.S. Cl. 98—60 **13 Claims**

1. A pipe assembly for forming a chimney, comprising:

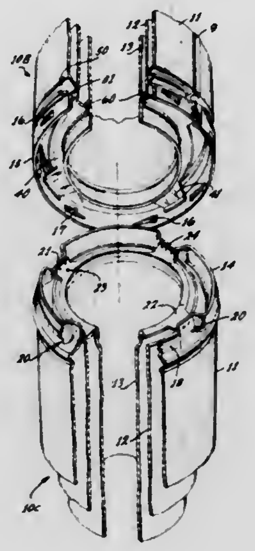
substantially cylindrical outer, intermediate and inner pipe sections, and pipe sections being positioned concentrically one within the other and dimensioned to define spaced apart walls;

a group of projections formed on the inner peripheral surface of said outer pipe section adjacent each end thereof for maintaining said intermediate pipe section concentrically positioned within said outer pipe section, the length of said intermediate pipe section being less than the length of said outer pipe section but at least as long as the longitudinal distance between said groups of projections;

first and second spacer rings, each of said spacer rings having an outer diameter a predetermined amount smaller than the inner diameter of said intermediate pipe section and an inner diameter larger than the outer diameter of said inner pipe section;

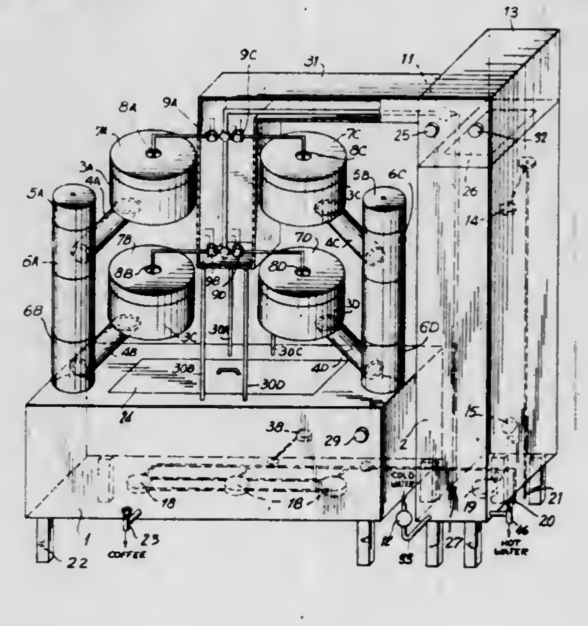
support structure secured between said outer pipe section and said spacer rings mounting said first and second spacer rings concentrically within said outer pipe section at opposite ends thereof, said support structure positioned to hold the ends of said intermediate pipe section longitudinally within the ends of said outer pipe section in a longitudinal position in which portions of the outer periphery surface of said intermediate pipe section are positioned within each of said groups of projections and hence are held concentrically positioned thereby; and

cooperating structure means formed on said spacer rings and inner pipe section for supporting said inner pipe section within said intermediate pipe section, said structure means being operable to hold said inner pipe section in a substantially fixed longitudinal position concentric with said outer pipe section.



3,872,781
INFUSION APPARATUS

Edward Helbling, 726 E. 10th St., Brooklyn, N.Y. 11230
Filed Apr. 1, 1974, Ser. No. 457,127
Int. Cl. A47j *31/34*
U.S. Cl. 99—282 **10 Claims**



1. An infusion apparatus comprising:

a fresh-water reservoir provided with water-supply means;

a plurality of brewing vessels adapted to store a particulate beverage ingredient;

first conduit means leading from said reservoir to said vessels;

first heating means in said reservoir;

first thermoelectric control means in said reservoir for operating said first heating means to maintain the water therein substantially at the boiling point;

first level-control means in said reservoir coupled with said water-supply means for establishing an initial water volume therein exceeding the combined volume of said vessels;

distributor means for cyclically connecting said reservoir via said first conduit means to said vessels in a predetermined order of succession;

transfer means in said first conduit means operative in an unoperated state of said water-supply means for cyclically delivering boiling water from said reservoir to said vessels via said distributor means;

a tank for beverage brewed in said vessels;

second conduit means connecting said vessels with said tank for delivering thereto an infusion produced by interaction of said boiling water with said particulate beverage ingredients;

second heating means in said tank;

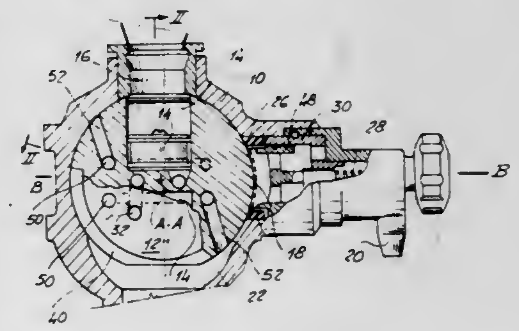
second thermoelectric control means in said tank for operating said second heating means to maintain the infusion therein at an elevated temperature;

second level-control means in said tank coupled with said transfer means for arresting same upon said infusion reaching a predetermined maximum level; and

manually operable outlet means on said tank for drawing varying amounts of infusion therefrom.

3,872,782
AUTOMATIC COFFEE-MAKING MACHINE

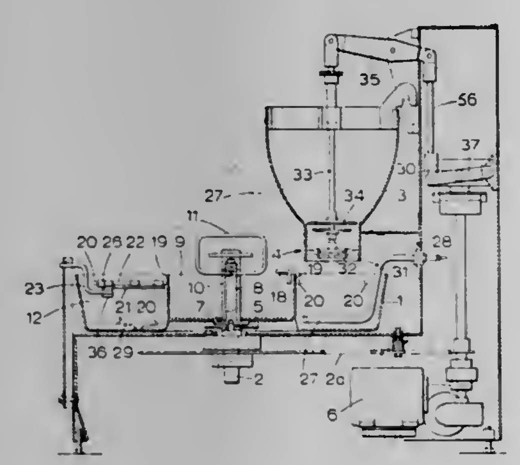
Mario Egi, 5, Via Omboni, 20129 Milan, Italy
Filed May 17, 1973, Ser. No. 361,325
Claims priority, application Italy, May 19, 1972, 24588/72
Int. Cl. A47j *31/00*
U.S. Cl. 99—289 **4 Claims**



1. An automatic coffee-making apparatus of the kind described, comprising a stationary casing having an inner cylindrical surface defining a cylindrical chamber having a ground coffee inlet at a first station, a screened beverage outlet including a substantially bowl-shaped liquid-permeable diaphragm at a second station circumferentially spaced from said first station, a used coffee discharge outlet at a third station circumferentially spaced from said second station and located diametrically opposite to said first station, and pressurized hot water supply means located transversely of said first station; a cylindrical drum rotor having an outer surface sealingly engaging said inner cylindrical surface of said stationary casing and formed with a plurality of coffee-making cylindrical cavities extending radially inwardly from said outer surface, and having a passage means containing a first opening, a second opening, an outlet passage, and a transverse passage, said outlet passage communicating with said first opening located on said outer surface of the rotor and extending inwardly therefrom, and said transverse passage communicating

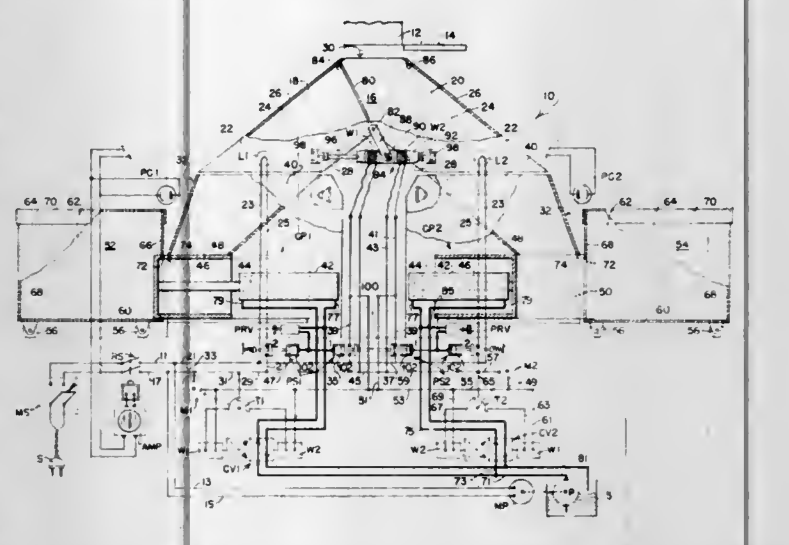
with said outlet passage and with said second opening on said outer surface of the rotor, said rotor being stepwise rotatable about an axis of said cylindrical chamber for consecutive indexing alignment of said cavities and said passage means with said stations and said hot water supply outlet, respectively; and drive means operatively connected to said rotor for rotating the same, when actuated, through a stepped cycle of rotation in which after a cavity has been indexed at said second station and has begun to be initiated towards said third station, said second opening on said rotor is indexed with said hot water supply means so as to permit a brief blast of pressurized hot water to issue from said first opening after passing through said transverse passage and said outlet passage and impinge on said bowl-shaped liquid-permeable diaphragm for sweeping residual ground coffee therefrom.

3,872,783
FRYING APPARATUS
Edward W. Fries, Jessup, Md., and Gordon Joseph White, Aylesbury, England, assignors to DCA Food Industries, Inc., New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 339,991
Int. Cl. A47j *37/12*
U.S. Cl. 99—407 **5 Claims**



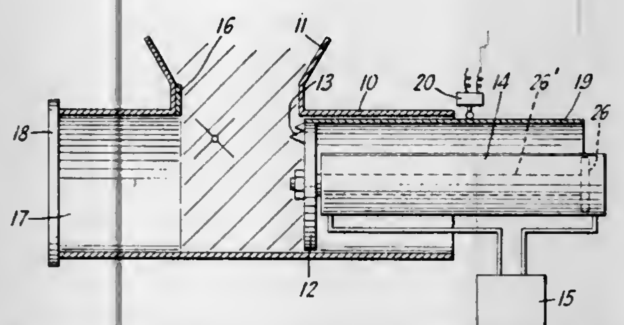
1. An automatic frying machine comprising a support, a hopper on said support disposed at a first work station and adapted to displace material to be fried into a comestible, a frying kettle on said support having a reserve kettle portion and a main kettle portion and adapted to contain a frying liquid therein and to receive said material, means mounting said frying kettle on said support for rotation about a vertical axis, means operatively connected to said frying kettle for rotating said frying kettle about said vertical axis, an immersion heater in said main kettle disposed in heat exchange relation to said main kettle portion and the frying liquid therein, an extruder device on said hopper which is automatically operable at predetermined intervals relative to the speed of rotation of said frying kettle to deliver portions of said material to said main kettle portion for frying into said comestible, means for supporting and positioning said comestible in said main kettle portion, said supporting and positioning means being adapted to receive said material at said first work station and to advance said comestible to a second work station, and including comestible-turning means intermediate said first and second stations and means for operatively engaging said comestible-turning means during rotation of said frying kettle about said vertical axis for turning said comestibles at least once during frying, and ejector means disposed at said second work station and automatically operable at predetermined intervals relative to the speed of rotation of said frying kettle about the vertical axis, to cooperate with said supporting and positioning means to intercept said individual comestible and remove said individual comestible from the frying kettle.

3,872,784
WASTE DISPOSAL SYSTEM
Robert J. Kaszuba, Chicago, and Raymond T. Nawrocki, Park Ridge, both of Ill., assignors to Automata, Inc., Chicago, Ill.
Filed Dec. 10, 1973, Ser. No. 423,590
Int. Cl. B30b *15/26*
U.S. Cl. 100—45 **4 Claims**



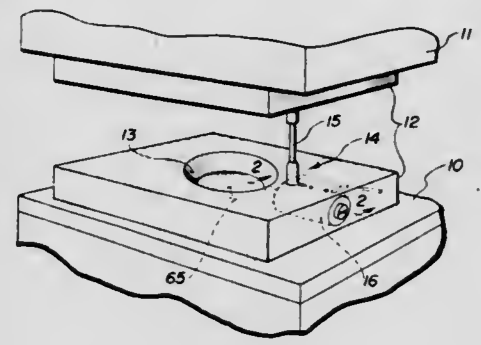
1. In a waste disposal system, in combination, a pair of trash compactor units each having a hopper, a compaction chamber in communication with said hopper for receiving loose trash, a container for compacted trash, a reciprocable ram effective upon reciprocation to traverse said compaction chamber and repeatedly eject trash contained therein and compress the same within said container to produce a bale and means for reciprocating said ram, a trash diverter for selectively directing trash to said hoppers and embodying a casing defining a trash inlet and a pair of trash outlets in communication with said hoppers respectively, a movable two-position trash diverter gate effective in one position to direct trash from the inlet to one of said hoppers and in another position to direct trash from the trash inlet to the other hopper, and means responsive to a predetermined maximum pressure of trash in either container for disabling the ram-reciprocating means of the compactor unit which is associated with such container, for actuating the ram-reciprocating means of the compactor unit which is associated with the other container, and for shifting the position of said trash diverter gate to establish communication between said trash inlet and the hopper of said other compactor unit.

3,872,785
DUAL PRESSURE REFUSE COMPACTOR
James D. Elliott, Essex, Conn., assignor to AMF Incorporated, White Plains, N.J.
Filed Nov. 13, 1972, Ser. No. 306,147
Int. Cl. B30b *15/20*
U.S. Cl. 100—48 **3 Claims**



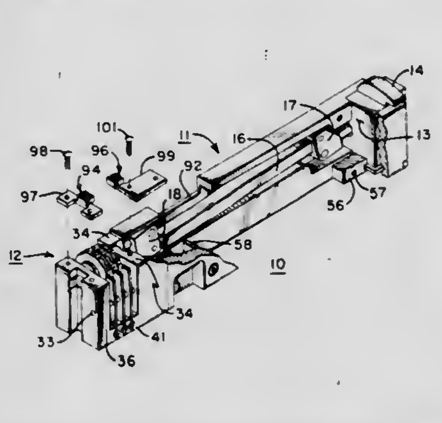
1. A refuse compactor comprising a housing closed at one end by a door, a feed opening in said housing, a ram mounted for reciprocation in said housing, cooperating refuse shearing means on said ram housing, drive means to reciprocate said ram whereby said ram shears refuse at the start of its forward stroke and thereafter compacts the refuse during the remainder of its forward stroke, means for reducing the force driving said ram after said ram shears refuse whereby overcompacting of the refuse is prevented.

3,872,786
FLUID ACTUATOR DEVICE
Morris J. Holton, 60 Golf Rd., Golf, Ill. 60029
Filed Feb. 7, 1974, Ser. No. 440,512
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **10 Claims**



1. In combination with apparatus having a stationary bed and a movable bed, a fluid actuator device for controlling the supply of a fluid to said apparatus to eject a workpiece therefrom during the course of operation thereof comprising, in combination: a plunger affixed to one of said stationary and movable beds, a fluid switch assembly affixed to the other one of said stationary and movable beds having a house, a bore extending through said housing for receiving therethrough said plunger as said movable bed is moved relative to said stationary bed, a lever trigger assembly within said housing having a lever arm pivotally affixed with respect to said housing and a trigger lever pivotally affixed to said lever arm in a position and fashion such as to pivotally operate said lever arm when said plunger is extended through said bore in one direction and to permit said plunger to pass through said bore in the other direction without said lever arm being pivotally operated, and a piston valve for controlling fluid flow through said fluid switch assembly to said apparatus, said piston valve normally being biased closed to block fluid flow therethrough and being operated by said lever arm when the latter is pivotally operated by said trigger lever to permit fluid flow therethrough.

3,872,787
SEQUENTIAL NUMBERING AND TYPE-HOLDING DEVICE
John Danov; Warren S. Hawkinson, and Vivian E. Miller, all of St. Paul, Minn., assignors to Delux Check Printers, Inc., St. Paul, Minn.
Filed Dec. 29, 1972, Ser. No. 319,473
Int. Cl. B41j *29/40*
U.S. Cl. 101—76 **7 Claims**



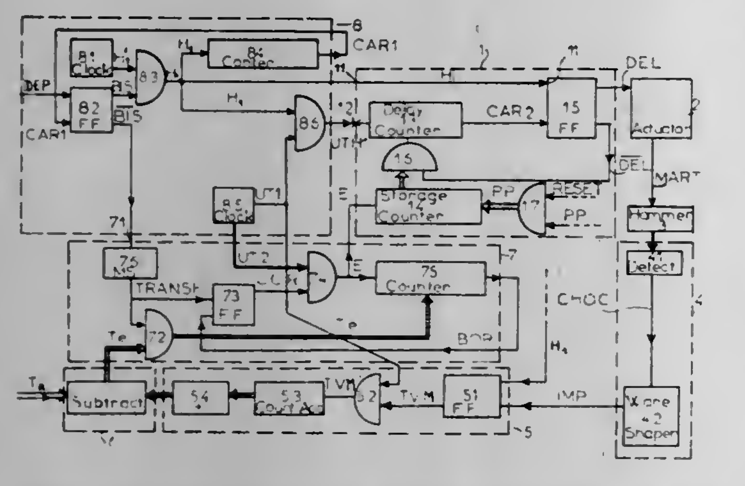
1. An improved sequential numbering and type-holding device for removable attachment to a printing press form to provide sequential numbers as part of a desired common printing surface in such form, said device comprising

a. A supporting frame having first and second side frame members,
b. a sequential number-printing unit including a number wheel housing secured to the frame at a first location and having a movable number-setting member supported for number-changing movement at said first location,
c. a movable remote actuating member for the number-printing unit supported on the frame and having a movable operating surface at a second location spaced along said frame from the number-printing unit and from said first location and thereby defining a longitudinal frame axis extending generally through said first and second spaced locations and parallel to the desired common printing surface with said first and second side frame members extending longitudinally between said first and second locations, the frame having
    1. a type-holding slot thereon for removably holding a selected printing-type member between said side frame members at a third location on the device between said first and second locations and in desired printing relationship as part of the desired common printing surface with the number-printing unit, and said frame also having
    2. a support portion supporting the movable remote actuating member for movement of its operating surface along a path perpendicular to the desired common printing surface and thereby providing for such movement of the remote actuating member in response to corresponding perpendicular movement of the frame and common printing surface, and
d. a connecting linkage between the actuating member and the number-setting member including at least one connecting member extending along the frame parallel to said longitudinal axis and between said first and second side frame members and at one side of said type-holding slot and supported for longitudinal movement parallel to said axis and to said common printing surface, said connecting linkage further including a first lever pivoted at the end of one frame member at said first location adjacent the number wheel housing and connected between said one connecting linkage member and the movable number-setting member of said number-printing unit for actuating the latter in response to longitudinal movement of the connecting linkage member, and a second lever pivoted at the other end of said one frame member at said second location adjacent the movable remote actuating member and connected between said one connecting linkage member and said movable remote actuating member for moving the linkage member longitudinally in response to vertical movement of the remote actuating member, said linkage thereby interconnecting said actuating and number-setting members for number-changing movement of the number-setting member in response to movement of the operating surface of the remote actuating member perpendicular to the desired common printing surface.

3,872,788
HAMMER FLIGHT TIME ALIGNING SYSTEM FOR IMPACT PRINTERS
Gaston Albert Palombo, Danjoutin, France, assignor to Compagnie Honeywell Bull (Societe Anonyme), Paris, France
Filed Oct. 23, 1973, Ser. No. 409,024
Claims priority, application France, Oct. 26, 1972, 72.38060
Int. Cl. B41j *7/08*
U.S. Cl. 101—93.14 **23 Claims**

1. In an impact printer having a printing anvil, a plurality of hammers normally spaced from said anvil, type carrier means disposed between said hammers and said anvil and including means for causing relative movement of said type carrier means between said hammers and said anvil periodically to effect particular alignments of the type carrier means relative

to the hammers and the anvil at the times of which alignments hammer impact against the anvil is desired, actuator means for causing each said hammer selectively to travel into impacting relation to said anvil, and timing means for initiating actuation of said actuator means in response to attainment of a predetermined relative position of such hammer and the type carrier means which is in advance of attainment of a corresponding particular alignment the improvement wherein:



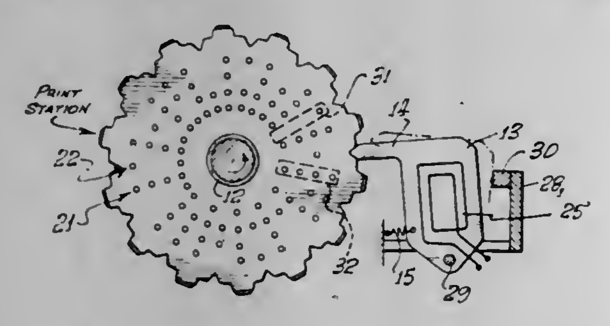
said timing means includes variable delay means for selectively varying the time of initiating movement of each said hammer with respect to the time of attaining the corresponding relative position of such hammer and the anvil; detector means associated with said anvil for detecting the time of impact of a selected hammer with said anvil; and

correction means connecting each detector means with an associated variable delay means for controlling said time of initiating movement of the selected hammer to cause such hammer to impact the anvil with essentially a predetermined time delay with respect to the attainment of said predetermined relative position between such hammer and the anvil whereby all hammers may be actuated to impact at the desired times.

3,872,789
PRINTER WITH PRINT WHEELS HAVING CODED PERFORATIONS FOR SELECTIVE POSITIONING

Biagio F. Ambrosio, Woodland Hills, Calif., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.

Filed Dec. 13, 1973, Ser. No. 424,454
Int. Cl. B41j *7/34*
U.S. Cl. 101—93.29 **10 Claims**

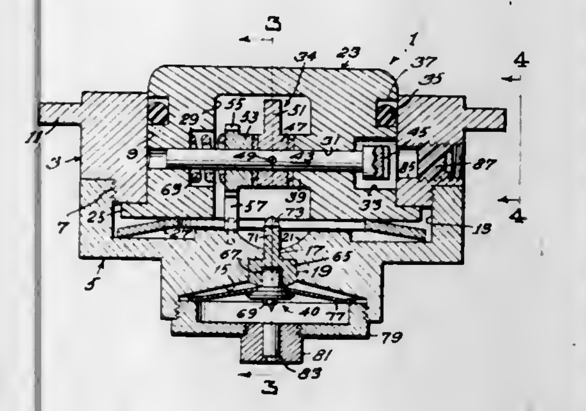


1. A printer employing a plurality of print wheels on a shaft, each carrying two sets of perforations, first set for coded groups of perforations, each group in a predetermined pattern of perforation positions, each coded group identifying by its position on the wheel a symbol on the print wheel, each group having N perforation positions and the code being in the form of a unique combination of perforations and no perforations in said positions, and a second set of perforations in groups, each group being arranged in said predetermined pattern and having a hole in every position, each group in said second set being available for sensing the coded groups on a turning print wheel while all other print wheels are at rest, each with a symbol in proper aligned position for printing at a printing stations, means for rotating one print wheel at a time while the rest of the print wheels are stationary with a group of sensing perforations in each stationary wheel in line with a group of sensing perforations in all other stationary wheels for permitting light to pass through all sensing perforations of aligned groups of said second set to N photocells, one photocell for each perforation position at one end of said shaft, said light being interrupted only by said coded groups of perforations of said first set of perforations in said turning print wheel as they rotate past said sensing groups in line with said photocells, each of said coded groups being disposed to have its perforation positions to be in line with perforation positions of said aligned sensing groups in stationary wheels as said turning wheel brings each coded group into a position to block light to said photocells.

3,872,790
FUZE

John H. McIvor, Denville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1958, Ser. No. 717,273
Int. Cl. F42c *7/02;* **F42b** *23/04*
U.S. Cl. 102—70 R **2 Claims**



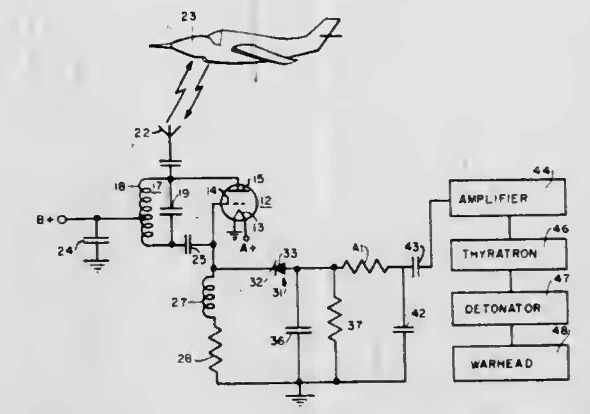
1. In a fuze for detonating an anti-tank mine, a body, a base secured to said body, a spring-biased pressure plate slidably mounted in said body and said base, a pressure responsive counting-mechanism for delaying detonation of said fuze housed in said pressure plate comprising, a shaft journaled for rotation transversely in said pressure plate, a first retaining clutch integral with said pressure plate, a second driven clutch mounted for free rotation on said shaft, a third clutch mounted on said shaft for rotation therewith and disposed between said first clutch and said second clutch, means fixed with said base adapted to rotate said second clutch upon reciprocal movement of said pressure plate, a firing mechanism housed in said base and a pressure bar integral with said third clutch for actuating said firing means and rotating in response to reciprocal movement of said pressure plate to actuate said firing means.

3,872,791
INCREASED SENSITIVITY FOR FUZE OSCILLATORS

Paul Wilson Redcay, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 21, 1955, Ser. No. 535,769
Int. Cl. F42c *13/04*
U.S. Cl. 102—70.2 P **2 Claims**

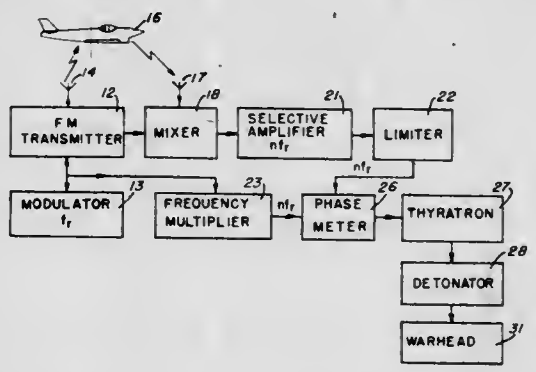
1. In a Doppler-type ordnance proximity fuze, said fuze having a tank circuit and means for causing radio-frequency energy of frequency f_o to circulate in said tank circuit, said fuze also having antenna means for radiating radio-frequency energy of frequency f_o from said tank circuit and for receiving a returned portion of said energy after reflection from a target, said returned portion as received by said antenna means having the frequency $f_o+\Delta f$, the frequency shift Δf being due to the relative motion of said fuze and said target, said returned portion having the effect of amplitude-modulating the radio-frequency energy in said tank circuit at a modulation frequency Δf, said fuze also having rectifier means for the half-wave rectification of a portion of the thus-modulated radio-frequency signal in said tank circuit to obtain a rectified signal having a component of frequency Δf, said fuze also having a detonator-firing circuit responsive to a component of frequency Δf, the improvement comprising: a diode having its cathode connected to said rectifier means to receive said rectified signal; a resistance connected between the anode of said diode and ground; a capacitance across said resistance; said diode and said capacitance cooperating with said rectifier means to provide voltage doubling of said portion of the thus-modulated radio-frequency signal in said tank circuit; and means connected to the junction of said diode and said resistance for applying a signal of frequency Δf to said detonator-firing circuit, the amplitude of the Δf signal at said junction being approximately twice the amplitude of the Δf signal at said rectifier means.



3,872,792
FUZE

Harold Goldberg, Washington, D.C., and Milton Sanders, Stamford, Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1956, Ser. No. 558,596
Int. Cl. F42c *13/04*
U.S. Cl. 102—70.2 P **1 Claim**

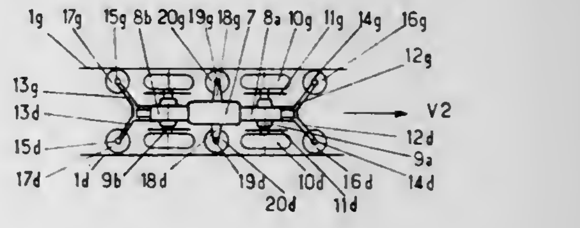


1. A radio-proximity ordnance fuze comprising: a generator of radio frequency energy; modulator means for modulating the frequency of said generator with a modulation frequency fr; antenna means for radiating energy from said generator and for receiving a portion of the energy thus radiated upon its return from a reflective target; mixer means for combining frequency-modulated radio-frequency energy thus received with a local frequency-modulated radio-frequency signal taken directly from said generator to obtain a mixer output signal having a component of frequency nf_r, n being an integer; selective amplifier means peaked at the frequency nf_r connected to the output of said mixer means for obtaining a return-derived-signal of frequency nf_r; a frequency multiplier connected to said modulator means for obtaining a reference signal of frequency nf_r having a constant phase; adjustable phase shift means connected to the output of said frequency multiplier for adjusting the phase of said reference signal to a predetermined value; frequency heterodyning means connected to the outputs of said selective amplifier means and said adjustable phase shift means for obtaining at a first heterodyning means output a reference signal of frequency nf_r-fo, and at a second heterodyning output a return-derived-signal also of frequency nf_r-fo; frequency doubler means connected to said second heterodyning means output for obtaining a return-derived-signal of frequency $2\ (nf_r-fo)$; first squarer means connected to said first heterodyning means output for producing a square wave reference signal of frequency nf_r-fo; second squarer means connected to the output of said frequency doubler for producing a square wave return-derived-signal of frequency $2(nf_r-fo)$; first pulse former means connected to the output of said first squarer means for producing a reference signal positive output pulse at the beginning of each positive-going step of said square wave reference signal; second pulse former means connected to the output of said second squarer means for producing a return-derived-signal positive output pulse at the beginning of each positive-going step of said square wave return-derived-signal; a bistable flip-flop circuit having an "on" state and an "off" state, said flip-flop circuit being adapted to be switched to the "on" state by said return-derived signal pulses and to be switched to the "off" state by said reference signal pulses, the output of said flip-flop circuit thereby being dependent upon the phase difference between said reference signal of frequency nf_r-fo and of constant and predetermined phase and said return-derived-signal of frequency nf_r-fo whose phase is dependent upon target distance; and detonator-firing means responsive to the attainment of the output of said flip-flop of at least a critical value.

3,872,793
GUIDED TRANSPORT SYSTEM

Pierre Patin, 9, rue Nicolas Houel, 75005 Paris, France

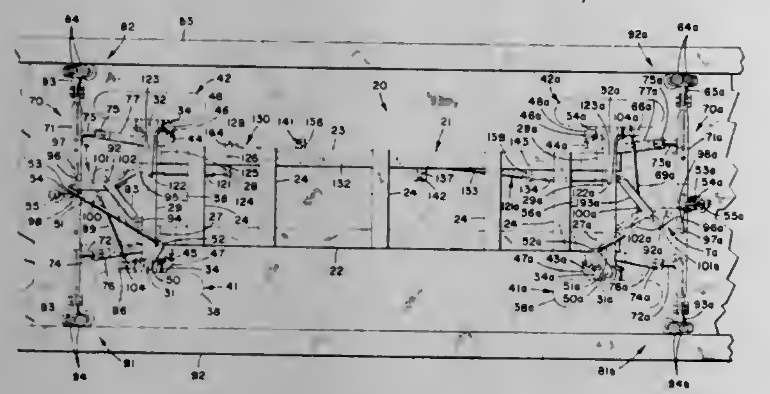
Filed Jan. 22, 1973, Ser. No. 325,347
Claims priority, application France, Feb. 3, 1972, 72.03637; July 13, 1972, 72.25513
Int. Cl. E01b *25/28*
U.S. Cl. 104—130 **10 Claims**



2. A guided transport system comprising a track, sets of cross-over points in said track, a control device for each of said sets of points, a guide parallel to said track, a break in the continuity of said guide adjacent each of said sets of cross-over points, flexible portions for said guide adjacent each of said breaks of continuity of said guide deformable by said points control device, a vehicle, support wheels for said vehicle rotatable on horizontal axes and engaging said track and six guide wheels for said vehicle on vertical axes engaging said guide, each corner of said vehicle having one of said guide wheels mounted thereon and each side of the central part of the vehicle having one of said guide wheels mounted thereon.

3,872,794
VEHICLE STEERING SYSTEM

William P. Goode, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Apr. 2, 1973, Ser. No. 347,104
Int. Cl. B61f *9/00*
U.S. Cl. 104—247 **4 Claims**



1. A steering system for a vehicle movable over a roadway having longitudinal side guide surfaces, the vehicle having a frame and pairs of transversely aligned wheels mounted on king pins connected to the frame and rotatable about substantially vertical axes, the king pins of each pair of transversely aligned wheels being connected for simultaneous turning movement about the axes of their king pins, at least one of the king pins of each pair of wheels having a steering arm extending therefrom, said steering system including:

a separate roadway steering mechanism for each pair of wheels, each said roadway steering mechanism including: a steering member mounted on a portion of the vehicle for movement relative thereto and engageable with the side guide surfaces of the roadway,

a linkage connecting said steering arm of the king pin of one of the pair of wheels whose turning movements are controllable by said steering member for causing said pair of wheels to turn about said axes in accordance with the movement of said steering member relative to the vehicle frame upon engagement of said steering member with the side guide surfaces,

the steering system including a tow steering mechanism for controlling the turning movement of the wheels when the vehicle is moving over a surface other than that provided by the roadway, said tow steering mechanism including: a tow member at the end of the frame connectible to a towing means;

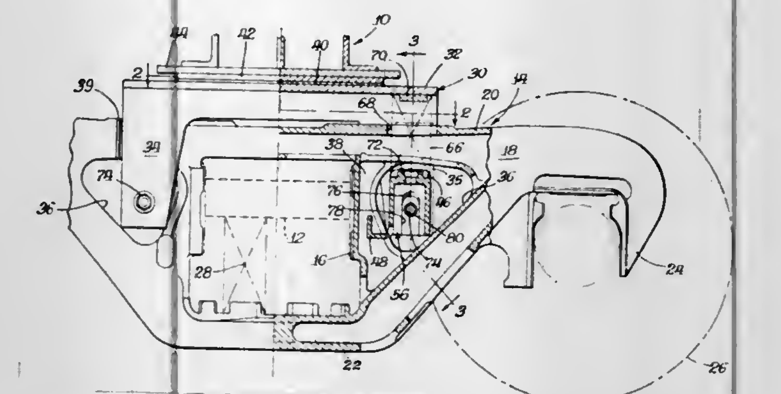
a linkage connecting said tow member to one of the king pins of the pair of wheels adjacent said one and for causing turning movement of the king pins of the wheels in accordance with the turning movement of the towing means; and

a second linkage connecting the king pin on one of the wheels of the pair of wheels with the king pin of one of the wheels of the other pair of wheels for causing said other pair of wheels to turn relative to the frame in a direction opposite to the direction of turning movement of said one pair of wheels relative to the frame.

3,872,795
RESILIENTLY FRICTIONALLY ROLL STABILIZED RAILWAY CAR

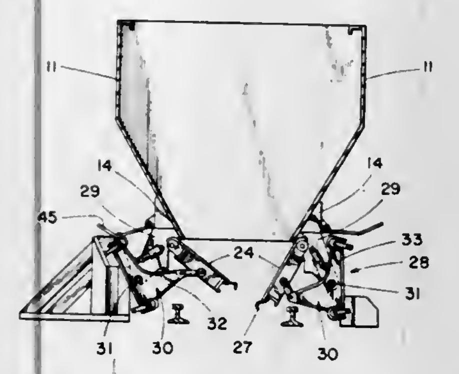
Carl E. Tack, Elmhurst, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Continuation of Ser. No. 853,176, Aug. 26, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 210,175
Int. Cl. B61f *5/14, 5/24;* **F16c** *17/26*
U.S. Cl. 105—199 A **7 Claims**

1. In a railway vehicle including a car body having a car bolster supported upon the bolster of a car truck wherein each end of the truck bolster is spring-supported in a side frame in turn supported upon wheel and axle assemblies, the improvement comprising: a yoke positioned between the car body and the side frame, said yoke being bifurcated to define a pair of spaced legs depending downwardly and receiving the side frame therebetween, said yoke having a friction surface, said car body having a friction surface, spring means on said frame urging said yoke surface into engagement with said car body friction surface, and snubbing means actuated by said spring means for frictionally engaging each pair of legs and yieldingly resisting vertical movements of the yoke, whereby a stabilizing effect is provided which substantially reduces both the rocking of the car body and truck swivel, said reduction of truck swivel being accomplished by said frictional engagement of the yoke surface with the car body surface and said reduction of the rocking of the car body being accomplished by said snubbing means attenuating the energy imparted thereto from the car body through said resiliently supported yoke.



3,872,796
DOOR OPERATING MECHANISM

Franklin P. Adler, Michigan City, and Roy W. Miller, Highland, both of Ind., assignors to Pullman Incorporated and Pullman Transport Leasing Company, Chicago, Ill.
Filed Nov. 12, 1973, Ser. No. 415,098
Int. Cl. B61d *7/30*
U.S. Cl. 105—241 C **9 Claims**



1. In a hopper car having a body structure and a hopper, bottom dump door means including a door hingedly connected to said body on one side of said hopper for hinging movement downwardly about a longitudinal axis from a closed to an open position, the improvement comprising:

a lever having a substantially upright arm and a laterally extending arm,

first pivot means connecting said lever to said body for pivotal movement about a longitudinal axis,

a strut including second pivotal connecting means connecting said strut to said laterally extending arm,

third pivotal connecting means connecting said strut to said door,

said second pivotal connecting means in the closed position of said door being disposed in an over center position relative to said first and third pivotal connecting means,

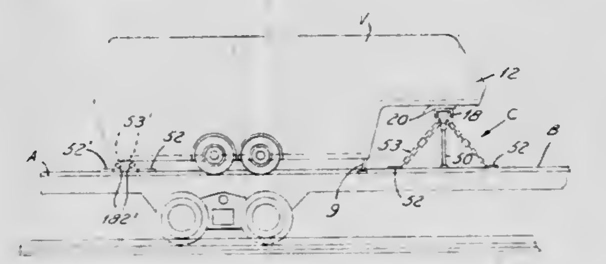
a stop carried on said body limiting the movement of said door to its over center position,

first and second cam engageable means on said upright arm, said first cam engageable means being adapted to engage first trackside camming means during movement of said car to pivot about said lever from said over center position wherein said door is opened and material is discharged from said car, and

said first cam engageable means being adapted to engage second trackside camming means during said car movement for pivoting said lever again to its over center door closed position.

3,872,797
TRAILER HITCH TIE-DOWN ASSEMBLY

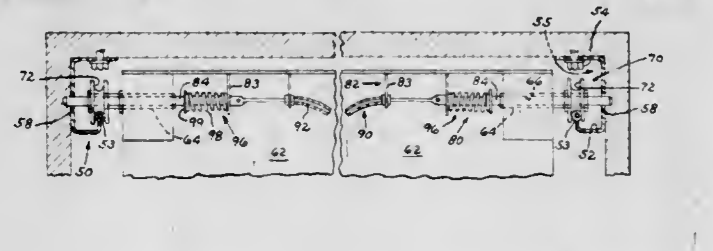
William R. Baker, Northville, and Israel D. Peisner, Huntington Woods, both of Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.
Filed Jan. 28, 1974, Ser. No. 437,286
Int. Cl. B60p *7/08*
U.S. Cl. 105—368 T **7 Claims**



1. Tie-down structure for securing a trailer on the elongated deck of a transport, comprising a pair of elongated laterally spaced parallel rails adapted to be anchored lengthwise upon the deck, a support frame having a pair of laterally spaced parallel bars, means for pivotally mounting said frame between said rails in selected positions along the length of said rails for swinging movement from a generally horizontal to an upright position, said pivotal mounting means comprising laterally extending pins carried by the lower ends of said bars, pin-receiving apertures in said rails spaced apart along the length thereof, said pins being received in any opposed pair of apertures in said rails, means for releasably holding said frame in upright position comprising carriages, pins on said carriages receivable in said rail apertures to secure said carriages in adjusted positions on opposite sides of said frame, flexible linear members connected to and extending between said frame and said carriages, and means for securing the trailer to the upper portion of said frame in the upright position of the latter.

3,872,798
BULKHEAD TROLLEY AND LOCKING DEVICE

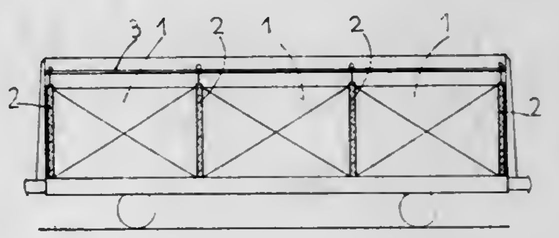
Lowell L. Malo, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Nov. 27, 1973, Ser. No. 419,399
Int. Cl. B60p *7/14*
U.S. Cl. 105—376 **14 Claims**



1. A railway box car comprising: fixed rail asemblies mounted upon a fixed upper portion of opposite sides of the box car; said rail assemblies each having a longitudinally extending rail having a rail contour which cooperates with a contour on a rotatable bulkhead trolley; said bulkhead trolleys rotatably mounted upon a hollow member mounted on a bulkhead adapted for longitudinal movement in the box car; said bulkhead trolleys having a channel contour adapter to engage said rail contour; means for maintaining said bulkhead in a desired position within the box car comprising at least one locking member mounted on the bulkhead for transverse movement within said hollow member and being resiliently biased to engage openings in a fixed portion of the car in a plurality of positions in the car; and actuating means to overcome the resilient bias of said locking member by an operator in the box car.

3,872,799
SHOCK ABSORBING APPARATUS

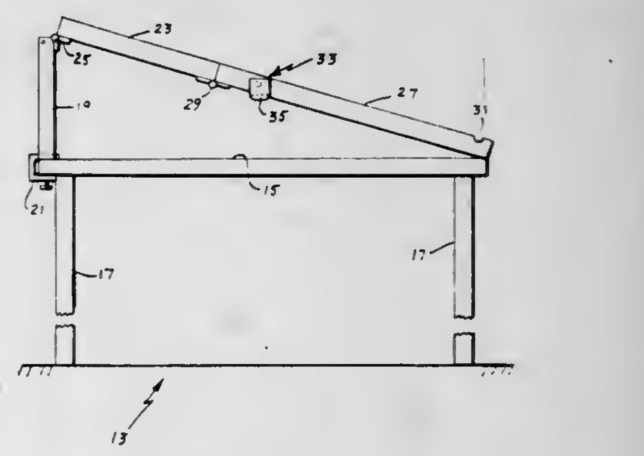
Remy Dousset, Lyon, France, assignor to Societe Nouvelle des Ateliers de Venissieux, Paris, France
Filed Mar. 29, 1973, Ser. No. 346,039
Claims priority, application France, Oct. 20, 1972, 72.37299; Jan. 16, 1973, 73.01410; May 10, 1972, 72.16701
Int. Cl. B61d *45/00*
U.S. Cl. 105—492 **21 Claims**



1. Shock-absorption apparatus for insertion between loads conveyed in a vehicle, or between a load and a wall or a partition of the vehicle, characterized by the fact that it consists of at least one assembly consisting of two rigid, tight panels, connected by a flexible, tight joint, the whole enclosing a volume of air communicating with the atmosphere through a measured orifice of small cross-section impeding the flow of air from the apparatus, the two panels when in use being held apart from each other by elastic elements having negligible shock absorption applying a force simply sufficient to bring the panels into the maximum separation position when the shock-absorption apparatus is in use in the free state, in the absence of any external influence.

3,872,800
DESK-TOP DRAFTING TABLE

Victor B. Wallis, 4784 Junupa Ave., Riverside, Calif. 92506, and Philip J. Beaton, Sr., P.O. Box 272, Westmoreland, N.Y. 13490
Filed May 7, 1973, Ser. No. 357,569
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **2 Claims**

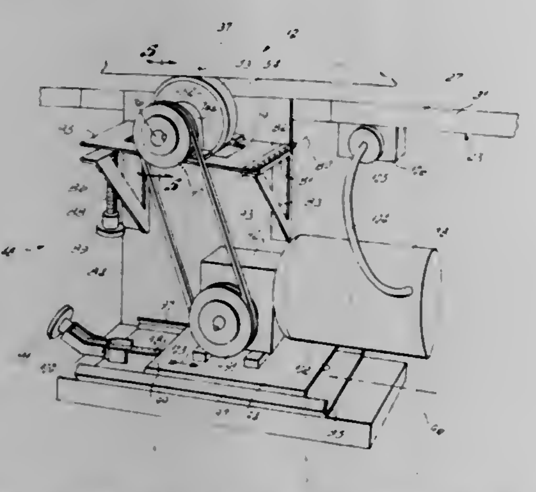


1. A foldable desk top drafting table for attachment to a conventional desk to produce a multi-purpose work unit, said

drafting table comprising a stationary first board having its lower edge fixedly attached to the rear edge of the top of the conventional desk, said first board being vertically oriented upward from the desk top surface, a second board having its rearward edge pivotally attached to the upper edge of said first board, said second board being angularly oriented forward and downward, and a third board having its rearward edge pivotally attached to the forward edge of said second board, said third board extending forward and downward at the same angle as said second board and the forward edge of said third board making contact with the front edge of the desk top thereby providing an inclined surface suitable for drafting and foldable back out of the way when not in use to allow access to substantially all of the desk top surface.

3,872,801
DRIVE SYSTEM FOR A ROTATING CAFETERIA TYPE FOOD SERVICE COUNTER

Elmer R. Weddendorf, Cincinnati, Ohio, assignor to B/W Metals Company, Inc., Fairfield, Ohio
Filed June 1, 1973, Ser. No. 365,981
Int. Cl. A47b *37/00*
U.S. Cl. 108—20 **7 Claims**



1. A drive system for a rotating cafeteria food service counter, said counter including a counter top adapted to rotate on a fixed frame, including

a plurality of vertically disposed drive wheels disposed beneath said counter top, each drive wheel being frictionally engageable with the underside of said counter top for rotating said counter top,

a drive motor interconnected with said drive wheels by a flexible drive means,

tension adjustment means connected with said drive motor, said tension adjustment means permitting adjustment of the tension on said flexible drive means as desired

compression adjustment means connected with each drive wheel, said compression adjustment means being manually adjustable to permit varying degrees of compression to be exerted on the underside of said counter top by each drive wheel as desired, and said compression adjustment means also being manually adjustable to frictionally engage or disengage each drive wheel with the underside of said counter top as desired,

a series of vertically disposed idler wheels mounted to said fixed frame, said vertically disposed idler wheels bearing against the underside of said counter top,

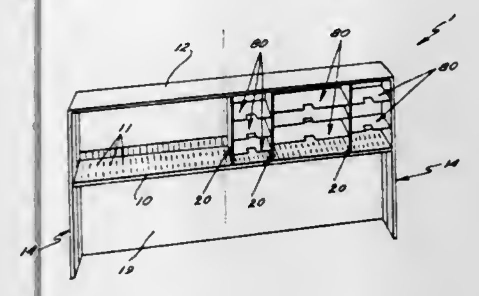
first positioning adjustment means connected with each vertically disposed idler wheel, said first positioning adjustment means being manually adjustable to permit varying degrees of compression to be exerted on the underside of said counter by each idler wheel as desired, a series of horizontally disposed idler wheels mounted to said fixed frame and positioned along a circular locus of points concentric with the counter top's axis of rotation, said horizontally disposed idler wheels cooperating with an annular rail fixed to said counter top that is concentric with said counter top's axis of rotation, and

second positioning adjustment means connected with said horizontally disposed idler wheels, said second positioning adjustment means being manually adjustable to permit positioning of each idler wheel along a radially oriented path relative to the center of said counter top for maintaining said counter top in centered position on said fixed frame during rotation of said counter top,

said compression adjustment means, and said first and second positioning means, permitting said drive and idler wheels to be adjusted manually as required so that said counter top may rotate with substantially no noticeable vibration to a customer.

3,872,802
FILING CABINET

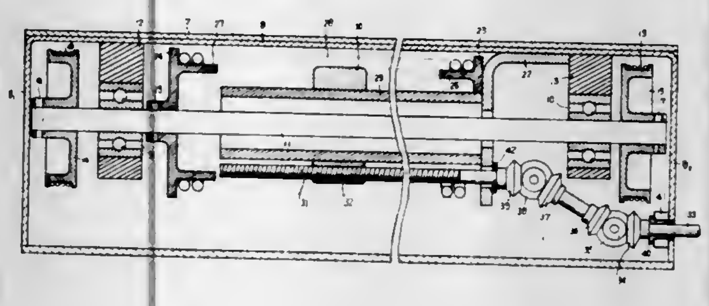
Douglas Scheerhorn, and Robert C. Van Gessel, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jan. 8, 1973, Ser. No. 321,561
Int. Cl. A47b *57/28*
U.S. Cl. 108—61 **17 Claims**



1. In a cabinet having at least one horizontal shelf and at least one vertical divider including a movable detent for releasably cooperating with a keeper in said shelf to thereby releasably hold said divider in position, the improvement comprising: said detent being positioned within said divider and including a portion extending therebeyond; an actuator being positioned within said divider and being operably connected to said detent; an access aperture extending completely through said divider, said actuator extending into said access aperture whereby it is readily accessible from either side of said divider and can be operated to facilitate retraction or extension of said detent member with respect both to said divider and to said keeper with which it releasably cooperates.

3,872,803
HANDCART

Nobuo Yasutake, Osaka, Japan, assignor to Daifuku Machinery Works, Ltd., Osaka, Japan
Filed July 17, 1973, Ser. No. 380,126
Int. Cl. A47b *9/02*
U.S. Cl. 108—136 **2 Claims**



1. A self-leveling apparatus comprising;

a base;

hollow upright supports attached to and extending vertically from said base;

a shaft rotatably mounted in said base between said upright supports;

cable drums fixed to opposite ends of said shaft and rotatable therewith;

pulleys rotatably mounted at the top of said hollow upright supports;

a torsion spring arranged concentrically with respect to and at a distance away from said rotary shaft and having one end thereof fixed stationarily with respect to said base, and the other end fixed to said rotatable shaft;

a support table mounted between said hollow upright supports and movable vertically in a horizontal position parallel to said base;

cables having one end fixed to said cable drums extending upward through said hollow upright supports and over said pulleys, with the other end fixed to said support table;

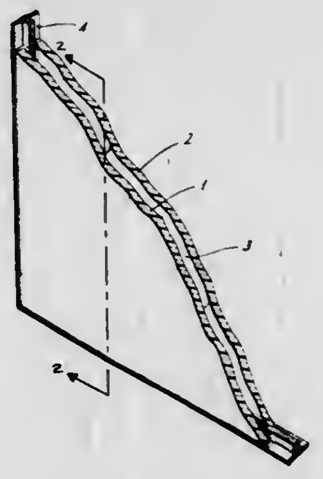
a guide sleeve operatively located within the space between said torsion spring and said rotatable shaft;

a slider slidable on said guide sleeve within said space between the torsion spring and the shaft, the outer diameter of said slider fitting within the inner diameter of the torsion spring when there is no load on the support table; and

adjusting means for moving said slider along said guide sleeve within said torsion spring whereby adjusting the position of the slider by the adjusting means in relation to the torsion spring will regulate the effective length of the torsion spring.

3,872,804
COMPOSITE PANEL PROJECTILE BARRIER

Donald I. Yarnall, Ambler, Pa., assignor to Commercial Plastics & Supply Co., Inc., Cornwells Heights, Pa.
Continuation-in-part of Ser. No. 182,397, Sept. 21, 1971,. This application Sept. 24, 1973, Ser. No. 400,450
Int. Cl. F41h *5/08*
U.S. Cl. 109—49.5 **7 Claims**



1. A composite panel, particularly an impact-resistant projectile barrier, comprising:

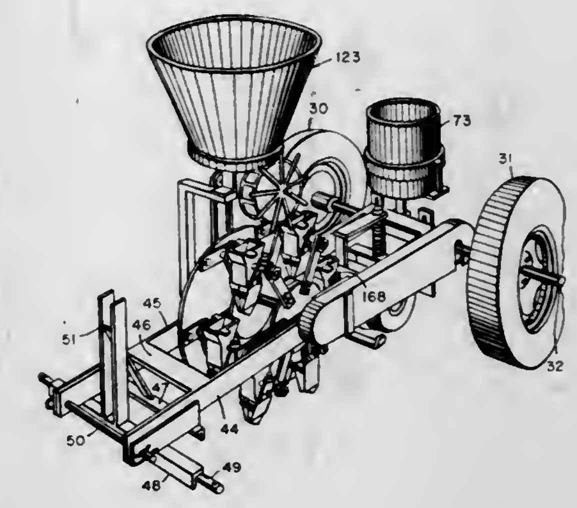
a. a plurality of coextensive panels of tough resilient plastic material arranged in spaced parallel planes,

b. spacing means interposed between said panels at the edges thereof and comprising strips of resilient plastic material, said strips extending around the entire peripheries of said sheets and being sealed thereto by a high-strength adhesive so as to provide a freely flexible structure having an hermetically sealed enclosure between said sheets capable of withstanding the impingement of a high velocity projectile without rupturing the seals between said sheets and said strips, said enclosure being filled with an inert dry gas,

c. whereby the energy of a projectile impinging upon an outer surface of one of said sheets is dissipated by the combined action of said resilient sheets and the compression of a gas within said enclosure so as to resist passage of a projectile through said barrier.

3,872,805
PLANTING MACHINE

Howard A. Kolk, 129 W. 34th St., and Robert D. Kolk, 28 W. 39th St., both of Holland, Mich. 49423
Filed Jan. 18, 1972, Ser. No. 218,698
Int. Cl. A01c *5/00*
U.S. Cl. 111—2 **5 Claims**



1. A planting machine including vehicle means having a normal direction of movement over a ground surface, a rotary assembly having a frame rotatably mounted on said vehicle means on a horizontal axis of rotation transverse to said direction of movement, and drive means for said rotary assembly, wherein the improvement comprises: at least one receptacle rotatably mounted on said rotary assembly, said receptacle having trap door means at the bottom thereof at least in part defining a downwardly pointed configuration at the lower extremity of the rotary path of movement of said receptacle, said axis of rotation being disposed to cause penetration of ground by said pointed configuration;

orienting means mounted on said vehicle means interrelating said receptacle and said vehicle means, and maintaining a substantially constant position of said receptacle during the rotation of said rotary assembly;

synchronizing means incorporated in said drive means interrelating the movement of said vehicle means and said rotary assembly to establish a substantially zero velocity of said receptacle means with respect to ground at the lower extremity of said rotary path of movement;

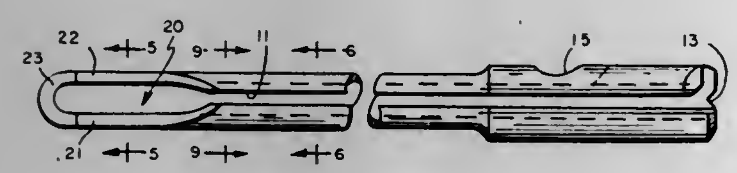
actuating means having components mounted on said vehicle means and receptacle means, respectively, and operative to induce said trap door means to open exclusively at an adjacent said lower extremity;

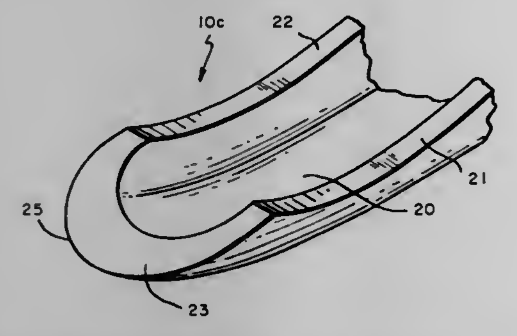
hopper means mounted on said vehicle and located generally above said rotary assembly; and

transfer means operative to remove a predetermined quantity of material from said hopper means and transfer the same to said receptacle means in an upper portion thereof, said transfer means including a rotary member having end-plates and mounted for rotation on a horizontal axis, and also having a plurality of outwardly-open pockets between said end-plates, said rotary transfer member being vertically interposed between said outlet and the path of movement of the top of said receptacle at the upper positions thereof, said transfer means further including a shield disposed to close off the opening of said pockets around a section of rotation of said rotary transfer member sufficient to induce said pockets to dump the contents thereof exclusively into said receptacle, and means synchronizing said transfer means and said rotary assembly, said synchronizing means including a Geneva mechanism incorporating a portion of said receptacle and angularly spaced arms extending from said rotary transfer member.

3,872,806
FASTENER ATTACHMENT INSERTION DEVICE NEEDLE CONSTRUCTION

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Feb. 15, 1973, Ser. No. 332,625
Int. Cl. D05b *3/12*
U.S. Cl. 112—104 **3 Claims**

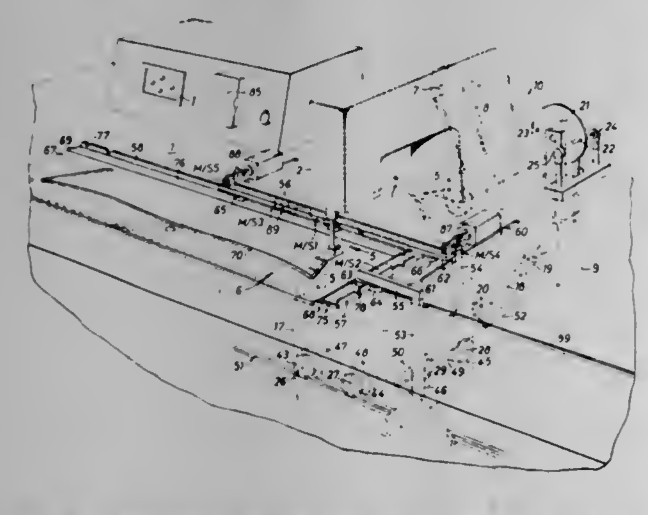




1. In a fastener attachment member insertion device needle for inserting fastener attachment members into material, the needle including a tubular member having a mounting portion, a central portion and a front end portion, at least the central portion having a bore and a longitudinal slot along one side of the bore, the distance between the surfaces defining the slot less than the diameter of the bore, the improvement comprising a needle tip having a spoon-like hollow forward of the bore for expelling the fastener attachment member with the forward most tip portion defining a line knife edge to form an elongate slit in material upon insertion into the material, said line knife edge being a curved line and said line knife edge defined by a curved side surface and a flat side surface intersecting the curved side surface, said spoon-like hollow portion having a curved open channel defined between spaced curved side surfaces and said flat surface, which intersects said spaced curved side surfaces at the front of the channel, and said spaced curved side surfaces also intersecting surfaces defining said slot at the rear of said channel.

3,872,807
PROFILE STITCHING MACHINES

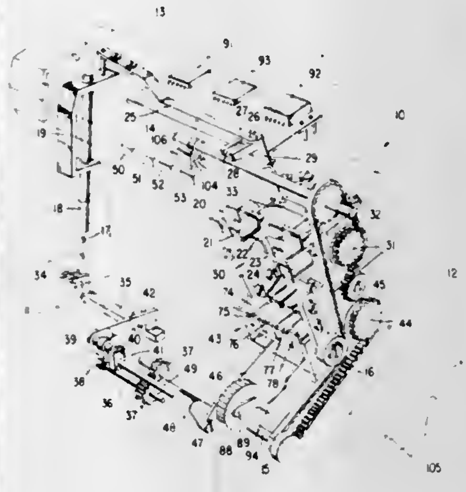
George William Palmer, Sudbury, England, assignor to Stateside Machinery Co. Ltd., London, England
Filed Oct. 23, 1973, Ser. No. 408,998
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **17 Claims**



1. Profile stitching apparatus including a power driven sewing machine having drive means and a needle, a stitching tracker plate having a slotted profile arranged to be moved with the slot in register with the needle of the machine to sew along the profile, guide means, arranged along one longitudinal edge of the tracker plate, further guide means arranged along a lateral edge of the tracker plate, a first carriage member, a first rack operatively connected to the first carriage member and arranged to engage the guide means, a second carriage member, a second rack operatively connected to the second carriage member and arranged to engage the further guide means, transmission means arranged to couple the plate to the drive means for the machine to allow the plate to move relatively to the needle of the machine, said transmission means including a gear assembly having a pair of first pair of contra-rotatable pinions co-operable with the first rack to permit the tracker plate to be moved in a direction transversely of the one longitudinal edge, and the gear assembly including a second pair of contra-rotating pinions co-operable with the second rack to permit the tracker plate to be moved in a direction different from the first mentioned direction, and means included in the transmission means for moving the tracker plate in timed relationship with the operation of the machine such that the tracker plate is moved only when the needle is clear of the workpiece.

3,872,808
SEWING MACHINE STITCH PATTERN SELECTION FROM DATA STORED IN A MULTIPLE PATTERN STATIC MEMORY

John W. Wurst, Dover, N.J., assignor to The Singer Company, New York, N.Y.
Filed July 5, 1973, Ser. No. 376,781
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 E **7 Claims**

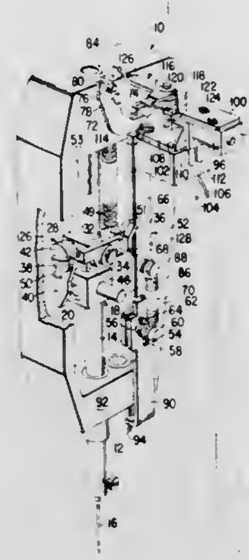


1. A multiple pattern sewing machine having instrumentalities for forming a succession of stitches individually placed in a selected one of a plurality of different patterns, said sewing machine including:

a. static memory means in which a multiplicity of separate digital code words are stored in a predetermined sequence with each word corresponding to one individually placed stitch in a pattern;
b. plural switch means arranged accessible to a sewing machine operator on said sewing machine, each said switch means coupled to said static memory means and effective when actuated individually to impress on said static memory a signal identifying as a starting word in a pattern any specific one of said multiplicity of separate digital code words which correspond to individually placed stitches;
c. means for providing timing pulses related to the formation of successive stitches formed by said sewing machine;
d. counter means coupled to said static memory means and utilizing said timing pulses for addressing digital code words in said static memory means in said predetermined sequence beginning with said starting word identified by said switch means signal;
e. means effective automatically to return said counter to a condition addressing said starting word identified by said switch means signal to repeat said predetermined sequence; and
f. actuating means coupled to said static memory means and operatively connected to said stitch forming instrumentalities and responsive to said predetermined sequence of digitally coded words addressed by said counter means for influencing said stitch forming instrumentalities to form a pattern in response thereto.

3,872,809
NEEDLE BAR RELEASE DEVICE

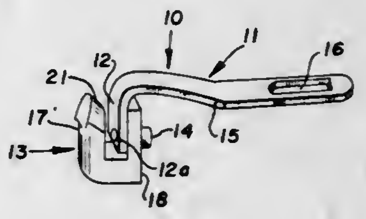
Kenneth D. Adams, Madison, and John Petronchak, Singac, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed Sept. 13, 1974, Ser. No. 505,829
Int. Cl. D05b *55/16*
U.S. Cl. 112—221 **11 Claims**



1. A needle bar release device for a sewing machine comprising, an endwise reciprocable needle bar, frame means for accommodating reciprocatory movement of said needle bar, a reciprocating drive member slidably mounted on said needle bar, a coupling member fixed to said needle bar for continuous movement with said needle bar, said coupling member including latching means for releasably connecting said coupling member to said drive member to transmit reciprocatory movement of said drive member to said needle bar, said latching means including a latch extension movable in a first direction toward said drive member to permit said coupling member to connect to said drive member, said latch extension being movable in a second direction away from said drive member to permit said coupling member to disconnect from said drive member, said latching means further including first biasing means for urging said latch extension to move in said first direction, latch release means mounted on said frame means for pivotal movement against said latching means to move said latch extension in said second direction, said first biasing means continuously urging said latch release means to pivot away from said latching means, and a solenoid member mounted on said frame means, said solenoid member having actuating means for causing pivotal movement of said latch release means against said latching means to cause movement of said latch extension in said second direction to disconnect said coupling member from said drive member whereby said drive member slides on said needle bar without influencing reciprocatory movement of said needle bar.

3,872,810
NEEDLE PROTECTOR

Lloyd B. Johnson, Rosemount, Minn., assignor to Lees Manufacturing Company, Cannon Falls, Minn.
Filed Oct. 10, 1973, Ser. No. 404,852
Int. Cl. D05b *51/00*
U.S. Cl. 112—227 **5 Claims**

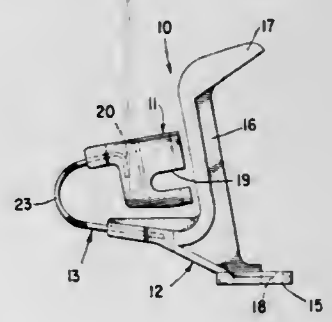


1. In a sewing machine provided with a needle, a pair of looping mechanisms, which looping mechanisms have loopers arranged on opposite sides of the needle and which are alternatively actuated to receive the thread loop from the needle, a needle protective device including:

a. a first mounting arm;
b. said mounting arm having means for attaching the same to the machine;
c. a needle receiving area provided on said mounting arm in position to receive the needle therein during at least a portion of its upward and downward stroke, said area being defined by a downwardly directed portion of said mounting arm and a laterally spaced, upwardly extending arm, said upwardly extending arm having a plurality of angularly arranged surfaces on the upper portion thereof to normally direct the needle into said receiving area; and,
d. said protective device being positioned relative to the loopers to permit the loopers to pass upwardly and across said receiving area.

3,872,811
DARNING AND EMBROIDERY ATTACHMENT

Karl Weber, Leopoldshafen, Germany, assignor to G.m.b.H. Singer, Eschborn/Ts., Frankfurt Allee, Germany
Filed Sept. 19, 1974, Ser. No. 507,325
Int. Cl. D05b *29/00;* **D05c** *9/02*
U.S. Cl. 112—236 **2 Claims**



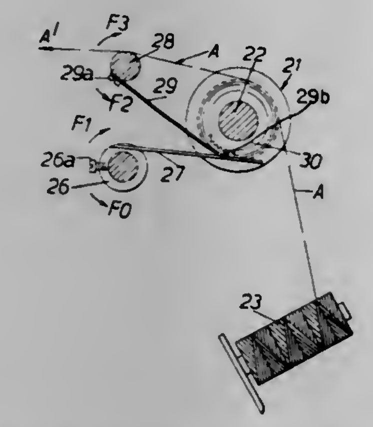
1. A unitary molded darning and embroidery attachment for a sewing machine having a presser bar and an endwise reciprocating needle bar comprising:

a. a first plastic member including a plastic darning foot and means integral with said darning foot for engagement with and actuation by said needle bar of said sewing machine over a portion of its endwise reciprocation,
b. a second plastic member, said second plastic member having means thereon for removably securing said second member to said presser bar of said sewing machine, and
c. resilient means integrally molded with and joining said first and second plastic members whereby said first plastic member may partake of limited motion relative to said second plastic member by reason of said engagement with

and actuation by said needle bar over a portion of its endwise reciprocation.

3,872,812
THREAD-BRAKING DEVICE FOR EMBROIDERY MACHINES

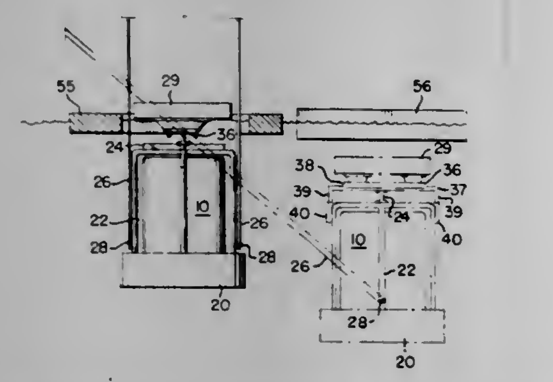
Ercole Comerio, Busto Arsizio, Italy, assignor to Metalmeccanica S.p.A., Busto Arsizio (Varese), Italy
Filed Jan. 2, 1973, Ser. No. 322,827
Int. Cl. D05b *47/00*
U.S. Cl. 112—255 **13 Claims**



1. A thread-braking device for embroidery machines having a plurality of threads fed in a stepwise manner, the device comprising a separate braking unit associated with each thread being fed to the machine, means for adjusting the braking effect in said braking units, and common locking means for the threads.

3,872,813
METHOD AND APPARATUS FOR INSTALLING OR REPLACING FLOTATION IN EXISTING MARINE STRUCTURES

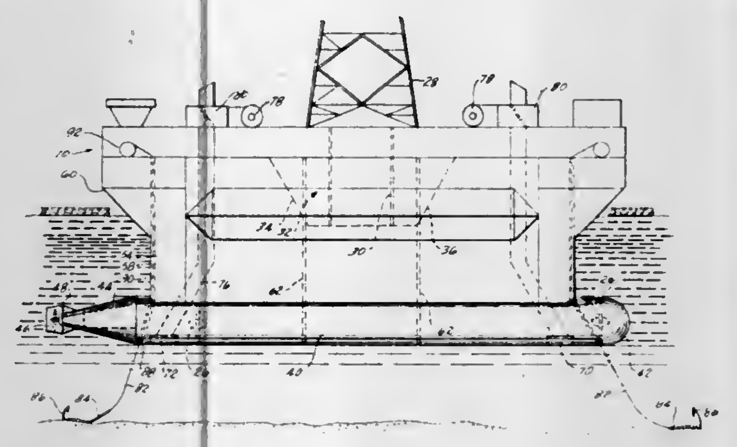
John T. Broadfoot, Star Route 1, Box 144, Kingston, Wash. 98346
Filed Jan. 2, 1974, Ser. No. 429,591
Int. Cl. B63b *7/00*
U.S. Cl. 114—0.5 F **10 Claims**



1. An in situ method of installing flotation units under floating marine structures, comprising:
- providing a floating vessel in the water adjacent the marine structure,
- temporarily securing one or more flotation units to be installed under the floating marine structure to the vessel, adding ballast to the vessel sufficient to suspend the vessel and connected flotation units beneath the water at a level to clear the underside of the marine structure,
- locating the flotation units in the desired position beneath the floating marine structure,
- removing ballast from the vessel, allowing the flotation units to ascend in the water and contact the underside of the marine structure in the position desired,
- releasing the flotation units from the vessel, and
- removing the vessel from beneath the floating marine structure.

3,872,814
TWIN-HULL SHIP FOR DRILLING IN ICE-COVERED WATERS

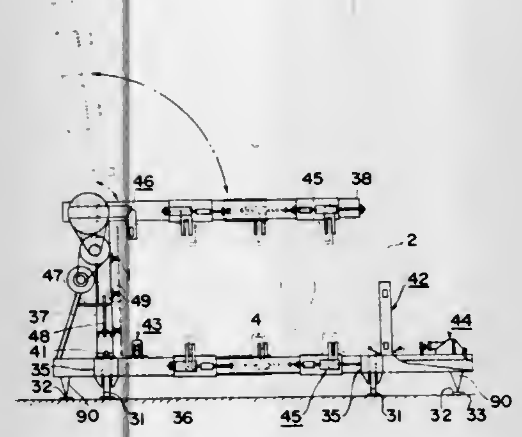
Joaquin R. Rodriguez, Cerritos, Calif., assignor to Global Marine Inc., Los Angeles, Calif.
Filed Sept. 24, 1973, Ser. No. 400,218
Int. Cl. B63b *35/10*
U.S. Cl. 114—40 **5 Claims**



1. An icebreaking vessel for providing a mobile drilling platform capable of operating in arctic waters, comprising: a pair of spaced parallel hulls, deck means interconnecting the hulls above the waterplane when the vessel is floating, the vessel having a high radius of gyration and a small waterplane area, each hull having a very narrow beam in relation to the length and draft, the bow and stern of each hull having a wedge-shaped portion forming an icebreaking edge extending at a substantial angle from the vertical from a point substantially below to a point substantially above the waterline, icebreaking sponsons extending along the sides of each of the hulls at the waterline from the bow to stern, each sponson having a lower surface extending below the waterline and projecting outwardly and upwardly from the side of the hull at an acute angle so as to ride up on and depress the ice along the full extent of the sides of the hulls with rolling motion of the vessel.

3,872,815
APPARATUS FOR ASSEMBLING BLOCKS OF A HULL

Takashi Kawai, Yokohama; Kiyoshi Mikizawa, Shimizu; Shigeo Tomita, Shimizu; Yoshio Tatsui, Shimizu, and Akio Hikai, Shimizu, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Oct. 17, 1973, Ser. No. 407,083
Claims priority, application Japan, Oct. 25, 1972, 47-106157
Int. Cl. B63b *3/00*
U.S. Cl. 114—65 R **7 Claims**

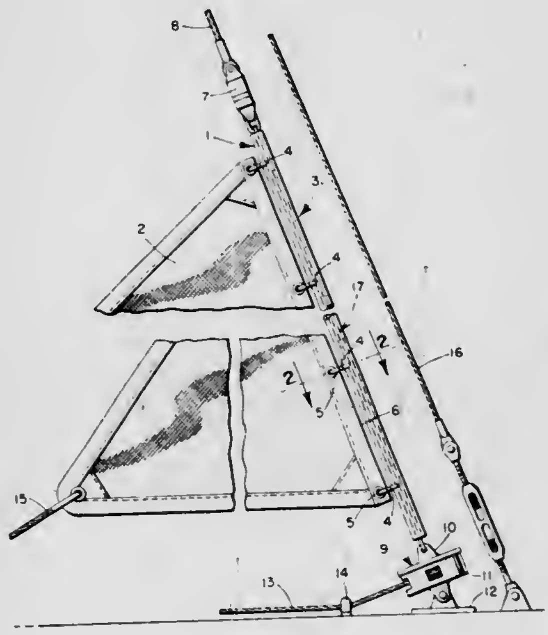


1. Apparatus for assembling blocks of a ship hull comprising:

- a bed carrying parallel rails; and
- a horizontal frame movable along said rails, said horizontal frame carrying:
- a floor plate fixing device;
- first and second floor plate sockets;
- a plurality of sockets and fixing devices for lower longitudinal members;
- a vertical frame, and
- means fixedly mounting said vertical frame on one side margin of said horizontal frame, said vertical frame carrying:
- a tiltable frame;
- means supporting said tiltable frame for vertical movement and tilting relative to the vertical frame;
- a jig, and
- means supporting said jig for pivotal movement relative to the vertical frame, said tiltable frame carrying:
- a plurality of sockets and fixing devices for upper longitudinal members.

3,872,816
ROTATABLE STAY FOR SAIL FURLING GEAR

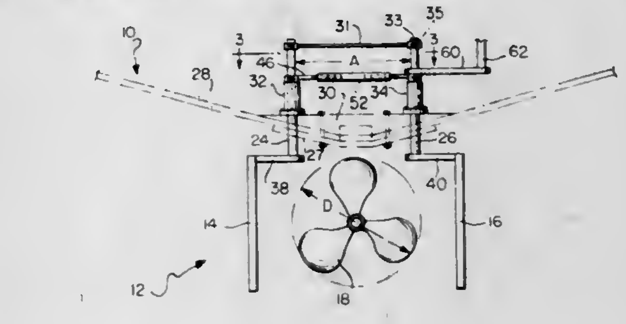
Edmund A. Cutts, Box 8, Oxford, Md. 21654
Filed July 5, 1973, Ser. No. 376,443
Int. Cl. B63h *9/10*
U.S. Cl. 114—106 **9 Claims**



1. A rotatable stay for furling a sail of a sailboat, said stay comprising:
- a plurality of links, said links each having a pair of opposing end loop portions and at least one interior opening through which one end loop portion of at least one adjacent link extends;
- said links being interlocked to form a linear chain having first and second ends, said first end being adapted to be attached through swivel means to a halyard on a mast of the sailboat, said second end being adapted to be attached to rotational drive means mounted on the deck of the sailboat; and
- at least alternate links of said chain being formed such that the maximum transverse dimension of the interior openings of the links is substantially equal to the thickness of the end loop portions of the adjacent links which extend therethrough whereby the torsional flexibility of said chain is minimized.

3,872,817
DUAL OFFSET RUDDER SYSTEM

Charles S. Duryea, 168 N. Bridge St., Somerville, N.J. 08876
Continuation-in-part of Ser. No. 298,863, Oct. 19, 1972, Pat. No. 3,828,713, which is a continuation-in-part of Ser. No. 113,247, Feb. 8, 1971, Pat. No. 3,710,749. This application Feb. 7, 1974, Ser. No. 440,535
Int. Cl. B63h *25/06*
U.S. Cl. 114—163 **1 Claim**

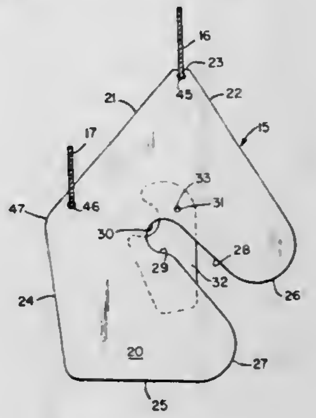


1. Dual offset rudder system for a propeller driven boat consisting of:
- a. a pair of generally vertically disposed rudder shafts rotatably mounted at the stern end of a boat on opposite sides of boat's propeller and in lateral alignment with the circle of revolution of the propeller;
- b. an offset bracket secured to the lower end of each rudder shaft and positioned to normally extend toward the side of the boat and away from the propeller;
- c. a rudder blade secured to each of said offset brackets;
- d. a lever arm mounted adjacent the upper end of each of said pair of shafts with said lever arms positioned to extend in parallel planes when the boat is normally operating along a straight path;
- e. link means pivotally inter-connecting the extended end of each of the said lever arms; and
- f. means connected to one of said shafts for controlling the angular adjustment of said pair or rudder blades;

wherein the length of each of the offset brackets is less than the radius of the propeller and the rudder shafts are spaced within the diameter of the propeller.

3,872,818
RAT GUARD

Robert M. Salvarezza, 110 Braemar Dr., Hillsborough, Calif. 94010
Continuation-in-part of Ser. No. 317,365, Dec. 22, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,398
Int. Cl. B63b *21/12*
U.S. Cl. 114—221 R **11 Claims**



1. A rat guard for ships' hawsers and the like, including in combination:
- a large barrier plate having a slot leading in upwardly at an angle with respect to vertical from an edge at a locus below the center of gravity of said plate to near the center and thence approximately horizontally into a round hawser-engaging edge at approximately said center of gravity,

said plate by virtue of its shape and appending parts having a normal righted position which it automatically seeks,

a freely swingable closure door pivoted to said plate near said hawser-engaging edge and normally lying athwart said slot, said door having an arcuate edge portion near its pivot, said door at all times hanging freely,

a pair of guide and manipulation ropes secured to said plate for swinging said plate away from its normal righted position to a position where said freely swinging closure door hangs in a position where the hawser itself can swing the door open to enter the slot fully and engage said hawser-engaging edge, said door then swinging back to enclose said hawser with its said arcuate edge upon release of said guide and manipulation ropes as said plate rights itself to its normal righted position, where said hawser cannot cause said door to open and release said hawser until said ropes have once again been used to enable release.

3,872,819

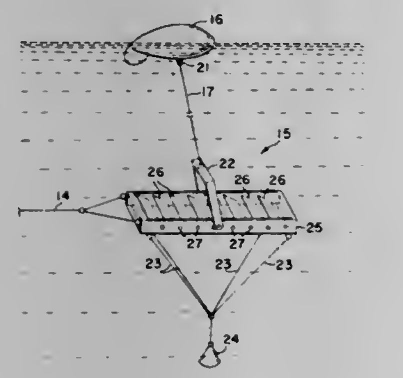
WAVE-ACTUATED HORIZONTAL ARRAY STRETCHER

George O. Pickens, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 19, 1974, Ser. No. 443,646

Int. Cl. B63h *19/02*

U.S. Cl. 115—4 **12 Claims**



1. A wave-actuated tensioning device for applying a tensional force to a submarine structure comprising:

a surface float;

a pendent line attached to said surface float and extending downwardly therefrom;

a support attached to the distal end of said pendent line having a substantially horizontal median plane;

a plurality of pivotable fins attached to said support in a manner to permit pivoting between two limit positions where the fins are inclined upwardly or downwardly from the median plane thereof;

attachment means connected to said support and extending outwardly therefrom substantially in the median plane therof for providing a tensioning connection to said submarine structure; and

stabilizing means attached to said support and extending downwardly therefrom for providing a downward force thereon, whereby vertical motions imparted to said support by virtue of the buoyant movement of said surface float in following the action of surface waves and the restorative downward force provided by said stabilizing means cause the pivotable or flexible fins to move between their two positions and divert the water displaced by said vertical motions along directions at an angle to said vertical movement.

3,872,820

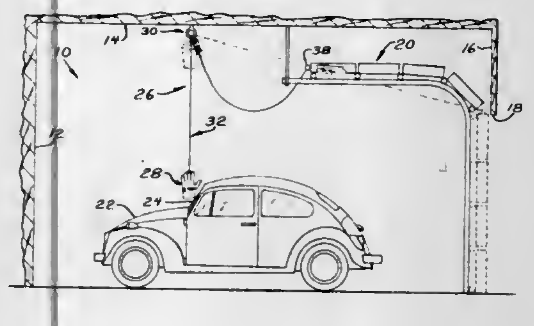
CAR POSITION SPOTTING DEVICE IN GARAGES

Christian F. Hess, 329 Meadow Lark Rd., Bloomingdale, Ill.

Filed Nov. 10, 1972, Ser. No. 305,422

Int. Cl. B60q *9/00*

U.S. Cl. 116—28 R **8 Claims**



1. A car spotting device for use in garages having closable doors to indicate to a driver of a vehicle entering the garage when the vehicle is at a predetermined position therein and for indicating to the driver of a vehicle seeking to leave the garage that the door thereof is closed, said device comprising:

means defining a target visible to the driver of a vehicle in a garage and adapted to be engaged by the vehicle to be moved thereby to provide a perceptible indication of such engagement to the driver, said target being positionable in a garage so as to first be engaged by a vehicle when the vehicle is approximately at said predetermined position; means for mounting said target for movement within a garage between first and second positions, said first position being one wherein the target will be obviously visible to a driver and will be first engaged by a vehicle when a vehicle entering the garage has moved to approximately said predetermined position and said second position being one remote from said first position and wherein said target will not be obviously visible to a driver; and

means associated with at least one of said target and said mounting means and connectable to the door of the garage to be responsive to movement thereof for moving said target to said first position when the garage door is open and for moving said target to said second position when the garage door is closed;

whereby said target, when in said first position, provides an indication to the driver of a vehicle entering the garage that the vehicle has attained said predetermined position, and when in said second position, provides an indication to the driver of a vehicle about to exit the garage that the garage door is closed.

3,872,821

CATALYTIC CONVERTER FAILURE ALARM DEVICE

Masanori Harada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

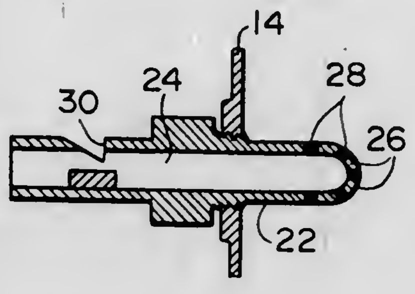
Filed Dec. 17, 1973, Ser. No. 425,125

Claims priority, application Japan, Dec. 20, 1972, 47-146287

Int. Cl. G08b *17/04;* **G01k** *11/06*

U.S. Cl. 116—106 **11 Claims**

1. In combination, a catalytic converter having a housing having means defining an exhaust gas flow path for heated exhaust gases from an internal combustion engine and a catalyst therein, an alarm device for indicating that the temperature of exhaust gases in said flow path exceeds a predetermined temperature below which said catalyst is effective and above which said catalyst is ineffective, said alarm device comprising a tubular element and having therein sensing means for sensing the temperature of exhaust gases in said flow path, said sensing means comprising a fusible plug normally closing said tubular element to preclude flow of exhaust gases therethrough from said path to the atmosphere, said fusible plug comprising a metal fusible when the temperature of the exhaust gases in said flow path exceeds said predetermined temperature to allow flow of exhaust gases through said tubular element to the atmosphere, said tubular element having means for developing an audible sound in response to the flow of exhaust gases through said tubular element into the atmosphere, and screen means in said tubular element coacting with said fusible plug and operative after said fusible plug is melted by the exhaust gases when the gases reach about said predetermined temperature for allowing the exhaust gases to pass through said screen means and out said tubular element to the atmosphere and precluding said catalyst from passing through said tubular element.



3,872,822

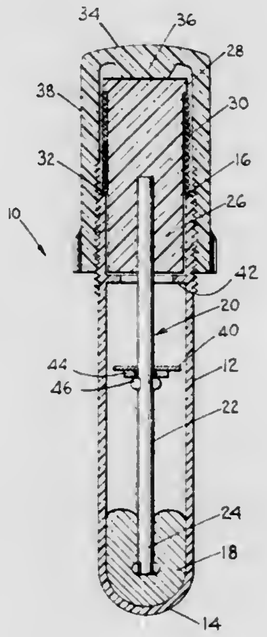
DISPOSABLE TEMPERATURE INDICATOR

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 20, 1973, Ser. No. 389,964

Int. Cl. G01k *1/14*

U.S. Cl. 116—114.5 **4 Claims**



1. A fever indicator for determining temperatures above a predetermined value comprising: an elongated vessel having a closed end and an open top end, a movable elongated rod member having a first end portion disposed within said vessel at a first position, means bonding said first end of the movable member to a section of said vessel at said first position, said bonding means comprising a material meltable at said predetermined temperature, means on said open top end exerting a resilient force on said member for urging said member toward a second position, and selectively removable means engaging said top open end for constraining said member to said first position even after the predetermined temperature is reached.

3,872,823

TIME SWITCHES

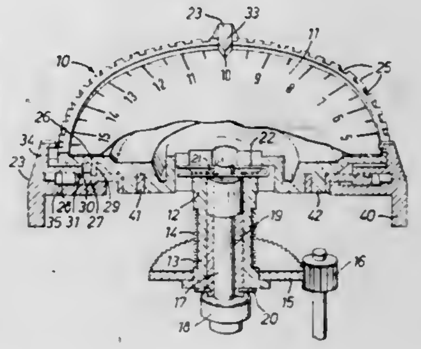
Peter Robert Durdin, New Malden, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,633

Claims priority, application United Kingdom, Mar. 2, 1972, 9825/72

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 L **5 Claims**



1. Apparatus for selecting a time for operation of a time switch comprising

a disc shaped dial adapted to be rotated by timing means, an annular flange at the periphery of said dial,

said flange having a series of recesses therein corresponding to selectable time intervals,

at least one tappet carried at the periphery of said dial and selectably rotatable thereabout,

engagement means on said tappet for selectively engaging a recess on the periphery of said flange,

a rib on said tappet spaced radially inwardly of the periphery of said dial,

means associated with said dial and engageable with said rib for restricting radial movement of the tappet between first and second radial positions on the dial and permitting substantially free movement of the tappet around the dial when the tappet is in one of its two restricted radial positions.

3,872,824

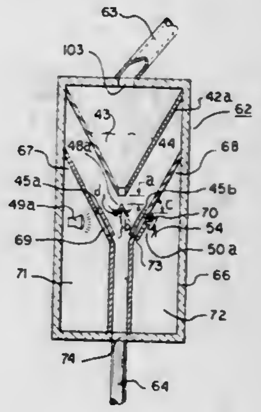
XEROGRAPHIC TONER CONCENTRATION CONTROL APPARATUS

Daniel Richard Erny, Boonton, and Leon Albert Tysko, Rockaway, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.Y.

Division of Ser. No. 227,965, Feb. 22, 1972. This application July 20, 1973, Ser. No. 381,035

Int. Cl. G03g *13/00*

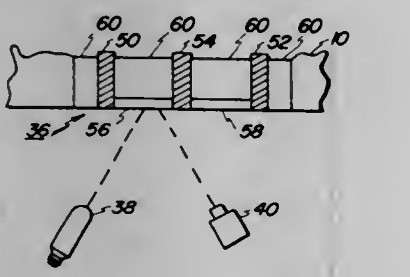
U.S. Cl. 118—7 **13 Claims**



1. Apparatus for controlling the toner concentration of the developer in the developer tank of a xerographic copying apparatus, comprising:

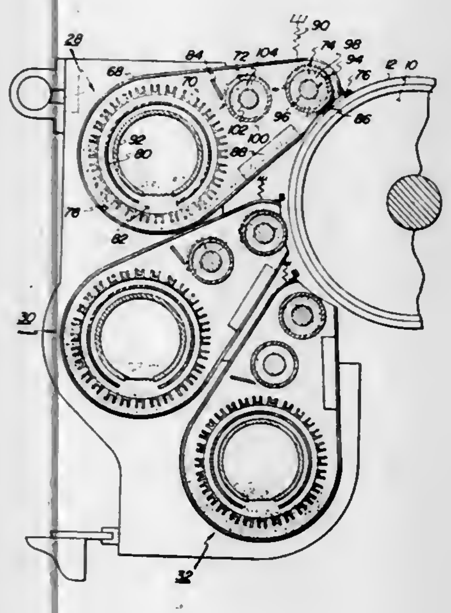
a developer sample storage hopper;
a supply conduit for transporting a portion of the developer in said tank to said hopper;
a lower orifice in said hopper for permitting developer stored in said hopper to flow through said orifice in a stream at a rate limited by the size of the orifice;
first and second inclined light transmissive toner collecting plates;
a developer stream deflecting element situated below said orifice for (i) introducing a substantial amount of turbulence into said stream by disrupting the flow of developer in said stream, for (ii) dividing the stream into at least two relatively turbulent streamlets, and for (iii) directing said turbulent streamlets onto respective ones of said collecting plates
with kinetic energy sufficient to dislodge toner particles from the developer carrier beads to which the particles are electroscopically adherent, said dislodged toner particles being deposited upon said collecting plate portions, the kinetic energy and turbulence of said developer streamlets being sufficient to remove toner particles from said collecting plate portions when the concentration of toner in said streamlets decreases, said kinetic energy being sufficiently low so that the developer is not damaged by impact with said collecting plates;
at least one light source for illuminating said collecting plate portions;
a photosensitive element for generating a control signal responsive to the light from said source which is transmitted through said collecting plate portions;
means coupled to said element for varying the concentration of toner in the developer within said tank in accordance with said control signal; and
conduit means for returning the developer in said streamlets to said tank after the streamlets have impinged on said collecting plates.

3,872,825
PARTICLE CONCENTRATION DETECTOR
James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 6, 1973, Ser. No. 385,936
Int. Cl. G03g *13/00*
U.S. Cl. 118—7 **22 Claims**



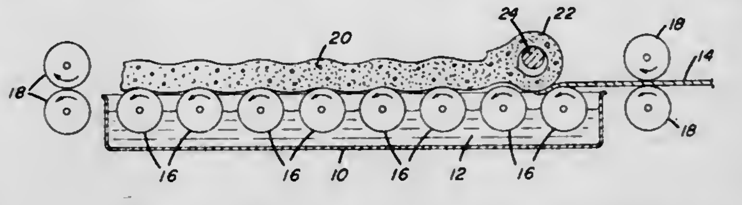
1. An apparatus regulating toner particle concentration within a mix of toner particles and carrier granules employed in a development system arranged to deposit toner particles on an image-bearing member, including:
reflecting means disposed to attract toner particles thereto from the carrier granules of the mix;
means for biasing electrically said reflecting means to produce a voltage pattern having a greater potential in a first region of said reflecting means than in a second region thereof;
means for generating of a beam of light rays, said reflecting means being in a light receiving relationship with the beam of light rays so that a third region thereof having a preselected potential intermediate the potential of the first region and second region is illuminated by the beam of light rays; and
means for detecting the intensity of the light rays reflected from said reflecting means, said detecting means producing an electrical output signal indicative of the intensity of light ray reflected from said reflecting means.

3,872,826
DEVELOPMENT SYSTEM SEAL
William J. Hanson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 23, 1973, Ser. No. 408,363
Int. Cl. G03g *13/06*
U.S. Cl. 118—8 **8 Claims**



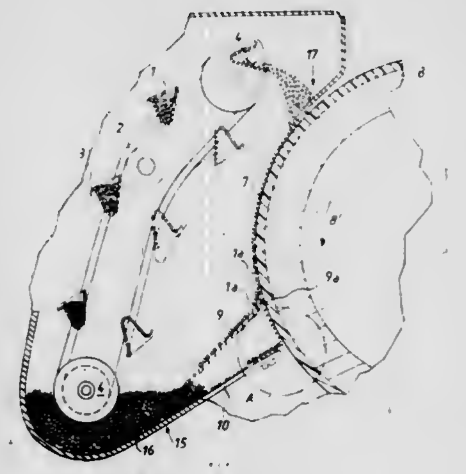
1. An apparatus for rendering visible an electrostatic latent image recorded on an image bearing member, including:
means for depositing charged particles onto the electrostatic latent image recorded on the image bearing member, said depositing means comprising a housing defining a chamber adapted to store the charged particles therein, means for advancing the charged particles from a first region to a second region for discharge thereat, rotary driven developer means mounted within the chamber of said housing closely proximate to said advancing means for receiving the charged particles therefrom, said developer means being arranged to deposit the charged particles onto the electrostatic latent image when in operative communication therewith, means for driving said advancing means such that the reaction torque to the driving moment applied to said advancing means pivots said housing disposing said developer means adjacent the electrostatic latent image in operative communication therewith;
means for actuating said depositing means in response to the image bearing member being disposed at a preselected position, said depositing means moving from an inoperative position spaced from the image bearing member to an operative position adjacent to the electrostatic latent image recorded thereon;
biasing means for resiliently urging said depositing means from the operative position adjacent the electrostatic latent image to the inoperative position spaced from the image bearing member; and
sealing means, operatively associated with said depositing means, for preventing charged particles from being distributed external to said depositing means and the image bearing member when said depositing means is located in the operative position.

3,872,827
ROLLER APPLICATOR
John Gerald Howe, and Edward Charles Timothy Samuel Glover, both of London, England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 27, 1973, Ser. No. 355,129
Claims priority, application United Kingdom, Apr. 27, 1972, 19692/72
Int. Cl. B05c *1/08*
U.S. Cl. 118—223 **7 Claims**



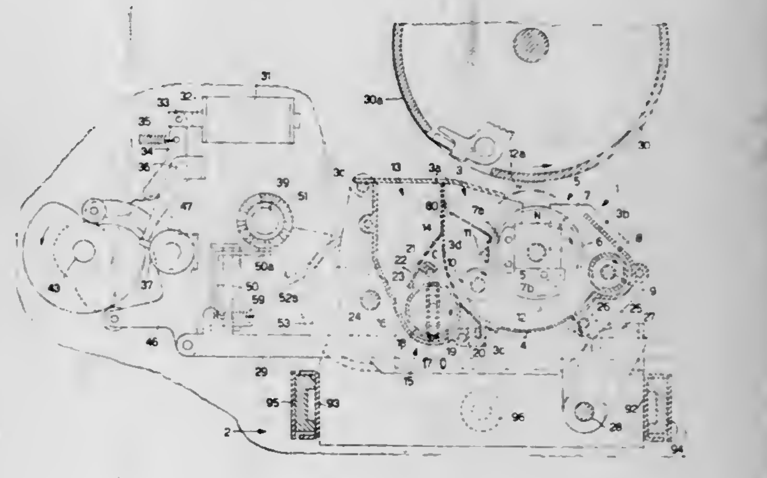
1. In a surface application photographic processing device for processing the exposed photosensitive surface of a web or sheet of material by applying thereto a layer of processing solution, the combination comprising:
a container for holding a processing solution;
a plurality of spaced apart, rotatably driven rollers partially immersed in the processing solution for transporting a material through the processing device and simultaneously applying the processing solution to one surface of said material in engagement with said rollers for processing said material during its transport; and
a flexible blanket supported by said rollers for engaging the opposite surface of said material and guiding said material with said one surface thereof pressed and held into intimate engagement with said rollers.

3,872,828
XEROGRAPHIC COPYING APPARATUS WITH INTERCEPTING MEANS FOR CARRIER PARTICLES
Karl Hartwig, Unterhaching, and Juergen Vossnacke, Pullach, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 15, 1972, Ser. No. 315,482
Claims priority, application Germany, Dec. 17, 1971, 2162842
Int. Cl. G03g *13/00;* **117** *17.5*
U.S. Cl. 118—637 **1 Claim**



1. In a xerographic copying apparatus wherein a moving endless cylindrical xerographic surface transports electrostatic latent images, a development unit including a magazine for a supply of intermixed toner and substantially spherical carrier particles, conveyor means for removing toner and carrier particles from the supply in said magazine and for dumping the thus removed particles onto said xerographic surface at a first level whereby at least some toner particles adhere to said xerographic surface to convert said latent images into powder images and the carrier particles descend by gravity along and some thereof adhere to said xerographic surface, and intercepting means for returning at least some of the dumped carrier particles into said magazine, said intercepting means comprising an intercepting element extending substantially radially of said xerographic surface and having an elastically deformable substantially strip-shaped portion extending close to but being spaced apart from said xerographic surface at a second level below said first level, said deformable portion of said intercepting element having an elongated edge defining with said xerographic surface a clearance whose width is between one-tenth and one-half the diameter of a carrier particle and the elasticity of said portion of said intercepting element being sufficient to enable said portion to yield to carrier particles which adhere to said xerographic surface with a predetermined force, said xerographic surface being arranged to travel in a direction from said first level to said second level so that the descending carrier particles travel toward said portion of said intercepting element by moving in the same direction as said xerographic surface and said intercepting means further comprising means for adjustably supporting said intercepting element so that the latter is movable relative to said xerographic surface.

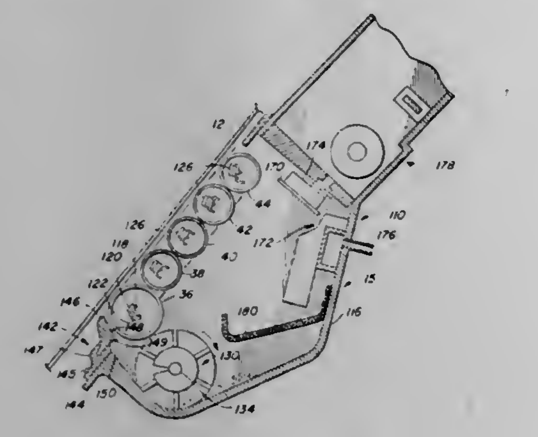
3,872,829
UNIT FOR THE MAGNETIC BRUSH DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES
Luciano Rattin, Pino Torinese, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed July 5, 1973, Ser. No. 376,479
Claims priority, application Italy, July 13, 1972, 69256/72
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **5 Claims**



1. A developer apparatus for the development of a latent image of electrostatic charges on an electrically nonconductive support, produced in an electrostatic printing or copying machine, by means of a mixture of carrying magnetic particles and of electrostatically chargeable developer particles, comprising:
a container containing said mixture and having in the bottom a discharge trap for the mixture,
a tubular cylinder of non-magnetic material rotatably mounted in said first container,
a magnet mounted in said tubular cylinder capable of setting up a magnetic field having zones of density of flux which are relatively different and adapted to assume selectively two operative positions of development fixed with respect to said first container and a third emptying position fixed with respect to said first container wherein the zone of least flux density of the magnet is downwards in correspondence with said trap for emptying the container from the mixture, and
means for cyclically, in synchronism with the cycle of the machine, advancing and retracting said container towards and from said surface bearing said latent image.

3,872,830
MAGNETIC BRUSH DEVELOPING APPARATUS

Terrence D. Charland, 32 Sturbridge Ln., Pittsford, and Stanley D. Klett, 18 Bradford Hill Rd., Fairport, both of N.Y. Division of Ser. No. 255,721, May 22, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,196
Int. Cl. B05b *5/00*
U.S. Cl. ii8—637 **2 Claims**



1. In an electrostatic printing machine having a photosensitive surface movable along a predetermined path on which electrostatic latent images are formed, a magnetic brush developing apparatus for applying magnetically attractable developing material to the photosensitive surface to develop latent electrostatic images formed thereon, comprising, in combination

a plurality of magnetic roller assemblies arranged in succession adjacent a portion of said photosensitive surface path and in operative relation with said photosensitive surface for bringing said developing material into operative relationship therewith whereby to develop electrostatic images on said photosensitive surface, each of said roller assemblies including a generally cylindrical sleeve for supporting said developing material on the periphery thereof, means supporting said sleeves for rotation to enable said sleeves to bring said developing material into operative relationship with said photosensitive surface, at least one bar magnet in each of said sleeves, a first support member for mounting the magnet of each of said succession of roller assemblies except the last substantially parallel to said photosensitive surface and a second support member for mounting the magnet for said last roller assembly at an angle with respect to said photosensitive surface whereby to reduce the magnetic attraction of said last roller assembly magnet for said developing material and enhance release of said developing material from said last roller assembly.

3,872,831
SANITATION DEVICE

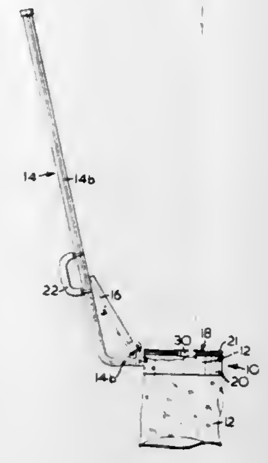
Andrew J. Cassidy, 727 Alfred Cres., Kingston, Ontario, Canada
Filed May 4, 1973, Ser. No. 350,124
Claims priority, application Canada, Apr. 20, 1972, 140105
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **4 Claims**

4. A portable sanitation device comprising:

a. holder means for a disposable bag, said holder means comprising an open ended annular member having an axial length considerably less than its diameter and having an upper rim providing a continuous outwardly facing surface around the top end of the annular member and suitable for receiving the folded over end portion of a disposable bag while the main part of the bag extends within said annular member, said annular member comprising a strip of metal the major portion of which is bent to form a cylinder, the end portions of the strip forming flanges projecting outwardly from the cylinder,

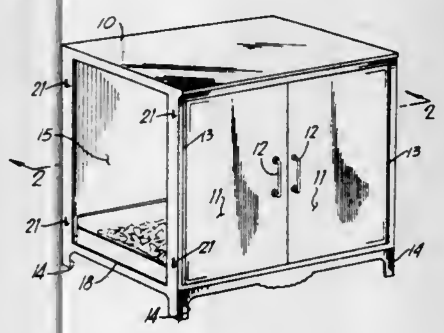
b. a long handle fixed to said flanges and extending away from said cylinder upwardly with respect to said upper rim and at a small angle to the axis of said cylinder, and

c. a lid pivotally connected to said flanges and movable between a closed position over said upper rim and forming a closure with said bag, and an open position in which the lid is well clear of the said upper rim.



3,872,832
INDOOR CAT HOUSE

Clara Quinn, Toronto, Ontario, Canada, assignor to Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 15, 1974, Ser. No. 433,600
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **1 Claim**

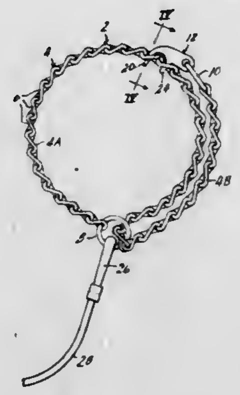


1. A structure for housing the litter box of a cat, which is adaptable for location in the living quarters of a room, said structure having provisions for the containment of a litter box, said structure being formed in the shape of a console of furniture, with the front of the structure being in the form of two hinged doors which may be opened, for the removal and replacement of the litter box within the structure, with access to the inside of the structure by a cat furnished by a side opening, together with a removable side panel which may be fitted so as to completely close one of the two side openings of the console, thus permitting the user to vary the open side of the console in order to conceal the open side by location of the open side against an adjoining corner wall or piece of furniture, with the hinged doors accessibly oriented as the front of the located structure, in which

brackets are fitted externally to each side of the unit, each bracket being open at its top so as to retain a removable side panel in place, said panel being fitted with protruding tabs which engage the said brackets by being lowered into the bracket without the use of threaded fasteners, such that the fastened panel is retained by its associated tabs in the brackets by the weight of the panel.

3,872,833
DOG COLLAR

Earl Herbert, 2428 S. Twelfth St., St. Joseph, Mo. 64505
Filed Jan. 28, 1974, Ser. No. 437,316
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **3 Claims**



1. A dog collar comprising:

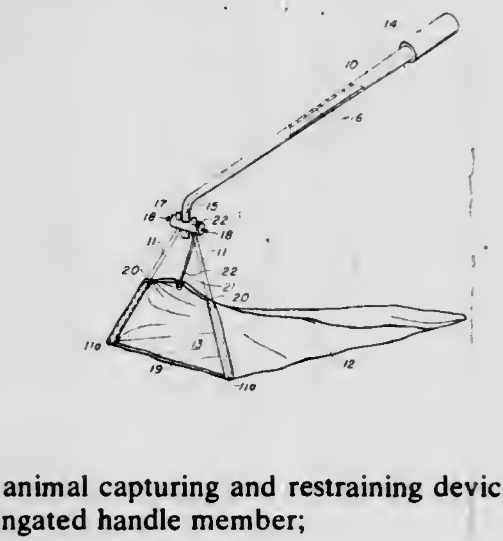
a. an elongated flexible chain, each of the links of said chain being open, the opening thereof having a transverse width less than the longitudinal length thereof, relative to said chain,

b. an eye member attached to one end of said chain, through which an intermediate portion of said chain is slidably trained to constitute said chain as a running noose having a loop portion and an end portion extended through said eye member, a leash being attachable selectively to either end of said chain, said extended end portion of said chain being capable of being doubled back along the loop portion of said chain, and

c. fastening means operable to secure said extended chain portion releasably to said loop portion, said fastener including a rigid, elongated body member attached loosely at one end to said chain, and having at its opposite end a finger extending transversely therefrom for insertion through a link of said chain, said finger being affixed to and projecting laterally from said body member, and said finger having at its free end a T-head transverse to said finger and to said body member, the width of said head, in a direction parallel to said body member, being less than the transverse width of said link opening and the length thereof, in a direction transverse to said body member, being greater than the transverse width of the link opening, but less than the longitudinal length of said link opening.

3,872,834
ANIMAL CAPTURING AND RESTRAINING DEVICE

Richard C. Fuhrman, 1212 W. Flamingo, Seabrook, Tex. 77586
Filed Oct. 3, 1973, Ser. No. 402,971
Int. Cl. A01k *29/00*
U.S. Cl. 119—151 **15 Claims**



1. An animal capturing and restraining device comprising:

a. an elongated handle member;

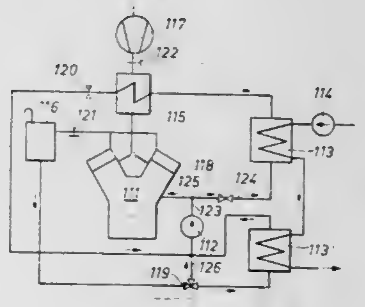
b. a bag member having an opening at one end thereof;

c. mounting means attached to said handle member for releasably affixing said bag member at one end of said handle member with said opening in an open position, said mounting means comprising a pair of diverging flexible rod members between the tips of which lies the base of said bag member opening when in said open position; and

d. means for flexing said rod members so as to draw said tips together for selectively closing said bag opening.

3,872,835
COOLING WATER CIRCULATION FOR A SUPERCHARGED INTERNAL COMBUSTION PISTON ENGINE

Herbert Deutschmann, Konrad-Kummel-Weg 31, Friedrichshafen, Germany
Filed Sept. 4, 1973, Ser. No. 394,343
Claims priority, application Germany, Sept. 15, 1972, 2245257
Int. Cl. F01p *1/06, 3/12*
U.S. Cl. 123—41.31 **19 Claims**



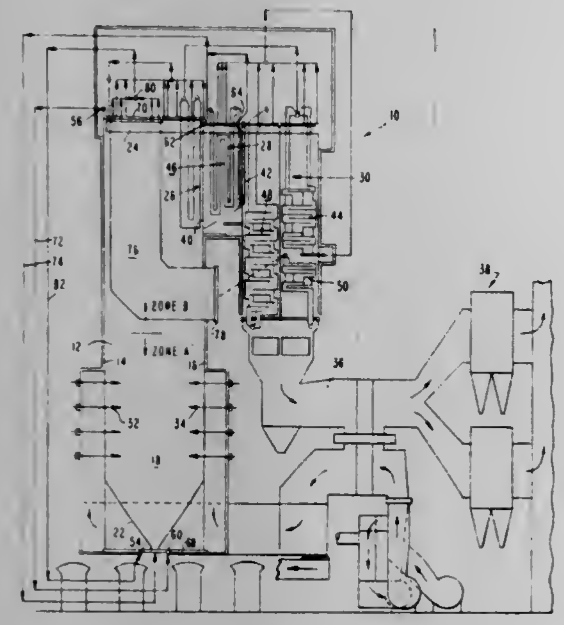
1. In combination with a supercharged piston internal combustion engine, a cooling water circulatory system which includes a cooling water pump, a re-cooler means, a feed means for a re-cooling medium and a supercharged air cooler means, characterized in that the cooling water stream is branched off on the pressure side of the cooling water pump into a first partial stream for cooling the supercharged air and into a second partial stream for cooling the engine, said partial streams recombining after passing through the supercharged air cooler means and the engine, respectively, on the suction side of the cooling water pump, the partial stream for cooling the supercharged air being cooled in the re-cooler means prior to entry in the supercharged air cooler means, a bypass line bypassing at least a part of the re-cooler means, and a thermostatic valve means opening said bypass line with a relatively cold engine whereby a faster warm-up of the engine cooling medium to its operating temperature is made possible.

3,872,836
COAL-FIRED GENERATOR OF MEDIUM TO LARGE CAPACITY

Walter P. Gorzegno, Florham Park, and William D. Stevens, North Caldwell, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Sept. 18, 1973, Ser. No. 398,518
Int. Cl. F22b *27/04*
U.S. Cl. 122—406 S **8 Claims**

1. In a supercritical forced-flow once-through vapor generator of medium to large capacity for coal firing and of the type having a rectangular upright furnace enclosure formed of a plurality of panels of upright tubes welded together lengthwise to form a gas tight construction, including front, a pair of side and rear walls, the front and rear walls being separated by the pair of side walls, a plurality of burners in the front and rear walls, the improvement comprising a plurality of downcomers serially connecting said panels into first, second and third flow

passes, said flow passes extending uninterrupted substantially the full height of the furnace enclosure, the first pass defining substantially the full extent of the front wall of the enclosure,



the second and third passes defining substantially the full extents of the rear wall of the enclosure and of the side walls of the enclosure, respectively, or vice versa.

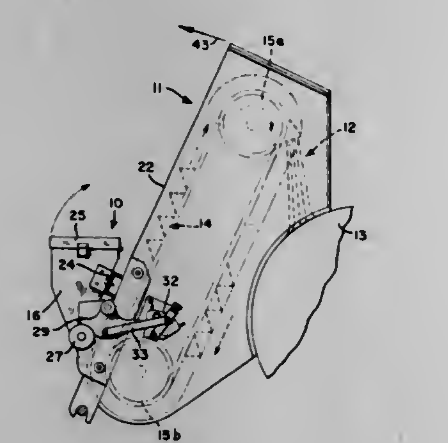
3,872,837
APPARATUS FOR DISPENSING XEROGRAPHIC TONER PARTICLES

George W. Rogers, Dayton, Ohio, assignor to Micro-Data Corp., Dayton, Ohio

Continuation of Ser. No. 345,732, March 28, 1973, abandoned. This application Mar. 25, 1974, Ser. No. 454,677

Int. Cl. G01f ***11/00***

U.S. Cl. 222—407 **5 Claims**



1. Dispensing apparatus for xerographic toner particles comprising:

- a supply hopper for said toner particles, said hopper being provided along the lower portion thereof with a longitudinally extending dispensing aperture,
- a resilient dispensing roll fitted inside said hopper to cover said aperture, said dispensing roll having a porous surface and a diameter greater than the width of said aperture, and
- drive means for rotating said dispensing roll to carry said particles through said aperture; said drive means comprising an input drive shaft, a drive plate mounted fast on said shaft, a drive link pivotally mounted with respect to said drive plate, a gear mounted for driving by pivotal connection to said link whereby rotary motion of said drive shaft produces oscillating two directional rotation of said gear, and a clutch driven by said gear and connected for stepwise one directional rotational of said dispensing roll.

3,872,838
COMBUSTION ENGINE HAVING A ROTARY TYPE PISTON ARRANGEMENT

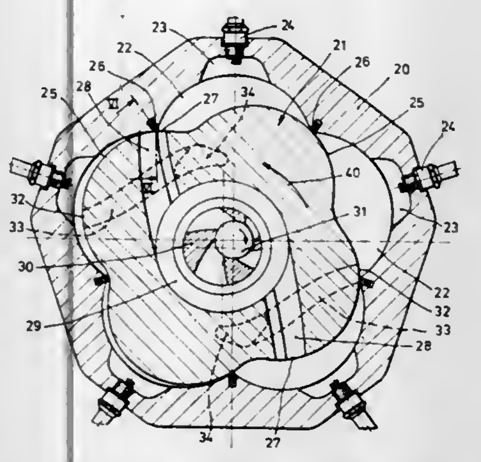
Gustav Vogelsang, Braunschweig, and Helmut Leptien, Wolfsburg, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of Ser. No. 199,546, Nov. 17, 1971, abandoned. This application Aug. 8, 1973, Ser. No. 386,698

Claims priority, application Germany, Nov. 30, 1971, 2058827

Int. Cl. F02b ***53/10***

U.S. Cl. 123—8.09 **10 Claims**



1. In a combustion engine having a rotary-type piston arrangement therein mounted for rotation in a housing, gas guiding passages provided in said piston, sealing means provided in said housing, said gas guiding passages being elongated in shape transversely with respect to the direction of movement of said piston, each of said gas guiding passages having at least one bearing surface associated therewith for said sealing means, said bearing surface being elongated in the direction of movement of said piston.

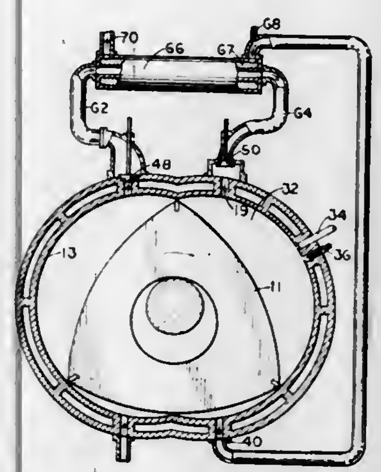
3,872,839
ROTARY PISTON ENGINE

Charles R. Russell, 3071 Marilyn Way, Santa Barbara, Calif. 93105, and James R. Woods, II, 1703 Santa Barbara, Obispo, Calif. 93401

Filed Mar. 28, 1974, Ser. No. 455,553

Int. Cl. F02b ***53/00;*** **F02m** ***31/06***

U.S. Cl. 123—8.31 **6 Claims**



1. In a rotary piston internal combustion engine having a rotor moving in an epitrochoidal housing to define compression and combustion chambers the improvement comprising:

a. a regenerator,
  b. conduit means for directing combustion gases from said combustion chamber to said regenerator,
  c. conduit means for directing compressed air from said compression chamber at substantially constant volume through said regenerator and thence to said combustion chamber, and

  d. valve means for controlling the flow of combustion gas and compressed air through said regenerator.

3,872,840
ROTARY MACHINE

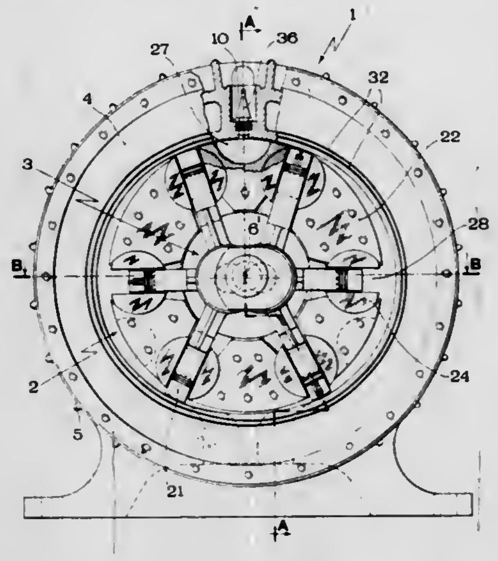
Alfredo Adragna, Via Senatore Maielli 12, Siracusa, Italy

Filed Jan. 24, 1974, Ser. No. 436,274

Claims priority, application Italy, Feb. 15, 1973, 2115/73

Int. Cl. F02b ***53/08***

U.S. Cl. 123—8.33 **4 Claims**



1. A rotary engine comprising

- a stator formed by a substantially cylindrical metal housing having an inner profile formed by an intersection of three circular circumferences;
- a rotor formed by a cylindrical metal body having equally spaced around its periphery six cylindrical recesses opening toward the outside of the rotor and each receiving a cylindrical roller member, and three recesses for receiving compressed fluid and forming the movable portions of combustion chambers;
- a rotary blade assembly including two groups of three blades each, provided with fluid-tight metal sealing gaskets and mounted with their legs astride of the ends of said cylindrical roller members so as to be able to move radially in grooves provided in said cylindrical roller members and to rotate relative to the rotor,
- said blades forming three working pairs of two blades each, located on either side of said fluid receiving recesses;
- a crankshaft fixedly mounted in the stator and movably mounting the legs of said rotary blades for rotation around the two outer axes of the crankshaft,
- said rotary blades being connected to the rotor for reciprocating as well as rotary movement relative thereto by means of said
- cylindrical roller members so as to be able to follow the inner profile of the stator during rotation of the rotor and to withdraw into said grooves in said cylindrical roller members as the rotary blades pass the stator profile located close to the periphery of the rotor.

3,872,841
CONSTRUCTION ARRANGEMENT OF COMBUSTION CHAMBER FOR USE IN DIRECT FUEL INJECTION TYPE DIESEL ENGINES

Motoyasu Kimbara, Yokohoma, and Yoshitaka Yoshida, Tokyo, both of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

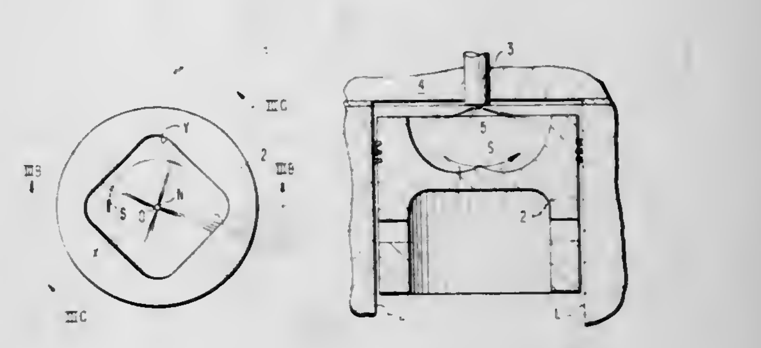
Filed Aug. 24, 1973, Ser. No. 391,365

Claims priority, application Japan, Aug. 25, 1972, 47-85156; Aug. 25, 1972, 47-85157; Aug. 25, 1972, 47-85158

Int. Cl. F02b ***23/06;*** **F02f** ***3/14***

U.S. Cl. 123—32 A **3 Claims**

1. In a combustion chamber for use in a Diesel engine of the direct fuel injection type which is defined by a cylinder liner, a cylinder head, a piston being slidable within said cylinder liner and having a cavity at its crown portion, and having means for effecting air swirling in said cavity, and a fuel injection nozzle so attached at a cylinder head that its tip portion is disposed at the upper portion of the combustion chamber at the center of said cavity and having a plurality of orifices so as to timely inject metered fuel jets into said cavity from said orifices radially against said cavity wall, the improvement wherein: said cavity has its inner peripheral wall surface formed by four inner side wall surfaces, each being in a straight line and of the same length in its horizontal cross-



section with respective two straight lines adjacent to each other being perpendicular to each other, and four inner corner wall surfaces, each being in a substantially arc in its horizontal cross-section and being interposed between respective two inner side wall surfaces adjacent to each other and being so formed that the ratio of the radius of the arc to that of a circle, which is inscribed with said wall surfaces, is within the range of from 0.40 to 0.75, and wherein: the fuel injection direction of each of said orifices is so defined that fuel is injected from each orifice to said straight line peripheral wall surface of said cavity at a slant angle with respect to each side wall surface in the horizontal plane at the point of contact.

3,872,842
SPEED CONTROL SYSTEM FOR FAN IN ENGINE COOLING SYSTEM

Jackson C. Medley, Oshkosh, Wis., assignor to Kress Corporation, Brimfield, Ill.

Filed June 14, 1973, Ser. No. 370,018

Int. Cl. F01p ***7/02***

U.S. Cl. 123—41.12 **15 Claims**

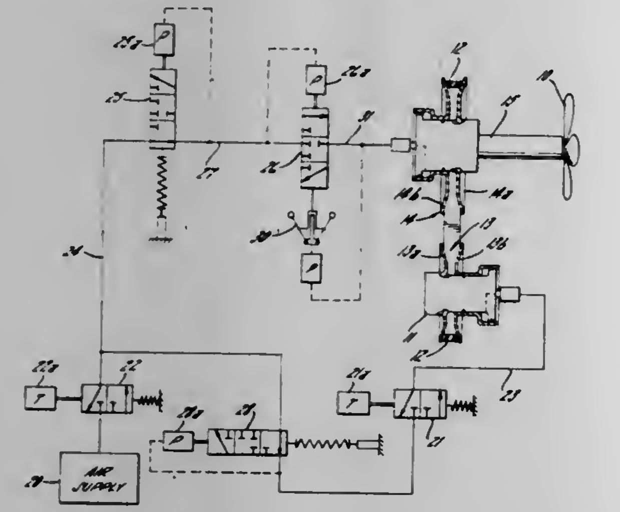
1. A speed control system for an engine-driven fan that is part of the cooling system for the driving engine, said speed control system comprising the combination of

a. a pair of sheaves one of which is connected to said engine and the other of which is secured to a shaft carrying the fan, each of said sheaves including
  1. a fixed sheave member,
  2. a movable sheave member mounted for axial movement relative to the fixed sheave member for varying the effective diameter of the sheave,
  3. and fluid pressure-operated adjusting means connected to the movable sheave member for adjusting the axial position thereof,

b. a source of fluid pressure for operating said adjusting means,

c. a drive belt trained around the two sheaves for driving the fan from the engine with the speed of the fan depending on the effective diameters of the sheaves as well as the engine speed,

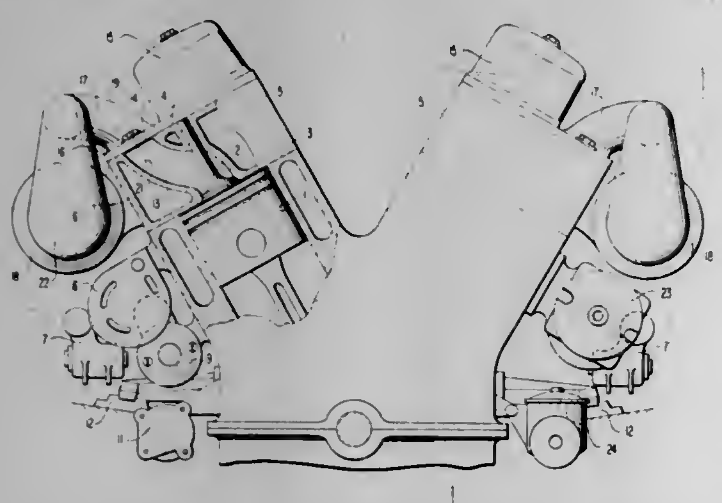
d. a pair of thermostatically operated valves connected between the source of fluid pressure and the adjusting means of the two sheaves with the thermostats of the two valves sensing the engine temperature, said valves being
   1. responsive to engine temperatures above said first predetermined level and below a second predetermined level for connecting said pressure source to the adjusting means of the fan sheave to increase the effective diameter of the fan sheave and thereby drive the fan at a speed corresponding to a first predetermined ratio of fan speed to engine speed,



   2. and responsive to engine temperatures above said second predetermined level for connecting said pressure source to the adjusting means of the engine sheave to increase the effective diameter of the engine sheave and thereby drive the fan at a speed corresponding to a second predetermined ratio of fan speed to engine speed to increase the fan speed.

3,872,843
EXHAUST GAS CHANNEL SYSTEM

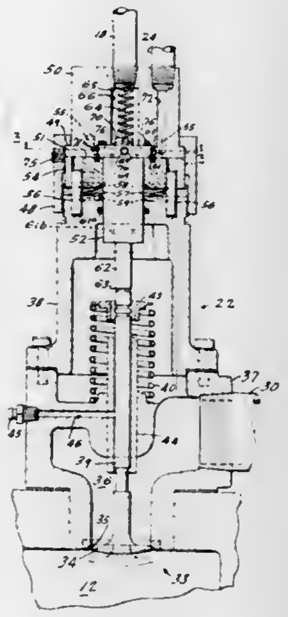
Hans-Jochem Steinmuller, Wernau, Germany, assignor to Diamler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Mar. 22, 1974, Ser. No. 453,809
Claims priority, application Germany, Mar. 24, 1973, 2314771
Int. Cl. F02b *75/22*
U.S. Cl. 123—52 MV **9 Claims**



1. An exhaust channel system with exhaust channel means and an exhaust gas decontamination installation which are arranged, respectively, in a cylinder head of an internal combustion engine and in a housing means, said housing means being arranged at least to one side of the internal combustion engine in direct proximity of the cylinder head and approximately parallel to the engine axis, characterized in that the exhaust channel means adjoining the exhaust valve means in the cylinder head is constructed essentially S-shaped and its aperture means is located in the working surface of the cylinder head, said working surface being constructed flange-like about the aperture means and mounted thereto an elbow flange means which is adjoined by the associated exhaust elbow means, said exhaust elbow means extending at first approximately in the direction of the axis extending through the aperture means and thereafter outwardly and downwardly so that the housing means which extends along the engine side, is able to adjoin the same.

3,872,844
FUEL INJECTION CONTROL SYSTEM

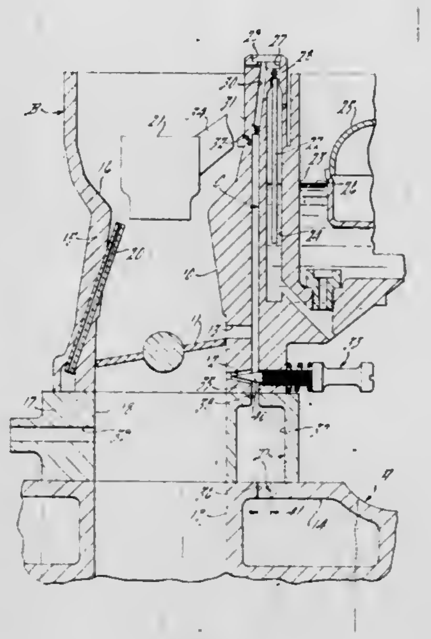
Alfred C. Gates, Corry, Pa., assignor to Cooper Industries Inc., Houston, Tex.
Filed Nov. 12, 1973, Ser. No. 414,884
Int. Cl. F01l *9/02;* **F15b** *15/24;* **F16k** *31/12*
U.S. Cl. 123—90.13 **10 Claims**



1. A hydraulic fuel valve control system including a driven hydraulic pump connected in a closed hydraulic circuit to a hydraulically operable valve assembly extending into a combustion chamber to intermittently admit a fuel to the combustion chamber, said valve assembly including a housing with a valve disposed therein in communication with a source of fuel and said combustion chamber, means for biasing said valve in closed position, an axially movable plunger positioned to open said valve when moved downwardly, said plunger disposed within a sleeve which includes spillport relief vents, hydraulic fluid supply and return lines connecting said pump with a fluid chamber above said plunger and with said relief vents, respectively, an axially translatable cap extending above and secured to said sleeve for axial movement therewith, and an external adjustment sleeve peripherally engaging said cap and threadably connected to said housing, whereby, when said plunger is moved downwardly by hydraulic pressure from said pump, said valve will open and remain open until said spillports are uncovered by said plunger to release pressure thereupon, and whereby incremental rotation of said adjustment sleeve will adjust the axial position of said sleeve and its spillports to vary the duration of said valve is held open by said plunger.

3,872,845
EGR SYSTEM BUILT INTO CARBURETOR

Thomas C. Schultz, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 5, 1972, Ser. No. 312,429
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **7 Claims**



1. In an internal combustion engine having an inlet system for conducting an air/fuel mixture into said engine for combustion and having a throttle, an exhaust system for discharging the combustion products from said engine, and a fuel circuit means for adding fuel to said inlet system and having a fuel reservoir, the combination comprising:

a. at least one port in said inlet system effective to function as part of said fuel circuit means, said port being located substantially adjacent said throttle so that said throttle controllably effects a suction at said port during flow through said inlet system.

b. at least one opening in said exhaust system,

c. means commonly communicating said opening, port and fuel reservoir at a location immediately adjacent said port whereby exhaust gases may be drawn into said inlet system premixed with fuel under the influence of vacuum operating at said port, for the purpose of continuous engine operation, said location being arranged so that at high suction levels fuel will be inducted therein through said port to the exclusion of exhaust gases and at low suction levels exhaust gases will be siphoned into the port to the exclusion of fuel.

3,872,846
EXHAUST GAS RECIRCULATION (EGR) INTERNAL COMBUSTION ENGINE ROUGHNESS CONTROL SYSTEM

Lael B. Taplin, Livonia; William R. Seitz, and Chun Keung Leung, both of Farmington, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Continuation-in-part of Ser. No. 249,440, April 24, 1972. This application Mar. 29, 1973, Ser. No. 346,239
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **23 Claims**

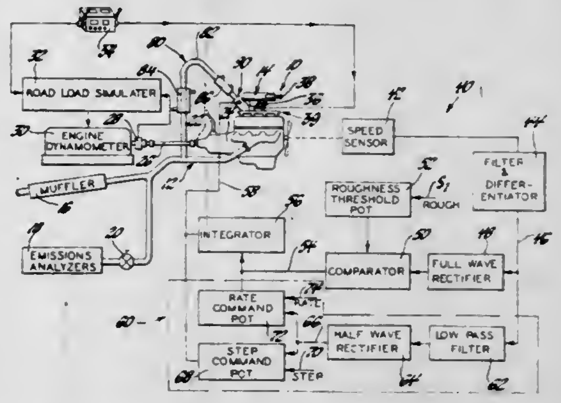
1. An exhaust gas recirculation valve control system for controlling position of the exhaust recirculation valve of an internal combustion engine having a rotatable member, rotatable at speed varying with the speed of the engine, said exhaust gas recirculation valve control system comprising:

a. speed sensor means responsively connected to the engine to provide a speed signal varying with the speed of the rotatable member;

b. differentiator means operatively connected to said speed sensor means for differentiating said speed signal and providing a derivative signal varying with a derivative of said speed signal;

c. rectifier means operatively connected to said differentiator means for rectifying said derivative signal and providing a rectified output signal indicating the magnitude of the speed changes;

d. comparator means operatively connected with said rectifier means for providing a comparison signal having a first magnitude when said rectified output signal is above a predetermined magnitude and a second magnitude when said rectified output signal is below said predetermined magnitude;



e. integrator means operatively connected to said comparator means for generating a control signal having a magnitude varying at a first predetermined rate when the magnitude of said comparison signal is one of said first and second magnitudes and at a second predetermined rate when the magnitude of said comparison signal is the other of said first and second predetermined magnitudes; and

f. control means operatively connected to said integrator means and to said exhaust gas recirculation valve operative to control the position of said exhaust gas recirculation valve in accordance with the magnitude of said control signal.

3,872,847
TEMPERATURE SUPPLEMENTAL PULLDOWN MECHANISM FOR CARBURETOR AUTOMATIC CHOKE

William W. Charron, Orchard Lake; Lyman V. Root, Dearborn, and Calvin J. Simmons, Madison Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 6, 1973, Ser. No. 385,509
Int. Cl. F02m *1/10*
U.S. Cl. 123—119 F **5 Claims**

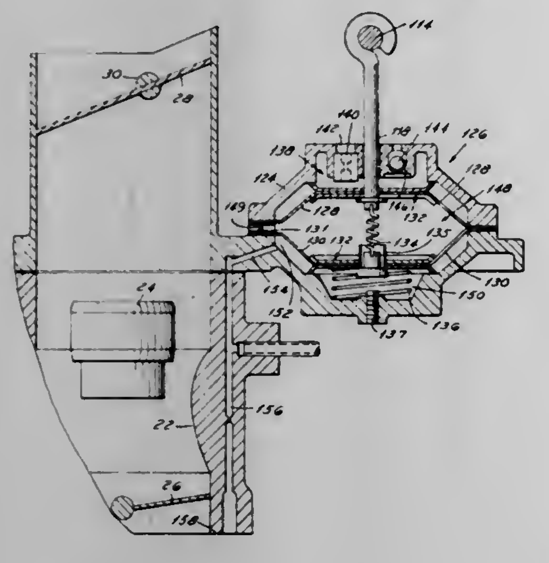
1. An automatic choke system for use with a carburetor having an air/fuel induction passage and

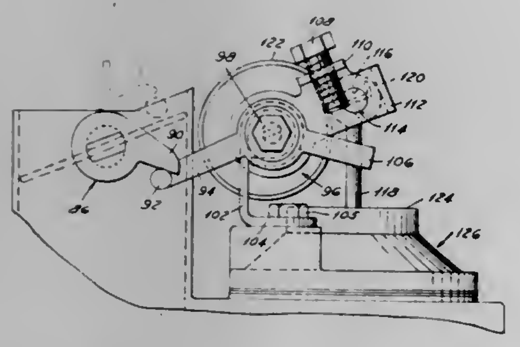
an unbalance mounted, air movable, choke valve mounted for variable movement across the passage to control airflow through the passage,

first engine temperature responsive spring means operably connected to the choke valve urging the choke valve towards a closed position with a force increasing as a function of decreases in the temperature of the spring means from a first predetermined level,

a choke pulldown servo sensitive to engine manifold vacuum for operatively moving the choke valve towards an open position in opposition to the spring means, and

second ambient temperature responsive bimetal coil spring means between the servo and choke valve for controlling the opening of the choke valve as a function of ambient temperature changes from a second predetermined level, the ambient responsive spring having an inner end secured to a shaft and an outer end movable circumferentially in response to the coiling and uncoiling of the ambient spring in response to ambient temperature changes, means connecting the outer end of the ambient spring to the pulldown servo, and a lever fixed to the shaft, the lever having first and second legs extending in opposite directions, one leg extending in a direction to be engaged at times and moved by abutment means on the servo upon operation of the servo, the second leg being movable in a path containing the choke valve and moving alternately in response either to movement of the lever by the abutment means or in response to ambient temperature changes effecting rotation of the shaft to operatively engage the choke valve to move it to an open pulldown position, the degree of pulldown opening of the choke valve varying as a function of the ambient temperature level.

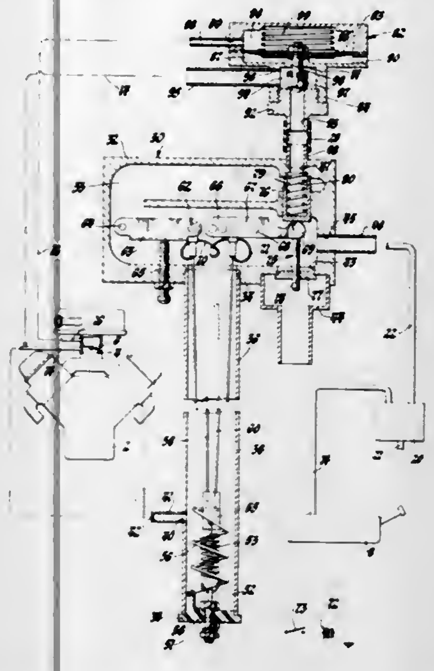




3,872,848
FUEL VAPOR AND AIR MIXING DEVICE WITH FUEL-AIR RATIO LIMITING MEANS

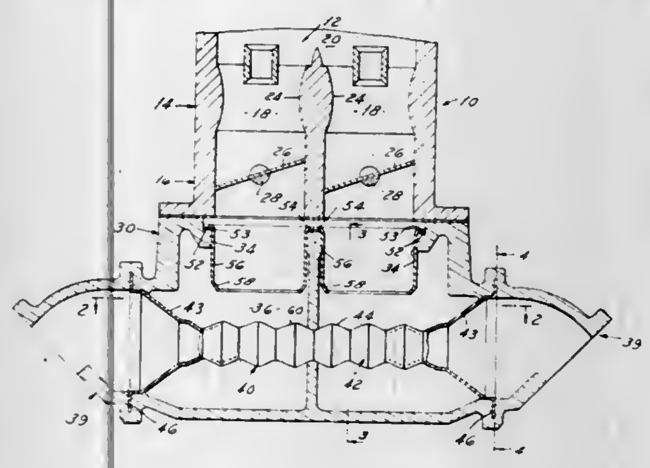
Jack B. King, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 13, 1973, Ser. No. 388,006
Int. Cl. F02m *17/08;* **F02b** *77/00*
U.S. Cl. 123—119 R **4 Claims**

1. A device for controlling the fuel-air ratio of a fuel vapor-air mixture for supply to the induction passage of an internal combustion engine, said device comprising, in combination: a housing defining a chamber, said housing having an inlet for communication with a source of fuel vapor-air mixture of variable fuel-air ratio and main and restricted outlets for communication with said induction passage, whereby a stream of fuel vapor-air mixture is drawn through said chamber from said mixture inlet to said outlets, said housing further having an inlet for communication with a source of air for the admission of air into said chamber to reduce the fuel-air ratio of said mixture; an air valve in said air inlet for controlling the flow of air therethrough, said air valve having a closed position in which the flow of air through said air inlet is prevented; a valve positioning mechanism adapted to move said air valve to and from its closed position, said valve positioning mechanism including spring means for biasing said air valve away from its closed position; first and second substantially parallel electrically conducting wires in said chamber, one end of each of said wires being connected to a movable member, said first wire having its other end fixed with respect to said housing, said second wire being coated with an oxidation catalyst and having its other end connected to said valve positioning mechanism so that tension in said second wire is applied in opposition to the bias of said spring means, said movable member being biased away from said wires in a direction parallel to said wires so as to produce tension in at least one of said wires, said movable member normally producing in said second wire tension sufficient to hold said air valve in its closed position; said wires being connectible to a source of electric current for heating said wires to the activation temperature of said oxidation catalyst, said wires being positioned downstream from said air inlet in the path of only that portion of the stream of mixture flowing to said restricted outlet, whereby an increase in fuel-air ratio causes said second wire to increase in temperature and length relative to said first wire and thus allows said valve positioning mechanism to open said air valve to limit said fuel-air ratio.



3,872,849
ENGINE FUEL VAPORIZER

Frederic J. Chester, Oxford, and Richard P. Krygowski, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 7, 1973, Ser. No. 338,796
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 AA **6 Claims**



1. An engine fuel vaporizer for use on an internal combustion engine having an intake manifold, a carburetor mounted on the intake manifold and having one or more air/fuel induction passages aligned so as to discharge an air/fuel mixture into the intake manifold, exhaust manifolding including an exhaust gas crossover passage connecting spaced parts of the exhaust manifolding and passing through the intake manifold directly beneath the carburetor induction passages, the intake and exhaust manifolding being constructed of high thermal inertia slow heat transfer material, the improvement comprising,

the crossover passage being defined by a thin walled sheet metal tube of high heat transfer potential for quickly radiating and transferring the heat of exhaust gases flowing through the tube through the tube walls in all directions to the fuel in the air/fuel mixture adjacent and contiguous to the tube,

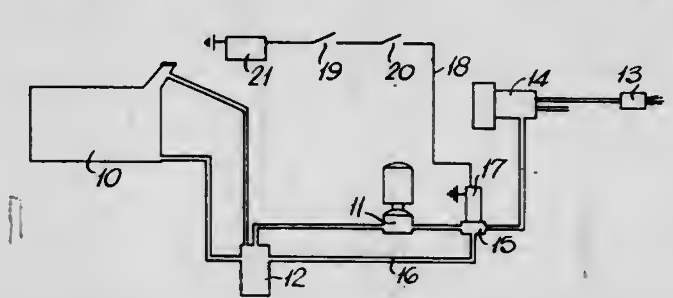
the tube having a flattened midportion of a generally rectangular-like cross section providing major and minor axes and being spaced from the walls of the intake manifold so as to be encompassed by the air/fuel mixture for maximum heat transfer therebetween,

the tube extending laterally to a width comparable to the diameter of an induction passage to constitute a splash shield for the vaporization of liquid fuel and fuel vapor coming into contact therewith,

the tube having bell mouth-like shaped end sections mating with essentially annular exhaust manifolding portions, the end sections converging towards the flattened tube midportion for spreading the exhaust gas flow laterally of the tube longitudinal axis for better heat transfer through the tube walls.

3,872,850
FUEL INJECTION SYSTEMS

Herbert James Littlehales, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 4, 1969, Ser. No. 796,325
Int. Cl. F02b *3/02;* **F02d** *31/00*
U.S. Cl. 123—139 AW **5 Claims**

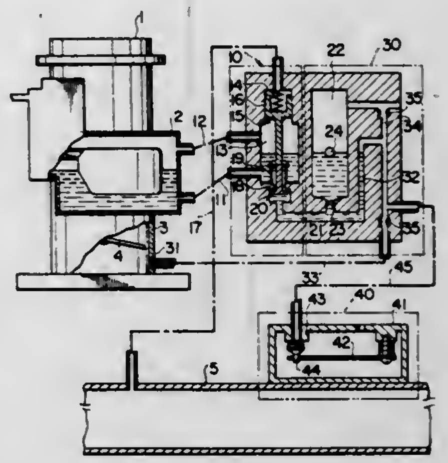


1. A fuel injection system having a pump, a metering unit, a pressure relief valve connected between the pump and the metering unit, said pressure relief valve having a first setting in which it can spill fuel delivered by the pump in excess of a predetermined pressure, and electrical control means associated with the pressure relief valve, and the pressure relief valve having a further setting which is selectable by actuation of the control means at selected engine operating conditions to reduce the pressure at which the pressure relief valve opens to a pressure below that at which the metering unit can deliver fuel to at least one nozzle disposed in the inlet manifold of the associated engine.

3,872,851
FUEL SUPPLY DEVICE FOR AN INTERNAL COMBUSTION ENGINE

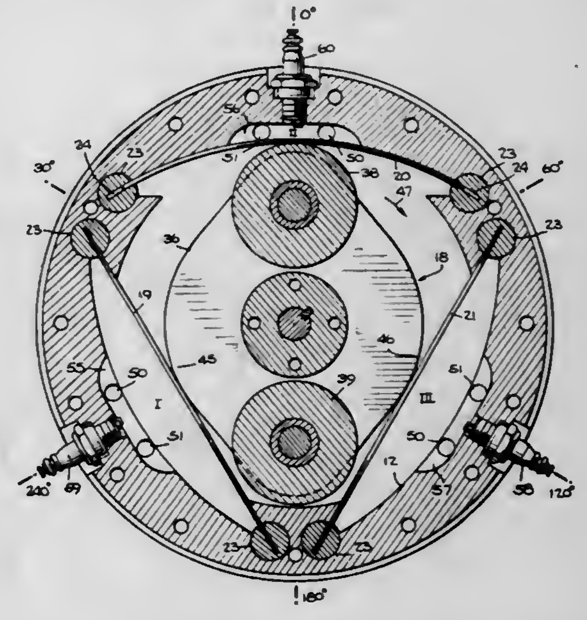
Hirofumi Matsumoto, and Masahiko Nakada, both of Toyota Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota Aichi-ken, Japan
Filed May 30, 1973, Ser. No. 365,057
Claims priority, application Japan, July 19, 1972, 47-71631
Int. Cl. F02m *1/08*
U.S. Cl. 123—180 R **6 Claims**

1. In an internal-combustion engine comprising a carburetor including a float chamber arranged to contain a supply of fuel, a venturi tube arranged to receive fuel from said float chamber, and an intake manifold arranged to convey the fuel from the venturi tube into the engine, wherein the improvement comprises first means for providing an additional fuel supply for cold start up and idling of the engine, said first means comprises a fuel well connected to said float chamber, a fuel chamber, a conduit connecting said fuel well to said fuel chamber for supplying fuel into said fuel chamber from said fuel well, a valve means for closing off flow from said fuel well through said conduit into said fuel chamber, and pressure means connected to said fuel well for acting on said valve means for opening flow between said fuel well and said fuel chamber when the engine is not operating and for closing flow between said fuel well and said fuel chamber when the engine is operating so that when the engine is inoperative a supply of fuel can be stored in said fuel chamber, second means for conveying fuel from said fuel chamber into said venturi tube, said second means comprising a fuel line connecting said fuel chamber and said venturi tube, and a branch pipe connected to said fuel line and said fuel chamber for introducing atmospheric air into said fuel line, and third means for sensing the temperature of the engine and being connected to said fuel line for discontinuing the flow of fuel therethrough from said fuel chamber to said venturi tube when the temperature of the engine reaches a predetermined level.



3,872,852
FOUR CYCLE ROTARY ENGINE WITH FLEXIBLE COMBUSTION CHAMBER WALL

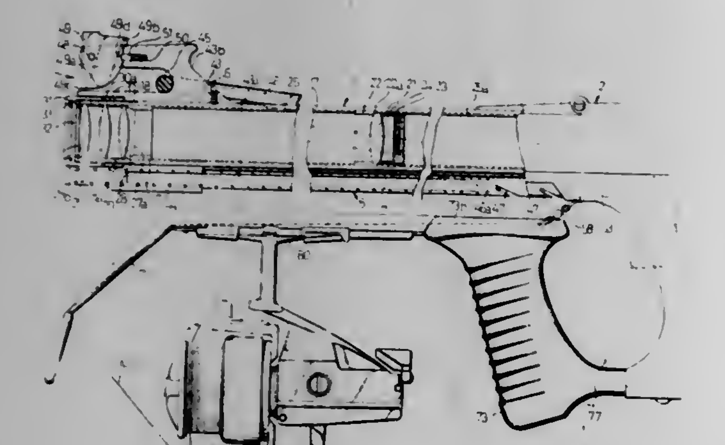
Jack J. Gilbert, 3 River Rd., Suffern, N.Y. 10901
Filed June 25, 1973, Ser. No. 373,611
Int. Cl. F02f *1/00*
U.S. Cl. 123—193 R **17 Claims**



12. In a rotary expansible chamber device comprising a housing having a wall forming one wall of said chamber and having at least one port opening into said chamber, a rotor rotatably mounted on said housing and having a portion which

is radially sapced from the axis of rotation thereof and which travels around said axis, the combination therewith of a flexible, resilient reed forming a wall of said chamber, said reed being in sliding engagement at its side edges with said housing, and support means on said housing slidably and pivotally supporting said reed at its ends on said housing with an intermediate portion thereof in the path of movement of said portion of said rotor whereby upon rotation of said rotor, said reed is bent toward and away from said housing wall thereby alternately reducing and increasing the volume of said chamber.

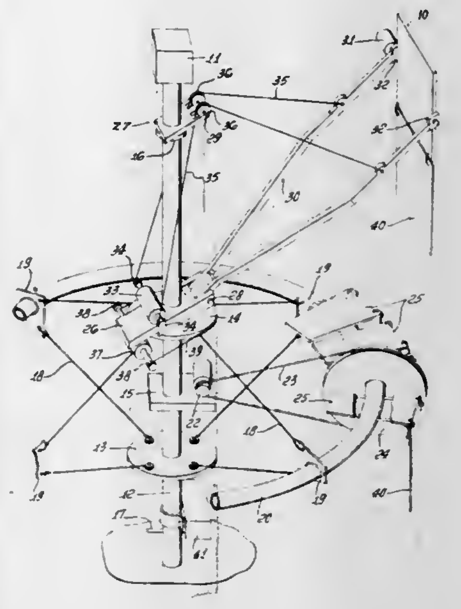
3,872,853
ELASTIC BAND HARPOON PROTECTING DEVICE
Kiyoshi Nakatani, Osaka, Japan, assignor to Suwa Tekko Sho Co., Ltd., Osaka, Japan
Filed Oct. 27, 1972, Ser. No. 301,298
Claims priority, application Japan, Oct. 29, 1971, 46-101531
Int. Cl. F41b *7/00*
U.S. Cl. 124—22 **5 Claims**



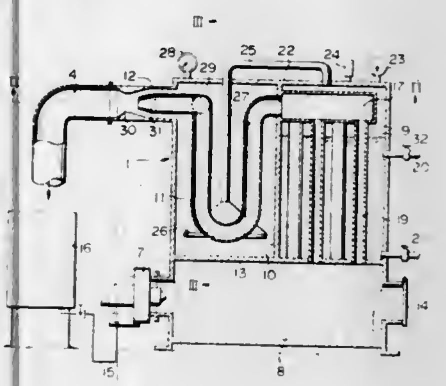
1. An underwater gun including a telescope to be immersed in water at its front end for sighting fish in the water and a harpoon to be released from its cocked position from about the surface of water so as to capture the fish comprising a harpoon, holding means having a gun grip, a telescope including an objective lens at its front end and an eyepiece at its rear end and wherein said holding means engages and supports the telescope only at a portion proximate to its rear end, a harpoon guiding member extending along and affixed to the under face of the telescope and parallel therewith, propelling means for projecting a harpoon and having one end engaged and supported by the front end portion of the telescope and the other end engageable in a rear portion of the harpoon to urge the harpoon forward, and discharge means provided in the gun grip for latching and releasing a cocked harpoon.

3,872,854
SUNLIGHT CONCENTRATOR FOR ENERGY CONVERSION
William H. Raser, 6451 W. 83rd St., Los Angeles, Calif. 90045
Filed Feb. 7, 1974, Ser. No. 440,522
Int. Cl. F24j *3/02*
U.S. Cl. 126—270 **11 Claims**

1. Apparatus for solar thermal conversion comprising;
a mast protruding from the ground;
a ring-like structure encircling said mast;
a plurality of mirrors mounted on said ring-like structure;
a body to be heated mounted on said mast;
a beam rotatably mounted on said mast;
a tiltably controlled reflector mounted at the extremity of said beam; and
control means enabling the sunlight reflected from said mirrors to be directed by said reflector onto said body to be heated.

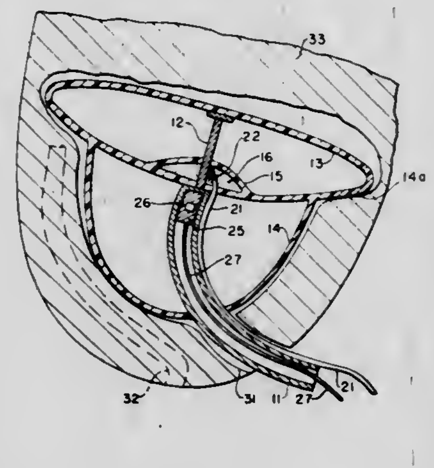


3,872,855
SNOW MELTING DEVICE FOR RAILROAD TURNOUT
Tadao Kawata, Higashi, Japan, assignor to Kawada Kogyo Kabushiki Kaisha, Higashi, Japan
Filed Feb. 8, 1974, Ser. No. 440,709
Claims priority, application Japan, Feb. 23, 1973, 48-22726
Int. Cl. F23c *5/00*
U.S. Cl. 126—271.2 B **7 Claims**



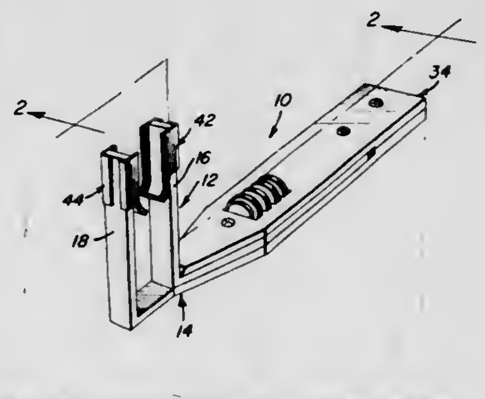
1. A snow melting apparatus for railroad switches or turnouts, comprising:
a high temperature mixed air producing means including:
a boiler (**1**) having a combustion chamber (**8**) and means for heating said combustion chamber (**8**);
a steam generating chamber (**9**) and a steam drying chamber (**11**) partitioned from each other by a partition wall (**10**) in the upper part of said boiler (**1**);
a steam guiding pipe (**25**) extending from said steam generating chamber (**9**) into said steam drying chamber (**11**);
an exhaust air pipe means (**19, 27**) extending from said combustion chamber (**8**) into said steam drying chamber (**11**) and passing through said steam drying chamber (**11**) without discharging exhaust air into said steam drying chamber (**11**); and
a mixing chamber (**12**) having a Venturi pipe (**30**) connected to said steam drying chamber (**11**) and to an outlet (**31**) of said exhaust air pipe means (**19, 27**) for mixing the dry steam from said steam drying chamber (**11**) and the exhaust gas from said exhaust air pipe means (**19, 27**); and
feed pipe means (**4**) coupled to said mixing chamber (**12**) for feeding said mixed dry steam and exhaust gas to said switches or turnouts.

3,872,856
APPARATUS FOR TREATING THE WALLS AND FLOOR OF THE PELVIC CAVITY WITH RADIATION
Ralph S. Clayton, 3044 Fillmore Ave., El Paso, Tex. 79930
Continuation-in-part of Ser. No. 151,425, June 9, 1971, abandoned. This application July 24, 1973, Ser. No. 382,210
Int. Cl. A61n *5/10*
U.S. Cl. 128—1.2 **25 Claims**



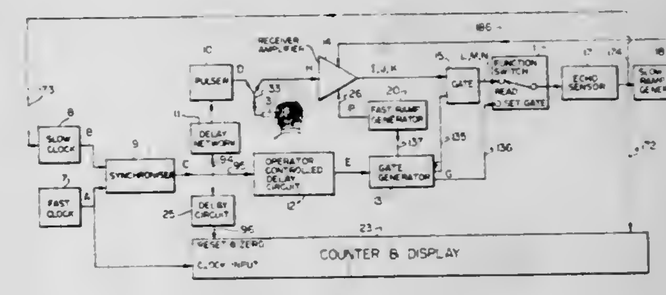
1. An apparatus for treating carcinoma of the walls and floor of the pelvic cavity comprising: an elongated hollow tube having a closed inner end adapted to be located in the pelvic cavity, the tube adapted to extend through a body opening to the outside of the body and including an opened outer end adapted to be located outside the body, means for locating radioactive material in the tube at the vicinity of said inner end by passing the radioactive material into the opened outer end of the tube and through the tube, positioning means including at least one inflatable balloon having a spacing portion attached to and surrounding the exterior of the tube in the vicinity of the said inner end thereof, said ballon, when inflated, spacing the walls and floor of the pelvic cavity from the radioactive material to position the radioactive material a generally uniform distance from all wall and floor surfaces subject to the radiation, while the tube extends through the body opening, and means for introducing fluid into the inflatable balloon spacing portion to expand the same and for removing fluid from the inflatable balloon spacing portion to collapse the same to permit the removal of the apparatus through the body opening.

3,872,857
INSTRUMENT FOR TAKING IMPRESSIONS OF NASAL SEPTUMS
Minoru Sakamoto, 3911 Niol Pl., Honolulu, Hawaii 96816
Filed May 9, 1973, Ser. No. 359,211
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 S **4 Claims**



1. A caliper device, comprising, in combination:
a. means for corresponding to an extent of an object, the extent corresponding means including:
   i. a pair of elements having parallel portions in the form of jaws arranged for bracketing an object;
   ii. means for adjusting the spacing between the element portions; and
   iii. means for taking an impression of a nasal septum, the impression taking means including a pair of attachments, each mounted on a respective one of the elements and having a pair of parallel walls and a web connected to and arranged extending between the parallel walls and cooperating with the same for forming a channel arranged for receiving an impressionable material therein, the portions of the elements being planar, and flanges being provided on the attachment side walls and arranged extending parallel to the web and toward one another for embracing an associated element portion; and
b. means for indicating the extent of the object as a function of the extent corresponding means.

3,872,858
ECHOENCEPHALOGRAPH
Arthur C. Hudson, and Brian J. Trollope, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development limited, Ottawa, Ontario, Canada
Filed Aug. 8, 1973, Ser. No. 386,590
Claims priority, application Canada, May 29, 1973, 172609
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **14 Claims**

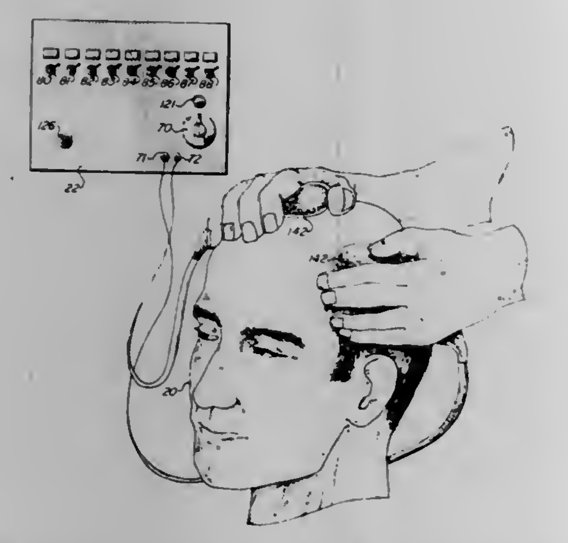


1. An echoencephalograph apparatus for determining the position of a particular structure within a patient's head comprising:
transducer means adapted to be positioned on the surface of a patient's head to transmit an ultrasonic energy pulse therein and receive a group of echo pulses from structures within the head, said transducer means further adapted to convert said echo pulses to electrical echo signals;
amplifier means coupled to said transducer means to amplify said echo signals, said amplifier having controllable gain means;
first control means coupled to said controllable gain means and adapted to variably control the amplifier gain to compensate for ultrasonic pulse energy attenuation within the patient's head;
gating means coupled to the output of said amplifier means, said gating means adapted to be open for a predetermined gating period to pass amplified echo signals which correspond to echoes from the region of said particular structure;
sensing means coupled to the gating means and adapted to provide an output signal in response to a gated echo signal above a predetermined amplitude; and
counter and display means controlled by said sensing means output signal and adapted to determine the travel time through the patient's head of the echo pulse represented by said gated echo signal above a predetermined amplitude and to display said travel time in terms of distance travelled.

3,872,859
METHOD AND DEVICE FOR STIMULATING THE ORGANS ASSOCIATED WITH THE HUMAN SCALP

Sylvester A. Pitzen; Jacques P. Drabier, both of Phoenix, and Dale H. Liljegren, Goodyear, all of Ariz., assignors to Sono-Therapy Institute, Inc., Phoenix, Ariz.

Filed Apr. 4, 1973, Ser. No. 347,899
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.5 **8 Claims**



1. A method for stimulating and exciting the organs associated with the human scalp, said scalp having tight areas and loose areas, said method comprising the steps of:
- a. successively positioning a pair of electrodes in a spaced relationship against predetermined areas of that portion of the scalp overlaying the galea;
- b. passing electrical current between said electrodes wherein said current is in the form of a low-frequency wave in the range 200 to 3,000 cycles per second, with an electrical potential sufficient to stimulate said organs; and
- c. massaging said scalp in the area of at least one of said electrodes.

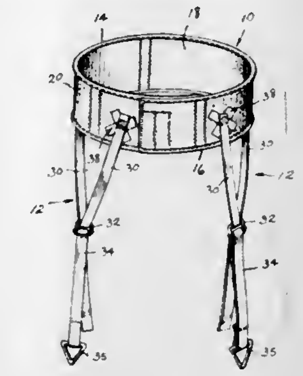
5. A device for the stimulation and excitation of the human organs associated with hair follicles, said device comprising:
- a. a plurality of waveform generators, each said generator operating at a different frequency within the range of 200 to 3,000 cycles per second;
- b. a selectively variable power amplifier;
- c. switch means for selectively and in combination coupling each of said generators to said amplifier;
- d. a first electrode driven by said amplifier; and
- e. a second electrode maintained at ground potential from which the signals from the first electrode are referred.

3,872,860
PELVIC TRACTION BELT

Niles L. Noblitt, Warsaw, Ind., assignor to Orthopedic Equipment Company, Inc., Bourbon, Ind.

Filed Dec. 13, 1973, Ser. No. 424,625
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **7 Claims**

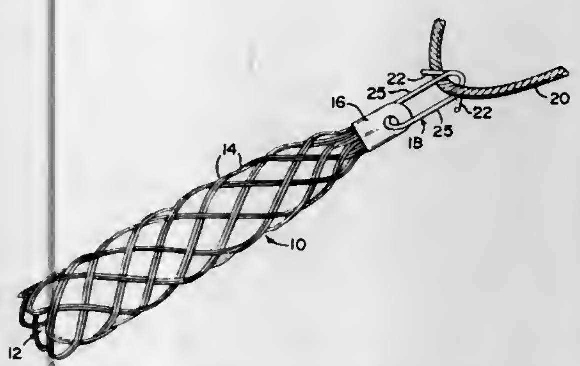
1. A pelvic traction belt including a waist encircling member, said member having top and bottom edges and inner and outer faces, means for securing said member about the waist of a patient with said inner face being positioned against the patient, a strap, said strap having one end means for connection to a tensioning means and having an opposite end means used to releasably connect said strap to said member at its outer face, the outer face of said member having portions thereof formed of fabric-defining catch means, said strap opposite end means carrying hook-defining means engageable with said catch means for releasably securing said strap to the outer face of said member, the improvement wherein said hook-defining means includes a pad having a central portion and a peripheral outer edge means extending about said central portion, said outer edge means being radially spaced from said central portion, said strap opposite end means being anchored to said pad central portion and being shiftable relative to the outer edge means of said pad and that section of said pad extending between said central portion and the outer edge means thereof, said pad section being utilized to resist separation of said strap from said member when said strap is under a tensioning load and said member is secured about the waist of said patient, said pad including at least three equal angularly spaced arm parts extending radially outwardly from said central portion, said strap opposite end means lying in substantially the same plane as said arm parts, the remainder of said strap including said one end means projecting between two of the said spaced arm parts.



3,872,861
CONTRACTABLE FINGER TRAP

Simon Tamny, and Sandi R. Tamny, both of 5320 Longbrook Rd., Lorain, Ohio 44053

Filed Aug. 20, 1973, Ser. No. 389,597
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 R **4 Claims**



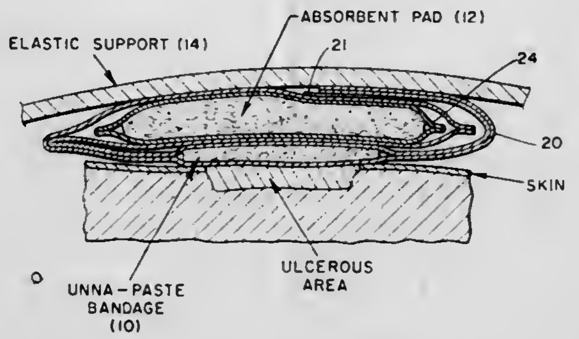
1. A tubular shaped contractable finger trap comprising a plurality of looped strand groups formed into an open mesh to define the tubular shape, a closure element holding all the strand ends at one end of the tubular shape, and wherein each strand group is formed from at least two separate strands arranged to lie in immediate adjacent side by side relation over substantially their entire length in a surface essentially of revolution about the axis of the trap and wherein the strands comprising a single group are spaced apart by no more than a minor percentage of the cross-sectional measure of an individual strand and the spacing between parallel strand groups is several times larger than the total cross-sectional measure of a strand group.

3,872,862
DRESSING AND SUPPORT COMBINATION FOR THE TREATMENT OF INDOLENT ULCERS

Michael Hume, 50 River St., Boston, Mass. 02108

Filed Oct. 23, 1973, Ser. No. 408,280
Int. Cl. A61f *13/02;* **A61m** *35/00*
U.S. Cl. 128—165 **11 Claims**

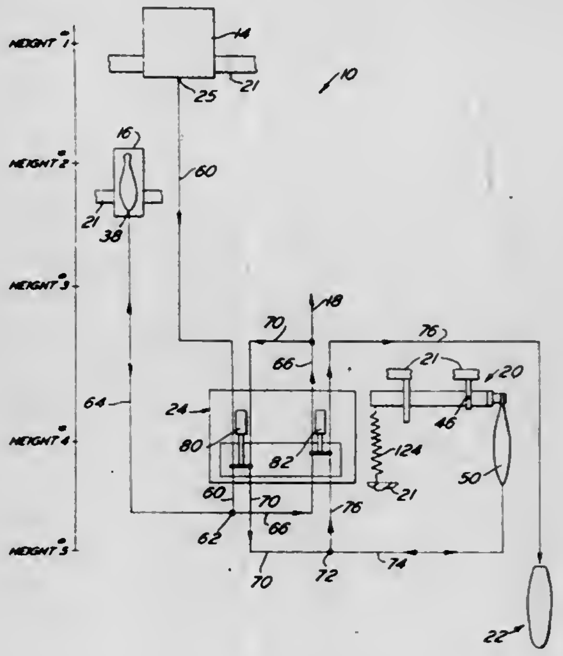
1. A dressing for indolent ulcers comprising a bandage impregnated with an ointment for application to and treatment of a venous ulcer of the skin, an absorbent pad over said bandage, a gradient-pressure stocking over said pad, and means at a predetermined location between said stocking and pad for interlocking and preventing relative motion therebetween.



3,872,863
PERITONEAL DIALYSIS APPARATUS

Norman Lasker, Gladwyn, and Bruce E. Jarrell, Philadelphia, both of Pa., assignors to American Medical Products Corp., Fairfield, N.J.

Filed July 31, 1973, Ser. No. 384,316
Int. Cl. A61m *5/00, 37/00*
U.S. Cl. 128—213 **10 Claims**

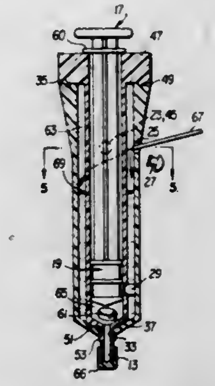


1. A dialysis apparatus comprising first means for supplying dialysis fluid, second means for measuring a predetermined quantity of dialysis fluid, a catheter, third means for detecting a minimum quantity of dialysis fluid, means for supporting said first means above said second means, said second means above said catheter, and said third means below said catheter so that dialysis fluid moves through said apparatus under the force of gravity, fluid flow conduits interconnected between said first and second means, said second means and said catheter and said catheter in said third means, fourth means for regulating the flow of dialysis fluid and said conduits between said first and second means and said catheter and said third means, fifth means for regulating the flow of dialysis fluid between said second means and said catheter, and from said third means, and means for controlling said fourth and fifth means to alternately permit flow of dialysis fluid in the conduits regulated thereby so that the dialysis fluid is permitted to flow through said apparatus and a patient and then from said third means.

3,872,864
DOUBLE SYRINGE

Robert E. Allen, Jr., 13403 Kiama Ct. (Briarwood), Laurel, Md. 20810

Filed July 6, 1973, Ser. No. 377,148
Int. Cl. A61m *5/18*
U.S. Cl. 128—218 M **10 Claims**

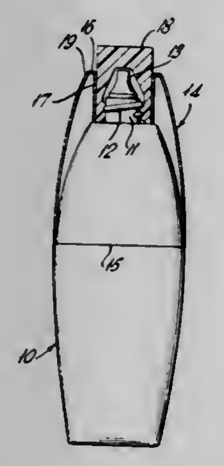


1. A syringe comprising:
- a cylindrically-shaped hollow outer housing having a relatively large opening at a first end thereof, a smaller opening at a second end thereof and at least one port in a sidewall thereof, said at least one port being located closer to said outer-cylinder first end than to said outer-cylinder second end, said cylindrically-shaped hollow outer housing including a first sealing means encircling said large opening and a second sealing means encircling said smaller opening;
- a cylindrically-shaped hollow inner housing having an outer diameter less than the outer-housing inner diameter inserted in said outer-housing through said large opening, said inner housing having a relatively large opening at a first end thereof, a smaller opening at a second end thereof, and a port in a sidewall thereof, said port being located closer to said inner-housing second end than than to said inner-housing first end, said cylindrically-shaped hollow inner housing including a first sealing means encircling said large opening for engaging said first sealing means of said outer housing and a second sealing means encircling said smaller opening for engaging said second sealing means of said outer housing, said inner-housing defining an inner reservoir in the interior thereof;
- a plunger inserted into said inner reservoir of said inner housing through said large opening, said plunger including a tip thereon for engaging the inner surface of said inner housing, and thereby preventing fluid flow in said inner reservoir past said tip;
- a mounting means holding said inner housing tightly inside said outer housing with said respective large and small openings of said inner and outer housings being adjacent one another, said inner and outer housings forming an outer reservoir therebetween, said mounting means allowing relative rotation between said inner and outer housings, but yet providing sufficient axial restraint to hold said first sealing means of said outer housing in tight engagement with said first sealing means of said inner housing, thereby preventing fluid leakage from an outer-reservoir first end, and said second sealing means of said outer housing in tight engagement with said second sealing means of said inner housing, thereby preventing fluid leakage from an outer-reservoir second end;

wherein, a first bead means is included on an inner surface of said outer housing for covering and uncovering said port in said inner housing in response to relative rotation between said inner and outer housings, a second bead means is included on an outer surface of said inner housing for covering and uncovering said at least one port in said outer housing in response to relative rotation of said inner and outer housings and said bead means are angularly positioned relative to one another so that they simultaneously cover and uncover said ports.

3,872,865
EYEDROP DISPENSER

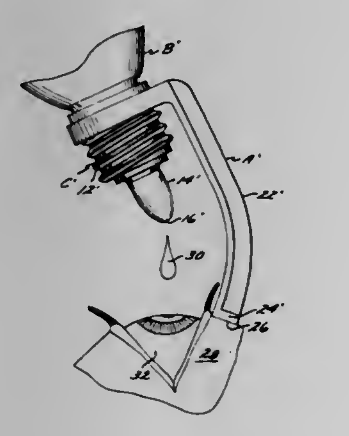
William J. Casey, 153 Rensselaer Rd., Essex Fells, N.J. 07021
Filed June 16, 1972, Ser. No. 263,501
Int. Cl. A61f *9/00*
U.S. Cl. 128—233 **2 Claims**



1. A receptacle for containing and dispensing drop-wise a liquid composition for application to the eye of the user, comprising a hollow body for containing the liquid, means extending from and communicating directly with the uppermost portion of said hollow body for dispensing the liquid drop-wise from the container in the inverted position thereof, and bumper means defining inner cylindrical surface means surrounding said dispensing means and extending at least such distance that an extremity of said surrounding means is approximately coplanar with the outer end of said dispensing means in a plane perpendicular to the axis thereof, the upper portion of said bumper means being rounded in elevational cross-section and further defining an outer dome-shaped surface extending from the outer end of said dispensing means and diverging away from the eye of the user when said receptacle is in the inverted position with said dispensing means above the eye of the user, said bumper means being dimensioned for preventing insertion thereof past the outermost portions of the users eyelids so as to constitute said bumper means during use of the receptacle to dispense the liquid composition drop-wise into an eye of the user as a blunt object before the eye of the user and as means for preventing contact between the eye of the user and said dispensing means.

3,872,866
EYEWASH CONTAINER SUPPORTED EYELID ENGAGING DEVICE

Jhon Lelicoff, 947 Sharlot Ave., Prescott, Ariz. 86301
Filed Aug. 22, 1972, Ser. No. 282,763
Int. Cl. A61m *1/00*
U.S. Cl. 128—233 **2 Claims**

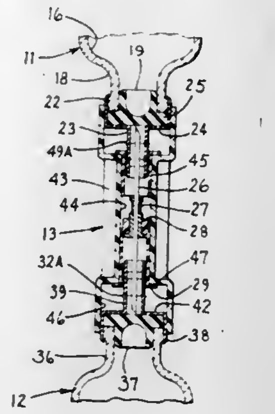


1. In combination with an eyewash container having a neck in which a dispensing aperture is defined from which eyewash will discharge drop by drop downwardly by gravity when said container is held in an inverted position, said neck having external threads on at a portion thereof intermediate said aperture and said container and an internally threaded cap that removably engages said threads of said neck to completely envelop said aperture and the portion of the neck adjacent thereto protect them and the eyewash in said container from contamination when said container is not in use, an eyelid engaging device, said device including:

a. a ring that engages said threads on said neck;
b. a boss extending outwardly from said ring;
c. a single curved upright supported by said boss and extending upwardly and inwardly relative thereto, said upright transversely spaced from said threads on said neck sufficiently as to permit said cap to be screwed on and unscrewed from said neck; and
d. a transverse eyelid-engaging member supported from the upper end of said upright, said member being arcuately curved to permit said member to be brought into light frictional contact with an eyelid of a user to maintain said eyelid in an open position when said container is in an inverted position and the head of the user is tilted rearwardly, and said upright being of such length as to dispose said aperture directly above said eye when said eyelid is so contacted to permit drops of the eyewash to fall by gravity into said eye, with said cap capable of being secured on and unscrewed from said neck while said device remains mounted on said container.

3,872,867
WET-DRY ADDITIVE ASSEMBLY

Fred M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of Ser. No. 149,321, June 2, 1971, Pat. No. 3,788,369, Continuation-in-part of Ser. No. 212,592, Dec. 27, 1971, Pat. No. 3,826,260. This application May 9, 1973, Ser. No. 358,693
Int. Cl. A61j *1/00*
U.S. Cl. 128—272 **4 Claims**



1. A double vial assembly for storing a medicament, comprising:

first vial means defining a chamber therein and having a first elongated sleevelike end portion of reduced diameter, said first sleevelike end portion having a first flow opening therethrough for providing the only communication with said chamber;

perforable seal means blocking said first opening, said seal means being spaced inwardly from the outer end of said first opening as defined adjacent the free end of said first sleevelike end portion;

second vial means defining a chamber therein and having a second elongated sleevelike end portion of reduced diameter, said second sleevelike end portion having a second flow opening therethrough for providing the only communication with said chamber in said second vial means;

perforable stopper means blocking said second flow opening, said perforable stopper means being spaced inwardly of said second sleevelike opening from the outer end thereof as defined adjacent the free end of said second end portion;

elongated double ended cannula means extending between said first and second vial means, said cannula means having one end portion thereof loosely but slidably disposed within said first sleevelike end portion, the other end portion of said cannula means being loosely but slidably disposed within said second sleevelike end portion;

support means disposed in surrounding relationship to said cannula means and fixedly secured thereto at a location disposed between the ends thereof, said support means including a portion disposed in snug, slidable, telescopic engagement with said second sleevelike end portion;

releasable detent means coacting between said portion of said support means and said second sleevelike end portion for resisting movement of said cannula means relative to said second vial means;

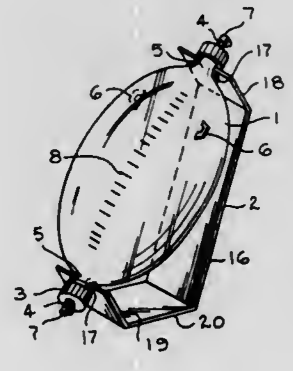
removable tubular sheath means surrounding said cannula means and extending between said first and second vial means for connecting same together, said sheath means including a first annular end portion having first and second sleevelike parts of different diameters disposed in surrounding relationship to said first sleevelike end portion and said first vial means, respectively, and disposed in snug slidable engagement therewith;

said sheath means including a second annular end portion having first and second sleevelike parts of different diameters disposed in surrounding relationship to said second sleevelike end portion and said second vial means, respectively, and disposed in snug slidable engagement therewith, whereby said sheath means can be slidably disconnected from both said first and second vial means; and

means, including releasable detent means, coacting between said first sleevelike end portion and said sheath means for resisting relative movement of said sheath means toward said first vial means.

3,872,868
UNIVERSAL HOSPITAL CONTAINER

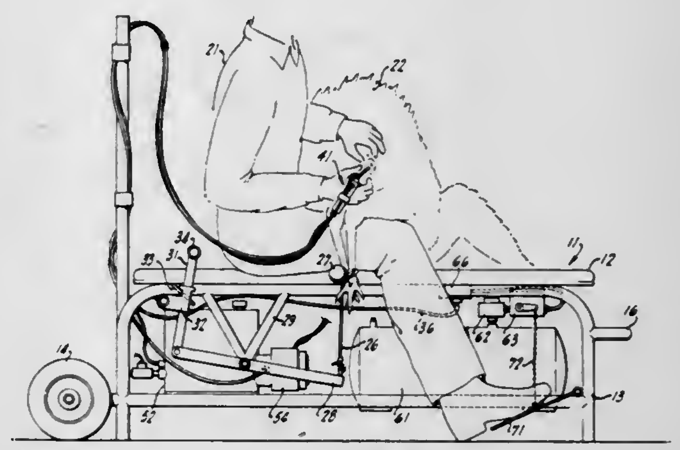
Joel B. Kline, 5226 Hummingbird, Houston, Tex. 77035
Filed Sept. 27, 1973, Ser. No. 401,223
Int. Cl. A61j *1/00*
U.S. Cl. 128—272 **3 Claims**



1. A universal hospital container comprising an enclosed ellipsoid body having substantially duplicate ends a frustrum at each end of the long axis of said body, a neck extending from each of said frustrums, an opening at the end of each of said necks, a cap threaded onto each neck, a tube extending from each cap and opening into said neck, a cap threaded onto each tube, a base, a plate angularly attached to said base, two end members, one each being attached to said base and said plate respectively and a slot in each of said end members, each of said slots demountably engaging one of said necks.

3,872,869
POULTRY SEMEN COLLECTING APPARATUS

Arthur J. Randolph, 4711 Sonoma Hwy., and Albertus G. Horsting, 6685 Sonoma Hwy., both of Santa Rosa, Calif. 95405
Filed Aug. 2, 1973, Ser. No. 385,060
Int. Cl. A01k *37/00;* **A61m** *1/00*
U.S. Cl. 128—276 **4 Claims**



1. Apparatus for collection of poultry semen comprising:

means defining a narrow elongated bench having means to support an operator seated astraddle same with a front end of said bench extending forwardly between the legs of the operator and including a portion to support poultry thereon,

a means for restraining poultry comprising a flexable line with an enlarged first end disposed on a first side of said bench and adapted to be wound about the legs of poultry disposed across the bench with the legs of the poultry over a leg of an operator seated on the bench,

said restraining means further including an arm having locking means pivotally mounted on the first side of said bench with said line secured at the second end thereof to said pivot arm whereby pivoting of the arm tensions the line secured to the legs of poultry to restrain the legs of the poultry,

means mounted on said bench including a suction probe having a vacuum controllably drawn therethrough for collection of poultry semen, and

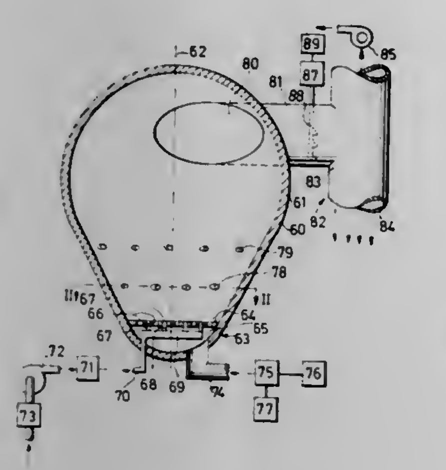
a flask connected to said probe for storage of semen therein.

3,872,870
PROCESS FOR SHAPING A PULP, MASH OR SLURRY INTO SMOKABLE FIBERS

Paul Buchmann, Basel, Switzerland; Monique Beringer, Saint Louis, France, and Heinz Sporri, Birsfelden, Switzerland, assignors to Tamag Basel AG, Basel, Switzerland
Filed Dec. 17, 1973, Ser. No. 425,133
Claims priority, application Luxembourg, Dec. 21, 1972, 66737
Int. Cl. A24b *03/14*
U.S. Cl. 131—140 C **5 Claims**

1. A process for making smokeable fibers comprising the steps of forming a shapeable smokeable composition into fiber strands; passing said strands upwardly while entraining them in a drying gas stream to set the strand and form dry fibers which are lighter than moist fibers; entraining the dry fibers

upwardly in said gas stream upon their drying; and maintaining a circulation of moist fibers in said gas stream until said moist fibers become sufficiently light by drying to be entrained with said gas stream.



3,872,871
THE METHOD OF MAKING A RECONSTITUTED TOBACCO FOAMED SHEET

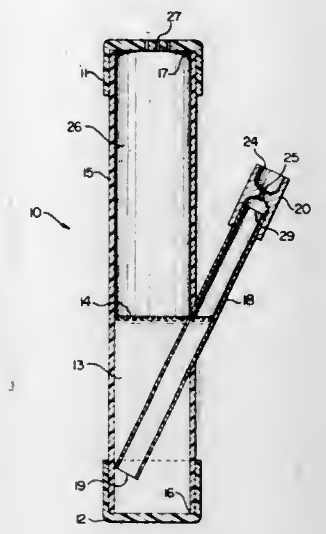
Joseph V. Fiore; T. Kenneth Kelly, both of Fairfield, Conn., and William J. Nellen, Richmond, Va., assignors to AMF Incorporated, White Plains, N.Y.
Filed Dec. 27, 1973, Ser. No. 428,949
Int. Cl. A24b *03/14*
U.S. Cl. 131—140 P **7 Claims**

1. Method of making a foamed reconstituted tobacco sheet suitable for use as a smoking material which comprises preparing a tobacco slurry comprising a major proportion of tobacco resulting in sheet containing at least 655 by weight thereof and a cellulose ether, subjecting said slurry to a dispersing gas and a high shear force at temperatures below 80°F to attain an emergent foam density of between 0.85 and 1.0 g/cc and a foam bubble within the slurry such that at least 80 percent of the bubbles are less than 100 microns in diameter, and greater than 30 percent are less than 50 microns in diameter, and casting and drying the slurry into sheet form, said sheet being essentially non-porous, having a density of from about 0.2 up to about 0.45 g/cc, and resembling sponge or coral under magnification.

3,872,872
COMPACT WATER PIPE

Richard W. Kahler, Clinton, Md., assignor to Surf and Psych, Inc., College Park, Md.
Filed May 25, 1973, Ser. No. 364,065
Int. Cl. A24f *1/30*
U.S. Cl. 131—173 **7 Claims**

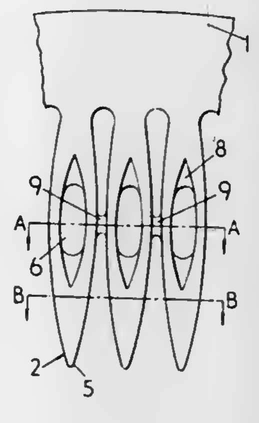
1. A compact water pipe comprising:
- a. a first hollow elongated cylindrical tube having top and bottom open ends;
- b. means secured across said bottom end to permit fluid to be retained in said tube;
- c. a second hollow elongated cylindrical tube having top and bottom open ends, said bottom end inserted into said first tube and said top end extending outwardly therefrom;
- d. a cylindrical reversible smoking bowl connected to the top end of said second tube for retaining smoking tobacco and permitting smoke to pass into the tube;
- e. said second tube and said bowl being smaller in length and diameter than said first tube and separable therefrom whereby said second tube and said bowl may be disassembled from said first tube and stored within the interior space defined by said first hollow tube;



- f. whereby smoke passing into said second tube is drawn through said fluid and directed out through said first tube.

3,872,873
GROOMING IMPLEMENTS

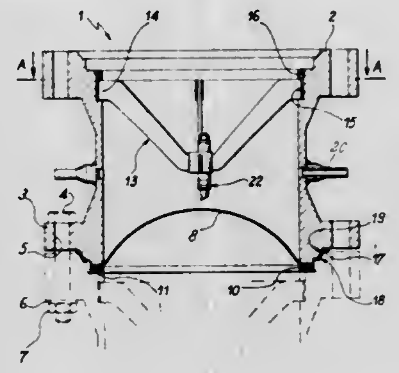
Earl Silas Tupper, Panama City, Panama, assignor to Tup! (Panama) S.A., Panama City, Panama
Filed Jan. 23, 1973, Ser. No. 326,081
Claims priority, application United Kingdom, Jan. 28, 1972, 4021/72
Int. Cl. A45d *24/00*
U.S. Cl. 132—159 **4 Claims**



1. A haircombing implement having a back portion and a plurality of teeth integral therewith and extending generally at right angles therefrom, wherein
- a. each tooth has a transverse cross-section which is rectilinear with rounded corners, the root portion of each tooth, where it communicates with the back portion, and the greater part of the length of each tooth, being at least as broad as it is deep;
- b. each tooth is spaced from its neighbouring teeth, the spaces thereby defined between teeth terminating in smooth rounded surfaces at the back portion;
- c. each tooth possesses at least one elongate through orifice extending along the tooth and opening towards the front and side wall portions thick enough to be resistent to any deformation whereby the spacing between teeth could be substantially varied, said implement thereby presenting a plurality of robust and non-gripping teeth to facilitate combing of hair.

3,872,874
SAFETY DEVICE FOR LIMITING THE PRESSURE OF A FLUID

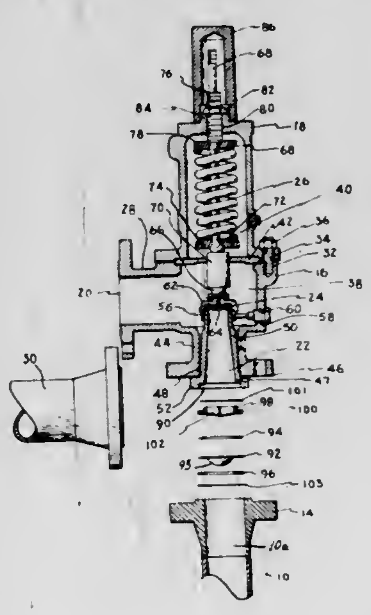
Joseph Marie Nedelec, Voulx; Philippe Buffet, Melun, and Alain Michel, Le Mee sur Seine, all of France, assignors to Electricite de France (Service National), Paris, France
Filed July 6, 1973, Ser. No. 376,944
Claims priority, application France, July 11, 1972, 72.25130
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **5 Claims**



1. A safety device for limiting the pressure of a fluid within a vessel or duct to a predetermined value wherein said device comprises in combination:
- a hollow modular element which is open at both ends,
- a preformed spherical segment non-reversing metallic diaphragm mounted as a shutter for closing off one end of the hollow element and having a convex surface directed towards the interior of said element,
- an axial progressive-shearing cutter placed in the proximity of said surface and secured to a removable structure which is mounted on the other end of the hollow element, sealing and coupling means suited to each end of the modular element and said structure including radial arms locked by strengthening ring in the internal wall of the modular element and, a central hub joining said arms together and mounting said cutter.

3,872,875
RELIEF VALVE ISOLATING MEANS

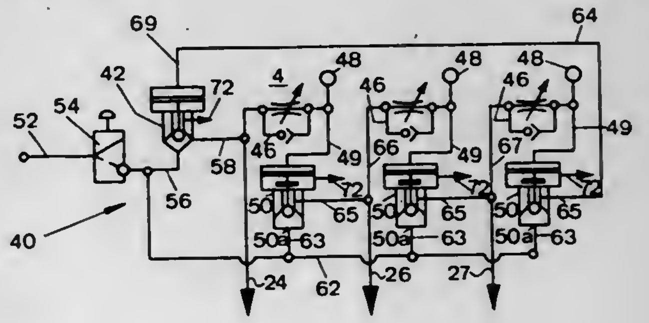
John H. Raidl, Jr., 6625 Milhaven Dr., Mission, Kans. 66202
Filed Nov. 23, 1970, Ser. No. 91,620
Int. Cl. F16k *17/40*
U.S. Cl. 137—71 **2 Claims**



1. In a fluid pressure system having a relief valve for protecting it from over-pressure, said fluid pressure system having an exit passage for communication with the valve with a flange at the end thereof, said valve having an inlet end and an inlet passage for communication with said exit passage and a discharge outlet for connection thereto of discharge piping, an isolation system for the relief valve comprising rupture disc means isolating the relief valve from said fluid pressure system, said rupture disc means comprising a relatively thin rupturable disc having a central dome and a generally flat annular flange surrounding said dome and integral therewith at a circular transition between the outer periphery of the dome and the inner periphery of said annular flange of the disc, said dome being of smaller diameter than one of the said passages, and said rupture disc being secured in position via securement of the inlet end of the relief valve to said flange at the end of said exit passage with its dome accommodated in said one passage, and its said annular flange sealed with respect to both said passages and with said inlet end of the relief valve and said flange at the end of said exit passage closely adjacent one another without any substantial change in the position of the outlet of the relief valve from what its position would be with the relief valve installed on said flange at the end of said exit passage without the said rupture disc means, whereby said rupture disc means may be installed without substantial alteration of said discharge piping, said dome being adapted to rupture at a predetermined over-pressure in said fluid pressure system to communicate said over-pressure to said relief valve, and said relief valve having a port therein for communication between the outside of the relief valve and the inside of the relief valve downstream from the disc, said rupture disc being a reverse acting disc with its dome of smaller diameter than the said exit passage of said fluid pressure system, said disc being secured in position with the dome accommodated in said exit passage with its convex side directed upstream in said exit passage, said dome being adapted to snap over in downstream direction at said predetermined over-pressure, said rupture disc means further comprising knife means for cutting the dome when it snaps over, said knife means comprising at least one knife blade and an annular support for the blade, said annular support overlying the downstream face of said annular flange of the disc and being in sealed relation thereto, said annular support having an annular flange overlying the downstream face of the said annular flange of the disc, both these flanges being clamped between the inlet end of the relief valve and the said flange at the end of said exit passage, said relief valve having a counterbore at its inlet end around its inlet passage, and said annular support and knife blade being at least partially accommodated in said counterbore.

3,872,876
PNEUMATIC CONTROL

Robert Theophil Bachman, Oberengstringen, Switzerland, assignor to Luwa AG, Zurich, Switzerland
Continuation-in-part of Ser. No. 274,755, July 24, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,139
Claims priority, application Switzerland, July 30, 1971, 011232
Int. Cl. F15b *21/02, 21/10*
U.S. Cl. 137—118 **4 Claims**



1. A pneumatic control for automatically repeating an operational cycle, especially a movement cycle, comprising a series connection of a logical NOT-element and at least two logical timing elements, each logical timing element having an

input side and an output side and a respective throttle, volume chamber and identity-element, each identity-element having an input side, means for feeding essentially the same input reference signal to the input side of each identity-element, a supply conduit for a supply pressure with which the NOT-element is connected, the last logical timing element having an outlet, a switching conduit for connecting the outlet of the last timing element of the control with the NOT-element, and means for removing from at least one of said logical timing elements a respective output signal at both the input side and the output side of said at least one logical timing element.

3,872,877

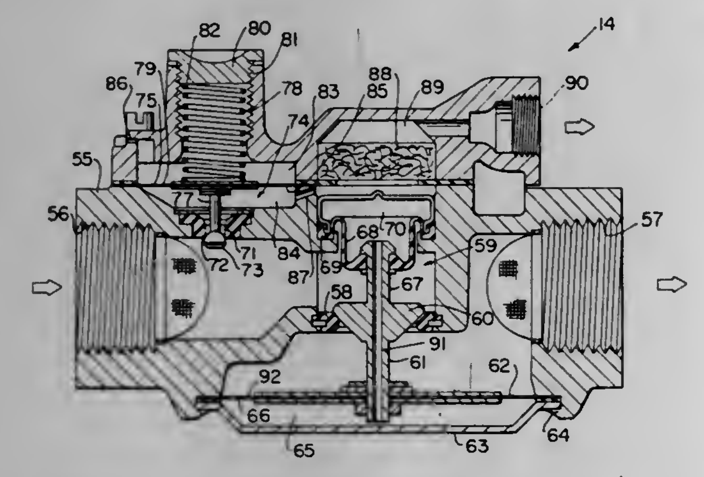
FUEL CONTROL SYSTEM AND PRESSURE REGULATOR CONSTRUCTION THEREFOR AND METHOD FOR OPERATING THE SAME

Charles D. Branson, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 298,521, Oct. 18, 1972, Pat. No. 3,809,313. This application Feb. 25, 1974, Ser. No. 445,357

Int. Cl. F16k *31/365*

U.S. Cl. 137—118 **3 Claims**



1. A pressure regulator construction comprising housing means having an inlet and an outlet, a first pressure regulator between said inlet and said outlet for regulating the fluid pressure of the fluid delivered to said outlet, said housing means having an inlet means in fluid communication with said inlet upstream from said first pressure regulator and having an outlet means, and a seoncd pressure regulator between said inlet means and said outlet means for regulating the pressure of the fluid delivered to said outlet means, said second pressure regulator controlling the operation of said first pressure regulator, said first pressure regulator having a fluid biasing chamber, said first pressure regulator having a valve member carried by a flexible diaphragm that defines part of said chamber, said valve member having a passage means therethrough that is adapted to direct fluid pressure from a point intermediate said second pressure regulator and said outlet means to said chamber.

3,872,878

ANTI-CONTAMINANT DIAPHRAGM VALVE

James A. Kozel, Elmhurst, and Charles A. DeLew, Des Plaines, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.

Filed Dec. 17, 1973, Ser. No. 425,266

Int. Cl. F16k *31/385*

U.S. Cl. 137—242 **4 Claims**

1. A solenoid valve comprising

a valve body having an annular inlet and an outlet centrally located relative to the inlet,

a diaphragm mounted in the body overlying both the inlet and the outlet,

a valve seat between the inlet and the outlet and having a resilient face adapted to close on said seat,

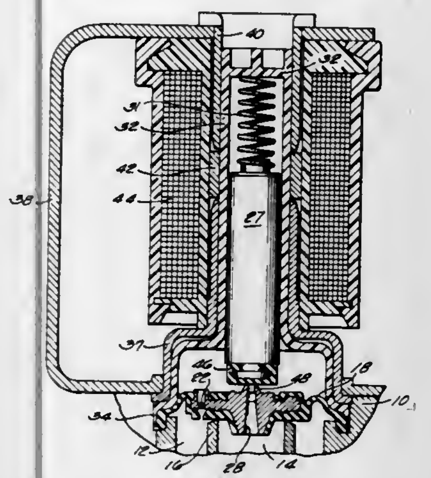
a rigid insert molded in the diaphragm,

a central vent hole through the diaphragm and insert,

a solenoid assembly including a watertight plunger guide and a coil surrounding the guide,

the guide cooperating with the diaphragm to define a chamber the contents of which may flow through the vent hole when the hole is open,

a plunger slidable in the guide and having a valve portion normally closing the vent hole but movable upon energization of said coil to open the vent hole,



a bleed hole in said insert outside the portion overlying said valve seat,

a groove in said resilient face communicating with said bleed hole whereby fluid may flow from the inlet through the groove into the bleed hole and then into said chamber,

the width of said groove being less than the diameter of the bleed hole whereby entrained particles which pass through the groove will pass throuogh the bleed hole while larger particles are rejected or lodge in the groove.

3,872,879

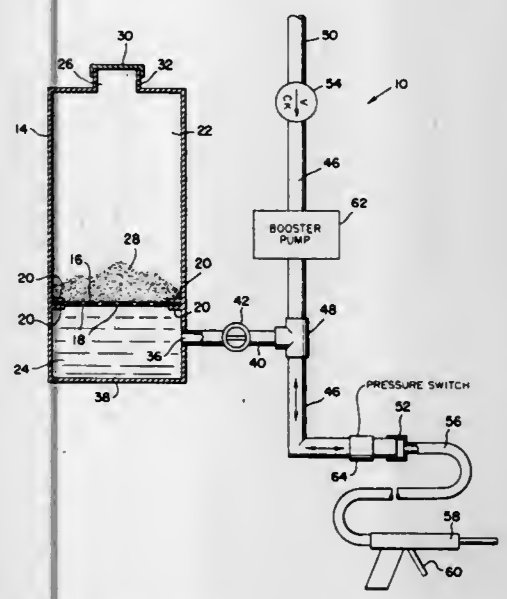
MIXING AND DISPENSING DEVICE

Bernard S. Green, 3431 Ridge Ave., Philadelphia, Pa. 19132

Filed May 9, 1974, Ser. No. 468,243

Int. Cl. E03c *1/046*

U.S. Cl. 137—268 **8 Claims**



1. A mixing and dispensing device comprising a hollow member, a diaphragm, means supporting said diaphragm in the interior of said hollow member, said diaphragm dividing said member into upper and lower chambers, said diaphragm having a plurality of apertures, said upper chamber having an inlet for receiving material to be mixed with a liquid, said lower chamber having an opening therein, a first conduit connected to said chamber at said first opening for communicating with the interior of said chamber, a second conduit, one end of said second conduit being connectable to a supply of liquid of which is subject to rapid fluctuations of pressure over very short intervals, the other end of said conduit defining a discharge opening, means for coupling said first conduit to said second conduit intermediate said first and second ends of said second conduit so that water with material is discharged from said discharge opening, and means for halting the flow of liquid through said first conduit, said halting means being disposed in said first conduit so that water without material is discharged from said discharge opening.

3,872,880

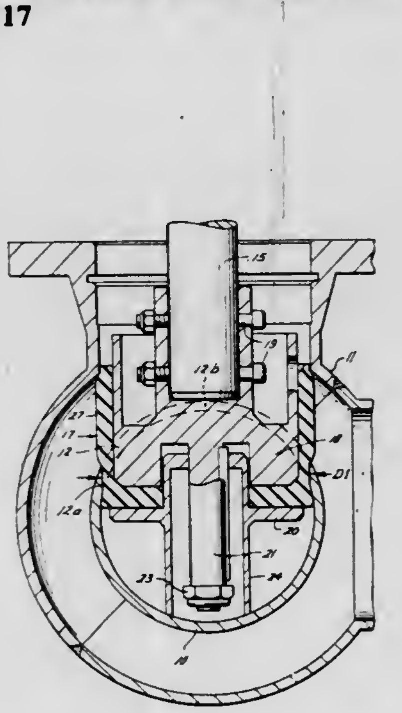
PLUGGING APPARATUS

Burton Ver Nooy, and Coy D. Osburn, both of Tulsa, Okla., assignors to T. D. Williamson, Inc., Tulsa, Okla.

Filed Feb. 16, 1973, Ser. No. 332,812

Int. Cl. B23b *41/08;* **F16c** *41/04*

U.S. Cl. 137—317 **5 Claims**



1. A plugging apparatus especially adapted to plug and seal a side opening in the wall of a pipeline while the pipeline is under pressure differing from atmospheric and wherein the side opening has a nominal diameter which is a major portion of the diameter of the pipeline which comprises, in combination; a fluid tight housing adapted to be mounted on a pipeline to surround a side opening therein; a plug carrier reciprocal in said housing; a back-up plate carried by said carrier and having a portion adapted to engage an inner wall of a pipeline when the plugging apparatus is being used, a hollow cylindrical resilient sealing element surrounding the carrier and having one end resting on said back-up plate and the other end open, and a unitary solid cylindrical imperforate expander head on the carrier slidably movable into said sealing element through the open end thereof to a sealing position responsive to movement of the plug carrier; said sealing element, when in a relaxed state, having an outside diameter less than the diameter of a side opening to be plugged and said expander head having an outside diameter intermediate the inside and outside diameters of said sealing element, when the latter is in a relaxed state, so that as said head moves into the sealing element, the head radially expands the sealing element by mechanically displacing it outwardly into engagement with the edges of a side opening; said head when in sealing position having portions lying opposite such edges of a side opening with the sealing element being comprised between such head portions and such edges.

3,872,881

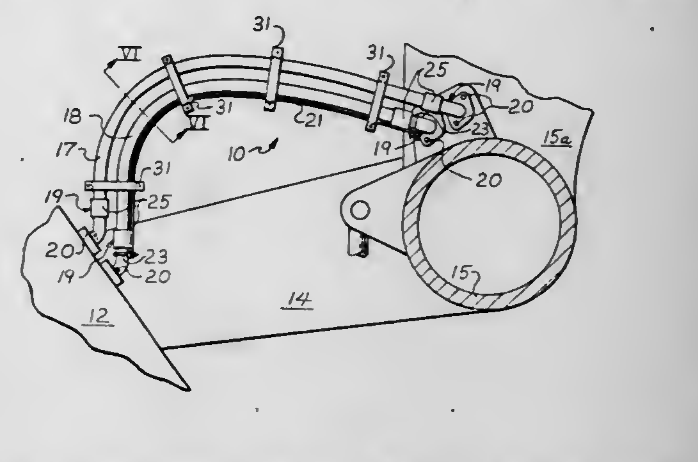
TETHER BAND FOR FLEXIBLE HYDRAULIC HOSES

Lawrence J. Miller, and Roger M. Smith, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 379,587, July 16, 1973, , which is a continuation of Ser. No. 223,466, Feb. 4, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,114

Int. Cl. B65h *75/36*

U.S. Cl. 137—355.17 **5 Claims**



1. A tether band for restraining flexible hydraulic hoses having hose fittings attached to their opposite ends for connecting them to machine components having relative movement comprising:

an elongated metal band having a width substantially greater than its thickness, said metal band having a plurality of spaced notches along its length and flexible along its longitudinal axis normal to its width;

an anchor means on at lest one end of said metal band for attaching it to a hose fitting of one of such hoses so said band is attached to one of the components through a hose fitting so it can be removed with such hoses as a unit without being disconnected from such fitting; and

a plurality of bracket means disposed in spaced relationship along the length of said band in spaced notches operable to prevent longitudinal movement of said bracket means along said band with at least one of said bracket means located adjacent to each end of said band any remaining bracket means disposed intermediately thereof, each of said bracket means including means attaching it in its notch which prevents rotation of said bracket about the longitudinal axis of said band.

3,872,882

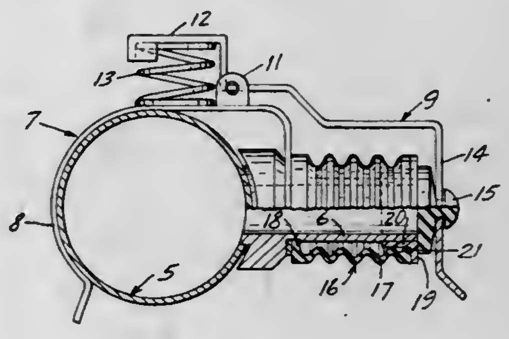
MILK LINE NIPPLE PROTECTOR

Arnold R. Fjermestad, and Clifford R. Brown, both of Albert Lea, Minn., assignors to Universal Cooperatives, Inc., Albert Lea, Minn.

Filed Dec. 26, 1973, Ser. No. 428,378

Int. Cl. F16k *51/00*

U.S. Cl. 137—381 **6 Claims**



1. A milking machine milk line nipple assembly comprising:

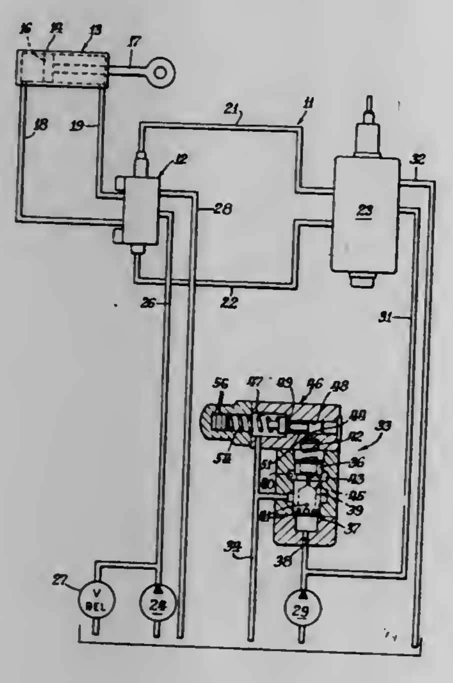
a. a milk line,

b. nipple structure extending laterally from said milk line and having an open outer end adapted to receive a milking machine connector line thereon,

- c. nipple closing mechanism carried by said milk line and including a closure member resiliently urged toward nipple-closing position across the open outer end of said nipple structure,
- d. a bellows-type sleeve member carried by said nipple structure is encased relation and extending along the major portion of the length thereof,
- e. said sleeve member being resiliently and compressible along its longitudinal axis, and
- f. a rigid ring member carried by the outer end portion of said sleeve member in axially aligned relation and having a bore only slightly greater than the exterior diameter of said nipple and terminating at the end of the nipple when said sleeve member is in non-compressed position and bearing against said closure member to cooperatively effectively prevent contamination of said nipple while not in use.

3,872,883
SPOOL-TYPE RELIEF VALVE

Donald L. Bianchetta, Coal City, and Francis X. Hufeld, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 17, 1973, Ser. No. 397,670
Int. Cl. F16k *17/04*
U.S. Cl. 137—491 **1 Claim**

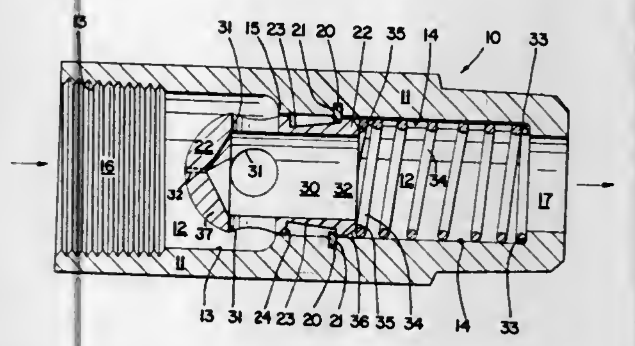


1. A hydraulic pilot control circuit wherein a pilot pressure for operating a control valve is regulated by a pilot operated valve responsive to a pilot pressure developed by a pilot relief valve limiting fluid communication from a pilot passage to a drain passage, the pilot operated valve having an inlet passage in operative communication with the control valve and forming a bore for communicating the inlet passage with the pilot passage, a movable valve member being arranged in the bore and defining an orifice for regulating fluid flow from the inlet passage to the pilot passage, the movable valve member also defining throttle means providing variable communication between the inlet passage and a drain passage, the pilot relief valve including a valve body forming a relief chamber in communication with the drain passage and a bore communicating the relief chamber with the pilot passage, a pilot relief valve member having a tubular section slidably arranged in the pilot relief valve bore, the tubular section being open to the pilot passage and closed from the relief chamber, the pilot relief valve body forming an annular stop surface about the bore in the relief chamber, the pilot relief valve member having an enlarged portion in the relief chamber for engagement with the stop surface, a spring being disposed in the relief chamber for interaction with the pilot relief valve member, the tubular section of the pilot relief valve member forming diametrically opposed, radially extending relief flow passages adjacent its enlarged portion to permit balanced relief flow into the relief chamber as the pilot relief valve member is shifted against the spring, the radially outwardly extending relief flow passages being angled away from the relief chamber, and further comprising,

a restrictive passage of relatively reduced size for communicating the pilot passage with the bore in the pilot relief valve body.

3,872,884
EXCESS FLOW CHECK VALVE

Wayne S. Busdiecker, Wickliffe; Zdenek J. Lansky, Solon, and John G. Russell, Highland Heights, all of Ohio, assignors to Parker-Hannifer Corporation, Cleveland, Ohio
Filed Nov. 20, 1972, Ser. No. 308,292
Int. Cl. F16k *17/00, 1/44, 17/24*
U.S. Cl. 137—498 **8 Claims**

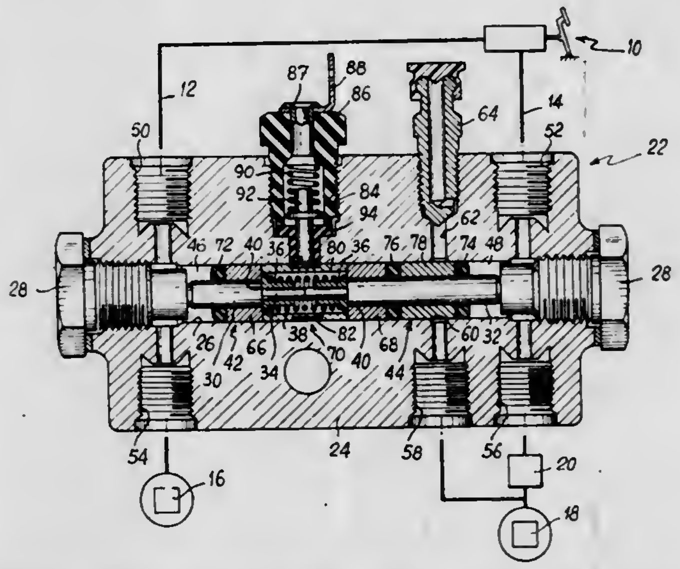


1. An excess flow check valve comprising a body having a passage therethrough, said passage including a large diameter bore and a small diameter bore, a valve member slidable in said passage and having a perforate portion and a substantially imperforate portion, said perforate portion providing a passage through said member a pair of abutment faces on the body spaced from said large diameter bore and cooperable with a pair of spaced abutment faces on said valve member to limit movement of the valve member between a closed position in which said imperforate portion is in said small bore to substantially prevent flow through both the small bore and the perforate portion and an open position in which said imperforate portion and at least part of the perforate portion are within said large bore to permit flow through said valve member and said body passage, one of said pairs of abutment faces being formed by end walls of a recess in one of said body and valve members, said end walls extending in only one radial direction from said small bore, the other pair of abutment faces extending radially into said recess a resilient member mounted exteriorly of the recess so as not to engage either of said end walls and biasing the valve member toward said open position, and said valve member being movable to said closed position by a predetermined differential in fluid pressure acting on opposite ends of said valve member.

3,872,885
PRESSURE FAILURE SWITCH

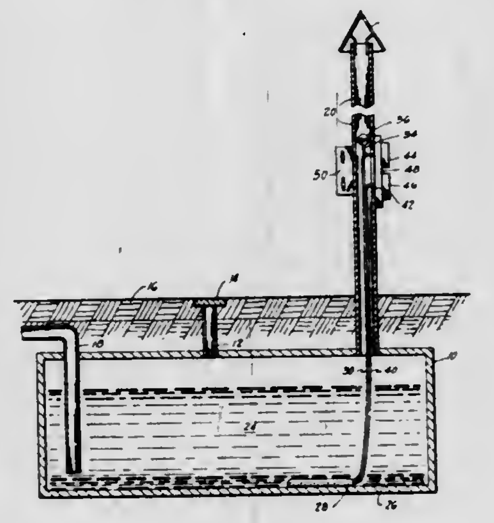
Christian Eloi, Garges-les-Gonesses, and Christian Riquart, Paris, both of France, assignors to Societe Anonyme D.B.A.
Filed Dec. 13, 1973, Ser. No. 424,525
Claims priority, application France, Dec. 27, 1972, 72.46393; Mar. 14, 1973, 73.099028
Int. Cl. H01h *35/10*
U.S. Cl. 137—554 **12 Claims**

1. Pressure imbalance detector comprising a housing with a bore therein, two annular pistons slidably mounted in said bore, the adjacents ends of the pistons being separated by a resilient system whereas the other ends of the pistons define in said bore two pressure chambers capable of being connected to two separate fluid circuits, rods fixed relative to said housing and sealingly projecting through said pistons, said rods being adapted to be engaged by the ends of the resilient system and switching means for closing an electrical circuit in the event of motion of the pistons due to a pressure difference denoting failure of one of the fluid circuits, said means for closing comprising a movable element mounted between the pistons and engaged thereby without interference with the resilient system.



3,872,886
COMBINED WATER REMOVING AND CONTENTS INDICATING DEVICE FOR UNDERGROUND LIQUID FUEL CONTAINING TANKS

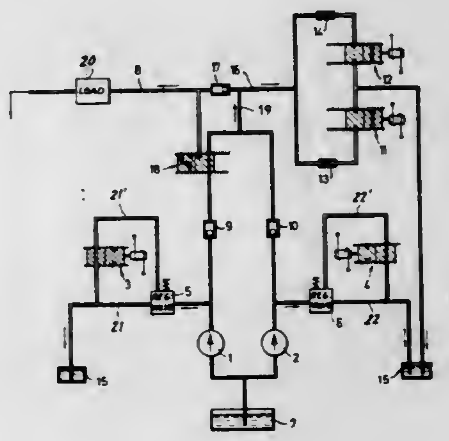
Albert Shotmeyer, c/o Shotmeyer Oil & Chemical Co., One Valley St., Hawthorne, N.J. 07506
Filed Sept. 12, 1973, Ser. No. 396,575
Int. Cl. E03b *7/07*
U.S. Cl. 137—558 **8 Claims**



1. A combined water removing and contents indicating device for underground liquid fuel containing tanks, comprising: a flexible walled container; a partition dividing said container into an upper chamber and a lower chamber, said upper chamber being imperforate, and said lower chamber having perforations in at least one wall thereof; means within said lower chamber having a specific gravity greater than that of water and fuel within the tank; a first tubular conduit connected at one end with said upper chamber; a pressure responsive liquid contents indicating means connected with the other end of said first tubular conduit; said first tubular conduit including a connection for admitting fluid under pressure into said conduit and into said upper chamber; a second tubular conduit connected at one end with said lower chamber; and an exhaust pump means connected with the other end of said second tubular conduit.

3,872,887
APPARATUS FOR SELECTIVELY ESTABLISHING A MULTIPLICITY OF DISCRETE FLOW RATES

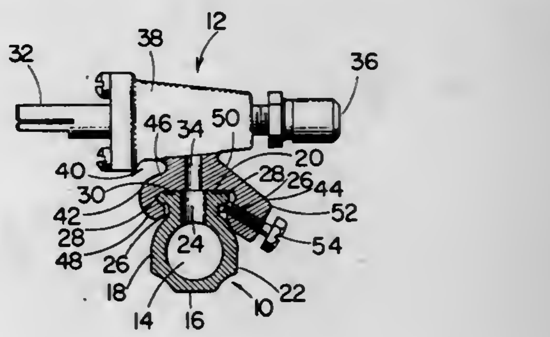
Walter Wohlrab, Weissenburg, Germany, assignor to Krauss-Meffei Aktiengesellschaft, Munich, Germany
Filed Sept. 5, 1972, Ser. No. 286,405
Claims priority, application Germany, Sept. 15, 1971, 2146210
Int. Cl. G05d *7/03*
U.S. Cl. 137—567 **10 Claims**



1. A system for selectively establishing a multiplicity of discrete flow rates of a liquid through a load, comprising:
- a first calibrated constant-flow source of liquid having a relatively low capacity;
- a second calibrated constant-flow source of liquid having a relatively high capacity;
- first control means for individually activating and deactivating said sources;
- constant means with a capacity exceeding that of said second source for supplying the combined outputs of said sources to the load, said conduit means including a first and a second branch respectively connected to said first and said second source;
- a first and a second calibrated constant-flow fluid sink connected to said second branch for deviating part of the output of said second source from said load upon being placed in an operative condition, said fluid sinks being of different capacity and having a combined capacity less than that of said second source; and
- second control means for individually rendering said first and second fluid sinks operative.

3,872,888
MEANS FOR MOUNTING A CONTROL DEVICE ON A FUEL SUPPLY MANIFOLD

Elmer D. Porter, Mitchell, Ind., assignor to Essex International, Inc., Ft. Wayne, Ind.
Filed Oct. 10, 1973, Ser. No. 405,024
Int. Cl. F16l *41/00*
U.S. Cl. 137—608 **7 Claims**

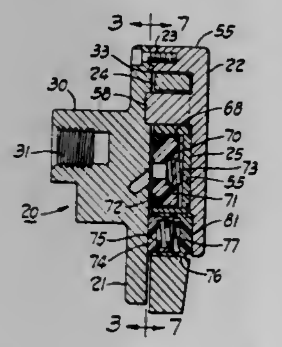


1. In combination, an elongated fuel supply manifold having a longitudinally extending fuel carrying bore, first elongated sidewall means on said manifold disposed parallel to the axis

of said bore, said manifold including second and third spaced elongated sidewalls longitudinally disposed one adjacent each longitudinal edge of said first sidewall means, a lip extending from each longitudinal edge of said first sidewall means adjacent said second and third sidewalls in substantially the same plane as said first sidewall means, said manifold having an opening in said first sidewall means in fuel communication with the fuel carrying bore of said manifold, a control device mounted in fuel tight engagement with said first sidewall means, said control device having an inlet in alignment with the opening in said first sidewall means whereby said control device may control the flow of fuel from said fuel carrying bore to a fuel consuming device, said control device having rigid fingers overlying and extending around said lips to prevent lateral movement of said control device relative to said manifold, and a screw threaded through one of said fingers and engaging one of said lips to securely hold said control device in sealed relation to said manifold.

3,872,889
ROTARY SELECTOR VALVE

William J. Smith, Bay Village, and Ernest Irti, Parma, both of Ohio, assignors to Teledyne, Inc., Cleveland, Ohio
Filed Jan. 7, 1974, Ser. No. 431,503
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.21 **6 Claims**



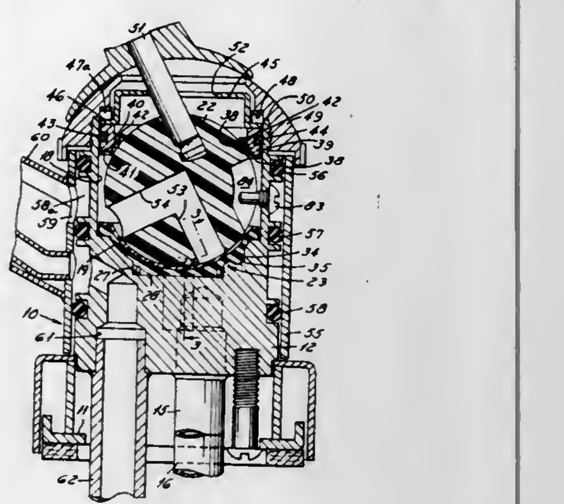
1. A rotary selector valve comprising:

a. structure defining a valve body having:
  i. a valving surface,
  ii. pressure, system and exhaust ports in said valving surface,
b. a single, pre-loaded, plunger-type shear seal including a rigid tubular member having means at one end defining an annular seal face, and
c. actuator means connected to said valve body for relative rotative movement and carrying said tubular member so that said annular seal face is in fluid-sealing, sliding engagement with said valving surface,
d. said actuator means and valve body being relative rotatable between one position in which said system and exhaust ports are in communication and at least one other position in which said pressure port and at least one system port are in communication.

3,872,890
SINGLE HANDLE FAUCET VALVE

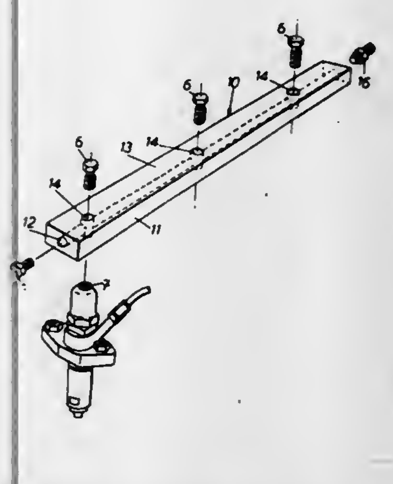
Terence G. Hare, Farmington, Mich., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Oct. 25, 1973, Ser. No. 409,755
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.41 **13 Claims**

1. In a single handle faucet, the combination comprising a faucet body, said faucet body having a pair of liquid inlets for hot and cold water and a liquid outlet, said faucet body having a generally spherical surface, a sealing member having a generally spherical surface mounted on said spherical surface of said faucet body surface and having a centrally located axially thickened portion, said faucet body having a generally complementary recess into which said thickened portion of said sealing member extends, the periphery of said thickened portion being spaced from the periphery of said recess, means integral with said sealing member but spaced from said thickened portion providing a hydraulic seal between said sealing member and said recess, said means comprising a peripheral web surrounding said thickened portion, said faucet body having passages extending from said inlets to said recess in said faucet body, said sealing member having openings through said thickened portion aligned with the passages in said faucet body, a valve body mounted for swinging movement within said faucet body, said valve body having a spherical surface complementary to said spherical surface on said sealing member, said valve body having passage means extending from one area on the periphery of said spherical surface of said valve body to another area of the periphery thereof to said valve seat, one end of said passage means terminating along said spherical surface such that said passage means is adjacent said thickened portion of said sealing member in all positions of said valve body, and means for guiding said valve body to selectively change the communication of the passage means in the valve body with the inlets of said faucet body.



3,872,891
PIPES

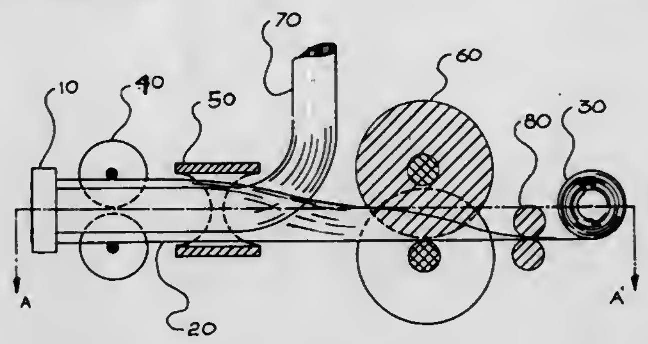
Noel Christopher Chamberlain, Eye, England, assignor to Perkins Engines Limited, London, England
Filed Jan. 19, 1973, Ser. No. 324,944
Claims priority, application United Kingdom, Jan. 22, 1972, 3139/72; Jan. 5, 1973, 701/73
Int. Cl. F16l *9/18*
U.S. Cl. 138—177 **15 Claims**



1. A pipe comprising a wall of malleable material of non uniform wall thickness having two substantially plane and parallel surfaces defining at least part of the outer surface of said pipe, said wall defining a passage of such size relative to the thickness of said wall as to permit under a load applied normal to said plane surfaces, local deformation of material at said plane surfaces without closure of said passage by collapse of said pipe.

3,872,892
FLUID DISPENSING APPARATUS

Robert C. Farrington, St. Paul, Minn., assignor to Timeline Inc., St. Paul, Minn.
Filed Jan. 29, 1973, Ser. No. 327,767
Int. Cl. F16l *55/00*
U.S. Cl. 138—103 **2 Claims**

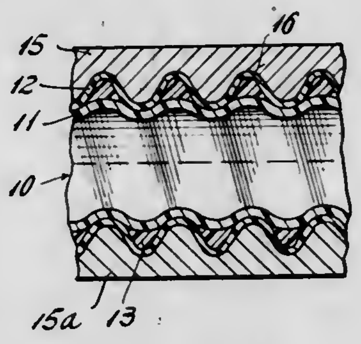


1. Means for directing a fluid stream into a vessel comprising:

a fluid reservoir;
a flexible tube connected at one end to said fluid reservoir;
a coiled ribbon of resilient metal with one end connected to the other end of said flexible tube; and
means for uncoiling said coiled ribbon, and for advancing the ribbon and said flexible tube along an axis entrant to said vessel and for forming the uncoiled portion of said ribbon around said flexible tubing to form a device substantially rigid in a transverse direction to advancement.

3,872,893
SELF-REINFORCED PLASTIC HOSE AND METHOD FOR MOLDING SAME

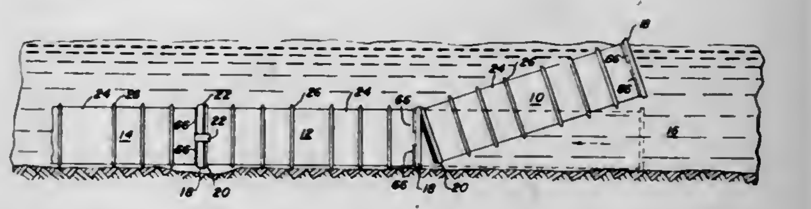
Robert E. Roberts, Wilton, Conn., assignor to Fred T. Roberts & Company, Wilton, Conn.
Continuation of Ser. Nos. 248,932, May 1, 1972, abandoned, and Ser. No. 41,796, June 1, 1970, abandoned. This application Feb. 7, 1974, Ser. No. 440,458
Int. Cl. B29c *17/07*; **F16l** *11/08*
U.S. Cl. 138—121 **7 Claims**



1. The method of making a self-reinforced corrugated hose of thermoformable elastomeric material without the necessity of incorporating non-elastomeric reinforcement materials comprising the steps of forming a tubular member by extruding an inner tubular layer consisting essentially of elastomeric material, extruding a tubular reinforcing layer consisting essentially of elastomeric material over said inner layer, and extruding a tubular cover layer consisting essentially of elastomeric material over said reinforcing layer, the material of the reinforcing layer having a flow temperature lower than the material of the inner layer and the cover layer, inserting said tubular member into a mold having a cavity provided with a corrugated wall, heating said tubular member to a molding temperature above the flow temperature of the reinforcing layer and lower than the flowtemperature of the inner layer and the cover layer, applying internal pressure to the tubular member to force the cover layer of the tubular member into conforming engagement with the corrugated mold wall to mold the exterior of the hose, said pressure being sufficient to cause portions of the flowable reinforcing layer to be displaced into the troughs in the cover layer produced by the corrugations of the mold, and to cause the cover layer and inner layer to engage and adhere together over the crests of the corrugations of the mold, and setting the hose as molded in a single mold operation, said reinforcing layer forming accurately and uniformly spaced resilient reinforcing portions conforming to the corrugations of the mold and disposed between said inner layer and said cover layer.

3,872,894
LIGHT WEIGHT CABLE HOUSING

Kenneth F. Streit, Mount Prospect, Ill., assignor to 3-D Ducts, Inc., Hillside, Ill.
Filed Oct. 3, 1973, Ser. No. 403,248
Int. Cl. F16l *9/22*
U.S. Cl. 138—155 **19 Claims**



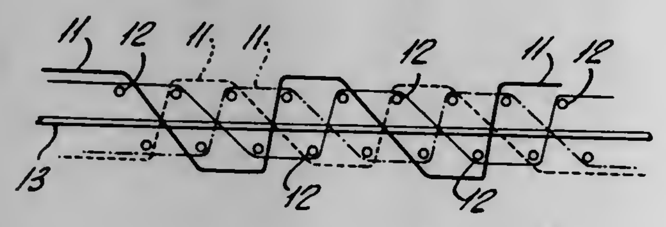
1. A light-weight, plastic conduit section for connection to similar conduit sections comprising: elongated wall means defining a passage therein; an outwardly tapered male portion at one end of said wall means and integral therewith; means defining a female portion integral with said wall means at the other end thereof to permit insertion of said male portion into a female portion of an adjacent similar conduit section, the outer transverse dimensions of said male portion at the free end thereof being generally equal to the inner transverse dimensions of said female portion at a section opposite the free end thereof for supporting a section of a similar conduit female portion thereon; a flange integral with and spaced from the free end of said male portion, the outer transverse dimensions of said flange corresponding to inner transverse dimensions of a section of said female portion near the free end thereof for supporting the female portion of a similar conduit section on said flange when said male portion is inserted therein; partition walls integral with and extending transversely between said wall means within said passage for dividing said passage into a plurality of longitudinally extending passageways, said partition walls extending outwardly of the end of said wall means and within said female portion defining means to provide integral wall projections having generally U complement shapes with inclined flat bearing surfaces; and the partition walls at said male portion being correspondingly recessed from the end of said wall means, whereby said projections and recesses provide column-like support for the joint between connected similar conduit sections.

3,872,895
WOVEN FABRIC FOR SAFETY BELTS OF HIGH ENERGY-ABSORBENCY

Takezo Takada, Hikone, Japan, assignor to Takatao Kojyo Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 78,774, Oct. 7, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,190
Claims priority, application Japan, Jan. 2, 1972, 47-004480
Int. Cl. D03d *15/00, 11/00*
U.S. Cl. 139—383 R **12 Claims**

1. A woven energy absorbing safety belt web comprising first and second groups of warp threads of relatively low and relatively high elongation respectively, and a filler thread interwoven with said warp threads, said second group warp threads having a weave crimp exceeding that of said first group warp threads and said first group warp threads comprising a plurality of core threads having elongations different from each other and lower than that of said second group

warp threads, and said first group warp threads having a nonrecoverable extensibility under a substantially constant predetermined load for a predetermined elongation before the rupture of said first group warp threads of maximum elongation.



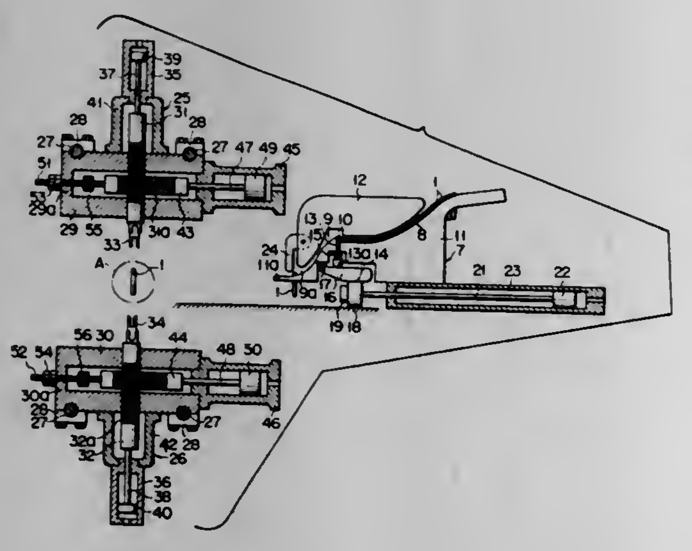
3,872,896
APPARATUS FOR TWISTING WAVE FORM WIRE SPRINGS

Shigeru Yoshimura, Hiroshima, Japan, assignor to NHK Spring Co., Ltd., Yokohama-shi, Japan

Filed Feb. 27, 1974, Ser. No. 446,276

Int. Cl. B21f *35/04*

U.S. Cl. 140—71 R **5 Claims**



1. A twisting apparatus for twisting a formed wire spring comprising:

a twisting unit disposed on one side of a working station, said twisting unit including:

a base block adjustable along a guide rail;

a spindle provided with a pinion at one portion thereof and slidably mounted on said base block;

a first pneumatic actuator disposed at one end of said spindle for moving said spindle in the axial direction;

a jaw mounted on the other end of said spindle, said jaw being adapted to clamp said formed wire spring upon operation of said first pneumatic actuator;

a rack disposed on said base block at right angles with respect to said spindle and arranged to drive said pinion; a second pneumatic actuator for reciprocating said rack, thereby causing said jaw to rotate to twist said formed wire spring; and

adjusting means for adjusting the stroke of said rack, said adjusting means including a rod secured to one end of said rack, and a gauge member having a predetermined width and mounted on said rod between said one end of said rack and said base block.

3,872,897
PROCESS AND DEVICE FOR THE WINDING OF COILS FOR STATORS OF ELECTRIC MACHINES

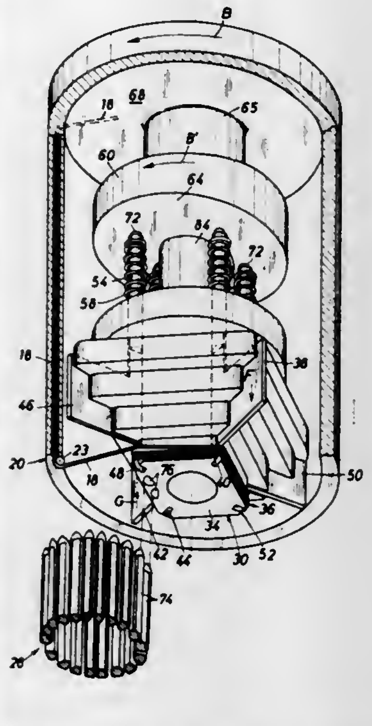
Hans Droll, and Willi Muskulus, both of Bergen-Enhkeim, Germany, assignors to Balzer & Droll K G, Niederdorfelden, Germany

Filed June 25, 1973, Ser. No. 373,239

Claims priority, application Germany, Feb. 28, 1973, 2309837; Apr. 18, 1973, 2319651

Int. Cl. B21f *3/04*

U.S. Cl. 140—92.1 **13 Claims**



1. A method of forming a multi-layer coil by a winding device which winds a strand of wire about a winding form comprising the steps of:

a. winding the wire on at least one surface of the winding form, said at least one surface being parallel to the axis of rotation of said winding device, and

b. sequentially moving a plurality of stripper plates parallel to the axis of rotation of said winding device in synchronism with such winding device to move the wire wound on said at least one surface in a direction parallel to the axis of rotation of said winding device.

3,872,898
MULTIPLE COMPONENT PRE-FORMER

William E. Parks, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Mar. 4, 1974, Ser. No. 447,747

Int. Cl. B21f *1/00*

U.S. Cl. 140—105 **6 Claims**

1. An electrical component pre-former for automatically cutting and forming groups of electrical components having axial leads supported at the ends of the leads by tape, the pre-former comprising:

a supply station having a supply of taped components therein;

a cut and form station including a die block and a complementally formed punch plate;

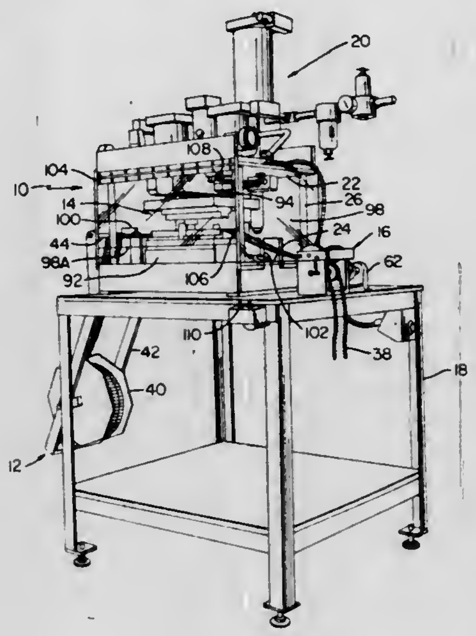
a take-up station, said taped components being initially manually fed from said supply station across said die block to said take-up station;

said take-up station including means for engaging the taped ends of said components;

motor means for rotatably driving said means wherein said taped ends are sequentially driven through said take-up station wherein groups of said components are moved across said die block;

timing means electrically connected with said motor to activate said motor to thereby drive said take-up station means after each group of components has been formed wherein a new group of components are brought into position relative to said die block;

power means for driving said punch plate into cooperative engagement with said die block thereby cutting and forming any components resting on said die block, said components having imparted thereto a momentum sufficient to travel through said die block, said punch plate being retracted at the completion of the cutting and forming step;



switch means being responsive to the retraction of said punch plate, said switch means being connected with said timing means wherein said motor means is actuated only when said punch plate is in the retracted position, said timing means permitting said motor to run for a predetermined time such that a new group of components are brought into position on said die block; and

means for collecting the cut and form components exiting from said die block.

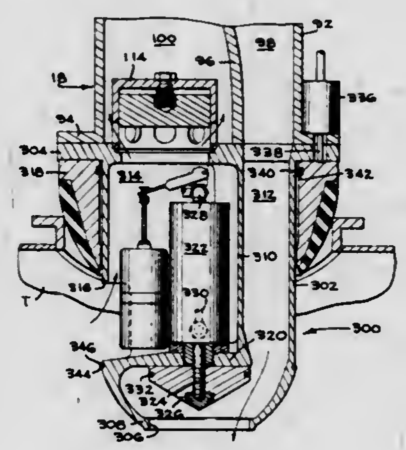
3,872,899
VAPOR RECOVERY FLUID LOADING ARM WITH DRIPLESS DISCHARGE SPOUT

Houston W. Knight, Whittler, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed June 4, 1973, Ser. No. 366,394

Int. Cl. B65b *31/00*

U.S. Cl. 141—59 **6 Claims**



1. In a vapor recovery fluid loading arm including a fluid delivery conduit extending between fluid supply means and fluid dispensing means, and a vapor return conduit extending between said fluid dispensing means and a vapor receiving means, the improvement comprising a fluid outlet-vapor inlet assembly intermediate the fluid dispensing means and the atmosphere, said assembly including

a. a generally tubular body having inner and outer ends, said inner end connected to said fluid dispensing means, said body separated into a fluid passageway and a vapor passageway by a generally longitudinal wall having a transverse web portion forming a mounting for a valve operating means,

b. a valve seat formed in the outer end of the tubular body,

c. a valve closure element for cooperating with the valve seat to form a barrier preventing fluid from passing to the atmosphere from the fluid passageway,

d. a valve operating means mounted on the web portion and connected to the valve closure element, and

e. valve control means connected to the valve operating means for controlling actuation of said operating means from a remote location.

3,872,900
FILLER PIPE FOR A FUEL TANK OF A MOTOR VEHICLE

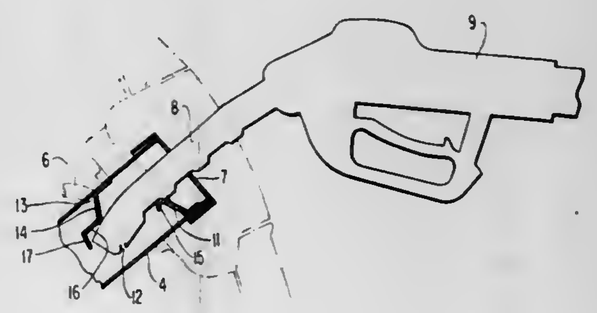
Hans Gotz, Boblingen-Dagersheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 22, 1973, Ser. No. 334,752

Claims priority, application Germany, Feb. 22, 1972, 2208189

Int. Cl. B65b *1/04, 3/24;* **B67c** *3/34*

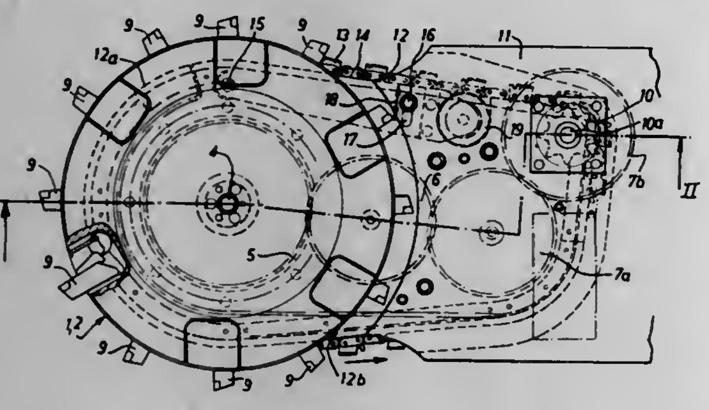
U.S. Cl. 141—392 **21 Claims**



1. A filler pipe for a fuel tank of a motor vehicle with a first web plate means arranged on the inside of the filler pipe in proximity to the insert aperture for a discharge pipe, in which the fuel tank is additionally connected with the filler pipe by a small vent pipe, characterized in that a second web plate means is arranged on the inside of the filler pipe downstream of the first web plate means and upstream of the discharge orifice of the small vent pipe in the filler pipe as viewed in the insert direction of the discharge pipe, the second web plate means is arranged at the upper surface with respect to the vertical of the filler pipe on the inside thereof, wherein the filler pipe has a substantially horizontally extending section and a slightly incline section, the horizontal section of the filler pipe terminating near the upper boundary wall of the fuel tank in the latter, said small vent pipe terminating in the incline section of the filler pipe approximately in the center of its upper surface, and wherein the web plate means are inclined in the insert direction of the discharge pipe by about 28° with respect to a respective cross-sectional plane of the filler pipe, said web plate means including substantially straight edge portions which are flanged over in the direction toward a respective mounting wall of the web plate means in the filler pipe, and further characterized in that the second-mentioned web plate means includes a substantially straight edge portion and is angularly bent twice at its straight edge portion, and in that the thus-formed transverse strip having a free edge limits the introduction of the discharge pipe.

3,872,901
CUTTING DEVICE

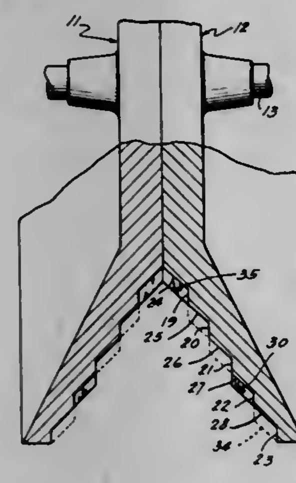
Denis Bernard, La Ravoire, France, assignor to C.E.M.E.T. Societe Anonyme, La Ravoire, France
Filed Oct. 12, 1973, Ser. No. 405,750
Claims priority, application France, July 9, 1973, 73.25132
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **5 Claims**



1. A device for making a wide saw cut, said device comprising; a frame; means defining an axis thereon; at least two discs coaxially mounted on said frame for rotation about said axis, said discs being spaced apart along said axis, each disc having a plurality of cutters radially outwardly extending from the disc and mounted thereon at mutually spaced locations near the periphery the disc; means defining an arc-shaped guideway coaxial with and between said discs; an endless chain movable along said frame and arc-shaped guideway, said chain having a plurality of outwardly extending cutters mounted thereon and located between said discs when the chain moves along said arc-shaped guideway; means on said frame for rotating said discs; and means on said frame for moving said chain along said frame and arc-shaped guideway; whereby the cutters on said discs make mutually spaced narrow saw cuts and the cutters on said chain clear out uncut material between said spaced, narrow saw cuts, as the several cutters move along said arc-shaped guideway.

3,872,902
WOOD-CHIP CUTTING MACHINE

Philip Nilsson, Kaptensgaton 3a, 82600 Soderhamn, Sweden
Filed Sept. 21, 1973, Ser. No. 399,721
Claims priority, application Sweden, Sept. 21, 1972, 12174/72
Int. Cl. B27c *1/08*
U.S. Cl. 144—176 **6 Claims**

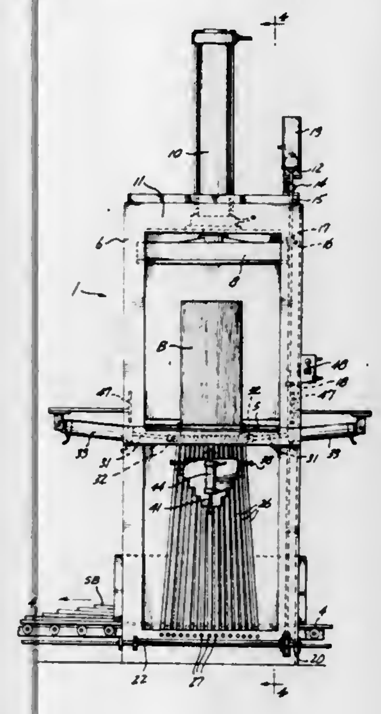


1. A wood-chip cutting machine comprising:
a. at least one tool carrier adapted to be driven about a rotational axis, said carrier having a series of concentric separate annular guide surfaces extending perpendicularly to the rotational axis and radially spaced from one another, said annular guide surfaces being successively offset in an axial direction, said carrier having a series of concentric separate frustoconical abutment surfaces axially offset from one another and respectively filling the spaces between said annular guide surfaces, the generatrix of each of which forms an angle with the rotational axis; and
b. a series of cutter tools respectively secured to and projecting from said frustoconical abutment surfaces, each tool having a main cutting edge parallel to the adjacent frustoconical abutment surface, said cutter tools being so mutually staggered that the successive cutter tools are disposed on a combined helicoidal and spiral line,

whereby when logs are fed lengthwise toward said carrier in a plane perpendicular to the rotational axis, said cutting edges cut essentially in a plane at an angle to the grain direction of the log.

3,872,903
MULTIPLE SHAKE-BOARD SPLITTING METHOD

Charles E. Carr, 954 N. N St., Aberdeen, Wash. 98520
Division of Ser. No. 248,235, April 27, 1972, Pat. No. 3,802,473. This application Jan. 25, 1974, Ser. No. 436,510
Int. Cl. B27l *7/00*
U.S. Cl. 144—309 R **1 Claim**



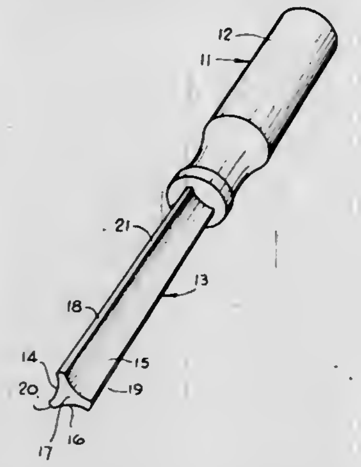
1. The method of splitting substantially an entire block into shake-boards which comprises forming all the shake-boards substantially simultaneously by placing the block with the length of its grain upright in a predetermined position relative to a plurality of froes in substantially parallel horizontal relationship beneath the lower end of the block, pushing the block downward from such predetermined block position and against the splitting edges of the froes and thereby splitting the entire block substantially simultaneously into shake-boards, and spreading the froes apart horizontally relative to each other to free the split-apart shake-boards between the froes for falling past the froes while remaining in substantially parallel relationship to each other for clearing the shake-boards from such predetermined block position for reception of the next block to be split.

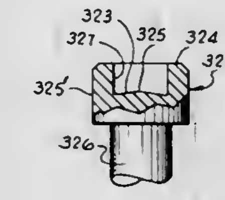
3,872,904
FLEX COUPLING FASTENER

John W. Barlow, 1351 Larkin St., San Francisco, Calif. 94108
Filed Nov. 24, 1972, Ser. No. 308,981
Int. Cl. B25b *15/00;* **F16b** *23/00*
U.S. Cl. 145—50 A **8 Claims**

1. A flex coupling fastener comprising, in combination with a screw driver consisting of a shank, a plurality of angularly shaped keys on said shank arranged successively about the perimeter thereof, a screw comprising a head, a flat top on said head, a threaded shank extending in the axial direction of

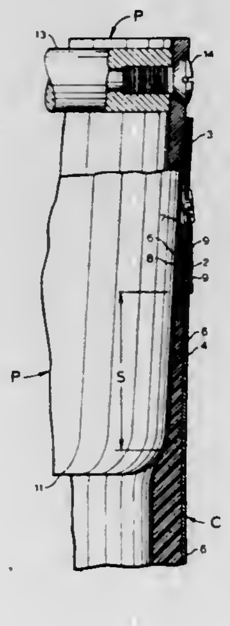
the screw; said head having an angularly shaped recess therein extending into a free face of said flat top of said head, a cone-shaped base on said head having its apex substantially parallel to the axis of the screw and the apex being the highest point of the bottom of said recess which surrounds said apex to comprise a key-way complementary to said keys on the shank of said screw driver whereby said keys on said shank of said screw driver are adapted to be removably fitted into said recess in said head of said screw to effect flex coupling therebetween during engagement and rotation of said screw by said screw driver in driving the screw into a work and in removing the screw therefrom.





3,872,905
MOISTUREPROOF CONTAINER CONSTRUCTION

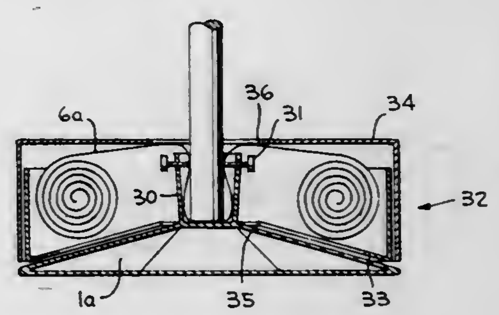
Conrad J. Gaiser, P.O. Box 534, Zephyr Cove, Nev. 89448. and Lynn E. Sarraille, 45069 Palm St., Indio, Calif. 92201
Filed Sept. 24, 1973, Ser. No. 400,211
Int. Cl. B65d *33/16*
U.S. Cl. 150—8 **12 Claims**



1. A moistureproof container construction capable of preventing leakage under water comprising a collapsible jacket of flexible moistureproof substantially non-stretchable material having a receptacle mouth, a lining of compressible water impermeable plastic foam adhered to the inside face of the jacket and extending adjacent to the edge of the mouth, a band of material secured to said jacket on the outside thereof adjacent the edge of said mouth, and a plug closure for such jacket of rigid relatively non-compressible material having a bottom edge shaped to facilitate insertion thereof into the mouth and a wall tapering outwardly from said bottom edge to compress the foam between said jacket and said tapered wall to thus form a tight elongated tapered sealing band adjacent said mouth.

3,872,906
CHRISTMAS TREE COVER

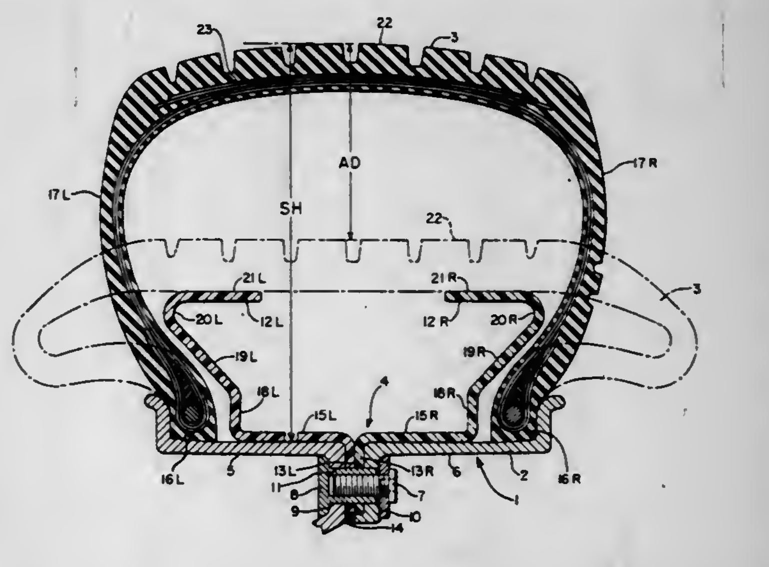
Gerrit Martin Bolanz, Basler Str. 59, D-7858 Weil am Rhins Baden-Wurttemberg, Germany
Filed Aug. 16, 1971, Ser. No. 118,642
Claims priority, application Germany, Feb. 27, 1970, 7007153; Feb. 26, 1970, 2031564
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **6 Claims**



1. A cover assembly for a Christmas tree and the like, usable with a tree supporting stand, comprising a container having a bottom and side walls, said bottom wall having a removable portion therein defining an opening when removed, a tree cover adapted for completely covering the tree comprising a flexible bag having a closed bottom and an open top, said bag being stored in said container in a collapsed condition, a lid for said container having an opening therein aligned with said bottom wall opening, and said bag being disposed in said container with its closed bottom overlying said bottom wall opening, said container and its lid are adapted to be disposed over the tree supporting portion of the stand so that said closed bottom will overlie such portion for the reception of the lower end of the tree trunk when mounted within the tree supporting portion.

3,872,907
SAFETY SUPPORT DEVICE FOR PNEUMATIC TIRES

Walter W. Curtiss, Jr., Brimfield; Joseph M. Forney, Akron, and William J. Hampshire, Peninsula, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 1, 1973, Ser. No. 402,444
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 **26 Claims**



1. A run flat device for use in conjunction with a pneumatic tire and rim assembly comprising:
A. a pair of annular axially spaced apart members for supporting each axially outer portion of the tread of the tire when the tire is deflated, each of said spaced apart members comprising:
   1. an annular side ring portion extending radially outwardly from the base of the wheel rim when the device is mounted thereon,

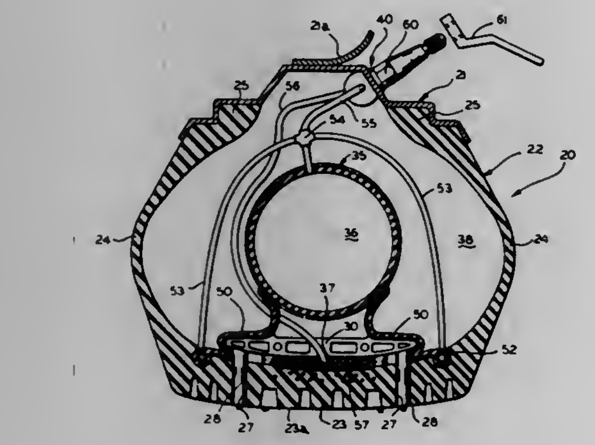
2. an axially extending resilient hoop portion concentrically spaced between the base of the wheel rim and an axially outer portion of the tire tread,

3. said hoop portion having one axial edge supported by the side ring and the opposite edge unsupported to permit deflection in the radial direction when the hoop portion is subjected to radial loads, and

(B) means for retaining said spaced apart members in a fixed position relative to axial direction with respect to the rim.

3,872,908
RETRACTABLE STUDDED TIRE

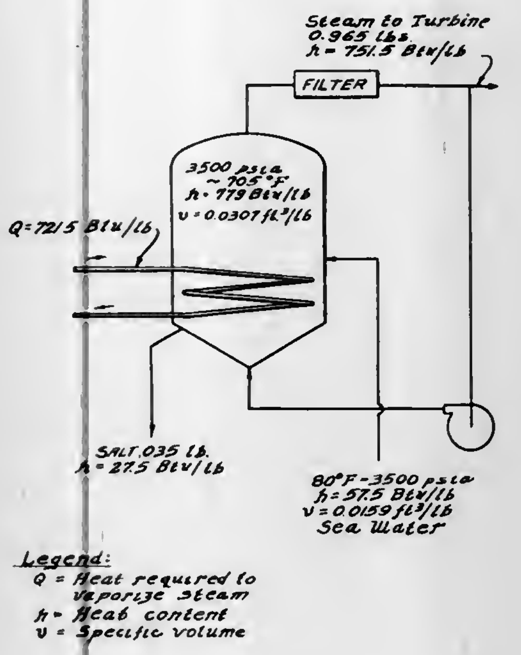
Einar Einarsson, Eyjabakki 2, Reykjavik, Iceland
Filed Aug. 24, 1973, Ser. No. 391,071
Int. Cl. B60c *11/14*
U.S. Cl. 152—208 **21 Claims**



1. In a retractable studded tubeless vehicle tire comprising, a tire casing adapted to be mounted on a wheel rim, said casing including a peripheral tread wall having a plurality of stud holes therein, studs in said holes movable therein between extended road-engaging and retracted non-road-engaging position, self-contained power means within said tire casing operable to selectively cause extension or or retraction of said studs, said power means including a high pressure air chamber providing pneumatic power for causing stud retraction and a low pressure air chamber providing pneumatic power for causing stud extension, said high pressure chamber being defined by tube means, said low pressure air chamber additionally maintaining the tire inflated, air pressure responsive expansible means coacting with said studs and operable by said high pressure air chamber to control stud position, and valve means mounted on the wheel rim for selectively intercommunicating the expansible means with the high pressure air chamber to cause expansion thereof and retraction of the studs or with the atmosphere to cause collapse thereof and extension of the studs, the improvement in means pneumatically sealing the studs and stud holes from the low pressure air chamber to prevent loss of tire inflation air, said pneumatic sealing means including circumferentially extending annular grooves along the inside of the tire casing, one at each edge of the tread wall outside of the stud holes area, an air impermeable diaphragm means within the casing across the tread wall and stud holes area, and locking edges on the diaphragm means mating with and sealingly engaging in said grooves to pneumatically isolate the studs and stud holes from the low pressure air chamber.

3,872,909
METHOD OF DESALINATING SALT WATER

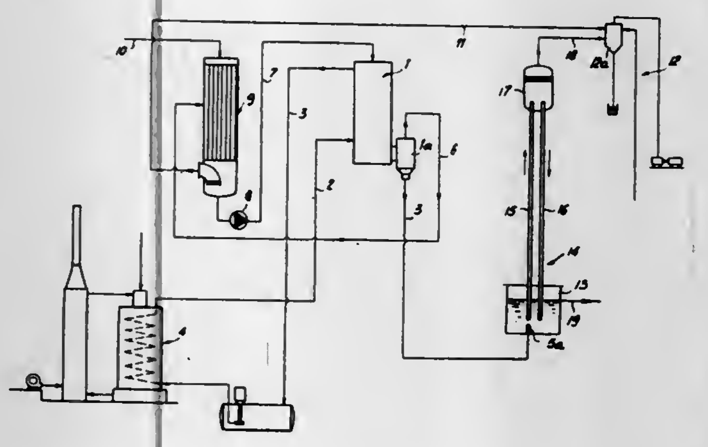
Michael R. Fox, and Earl S. Grimmett, both of Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Jan. 10, 1972, Ser. No. 216,420
Int. Cl. B01d *1/00*
U.S. Cl. 159—47 **2 Claims**



1. A method for desalinating salt water comprising establishing and maintaining a fluidized bed of salt particles at a pressure above the critical pressure of water by passing steam upwardly therethrough, heating the fluidized bed to above the critical temperature of water, introducing salt water into the bed and taking steam off from the fluidized bed.

3,872,910
METHOD OF CONCENTRATING CAUSTIC SOLUTIONS

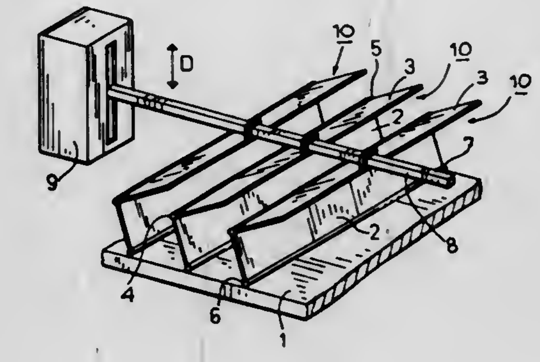
Hans Kuhnlein, Fellinsdorf, Switzerland, assignor to HCH. Bertrams Aktiengesellschaft, Basel, Switzerland
Continuation of Ser. No. 111,183, Feb. 1, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,361
Claims priority, application Switzerland, Feb. 4, 1970, 1623/70
Int. Cl. B01d *1/22*
U.S. Cl. 159—49 **3 Claims**



1. A method for concentrating caustic solutions comprising the steps of heating a caustic solution under atmospheric pressure to produce a hot caustic solution concentrate; separating the produced vapors from the hot concentrate and utilizing the separated vapors in heating of the caustic solution; then expanding the hot concentrate in a vacuum while simultaneously cooling the same to a temperature which is still above the crystallization temperature; and prior to heating the caustic solution under atmospheric pressure, subjecting the caustic solution to a preliminary concentration under vacuum in accordance with the falling film procedure and utilizing vapors developed during such heating of the caustic solution under atmospheric pressure.

3,872,911
LOUVER SYSTEM WITH HINGED BLADES

Manfred Janes, Voorschoten, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France
Filed June 26, 1973, Ser. No. 373,624
Int. Cl. E05f *17/00*
U.S. Cl. 160—1 **3 Claims**



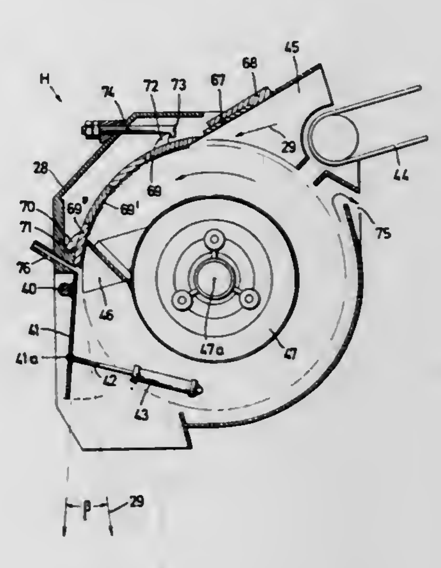
1. In a spacecraft of the type having a surface, a plurality of louver means mounted onto said surface for rotation about axes parallel to one another and to said surface, and thermally responsive actuator means for controlling the angular displacement of said louver means about their respective axes, the improvement wherein each louver means is comprised of at least two substantially parallel panels hinged with one another substantially about one of their longitudinal edges, the panels of each louver means being mounted with respect to each other, a first panel of each louver means being further mounted to rotate about an axis parallel and adjacent to said surface, and the outer panel of each louver means being attached at its outer longitudinal edge to a driving element in turn connected to said actuator means, the actuator means comprising means for moving said driving element linearly in a direction perpendicular to said surface, thereby causing the respective angular positions of the panels to vary depending on the sensed temperature.

3,872,912
SAND SLINGER

Felix Axmann, Freiligrath Str. 35, 5 Cologne-Lindenthal, Germany
Continuation of Ser. No. 18,943, March 12, 1970, abandoned. This application Aug. 10, 1973, Ser. No. 387,286
Claims priority, application Germany, Jan. 31, 1970, 2004429
Int. Cl. B22c *15/20*
U.S. Cl. 164—20 **25 Claims**

1. A method of filling a material in an at least semi-plastic or moldable condition into a tubular space defined between an outer, female, wall surface and an inner, male, surface with periphery spaced from the female surface, and having a closed bottom, comprising: dividing the material into continually produced similar slugs; projecting said slugs as produced in a constant flow stream into the tubular space towards its bottom, while continually advancing said stream in repeated circuits around the closed circumference of said tubular space and while maintaining a rough parallelism of the average centerline of the stream relative to a fixed central axis; rapidly deflecting said stream in an oscillatory manner, transverse to the direction in which the stream is advancing, to shift the place of stream impact continually to and fro between the inner and outer surface 5; the aforedescribed procedure being carried on through sufficient repeated circuits of the stream until the said space is filled.

10. A sand slinger machine having:
- a slinger head, and means shiftably supporting and driving the slinger head as a whole relative to a region to be filled with slung material to cause a head discharge stream of slung material to traverse a said region with a major motion for distribution of the material over the entire region;
- said slinger head having
- a bladed slinger wheel,
- a housing mounting the wheel for high speed rotation and providing also



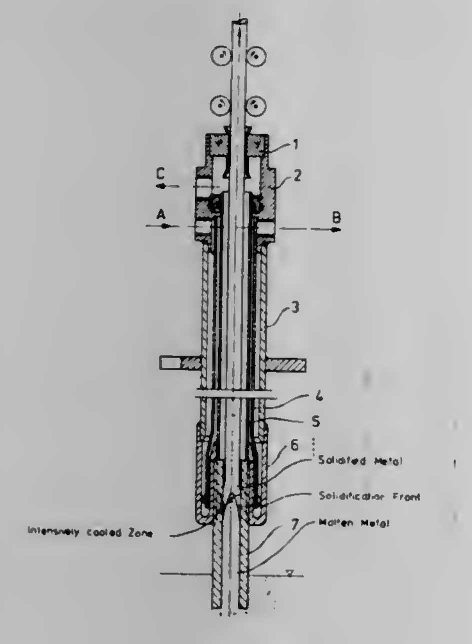
  - a circumferential casing about the wheel,
  - a charging funnel inlet opening through the casing, and
  - a discharge outlet from the casing,
- a flap plate at the discharge outlet swingable about a pivot shaft inwardly beyond a line tangential to the inner circumferential surface of the casing at the upstream side of said discharge outlet
  - thereby to vary the head wheel discharge direction,
- and
- power driven means mounted on the housing and connected with said flap plate
  - to swing the plate about said pivot shaft at a frequency of swing of at least 50 cycles per minute
    - whereby the wheel discharge direction is varied in an oscillatory manner relative to said major motion.

3,872,913
CONTINUOUS METHOD AND APPARATUS FOR UPWARDS CASTING

Timo Jorma Juhani Lohikoski, Pori, Finland, assignor to Outokumpu Oy, Outokumpu, Finland
Filed Dec. 4, 1970, Ser. No. 95,038
Claims priority, application Finland, Dec. 15, 1969, 3631/69
Int. Cl. B22d *11/12*
U.S. Cl. 164—64 **2 Claims**

1. An improved continuous method of upwards casting of profiled products, such as bars, plates and pipes in which melt is sucked above the surface of the melt into a nozzle where it is solidified and then pulled upwards through a cooler to form a solidified product, the improvement comprising:
- applying said upwards-directed suction on the melt through the nozzle which is partly immersed in the melt;
- cooling the upper portion of the nozzle to solidify the product enough to endure pulling;
- further cooling the product in the cooler above the nozzle; and
- pulling the solidified product removed from the nozzle upwards by pulling means above the cooler.

2. Apparatus for casting profiled products continuously upwards from a melt comprising:
a support above the melt;
a vertical cooler attached to the support and comprising three concentric pipes defining a passage therebetween having an inlet and an outlet for coolant medium, the innermost pipe having a greater cross-section than the product and an opening for creating suction inside said innermost pipe; and
a nozzle coaxially attached to and partially surrounded by the lower end of the cooler to cool the upper portion of the nozzle for conducting the metal from the melt and for forming a shaping surface for solidification of the melt.



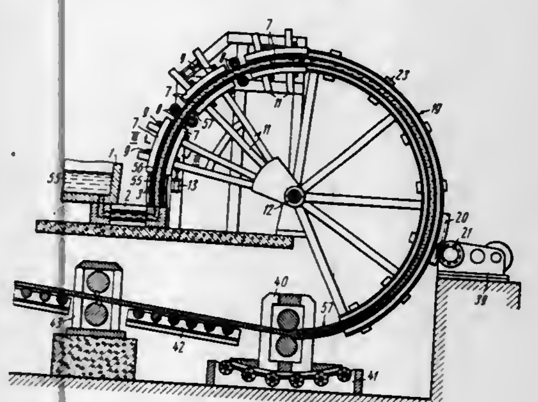
3,872,914
CONTINUOUS INGOT CASTING MACHINE

Evgeny Alexeevich Korshunov, pereulok Otdelny, 5a, kv. 29; Evgeny Zakharovich Freidenzon, ulitsa Lunacharskogo, 161, kv. 23; Mikhail Ivanovich Fedorov, ulitsa Komsomolskaya, 72, kv. 27; Konstantin Alexeevich Malikov, ulitsa Komsomolskaya, 59a, kv. 7, all of Sverdlovsk; Nikolai Vasilievich Brazhnikov, ulitsa Gvardeiskaya, 6, kv. 17, Nizhny Tagil; Alexandr Ivanovich Kalinin, ulitsa Mira, 12, kv. 49, Nizhny Tagil; Lev Mikhailovich Axelrod, ulitsa Stroitelei, 2, kv. 4, Nizhny Tagil; Mikhail Iosipovich Arshansky, prospekt Lenina, 23/40, kv. 8, Nizhny Tagil; Vladimir Arkadievich Tyagunov, ulitsa Mira, 36/7, kv. 3, and Oleg Ashotovich Aragilian, ulitsa Kuibysheva, 137, kv. 3, both of Sverdlovsk, all of U.S.S.R.

Filed Feb. 1, 1974, Ser. No. 438,662
Int. Cl. B22d *11/12*

U.S. Cl. 164—147 **7 Claims**

1. A continuous ingot casting machine, comprising: a vessel for molten metal; a siphon device which has an inlet portion connected to said vessel, and an outlet portion; a radial cooled mould whose lower end is open to the outlet portion of said siphon device; a secondary cooling device located after said mould in the direction of the production process and comprising ascending and descending sections which are beams to which ingot-supporting rollers are secured with said descending section being curved radially, similar in shape to a half-ring and resting on a horizontal shaft passing through its centre of curvature; a drive for reversible rotation of said descending section of the secondary cooling device about said horizontal shaft, said drive being fitted with a gear on which said descending section of the secondary cooling device rests; inductors arranged in pairs along the entire length of the ascending section of said secondary cooling device; an appliance adapted for ingot withdrawal from said radial cooled mould, comprising a dummy bar and at least a single pair of radial cooled bars made from an electro- and heat-conducting metal and connected at the beginning of the withdrawal operation with one end to the dummy bar and with the other to the top part of the descending section of said secondary cooling device; drives pressing each of said bars against the lateral side of the ingot being cast.

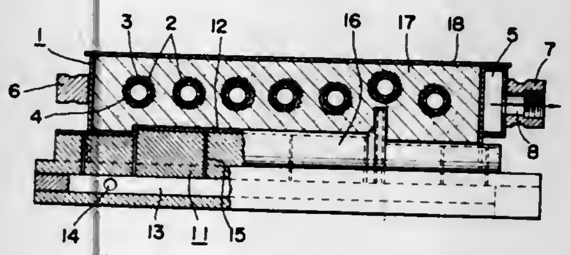


3,872,915
VACUUM SEALED MOLDING APPARATUS

Kunii Nakata, Nagano, and Masao Hondo, Susaka, both of Japan, assignors to Kabushiki Kaisha Akita, Susaka, Nagano Pref., Japan

Filed Oct. 2, 1972, Ser. No. 294,104
Claims priority, application Japan, Oct. 8, 1971, 46-79572
Int. Cl. B22c *15/22*

U.S. Cl. 164—160 **1 Claim**



1. Mold producing apparatus consisting of
at least one flask;
a heat resisting, binder-free material in said flask as a filler mass with at least one indentation defining a hollow mold space;
a synthetic plastic foil surrounding the filler mass at the mold space;
at least one embedded evacuation line in said filler mass;
a communication passage in said flask engaging said at least one evacuation line; and
support projections at opposite ends of said flask, one of said support projections having a passage arranged to communicate with said each evacuation line through said communication passage and further adapted to be connected to a vacuum source whereby said filler mass may be subjected to a vacuum.

3,872,916
FAN SHROUD EXIT STRUCTURE

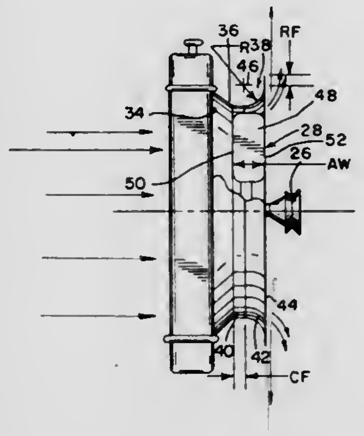
Harold D. Beck, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 5, 1973, Ser. No. 348,436
Int. Cl. F28d *21/00*

U.S. Cl. 165—1 **14 Claims**

1. A method of transferring internal combustion engine produced heat for cooling said engine comprising the steps of:
transferring the engine generated heat to a coolant;
passing said heated coolant through a heat exchange means;
generating an air stream with a fan means;

drawing the air stream through the heat exchanger transferring heat thereto;
guiding the heated air stream from said heat exchanger to said fan with a shroud; and
expelling the heated air stream from the fan means over a contoured fan shroud configured to produce a Coanda effect directing the air stream generally radially outward, said fan shroud being positioned generally around said fan.

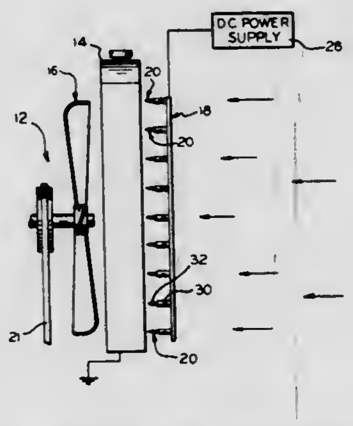


3,872,917
COOLING APPARATUS AND METHOD FOR HEAT EXCHANGERS

Oscar C. Blomgren, Sr.; Oscar C. Blomgren, Jr., both of Lake Bluff, and Felix J. Lyczko, Lake Forest, all of Ill., assignors to Inter-Probe, Inc., North Chicago, Ill.

Division of Ser. No. 132,280, April 8, 1971, Pat. No. 3,794,111. This application Aug. 16, 1973, Ser. No. 388,829
Int. Cl. F28f *13/16*

U.S. Cl. 165—1 **2 Claims**



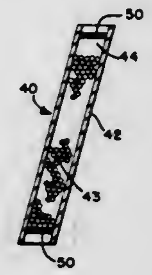
1. A method of changing the heat content of a fluid comprising the steps of pumping steam through a plurality of condenser tubes of a steam condenser, positioning a first elongated electrical conductor of a first plurality of elongated electrical conductors inside each tube of said plurality of condenser tubes of the steam condenser near the steam inlet to the condenser, positioning a second elongated electrical conductor of a second plurality of elongated electrical conductors inside each tube of said plurality of condenser tubes of the steam condenser at another location in the condenser tube, connecting the tubes to ground potential, and applying a high voltage DC electrical potential slightly less than that at which arcing to the tube walls occurs to each of said first plurality of elongated conductors and applying a lower high voltage DC electrical potential to each of said second plurality of elongated electrical conductors, whereby the rate of transfer of heat through the walls of the tubes is increased.

3,872,918
HEAT EXCHANGER

Edward A. Stalker, deceased, late of Bay City, Mich. (by Otillia J. Stalker, executrix), assignor to The Stalker Corporation, Essexville, Mich.

Filed Feb. 21, 1974, Ser. No. 444,401
Int. Cl. F28d *19/00*

U.S. Cl. 165—5 **8 Claims**



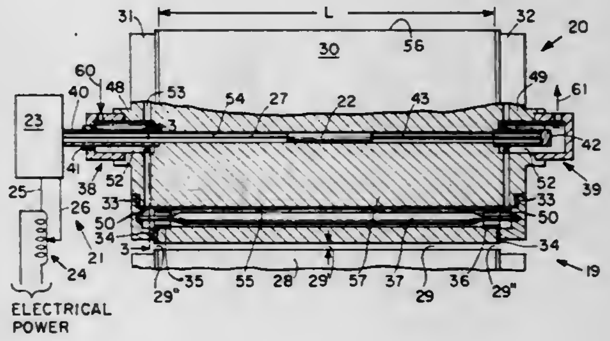
1. A self-cleaning rotary heat exchanger in which a heat exchange core rotates through hot gas and cold gas ducts, the improvement in core construction comprising a plurality of passageways extending from one side of said core to the other for the passage of gases therethrough, said passageways being defined by a plurality of individual tubes which are inclined to the axis of rotation so that the ends thereof alternate in relative elevation as the core is rotated about its axis of rotation, a plurality of heat conductive elements partially filling each of said tubes leaving a free space therein so that said elements may shift in relative position within said tubes with the rotation of said core, and means retaining the elements in said tubes while providing for the flow of gases therethrough.

3,872,919
CONTROLLABLE-PROFILE ROLL

Gustav A. Maag, Fort Mitchell, Ky., assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Apr. 23, 1973, Ser. No. 353,856
Int. Cl. F25b *29/00*

U.S. Cl. 165—30 **5 Claims**



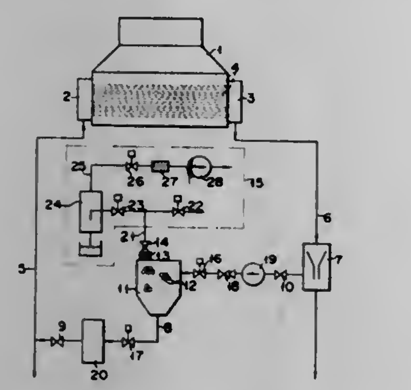
1. In an apparatus comprising a rotatably mounted substantially solid-core roll having a cylindrical working surface and means for controlling the temperature of said working surface, the improvement comprising means for controlling the temperature profile of the core of the roll substantially independently from controlling the temperature of said working surface, said means for controlling the temperature profile being disposed radially inwardly from said working surface and said means for controlling the temperature of said working surface whereby the physical profile of the roll can be controlled substantially independently from the temperature of and the heat load on the working surface of the roll.

3,872,920

DESCALING SYSTEM FOR THE COOLING TUBES OF A STEAM CONDENSER

Yoshio Honma, Yokosuka, and Junichi Takahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Tobshiba Engineering Co., Ltd., Tokyo, both of, Japan

Filed Feb. 25, 1974, Ser. No. 445,581
Claims priority, application Japan, May 28, 1973, 48-58585
Int. Cl. F28g *1/00*
U.S. Cl. 165—95 **4 Claims**



1. A descaling system for cleaning the inner walls of the cooling water tubes of a steam condenser by a plurality of sponge balls which comprises a cooling water feed pipe connected to the inlet side of the cooling water tubes to supply cooling water thereto; a cooling water discharge pipe connected to the outlet side of the cooling water tubes to drain off cooling water therefrom; a sponge ball collector provided on the discharge pipe; a sponge ball circulation passageway connected at one end to the cooling water feed pipe and at the other end to the collector, the circulation passageway containing a sponge ball circulation pump and a sponge ball reservoir; a sponge ball water-soaking vessel for receiving a plurality of sponge balls to soak them with cooling water; an inlet valve for the water-soaking vessel so as to supply cooling water thereto from the sponge ball circulation passageway or stopping the supply; an outlet valve for the water-soaking vessel so as to drain off cooling water and the sponge balls contained therein to the circulation passageway or shutting off the passage of the cooling water and sponge balls; an evacuating device connected to the water-soaking vessel for holding sponge balls to deaerate its interior, thereby attaining evacuation to a prescribed vacuum level, wherein, when the sponge ball water-soaking vessel is evacuated to a prescribed vacuum level by the evacuating device, the inlet valve of the sponge ball water-soaking vessel is opened to lead cooling water thereinto from the sponge ball circulation passageway, thereby soaking the sponge balls received in the water-soaking vessel with cooling water.

3,872,921

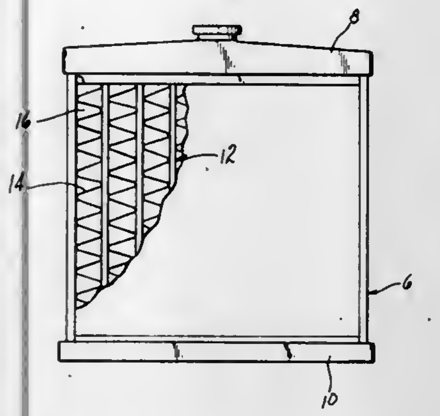
EROSION-CORROSION RESISTANT ALUMINUM RADIATOR CLAD TUBING

William H. Anthony, and James M. Popplewell, both of Guilford, Conn., assignors to Swiss Aluminium Limited, Chippis, Switzerland

Division of Ser. No. 222,795, Feb. 2, 1972, Pat. No. 3,809,155.
This application Feb. 4, 1974, Ser. No. 439,335
Int. Cl. F28d *1/02*
U.S. Cl. 165—152 **6 Claims**

1. An aluminum heat exchange assembly having improved resistance to erosion corrosion in aqueous environment comprising:

A. at least one header;
B. connected by at least one tube; and
C. secondary heat exchange surface connected to said tube wherein said tube comprises an aluminum base alloy cladding consisting essentially of 0.8 to 1.3 percent zinc, 0.7 percent maximum silicon plus iron, 0.10 percent maximum copper, 0.10 percent maximum manganese, 0.10 percent maximum magnesium, balance essentially aluminum, bonded to at least one side of an aluminum base alloy core consisting essentially of manganese from 1.0 to 1.5 percent, chromium from 0.1 to 0.4 percent, copper from 0.05 to 0.4 percent, balance essentially aluminum.

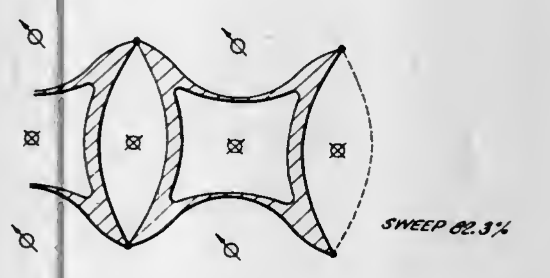


3,872,922

TERTIARY RECOVERY OPERATION

Anthony F. Altamira, Dhahran, Saudi Arabia, and Donald L. Hoyt, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,919
Int. Cl. E21b *43/16*
U.S. Cl. 166—245 **7 Claims**



1. A method of producing formation fluids including hydrocarbons from a subterranean hydrocarbon-bearing formation by a direct line drive in a secondary recovery operation which comprises penetrating said formation with a plurality of wells disposed in a linear pattern and comprising a series of a pair of production wells and an intermediate injection well, injecting substantially equal amounts of an extraneous driving fluid into said formation via the intermediate injection well in each series to displace formation fluids including hydrocarbons in said formation toward said production wells, producing said formation fluids including hydrocarbons from said formation via said production wells, said producing of said formation fluids and said injecting of said extraneous driving fluid being for a first predetermined period, thereafter initiating a tertiary recovery operation by imposing a new set of flow gradients comprising the steps of shutting in the intermediate injection well in each of said series and converting production wells in alternate series into injection wells, and thereafter producing formation fluids via the remainder of said production wells while injecting said extraneous driving fluid into said formation via the converted production wells for a second predetermined period.

3,872,923

USE OF RADIATION-INDUCED POLYMERS AS TEMPORARY OR PERMANENT DIVERTING AGENT

Bruce L. Knight; John S. Rhudy, and William B. Gogarty, all of Littleton, Colo., assignors to ICI United States Inc., Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,737
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—247 **21 Claims**

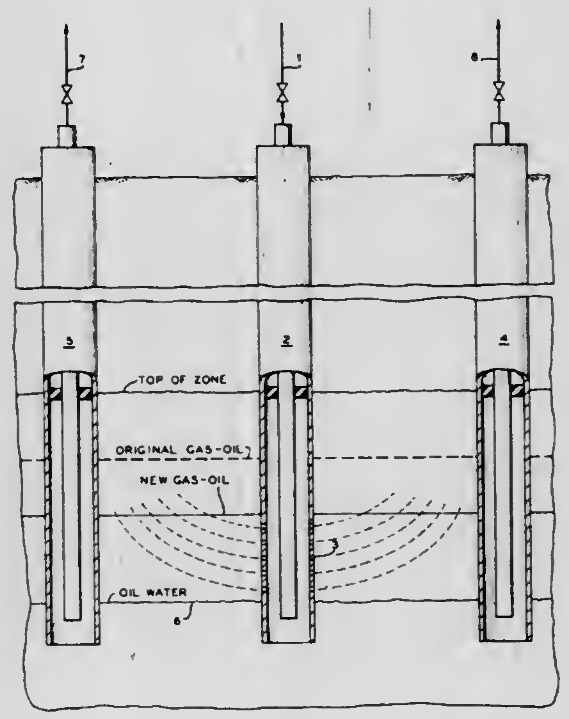
1. A process of "plugging" porous medium to the flow of fluids, the process comprising treating the porous medium with water comprised of sufficient amounts of a polymer having sufficient property to at least substantially reduce the permeability to the flow of the fluids through the porous medium, the polymer obtained as a product of radiation polymerization of at least one monomer selected from the group consisting of acrylamide and methacrylamide and at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, alkali metal acrylate, and alkali metal methacrylate in concentrations of about 10 to about 60 percent by weight dissolved monomer in an aqueous medium, the radiation intensity being about 250 to about 1,000,000 rads/hr, and the radiation dose being about 500 rads to about 300,000 rads.

3,872,924

GAS CAP STIMULATION FOR OIL RECOVERY

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 25, 1973, Ser. No. 400,556
Int. Cl. E21b *43/24*
U.S. Cl. 166—261 **4 Claims**



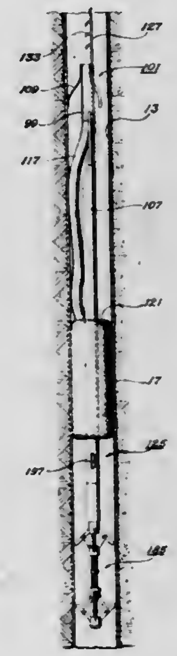
1. A method for the recovery of oil from an oil bearing formation having a gas cap associated therewith which method comprises heating the interstices of the gas cap and formation then injecting into the heated portion of the formation a quantity of water sufficient upon later injection of a combustion sustaining fluid substantially to retain the combustion sustaining fluid in said heated part of the formation as said combustion sustaining fluid displaces the water therefrom to the boundaries of the treated area, and then injecting a combustion sustaining fluid into the thus treated portion of the formation in quantities sufficient and for a time sufficient to cause auto-ignition and consequent in situ combustion to generate heat and pressure sufficient to cause oil contained in the formation to flow away from said injection well toward at least one production well.

3,872,925

THROUGH-TUBING BRIDGE PLUG

Harrold D. Owen, and Jamie B. Terrell, both of Fort Worth, Tex., assignors to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Continuation of Ser. No. 353,969, April 24, 1973, abandoned.
This application Mar. 18, 1974, Ser. No. 451,936
Int. Cl. E21b *23/06, 33/134*
U.S. Cl. 166—286 **13 Claims**



13. A through-tubing bridge plug comprising:

a. a vent tube;
b. a collapsible and extensible packer element carried by said vent tube;
c. vent closure means carried by said vent tube;
d. vent closure operating means operable at will to close said vent tube and including tattle-tell means; and
e. release means operable to release said tattle-tell means for return to above-ground upon and only upon movement of said vent closure means to the close vent tube position.

3,872,926

METHOD FOR RETRIEVING A SEVERED PIPE STRING FROM A WELL

Adrianus W. Van Gils, 24 Woodstock Rd., Aberdeen, Scotland

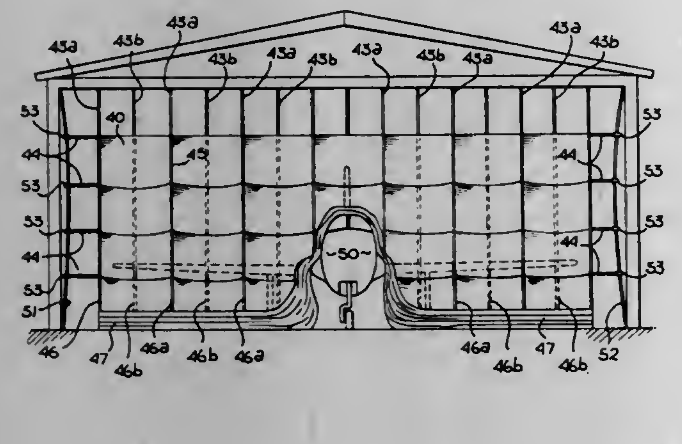
Filed June 13, 1974, Ser. No. 479,118
Int. Cl. E21b *31/02, 29/00*
U.S. Cl. 166—301 **5 Claims**

1. A method of retrieving a severed pipe string or the like remaining in a well, comprising the steps of:

supporting said pipe string in the blowout preventer stack in the rams of an annular blowout preventer;
severing said pipe string above said annular blowout preventer thus forming a flattened upper end on the pipe string remaining in the well in order to remove the top portion of the pipe string temporarily;
running a milling device down to the flattened pipe string end and milling said end to reduce the diameter thereof; and
removing the milling device and lowering a grappling device, over said milled pipe string end and lifting said pipe string from said supported position.

3,872,927
FOAM RESTRAINING BARRIER

Howard C. Stults, 2154 DeClma Plaza, Anaheim, Calif. 92802
Filed July 18, 1974, Ser. No. 489,613
Int. Cl. E05f *15/20*
U.S. Cl. 169—48 **12 Claims**



1. A restraining barrier for use with foam fire extinguishing systems which include generators for producing a given volume of fire extinguishing foam, said barrier comprising:

a. a pair of porous, non-combustible panels adapted to be vertically positioned in parallel, spaced relation to one another, each of said panels including a plurality of vertical seams therein, the vertical seams of one of said panels being interleaved with the vertical seams of the second of said panels, the vertical height of said panels including a predetermined excess portion at the bottom thereof;

b. distributed load means for weighting said panels, said distributed load means being coupled to each of said panels intermediate said excess portion and the portion of said panels adapted to be vertically positioned;

c. a plurality of vertical battens uniformly disposed along each of said panels;

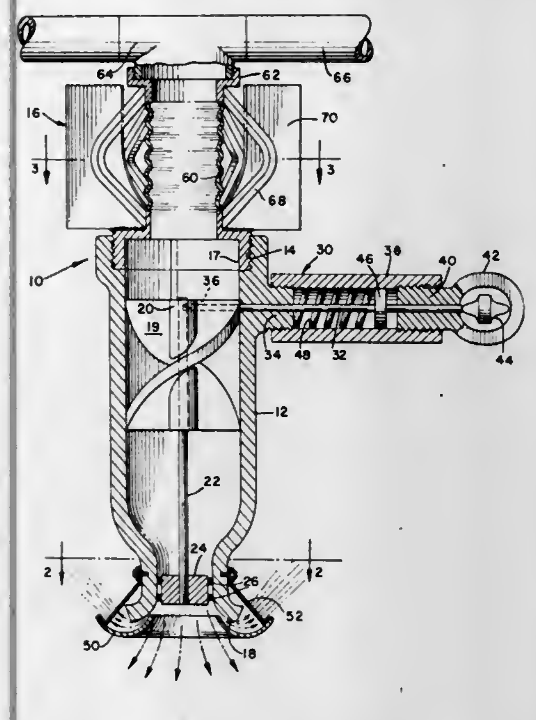
d. a plurality of horizontal battens uniformly disposed along each of said panels, the lowermost of said horizontal battens being adjacent the upper terminus of said vertical seams; and

e. release means for vertically positioning said panels upon the activation of the foam fire extinguishing system, said release means being coupled to said panels.

3,872,928
FLUID DISCHARGE ASSEMBLY HAVING A TILTABLE DISCHARGE PORTION AND A DISCHARGE CONTROL SYSTEM INCORPORATING A PLURALITY OF SAID ASSEMBLIES

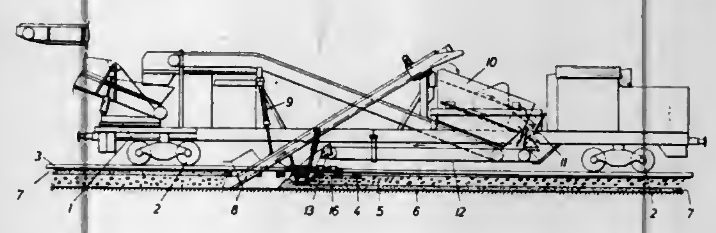
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed May 7, 1974, Ser. No. 467,735
Int. Cl. A62c *37/10*
U.S. Cl. 169—56 **36 Claims**

1. A fluid discharge assembly comprising a nozzle portion having an inlet for receiving fluid and an outlet for discharging said fluid, means for mounting said nozzle portion relative to a conduit for supplying fluid to said inlet for discharge from said outlet in a predetermined direction, and means connected to said nozzle portion and responsive to a predetermined temperature occurring in the vicinity of said assembly for tilting said nozzle portion relative to said conduit and varying said direction of discharge, the degree of tilting of said nozzle portion being directly proportional to the value of temperatures occurring in the vicinity of said assembly above and below a predetermined norm.



3,872,929
METHOD AND APPARATUS FOR STABLIZING THE SUB-GRADE OF A RAILROAD BALLAST BED

Josef Teurer, Vienna, and Karl Folser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H., Vienna, Austria
Filed Mar. 18, 1974, Ser. No. 452,203
Claims priority, application Austria, Apr. 16, 1973, 3338/73
Int. Cl. E01b *27/04*
U.S. Cl. 171—16 **8 Claims**



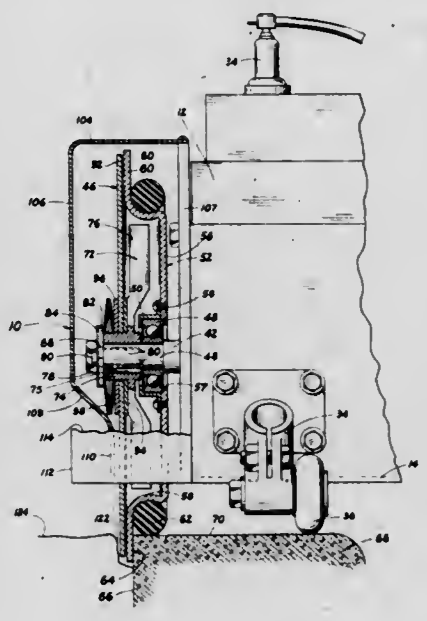
1. A method of stabilizing the sub-grade of a railroad ballast bed, comprising the sequential steps of

1. depositing sand on the ballast bed,
2. removing the sand and ballast in admixture until the sub-grade has been exposed,
3. separating the sand and the ballast from each other,
4. depositing the separated sand in a layer on the exposed sub-grade, and
5. depositing the separated ballast on the layer of sand.

3,872,930
LAWN EDGER

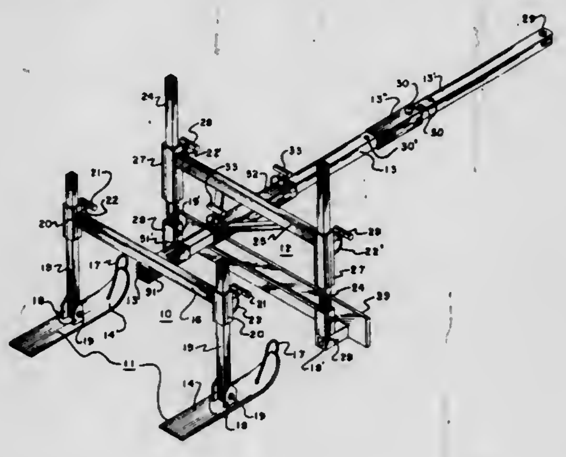
Rouel R. Campbell, 7064 E. 52nd, Tulsa, Okla. 74145
Filed Mar. 13, 1973, Ser. No. 340,712
Int. Cl. A01d *35/00;* **A01b** *33/08, 45/00*
U.S. Cl. 172—15 **4 Claims**

1. A lawn edger comprising power means in a housing and having a rotatable drive shaft, bearing means mounted on said drive shaft, guide wheel means coaxially mounted on said bearing means and having a continuous outer periphery, said bearing means providing independent rotation of the guide wheel means with respect to the drive shaft, ground engaging support roller means depending from said housing and laterally spaced from the guide wheel means for cooperation therewith to facilitate movement of the lawn edger, blower means coaxially mounted on the drive shaft and secured thereto for simultaneous rotation therewith, cutting blade means coaxially mounted on the drive shaft and outwardly of said blower means, locking means removably securing the cutting blade means and guide wheel means to the drive shaft, spring washer means interposed between the locking means and cutting blade means for urging the cutting blade means in a direction toward the blower means, friction means coaxially mounted on said drive shaft between the blower means and cutting blade means for transmitting rotation to the cutting blade means and permitting slippage of the cutting blade means upon engagement of the cutting blade means with extremely hard material, cover means mounted on said housing and substantially enclosing the drive shaft and blower means and cutter blade means, exhaust channel means on the lower end of the cover means for discharge of debris in a preselected direction away from the lawn edger, and scoop means on said cover means and adjacent the exhaust channel means for directing said debris in said preselected direction away from the lawn edger.



3,872,931
COMBINATION TRAIL GRADER AND CARRIER

Richard H. Camp, c/o Haines Equip. Co., Haines, Oreg. 97833
Filed May 11, 1973, Ser. No. 359,289
Int. Cl. A01b *15/10;* **E01h** *5/06*
U.S. Cl. 172—387 **4 Claims**



1. A trail grader, comprising:

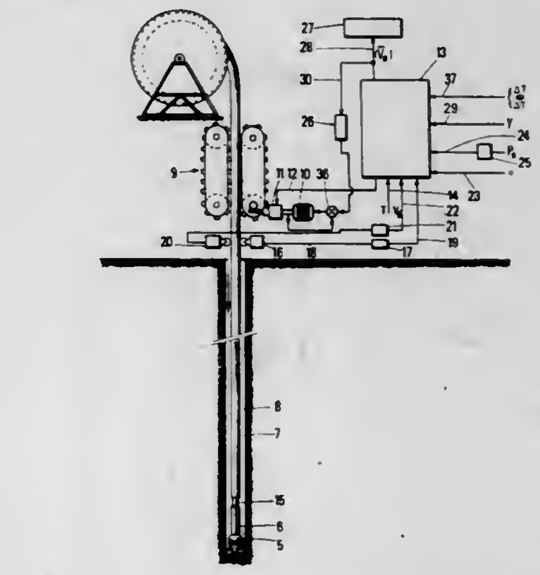
a runner assembly including a first pair of upstandingly disposed cornerposts, a first crossbar slidably mounted at each of its terminal ends to one of said posts and a runner mounted substantially perpendicularly to said crossbar at the lowermost terminal end of each of the first pair of cornerposts;

a moldboard assembly including a second pair of upstandingly disposed cornerposts, a second crossbar slidably mounted at each of its terminal ends to said moldboard assembly cornerposts and a moldboard having an upstandingly, horizontally disposed surface mounted at the lowermost terminal ends of said moldboard cornerposts;

a tongue including a bar mounted centrally and substantially perpendicularly relative to said crossbars, said tongue being mounted to said first crossbar and slidably mounted to said second crossbar, each of said slidable mountings serving as an adjustment means, and means to lock said slidable mountings in a desired adjusted position.

3,872,932
PROCESS AND APPARATUS FOR AUTOMATIC DRILLING

Jean-Charles Gosselin, Versailles, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France
Filed Oct. 23, 1973, Ser. No. 408,261
Int. Cl. E21b *3/12*
U.S. Cl. 173—1 **12 Claims**



1. A process for automatically optimizing the penetration rate of a drill bit suspended from drill pipe, said drill bit being driven in rotation by a motor whose torque decreases with an increasing of its rotation speed, and said drill bit having a penetration rate which, as a function of the weight exerted on the drill bit, reaches a maximum value for an optimum value of the weight, said process comprising

measuring the tension on the drill pipe,

periodically determining the penetration rate of the drill bit, automatically adjusting the linear speed of the drill pipe at the ground surface so as to provide values of the linear speed which are successively greater and lower than the rate of penetration of said drill bit into the ground, the variation in linear speed causing alternatively a decrease and an increase in the tension on the drill pipe, thereby producing an oscillation in the value of the weight on the drill bit about the optimum value of said weight, wherein during each period when the linear speed at the surface is greater than the penetration rate, said penetration rate is periodically determined and the highest value thereof is recorded,

effecting a transition from said period when said linear speed is greater than the penetration rate to a second period during which the linear speed at the surface is lower than the penetration rate when said penetration rate has reached a preselected value, and

effecting a transition to another period wherein the linear speed at the surface has a greater value than the penetration rate when the tension on the drill pipe reaches a preselected limit-value, said tension increasing to said preselected limit-value.

8. An apparatus for automatically optimizing the penetration rate of a drill bit located at the lower end of a drill pipe, said drill bit being driven in rotation by a motor whose torque decreases with increasing rotation speed and having a penetration rate which, as a function of the load applied thereon, reaches a maximum value for an optimum value of this load, this apparatus comprising means for measuring the tension exerted on the drill pipe, means for evaluating the successive values of the penetration rate and control means for sequentially performing a progressive increase and a progressive decrease of the load on the drill bit, analyzing means connected to said means for evaluating the penetration rate and adapted to determine and record during each period of increasing load the highest value detected by said evaluating means, first actuating means operatively connected to said control means, to said evaluating means and to said analyzing means, said first actuating means elaborating a first limit-value as a function of said highest value recorded by said analyzing means and initiating a decrease in the load exerted on the weight, when the penetration rate reaches, while decreasing, said first limit value and second actuating means operatively connected to said control means, said second actuating means elaborating a second limit-value and initiating an increase in the load exerted on the drill bit when the tension on the drill pipe has reached, while increasing, said second limit value.

3,872,933
SUSPENDING DEVICE

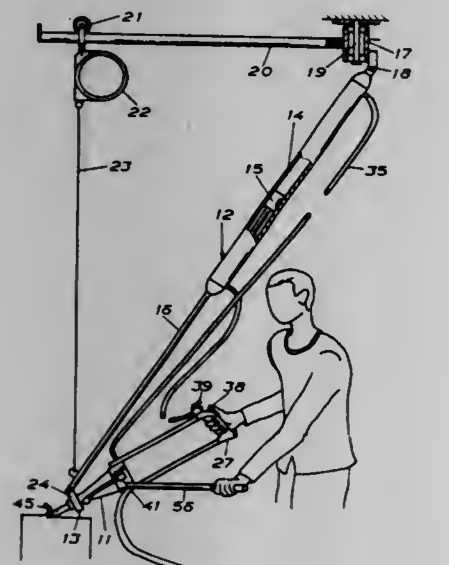
Sture R. Andersson, Extorp, and Heino Elmessaar, Lidingo, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 20, 1974, Ser. No. 444,130

Claims priority, application Sweden, Feb. 28, 1973, 73028110

Int. Cl. B25d *4/00*

U.S. Cl. 173—38 **16 Claims**



1. A suspending device for a hand-held power hammer, comprising:

a mount,

an obliquely downwardly directed extendible arm pivotably mounted at its upper end to the mount so as to be swingable both laterally and vertically, said arm including a feed jack for extending and retracting said arm,

means for universally movably mounting said hammer to the lower end of said arm, and

a device arranged to apply an upward swinging force on said arm to countervail the downward swinging force caused by the weight of the hammer and the arm.

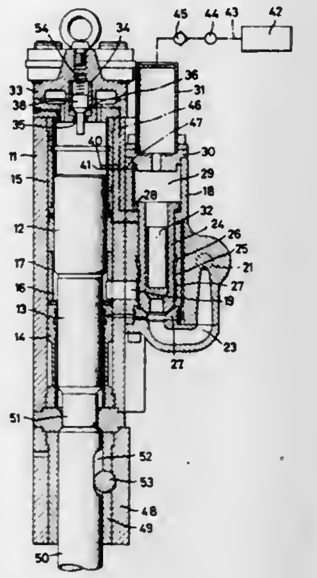
3,872,934
IMPACT TOOL

Hiromu Terada, Ikoma, Japan, assignor Nippon Pneumatic Manufacturing Company Limited, Osaka, Japan

Filed Oct. 30, 1973, Ser. No. 411,170

Int. Cl. B25d *9/00*

U.S. Cl. 173—134 **1 Claim**



1. In an impact motive implement having a main cylinder having a larger diameter upper portion and a smaller diameter lower portion, a main piston in said main cylinder having a larger diameter upper portion slidable in the upper portion of the cylinder and a smaller diameter lower portion slidable in the lower portion of the main cylinder, a tool holder on the lower end of said main cylinder and an impact tool mounted in said tool holder and against the upper end of which the lower end of the lower piston portion strikes when the main piston is lowered, said main cylinder having a liquid port opening into said lower portion of said main cylinder at a point below said lower portion of said main piston when said main piston is in the lowermost position in said main cylinder, a valve casing on said main cylinder having a liquid port communication with said liquid port in said main cylinder and further having a liquid inlet port and a liquid outlet port, a compressed gas operated main valve slidable in said valve casing between a first position in which it blocks off communication between said liquid port communicating with said main cylinder and said liquid inlet port and a second position in which it blocks off communication between said liquid port communicating with said main cylinder and said liquid outlet port, said main cylinder having a passage therethrough from said upper portion of said main cylinder to a position of said valve casing for supplying compressed gas thereto for actuating said main valve for moving it to said first position, limiting valve means in said passage and engageable by the upper portion of said main piston near the upper limit of its movement for opening said limiting valve means, and a source of compressed gas connected to said valve casing for supplying compressed gas for urging said main valve toward said second position, the improvement comprising a subsidiary valve body, said main valve having a recess therein exposed to the space within said valve casing through which the liquid flows from the main cylinder to said outlet port, said subsidiary valve body being slidable in said recess in response to overpressure in said space to relieve said overpressure.

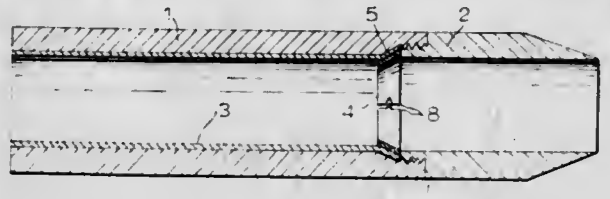
3,872,935
APPARATUS AND METHOD FOR OBTAINING UNDISTURBED SOIL CORE SAMPLES

Lloyd N. Mielke, Lincoln, Nebr., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 30, 1974, Ser. No. 465,650

Int. Cl. E21b *49/02*

U.S. Cl. 175—58 **1 Claim**



1. In a method of obtaining undisturbed soil core samples of the type which utilizes a soil core sampler comprising a cylindrical tube or sampler body, open at both ends, and having at one end thereof a cutting tip which is sharpened for facilitating entry into the soil, an improvement comprising the steps of:

a. lining the inside surface of a soil core sampler with a flexible heat-shrinkable plastic tube;

b. securing said heat-shrinkable plastic tube to the inner wall near the cutting tip end of said soil core sampler;

c. pressing the lined soil core sampler into the ground;

d. removing the soil sampler from the ground; and

e. heating said heat-shrinkable plastic tube evenly on all sides at a temperature sufficient to cause shrinkage.

3,872,936
WEIGHING APPARATUS INCLUDING PULSE COUNTER MEANS HAVING A RELATIVELY SMALL CAPACITY

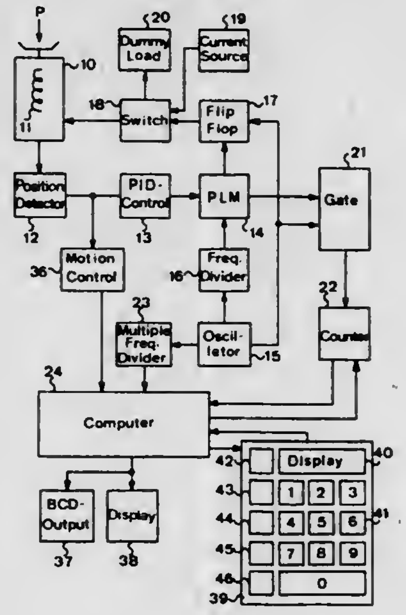
Arthur Baumann, Schwerzenbach, and Werner Langenegger, Zurich, both of Switzerland, assignors to Metter Instrumente AG, Zurich, Switzerland

Division of Ser. No. 380,720, July 19, 1973,. This application Mar. 15, 1974, Ser. No. 451,554

Claims priority, application Switzerland July 28, 1972, 11333/72

Int. Cl. G01g *19/40, 3/14*

U.S. Cl. 177—15 **2 Claims**



1. In an electrical weighing apparatus including a load carrier member, and means (14) responsive to the amount of load on said load carrier member for producing in a given period of time a plurality of pulses the number of which is a function of the load applied to said load carrier, the improvement which comprises

a. pulse counter means (22) connected with said pulse producing means, said counter means having a counting capacity that is low relative to the measuring range of the weighing apparatus;

b. actual measurement display means (38) for displaying the actual value of the load being measured; and

c. computer means (24) connected between said counter means and said display means for controlling the operation of said counter means to totalize a plurality of separate subtotals of said pulse counter means and to transmit to said display means the totalized actual load measurement, said computer means including

1. count storage means (26); and

2. means (27, 32) operable during said given period of time for periodically transferring the subtotal counts of said counter means to said count storage means and for resetting said counter means to zero.

3,872,937
COMPOSITE OF POLYAMIDE BONDED TO RUBBER

Gerard E. Van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1972, Ser. No. 316,206

Int. Cl. B44d *1/10, 1/14*

U.S. Cl. 117—72 **8 Claims**

1. A bonded composite material comprising a polyamide reinforcing element embedded in a vulcanized rubber, said element containing a total of from about 3 to 7 percent by weight (dry) based on the weight of said element of an adhesive composition consisting essentially of a first deposit consisting essentially of a heat set epoxide from an epoxide having an average of from about 2 to 4 epoxide groups per molecule and a molecular weight of up to about 600 and a second deposit consisting essentially of a heat set mixture of a major amount of a rubbery vinyl pyridine copolymer and a minor amount of a heat reactable 2,6-bis(2,4-dihydroxy phenyl methyl)-4-chlorophenol composition, said adhesive composition forming a bond between said element and said rubber.

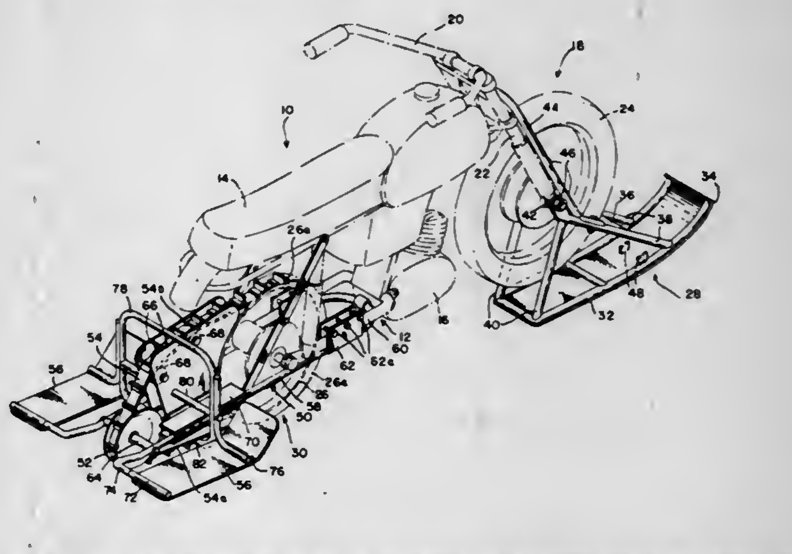
3,872,938
CONVERTIBLE GROUND AND SNOW TRAVELING VEHICLE

Charles F. DeGroot, Rt. 1, Box 55, Fall City, Wash. 98024

Filed Dec. 26, 1973, Ser. No. 427,905

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **13 Claims**



1. In combination with a ground traveling vehicle, such as a motorcycle, having a main supporting frame, a steerable front wheel assembly mounted to the frame, and a rear drive wheel which is mounted to the main frame and comprises a wheel rim having a circumferential groove adapted to carry a tire therein.

an apparatus used in combination with said vehicle for easy conversion of the vehicle for travel over a snow surface, and easy reconversion back to the conventional vehicle arrangement for ground travel, said apparatus comprising:

a. a front ski unit adapted to be mounted to said front wheel assembly so as to be steerably therewith and provide front end support for the vehicle,

b. a rear support and drive assembly comprising;

1. an auxiliary frame mounted to said main frame and extending rearwardly therefrom,
2. a rear idler wheel rotatably mounted to a rear portion of the auxiliary frame at a level proximate said snow surface and rearwardly of said drive wheel, and
3. an endless snow engaging belt mounted around and in the circumferential groove of the rim of said drive wheel and on said idler wheel so as to be powered directly from said drive wheel, said belt having a lower drive run portion positioned to engage said snow surface.

3,872,939

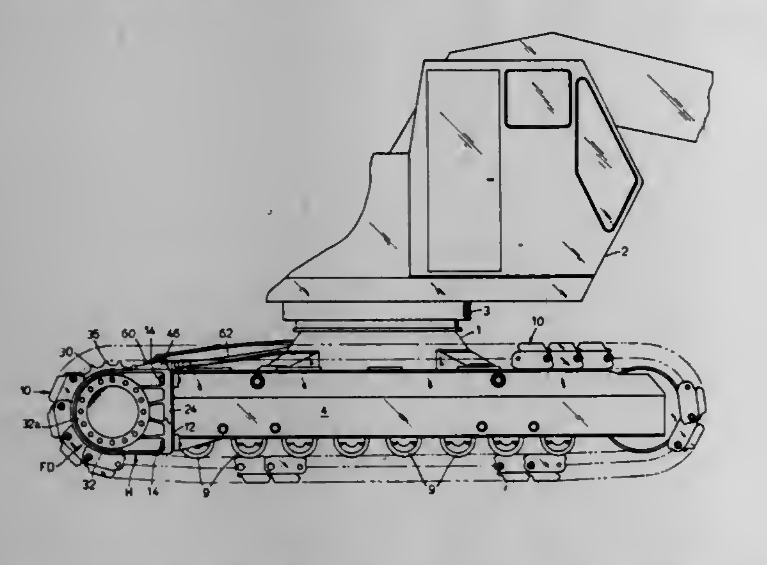
MODULAR FINAL DRIVE FOR TRACK TYPE VEHICLES

Herbert L. Eckert, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Feb. 21, 1974, Ser. No. 444,310

Int. Cl. B62d *11/04, 55/12*

U.S. Cl. 180—6.48 **20 Claims**



1. A modular final drive in combination with a track type vehicle having a pair of track roller frames, one disposed longitudinally along each side of the vehicle and each frame having a rear end; said final drive comprising, a housing, a track driving sprocket rotatably mounted in the housing, means for rotatably supporting said sprocket on each of its sides and in the housing, fastening means for detachably securing said housing to said rear end of said track roller frame, a gear train mounted on the side of said housing and extending forwardly and upwardly therefrom and terminating in a forward elevated end which is adjacent the juncture between the housing and rear end of said track frame, motor means located at an elevated and forward position relative to the housing and connected with said forward elevated end of said gear train, and means for detachably and adjustably positioning the gear train relative to the housing so as to render said modular drive usable with either of said track frame.

3,872,940

SELF PROPELLED SELF-ADJUSTING CARRIAGE ABLE TO MOVE ALONG CURVED PROFILES AS PIPELINES

Arnaldo Gambini, San Donato Milanese, Italy, assignor to Snam Progetti, S.p.A., Milan, Italy

Filed May 12, 1972, Ser. No. 252,765

Claims priority, application Italy, May 13, 1971, 24463/71; May 13, 1971, 24464/71

Int. Cl. B62d *55/08*

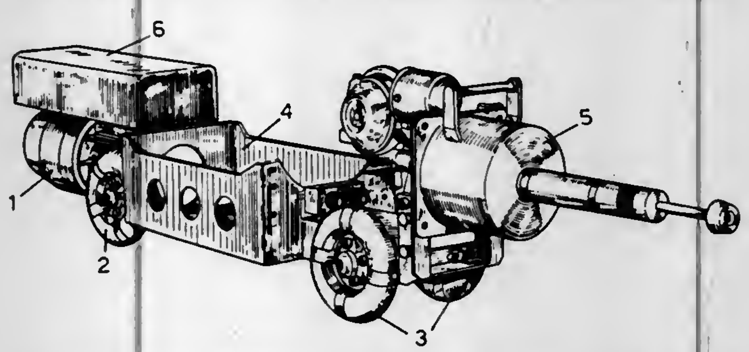
U.S. Cl. 180—9.5 **4 Claims**

1. A self-propelled self-adjusting carriage able to move along curves profiles, such as pipelines, said carriage comprising:

i. a bearing body;

ii. means to propel said carriage;

iii. a self-adjusting guide system on said bearing body whereby self-adjustment is achieved by gravity, said self-adjusting guide system comprising wheels, said wheels provided with peripheral rollers mounted for free rotation around axes substantially orthogonal to the axes of rotation of said wheels so that said rollers are located between the sides of the wheels.



3,872,941

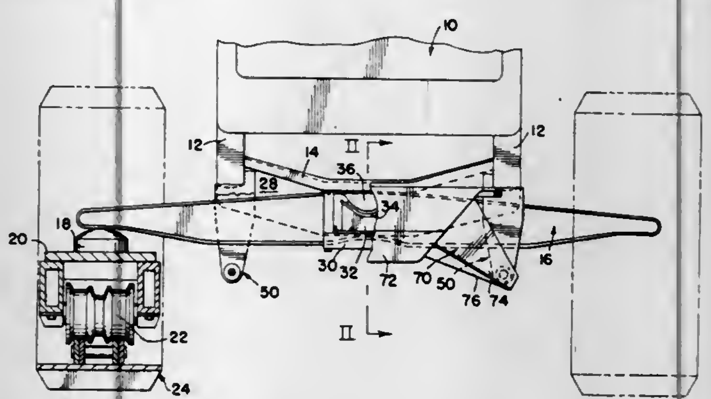
EQUALIZER BAR OSCILLATION STOP AND PROTECTIVE GUARD

Kermit L. Copeland, Bellevue, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 23, 1974, Ser. No. 435,753

Int. Cl. B62d *55/08*

U.S. Cl. 180—9.5 **7 Claims**



1. In a front end suspension for track-type tractors having a main frame flanked by truck frames on opposite sides, a rigid bar bridging the truck frames adjacent their forward ends, a cross member on the main frame resting centrally on the bar for rocking movement thereon, a mass of rubber-like material engaging the bar generally centrally with respect to the longitudinal center line of the tractor for resisting such rocking movement, and a pair of upper stop means on the main frame, one on each side of said center line, for engaging the upper surface of the bar to partially restrict such rocking movement, the improvement comprising, a pair of lower stop means secured to said frame, one on each side of said center line, and located below said bar for engaging the underside of said bar so as to act in concert with said upper stop means to fully restrict such rocking movement to thereby preclude overcompression of said rubber-like mass thereby extending the useful life thereof.

3,872,942

EARTH-ROLLING VEHICLES

Roger Metailler, Grenoble, France, assignor to Societe Anonyme dite: Richier, Paris, France

Filed July 31, 1973, Ser. No. 384,195

Claims priority, application France, Aug. 3, 1972, 72.28509

Int. Cl. E01c *19/23*

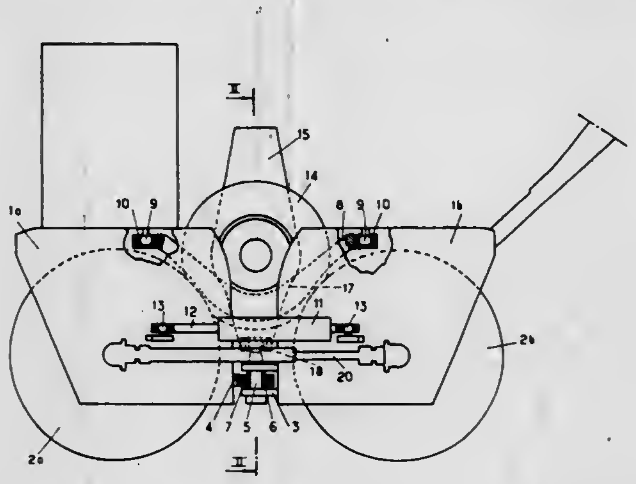
U.S. Cl. 180—20 **2 Claims**

1. In an earth-rolling vehicle comprising two tandem rollers and two frames each carrying a respective one of the rollers

a. pivot means connecting the frames, said pivot means comprising a first ball joint, said ball joint comprising a ball and a cage, the cage being mounted on one of the frames, the ball being mounted on a shaft, said shaft being carried by the other frame;

b. a drive unit comprising a motor and a speed reducing device coupled to the motor, driving wheels carried by the drive unit, said driving wheels contacting both of the rollers whereby to drive the rollers and to support the drive unit, the drive unit being arranged between the two frames in such a manner as to urge the driving wheels against the rollers; and

c. a second ball joint connecting the drive unit to the shaft on which the ball of the first ball joint is mounted.



3,872,943

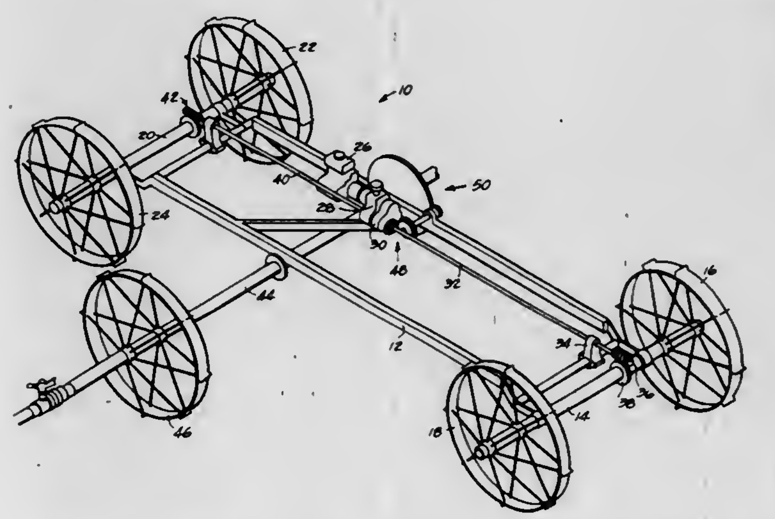
DRIVE UNIT

Lloyd C. Olson, Beaverton, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed July 26, 1973, Ser. No. 382,716

Int. Cl. B62d *3/00*

U.S. Cl. 180—24.08 **8 Claims**



1. A drive unit for carrying and transporting a portion of an irrigation pipe or the like comprising:

a frame;

wheel means rotatable mounted to the frame and on which the frame is supported;

means on said frame supporting said irrigation pipe for rotation generally medially thereof, drive means on said pipe imparting rotation thereto,

a rotary prime mover fixed relative to the frame;

a variable speed transmission operatively connected to the prime mover;

a locked differential operatively connected to the transmission;

means for interconnecting the locked differential and wheel means for transmitting rotary motion to the wheel means for moving the drive unit, and said interconnecting means further including power take off means connected to said pipe drive means for driving the same.

3,872,944

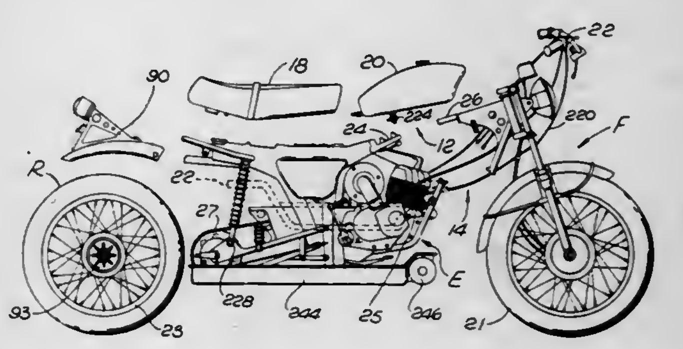
QUICK-CONNECT COUPLING STRUCTURES EMBODIED IN MOTORCYCLE FOR RAPID TAKE DOWN

Lawrence S. Shapiro, 8012 Dunfield, Los Angeles, Calif. 90045, and Ralph H. Piel, 1226 Franklin Street, Calif.

Filed June 9, 1972, Ser. No. 261,194

Int. Cl. B62k *15/00*

U.S. Cl. 180—33 R **3 Claims**



1. A motorcycle construction that facilitates disassembly, as for transportation, including:

a front-wheel section including a front wheel, a first frame segment supportig said front wheel and a first coupling means affixed to said first frame segment;

an engine section including an engine, drive structure, a second frame segment supporting said engine and drive structure, a second coupling means for engagement with said first coupling means, to rigidly fix said frame sections together, and a loading tray affixed under said engine including at least one wheel rotatably mounted on said tray;

stud means for releasably locking said first and second coupling means in mating engagement; and

a rear-wheel section including a rear wheel and means for affixing said rear wheel to said second frame segment.

3,872,945

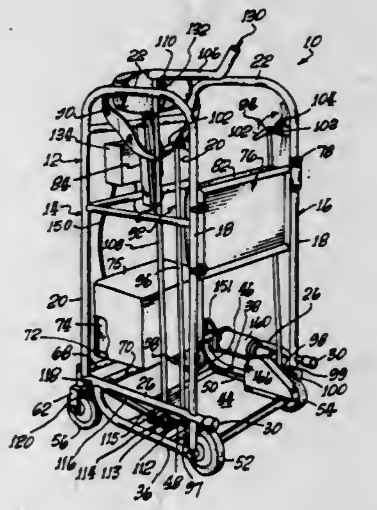
MOTORIZED WALKER

Arthur D. Hickman, North Glenn, Colo., and Raymond H. Hickman, Shelton, Nebr., assignors to Falcon Research and Development Co., Denver, Colo.

Filed Feb. 11, 1974, Ser. No. 441,507

Int. Cl. B60k *1/00*

U.S. Cl. 180—65 R **12 Claims**



1. A powered walker which comprises: an upstanding rigid frame assembly comprising interconnected, rigid frame members defining (a) vertical sides which define a vertical space for receiving a user's body and defining (b) an entryway in one side thereof, said frame assembly connected to and terminating at its lower end in support means for supporting a walker user thereon in standing position within said frame assembly; a gate hingedly connected to said frame assembly along one side of said entryway and sized to extend across said entryway

for closing engagement with said frame assembly along the opposing side of said entryway; wheel means connected to said frame assembly for supporting said frame assembly above a surface for transportational movement thereover, said wheel means comprising a pair of independently-mounted front wheels and a pair of interconnected turnable rear wheels; electrical power means carried within said frame assembly; drive means connected to said electrical power means and to one of said front wheels; switch means mounted adjacent the upper end of said frame assembly for manual operation by a walker user and electrically connected to said electrical power means; steering means connected at a lower end to said rear wheels and rotatably connected at its upper end to said frame assembly adjacent said upper end thereof; and brake means carried vertically along said frame assembly and terminating at one end adjacent said wheel means and for engagement therewith when said brake means are applied and terminating in a hand-operable position adjacent said upper end of said frame assembly.

3,872,946
DUCT SYSTEM WITH BUILT-IN VOLUME REGULATOR

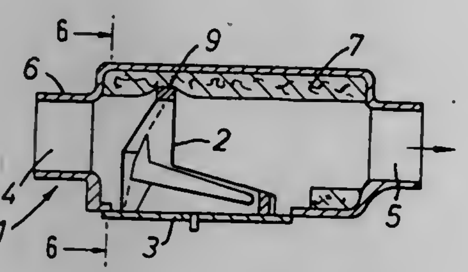
Knud Vagn Valbjorn, Nordborg; Volker Spies, Augustenborg, and Poul Christian Dyhr-Mikkelsen, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 4, 1974, Ser. No. 439,650

Claims priority, application Denmark, Feb. 6, 1973, 608/73

Int. Cl. F01n *3/06*

U.S. Cl. 181—36 B **4 Claims**



1. An air volume regulator assembly comprising a duct section open at opposite ends thereof and having wall means on three sides thereof, a removable wall portion, a regulator unit mounted on said wall portion, a U-shaped portal attached to said removable wall portion in surrounding relation to said regulator unit, sound absorbing material having a U-shaped section attached internally to said three sides of said wall means, said sound absorbing material being deformed by said portal when in an assembled position.

3,872,947
SCAFFOLDING AND LIKE CONSTRUCTION

John Henry Cranfield, 18 Rowan Rd., Sutton, Coldfield, England

Filed Dec. 3, 1973, Ser. No. 421,132

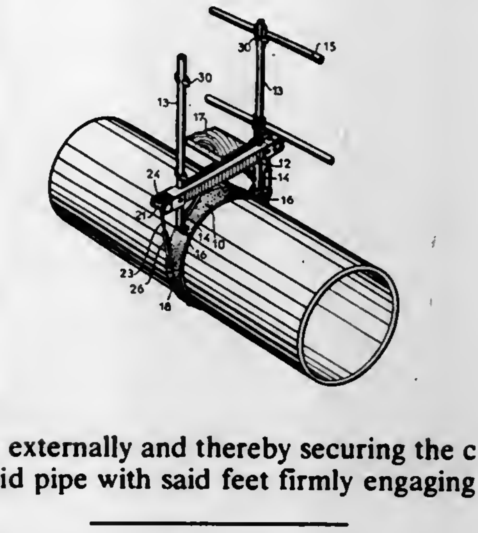
Claims priority, application United Kingdom, Dec. 9, 1972, 56950/72

Int. Cl. E04g *3/00*

U.S. Cl. 182—82 **10 Claims**

1. A clamp for securing releasably to large diameter pipes to serve as a support member for scaffolding, access ways or the like thereon, the clamp comprising

- a. a cross member,
- b. legs extending downwardly from said cross member at spaced positions along the length thereof,
- c. a respective foot mounted pivotally at the lower end of each said leg and adapted to engage the exterior of the pipe,
- d. a gripping element secured to said cross member at or adjacent to the ends thereof, and
- e. tensioning means operative between said gripping element and said cross member for collectively embracing said pipe externally and thereby securing the cross member to said pipe with said feet firmly engaging said pipe.



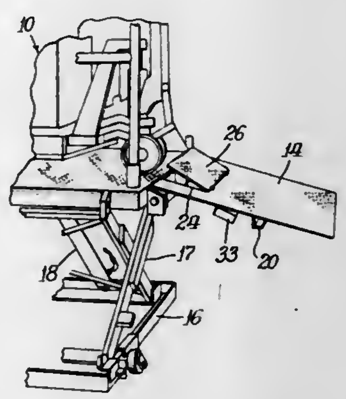
3,872,948
VEHICLE SAFETY STOP FOR PLATFORM OF VERTICAL RISING LIFT

Lawrence I. Richards, Elk Grove Village, Ill., assignor to Autoquip Corporation, Chicago, Ill.

Filed Apr. 13, 1973, Ser. No. 350,783

Int. Cl. B66f *7/28*

U.S. Cl. 187—8.52 **3 Claims**



1. In a vertical lift for transporting wheeled vehicles from one horizontal surface to another, said lift comprising a platform, a device connected to the platform to move the platform vertically, a loading ramp extending from one side of the platform, and a safety device on the lift for preventing a vehicle on the platform from accidentally moving off said side of the platform, the improvement wherein said device comprises: said ramp having an opening therein immediately adjacent said side of the platform, said opening having a first boundary adjacent said side and a second boundary spaced from the first boundary and said side, said second boundary being straight and approximately parallel to said side;

- a stop plate the size of said opening and positioned therein; means including a hinge connecting the ramp at said second side with the adjacent side of the stop plate and permitting the stop plate to move with respect to the ramp from a first position at which it is flush with the ramp in an upwardly direction to a second position at which it is sufficiently above the ramp to block the movement of the vehicle onto the ramp, said means limiting the movement of the plate in said direction, and
- actuating means for raising said plate after said ramp has moved a given distance from said surface and to contact said surface as said ramp moves down toward the surface to automatically retract the plate to said flush position upon the ramp reaching the floor, said actuating means including a counterweight on an arm fixedly attached to the plate and positioning the counterweight below said ramp at the opposite side of said second boundary from said plate.

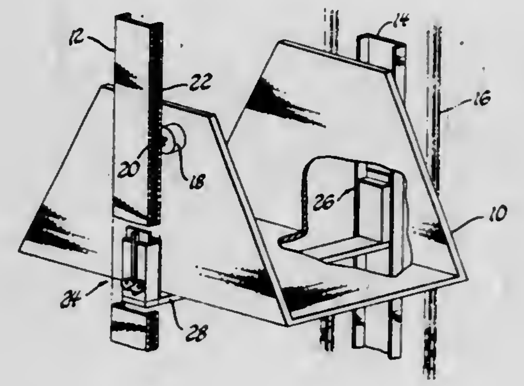
3,872,949
OVERSPEED PREVENTION SYSTEM FOR ELEVATOR CARS

James H. Snyder, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 15, 1970, Ser. No. 46,236The portion of the term of this patent subsequent to Aug. 23, 1988, has been disclaimed.

Int. Cl. B66b *5/06*

U.S. Cl. 187—89 **17 Claims**



1. An overspeed brake control system for an elevator comprising: an electrical generator adapted to be operatively connected with an elevator car to generate a voltage corresponding to the speed of the car, brake means for said car including a pyrotechnic actuator therefor with an electrical detonator, and voltage responsive switching means connected with the generator and adapted to connect said generator with said electrical detonator when the voltage of the generator reaches a predetermined value upon the occurrence of excessive speed of said car.

3,872,950
VIBRATION DAMPER FOR TRACTOR ROLL-BAR

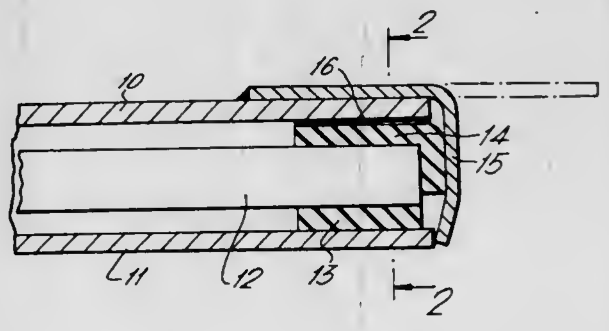
Herbert Edward Ashfield, and Stephen Moorhouse, both of Huddersfield, England, assignors to David Brown Tractors Limited, Huddersfield, England

Filed July 2, 1973, Ser. No. 375,789

Claims priority, application United Kingdom, July 13, 1972, 32766/72

Int. Cl. F16f *7/10;* **B06n** *21/02*

U.S. Cl. 188—1 B **7 Claims**



1. In a safety structure for an agricultural tractor having an engine and a supporting structure mounted on ground engaging wheels drive connected to said engine, said safety structure being in the form of a roll bar or bars, a safety frame or a cab structure or the like, said safety structure including frame means effectively fixed with respect to said supporting structure and protectively surrounding the driver of the tractor, the improvement in said frame means comprising at least one non-rotatable hollow frame member within which is mounted resilient means and a vibration damping mass suspended by said resilient means for damping vibrations set up in said safety structure as at certain engine speeds.

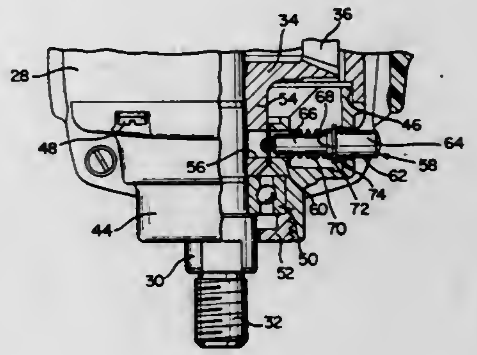
3,872,951
SPINDLE LOCKING MECHANISM FOR ROTARY POWER DEVICE

Charles Russell Hastings, Jr., Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Nov. 6, 1973, Ser. No. 413,335

Int. Cl. B62c *7/02*

U.S. Cl. 188—69 **14 Claims**



1. A manually operable locking mechanism for a rotary power tool including a housing which supports a rotatable spindle, comprising:

- a sleeve rigidly mounted on the spindle for rotation therewith, said sleeve including a radially extending opening; a lock pin slidably mounted on the housing for movement toward and away from said sleeve, said lock pin being normally biased away from said sleeve and manually movable toward said sleeve into said opening to prevent rotation of the spindle; and
- resilient guard means secured to said sleeve for rotation in common therewith and normally extending across said opening to prevent movement of said lock pin into said opening, said lock pin being engageable with said resilient guard means upon movement of said lock pin toward said sleeve and rotation of the spindle in a predetermined direction to displace said resilient guard means away from said opening to permit movement of said lock pin into said opening.

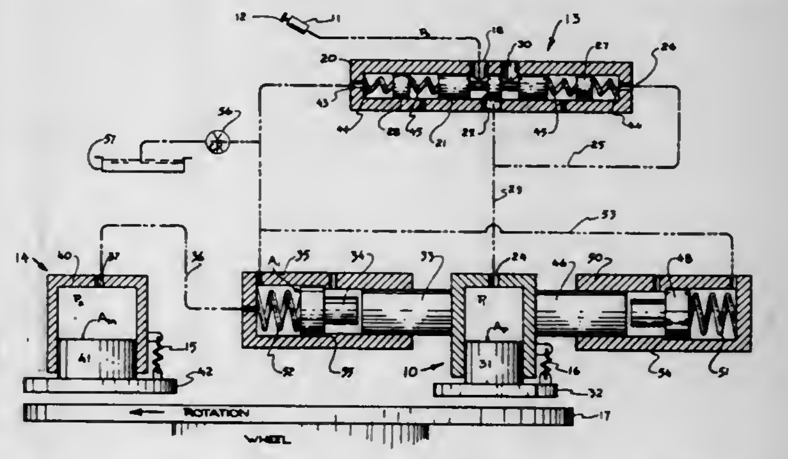
3,872,952
ANTI-SKID APPARATUS

Joseph L. Poggie, 815 Iris Ln., Vero Beach, Fla. 32960

Filed Oct. 9, 1973, Ser. No. 404,398

Int. Cl. B60t *8/06*

U.S. Cl. 188—181 T **12 Claims**



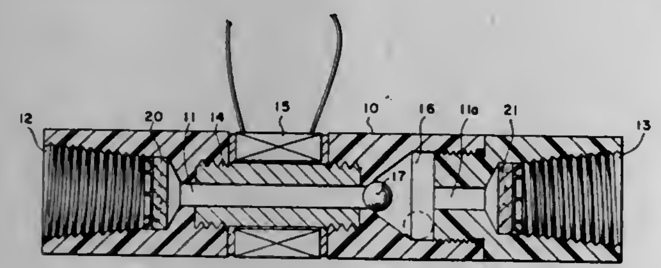
6. A vehicle wheel anti-skid braking method comprising the steps of sensing the torque applied to the road to a vehicle wheel and braking the wheel with the sensed torque; said step of sensing of the torque including applying a pilot brake pad against a wheel brake disc; and generating a force by the movement of the pilot brake responsive to the pilot brake pad engagement with the movement brake disc and applying the generated brake force of said pilot brake to the main brake thereby braking said wheel brake disc with said main brake

responsive to said generated force from said movement of said pilot brake.

3,872,953
HYDRAULIC BRAKE SYSTEM AND VALVE STRUCTURE

Ewing A. Taylor, Garland, Tex., assignor to R. O. Evans, Garland, Tex.

Filed Mar. 19, 1971, Ser. No. 126,001
Int. Cl. B60r *25/08*
U.S. Cl. 188—353 **8 Claims**



1. In a brake system for a wheeled vehicle, including an ignition system having an ignition switch operable to on and off positions, a hydraulic master cylinder, operable by a brake means, a plurality of slave cylinders operable to actuate braking devices at wheels of said vehicle and a fluid conduit connecting the master cylinder to operate at least one slave cylinder, the improvement comprising:

a. selectively enabled check valve means having a first bore having one end connected by the fluid conduit to the master cylinder, an enlarged chamber at the other end of said bore, a bore opening through which said first bore communicates with said chamber, a free rolling ball disposed within said chamber, said ball being larger than the diameter of said bore opening but substantially smaller than said chamber, and a second bore providing fluid communication between the chamber and fluid conduit connecting the second bore to said at least one slave cylinder, said valve means permitting fluid flow through said bore in only a first direction from the master cylinder to the slave cylinder when enabled to attract said ball to lodge in the bore opening and thereby prevent fluid flow in a second direction from the chamber to the first bore while permitting fluid flow from the bore to the chamber, said valve means permitting fluid flow through said bore in either of said two directions when not enabled and when said ball is not lodged in the bore opening;

b. enabling means, coupled with the ignition switch, for enabling said valve means upon operation of the brake means when the ignition switch is off; and

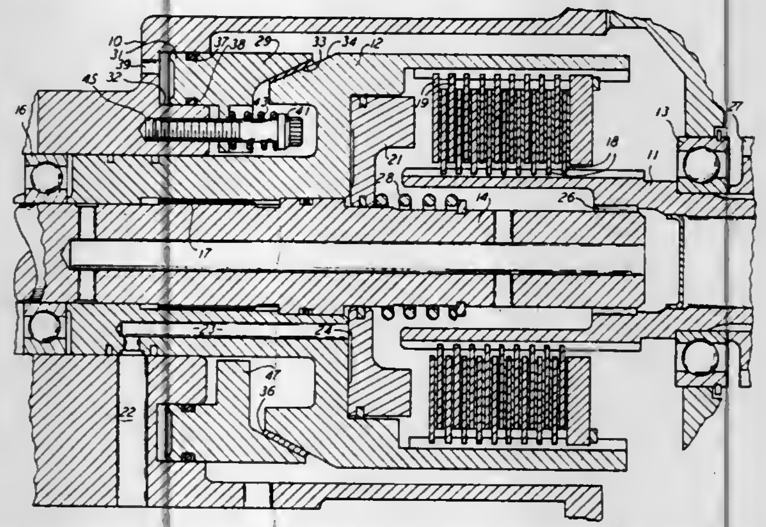
c. disabling means, coupled with the ignition switch, for disabling said valve means when the ignition switch is on; d. said ball being drawn toward said bore opening when said enabling means enables said valve and remaining lodged in the bore opening by back pressure from the slave cylinder and preventing fluid flow from the chamber toward the master cylinder until said brake means is operated with the ignition switch on causing said master cylinder to exert fluid pressure against the ball sufficient to dislodge the ball from the bore opening and permit fluid flow in either direction in the bore.

3,872,954
CLUTCH AND BRAKE ASSEMBLY

Leroy A. Nordstrom, Racine, and Peter D. Ruffalo, Kenosha, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 19, 1974, Ser. No. 462,588
Int. Cl. F16d *67/04*
U.S. Cl. 192—18 A **5 Claims**

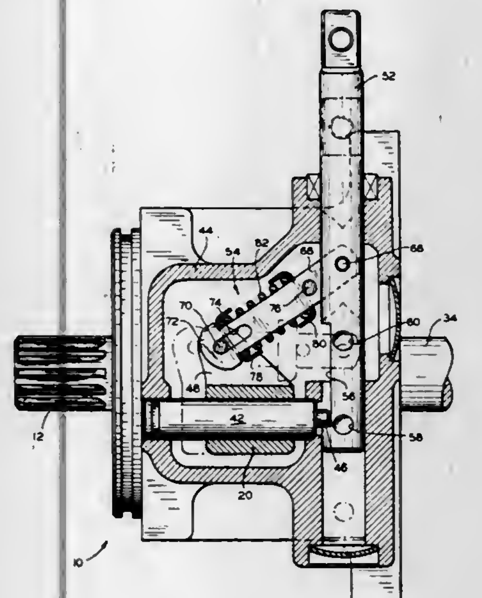
1. A clutch and brake assembly comprising a housing, a driving member rotatably mounted in said housing and including a set of clutch plates, a driven member rotatably mounted in said housing and including a set of clutch plates movable into and out of driving contact with said driving member clutch plates for rotating said driven member in unison with said driving member, a clutch control member movably mounted on said driven member for moving said clutch plates into contact with each other to effect said driving contact, a brake member non-rotatably disposed in said housing adjacent said driven member, said driven member and said brake member each having a conically shaped surface faced toward each other and being positioned to contact each other when said brake member is moved toward said driven member and thereby restrain said driven member against rotation, said brake member being movably mounted on said housing for axial movement only and relative to the center longitudinal axis of said conically shaped surface, and said housing and said brake member having annular surfaces defining a fluid tight annular pocket for receiving fluid under pressure to axially move said brake member into braking contact with said driven member, and a plurality of springs spaced around said brake member and secured with said housing for yieldingly urging said brake member away from said driven member to release the braking force when the fluid under pressure is released from said pocket.



3,872,955
CONNECTING MECHANISM

Duane E. McIntyre, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 18, 1973, Ser. No. 371,102
Int. Cl. F16d *7/00*
U.S. Cl. 192—67 R **6 Claims**



1. A connecting mechanism for selectively connecting two adjacent shaft ends for conjoint rotation comprising in combination:

a. a first shaft end having a first set of external splines;

b. a second shaft end concentric with said first shaft end and having a second set of external splines allochiral with said first set of splines;

c. a collar axially slidable and concentric with respect to said first and second shaft ends and having a third set of internal splines in constant mesh with one, and axially slidable with respect to both of said first and second sets of splines;

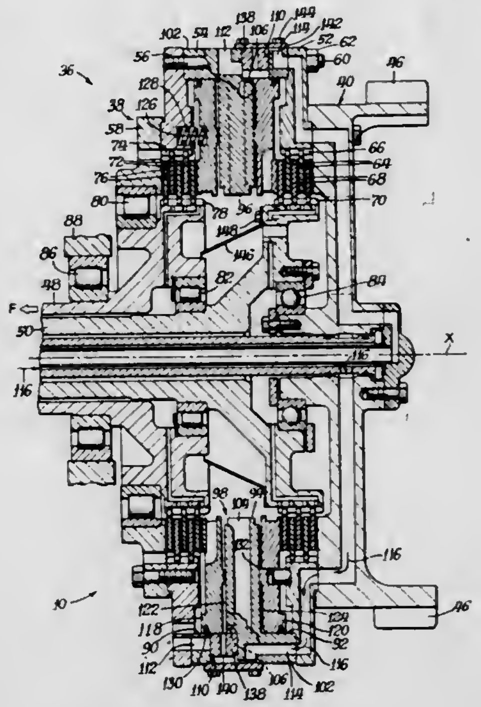
d. an axially slidable yoke connected with said collar;

e. means for actuating said yoke to effect immediate engagement between said third set of splines and the other of said first and second sets of splines only when said shaft ends are both axially and radially aligned, said actuating means including means for storing energy, whne said shaft ends are only axially aligned, to effect engagement between said third set of splines and the other of said first and second sets of splines only after said shaft ends are both axially and radially aligned, said actuating means comprising an over-center mechanism and also providing a direct, non-resilient mechanical connection with said yoke for disengagement purposes, with said energy-storing means being operative only for engagement purposes.

3,872,956
FLUID OPERATED CENTRIFUGAL CLUTCH

Charles H. Herr; Gunter W. Schulz, and George S. Bull, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1973, Ser. No. 394,166
Int. Cl. F16d *43/06*
U.S. Cl. 192—85 F **8 Claims**



5. The control system of claim 3, wherein said fluid directing means for limiting access of lubricating fluid to said chamber includes fluid relief passage means in said piston for collecting said lubricating fluid adjacent an inner diameter thereof and directing it generally radially outwardly and away from said chamber.

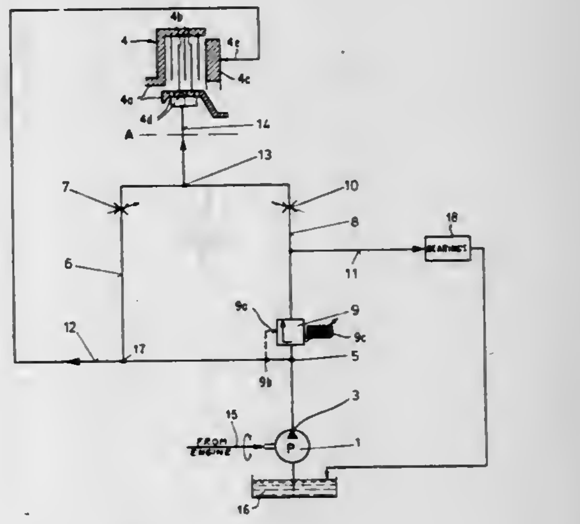
3,872,957
FLUID-SUPPLY SYSTEM FOR HYDRAULIC COUPLING

Gerhard Maurer, and Fritz Geiger, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Nov. 28, 1973, Ser. No. 419,720
Int. Cl. F16d *13/72, 13/74*
U.S. Cl. 192—113 B **4 Claims**

1. A fluid-supply system for a hydraulically actuated coupling controlling the transmission of torque from an engine to a load, said coupling being provided with a first inlet for a working fluid and with a second inlet for an ancillary fluid, comprising:

- an engine-driven pump for the circulation of a hydraulic liquid;
- a supply line extending from said pump to said first inlet;
- pressure-regulating means connected to said supply line for maintaining therein a fluid pressure substantially independent of engine speed with the engine operating above a predetermined speed limit;

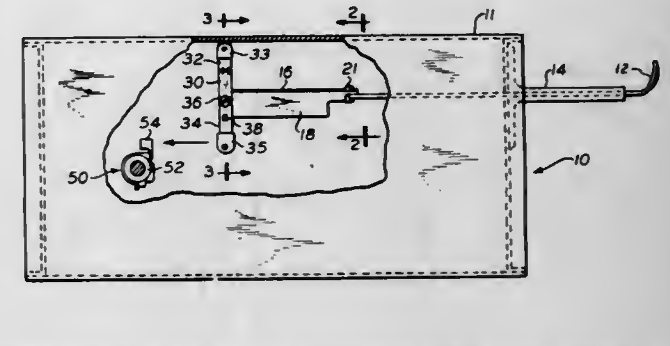


- an overflow line for excess fluid under variable pressure connected to said pressure-regulating means;
- a branch line connected to said supply line; and
- a conduit communicating with said overflow line and with said branch line for delivering a mixture of fluid of variable pressure from said overflow line and fluid of substantially constant pressure from said branch line to said second inlet.

3,872,958
SLIDE EXTENSION ASSEMBLY

Harry Greenwald, Whitestone, and Salvatore Iglio, Richmond Hills, both of N.Y., assignors to Walter, Kidde & Company, Inc., Clifton, N.J.

Filed Jan. 30, 1974, Ser. No. 437,823
Int. Cl. G07f *9/00*
U.S. Cl. 194—1 R **9 Claims**

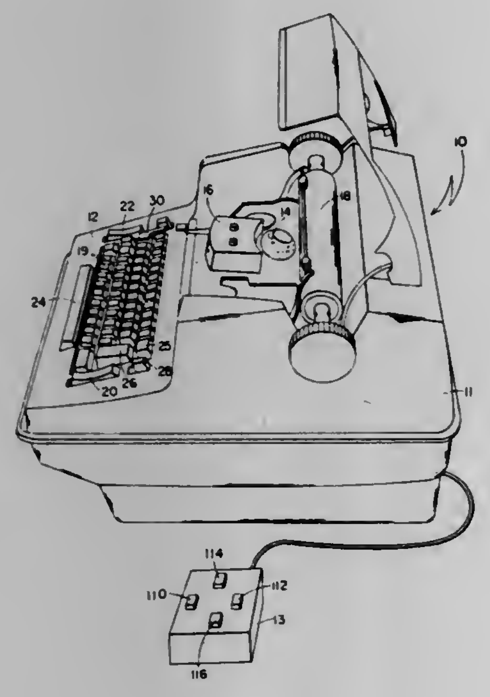


1. In combination with a coin operated apparatus having a housing, a coin slide reciprocably mounted in a guide track for projected and retracted movement within said housing, a starting mechanism, and a vertical actuator means mounted on the coin slide and extending in one direction normal to the plane of said slide, wherein the presence of a coin in the coin slide is operative to permit movement of the coin slide and engagement of the actuator means with the starting mechanism; wherein the improvement comprises: said actuator means having a portion extending in the other direction normal to the plane of said slide, said portion being bent to engage a corner of the housing for preventing substantial vertical movement of the actuator relative to the starting mechanism upon movement of the coin slide.

3,872,959
POSITIONING TYPEWRITER

An Wang; Ge Yao Chu, both of Lincoln, and Edward S. Wu, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.

Division of Ser. No. 130,281, April 1, 1971. This application Feb. 12, 1973, Ser. No. 331,486
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **6 Claims**



1. An output writer responsive to input signals comprising horizontal space signals and selection and print signals, said writer having

record sheet supporting means,

a type head providing a plurality of alpha-numeric symbols and operable to select and print an alpha-numeric symbol on a record sheet carried on said supporting means,

selection and printing means connected to said type head for moving said type head relative to said carriage means to select a particular alpha-numeric symbol and sequentially to print the selected alpha-numeric symbol on the record sheet,

selection and printing drive means including a main motor, said selection and printing drive means being responsive to input selection and print signals for operating said selection and printing means,

type head carriage means supporting said type head, said type head carriage means being driven independently of said selection and printing means for independent control and timing of said carriage means and said selection and printing means, and being horizontally movable with respect to said record sheet supporting means,

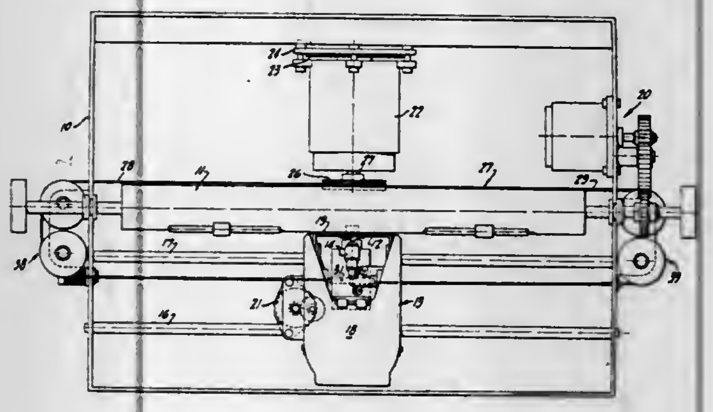
type head carriage drive means independent of said selection and printing drive means, said type head carriage drive means including a stepping motor and responsive to input horizontal space signals for moving said carriage means horizontally with respect to said record sheet supporting means,

said carriage drive means and said selection and printing drive means being independently responsive to the input horizontal space signals and the selection and print signals respectively for causing said selection and printing means to select and print an alpha-numeric symbol and for causing said carriage to move horizontally with respect to said record sheet.

3,872,960
HIGH-SPEED PRINTER WITH DRIFT COMPENSATED CABLE FOR CARRIAGE

Andrew Gabor, Danville, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1972, Ser. No. 229,397
Int. Cl. B41j *1/54*
U.S. Cl. 197—53 **4 Claims**

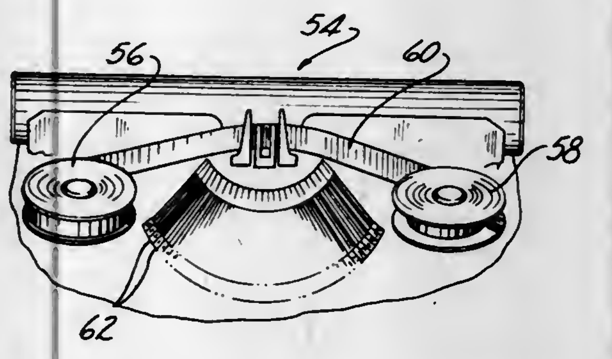


1. A high-speed printer for printing on a record medium comprising; a movable carriage for carrying a printing unit along a predetermined line of printing with respect to said record medium said carriage including first pulley means mounted for rotation on an axle mounted for rotation on said carriage; means for intermittently transporting said carriage and said printing unit to stationary printing positions along said line of printing, said carriage being movable from a center position to extreme left and right positions, such transporting means including a motor, second pulley means driven by said motor; a frame for accommodating said carriage and motor; cable means coupling said second pulley means to said carriage, said cable means being divided into two segments of equal length each of said segments having an end affixed to said second pulley means, said second pulley means having peripheral wrapping surfaces for wrapping equal lengths of said two segments on said surfaces when said carriage is in said center position, and for respectively accommodating a substantially greater length of one segment than the other when said carriage is in one of said extreme positions said two segments being respectively wrapped around such pulley means in opposite directions, the other ends of said two segments being affixed to said frame, at least one of said ends being affixed to said frame by resilient means biased to provide a continuous tension in said cable segments.

3,872,961
MEANS AND METHODS FOR CLEANING TYPE FACES OF IMPACT PRINTING MACHINES

Marc Antony St. James, Pennsauken, N.J., assignor to International Business Supplies, Oaklyn, N.J.

Filed Sept. 22, 1972, Ser. No. 291,247
Int. Cl. B41j *29/00*
U.S. Cl. 197—184 **4 Claims**

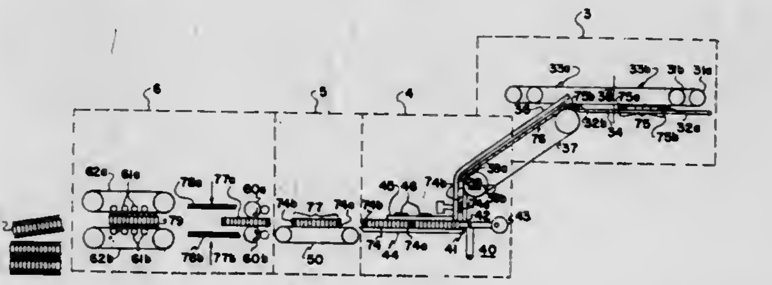


1. A cleaning ribbon for cleaning type faces of an impact printing machine using an inked ribbon to perform a printing operation comprising a pair of spools, a fabric strip material disposed to be moved from one spool to the other and dimensioned to substitute for said inked ribbon; and a neutral surfactant organic chemical compound capable of dissolving ink and removing paper dust and other unwanted dirt particles from said type faces on said strip material to dissolve ink and remove paper dust and other unwanted dirt particles from said type faces when said printing machine is operated with said strip material to cause said strip material with said neutral surfactant organic chemical compound to physically engage said type faces.

3,872,962
CONVEYOR FOR ASSEMBLING PANELS FROM ELONGATED STRIPS

John de Ligt, and Clifford D. Shelor, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 165,017, July 22, 1971, Pat. No. 3,733,235. This application Jan. 10, 1973, Ser. No. 322,484
Int. Cl. B65g *47/34*
U.S. Cl. 198—24 **4 Claims**



1. Apparatus for collimating a continuous series of long, narrow and thin sheet material strips having substantially parallel-planar ends, edges and faces of uniform length, width and thickness, said apparatus comprising:

first conveyance means for serially translating said strips in a first plane parallel with the planes of said faces and ends and in contiguous edge-to-edge abutment;

restraint means for restricting movement of said strips in either direction perpendicular to said face plane;

second conveyance means compliantly engaging one of said strip faces for sequentially thrusting each strip from said first conveyance means into collimating breech means with a force greater than provided by said first conveyance means;

reciprocating hammer means for sequentially striking each strip within said collimating breech on one of said faces thereof and translating each strip along a second plane and direction substantially perpendicular to said one face and into face-to-face contact with a preceding strip; and motion rectification means for restraining said strips from reverse movement back into said collimating breech means after said hammer means is withdrawn therefrom.

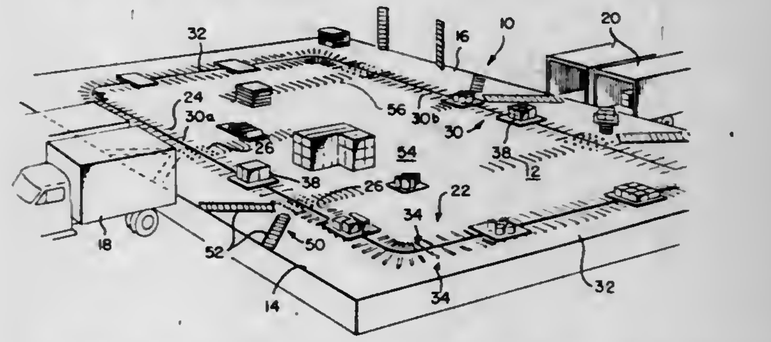
3,872,963
FREIGHT HANDLING SYSTEM

Clyde L. Sherwood, 846-4th St., Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 297,349, Oct. 13, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,318
Int. Cl. B65g *69/00*
U.S. Cl. 198—38 **10 Claims**

1. A freight handling system for transferring units of freight such as palletized freight loads, from one side of a freight handling platform, such as an unloading section of a dock, to a second side of the platform, such as a loading section of a dock, said system comprising:

a. chain conveyor means located at said platform and arranged to travel in a closed loop freight conveying path between the first and second sides of the platform,
b. first roller means positioned along said freight conveying path to provide a low friction freight conveying surface aligned with said freight conveying path,
c. a plurality of transfer stations located at spaced intervals along said path, each comprising multidirectional roller means positioned so as to be able to provide a low friction multidirectional conveying surface for freight loads either to continue travel along said path or for movement laterally of said path at the respective transfer station,
d. transfer conveying means at each transfer station for movement of freight loads either onto or from said multidirectional roller means, and
e. a plurality of freight load pushers mounted to said chain conveyor means at spaced locations therealong, each of said pushers comprising:
  1. a base member,
  2. a push arm means positioned proximate said conveying surface and having a first raised cargo position and second lower cargo release position,
  3. a releasable arm holding means having a hold position to hold said arm means in its raised position to apply a pushing force against a freight load adequate to move said load along said conveying path, said holding means being characterized in being selectively releasable at selected transfer stations so as to permit its related arm means to move to its second position in response to a resisting force of a freight load against said arm,
  4. arm positioning means to urge said push arm means with only moderate force to its raised position to come into holding engagement with its related holding means,

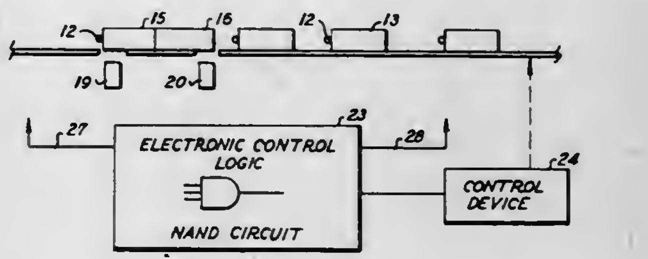


whereby when a freight load is moved onto a transfer station, a push arm of a proximate pusher moving into engagement with said freight load moves the load along said path, and when the loading means of the pusher is released at a selected subsequent transfer station, a resisting force of said cargo moves said push arm to its second release position against the urging of the positioning means to permit the load to be disengaged so that it can be moved from the transfer station.

3,872,964
ASSEMBLY FOR DETECTING IRREGULAR FEED CONDITIONS

Lester A. Higgins, Montville, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed May 19, 1972, Ser. No. 255,245
Int. Cl. B65g *43/00*
U.S. Cl. 198—232 **9 Claims**



1. A combination comprising:
a. means for moving packages along a path, and
b. sensing means located along said path to detect an irregular feed condition for the packages,
c. said sensing means including two proximity switches which operate when a magnetic material is disposed a predetermined distance therefrom,

d. said two proximity switches being interconnected to provide an interrelated condition and being laterally displaced with respect to each other by an amount effective to operate the proximity switches sequentially under normal feed conditions and to operate the proximity switches simultaneously when an irregular feed condition is present.

3,872,965

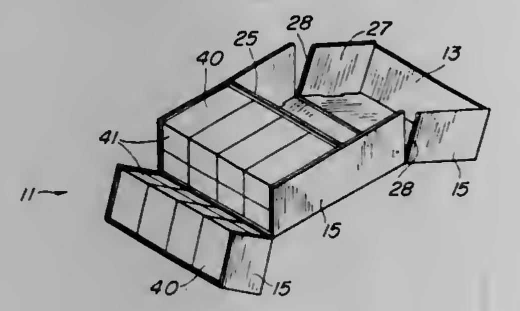
PIVOTALLY ARTICULATED CONTAINER

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust U/A, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,449

Int. Cl. B65d *5/48, 81/36*

U.S. Cl. 206—44 **7 Claims**



1. A shipping and display container adapted to hold a multiplicity of packaged units in an organized array,
said container comprising a plurality of linearly disposed, article-housing sections including a pair of walled end sections, a walled intermediate section therebetween and an articulated uniplanar floor beneath each said sections and integrally formed therewith, each said end sections being joined to said intermediate section thereadjacent along a laterally extending fold line formed in said articulated floor whereby said end sections are each pivotal downwardly with respect to said intermediate section along said fold line,
said end sections and said intermediate section each being adapted to hold a row of articles extending thereacross, whereby upon pivotal shifting of said end sections about each said fold line in said articulated floor, facing end panels of any articles contained in respective said sections are exposed and rendered readily accessible for application of price marking indicia thereto.

3,872,966

CONTAINER ASSEMBLY WITH INDIVIDUALLY PRICEABLE CARDED PACKAGES THEREIN

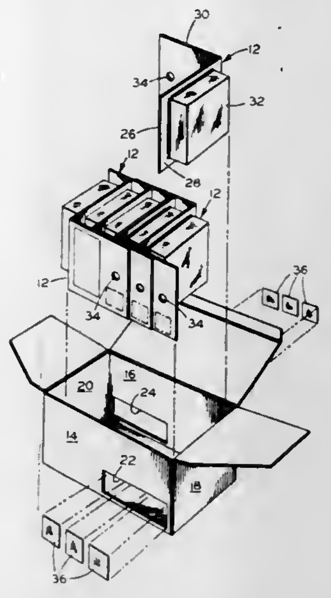
Yale J. Gordon, Killingworth, and John V. Koley, Canton, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 436,686, Jan. 25, 1974, abandoned. This application Sept. 9, 1974, Ser. No. 504,103

Int. Cl. B65d *25/54, 73/00;* **B65b** *61/26*

U.S. Cl. 206—45.31 **15 Claims**

1. A package for displaying the price of carded merchandise therein comprising:
A. a container having a pair of spaced parallel sidewalls each with an elongated aperture therein; and
B. a multiplicity of merchandise cards in said container disposed in stacked relationship between said pair of spaced sidewalls, each of said merchandise cards including a substrate having a body portion extending in space relationship to said pair of sidewalls and a folded portion extending at an angle to said body portion and parallel to said sidewalls, said cards also including an article of merchandise mounted on said body portion of said substrate and means mounting said article on said substrate, the folded portions of the substrates of some of said cards extending adjacent and being exposed through the aperture of one of said pair of sidewalls and the folded portions of the substrates of other cards extending adjacent and being exposed through the aperture of the other of said sidewalls,



whereby said folded portions of the substrates of said multiplicity of cards are exposed through said apertures for affixation thereto of indicia.

3,872,967

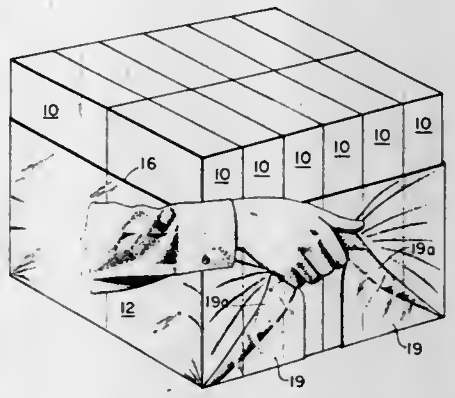
STORAGE AND DISPLAY PACKAGE

John B. Brush, North College Hill, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 21, 1974, Ser. No. 453,443

Int. Cl. B65d *33/06, 65/16*

U.S. Cl. 206—45.33 **12 Claims**



1. A package for a multiplicity of items such as cartons or the like to enable such items to be packaged for shipping, storage and display thereof as a unit while being yet easily removable therefrom for subsequent handling as individual items wherein each of such items has at least a base portion of generally upstanding parallelopiped configuration and such multiplicity of items is arranged with the base portions in a closely packed rectangular array, said package comprising a generally uniform width sleeve of stretchy and pliable material have an array encircling portion extending peripherally continuously around and vertically upwardly from outward lowermost edges of the sides of said array, substantially contiguous to the outward sides of said array and being of sufficient peripheral extent as to be at least as large as said array and therefore substantially unstressed by the enclosed array when the bottom thereof is supported on a surface so that such items may be easily lifted upwardly therefrom and removed from said package for handling as individual items when the same is at rest, and an extending portion extending beyond said lowermost edges folded inwardly past an opposed side pair of such edges toward such other to define a bottom portion extending generally perpendicularly inwardly of said array encircling portion to contiguously underly at least each of the

corners of the bottom of said array and, a pair of end flaps extending outwardly of side bottom portion generally in opposite directions parallel said side pair of lowermost edges, each of said end flaps comprising a generally medial generally rectangular region defined by a single thickness of material flanked on both sides by a pair of contiguous generally triangular regions defined by material folded to a double thickness, each of said end flaps being folded along an end lowermost edge of the array against the array encircling portion and overlying an end of said array and being bonded thereto in only a portion of each of said triangular regions less than the total area thereof and unbonded in the remainder of said triangular region to define means for enabling lifting of the package and the enclosed array as a unit by defining a pair of handles connected with said array encircling portion, one on each of an opposing pair of ends thereof generally centered between and upwardly of a pair of said bottom corners and spaced upwardly thereof upon the application of lifting force to said handles a distance such that tensile stresses are induced in the sleeve between said handles and the adjacent ones of said bottom corners and distributed upwardly thereof to provide resultant components directed inwardly of the array to cause at least the bottom portion of the sleeve to tighten about at least that part of the array defined by the base portion of the enclosed items and compress them together with a force sufficient to maintain said array substantially coherent through frictional forces developed thereby between adjacent ones of said items and to thereby provide substantially increased structural integrity to said package during such lifting.

3,872,968

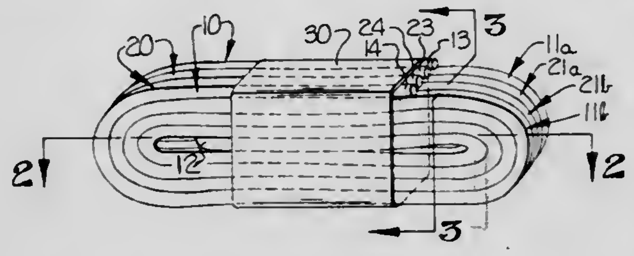
SHOELACE PACKAGE

John L. Hawkins, and Newman McIntyre, both of Shelby, N.C., assignors to Christie Manufacturing Company, Shelby, N.C.

Filed Mar. 5, 1973, Ser. No. 337,894

Int. Cl. B65d *85/18, 85/04*

U.S. Cl. 206—278 **7 Claims**



1. A convolute wound package of elongate strand material comprising sets of flattened convolute strand windings positioned beside each other in parallel planes with the innermost winding of the sets being interconnected by a strand loop portion and with terminal ends of the strand arranged in the outermost winding of the respective sets, and a wrapper transversely encircling the sets of windings for maintaining the same intact.

3,872,969

COLLAPSIBLE SELF-STORING SHIPPING CARTON

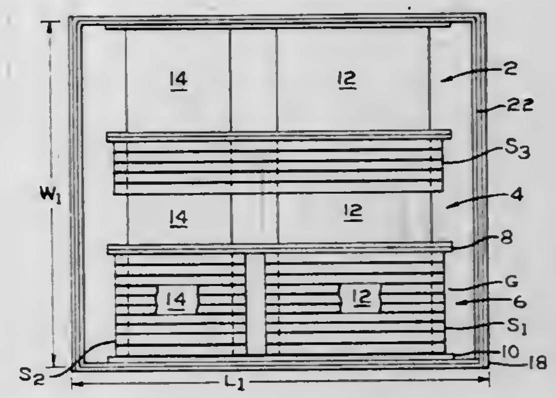
Roger Burl Jean, Pekin, Ind., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,226

Int. Cl. B65d *5/36, 5/50, 85/02*

U.S. Cl. 206—303 **4 Claims**

1. A collapsible self-storing shipping carton for packing a plurality of ringlike elements of at least two distinct sizes, each of said sizes having at least one dimension in common with at least one dimension of the other and at least another dimension different from at least another dimension of the other, said carton comprising larger and smaller open box-shaped closure members dimensioned such that the larger will telescopically receive the smaller and at least one package assembly capable of being disassembled and collapsed for reception within the confines of said smaller closure member, said at least one package assembly comprising:
A. two spaced essentially planar support panels telescopically received by said closure members and disposed substantially normal to the bottom surfaces of said closure members.
B. at least two spaced collapsible core members extending between said support panels, each of said core members having
 1. at least one dimension substantially corresponding to said at least one common dimension of the ring-like elements, and



 2. at least one other dimension which is additive to at least one other dimension of the other of said at least two core members and to the space between said at least two core members to substantially correspond to the larger of said at least another different dimension of said ring-like elements; and
C. at least two core member locating and positioning means on each of the facing surfaces of said panels to maintain said core members in a non-collapsed condition and in position with respect to said panels.

3,872,970

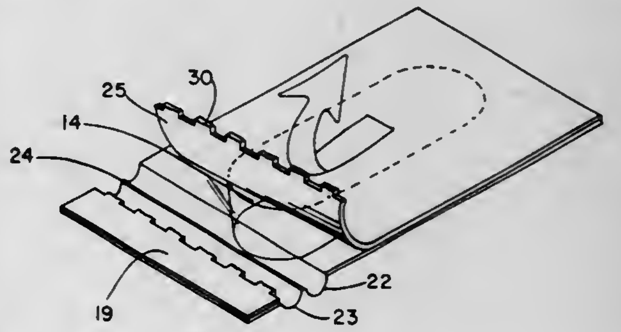
CHILD-RESISTANT BLISTER PACKAGE

Jack Roger Edison, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 11, 1974, Ser. No. 432,802

Int. Cl. B65d *17/24, 85/03, 75/62*

U.S. Cl. 206—532 **7 Claims**

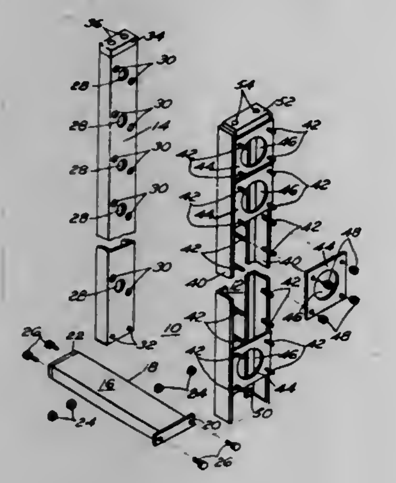


1. A child-resistant blister package comprising:
a blister receptacle formed from a stiff flexible sheet material and having an open side for receiving articles therein; a flange integrally extending about the open side of said blister receptacle;
said flange having a transverse expandable portion spaced between a leading edge of said flange and said blister receptacle; and
a cover sheet extending across the open side of said blister receptacle and adhering to said flange;
said cover sheet having a weakened and rupturable portion in juxtaposition with said flange's transverse expandable portion serving to rupture upon pulling said flange's leading edge to stretch said flange's expandable portion to expose a ruptured edge of said cover sheet for peeling from said blister receptacle.

3,872,971
MULTIPLE TRANSDUCER MOUNTING

Daniel Dinsmore, Jr., East Lyme, and George Nelmes Williams, New London, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1973, Ser. No. 408,340
Int. Cl. A47b *73/00;* H04b *13/00*
U.S. Cl. 211—13 **2 Claims**



1. A vertical stave assembly comprising:

a forward vertical frame including a first angle iron having a plurality of studs, a second angle iron having a plurality of studs with said second angle iron positioned parallel to and spaced from said first angle iron and a forward vertical frame end piece located intermediate said first and second angle irons;

a rearward vertical frame including a channel piece having a plurality of groupings of three apertures having a first aperture of predetermined size and second and third apertures smaller than said first aperture on diametrically opposed sides of said first aperture and a rearward vertical frame end piece connected to said channel piece;

connecting means for connecting said forward and rearward vertical frames;

a plurality of square shaped plates with each of said plates having a circular cutout, each of said plates having cutout means for inserting said studs of said first and second angle irons for connecting said plates to said forward vertical frame;

a plurality of elements adapted to be connected to said rearward vertical frame and passing through respective cutouts of said plates, such elements being of such size so as to be rotatable when disconnected from the rearward vertical frame; and

said elements, plates and forward vertical frame adapted to be aligned so as to have the plates accessible for removal from said forward vertical frame upon said plurality of elements being rotated 45° with respect to said plates.

3,872,972
BICYCLE STORAGE DEVICE

Richard D. Cummins, and Claire J. Cummins, both of 4923 Appletree Rd., Hamburg, N.Y. 14075

Filed Mar. 11, 1974, Ser. No. 449,617
Int. Cl. A47f *7/00*
U.S. Cl. 211—17 **11 Claims**

1. A device for storing a bicycle in an elevated position, said bicycle being of the type having a handle bar device for effecting manual rotations of a front wheel relative to the frame of said bicycle for steering purposes, said storage device comprising:

biasing means;

a first cable having a first end thereof connected to said biasing means;

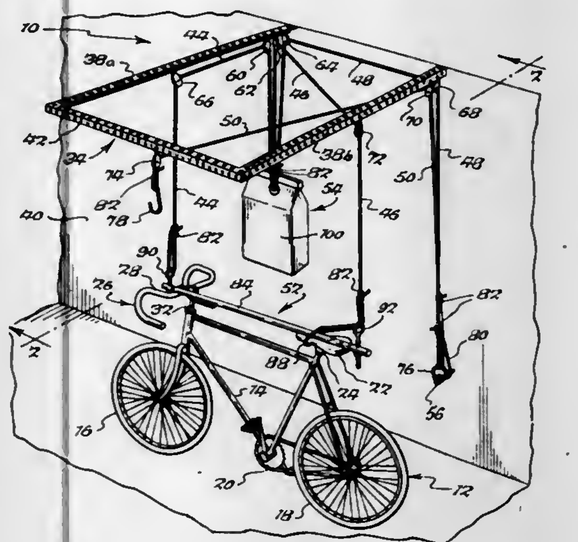
a second cable having a first end thereof connected to said biasing means;

attaching means for removably attaching second ends of said first and second cables to an upper portion of said bicycle;

a third cable having a first end thereof connected to said biasing means and a hand pull adjacent a second end thereof, said biasing means tending to move said first ends of said first, second and third cables vertically downwardly into a bicycle storage position;

a system for guiding said first, second and third cables whereby when said first ends thereof are moved vertically downwardly by said biasing means, said second ends thereof are forced to move vertically upwardly into a bicycle storage position thereof;

a stationary retainer means, said pull associated with said third cable being engageable with said retainer means for retaining said first ends of said first, second and third cables in a bicycle attachment position spaced vertically above said storage position thereof against the bias of said biasing means and said pull associated with said third cable being releasable from engagement with said retainer means to permit said biasing means to move said first ends of said first, second and third cables into said storage position thereof thereby to elevate the bicycle into a partial storage position; and



a fourth cable having connecting means adjacent a first end thereof for removably connecting said fourth cable to a lower portion of said bicycle and having a hand pull adjacent a second end thereof, said fourth cable being guided by said system whereby when said hand pull of said fourth cable is moved downwardly, said bicycle is pivoted upwardly about said attaching means from said partial storage position into a fully stored position, said bicycle being retained in said fully stored position by engagement of said hand pull of said fourth cable with said retainer means, and one of said attaching means and said connecting means serving to constrain rotation of said front wheel from alignment with said frame when in said fully stored position.

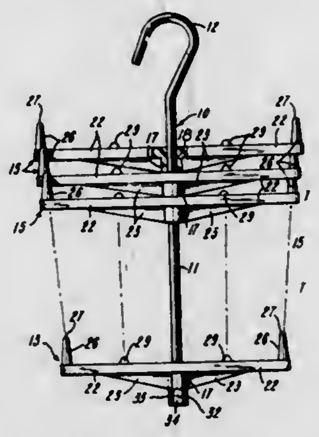
3,872,973
RACK SYSTEM FOR NECKTIES OR THE LIKE

Thomas W. Duncan, 800 Tulip Ln., Connersville, Ind. 47331

Filed July 23, 1973, Ser. No. 381,773
Int. Cl. A47f *7/12*
U.S. Cl. 211—115 **3 Claims**

1. A rack system adapted to receive a supply of neckties, comprising an elongated rod having a hooked upper end portion for suspending said rod in a vertical position from a clothes bar, a plurality of hanger members each formed of a substantially rigid plastics material and mounted on said rod in stacked relation for 360° rotation, means on the lower end portion of said rod for retaining the stack of hanger members

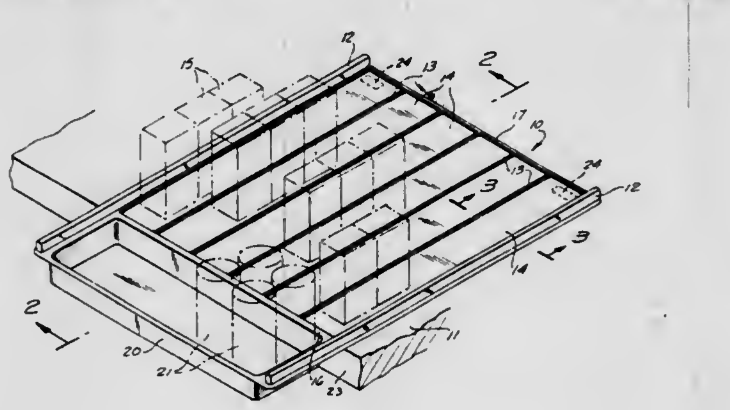
on said rod, each of said hanger members being generally flat within a vertical plane and including diametrically opposed arm portions projecting outwardly from an integrally connecting center hub portion having an opening for receiving said rod, each of said arm portions having outwardly converging side walls forming a tapering configuration, said hub portion of each said hanger member having a vertical height greater than that of said arm portions to define a substantial clearance space between the corresponding said arm portions of adjacent said hanger members, said clearance spaces providing for free independent rotation of each hanger member after neckties are placed on the corresponding said arm portions, each of said hanger members further including an integral tip portion projecting upwardly from the outer end of each said arm portion into the clearance space, said tip portions of each said hanger member extending upwardly by a distance greater than the clearance space to engage the adjacent said hanger member thereabove to limit the free independent relative rotation of each said hanger member for avoiding entanglement of the neckties carried by said arm portions, and said tip portions each have a horizontal thickness substantially less than that of the integral said hub portion for minimizing the horizontal space occupied by said rack system.



3,872,974
MERCHANDISE DISPLAY DEVICE

Peter Jan Anstatt, Oakland, N.J., assignor to Einson Freeman & De Troy Corporation, Fair Lawn, N.J.

Filed Oct. 29, 1973, Ser. No. 410,941
Int. Cl. A47f *9/00*
U.S. Cl. 211—134 **8 Claims**



1. A unitary merchandise display device comprising:

a. a flat body portion adapted to rest in a horizontal position upon the upper surface of a shelf,

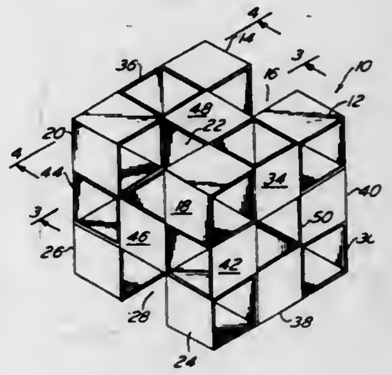
b. said body portion having at least three ridges projecting upwardly above the upper surface of a shelf upon which the device is placed, said ridges extending in a front-to-back direction of the shelf, each two of said ridges defining a merchandise-receiving region between them, and

c. a merchandise-receiving trough extending forwardly of the front edge of said portion and downwardly below the plane of said body portion, said trough projecting forwardly of the front edge of a shelf upon which the device is placed.

3,872,975
THREE-DIMENSIONAL GEOMETRIC MANIPULATIVE DEVICE

Arnold Silver, 172 Manor Cres., New Brunswick, N.J. 08901

Filed Oct. 17, 1973, Ser. No. 407,164
Int. Cl. A47f *5/10*
U.S. Cl. 211—178 R **6 Claims**

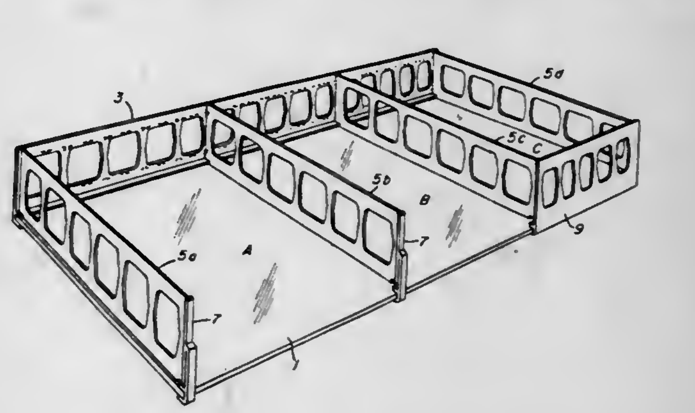


1. An adjustable geometric device comprising a plurality of hollow boxes, each box having four closed sides and two opposed open sides defined by said closed sides, the four closed sides of each box hingedly connected together and being connected in face-to-face relationship to those boxes which are adjacent thereto with the open sides of the adjacent boxes being disposed at right angles to each other, said device being expandable from a fully closed position wherein each box is flattened, with two adjacent closed sides thereof overlying the other two adjacent closed sides in face-to-face relationship, to a fully open position wherein each of the closed sides of each box is in spaced opposed relationship to another closed side thereof to form a hollow cube.

3,872,976
BINNING AND BANDING STRUCTURE

David M. Moore; Blair D. Armstrong, both of Pittsburgh, and William Kallas, Punxsutawney, all of Pa., assignors to Armstrong Store Fixture Corp., Pittsburgh, Pa.

Filed Mar. 5, 1973, Ser. No. 337,948
Int. Cl. A47f *5/10*
U.S. Cl. 211—184 **20 Claims**



1. A partitioning assembly for confining merchandise to a desired section of a display shelf, said assembly comprising:

a first elongated generally planar first banding element;

an elongated generally planar divider element;

first securing means for securing said first banding element along a first edge of said shelf with the plane of said banding element substantially perpendicular to the plane of said shelf;

first interlocking means for interlocking the banding and divider elements with one end of the divider in abutting relationship with the plane of the banding element;

second securing means including a vertical element for securing the opposite end of the divider element adjacent to a second edge of the shelf, said second edge being opposite to said first edge, said first and second securing means including confronting hooking means; and

second interlocking means for interlocking the opposite end of the divider element with said vertical element;

said interlocking means including means defining a vertically aligned horizontally undercut groove in one element and a vertically aligned tongue having a horizontal cross-section which meshes with the undercut groove in the other element to lock the two together;

said first and second securing means being positioned with said confronting hooks engaging said shelf and with said first banding element positioned along said first edge of said shelf, said divider element being slidable vertically downward between said first banding element and said vertical element with the tongue and groove of the respective interlocking means in interlocking engagement with one another, whereby the banding and divider elements are interlocked with the shelf to form a unified rigid structure.

3,872,977

CRANE WITH ROCKING MAST AND TELESCOPIC JIB

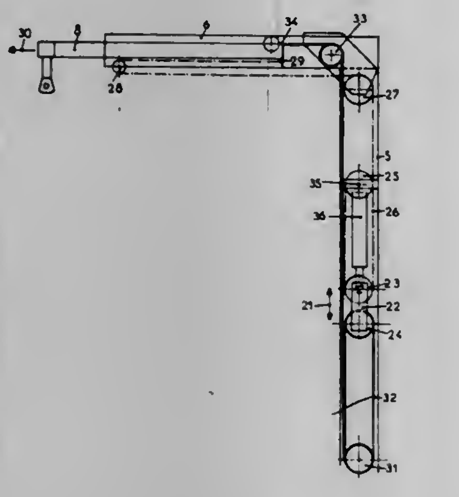
Jean Noly, La Clayette, France, assignor to Potain, Chevilly Laru (Val de Marnen), France

Filed Mar. 19, 1973, Ser. No. 342,553

Claims priority, application France, Apr. 28, 1972, 72.16905

Int. Cl. B66c *23/68*

U.S. Cl. 212—46 A **7 Claims**



1. A crane comprising a base, a hollow mast pivoted on one end at said base, first control means for moving said mast between a horizontal position and a vertical position about said one end, a jib foot pivoted at one end on the opposite end of said mast, an extendable jib head telescopically disposed in said jib foot, tie means connecting the opposite end of the jib foot to the base of the crane to cause said jib foot to pivot on said mast as said mast pivots on said base, cable means connected to the end of said jib head within said jib foot for extending and retracting said jib head relative to said jib foot, carriage means slidably mounted in said hollow mast and operatively connected to said cable means to extend and retract said jib head upon movement of said carriage means within said mast, second control means for moving said carriage within said mast and means for initiating the operation of said second control means subsequent to the initiation of said first control means whereby the free end of said jib head first moves along a substantially vertical trajectory and then along a substantially horizontal trajectory, said first and second control means are comprised of double acting hydraulic jacks and a common hydraulic circuit for said jacks.

3,872,978

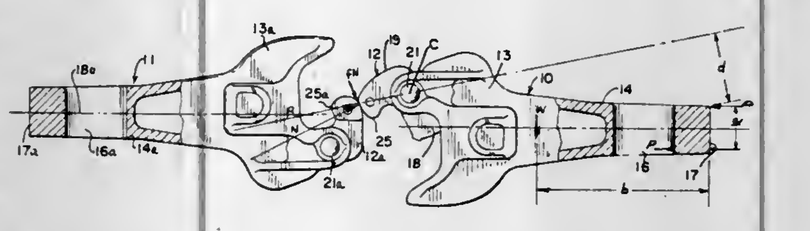
KNUCKLE STRUCTURE FOR RAILWAY VEHICLE COUPLER

Russell George Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,253

Int. Cl. B61g *3/04*

U.S. Cl. 213—151 **2 Claims**



1. A railway vehicle coupler comprising a coupler housing, a knuckle, knuckle pivot means mounting said knuckle on said housing for movement about a pivot axis between an open position and a closed position, said knuckle having a nose tip, a convex gathering surface extending from a point closely adjacent to said nose tip, said gathering surface being curved such that the resultant force of the force normal to the surface and the friction force at any point of contact along the length of the gathering surface lies along a line which passes approximately a same selected distance from the pivot axis so as to be incapable of overcoming the frictional resistance at said pivot means and thereby prevent premature closing, said curved gathering surface including the arc of a spiral having the equation: $\rho = ke^{m\psi}$ wherein ρ is the radial distance from the pivot axis to any point on the gathering surface, ψ is the angle in radians from a reference point, e is the value of the logarithm to the base e. k is the magnitude of ρ when $\psi = 0$, m is equal to a tangent λ which is the angle between the radial direction of ρ and the line normal to the tangent of the curve, and said parameters of said curve are determined by the relationship $\rho(\phi - \lambda) \leqq r^1$ wherein ϕ is the friction angle or arc tangent of the coefficient of friction at the point of contact with a mating coupler, and r^1 is the radius of a friction circle corresponding to the friction forces resisting turning of the knuckle about the pivot axis.

3,872,979

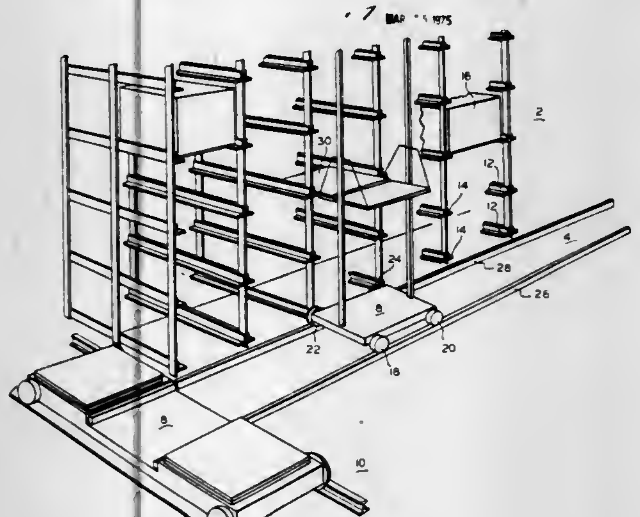
ORDER PICKER BACKSTOP WITH OFFLOAD FEATURE IN EITHER DIRECTION

William E. Riedner, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 18, 1972, Ser. No. 281,889

Int. Cl. B66f *9/14*

U.S. Cl. 214—1 BB **1 Claim**



1. A material handling mechanism including:

a horizontally extending material transporting support,

a resiliently biased translationally movable stop mechanism located adjacent said material transporting support and extending parallel to the direction of movement of material on said support including:

a stop element extending above said material transporting support,

a rigid supporting member located on the side of said stop element opposite said material transporting support,

a first rigid link pivotally connected at a pivot point near one end of said link to said stop element and pivotally connected at a pivot point near the other end of said link to said rigid supporting member,

a second rigid link pivotally connected at a pivot point near one end of said link to said stop element and pivotally connected at a pivot point near the other end of said link to said rigid supporting member,

said pivot points so located that lines connecting them in sequence form a parallelogram,

and spring biased means biasing said parallelogram into a rectangle

in which said material transporting support is capable of transporting said material in two directions of movement parallel to said stop element,

whereby said stop element is biased the maximum distance from said rigid support member permitted by said rigid links,

and moves translationally away from said material transporting support when frictionally engaged by the material carried by said support, and including,

a safety switch capable of stopping the movement of said material transporting support,

a means for actuating said safety switch when said stop element is moved translationally a predetermined distance away from said material transporting support,

whereby the movement of said stop element over a predetermined distance stops the movement of said material transporting support.

3,872,980

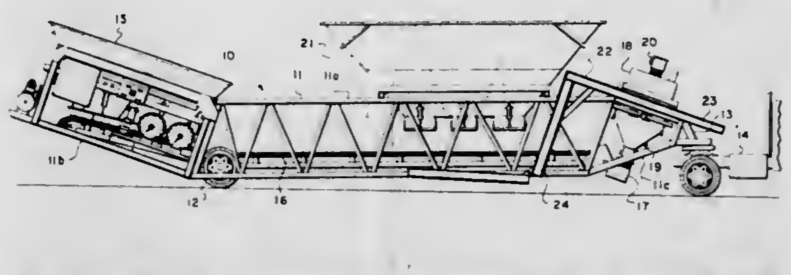
CONCRETE BATCHING PLANT MODULE AND METHOD

Vincent de P. Hagan, 3920 Frontier Ln., Dallas, Tex. 75214

Filed Jan. 31, 1973, Ser. No. 328,387

Int. Cl. B65g *69/00*

U.S. Cl. 214—2 **4 Claims**



1. A method for constructing a permanent concrete batching plant comprising assembling onto a framework configured to support a cement batcher at one end and an aggregate batcher at the other end with the cement batcher elevated with respect to the aggregate batcher when the framework is installed in a permanent plant, a cement batcher, an aggregate batcher, a discharge hood, an aggregate conveyor, cement and aggregate weighing equipment, electric and compressed air supply and control equipment and cement silo support means adapted for integration with separately erected silo support means; testing and adjusting said equipment while it is mounted on said framework prior to assembly of the permanent plant; temporarily mounting on said framework wheel travel support means; transporting said framework to a plant site after testing and adjusting such equipment and completing assembly of said plant by permanently erecting separate cement silo support means and integrating them with the cement silo support means mounted on said framework, removing said wheel travel support means, mounting an aggregate bin above said aggregate batcher, and mounting a cement silo on said silo support means above said cement batcher.

3,872,981

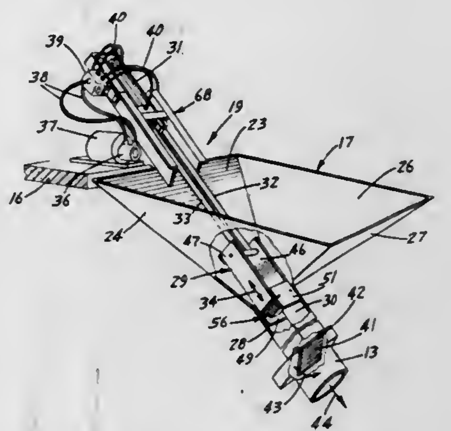
MANURE HANDLING SYSTEM

Junior M. Hedlund, P.O. Box 316, Boyceville, Wis. 54725

Filed Sept. 14, 1973, Ser. No. 397,380

Int. Cl. B65g *25/08*

U.S. Cl. 214—16 R **21 Claims**



17. A material handling system comprising: means having a chamber for receiving material, means having a passageway connected to said chamber leading to a material holding area, pump means for moving material from said chamber into said passageway and through the passageway into the material holding area, means in said passageway for permitting the material to flow from the pump means to the material holding area and blocking reverse flow of material in said passageway, said pump means including a pumping piston having a passage allowing material to flow from the chamber into the passageway leading to the material holding area, said piston having a forwardly projected top plate and a forwardly projected bottom plate, first door means and second door means operable to close the passage, first pivot means pivotally mounting the first door means on the top and bottom plates, second pivot means pivotally mounting the second door means on opposite portions of the top and bottom plates whereby said door means move toward each other to close the passage and move away from each other to open the passage to permit material to flow through the passage on movement of the piston means in a reverse direction, and means operably connected to the pumping piston to reciprocate the pumping piston in the forward direction and the reverse direction.

3,872,982

GRAIN UNLOADING ASSEMBLY

Edward W. Rowland-Hill, Lancaster, and Claude K. Focht, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed June 5, 1974, Ser. No. 476,504

Int. Cl. B65g *65/46*

U.S. Cl. 214—17 D **8 Claims**

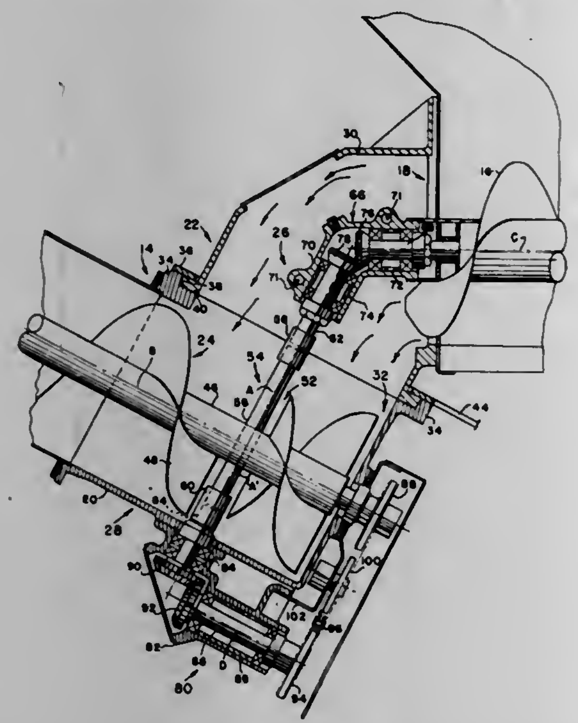
1. In a grain handling apparatus of the type which includes a grain storage tank having a grain discharge end and means located inside said tank for delivering grain in said tank to said discharge end, said tank delivering means having an end with a rotatable driving element disposed at said discharge end, an improved unloading assembly comprising:

a tube located outside said tank and having an end for receiving grain delivered to said discharge end of said tank;

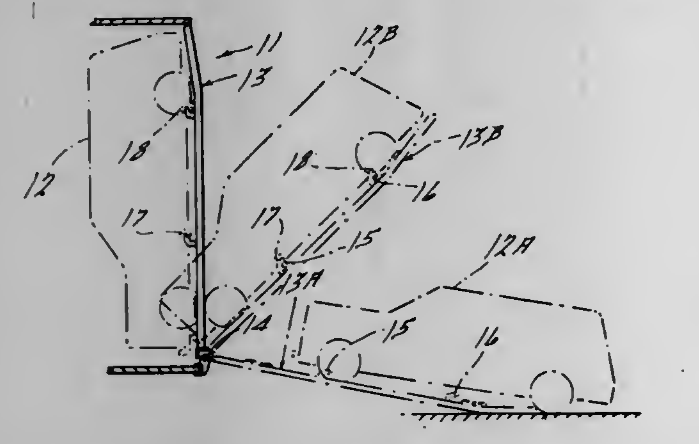
means mounting said tube at its receiving end generally below and in communication with said discharge end of said tank to thereby allow grain upon being delivered to said discharge end to flow with the aid of gravity from said tank into said tube;

means rotatably mounted in said tube for receiving at an end thereof the delivered grain which flows into said tube receiving end from said tank discharge end and for conveying the grain within said tube away from said tank to thereby unload the grain from said tank; and

drive transmission means coupling said driving element of said tank delivering means with said grain receiving end of said tube conveying means and including drive shaft means which extends generally downwardly from adjacent said driving element at said tank discharge end and transversely across said tube past and offset from the rotational axis of said tube conveying means so as to assume a position in general alignment with the path of gravity-aided grain flow from said tank discharge end into said tube receiving end, said drive shaft means further being rotatable about an axis which intersects with the rotational axis of said driving element.

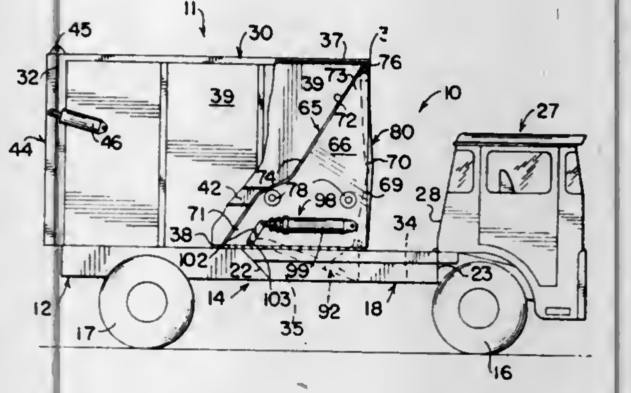


3,872,983
FREIGHT CARRYING DEVICE
Harvey W. Chapman, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.
Filed Apr. 20, 1970, Ser. No. 29,866
Int. Cl. B65g *67/02;* **B61d** *47/00*
U.S. Cl. 214—38 R **15 Claims**



1. In a freight carrying device comprising a load carrying member adapted to support a load, means supporting said load carrying member for movement between a loading position and a load supporting position, first latching means for locking said load carrying member in its load supporting position, said first latching means being movable between a latching position and a released position, means in said load carrying member defining a channel adapted to receive an operator for moving said first latching means between its positions, second latching means for locking said load carrying member in its load supporting position, said second latching means being movable between a latching position and a released position, means for moving said second latching means between its positions, and means operatively connected to each of said latching means for precluding removal of the operator from said channel until both of said latching means are in their latched positions and for precluding movement of one of said latching means from its released position to its latched position until the other of said latching means is moved from its released position to its latched position.

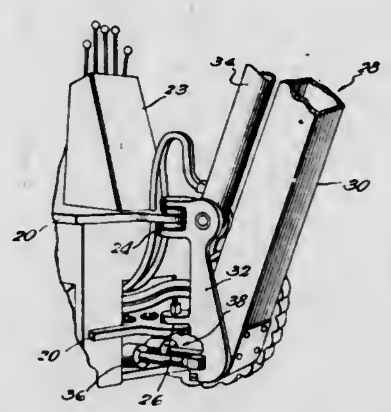
3,872,984
MATERIAL TRANSPORT
Raymond L. Moser, Tremont, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 354,450, April 25, 1973, Pat. No. 3,815,765. This application Feb. 19, 1974, Ser. No. 443,391
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.3 **18 Claims**



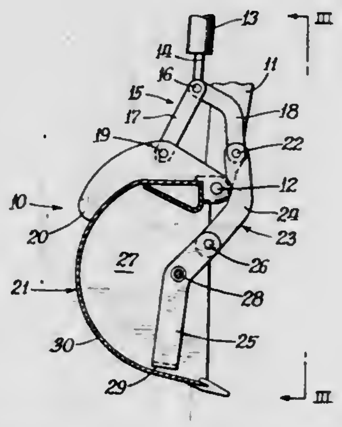
1. A material transport vehicle having a longitudinal axis and comprising;
- a vehicle chassis having an elongated frame disposed along said longitudinal axis;
- an elongated material receiving body carried on said frame and having a loading end and an ejection end;
- a loading bin having an open end disposed forwardly adjacent to said loading end of the body;
- powered material stuffing means movable through said loading bin for transferring material therefrom through said open end;
- pusher means disposed transversely of and reciprocably mounted within said material receiving body and having a pair of members which are relatively movable with respect to each other when disposed adjacent said loading end of the material receiving body between a first position providing an opening therebetween communicating with said open end of the loading bin for receiving material therethrough and into said body and a second position forming a substantially continuous wall; and
- power actuating means operatively associated with said pusher means for selectively moving said members between said first and second positions and for selectively reciprocating said pusher means between said loading and ejection ends of said material receiving body.

3,872,985
HYDRAULIC CONTROL VALVE CIRCUIT
Arthur G. Short, Bettendorf, Iowa, assignor to J. C. Case Company, Racine, Wis.
Continuation of Ser. No. 13,582, Feb. 24, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,224
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 R **2 Claims**

1. In a backhoe mounted on a tractor, the combination of a support on the rear end of the said tractor; a boom pivotally mounted on said support at a first pivot for rotation between extreme lateral positions about a substantially vertical pivot axis; first and second hydraulic motor means each having first and second relatively movable elements, one of said elements of each motor means being pivotally connected to said support and the other of said elements being pivotally connected to said boom; a source of fluid under pressure; a reservoir; conduit means connecting said source and reservoir to opposite ends of said first element of each hydraulic motor means; and control valve means in said conduit means, said control valve means having a first position for supplying fluid under pressure to one end of each of said first elements and connecting the opposite ends to said reservoir to rotate said boom between said extreme positions and a second position for allowing free floating movement of the elements of one of said hydraulic motor means when its pivots are on a line intersecting said first pivot while continuing rotation of said boom with said other motor means.

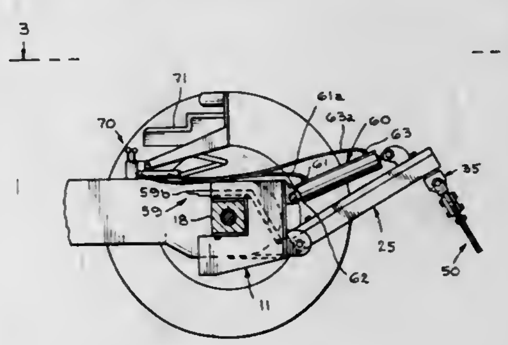


3,872,986
SELF-CLEANING BUCKET ARRANGEMENT FOR AN EXCAVATOR
Trevor G. Campbell, Peoria, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.
Filed Aug. 23, 1973, Ser. No. 390,910
Int. Cl. E02f *3/36*
U.S. Cl. 214—146 E **13 Claims**



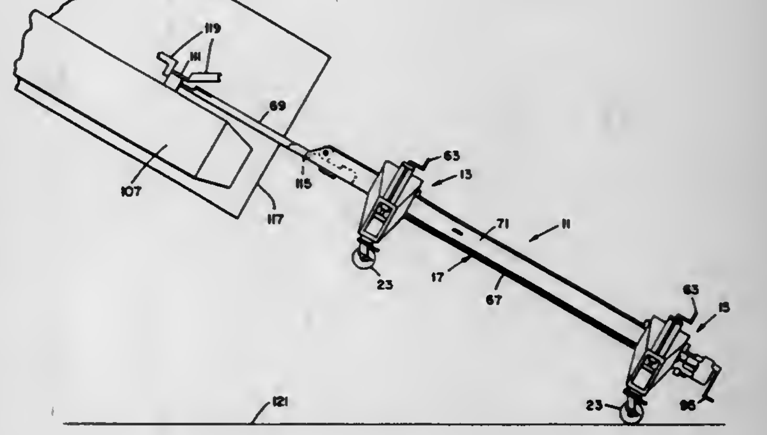
1.A self-cleaning bucket arrangement comprising
- a boom,
- a bucket pivotally mounted directly on said boom,
- extensible and retractable actuating means,
- first linkage means pivotally interconnected between said actuating means, said boom and said bucket for selectively pivoting said bucket between its rack-back and digging positions on said boom upon actuation of said actuating means, and
- second linkage means interconnected between said boom and said bucket and having self-cleaning means secured thereon for automatically sweeping through said bucket between fore and aft ends thereof in response to actuation of said actuating means,
- said second linkage means comprising a link having its first end pivotally connected to said boom and a bellcrank pivotally mounted on said bucket and having its first end pivotally connected to a second end of said link, said self-cleaning means secured on a lower end of said bellcrank.

3,872,987
GRAPPLE ARRANGEMENT FOR VEHICLE
Clauriste H. Byles, Hwy. 171 North, Many, La. 71449
Filed Jan. 23, 1974, Ser. No. 435,805
Int. Cl. B66c *3/00*
U.S. Cl. 214—147 G **10 Claims**



1. A grapple arrangement for mounting on a vehicle axle comprising:
- a. a generally U-shaped main frame for positioning on the rear axle of the vehicle;
- b. an elongated boom pivotally supported at one end on said frame for vertical movement;
- c. swivel means carried adjacent the other end of said boom;
- d. grapple means carried by said swivel means;
- e. means associated with said swivel means to effect rotation of said grapple means connected to said swivel means, said means including:
  - 1. a pulley connected to said swivel means for rotation;
  - 2. spring means secured to said boom;
  - 3. cable means having one end secured to said spring means, said cable means extending about said pulley;
  - 4. lever means pivotally mounted on said framemember having one end secured to the other end of said cable means whereby movement of said lever means effects rotation of said pulley and grapple means; and
- f. means mounted on said frame and connected to said boom for effecting vertical movement of said boom.

3,872,988
MISSILE LOADER
Fred L. Day, Bremerton, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 4, 1973, Ser. No. 403,711
Int. Cl. B60p *3/00*
U.S. Cl. 214—394 **3 Claims**



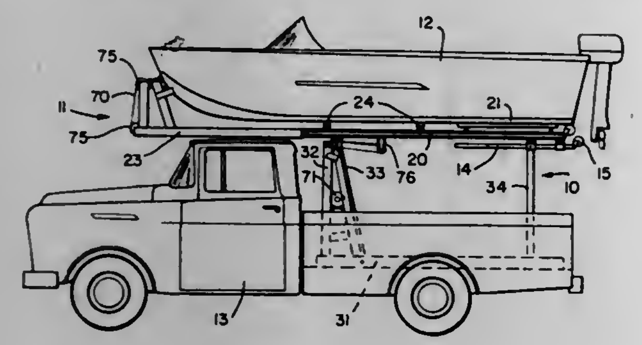
1. A loading device comprising:
- a. a first arch assembly;
- b. a second arch assembly;
- c. a beam assembly;
- d. said first and second arch assemblies being spaced apart and about parallel;

e. one end of said beam assembly being operatively connected to the upper interior section of said first arch assembly;
f. the other end of said beam assembly being operatively connected to the upper interior section of said second arch assembly;
g. means for raising and lowering said beam assembly;
h. said beam assembly including a beam and a track means extending the length of said beam;
i. sliding means for moving an element positioned on said track means along the length of said track;
j. said track includes first and second tracks;
k. said first track including an opening to receive the forward missile shoe of a missile; and
l. said second track including an opening to receive the rearward missile shoe of a missile.

3,872,989
VEHICLE TRANSPORT LOADER

Howard W. Smithson, 1971 Cordilleras Ct., Redwood City, Calif. 94062; Emory L. Smithson, 8030 S.W. Oak St., Portland, Oreg. 97223, and Robert L. Asburry, 3202 S.E. 165th St., Portland, Oreg. 97236

Filed Dec. 13, 1973, Ser. No. 424,423
Int. Cl. B60n *9/00*
U.S. Cl. 214—450 **14 Claims**

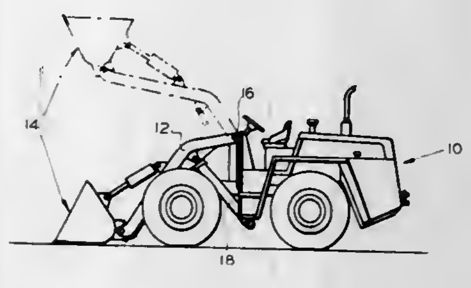


1. A self-contained structure for mounting on a vehicle for lifting and supporting recreational vehicles for transportation and subsequent use comprising:
a. a rigid base frame including an elongated generally planar first portion having opposite ends joined by opposite elongated edges and a second portion at one end of said first portion extending on one side of said first portion transversely of the axis of elongation thereof;
b. a first leg structure pivotally mounted on said first portion of said base frame at a point adjacent said one end thereof and spaced from said second portion along said axis of elongation of said base frame, said first leg structure extending transversely of said axis of elongation of said first portion a given length to a free end spaced from said one side of said first portion of said base frame;
c. a second leg structure pivotally mounted on said first portion of said base frame adjacent the other end thereof, said second leg structure extending transversely of said axis of elongation of said first portion of said base frame a length less than said given length to a free end spaced from said one side of said first portion of said base frame;
d. a rigid elongated generally planar support structure pivotally mounted on said free ends of said first and second leg structures;
e. said pivotal mounting of said leg structures on said first portion of said base frame and of said support structure on said free ends of said first and second leg structures being such as to allow rotation about parallel axes toward and away from said second portion of said base member, said spacing of said first leg structure from said second portion of said base member and the difference in lengths of said leg structures being related to each other to cause said generally planar support structure to be substantially parallel to said generally planar first portion of said base frame when said first leg structure is in contact with said second portion of said base frame;
f. said elongated edges of said first portion of said base frame comprising a pair of elongated channel members parallel to each other in a common plane, said second portion of said base frame comprising a pair of posts each having one end rigidly affixed to a different one of said elongated channel members and extending in a common plane on one side of said elongated channel members transverse to the axis of elongation thereof and including means rigidly connecting the free ends of said posts to each other, and each of said first and second leg structures comprising a pair of posts with one post of each pair pivotally mounted at one end on a different one of said elongated channel members, each pair of posts extending in a common plane on said one side of said elongated channel members, and each of said first and second leg structures including means mechanically coupling the free ends of said pair of posts thereof to each other.

3,872,990
LOADER BUCKET POSITION MAINTAINING SYSTEM

Donald W. York, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 9, 1970, Ser. No. 53,550
Int. Cl. E02f *3/86*
U.S. Cl. 214—763 **13 Claims**

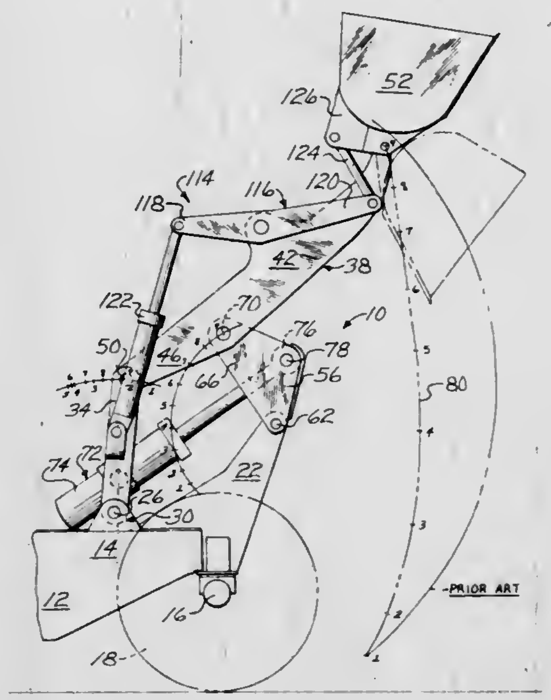


1. A loader bucket construction for use in conjunction with a vehicle having hydraulic power means, boom arms pivotally mounted for vertical swinging movements, a bucket mounted on the extended ends of the boom arms for tilting movements on a transverse axis, a hydraulic actuator on the boom arms for tilting the bucket, hydraulic lines interconnecting the power means and the actuator, said construction comprising
a. valve means for controlling the hydraulic lines including
 1. a housing and a spool therein movable relative thereto,
 2. the housing being mounted for movement at each of opposite ends,
 3. means biasing the spool in an outward direction relative to the housing and means limiting its movement in that direction,
b. manually movable means for moving one end of the valve housing, which moves relative to the fixed position of the spool, for thereby adjusting the valve for controlling the flow of hydraulic fluid to the actuator and correspondingly tilting the bucket, and
c. means actuated by the bucket in the resulting tilting movement thereof for moving the other end of the housing in direction effectively opposite to the movement effected by the manual means, relative to the fixed position of the spool, this movement thereby adjusting the valve terminate the flow of hydraulic fluid to the actuator at a predetermined tilted position of the bucket which corresponds with the position to which the manually movable means is moved.

3,872,991
VEHICLE LOADER LINKAGE MEANS

Stamos I. Pasideris, Bristol; Albert J. Berkel, Jr., North Aurora, and Paul D. Hagen, Aurora, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Aug. 28, 1972, Ser. No. 284,279
Int. Cl. E02f *3/28*
U.S. Cl. 214—770 **15 Claims**

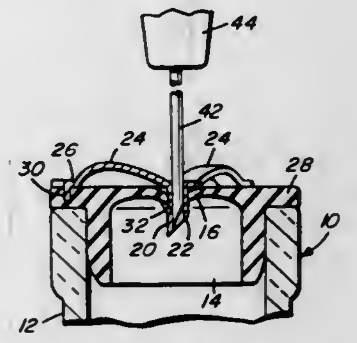


1. In combination with a vehicle having a vehicle frame; first and second generally parallel lever arms pivotally fixed to the frame of the vehicle adjacent the forward end thereof, and extending from the frame; first and second generally parallel lift arms having elongated body portions and extending forwardly relative to the vehicle and having rear portions pivotally fixed to the extended portions of the first and second lever arms respectively; implement means associated with the forwardly extending portions of the lift arms; first and second link members pivotally fixed to and extending from the frame, the extended portions thereof being pivotally fixed to the elongated body portions of the first and second lift arms respectively, forwardly of said rear portions thereof; and, means for moving the lift arms and the implement means therewith to fully raised and fully lowered positions relative to the vehicle, the link members being located to position the rear portions of the lift arms, with the lift arms between the fully raised and fully lowered positions, (i) rearwardly of the positions of the rear portions with the lift arms in their fully raised positions, and (ii) rearwardly of the positions of the rear portions with the lift arms in the fully lowered positions, the lever arms pivoting to allow such forward-rearward movement of the rear portions of the lift arms, wherein (i) with the lift arms in the fully lowered positions, each link member is in a lowered position with the extended portion of each link member lower than the link member-frame pivot point, and (ii) with the lift arms in the fully raised positions, each link member is in a raised position with the extended portion of each link member higher than the link member-frame pivot point, wherein means for moving the lift arms to the fully raised and fully lowered positions relative to the vehicle comprise cylinder means extendible and retractable to move the link members to provide such raising and lowering, wherein one end of the cylinder means is pivotally associated with each link member at a point between and not aligned with (i) that associated link memberframe pivot point and (ii) the extended portion of that link member, the extension of the cylinder means moving the link members from lowered to raised positions, the retraction of the cylinder means moving the link members from raised to lowered positions.

3,872,992
MEDICAMENT VIAL STOPPER PIERCING AND NEEDLE POSITIONING DEVICE

Roger R. Larson, Urbana, Ill., assignor to Pharmaco, Inc., Champaign, Ill.

Filed Aug. 6, 1973, Ser. No. 385,798
Int. Cl. B65d *41/50*
U.S. Cl. 215—249 **6 Claims**

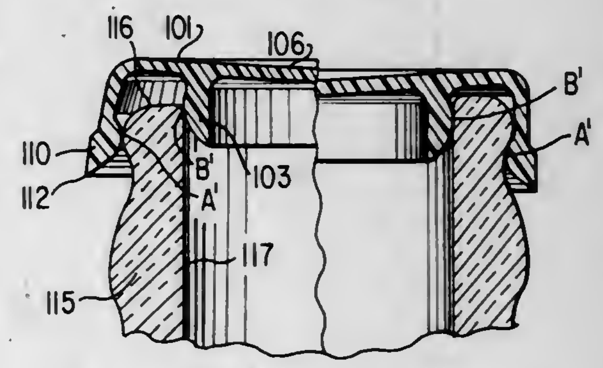


1. In combination with a vial having a stopper therein for closing the vial, said stopper including spaced outer peripheral portions and a thin central portion a stopper piercing and needle gripping attachment for said stopper, said attachment comprising an axially short sleeve constructed of shape retentive and yet resilient material, positioned on the outer side of the central portion of said stopper with one end of the sleeve in end opposing relation relative to said central area of said stopper, and support means supporting said sleeve from said stopper for advancement toward and movement of said one end of said sleeve through said central area, said one end of said sleeve being beveled and sharpened, said sleeve tapering, both internally and externally, toward said one end thereof, whereby said tapered sleeve receives a syringe needle in the large diameter end of said sleeve, after the sleeve has been inwardly displaced to pierce said central area, and said needle is tightly gripped by said sleeve for total support of the sleeve and said vial from the needle when the vial is disposed in an inverted position with the needle positioned therebelow.

3,872,993
CLOSURE CAP FOR A CONTAINER HAVING A PROTRUDING RIM OPENING

Dietmar Aichinger, Arlesheim, and Reinhold Beck, Pfeffingen, both of Switzerland, assignors to Albert Obrist & Co., Basel, Switzerland

Filed Mar. 13, 1973, Ser. No. 340,906
Claims priority, application Switzerland, Mar. 17, 1972, 3948/72
Int. Cl. B65d *41/16*
U.S. Cl. 215—320 **3 Claims**



1. An assembly of (1) a tight-head glass bottle container having a protruding lip opening and adapted to hold a liquid under pressure, said protruding lip having a rounded outer contour, and (2) a plastic closure for said container comprising
a base having a concave shape,
a generally cylindrically-shaped hollow inner section adapted to fit into the container opening and having a

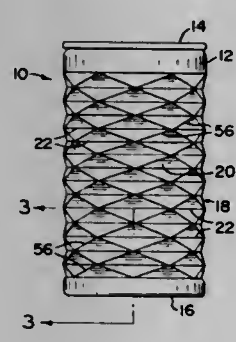
diameter larger than the diameter of said container opening, the outer surface of said inner section being convex in contour, and

a generally cylindrically-shaped outer rim section having an annular, flexible support lip adapted to enclose the outer surface of the container opening and to engage the protruding lip of the container, said outer rim section having a circumferential collar disposed on the outer portion thereof in the region of the rim opposite said base, the apex of the convex contour of said inner section being disposed at a point closer to said base than the location of the support lip of the outer rim section,

the closure and collar thereof being constructed of a flexible, resilient plastic and said outer rim section being tapered outwardly in the region of said collar to form a pointed edge at its end opposite said base whereby said pointed rim discourages people from trying to remove by hand said closure from said container and whereby removal of said closure from said container by means of a bottle opener leaves indentations indicating that said container has been opened.

3,872,994
COLLAPSIBLE CAN

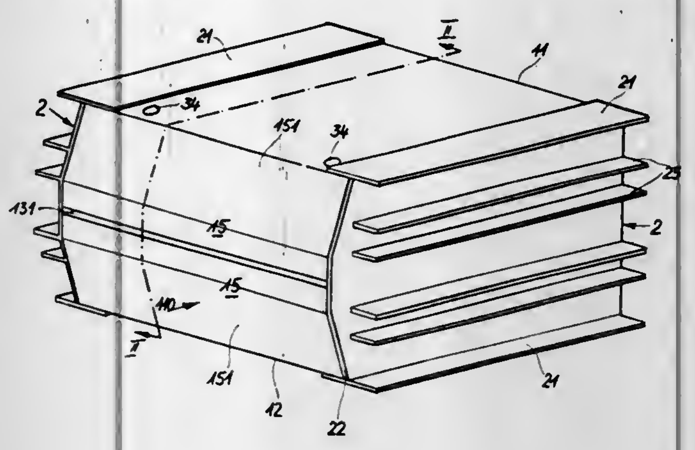
Robert W. Hyde, 1 Putter Pl., Crystal River, Fla. 32629
Filed Feb. 22, 1973, Ser. No. 334,581
Int. Cl. B65d *1/40, 7/42*
U.S. Cl. 220—1 R **7 Claims**



1. A container structure of the type capable of collapsing along its longitudinal axis, said container comprising: a wall including a plurality of multi-edged figures arranged in predetermined aligned relation to one another, each of said figures comprising a first edge and a plurality of second edges, said first and second edges of each figure disposed relative to one another so as to define a substantially diamond shaped configuration, said plurality of figures comprising a plurality of sets of figures, each set comprising a predetermined number of said diamond shaped figures disposed in successive, end to end relation to one another thereby defining a substantially circular configuration, said plurality of sets arranged in substantially stacked, offset relation to the next adjacent set such that figures of adjacent sets disposed in offset relation to one another are also contiguous to one another along a common second edge of said contiguously positioned figures; said first edge of each figure in each set disposed to define a plane substantially perpendicular to the longitudinal axis of said container structure and the totality of each set equal to the circular circumference of the container, said second edge of each figure and each set disposed in substantially co-linear relation to the correspondingly positioned second edge of adjacently positioned sets such that the totality of correspondingly positioned second edges are equal to the elliptical circumference of said container, whereby pressure applied inwardly along the longitudinal axis of said container wall will cause folding of said wall along the first and second edges of each figure and thereby collapse said container.

3,872,995
BOX-LIKE CASING CELL

Manfred Eickhorst, Hans-Henry-Jahnn-Weg 21, 2 Hamburg 22, Germany
Filed Mar. 22, 1973, Ser. No. 344,058
Claims priority, application Germany, Mar. 24, 1972, 2214507
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 R **10 Claims**

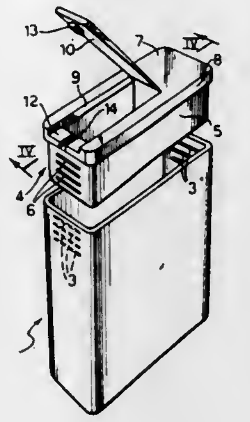


1. A box-like casing assembly comprising prefabricated parts adapted to be combined to provide any desired number of casing cells with each cell being adapted to accommodate production units, each such cell comprising:

a. one top member having a "U" shaped cross-section with inner and outer legs connected with a web;
b. one bottom member having a "U" shaped cross-section with inner and outer legs connected by a web;
c. one leg of said top member being connected to one leg of said bottom member whereby said top and bottom members are connected together;
d. side wall members each having an "I" shaped cross-section with flanges connected by a central web and forming connecting elements for additional adjacent casing cells; and
e. means for readily and releasably interconnecting said top, bottom and side wall members together into a casing cell.

3,872,996
CONTAINER FOR GRANULAR MATERIALS

Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero & C.S.p.A., Alba (Cuneo), Italy
Filed Apr. 9, 1973, Ser. No. 349,581
Claims priority, application Italy, Apr. 11, 1972, 6964/72
Int. Cl. B65d *43/00*
U.S. Cl. 220—254 **10 Claims**



1. A container comprising:

a hollow body portion having an opening of substantially rectangular cross section,

a hollow plastic plug of substantially rectangular cross section with a long side and a short side having a top wall and a skirt perpendicular to said top wall adapted to partially fit into the body portion through the opening therein, said skirt having a stepped portion adapted to bear on the edge of the opening in the body portion on insertion of the plug into the body,

the top wall of the plug being formed with an opening extending in the direction of the long side of said plug from a short side thereof,

a flap, adapted to close the said opening, integrally formed with the plug and integrally hinged to the top wall at the end of the opening remote from said short side,

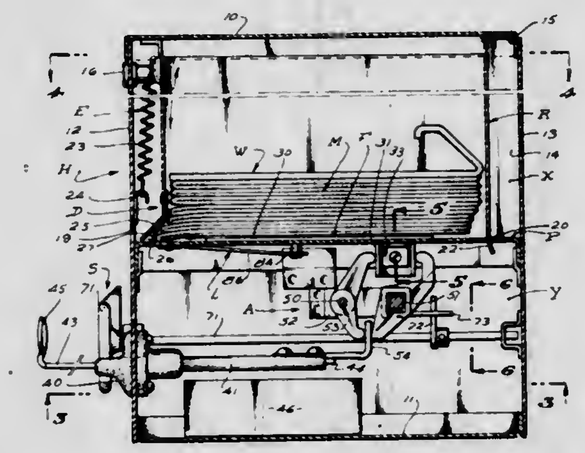
the plug being formed with a recess adapted to receive the free end of the flap in its closed position,

the flap being provided with an extension reaching beyond the said short side in the closed position to act as gripping means,

cooperating snap-action means disposed in said recess and on the bottom surface said free flap end, respectively, for retaining the flap in its closed postion, comprising complementary coupling surfaces extending in directions parallel to said long side of said plug.

3,872,997
MAP VENDING MACHINE

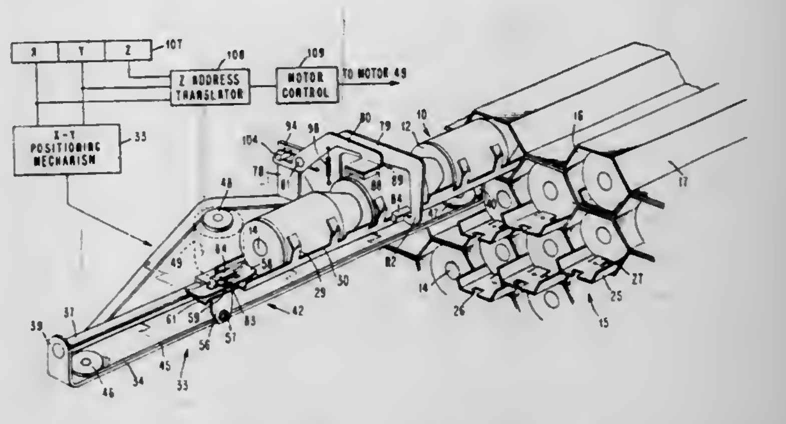
Currie Armstrong, c/o Rockwell Enterprises, Inc., 327 W. Francisco St., Carson, Calif. 90745, and Clarence B. Christophersen, San Clemente, Calif., assignors to said Currie Armstrong, by said Clarence E. Christophersen
Filed May 2, 1974, Ser. No. 466,396
Int. Cl. B65h *7/04*
U.S. Cl. 221—20 **11 Claims**



1. A machine for vending folded paper items comprising, an elongate vertical box-like housing with front, rear and side walls, a top and a bottom, a horizontal plate in the housing defining upper and lower compartments, an elongate vertical open ended chute with front, rear and side walls, slidably receiving a vertical stack of flat paper items and arranged in the housing above the plate, hinge means pivotally connecting the lower end of the rear wall to the plate, spring means normally yieldingly urging the front of the chute downwardly into engagement with the plate, said front wall of the chute having a downwardly and forwardly inclined lower lip portion cooperating with the plate to define a forwardly convergent recess opening rearwardly into the chute, a resilient keeper carried by the front wall of the chute and depending into said recess and releasably engaging a forward edge of the lowermost paper item, an item discharge slot in the front wall of the housing spaced forward of the lower end of the chute, an ejector slide slidably engaged on the top of the plate at the bottom of the chute, gripping means carried by the slide to establish gripping engagement with the bottom surface of the lowermost item upon forward shifting of the slide only, a drive post on the slide projecting through an opening in the plate, and drive means below the plate and engaging the post to shift selectively and intermittently the slide forwardly and rearwardly.

3,872,998
TAPE CARTRIDGE STORAGE DEVICE WITH DYNAMIC ORDERING

William F. Beausoleil, Hopewell Junction, and Edward C. Uberbacher, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 13, 1973, Ser. No. 369,647
Int. Cl. B65g *1/06*
U.S. Cl. 221—79 **7 Claims**



1. A data cartridge storage device comprising,

a rack having means providing positions to contain a plurality of cartridges in an array of at least two dimensions, the cartridge positions in one of said dimensions having progressively differing access times,

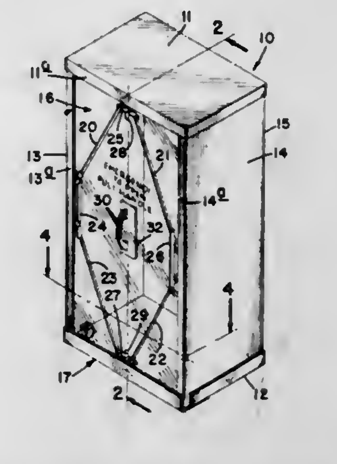
means to remove a selected cartridge from the rack and return the cartridge to the rack,

means for guiding said cartridges along said one dimension in the direction of longer access time when a cartridge is removed from a position of longer access time to provide the position of shortest access time for the cartridge being returned,

whereby a dynamic ordering of cartridges occurs to reduce the average access time.

3,872,999
FIRE EXTINGUISHER CABINET

William L. Fudge, Minneapolis, Minn., assignor to Larsen's Manufacturing Company, Minneapolis, Minn.
Filed Apr. 29, 1974, Ser. No. 464,837
Int. Cl. B65d *41/32*
U.S. Cl. 220—270 **14 Claims**



1. An enclosure for fire extinguishers and the like comprising, in combination:

a cabinet having a front opening;

closure means for said opening including a panel of frangible material and means maintaining said panel in closing relation to said cabinet;

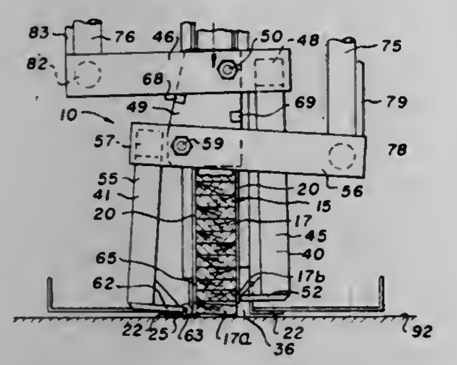
means weakening said panel in a predetermined pattern affecting a substantial portion of the area of said panel;

and handle means mounted on said panel within the area affected by said pattern, so that outward force applied to said handle fractures said panel to afford access to said cabinet.

3,873,000
STICK DEPOSITOR WITH SURFACE ACTUATED ESCAPEMENT MECHANISM

George H. Eaton, West Vancouver, and Roy A. McDonald, Richmond, British Columbia, both of Canada, assignors to Moore Dry Kiln Company of Canada Ltd., Richmond, British Columbia, Canada

Filed May 31, 1974, Ser. No. 475,096
Int. Cl. B65g *59/06*
U.S. Cl. 221—298 16 Claims

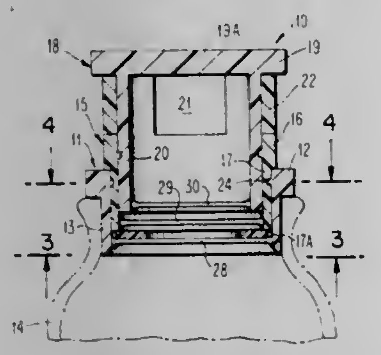


7. Apparatus for placing long sticks one at a time on to a surface, comprising a container for holding a stack of long sticks and having an opening at the lower end thereof through which sticks can drop, a pair of opposed jaws swingably mounted on the container and normally in an inner position to support the lowermost stick of the stack, means connected to and supporting the container through said jaws and adapted selectively to move the container up and down so that the weight of the container and any sticks therein maintain the jaws in their normal positions, and stop means at the container for stopping downward movement of the container on contacting the surface while the jaws swing to an outer position to permit the lowermost stick to drop through the opening, upward movement of the container causing the jaws to swing back to their inner positions to support the next stick in the stack.

3,873,001
SAFETY CLOSURE CAP

Burt H. Shulman, 71 Fuller Ave., Hyde Park, N.Y. 12538

Filed May 2, 1973, Ser. No. 356,368
Int. Cl. B67d *5/22*
U.S. Cl. 222—48 10 Claims

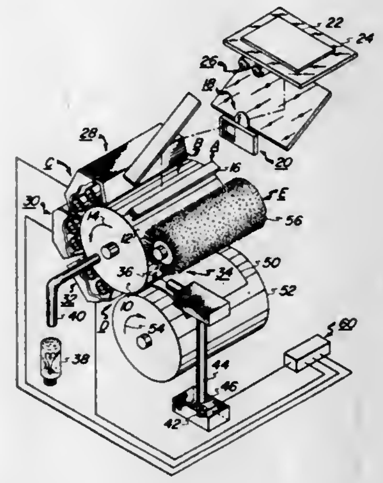


1. A safety dispensing closure comprising in combination: first and second open ended, telescopically engaging, tubular members; each of said members having a flange portion and depending skirt portion; a tubular cap member having a flange portion and depending skirt portion and being in telescopic engagement with said second tubular member; a sleeve rotatably mounted on said skirt portion of said cap member, and positioned intermediate said flange of said second member and said cap member; means to effect axial engagement of said members one to another while permitting relative rotation thereof; means defining an opening in said sleeve and means defining an aperture in the skirt portion of said cap member, said opening and aperture being alignable in radially superimposed relation to provide communication to the interior of said members; and object impedance means extending transversely of at least some of said members to inhibit the passage of an object through said members when said means are misaligned and to permit passage of an object therethrough when said means are aligned.

3,873,002
TONER DISPENSER LOGIC CONTROL

James R. Davidson, Brighton, and Carol A. Walter, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 16, 1973, Ser. No. 351,741
Int. Cl. B67d *5/08*
U.S. Cl. 222—56 12 Claims



1. A control device for regulating the dispensing of predetermined quantities of particles from a storage container to a mix, including:

means for detecting the concentration of particles in the mix, said detecting means being arranged to provide an electrical signal indicating that the particle concentration within the mix is beneath a predetermined level; and

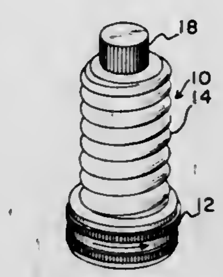
means for summing said detecting means electrical signals and providing a plurality of output signals each corresponding to a predetermined number of electrical signals, each output signal from said summing means being adapted to actuate the storage container for dispensing predetermined differing quantities of particles therefrom into the mix, said summing means provides a first output signal when the number of electrical signals from said detecting means is less than a first pre-selected sum, the first output signal being adapted to actuate the storage container for dispensing a first predetermined quantity of particles therefrom, and a second output signal when the number of electrical signals from said detecting means is intermediate the first pre-selected sum and a second pre-selected sum, the second output signal being adapted to actuate the storage container for dispensing a second predetermined quantity of particles therefrom.

3,873,003
DOME-BOTTOMED CONTAINER

Oscar E. Seiferth, and Glenn M. Austin, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

Filed July 6, 1970, Ser. No. 52,500
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 2 Claims

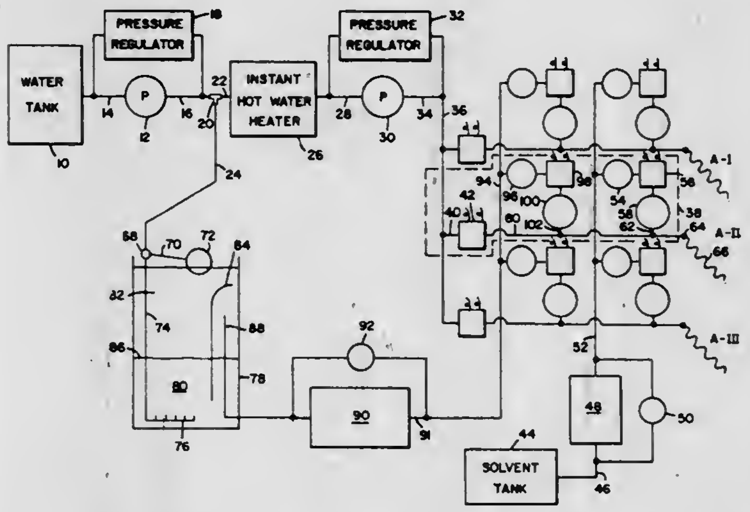
1. In a container for paste, and the like, comprising a hollow base member and a main chamber member, said main chamber member having a substantially flexible resilient annular wall member comprising a continuous helical bellows in the form of a helical thread having a central axis and biased to an extended position by the inherent resiliency of said wall member, said wall member including a short cylindrical wall portion which terminates downwardly at an annular bottom edge portion which is situated in a plane substantially perpendicular to said axis, said thread terminating downwardly at said substantially cylindrical wall portion, said main chamber member having a closed bottom and having a discharge opening at the top, said wall member thread being adapted to be screwed directly into and collapsed within said hollow base member; said hollow base member having a threaded opening at the top thereof for threadingly engaging said thread, and chamber member stop means spaced from said threaded opening a sufficient distance to receive said wall member in collapsed condition within said base member, the improvement in which: the closed bottom of the chamber consists of a smoothly curving flexible bottom member which begins radially outwardly at said annular bottom edge portion of said wall member, angles abruptly radially inwardly toward the central axis of the container, then curves smoothly away from said plane of said edge portion, and inwardly with respect to the central axis of the container, and thereupon terminates in a smoothly rounded, closed central portion, said flexible bottom member being of sufficient flexibility to permit involution to a position within said wall member.



3,873,004
HIGH PRESSURE HOT WATER SPRAY SYSTEM

Eugene P. Feild, 2213 Mission Blvd., Santa Rosa, Calif. 95405

Continuation-in-part of Ser. No. 124,141, March 15, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,662
Int. Cl. B67d *5/52*
U.S. Cl. 222—135 11 Claims



7. An apparatus for cleaning difficult to clean surfaces which comprises:

water source means for providing an insured source of water at a pressure of at least 25 psi and less than about 100 psi;

heating means;

continually operating water high pressurizing means for providing a constant volume of water in excess of the total maximum requirements of said apparatus consisting of a single high pressure pump;

a manifold;

wherein said heating means, water high pressurizing means and manifold are serially connected to said water source means;

a plurality of first conduits having one end connected to said manifold and an outlet at the other end;

at least one second conduit connected to each of said first conduits by a different one of a plurality of separately actuatable valves;

a different one of a plurality of separately actuatable water valves connected to each of said first conduits intermediate said manifold and said connection to said second conduits;

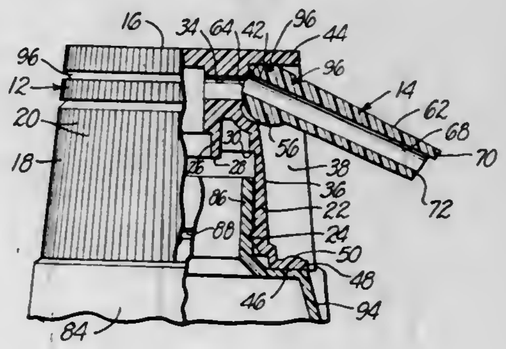
a separate one of a number equal to the number of said second conduits of auxiliary liquid high pressurizing means operably connected to each of said second conduits; and

control means for controlling all of said valves.

3,873,005
DISPENSING CLOSURE WITH SPOUT MOUNTED IN CLOSURE SKIRT

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Nov. 10, 1972, Ser. No. 305,487
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 10 Claims



6. In the combination of a dispensing closure and a container having a container neck, said closure having a cap and a spout, said cap including means engaging said neck so as to mount said closure on said neck, a skirt and an opening leading through said cap, said spout being rotatably mounted on said cap and having a passage extending therethrough, said spout being capable of being rotated between a closed position in which said opening is sealed off by contact with said spout and an open position in which said passage is in alignment with said opening, the improvement which comprises:

said spout being mounted on said skirt adjacent to the top of said skirt so as to extend downwardly towards the bottom of said skirt in said closed position,

said container having a circumferential recess located around said neck and having a radially extending notch extending radially from said recess,

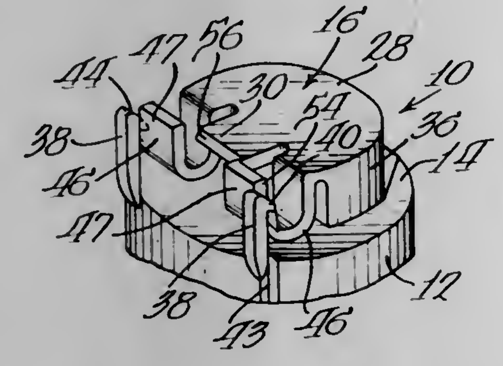
said notch being of such width and depth that said spout may be rotated between said opened and closed positions when it is opposite said notch,

said skirt and said spout fitting within said recess when said spout is in said closed position so that said spout cannot be rotated to said open position unless it is located opposite said notch,

said closure being rotatable on said neck so as to be capable of being rotated to positions in which said spout is not opposite said notch as well as to a position in which said spout is opposite said notch.

3,873,006
SAFETY SECONDARY CLOSURE

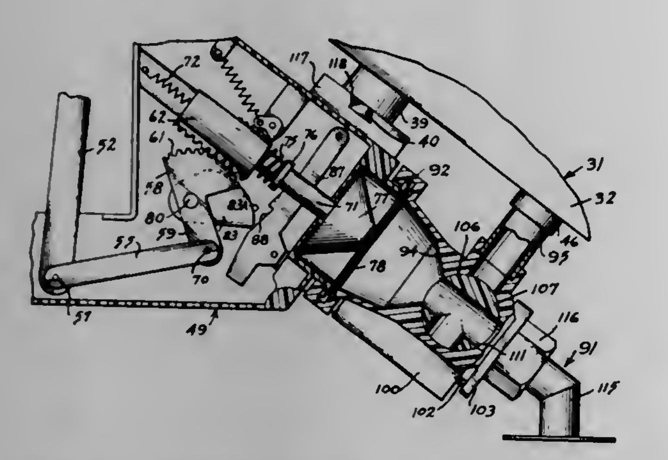
Mack Robert Fields, 1624-2 Lake Dr., Clearwater, Fla. 33516
Filed Nov. 15, 1973, Ser. No. 416,003
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **8 Claims**



1. A primary safety closure having a spout carried by a wall portion integrally formed with a depending skirt portion, an overcap hinged to said wall portion and having a plug member for sealing engagement in said spout, and means for latching said overcap in said sealing engagement, said means comprising a pair of spaced apart latch portions carried by said wall portion, a pair of resilient spaced apart catch means carried by said overcap and extending into latching engagement with said latch portions, tab means on said overcap extending outwardly part way between said pair of catch means whereby to unseal said spout both of said catch means must be disengaged from said latch portions before the tab means can be urged upward with respect to said spout.

3,873,007
METERED PRODUCT DISPENSING SYSTEM

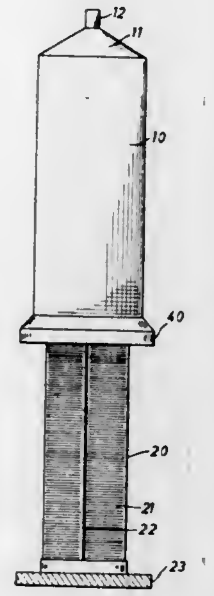
William C. Christine, Catasaque, and William E. R. Watt, Barto, both of Pa., assignors to Inpaco, Allentown, Pa.
Continuation-in-part of Ser. Nos. 205,692, Dec. 7, 1971, Pat. No. 3,758,005, and Ser. No. 301,076, Oct. 26, 1972, abandoned, and Ser. No. 312,485, Dec. 6, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,472
Int. Cl. G01f *11/30*
U.S. Cl. 222—309 **2 Claims**



1. In a metered product dispensing system, a hollow container including a base having a bottom wall, spaced apart side walls and spaced apart end walls, there being a slot in said bottom wall, said slot including a narrow portion and a wider portion, a bushing depending from said bottom wall, and having a tapered fitting depending therefrom, a cover hingedly connected to said base, and said cover including spaced apart side portions, and a top that includes angularly arranged surfaces, an end of said top being hingedly connected to said base, a latch releasably connecting the other end of said cover to said base, a flexible pouch arranged in said container for holding material to be dispensed, a fitment on said pouch projecting through the slot in said bottom wall; a gun including a hollow body member having a handle on an end portion thereof, a manually operable trigger pivotally connected to said handle, a link pivotally connected to said trigger, a gear piece pivotally connected to said link, a sleeve having teeth thereon meshing with teeth on said gear piece, a rod in said gun body and said rod having said sleeve slidably mounted thereon, a spring member connected to said gun body and said rod, a coil spring circumposed on said rod and abutting said sleeve, a frusto-conical plunger on the outer end of said rod, a flexible diaphragm adjacent the outer end of said plunger, a shaft connected to said gear piece, a cam member slidably mounted on said shaft, a spring member interposed between said gear piece and said cam member, a bar pivotally mounted in said gun body and said bar having a shouldered portion engaged by the cam member, a coil spring connected to said bar, a pusher connected to said bar, a nozzle connected to the front end of said gun and said nozzle including a housing having a tapered inner recessed portion, a bayonet piercing member on said nozzle, a slidable body element engaged by said pusher, a guide pin for said body element, a rotary valve member including first, second and third ports, a detachable tip for said nozzle, a shaft member connected to said valve member and said shaft member having gear teeth thereon, a rack on said body element engaging said last-named gear teeth, a coil spring engaging said guide pin, a coupling detachably connecting said nozzle to said gun, and detachable holding means on the top of said gun for receiving the tapered fitting on the lower portion of the container.

3,873,008
PACKAGE TYPE METERING DEVICE FOR HIGH VISCOSITY FLUID PRODUCTS

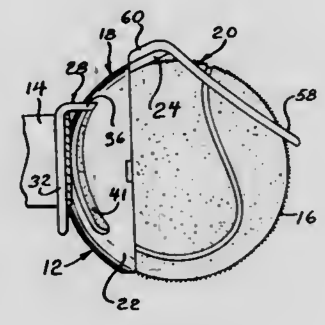
Ulrich W. K. Jahn, Wehrda, Germany, assignor to A. Kettenbach Fabrik Chemischer Erzeugnisse, Eschenburg-Wissenbach (Dillkreis), Germany
Filed May 24, 1974, Ser. No. 472,459
Claims priority, application Germany, Jan. 8, 1974, 7400492
Int. Cl. G01f *11/00*
U.S. Cl. 222—390 **2 Claims**



1. A package type metering device for high viscosity fluid products, particularly suitable for metering impression materials in dental applications and for the usage in dental laboratories, characterized by a first cylindrical tubular member having a cylindrical body open at its bottom end and closed at its upper end by a fixed upper cover plate member that is conically tapered towards a central discharge orifice; a plunger type bottom member fitted into the cylindrical cavity of said first cylindrical tubular member and movable within said cylindrical member by means of a second cylindrical tubular member having an externally threaded surface threadedly engaging an internal thread of a threaded ring member; said threaded ring member mounted at said open bottom end of said first cylindrical tubular member by a detent means engaging a bead reinforced edge on the open bottom end of said first cylindrical tubular member, a concentric annular groove formed in said threaded ring member, said concentric annular groove flaring conically outwardly towards the outer edge of said groove, a bead shaped shoulder at the inner end of said groove forming a restriction in a passage connecting the inner end of said groove with an annular cavity, said annular cavity adapted to receive and automatically latch said bead reinforced edge of said first cylindrical tubular member when press-fitting said bead reinforced edge into said annular cavity, an inner wall portion of said threaded ring member remote from the internal thread defining together with said bead shaped shoulder a narrow annular orifice of smaller dimensions than said bead reinforced edge on said first cylindrical tubular member, said orifice serving as a detent means for latching said bead reinforced edge when introducing the same in applying pressure into said annular cavity, an outer wall portion of said threaded ring member having an inherent elasticity and connected to a reinforcing flange; a plurality of indicia on an outer surface of said reinforcing flange, said indicia corresponding to a plurality of indicia adjacent a narrow groove extending over the whole length of the outer surface of said second cylindrical tubular member; said second cylindrical tubular member having at its lower end a reinforcing ring with a knurled outer surface and being conically tapered at its upper end, said conically tapered upper end adapted to engage the inner surface of said plunger type bottom member having a frusto-conically tapered bottom wall and about its outer circumference a plurality of piston-ring shaped annular ridges whereby the configuration and dimensions of said movable bottom member substantially correspond to those of the internal surfaces of said fixed cover plate of said first cylindrical tubular member.

3,873,009
BALL HOLDER

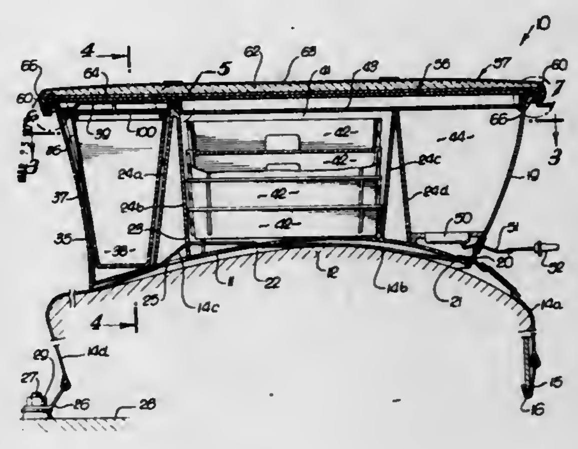
Noel G. Goudreau, Bradley, Ill., assignor to Willis G. Maltby, Bourbonnais, Ill., a part interest
Filed Aug. 3, 1973, Ser. No. 385,541
Int. Cl. A63b *61/00*
U.S. Cl. 224—5 D **10 Claims**



1. A ball holder adapted for readily removably holding a ball on the person of a player comprising, a base having a cavity defining a portion of a sphere less than a hemisphere, said sphere having a diameter approximately the diameter of the ball, a clip connected to the base for securing the ball holder to an article of clothing worn by the player, and a retaining ring resiliently connected to the base, said retaining ring having an annular portion spaced away from the base and adapted for engagement with the ball positioned in the cavity of the base with the ball protruding through the center of the annular portion.

3,873,010
DESK TOP STORAGE UNIT FOR VEHICLES

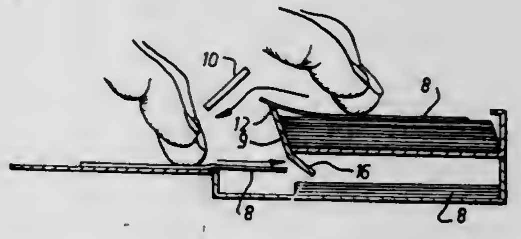
Richard J. Patterson, 2170 Century Park East, Los Angeles, Calif. 90067
Filed Apr. 16, 1973, Ser. No. 351,150
Int. Cl. B60r *7/04*
U.S. Cl. 224—42.42 A **12 Claims**



1. A storage container assembly for use in vehicles, comprising
  a. a box having an underside configured to vehicle associated support structure between left and right side passenger seating zones in the vehicle,
  b. a readily removable deck on the box, and a cushioned arm rest removably fitting over said deck, the arm rest peripherally interfitting the deck and the deck substantially peripherally encloses the upper rim portion of the box, and
  c. hold down means attached to the box for releasably connecting the box to vehicle structure in order to hold the box underside downwardly relative to said support structure.

3,873,011
METHOD AND APPLIANCE FOR RECORDING INFORMATION

Janos A. Tsuk, 19 Rue de l'Alouette, 94 St. Maude, France
Filed Apr. 17, 1972, Ser. No. 244,491
Int. Cl. G06k *21/06*
U.S. Cl. 225—93 **11 Claims**



1. An appliance for recording information on data receiving cards, comprising:
  an in tray for releasably storing a plurality of said cards in tacked relation;
  an out tray for releasably receiving said cards with recorded data hereon;
  a data recording station; and
  means for guiding said cards from said in tray to said recording station and from said recording station to said out tray.

3,873,012
PHOTOGRAPHIC COPYING MACHINE

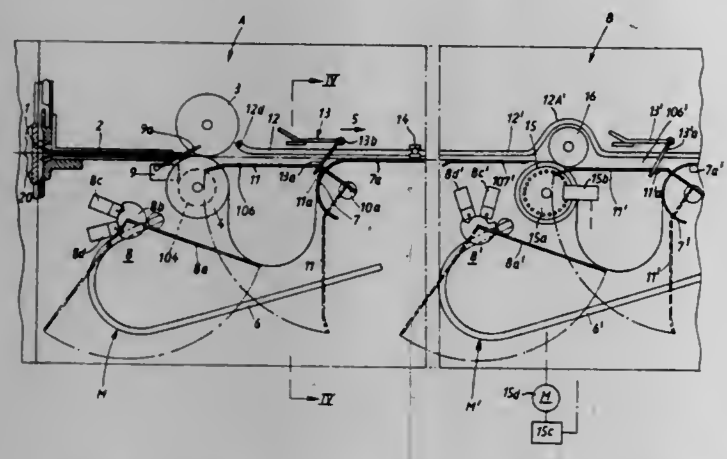
Richard Wick, Munich; Berthold Fergg, Taufkirchen; Wolfgang Zahn, Munich; Erich Nagel, Anzing; Mathias Pflugbeil, Baldham; Christian Gotze, Munich; Adolf Fleck, Munich, and Karl Dreher, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 14, 1973, Ser. No. 397,247

Claims priority, application Germany, Sept. 15, 1972, 2245309

Int. Cl. B65h *25/04*

U.S. Cl. 226—44 **22 Claims**



1. In a photographic copying machine wherein a web of photographic material is advanced lengthwise in a predetermined direction along an elongated path, a combination comprising a plurality of first guide members flanking said path at opposite sides and defining an opening through which an intermediate portion of a web in said path may extend from said path; a magazine adjacent to said opening and positioned to receive that intermediate portion of a web in said path which extends from said path through said opening, said magazine having confining means contacting one side of the web portion in said magazine; first transporting means located ahead of said opening, as considered in said direction, and arranged to feed the web lengthwise so that the length of the web portion in said magazine increases when the rate at which the web is being fed into said magazine by said first transporting means exceeds the rate of withdrawl of the web from said magazine; second transporting means located downstream of said opening and arranged to intermittently draw the web from said magazine; and a second guide member movable between first and second positions in which said second guide member respectively prevents and permits the web in said path to enter said magazine through said opening.

3,873,013
HIGH VELOCITY WEB FLOATING AIR BAR HAVING CENTER EXHAUST MEANS

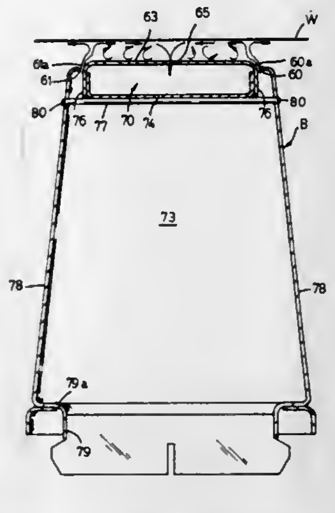
Paul H. Stibbe, DePere, Wis., assignor to TEC Systems, Inc., DePere, Wis.

Filed Oct. 4, 1973, Ser. No. 403,510

Int. Cl. B65h *17/32*

U.S. Cl. 226—97 **9 Claims**

1. An individual and replaceable air bar for floating a continuous running web and being elongated and of enclosed tubular shape and including opposite end walls, opposite side walls, and a generally flat plate located between said side walls, said plate having spaced apart longitudinal and curved edges and locatable closely adjacent the running web to be supported, said bar also having a pair of air supply slots one extending along each of said edges to form opposed Coanda nozzles therewith for directing a stream of pressurized air out of the interior of said air bar and against said web, a portion of said stream turning toward the center of said bar and along said web whereby said portions of said streams discharged by said pair of opposed nozzles merge at the center of said plate, an exhaust chamber formed within said air bar and under said plate, and exhaust passage means generally in the center of and through said plate and communicating with said exhaust chamber whereby said opposed portions of said streams of air are directed through said exhaust passage means and into said exhaust chamber for removal therefrom.



3,873,014
SHEET INTERMITTENT FEED DEVICE

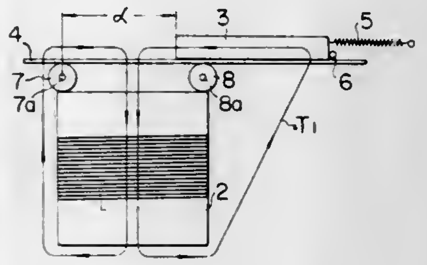
Koh Matsuhisa, Ninomiya-Machi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,808

Claims priority, application Japan, July 18, 1972, 47-72301

Int. Cl. B65h *17/36, 5/10*

U.S. Cl. 226—162 **9 Claims**



1. A sheet intermittent feed device comprising:

a. means for defining a path of movement of sheet material having two opposed major surfaces, including means for engaging one of the two major surfaces of the sheet material during advance thereof along said path;

b. a first member, for pressing said sheet material against said engaging means, reciprocable between first and second positions spaced a predetermined distance apart along said path, in engagement with the other of the two major surfaces of the sheet material, and sufficiently displaceable transversely of said path to vary the pressure exerted by said first member on sheet material in the path;

c. means for returning said first member for movement toward said first position; and

d. a second member fixedly disposed on one side of said path, and closer to said second position than to said first position, in facing relation to said one major surface of sheet material in the path such that the path extends between said first and second members;

e. one of said first and second members being intermittently energizable to constitute an electromagnet;

f. the other of said members being made of a magnetic material attractable by said electromagnet;

g. the sphere of influence of said electromagnet embracing said second member and said first and second positions of said first member, such that energization of said electromagnet causes said first member to move from said first position to said second position while being pressed against sheet material in the path by magnetic attraction to said electromagnet, thereby advancing the sheet material along the path for said predetermined distance by frictional pressing engagement of the first member therewith, and de-energization of said electromagnet releases said first member for return by said returning means to said first position in reduced-pressure sliding relation to sheet material in the path.

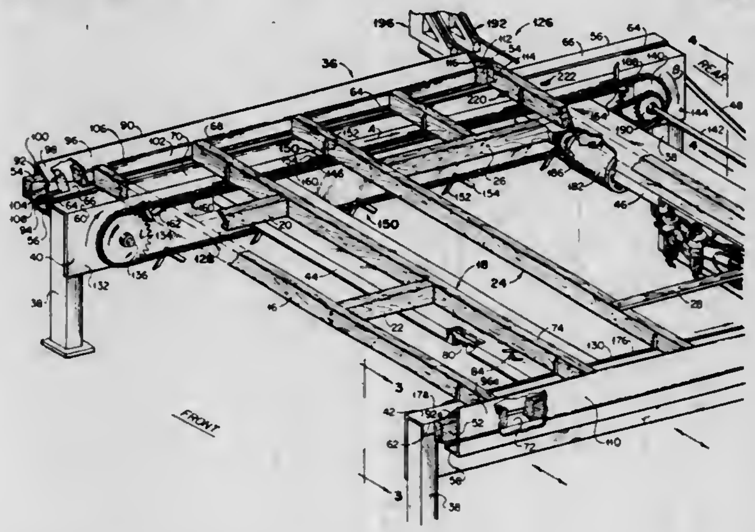
3,873,015
APPARATUS FOR PREFABRICATING BUILDING WALLS

Powell Whitaker, Rt. 2, Box 541, Bristol, Tenn. 37620

Filed Jan. 2, 1974, Ser. No. 429,755

Int. Cl. B27f *7/02*

U.S. Cl. 227—7 **5 Claims**



1. Apparatus for assembling a wall panel from a plurality of individual components including a plate, a sill and a plurality of studs comprising

a frame disposed substantially horizontally above a supporting surface and adapted to receive said plurality of components, said frame including oppositely disposed support members aligned with each other in a horizontal plane and defining respective elongated surfaces adapted to support the opposite ends of a plurality of studs extending transversely between said support members for sliding movement therealong, an elongated channel member disposed laterally outside of and aligned with each of said support members, said channel member having its entrance end located adjacent one end of said support member and terminating short of the other end of said support member and comprising a first upright elongated panel having its bottom side edge joined to said support member adjacent the outer side thereof, a second elongated panel disposed in juxtaposition and parallel to said first panel and having one of its side edges joined to the top side edge of said first panel and extending outwardly and downwardly from said top side edge of said first panel and inwardly of said frame to define an acute angle between said panels, and a third elongated panel disposed in juxtaposition and parallel to said second panel and having one of its side edges joined to the lower side edge of said second panel and extending downwardly therefrom toward said elongated surface on said support member and terminating above said surface whereby said third panel is disposed in a generally upright plane above said surface and is movable with respect to said surface in a direction generally laterally of the length of said surface, said panels and that support member to which they are joined defining an elongated passageway for receiving a plate or sill thereto,

stop means associated with each of said elongated surfaces at the exit end of its respective associated channel member for stopping sliding movement of said plate or sill within said passageway when said plate or sill contacts said stop means whereby a plate in one of said channel members is positioned substantially parallel to a sill in the other of said channel members and spaced apart laterally from such sill by the distance separating said channel members and with their leading ends aligned along a line transverse of said frame,

a plurality of endless means oriented in respective upright planes each of which is located laterally inwardly and aligned longitudinally with one of said elongated surfaces, each of said endless means being adapted to traverse a path including a horizontal upper run extending substantially parallel to its adjacent elongated surface, said upper run extending beyond both ends of said elongated surface of said support member,

horizontal planar support means disposed beneath said upper run,

a plurality of lug means joined to each of said endless means for travel therewith, each of said lug means including a first elongated arm means and a further elongated arm means joined to one end of said first arm means and extending therefrom at a generally right angle, each of said lug means being pivotally connected to said endless means at the juncture of said first and further arm means with one of said arm means being slidable on said horizontal planar support means beneath said upper run of said endless means when said lug means is in said upper run,

the other of said arm means of each of said lug means extending upwardly when in said upper run of its respective endless means to engage the backside of a stud supported at its opposite ends on said elongated surfaces of said support member, said plurality of lug means on one endless means being in register with said plurality of lug means on the other endless means,

drive means for propelling each of said endless means along its path whereupon said stud is moved forwardly as said plurality of endless means move through their respective upper run;

a plurality of fastener applicators disposed outwardly and on opposite sides of said frame means at locations adjacent each of said stop means and adapted to fasten said plate and sill to opposite ends of said stud,

means adapted to actuate said fastener applicators substantially simultaneously when a stud is in position between said plate and sill and aligned with said fastener applicators, and

means adapted to suspend the forward movement of said plurality of endless means at the time of actuation of said fastener applicators.

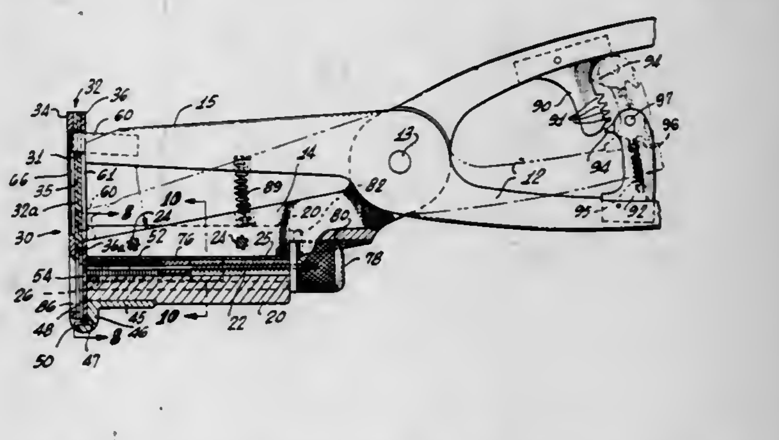
3,873,016
PLIERS TYPE SURGICAL STAPLER FOR JOINING DISUNITED SKIN OR FASCIA

Meyer Fishbein, 2242 N. Figueroa St., Los Angeles, Calif. 90065

Filed Nov. 30, 1973, Ser. No. 420,661

Int. Cl. B25c *5/02*

U.S. Cl. 227—83 **10 Claims**



1. A surgical stapling instrument for applying staples to unite skin or fascia, comprising:

a pair of horizontally elongated pliers-like members pivoted together between their ends at a horizontal pivot axis and formed to provide on one side of said axis upper and lower pliers-like handles and, on the other side of said axis, corresponding lower and upper jaw-like arms which close and open with jaw-like movements as the handles are closed and opened;

a staple housing fixed on said lower arm generally longitudinally thereof having a staple feedway extending longitudinally therethrough, said feedway terminating in an exit aperture facing generally in a direction away from said pivot axis;

spring means for urging a stack of staples along said feedway and out of said exit aperture;

an elongate, generally vertical staple and ram guide mounted on said lower arm over said feedway exit aperture and extending upwardly from said lower arm adjacent and past the extremity of said upper arm,

said guide having opposed, spaced, forward and rearward walls defining a generally vertical guideway for a single staple and a ram thereabove, said exit aperture of said feedway opening into said guideway in opposition to the inner face of said forward wall, whereby staples from said feedway may be moved by the pressure of said spring through said exit opening and into said guideway and be spring-pressed against said inner face,

a ram vertically reciprocable in said guideway,

an operative connection between said upper pliers arm and said ram, whereby closure of said handles drives said ram downwardly in said guideway to engage and lower the staple,

said guideway extending downwardly through the lower end of said guide,

a staple forming anvil supported on said end of said lower arm in alignment with said guideway; and

forming means on the lower end of said ram cooperable with said anvil to progressively close said staple around said anvil as said handles are closed, said anvil being dimensioned for disengagement from within the staple when the staple has been closed thereabout.

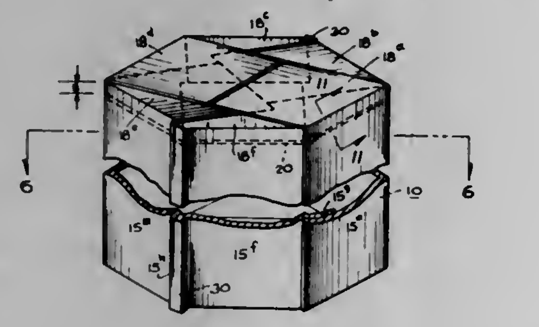
3,873,017
CORRUGATED POLYGONAL CONTAINER

David H. Blatt, Elkins Park, Pa., assignor to Franklin Container Corporation, Philadelphia, Pa.

Filed Apr. 6, 1973, Ser. No. 348,660

Int. Cl. B65d *5/36*

U.S. Cl. 229—41 C **6 Claims**



1. A polygonal shipping container having a tubular main body portion and integral top and bottom end closure flaps formed of three die-cut blanks of corrugated paper board stock, said blanks being respectively transversely scored along perimetrally spaced parallel score lines and adhesively secured together in laminated relation to provide said main body portion with a triple layered substantially continuous polygonally shaped side wall opposite halves of which each include at least three side wall panels, said panels being relatively foldable in the regions of all of said score lines for erecting said main body portion into polygonal shape, the two outermost laminations of said sidewall each having a single pair of diametrically spaced sets of closely adjoining score lines for flat folding said opposite halves of the tubular main body portion one against the other at two diametrically opposed corners of said container, said diametrically spaced sets of score lines in said two outermost laminations being respectively disposed in nested relation about a fold line of the innermost lamination to form at said diametrically opposed corners of said container outwardly projecting triple-layered ribs or flutes which permit unstressed flat folding of the opposite halves of the container as aforesaid and serve as hand holds to facilitate rolling of the containers about their central axes and vertical side-wise stacking of the containers when erected into polygonal shape, the outermost lamination of said side wall being perimetrally scored and vertically slit to integrally provide the same with a plurality of inwardly foldable end closure flaps respectively hinged to the top and bottom edges of each of said side wall panels, said closure flaps being each of a length substantially equal to one half the distance between opposite side wall panels of the erected container, the said pairs of said flaps being respectively adapted to be inturned from opposite side wall panels of the erected container toward the central axis thereof for coplanar disposition with their free edges in abutting relation along angularly related lines commonly intersecting said central axis of the container whereby said inturned pairs of the end closure flaps conjointly form a multi-layered closure at each end of the container.

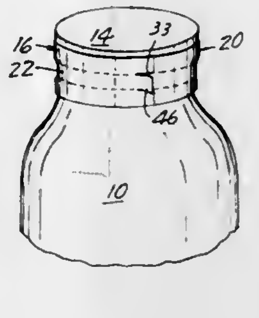
3,873,018
EASILY RUPTURABLE BAND OF TAPE

James A. Donnay, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 333,879

Int. Cl. B32b *31/00*; **B65d** *51/20*

U.S. Cl. 229—51 TS **10 Claims**



1. A method for providing an easily rupturable tape seal on an article comprising:

1. adhering onto the article an elongated tape assembly that comprises (a) an elongated tape backing that is heat-shrinkable at a useful elevated temperature, (b) a layer of adhesive carried on an inside surface of said backing for adhering the tape assembly to the article, and (c) an elongated tear strip that is adhered to the layer of adhesive, is at least substantially less heat-shrinkable at said elevated temperature than the backing, is narrower in width than the backing, and is disposed between the layer of adhesive and the article in longitudinal alignment with the backing and intermediate the outer edges of the backing;
2. making short longitudinal cuts in an end of the backing on each side of the tear strip; and
3. subjecting the tape assembly to said elevated temperature to shrink the backing into tight engagement with the article, whereupon a pull-tab is formed by an outward curving of the portion of the tape assembly located between the longitudinal cuts in the backing.

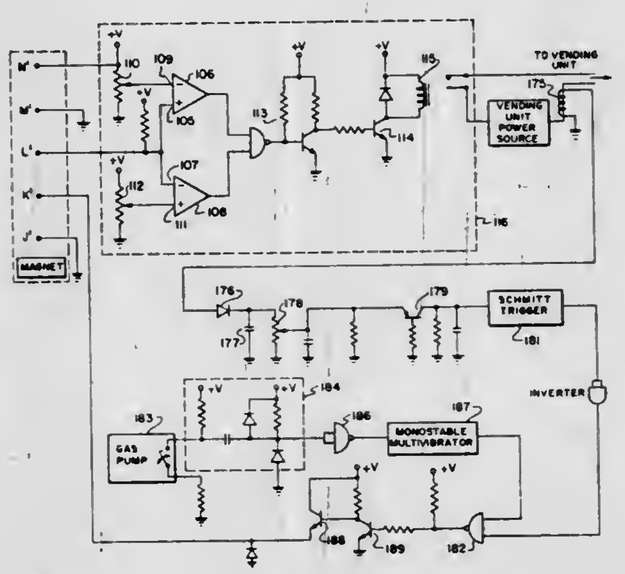
3,873,019
CONTROLLING AND RECORDING FUEL DISPENSING

Daniel C. Holcomb, Raleigh, N.C., assignor to CH Electronics, Inc., Raleigh, N.C.

Filed Mar. 15, 1973, Ser. No. 341,615

Int. Cl. G06m *3/12*

U.S. Cl. 235—92 CT **3 Claims**



1. In a machine for dispensing discrete products in response to the activation of product selection means, the improvement comprising:

- a. means for generating a binary word identifying a dispensed product in response to the activation of its associated selection means;
- b. a counter;
- c. clock means responsive to said generating means to deliver a series of electrical pulses;
- d. storing means for storing preset price information related to each of said selectable products;
- e. data selector means for setting related price information into said counter as a digital number in response to said binary word;
- f. means for gating said series of pulses from said clock into said counter whereby the digital number stored in said counter is varied in response to said pulses until said counter reaches a predetermined number;
- g. means for disabling said clock means in response to the presence of said predetermined number in said counter;
- h. tally module means insertable into the machine and when inserted enabling said selection means, and said module means including register means coupled to said clock means to receive said series of pulses and tally a number proportional to the price of the products, and said module means further including programmable security means comprising a preset electrical network;
- i. said machine further including means cooperative with said security means and comprising amplifier means cooperative with said electrical network for detecting a properly programmed module means and operative to deliver an enabling signal to activate the machine and allow it to dispense products while a properly programmed module is inserted, whereby unauthorized operation of the said machine is prevented when the module means is withdrawn; and
- j. lock means operative in response to the selection of a product to prevent withdrawal of the inserted module means until the complete series of pulses has been tallied in the module means.

3,873,020
SAFETY DEVICE FOR SEPARATORS

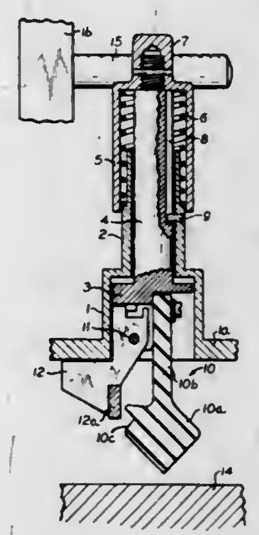
Freidrich Icking, and Klaus Bodemar, both of Oelde, Germany, assignors to Westfalia Separator AG, Oelde, (Westfalen), Germany

Filed Sept. 20, 1972, Ser. No. 182,103

Claims priority, application Germany, Sept. 18, 1970, 2046084

Int. Cl. B04b *7/06*

U.S. Cl. 233—1 B **14 Claims**



1. In a machine comprising a rotatable member and an auxiliary part comprising separable elements and having a catch mechanism including a release arm for selectively locking and unlocking the separable elements of the auxiliary part by movement of the release arm: a safety device to insure that the drum is stopped before unlocking of the separable elements, comprising,

- a. a safety device housing mounted on the machine in a normally fixed position with respect to the rotating member,
- b. an assembly including a plunger, a feeler member attached to one end of the plunger, and a catch mechanism stop attached to the other end of the plunger, axially slidably mounted in the safety device housing for movement between a first position wherein the feeler member is disengaged from the rotatable member and the catch mechanism stop is interposed in the path of the catch mechanism release arm preventing movement of the release arm to unlock the separable parts, a second position wherein the feeler member is in engagement with the rotatable member and the catch mechanism stop is still interposed as aforesaid, and a third position wherein the feeler member is in engagement with the rotatable member and the catch mechanism stop is out of the path of the catch mechanism release arm permitting movement of the release arm to unlock the separable parts,
- c. means for arresting travel of the feeler assembly in said intermediate position when the drum is rotating and releasing the feeler assembly for movement to the third position upon stopping of the drum.

3,873,021
WIRE FRAME CENTRIFUGE

W. Charles Paulsen, Newtown, Conn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 18, 1973, Ser. No. 361,410

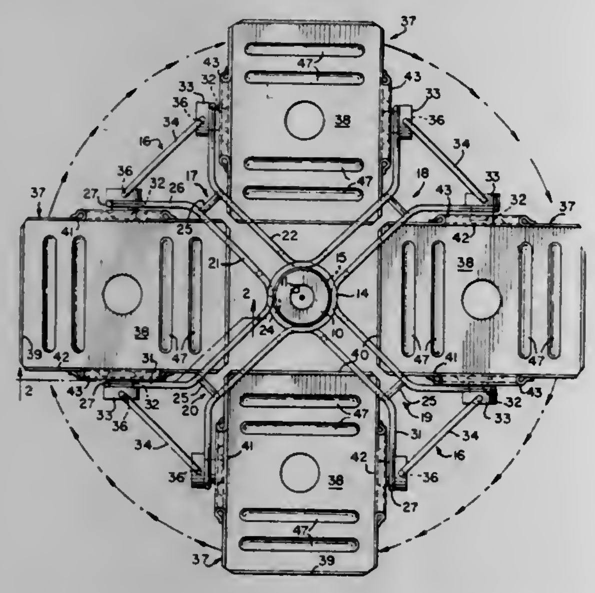
Int. Cl. B04b *9/12*

U.S. Cl. 233—26 **6 Claims**

1. A wire frame centrifuge comprising:

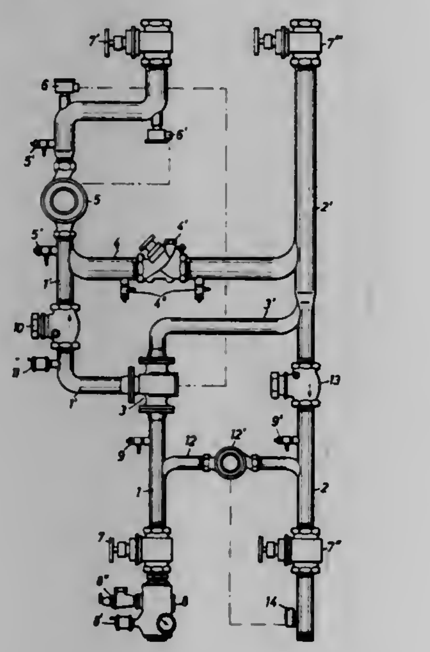
- a. a hub having a vertical bore for receiving a vertical drive shaft in driving relation thereto;
- b. a wire frame drivably connected to said hub and comprising a plurality of angularly spaced generally coplanar radial arms, and each of said arms comprises two pairs of

vertically spaced wires, with wires of each pair being horizontally and generally coplanarly spaced;
c. a pair of horizontally displaced trunnions carried by each of said arms at the outer ends thereof;
d. a straight link means in each arm connecting each of the trunnions of each pair of each of said arms, and



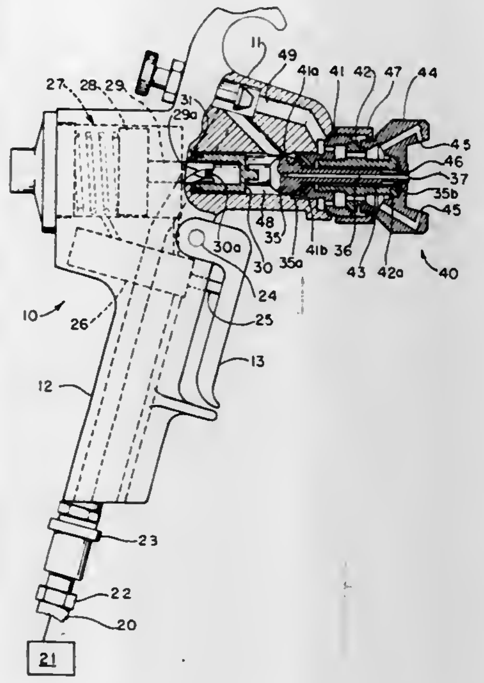
e. a plurality of pendulous buckets corresponding in number to the number of said arms, with each bucket being suspended from the trunnion of one arm and the trunnion of an adjacent arm, each of said buckets having a bottom and which bottom assumes a horizontal position when said centrifuge is motionless.

3,873,022
REGULATING STATION
Hans Hilgemann, Recklinghausen, Germany, assignor to Tour Agenturer Aktiebolag, Johanneshov, Sweden
Filed June 14, 1973, Ser. No. 369,795
Claims priority, application Germany, June 14, 1972, 2228918
Int. Cl. F24d *3/02*
U.S. Cl. 237—8 R **10 Claims**



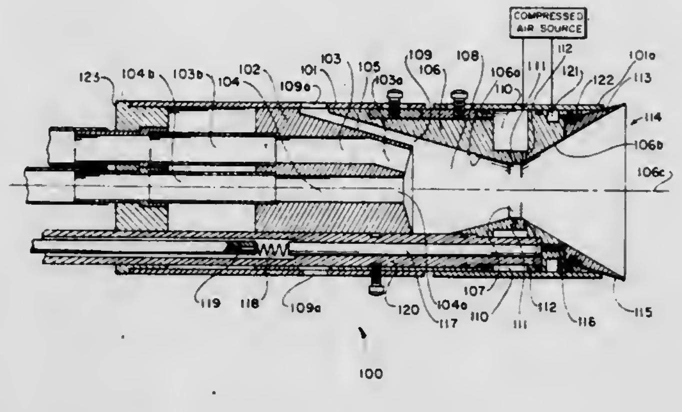
1. A flow regulating station for a pipeline for installation in a floor, wall or ceiling, for use in heating or cooling of a structural layer, the flow regulating station comprising:
a. a forward flow line
b. a three way mixing valve having a first input connected to the forward flow line and an output connected to the forward flow line, the output of the forward flow line being connected to the pipeline;
c. a return flow line, the input of the return flow line being connected to the output of the pipeline;
d. a regulating line connected between the return flow line and a second input to the three way valve, the regulating line carrying a reflux admixture;
e. a bypass line coupled between the return flow line and the forward flow line, the bypass line being connected to the return flow line between the input of the return flow line and the regulating line and connected to the forward flow line between the output of the three way valve and the output of the forward flow line;
f. a feed pump connected in the forward flow line between the bypass line and the output of the forward flow line; and
g. first and second thermostats connected in succession in the forward flow line between the feed pump and the output of the forward flow line, the first thermostat being preset to a desired value and regulating the three way valve, and the second thermostat switching off the feed pump when the forward flow fluid reaches a critical temperature.

3,873,023
APPARATUS FOR AND METHOD OF SPRAYING PLURAL COMPONENT MATERIALS
Albert H. Moss, Indianapolis, Ind., and Richard O. Probst, Sun Valley, Calif., assignors to Ransburg Corporation, Indianapolis, Ind.
Continuation-in-part of Ser. No. 290,210, Sept. 18, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,201
Int. Cl. A01g *23/10;* **B05b** *5/02*
U.S. Cl. 239—3 **15 Claims**



1. In a compressed air gun for spraying plural component material comprising a gun body, first and second means to connect the gun body with separate sources of first and second components to be mixed in and sprayed from the gun, means to connect the gun body with a source of compressed air, means for directing a flow of compressed air from the gun body, and an ejection orifice for the plural component material connected with the first and second means and cooperatively positioned with respect to said means for directing the flow of compressed air from the gun body to form a spray of plural component material,
the improvement comprising means for mixing the first and second components in the connection between the first and second means of said body and the ejection orifice, means to connect the source of compressed air to the mixing means, said mixing means being movably fastened to the body between a first position where the first and second components are permitted to flow through the mixing means to the ejection orifice and a second position where flow of the first and second components is blocked and a flow of compressed air is permitted to flow through the mixing means and ejection orifice, said mixing means being movably fastened to said body so that its movement does not move the ejection orifice for the mixed components either longitudinally along its axis or laterally with respect to the means for directing the flow of compressed air, and actuation means for moving the mixing means between its first and second positions.

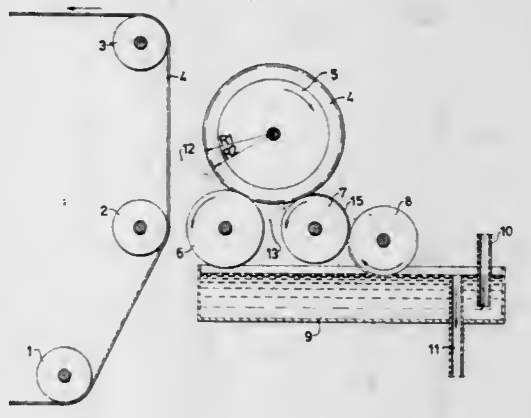
3,873,024
APPARATUS FOR SPRAYING A PLURALITY OF DIFFERENT POWDERS
Richard O. Probst, and Kenneth E. Pollard, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Continuation-in-part of Ser. No. 171,495, Aug. 13, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,316
Int. Cl. B05b *5/02*
U.S. Cl. 239—15 **14 Claims**



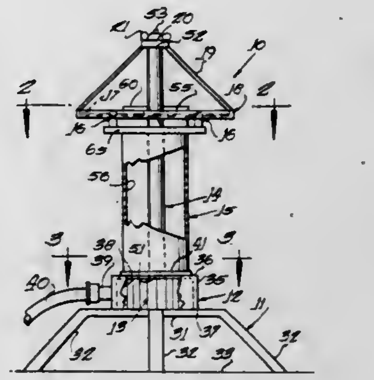
1. Apparatus for spraying one or more different powdered materials entrained in air comprising
means forming a compartment, a spray orifice connected with the compartment, a plurality of substantially straight passageways with openings to direct a flow of each of the different powdered materials into the compartment, means directing air flow into the compartment and out of the spray orifice to act on the flow of powdered material from each passageway in the compartment, and means for introducing an additional flow of air into the apparatus rearwardly of the compartment to assist in minimizing deleterious feedback of the powder to the unused passageways and to affect its spraying from the spray orifice.

3,873,025
METHOD AND APPARATUS FOR ATOMIZING A LIQUID MEDIUM AND FOR SPRAYING THE ATOMIZED LIQUID MEDIUM IN A PREDETERMINED DIRECTION
Bengt Qvarnstrom, Borlange, Sweden, assignor to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden
Filed May 6, 1974, Ser. No. 467,230
Int. Cl. F23d *11/06;* **B05b** *3/02, 13/02*
U.S. Cl. 239—220 **5 Claims**

1. A method for spraying an atomized liquid medium in a predetermined direction, particularly for coating or moistening a material continuously advanced in the path of the atomized medium, characterized in that the liquid medium is passed to a surface layer of elastomeric open porous material on a spreader roll, rotating this roll, passing said surface layer through the nip between said spreader roll and a press roll, thereby causing said press roll to compress said surface layer along the roll nip to atomize the liquid film into free droplets which are ejected from the roll nip in the form of a continuous liquid spray, as a result of rapid changes in the radial dimension of the spreader roll.



3,873,026
MUSICAL LAWN SPRINKLER
Cyril C. Ochs, 3246 LaClede Ave., Los Angeles, Calif. 90039
Filed June 7, 1974, Ser. No. 477,333
Int. Cl. B05b *3/04*
U.S. Cl. 239—240 **8 Claims**



1. A musical lawn sprinkler comprising:
a base member;
a hollow housing mounted on the top of the base member; an impeller member rotatably mounted in said housing for rotation relative thereto;
a shaft having a top end and a bottom end, said bottom end being drivingly connected to said impeller with said top end projecting vertically upwardly therefrom;
a hollow tubular cylindrically shaped sleeve member disposed concentrically with said shaft and extending upwardly about a portion thereof from said housing;
a plurality of spring metal tine members associated with the top end portion of said sleeving and projecting upwardly relatively thereto;
a spoked disc member affixed concentrically to said shaft with said spokes projecting radially outwardly therefrom in a position adapted to successively engage said tine members upon rotation of said spokes; and
means affixing said spoked member to said shaft for simultaneous rotation therewith.

3,873,027
VARIABLE-GEOMETRY CONVERGENT-DIVERGENT NOZZLES

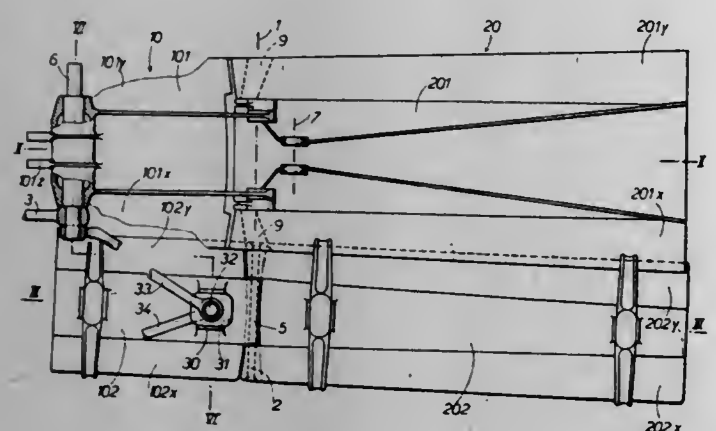
Andre Alphonse Mederic Leon Camboulives, Savigny-Sur-Orge; Theophile Francois Le Maout, Cesson; Roger Alfred Jules Vandenbroucke, Antony, and Bernard Arthur Zibette, Vitry-sur-Seine, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Apr. 26, 1974, Ser. No. 464,452

Claims priority, application France, Apr. 27, 1973, 73.15346

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.33 **4 Claims**



1. In a variable-geometry convergent-divergent fluid flow nozzle comprising a plurality of variable inclination flaps each of which has an internal face disposed towards the nozzle axis and an external face disposed towards the exterior of the nozzle, and also two lateral edges extending in the longitudinal direction of the nozzle, said flaps being distributed in two rings which are arranged one after the other in the direction of fluid flow so as to afford an upstream ring of flaps and a downstream ring of flaps, with each flap of the upstream ring articulated at its downstream end portion to the upstream end portion of a flap in the downstream ring, each ring of flaps comprising a group of internal flaps and a group of external flaps, the internal and external flaps of each ring being arranged alternately as considered in the circumferential direction of the nozzle and each internal flap being arranged so that portions of the outer face thereof adjacent its lateral edges bear against the internal faces of the two adjacent external flaps,

the improvement wherein:

a. each internal flap of the upstream ring is articulated to an internal flap of the downstream ring by means of a hinge which extends over the whole circumferential width of the said two flaps, and

b. each external flap of one of the two rings is provided adjacent each of its two lateral edges with a recess shaped in such manner as to receive in a substantially sealed manner, the end of the hinge associated with the pair of adjacent internal flaps, said end being arranged to slide in said recess in the circumferential direction of the nozzle when any variation in nozzle flap inclination takes place.

3,873,028
PRECISION TORCH ASSEMBLY

Richard W. Miller, Denton, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Dec. 3, 1973, Ser. No. 421,062

Int. Cl. B05b *7/12*

U.S. Cl. 239—413 **10 Claims**

1. A precision torch assembly comprising:

a. a small torch tip with a small orifice therein;

b. an elbow assembly that is connected at its exterior end with said torch tip; said elbow assembly including:

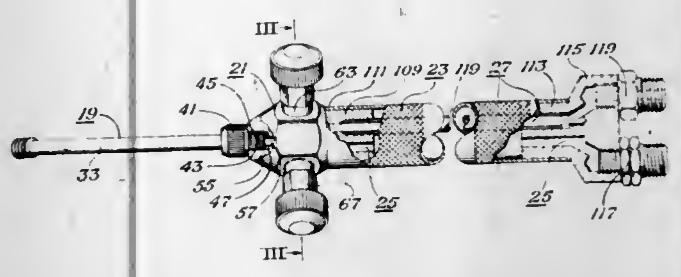
i. a tubular elbow that is straight adjacent its head end and is bent at a predetermined angle and is rotatable such that its tip end can be rotated to facilitate viewing and using the torch; said head end comprising a smooth end that is adapated to sealingly seat against a resilient gasket and retain its seal even if said elbow is rotated about its longitudinal axis to a new angle for optimum viewing and using:

ii. an elbow nut disposed peripherally about said smooth end and retaining it in engagement with said gasket; said elbow nut having a knurled portion for hand tightening and a threaded portion for retaining the sealing engagement between said smooth end and said gasket;

c. a resilient gasket sealingly engaging said smooth end of said elbow such that said elbow can be rotated to any desired angle and still provide a sealed interconnection with a first annular recess in a head;

d. a head including:

i. an elbow end having a first main passageway therewithin;



ii. a first annular recess disposed peripherally about said first main passageway and having said resilient gasket and said smooth end sealingly retained therewithin and a threaded bore disposed peripherally about said first main passageway and containing said threaded portion of said elbow nut;

iii. respective fuel and oxygen passageways connected with said first main passageway and having respective poppet valves and seats sealingly and adjustably interposed therewithin;

iv. a barrel end having an annular barrel recess disposed peripherally thereabout;

d. a barrel having its head end disposed in said annular barrel recess and about said barrel end of said head and connected to said barrel end of said head for serving as a handle; and

e. respective fuel and oxygen passageways extending longitudinally within said barrel and adapted at their hose ends for sealing connection with respective fuel and oxygen hoses.

3,873,029
ADAPTOR FOR FLAMELESS HEAT TOOLS

Michael F. Mihaly, Madison, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,846

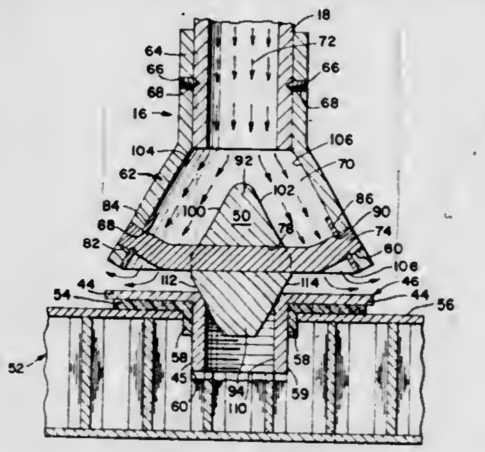
Int. Cl. B05b *1/26*

U.S. Cl. 239—518 **17 Claims**

1. An adaptor for use with a heat tool having a nozzle through which heated fluid exits, comprising:

a. housing means for defining an interior chamber, said housing means having first and second open ends including a portion adjacent said first end thereof adapted for detachable mounting to said exit nozzle;

b. baffle means disposed in said interior chamber for defining therein an orifice communicating with said exit nozzle through said first end of said housing means and for guiding said heated fluid exiting from said nozzle through said orifice and said housing means second end, said baffle means including means extending beyond said housing means second end for locating said orifice relative to an opening provided in a work surface, said extending means being adapted to be received within said opening to exclude said heated fluid therefrom; and



c. means for supporting said baffle means relative to said housing means.

3,873,030
ONE-PIECE DRIP IRRIGATION DEVICE

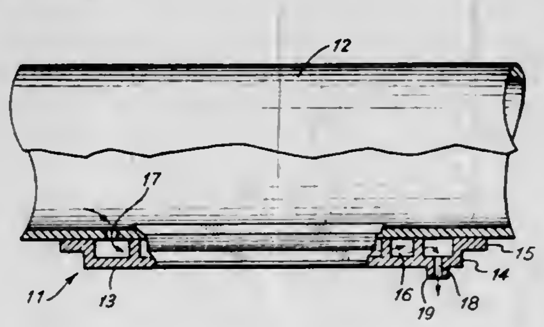
Jaime Suhagun Barragan, Calle del Teco 287, Zamora, Michoacan, Mexico. Continuation of Ser. No. 288,629, Sept. 13, 1972, abandoned.

Filed Feb. 19, 1974, Ser. No. 443,660

Claims priority, application Mexico, July 17, 1972, 137086

Int. Cl. B05b *1/30*

U.S. Cl. 239—542 **1 Claim**



1. A one-piece drip irrigation device for attachment to an irrigation pipe over a perforation in the wall of said pipe, comprising a one-piece elongated casing member with a curved cross-section corresponding to the radius of the outside of the pipe walls, said casing member having a curved bottom wall and side walls of uniform height extending around the edges of said bottom wall, and having a multiplicity of internal walls of the same height as the side walls arranged to form passages providing a multiplicity of obstacles to liquid flow, the tops of said side and internal walls engaging with the outer walls of the pipe when the device is attached to the irrigation pipe, an outlet hole being provided in said casing member to distribute liquid from said irrigation pipe at lowered pressure after passing through said passages.

3,873,031
WEEPER IRRIGATION SYSTEM AND METHOD

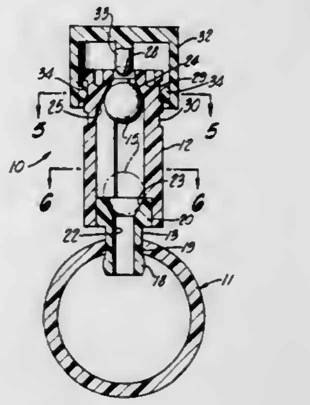
Wilbur C. Reeder, 1961 Midwick Dr., Altadena, Calif. 91001, and Norman D. Batterson, 3870 Shadow Grove Rd., Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 131,355, April 5, 1971, Pat. No. 3,746,263. This application Jan. 15, 1973, Ser. No. 323,638

Int. Cl. B05b *15/00*

U.S. Cl. 239—542 **41 Claims**

1. That improvement in a weeper type irrigation system of the type having plastic tubing for distributing pressurized water to an area to be irrigated, tubular weeper means having an inlet end projecting through the sidewall of said plastic tubing with a self-sealing fit occurring automatically as an incident to the insertion of said weeper means, said weeper means having a relatively large area water outlet opening at the opposite end thereof from said inlet end, valve seats facing one another from the inner ends of said inlet and outlet openings, a valve held loosely captive between said valve seats and seatable by gravity on the valve seat at said inlet end when said plastic tubing is not pressurized and being automatically shiftable into fixed seating engagement with said valve seat at said outlet opening so long as water in said tubing is pressurized, and one of said valve seats having a bleeder water flow passage thereacross effective to limit water flow through said irrigation system so long as said valve is seated on said one valve seat.



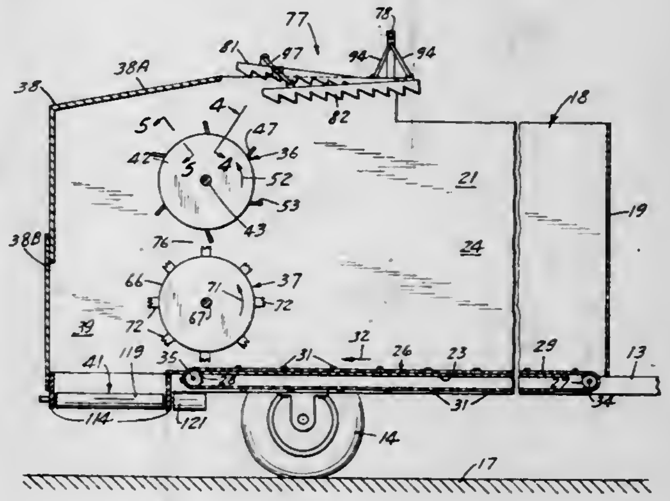
3,873,032
MATERIAL FEEDING APPARATUS

James C. Jellis, Jr., P.O. Box 585, Watertown, S. Dak. 57201

Filed Nov. 12, 1973, Ser. No. 414,984

Int. Cl. A01f *17/00;* **A01c** *17/00*

U.S. Cl. 239—658 **31 Claims**



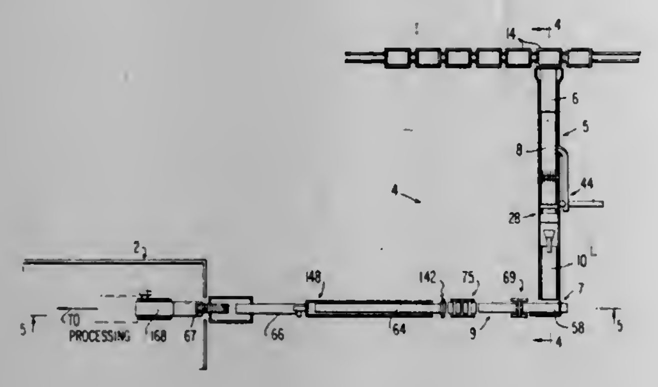
1. A material feeding apparatus comprising: open top box means having a chamber for receiving material, rotatable means mounted on the box means for separating and moving material from the chamber, first conveyor means for moving material in the chamber toward the rotatable means, walker means located generally above said rotatable means operable to move material away from the rotatable means and into the chamber, said walker means including a plurality of longitudinally arranged members, means pivotally carrying a portion of each of said members, and crank means connected to another portion of each said members, second means receiving material from the rotatable means and discharging the material from said box means, and drive means for operating the rotatable means, first conveyor means, walker means and second means, said drive means operable to rotate said crank means whereby said members reciprocate in a longitudinal direction.

3,873,033

METHODS AND APPARATUS FOR PREPARING SUGARCANE STALKS FOR SUBSEQUENT PROCESSING

Sydney Edward Tilby, Winterburn, Alberta, Canada, assignor to Canadian Cane Equipment Ltd., Edmonton, Alberta, Canada

Filed Apr. 26, 1973, Ser. No. 354,775
Int. Cl. A01d *55/00*; **B02c** *18/00*
U.S. Cl. 241—19 **18 Claims**



1. In an apparatus for preparing a mass of randomly oriented trash-containing sugarcane stalks for subsequent processing and which apparatus includes:
- conveyor means for conveying the randomly oriented trash-containing mass of sugarcane stalks;
  - the conveyor means including aligning means for generally aligning substantially all of the stalks in the mass longitudinally in the direction of their conveyed travel; chopping means disposed downwsteam of the aligning means and adjacent to the conveyor means, for receiving and chopping the aligned stalks transversely thereof into relatively shorter chopped lengths; and
- detrashing means disposed upstream of the chopping means for treating the mass of stalks during travel thereof to remove trash;

the improvement wherein said detrashing means includes:
- a detrashing station including at least one initial, coacting pair of rollers arranged to rotate in a first direction of stalk travel; the initial roller pair comprising an upper roller superposed vertically above a lower roller; said initial roller pair being arranged to positively engage and convey the mass of cane stalks therebetween in a first direction of travel to a junction of at least one additional pair of vertically superposed rollers arranged to rotate in a second direction of stalk travel; said additional roller pair disposed adjacent said initial roller pair and disposed to positively engage and convey the mass of cane stalks therebetween from said junction in a second direction inclined upwardly from said first direction; and the lower roller of said additional roller pair being positioned to deflect downwardly nonflexible trash material such as rocks.

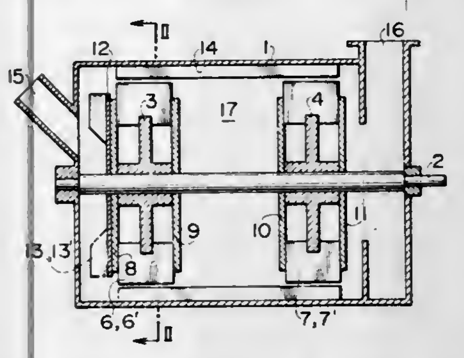
3,873,034

APPARATUS FOR PRODUCING SYNTHETIC PULP

Eitaro Iwahori, Narashinoshi; Mitsuo Kurita, Yokohamashi, and Mitsumasa Uno, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 362,580, May 21, 1973, , which is a continuation-in-part of Ser. No. 209,778, Dec. 20, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,408
Int. Cl. B02c *13/10, 13/288*
U.S. Cl. 241—55 **3 Claims**

1. An apparatus for fibrillating synthetic resin film into synthetic pulp which comprises in combination:
- A. a cylindrical outer casing having
  - a. an inlet on one side for supplying air and materials to be fibrillated,
  - b. an outlet on the other side for discharging an air stream containing fibrillated materials,
  - c. a plurality of linear projections disposed along the inner peripheral surface of said casing in an alignment which is substantially parallel to the center line of said casing,
- B. a rotary shaft extending centrally through said casing and which is capable of being revolved at high speed around the center line of said casing,
- C. at least two rotors affixed to said shaft
  - a. each rotor comprising a disk fixed perpendicularly to said rotary shaft and a plurality of spaced apart vanes fixed to the outer periphery of said disk which extend radially outward to within a very short distance of the inner longitudinal edges of said plurality of linear projections,
- D. pairs of circular plates fixed to said rotary shaft in such a way that each of said pairs supports a rotor therebetween,
- E. means adjacent said inlet for sucking in air and the materials to be fibrillated and discharging the air stream containing the fibrillated materials, said means comprising a disk fixed perpendicularly to said rotary shaft, and having a plurality of vanes provided thereon,
- F. the circular plates of adjacent rotors being spaced apart so as to leave a substantially unobstructed space between adjacent rotors.

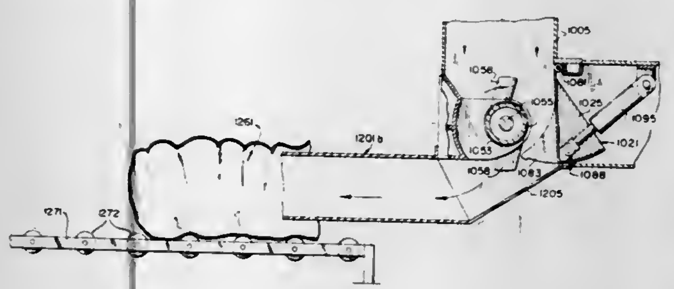


3,873,035

APPARATUS FOR TREATING WASTE MATERIAL

Russell Richard Benson, 1515 Pemberton Ave., North Vancouver, B.C., Canada

Filed Jan. 23, 1973, Ser. No. 325,985
Int. Cl. B02c *13/09*
U.S. Cl. 241—100 **3 Claims**



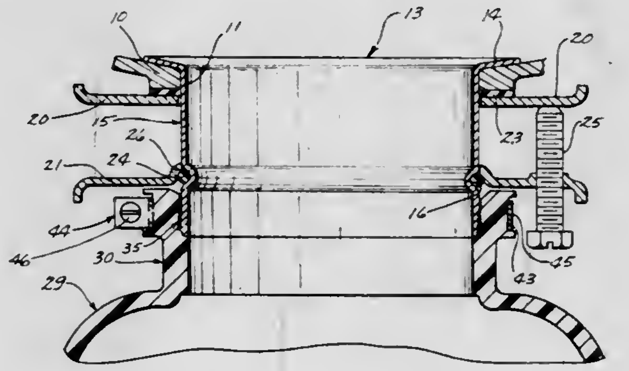
1. Garbage treating apparatus comprising a hopper having a discharge opening through its bottom, a breaking drum means rotatably mounted within said openning and comprising a central cylindrical member with a plurality of teeth fixed thereto and extending outwardly therefrom, the opposite ends of said drum means being disposed closely adjacent the opposite ends of said opening; anvil means disposed at and defining one side of said opening, said anvil means including a plurality of anvil elements extending between adjacent teeth of said breaking drum means, check means rigidly supported from the side of said opening opposite said first-mentioned side and including check plates disposed between the respective teeth of said breaking drum means and encircling said cylindrical member, power means for rotating said breaking drum means at a low peripheral speed in a direction such that its said teeth rotate downwardly between said anvil elements to force the treated garbage downwardly through said opening, while said check plates occupying the spaces between adjoining teeth prevent the upward return of garbage into the said hopper; a horizontally disposed tube means below said breaking drum means and communicating through said opening with the hopper; a receptacle having a horizontally directed opening telescopically receiving and movable lengthwise on said tube means, and means supporting the receptacle for lengthwise movement on the said tube means in response to the pressure of treated garbage as caused by rotation of said breaking drum means, said breaking drum means projecting downwardly through said opening into said tube means to produce said pressure on the treated garbage and movement of the treated garbage through the tube means.

3,873,036

SUPPORT AND SEAL FOR WASTE DISPOSER

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Jan. 14, 1974, Ser. No. 433,228
Int. Cl. B02c *18/42*
U.S. Cl. 241—100.5 **9 Claims**



1. In a waste disposer, the combination comprising: housing means including a resilient generally annular housing inlet portion, sleeve means including an upper flanged portion supportable in a drain opening of a sink and further including aa lower sleeve portion extending through and depending below said drain opening, means for securing said sleeve means to said sink, said sleeve means further including a plurality of closely spaced generally annular upwardly facing projections on the exterior surface of said lower sleeve portion, said resilient housing inlet portion including an internal surface formed with projections for generally mating resilient engagement with the projections on said lower sleeve portion, said resiliently engageable mating projections being formed to permit easy assembly of said resilient housing inlet portion onto said lower sleeve portion and to retard removal therefrom, and clamp means encircling the resilient housing inlet portion and generally aligned with the projections of said housing inlet portion and the projections of said lower sleeve portion to maintain positive engagement therebetween.

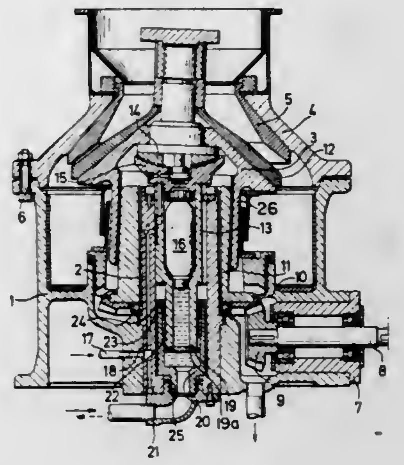
3,873,037

GYRATORY CRUSHER

Hans Decker, Baldurstrasse 24, Cologne-Rath; Heinz Hurtmanns, Markmannsgasse 3-5, Cologne; Willy Jakobs, Friedenstrasse 51, Porz-Gregel, and Helmut Stockmann, Birkenstrasse 24, Wesseling, all of Germany

Filed Aug. 30, 1973, Ser. No. 392,856
Claims priority, application Germany, Sept. 2, 1972, 2243313
Int. Cl. B02c *2/06*
U.S. Cl. 241—211 **9 Claims**

9. In a gyratory crusher of the kind in which a variable size crusher gap is formed between an interior housing lining and a crusher cone mounted for wobbling, rotary movement on the top end of a support stem through the intermediary of a spherical friction bearing, said support stem being mounted for slidable longitudinal movement in a stationary hollow shaft in the housing and having connected to its lower end a piston-cylinder in communication with a pressure fluid source for selective adjustment of the width of the crusher gap, the improvement consisting in that said connection between the support stem and the piston-cylinder assembly is such as to render said piston-cylinder assembly removable from and insertable in a downward direction into said hollow shaft from above the housing as a single unit together with said support stem.

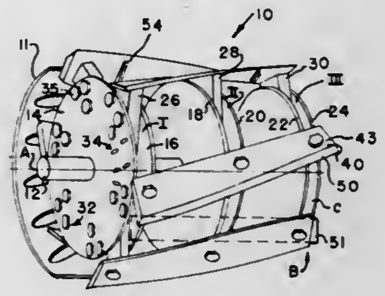


3,873,038

DIRECTION VANES FOR THE CUTTING BLADES OF A FORAGE HARVESTER

Robert A. Wagstaff, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 13, 1973, Ser. No. 396,953
Int. Cl. B02c *18/20*
U.S. Cl. 241—282.2 **13 Claims**



13. An improved forage harvester reel of the type having a rotatably mounted shaft; a plurality of disc shaped supporting plates rigidly mounted and axially spaced along the shaft; a plurality of cutting blades each with a cutting edge; a plurality of mounting blocks each having one end adapted to be mounted to and below the cutting blades and the other end being adapted to be rigidly secured to the supporting plates; wherein the improvement comprises, means interposed between said supporting plates and adjacent said cutting edge for directing and maintaining material as it is being cut by the cutting edge in its path as cut.

3,873,039
WINCH

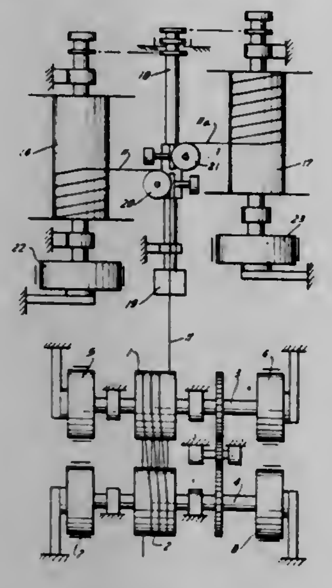
Horst Harms, and Hans-Jurgen Kunsch, both of Bremerhaven, Germany, assignors to Aktien-Gesellschaft "Weser", Bremen, Germany

Filed Feb. 14, 1974, Ser. No. 442,574

Claims priority, application Germany, Feb. 17, 1973, 2307889

Int. Cl. B65h *75/00*

U.S. Cl. 242—54 R **8 Claims**



1. In a winch, particularly in a deep-sea winch, a combination comprising a first rotatable storage drum storing a supply of a first elongated flexible element; at least one second rotatable storage drum storing a supply of a different second elongated flexible element; and a pair of driven rotatable friction drums adapted to receive said elements selectively and to have lengths of said elements trained about the peripheries of said friction drums for paying out and taking-up of the respective element, said friction drums each comprising a center portion and an annular portion surrounding and releasably connected to said center portion and having an outer circumferential surface provided with circumferentially extending grooves.

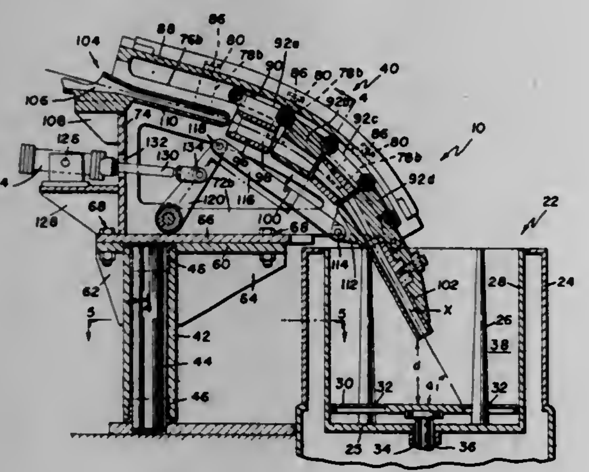
3,873,040
POURING REEL

Donald Sieurin, Northboro, and Alfred R. Leger, Shrewsbury, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Dec. 14, 1973, Ser. No. 424,852

Int. Cl. B21c *47/00*

U.S. Cl. 242—82 **6 Claims**



1. In a rolling mill, a pouring reel comprising: rotating means for forming an annular space into which a product length issuing from the mill is directed to accumulate in cylindrical coil form; elongated guide means having an entry end adapted to receive the product length and an exit end adapted to deliver the product length into said annular space; and operating means for varying the overall length of said guide means by axially moving said exit end relative to said entry end between an extended position protruding into said space, and a retracted position thereabove.

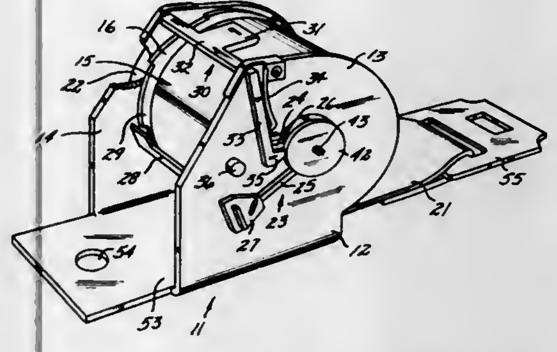
3,873,041
PAWL LOCK FOR RETRACTORS

Robert J. Rumpf, Grosse Pointe, and Wallace C. Higbee, Romeo, both of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 10, 1973, Ser. No. 395,764

Int. Cl. B65h *25/48*

U.S. Cl. 242—107.4 **11 Claims**



1. A pawl lock for seat belt retractors having a frame, a spool of webbing journalled in said frame, a spring motor biasing said spool to wound-up condition, a ratchet flange on said spool, a pawl movable toward and away from said ratchet in selected prevention of withdrawal of webbing from said spool comprising:

a stub shaft secured to said spool and extending axially therefrom;

a direction sensing member in friction compression relation on said stub shaft and slippably rotatable therewith and having a first arm extending substantially radially outwardly therefrom and a second arm extending to an operable connection with said pawl and biasing said pawl toward engagement with said ratchet as said webbing is withdrawn from said spool and biasing said pawl away from engagement with said ratchet during rewinding;

a disabling latch swingable beneath said first arm and preventing rotation of said direction sensing member during withdrawal of webbing from said spool until said disabling latch is pivoted out of blocking relation of said direction sensor; and

a condition sensing element connected to move said disabling latch toward or away from said direction sensor.

3,873,042
SAFETY BELT LOCKING WITH CONICAL INERTIA MEMBER

Per Olaf Weman, Haslah, Germany, assignor to Sigmatex, A.G., Basel, Switzerland

Filed Jan. 7, 1974, Ser. No. 431,514

Int. Cl. A62b *35/02;* **B65h** *75/48*

U.S. Cl. 242—107.4 **8 Claims**

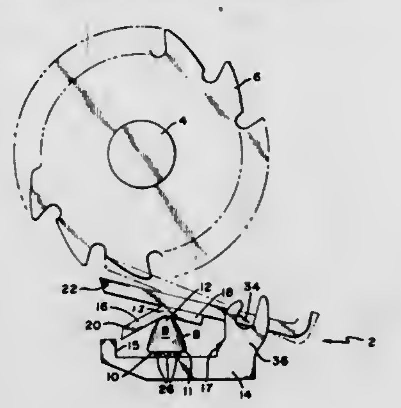
1. A locking mechanism operated by inertia and adapted for use with a safety belt having a withdrawal direction and a retracting direction, said safety belt being adapted to be wound around a reel having a ratchet wheel, said locking mechanism comprising:

a. a substantially conical inertia member having a base and an apex, said inertia member being adapted to be disposed in a central position when said locking mechanism is not in operation and adapted to be displaced from said central position by inertia;

b. a retaining platform for said inertia member, said inertia member being supported on said retaining platform;

c. a substantially conical actuating member having an apex and an open bottom, said actuating member being disposed above said inertia member and centered over said central position of said inertia member;

d. a locking dog affixed to said actuating member, whereby displacement of said inertia member from said central position causes movement of said actuating member and said locking dog to restrain said safety belt against movement in the withdrawal direction; and



e. said inertia member further comprising a plurality of recesses in the base of the inertia member and a plurality of balls rotatably positioned in said recesses, said balls resting on said retaining platform and supporting said inertia member thereon, said inertia member being adapted to roll on said retaining platform by means of the rotatable balls.

3,873,043
YARN GUIDE- AND MONITORING APPARATUS FOR A BOBBIN CREEL

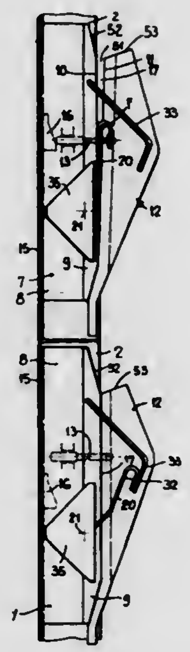
Edwin Wildi, Niederuzwil, and Albert Brandenberger, Uzwil, both of Switzerland, assignors to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Jan. 11, 1974, Ser. No. 432,580

Claims priority, application Switzerland, Jan. 17, 1973, 605/73

Int. Cl. B65h *49/02, 25/14;* **D02h** *1/00*

U.S. Cl. 242—131.1 **7 Claims**



1. A yarn guide- and monitoring mechanism for a bobbin creel, especially at a beam warping creel, comprising a feeler needle which is held against the yarn and in the presence of yarn rupture carries out a pivotal movement into a tilted position, wherein such feeler needle by interrupting a current control circuit shuts down an associated yarn processing machine, and a yarn clamping mechanism formed by two surfaces which can be resiliently pressed against one another, the improvement comprising said feeler needle being arranged behind the yarn clamping mechanism with respect to the direction of travel of the yarn and being pivotably mounted in a plane perpendicular to the plane of a gap between the surfaces of the yarn clamping mechanism, said feeler needle having a substantially U-shaped flexed free end which is located in said pivot plane, a spring acting upon the feeler needle, which spring in the absence of the yarn retains the feeler needle in said tilted position defining a rest position, a stationary yarn deflecting pin, the feeler needle in this rest position bearing with its free end against said stationary yarn deflecting pin and rendering possible the threading-in of a yarn in one operation into the yarn clamping mechanism and along the deflecting pin and about such into the U-shaped end of the feeler needle.

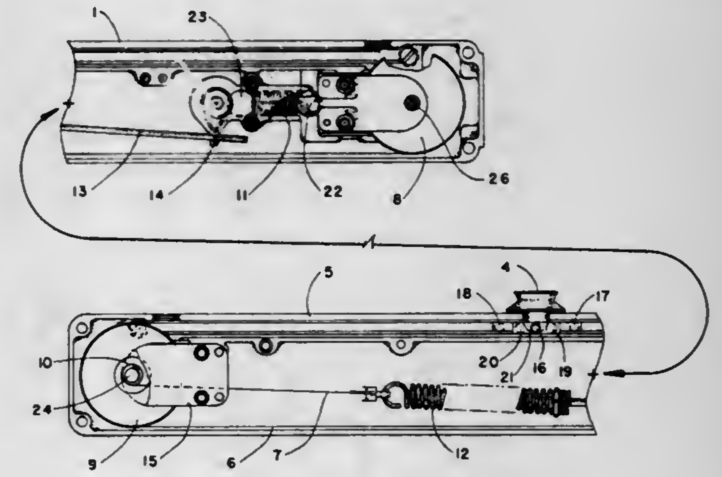
3,873,044
DUAL FUNCTION IN-LINE TENSIOMETER-YARN TENSION CONTROLLER

Thomas A. Flower, Colonial Heights, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,506

Int. Cl. B65h *59/32, 59/40*

U.S. Cl. 242—147 R **19 Claims**



1. A dual-function in-line tensiometer-yarn tension controller to constantly maintain and measure tension on a running length of yarn comprising in combination

a movable yarn guide,

an opposed pair of pulleys, mounted with their axes parallel to one another and spaced apart,

means to restrain said movable yarn guide to movement in one line, said line being any line congruent with and parallell to a line between nd perpendicular to said pulley axes and extending from on pulley axis to the other pulley axis,

a highly flexible, highly responsive continuous tensile member having low mass,

said yarn guide fixably mounted on said continuous tensile member,

said continuous tensile member mounted to pass around said pulleys under tension,

said pulley rotatably mounted at either end of said means to restrain said yarn guide,

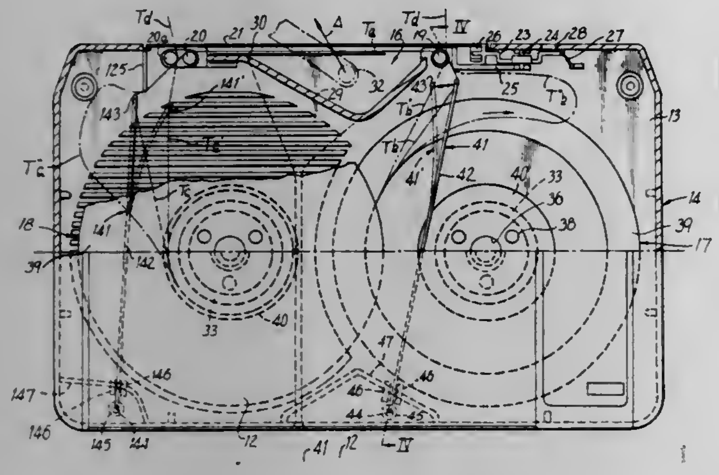
means adjacent said movable yarn guide to measure the position along said line of said movable yarn guide,

means connected to one of said pulleys to bias said one of said pulleys against motion toward the opposite pulley, and

means connected to one of said pulleys for urging said one of said pulleys to rotate in one direction of rotation, said urging means including a resiliently biased, noncontinuous, highly flexible, highly responsive tensile member having low mass, said one direction of rotation being opposite to the direction of rotation caused by movement of said guide and said continuous tensile member due to a tensioned yarn.

3,873,045
TAPE CASSETTE

Tsuneo Nemoto, and Kiyoshi Urayama, both of Miyagi-ken, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed July 19, 1973, Ser. No. 380,883
Claims priority, application Japan, July 25, 1972, 47-87670
Int. Cl. G11b *23/10*
U.S. Cl. 242—199 **7 Claims**

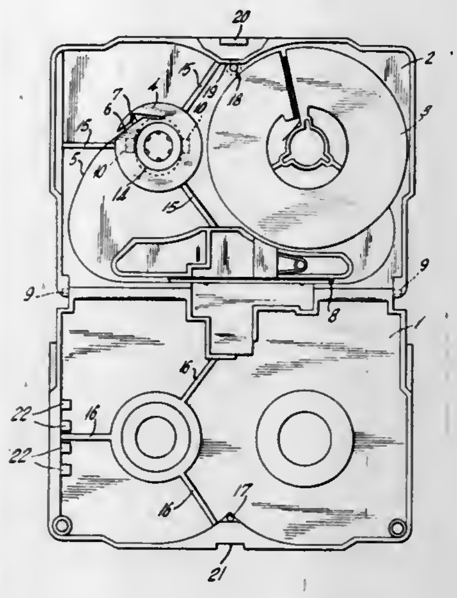


1. A cassette for use in a magnetic recording and/or reproducing apparatus, comprising a housing containing rotatable reels on which a resilient flexible tape is wound, said housing having an access opening extending along a side thereof and through which said tape can be withdrawn from said housing for the recording and reproducing of signals thereon, guide means within said housing adjacent the opposite ends of said opening for directing the tape between said reels in a path including a run extending along said opening and path portions extending from adjacent said ends of said opening tangentially to the outer turns of said tape wound on the respective reels, and at least one tape shifting means acting against a face of said tape in a region of a respective one of said path portions between the outer turn on the respective reel and the proximal side of said housing adjacent the access opening, said tape shifting means being mounted for movement in a course between the respective reel and the adjacent guide means and being resiliently urged generally tangentially of the outer turn thereon to a normal position in which said tape shifting means produces a bend in said one path portion between the respective guide means and reel, the concave surface of the bend facing generally toward the other reel so that turning of said respective reel in the direction for unwinding the tape therefrom enlarges said bend in a direction away from the other reel due to the resilient flexibility of said tape and transmission to said run of the resulting slack in the tape is avoided, said tape shifting means being deflected from said normal position by said tape in response to a substantial tension in the latter for removing said bend from the respective path portion.

3,873,046
PROJECTION CASSETTE

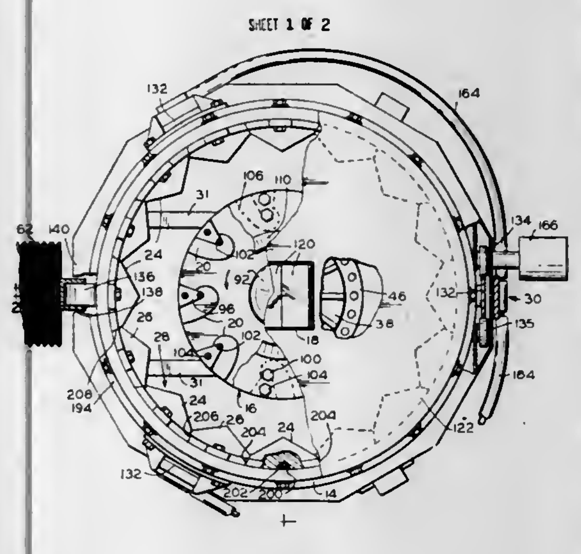
Louis Thevenaz, Sainte-Croix, Switzerland, assignor to Bolex International SA, Sainte-Croix, Switzerland
Filed Oct. 30, 1973, Ser. No. 410,992
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **14 Claims**

1. A cinematographic film projection cassette comprising a case, a first cavity for a standard film spool, a second cavity for a take-up core, a lid movably attached to the case and a spring element for locking the cassette, and having first means for guiding the film round the inside corners of the case, and second means for confining the path of the film to the plane common with the film spool and take-up core to ensure a regular winding of the film onto the take-up core, third means for retaining the take-up core in a pre-determined position relative to the case and film spool, fourth means for limiting the displacement of the spring element to prevent breaking thereof and a key to lock the lid and case in a closed and operative condition.



3,873,047
IMPACT CRUSHER

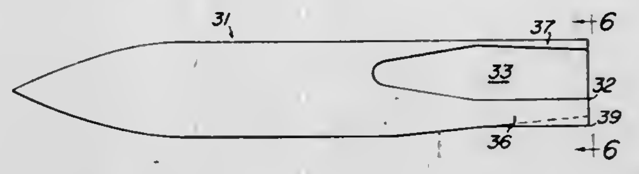
Louis W. Johnson, 3440 Franklin Blvd., Eugene, Oreg. 97401
Filed Mar. 22, 1973, Ser. No. 343,635
Int. Cl. B02c *13/09*
U.S. Cl. 241—275 **21 Claims**



1. In an impact crusher:
base means,
a rotary impeller mounted on the base means for rotation on a vertical axis,
drive means for rotating the impeller to centrifugally throw material to be crushed through a predetermined annular zone around the impeller,
annular breaker bar means,
mounting means mounting the breaker bar means adjustably on the base means in positions surrounding said annular zone,
and adjustment means for moving the breaker bar means relative to the base means to vary the portion of the breaker bar means impacted by the thrown material to distribute wear over a large area of the breaker bar means.

3,873,048
PROJECTILE BOATTAILS

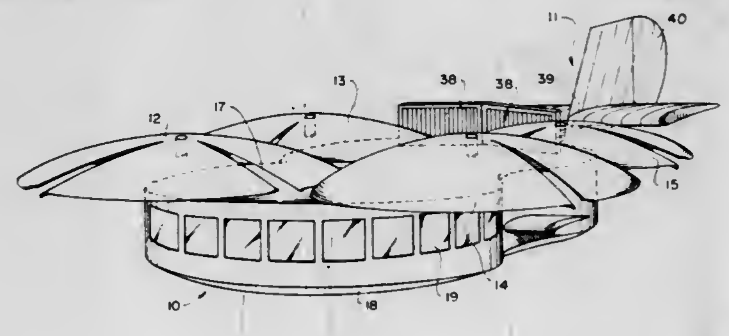
Anders S. Platou, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 23, 1973, Ser. No. 418,799
Int. Cl. F42b *11/02*
U.S. Cl. 244—3.1 **5 Claims**



1. An aerodynamically stable projectile comprising an ogival nose, a substantially cylindrical main body portion and a boattailed base portion formed by at least three equidistant identical slanted surfaces, each said slanted surfaces originating at a point on the cylindrical surface of said main body and each of said slanted surfaces being terminated by a straight side at the rear face of said base portion, said straight sides being non-contiguous to each other thereby forming fin-like portions between said slanted surfaces, and wherein the cross-section of each of said fin-like portions tapers outwardly from a minimum cross-sectional dimension at its minimum radial distance from the centerline of the projectile to a maximum cross-sectional demension at its maximum radial distance from the projectile centerline.

3,873,049
FLYING MACHINE

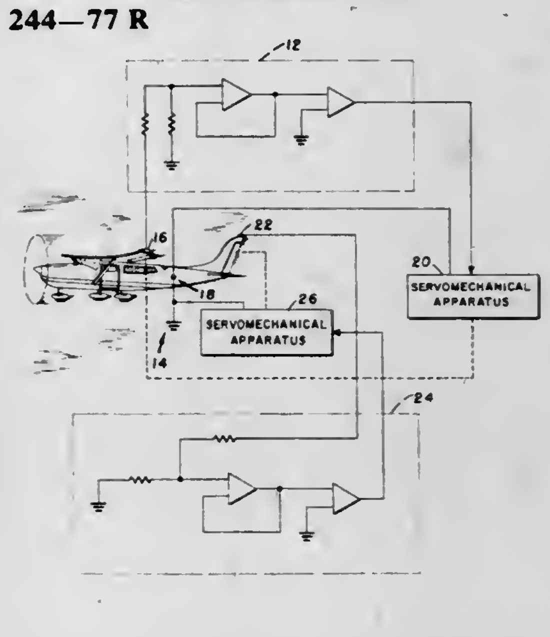
Paul V. Horsdal, 60 Sparks St., Ottawa, Ontario, Canada
Filed Aug. 31, 1973, Ser. No. 393,285
Claims priority, application Canada, July 13, 1973, 176372
Int. Cl. B64c *27/08*
U.S. Cl. 244—17.23 **1 Claim**



1. A flying machine comprising, in combination;
a hull;
four vertical drive shafts extending upwardly from said hull; four rotors respectively mounted on said shafts above said hull;
said drive shafts and said rotors being disposed in two pairs, with the two rotors of each pair spaced apart transversely of said machine and with said pairs spaced apart longitudinally of said machine;
means for rotating said vertical drive shafts in directions such that the inboard sides of said rotors travel towards the rear of said machine;
each of said rotors being dish-shaped and having its concave side facing downwardly; and
each of said rotors having means defining a plurality of radial slots therein;
said slot defining means comprising, for each of said slots, a first edge extending upwardly from, and forwardly in the direction of rotation of, the respective one of said rotors and a second edge extending downwardly from, and rearwardly in the direction of rotation of, said respective rotor;
an air baffle structure disposed rearwardly of said rotors for deflecting air discharged rearwardly by said rotors;
a pair of stabilizer flaps projecting horizontally from opposite sides of said hull; and
a tailplane provided rearwardly of said baffle structure.

3,873,050
ATTITUDE SENSING METHOD AND APPARATUS

Maynard L. Hill, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed Oct. 29, 1973, Ser. No. 410,391
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 R **12 Claims**



1. Apparatus for detecting the attitude of an airborne vehicle operating in the electrostatic field existing in the earth's atmosphere, comprising:
probe means mounted on said vehicle and responsive to said electrostatic field;
ground connection means on said vehicle;
referencing means electrically connected to the probe means and the ground connection means for comparing the response to the electrostatic field sensed by said probe means to the potential existing at said ground connection means, said referencing means producing an output signal proportional thereto, said output signal indicating alignment between a reference line taken between said probe means and said ground connection means and an equipotential line existing in said earth's electrostatic field.

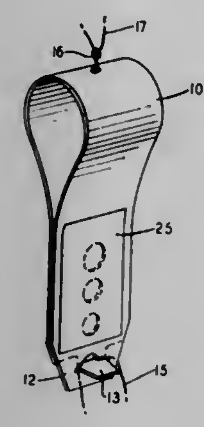
11. A method for detecting the attitude of an airborne vehicle operating in the electric field existing in the earth's atmosphere, comprising the steps of:
sensing the potential of said electrostatic field with probe means responsive to the electrostatic field;
measuring the potential at a ground connection on the vehicle;
comparing the potential sensed by said probe means with the potential measured at said ground connection; and
generating an output signal proportional to the difference in the two potentials, said output signal indicating alignment between a reference line taken between said probe means and said ground connection and an equipotential line existing in said earth's electrostatic field.

3,873,051
TIME DELAY RELEASE DEVICE

Rudolph S. Kennedy, 35 Maple Ave., New Providence, N.J. 07974
Filed Mar. 26, 1974, Ser. No. 454,826
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **7 Claims**

1. A time delay release device comprising an elongated piece of resilient material the ends of said elongated material having adhesive means to hold an article and subsequently

release said article after a defined time duration; said adhesive means which maintains said ends adjacent to each other consists of a series of apertures on each of said ends, and an adhesive strip overlaying said apertures on the same side of said piece of material whereby, when said ends are positioned adjacent to each other and the adhesive strip overlaying said apertures on each end is pressed into common engagement, said ends will be maintained adjacent to each other until the resilient force of said resilient material overcomes the holding adhesive force, and thereby releases said article.



3,873,052
SUPPORTING STRUCTURE FOR MOTORS OF VERTICAL CENTRIFUGAL PUMPS

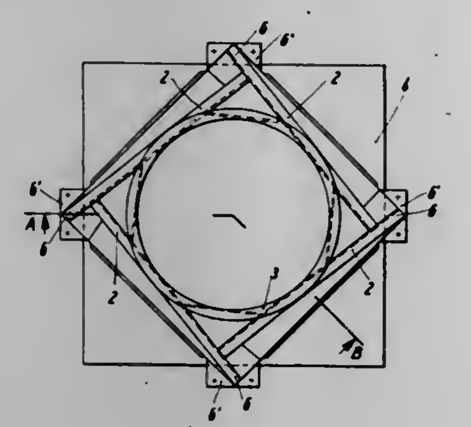
Guenter Bockau, Varrel II, and Horst Schaefer, Rhade, both of Germany, assignors to Klein Schanzlin & Becker Aktiengesellshaft, Frankenthal, Germany

Filed Mar. 22, 1973, Ser. No. 343,757

Claims priority, application Germany, Mar. 22, 1972, 2213852

Int. Cl. F01d *25/28;* **F16m** *1/00*

U.S. Cl. 248—20 **9 Claims**



1. A supporting structure for prime movers of hydraulic machines, especially for transmissions and/or electric motors of vertical centrifugal pumps, comprising a foundation; at least three spaced apart support points provided on said foundation; a polygonal frame including a plurality of metallic frame members, each of said frame members being secured at one end to one of said support points and at the other end to another of said frame members spaced from the end of the latter which is secured to another corresponding support point; and a substantially annular motor carrier supported by said frame, said frame members being substantially tangential to said carrier and the static and dynamic forces to which said frame members are subjected being transmitted to said foundation directly by way of bending moments and free of torsion.

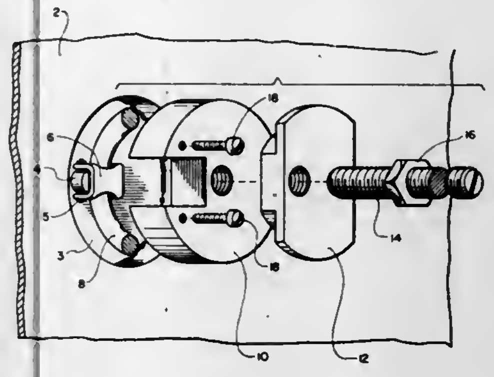
3,873,053
RING TO STUD CONVERTER

John H. Kwik, Jr., Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 3, 1974, Ser. No. 485,656

Int. Cl. B61d *45/00;* **B60p** *7/08*

U.S. Cl. 105—476 **4 Claims**



1. The combination with a cargo ring fitting having a recess in a rigid planar surface; a post, located off center in the recess and projecting from the bottom of the recess to the plane of the surface, having a hole for a pin extending through the post; a U-shaped hinge, the open end of which is connected to each end of the pin and the parallel sides of which are provided with in line circular holes having a ring passing through; of a ring to stud converter comprised of:

- a means for clamping and sandwiching the ring and bracketing the hinge preventing motion of the ring about the hinge and post;
- a stud fixedly attached tc the clamping means and projecting substantially normal to the rigid planar surface; and
- a means for removing play in a direction normal to the rigid planar surface between the ring and clamping means combination and the rigid planar surface.

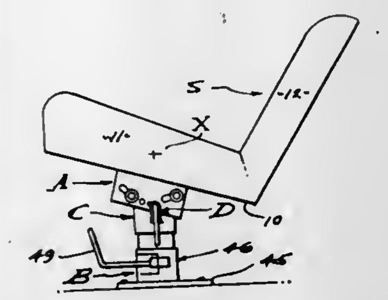
3,873,054
ADJUSTABLY POSITIONABLE SEAT SUPPORT

Dale P. McKee, and Richard D. McKee, both of Canoga Park, Calif., assignors to Burchfield and Turner Enterprises, Fresno, Calif.

Filed Apr. 23, 1973, Ser. No. 353,744

Int. Cl. F16m *11/04*

U.S. Cl. 248—371 **22 Claims**



1. An adjustably positionable seat support including, an adapter for supporting engagement with the underside of the seat and having spaced fore and aft elongated guide means, the foremost guide means being declined and the rearmost guide means being inclined, the forward extremities of said fore and aft guide means being in a plane normal to a line projecting from a point therebetween and extending through and beyond the underside of the seat to a metacenter above the seat, and a supportable carrier with fore and aft pivots slideably engageble in said fore and aft guide means and spaced to move to and from the forward extremities of said guide means respectively whereby fore and aft motion of the adapter causes rotation thereof about said metacenter.

3,873,055
DAMPING AND GUIDANCE SYSTEMS

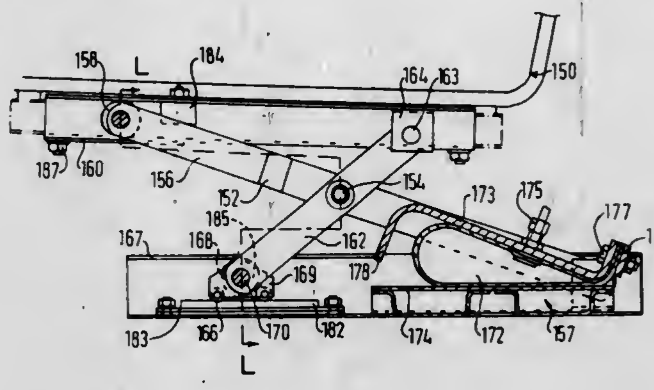
Harold William White, Coventry, England, assignor to Dunlop Limited, London, England

Filed Aug. 8, 1973, Ser. No. 386,632

Claims priority, application United Kingdom, Aug. 12, 1972, 37732/72; Dec. 1, 1972, 55493/72

Int. Cl. B60n *1/02*

U.S. Cl. 248—399 **5 Claims**



1. A damping and guidance system for controlling the relative position and movement of two components comprising two or more guidance channels, each channel being arranged to be operatively associated with one component and one of two interconnecting locating members arranged to be operatively associated with the other component and arranged to project one into each channel respectively, the channels and locating members being arranged to allow relative movement therebetween only in a direction substantially parallel to the longitudinal axis of the channels, one side of each channel having a lining of deformable elastomeric material and the respective locating member being preloaded into contact with the elastomeric material so that relative movement of each member along its respective channel is damped by the internal hysteresis of the material, each locating member comprising a block, at least two rollers on one face of said block, said rollers being preloaded into rolling contact with the lining of elastomeric material secured to one side of the associated channel.

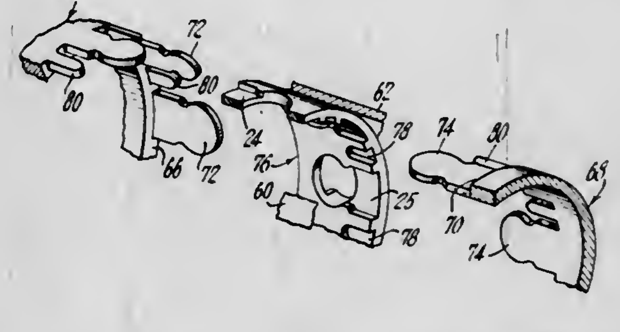
3,873,056
MOLD FOR MAKING A RETAINING RING FOR AN ANTIFRICTION BEARING

Roger W. Parkinson, Plainville, Conn., assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 319,527, Dec. 29, 1972, Pat. No. 3,839,531. This application Apr. 4, 1974, Ser. No. 458,007

Int. Cl. B29c *1/06;* **B29d** *31/02*

U.S. Cl. 249—142 **3 Claims**



1. A mold for use in the injection-molding of a plastic retainer ring for holding a plurality of like antifriction elements in angularly spaced relation, comprising mold-cavity defining structure including a cylindrical outer wall, a cylindrical inner wall concentrically arranged with respect to said outer wall to form an annular cavity therebetween, a first annular core piece sized to form a first radially extending wall joining said cylindrical inner and outer walls, a second annular core piece sized to form a second radially extending wall joining said cylindrical inner and outer walls at a location axially spaced from said first core piece, a first plurality of like angularly spaced radially inner arcuate groove-forming projections attached to the first core piece and extending axially into the mold cavity in axially slidable engagement with the outward cylindrical surface of the inner wall, and a second like plurality of similarly spaced radially outer arcuate groove-forming projections attached to the second core piece and extending into the mold cavity in axially slidable engagement with the inward cylindrical surface of the outer wall, the outer diameter of the projections of the first core piece being substantially the same as the inner diameter of the projections of the second core piece, and the inner and outer projections being axially slidable in angular registration and in and out of axial overlap, whereby upon such axial overlap said core pieces cooperatively define a retainer cavity wherein a like plurality of radially continuous openings will be established in the mold ring at the locations of angular and axial overlap.

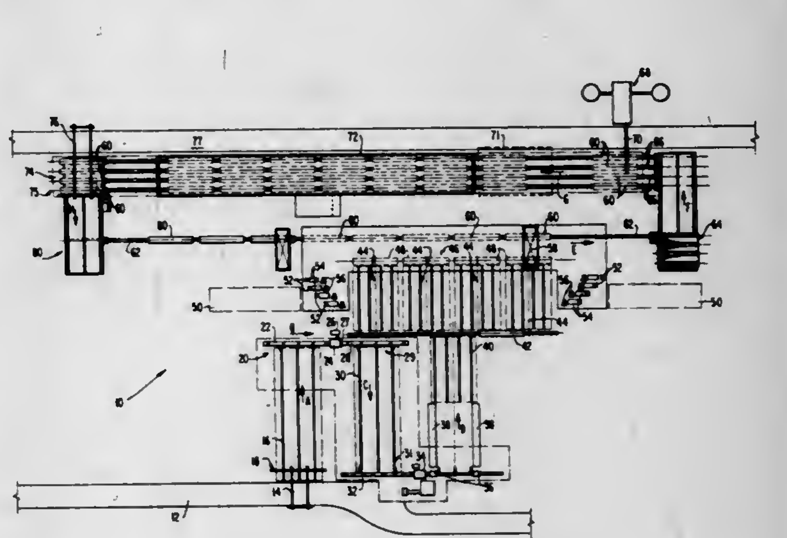
3,873,057
APPARATUS FOR WEIGHT COATING PIPE SEGMENTS

William R. Rochelle; Leroy N. Larenzo, and Eberhard V. Ranft, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed July 11, 1973, Ser. No. 378,041

Int. Cl. B22d *9/24*

U.S. Cl. 249—144 **13 Claims**



1. A mold for forming a weight coating upon the exterior surface of pipe segments comprising:

- a generally rectangular frame;
- a plurality of transversely mounted railway trucks positioned beneath said frame at longitudinally spaced regular intervals for translatably supporting said generally rectangular frame upon parallel railway rails;
- a plurality of longitudinally extending arcuate form means extending approximately the length of said frame for forming a cylindrical weight coating upon the exterior surface of a pipe segment;
- a plurality of base support means connected at longitudinally spaced intervals along said frame and generally transversely, upwardly extending with respect to said frame for supporting a first portion of said plurality of arcuate form means longitudinally with respect to said frame;
- a first plurality of arcuate arm support means, one being pivotally connected at one end thereof to one end of each of said base support means, for supporting a second portion of said plurality of arcuate form means longitudinally with respect to said frame and being operable to support in pivotal movement said at least a second portion of said plurality of arcuate from means in registry with and away from an imaginary cylindrical surface formed by a circumferential continuation of the curvature of said first

portion of said plurality of arcuate form means connected to said plurality of base support means;

a second plurality of arcuate arm support means, one being pivotally connected at one end thereof to the other end of each of said base support means and opposing said first plurality of arcuate arm support means for supporting a third portion of said plurality of arcuate form means longitudinally with respect to said frame and being operable to support in pivotal movement said third portion of said plurality of arcuate form means in registry with and away from the imaginary cylindrical surface formed by a circumferential continuation of the curvature of said first portion of said plurality of arcuate form means connected to said plurality of base support means;

means connected between at least a plurality of the other ends of opposing ones of said first and second plurality of arcuate arm support means for selectively holding against separation said first and second plurality of opposing arcuate arm support means in a posture where the first, second and third portion of said plurality of arcuate form means abut to provide a substantially closed cylindrical form;

means for supporting a pipe segment to be weight coated concentrically within the interior of said cylindrical form means;

a longitudinally extending opening in the top surface of said substantially closed cylindrical form means to prevent deposit of a weight coating composition within said cylindrical form and about the pipe segment position therein; and

said first and second plurality of arcuate arm support means being each pivotally connected to a corresponding base support means in a posture horizontally below the central axis of the substantially closed cylindrical form, whereby parting of said first and second plurality of arcuate arm support means and said second and third portions of said plurality of arcuate form means carried thereby respectively will expose more than the upper 180° surface of the weight coated pipe segment for facilitating unobstructed removal of the weight coated pipe segment from the mold.

3,873,058
MOULDING APPARATUS

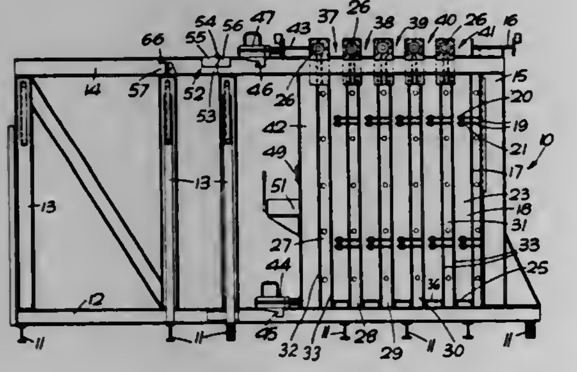
Robin Douglas Jeffery, Columbia, Md., assignor to Stelmo Limited, Ashford, Kent, England

Filed Mar. 27, 1973, Ser. No. 345,410

Claims priority, application United Kingdom, Mar. 28, 1972, 14570/72

Int. Cl. B41b *11/56*

U.S. Cl. 249—161 **6 Claims**



1. Moulding apparatus comprising
a. a frame having a base portion and an end wall upstanding from the base portion,
b. a plurality of upstanding wall members parallel to the end wall and in face to face relationship therewith,
c. two support members running along an upper part of the apparatus, one running along each side of the apparatus respectively, said wall members being positioned so that portions thereof rest on said support members and the lower edges thereof rest on said base portion,
d. a soffit between each adjacent pair of wall members and fixed along the lower edge of one of said pair of wall members to define with the wall members a moulding cavity between the wall members when the wall members are in a moulding position with the lower edges of the wall members and the soffits supported on said base portion,
e. at least two hydraulic ram devices, which in the moulding position, are mounted on the frame, one being arranged to act at or near the top and the other at or near the bottom of the wall member furthest from the end wall to urge the wall members and soffits together to form the moulding cavities, the hydraulic ram devices being readily disengageable from the frame to allow the wall members to be moved from the moulding position,
f. a separate carriage mounted for movement along the length of each of said two support members,
g. means on each carriage for selectively lifting a mould wall member from its position resting on said support members and said base portion, and
h. power drive means for moving each carriage along its support member whereby a mould wall member can be moved towards or away from the moulding position, said power drive means including a chain associated with each support member which chains are linked by said carriages, each chain passing around sprockets located at or adjacent each end of the support member with which it is associated, and wherein the two sprockets at or adjacent at least one of the ends of the two support members respectively are interconnected by shafting, there being drive means arranged to rotate the shafting.

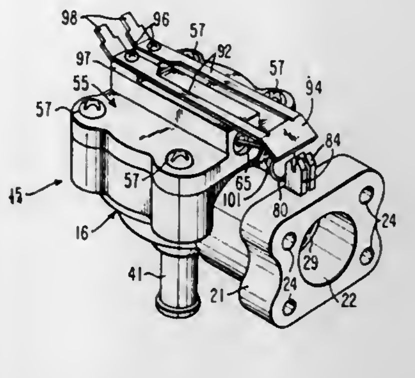
3,873,059
PILOT OPERATED FLUID CONTROL VALVE

Alan F. Meckstroth, 2357 Sheltenwood Dr., Dayton, Ohio 45409

Filed Jan. 17, 1973, Ser. No. 324,506

Int. Cl. F16k *31/02;* **F03g** *7/06*

U.S. Cl. 251—11 **15 Claims**



1. A pilot operated fluid control valve comprising a valve body having an inlet and an outlet with a valve seat therebetween, a flexible diaphragm cooperating with said seat to control the flow of fluid from said inlet to said outlet and having means defining a bypass port, a movable valve member supported for movement between an open position and a closed position relative to said port to control the movement of said diaphragm by differential pressure across said diaphragm, a bimetallic actuating element supported by said valve body, means for connecting said actuating element as a resistance within an electrical circuit to effect heating of said actuating element and movement between a normal position and a heated position, an actuating lever having one end portion connected to said valve member, means including a flexible seal means for pivotally supporting said lever, a compression spring connected to the opposite end of said lever, and means supporting said spring for over-center toggle actuation of said lever in response to movement of said bimetallic actuating element between said normal and heated positions to produce relatively rapid movement of said valve member between said open and closed positions in response to slower movement of said actuating element.

3,873,060
ELECTROMAGNETIC PRESSURE REGULATOR

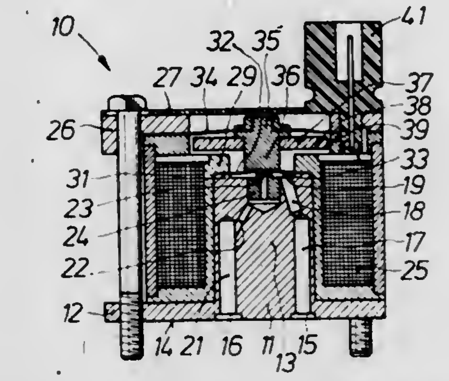
Helmut Espenschied, Ludwigsburg, and Wolfgang Gauss, Oeffingen, both of Germany, assignors to Robert Rosch G.m.b.H., Stuttgart, Germany

Filed May 24, 1972, Ser. No. 256,583

Claims priority, application Germany, May 26, 1971, 2126045

Int. Cl. F16k *31/06*

U.S. Cl. 251—129 **16 Claims**



1. A pressure regulator for regulating the pressure in a hydraulic circuit, comprising, in combination, a valve housing having an interior bounded by an interior wall and two ports opening into said interior of said valve housing and being bounded by surface portions of said interior wall, the surface portion bounding at least one of said ports constituting a valve seat; elastic separating means comprising an elastic separating diaphragm mounted in said interior of said valve housing and dividing said interior of said valve housing into a first chamber and a second chamber located on opposite sides of said elastic diaphragm, said ports opening into said first chamber, and said separating means being a continuous unbroken separating means completely preventing flow of fluid out of said first chamber into said second chamber; an armature located in said second chamber; mounting means mounting said armature for movement from a first position in which said armature presses said elastic separating means into sealing contact with said valve seat, thereby preventing fluid communication between said ports, to a second position in which said armature does not press said elastic separating means into sealing contact with said valve seat, thereby permitting fluid communication between said ports; and electromagnetic means mounted on said housing and operative when energized for moving said armature from one to the other of said positions thereof, said mounting means comprising a further elastic diaphragm constituting an elastic mounting diaphragm mounted in said interior of said valve housing and furthermore supporting and guiding said armature for movement between said first and second positions thereof.

3,873,061
DEVICE FOR TRANSFERRING FLUIDS BETWEEN STATIONARY AND ROTARY PARTS

Henric Wilhelm Thylefors, Stöckholm, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

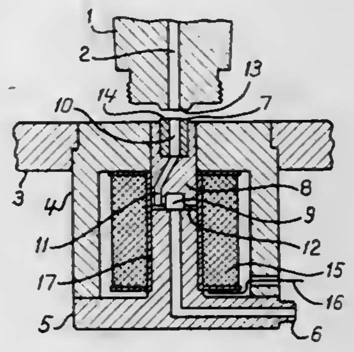
Filed Apr. 17, 1974, Ser. No. 461,726

Claims priority, application Sweden, May 29, 1973, 7307558

Int. Cl. F16k *31/06*

U.S. Cl. 251—139 **2 Claims**

1. In combination with a rotating machine part having a fluid passage coaxial with the rotation axis of said part, a stationary part having a fluid supply conduit and a valve seat in said conduit, a body having a fluid-transferring channel coaxial with said rotation axis and comprising a magnetizable material, said body including a valve element integral with said body and coacting with said valve seat, said body being movable axially in one direction to disengage said valve element from the valve seat and engage said body with the rotating part to connect the supply conduit through said channel to said fluid passage, said body being movable axially in the opposite direction to disengage the body from the rotating part and engage said valve element with the valve seat to close said supply conduit, and an electromagnet associated with said body and operable to hold the valve element against said seat against the action of the fluid pressure in said conduit.



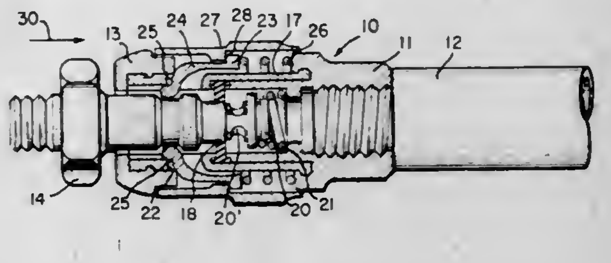
3,873,062
AIR HOSE QUICK COUPLER

Jerry Lynn Johnson, P.O. Box 50, Potrero, Calif. 92063, and Donald L. Adams, c/o Diamond-U Products, Inc., 1427 Magnolia St., Long Beach, Calif. 90813

Filed Nov. 30, 1973, Ser. No. 420,526

Int. Cl. F16l *37/18*

U.S. Cl. 251—149.6 **6 Claims**

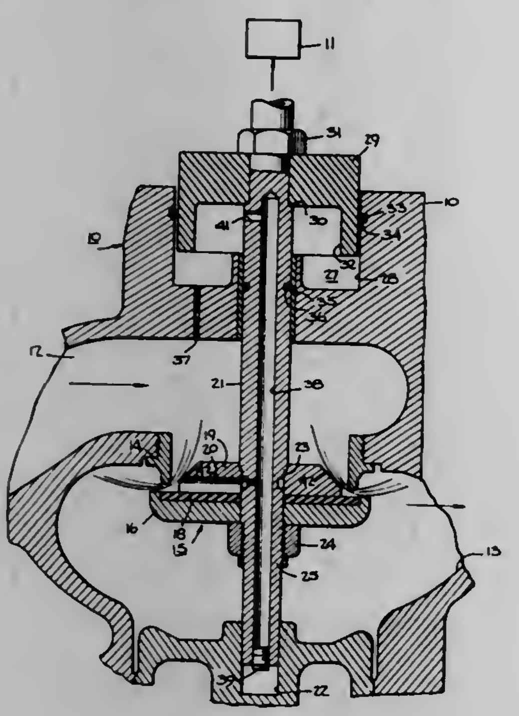


1. An air hose quick coupling device including:
a. a cylindrical body having an internal valve seat and poppet valve head spring-biased against said seat;
b. a retainer member in the form of a ring surrounding the body and a plurality of flexible fingers extending forwardly and biased radially inwardly from circumferentially spaced points on the ring; and,
c. a retainer spring urging said retainer member forwardly along said body, said body having side openings through which the end portions of the fingers pass, whereby insertion of a male connector having a nose and a central enlarged diameter portion into the coupling device causes the nose to unseat the poppet valve head and peripherally seal against the valve seat and the enlarged diameter portion to snap under the finger ends of the retainer member the end portions of said fingers including a flat step which engages under the forward edge of the opening through which it passes to thereby prevent radial outward movement of each of the fingers when the male member is connected to thereby lock the male connector to the coupling device, the retainer member being manually slidable rearwardly against the bias of the retainer spring to release the fingers and permit removal of the male member.

3,873,063

ASPIRATED BALANCE PISTON

Henry Illing, Parksville, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.
Filed Nov. 1, 1973, Ser. No. 411,803
Int. Cl. F16k *17/34*
U.S. Cl. 251—282 **8 Claims**

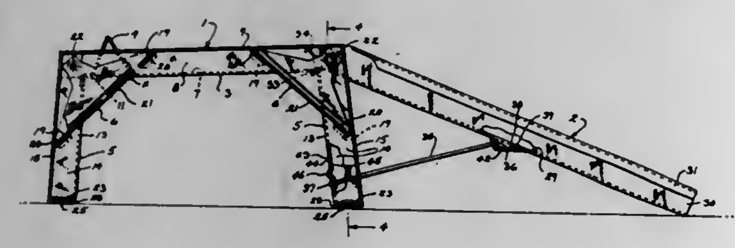


1. In a valve having
a valve body having an inlet and an outlet;
a valve seat within said valve body defining an opening communicating said inlet with said outlet;
an innervalve plug for sealingly seating on said valve seat to seal said opening;
a valve stem connected to said innervalve plug;
a balance piston slidably mounted in said valve body to define a pressure chamber therewith, said piston being connected with said valve stem;
a bias port in said valve body communicating said inlet with said pressure chamber; and
means communicating said pressure chamber with a point adjacent said opening upstream of said innervalve plug to effect a pressure tap in close proximity to the vena contracta of a fluid flowing through said opening with said innervalve plug spaced from said valve seat.

3,873,064

VEHICLE RAMP

Philip L. Lundman, Milwaukee, Wis., assignor to Petersen Industries, Inc., Fredonia, Wis.
Filed Jan. 14, 1974, Ser. No. 433,240
Int. Cl. E02c *3/00*
U.S. Cl. 254—88 **10 Claims**

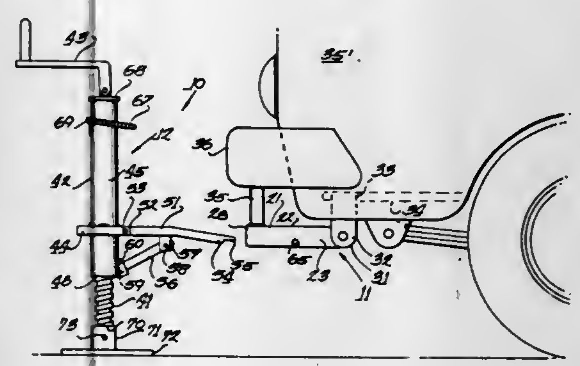


1. A vehicle ramp, comprising a supporting stand section, an inclined section connected to an end of said supporting stand section, a connecting member connecting the supporting stand section and the inclined section, pivotal means for pivotally connecting a first end of said connecting member to one of said sections, an enlarged head on the second end of said connecting member, the other of said sections having a generally keyhole-shaped slot including an enlarged portion having a size sufficient to receive said head and a narrow portion connected to said enlarged portion, said second end of said connecting member being disposed within said narrow portion of said slot and the head being disposed behind said other section to connect said connecting member to said other section.

3,873,065

VEHICLE SAFETY JACKING APPARATUS

Robert G. McCann, 855 E. Dolphin Ridge Dr., West Palm Beach, Fla. 33406
Filed Jan. 21, 1974, Ser. No. 435,027
Int. Cl. B66f *3/36*
U.S. Cl. 254—100 **4 Claims**

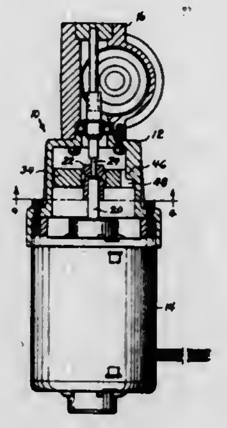


1. Jacking apparatus intended for use with a vehicle for the safe and positive jacking of the vehicle to an elevated position for performance of maintenance on the vehicle, changing a tire of the vehicle, and the like, the apparatus comprising:
at least one lifting adaptor bracket affixed to the frame of the vehicle and having a front end and a back end, the front end projecting outwardly of the vehicle and defining a recess therein;
a screw type jack having a threaded shaft with a tubular cylindrical sleeve member telescopically received on said shaft for reciprocal movement therealong, a handle operatively attached to the jack to effect the reciprocal movement of the sleeve member;
a self-aligning jack base member affixed to the bottom end of said jack and adapted to engage a supporting surface in a self-aligning manner for support of the jack thereon; and
a lifting arm having one end affixed to said jack sleeve member with the opposite end projecting outwardly therefrom and adapted to engage said recess of said lifting adaptor bracket and operable in a manner to elevate the vehicle by means of said bracket when said sleeve member is moved vertically upwardly along said threaded shaft of said jack;
said lifting adaptor bracket comprising an elongated body member having an inverted substantially U-shaped cross-section formed of a horizontal base member and depending vertically downwardly projecting leg portions, said base member and said leg portions defining interiorly thereof the elongated slot forming recess, said body member having a front end and a back end, a hardened steel pin spaced inwardly from said front end a substantial distance and extending intermediate said leg portions, a supporting member having one end affixed to said back end portion of said body member with the opposite end projecting substantially vertically upwardly therefrom and adapted to be secured to a portion of the frame of said vehicle, a second support member having one end affixed to the front end portion of said body member with the opposite end projecting upwardly therefrom and adapted to engage a rigid portion of said vehicle and selected from the portions including the vehicle bumper, the vehicle frame, and the like whereby the front end of said body member is directed outwardly of said vehicle.

3,873,066

SELF-CONTAINED MECHANICAL ACTUATOR

Martin A. Opyrchal, Charlotte, N.C., assignor to Duff-Norton Company, Inc., Charlotte, N.C.
Filed Sept. 13, 1973, Ser. No. 397,012
Int. Cl. B66f *3/18*
U.S. Cl. 254—103 **8 Claims**

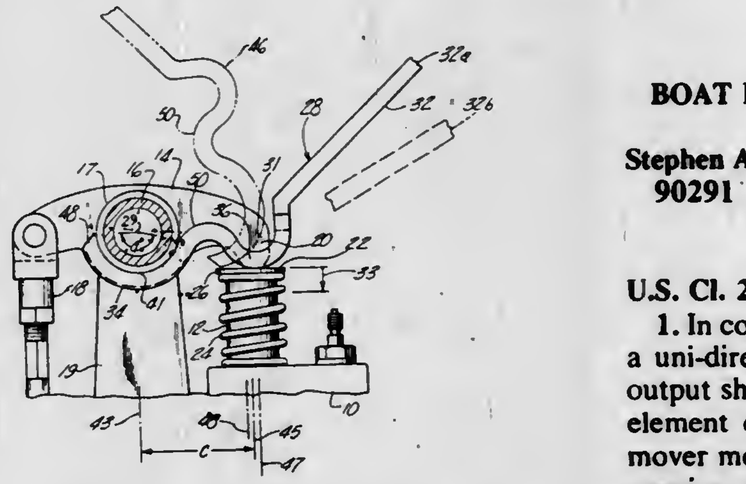


1. A self-contained mechanical actuator which includes a housing, a drive motor, a drive shaft assembly connecting the drive motor with the input side of a speed reduction gear train within said housing, and load-bearing means associated with the output side of said reduction gear train for manipulating a load, the improvement of braking means comprising a carrier member mounted on said drive shaft assembly, a plurality of radially spaced ball elements carried at circumferentially spaced locations in said carrier member, means acting individually on each of said ball elements for biasing said ball elements into contact with said drive shaft assembly, said ball elements constituting the sole support for said carrier member, and stationary abutment means disposed on said housing for engagement with said carrier member to restrict rotational movement thereof and thereby cause said ball elements to apply a braking resistance to rotation of said drive shaft assembly.

3,873,067

FUEL INJECTOR DEPRESSOR TOOL

Raul M. Carpio, 9545 Pistachio St., El Paso, Tex. 79924, and Ernesto J. Alarcon, 343 Tulane Dr., El Paso, Tex. 77907
Filed Mar. 13, 1974, Ser. No. 450,716
Int. Cl. B66f *15/00*
U.S. Cl. 254—131 **10 Claims**

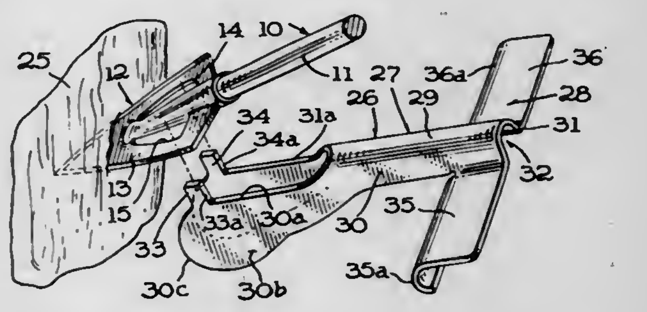


1. A fuel injector depresser tool comprising arcuate hook means adapted to partially encircle a fuel injector rocker arm shaft to temporarily mount the tool for arcuate motion around the shaft axis; presser means having a surface adapted to engage the end face of a fuel injector plunger for depressing same to the cylinder misfire position, and a manually operated handle for effecting arcuate movement of the tool around the shaft axis; said hook means having an arcuate shaft-engagement surface measuring at least approximately 150° around the shaft axis for preventing inadvertant shifting of the tool relative to the shaft when the presser means is engaged with the plunger.

3,873,068

ARCHER'S ACCESSORY TOOL FOR REMOVING EMBEDDED ARROWHEADS

Preston V. Allen, c/o Quad Taylor, Altamont, Utah 84001
Continuation-in-part of Ser. No. 229,293, Feb. 25, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,661
Int. Cl. B66f *3/00;* **B23p** *19/04*
U.S. Cl. 254—131 **14 Claims**



1. An archer's accessory tool for removing an object-embedded arrow via the arrowhead which has a pair of transversely disposed, forwardly facing contact surfaces, said tool comprising an elongated body member provided with a bifurcated, forwardly disposed end portion to facilitate operative use of said tool selectively from both above and below the arrow; said bifurcated end portion having a pair of transversely disposed lugs with rearwardly facing bearing surfaces, disposed at the forward end thereof and on at least one side of a longitudinal centerline of said elongated body member; said lug bearing surfaces adaptable for bearing engagement with said contact surfaces to facilitate removal of the arrow in a substantially axial direction; and said bifurcated end portion having arcuate camming surfaces operatively engageable with said object when said lug bearing surfaces of said bifurcated end portion engage said contact surfaces of said arrowhead, said camming surfaces being disposed forwardly of said lug bearing surfaces and entirely on a side of the longitudinal centerline of said elongated body member opposite said one side.

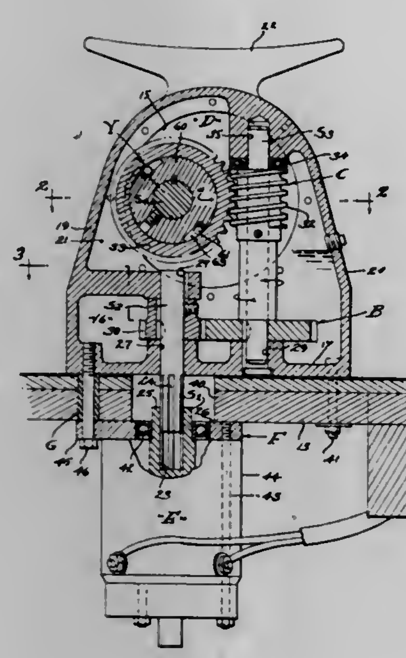
3,873,069

BOAT DECK WINDLASS WITH POWERED-MANUAL DRIVE

Stephen A. Sprague, 420 Linnie Canal, Marina Del Rey, Calif. 90291
Filed Feb. 28, 1973, Ser. No. 336,607
Int. Cl. B66d *1/14*
U.S. Cl. 254—187 R **14 Claims**

1. In combination with a windlass having a live output shaft, a uni-directional transmission means operable to drive said output shaft in a hauling direction of rotation, a line hauling element driveably carried on said output shaft, and prime mover means powering said transmission means; a first overrunning clutch driveably connecting said transmission means and said output shaft to drive the latter in a hauling direction of rotation, a manually operable drive means, and a second overrunning clutch driveably connecting the manually operable drive means and said output shaft also to drive the latter in a hauling direction of rotation, there being a drive element carried on said output shaft and common to and driven by said

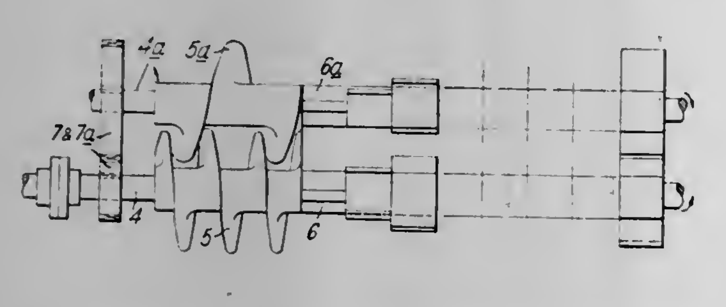
first and second overrunning clutches, whereby either the prime mover or manually operable drive means can pre-empt



the other to drive the output shaft and said hauling element in a hauling direction of rotation.

3,873,070
CONTINUOUS MIXING MACHINES

Horace Fritz Beken, and John Michael Beken, both of Barking, England, assignors to Beken Engineering Limited, Barking, Essex, England
Filed Sept. 10, 1973, Ser. No. 395,458
Claims priority, application United Kingdom, Nov. 8, 1972, 51548/72
Int. Cl. B01f *7/04*, *7/08*; **B29b** *1/10*
U.S. Cl. 259—6 **10 Claims**



1. A continuous mixing machine comprising a mixing chamber having inlet means for materials to be mixed therein and outlet means for materials mixed therein; feeder means for supplying materials to be mixed to said inlet means at a predetermined rate;

a pair of axially parallel rotatable shafts accommodated in said mixing chamber between said inlet means and said outlet means;

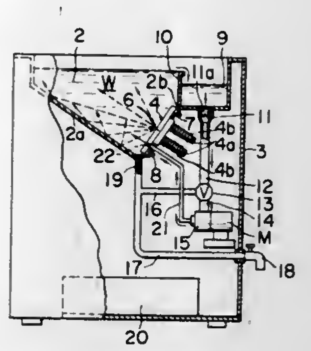
drive means for rotating said shafts in opposite senses and at different speeds;

circumferentially extending feed worm sections at the inlet ends of said shafts, which sections intermesh whereby material is advanced from said inlet means towards said outlet means;

mixing blade sections on said shafts on the outlet side of the feed worm sections, which mixing blade sections each comprises a plurality of axially spaced mixing blades and which intermesh whereby material is mixed but not substantially advanced.

3,873,071
ULTRASONIC WAVE CLEANING APPARATUS

Noriyasu Tatebe, Tokyo, Japan, assignor to Kabushiki Kaisha Tatebe Seishudo, Tokyo-to, Japan
Filed Aug. 1, 1973, Ser. No. 384,737
Int. Cl. B01f *11/02*
U.S. Cl. 259—72 **8 Claims**

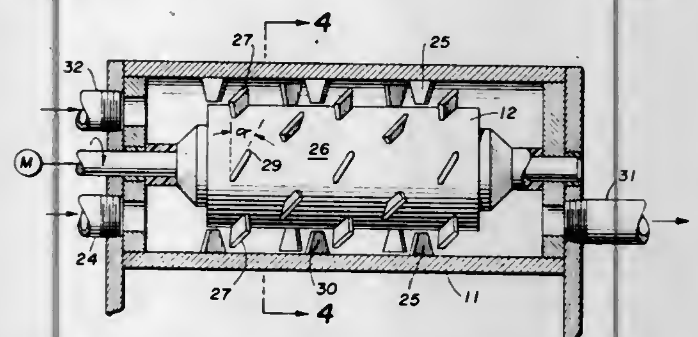


1. In an ultrasonic wave cleaning apparatus including an open-top cleaning liquid tub having a bottom of V-shaped cross section, including a pair of first and second oppositely inclined bottom walls, and ultrasonic wave oscillating means on said first bottom wall to radiate ultrasonic waves into a cleaning liquid contained in said tub:

an improvement wherein said second bottom wall is less inclined with respect to the horizontal than said first bottom wall so as to extend obliquely upwardly over a greater length than said first bottom wall, said ultrasonic wave oscillating means being oriented to radiate the ultrasonic waves obliquely upwardly along and parallel to said second bottom wall, said tub being fully open upwardly at the upper edge of the bottom walls.

3,873,072
MELT EXTRUSION

Lawrence E. Blackmon, Foley, Ala., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 168,286, Aug. 2, 1971, abandoned. This application Jan. 24, 1873, Ser. No. 326,329
Int. Cl. B01f *7/08*; **B29b** *1/06*
U.S. Cl. 259—192 **2 Claims**



1. Apparatus for mixing and kneading a wax-like substance into a moving stream of molten synthetic fiber-forming polymer comprising:

a. a heated barrel having an entrance and an exit;

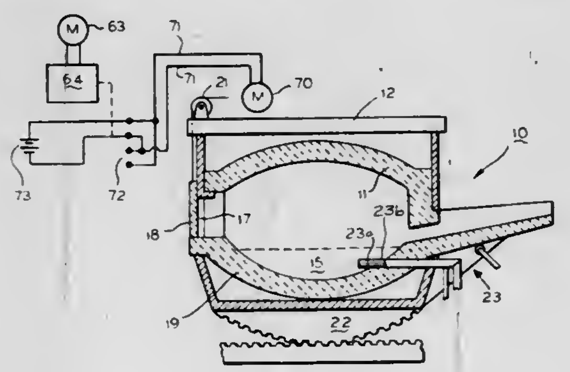
b. a screw operatively positioned for driven non-oscillating rotation within said barrel for propelling the wax-like substance and polymer from the entrance to the exit and uniformly dispersing the wax-like substance as a separate and distinct phase in the polymer as the same moves therethrough;

c. a series of fixed feed-compression flights radially outwardly extending from the root of the screw along helical lines, each flight of which is interrupted to provide a plurality of circumferentially spaced spoke-like blades each having a leading edge and a trailing edge;

d. a series of fixed feed-resisting flights extending radially inwardly from the barrel along reverse complementing helical lines with respect to the disposition of the feed-compression flights, each feed-resisting flight being composed of a plurality of circumferentially spaced spoke-like blades each having a leading edge and a trailing edge; said screw blades and barrel blades being spaced on the screw and barrel, respectively, such that during rotation of the screw the distance of closest approach of the leading edge of the screw blades and the trailing edge of the barrel blades is between about one-eighth inch and about one thirty-second inch.

3,873,073
APPARATUS FOR PROCESSING MOLTEN METAL

Joerg P. Baum, and Jai K. Pearce, both of Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed June 25, 1973, Ser. No. 373,014
Int. Cl. C21c *5/38*
U.S. Cl. 266—16 **43 Claims**



1. A metallurgical process system comprising:

a metallurgical vessel for containing a quantity of molten metal to be processed,

said vessel including first means for introducing reactants to said molten metal whereby substantial quantities of gases are evolved therefrom, an exit opening formed in said vessel for discharging said gases,

gas disposal means for receiving said gases,

second means for coupling said exit opening to said gas disposal means,

said second means including third means for controlling the amount of air admitted to said gas disposal means through said second means,

and fourth means respective to a change in air flow conditions into said vessel and being operable to actuate said third means to adjust the amount of air admitted to said gas disposal means,

an access opening formed in said vessel, closable means operatively associated with said access opening and movable between open and closed positions for opening and closing said access opening whereby air is admitted into said vessel when said closable means is open,

said fourth means being operative to sense the position of said closable means and operable to actuate said third means to decrease the amount of air admitted to the gas disposal means through said second means when said closable means is open and for increasing the amount of air admitted through said second means when said closable means is closed.

3,873,074
CONVERTER-BOTTOM FOR BOTTOM-BLOW STEEL MAKING PROCESS

Yi-Chung Chang, Murrysville, Pa., assignor to Berry Metal Company, Harmony, Pa.
Filed Mar. 26, 1973, Ser. No. 344,811
Int. Cl. C21c *5/48*
U.S. Cl. 266—35 **13 Claims**

1. In a bottom-blow steel making converter, a converter-bottom comprising:

a metal shell side wall means,

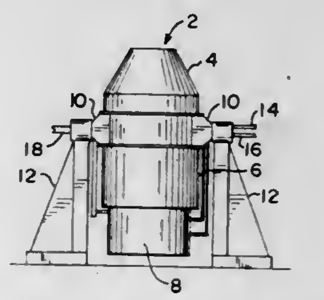
a metal bottom wall,

gas injector means extending upright through the bottom wall,

rammed refractory material between the injector means and the side wall means and forming a bottom surface below a converter melting area up to which extends a top of the injector means to provide gaseous communication of the gas within the injector means into the interior of the melting area,

coolant spray and metal shield means between the refractory material and the injector means,

coolant spray means extending in between the shield means and the injector means and being below the converter bottom surface below the melting area, said spray means spraying the coolant under low pressure in the area of the injector means attendant to cooling the gases to be emitted from the injector means, and



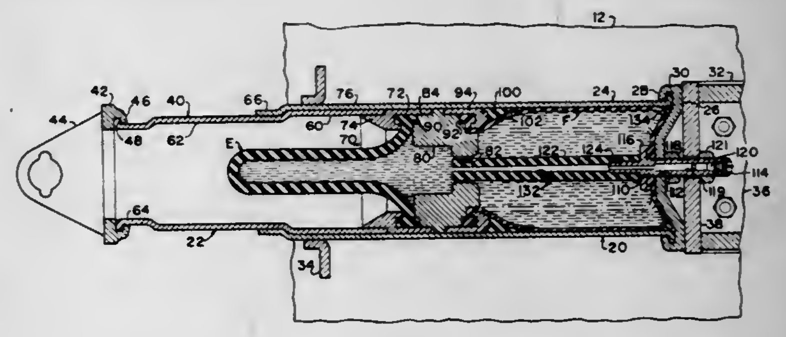
cooling means between the injector means and the metal side wall means in the rammed refractory material and spaced substantially below the bottom surface of the melting area so as not to come in contact with the melting area,

said metal shield means being spaced from and disposed about said spray means and said injector means, and

a tapered and top annular metal collar means having a reduced upper end adjacent the bottom surface of said refractory material and an enlarged lower end disposed on said metal shield means, said refractory material including portions surrounding and covering the upper reduced end of said metal collar means from the converter melting area, said metal collar means being disposed about the top of said injector means whereby said metal collar means and said metal shield means effectively cool the top of said injector means upon operation of said spray means during use of said converter.

3,873,075
FLUID PRESSURE DEVICE

Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Wickliffe, Ohio
Continuation-in-part of Ser. No. 308,808, Nov. 22, 1972, Pat. No. 3,819,219. This application June 7, 1973, Ser. No. 367,761
Int. Cl. F16f *9/10*; **B60r** *19/06*
U.S. Cl. 267—116 **14 Claims**



2. In a fluid pressure device, a tubular member, a rigid member slidable within said tubular member, an elastic tubular member at one side of said rigid member having one end

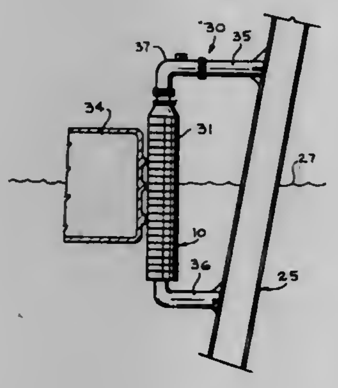
sealed to said rigid member and its opposite end closed, and a flexible ring-like member at the same side of said rigid member as said elastic tubular member having a feather edge between said tubular member and said elastic tubular member.

3. In a fluid pressure device, first and second relatively movable assemblies having a predetermined relative normal operation position, one of said assemblies including a part orientated transversely of the direction of relative movement between the assemblies and having an aperture therethrough, a flexible tubular member adapted to contain liquid at one side of said transversely orientated part having one end sealed about said aperture therethrough and its opposite end closed, an elastic tubular member adapted to contain liquid at the opposite side of said transversely orientated part having one end sealed about said aperture therethrough and its opposite end closed and adapted to bias said assemblies to said predetermined normal operating position, and a member connected to the closed end of one of said tubular members and extending through said aperture in said transversely orientated part.

3,873,076

ANNULAR BUMPER GUARD FOR FLOATING VESSELS

Orde R. Evans, P.O. Box 51303, O.C.S., Lafayette, La. 70501
Filed Oct. 26, 1973, Ser. No. 410,187
Int. Cl. F16f *7/12*
U.S. Cl. 267—140 **3 Claims**

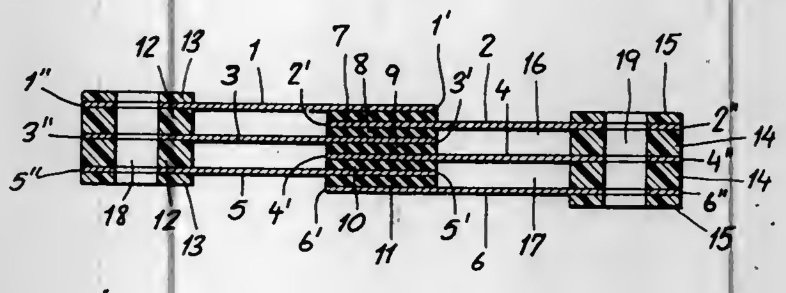


1. A guard for preventing damage by contact of floating vessels with structures in water covered areas comprising:
- a. an annular elastomer member having a central opening and an outer circumferential edge spaced therefrom;
- b. said member having a plurality of circumferentially spaced openings therein and extending through said member between the central opening and said outer circumferential edge of said annular member;
- c. said annular member having top and bottom surfaces;
- d. one of said surfaces having a recess therein;
- e. the other of said surfaces having a projection therein whereby said annular members may be stacked with the bottom surfaces of each engaging the top surface of the next adjacent member and with said projection engaging in the recess;
- f. support means for engaging in the central opening of a plurality of stacked annular members to position them in relation to a structure as a guard; and
- g. the central opening being defined by a plurality of recesses separated by projections extending circumferentially of the central opening, with the recesses extending toward the outer circumferential edge, with the projections having an inner surface for contact with the support member upon impact.

3,873,077

COMPOSITE SPRING ELEMENT

Raoul Jorn, 53 1/7 Post Wasserburg a.B., Hengnau, Germany
Filed June 24, 1974, Ser. No. 482,631
Claims priority, application Germany, Sept. 12, 1973, 2345990
Int. Cl. F16f *1/26*
U.S. Cl. 267—152 **11 Claims**

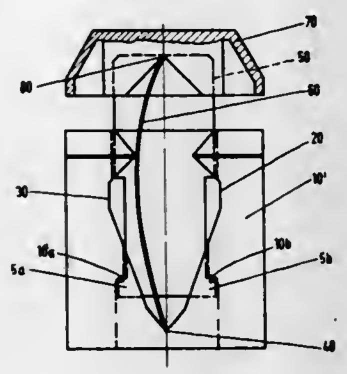


1. A spring element comprising:
- a pair of generally parallel elongated bendable but relatively incompressible first leaf springs having spaced-apart inner ends and opposite spaced-apart outer ends;
- means for rigidly connecting together said spaced-apart outer ends of said first springs;
- a second bendable but relatively incompressible leaf spring having an inner end spacedly received between and parallel to said inner ends of said first springs and an outer end turned away from said first springs; and
- a respective body of elastomeric material between each inner end of each first spring and said inner end of said second spring, said bodies being bonded to said inner ends.

3,873,078

MECHANICAL BISTABLE DEVICE

Heribert Wolf, Nurnberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed June 8, 1973, Ser. No. 368,187
Claims priority, application Germany, June 20, 1972, 2230028
Int. Cl. F16f *1/18*
U.S. Cl. 267—159 **11 Claims**

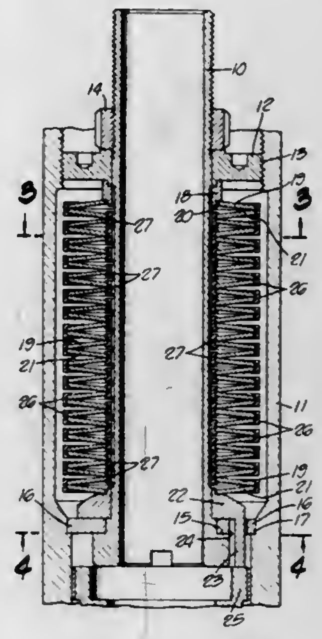


1. A snap acting operator comprising: a housing having a recess therein; a movable member; motion direction means to guide movement of said member, said member having a recess therein, said member recess extending toward and reaching a first apex pointing in a first predetermined direction, said housing recess extending toward and reaching a second apex pointing in a second predetermined direction opposite said first predetermined direction, said housing recess having a projection fixed relative thereto on each of two opposite sides of said housing recess in positions extending into said housing recess, said housing recess having sides receding in opposite directions away from said projections, respectively, on the side thereof opposite the side thereof on which said member is located; and a spring in said recesses having first and second opposite ends thereof adapted to fit into said first and second apexes, respectively, said spring being movable from a position in engagement with either one of said projections to a position in engagement with the other by movement of said member toward said housing, said housing having first and second spaced and parallel main flat surfaces partially defining said housing recess, said housing recess having surface portions defining the remainder of said housing recess, said surface portions being normal to said first and second main flat surfaces, said surface portions lying in mathematical surfaces described by moving a first line segment in a direction normal thereto while located between said first and second main flat surfaces normal thereto and having first and second ends located in the respective first and second main flat surfaces, said housing recess and said member recess being symmetrical about a plane normal to said first and second main flat surfaces midway between said projections and passing through said apexes, two of said surface portions being first and second auxiliary flat surfaces which intersect substantially in a second line segment normal to said first and second main flat surfaces, which second line segment is effectively said second apex, said member having third and fourth main flat surfaces approximately in the planes of said respective first and second main flat surfaces, and partially defining said member recess, said member having third and fourth auxiliary flat surfaces normal to and extending between said third and fourth main flat surfaces, said third and fourth auxiliary flat surfaces intersecting substantially in a third line segment normal to said third and fourth main flat surfaces, which third line segment is effectively said first apex, said member and housing having flat facing sides with respective facing openings into the respective recesses therein, said spring being a straight metal leaf spring having a rectangular cross section uniform along its length, said spring being flat when unstressed, said motion direction means including a straight slot in said housing and having an opening through said facing end of said housing, said slot being symmetrical about a plane through said apexes and having a rectangular cross section uniform throughout a portion of its length thereinto from said opening thereinto, a straight rigid slide having a rectangular cross section uniform throughout its length fixed relative to said member and slidable in said slot, stop means fixed relative to said housing and engageable by said slide to limit movement of said slide in a direction out of said slot, said spring being column loaded between said housing and member apexes when said slide engages said stop means in a manner such that said spring takes a deflection so that it successively and substantially forms each one of both oppositely disposed arcs, said spring being movable to a first position engageable with one of said projections, movement of said spring from engagement with said one projection to a second position for engagement with the other being caused by a movement of said member toward housing, subsequent movement of said member to a position where said slide lies in engagement with said stop means making it possible to move said spring from said second position thereof to said first position thereof by again moving said member toward said housing, the transfer of said spring from said first position thereof to said second position therof, and vice versa, being successively possible substantially ad infinitum, said spring being bistable, that is, stable in each of said first and second positions thereof, said member and housing recesses being of widths only slightly greater than said spring to guide movement of said spring, said projections being located about two-thirds the maximum distance between apexes from the apex in said housing recess, said apex in said housing recess having a groove therein in which the end of said spring is held in cantilever fashion, each projection having a conductive switch contact engageable by said spring when it is in its respective first and second positions.

3,873,079

BELLEVILLE SPRING CARTRIDGE

Felix Kuus, Huntington Beach, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.
Filed Jan. 4, 1974, Ser. No. 430,980
Int. Cl. F16f *1/34*
U.S. Cl. 267—162 **18 Claims**

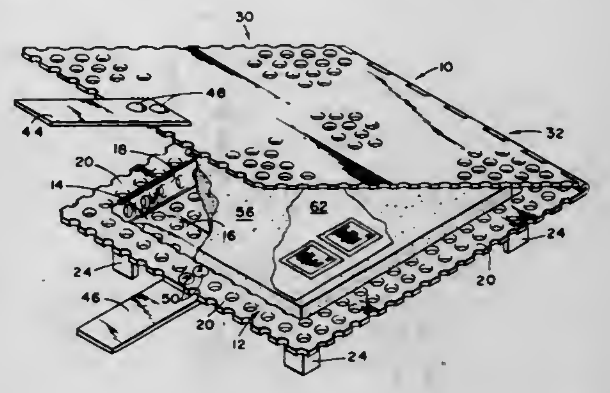


1. A spring assembly comprising: a pair of axially spaced abutment members, means for thrusting one of said abutment members towards the other, and Belleville spring washer means interposed between and in contact with said abutment members for biasing said abutment members relatively apart, said Belleville spring washer means comprising a plurality of Belleville spring washers disposed in coaxial relation and having peripheral edges in mutual contact, and peripheral retainer ring means engaged with the peripheries of said washers that have peripheral edges in contact, said retainer ring means including radially split resiliently deformable rings receiving said peripheries and having means confining said peripheral edges in said mutual contact.

3,873,080

STAMP SOAKER

James A. Bostic, 2329 Gable Dr., Indianapolis, Ind. 46229
Filed Oct. 3, 1973, Ser. No. 403,183
Int. Cl. B25b *1/04*
U.S. Cl. 269—237 **7 Claims**

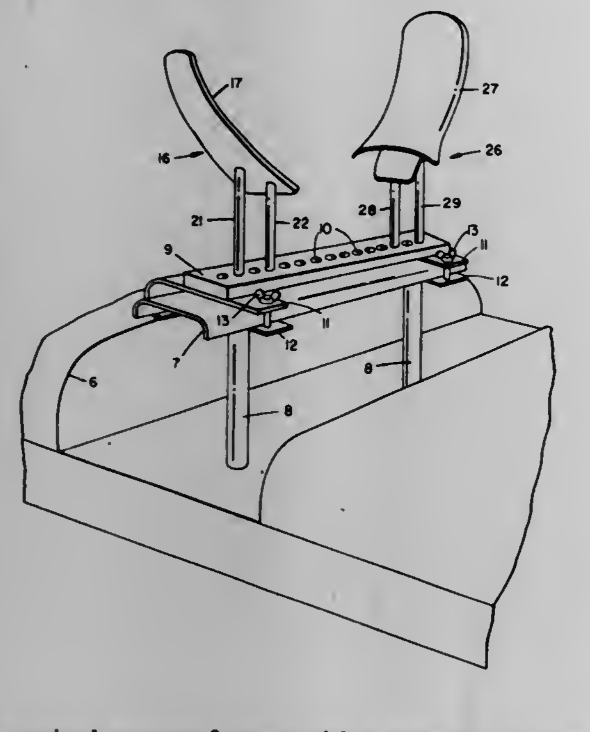


1. A stamp soaking unit comprising a pan providing a shallow cavity having a generally flat bottom, sponge means disposed in said cavity, a generally flat top for said pan disposed to cover and close said cavity, and means for connecting said top to said pan to be generally parallel with said bottom in its cavity closing position, said pan and said top being perforated, said sponge means being effective to hold envelope sections on which stamps are glued flat against said bottom and said top while said unit is held under a stream of hot water or steam.

3,873,081
SURGICAL SUPPORT

Robert H. Smith, 538-48 Ave., San Francisco, Calif. 94121
Filed Jan. 7, 1974, Ser. No. 431,385
Int. Cl. A61g *13/00*

U.S. Cl. 269—328 **2 Claims**



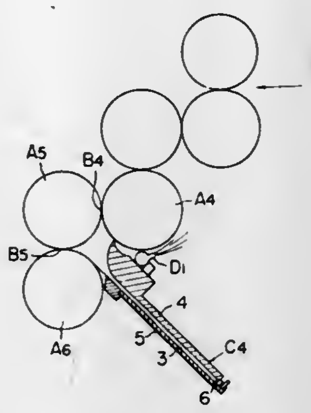
1. A surgical support for use with a patient in prone position on an operating table having a transverse kidney rest including a vertically movable elevator member comprising a base bar having a plurality of apertures therein in a line transversely of said table, means for securing said base bar in transverse alignment on said elevator member, a left support including a first upwardly concave curved plate having a lower end near but spaced upwardly from and laterally of the center of said base bar and extending to an upper end generally over one end of said base bar, a right support including a second upwardly concave curved plate having a lower end near but spaced upwardly from and laterally of the center of said base bar to leave a gap between said lower ends of said first and second plates and extending to an upper end generally over the other end of said base bar, each of said first and second plates having dimensions restricting said plates to engagement from below with said prone patient substantially only in the areas of his iliac crests, and support means secured to said first and second plates including columns extending from the lower faces of the plates engageable in selected ones of said apertures and having a height effective to position said plates above said base bar a distance sufficient to support above said base bar said prone patient's abdomen when depending by gravity toward said gap.

3,873,082
SYNTHETIC PAPER FOLDING DEVICE

Kotaro Imaizjmi, and Katsukuni Nitta, both of Tokyo, Japan, assignors to Kabushiki Kaisha Oji Yuka Goseiski Kenkyusho
Filed Dec. 22, 1972, Ser. No. 317,534
Claims priority, application Japan, Dec. 25, 1971, 47-1810
Int. Cl. B65h *45/14*

U.S. Cl. 270—68 A **5 Claims**

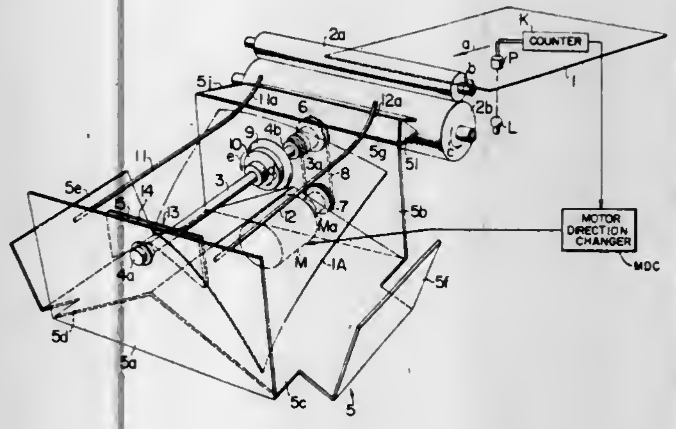
1. A synthetic paper folding apparatus for successively folding paper sheet material advancing through said apparatus, comprising: a buckle chute folder having a plurality of adjacent paper folding rollers forming corresponding nips at the respective interface surfaces of said rollers; alternately disposed buckle chutes and paper folding roller heating means disposed in proximity to said folding rollers, said roller heating means being provided with an inner cylindrical chamber having a series of nozzle passages disposed along its longitudinal axis, an outer generally cylindrical member surrounding said chamber thusly defining a channel therebetween, said outer member being further defined by an integrally formed elongated slot means, heating element means positioned within said channel for heating a heat transfer fluid being fed into said chamber from a source of supply, said outer cylindrical member being rotatable relative to said chamber for orientation of said elongated slot means with respect to adjacent roller undersurfaces to enable heated fluid travelling from said nozzle passages in said channel to exit through said elongated slot means and impinge tangentially upon said undersurfaces in the direction of roller rotation as folded paper is drawn through said nips.



3,873,083
APPARATUS FOR DISTRIBUTING AND SORTING DISCHARGED SHEETS

Sakae Fujimoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed July 19, 1973, Ser. No. 380,551
Claims priority, application Japan, July 24, 1972, 47-73922
Int. Cl. B65h *29/60*

U.S. Cl. 271—64 **9 Claims**

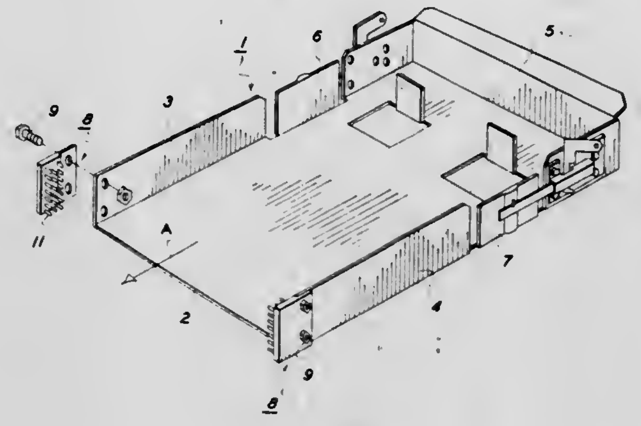


4. An apparatus for distributing sheets discharged from a feed path along a discharge path, comprising a distributing shaft disposed to extend along the direction of sheet discharge within the discharge path for the sheets and capable of reversible rotation to divert discharged sheets which come into contact therewith to lateral sides with respect to the direction of discharge, means for controlling the direction of rotation of the distributing shaft, and a quick feed member fixedly mounted on the distributing shaft to rotate therewith and adapted to contact the trailing end of a discharged sheet after the sheet moves into contact with the distributing shaft and is diverted thereby to rapidly move the trailing end in the direction of diversion.

3,873,084
PAPER FEEDER

Haruhiro Ito, Atsugi, Japan, assignor to Rank Xerox Ltd., London, England
Filed Sept. 21, 1973, Ser. No. 399,592
Claims priority, application Japan, Sept. 7, 1972, 47-103650
Int. Cl. B65h *3/56*

U.S. Cl. 271—169 **5 Claims**



1. An apparatus for feeding individual sheets from a stack of sheets, said apparatus having a pair of spaced apart side walls adapted to contain a stack of sheets therebetween, and means for feeding the sheets from the stack in a predetermined delivery direction, wherein the improvement comprises:

the provision of double-feed preventing means at the sheet delivery end of each of said side walls, said double-feed preventing means comprising a plurality of rows of double-feed preventing elements, said rows being spaced from each other in the direction of sheet delivery, each of said rows containing a plurality of spaced apart double-feed preventing elements with the elements in each respective row being staggered relative to the elements in an adjacent row,

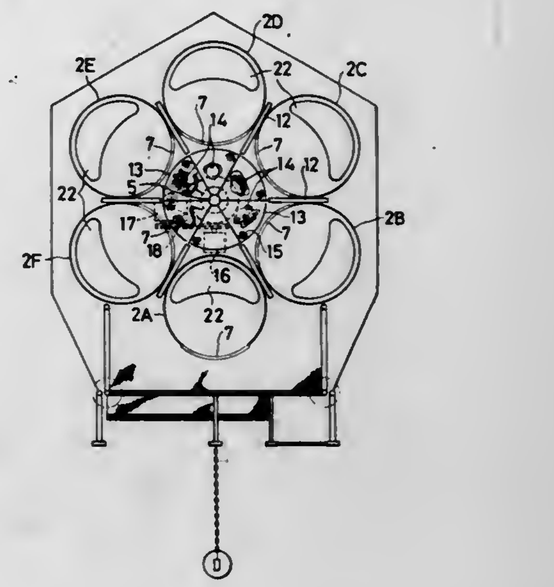
said double-feed preventing means in said respective side walls being opposed to one another with said elements of each of said preventing means projecting inwardly within said side walls, and with the distance between elements in each respective row being slightly smaller than the width of a respective elements.

3,873,085
SPECTATOR-STAND WITH CENTRAL DISPLAY SECTION AND INDIVIDUALLY ROTATABLE CAPSULES MOVABLE RELATIVE TO DISPLAY SECTION

Masaya Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakujo, Tokyo, Japan
Filed Jan. 10, 1973, Ser. No. 322,396
Claims priority, application Japan, July 18, 1972, 47-71244
Int. Cl. A63g *31/00*

U.S. Cl. 272—2 **4 Claims**

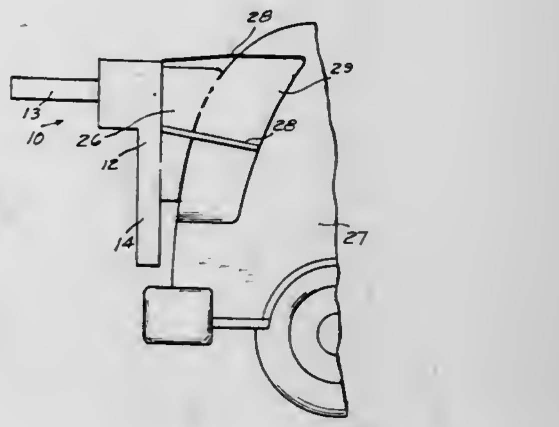
1. A spectator-stand comprising a base, a center shaft extending upwardly from said base, a floor mounted on and extending radially outwardly from said shaft, a plurality of capsules disposed on said floor and forming a circle of said capsules, wherein said capsules are spaced outwardly from said shaft, each of said capsules arranged to rotate about its own upwardly extending axis, said capsules being equidistantly spaced apart from one another and each of said capsules being formed in one portion thereof with a window serving as an entrance to and an exit from said capsule and being closed in the remaining portions thereof, a display section located about the center shaft inwardly of and encircled by said circle of capsules, a covering about said display section cooperating with said capsules for maintaining said display section lighttight, lamps arranged to illuminate said display section, means for individually rotating said capsules for selectively orienting the position of the windows therein, and means for moving said capsules and display section relative to one another.



3,873,086
WAGGING TAIL NOVELTY

Theodore W. Lee, 2659 W. Okeechobee Rd., Hialeah, Fla. 33010
Filed Mar. 14, 1973, Ser. No. 341,311
Int. Cl. A63j *5/00*

U.S. Cl. 272—8 N **1 Claim**



1. A wagging tail novelty, comprising in combination, a hollow housing having the configuration of a hind quarter of an animal, and a moveable tail attached thereto, a mechanism inside said hollow housing for reciprocally waving said tail, said mechanism including an electric motor powered by dry cell batteries and which are in an electric circuit together with switch means, said motor driving a mechanical linkage that includes a reciprocally pivotable link extending outwardly of a rear opening of said housing and to which said tail is attached so to wag, said switch means comprising a pair of binding posts protruding outwardly of said housing and which are manually connectable by an electrical conductor wire, a block attached to a forward side of said housing, said block having a front side configurated to fit a rear portion of an automotive vehicle trunk door to which said wagging tail novelty is intended to be secured, and mounting means for securement thereto, said mounting means comprising a plurality of straps each of which extends from one side of said housing and is adaptable to be passed under said trunk door and then out the other side thereof before closing said trunk door.

3,873,087

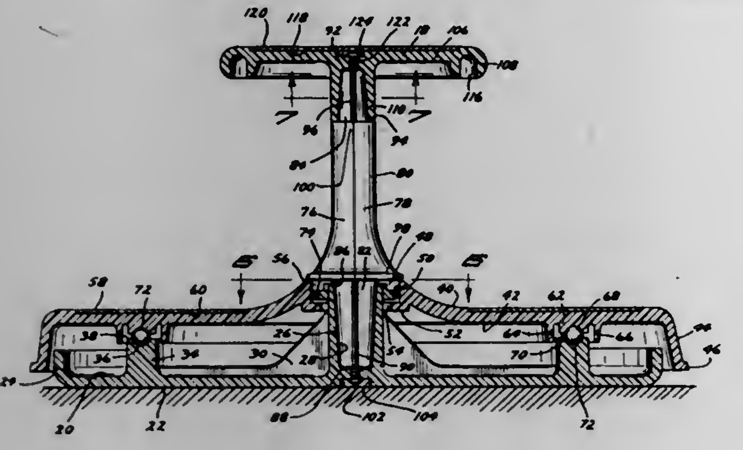
OCCUPANT PROPELLED ROTARY AMUSEMENT DEVICE

Jacob W. Burkart, Cincinnati, Ohio, and John F. Mayer, Fort Thomas, Ky., assignors to General Mills Fun Group Inc.

Filed Apr. 30, 1973, Ser. No. 355,984

Int. Cl. A63g *1/12*

U.S. Cl. 272—33 R **6 Claims**



3. A rotatable amusement device adapted to support a child for rotary movement comprising a substantially circular base member having an upper and a lower surface, a vertically aligned post having two ends, means for securing a first end of the post to the center of the top surface so that it is non-rotatable with respect to the base member, a substantially circular seat member having an upper and a lower surface and a circular opening at its center, means for positioning said seat member over the base member so that the post projects through the circular opening and said seat member is maintained in spaced apart relationship with respect to said base member, a portion of the top surface of the seat member surrounding said circular opening sloping upwardly toward the upper portion of said post, said positioning means including a first annular wall which projects upwardly from the top surface of the base member, said wall being spaced from said post and having a raceway along its top edge, a second annular wall which projects downwardly from the bottom surface of the seat member, said wall being spaced from said post and having a raceway along its bottom edge, and a plurality of balls, said second wall being superimposed over the first wall so that said raceways define a prescribed orbit for the balls between said seat and base members, means for coupling the seat member to the base member to prevent substantial vertical displacement of the seat member relative to the base member by engaging a portion of said base member, and handle means secured to the other end of the post adapted to be gripped by the operator so as to effectuate relative movement of the seat member with respect to the base member when the child is positioned on said seat member.

3,873,088

CHEST PULL TYPE EXERCISERS

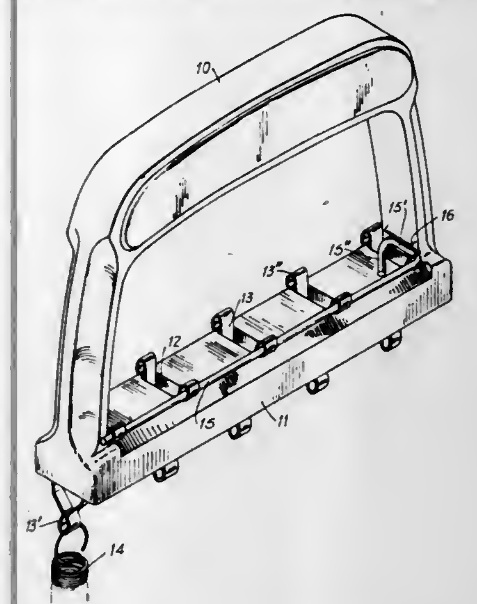
Louis J. Panepinto, Hillsdale, N.J., assignor to AMF Incorporated, White Plains, N.Y.

Filed July 22, 1974, Ser. No. 490,490

Int. Cl. A63b *21/00*

U.S. Cl. 272—83 R **3 Claims**

1. In a chest pull type exerciser comprising a pair of handles interconnected by a plurality of elongated resilient elements, said handles having a base portion and a generally U-shaped hand grip connected thereto, said base portion having a row of transverse slots formed therein, a row of generally U-shaped removable resilient retainers overhanging the opposite ends of said slots on the side of said base portions facing said hand grips, means for connecting opposite ends of said elongated resilient elements to said retainers at the underside of said base portions, and means for further removably securing said retainers in said base portions comprising aligned eyelets formed on the overhanging ends of said retainers along at least one edge of said base portion sides facing said hand grips, and generally L-shaped elements having an elongated upright leg and a base leg which is relatively short with respect to said upright leg, said upright legs extending through said aligned eyelets and said base legs overlying said base portions at the junctures of said U-shaped hand grips with said base portions, detents on said hand grips overlying said base legs, and the endmost ones of said rows of retainers being positioned close to said detents so as to resiliently trap said base legs beneath said detents.



3,873,089

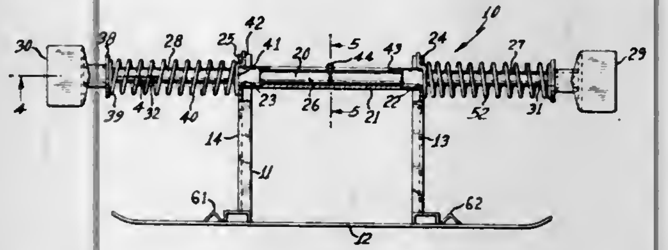
ATHLETIC TRAINING APPARATUS

Donald G. Krug, Jacksonville, Fla., assignor to Krug Blocker, Inc., Jacksonville, Fla.

Filed Dec. 12, 1973, Ser. No. 424,187

Int. Cl. A63b *67/00*

U.S. Cl. 273—55 R **10 Claims**



1. In an athletic training apparatus the combination comprising a support means, an elongated rod having opposite end portions and a medial portion, means for slidingly attaching said medial portion to said support means with said opposite end portions protruding outwardly therefrom, a pair of impact members mounted on respective said rod end portions for contact with parts of the body of one or more trainees, resilient means associated with said rod for biasing said rod generally centrally of said support means with said end portions protruding substantially the same distance outwardly from said support means.

3,873,090

GRAPHITE SHAFT CONNECTION TO GOLF CLUB HOSEL

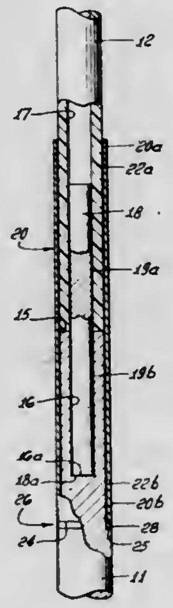
Stanley C. Thompson, 7851 Talbert St., Apt. 1, Playa Del Rey, Calif. 90271

Filed Dec. 17, 1973, Ser. No. 425,335

Int. Cl. A63b *53/02*

U.S. Cl. 273—80.8 **6 Claims**

1. In a sports implement having a shaft, hosel, and means connecting said shaft to said hosel, comprising: said shaft being tubular and made from graphite fibers and resin, said hosel extending from the head of the sports implement for a predetermined first distance and a predetermined first outer diameter, a hosel step shoulder formed at the end of said predetermined first distance, said hosel extending from said shoulder a second predetermined distance and a second predetermined outer diameter less than said first outer diameter and terminating in an end surface, a bore formed in said second predetermined distance hosel portion and extending from said end surface inwardly thereinto to a predetermined distance less than said second predetermined distance, said connecting means including a uniform diameter solid pin closely received in and adhesively bonded to the hosel bore wall, said pin occupying substantially the entire length of said bore and extending outwardly beyond said end surface a distance approximately equal to said predetermined distance, said shaft being positioned over and adhesively bonded to substantially the entire exposed pin portion and in end-to-end relation to said hosel at said end surface, the outer surface of said shaft being aligned with said second predetermined outer diameter hosel portion, said connecting means further including a sleeve telescopically received over and adhesively bonded to the shaft and second predetermined distance hosel portion, said sleeve extending endwise beyond both ends of said pin, the hosel end of said sleeve terminating adjacent said hosel step shoulder, the outer surface of said sleeve being aligned with said first predetermined outer diameter hosel portion.



3,873,091

PROJECTOR, PROJECTILE AND TARGET OF INCREASING DIFFICULTY

Allison W. Katzman, Chicago, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 5, 1973, Ser. No. 394,546

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 R **11 Claims**

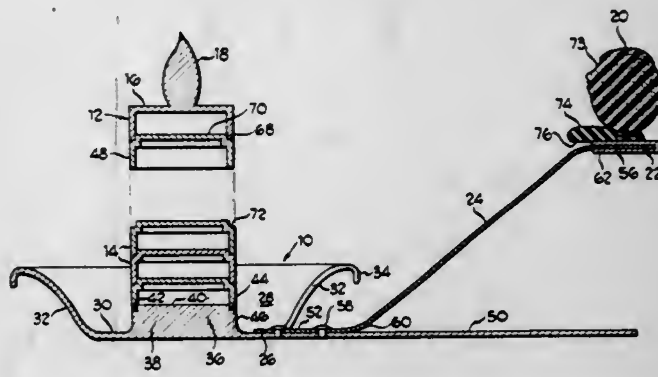
1. A self-contained game playable by a plurality of players on an underlying surface, comprising:

a base member;

a plural number of playing pieces supportable on said base member and stackable on top of each other for providing a vertically adjustable barrier, the vertical extent of which is dependent upon the number of pieces which are stacked;

a missile-type launchable playing piece of a different size and shape than said stackable playing pieces; and

launching means secured to said base member on one side of the barrier and selectively actuatable by a player of the game for propelling the missile playing piece toward the barrier in an attempt to propel the missile playing piece over the barrier, said missile after being propelled over said barrier permitting the player who propelled the missile piece to raise the barrier by adding one of said stackable pieces thereto.



3,873,092

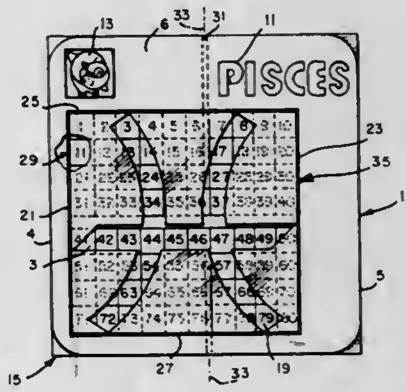
METHOD OF PLAYING A KENO-ZODIAC GAME

Richard D. Fagan, 20600 Debbie Ln., Saratoga, Calif. 95070

Filed Mar. 5, 1973, Ser. No. 338,079

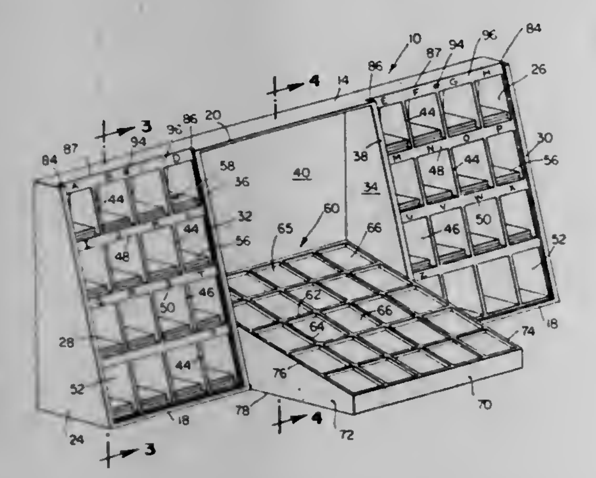
Int. Cl. A63f *3/06*

U.S. Cl. 273—135 B **2 Claims**



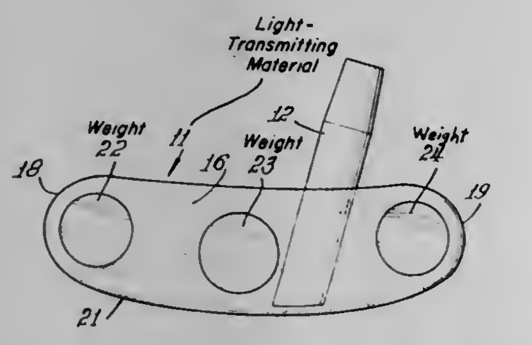
1. A method of playing Keno, comprising placing a rectangular parallelepiped having a void in the shape of a zodiac symbol passing therethrough from the upper base thereof to the lower base thereof, the minimum dimension of said void in said lower base and in said upper base being at least equal to the smallest dimension of a single number box on a Keno card which has a series of numbers appearing thereon, said void being restricted in size so that said void, in its entirety, can be placed over the number selection portion of the Keno card, said rectangular parallelepiped being constructed of a plastic material, said rectangular parallelepiped including a thinned-out portion of said plastic, said thinned-out portion being along an axis parallel to a pair of the parallel lateral faces of said rectangular parallelpiped, said axis bisecting said rectangular parallelepiped and passing through said void, said thinned-out portion making possible the folding of said parallelepiped for easy portability, said rectangular parallelepiped further including on the upper base thereof indicia identifying said zodiac symbol of said void so that said void renders visible at least a portion of the numbers on the Keno card, selecting less than the total of the visible numbers of said portion, recording the selected numbers on said Keno card, randomly determining a particular combination of numbers from those which appear on said Keno card, and comparing the selected numbers recorded on the Keno card with the numbers of the combination which have been randomly determined.

3,873,093
WORD GAME AND APPARATUS THEREFOR
Israel Beskrone, 100 S. Iroquois Ave., Margate, N.J. 08402
Continuation-in-part of Ser. No. 294,555, Oct. 3, 1972,. This application June 24, 1974, Ser. No. 482,365
Int. Cl. A63f *3/00;* **A47b** *81/00*
U.S. Cl. 273—135 D **13 Claims**



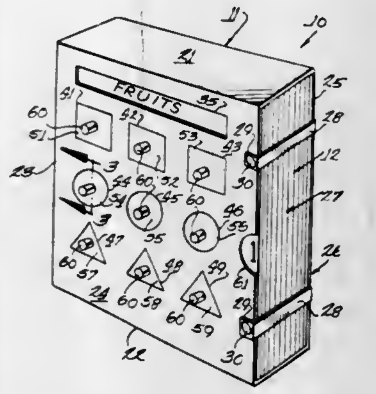
11. A word game unit comprised of a longitudinal vertically extending cabinet member including interconnected horizontal top and bottom walls, a rear vertical wall, outer end vertical walls, and an inner vertical wall intermediate said outer end vertical walls, intersecting vertical and horizontal partitions in the area between one end wall and the intermediate wall dividing the same into compartments with a letter associated with each compartment, lettered playing pieces in corresponding compartments, a playing board insertable in and able to occupy substantially the entire space formed between the top and bottom walls, the intermediate wall and the other end wall, said playing board including an upper playing surface divided into vertical and horizontal rows of areas shaped correspondingly to said playing pieces and adapted to retain and receive them, said playing board being selectively positionable widthwise between said intermediate wall and said other end wall in a playing position in which the playing surface extends outwardly from the front of said cabinet member, and in a storage position in which the playing surface extends vertically and substantially along the front of said cabinet member.

3,873,094
PUTTER-TYPE GOLF CLUB
Alexander Sebo, 7854 N. 44th St., Augusta, Mich. 49012, and Leroy H. Despins, 15253 Uldriks Dr., Battle Creek, Mich. 49017
Filed Mar. 10, 1972, Ser. No. 233,611
Int. Cl. A63b *53/04*
U.S. Cl. 273—163 R **10 Claims**



1. A putter golf club for use in putting comprising:
a. an elongated club head symmetrically formed about a longitudinal axis and composed of a light-transmitting material having at least one relatively flat striking face extending parallel with respect to said longitudinal axis, said head having disposed therein:
1. a centrally located first weight balancing of substantially rod form arranged substantially perpendicular to said striking face having an end face exposed and flush with the surface of said striking face, and having a longitudinal surface substantially perpendicular to said striking face,
2. a second weight balancing member disposed within the toe portion of said club head,
3. a third weight balancing member disposed in the heel portion of said club head, all of said weight members being spaced apart from each other along the longitudinal direction of said club head,
4. said weight balancing members being composed of metal; and
b. a handle comprising a shaft having one end fixedly attached to said head at a location between said first weight balancing member and the heel portion of the club head, and having a grip mounted at the other end of said handle,
c. said light-transmitting material being effective to reveal said longitudinal surface of the first weight balancing member.

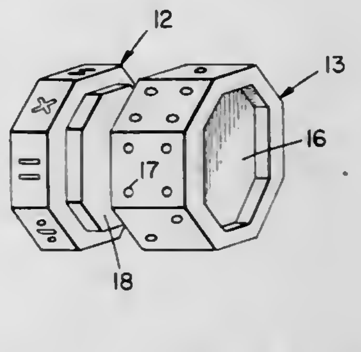
3,873,095
THREE-IN-A-ROW GAME APPARATUS
John Nehre, 60 Harvard Ln., Napa, Calif. 94558
Filed Jan. 7, 1974, Ser. No. 431,576
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 B **1 Claim**



1. A game apparatus comprising, in combination:
a hollow rectangularly shaped box-like case having a horizontal flat top surface, a horizontal flat bottom surface, a closed vertically extending side wall surface, an open vertically extending opposite side wall surface, a vertical flat front face wall surface, and a vertical flat back face wall surface;
a rectangularly shaped compartment defined interiorly of said surface and opening out of said open side wall surface;
an elongated horizontally extending slot disposed in said front face surface adjacent a top edge thereof and extending therealong intermediate the side edges, the slot in communication with said compartment;
a first horizontal row of three identical rectangularly shaped openings disposed in said face surface vertically below said horizontal slot, the openings spaced horizontally apart from each other;
a second row of three circular disposed in said face surface immediately below said first row of openings, each opening of said second row disposed in vertical alignment with opening of said first row disposed immediately thereabove, each of said second row openings spaced horizontally apart from each other;
a third row of three triangularly shaped openings disposed in said face surface, each of said triangularly shaped openings being vertically aligned with a circular opening of said second row disposed immediately thereabove, each of said triangular openings being spaced horizontally apart from each other;

a plurality of rectangularly shaped cover members each associated with one of said rectangular openings to be received therein for closing the same;
a plurality of circular shaped cover members each associated with one of said circular openings of said second row and each adapted to be received in said associated opening to completely close the same;
a plurality of triangularly shaped cover members each associated with one of said triangular openings of said third row, each of a configuration adapted to be received completely in said associated opening for completely closing the same;
a plurality of axially elongated cylindrically shaped rod forming handle members, each handle member associated with one of said cover members and having one end affixed centrally thereto on the exterior surface therof with the handle member projecting outwardly therefrom in a manner adapted to be grasped in an individual's hand for use in the removal and insertion of the cover member relative to its associated opening for the opening and closing of each of said openings;
a recess of a semi-circular configuration disposed centrally of said front face wall surface and opening into the edge thereof adjacentmost said open side wall surface to provide access to said compartment
a pair of vertically spaced apart flexible strap members each having one end affixed to said back face wall surface adjacent the edge thereof adjacentmost said open side wall surface, the free ends of said strap members adapted to overlie said open side wall surface and a portion of said front face wall surface;
fastening means mounted on said free ends of said strap members;
fastening means affixed to said front face wall surface adjacent the edge thereof adjacentmost to the open side wall surface and adapted to have said strap member fastening means detachably affixed thereto for selective engagement therewith such that the strap members are movable between an open position providing unobstructed access to said compartment, and a closed position wherein they overlie said entrance to said compartment and restrict the ingress and egress thereof;
a plurality of identically shaped and configured rectangular flat card members each having a flat face surface, a flat back surface, top and bottom edges, and opposed side edges, said card members adapted in be placed n stacked front-to-back parallel relationship and inserted into said compartment with said front surfaces thereof facing forwardly in the direction of said compartment front face wall surface;
said card members being retained in said compartment by means of said strap members when overlying said entrance to said compartment;
an identifying sequential number disposed on the face surface of each of said card members along the side edge thereof and centrally thereof providing unique identification of each of said card members, each member adapted to be aligned with said semi-circular recess when said card members are disposed in said case compartment;
entitling indicia extending horizontally in a single line along said face surface of each of said card members along a top edge thereof, said entitling indicia adapted to be aligned with said horizontally elongated slot in said case front wall surface when said card member is disposed immediately behind said face surface such that the entitling indicia is viewable therethrough exteriorly of said case;
nine independent and separate legends disposed in three horizontal rows of three legends each, the legends disposed on said face surface of each of said card members and being of a species within the generic entitling indicia on said card member, the spacing both horizontally and vertically between said legends corresponding to the three rows of openings in said case front wall surface such that said legends of said card member disposed immediately behind said case front wall surface are visible through said openings when said cover members have been removed therefrom; and
whereby said cover members are operatively associated with each of said openings and operable to selectively cover and uncover said opening in a manner to hide or expose the legend on the card disposed in juxtaposition therebeneath.

3,873,096
INTERCONNECTED PUZZLE BLOCKS
Philip L. Shoptaugh, Oakland, Calif., assignor to William Carlisle, Alameda, Calif.
Filed July 5, 1973, Ser. No. 376,814
Int. Cl. A63f *9/12*
U.S. Cl. 273—156 **10 Claims**



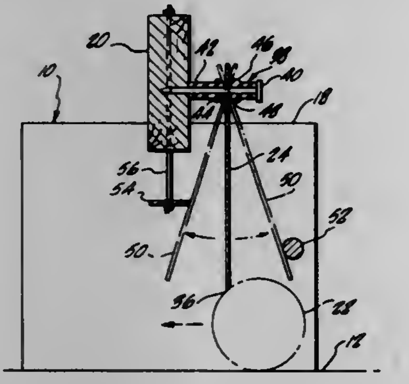
1. A puzzle device comprising a plurality of freely disposed blocks each having a first axis and a plurality of faces disposed about said first axis with indicia appearing on more than one of said faces and interconnection means associated with each of said blocks adapted to enable said blocks to be serially interconnected with said first axes thereon aligned to form the longitudinal axis of the assembled puzzle device and with faces of adjacent blocks linearly aligned in a row extending along said longitudinal axis, said interconnection means being adapted to enable:
a. each of said blocks to be interconnected with an adjacent block in a plurality of rotational positions about said longitudinal axis;
b. at least two of said blocks to be interchanged with each other along said longitudinal axis for interconnection in said plurality of rotational positions; and
c. at least one of said blocks to be interconnected with an adjacent block in either of two opposite orientations about a second axis thereof normal to said longitudinal axis of said assembled puzzle device, said indicia appearing on said more than one of said faces of said at least one of said blocks and being of such form and placement on said faces as to give no indication specifically identifiable with either one of said two opposite orientations of said at least one of said blocks about said second axis normal to said longitudinal axis.

3,873,097
GOLF PUTTING DEVICE
Henry Paul Willis, deceased, late of Palm Springs, Calif. (Norman E. Decker, executor)
Filed June 23, 1972, Ser. No. 265,634
Int. Cl. A63b *69/36*
U.S. Cl. 273—185 R **5 Claims**

4. A golf putting device, comprising:
a frame member adapted to be placed on a putting surface and defining a path through which a golf ball is adapted to pass;
means associated with said frame defining a target area corresponding to a golf cup; and
non-visual indicator means suspended from said frame member and elevated from the putting surface a distance less than the diameter of a golf ball whereby a golf ball moving through said path engages said non-visual indica-

tor means and displaces same, said non-visual indicator means including a first indicator in said path in alignment with said target area and a second indicator in said path in non-alignment with said target area, said first indicator indicating a strike of said target area by a golf ball and said second indicator indicating the degree to which a golf ball misses said target area, said second non-visual indicator means having substantially varied non-visual indications for easy non-visual discrimination thereof, a plurality of elongated chimes adapted to produce particular sounds defining said first and second indicators, each said chime having an upper end pivotally attached to said frame member and a free lower end which is adapted to be engaged by a golf ball and swung thereby as the golf ball passes;

a first bar connected to said frame member and suspended over said path a distance greater than the diameter of a golf ball, said first bar being adjacent one side of said chimes and adapted to be contacted by said chimes when swung and thereby cooperate with said swinging chimes to produce one sound indicating a strike of said target area by the golf ball and other sounds indicating the degree the golf ball misses said target area.



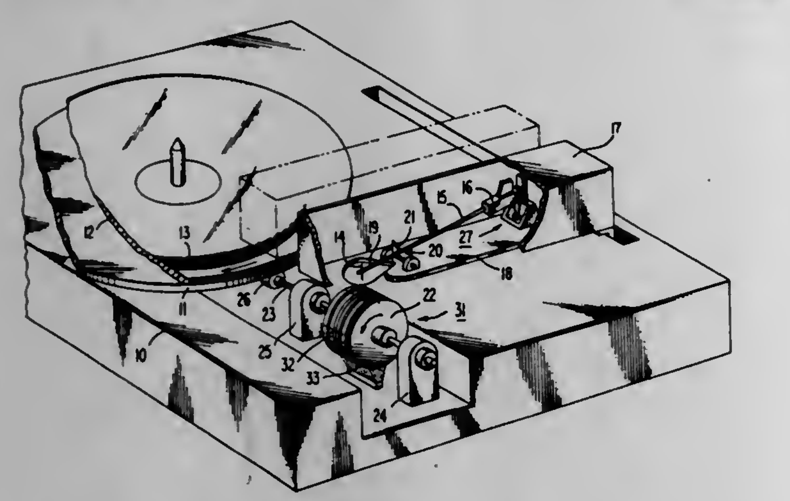
3,873,098
ROTARY STYLUS RESHAPER

Marvin Allan Leedom, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 437,966

Int. Cl. G11b *3/56, 3/58*

U.S. Cl. 274—1 R **7 Claims**



1. In a disc playback system including a board, a turntable mounted for rotation relative to said board, and having a surface adapted to receive a disc having a spiral groove with information recorded therein, a stylus having a tip subject to placement in said disc groove for recovering said information while in a play position, and a stylus-arm carrying said stylus, said stylus-arm being mounted with respect to said board in a manner permitting movement of said stylus between rest and play positions; a rotary stylus reshaper comprising;

a rotatable drum having an axis of rotation perpendicular to the longitudinal axis of the stylus arm mounted on said board and located under said stylus when said stylus is at the rest position, said drum having a plurality of abrasive, coaxial, substantially V-shaped grooves, concentric with said drum, said V-shaped grooves having opening dimensions greater than the width dimension of said stylus tip; a drive means secured to said board and coupled to said drum for causing rotation of said drum for the purpose of reshaping said stylus; and

means for lowering and raising of said stylus tip into and out of engagement with an abrasive groove on said drum when said stylus is at the rest position.

3,873,099
RECORD STABILIZER DEVICE FOR A RECORD CHANGER

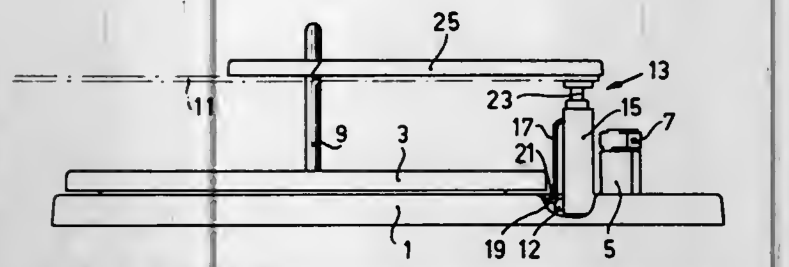
Georg Cukrowski, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,410

Claims priority, application Germany, Nov. 17, 1972, 2256471

Int. Cl. G11b *15/00*

U.S. Cl. 274—1 R **3 Claims**



1. A record stabilizer device for a record changer, comprising a support, a vertical spindle guided in said support for vertical movement, and a hold down arm carried on said spindle, said support being adapted to be fitted in a chassis of a record changer, said support comprising latching means for retaining said support in the chassis, wherein said latching means comprises a spring adapted to snap behind an edge of a recess in the chassis.

3,873,100
RECORD DISK LOADING AND RETRIEVING SYSTEM

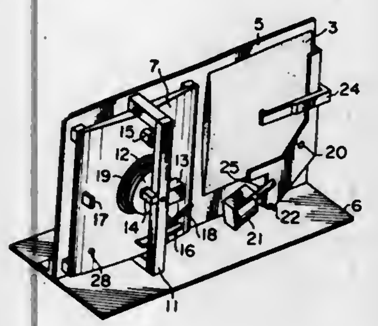
Shoji Omiya, Shijonawate, and Toshio Yoshimatsu, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 27, 1973, Ser. No. 383,290

Claims priority, application Japan, July 31, 1972, 47-77224; Apr. 4, 1973, 48-38906; Oct. 2, 1972, 47-99347; Aug. 28, 1972, 47-100575[U]; Nov. 16, 1972, 47-132455[U]; Dec. 19, 1972, 47-146217[U]; Dec. 20, 1972, 47-147156[U]; Dec. 26, 1972, 48-750[U]

Int. Cl. G11b *3/00*

U.S. Cl. 274—913 **10 Claims**



1. A record disk loading and retrieving system comprising: a record disk;

a record disk container having an opening on one side for allowing said record disk to go in and out;

a turn table for engaging with and rotating said record disk;

means for taking said record disk out of said record disk container and transporting the disk onto said turn table;

clamp means for detachably engaging said record disk with said turn table;

means for contacting the periphery of said record disk rotating on the turn table and applying a damping load for the rotation when said clamp means is released; and

guide means for guiding the record disk to the opening of said record disk container utilizing the thrust force generated by the rotation of said record disk subjected to said load means.

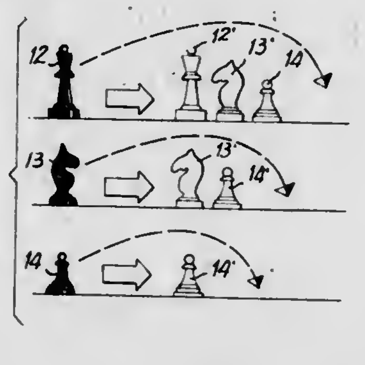
3,873,101
BOARD GAME APPARATUS

William S. Kelly, 67-81 Alderton St., Rego Park, N.Y. 11374

Filed Aug. 20, 1973, Ser. No. 390,111

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 K **1 Claim**



1. A game device comprising in combination: a playing board having a playing pattern substantially as shown in FIG. 1 of the drawing, and at least two separately identifiable sets of playing-pieces, each set comprising a king-designated and identifiable king-player piece, knight-player pieces, and pawn-player pieces.

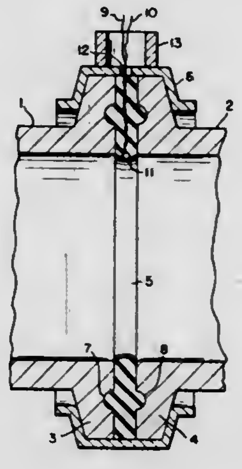
3,873,102
SANITARY THERMOELEMENT ASSEMBLY

Thomas H. Lotze, and James Robert Tompkins, both of Greece, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed July 30, 1973, Ser. No. 383,826

Int. Cl. F16j *9/00*

U.S. Cl. 277—2 **6 Claims**



1. A sanitary thermoelement assembly comprising, in combination, an annular gasket of elastomeric material for sealing a joint between a pair of pipe-ends, and a thermoelement for providing a signal as a function of the temperature thereof;

said thermoelement being fixed to the inner peripheral surface of said gasket, said surface having CIP form, and said thermoelement providing in said surface a CIP interruption projecting from said surface radially-inwardly of said gasket;

said thermoelement having connecting means sealed within the body of said gasket but emerging therefrom at its outer periphery for connecting said signal to external means.

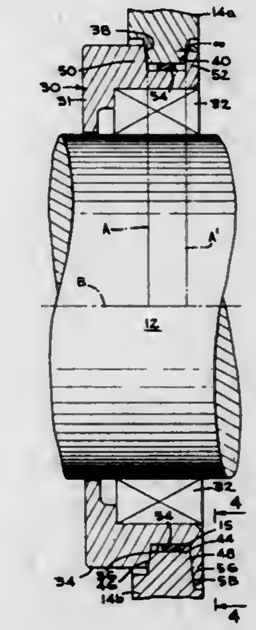
3,873,103
SEAL CARRIER ASSEMBLY

William J. Derner, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed June 20, 1973, Ser. No. 371,922

Int. Cl. F16j *9/00;* **F16c** *1/24*

U.S. Cl. 277—66 **3 Claims**



1. In a seal assembly for surrounding a shaft, said assembly comprising a housing having separable portions, said housing defining an opening therein for said shaft when said portions are secured together, a rigid seal carrier received in said opening, said seal carrier supporting a flexible seal encircling said shaft, circumferential intermeshing portions extending from said housing opening and from said seal carrier, said circumferential intermeshing portions having sloping sides to provide a wedging grip by said housing on said seal carrier when said separable housing portions are clamped together over said seal carrier to thereby positively lock the carrier against radial and axial displacement with respect to the housing, the improvement comprising seqmental intermeshing portions on said seal carrier and said housing to prevent rotation of said seal carrier in said housing.

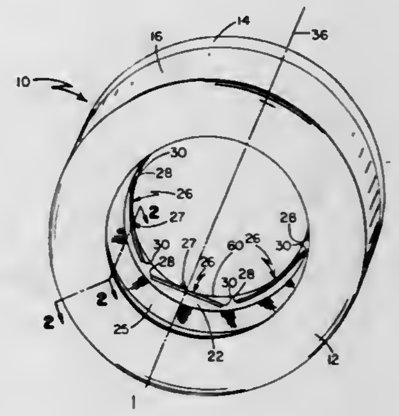
3,873,104
SEAL

Dean R. Bainard, Gilford Village, N.H., assignor to International Packings Corporation, Bristol, N.H.

Filed Mar. 8, 1972, Ser. No. 232,781

Int. Cl. F16j *15/54*

U.S. Cl. 277—134 **1 Claim**



1. For use in combination with an element with a smoothly curved cylindrical surface, a bidirectional seal comprising

a molded sealing element of resilient material having

a frusto-conical sealing element surface having a longitudinal axis and terminating in a constant radius circular sealing edge and

a plurality of discrete spaced rib segments formed on said frusto-conical sealing element surface, each said rib segment
  a. extending in a straight line in the plane perpendicular to said frusto-conical surface
  b. extending in a line smoothly convexly curved solely in a direction toward said sealing edge in the plane perpendicular to said longitudinal axis.
  c. having an average radius of curvature in the plane perpendicular to said longitudinal axis greater than that of said sealing edge
  d. tangential to said sealing edge at a point centrally between its ends
  e. spaced at its ends a limited distance from said sealing edge
  f. having its ends circumferentially spaced from the end of an adjacent segment and
  g. having a surface inclined radially inwardly toward said longitudinal axis, the portion of said inclined surface in contact with a said smoothly curved surface being substantially parallel with the axis of said sealing ring.

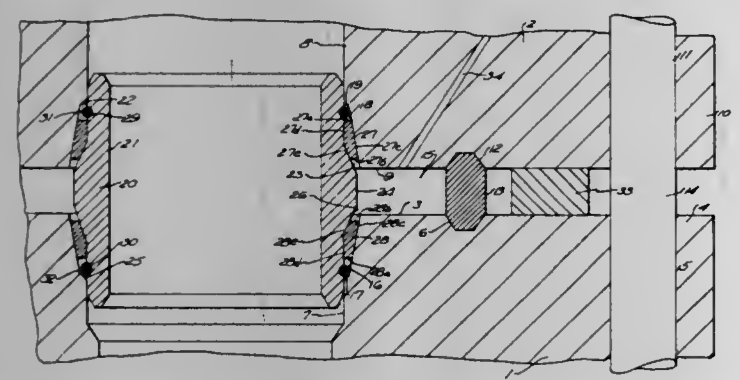
3,873,105
HIGH PRESSURE JOINT AND SEALING RING THEREFOR

Byrom T. Wehner, Houston, Tex., assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 246,187, April 21, 1972, Pat. No. 3,797,835. This application July 23, 1973, Ser. No. 381,415

Int. Cl. F16j *15/08*

U.S. Cl. 277—171 **3 Claims**



1. A pair of master valve bodies comprising facing first and second members having axially aligned first and second bores respectively; gasket receiving grooves in said facing first and second members and a gasket located in said grooves, said grooves and gasket surrrounding said bores; spacing means to space said first member from said second member; means to clamp said first and second members together to the extent permitted by said spacing means, said gasket being of such size relative to said spacing means as to be compressed in said grooves when said clamping means are actuated; a carrier member having its respective ends located in, and having a sliding fit within, the said first and said second bores so as to present juxtaposed annular sealing surfaces between said carrier member and said first and said second members; and first and second sealing rings located between said juxtaposed sealing surfaces; there being a first plurality of said juxtaposed sealing surfaces between said carrier member and said first member, one of these said first plurality of sealing surfaces being frusto-conical, another of these said first plurality of sealing surfaces having two adjacent portions, a first of said adjacent portions being frusto-conical and flaring outwardly in the same direction as and at a greater angle than said frusto-conical sealing surface, the second of said adjacent portions being angularly related to both said frusto-conical sealing surface and to said frusto-conical portion; and there being a second plurality of said juxtaposed sealing surfaces between said carrier member and said second member, one of these said second plurality of sealing surfaces being frusto-conical, another of these said second plurality of sealing surfaces having two adjacent portions, a first of said last mentioned adjacent portions being frusto-conical and flaring outwardly in the same direction as and at a greater angle than said last mentioned frusto-conical sealing surface, the second of said last mentioned adjacent portions being angularly related to both said last mentioned frusto-conical sealing surface and to said last mentioned frusto-conical portion; said first sealing ring being located between the said juxtaposed sealing surfaces of said first plurality of sealing surfaces and having inner and outer surfaces conforming thereto; and said second sealing ring being located between the said juxtaposed sealing surfaces of said second plurality of sealing surfaces and having inner and outer surfaces conforming thereto; whereby to provide a fluid tight seal between said facing first and second members and said axially aligned first and second bores whether pressure be exerted from within or without the joint thus created between said carrier and said first member, by said first sealing ring, and whether pressure be exerted from within or without the joint created between said carrier and said second member, by said second sealing ring.

3,873,106
JOINTLESS PACKING RING AND METHOD OF MAKING SAME

Eugene Pastelak, Penn Township, Lancaster, Pa., assignor to Raybestos-Manhattan Inc., Manheim, Pa.

Filed Apr. 17, 1972, Ser. No. 244,881

Int. Cl. F16j *15/18*

U.S. Cl. 277—203 **6 Claims**

1. A jointless packing ring comprising an annular helix formed of a plurality of convolutions of a yarn comprising asbestos fibers impregnated with a polymeric binder selected from the group consisting of fluorocarbon, urethane and acrylonitrile polymers, the adjacent yarn convolutions within said helix being in substantially parallel side-by-side relation, and said helix having been subjected to heat and pressure to consolidate the yarn convolutions upon each other and to set said binder, the exterior surface of said ring being coated with said polymeric binder, said ring containing from about 10 to about 60 percent of binder, based on the combined weight of yarn and binder.

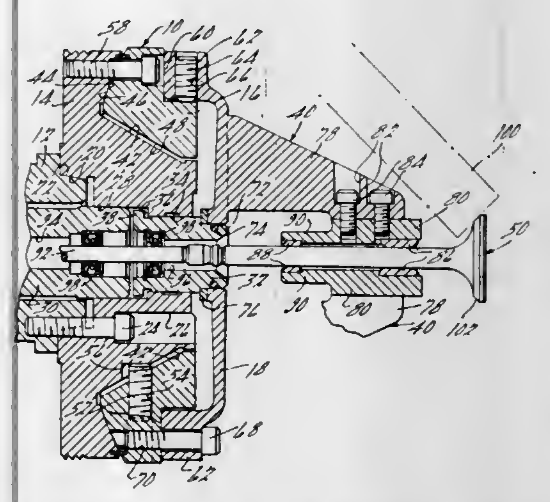
3,873,107
ADJUSTABLE WORK HOLDER WITH FRONT AND REAR WORK HOLDING JAWS

George Hohwart, Howell; Paul Toth, Allen Park, and Kenneth O. Cross, Northville, all of Mich., assignors to N. A. Woodworth Company, Detroit, Mich.

Filed Apr. 25, 1973, Ser. No. 354,440

Int. Cl. B23b *31/32*

U.S. Cl. 279—1 D **8 Claims**



1. In a chuck assembly of the type adapted to be mounted on a spindle of a machine tool, the combination including a chuck body and a plurality of work engaging jaws supported

by said chuck body for radial movement with respect to the longitudinal axis of said chuck assembly between a work engaging position and a nonengaging position radially spaced therefrom, each said engaging jaw formed with a work engaging face including a first abutment for substantially rigidly engaging a piece of work and a second abutment axially spaced from said first abutment and disposed on a radially unsupported portion of an axially extending radially deflectable member for yieldably engaging a piece of work with a clamping force less than that of said first abutment.

3,873,108
SKI BRAKE

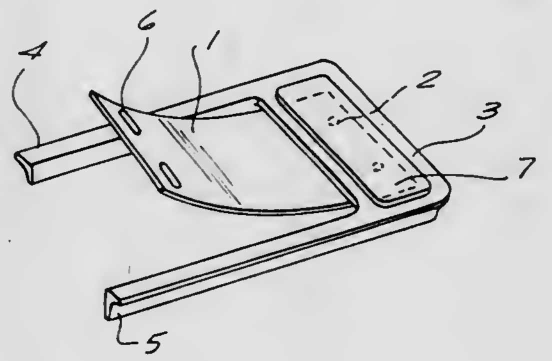
Philippe Lacarrau, and Jean-Marc Duriaux, both of 1, allee du Bois, 69260 Charonnieres, France

Filed Nov. 21, 1973, Ser. No. 418,096

Claims priority, application France, Nov. 27, 1972, 72.42953; Dec. 4, 1972, 72.43672

Int. Cl. A63c *7/10*

U.S. Cl. 280—11.13 B **8 Claims**



1. In combination with a ski having a top face, a bottom face and a pair of longitudinal side faces, and a ski binding having a front and a rear unit for releasably holding a ski boot on the top face of a ski, a ski brake for slowing down and stopping the movement of the ski when, during skiing, the boot slips out of the ski binding, said ski brake comprising a mobile member of plastic material having at low temperatures a high resistance against bending, said member being substantially U-shaped and havng a portion extending transverse to the longitudinal direction of the ski and two elongated prongs each integral at one end with and projecting from said transverse portion towards the front end of the ski and located laterally and closely adjacent to the respective side face of the ski, said mobile member being, when the boot of the skier is held by the ski binding against the top face of the ski, in an inactive position in which said transverse portion is located between a front portion of the sole of the ski boot and the top face of the ski while said elongated prongs extend substantially parallel to and adjacent to the respective side faces of the ski in the region of the top face of the latter, said mobile member being movable, when the boot slips out of the binding, from said inactive to an active position in which said transverse member and said prongs are tilted with respect to said top face so that the free end portions of said prongs will project beneath the bottom face of the ski to dig into the snow beneath the latter; and biasing means for biasing said mobile member from said inactive to said active position and comprising a leaf spring fixedly attached at one end to said transverse portion and at the other end to the top face of the ski in the region of the front unit of the ski binding.

3,873,109
RELEASABLE HEEL HOLD-DOWN DEVICE FOR A SKI

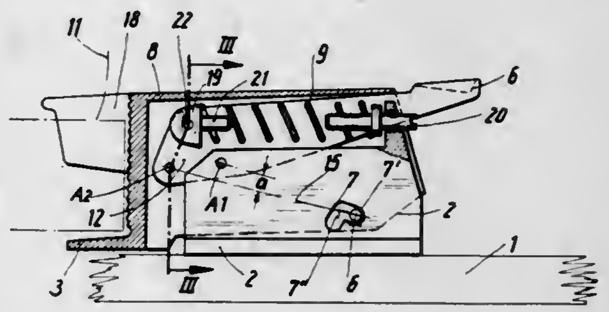
Paul Unger, Bruckwiesenstrasse 113, 8501 Altenberg, Germany

Filed Mar. 5, 1973, Ser. No. 338,344

Claims priority, application Germany, Mar. 8, 1972, 2211070

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **8 Claims**



1. A releasable heel hold-down device for a ski binding including a base part arranged to be mounted on a ski surface and to extend in the longitudinal direction of the ski, a housing extending in the longitudinal direction of the ski and having a first end arranged to be located adjacent the portion of the heel of a ski boot on the ski and a second end spaced rearwardly along the ski from the first end, a heel hold-down member secured to the first end of said housing, a crank extending in the longitudinal direction of the ski and pivotally connected to said base part about a first axis and to said housing about a second axis, the first and second axes of the pivotal connection of said crank being spaced apart in the longitudinal direction of the ski, an elongated adjustable spring mounted on one end on said crank at the end thereof closer to the first end of said housing and extending toward the second end of said housing, abutment means in said device located adjacent the second end of said housing for supporting the other end of said adjustable spring, means for displaceably mounting said housing relative to said base part, wherein the improvement comprises that said means for displaceably mounting said housing comprises an L-shaped slot in said base part and a journal attached to said housing and movably displaceable through said L-shaped slot, said L-shaped slot comprising a first leg extending generally in the longitudinal direction of the ski and a second leg extending downwardly from one end of said first leg and at an angle to the longitudinal direction of the ski, said L-shaped slot spaced in the longitudinal direction of the ski from said first and second axes, said first and second axes and said journal forming three corners of a triangle and said second axis and said journal defining the opposite ends of a connecting line, said housing being displaceable between a holding position for securing the heel of a ski boot on a ski, a release position for releasing the heel of the ski boot and a locked release position so that in the holding position and the locked release position said first axis is located above the connecting line extending between said second axis and said journal.

3,873,110
HEEL HOLDDOWN FOR SKI BINDING

Rene Ramillon, 3, Rue Emile Zola, Grenoble, France

Filed Nov. 26, 1973, Ser. No. 418,822

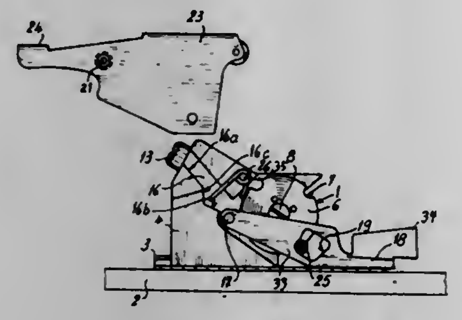
Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **10 Claims**

1. A heel holddown for a ski binding, said holddown comprising:
  a support adapted to be mounted on the face of a ski;
  a longitudinal guide on said support inclined to said ski face;
    a heel clamp longitudinally slidable in said guide and having an end displaceable transversely to said face and engageable over a ski boot heel to clamp said heel against said ski face;

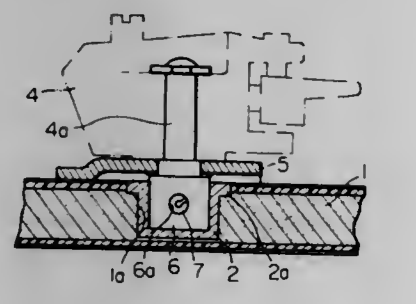
an actuating member mounted on said support for rotation about a transverse axis generally parallel to said ski face and formed with a notch displaceable away from said ski face on rotation of said member, said heel clamp being positioned for engagement in said notch in at least one angular position of said member, said notch being displaceable out of engagement with said clamp on rotation of said member from said position through a predetermined angular displacement; and

means on said support for elastically returning said member to said position on rotational displacement thereof through an angular displacement less than said predetermined angular displacement.



3,873,111
CONNECTION FOR SKI-BINDING

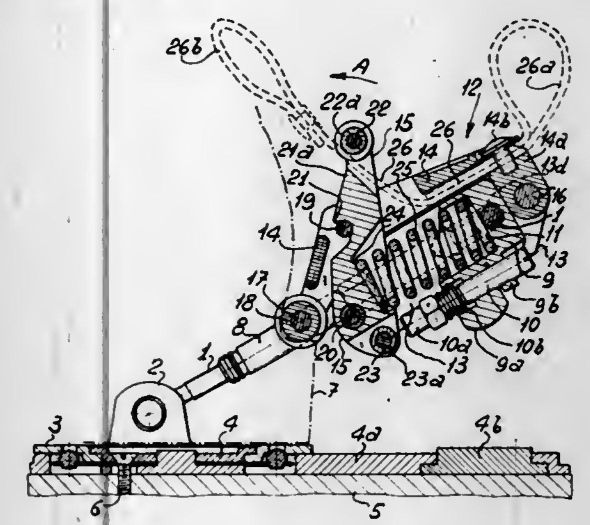
Katsuhiko Imagawa, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamanatsu, Japan
Filed Dec. 6, 1973, Ser. No. 422,198
Claims priority, application Japan, Jan. 31, 1973, 48-12591
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 R **4 Claims**



1. An improved connection means for ski-binding, comprising:
a ski board having a hollow cavity in one portion at a top surface thereof, and a hole formed therein and opening at a lateral side of said ski board, the axis of said hole passing through said hollow cavity;
a ski-binding clamp for a ski boot, comprised of a main body, and at least one fitting member extending downwardly from said main body and also having a through-hole formed therein at a position corresponding to said through-hole in said ski board, said fitting member being inserted into said hollow cavity for assembling the ski-binding on said ski board; and
a stopper pin for insertion through said holes in said ski board and said fitting member, all being in mutual alignment so as to secure the ski-binding clamp to said ski board.

3,873,112
RELEASABLE REAR ATTACHMENT FOR SKIS HAVING A CONSTANT RELEASE MOVEMENT

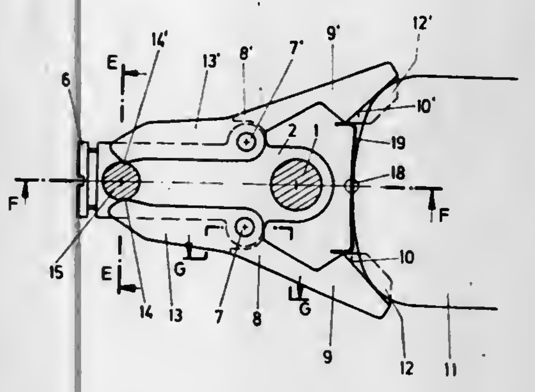
Lorenzo Covini, Milan, Italy, assignor to Cober Fabbrica Articoli Sportivi S.p.A., Milan, Italy
Filed Feb. 13, 1974, Ser. No. 442,095
Claims priority, application Italy, Feb. 15, 1973, 20424/73; Sept. 25, 1973, 29383/73
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **11 Claims**



1. A releasable binding for the heel of a ski boot placed on a ski, comprising
1. a substantially rigid elongated body,
2. means for pivotally connecting the body to the ski,
3. a displaceable unit slidable longitudinally on the elongated body, the unit including
a. a slide mounted for sliding on the body,
b. a pressure lever pivoted to the slide for acting on the heel, and
c. a coupling lever pivoted to the slide and acting on the pressure lever,
4. an abutment on the body for engagement by the coupling lever, and
5. a spring interposed between the body and the displaceable unit, the spring operating to permit limited sliding elastic movement of the unit relative to the body and any elastic movement in excess of the permitted limited movement causing engagement of the coupling lever with the abutment to release the pressure lever from the heel.

3,873,113
SKI SAFETY BINDING FOR THE TOE OF A SKI BOOT

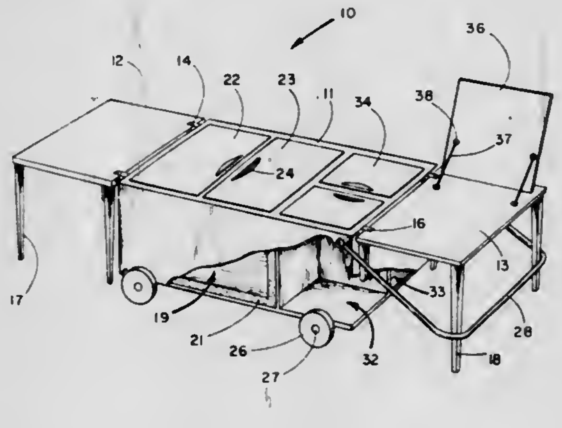
Willy Suhner, Aarauerstrasse 38, 5200 Brugg, Switzerland
Filed Nov. 20, 1973, Ser. No. 417,521
Claims priority, application Switzerland, Nov. 27, 1972, 17265/72
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **9 Claims**



1. In a ski safety binding for the toe of a ski boot, a combination comprising a member mountable on a ski for pivoting relative to the latter about an axis which extends normal to the plane of the ski, between a normal operating position, a displaced release position and an intermediate damping position; abutment means fixedly mountable on the ski at a location spaced from said axis; a pair of double-armed levers pivoted to said member for pivotal movement about parallel pivot axes extending normal to the plane of the ski and located at opposite sides of a line extending longitudinally of the ski and passing through said axis and said abutment means, each of said levers having a first arm adjacent to a toe of the boot and a second arm spaced therefrom and normally slidably engaging said abutment means; a contact face provided on each of said first arms, said contact faces being located in planes substantially normal to the plane of the ski and normally engaging said boot toe at opposite sides of a longitudinal center-line or the boot; and biasing means permanently urging said member to said normal operating position, but permitting pivoting of said member about said axis to said intermediate damping position in response to slight lateral shifting of the boot toe, and to said release position in response to greater lateral shifting of the boot toe with concomitant disengagement from the boot toe of the first arm of that lever towards which the boot toe is shifting.

3,873,114
PORTABLE CONTAINER APPARATUS

Rilma L. Brown, 3148 N. Central Ave., Indianapolis, Ind.
Filed Dec. 14, 1973, Ser. No. 424,863
Int. Cl. B62b *3/02*
U.S. Cl. 280—30 **9 Claims**

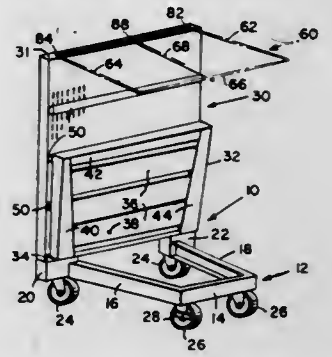


1. Portable container apparatus comprising:
a wheeled container;
a first platform hingedly attached to a first side of the container having a first position adjacent the container and having a second position extending essentially horizontally beyond the container;
a leg attached to the platform foldable adjacent the platform when the platform is in the first position and unfoldable beneath the platform when the platform is in the second position; and
a back rest member pivotally attached to the first platform and positionable extending above the first platform.

3,873,115
PORTABLE STOWAGE RACK FOR BEVERAGE CONTAINERS

Frank L. Shiflet, Waynesboro, Va., assignor to Hopeman Brothers, Inc., New York, N.Y.
Filed Feb. 9, 1973, Ser. No. 331,130
Int. Cl. B62b *11/00, 3/02*
U.S. Cl. 280—33.99 H **3 Claims**

1. A portable stowage rack for beverage containers comprising a base means adapted to have an array of beverage containers supported thereon, a back member extending upwardly from the back end of said base means to provide a backing support for a plurality of layers of beverage containers stacked in arrays on said base means, said base means including a shelf portion upon which the bottom layer of beverage containers is supported, means extending from the top portion of said back member around the periphery of the array of beverage containers in the top layer for retaining the same on the stowage rack, said retaining means including a portion extending across the front of the array of beverage containers in the top layer for preventing forward movement thereof away from said back member, said retaining means being movably mounted on said back member for movement between said position extending therefrom for retaining beverage containers to a stowed position clear of the beverage container to permit removal of the beverage containers from the stowage rack, and wheel means for portably supporting said base means and said back member, the shelf portion and the back member being backwardly inclined so as to support the beverage containers in a stacked, backwardly inclined condition, said retaining means including a wire yoke mounted on said back member for movement to the beverage container retaining position extending forwardly from said back member for contact with the beverage containers defining the periphery of the array of beverage containers in the top layer, said top portion of said back member extending generally horizontally away from the front face thereof which faces the stowed beverage containers, and said wire yoke being mounted with side legs slidable and pivotal in openings in said top portion said back member for movement to a position with said side legs stowed vertically behind said front face of said back member.

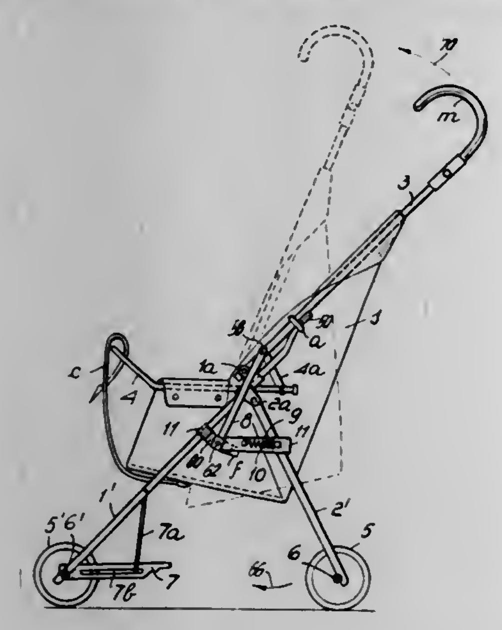


3,873,116
BABY CARRIAGE CONSTRUCTION

Gianluca Perego, Arcore, Italy, assignor to Perego-Pines S.p.A., Arcore, Italy
Filed May 24, 1974, Ser. No. 473,192
Claims priority, application Italy, Jan. 25, 1974, 20617/74
Int. Cl. B62b *7/08*
U.S. Cl. 280—36 B **3 Claims**

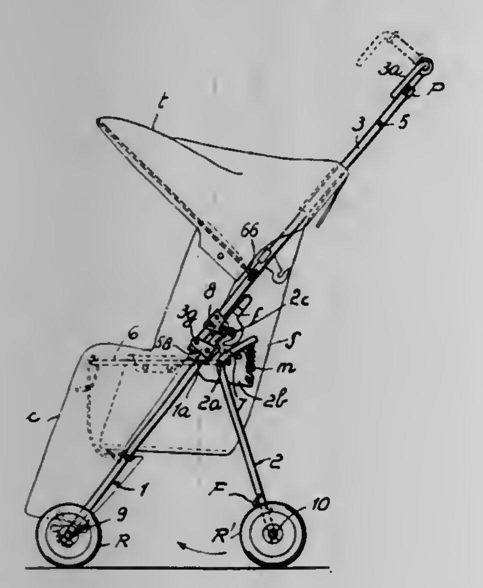
1. A baby carriage construction, comprising a lower front portion including a pair of spaced apart lower front side rod members, each of said front side rod members having an upper and a lower pivot bracket thereon, wheel means carried on the lower end of said lower front side rod members, a lower rear portion including a pair of spaced apart lower rear side rod members having upper end portions connected to said lower pivot bracket and having lower portions, wheel means on the lower portions of said lower rear side rod members, an upper portion including a pair of spaced apart upper side rod members having lower end portions pivoted on said upper pivot bracket and being alignable with said lower front side rod members, ring means on said spaced apart upper side rod members engageable over the upper ends of said front side rod members when said upper and lower portions are in an erected position to hold said upper portion side rod members and said front side rod members in end-to-end alignment, said upper side rod members having upper converged portions portins terminating in U-shape handles, a substantially U-shape seat guard rod member extending between said front side rod members, a connecting link pivotally connected between said upper side rod members and said seat guard rod member adjacent each end of said seat guard rod member to support said seat guard rod member from said upper side rod members, a fabric seat having a seat back portion slung from said upper side rod members and a seat bottom portion slung

away from said seat guard rod member, a collapsible brace including a tubular portion engaged over at least one of said front side rod members and slidable therealong, a brace link having one end pivoted to said collapsing brace and an opposite end with a slot therein, a bolt secured to an associated lower rear side rod member and movable in said slot, and spring means biasing said bolt to move along said slot in a direction to pivot said brace link to collapse said collapsing brace to permit the pivotal movement of said lower rear portion into juxtaposition with said lower front portion.



3,873,117
FOLDABLE BABY CARRIAGE CONSTRUCTION

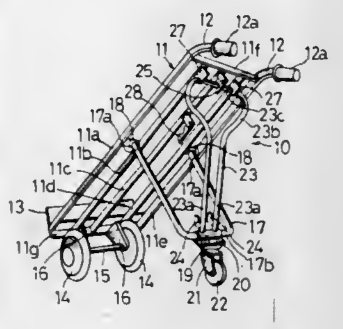
Giuseppe Perego, Via De Gasperi, 50, Arcore, Italy (20043)
Filed Oct. 31, 1973, Ser. No. 411,206
Claims priority, application Italy, Jan. 24, 1973, 20511/73
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 B **7 Claims**



1. A baby carriage, comprising an upper frame portion having two spaced apart upper legs converging upwardly and terminating in a handle, a lower frame portion having two spaced apart lower legs, a wheel axle extending between and journalled on said lower legs, said axle having front wheel means thereon, a lower rear frame having two spaced apart lower rear legs, a rear wheel axle extending between and journalled on said lower rear legs and having rear wheel means thereon, a rigid seat frame forming member having spaced apart leg portions pivoted on said lower frame and on said rear frame, bracket means carried on said lower frame adjacent to but spaced from the upper end of said lower frame and pivoted on said upper frame, plate means carried on the upper end of said lower rear frame and pivoted to the upper end of said lower frame and having a projecting pin thereon, a hook member pivoted on said upper frame and engageable with said pin to retain said lower frame and said lower rear frame in an extended operative position but releasing said frames for collapsible movement against said upper frame, a fabric seat assembly including a back portion engaged with said upper frame, a seat portion secured to the lower end of said back portion and having side parts engaged over said seat frame forming member, a top parasol cover including a back part secured over said upper frame and a top support extending outwardly from said upper frame and being pivoted to said upper frame to extend and retract said fabric cover therefrom, and a bottom foot receiver comprising a fabric bag secured to said lower frame and having an opening aligned with the front of said seat to receive the feet of the baby.

3,873,118
MANUAL CARRIER

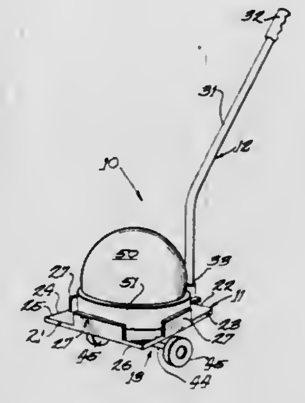
Shozo Takagi, No. 6-4, 6-chome, Yamamoto-cho-minami, Yao-shi, Osaka, Japan
Filed May 31, 1974, Ser. No. 475,180
Claims priority, application Japan, May 31, 1973, 48-64954
Int. Cl. B62b *11/00*
U.S. Cl. 280—47.2 **5 Claims**



1. A manual carrier comprising
a carrier table,
a pair of operating handles extending forwardly from said carrier table,
a pair of rear wheels provided under said carrier table,
a U-shaped arm with a pair of forked ends pivotally connected to the underside of said carrier table,
a hollow tube movably journalled to said U-shaped arm at a position opposite to said pair of forked ends of said U-shaped arm,
a front wheel connected to said hollow tube through a bracket,
a support arm having a pair of legs secured to a portion of said hollow tube opposite to said bracket,
a pair of inwardly directed rests mounted on each of said pair of legs of said support arm adjacent to said hollow tube, respectively,
said pair of rests being engageable with the front end of said carrier table when said U-shaped arm is pivotted toward the front end of said carrier table,
said support arm substantially perpendicularly standing adjacent to the front end of said carrier table when said pair of rests are engaged with the front end of said carrier table,
a first hook mounted on the lower side of the carrier table adjacent to the front end thereof,
said first hook being engageable with said support arm at a position opposite to said pair of legs of the support arm when said U-shaped arm is extended in the direction substantially perpendicular to said carrier table,
a second hook mounted on the lower side of said carrier table in axially spaced relation with said first hook, and
said second hook being engageable with said support arm at a position opposite to said pair of legs of the support arm when said U-shaped arm and the support arm are folded together in the direction of the rear end of the carrier.

3,873,119
BOWLING BALL CART

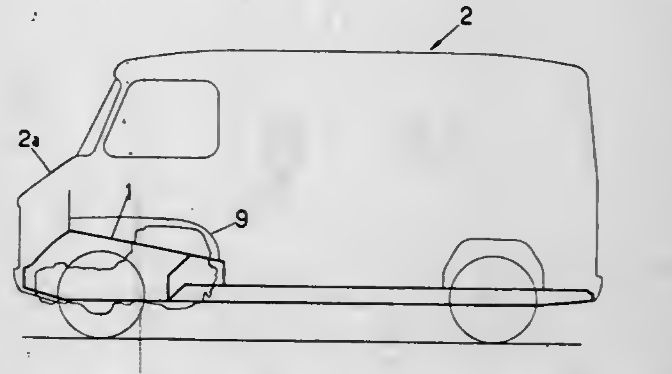
Clyde M. Koch, 3907 Bennington St., Philadelphia, Pa. 19124
Filed Dec. 6, 1973, Ser. No. 422,607
Int. Cl. B62b *5/00*
U.S. Cl. 280—47.13 R **2 Claims**



1. A bowling ball cart comprising a substantially flat rectangular platform having a top surface, a bottom surface, opposed side edges, and opposed front and back end edges, flange like members associated with each of the end edges and side edges and projecting upright adjacent thereto from the top surface of the platform, a socket secured to the platform adjacent the back end edge thereof and projecting upwardly therefrom, an elongated handle member having one end adapted to be detachably attached to the socket with the opposite end projecting upwardly and rearwardly therefrom and terminating in a handle grasping end adapted to be readily grasped in the hand of an individual, a pair of axially aligned transversely spaced wheels rotatably mounted to the bottom surface of the platform, the socket having a threaded bore with screw like threads, the end of the handle received in the bore provided with screw like threads of a size and pitch complementary to the size and pitch of the threads in the socket such that the handle may be threadedly attached to and detached from the socket, the wheels include a pair of winged V-shaped transversely spaced and aligned brackets having the winged portions thereof suitably fastened to the bottom surface of the platform, the apex of each bracket having a transversely extending cylindrical bushing fastened thereto with the bores of the bushings in axial alignment, an elongated cylindrical axle adapted to extend completely through both of the bushings and project laterally outwardly of the outermost ends of each of the bushings, a wheel adapted to be permanently affixed to each end of the axle adjacent the end of the bushing and within the boundaries of the platform whereby the combined wheels and axle are rotatable about their axis relative to the brackets and bushings, a cylindrical ring like member having an outer diameter adapted to fit within the flanges on the platform and having an inner diameter adapted to restingly receive therein a conventional type bowling ball, the ring member being of a sufficient height such that when rested on the top surface of the platform between the flanges the bowling ball supported therein will not engage the top surface of the platform, and the ring being detachably retained on the platform between the flanges with the flanges preventing any unwanted relative movements between the ring and the platform.

3,873,120
MODULAR FRAME ASSEMBLY FOR VEHICLE

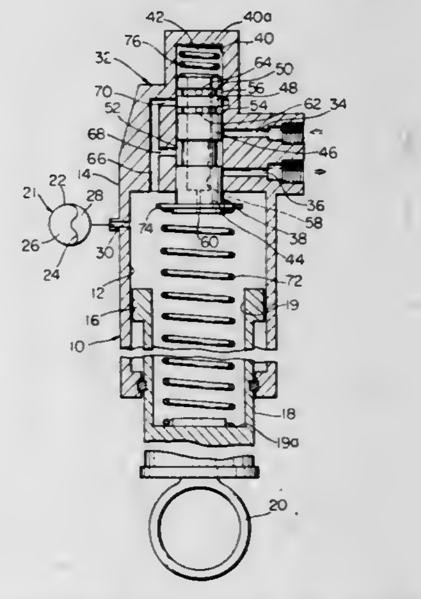
Camille Lecomte, Rueil-Malmaison, and Andre Desirat, Boulogne-Billancourt, both of France, assignors to Societe Anonyme de Vehicules Industries et d'Equipement Mechanique, Saviem, Suresnes, France
Filed Dec. 21, 1973, Ser. No. 427,273
Claims priority, application France, Jan. 5, 1973, 73.00416
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 R **7 Claims**



1. A frame assembly for use as part of a utility vehicle comprising a front sub-assembly having at least two structural beams each having upper and lower bearing surfaces thereon, and a load-carrying sub-assembly adapted to be rigidly assembled to said front sub-assembly to define said frame, said load-carrying sub-assembly having at least two longitudinal bearing beams each including a first substantially horizontal extension bearing into said upper bearing surface of said structural beams of said front sub-assembly to locate said load-carrying structure in a relatively high position and a second substantially horizontal extension onto which bear said lower bearing surface of said structural beams of said front sub-assembly to locate said load-carrying structure in a relatively low position.

3,873,121
HYDROPNEUMATIC SUSPENSION UNIT FOR MOTOR VEHICLE

Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan
Filed Jan. 12, 1973, Ser. No. 322,990
Claims priority, application Japan, Jan. 13, 1972, 47-5508
Int. Cl. B60g *13/00*
U.S. Cl. 280—124 F **9 Claims**



1. A hydropneumatic suspension unit adapted to mounted between a vehicle body and wheel supporting means, comprising a cylinder defining therein a cylinder chamber filled with pressurized fluid, the volume of said cylinder chamber being variable in response to variations in the load of a vehicle body

to allow retraction and extension of said suspension unit, said cylinder chamber being fluidly communicable with a pressurized fluid source and with a drain, valve means disposed between said source and said cylinder chamber and between said drain and said cylinder chamber to normally block fluid communication therebetween and operable in response to increases and reductions in the load of said vehicle body to extablish fluid communication between said source and said cylinder chamber to cause supply of pressurized fluid thereinto for extension of said suspension unit and between said drain and said cylinder chamber to cause discharge of fluid therefrom for retraction of said suspension unit thereby maintaining the height of said vehicle body substantially constant independently of the load of said vehicle body, a hollow member, a floating piston slidably disposed in said hollow member, said hollow member having therein a first fluid chamber at one end of said floating piston and a second fluid chamber at the other end of said floating piston, said floating piston having formed therethrough a restricted passageway interconncecing said first and second fluid chambers, said hollow member having formed therein a bypass passageway opening at one end into said first fluid chamber and fluidly communicable at the other end with said second fluid chamber, said floating piston controlling fluid communication between said bypass passageway and said second fluid chamber and being held in a neutral-position to block said fluid communication therebetween when said valve means blocks said fluid communication between said cylinder chamber and said source and between said cylinder chamber and said drain and being movable to first and second operative positions to extablish said fluid communication between said bypass passageway and said second fluid chamber when said valve means establishes said fluid communication between said source and said cylinder chamber and between said drain and said cylinder chamber, and two biasing means urging said floating piston in opposite directions to resiliently hold the same in said neutral position.

3,873,122

AUTOMATIC LEVELLING ARRANGEMENT FOR VEHICLES AND THE LIKE

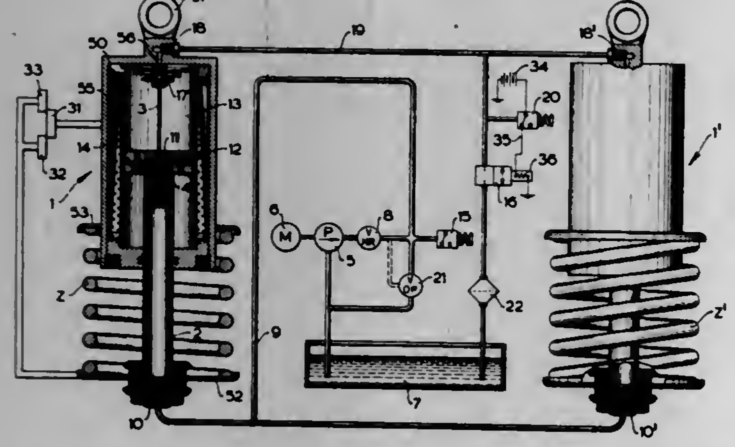
Friedhelm Fischer, Letmather Strasse 25, 5845 Villigst, Germany

Filed July 25, 1973, Ser. No. 382,565

Claims priority, application Germany, July 25, 1972, 2236402

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **13 Claims**



1. In a distance-regulating arrangement for controlling the spacing between two components that are to be subjected to varying forces tending to change the spacing between the components, particularly for controlling the spacing between an axle and the chassis of a vehicle subjected to varying weight forces, in combination, linkage means for connecting together said two components and including a first portion connectable to one of said two components and a second portion connectable to the other of said two components and movable relative to said first portion of said linkage means in a predetermined direction, said linkage means being subjected to a loading force varying between a lower limit and an upper limit; detecting means operative for detecting whether the loading force applied to said linkage means is in a first range bounded by said lower limit and by a predetermined first value greater than said lower limit, in a second range bounded by said first value and by a predetermined second value greater than said first value but lower than said upper limit, or in a predetermined third range bounded by said second value and by said upper limit; and control means operative when said loading force is in said second range for automatically restoring said distance to a predetermined normal value when said distance departs from said normal value but operative when said loading force is in either one of said first and third ranges for automatically changing said distance as a predetermined function of the magnitude of said loading force.

3,873,123

CONTROL SYSTEM FOR REGULATING THE QUANTITY OF PRESSURE MEDIUM IN A SUSPENSION SYSTEM

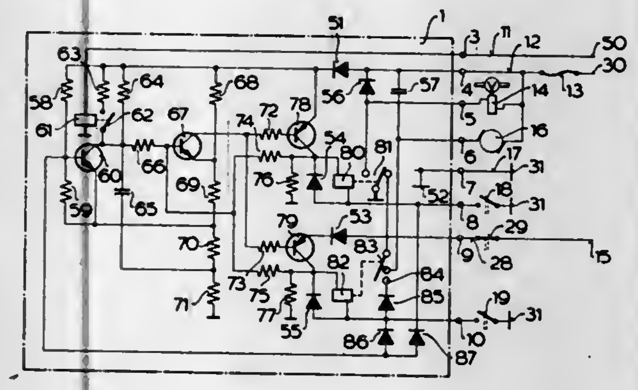
Knut Joneleit, Iserlohn, Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Germany

Filed Jan. 29, 1974, Ser. No. 437,611

Claims priority, application Germany, Jan. 30, 1973, 2304295

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **6 Claims**



1. In a suspension system for suspending a first member relative to a second member and wherein the distance between said first and second members varies as a function of the quantity of pressure medium in said suspension system, in combination, signal furnishing means for furnishing a control signal when said distance between said first and second member varies from a predetermined distance by at least a predetermined increment; supply means for furnishing a supply voltage; timing circuit means energized by said supply voltage and connected to said signal furnishing means for furnishing a timing signal a predetermined time interval following receipt of said control signal, said predetermined time interval having undesired variations as a function of changes in said supply voltage; stabilizing circuit means including a voltage divider circuit connected to said timing circuit means for stabilizing said timing circuit means with respect to said variations in said supply voltage; level varying means for changing the quantity of said pressure medium in said suspension system upon energization; and output circuit means connected to said timing circuit means, said signal furnishing means and said level varying means for energizing said level varying means in the presence of said control signal and upon receipt of said timing signal.

3,873,124

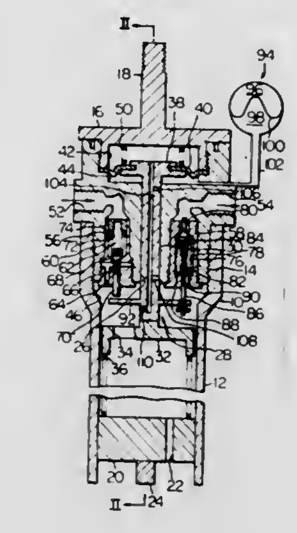
VEHICLE HYDROPNEUMATIC LEVEL ADJUSTING SHOCK ABSORBER

Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 5, 1974, Ser. No. 448,389

Int. Cl. F16f *5/00*

U.S. Cl. 280—124 F **7 Claims**



1. A hydropneumatic level-adjusting shock absorber for a vehicle comprising a cylinder having inlet and outlet ports for a hydraulic fluid to operate in the cylinder, a first piston longitudinally slidable in the cylinder and formed with a passageway providing constant fluid communication across the first piston, the cylinder and the first piston being connected between a body structure of the vehicle and an axle of a road wheel, first and second valves which are carried on the cylinder and which are operative on the inlet and outlet ports, respectively, of the cylinder when actuated, a piston guide member disposed in and fast on said cylinder and having an elongate bore extending throughout the length of the piston guide member, a second piston longitudinally movable in the cylinder and having a rod portion longitudinally slidable throughout the elongate bore in said guide member and extending substantially in parallel to said first and second valves, a pressure-receiving portion formed at one end of the rod portion and located in the vicinity of one end wall of the cylinder and a valve-actuating portion formed at the other end of the rod portion and engageable with said first and second valves for selectively actuating the first and second valves depending upon the longitudinal position of the second piston relative to the cylinder, a flexible partition member connecting said pressure-receiving portion to the cylinder for forming in the cylinder a first chamber defined between said end wall of the cylinder and the combination of the pressure-receiving portion of the second piston and the flexible partition member and a second chamber in the remaining free space in the cylinder and in communication with said inlet and outlet ports over the first and second valves, respectively, a first spring seated between the first and second pistons, and a second spring seated between said end wall of the cylinder and said combination so that the second piston is suspended between the first and second spring means.

3,873,125

SAFETY DEVICE FOR AUTOMOTIVE VEHICLES

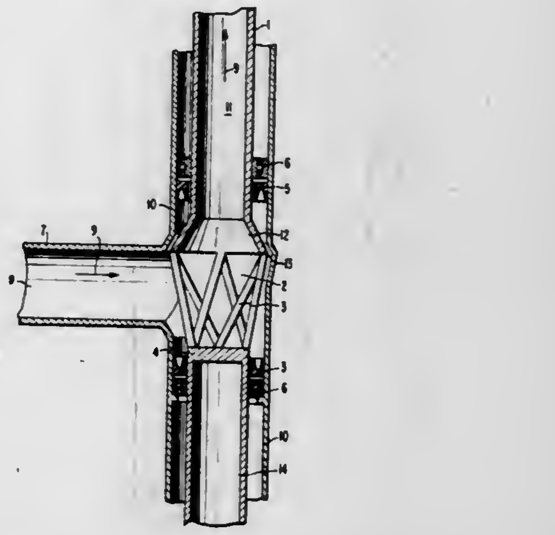
Hellmut Bendler, Nurnberg; Egon Flach, Koln, and Axel Homburg, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 20, 1973, Ser. No. 381,007

Claims priority, application Germany, July 22, 1972, 2236139

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **16 Claims**



1. A gas conducting arrangement for conducting inflating gas from a gas pressure generating mechanism to an inflatable bag disposed in an automotive vehicle of the type having a steering column supporting a vehicle steering wheel, said bag being positioned for cushioning collision impacts when in an inflated condition; said arrangement comprising:

hollow gas conducting space means formed inside said steering column and extending in the direction of the longitudinal axis of said steering column,

and a connection pipe for feeding gas from said pressure generator into said hollow space means at a gas entrance zone of said steering column, said connection pipe being disposed at an angle to the longitudinal axis of the steering column at least in the area of said gas entrance zone, wherein the flow cross section of the hollow space means is smaller than the flow cross section of the connection pipe along a substantial portion of the longitudinal extent of said hollow space means, and wherein the flow cross section of the hollow space means is enlarged in the gas entrance zone to a size at least as great as the flow cross section of the connection pipe, and further

wherein the steering column is formed with grid-like struts in the gas entrance zone with openings between said struts permitting passage of gas from said connection pipe to said hollow space means, which hollow space means is formed in part by said struts.

3,873,126

DEVICE FOR SUPPORTING PART OF A WHEELED VEHICLE

John C. Hewett, 4224 Cedar Mountain Dr., Waco, Tex. 76708

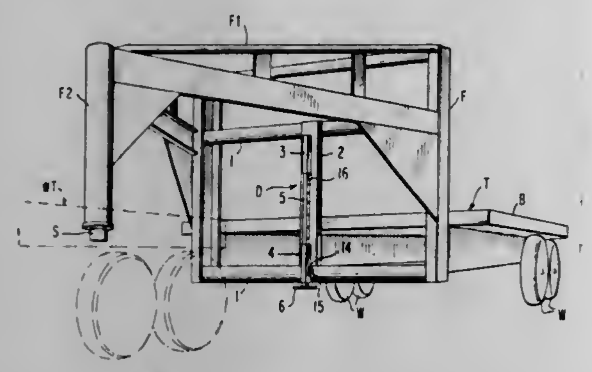
Filed Aug. 20, 1974, Ser. No. 498,964

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **11 Claims**

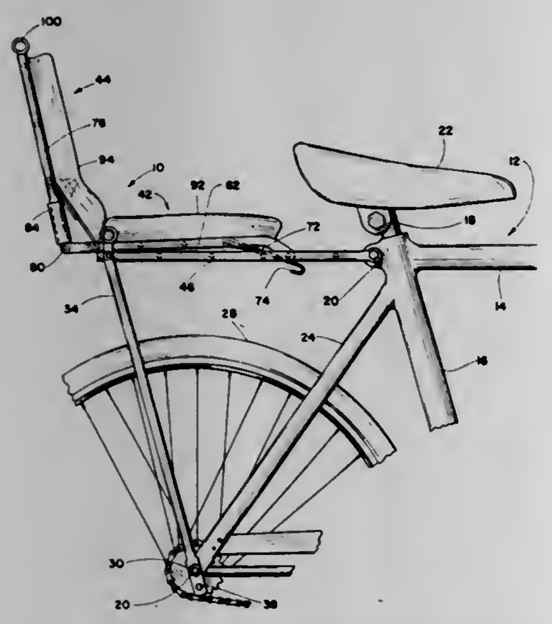
1. A device for at least partially supporting the frame of a wheeled vehicle when the vehicle is not completely supported by its wheel equipment, said device comprising upper and lower guides attachable to such a vehicle frame in vertically aligned relation, one above the other, with a space between the bottom end of said upper guide and the top end of said lower guide; a prop guidable vertically by both of said guides; releasable fixing means for holding said prop in an elevated position while engaging both said upper and lower guides to maintain the bottom end of said prop clear of the ground to

permit the vehicle to travel on its wheel equipment; a load supporting abutment mounted at the bottom end of said upper guide for movements respectively to an inoperative position in which it is laterally displaced from the vertical line of movement of said prop in said guides thereby to permit said prop to move into its said elevated position, and to an operative position below the bottom end of said upper guide and above the top end of said lower guide and the top end of said prop when said prop is in a lowered position with its bottom end positioned for ground engagement and with its top end spaced below the bottom end of said upper guide, thereby providing a clearance space between the top end of said prop and said abutment; and a lifting jack insertable in said clearance space and having two relatively vertically movable jack elements, one for engagement with said abutment and the other for engagement with the top end of said prop, whereby relative extending movements of said jack elements will apply lifting and sustaining force to said abutment and thereby to said vehicle frame.



3,873,127
MULTI-PURPOSE BICYCLE RACK

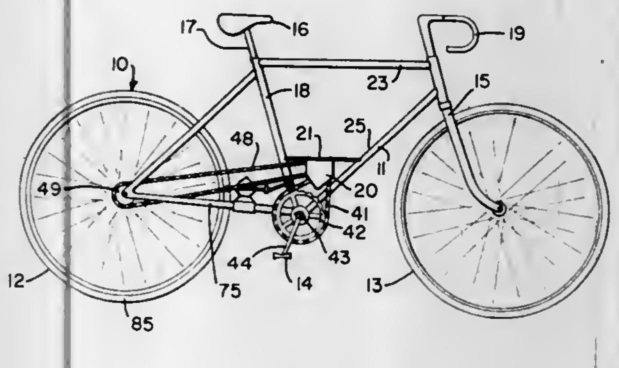
Murray C. McNichol, Jr., and Raymond Keith Griggs, both of Bartlesville, Okla., assignors to Kain's Research and Development Company, Inc., Bartlesville, Okla.
Filed Oct. 1, 1973, Ser. No. 402,009
Int. Cl. B62j *7/04*
U.S. Cl. 280—202 **4 Claims**



1. A multi-purpose rack for bicycles comprising a horizontally disposed rack base, means for securing said rack base to the bicycle over the rear wheel thereof behind the bicycle seat, rack section comprising a first rack section pivotally secured to the rack base directly behind the bicycle seat, and latching means connectable between the rack base and said first rack section, and a second rack section pivotally secured to the free end of said first rack section, whereby said second rack section may be disposed in alignment with the first rack section or may be pivotally moved to a substantially right angle with respect thereto, first locking means for locking said second section in substantial alignment with the first section, and second locking means for locking said second section at an angle with respect to the first section to form a rear seat when said first section is disposed in a horizontal position.

3,873,128
DRIVE TRANSMISSION FOR A BICYCLE OR THE LIKE

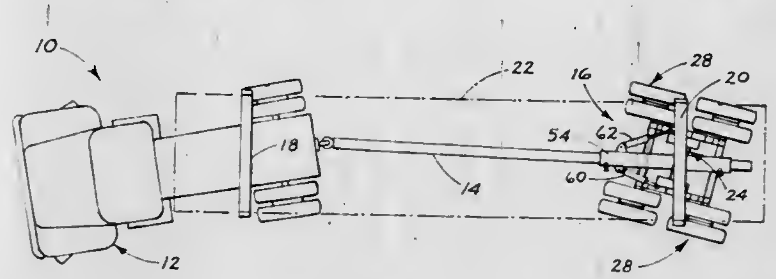
David Dunder, Cupertino, and Sheldon Wiley, Los Gatos, both of Calif., assignors to Trans World Products, Inc., San Jose, Calif.
Filed May 29, 1973, Ser. No. 364,380
Int. Cl. B62m *11/12*
U.S. Cl. 280—236 **5 Claims**



1. In a bicycle having at least a frame, a rear driving wheel having a rear wheel sprocket mounted for rotation on said frame, a front wheel freely rotatable on said frame, and a pedal sprocket journaled for rotation in said frame, said bicycle including:
- a housing mounted on said frame;
- a pair of generally right circular cones journaled for rotation in said housing, said cones being spaced from one another and rotatable about their longitudinal axes, one of said cones being tapered in a direction opposite the tapering of the other of said cones with their longitudinal axes being generally parallel to each other;
- cone rotation transmission means associated with said housing operatively engaging both of said cones for transmitting rotation of one of said cones to the other of said cones;
- cone ratio varying means associated with said housing operatively engaging said cone rotation transmission means for varying the engagement thereof along the outer surfaces of said cones in a direction generally parallel to the longitudinal axes of said cones and thus varying the ratio of revolution between said cones;
- each of said cones having a sprocket fixed for rotation therewith, the axes of rotation of said sprockets being generally coincident with the axis of rotation of each of said cones, the outer surfaces of each of said cones being textured and said cone rotation transmission means including an endless belt extending about the outer surface of both of said cones in a direction generally normal to the longitudinal axes of said cones; and
- said cone ratio varying means including a lever having one end engaging said belt for selectively varying the engagement of said belt with said cones, and said cone ratio varying means further including motion generating means operatively engaging the rear wheel of said bicycle for converting rotation of said rear wheel to said lever.

3,873,129
STEERABLE TRAILER

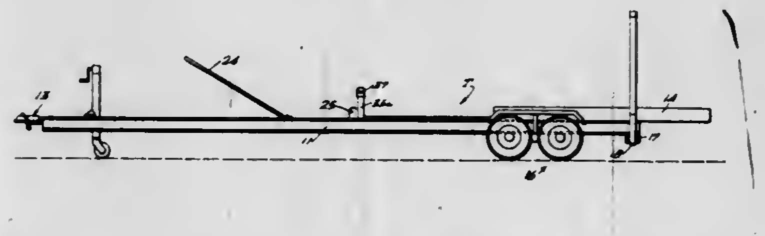
Kenneth J. Schmidt, Thruston, Oreg., assignor to General Trailer Company, Inc., Springfield, Oreg.
Filed Aug. 13, 1974, Ser. No. 497,093
Int. Cl. B62d *53/00*
U.S. Cl. 280—404 **10 Claims**



1. A steerable trailer for elongated loads such as logs and the like comprising
- means for receiving a load to be carried by the trailer,
- means for transmitting to the ground the totality of the weight of any such load received by the load-receiving means, said transmitting means including a frame which mounts the load-receiving means, and ground-traveling support means which supports the frame for travel over the ground, and
- non-load-transmitting steering mechanism including a member accommodating coupling of the trailer to a towing vehicle, pivot means pivoting said coupling member on said frame for swinging about a generally upright axis, and means operatively interconnecting said coupling member and said frame for swinging the former relative to the latter to different adjusted positions about said axis.

3,873,130
GUIDE AND SUPPORT MECHANISM FOR BOAT TRAILERS

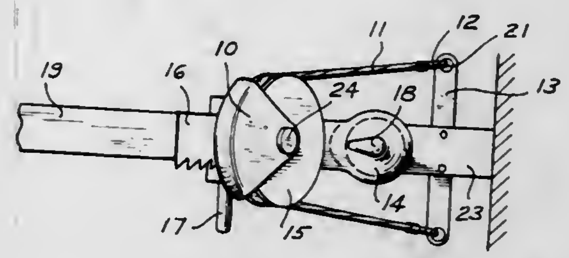
William P. Whitley, Jr., 4525 E. 10th Ln., Hialeah, Fla. 33013
Filed Feb. 22, 1974, Ser. No. 444,716
Int. Cl. B60p *3/10*
U.S. Cl. 214—84 **4 Claims**



1. In a bow guide and support mechanism for boat trailers of the type comprising a trailer framework having chock means along its length for supporting a boat to be trailered, the improvement comprising; auxiliary chock means comprising a V-block member adapted to be transversely secured to the trailer framework near the front end thereof and a cylindrical guide member centrally bent to define an obtuse angle of somewhat lesser included angle then that defined by the V-block member, means for securing said cylindrical guide member against one side of said V-block member in symmetrical relation with respect thereto with its apex portion below the apex of the included angle of said V-block member and so positioned that outwardly-extending arm portions of said cylindrical guide member project upwardly of respective outer surface portions of said V-block member defining said obtuse angle, said outwardly-extending arm portions of said cylindrical guide member extending substantially beyond the transverse outer ends of said V-block member at each side of the trailer to serve as extended guide means for centering the bow of a boat to be trailered upon said V-block member when being loaded.

3,873,131
TRAILER SAFETY HITCH

William N. Adams, Silsbee, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed July 17, 1973, Ser. No. 380,074
Int. Cl. B60d *1/06, 1/12*
U.S. Cl. 280—456 R **2 Claims**

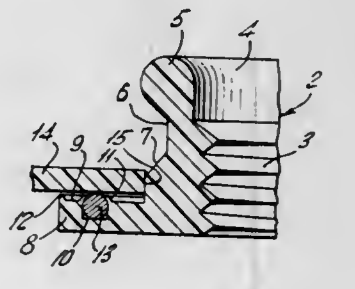


1. A trailer hitch for joining the hitch bar of a towing vehicle to the hitch bar of the towed vehicle, consisting of a cross bar mounted at a point of attachment to a first hitch bar and oriented perpendicularly to the axis of the said hitch bar, with a cable mounted over a free rotatable pulley, said pulley being mounted on the other second hitch bar, and said cable fitted with means to fasten a first end of the said cable to the cross bar at a fixed distance from the point of attachment of the cross bar to the first hitch bar, with means to fasten the other second end of the cable to the other side of the cross bar at an equal said fixed distance from the point of attachment of the cross bar to the first hitch bar, together with means to apply a tension force to the cable when the two hitch bars are joined together in the conventional fashion,

in which the pulley is rotatably mounted in a frame, with said frame fastened onto a rachet bar that fastens to the second hitch bar, with means associated with a handle for moving the said frame in a direction on the rachet bar so as to increase the tension in the cable, with said rachet bar mechanism holding the said frame in a fixed position after the desired tension force has been reached in the cable.

3,873,132
PLASTIC CONTAINER CLOSURE FLANGE

Marian A. Czerwiak, New York, N.Y., assignor to American Flange & Manufacturing Co., Inc., New York, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,683
Int. Cl. F16l *13/02, 35/00, 47/02*
U.S. Cl. 285—21 **7 Claims**



1. A closure flange molded of synthetic plastic resin for electromagnetic bonding to a plastic container wall opening comprising an upstanding cylindrical neck, a screw thread formed on said neck, a laterally extending annular collar surrounding said neck, an axially opening circular groove formed on said collar adapted to receive an electromagnetic bonding element and means integrally molded in conjunction with said groove for positively retaining said element in seated position within said groove.

3,873,133

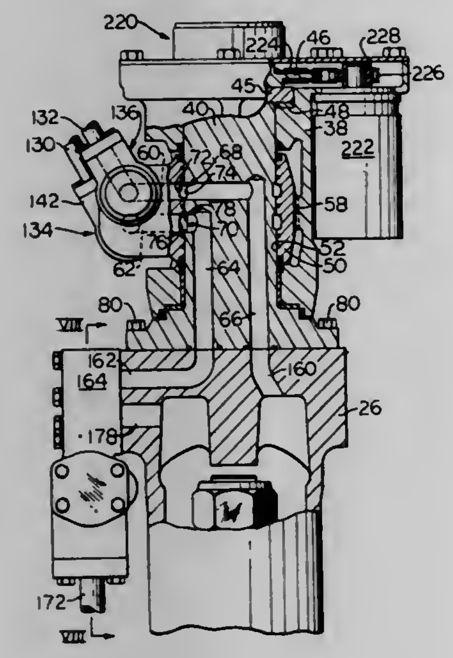
CLAMSHELL BUCKET ASSEMBLY FOR HYDRAULIC EXCAVATOR

Lawrance F. Berg, Lockport; Theodore B. Hogg, Aurora, and Robert W. Lichti, Oswego, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Aug. 25, 1972, Ser. No. 283,818

Int. Cl. F16l ***39/00***

U.S. Cl. 285—136 **2 Claims**



1. A joint assembly comprising: a tubular member generally fixed in position and defining a longitudinal bore and a lateral tubular member passage through the body thereof; a longitudinal shaft disposed within the bore of the tubular member with the outer surface thereof in intimate relation with the inner surface of the tubular member and rotatable about its longitudinal axis within the tubular member, and defining through the shaft body a shaft passage; and, an annular passage defined between the inner surface of the tubular member and the outer surface of the shaft, providing continuous communication therethrough of the tubular member passage and the shaft passage, irrespective of the rotative postion of the shaft relative to the tubular member, wherein is further included a hose defining an internal passage, and a coupling interconnecting the hose end and tubular member, said coupling comprising means for providing a degree of movement of the hose end relative to the tubular member, meanwhile providing continuous communication of the hose internal passage with the tubular member passage, wherein the coupling comprises (*i*) a longitudinal bolt threadably connected to the tubular member and defining a longitudinal internal passage which communicates with the tubular member passage, (*ii*) a tubular coupling body disposed about the bolt with the inner surface of the body in intimate relation with the outer surface of the bolt, the tubular coupling body defining a lateral body passage, the hose end being fixed to the tubular coupling body to provide communication between the internal passage of the hose and the tubular coupling body passage, and (*iii*) an annular open path defined between the inner surface of the tubular coupling body and the outer surface of the bolt, providing continuous communication therethrough of the tubular coupling body passage and the bolt passage, meanwhile allowing a degree of movement of the tubular coupling body, and the hose end fixed thereto, about the longitudinal axis of the bolt.

3,873,134

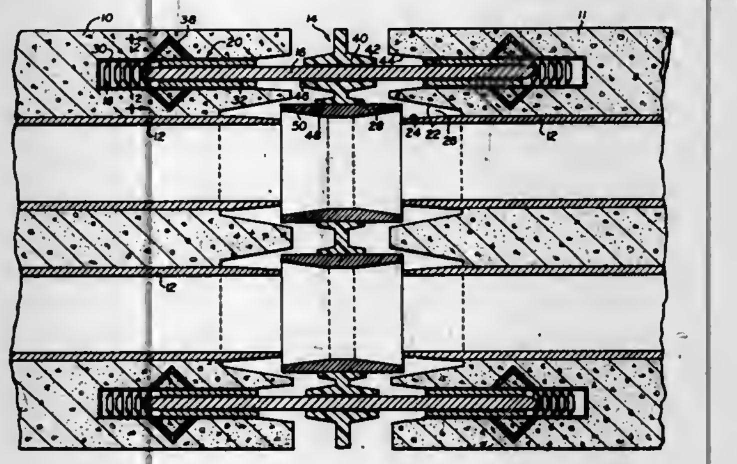
APPARATUS FOR JOINING PREFORMED CONDUITS

Michael Sammaritano, 910 Manor Ln., Bayshore, N.Y. 11706

Filed Jan. 4, 1973, Ser. No. 320,884

Int. Cl. F16l ***34/00***

U.S. Cl. 285—137 R **7 Claims**



1. A preformed conduit comprising a longitudinal extending body, a plurality of spaced pipes extending in said body substantially parallel to one another, a second longitudinal extending body substantially identical to the first said body and disposed in longitudinal alignment with said first body, each of said bodies having a plurality of passages axially aligned with each of said pipes and opening up to the respective longitudinal ends of said bodies, connecting sleeves disposed in said passages to couple the longitudinal ends of the pipes in said first and second bodies, and gasket means disposed and around the peripheral edge portion of the longitudinal ends of said bodies, said longitudinal ends of said bodies having opposed indentations in which said gasket means is disposed to form a water tight seal, said gasket means having a main flange disposed around the peripheral edge portion of the longitudinal ends of said bodies in the space between the pipes and the outer surface of said bodies, said gasket means having a metal element embedded therein and disposed to traverse said opposed indentations to provide rigidity against a shearing action tending to displace one of said bodies transversely of the other.

3,873,135

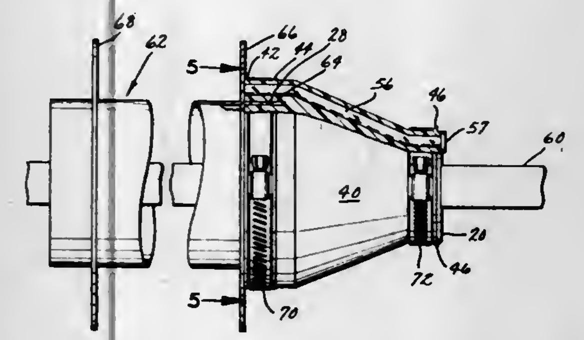
WAVEGUIDE BOOT

James S. Kreitzberg, Salem, Oreg., Microflect Cl., Inc., Salem, Oreg.

Filed July 26, 1973, Ser. No. 382,757

Int. Cl. F16l ***21/06***

U.S. Cl. 285—177 **10 Claims**



1. A waveguide boot for a microwave transmission line comprising first and second resilient boot segments having a junction portion whereat said segments are joined together for pivotal movement with respect to each other, each said boot segment having an outer perpheral surface oppositely disposed first and second base portions and axially extending side portions, said first and second segments each including an elongated channel extending from respective first base portions to respective second base portions, said waveguide boot further including locking means in each segment for clamping said segments together to prevent said pivotal movement, the elongated channel in each said segment being disposed intermediate said junction portion and the locking means in each said segment such that said segments when locked together cause said elongated channels to confront each other and said side portions of the segments to engage one another to form a closure, said locking means including a keyway comprising a keyway portion within each said segment at the edge of the segment remote from said junction portion, said locking means further including an elongated resilient key member having a stem portion insertable in said keyway portions for locking said segments together, said stem portion being disposed entirely within the outer peripheral surface of said boot segments, said stem portion and said keyway portions having interlocking means for holding said segments in engagement with one another.

3,873,136

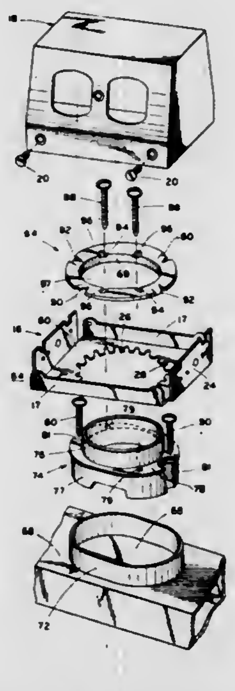
ANTI-TWIST SERVICE FITTING FOR USE WITH UNDERFLOOR WIRING DUCT

John R. Curry, Oxford, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed July 5, 1973, Ser. No. 376,244

Int. Cl. F16l ***5/00***

U.S. Cl. 285—189 **11 Claims**



1. A service fitting for an underfloor wiring duct, the fitting comprising a base having a circular opening for the passage of wires, a tubular adapter received in the circular opening in the base, and a clamping plate fixedly secured to the adapter and having a planular portion overlying the base for holding the base against a floor surface, characterized in that the opening in the base has a plurality of circumferentially, closely spaced slots about its periphery, the space between said slots being substantially equal and the clamping plate has an interlocking portion extending outwardly from the plane of the planular portion overlying the base and received in a selected one of the slots, the base being fixedly held in a pre-selected angular position with respect to the clamping plate and adapter.

3,873,137

BELLOWS-TYPE JOINT ASSEMBLY

Seiichi Yamaguchi, 11-2 Asagaya Minami 1-chome, Suginami-ku, Tokyo, Japan

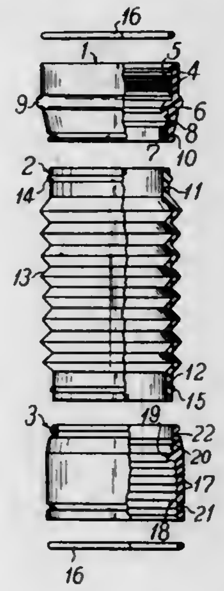
Filed Sept. 19, 1973, Ser. No. 398,865

Int. Cl. F18l ***21/00***

U.S. Cl. 285—226 **2 Claims**

1. A bellows-type joint assembly for connecting between tubular members to be connected together comprising a first resilient tubular joint section having connecting means, a second resilient intermediate tubular bellows joint section detachably connected to said first joint section and having connecting means and a third resilient tubular joint section detachably connected to said intermediate bellows joint section and having connecting means in which

said connecting means of the first joint section includes a plurality of spaced annular projections of triangular cross-section formed on the inner surface of said first joint section covering a distance from one end to an intermediate point along the length of the joint section for receiving one of said tubular members to be connected, an annular flange of trapezoidal cross-section formed on the inner surface of said first joint section at a point below the lower most one of said plural projections and an annular recess formed in the inner surface of said first joint section at a point below said flange,



said connecting means of the second intermediate joint section includes an annular projection of arcuate cross-section formed on the outer surface of the joint section at a point adjacent to one end thereof to be received in said annular recess of the first joint section and a similar annular projection of arcuate cross-section formed on the outer surface of said intermediate joint section at a point adjacent to the other end of the joint section and,

said connecting means of the third joint section including an annular recess formed on the inner surface of the joint section for receiving said annular projection on the outer surface of the intermediate joint section at the other end of the latter and a plurality of spaced annular projections of arcuate cross-section formed on the inner surface of the joint section for receiving the other tubular member of the members to be connected together.

3,873,138

QUICK DISCONNECT SEALED COUPLING

Edward J. Griffiths, Pekin, and Lee R. Loyd, Peoria, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

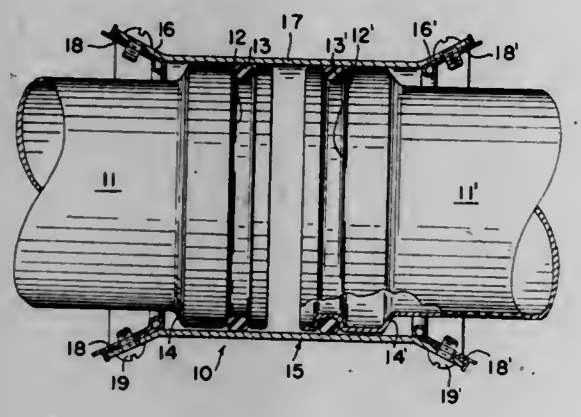
Filed Oct. 19, 1972, Ser. No. 299,086

Int. Cl. F16l ***21/02***

U.S. Cl. 285—233 **2 Claims**

1. A sealed coupling in combination with a pair of axially aligned conduits, said coupling comprising, a circumferentially formed groove in each external end of said conduits, an annular sleeve surrounding the ends of said conduits and being flared axially outwardly at each of its ends from an intermediate cylindrically shaped mid-portion of said sleeve, annular elastomeric sealing means mounted in each of said grooves to abut said sleeve in sealing contact, co-operating stop means positioned at the ends of each of said conduits and on said sleeve for preventing said conduits from moving axially away from said sleeve, said stop means comprising an annular downwardly tapered shoulder means formed on the end of each of said conduits inwardly of said grooves and lug means comprising clip members having at least one flat surface and an enlarged portion with said flat surface contigious to an

inner surface of each respective flared end of said sleeve positioned in axially spaced relationship relative to a respective shoulder means, with the enlarged portion being disposed and extending into the sleeve and in the same plane of said



annular shoulder whereby the same may engage one another upon axial displacement, and threaded fasteners extending through said flat surfaces and said inner surfaces for removably securing one to the other.

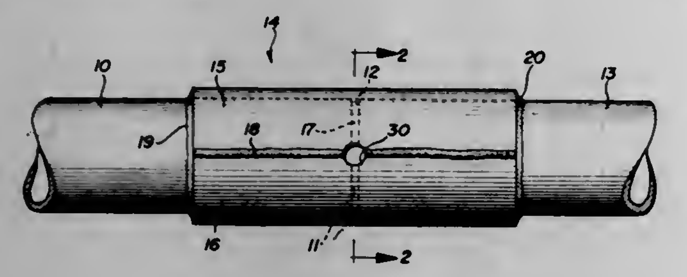
3,873,139
PIPE JOINT

John Stanton McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 29, 1973, Ser. No. 410,787

Int. Cl. F16l *13/02*

U.S. Cl. 285—286 **8 Claims**



1. A pipe joint comprising:
a first metal pipe end portion;
a second metal pipe end portion in axial alignment with, and close to, the first pipe end portion;
a metal tubular sleeve containing and encircling the first pipe end portion and the second pipe end portion;
said tubular sleeve comprising at least two elongated sections which are welded together at abutting edges to form elongated weld joints and the ends of the sleeve sections are welded to the adjacent pipes; and
each elongated weld joint in the sleeve having a hole therein wider than the weld, said hole extending through said weld and portions of said tubular sleeve and spanning the space between the two pipe ends whereby said hole renders the elongated weld joint discontinuous and prevents the formation of a crack generating zone.

3,873,140
FISH HOOK HOLDER AND KNOT TYING DEVICE

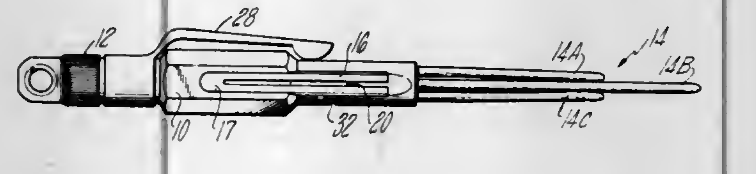
Paul P. Bloch, Moodus, Conn., assignor to Moodus Sports Products, East Haddam, Conn.

Filed Oct. 15, 1973, Ser. No. 406,536

Int. Cl. D03j *3/00*

U.S. Cl. 289—17 **10 Claims**

1. A fish hook threader and knot tying device including:
an elongated body portion having first and second ends;
a plurality of tying fingers extending from a first end of said body portion, said fingers being in substantially a common plane with at least one of said fingers being resiliently spring biased against another finger to from a pair of fingers cooperating to hold therebetween a line to be tied;
a recessed portion on said body defining a shoulder transverse to the body;
a conical passageway through said body portion, said conical passageway communicating with said recessed portion to form an entranceway to said recessed portion spaced from said shoulder;
a pair of spaced apart resilient fingers extending over said recessed portion, the spacing between said fingers being aligned with said entranceway; and
a transverse slot through said body to said conical passageway.



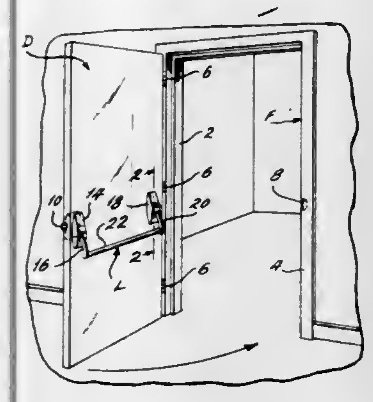
3,873,141
DOOR SECURING APPARATUS HAVING REMOTELY CONTROLLED MEANS TO HOLD ITS LATCH BOLT IN A RETRACTED POSITION

Francis C. Peterson, Affton, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Nov. 1, 1973, Ser. No. 411,800

Int. Cl. E04c *9/04*

U.S. Cl. 292—40 **14 Claims**



1. An apparatus for securing a door in a structure framing the door, said apparatus comprising a bolt mounted on the door and movable between extended and retracted positions, the bolt when in its extended position being capable of engaging the structure framing the door so as to secure the door in that structure; a movable handle on the door, the handle being normally in a standby position; intermediate operating means interconnecting the handle and the bolt for causing the bolt to move to its retracted position when the handle is moved away from its standby position; a latching dog engageable with the intermediate operating means and movable between latching and release positions, the latching dog when urged to its latching position being capable of engaging the intermediate means each time the intermediate means, as a result of the handle being moved, brings the bolt to its retracted position, the latching dog when engaged with the intermediate means restraining the intermediate means such that the latch bolt remains retracted, whereby the first individual to move the handle away from its standby position when the latching dog is urged to its latching position will cause the latching dog to engage and retain the intermediate means so as to maintain the latch bolt in its retracted position; and electromagnetic means connected with the latching dog for urging the latching dog to and holding it in one of its positions.

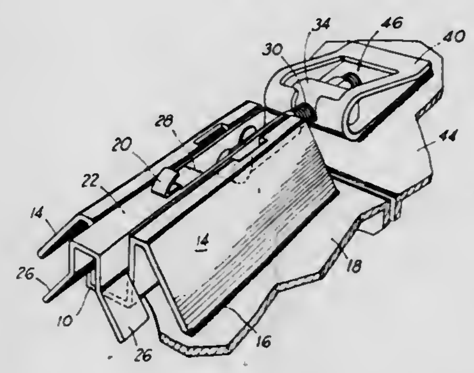
3,873,142
LATCH

Paul W. Reid, P.O. Box 343, Madison, Ga. 30650

Filed Oct. 11, 1973, Ser. No. 405,328

Int. Cl. E05c *5/00*

U.S. Cl. 292—66 **4 Claims**



1. A latch for use with a strike and comprising a U-shaped channel member having a floor, two parallel sidewalls projecting upwardly from said floor and two flanges extending downwardly and outwardly from the upper edges of said sidewalls and terminating substantially in the plane of said floor, whereby said latch may be positioned on a planar surface with the floor and the outer edges of the flanges in contact with said surface, an elongated handle pivotally mounted to said sidewalls within said channel member, a draw bolt pivotally mounted to said elongated handle, and strike engaging means adjustably mounted on said draw bolt.

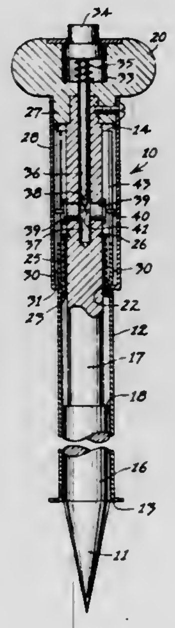
3,873,143
DEVICE FOR PICKING UP LITTER

Charles E. Foust, 1098 Manning Heights, Clarksville, Tenn. 37040

Filed Jan. 24, 1973, Ser. No. 326,488

Int. Cl. B08b *1/00*

U.S. Cl. 294—61 **7 Claims**



1. A pick-up device comprising:
a. an elongated tubular body having open upper and lower ends,
b. an elongated shaft telescopingly received longitudinally within said body,
c. said shaft having an upper end portion terminating in a handle member, and a lower end portion terminating in a pick-up tool,
d. compressible spring means cooperative between said shaft and said tubular body to bias said tubular body downward relative to said shaft to place said pick-up tool in a normal retracted position,
e. said spring means being adapted to be compressed by the movement of said shaft downward relative to said tubular body to place said pick-up tool in a protracted position,
f. a first latch element attached to and movable with said shaft, said first latch element depending exteriorly along said tubular body,
g. a second latch element fixed to the exterior of said tubular body for engagement by said first latch element to hold said pick-up tool in said protracted position,
h. a manually actuated operator element on said handle member,
i. operative means connected to said operator element and cooperative with said first latch element to force said first latch element away from said second latch element when said operator element is actuated, permitting said tubular body to move downward relative to said shaft.

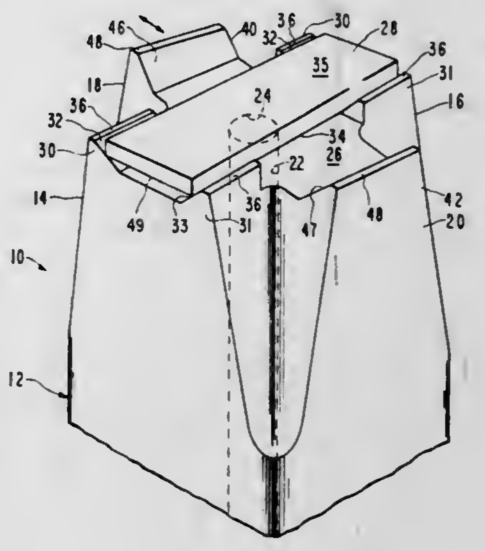
3,873,144
DIE HOLDING TOOL AND METHOD OF USING SAME

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif. 94087

Filed June 28, 1973, Ser. No. 374,738

Int. Cl. B66c *1/02*

U.S. Cl. 294—64 R **12 Claims**



1. A tool for engaging and holding an elongated die in either of a pair of relatively angularly disposed operative positions with the die having a first pair of opposed margins and a second pair of opposed margins comprising: a body having a pair of opposed ends; first surface means on one end of the body for engaging said first pair of opposed margins of an elongated die when the die is in one of said operative positions; second surface means on said one end of the body for engaging said second pair of opposed margins of said die when the die is in the other of said operative positions, said second surface means extending longitudinally of said first surface means; and means on the body for permitting a suction force to be generated at said end thereof so that the die can be held thereto by said force when the die is in either of said positions.

3,873,145
CABLE GRAPPLE

David E. Adkins; Donald J. Hackman; William S. Pope, all of Columbus, Ohio; Jerry D. Totten, Arlington, Va., and Larry L. Wischhoefer, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

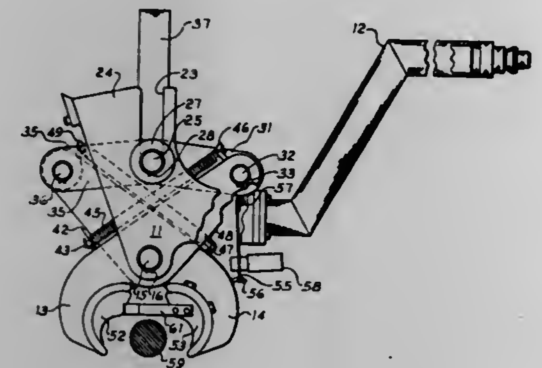
Filed Feb. 21, 1974, Ser. No. 444,208

Int. Cl. B66c *1/42*

U.S. Cl. 294—66 R **2 Claims**

1. A cable grapple comprising,
a guide plate having a cam surface thereon and a slot therein,

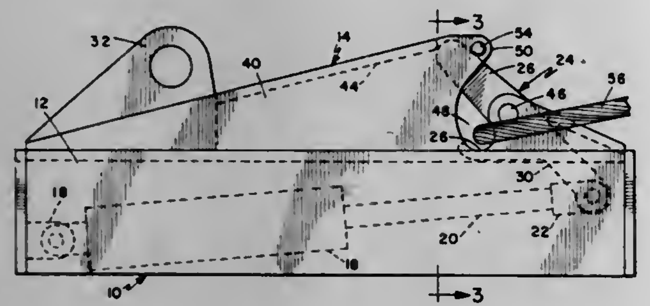
first and second cable engaging jaws pivotally connected to said guide plate at a common point,
spring means biasing said first and second cable engaging jaws in a normally closed position,
guide means slidable in said guide plate slot and engageable with said cam surface
a first link connecting said first cable engaging jaw and said guide means and a second link connecting said second cable engaging jaw and said guide means whereby said guide means moves in said slot during closing of said jaws and onto said cam surface to lock said jaws in a closed position,



a wire connected to said first link and said second cable engaging jaw for holding said first and second cable engaging jaws in an opened position, and
means for severing said wire whereby said first and second cable engaging jaws are closed by said spring means.

3,873,146
TETHER RELEASE DEVICE

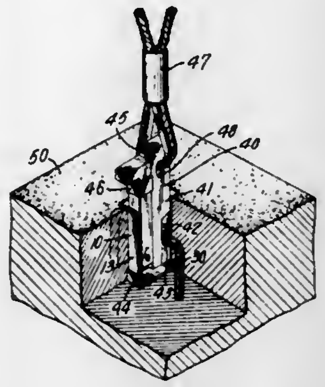
Glen Nicholas Houshar, San Diego, Calif., assignor to Campbell Industries, San Diego, Calif.
Filed Apr. 17, 1974, Ser. No. 461,611
Int. Cl. B66c *1/38*
U.S. Cl. 294—83 R **6 Claims**



1. In a device for controlably restraining and releasing a load attached to a tether, comprising:
a frame,
trigger means carried on a pivot bearing on said frame for pivotal movement between tether restraining and tether release positions, means for pivoting said trigger means between said tether restraining and tether release positions,
a tether restraining notch in said frame spaced from said pivot bearing,
said trigger means in said tether restraining position and said tether restraining notch prevent the release of said tether over a range of tether pull directions in excess of 180° about an axis parallel to the axis of said bearing,
said trigger means includes a tether lift means for lifting a tether free of the restraint of said tether restraining notch.

3,873,147
LIFT CONNECTOR FOR PRECAST MEMBERS

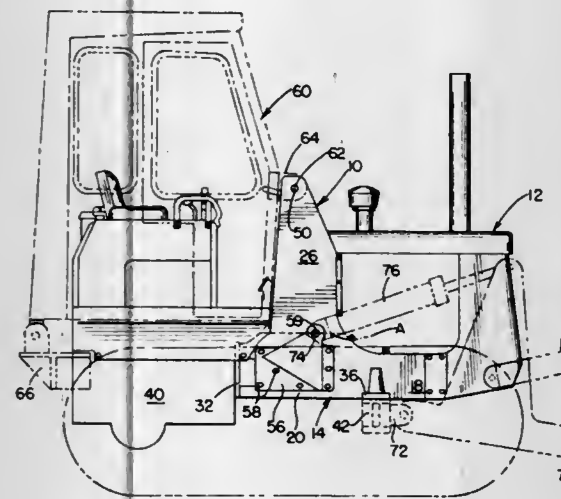
Thomas Michael Annable, 72 Cloverdale Dr., Bramalea, and Gerhard Heieis, 99 Stapleton Dr., Weston, Ontario, both of Canada
Filed Nov. 23, 1973, Ser. No. 418,241
Int. Cl. B66c *1/66;* **E04c** *5/00*
U.S. Cl. 294—89 **5 Claims**



1. A connector for precast members and engageable by a lifting device having an elongated rectangular hook member having a hook cavity in a side wall thereof defining a hook section thereunder, and a spacer member slidingly retained on a further side wall of said hook member opposite said hook cavity, said connector comprising a hollow housing having opposed parallel side walls, a closed end and an open end, said connector being adapted for securement to a form wall, a groove extending transversely between a pair of said opposed parallel side walls and defining a mouth opening extending across one of said side walls, said groove having a rod retention end, a lip extending from an edge of said groove adjacent said rod retention end, said lip extending parallel to the longitudinal axis of said groove and internally of said groove to frictionally retain and position a portion of a reinforcing rod extending across said retention end and projecting within a form in which concrete is to be poured, an engageable abutment cavity formed internally of said housing between said groove and said closed end, said hook section of said hook member being positioned in said engageable abutment cavity and being prevented from moving out from under said engageable abutment by said spacer member.

3,873,148
VEHICLE FRAME

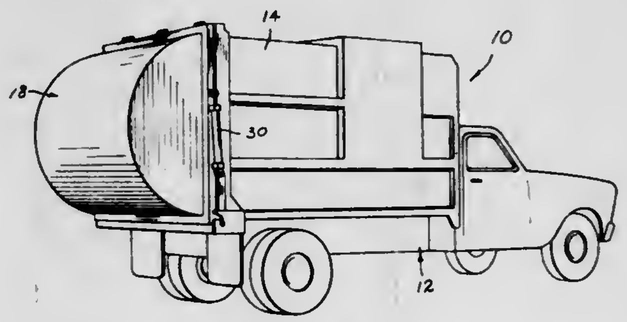
Robert B. Kennicuit, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 27, 1972, Ser. No. 318,821
Int. Cl. B62d *33/00*
U.S. Cl. 296—28 R **7 Claims**



1. A frame for a vehicle comprising: first and second generally parallel spaced-apart side plates, defining first and second forwardly extending portions and first and second rear portions respectively and first and second upwardly extending portions extending from the first and second rear portions respectively; brace means interconnecting the first and second upwardly extending portions; first and second ears fixed relative to and generally parallel to the first and second upwardly extending portions respectively and in spaced-apart relation thereto; the first ear and first upwardly extending portion defining coaxial apertures, and the second ear and second upwardly extending portion defining coaxial apertures; and means for attaching said first and second side plates relative to the vehicle, wherein the first and second ears are fixed to the brace means, wherein the first and second ears are disposed inwardly of the first and second upwardly extending portions.

3,873,149
BODY AND TAILGATE ASSEMBLY FOR A TRUCK OR SIMILAR VEHICLE

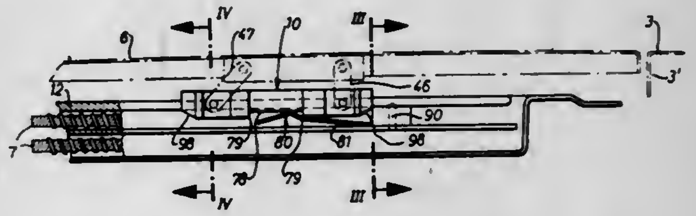
Henry W. Churchman, deceased, late of Wichita, Kans. (by Mildred Churchman, administratrix), assignor to Helix Corporation, Crown Point, Ind.
Filed Apr. 3, 1972, Ser. No. 240,432
Int. Cl. B60j *5/10*
U.S. Cl. 296—56 **3 Claims**



1. In combination, a vehicle body open at one end and a tailgate having upper and lower edge portions, means pivotally connecting said tailgate at its upper edge portion to said body so that said tailgate is pivotal about an axis between a closed position spanning said one end of the body and an open position, said connecting means between said tailgate and body including a link means pivotally connected at one end to said tailgate upper edge portion and pivotally connected at its opposite end to said body above said open end therein, the pivot connection of said one end of the link means to said tailgate forming said tailgate pivot axis, link means for shifting said tailgate pivot axis between upper and lower locations relative to said body including a spaced pair of power actuated cylinder means for moving said tailgate between its open and closed positions, said cylinder means such including an extendible and retractable piston rod slidable within a cylinder part, each said rod being pivotally connected at one end to said tailgate, each said cylinder part being pivotally connected at one end to the body, the pivot connection of each said cylinder part being at opposite sides of the open end of the body such that said cylinder means is substantially vertically oriented along the plane of the open end when said tailgate is in the closed position, the pivot connection of each said rod to said tailgate being above and rearwardly of the pivot connection of the cylinder part to said body whereby actuation of said cylinder means causing initial extension of said rod will cause said tailgate pivot axis and link means to be shifted upwardly into said upper location of said pivot axis and actuation of said cylinder means causing final retraction of said rod will cause said tailgate pivot axis and link means to be shifted downwardly into said lower location of said pivot axis, securement means carried by said body and engageable with said tailgate adjacent its lower edge portion to releasably lock said tailgate in its closed position, said securement means being releasable as said tailgate pivot axis is shifted from its lower location into its upper location to allow said tailgate to be moved from its closed into its open position, said securement means locking said tailgate in its closed position after said tailgate pivot axis is shifted from its upper location into its lower location and said cylinder means is actuated to retract said piston rods into the associated cylinder parts.

3,873,150
SLIDING ROOF CONSTRUCTION FOR A MOTOR VEHICLE

Fritz Marr, Offenbach; Albert Schlapp, Sprendlingen; Rainer Hattass, Rothenbergen, and Edmund Binder, Dreieichenhain, all of Germany, assignors to H. T. Golde GmbH, Frankfurt, Germany
Filed Oct. 3, 1973, Ser. No. 402,911
Claims priority, application Germany, Oct. 11, 1972, 2249718
Int. Cl. B60j *7/04*
U.S. Cl. 296—137 H **7 Claims**



1. In a motor vehicle body construction comprising a roof having an opening therein and the opening having a forward end and a rearward end, a rigid sliding cover movably displaceable within the opening in the direction between its forward and rearward ends so that it is movable between open and closed positions, guide rails located along the sides of the opening in said roof extending in the direction between the forward and rearward ends, sliding shoes connected to said cover and mounted on each of said guide rails, said sliding shoes on each said guide rail spaced apart in the direction of movement of said cover, cables in operative engagement with said sliding shoes for displacing said cover between the open and closed positions, wherein the improvement comprises means associated with at least one of said guide rails at the forward end of the opening in said roof and with said sliding shoe in at least one of the said guide rails located at the forward end of the opening in said roof in a closed position for releaseably securing said cover in the closed position, and said means comprises that one of said guide rails and said sliding shoe has a notch formed therein and the other one of said guide rails and said sliding shoe has a resilient member including a protuberance displaceably engageable within the notch.

3,873,151
WALL MOUNTED FOLD DOWN SEAT

Earl Lavern Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, City of Industry, Calif.
Filed June 11, 1973, Ser. No. 369,059
Int. Cl. A47c *1/126*
U.S. Cl. 297—14 **15 Claims**

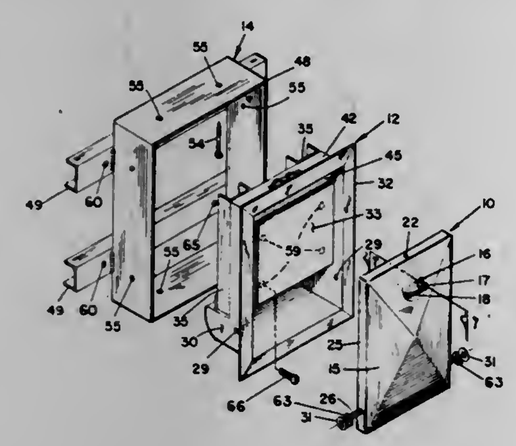
1. A fold-down seat for mounting in a recess in a wall comprising:
a. seating means;
b. pivot means for said seating means, said pivot means further dividing said seating means into first and second portions;
c. seat stowage and support structure means, comprising:
  a duct having front and rear openings, said front opening adapted to receive said seating means therein;
  a wall joined to the rim of said rear opening to said duct, and having an upper portion and a lower portion, said upper portion being spaced apart from the plane of the rim of said front opening to said duct by at least a

substantial portion of the thickness of said seating means and said lower portion of said wall projecting rearwardly and outwardly away from said upper portion of said wall to form a shoulder and thereafterwards projecting forwardly and downwardly until it joins with said duct;

d. means for connecting said seat dividing and pivot means to said duct so that when a portion of said first portion of said seating means moves from a position within said seat stowage and support structure means to a position outside of said seat stowage and support structure means, said second portion of said seating means moves towards abutting engagement with the shoulder formed by said rear wall joined to the rim of said rear opening of said duct and visa versa;

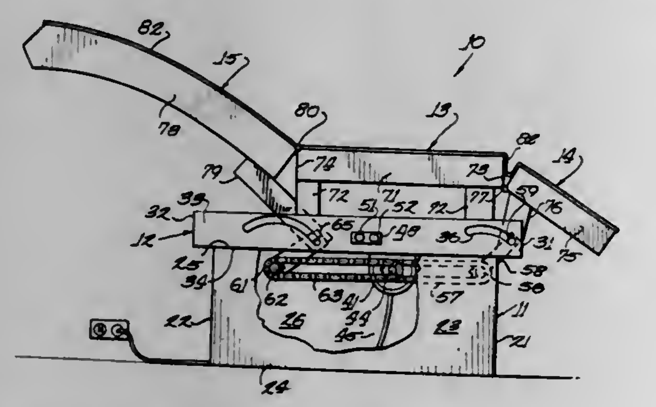
e. latching means for securing said seating means within said seat stowage and support structure means; and

f. handle means on said seating means, said handle means disposed on the face of said seating means which is exposed when said seating means is stowed within said seat stowage and support means.



3,873,152
ADJUSTABLE ORTHOPEDIC LOUNGER

John Garas, 6706 Jefferson St., Merrillville, Ind. 46410
Filed Jan. 9, 1974, Ser. No. 431,867
Int. Cl. A47c *1/034*
U.S. Cl. 297—68 **1 Claim**



1. An orthopedic lounger comprising:

a floor engaging base;

a supporting frame mounted atop the base and having a front end, a back end, opposed side wall members, a top surface, and a bottom surface;

a seat portion constituting a unitary structure and stationarily mounted to said support frame in a position spaced vertically thereabove, said seat having a front end and a back end;

a leg rest portion having a front end and a back end, said back end of said leg rest portion disposed adjacent said front end of said seat portion;

hinge means connecting said back end of said leg rest portion to said front end of said seat portion for relative pivotal movement in a vertical plane pivotally about a horizontal transverse axis;

an integral head and back rest portion having a top end and a bottom end, said bottom end disposed adjacent said back end of said seat portion;

hinge means connecting the adjoining edges of said back rest bottom end to said back end for relative pivotal movement on an axis parallel to the pivotal connection of said leg rest to said seat portion;

one of said side wall members of said supporting frame being provided with a first arcuate slot adjacent the front end thereof and a second arcuate slot adjacent the back end thereof;

a reversible electrically operated motor having a shaft extending out of one end thereof;

a pair of axially spaced apart concentrically disposed toothed sprocket wheels disposed on said motor shaft;

a first horizontal disposed transversely extending shaft carried rotatably by said base adjacent said front end wall thereof;

a second horizontal disposed transversely extending shaft carried rotatably by said base adjacent said back end wall thereof;

said first shaft having a toothed sprocket wheel affixed concentrically thereto;

a first endless sprocket chain trained about said first sprocket wheel and said first mentioned of said motor sprocket wheels;

an elongated operating lever arm having one end affixed to said first shaft with said lever arm projecting radially outwardly therefrom;

a guide pin extending outwardly of said arm substantially normal thereto and received in said first arcuate slot of said supporting frame side wall member such that operation of said motor will effect reciprocal movement of said guide pin through said slot;

a sprocket wheel affixed concentrically to said second shaft; a second endless sprocket chain trained about said second sprocket wheel and said second mentioned motor sprocket wheel for drivingly interconnecting the same;

a second elongated operating lever arm having one end affixed to said second shaft with said arm projecting radially outwardly therefrom;

a second guide pin affixed to said second lever arm and projecting outwardly therefrom substantially normal thereto and adapted to be freely received in said second arcuate slot of said supporting frame side wall member such that energization of said motor will effect the reciprocal movement of said second guide pin through said second slot;

a guide member connected to said back rest and operable to effect said pivotal movement thereof between a position lying in the plane of the seat and a position disposed upright relative thereto as well as to any selected position therebetween;

said back rest guide member having one end affixed to said back rest with said guide member projecting outwardly therefrom and having the opposite end thereof operatively connected to second guide pin with movement of said guide pin in said arcuate slot effecting the pivotal swinging movement of said back rest relative to said seat; a guide member connected to said leg rest portion and operative in a manner to effect the pivotal movement thereof between a position lying substantially in the plane of said seat and a position disposed downwardly therefrom as well as to any selected position therebetween;

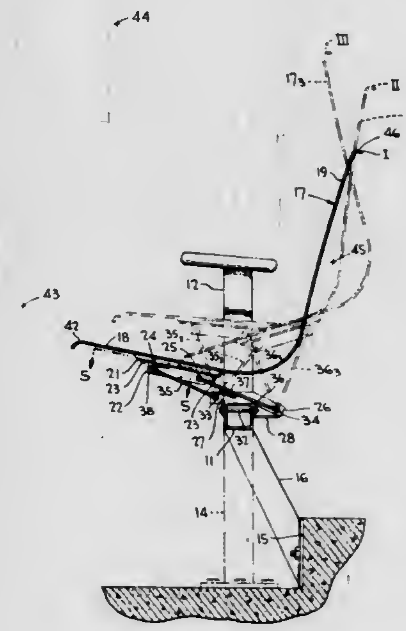
said leg rest guide member has one end affixed to said leg rest with the opposite end projecting outwardly therefrom and operatively connected to said first guide pin with movement of said guide pin effecting the pivotal movement of said leg rest relative to said seat;

an electrical control switch including a pair of electrical push button switches adapted to be manually held in an "on" position with release of the push buttons effecting the return thereof to their normal "off" positions, a first one of said push buttons effecting the clockwise rotation of said motor with the second one of said push buttons effecting the counter-clockwise rotation of said motor, permitting an individual to selectively simultaneously adjust said back rest and said leg rest relative to said seat; and

an integral sheet like member overlying the top surfaces of said back rest portion, said seat portion and said leg rest portion to provide a smooth continuous cover layer thereover.

3,873,153
MOVABLE AUDIENCE CHAIR

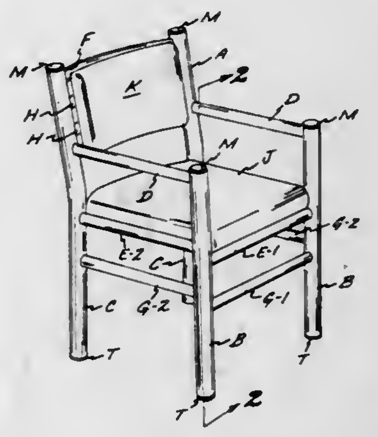
Charles Mackintosh, 3838 Oakwood Ave., Los Angeles, Calif. 90004
Filed Aug. 14, 1973, Ser. No. 388,122
Int. Cl. A47c *1/12*
U.S. Cl. 297—334 **3 Claims**



1. An audience chair arrangement movable between a seating position and a pushed-back position, comprising: a seat bottom interconnected with a seat back; chair support means supporting the chair; a pair of spaced link members pivotally connected at one end thereof to said seat bottom and pivotally connected at the other end thereof to said support means, said link members being inclined toward the forward edge of said seat bottom and being slightly inclined toward each other in the seating position of the chair, said link members lying in planes intersecting forwardly and slightly upwardly of said forward edge, one of said link members being disposed forwardly of the other thereof toward said forward edge, and the length of said one link member between its ends being shorter than the length of said other link member between its ends; and said support means including a bracket plate on which a first of said link members rests for horizontally supporting said seat bottom in the seating position of the chair; whereby the chair is movable upwardly and rearwardly about said link member pivotal connections from its seating position to an intermediate position during which said seat bottom remains horizontal, and whereby the chair is further movable rearwardly about said link member pivotal connections from its intermediate position to its pushed-back position, said seat bottom gradually moving downwardly at its forward end between the intermediate and pushed-back positions.

3,873,154
CHAIR STRUCTURE AND METHOD OF FORMING THE SAME

Richard E. Baker, Jr., 4190 Via Verde, Cypress, Calif. 90630
Filed Apr. 18, 1973, Ser. No. 352,124
Int. Cl. A47c *7/00, 7/14*
U.S. Cl. 297—445 **6 Claims**



1. A chair structure of the type that includes two first forwardly disposed legs, two second rearwardly disposed tubular legs of greater length than said first legs, with the upper portion of said second legs defining a portion of the back of said chair structure, four substantially horizontal first rungs that are normally disposed to one another and extend between said forwardly and rearwardly disposed legs, a seat, means for supporting said seat in a substantially horizontal position from said first rungs, at least one transverse cross piece that extends between said upper portions of said legs to define said back, two arms that extend between said forward and rearward legs above said seat, said first and second legs, first rungs, cross piece and arms formed from lengths of rigid, non-metallic conduit, said first and second legs of greater diameter than that of said first rungs, cross piece and arms, and having openings therein through which end portions of said first rungs cross piece and arms extend into the confines of said first and second legs, with the portions of said first rungs, cross piece and arms within said confines having pairs of axially aligned openings therein, said first and second legs, rungs, cross piece and arms being formed from a heat bendable conduit and said chair being characterized by:

a. two first splines within said first legs that snugly engage said pairs of openings in said arms and rung portions within said first legs;

b. two second splines within said second legs that snugly engage said pairs of openings in said arms, rungs and cross piece within said second legs;

c. a plurality of caps that close the upper and lower ends of said first and second legs; and

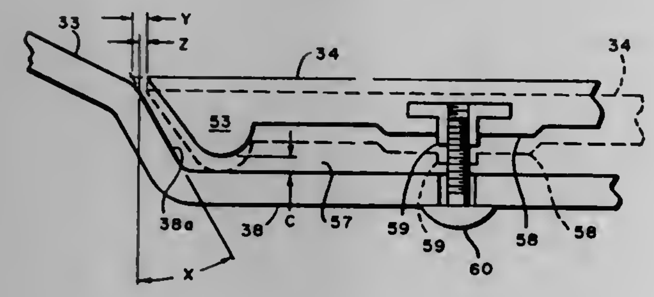
d. a quantity of a rigid polymerized foamed resin that fills the interior confines of said first and second legs, rungs, cross piece and arms to cooperate with said first and second splines to hold said chair structure together as an integral unit.

3,873,155
TRANSIT SEAT WITH CONTOURED PLASTIC SHELL

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Continuation-in-part of Ser. No. 232,430, March 7, 1972, Pat. No. 3,747,978. This application May 24, 1973, Ser. No. 363,716
Int. Cl. A47c *7/02*
U.S. Cl. 297—445 **8 Claims**

1. In a transit seat comprising a plastic shell having at least one contoured seat recess for receipt of a seat insert panel,

said recess having a peripheral wall of a predetermined height and a bottom portion adjoining and adjacent at least said peripheral wall, the improvement comprising: a seat insert panel having a peripheral side wall defining a peripheral outline substantially corresponding to the peripheral outline of said seat recess; spacing means having a predetermined height and extending below the bottom of said insert panel, adjacent said peripheral side wall, and between said panel bottom and recess bottom portion for positioning portions of said insert panel in spaced relationship to said seat recess; said spacing means providing an air gap between the bottom of said insert panel and said seat recess; at least one of said peripheral recess wall and panel peripheral side wall being tapered downwardly and inwardly toward the center of said recess at a predetermined angle; attachment means for securing said insert panel in said recess including a plurality of fasteners spaced inwardly of said peripheral spacing means and extending between said insert panel and recess bottom portion; said attachment means providing an attachment of said insert panel to said shell within said recess by drawing said panel into said recess such that as said spacing means contacts said recess bottom portion said air gap, provided by said spacing means, and the said predetermined angle of said one tapered wall cooperate to accommodate any deviations or undulations in the insert panel or seat shell recess and yield a tight uniform fit of the periphery of said insert panel with the periphery of said recess and space the top of said insert panel above said bottom portion of said recess such that said panel top is substantially flush with the top edge of said recess peripheral wall.



3,873,156
BEDDED UNDERGROUND SALT DEPOSIT SOLUTION MINING SYSTEM

Charles H. Jacoby, Dalton, Pa., assignor to Akzona Incorporated, Asheville, N.C.
Continuation of Ser. No. 324,005, Jan. 15, 1973, abandoned. This application Feb. 26, 1974, Ser. No. 445,975
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 **19 Claims**

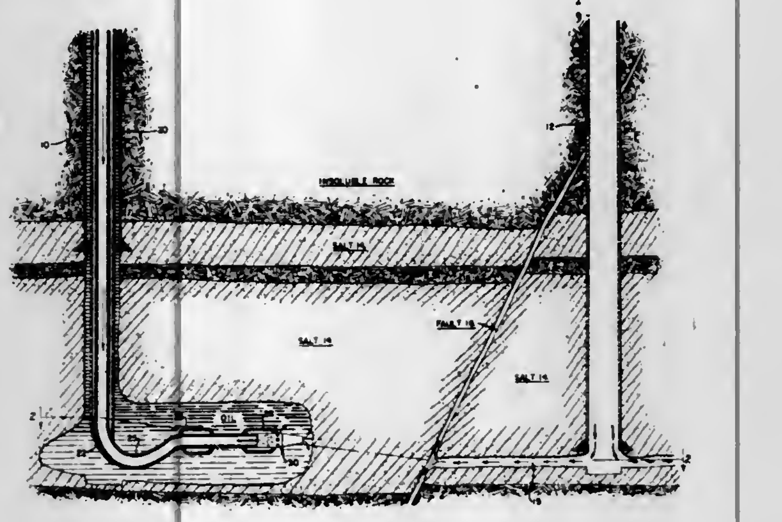
1. The method for solution-coalescing the nether ends of two or more bore holes intersecting a bedded rock salt deposit which includes a geologic anomaly preventive of effectively coalescing said bore holes by means of a hydraulic fracturing technique, and for conducting a solution mining operation throughout said deposit, said method comprising:

driving two or more bore holes in spaced apart relation into the lower level of said deposit at opposite sides of said anomaly,

hydraulically fracturing said deposit from one of said bore holes as far as feasible towards one other of said bore holes, thereby providing a first horizontally extending passageway for fluid flow,

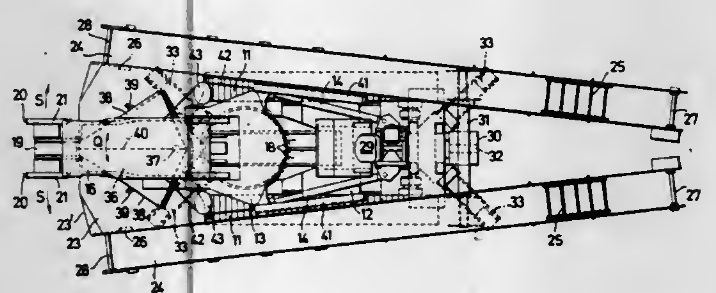
then solution-mining a second horizontally extending passageway from the nether end of the other of said bore holes through said salt bed and through said anomaly into communication with said first passageway, thereby providing a solution mining cavity,

and then solution mining said deposit intermediately of said bore holes by passing a solvent fluid through said cavity from one of said bore holes and withdrawing brine out of the other of said bore holes whereby said cavity enlarges and said deposit is mined.



3,873,157
MOBILE MINE TUNNELLING MACHINE HAVING COOPERABLE CUTTER, TROUGH, LOADER AND CONVEYORS

Wilhelm Stoltefuss, Heeren-Werve, and Egon Melis, Altlunen, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar bei Lunen, Westfalia, Germany
Filed Dec. 6, 1972, Ser. No. 312,526
Claims priority, application Germany, Dec. 7, 1971, 2160643; May 13, 1972, 2217765; Aug. 19, 1972, 2240873
Int. Cl. E21c *27/24, 35/20*
U.S. Cl. 299—31 **29 Claims**

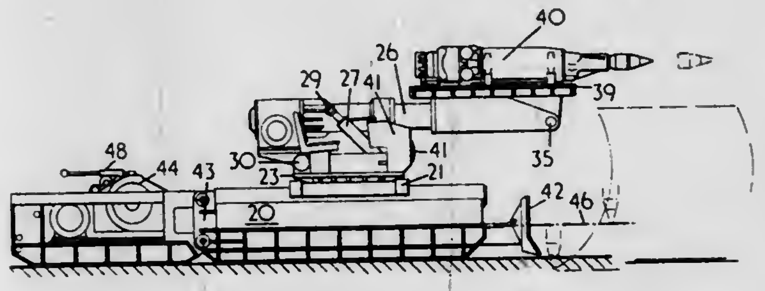


1. A machine for use in tunnelling or mining; said machine comprising: a chassis, mobile support means for rendering the chassis displaceable, means for detaching material from a working face; means for supporting the detaching means for movement in two mutually-perpendicular planes relative to the chassis, a trough for receiving the material detached from the face, a conveyor located at each side of the trough for conveying the material rearwardly from the face and a separate loading device which is movable to transfer material from said trough to the conveyors in alternation.

3,873,158
Patent Not Issued For This Number

3,873,159
ADJUSTABLE TOOL SUPPORT ON VEHICLE FOR MINING

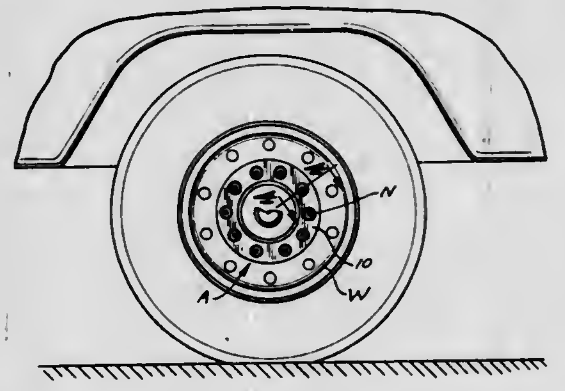
Kenneth Hazelton Dabell, Great Longston, and Raymond Jeffery Phillips, Matlock, both of England, assignors to Lemand Engineering Limited, Matlock, Derbyshire, England
Filed July 13, 1973, Ser. No. 378,860
Claims priority, application United Kingdom, July 15, 1972, 33246/72
Int. Cl. E21c *27/28*
U.S. Cl. 299—64 **12 Claims**



1. A mining machine comprising: a base; a first carriage slidable along the base; a cradle mounted on the first carriage for rotation with respect to said carriage about a vertical axis; a fixed length boom parallel with the longitudinal axis of the base, rotatable about its own longitudinal axis, and pivoted on the cradle for movement about a horizontal axis; a platform mounted on the boom and pivotal about a horizontal axis at or adjacent the leading end of the boom; and, a second carriage for mounting an earth-working tool and slidable relative to the platform.

3,873,160
DEVICE FOR PROTECTING A WHEEL DURING REMOVAL AND INSTALLATION OF LUG NUTS

James L. Mayrand, 11 Cary Rd., Cloquet, Minn. 55720
Filed May 30, 1974, Ser. No. 474,409
Int. Cl. B60b *29/00;* **B25b** *29/00*
U.S. Cl. 301—5 R **6 Claims**



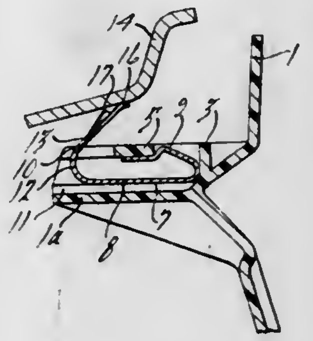
1. A device for protecting a wheel during removal and installation of the lug nuts thereof comprising:

a. a substantially flat body member,

b. void means formed in said body through which the lug nuts of a wheel extend for engagement by a wrench.

3,873,161
FASTENING ARRANGEMENT FOR DECORATIVE WHEEL RINGS

Paul Kretschmer, Hoehenstr. 18, 8752 Waldaschaff, Germany
Continuation of Ser. No. 284,283, Aug. 28, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,473
Int. Cl. B60b *7/04*
U.S. Cl. 301—37 P **14 Claims**



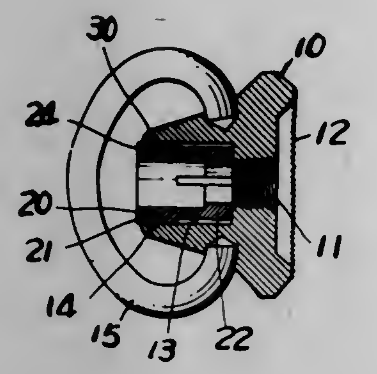
1. Fastening means for fastening a decorative wheel ring on the axially outer face of a vehicle wheel having an annular axial wheel flange, said fastening means comprising axial flange means on said ring adapted to lie radially inwardly of the axial wheel flange when the ring is applied to the wheel, means defining a plurality of clip-receiving recesses on said flange means around said ring, each of said recesses having an open axially inner end, a spring clip for each recess, each clip comprising an interior portion inserted into and axially interlocked with its recess and an exterior portion extending exteriorly of its recess from the open axially inner end thereof, each exterior portion comprising a retaining finger extending both axially and radially outwardly for engagement with the annular axial wheel flange, said finger including a pair of circumferentially spaced, sharp, pointed teeth projecting outwardly of the plane of the finger for biting engagement with the annular axial wheel flange, each clip including resilient means resiliently connecting its finger to the interior portion of its clip for enabling the finger to resiliently deflect toward its recess upon application of the ring to the wheel, each clip including between the teeth thereof a projecting tab which projects both radially and axially outwardly beyond the teeth thereof, each projecting tab being adapted, upon initial application of the ring to the wheel to initially engage the annular axial wheel flange prior to engagement of the teeth with said flange, each projecting tab disengaging said annular wheel flange as the teeth bite into said wheel flange upon full application of the ring to the wheel.

3,873,162
HUB MOUNTING MEANS FOR BICYCLE

Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan
Filed Feb. 15, 1974, Ser. No. 442,820
Claims priority, application Japan, Feb. 20, 1973, 48-22663
Int. Cl. B60b *27/04*
U.S. Cl. 301—105 B **7 Claims**

1. A hub mounting means for a bicycle, which is screwably engaged with a threaded screw portion provided on a main shaft, rotatably supporting a hub shell, at least at one end of said main shaft in the axial direction thereof so that said main shaft is fixed to a frame member of a bicycle, said hub mounting means comprising:

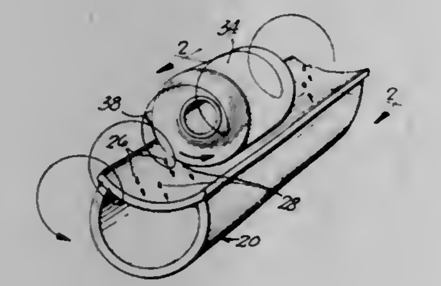
a. a main body having a threaded hole screwably engaged with said threaded screw portion of the main shaft, said main body also having a hole which has a larger diameter than that of said threaded hole and is connected thereto,
b. a friction member inserted into said hole larger in diameter, said friction member comprising
  a base portion insertibly supported within said hole larger in diameter in contact with the inner surface thereof, and
  a frictionally contacting portion which extends from said base portion in the axial direction thereof and which is expandable in the radial direction thereof, said frictionally contacting portion resiliently coming into contact with the outer periphery of said main shaft, and
c. a means for fixing said friction member to said hole larger in diameter.



3,873,163
AIR CONVEYOR

Herbert E. Gladish, Ottawa, Ontario, Canada, assignor to The E. B. Eddy Company, Ontario, Canada

Filed Apr. 9, 1973, Ser. No. 349,332
Claims priority, application Canada, Apr. 20, 1972, 140133
Int. Cl. B65g *51/00*
U.S. Cl. 302—2 R **18 Claims**

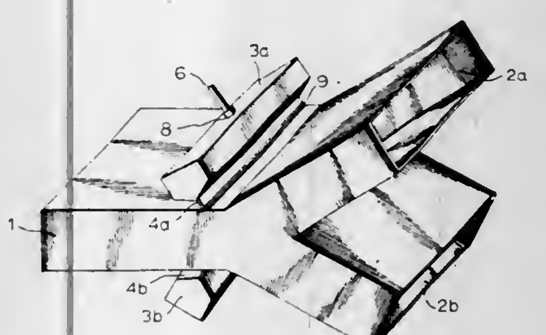


1. A conveyor for conveying objects having a curved outer surface comprising curved support means for receiving said object, fluid plenum means adjacent said support means and a plurality of spaced fluid directing nozzles communicating between said plenum means and a surface portion of said support means, said nozzles being asymmetrically disposed substantially on one side of the longitudinal axis, obliquely disposed with respect to a tangent at said surface portion of said support means and obliquely disposed forwardly with respect to the longitudinal axis, said obliquities being substantially in the range of 25° to 60°, whereby fluid under pressure in said plenum means is directed by said nozzles to said surface portion to create a support fluid film wedge between said surface portion and said curved outer surface to displace said object away from said support means and to impart longitudinal movement therealong.

3,873,164
PNEUMATIC VALVE FOR AIRBORNE MATERIALS

Anselm C. Griffin, Jr.; Charles A. Collins, and Joe S. Ferriss, Jr., all of Leland, Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 6, 1973, Ser. No. 376,972
Int. Cl. B65g *53/56*
U.S. Cl. 302—28 **1 Claim**

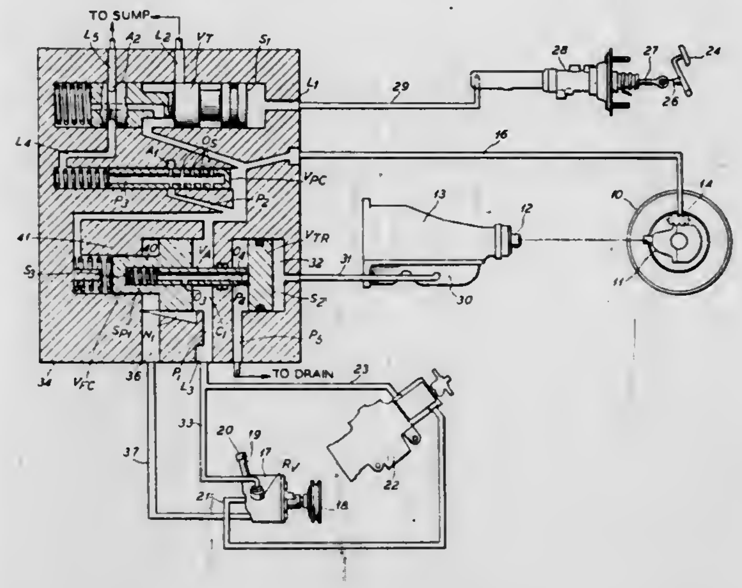


1. A pneumatic valve for selectively routing airborne solid fibrous materials within a pneumatic system by controllably activating currents of air at the exclusion of mechanical means, said valve consisting of various component parts fastened to the main ducts of a pneumatic system, to function as a unit accessory to the said pneumatic system, the pneumatic valve comprising:
a. a main duct to receive the airborne fibrous solid materials, to be secured to the main duct of an existing pneumatic system, and positioned as a continuation of the said existing pneumatic system,
b. a plurality of branching ducts secured to the main duct at oblique angles and linearly continuing therefrom, the dimensions of said branching ducts being of the same magnitude as those of the main duct, and
c. a plurality of plenum chambers secured flexibly to the main duct and preceding the area of attachment of the branching ducts, said plenum chambers having their respective plannar axes oriented quasi-perpendicular to the planar axes of the branching ducts, each of said plenum chambers constituting a funnel-like structure to convey a jet air stream into a flexible nozzle which connects to and empties its air contents into the branching ducts, each of the said plenum chambers having a surface to which is attached a tubular flexible duct, and each of said plenum chambers containing a gate to stop the passage of air at the nozzle end of the plenum chamber, each of said gates being actuated controllably open or shut from outside of the plenum chamber.

3,873,165
TORQUE EQUILIBRIUM SKID CONTROL SYSTEM EMPLOYING A POWER SOURCE INDEPENDENT OF WHEEL SPEED

Gilbert H. Drutchas, Birmingham, Mich., and Garrett D. Shaw, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 28, 1972, Ser. No. 310,136
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **6 Claims**



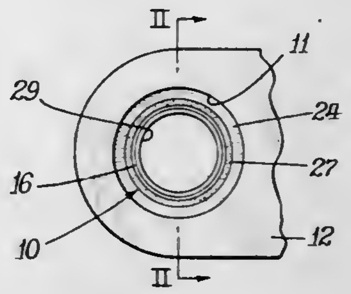
1. The method of programming wheel deceleration of a wheeled vehicle which includes the steps of:
  driving a supply of liquid through a closed circuit in the form of a stream,
  at one point in the circuit pressurizing the liquid independently of vehicle wheel speed,
  generating a wheel speed signal,
  at a second point in the circuit controlling the flow of the stream in the circuit as a function of variations in the wheel speed signal,
    thereby to produce a flow characteristic in the circuit downstream of said second point wherein the flow pressure rises with speed,
  at a third point in the circuit selectively applying a deceleration bias to the wheels of the vehicle as a function of said downstream flow characteristic,
  at a fourth point in the circuit throttling said downstream flow characteristic as a function of an operator-supplied input signal,
  and at a fifth point in the circuit between said third and fourth points metering out pressurized liquid from the circuit as a function of pressure to maintain a constant flow pressure at said third point,
so that said deceleration bias is maintained at a level below that necessary to lock the wheels thereby seeking the peak of the coefficient of friction-slip curve.

3,873,166
SEALED SELF-ADJUSTING BEARING

Lawrence F. Berg, Lockport, and Peter F. M. Prillinger, Decatur, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 18, 1973, Ser. No. 352,502
Int. Cl. F16c *23/08, 33/74;* **F16j** *15/32*
U.S. Cl. 308—36.1 **10 Claims**

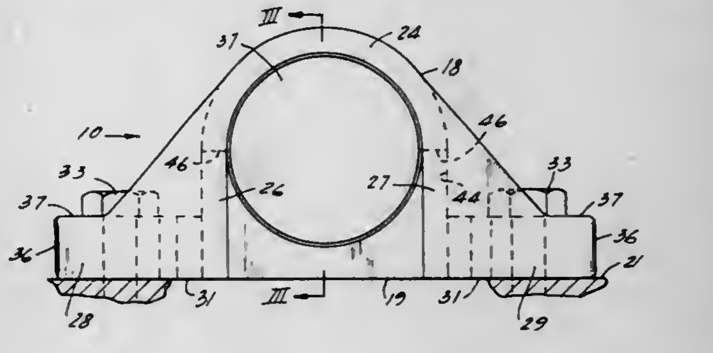
1. A sealed ball and socket connection mounted in a bore formed in a support member comprising
  an inner race having a convex spherical bearing surface formed exteriorly thereon,
  an outer race, mounted in said bore, having a concave spherical bearing surface formed internally thereon to substantially conform to said convex spherical bearing surface and universally mounted thereon, and
  a combined sealing and retaining means disposed on each lateral side of said outer race including an annular retainer secured within said bore, annular recess means solely formed on an inboard side and radially inner corner of said retainer to extend to a limited depth axially in said retainer and to a limited depth radially outwardly from said inner race and an annular lip seal disposed in said recess and clamped axially between said outer race and said retainer and having a flexible lip extending radially inwardly substantially past said retainer and into sealing contact with the convex spherical bearing surface of said inner race.



3,873,167
NONMETALLIC BEARING HOUSING

Lawrence G. Anderson, Greenhurst, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed July 6, 1971, Ser. No. 159,724
Int. Cl. F16c *13/00*
U.S. Cl. 308—74 **3 Claims**



1. A glass fiber reinforced nylon pillow block adapted to tiltably support an anti-friction bearing with a convex outer race ring which comprises a glass fiber reinforced nylon inverted U-shaped body having an open bottom semi-cylindrical bight portion with depending side legs and outturned apertured feet at the bottoms of said side legs, said bight portion having bottom ends providing abutment shoulders at the tops of said legs, said legs having recesses along the length thereof, said feet having central dove-tail recesses diverging from the bottoms of said leg recesses, a glass fiber reinforced nylon slab having an open top semi-cylindrical recess with end walls for abutting said abutment shoulders of said body, side walls fitting the leg recesses of the body and a bottom with laterally projecting dove-tail ears fitting the dove-tail grooves of the feet of said body, said open bottom semi-cylindrical bight portion of the body and said open top semi-cylindrical recesses of the slab having transversely concave inner peripheral surfaces, and bolts bottomed in said apertured feet for securing the pillow block to a base and bottoming the shoulders of the body against the top end walls of the slab to unite the body and slab in fixed relation with the dove-tail ears of the slab mating in the diverging recesses of the body to secure the slab against lateral displacement relative to the body, and said concave inner peripheries of the semi-cylindrical portions of the slab and the bight portion of the body forming a continuous concave annular seat to tiltably support the convex outer race ring of the anti-friction bearing in the pillow block.

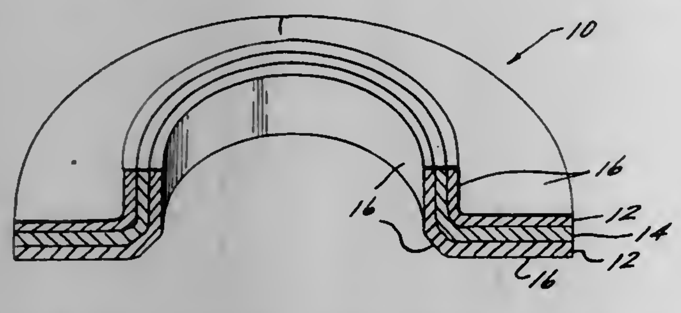
3,873,168
LAMINATED COMPOSITE ARTICLE WITH IMPROVED BEARING PORTION

Olivo L. Viola, and Wilbert H. Smith, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 18, 1972, Ser. No. 315,884

Int. Cl. F16c *33/00*

U.S. Cl. 308—238 **5 Claims**



1. An improved laminated composite annular spacer article for use between two opposed cooperating bearing surfaces, at least one of which is movable in respect to the other and including improved opposed bearing portions, the article comprising:

an annular body of at least one layer of glass fibers; and

a pair of annular outer bearing portions each having an outer bearing surface, each of the pair of bearing portions connected with the body in opposed relationship, at least one of the pair of bearing portions comprising therethrough ingredients selected from the group consisting of graphite, carbon and their mixtures,

the body and the bearing portions each impregnated with and bonded together through a resin selected from the group of resins consisting of epoxy and polyimide-type resins.

3,873,169
MULTIPLE DIGIT DISPLAY DEVICE AND METHOD OF MANUFACTURING SAME

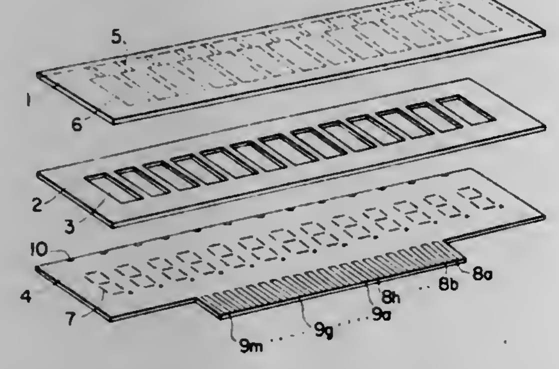
Akio Miyamoto; Masaharu Koyama, both of Mobara; Toyokazu Odaka, Ichinomiya; Kanji Otsuka, and Gen Murakami, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,440

Claims priority, application Japan, June 1, 1972, 47-54616

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **11 Claims**



1. A method of forming a cathode substrate for a multiple-digit display device, in which said cathode substrate including cathodes is arranged opposite to a plate including anodes, comprising the steps of:

a. shaping a pasty composition comprising a dielectric material, a binder and a solvent into a shett form having a predetermined thickness and size;

b. drying the sheet to obtain an unsintered dielectric sheet;

c. multilevel printing, on said unsintered dielectric sheet, a plurality of sets of cathodes for respective digits, a plurality of cathode terminals for the corresponding cathodes between said cathode sets, a plurality of wires for the connections of the corresponding cathodes, between said cathode sets, to said cathode terminals, and a plurality of dielectric layers to provide an unsintered multilayer cathode substrate; and

d. sintering said unsintered multilayer cathode substrate to provide a cathode substrate.

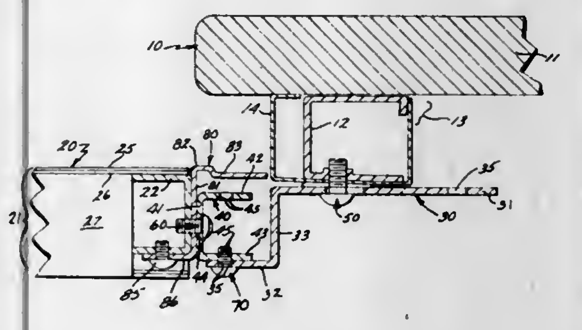
3,873,170
ATTACHMENT MEANS FOR MODULAR FURNITURE CONSTRUCTION

Douglas Scheerhorn, Grand Rapids, and Ronald R. Hodges, Grandville, both of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed July 23, 1973, Ser. No. 381,911

Int. Cl. A47b *96/06*

U.S. Cl. 312—280 **13 Claims**



1. A furniture system including a wing unit or the like, a desk unit or the like and attaching means for attaching the wing unit to the desk, said attaching means comprising:

a first bracket having first securing means for securing said first bracket to a desk;

a second bracket having second securing means for securing said second bracket to a wing unit;

joining means joining said first and second brackets together; one of said first and second brackets including first and second joining points for cooperating with said joining means; said joining means cooperating with said one bracket at one of said first and second joining points; said one bracket being adapted for securing to its respective desk or wing unit with either its first or second joining point in position adjacent the other of said brackets; said first and second joining points being on different levels whereby desks and wing units of several different relative heights can be joined together by effecting an appropriate one of the alternative arrangements of said brackets.

3,873,171
MULTIPLE-DIGIT DISPLAY DEVICE AND METHOD OF MANUFACTURING THE SAME

Akio Miyamoto; Masaharu Koyama, both of Mobara; Toyokazu Odaka, Chiba; Kanji Otsuka, and Gen Murakami, both of Kodiara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,404

Claims priority, application Japan, June 1, 1972, 47-54617

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **13 Claims**

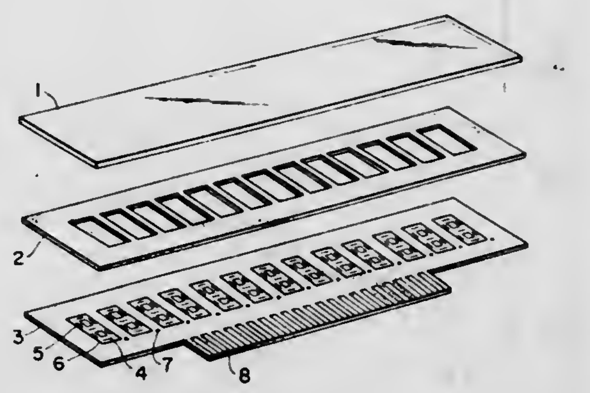
1. A method of forming an electrode substrate for a multiple-digit display device in which cathodes and anodes are arranged in a single substrate, comprising the steps of:

a. shaping a pasty composition comprising a dielectric material, a binder and a solvent into a sheet form of a predetermined thickness and size;

b. drying the sheet to obtain an unsintered dielectric sheet;

c. multilevel-printing, on said unsintered dielectric sheet, a plurality of sets of cathodes for respective digits, a plurality of sets of anodes associated respectively with said cathode sets, a plurality of cathode terminals for the corresponding cathodes between said cathode sets, a plurality of anode terminals for said anode sets, a plurality of wires for the connection of the corresponding cathodes, between said cathode sets, to said cathode terminals, a plurality of wires for the connection of said anode sets to said anode terminals, and a plurality of dielectric layers to provide an unsintered multilayer electrode structure; and

d. sintering said unsintered multilayer electrode structure to provide an electrode substrate.



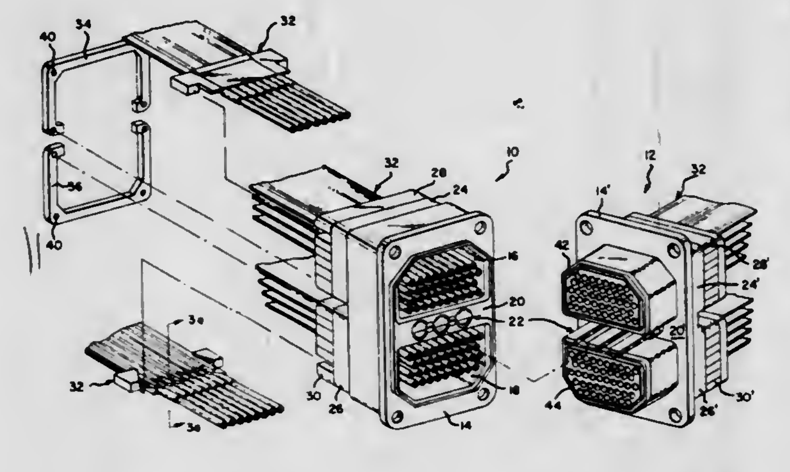
3,873,172
FLAT MULTI-CONDUCTOR CABLE HOLDER

Clarence Leonard Paullus, Lewisberry, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 209,208, Dec. 17, 1971, abandoned. This application June 25, 1973, Ser. No. 373,228

Int. Cl. H01r *13/58;* **H05k** *1/04*

U.S. Cl. 339—17 F **2 Claims**



1. A terminated flat multi-conductor cable and cable holder comprising:

a. a flat cable having a plurality of parallel, spaced apart conductors contained in insulating material;

b. a cable holder having a cable-receiving surface with an end of the cable positioned thereon, guide means being positioned on either side for locating the cable and a plurality of spaced fingers projecting forwardly from the surface, each finger having front and back ends; and

c. a plurality of terminals each having crimping means on the underside of one end, said means being crimped onto the conductors of the cable at a distance removed from the cable end, each terminal further having a rearwardly opening receptacle on the underside and spaced adjacent to the end of the cable, said receptacles being positioned on said fingers with the end of the cable abutting the back end of the fingers thereby preventing axial movement of the cable.

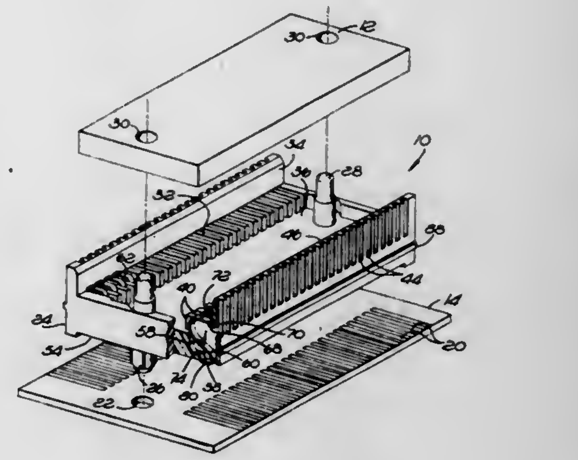
3,873,173
ELECTRICAL CONNECTOR ASSEMBLY

John W. Anhalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 5, 1973, Ser. No. 404,370

Int. Cl. H05k *1/07*

U.S. Cl. 339—17 CF **16 Claims**



1. An electrical connector assembly for interconnecting an electrical circuit element having a plurality of conductive pads on one surface thereof with a mounting member having conductive strips thereon, comprising:

an insulative housing member having means defining an upwardly facing planar surface adapted to support said circuit element and a lower surface adapted to overlie said mounting member;

a plurality of compartments formed in said housing member, said compartments opening upwardly at said planar surface;

vertical apertures in said housing member extending downwardly from said compartments to said lower surface; and a contact positioned in each of said compartments, said contact being formed of a spring metal strip, said contact means defining an upper portion extending above said planar surface, said means having a generally convex configuration for making wiping engagement with one of said conductive pads, a lower portion extending across and downwardly through said aperture below said lower surface, said lower portion having a generally convex configuration for making wiping engagement with one of said conductive strips, and an intermediate portion joining said upper and lower portions.

3,873,174
ANTENNA BOARD ASSEMBLY WITH WIRE RECEPTACLE AND SWITCH

Stanley V. Horecky, Oak Park, and Robert W. Sebastian, Wheaton, both of Ill., assignors to Molex Incorporated, Downers Grove, Ill.

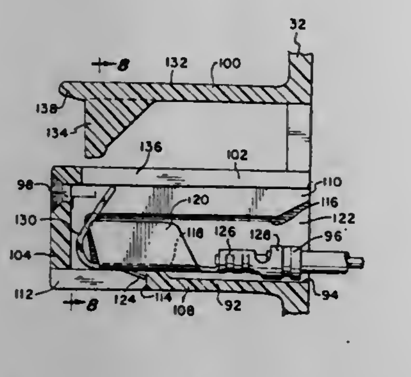
Filed Mar. 30, 1973, Ser. No. 346,442

Int. Cl. H01r *9/12*

U.S. Cl. 339—95 D **7 Claims**

1. A wire receptacle comprising a housing having a cavity defined in part by a relatively rigid wire engaging wall, a wire receiving opening extending from said cavity generally parallel to and aligned with said wall, a terminal in said cavity having a base spaced from said wall and having a spring leg slanting away from said opening and inclined relative to said wall, said spring leg having an end spaced from said base and abutting said wall, and resilient spring release means being

unitary with a portion of said housing for engaging said spring leg and forcing said spring leg away from said wall in order to permit movement of a wire between said end of said spring leg and said wall.



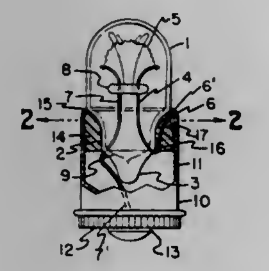
3,873,175
MINIATURE LAMP CONSTRUCTION AND METHOD OF MANUFACTURE

John R. Anderson, Chesterland, Ohio, and Steve Boros, Memphis, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,805

Int. Cl. H01r *19/00*

U.S. Cl. 339—144 R **7 Claims**



1. In a miniature size electric lamp having an tungsten filament connected between a pair of wire leads which are hermetically sealed within a tubular shaped glass envelope, with said wire leads extending outwardly from said envelope and being electrically connected to a cylindrical metal base shell having an inturned rim, the improvement which comprises having one flattened wire lead extending between the envelope wall and the rim of the base shell so as to lie in a plane approximately tangent to the envelope wall and being disposed between the wall of said envelope and the rim of said base shell, said wire lead being adhesively bonded to the inside rim of the base shell with an electrically-conducting base cement utilizing a heat cured organic polymer binder having a finely divided conductive solid dispersed therein.

3,873,176
LAMP SOCKET

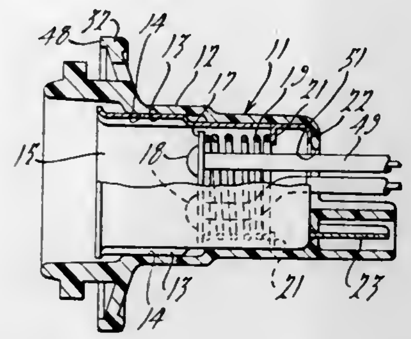
Marvin W. Moore, Rochester, Mich., assignor to Microdot Inc., Troy, Mich.

Filed Jan. 2, 1974, Ser. No. 430,078

Int. Cl. H01r *11/04, 13/32*

U.S. Cl. 339—59 L **5 Claims**

1. In a socket, a body made of a hard plastic material having an internal recess, a metal tube within said recess for supporting a lamp bulb, an outwardly extending annular flange about the lamp bulb end of the body having slotted areas within the flange to provide resiliency to the continuous outer edge of the flange, and cam means between the flange and lamp end having cam faces thereon which when disposed through notches in the edge of an aperture through a panel draws the socket thereinto and deflects the edge of the flange into pressure engagement with the panel.



3,873,177
JUNCTION BOX CONNECTOR ASSEMBLY

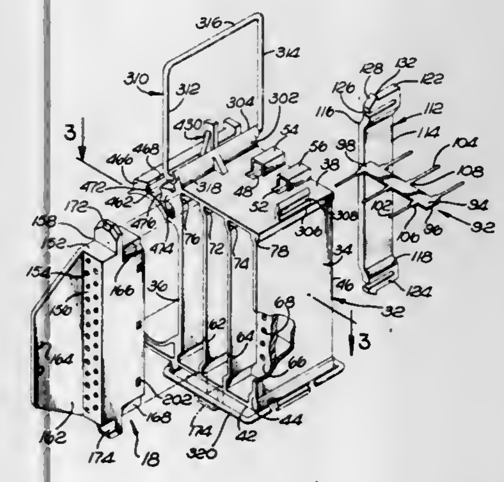
Philip C. Ross, Costa Mesa, Calif., assignor to Electronic Engineering Company of California, Santa Ana, Calif.

Filed Mar. 28, 1973, Ser. No. 345,824

Claims priority, application Japan, Mar. 30, 1972, 47-31943

Int. Cl. H01r *13/54, 13/60*

U.S. Cl. 339—91 R **11 Claims**



1. A junction box connector assembly comprising:

a connector junction housing member;

means positioned on said housing member for adjustably locating said connector junction housing member on a side-wall raceway and locking said connector junction housing member in a predetermined position;

a plurality of sets of electrical contacts positioned in said connector junction housing member, each of said sets being interconnected by a bussing member integrally formed with each of said sets of contacts;

a plurality of electrical connector means matable with said connector junction housing member on opposite sides thereof and including flange means extending therefrom, each of said connector members having a plurality of electrical contacts for mating with one of the contacts of each set of contacts positioned in said housing member; and

locking ring means pivotally attached to said connector junction housing member and movable into engagement with said flange means securing a plurality of said electrical connector members to opposite sides of said connector junction housing member.

3,873,178
TERMINAL CLAMP FOR ELECTRICAL CONDUCTORS

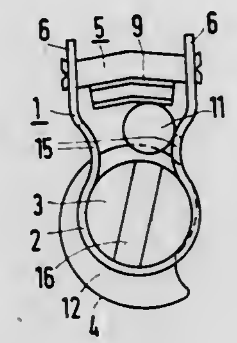
Anton Galli, Schwandorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 29, 1973, Ser. No. 392,522

Claims priority, application Germany, Sept. 4, 1972, 2243454

Int. Cl. H01r *7/06, 9/08*

U.S. Cl. 339—274 **12 Claims**



1. A terminal clamp for electrical conductors, comprising

a cylinder-like clamping member having a cylindrical surface and defining a longitudinal axis;

a clamping frame including a U-shaped bent guide part for accommodating said clamping member and defining at least one insertion opening for receiving an electrical conductor therein, said opening extending in the direction of said axis and being beyond said cylindrical surface, said clamping frame being configured so as to have bent-in portions between where said clamping member is disposed and said insertion opening;

said clamping member being rotatably mounted in said clamping frame between said bent-in portions and the bight of said U-shaped guide part for clamping the electrical conductor, said clamping member having an eccentric portion protruding eccentrically from the cylindrical surface thereof to define at least one clamping surface, and

a pressure plate attached to said guide part so as to close the open end of said U-shaped guide part.

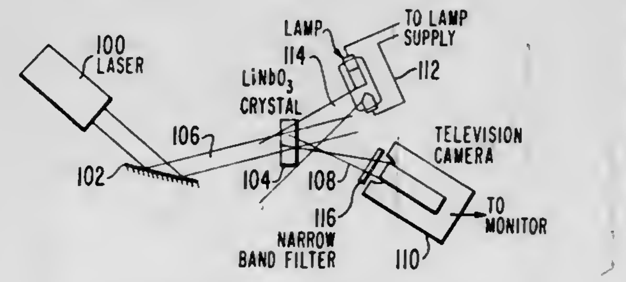
3,873,179
LITHIUM NIOBATE HOLOGRAM READOUT USING CONTINUOUS INCOHERENT NOISE ERASING LIGHT

William Joseph Burke, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 10, 1974, Ser. No. 477,851

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **5 Claims**



VOLUME HOLOGRAM READOUT SYSTEM

1. In a readout system for a volume hologram including a volume hologram recording medium comprising a given crystal of Fe-doped $LiNbO_3$ which has a volume hologram of a given scene recorded therein, means for illuminating said crystal with a readout input beam of coherent wave energy of said given wavelength to derive from said recorded volume hologram therein a readout image beam of coherent wave energy of said given wavelength which reconstructs an image of said given scene, and viewing means in cooperative relationship with said readout image beam for viewing said reconstructed image of said given scene, wherein said given crystal exhibits a response to the cumulative illumination thereof by said readout input beam which results in spurious cumulative recordings within said crystal and exhibits a response to the cumulative illumination thereof by given broad-band incoherent wave energy which results in cumulative erasing of said spurious recordings within said crystal; the improvement therewith comprising:

- a. a source of said given broad-band incoherent wave energy for illuminating said given crystal therewith while simultaneously said given crystal is being illuminated with said readout input beam of coherent wave energy of said given wavelength, and
- b. wherein said viewing means includes a narrow-band filter located in the path of said readout image beam for passing wave energy incident thereon having said given wavelength and substantially blocking out said given incoherent wave energy incident thereon.

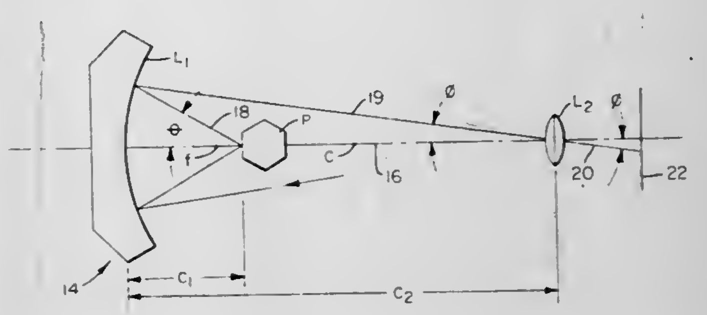
3,873,180
LIGHT BEAM SCANNING SYSTEM WITH SCAN ANGLE DEMAGNIFICATION

Samuel Bousky, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sept. 10, 1973, Ser. No. 395,780

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **13 Claims**



1. An improved light beam scanning system capable of substantially diffraction limited performance, for scanning data in the form of lines on a medium during record, display and readout processes, and having at least one entrant light beam, comprising the combination of:

rotating mirror means formed of at least one mirror surface disposed to receive the entrant light beam and to generate an initial scan beam of a selected initial angular scan with a pivot point substantially at the mirror surface;

optical beam directing means disposed to receive the initial scan beam and to generate a final scan beam of substantially reduced angular scan relative to the initial angular scan; and

spot forming lens means disposed to receive the beam of reduced angular scan and to form a focussed scan spot within a correspondingly reduced angular scan field.

3,873,181
INFRARED CORRELATION METHOD USING THERMOCHROMICS HAVING A HYSTERESIS PROPERTY

Jay S. Chivian, Richardson, and Dayton D. Eden, Dallas, both of Tex., assignors to Advanced Techology Center, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 825,883, May 19, 1969, abandoned. This application Jan. 8, 1971, Ser. No. 105,055

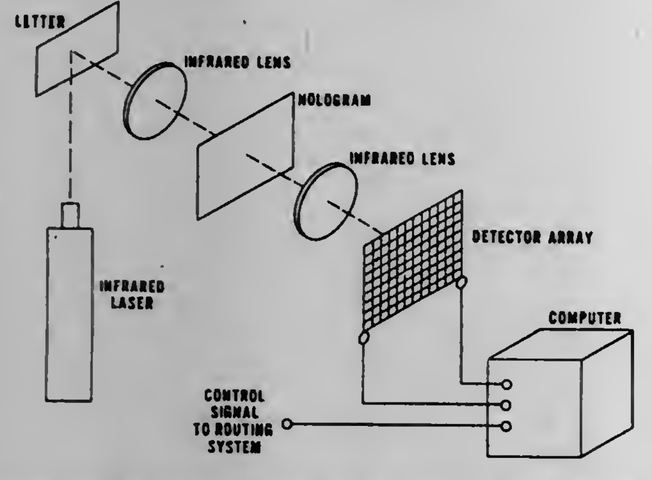
Int. Cl. G06g *9/00;* **G02b** *27/00*

U.S. Cl. 350—3.5 **5 Claims**

1. In the process of comparing optical characteristics of first and second objects, the steps of:

- a. in a thermochromic film having a reflectance hysteresis loop associated with changes in temperature over a certain range, establishing said thermochromic film at a bias temperature in the hysteresis loop;

b. with infrared radiation, producing a holographic fringe pattern of said first object on the surface of the thermochromic film, the wavelength being bounded by an upper limit which is not substantially greater than the smallest spatial detail of said object, and being bounded by a lower limit which does not exceed two orders of magnitude less than the size of said smallest spatial detail, the power of said infrared radiation producing said holographic fringe pattern being adequate to permit absorption of sufficient energy to cause localized transition in the film from one reflectance to another in a period of time that is not appreciably greater than the ratio of the square of a given diffusion length and the film's thermal diffusivity, wherein the diffusion length is established by the resolution required to record said holographic fringe pattern;



c. reproducing the holographic fringe pattern in a medium which exhibits properties making it suitable as a complex spatial filter in the infrared portion of the spectrum, so as to achieve a complex spatial filter matched for the information contained in the first object;

d. directing a beam containing optical information derived from said second object at said complex spatial filter, thereby to produce optical correlation and convolution beams, wherein said beam containing optical information derived from said second object is a beam of coherent radiation of the same wave length as the radiation used in producing said holographic fringe pattern of said first object; and

e. focusing the resultant optical beams on an output plane.

3,873,182

MAGNIFICATION VARYING DEVICE IN OPTICAL INSTRUMENT CAPABLE OF CHANGING THE SPACING BETWEEN TWO OPTICAL AXES

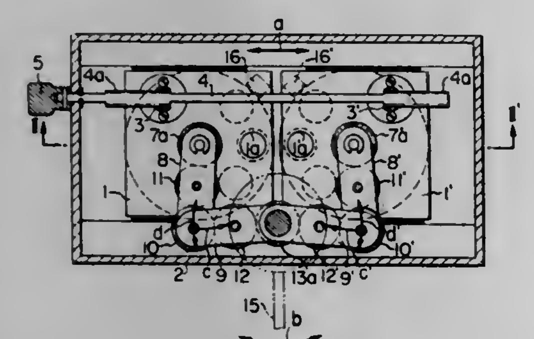
Hidehiko Furuhashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 206,290, Dec. 9, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,643

Claims priority, application Japan, Dec. 15, 1970, 45-124696

Int. Cl. G02b *7/16*

U.S. Cl. 350—39 **6 Claims**



1. A magnification varying device in an optical instrument having two objective optical axes, the spacing between which is variable, said device comprising:

a pair of movable members, each having an opening through which an objective optical axis passes, said movable members being movable so that the spacing between said openings is variable on a straight line joining said two objective axes;

an adjusting member for adjusting the spacing between said openings of said movable members, said adjusting member being mounted on said movable members outside the area of movement of said movable members;

a pair of magnification varying members mountd for rotation in a plane normal to said optical axes on said movable members for successively moving lenses of any desired magnifications into alignment with said two optical axes;

a pair of supporting members, each having at least one articulation, one end of each said supporting member being pivotally connected to one of said magnification varying members, the other ends of said supporting members being pivotally connected to a rotatable operating member; and

a pair of rotation transmitting members supported by said supporting members for transmitting the rotation of said operating member to said magnification varying members.

3,873,183

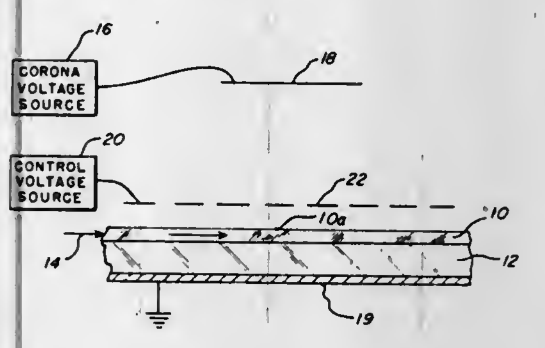
OPTICAL BEAM MODULATION IN OPTICAL WAVEGUIDES

Tzuo-Chang Lee, Bloomington, and Di Chen, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 25, 1973, Ser. No. 382,599

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **12 Claims**



1. A method of modulating a light beam comprising:

directing the light beam through a thin film optical waveguide having an electric field controllable optical property;

generating electrical charges at a position remote from a surface of the thin film optical waveguide;

depositing electrical charge on a selected region of the surface of the thin film optical waveguide to selectively alter the electric field controllable optical property; and removing the deposited electrical charge from the selected region by directing a flooding electron beam onto the surface to cause secondary emission of electrons from the surface.

3,873,184

REFLECTOR WITH INTERSPERSED ANGLED REFLEX ELEMENTS

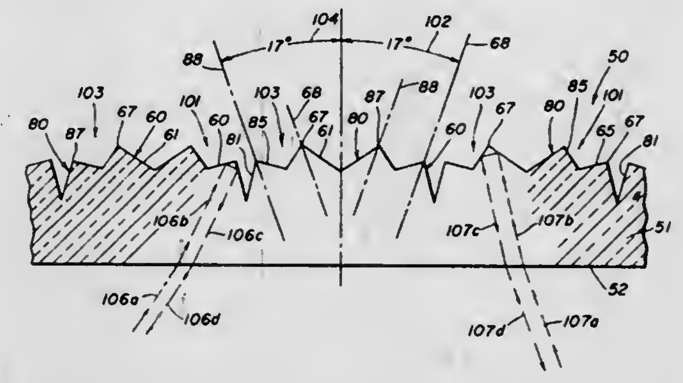
Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,352

Int. Cl. G02b *5/12*

U.S. Cl. 350—103 **23 Claims**

1. A retrodirective reflector for reflecting light substantially back to the source thereof over a wide angle as measured in a predetermined plane, said reflector comprising a body of transparent material having a light-receiving front face, a plurality of retrodirective first reflector elements at the rear of said body, said first reflector elements respectively having substantially parallel first optical axes disposed at a first angle in said predetermined plane, said first reflector elements being capable of reflecting light back toward the source thereof within a first zone of reflectorization defined by said first optical axes, a plurality of retrodirective second reflector elements at the rear of said body, said second reflector elements respectively having substantially parallel second optical axes disposed at a second angle in said predetermined plane, said second reflector elements being capable of reflecting light back toward the source thereof within a second zone of reflectorization defined by said second optical axes, and a plurality



of retrodirective third reflector elements at the rear of said body, said third reflector elements respectively having substantially parallel third optical axes disposed at a third angle in said predetermined plane, said third reflector elements being capable of reflecting light back toward the source thereof within a third zone of reflectorization defined by said third optical axes, said first and second and third reflector elements being arranged respectively in first and second and third rows, said rows being interspersed with one another to enable said reflector to appear substantially fully illuminated throughout its area to a viewer who is within a combined zone of reflectorization defined by said first and second and third zones of reflectorization.

3,873,185

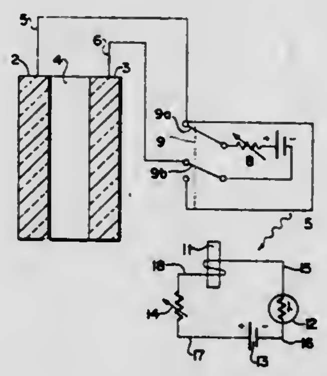
VARIABLE LIGHT-FILTERING DEVICE

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 155,112, June 21, 1971, Pat. No. 3,774,988, which is a division of Ser. No. 854,522, Sept. 2, 1969, Pat. No. 3,652,149. This application June 27, 1973, Ser. No. 374,252

Int. Cl. G02b *5/30*

U.S. Cl. 350—147 **14 Claims**



1. In a vehicle having at least one headlamp and a windshield, the improvement which comprises positioning in coextensive relationship with said windshield a variable light-filtering device comprising a pair of spaced, parallel, coextensive light-transmitting electrodes, a layer of a light-transmitting redox compound capable of forming a stable colored free radical upon the addition of electrons confined between said electrodes and means for flowing an electric current in a predetermined direction through said device.

3,873,186

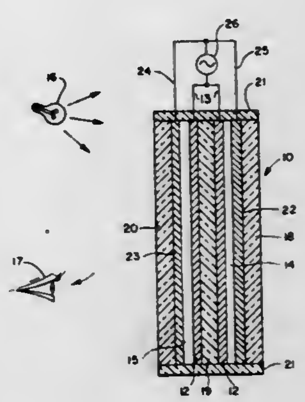
LIQUID CRYSTAL DISPLAY

Kim Ritchie, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 18, 1973, Ser. No. 398,517

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 LC **6 Claims**



3. A liquid crystal display comprising means securing a first, second and third plate in spaced parallel relation, said second plate being of light transmitting material having transparent electrodes on opposite surfaces, said first plate being of transparent material and having a transparent electrode thereon in spaced parallel opposed relation to one of the electrodes on said second plate, said third plate having an electrode thereon of reflective conductive material, said first, second and third plates together defining first and second cells, said first cell being filled with a liquid crystal material having a first low nematic temperature range of approximately −20°C to 60°C and the second cell being filled with a liquid crystal material having a nematic characteristic in a second higher temperature range of approximately 60°C to 100°C thereby extending the temperature range of the display over normal temperature conditions.

3,873,187

LIGHT MODULATOR ARRAY AND METHOD OF MAKING IT

Robert E. Brooks, Manhattan Beach, Calif., assignor to IRW Inc., Redondo Beach, Calif.

Filed Oct. 29, 1973, Ser. No. 410,730

Int. Cl. G02f *1/28*

U.S. Cl. 350—160 R **4 Claims**

1. The method of manufacturing an array of light modulators from a substantially rectangular strip of electro-optical material transparent to optical radiation, said method comprising the steps of:

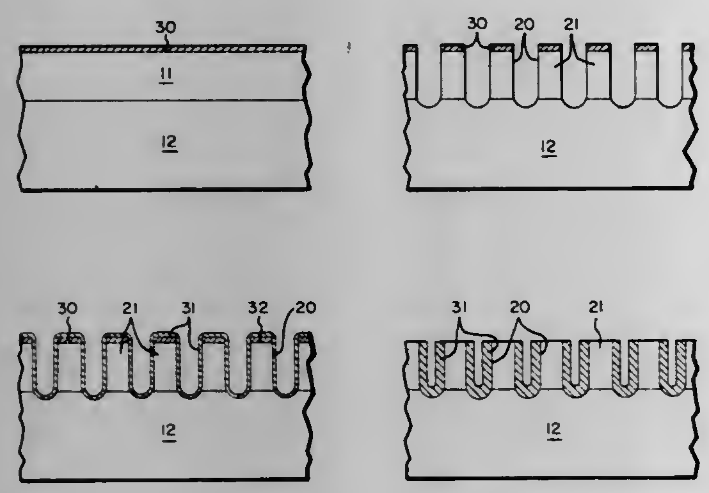
a. mounting the strip of electro-optical material on a substrate having a substantially plane surface and being transparent to the optical radiation;

b. coating the electro-optical material with a first protective coating removable by a chemical compound;

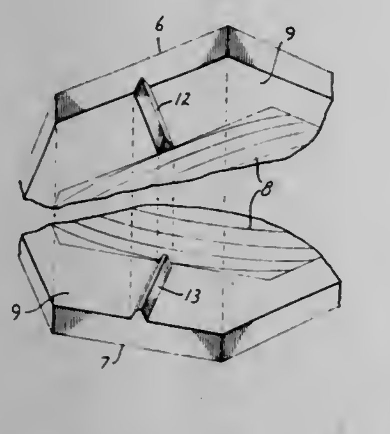
c. repeatedly cutting through the protective coating, the electro-optical strip and into the substrate to provide a plurality of substantially parallel cuts defining a plurality of individual electro-optical elements;

d. coating the thus obtained structure with a metal forming a second coating which is not removed by the compound; and

e. removing the first coating but not the metal from the original surface of the electro-optical strip, thereby to obtain a plurality of electro-optical elements, the cuts of which are coated with the second coating.

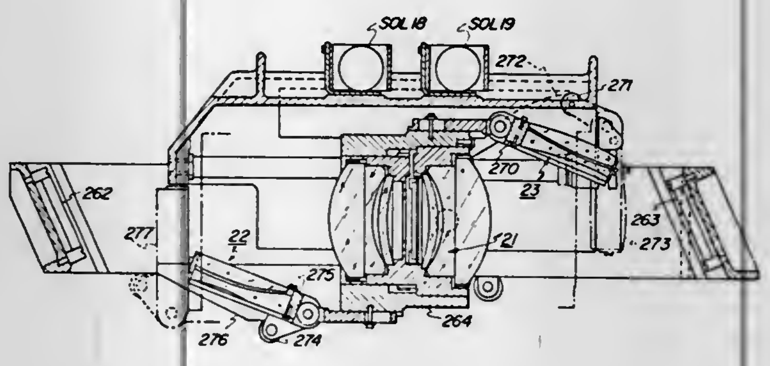


3,873,188
ALIGNING MEANS FOR INCREMENTAL LENSES
Robert B. Baeker, Columbia, Mo., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 29, 1973, Ser. No. 346,001
Int. Cl. G02b *3/08;* **B29d** *11/00*
U.S. Cl. 350—211 **3 Claims**



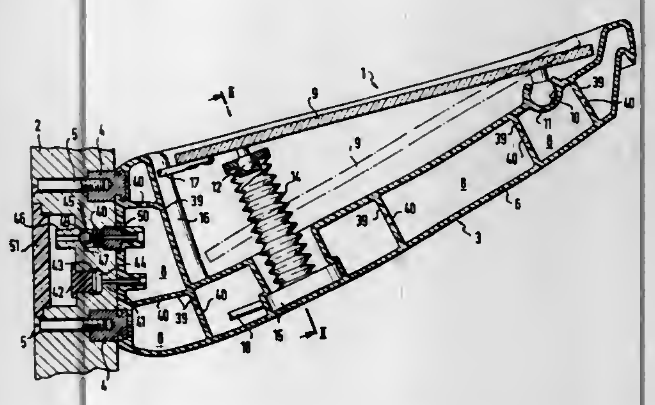
1. A lens comprising a pair of polymeric, incremental lens members each of the Fresnel-type in juxtaposition and sealed together at the edge, said lens members being aligned to dispose the optic axis of the refracting increments coaxially, and each of said pair of lens members having on a face at four positions, spaced radially from the axis and spaced circumferentially on radial lines 90° apart, one of a V-groove or mating rib extending in a radial direction and in opposed relationship to a cooperating groove or rib on the other lens member.

3,873,189
ADJUSTABLE-POSITION OPTICAL SYSTEM
Raymond Whitaker, Leeds, and Bryan S. Haslam, Harrogate, both of England, assignors to Rank Xerox Limited, London, England
Filed June 19, 1973, Ser. No. 371,459
Claims priority, application United Kingdom, June 23, 1972, 39651/72
Int. Cl. G02b *7/02*
U.S. Cl. 350—255 **8 Claims**



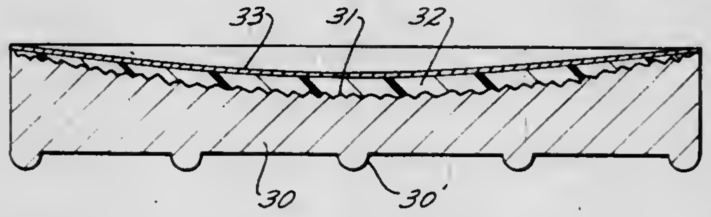
1. An apparatus for positioning an optical assembly in one of a plurality of predetermined positions along its optical path comprising means for driving the optical assembly in one direction and in the opposite direction along the optical path, a plurality of stops which are individually operable to directly engage the optical assembly and stop it in said predetermined positions, and in the case where the assembly is to change position in said one direction means to actuate said drive means to bring the assembly directly against a selected, operated, one of said stops, and in the case where the assembly is to change position in the opposite direction, means to actuate the drive means to drive the assembly in said opposite direction past the stop, and means to operate the selected stop and reverse the drive means when the assembly has travelled past the stop, whereby in operation of the apparatus, the assembly always engages one of said stops in said one direction.

3,873,190
MOUNTING ASSEMBLY FOR EXTERNAL VEHICLE REAR VIEW MIRROR
Peter Hess, Coburg, Germany, assignor to Metallwerk Max Brose & Co., Coburg-Bavaria, Germany
Filed Aug. 1, 1973, Ser. No. 384,571
Claims priority, application Germany, Aug. 9, 1972, 2239257
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **13 Claims**



1. A mounting assembly, for a vehicle rear view mirror adapted to be mounted externally of the vehicle and to have its position adjusted from within the vehicle, said assembly comprising, in combination;
a base member affixed to the exterior of said vehicle;
a mirror;
swivel means pivotally interconnecting said mirror and said base member;
a pair of fluid controlled elements each extending between said mirror and said base member and each being adapted to have its length adjustably varied by control of fluid pressure applied thereto;
means swivelly interconnecting each of said fluid controlled elements with said mirror;
fluid pressure control means comprising a pair of fluid pressure transmitters each connected, respectively, in fluid communication with one of said pair of fluid controlled elements for selectively individually varying application of pressure to said fluid controlled elements;
said swivel means and said fluid controlled elements each being individually connected to said mirror, respectively, at points arranged in triangular trianglular configuration; a controlled lever universal swivel bearing;
a control lever mounted for universal pivoted motion by said control lever swivel bearing;
a pair of lever arms extending relative to each other through an angle smaller than 180° connected to and laterally projecting from said control lever, said lever arms being individually connected, respectively, to one of said fluid pressure transmitters to transmit motion of said control lever thereby to effect control of fluid pressure within each of said fluid controlled elements;
whereby adjusting movement of said mirror may be effected by movement of said control lever in directions generally correlated to the directions of movement of said mirror.

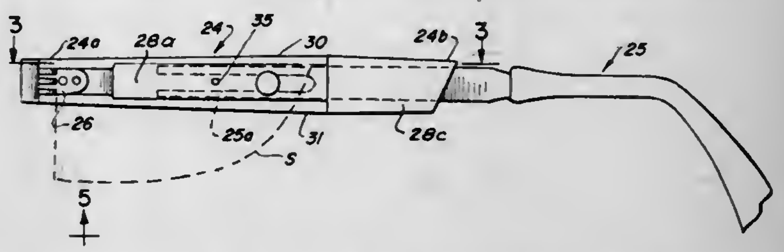
3,873,191
UNIFORM OPTICAL SURFACES AND ELEMENTS
Claude Veret, Saint Maur, and Pierre Durrenberger, Antony, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Bagneux, France
Continuation-in-part of Ser. No. 176,758, Aug. 27, 1971, abandoned, which is a division of Ser. No. 49,055, June 23, 1970, abandoned. This application Sept. 4, 1973, Ser. No. 393,794
Claims priority, application France, June 24, 1969, 69.21143
Int. Cl. G02b *5/10*
U.S. Cl. 350—293 **10 Claims**



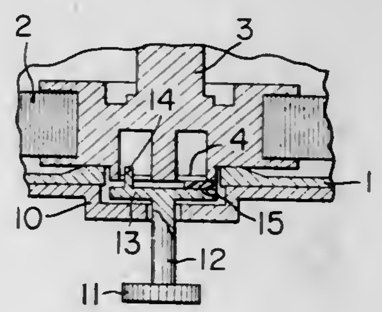
8. An optical element comprising a rigid support member with a spherically concave working surface and a thin resinous layer on said working surface having a nonuniform thickness starting at substantially zero, said layer having a paraboloidally concave outer surface.

3,873,192
ADJUSTABLE TEMPLE FOR EYEGLASSES
Marshall N. Anderson, Grayslake, Ill., assignor to Sellstrom Manufacturing Co., Palatine, Ill.
Filed Feb. 28, 1974, Ser. No. 446,633
Int. Cl. G02c *5/20*
U.S. Cl. 351—118 **11 Claims**

1. An adjustable temple for the frame of a pair of eyeglasses, said temple comprising elongated first and second members slidably interconnected and manually adjustable to assume selected relative positions, said first member having one end for hingedly connecting to the frame, said second member having an ear-engaging portion, one of said members being provided with an elongated, longitudinally extending guideway open at one end, the other member having an elongated shank portion extending through the open one end and being disposed within said guideway for selected sliding adjustment; and an elongated longitudinally extending spring means disposed substantially moveable independently thereof to within said guideway and resiliently engage said shank portion and effect frictional engagement thereof between said spring means and a wall of said guideway whereby said first and second members are retained in a selected position of adjustment until a predetermined external force is applied to the members overcoming the resistance of the frictional engagement.



3,873,193
FILM REWIND DEVICE IN A CINECAMERA
Yozo Iida; Hideyo Nozawa, and Shigeo Akasaka, all of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Feb. 16, 1973, Ser. No. 333,125
Claims priority, application Japan, Feb. 21, 1972, 47-21382
Int. Cl. G03b *23/16*
U.S. Cl. 352—72 **4 Claims**

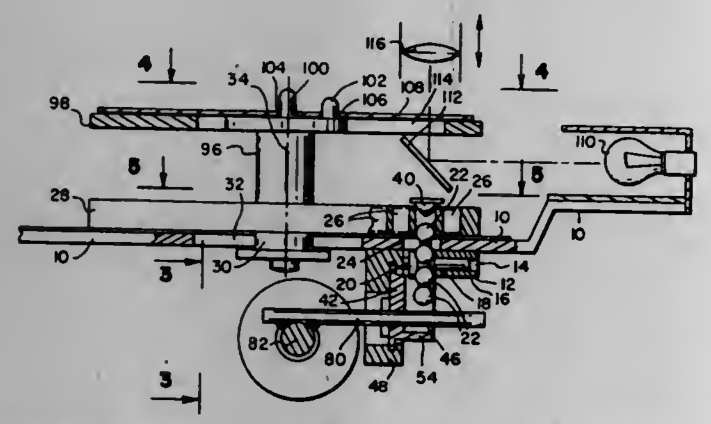


1. Apparatus in a cinecamera using a film magazine having an opening for exposure and having means for preventing reverse rotation of a take-up core in a take-up chamber of the magazine, the apparatus comprising drive means, rotatable means having means engageable with the take-up core for causing rotation of the take-up core with the rotatable means, and coupling means for coupling the drive means to the rotatable means to rotate the drive means and the take-up core, the improvement comprising a resilient member provided on the rotatable means and engageable with the take-up core for opposing rotation of the take-up core relative to the rotatable means.

3,873,194
PHOTO NEGATIVE PROJECTOR
Theodore F. Schwartz, 11660 St. Andrews Way, Scottsdale, Ariz. 85254
Filed Apr. 4, 1973, Ser. No. 348,175
Int. Cl. G03b *23/10*
U.S. Cl. 353—110 **5 Claims**

1. In a photonegative projector, the combination of: an indexing mechanism for spiral shaped arrays of photo negatives; said mechanism having a frame; a rotary member having a spiral shaped means including an array of indexing portions rotatably mounted on said frame to rotate about an axis of rotation; first means also mounting said rotary member to

move freely in a rectilinear path generally normal to said axis of rotation; second meand adapted to rotate said rotary member successively from one of said indexing portions to an adjacent one of said indexing portions of said spiral array; stationary means of said second means engageable with said spiral shaped means; said stationary means stationarily mounted on said frame and adapted to cause said rotary member to move in said rectilinear direction normal to said axis of rotation when said rotary member is rotated about said axis of rotation; whereby each of said indexing portions on said rotary member may move into registry with a fixed position relative to said frame; a film carriage coupled to and movable with said rotary member and spaced therefrom; said film carriage having first alignment means; (adapted to coordinate) a spiral array of negatives; a spiral film plate on said film carriage said alignment means adapted and disposed to coordinate respective ones of said negatives relative to respective ones of said spiral array of indexing portions on rotary member; an illuminater means mounted on said frame and adapted to project light to a position on said film carriage corresponding with said fixed position to which said indexing portions of said rotary member progressively move; said rotary member is provided with first and second opposite sides disposed at right angles to said axis of rotation; said indexing portions comprising openings extending through said rotary member from said first side to said second side; said second means comprises a rotatable member having radial projection means disposed so as to progressively engage in said openings at one of the sides of said rotary member; said rotatable member rotatably mounted on said frame on a second axis substantially at right angles to said axis of rotation; said rotatable member restrained against movement relative to said frame in a direction longitudinally of said second axis; said stationary means having a spring loaded detent successively engageable within said openings at one of the sides of said rotary member for successively holding each of said indexing portions in said fixed position; said detent is disposed concurrently to engage the same one of said holes in which said projection means of said rotatable member engages; said detent and said (projections) projection means both being substantially in alignment with said rectilinear path of said first means.



3,873,195
SLIDE TRAY

Robert B. Otto, Champlin, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 5, 1973, Ser. No. 376,888

Int. Cl. G09f *11/30*

U.S. Cl. 353—117 **2 Claims**

1. A circular slide tray comprising:

a cylindrical hub,

a base wall extending from one end of said hub perpendicular to the axis of said hub,

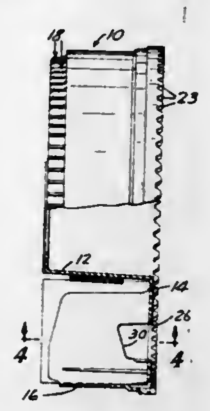
a peripheral edge wall extending perpendicularly from said base wall around said hub to define an annular slide receiving area between said edge wall and said hub,

a plurality of similar equally spaced slide guide walls extending from said peripheral edge wall radially inward toward said hub and terminating spaced from said hub to provide close packing of adjacent slides at said hub, two adjacent guide walls defining with said edge wall and said hub a slide receiving slot,

a slide retaining strip extending around said hub and having straight fibers extending radially therefrom into each of said slide receiving slots to guide and retain the edges of slides adjacent said hub, and

means adapted to engage a slide projector for stepwise advancement of said tray to align sucessive slide receiving slots with a slide pusher bar and a fixed opening in the projector into which a slide is to be pushed,

said base wall being formed with openings communicating with each of said slide receiving slots for access by a slide pusher bar and movement thereof parallel to the axis of said hub to remove a slide from a said slot and said slide guide walls being recessed in axial alignment with said openings and being beveled at the end of the recess in a direction progressing axially and radially inward of the tray, adjacent slide guide walls at the beveled portions thereof axially nearest the aligned pusher bar opening being spaced a distance greater than the corresponding thickness of the slide pusher bar and progressing radially inward along said beveled portions to a spacing distance equal to the thickness of the slide pusher bar for engagement thereby to precisely align the slide receiving slot between said adjacent slide guide walls with the opening in the projector into which a slide is to be pushed.



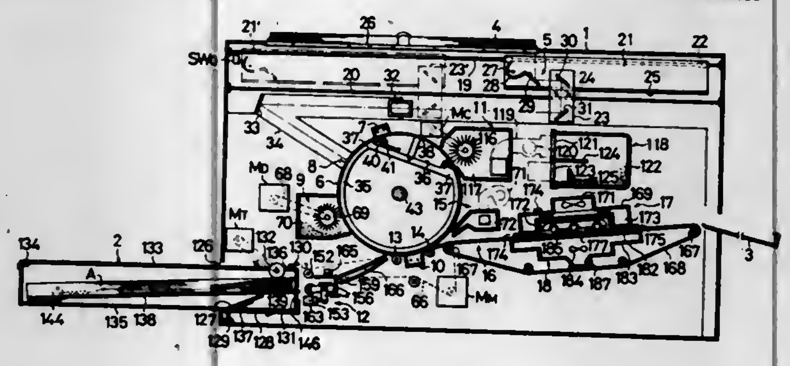
3,873,196
ELECTROPHOTOGRAPHIC COPIER OF TRANSFER TYPE

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 167,398, July 29, 1971, abandoned. This application Apr. 3, 1973, Ser. No. 347,530

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **9 Claims**



1. An electrophotographic copier of the transfer type comprising:

a document table made of a transparent plate;

an exposure optical system of the slit scanning type having means for scanning the surface of an original document, disposed below said document table and movable in parallel with said document table;

an endless support disposed below said exposure optical system and movable at a constant peripheral speed;

an image forming and copying assembly disposed around said endless support including means for charging said photoreceptor composed of a corona discharger, an exposure window positioned at the terminal end of the light path of said exposure optical system for exposing the charged photoreceptor to produce an electrostatic latent image, developing means for visualizing the electrostatic latent image with a toner, transfer means for transferring the powder image onto copy paper, and cleaner means for cleaning the surface of said photoreceptor;

a copy paper supply station including paper supply roller means for dispensing sheets of copy paper, paper feed means for feeding the dispensed paper to said transfer means, conveyor means for discharging transferred paper out of said copier, and means disposed over the transport path of said conveyor means for heat-fixing the toner image on said transferred paper;

a control member disposed in said copier and rotatable in a predetermined synchronous relation with said endless support; and

means including a program circuit for controlling the operation for a selective pre-selected number of copying cycles of said copier, and characterized in that:

said support is detachably provided with a flexible photoreceptor having a size approximately equal to the size of the image to be projected and an entire peripheral length slightly greater than the length of said photoreceptor; and said operation control means includes operation switches for said image forming and copying assembly disposed around said control member which program circuit turns on a main motor and the heat sources of said fixing means upon closing of a main switch and drives said endless support and said control member upon depression of a start switch to operate said operation switches, whereby scanning of the surface of the document by said slit scanning means and the respective operations of said image forming and copying assembly and of paper feed means are effected for said preselected number of copying cycles during a corresponding number of cycles of operation of said endless support, and means for advancing said endless support and said control member one cycle more of operation than said preset number in the absence of a copying cycle and brought to a halt.

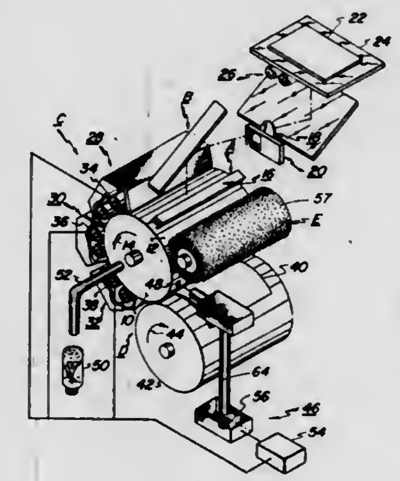
3,873,197
APPARATUS FOR REGULATING THE TONER CONCENTRATION IN A ELECTROPHOTOGRAPHIC DEVICE

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1973, Ser. No. 416,154

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 DD **8 Claims**



1. An apparatus for controlling the concentration of particles in a mix thereof, including:

electrode means;

means for periodically electrically biasing said electrode means to a first preselected level as said electrode means contacts the mix to attract particles thereto;

means for illuminating said electrode means having the particles adhering thereto with light rays;

means for sensing the intensity of light rays transmitted from said electrode means to produce an electrical output signal corresponding to the density of particles deposited thereon;

means for discharging said electrode means to a second preselected level after said sensing means detects the light rays transmitted therefrom; and

means, associated with said discharging means, for indicating that said electrode means is discharged to the second preselected level.

3,873,198
APPARATUS FOR ACTUATING THE STARTING AND ARRESTING DEVICES OF ELECTROSTATIC COPYING MACHINES

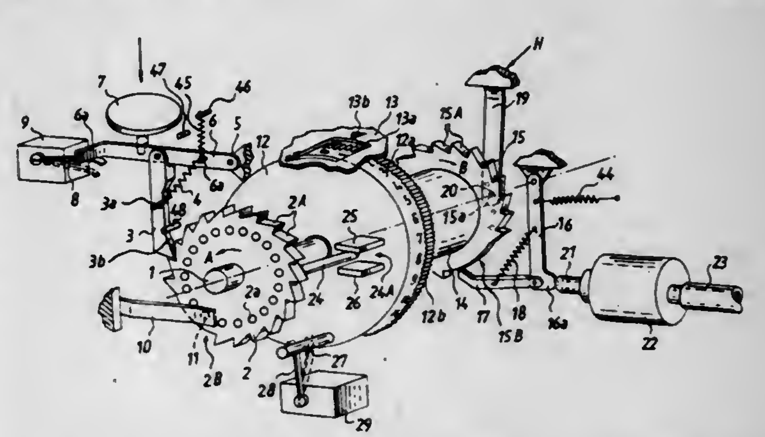
Rudiger Ettelbruck, Munich; Karl Hartwig, Unterhaching; Gunther Schnall, Eching, and Werner Weiss, Pfaffenhofen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 9, 1973, Ser. No. 414,595

Claims priority, application Germany, Nov. 11, 1972, 2255455

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **15 Claims**



1. In an electrostatic copying machine, a combination comprising first and second control means respectively operable to start and terminate the making of copies from originals; selector means movable from a starting position to a plurality of second positions in each of which the machine is set to make a different number of copies from a given original; first indexing means for moving said selector means to a selected second position; second indexing means for moving said selector means stepwise to a selected second position, including actuating means for operating said first control means in response to each stepwise movement of said selector means under the action of said second indexing means; means for resetting said selector means stepwise toward said starting position in response to the making of copies; and means for operating said second control means in response to movement of said selector means back to said starting position.

3,873,199
METHOD AND ARRANGEMENT FOR ADJUSTMENT OF PHOTOGRAPHIC COPYING APPARATUS

Volker Weinert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellshcaft, Leverkusen, Germany

Filed Sept. 20, 1973, Ser. No. 399,185

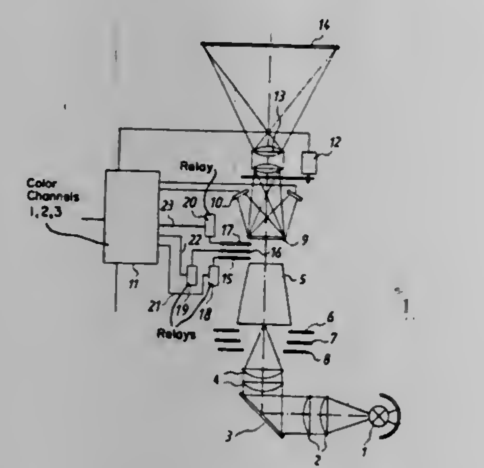
Claims priority, application Germany, Sept. 22, 1972, 2246744

Int. Cl. G03b *27/76*

U.S. Cl. 355—38 **14 Claims**

1. Arrangement for adjusting photographic copying apparatus having a first, second and third color channel for control-

ling, respectively, the illumination time in a first, second and third primary color, said first, second and third color channel having, respectively, a first, second and third photoreceiver, first, second and third integrator means, each connected to the output of a corresponding one of said photoreceivers, for furnishing, respectively, a first, second and third total color signal corresponding to the total quantity of illumination having impinged upon the corresponding one of said photoreceivers during said illumination time, and first, second and third terminating means for terminating the exposure in said first, second and third color channel, respectively, when the corresponding one of said total color signals is equal to a corresponding one of a first, second and third reference signal, in combination, first, second and third and fourth storage means in each of said color channels, for storing, respectively, first, second and third and fourth signals corresponding respectively to the sensitivity to the corresponding color of the copying material, the required color correction value in the corresponding color, the required density correction value, and the slope correction value, said fourth signal constituting, at least in part, a reference signal, at least one of said storage means being adjustable under predetermined operating conditions to a calibrating signal corresponding to the signal to be stored in another of said storage means during the exposure time; and null indicator means for comparing said calibrating signal to said signal in said other of said storage means and for indicating equality when the signal in said other storage means has been adjusted to equal said calibrating signal.



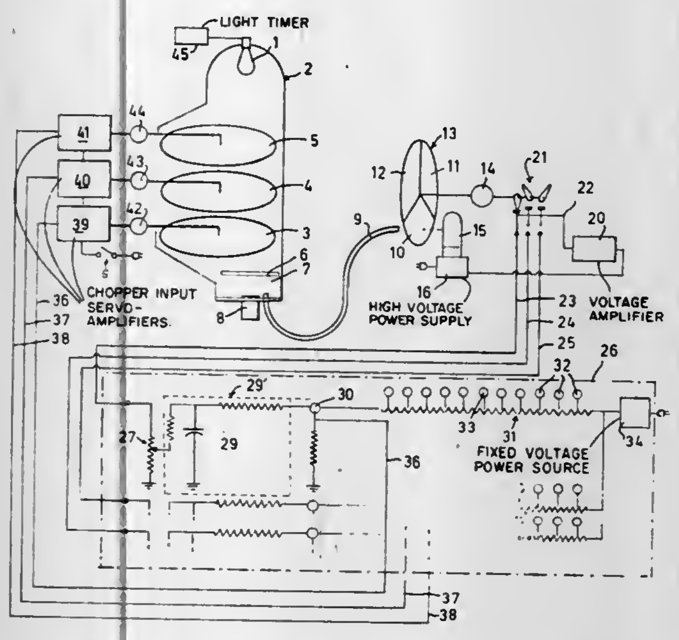
3,873,200
PHOTOGRAPHIC COLOR ENLARGING SYSTEM

Darrel R. Crete, Fair Oaks, and Kenneth A. McDonald, West Sacramento, both of Calif., assignors to Charles A. Crete, Marysville, Calif.

Filed Sept. 6, 1973, Ser. No. 394,732
Int. Cl. G03b *27/76*
U.S. Cl. 355—38 **8 Claims**

1. In a system for making enlarged color prints from color negatives that includes the combination of an enlarger having a source of white printing light and a projection lens; an enclosed passageway between said source and said lens for passage of the light from said source to said lens for projection from the latter; negative holder in said passageway spaced between said source and said lens for supporting a color negative in a position for transmitting therethrough light from said source to said lens; and color correction filters between said source and said negative for correcting color imbalance in the cyan, magenta and yellow colors in said negative:

a. generating means for generating first voltage color signals respectively proportional to the saturation of the colors complementary to the red, green and blue colors in a color negative when the latter is in said position in the enlarger;
b. a source of a second voltage of opposite polarity to said first voltage color signals;
c. means for establishing from said second voltage separate reference voltages respectively of absolute magnitudes equal to the voltage color signal required for the correct printing light for each of the aforesaid colors in said negative;
d. means for combining each of said reference voltages with the first voltage for the corresponding color to form an error voltage signal for each color of a magnitude equal to the difference between the reference voltage and the first voltage for each color, having the polarity of the greater voltage;

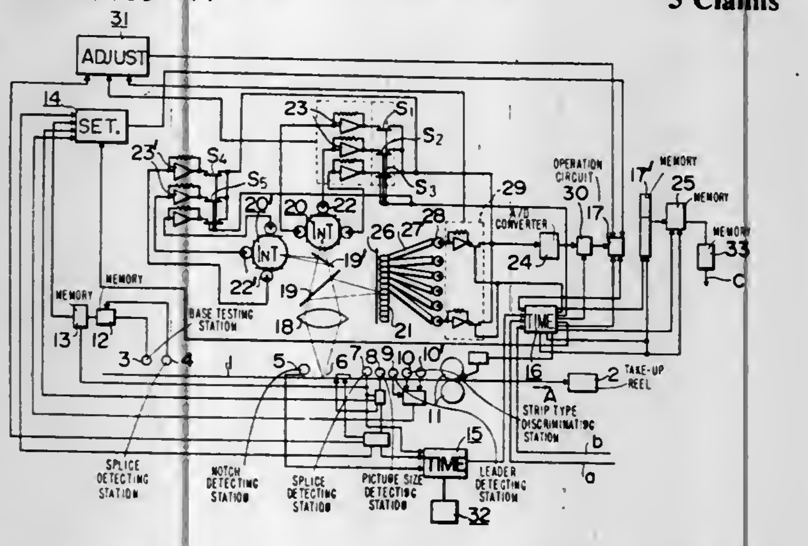


e. electrically actuatable control means for controlling the intensities of the light rays transmitted from said source to a color negative in said holder; and
f. means operatively connecting said error signals with said control means for altering the intensities of the rays of printing light transmitted to the color negative for passage through the latter when the latter is in said holder, proportional to the magnitudes of said error voltage signals, whereby the printing light projected through said negative and lens will make a print in which the color is correctly balanced.

3,873,201
METHOD OF DETERMINING EXPOSURE AMOUNTS IN PHOTOGRAPHIC PRINTING

Tadashi Amano, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,207
Claims priority, application Japan, Aug. 25, 1972, 47-85119
Int. Cl. G03b *27/78*
U.S. Cl. 355—77 **5 Claims**



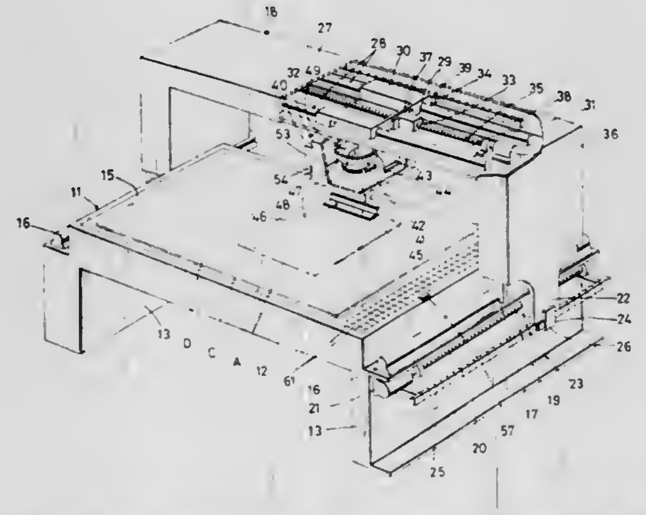
1. A method of determining exposure amounts in photographic printing for a strip carrying a plurality of pictures comprising the steps of measuring characteristics of a first negative frame on said strip; provisionally determining optimum exposure amounts in printing for said first negative

frame based on the result obtained in said measuring step; storing said optimum exposure amounts; measuring characteristics of at least one of several negative frames on said strip other than said first negative frame; selecting a second negative frame which is deemed to be equivalent to said first negative frame with respect to the characteristics from said several negative frames, said second negative frame and said first negative frame consecutively following one another on said strip; provisionally determining exposure amounts based on the result obtained in measuring said second frame; and finally determining exposure amounts for said first frame based on the combination provisionally determined exposure amounts of said first and those of said second frame.

3,873,202
DEVICE FOR MOUNTING POLYCHROME HALFTONE NEGATIVES ON SHEET FILM

Yoshio Inoue, No. 10, 2-chome, Tanabehigashino-cho, Higashisumiyoshi-ku, Osaka-shi, Osaka-fu, Japan

Filed Apr. 10, 1974, Ser. No. 459,853
Claims priority, application Japan, Apr. 26, 1973, 48-49388
Int. Cl. G03b *27/04*
U.S. Cl. 355—88 **1 Claim**



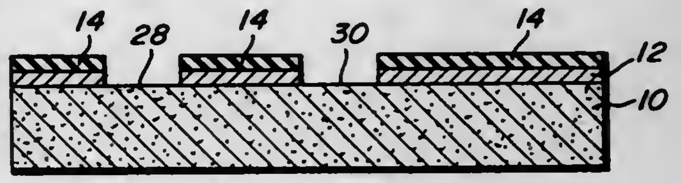
1. A device for mounting polychrome printing halftone negatives in predetermined positions on sheet film characterized in that a negative fixing implement capable of detachably fixing halftone negatives by means of positioning holes bored through said negatives is provided on a work table for placing sheet film thereon, the negative fixing implement being adapted to be movable on the work table by longitudinal, transverse and rotary shifting mechanisms provided with driving means respectively, shift amount detecting mechanisms being provided along the direction of the respective shifting mechanisms for electrically detecting the longitudinal, transverse and rotary movements of the negative fixing implement actuated by said shifting mechanisms, the negative mounting position of the fixing implement being memorized by memorizing the amount of movement thereof detected by the detecting mechanisms respectively, memory reversion circuits for actuating the driving means of the shifting mechanisms and the detecting mechanisms being provided thereby enabling to return automatically the fixing implement to the memorized position after its removal on memorization.

3,873,203
DURABLE HIGH RESOLUTION SILICON TEMPLATE

Alden Stevenson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1973, Ser. No. 342,668
Int. Cl. G03b
U.S. Cl. 355—133 **6 Claims**

1. A template comprising:
a glass substrate, said glass substrate being transparent to ultraviolet light;
a layer of polycrystalline silicon on said glass substrate, said layer of polycrystalline silicon being patterned, and
protective coating means on and coextensive with said layer of polycrystalline silicon for defining the edges of said layer of polycrystalline silicon, said protective coating

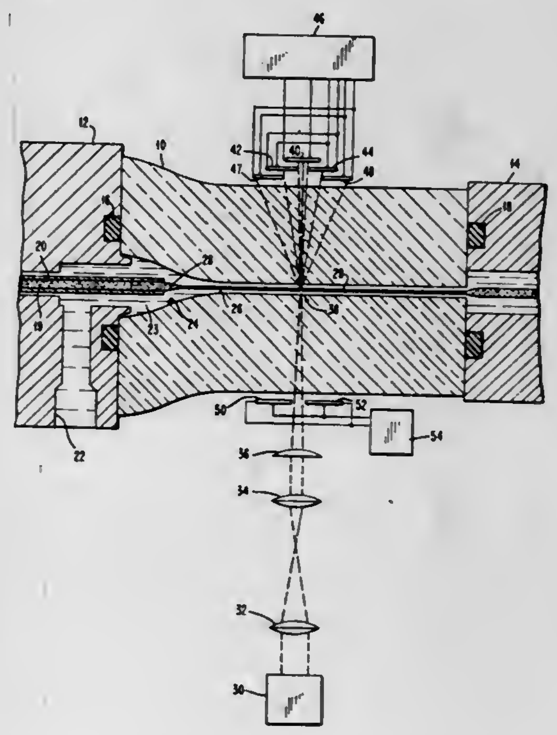


being chosen from the group consisting of silicon dioxide, silicon nitride, and silicon oxynitride.

3,873,204
OPTICAL EXTINCTION PHOTOANALYSIS APPARATUS FOR SMALL PARTICLES

Mitchell Friedman, Yorktown Heights; Louis A. Kamentsky, Briarcliff Manor, and Isaac Klinger, Yorktown, all of N.Y., assignors to Bio/Physics Systems, Inc., Mohopac, N.Y.

Continuation-in-part of Ser. No. 2,750, Jan. 14, 1970, Pat. No. 3,705,771. This application Nov. 29, 1972, Ser. No. 310,388The portion of the term of this patent subsequent to Dec. 12, 1989, has been disclaimed.
Int. Cl. G01n *33/16*
U.S. Cl. 356—39 **11 Claims**



1. Apparatus for optical measurement of at least one characteristic of each particle of a group of small particles such as blood cells while the particles are suspended in a liquid,
comprising a source of light operable to produce a narrow beam having substantially parallel beam elements and having well defined outer beam margins,
a housing comprised of a material which transmits light from said source and defining an optical chamber,
means for moving the particle suspending liquid through said housing in a thin narrow stream substantially centered in said chamber to convey the particles in sequence through the stream one by one,
means for directing the narrow beam of light into one side of said housing to intersect with the thin stream of particles,
said light directing means being operable to cause the beam to converge to the intersection with the stream of particles at a small angle of convergence between the outer beam margins to thereby concentrate the energy of the beam upon the particle stream,
a photoresponsive pick-up element positioned outside of said housing in alignment with the light beam on the side of said housing opposite to said light source to directly

receive the unscattered illumination from the light beam to thereby detect the degree of extinction of light by each particle,

and masking means positioned in front of said photoresponsive pick-up element to intercept illumination scattered away from the direct path of the light beam by the particles in the particle stream to thereby mask said photoresponsive pick-up element from scattered illumination.

3,873,205
ASSEMBLY FOR USE IN ATOMIC ABSORPTION SPECTROSCOPY

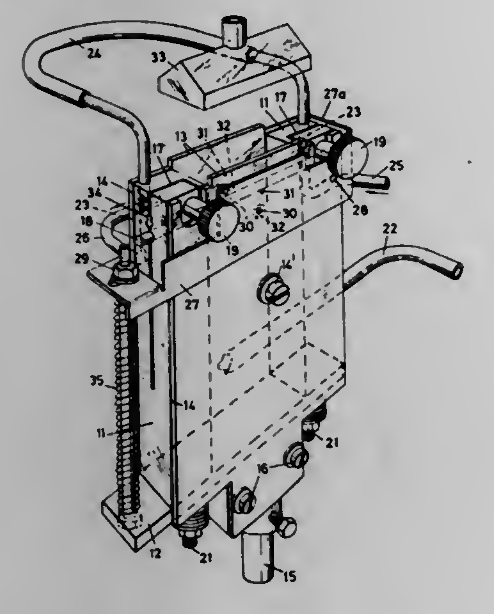
Kenneth Clive Thompson, Camberley, England, assignor to Shandon Southern Instruments Ltd., Camberley, Surrey, England

Filed Oct. 3, 1973, Ser. No. 403,115

Claims priority, application United Kingdom, Oct. 23, 1972, 48671/72

Int. Cl. G01j *3/30*

U.S. Cl. 356—85 **8 Claims**



1. An atomic vapour source which includes two spaced metal pillars clamped between but electrically insulated from two plates defining a chamber therebetween, each pillar being adapted at one end to be clamped to one end of a carbon rod extending between the ends of the two pillars, the clamping ends of the pillars being free to move relative to one another to permit expansion and contraction of the carbon rod when heated and cooled, said carbon rod provided with means for receiving a sample to be observed, means for directing radiation towards said sample, and means for effecting atomic absorption measurements.

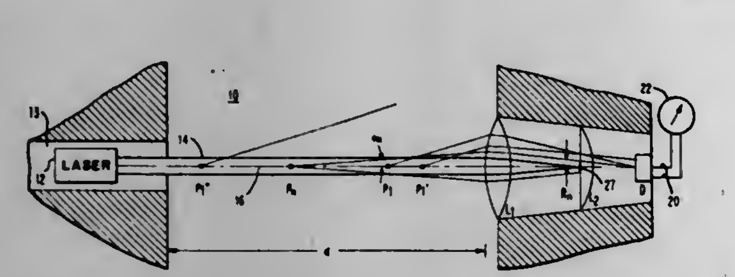
3,873,206
METHOD FOR DETERMINING A SPECIFIC CHARACTERISTIC OF FLUID SUSPENDED PARTICLES

William Leslie Wilcock, Y Felin Hen near Bangor, England, assignor to Leeds & Noethrup Company, North Wales, Pa.

Filed Oct. 3, 1973, Ser. No. 403,288

Int. Cl. G01n *15/02, 21/00*

U.S. Cl. 356—103 **19 Claims**



1. A method for measuring the specific characteristic of fluid suspended particles comprising the steps of:

passing a light beam through a sample of said fluid,

filtering with a spatial filter the light diffracted from said beam by the suspended particles in said sample, said filter having a transmission factor which varies as a function of the distance from the axis of said beam in a manner such that the magnitude of the total light flux transmitted due to each individual particle has a functional relationship to the dimensions of the particle which makes the total light flux transmitted due to all of the suspended particles proportional to the magnitude of said characteristic, and detecting the magnitude of the total light flux transmitted by said filter as a measure of said specific characteristic.

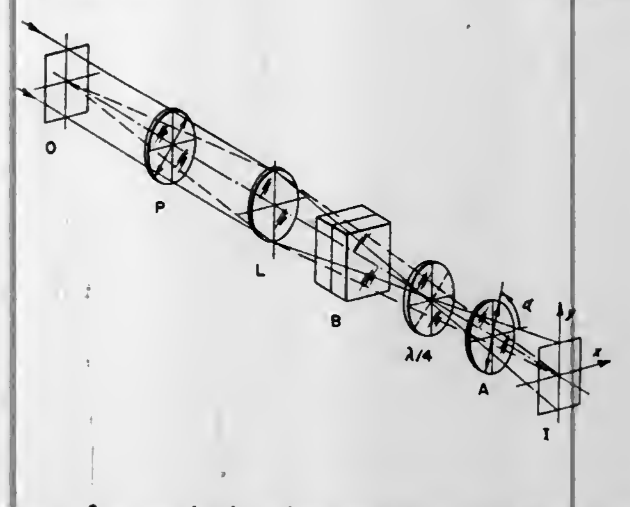
3,873,207
POLARIZING INTERFEROMETER

Olof Bryngdahl, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 9, 1973, Ser. No. 339,672

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **16 Claims**



1. Apparatus for producing interferograms which have hypersensitive colors in an image plane from an illuminated object comprising:

means for illuminating said object with achromatic light,

means for polarizing the illumination from said object, said polarizing means being positioned in the optical path between said object and said image plane,

means for splitting said illumination into at least two beams of light directed toward said image plane,

means for imaging said illumination such that said beams interfere with one another to produce an interferogram in said image plane, and

achromatic optical means for converting the polarized illumination into linearly polarized illumination prior to the formation of said interferogram.

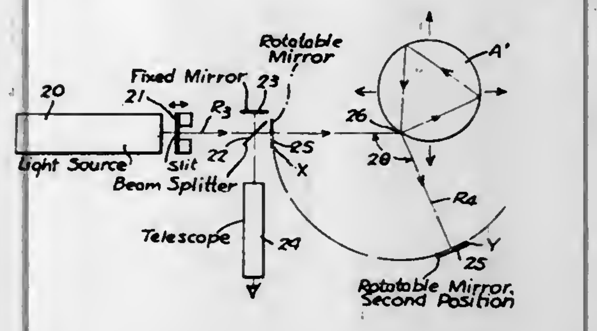
3,873,208
MEASURING THE INDEX OF REFRACTION

William H. Southwell, Pittsburgh, Pa., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 23, 1973, Ser. No. 381,885

Int. Cl. G01n *21/46*

U.S. Cl. 356—128 **20 Claims**



1. The method of measuring the index of refraction of an unknown material surrounded by a known material wherein there is a round interface between the materials which comprises

directing a beam of radiant energy to which the materials are transparent against said interface at an acute angle to a tangent thereto,

moving the materials relative to the beam in the direction transverse thereto until the light is internally reflected and emanates at the interface at an acute angle to a tangent at the point at which the beam first impinges on the interface,

whereby the included angle between the entering beam and emanating beam is equal to 2θ where θ is the angle of incidence, n is the index of refraction of the unknown material, n_0 is the index of refraction of the known material and the relationship is represented by the formula $n=2n_0\sin\theta$.

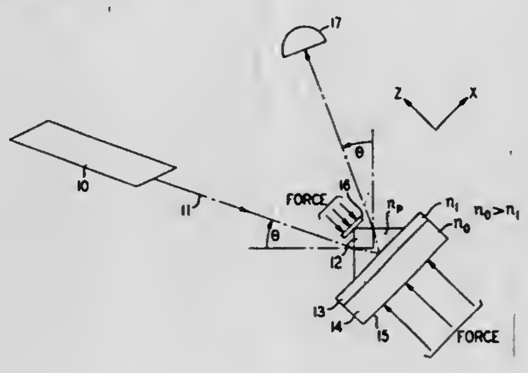
3,873,209
MEASUREMENT OF THIN FILMS BY OPTICAL WAVEGUIDING TECHNIQUE

David Paul Schinke, Berkeley Heights, and Richard Grant Smith, Basking Ridge, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.

Filed Dec. 10, 1973, Ser. No. 423,150

Int. Cl. G01n *21/46;* **G02b** *5/14*

U.S. Cl. 356—135 **11 Claims**



1. The method of testing a thin film on a substrate of higher refractive index than the film at a given wavelength of optical radiation which comprises the steps of

a. launching an evanescent wave of the optical radiation containing said wavelength in an air gap between a portion of an exposed major surface of the thin film and a first medium, said evanescent wave being produced in the air gap by means of a beam of optical radiation at said wavelength propagating at an angle greater than the critical angle in the first medium, whereby the optical wave in the first medium is coupled into the thin film; and

b. determining the angle of incidence at which the intensity of the optical wave beam reflected from the thin film on the substrate undergoes a relative minimum of intensity, said beam being reflected from the film as radiation coupled out of the film arising from the evanescent wave's having been coupled into the film.

3,873,210
OPTICAL DEVICE FOR VEHICULAR DOCKING

John P. Konopka, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 28, 1974, Ser. No. 455,647

Int. Cl. G01b *11/26;* **G02b** *27/00*

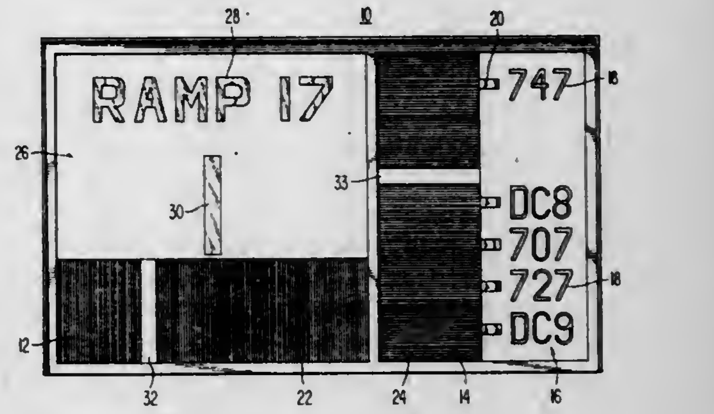
U.S. Cl. 356—138 **11 Claims**

1. An optical device for providing a visual display for guiding a moving observer along a prescribed path of travel comprising:

a lens system comprised of an array of cylindrically ribbed lenticulars, each lens of said array having a center line and one of said lenses being a central lens of said array, and having its aperture oriented toward said observer,

a field member having a plurality of translucent slits each of said slits having a longitudinal center line, said slits being separated from one another by opaque sections, said field member being positioned substantially at the focal plane of said lenticular array, at least one of said translucent slits being associated with each lenticular lens of said array, the longitudinal center line of the slit associated with the central lens of the array being aligned with the center line thereof, each of the other slits being displaced from the respective center line of the lens with which it is associated, said displacement being in direct proportion to the distance of the latter lens from the center of the array, and

a light source positioned with respect to said field member to provide for back-lighting of said translucent slits.



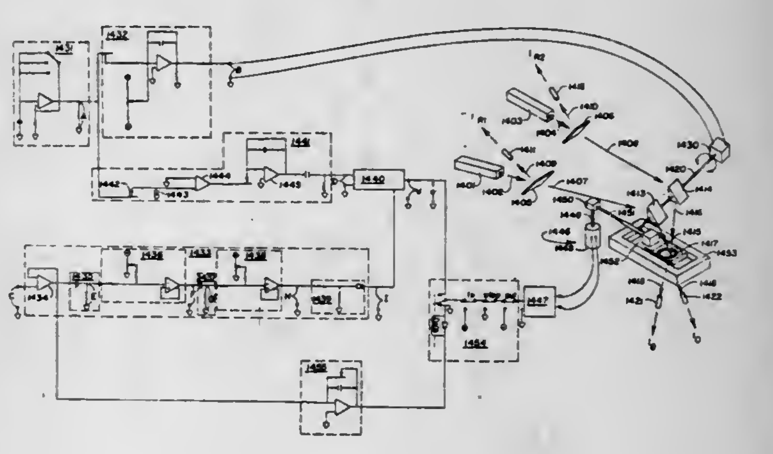
3,873,211
HOLE MEASURER CONTROLLER

Robert L. Watson, Bluff City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,920

Int. Cl. G01b *11/00*

U.S. Cl. 356—156 **8 Claims**



1. In a method of measuring both the length and the diameter of a capillary of an orifice in a spinneret comprising

1. rotating about its axis a spinneret having a plurality of orifices disposed in a circle substantially concentric to the axis of the spinneret, at least a portion of each orifice defining a right cylinder capillary passageway,
2. generating first and second laser beam, each beam having a size larger than the size of the capillary,
3. optically dividing the first laser beam into a first reference laser beam and a first measurement laser beam,
4. optically dividing the second laser beam into a second reference laser beam and a second measurement laser beam,

5. optically positioning the first measurement laser beam substantially parallel to the axis of the spinneret and upon an orifice in such a manner that the beam entirely covers the orifice and a portion of the beam passes through the capillary of the orifice,
6. optically positioning the second measurement laser beam at a predetermined angle with regard to the axis of the spinneret and upon the orifice in such a manner that the beam entirely covers the orifice and a position of the beam passes through the capillary of the orifice,
7. optically radially oscillating the first and second measurement laser beams across the circle defined by the centers of the plurality of orifices, the radial oscillation being at a suitable rate to allow the portion of the first and second beams to substantially simultaneously pass through the capillary of the orifice on at least three consecutive oscillations,
8. sensing the quantity and the nonuniform character of energy in a portion of the first measurement laser beam passed through the capillary of the orifice by photoelectrically converting the light energy of the portion of the beam into a first measurement electrical signal having an oscillatory voltage reflective of the magnitude and nonuniform character of the sensed energy.
9. sensing the quantity and the nonuniform character of energy in the portion of the second measurement laser beam passed through the capillary of the orifice by photoelectrically converting the light energy of the portion of the beam into a second measurement electrical signal having an oscillatory voltage reflective of the magnitude and nonuniform character of the sensed energy,
10. sensing the nonuniform character of the energy in the first reference laser beam and generating a first reference electrical signal having a voltage reflective of the nonuniform character of the sensed energy,
11. sensing the nonuniform character of the energy in the portion of the second reference laser beam and generating a second reference electrical signal having a voltage reflective of the nonuniform character of the sensed energy,
12. electrically dividing the voltage of the first measurement electrical signal by the voltage of the first reference electrical signal, and generating a third electrical signal having an oscillatory uniform voltage reflective of the magnitude of the division,
13. electrically dividing the voltage of the second measurement electrical signal by the voltage of the second reference electrical signal and generating a fourth electrical signal having an oscillatory uniform voltage reflective of the magnitude of the division.
14. sensing the maximum amplitude of the oscillating voltage of the third electrical signal and generating a fifth electrical signal having a voltage which is substantially constant and equal to the amplitude of the maximum voltage oscillation of the third signal,
15. correlating the diameter of the capillary in terms of a predetermined constant multiplied by the square root of the value of the voltage of the fifth electrical signal,
16. electrically determining the diameter of the capillary by determining the square root of the value of the voltage of the fifth electrical signal and multiplying the determined value of the square root of the voltage by the predetermined constant and generating a sixth electrical signal having a voltage reflective of the magnitude of the diametr of the capillary,
17. electrically generating a seventh visually displayable signal which is the value of the diameter of the capillary,
18. visually displaying the seventh signal which is the value of the diameter of the capillary,
19. electrically comparing the voltage of the sixth electrical signal with maximum and minimum voltages reflective of maximum and minimum permissible values for the diameter of the capillary,
20. electrically generating a visually displayed reject signal when the voltage of the sixth signal is either more than the maximum voltage or less than the minimum voltage, and
21. visually displaying the reject signal in correlation with the visual display of the seventh signal which is the value of the diameter of the capillary,
22. sensing the maximum amplitude of the oscillating voltage of the fourth electrical signal and generating an eighth electrical signal having a voltage which is substantially constant and equal to the amplitude of the maximum voltage oscillation of the fourth signal,
23. electrically determining the ratio of the eighth electrical signal to the fifth electrical signal by dividing the voltage of the eight signal by the voltage of the fifth signal and generating a ninth electrical signal having a voltage reflective of the magnitude of the ratio,
24. mathematically correlating the ratio of the length of the capillary to the diameter of the capillary in terms of a linear approximation of the ratio of the eighth electrical signal to the fifth electrical signal and the predetermined angle of the second measurement laser beam with regard to the axis of the spinneret,
25. electrically determining the ratio of the length of the capillary to the diameter of the capillary by adding a predetermined voltage to the product of the multiplication of the voltage of the ninth electrical signal by a predetermined value and generating a tenth electrical signal having a voltage reflective of the magnitude of the ratio of the length of the capillary to the diameter of the capillary,
26. electrically determining the length of the capillary by multiplying the voltage of the tenth electrical signal by a value selected from the group consisting of a value reflective of the nominal diameter of the capillary and a value reflective of the electrically determined diameter of the capillary and generating an eleventh electrical signal reflective of the magnitude of the length of the capillary,
27. electrically generating a twelfth visually displayable signal which is the value of the length of the capillary,
28. visually displaying the twelfth signal which is the value of the length of the capillary,
29. electrically comparing the voltage of the eleventh electrical signal with maximum and minimum voltages reflective of maximum and minimum permissible values for the length of the capillary,
30. electrically generating a visually displayable reject signal when the voltage of the eleventh signal is either more than the maximum voltage or less than the minimum voltage, and
31. visually displaying the reject signal in correlation with the visual display of the twelfth signal which is the value of the length of the capillary,

the invention which is a method of control comprising

A. generating a first periodic signal having a voltage directly proportional to time,
B. responsive to the first periodic signal, periodically optically radially oscillating the first and second measurement laser beams across the circle defined by the centers of the plurality of orifices so as to position the first measurement laser beam at an angle with regard to the axis of the capillary that is proportional to the value of the voltage of the first periodic signal,
C. generating a periodic sampling signal having a sampling period of predetermined duration, the sampling period corresponding in time to the maximum amplitude of the third electrical signal,
D. sensing the value of th voltage of the first periodic signal during the sampling period of the periodic sampling signal,
E. generating an error signal reflective of the magnitude of the sensed voltage of the first periodic signal during the sampling period of the periodic sampling signal, and
F. radially translating the rotating spinneret at a rate reflective of the magnitude of the error signal.

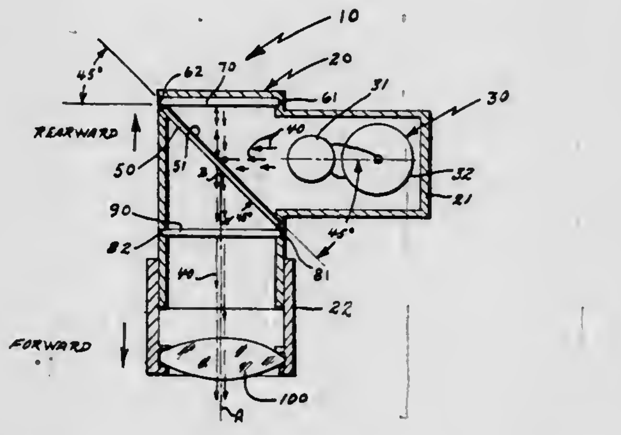
3,873,212
OPTICAL COMPARATOR

Forney L. Shell, Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Jan. 20, 1972, Ser. No. 219,459

Int. Cl. G01b *11/24*

U.S. Cl. 356—168 **1 Claim**



1. An optical comparator for comparing two objects, an opaque one and a transparent one, by permitting the magnification, and the direct and simultaneous viewing, in superimposition, of the two objects which are in geometric alignment comprising:

a. a source of light, with said source emitting a beam of light;
b. a fixedly positioned beam splitter, so disposed that said beam of emitted light impinges upon it at an angle of 45°, with said beam splitter having an anti-glare coating on the surface upon which said beam of light impinges, and with said beamsplitter reflecting rearwardly said impinging beam of light;
c. means, rearward of said beam splitter, for removably holding and supporting the opaque object to be compared at an angle of 45° to, and in optical alignment with, said beam splitter, and in a plane perpendicular to the beam of light reflected by said beam splitter;
d. means, forward of said beam splitter, for removably holding and supporting the transparent object to be compared at an angle of 45° to, and in optical alignment with, said beam splitter, and in a plane parallel to the plane of the opaque object to be compared;
e. a magnifying lens, adjustable for focusing and viewing, which is disposed forward of said means for removably holding and supporting the transparent object to be compared, with said magnifying lens having an optical axis which is at 45° to, and in optical alignment with, said beam splitter;
f. and, a housing to contain said source of light, said beam splitter, said means for removably holding and supporting the opaque object to be compared, said means for removably holding and supporting the transparent object to be compared, and said magnifying lens;

whereby when the opaque object and the transparent object are positioned in their respective holding and supporting means, the opaque object, said beam splitter, the transparent object, and the magnifying lens are in optical alignment, and the opaque object and the transparent object are in geometric alignment, and the light reflected rearwardly by said beam splitter impinges upon, front lights, and illuminates the opaque object, and is then reflected by the opaque object forwardly to said beam splitter which transmits forwardly the light reflected by the opaque object, with the forwardly reflected light impinging upon, back lighting, and illuminating the transparent object, and with the light then passing through the transparent object and impinging upon said magnifying lens, thereby permitting the magnification, and the direct and simultaneous viewing, in superimposition and, therefore, a comparison, of the opaque object and of the transparent object, through said magnifying lens.

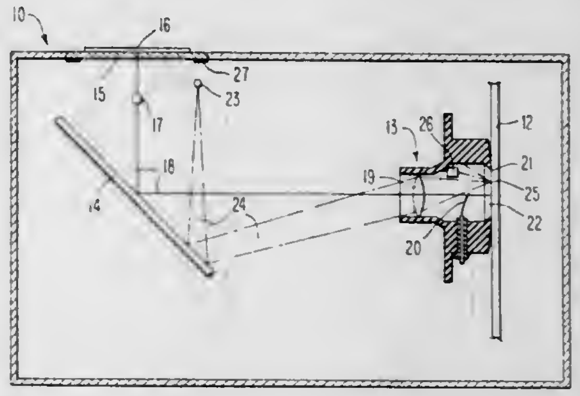
3,873,213
METHOD AND APPARATUS FOR DETECTING DATA ON A PHOTOGRAPHIC RECORDING MEDIUM

John David Plumadorf, Westfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Filed Apr. 8, 1974, Ser. No. 459,197

Int. Cl. G01n *21/48;* **G03b** *27/52*

U.S. Cl. 356—209 **11 Claims**



1. In an apparatus for selectively imaging discrete frames on a photographic recording medium having a plurality of frames thereon and upon which imaging is accomplished by projecting an illuminated image from a document through a lens and onto the selected frame on the photographic recording medium, an exposed-frame detector comprising:

signal-light projection means for projecting light to a predetermined position on each frame of the photographic recording medium;
signal-light detection means positioned to receive the signal light leaving the photographic recording medium and for detecting the magnitude of the signal light leaving the photographic recording medium; and
means within the apparatus for causing the predetermined position of each frame to change its optical properties upon developing an image on the frame, whereby the magnitude of the signal light received be the signal-light detection means is reduced.

3,873,214
X-Y MEASURING APPARATUS

Warren Childers, and David L. Zipps, both of Houston, Tex., assignors to Graphic Arts Mfg. Co., Inc., Houston, Tex.

Filed Jan. 29, 1973, Ser. No. 327,827

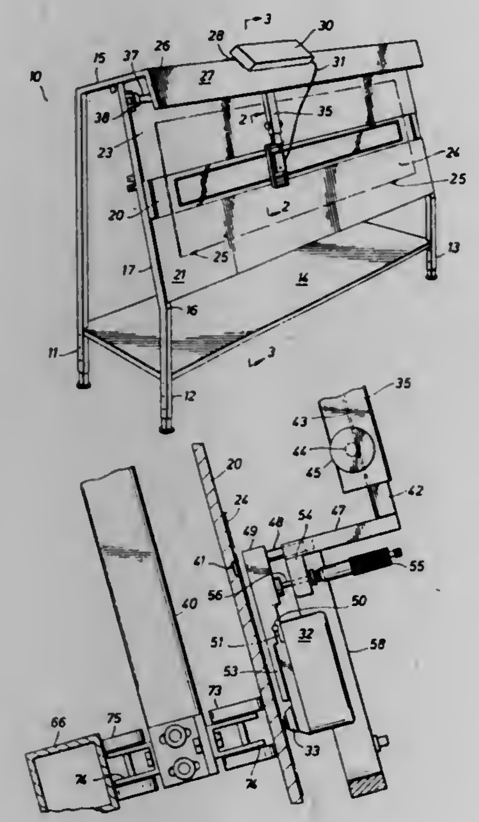
Int. Cl. G01j *1/00*

U.S. Cl. 356—213 **12 Claims**

1. An X-Y monitoring table, comprising:

a working surface having two sides on which measurements are made at locations which can be represented by a two coordinate designation of a specimen placed thereon;
a guide parallel to said working surface;
a U-shaped means having
  a first arm on one side of said working surface;
  a second arm on the other side of said working surface;
    an additional side in said U-shaped means joining said arms together;
journal means carried by said U-shaped means for movement along said guide;
means for positioning said second arm at a fixed distance relative to said working surface, said second arm positioning said first arm at a fixed elevation above said working surface; and,
a detection means carried by said U-shaped means by said arm adjacent to the specimen for obtaining a measurement of optical density at a two coordinate designated location on the specimen;

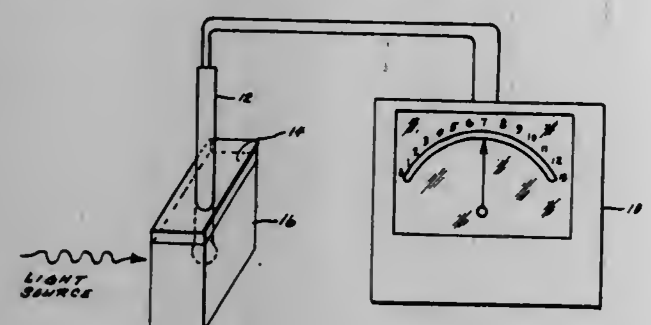
a framework having a pair of elongate, lengthwise members;
a plurality of positioning means on said framework members at multiple points and cooperative by supporting said working surface, said positioning means including



a tab on each of said members;
a shaft associated with each tab and extending from said working surface through each of said tabs; and,
means engaging said working surface to move said shaft selectively toward said tab and thereby move said working surface to a desired position.

3,873,215
RADIOMETER

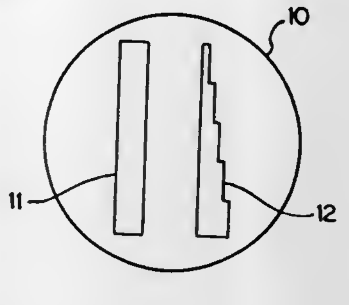
Kenneth P. Quinlan, Newton, Mass., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.
Filed Sept. 20, 1973, Ser. No. 399,011
Int. Cl. G01j *1/42; C07c 49/62*
U.S. Cl. 356—218 **4 Claims**



1. A system for detecting and measuring radiant electromagnetic energy comprising a means containing a light sensitive solution composed of a solvent mixture of a porphyrin and a quinone and a means for measuring pH including a glass electrode positioned within and in contact with said light sensitive solution.

3,873,216
CALIBRATION OF PHOTOELECTRIC SCANNER FOR ANALYTICAL ULTRACENTRIFUGE

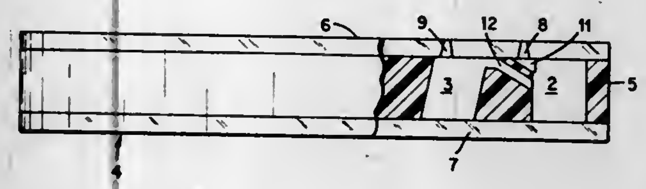
Lee Gropper, Los Altos Hills, and Walter W. Thurber, San Jose, both of Calif., assignors to Beckman Instruments, Inc., Sullerton, Calif.
Filed Mar. 19, 1973, Ser. No. 342,470
Int. Cl. G01j *1/02*
U.S. Cl. 356—243 **4 Claims**



1. A method of absolute calibration of a photoelectric scanner associated with an analytical ultracentrifuge, the ultracentrifuge having a rotor into which a sample cell having a centerpiece containing sample solution is normally inserted, and the scanner having a slit for receiving ultraviolet light, the slit being stationary with respect to the direction of rotation of the rotor and movable in the radial direction of the rotor, which method comprises
inserting into the rotor a sample cell having, in place of the centerpiece, a disc having two slits, one slit having substantially uniform width, the other slit having stepwise graduated width, the length of each step being greater than the width of the slit of the scanner,
rotating the sample cell in the ultracentrifuge,
passing ultraviolet light through the rotating sample cell,
moving the slit of the scanner radially with respect to the rotor,
receiving and processing in the scanner light passing through the cell to produce electrical signals representative of the differences in the intensity of the light transmitted by the slits of the disc,
recording the electrical signals, and
comparing the value of the electrical signals with the corresponding differences in width between the two slits of the disc.

3,873,217
SIMPLIFIED ROTOR FOR FAST ANALYZER OF ROTARY CUVETTE TYPE

Norman G. Anderson, Oak Ridge, and Damous D. Willis, Clinton, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed July 24, 1973, Ser. No. 382,240
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **8 Claims**

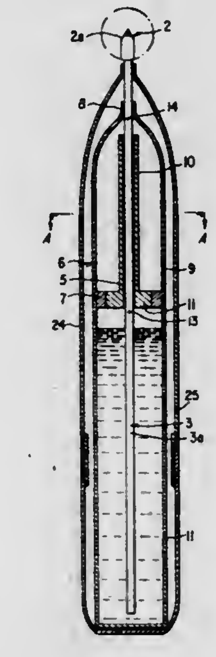


1. An improved rotor for use in a fast photometric analyzer of the rotary cuvette type comprising a disk-shaped member of laminated construction with a central opaque disk sandwiched between top and bottom transparent walls, said disk-shaped member defining:
a. circular array of sample analysis cuvettes extending through said central opaque disk for receiving and holding samples and reagents for photometric analysis;

b. a circular array of outwardly and downwardly extending ramps defining cuvette loading passageways, each of said ramps being in communication with the top end of the centripetal side of a respective cuvette in said array of sample analysis cuvettes;
c. a circular array of first loading apertures extending through said top transparent wall in axial register and liquid communication with respective ramps in said circular array of ramps for facilitating the static loading of liquid in said cuvettes; and
d. means for dynamically injecting liquids into said sample analysis cuvettes.

3,873,218
WRITING INSTRUMENT FOR LOW-VISCOUS INK WITHOUT AN ABSORBING FIBROUS BUNDLE

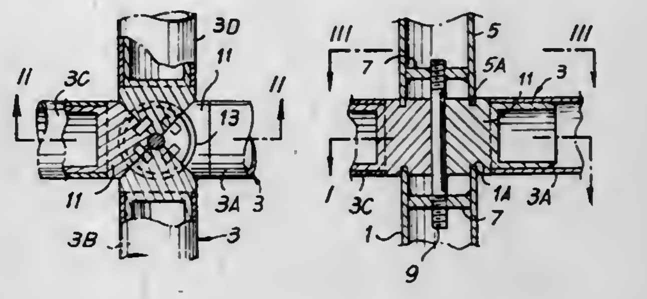
Kisaburo Yoshida, Osaka, Japan, assignor to Kabushiki Kaisha Sakurakurepasu, Osaka, Japan
Filed Apr. 3, 1973, Ser. No. 347,465
Claims priority, application Japan, Apr. 26, 1972, 47-42508
Int. Cl. B43k *5/00*
U.S. Cl. 401—292 **7 Claims**



1. A writing instrument for low-viscous ink comprising a pen tip, a reservoir containing said ink without employing an ink absorbing fibrous bundle, an ink feeding conduit extending from said pen tip into said reservoir to its rear portion and having an inner ink passageway extending throughout the entire length thereof, said conduit having in its peripheral wall a port positioned in the front end of said reservoir and permitting said ink passageway to communicate with the interior of said reservoir, an air admission inside tube covering said conduit and forming an annular air passage between the inner peripheral surface of said air admission inside tube and the outer peripheral surface of said conduit which annular passage permits capillary action therein, an air admission outside tube covering both said conduit and said inside tube and being closed at its opposite ends so that a sufficiently large space is formed between said inside and outside tubes to prevent ink from being drawn by capillary action from the front portion of said outside tube toward its rear portion, said air admission outside tube having in its rear portion an air port for permitting the interior of said air admission outside tube to communicate with the atmosphere, said annular air passage having a front end open to the front portion of said outside tube and a rear end open to the front end of said reservoir, whereby the ink in said reservoir is rendered replaceable by air.

3,873,219
DEMOUNTABLE STRUCTURE

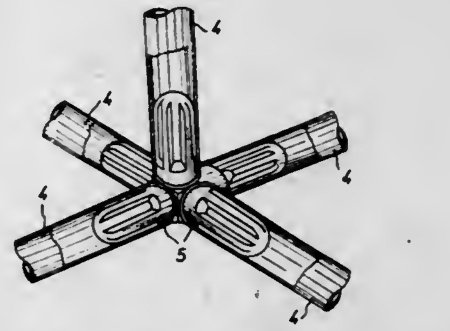
Giancarlo Pofferi, Via Chilone 14, I-00124 Casalpalocco, Rome, Italy
Filed Oct. 31, 1972, Ser. No. 302,403
Int. Cl. F16b *7/00*
U.S. Cl. 403—171 **6 Claims**



1. A demountable supporting structure comprising a plurality of connection members, each of which includes an internal partition defining a threaded opening therein and an edge portion having a frusto-conical inner surface that is circular in cross-section about an axis of said connection member, a plurality of connection elements interposed between and intersecting the connection members, said connection elements having frusto-conical annular walls engaged by said inner surfaces, each connection element being formed by a plurality of segments adjoining each other along angularly displaced surfaces directed radially of said axis said surfaces carrying respective projections and recesses by which the segments are interlocked, and screw means extending transversely from the connection elements and axially into the connection members for threadedly engaging the partitions therein whereby the connection members can be secured to the connection elements and stiffened by a rotational force applied externally to said connection members.

3,873,220
TUBE JOINT

Mikio Kashiwabara, Tokyo, Japan, assignor to Nihon Space Union Co., Ltd., Tokyo, Japan
Filed Jan. 23, 1973, Ser. No. 326,004
Claims priority, application Japan, Feb. 17, 1972, 47-18909
Int. Cl. F16b *7/00*
U.S. Cl. 403—172 **9 Claims**



1. A joint made of metal and adapted to be connected to a plurality of round pipes consisting essentially of a plurality of joint rods, means for connecting said joint rods at their root ends so that their longitudinal axes interesect and for forming a shoulder for said pipes to abut against, a knurling tool connected to each of said joint rods near their root ends, each of said joint rods and said knurling tools having a round shape in transverse crosssection, said knurling tools extending in the longitudinal direction of said joint rods, said joint rods and said knurling tools at the point of connection to said joint rods each having a diameter which is at least equal to the inner diameter of said pipe and said knurling tools being tapered in the longitudinal direction of said joint rods, each of said knurling tools being adapted to fit inside of said pipes and the root

ends of said knurling tools and of each of said joint rods being adapted to snugly engage said pipes.

3,873,221
FRAME JOINT

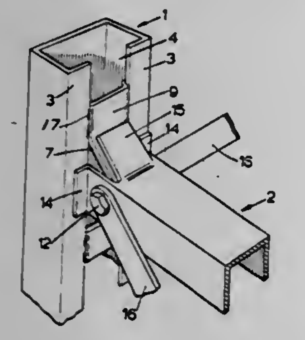
Gordon Stewart Greenfield, Sutton Coldfield, England, assignor to Steel Equipment Company Limited, West Bromwich, Staffordshire, England

Filed Oct. 10, 1973, Ser. No. 405,245

Claims priority, application United Kingdom, Oct. 12, 1972, 47007/72

Int. Cl. F16b *11/00, 12/04*

U.S. Cl. 403—189 **11 Claims**



1. A connector for securing together two structural members comprising a first structural member having a C-shaped channel section with an inwardly directed flange on each side of, and in the plane of, the channel section opening, and a second structural member having a simple channel section consisting of a web joining two spaced side portions, comprising in combination, a sheet metal member having two end portions which lie in a common plane interconnected by a central portion which extends to one side of said common plane so as to define an aperture with said common plane, means for connecting said end portions which lie in a common plane to the inwardly directed flanges in the plane of the first structural member channel opening, said second structural member side portions each having an aperture formed therein for receiving a pin-like member whereby said side portion apertures will be aligned with the aperture defined by the sheet metal member upon juxtopositioning of the structural members together for securement together by the said pin-like member.

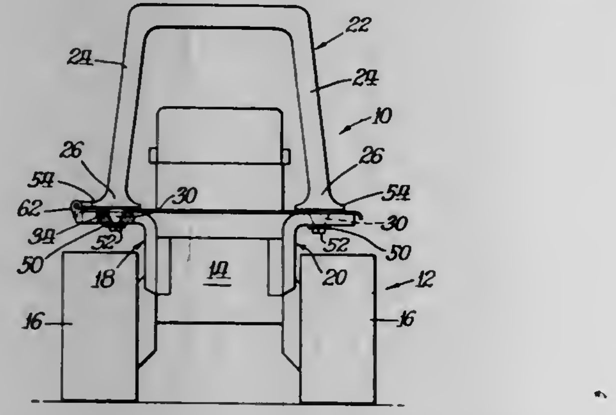
3,873,222
ROLL-OVER PROTECTIVE STRUCTURE MOUNTING

John H. Babbit, Jr., Peoria, and John D. Wait, Jr., Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 5, 1973, Ser. No. 338,218

Int. Cl. F16b *21/00*

U.S. Cl. 403—253 **8 Claims**



1. Mounting apparatus for interconnecting first and second body members comprising:

an extended member fixed relative to and extending from the first body member and terminating in an extended end;

socket means fixed relativee to the second body member and defining a bore sized to allow penetration of the extended member therein;

means associated with the extended member and socket means for (i) limiting penetration of the extended member into the bore after a degree of penetration therein and (ii) transferring a load placed on the extended member in the approximate direction of the extended end thereof to the socket means; and

means removably securable on the extended end of the extended member with the extended member penetrating into the bore, for fixing the extended member relative to the socket means.

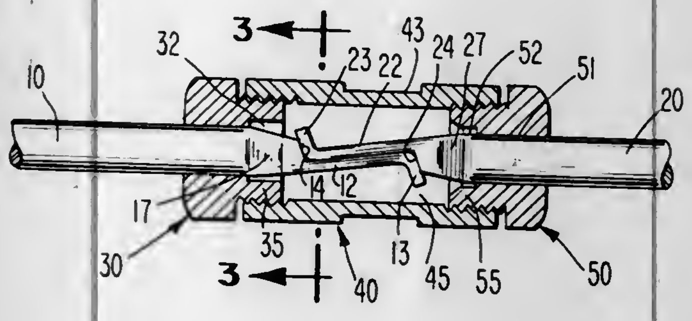
3,873,223
COUPLING MEANS FOR SEWER ROD

Charles B. Caperton, 52 Pitney Ave., Springlake, N.J. 07762

Continuation-in-part of Ser. No. 336,928, March 1, 1973, Pat. No. 3,814,529. This application Apr. 2, 1974, Ser. No. 457,191The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl. F16b *7/18*

U.S. Cl. 403—341 **4 Claims**



1. In combination:

a. first and second cylindrical metal rod sections,

a-1. each rod section having its end portions flattened and spread to form shoulders at the junction of the end portion with the cylindrical portion of said rod section;

a-2. each rod section having its flattened end portion inclined downwardly and upwardly along the center axis of the rod section, the flattened end portion of the second rod section being inverted relative to the flattened end portion of the first rod section and interfitted therewith in overlapping manner;

b. coupling means for connecting said interfitted rod sections axially together in overlapping manner for transmitting axial and torsional forces from one rod section to an adjacent rod section without substantial loss, said coupling means comprising:

b-1. first, second and third coupler elements;

b-2. said first coupler element having an externally threaded shank having an internal recess, said shank having shoulders at its inward end for bearing against said shoulders of said first rod section;

b-3. said second coupler element being internally threaded at both ends, and adapted at one end to be screwed onto the shank of said first coupler element, said second coupler element having a center recess having a cross-sectional dimension corresponding to that of the flattened and spread end portions of said rod sections;

b-4. said third coupler element having an externally threaded shank adapted to be screwed into the other end of said second coupler element, said shank having an internal shoulder for abutting against the shoulders of said second rod section.

3,873,224
KEY RECEIVABLE IN A T-GROOVE OF A SUPPORT

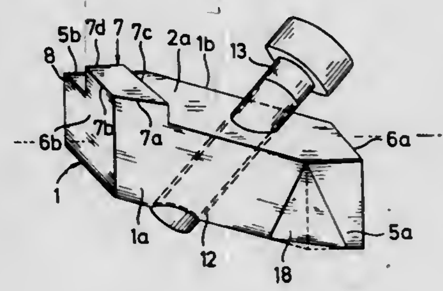
Helmut Letzel, Cologne, and Wolfgang Letzel, Porz-Eil, both of Germany, assignors to Jakob Wollenhaupt Werkmittel, K. G., Cologne-Holweide, Germany

Filed June 6, 1974, Ser. No. 477,088

Claims priority, application Germany, June 9, 1973, 2329640

Int. Cl. F16d *1/06*

U.S. Cl. 403—381 **9 Claims**



1. A key receivable in a T-groove of a support for securing an object to the latter, comprising an elongated body having a longitudinal axis and two spaced parallel end faces extending transversely to said axis, a pair of side faces each including a first side face portion extending longitudinally of said body from one of said end faces part of the distance towards the other end face and a second side face portion extending from said first side face portion to said other end face, said first side face portions extending parallel to said longitudinal axis and being transversely spaced by a distance smaller than the narrowest dimension of a T-groove into which said body is to be inserted, and said second side face portion being inclined from the respective first side face portions in direction towards said longitudinal axis, and an upper face having in the region of said end faces respective upper face portions which are located at opposite sides of said longitudinal axis and which are adapted to engage from below the respective opposite shoulders bounding said narrowest dimension of said T-groove; and arresting means for arresting said body in said T-groove.

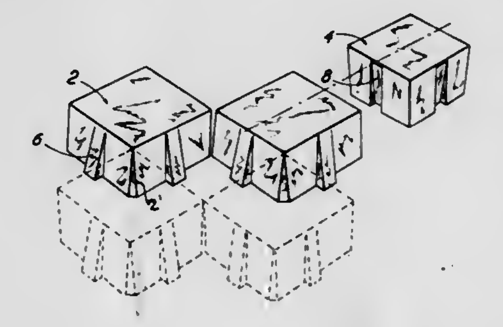
3,873,225
PAVING STONES

Karna Jakobsen, and Otto Maurus Jakobsen, both of Sdr. Ringvej 8, Silkeborg, Denmark

Filed Sept. 5, 1972, Ser. No. 286,323

Int. Cl. E01c *5/00*

U.S. Cl. 404—41 **5 Claims**



1. A paving stone arrangement comprising: a first and second type of stone, said stones of both types having top surfaces of substantially similar configuration, each stone of said first type having a plurality of side surfaces tapering exclusively inwardly and downwardly from the top surface thereof, at least one of said side surfaces of each stone of said first type being shaped with a substantially vertically extending groove, said substantially vertically extending groove having a depth which is largest adjacent the bottom surface of the stone and which is gradually reduced toward the top surface of the stone leaving the top surface of the stone unbroken, each stone of said second type having a plurality of side surfaces tapering exclusively outwardly and downwardly from said top surface thereof, at least one of said side surfaces of each stone of said second type being provided with a substantially vertically extending tongue-like projection received in one of said grooves of a neighboring stone of said first type, said tongue-like projections having a maximum protrusion at a base surface disposed adjacent the bottom surface of the stones of said second type and gradually diminishing toward the top surface of the stones leaving said top surface unbroken.

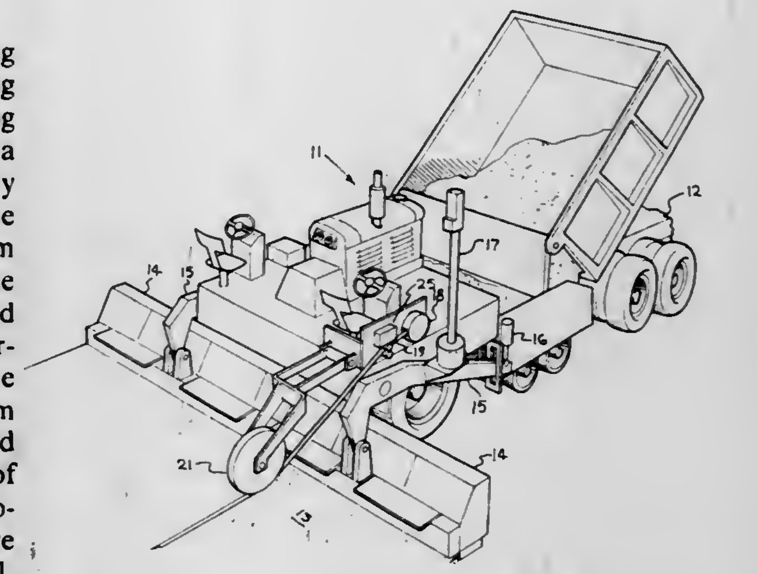
3,873,226
LASER BEAM CONTROL SYSTEM FOR ROAD PAVING MACHINES

Ted L. Teach, Springfield, Ohio, assignor to Laserplane Corporation, Dayton, Ohio

Filed July 11, 1973, Ser. No. 378,171

Int. Cl. E01c *19/00*

U.S. Cl. 404—84 **8 Claims**



1. Apparatus for controlling the vertical height of a vertically adjustable working tool of a mobile earth-working machine, said apparatus comprising, in combination:

means for sensing the elevation of a laser beam periodically moving in a pre-determined substantially horizontal plane;

control means responsive to said laser beam for maintaining a pre-determined vertical relationship between said plane and the vertical height of said tool; and

adjustment means for changing said pre-determined relationship at pre-determined locations along the intended path of travel of the said machine, said adjustment means comprising:

1. means on the machine for dispensing an indicia bearing tape measuring the distance traveled by said machine as said machine moves along its path of travel, and
2. reader means responsive to said indicia and operatively associated with said control means for changing said predetermined relationship as a function of the distance traveled by said machine.

3,873,227
PAVING CRACK SEALER MACHINE

Robert L. Goethe, Tampa, Fla., and Robert R. Green, Kansas City, Mo., assignors to Crestmark Products Company Incorporated, Kansas City, Kans.

Continuation-in-part of Ser. No. 224,482, Feb. 8, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,097

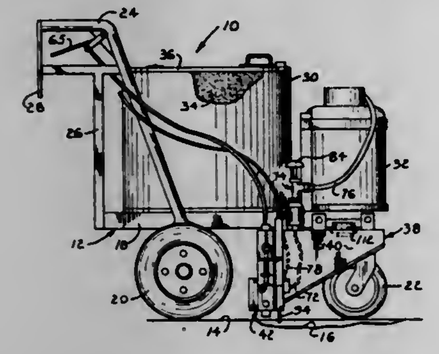
Int. Cl. E01c *23/02*

U.S. Cl. 404—107 **12 Claims**

1. Apparatus for delivering a fluid material to a crack in a surface for filling the crack, said apparatus comprising:

a vehicle adapted to be moved over the surface along the crack;

- a source of said fluid material carried by said vehicle;
- crack follower structure mounted on said vehicle and adapted to extend down into said crack;
- said structure being mounted for pivotal movement about horizontal and vertical axes while precluding movement other than about said axes;
- means coupled with said structure and said vehicle for biasing said structure against movement about either of said axes while yielding under force to allow said movement; and

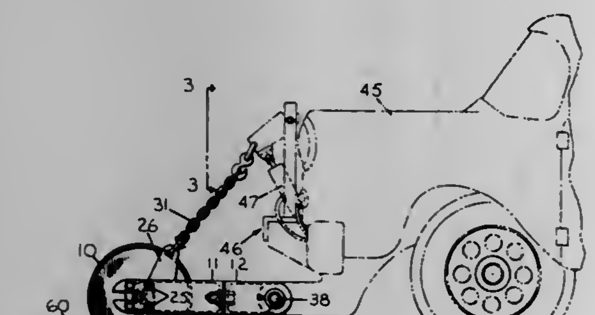


- conduit structure coupled with said source for receiving material therefrom,
- said conduit structure including means presenting an outlet opening adjacent said crack follower structure and in rearwardly spaced relationship thereto relative to the direction of travel of the vehicle, the means presenting said outlet opening being coupled with the crack follower structure for movement along the path of the crack as the vehicle moves over the surface.

3,873,228
STREET ROLLER

Richard Dunham, R.F.D. 2, Old Southbridge Rd., Dudley, Mass. 01570

Filed Aug. 31, 1973, Ser. No. 393,643
Int. Cl. E01c *19/26*
U.S. Cl. 404—128 4 Claims



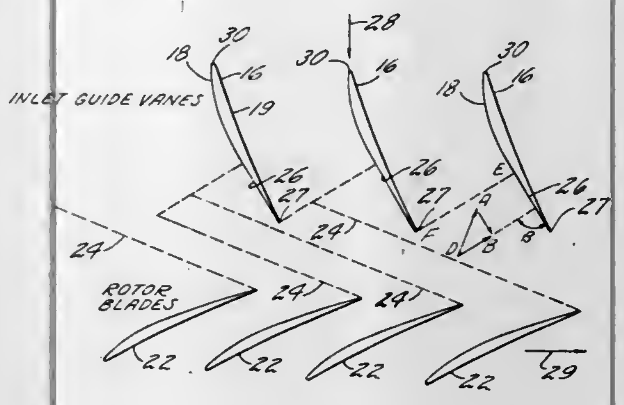
1. A roller attachment for snowplow frames adapting a conventional snowplow frame mounted on the front of a road maintenance vehicle to accept a roller for packing and smoothing pavement patches and the like comprising:

- a. a roller;
- b. a first U-shaped frame in which the legs of the "U" carry bearings at their ends rotatably supporting said roller;
- c. a second U-shaped frame extending in a substantially common plane with said first U-shaped frame (connected) and adjacently coupled back-to-back with said first U-shaped frame by a pivot pin aligned perpendicular to the axis of said roller in said common plane, the legs of said second U-shaped frame having holes arranged to align with matching holes in the bottom support of a snowplow frame so as to receive an interlocking pin; (and,)
- d. at least one interlocking pin for passing through the holes in said second U-shaped frame and said matching holes; and,
- e. connectors mounted on the legs of said first U-shaped frame for connection of flexible lifting means to a hydraulic lift device on said snowplow frame, all whereby said first U-shaped frame supporting said roller has freedom of movement around two mutually perpendicular axes and may be raised and lowered hydraulically.

3,873,229
INLET GUIDE VANE CONFIGURATION FOR NOISE CONTROL OF SUPERSONIC FAN

Alojzy Antoni Mikolajczak, Farmington, and Robert Alfred Arnoldi, West Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,871
Int. Cl. F01d *5/10;* F04d *21/00*
U.S. Cl. 415—119 6 Claims

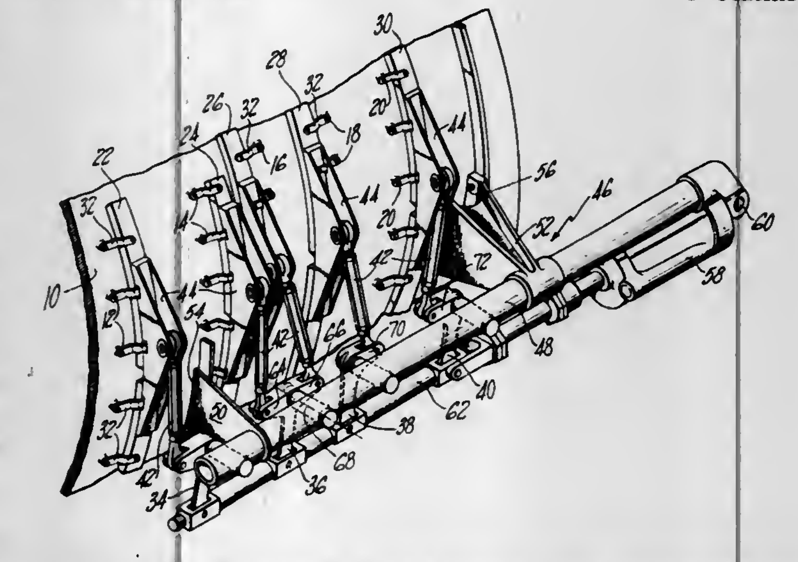


1. In combination in a gas turbine engine, a casing, a row of stationary inlet guide vanes disposed therein, a supersonic rotor disposed downstream and adjacent said row of guide vanes, each of said guide vanes including a surface facing in a direction opposed to the direction of rotation of said rotor, said surface including a reflecting surface, the chord length of said vanes at each radial location along the span of said reflecting surface being longer than the length of said reflecting surface at said respective radial locations, and a tangent line to each point on said reflecting surface forming a downstream angle of at least 90° with a line parallel to the direction of noise propagation at each respective point on said reflecting surface.

3,873,230
STATOR VANE ACTUATING MECHANISM

James Reynolds Norris, Bolton, and Frederick Mathew Pendoley, Canton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 10, 1974, Ser. No. 459,836
Int. Cl. F01d *17/16*
U.S. Cl. 415—162 5 Claims



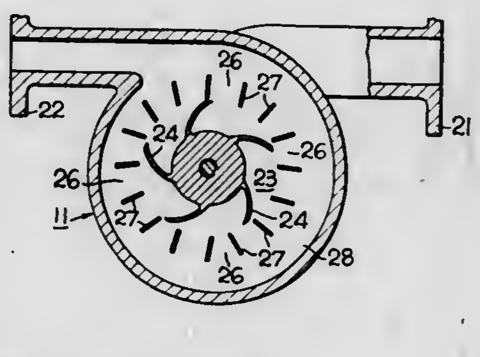
1. In an axial flow gas turbine engine a stator vane actuation system comprising:

- an annular casing;
- a plurality of stages of rotatably mounted stator vanes disposed within said casing, including at least one pair of balanced stages;
- a plurality of first actuating arms connected to the vanes of a first stage of each of said pairs and extending rearwardly therefrom;
- a plurality of second actuating arms connected to the vanes of a second stage of each of said pairs and extending forwardly therefrom;
- a first unison ring for each of said pairs surrounding said casing and disposed rearwardly of the vanes of said first stage of each of said pairs, said first actuating arms being connected thereto;
- a second unison ring for each of said pairs surrounding said casing and disposed forwardly of the vanes of said second stage of each of said pairs, said second actuating arms being connected thereto;
- a bell-crank support assembly including substantially axially extending bell-crank carrier means, said support assembly also including casing connecting means secured to said carrier means and to said casing, and adapted to substantially isolate said carrier means from deflection and axial growth of said casing;
- bell-crank means including a pair of bell-crank arms for each of said pairs of stages, said arms being pivotally connected to said carrier means, one of said pair of bell-crank arms extending forwardly of its pivot point and the other of said pair of bell-crank arms extending rearwardly of its pivot point, one of said pair of bell-crank arms being connected to said first unison ring and the other of said pair of bell-crank arms being connected to said second unison ring; and
- actuation means mounted entirely on said bell-crank support assembly and connected to said bell-crank means and adapted to simultaneously rotate said pairs of bell-crank arms in the same direction thereby rotating said first and second unison rings of each of said pairs of stages in opposite directions to balance the reaction forces transmitted into said carrier means through each of said pairs of bell-crank arms and to effectuate rotation in the same direction of the vanes of each of said pairs of stages.

3,873,231
CENTRIFUGAL PUMP DIFFUSER

Thomas R. Callahan, Milford, Ohio, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 279,978, Aug. 11, 1972, Pat. No. 3,823,063. This application Sept. 13, 1973, Ser. No. 397,080
Int. Cl. F04d *29/44;* F01d *5/16*
U.S. Cl. 415—195 3 Claims



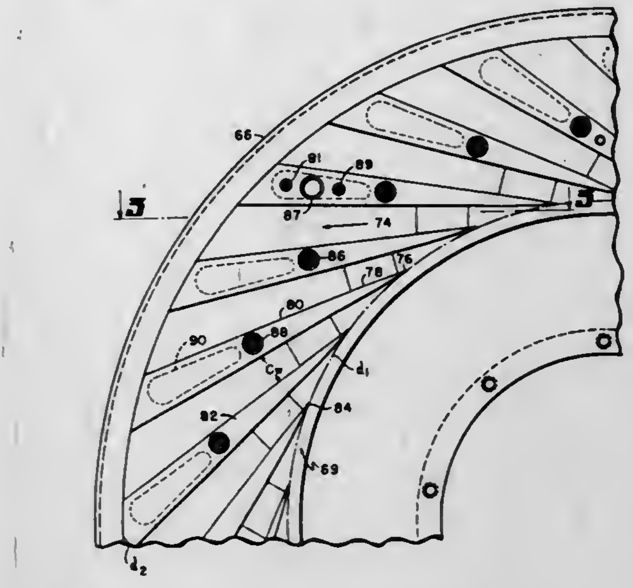
1. A rotary fluid pump comprising;

- walls defining a pumping chamber;
- an impeller rotatably contained within said pumping chamber and having a plurality of substantially radially disposed circularly spaced blades; and
- a plurality of substantially radially disposed circularly spaced vanes located about the periphery of said blades and fixed to said walls the circular distances between points on adjacent vanes defined by the intersection thereof by a pair gradually spaced circles having as their centers the axis of the pump impeller being equal at the outer ends of said vanes and being unequal at the inner ends of said adjacent vanes.

3,873,232
TWO-PIECE CHANNEL DIFFUSER

Wolfgang J. Stein, Milford; Salvatore Straniti, Orange, and John T. Exley, Milford, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,201
Int. Cl. F04d *29/44;* F01d *9/04*
U.S. Cl. 415—207 9 Claims



1. A compressor diffuser for use with a gas turbine engine having a generally annular housing comprising:

- a first annular element having a substantially smooth face defined by an inner and outer diameter, said face being defined by straight-lined elements extending radially from said inner to said outer diameter, said first annular element forming a portion of said housing;
- a second annular element having an inner and outer diameter substantially equal to the inner and outer diameter of the face on said first element, said second annular element abutting the face of said first element, said second element having a plurality of tangentially directed channels extending from the inner to the outer diameter of said second element to form a series of diffuser passages, said passages comprising an inlet throat section having a constant height and width, a first diffusing section having a height and width which expand at a first rate and a second diffusing section having a height and width which expands at a second faster rate, said widths expanding in the downstream portion of the channel whereby said diffuser sections provide an increasing cross-sectional flow area defined by an increasing channel depth and increasing channel width and whereby all of the divergence in the diffuser passageways takes place in said second element.

3,873,233
DOUBLE SLOTTED CIRCULATION CONTROL AIRFOIL

Drew W. Linck, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

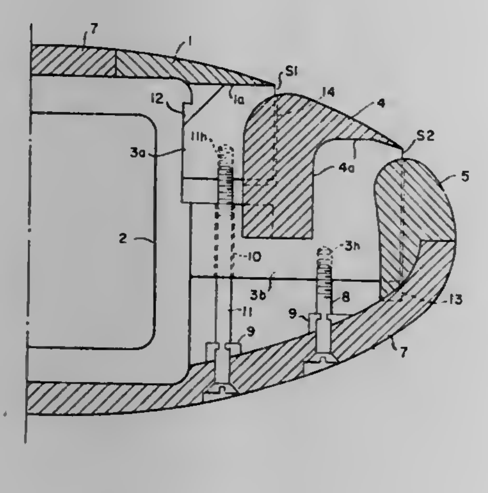
Filed Feb. 19, 1974, Ser. No. 449,573
Int. Cl. B64c *21/08*
U.S. Cl. 416—90 A 4 Claims

1. A multislotted circulation control airfoil comprising:

- a main spar for supporting the multislotted circulation control airfoil;
- a first slot blade attached substantially immovably to said main spar;
- a support rib attached to said main spar;

a second slot blade attached substantially immovably to said support rib;

a sliding support rib attached to said first slot blade and positioned within a groove in said main spar and a groove in said second slot blade;



a blunt trailing edge including a coanda surface

said first slot blade and said second blade forming a first blowing slot; and

said second slot blade and said trailing edge forming a second blowing slot.

3,873,234

TURBINE ROTOR

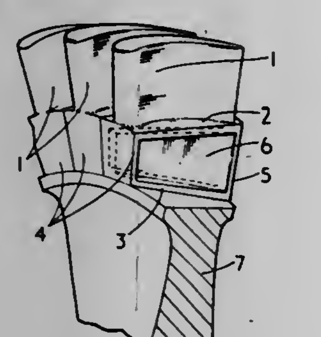
Robert Noel Penny, 12 Alderbrook Rd., Solihull, Warwickshire, England

Filed Nov. 6, 1972, Ser. No. 304,009

Claims priority, application United Kingdom, Nov. 10, 1971, 52133/71

Int. Cl. F01d *5/08*

U.S. Cl. 416—97 **6 Claims**



1. A turbine rotor comprising a hub and a plurality of blades formed separately of the hub and arranged circumferentially around the periphery of the hub, each blade having a root end in the form of a hollow box including a radially-outer wall forming a platform from which the blade extends, a radially-inner wall which abuts the periphery of the hub and is directly attached thereto, and radially-extending walls at each axial end of the box, the box having an internal wall interconnecting the radially-inner and radially-outer walls, and the radially-extending walls at each axial end of the box, thereby dividing the box into two compartments, each open at the relevant circumferentially outer end of the box and at least some of the blades each having at least one passage therein extending from the interior of the box of the root end of the blade through the radially-outer wall forming the platform to a radially-outer part of the blade, the circumferential ends of the box-like roots of adjacent blades being spaced apart circumferentially to form spaces through which coolant can be introduced into the compartments of the box-like roots.

3,873,235

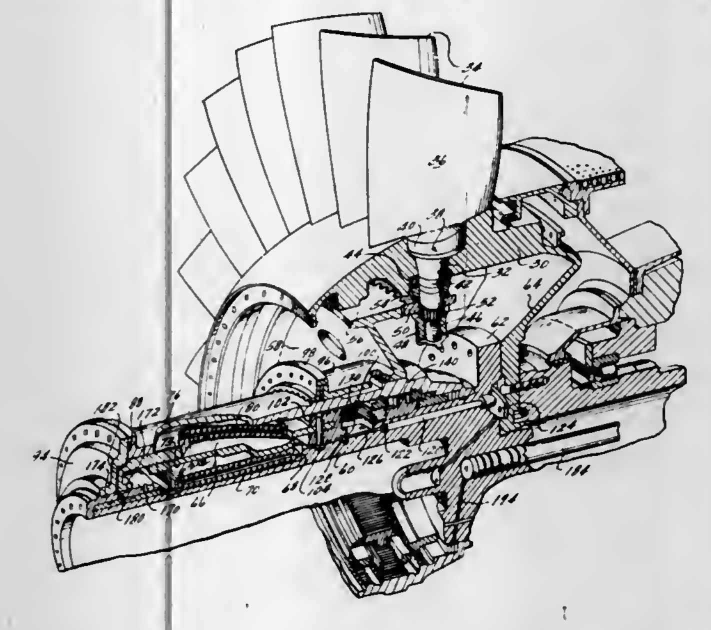
VARIABLE PITCH TURBOFAN ENGINE

Irwin Mendelson, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Oct. 1, 1973, Ser. No. 402,067

Int. Cl. B64c *11/06, 11/30, 11/38*

U.S. Cl. 416—154 **13 Claims**



1. In a turbofan engine of the variety including an annular fan duct, a core engine disposed internally of the fan duct and comprising a compressor, a combustion chamber and a turbine, a variable pitch fan comprising:

a fan disc, generally circular in peripheral shape, rotatable about its longitudinal axis and having a plurality of apertures in its periphery;

a fan blade disposed within said duct and including a shank adapted to penetrate one of said apertures;

bearing means interconnecting said shank and said one aperture and permitting relative rotation therebetween; and

pitch varying means for rotating said shank including:

a shaft coaxial and rotatable with said disc, the shaft secured in a predetermined relationship with the disc;

a sleeve located radially outward of and telescopically receiving the shaft, the sleeve being axially translatable with respect to the shaft;

a casing located radially outward of the sleeve, and telescopically receiving the shaft and the sleeve, the casing being rotatable about the shaft;

first means carried by the casing for rotating said blade shank in response to rotation of the casing about the shaft;

second means cooperating with the sleeve for causing translation of the sleeve in response to a predetermined signal; first recirculating ball spline means disposed between the shaft and the sleeve at a predetermined first helix angle for permitting said sleeve translation; and

second recirculating ball spline means disposed between the sleeve and the casing at a predetermined second helix angle for rotating said casing in response to translation of said sleeve.

3,873,236

FAN WITH VARIABLE PITCH BLADES AND TRANSLATING BEARING ACTUATION SYSTEM

William Gall, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 26, 1973, Ser. No. 428,079

Int. Cl. B64c *11/42*

U.S. Cl. 416—162 **10 Claims**

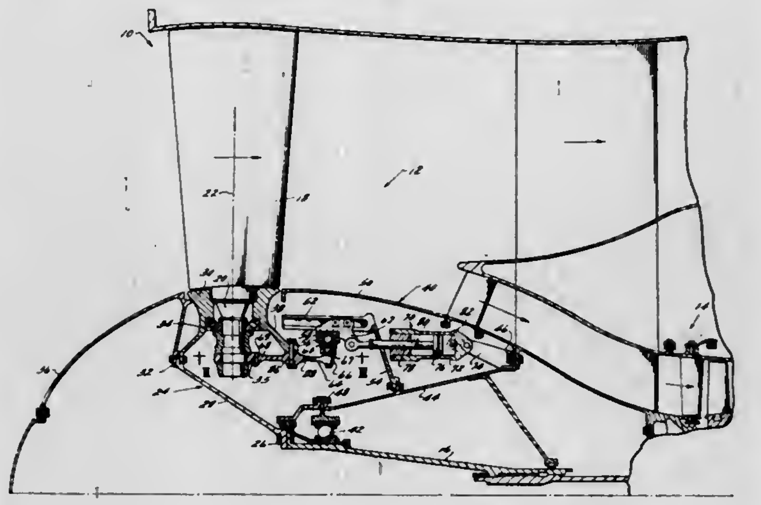
1. A fan of the type used in a gas turbine having a core engine driving the fan through a fan shaft, the fan comprising:

a. a plurality of variable-pitch blades mounted to said fan shaft;

b. an annular casing for mounting said fan shaft for rotation;

c. track means spaced radially from said fan shaft and cooperating with said casing;

d. a bearing cooperating with said track means, wherein said bearing includes a first bearing race axially movable relative to said track means and a second bearing race; and



e. linkage means for cooperating with said second bearing race and said variable-pitch blades wherein said linkage means varies the pitch of said blades in response to axial movement of said first bearing race relative to said track means.

3,873,237

IMPELLER WHEEL FOR TORQUE CONVERTER OR FLUID COUPLING

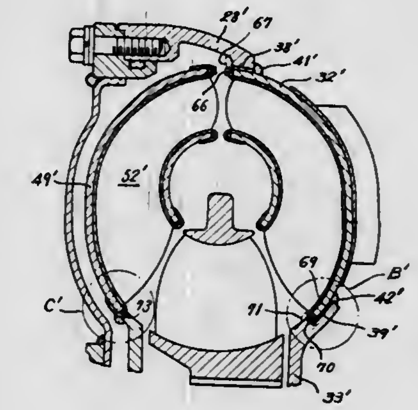
Masayoshi Tokunaga, Takatsuki, Osaka, Japan, assignor to Kabushiki Kaisha Daiken Seisakusho, Neyagawa Osaka, Japan

Filed Dec. 17, 1973, Ser. No. 425,297

Claims priority, application Japan, Dec. 30, 1972, 48-2817

Int. Cl. B21k *3/04*

U.S. Cl. 416—180 **3 Claims**



1. An impeller wheel for torque converter or fluid coupling (**11**) comprising

a shell (**32**); a core ring (**34**); a circular array of circumferentially spaced blades (**35**); and

a support ring member (**28, 33**) connected at at least one of the inner and outer peripheries of said shell (**32**),

each of said blades having a least a rib (**36**) with a configuration complementary to that of the interior surface of said shell (**32**),

said rib (**36**) having a tab (**38, 39**) at at least one of the opposite ends of said rib (**36**),

said shell (**32**) and support ring member (**28**) being welded annularly together with said tabs (**38**) interposed therebetween.

3,873,238

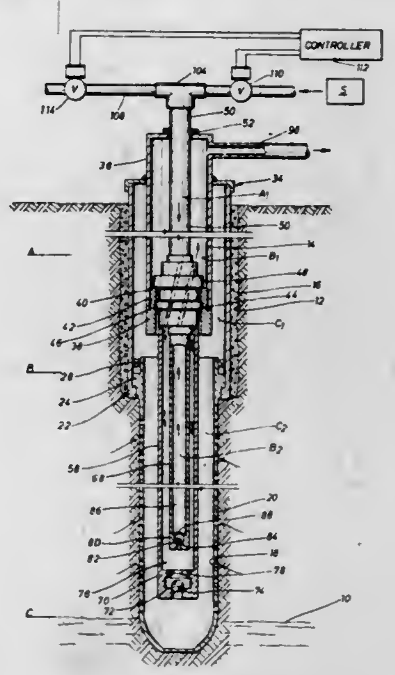
METHOD AND APPARATUS FOR FLOWING CRUDE OIL FROM A WELL

Johnnie A. Elfarr, P.O. Box 901, Palestine, Tex. 75801

Filed Sept. 19, 1973, Ser. No. 398,571

Int. Cl. F04f ; E21b

U.S. Cl. 417—54 **18 Claims**



1. Apparatus for flowing liquid from a well bore extending from the surface of the earth to a liquid bearing earth formation, said apparatus comprising:

casing means extending into said well bore and defining a well head at the upper extremity thereof, said casing being in fluid communication with said liquid bearing earth formation;

outer conduit means being supported by said well head and extending into said casing;

a landing nipple being coupled to the lower extremity of said outer conduit means and defining support means;

inner conduit means being removably supported by said well head and extending into said outer conduit means, said inner conduit means cooperating with said outer conduit means to define flow chamber means;

landing adapter means being coupled to said inner conduit means and being releasably and sealingly engaged with said landing nipple;

outer pump conduit means being supported in sealed relation by said landing adapter means and depending therefrom, said outer pump conduit defining a pressure imposing chamber;

first valve means being carried by said outer pump conduit means and allowing unidirectional flow of said production liquid from said casing means into said pressure imposing chamber;

inner pump conduit means being supported by said landing adapter means, said inner pump conduit means extending into said pressure imposing chamber and being in fluid communication with said outer conduit means;

second valve means being carried by said inner pump conduit means and allowing unidirectional flow of said production liquid from said pressure imposing chamber to said flow chamber means;

means for selectively introducing pressurized fluid into said pressure imposing chamber; and

means for conducting produced liquid from said flow chamber means.

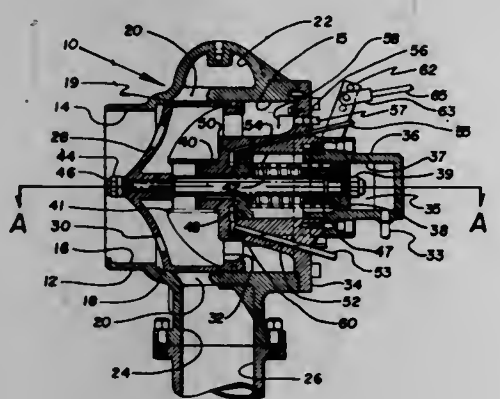
7. A method of displacement pumping of a production fluid including crude oil and water from an oil bearing earth formation wherein production and injection wells are formed in the earth and are in communication with said formation and at least one injection well continuously injects steam into said oil bearing earth formation and wherein said production wells each have apparatus defining an injection chamber, a produc-

tion fluid supply chamber being open to said formation and receiving production fluid from said formation, a first pumping chamber having valved communication with said production fluid supply chamber, a second pumping chamber having valved communication with said first pumping chamber and a flow chamber being disposed in communication with said second pumping chamber, said method comprising the steps of:

causing production fluid including steam, water and crude oil to enter said first pumping chamber from said production fluid supply chamber;
condensing at least a portion of said steam in said first pumping chamber into water;
causing flashing of a portion of the water content of said production fluid into steam in said first pumping chamber and causing steam pressure forcing of liquid and steam from said first pumping chamber to said second pumping chamber;
condensing at least a portion of the steam content of said production fluid in said second pumping chamber into water;
causing flashing of a portion of the condensed water of said liquid in said second pumping chamber to steam and causing steam pressure forcing of said liquid and steam from said second pumping chamber to said flow chamber;
condensing at least a portion of the steam content of said production fluid in said flow chamber into water; and
causing flashing of a portion of the condensed water of said production fluid in said flow chamber to lighten the column of the liquid in said flow chamber and to cause steam forcing of liquid from said flow chamber for production.

3,873,239
COMPRESSOR CONTROL

Arthur A. Jamieson, 2010 E. Coalspring Ave., Michigan City, Ind. 46360
Continuation-in-part of Ser. No. 191,598, Oct. 22, 1971, abandoned. This application Apr. 26, 1973, Ser. No. 354,757
Int. Cl. F04b *49/00*
U.S. Cl. 417—281 **11 Claims**



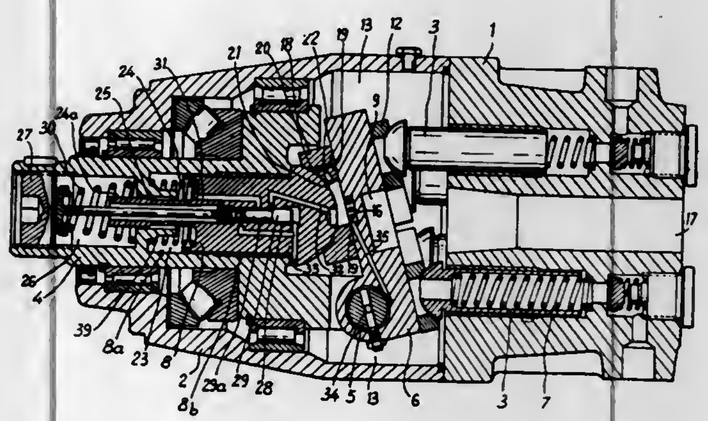
7. Apparatus as specified in claim 6 additionally comprising circuit means for delivering pressurized gas to said force modulating means at a pressure related to the pressure in said gas receiving means.

3,873,240
HYDRAULIC SWASH PLATE PUMP

Gerard Leduc, 88, rue d'Alsace, 88 Saint-Die, and Michel Leduc, 54 Azerailles, both of France
Filed June 15, 1973, Ser. No. 370,545
Claims priority, application France, June 16, 1972, 72.21752; Oct. 27, 1972, 72.38168
Int. Cl. F04b *49/00*
U.S. Cl. 417—222 **23 Claims**

1. In a hydraulic swash plate pump whose driving torque is to be kept constant as a function of delivery pressure, said pump comprising:

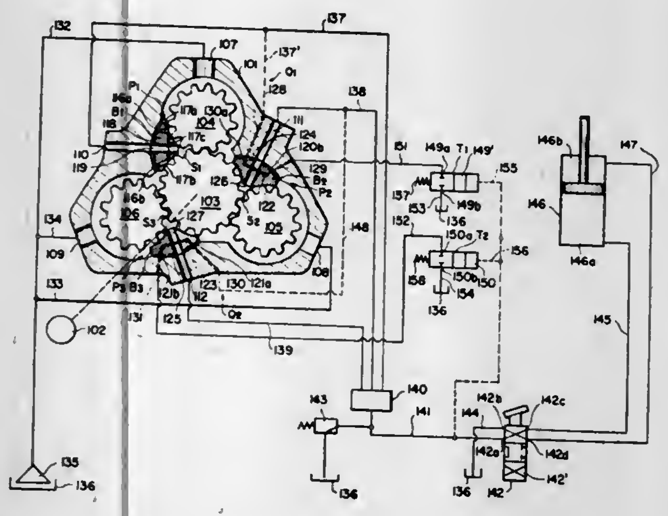
a rotatable swash plate mounted for variable inclination,
means driving said swash plate for establishing a pump delivery pressure,
a hydraulic jack means for varying the inclination of said swash plate,
control means having first and second inlets and an outlet, means for providing fluid at the delivery pressure to said first inlet and means for providing low pressure fluid to said second inlet,
means including a chamber in fluid communication with said jack and responsive to an applied fluid to move said control means,



means communicating between said control valve means outlet and said jack moving means, said control valve means moving in response to variation of pressure in said chamber and communicating the fluid from one of said first or second inlets to said outlet to move said jack in a direction to change the inclination of the swash plate to maintain a given torque at said driving means in response to a variable delivery pressure, said control valve means also being movable with respect to said jack to vary the flow of the fluid to said jack as the jack moves.

3,873,241
VARIABLE OUTPUT GEAR PUMP AND MOTOR

Mitsuteru Motomura, Kamakura, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed July 10, 1973, Ser. No. 377,964
Claims priority, application Japan, July 10, 1972, 47-68219; July 10, 1972, 47-68220; July 11, 1972, 47-68694
Int. Cl. F04b *49/00;* **F01c** *19/02;* **F03c** *3/00*
U.S. Cl. 417—283 **20 Claims**

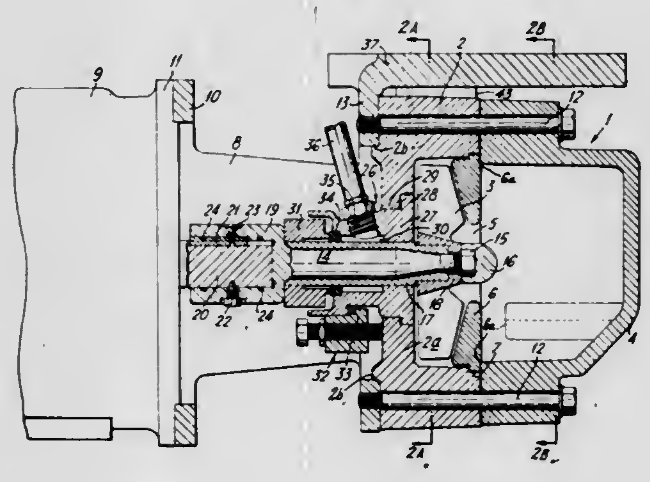


1. A gear pump comprising:
a fluid reservoir;
a hydraulic actuator fluidically connected to said reservoir;
a plurality of pump means being simultaneously driven by a prime mover and interposed between said fluid reservoir and said actuator;

a drive gear and at least two driven gears intermeshed with said drive gear mounted within each of said pump means;
seal members disposed within the vicinity of the engaging areas between said drive gear and said driven gears;
a plurality of control valve means each of which has two ports, and a spool slidably disposed therein so as to be movable between a first position at which said ports are disconnected from each other and a second position at which said ports are in communication with each other;
means for introducing the discharge pressure of a previously actuated pump means to the seal members of a successive pump means;
means for conducting the resulting pressure to said control valve means; and
spring means disposed so as to urge said spools against the hydraulic pressure supplied to said spools for controlling the force applied to said seal members so as to permit said seal members to move toward or away from said gears of said pump means.

3,873,242
FLUID MACHINES

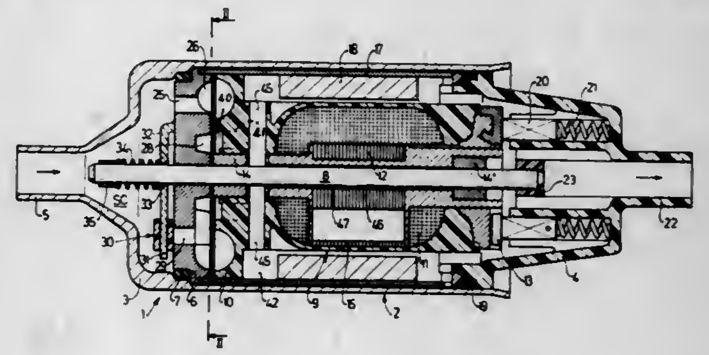
Ronald Colquhoun Anderson, Glasgow, Scotland, assignor to Weir Pumps Limited, Glasgow, Scotland
Filed Sept. 17, 1973, Ser. No. 397,626
Claims priority, application United Kingdom, Sept. 23, 1972, 44122/72
Int. Cl. F04b *17/00;* **F04d** *29/60*
U.S. Cl. 417—360 **4 Claims**



1. A pump installation including:
a pump comprising a casing having a removable front cover and a back wall, an impeller shaft penetrating the back wall of the casing, sealing means sealing said penetration of said back wall, a rotary impeller mounted on said impeller shaft inside the casing, a fluid suction duct in the casing for delivery of fluid to said impeller, an inlet to said fluid suction duct located in a lateral wall of the casing, a fluid discharge duct in the casing for discharge of fluid from the impeller, and an outlet from said fluid discharge duct located in said lateral wall of the casing;
a motor having a casing and being connected to the impeller shaft for driving the pump;
bracket means rigidly interconnecting the motor and pump casings;
a support member formed by an extension of said bracket means and adapted to fixedly carry pipes such that the pump casing is substantially free from pipe loads and thermal loads due to differential thermal expansion between the pump casing and the support member;
and conduit means interconnecting the support member and said inlet and outlet;
whereby on removal of said front cover said pump can be disassembled without disturbance to the pipes.

3,873,243
FUEL PUMP ASSEMBLY

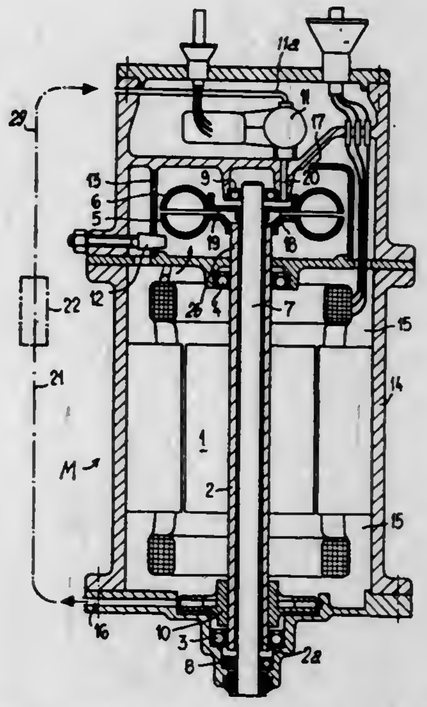
Hermann Nusser, Asperg, and Hans-Reimer Speck, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 19, 1973, Ser. No. 417,183
Claims priority, application Germany, Dec. 21, 1972, 2262569
Int. Cl. F04b *17/00;* **H02k** *9/06;* **F04d** *5/00*
U.S. Cl. 417—368 **10 Claims**



1. Apparatus for conveying a fluid, particularly liquid fuel, comprising a hydrodynamic pump having a rotary part; an electric motor having an armature arranged to drive said rotary part; a housing surrounding said pump and motor and defining a chamber receiving pressurized fluid from said pump and surrounding said armature; a shaft mounted in said housing coaxially with said armature; a pair of spaced apart bearings surrounding said shaft, at least one of said bearings being disposed between said shaft and said armature, said shaft and said armature defining a space extending between said bearings; and auxiliary pump means driven by said armature and arranged to effect the flow of fluid between said chamber and said space whereby the fluid entering said space lubricates said bearings.

3,873,244
ELECTRICAL VARIABLE-SPEED DRIVE

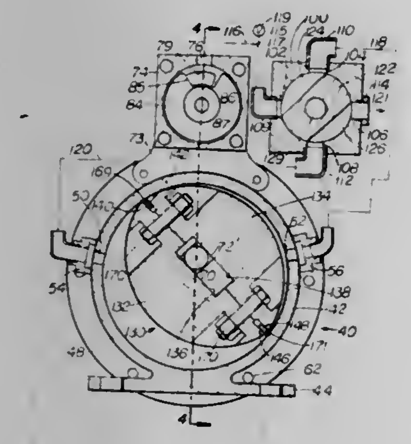
Hans Jaggi, Zurich, Switzerland, assignor to Haeny & Cie, Zurich, Switzerland
Filed Aug. 13, 1973, Ser. No. 388,063
Claims priority, application Switzerland, Aug. 21, 1972, 12364/72
Int. Cl. F04b *17/00*
U.S. Cl. 417—424 **10 Claims**



1. An electric variable-speed drive, especially for the drive of a sewage pump, comprising an electric motor, a hydrodynamic transmission unit which is arranged after the electric

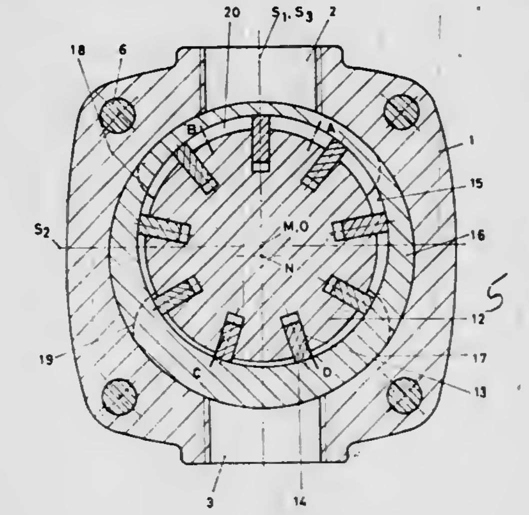
motor, the electric motor comprising a motor housing having a chamber and a motor compartment, said chamber containing a hydraulic fluid medium, said motor compartment containing hydraulic fluid medium and serving as a reservoir for the chamber, the transmission unit being arranged in said chamber of the motor housing containing the hydraulic fluid medium, and a conveyor device provided between the chamber containing the transmission unit and the motor compartment containing the motor for the exchange of the fluid medium between said chamber and said compartment in order to influence the degree of filling of the chamber with the hydraulic fluid medium to thus control the output of the transmission unit.

3,873,245
STEAM-DRIVEN ENGINE
Niranjan Kumar Doshi, East St. Louis, Ill., assignor to Nastol Research, Inc., St. Louis, Mo.
Filed Jan. 2, 1973, Ser. No. 320,202
Int. Cl. F01c *1/02;* **F04c** *17/02;* **F01c** *11/00*
U.S. Cl. 418—5 **1 Claim**



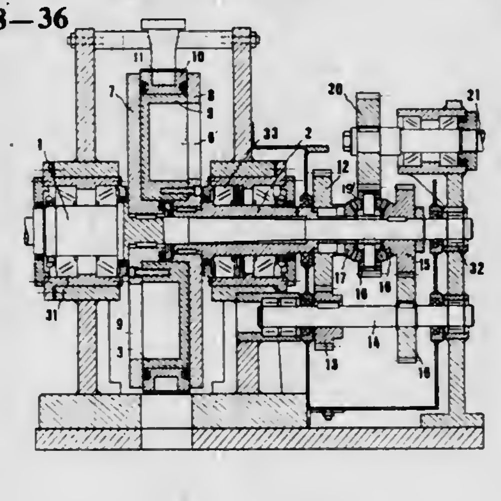
1. A positive-displacement fluid-driven engine which comprises a generally cylindrical chamber that has a generally cylindrical wall, a shaft which extends into said chamber, said shaft having the axis thereof eccentric of the center of said generally cylindrical chamber, a generally elliptical rotor which is disposed within and which is rotatable relative to said generally cylindrical chamber, said rotor having a major axis and having an elongated slot therein which is generaly parallel to said major axis, said slot accommodating said shaft and being longer than said shaft is wide so said rotor can reciprocate relative to said shaft as said rotor rotates within said generally cylindrical chamber, an inlet port for propulsive fluid in said generally cylindrical wall of said generally cylindrical chamber, an outlet port for spent propulsive fluid in said generally cylindrical wall of said generally cylindrical chamber, said rotor responding to the introduction of propulsive fluid through said inlet port to rotate within said generally cylindrical chamber while reciprocating relative to said shaft, seals that are mounted on and that rotate with said rotor and that provide sealing engagements with said generally cylindrical wall of said generally cylindrical chamber, one of said seals being located at one end of said major axis of said rotor and another of said seals being located at the opposite end of said major axis of said rotor, one portion of the periphery of said rotor confronting and being in its closest proximity to one portion of the internal surface of said generally cylindrical wall of said generally cylindrical chamber whenever said rotor is in its zero position, the opposite portion of said periphery of said rotor confronting and being in its closest proximity to said one portion of said internal surface of said generally cylindrical wall of said generally cylindrical chamber whenever said rotor is displaced one hundred and eighty degrees from its said zero position, said one end of said major axis of said rotor being adjacent said inlet port whenever said rotor is in its said zero position, said opposite end of said major axis of said rotor being adjacent said outlet port whenever said rotor is in its said zero position, and said seals and sealing engagements helping said rotor respond to the introduction of said propulsive fluid into said generally cylindrical chamber through said inlet port to rotate within said generally cylindrical chamber while reciprocating relative to said shaft, a second generally cylindrical chamber which is mounted adjacent the first said generally cylindrical chamber and which has a generally cylindrical wall, said shaft also extending into said second generally cylindrical chamber, a second generally elliptical rotor which is disposed within and which is rotatable relative to said second generally cylindrical chamber, said second rotor having a major axis and having an elongated slot therein which is generally parallel to said major axis, said slot accommodating said shaft and being longer than said shaft is wide so said second rotor can reciprocate relative to said shaft as said second rotor rotates within said second generally cylindrical chamber, a second inlet port for propulsive fluid in said generally cylindrical wall of said second generally cylindrical chamber, a second outlet port for spent propulsive fluid in said second generally cylindrical chamber, said second rotor responding to the introduction of propulsive fluid through said second inlet port to rotate within said second generally cylindrical chamber while reciprocating relative to said shaft, further seals that are mounted on and that rotate with said second rotor and that provide sealing engagements with said generally cylindrical wall of said second generally cylindrical chamber, one of said further seals being located at one end of said major axis of said second rotor and another of said further seals being located at the opposite end of said major axis of said second rotor, one portion of the periphery of said second rotor confronting and being in its closest proximity to one portion of the internal surface of said generally cylindrical wall of said second generally cylindrical chamber whenever said second rotor is in its zero position, the opposite portion of said periphery of said second rotor confronting and being in its closest proximity to said one portion of said internal surface of said generally cylindrical wall of said second generally cylindrical chamber whenever said second rotor is displaced one hundred and eighty degrees from its said zero position, said one end of said major axis of said second rotor being adjacent said second inlet port whenever said second rotor is in its zero position, said opposite end of said major axis of said second rotor being adjacent said second outlet port whenever said second rotor is in its said zero position, said further seals and said sealing engagements helping said second rotor respond to the introduction of said propulsive fluid into said second generally cylindrical chamber through said second inlet port to rotate within said second generally cylindrical chamber while reciprocating relative to said shaft, a valve which is connected to the first said inlet port and which has a rotatable member that rotates when said first said rotor rotates, a second valve which is connected to said second inlet port and which has a rotatable member that rotates when said second rotor rotates, the first said valve supplying said propulsive fluid to said first said inlet port during just a part of each revolution of the first said rotor, an intermediate chamber which has the inlet thereof continuously connected to said first said outlet port and which has the outlet thereof selectively connected to said second inlet port by said second valve, whereby said intermediate chamber is continuously connected to said first said outlet port and is selectively connected to said second inlet port, and said intermediate chamber receiving said spent propulsive fluid from said first said outlet port and selectively supplying said spent propulsive fluid to said second inlet port, whereby said second rotor can be driven by said spent propulsive fluid, said second valve supplying said spent propulsive fluid to said second inlet port during just a part of each revolution of said second rotor.

3,873,246
VANE-TYPE PUMP
Gunnar Lyshoj Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 3, 1973, Ser. No. 403,339
Claims priority, application Germany, Oct. 10, 1972, 2249591
Int. Cl. F04c *1/00*
U.S. Cl. 418—16 **5 Claims**



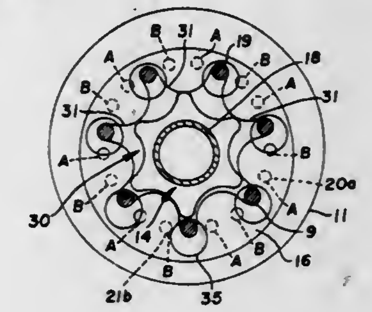
1. A vane type pump comprising a casing having a line of symmetry, an impeller in said casing having radially reciprocal vanes and being rotatable about a fixed axis on said line of symmetry, inlet and outlet passages on diametrically opposite sides of said casing, an adjustably rotatable ring member in said casing with the outer circumferential surface thereof having a fixed axis on said line of symmetry which is the center of an imaginary base circle and which is off-set from said impeller fixed axis, said ring member having a generally circular internal running surface with portions on diametrically opposite sides thereof which are involutely shaped relative to said base circle.

3,873,247
ROTARY PISTON MACHINES
Jean Boes, 61 Avenue de la Bourdonnais, Paris 7eme, France
Filed Oct. 15, 1973, Ser. No. 406,307
Claims priority, application France, Oct. 19, 1972, 72.37065
Int. Cl. F01c *21/00*
U.S. Cl. 418—36 **9 Claims**



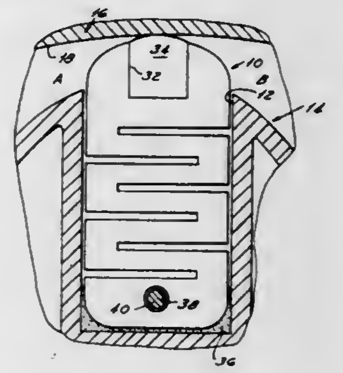
1. A central axis rotary piston machine comprising a housing, two coaxial shafts mounted for rotation in said housing, at least one blade mounted for movement with each of said shafts, means for controlling the relative angular position of the at least one blade of one shaft with respect to the at least one blade of the other shaft, a gear train including an auxiliary shaft, two quasi-elliptical gear wheels in engagement with each other and carried by said auxiliary shaft and one of said coaxial shafts, other gear wheels in engagement with each other and carried by said auxiliary shaft and the other of said coaxial shafts, and a differential gear including two differential wheels each mounted to be driven by one of said coaxial shafts, a start pinion in meshing engagement with the differential wheels and a gear wheel carrying the star pinion for transmitting power between the machine and means external to the machine and having relatively slow speed variations.

3,873,248
VALVING MEANS FOR A GEROTOR ASSEMBLY
Oliver W. Johnson, 1360 Prairie St., Chaska, Minn. 55318
Filed Sept. 17, 1973, Ser. No. 398,015
Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*
U.S. Cl. 418—61 B **6 Claims**



1. A gerotor assembly including:
a. a stationary, internally toothed stator;
b. an externally toothed rotor having one less tooth than said stator and being received in said stator;
c. a shaft connected to said rotor;
d. an end plate on the end of said stator and rotor for sealing the same;
e. a pair of flow passages including a fluid inlet and a fluid outlet arranged respectively on opposite sides of said internal teeth of said stator;
f. a valving disc arranged on said rotor for movment therewith but arranged for rotation relative thereto, said disc having a plurality of apertures therethrough, said apertures being located and having dimension to control flow through said inlets and outlets and into and out of the areas between the internal and external teeth of said stator and rotor; and,
g. means for restraining rotation of said valving disc such that one aperture will control each of said inlet and output pairs including tie rods joining said stator and said end plate and passing respectively through said disc apertures.

3,873,249
SEAL FOR ROTARY COMBUSTION ENGINE
Vemulapalli D. N. Rao, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 24, 1973, Ser. No. 400,282
Int. Cl. F01c *19/02;* **F04c** *27/00;* **F01c** *21/00*
U.S. Cl. 418—113 **2 Claims**



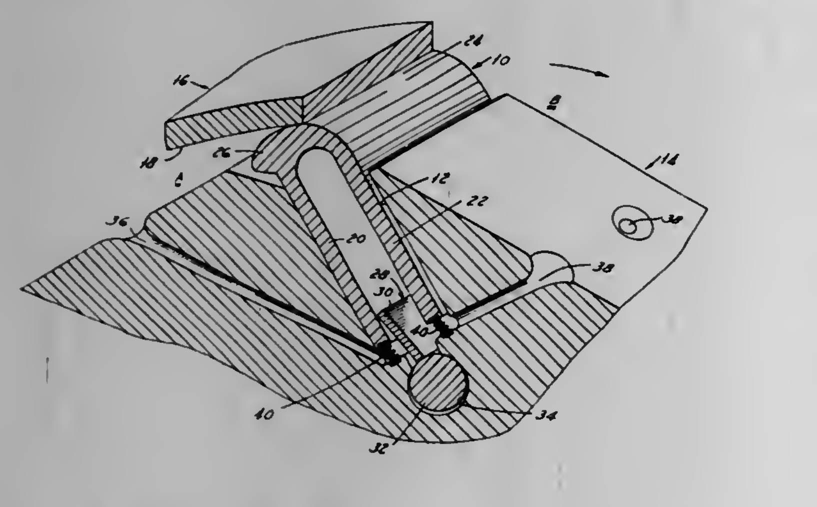
1. A rotary combustion engine comprising a housing having a trochoid surface,

a rotor disposed in said housing,
said rotor having an apex groove,
an apex seal disposed in said groove and having one edge engaging said trochoid surface,
said seal being formed of a material having a low modulus of elasticity,
said seal having a plurality of longitudinally arranged slots formed along each of its lateral sides,
said slots of one lateral side being arranged in overlapping relationship with respect to said slots of the other lateral side,
said slots being constructed to increase the effective elasticity of said seal,
sealing means interposed between the base of said seal and the depth of said apex groove,
retaining means stationary with said rotor and engaging said base of said apex seal,
said retaining means being constructed to hold the base of said seal against radial displacement with respect to said rotor,
the outer edge of said apex seal having a longitudinally extending recesses,
a friction reducing material disposed in said recess and engaging said trochoid housing,
said seal being laterally flexible within said groove and radially resilient.

3,873,250
APEX SEAL HAVING GAS PRESSURE BIAS FOR A ROTARY ENGINE

Cyril J. Batten, Romulus, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1973, Ser. No. 421,470
Int. Cl. F01c *19/02;* **F04c** *27/00*
U.S. Cl. 418—123 **4 Claims**

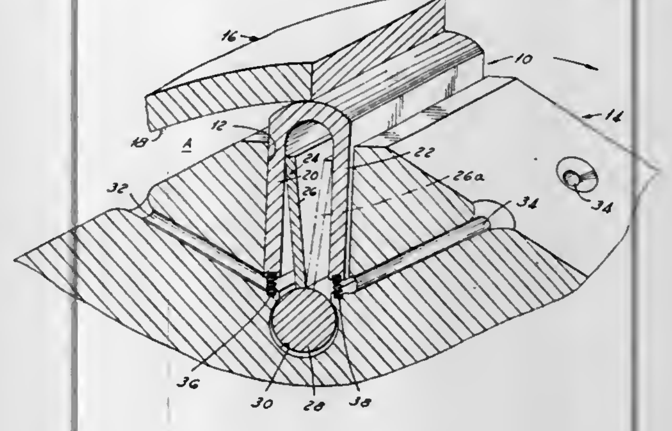


1. A sealing system for a rotary mechanism comprising a housing having a trochoid surface,
a rotor supported for rotation relative to said housing about an orbitting axis parallel to and spaced apart from the axis of said housing,
said rotor having an apex groove defined by a pair of parallel side surfaces,
one of said side surfaces being arranged at an angle to a plane extending through the center axis of said rotor and the outer edge of said one side surface,
an elongated apex seal having a body portion disposed in said apex groove and a rubbing portion engaging said trochoid surface,
said seal being disposed between a leading pressure chamber and a trailing pressure chamber,
said seal being inclined toward said trailing chamber,
said seal having a pair of spaced apart generally flat sidewalls having exterior surfaces slidably engaging said side surfaces of said groove,
pressure responsive valve means interposed between said spaced apart sidewalls
means constructed to convey gas pressure from said leading chamber to one side of said valve means,
means constructed to convey gas pressure from said trailing chamber to the other side of said valve means,
said valve means being constructed to selectively direct gas pressure from that one of said leading chamber and said trailing chamber which has the higher pressure to the area of said seal between said sidewalls whereby said seal is urged outwardly into engagement with said trochoid surface.

3,873,251
APEX SEAL WITH VALVE CONTROLLED GAS PRESSURE BIAS

Cyril J. Batten, Romulus, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1973, Ser. No. 421,471
Int. Cl. F01c *19/02;* **F04c** *27/00*
U.S. Cl. 418—123 **10 Claims**



1. A rotary mechanism comprising a housing having a trochoid surface,
a rotor disposed in said housing,
said rotor and said trochoid surface defining portions of two adjacent pressure chambers,
said rotor having an apex groove,
an apex seal disposed in said groove and interposed between said pressure chambers,
said apex seal having one surface engaging said trochoid surface,
said seal comprising an elongated member having a vacant interior portion,
a valve means disposed in said interior portion,
two passage means constructed to provide mutually independent communication between said two pressure chambers and two sides of said valve means, respectively, said valve means being constructed to direct gas pressure from the one of said two pressure chambers that has the higher pressure to an area in said apex seal whereby said seal is urged radially outwardly in response to said gas pressure.

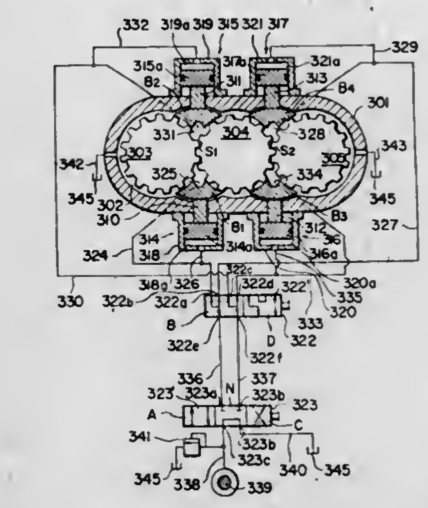
3,873,252
GEAR PUMP AND MOTOR

Mitsuteru Motomura, Kamakura; Masayuki Futamata, Tokyo; Kazuyuki Hirose, Yokohama, and Kazuo Ban, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 10, 1973, Ser. No. 377,965
Claims priority, application Japan, July 11, 1972, 47-68693
Int. Cl. F01c *19/02;* **F03c** *3/00;* **F04c** *15/00*
U.S. Cl. 418—126 **2 Claims**

1. A gear motor comprising:
a housing;
first, second and third gears disposed within said housing;

first and second seal blocks disposed upon opposite sides of the engaging area between said first and second gears;
third and fourth seal blocks disposed upon opposite sides of the engaging area between said second and third gears;
first, second, third and fourth openings in the housing associated with the first, second, third and fourth seal blocks, respectively, which openings selectively function as inlets and outlets to the motor,
at least four cylinders respectively mounted upon said housing relative to said four seal blocks;
at least four piston means respectively slidably disposed within said four cylinders for actuating said four seal blocks;
control valve means for selectively actuating said piston means having first, second, third and fourth ports at one side thereof and fifth and sixth ports at the other side thereof; and



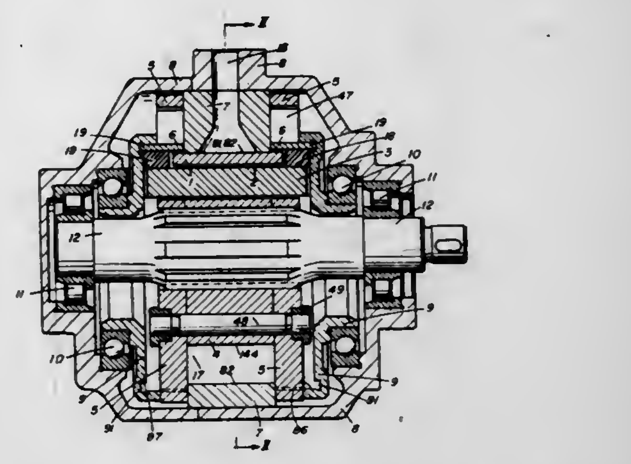
spool means movable within said valve means between a first position at which said first and second ports are in communication with said fifth port and said third and fourth ports are in communication with said sixth port, and a second position at which said first port is in communication with said fifth port, said second port is in communication with said third port, and said fourth port is in communication with said sixth port, for selectively delivering hydraulic fluid from an external source to two of the four openings associated with said four seal blocks and for exhausting from the other two of said four openings and also for delivering hydraulic fluid to two of said four cylinders when said spool means is in said first position, and for delivering hydraulic fluid to one of the four openings associated with the four seal blocks and for exhausting from another one of said four openings and also delivering hydraulic fluid to one of said four cylinders when said spool means is in said second position, for respectively urging said pistons and said seal blocks toward said three gears for generating various torques therefrom.

3,873,253
VANE SEAL MEANS IN ROTARY VANE MACHINES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Oct. 12, 1972, Ser. No. 297,256
Claims priority, application Austria, Oct. 11, 1971, 8793/71
Int. Cl. F01c *19/02*
U.S. Cl. 418—147 **10 Claims**

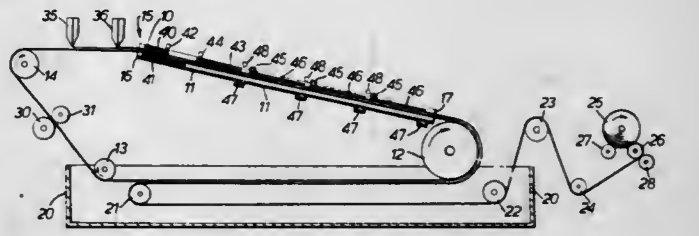
1. In a fluid handling device, a combination comprising a hollow housing; a rotor mounted in said housing and including a smaller-diameter median portion and two end walls disposed at the axial ends of and extending radially outwardly beyond said median portion, said rotor having substantially radially extending slots parallel with the axis thereof and each including a central portion provided in said median portion and outer portions provided in the respective end walls; a closure member provided in said housing and having an internal surface eccentric to said rotor and spacedly surrounding said median portion thereof, said rotor and said closure member defining an annular fluid handling space; inlet and outlet means communicating with said space; vanes radially movably received in said slots and subdividing said space into a plurality of chambers communicating seriatim with said inlet and outlet means in response to rotation of said rotor, each of said vanes having an outer part including two end portions extending radially outwardly beyond said internal surface, each of said outer parts being provided with a seal bed having ends extending to the outer portions of the respective slot and radially outwardly into the end portions of the respective vane and beyond said internal surface, and a seal radially movably received in the respective bed, said seals having end portions extending into the ends of the respective beds and each of said seals having a central portion abutting against said internal surface when said rotor rotates to thereby seal said chambers from each other, said end portions of said seals being free to move radially outwardly in the ends of the respective seal beds so that said central portions of said seals continue to abut against said internal surface after pronounced wear upon said central portions of said seals as a result of abutment against and sliding movement along said internal surface; and antifriction bearing means coaxial with said closure member and arranged to hold said vanes out of frictional engagement with said internal surface.



3,873,254
APPARATUS FOR MAKING WATER VAPOUR PERMEABLE POLYMER SHEET MATERIALS

Eric Albert Warwicker, King's Lynn, England, assignor to Porvair Limited, Lynn, Norfolk, England

Division of Ser. No. 42,793, June 2, 1970, Pat. No. 3,729,536. This application Feb. 5, 1973, Ser. No. 329,410
Claims priority, application United Kingdom, June 3, 1969, 28076/69
Int. Cl. B29d *7/22*
U.S. Cl. 425—71 **12 Claims**



1. Apparatus for making a water vapor permeable polymer sheet material which comprises means for forming a layer of coagulable polymer composition at least 0.5mms thick, said layer having a free surface, and for passing said layer through a body of liquid, with said free surface in contact with said liquid, to coagulate said layer, characterised in that up-stream of said body of liquid there are means having a solid boundary, spaced from said free surface so that a slot is left between said boundary and said free surface and in that means are provided for supplying coagulating liquid down-stream of said slot so as

to maintain a body of said liquid on said free surface and to keep the slot filled with said liquid and in that the thickness of the slot is such that when said liquid is supplied downstream its surface tension establishes a meniscus between said boundary and said free surface, the construction and arrangement being such that said free surface first comes into contact with said supplied liquid at said meniscus.

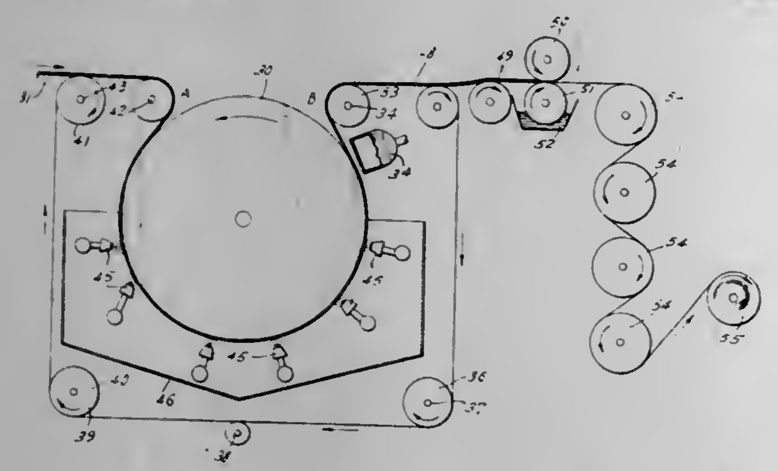
3,873,255
APPARATUS FOR PRODUCING NONWOVEN FABRIC

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 295,768, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 110,193, Jan. 27, 1971,. This application Sept. 13, 1973, Ser. No. 397,031

Int. Cl. B29c *1/14*

U.S. Cl. 425—83 **7 Claims**



1. Apparatus for treating a layer of fibers to form a web of fibers having areas of varying opactiy and varying fiber concentration comprising: impermeable, patterned support means for supporting a layer of fibers over a substantial portion of its area, means for directing fluid against said layer of fibers while said layer is supported to produce fiber moving forces acting in the plane of the layer and at various angles to the layer, said support means being capable of reflecting the fluid directed against the supported layer so that fluid forces are applied and dissipated from the same side of the layer of fibers, and means for removing said fluid from the layer to produce a web of fibers.

3,873,256
CHEESE MOULD

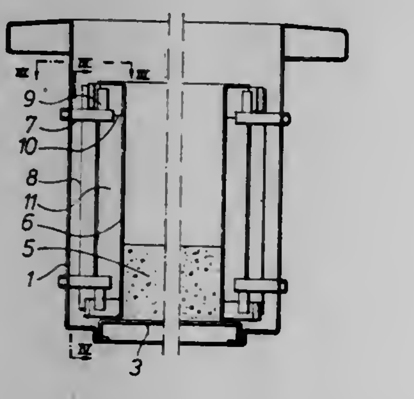
Olavi Reijonen; Roland Gabriel Robez, and Lauri Kostiainen, all of Helsinki, Finland, assignors to MKT-tehtaat Oy, Helsinki, Finland

Filed May 22, 1973, Ser. No. 362,866

Claims priority, application Austria, May 24, 1972, 4482/72

Int. Cl. A23c *19/02*

U.S. Cl. 425—84 **3 Claims**



1. Improvement in a rectangular, large cheese mould, consisting of a box-like body and wherein the space intended for the cheese is confined by side strainer plates and bottom strainer plates so that a cheese bolster formed in the mould is supported at its bottom by said side strainer plates and laterally by said side strainer plates, and wherein one end of the mould has been constructed to constitute a door to which the bottom strainer plates and the cheese bolster resting thereon may be extracted from the mould, wherein the improvement comprises guiding means connecting said side strainer plates with said body and said guiding means arranged for forcing the side strainer plates to move away from the cheese bolster immediately as the cheese bolster is commenced to be withdrawn from the mold, said guiding means comprises slides attached to said side strainer plates and said slides having free ends which are obliquely outwardly directed in the direction pointing toward the door of the mould, and guides for which are affixed to the body of the mould.

3,873,257
AUTOMATIC MOULD FOR THE CONTINUOUS MOULDING OF CHAINS MADE OF DUCTILE MATERIALS

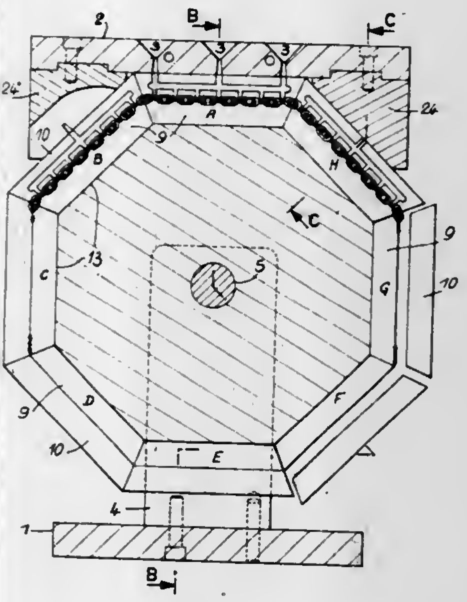
Guy Vanotti, Oyonnax, France, assignor to Etablissements Vape, Oyonnax, France

Filed Dec. 6, 1972, Ser. No. 312,617

Claims priority, application France, Mar. 30, 1972, 72.11993

Int. Cl. B29c *1/16;* **B29d** *31/00*

U.S. Cl. 425—112 **6 Claims**



1. An automatic moulding apparatus for the continuous moulding of a chain made of ductile materials and having a series of links connected together wherein the apparatus comprises in combination;

a. a frame,
b. a hub rotatably supported on the frame,
c. a plurality of individual mould assemblies secured around the periphery of the hub for moulding successive sections of the series of links wherein each first link of a section is freely and loosely connected to the last link of a preceding section with each mould assembly comprising relatively movable mould parts,
d. an injection moulding plate movable towards and away from each mould assembly, successively, during the rotation of the hub,
e. means carried by the injection moulding plate for successively locking together the parts of each mould assembly upon movement towards the same, and
f. means secured to the hub for successively releasing the mould parts to thereby release each section of moulded links during rotation of the hub.

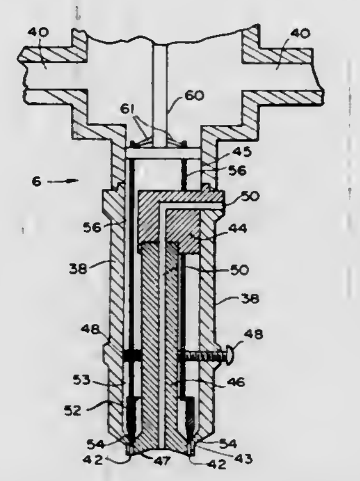
3,873,258
APPARATUS FOR APPLYING A SEALING GASKET TO A SURFACE

Floyd A. Ratliff, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 177,245, Sept. 2, 1971, abandoned. This application June 28, 1973, Ser. No. 374,734

Int. Cl. B29c *13/02*

U.S. Cl. 425—113 **2 Claims**



1. An apparatus for applying a fluid gasket composition to a closure, comprising: a housing, a central cone situated within said housing, said central cone having an air passage therethrough, said housing and said central cone defining an annular orifice at the lower portion of said cone, a plunger interposed between said housing and said central cone, means connected to said housing for actuating the plunger within said housing, said plunger having an annular tapering portion to accommodate and close off said annular orifice.

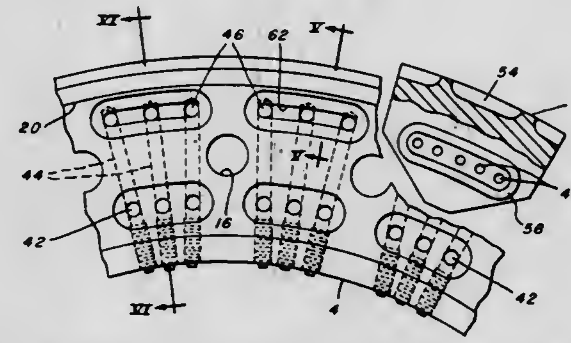
3,873,259
MOLD SEGMENT

Frank Kennedy, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 7, 1973, Ser. No. 422,641

Int. Cl. B29c *1/00*

U.S. Cl. 425—470 **1 Claim**



1. A mold segment comprising a generally V-shaped steel element having a mold surface opposite the point of the V and including at least three transverse holes for effecting the circulation of cooling water, said holes being spaced by distances at least three-fourths of their diameter and less than two times their diameter, the distance from the hole to the mold surface throughout the length of the hole being at least the distance between holes and no more than three times that distance.

3,873,260
PHOTOFLASH LAMP

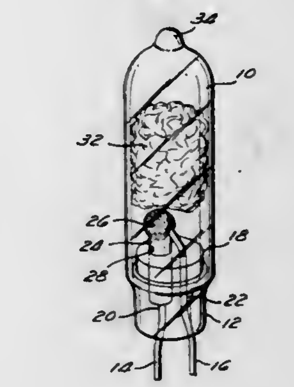
Paul T. Cote, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,395

Int. Cl. F21k *5/02*

U.S. Cl. 431—95 **7 Claims**

1. A photoflash lamp comprising a sealed bulb of light transparent material, a pair of inlead wires extending into said bulb in a spaced relationship, a mass of metallic combustible material substantially filling said bulb, a combustion supporting atmosphere in said bulb, and ignition means connected between said inlead wires, wherein the improvement comprises a sleeve of electrically insulating material extending beyond the end of only one inlead wire, said sleeve having a larger end opening than the diameter of said inlead wire with said opening being disposed at the sleeve end adjacent the mass of metallic combustible material in the sealed bulb cavity and being vented to said bulb cavity, and a mass of primer material which bridges the end of said sleeved inlead and the other inlead wire.



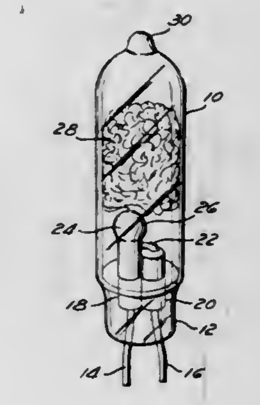
3,873,261
PHOTOFLASH LAMP

Paul T. Cote, Cleveland Hts., Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,394

Int. Cl. F21k *5/02*

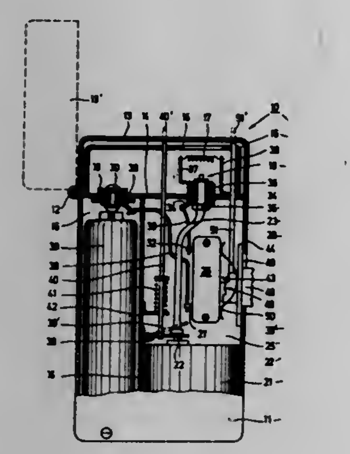
U.S. Cl. 431—95 **12 Claims**



1. A high-voltage pulse actuated photoflash lamp comprising a sealed bulb of light transparent material, a pair of inlead wires extending into said bulb in a spaced apart relationship established at least in part by the presence of electrically insulating material between said inleads, a mass of metallic combustible material substantially filling said bulb, a combustion supporting atmosphere in said bulb, and ignition means connected between said inleads which includes conductive primer material being disposed upon one of said inlead wires and an electrically conductive film spaced from said one inlead wire and interconnecting said primer material and the other inlead wire, insulating means protecting all of said one inlead except that portion exposed to the primer material, said conductive film being disposed adjacent said mass of filamentary combustible material and having contast therewith.

3,873,262
WINDPROOF LIGHTER WITH HOT FILAMENT

Walter Pogrell, Neuenhain, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 19, 1974, Ser. No. 443,507
Claims priority, application Germany, May 2, 1973, 2321972
Int. Cl. F23q *2/08*
U.S. Cl. 431—132 **5 Claims**



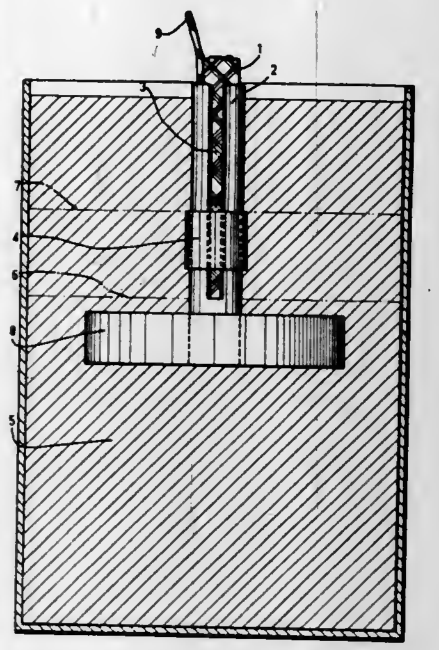
1. Windproof lighter comprising:

a. a gas container in a housing;
b. a burner nozzle;
c. a filament disposed in the neighborhood of said burner nozzle;
d. an electric circuit including a battery and an electric switch for said filament;
e. means including an actuating element for moving said switch into the on position by the application of force;
f. a return spring cooperating with said means for returning said actuating element into the off position; and
g. said means including a locking element associated with said actuating element for selectively locking said actuating element in the on position and for preventing it from returning to the off position.

3,873,263
DEVICE FOR ADJUSTING THE BURNING TIME AND LUMINOSITY OF THE FLAME OF A WICK-TYPE LIGHTING DEVICE SUCH AS A CANDLE

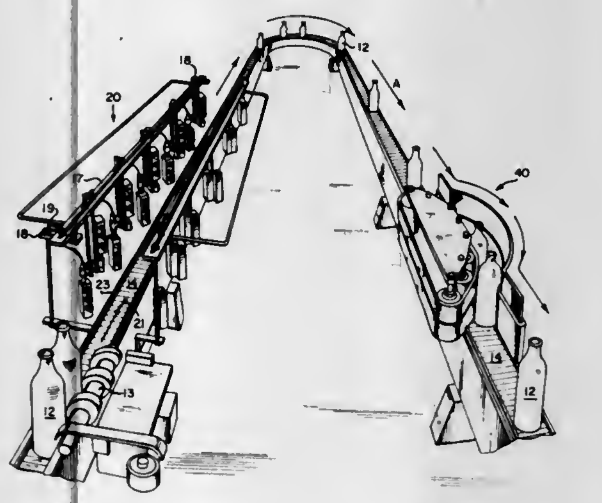
Paul Marcel Edmond DeCroix, 2 rue Collin, 92, Puteaux, France
Filed Oct. 4, 1973, Ser. No. 403,428
Claims priority, application France, Oct. 9, 1972, 72.35652
Int. Cl. F23c *3/16*
U.S. Cl. 431—290 **6 Claims**

1. A wick-type device for burning a combustible material and for adjusting both the brightness and the burning time of the flame, comprising a tube of heat conducting material having a slot extending longitudinally of said tube from a slot end adjacent one end of the tube and being of less length than the axial length of the tube; a relatively slowly consumable main wick impregnable with combustible material and being exposed to said slot for receiving additional combustible material from outside said tube through said slot and having one of its ends exposed for burning adjacent said one end of said tube; an auxiliary wick within said tube and projecting beyond said one end of said tube and said one end of said main wick for being accessible to being lit and for, in turn, lighting said main wick at its said one end thereof; and ring means slidably mounted on said tube and being longitudinally adjustable therealong selectively in two zones, the first zone being adjacent said one end of said tube wherein said ring means is adapted to limit the brightness of the flame, and the second zone extending from said first zone along a major portion of the tube, said ring means, when in said second zone being adapted to determine the burning time and to extinguish the flame when said main wick burns down to the position of said ring means in said second zone.



3,873,264
BOTTLE COATING SENSITIZER AND METHOD THEREOF

Barney R. Daugherty, Elmira Heights, and John R. Letawa, Horse Heads, both of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 4, 1974, Ser. No. 448,095
Int. Cl. F23d *13/26, 13/36*
U.S. Cl. 432—18 **14 Claims**



1. A system for sensitizing the surfaces of containers comprising:

a conveyor for transporting containers through a system;
a flame treatment station adjacent said conveyor for heating the container surfaces including a first group of successive upper and lower banks of flame nozzles located along

one side of a predetermined length of said conveyor and a second group of corresponding successive upper and lower banks of flame nozzles located on a side of said conveyor opposite said first group with the nozzles of each respective group facing across said conveyor in opposite directions and aligned diagonally with respect to the conveyor centerline; and,
a cooling station in line with said conveyor and located downstream from said flame treatment station including means to roll the container against a cooling medium.

10. A method of sensitizing the surfaces of a container comprising:

positioning a container on a conveyor;
conveying said container through a flame treatment station and subjecting said container to a plurality of successive open flames, said flames directed in opposing directions against the container surfaces; and,
conveying said container from said flame treatment station to a cooling station, including the step of rolling the container against a cooling medium.

3,873,265

VAT OR REACTIVE DYES OR MIXTURES THEREOF AND ACRYLAMIDE OR METHYLENE BIS-ACRYLAMIDE IN ALKALINE CROSSLINKING AND DYEING

Rolf Kleber, Neu-Isenburg; Otto Smerz, Kelkheim, Taunus, and Gunther Trapp, Frankfurt, Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Main, Germany

Filed Feb. 2, 1973, Ser. No. 328,941

Claims priority, application Germany, Feb. 7, 1972, 2205589

Int. Cl. D06m *13/34*

U.S. Cl. 8—17 **6 Claims**

1. A process for the simultaneous dyeing and creaseproof finishing of textile material consisting of cellulose fibers or blends of cellulose fibers and polyester fibers by joint fixation of dyestuffs and synthetic resin precondensates on textiles, which process consists of the following steps:

a. impregnating the textile material with an aqueous bath that comprises either a reactive or vat dye-stuff or a mixture of a disperse dyestuff and a reactive or vat dyestuff, and that comprises an ambivalent cross-linking agent selected from the group consisting of N-methylol-acrylamide, N,N-dimethylol-methylene-bis-acrylamide, and ethers thereof with an alkanol containing 1 to 3 carbon atoms, and an acid catalyst;

b. in a first fixation step, exposing the material in an acid medium to dry heat;

c. in a second fixation step, treating the textile material in an alkaline medium; and

d. finally, carrying out an after-treatment of the material by a washing operation.

3,873,266

SOLUTIONS OF POLYALKYLENE POLYAMINE-CYANAMIDE CONDENSATION PRODUCTS

Kurt Hofer, Muenchenstein; Robert Christian Keller, Basel, and Alfred Emil Zingg, Allschwil, Baselland, all of Switzerland, assignors to Sandoz Ltd. (a/k/a Sandoz AG), Basel, Switzerland

Continuation of Ser. No. 126,271, March 19, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,739

Int. Cl. D06p *5/02*

U.S. Cl. 8—74 **6 Claims**

1. In a process wherein fibers of natural or regenerated cellulose are dyed in a bath with an anionic dye and treated with a fixing agent for the dye, the improvement which comprises employing as fixing agent a solution produced by the steps of (1) mixing a condensation product (A) of a polyalkylene polyamine and dicyandiamide or a water soluble salt of (A), said condensation product containing about 7 to 20 percent by weight ineffective components, with water to dissolve the water soluble components of the condensation product, (2) allowing the resulting mixture to stand for a period sufficient to precipitate at least 85 percent of said ineffective components from the resulting solution, (3) separating the precipitate and (4) recovering an aqueous solution of said condensation product containing no more than 3 percent by weight ineffective components.

3,873,267

OXYGEN OR CARBON MONOXIDE DETECTOR

Mitchell R. Swartz, Malden, Mass., assignor to Allen Irving Swartz, Malden, Mass., a part interest

Filed Aug. 7, 1972, Ser. No. 278,556

Int. Cl. A61b *5/00;* **G01n** *27/42, 33/16*

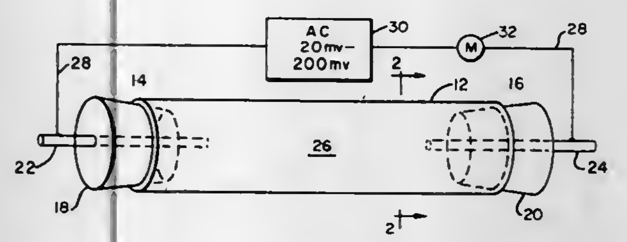
U.S. Cl. 23—230 B **16 Claims**

1. A detector for providing an indication of the relative concentration of oxygen in an environment comprising:

a material selected from the group consisting of haemoglobin, cobalt dihistidine, hemerythin, erythrocruorin, chlorocruorin, hemocyanin, and myoglobin having the property of reversibly binding oxygen;

the binding of oxygen by said material resulting in the release of charge carriers in said material;

means responsive to the concentration of charge carriers released from said material to provide a representation of the conductivity of said material; and



membrane means for exposing said material to said environment to permit reversible binding of oxygen by said material to a degree representative of the concentration of oxygen in said environment.

9. The gas sensitive resistor of claim 6 further including means attached to said electrodes to provide an output indication of the conductivity of said binding material.

3,873,268

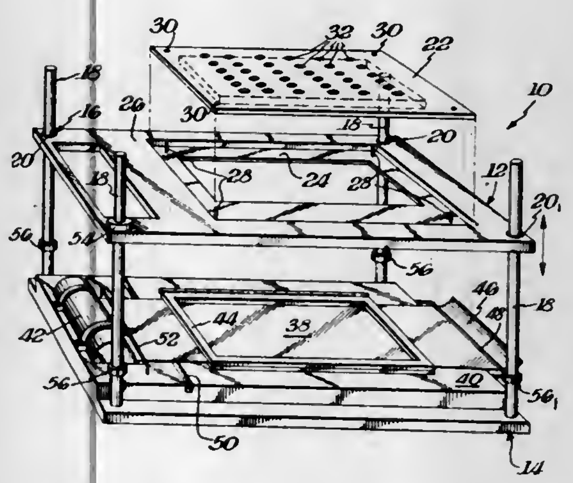
MULTIPLE SOLUTION TESTING DEVICE

James E. McKie, Jr., Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 159,795, July 6, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 279,069

Int. Cl. G01n *31/20*

U.S. Cl. 23—230 R **26 Claims**



1. A method of simultaneously testing the reactions of a number of solutions with a reactive layer which comprises the steps of placing substantially equal quantities of each of said solutions in cavities in a holder whereby substantially equal quantities of said solutions are caused to project substantially equal distances from said holder, disposing said reactive layer upon a plate, aligning said holder and said plate parallel to each other whereby each of the projecting quantities is equidistant from said reactive layer, causing relative movement between said holder and said plate while maintaining said parallel relationship for disposing them closely adjacent each other whereby said projecting quantities simultaneously contact said reactive layer to simultaneously commence reactions between said solutions and said reactive layer, and separating said holder from said plate whereby substantially equal portions of said projecting quantities transfer to said reactive layer for completing said reactions.

3,873,269

INDICATOR FOR THE DETERMINATION OF UREA

Friedrich Kraffczyk, and Roland Helger, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed June 7, 1973, Ser. No. 367,952

Claims priority, application Germany, Oct. 11, 1972, 2249647

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **12 Claims**

1. A colorimetric indicator suitable for the rapid semiquantitative detection of urea in solution, said indicator comprising:

a. a reaction zone containing an absorbent carrier impregnated with an enzyme capable of hydrolyzing urea into ammonia and carbon dioxide and at least one alkali metal carbonate or alkali metal hydroxide in an amount sufficient to provide a pH of 8 – 10 when said reaction zone is moistened with water and to raise the vapor pressure of ammonia released by enzymatic hydrolysis of urea; and

b. a pH indicator zone separate from the reaction zone containing an absorbent carrier impregnated with a colorimetric indicator responsive to ammonia liberated by said reaction zone.

3,873,270

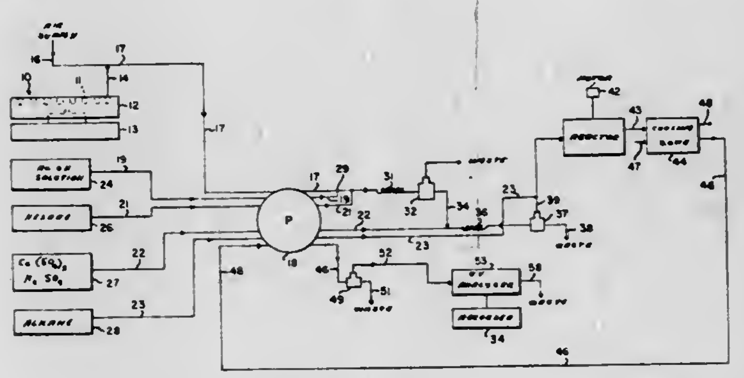
DETERMINATION OF METHADONE IN BIOLOGICAL SPECIMENS

Horace E. Hamilton, and Jack E. Wallace, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1973, Ser. No. 412,853

Int. Cl. G01n *33/16, 21/24, 21/34*

U.S. Cl. 23—230 B **15 Claims**



1. A method for determining the presence and concentration of methadone in a biological specimen which comprises extracting methadone from a biological specimen; mixing the extracted methadone with an alkane and ceric sulfate; refluxing the mixture for a period of time sufficient to oxidize any methadone present to benzophenone; separating from the mixture a solution of the benzophenone in the alkane; and subjecting the separated solution to spectrophotometric analysis, thereby obtaining an ultraviolet spectrum of the benzophenone.

3,873,271

METHOD AND APPARATUS FOR DETECTING FREE WATER IN HYDROCARBON FUELS

Dale A. Young, Basking Ridge; Alfred H. Miller, Somerset, and John F. Coburn, Jr., Cranford, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Jan. 2, 1974, Ser. No. 429,973

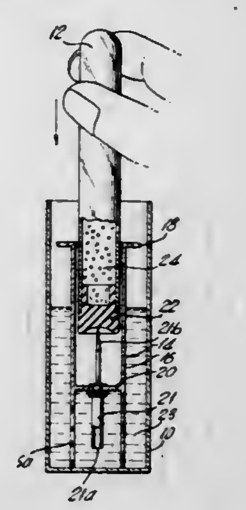
Int. Cl. G01n *33/22, 33/18, 21/06*

U.S. Cl. 23—230 HC **11 Claims**

1. An apparatus for detecting the presence of free water in hydrocarbons which comprises in combination:

a. an evacuated tube containing chemicals sensitive to the presence of said free water, said tube being closed at one end and sealed at the other end by a pierceable closure to maintain said vacuum;

b. a receptacle means for receiving said tube of (a);



c. a cannula having an inlet end and an outlet end mounted on said receptacle and disposed to pierce said closure when said tube is inserted into said receptacle, thereby providing a conduit into the evacuated interior of said tube.

3,873,272

REAGENT AND METHOD FOR ALBUMIN DETERMINATION

Elisabeth D. Wakefield, Costa Mesa, and Patricia A. Friedman, La Palma, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Feb. 20, 1974, Ser. No. 444,067

Int. Cl. G01n *31/22, 33/16*

U.S. Cl. 23—230 B **4 Claims**

3. In the method of determining serum albumin by the use of bromcresol green, together with sequestering agent in aqueous solution buffered to a pH of 4–4.2, the improvement comprising employing from about 4 to about 6 grams of sequestering agent selected from the group consisting of disodium and tetrasodium salts of ethylenediamine tetraacetic acid, and from about 4.5 to about 6 ml. of nonionic surfactant selected from the group consisting of polyoxyethylene fatty alcohol ethers having from about 12 to about 30 carbon atoms in the alcohol moiety and from about 2 to about 23 ethylene oxides in the molecule, per liter of said aqueous solution.

3,873,273

AUTOMATIC CHEMICAL TESTING SYSTEM

John Joseph Moran; Sverre Wolff, and Holvor Walter Ashley, all of Houston, Tex., assignors to Hycel, Inc., Houston, Tex.

Filed Oct. 15, 1973, Ser. No. 406,258

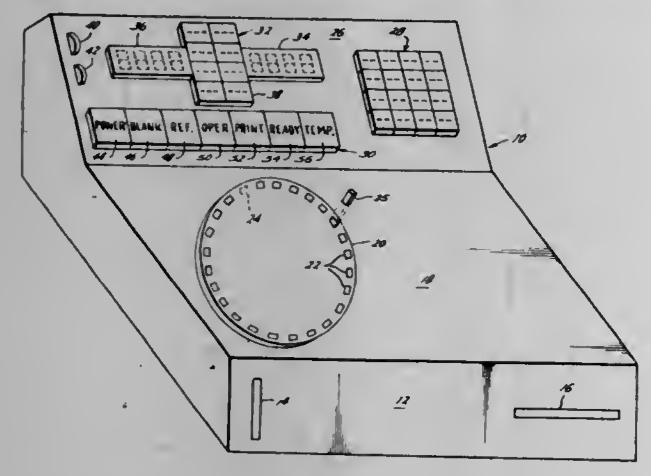
Int. Cl. G01n *33/16, 21/26*

U.S. Cl. 23—253 R **18 Claims**

1. Automatic chemical testing apparatus for detecting the amount of at least one of a plurality of given chemical substances in a liquid sample, wherein for each given substance to be detected a portion of said sample is mixed with predetermined chemical reagents in a reaction vessel, whereby said mixture undergoes a detectable change in proportion to the amount of that given substance present in said sample, said change being measurable by detecting the energy passing therethrough, said apparatus comprising:

a plurality of vessel holding chambers, each chamber including means for sensing the insertion therein of a reaction vessel and providing a presence signal indicating the insertion in a chamber of a vessel, each chamber having energy associated therewith and means for providing an energy path for said energy to and through each of said plurality of chambers, each vessel being inserted in a chamber so that said energy is applied through the mixture in that vessel;

detector means associated with and positioned in juxtaposition with each chamber so that said energy applied to and through said chamber is applied to said detector means, said detector means providing a signal manifesting the energy applied thereto; and



control means, responsive to the detector means signals provided from each detector means associated with those chambers having said presence signal provided therefrom, for processing each detector means signal at least one time, at a prescribed time or at prescribed times, after the vessel associated with that detector means was inserted in a chamber and for providing a signal manifesting the amount of each given substance being detected.

3,873,274

TITRATOR

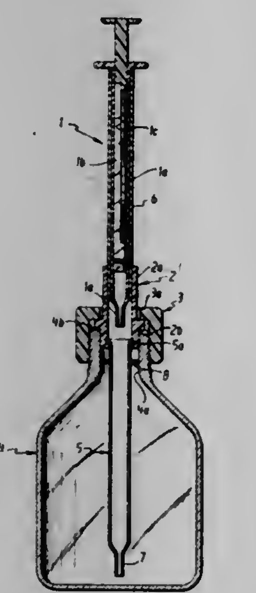
Karlheinz Neisius, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Feb. 2, 1973, Ser. No. 329,022

Claims priority, application Germany, Feb. 2, 1972, 2204808

Int. Cl. G01n *1/10, 1/14*

U.S. Cl. 23—259 **3 Claims**



1. A titrating device comprising a container for a liquid to be titrated, said container having an opening through a neck bearing external threads, separable means for withdrawing said liquid from said container including a burette for depending into said container, a graduated plunger-type syringe for standing above said container, and hollow sealing means interconnecting said burette and said syringe in air-tight communication, the volume of said syringe being not substantially greater than the volume of said burette, and said sealing means including an upwardly extending tubular portion having an integral annular ring on the external surface thereof, and a screw cap for mounting on said threaded neck and having an aperture therein for receiving said tubular portion therethrough, said screw cap interacting with the upper surface of said annular ring for forcing the lower surface of said ring against said neck for sealing said separable means with said container.

3,873,275

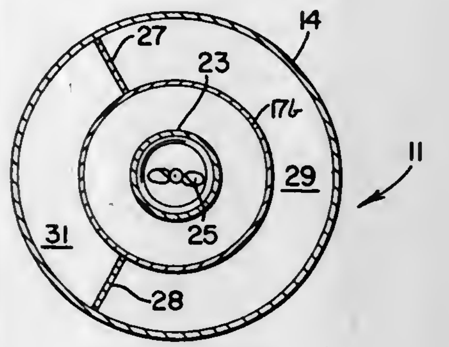
CRYSTALLIZATION APPARATUS AND METHOD

Richard C. Bennett, Park Forest, Ill., assignor to Whiting Corporation, Harvey, Ill.

Continuation of Ser. No. 861,805, Sept. 29, 1969, abandoned. This application Apr. 21, 1972, Ser. No. 246,439

Int. Cl. B01d *9/02*

U.S. Cl. 23—273 R **14 Claims**



1. An improved crystallization apparatus, comprising a vessel adapted to contain a body of slurry which includes crystal particles and liquid, means for maintaining supersaturation conditions in the slurry body to induce crystallization therein, means in said crystallization apparatus for circulating said slurry in a predetermined flow path in said vessel and for maintaining said crystal particles in suspension, said vessel also including at least two separate elutriation chambers, each of said elutriation chambers having an outlet at one end thereof for removing slurry liquid and crystal particles which are below a predetermined size only from said slurry body, and means communicating with each of said outlets for independently regulating the flow rate in each of said elutriation chambers to selectively operate any one or more of said elutriation chambers at a desired flow rate; whereby, the size and quantity of crystal particles removed from said slurry body through said elutriation chambers can be selectively and independently regulated with respect to each other to provide product crystals of improved size uniformity.

3,873,276

ORGANIC COMPOUNDS FOR USE AS ADDITIVES FOR MOTOR-FUELS

Bernard Haemmerle; Bernard Sillion, and Gabriel De Gaudemaris, all of Grenoble, France, assignors to Institut Francais du Petrole, des Carburants, et Lubrifiants, France and Entreprise de Recherches et d'Activities Petrolieres, Rueil-Malmaison, France

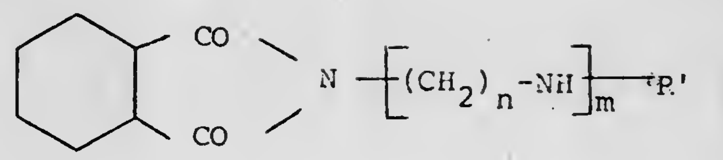
Continuation-in-part of Ser. No. 107,861, Jan. 19, 1970, Pat. No. 3,804,852. This application Aug. 30, 1973, Ser. No. 393,035

Claims priority, application France, Jan. 21, 1970, 70.02200

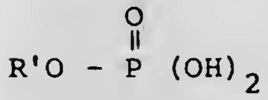
Int. Cl. C10l *1/26*

U.S. Cl. 44—63 **18 Claims**

1. A fuel composition comprising a major amount of gasoline and, as an additive, a small amount of at least one member selected from the group consisting of a compound of the formula

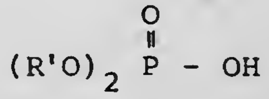


in which the divalent hydrocarbon ring is selected from the group consising of o-phenylene, 1,2-dihydro o-phenylene, 1,2,3,6-tetrahydro o-phenylene, 3,6-endomethylene-1,2,3,6 tetrahydro o-phenylene, 3,6-endodimethylene-1,2,3,6 tetrahydro o-phenylene cyclohexylene-1,2,3,6-endomethylene-cyclohexylene-1,2,3,6 endodimethylene-cyclohexylene-1,2, substituted, or not with 1–4 monovalent aliphatic hydrocarbon radicals having, as a whole, 1–30 carbon atoms, *n* is an integer from 2 to 10 inclusive, m an integer from 0 to 10 inclusive and R is a linear or branched, saturated or unsaturated, monovalent hydrocarbon radical having 1–3 carbon atoms and a neutralization product of said compound with an amount of at least one acid compound selected from the group consisting of monoalkyl- and dialkyl-phosphoric acids of the general formulae:



$$R'O-\overset{\overset{\textstyle O}{\|}}{P}(OH)_2$$

and



$$(R'O)_2\overset{\overset{\textstyle O}{\|}}{P}-OH$$

in which R′ is a monovalent saturated aliphatic hydrocarbon radical having from 8 to 18 carbon atoms, corresponding to a number of OH groups not higher than the number of amino groups of said compound; said small amount of additive being in an amount effective to impart detergent, anti-frost and anti-corrosion properties to the fuel composition.

3,873,277

DEPOSIT CONTROL ADDITIVES BASED ON HYDRAZINE

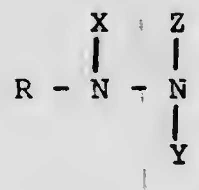
Marvin D. Coon, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 130,770, April 2, 1971. This application Mar. 15, 1973, Ser. No. 341,622

Int. Cl. C10l *1/22*

U.S. Cl. 44—64 **10 Claims**

1. A fuel composition having a major amount of a hydrocarbonaceous distillate fuel boiling in the gasoline range and in an amount to provide detergency and dispersancy, a composition of the formula:



$$R-\overset{\overset{\textstyle X}{|}}{N}-\underset{\underset{\textstyle Y}{|}}{\overset{\overset{\textstyle Z}{|}}{N}}$$

wherein

R is polyisobutylene or polyisopropylene radical of from about 400 to 5,000 average molecular weight;

X is hydrogen, methyl, and ethyl;

Y is hydrogen, phenyl, tolyl, hydrocarbyl of from 1 to 4 carbon atoms, $-CH_2CH(CH_3)OH$, $-CH_2CH_2OH$, $-CH_2CH_2OCH_3$, and $-CH_2CH_2OCH_2CH_3$;

Z is hydrogen, phenyl, tolyl, hydrocarbyl of from 1 to 4 carbon atoms, $-CH_2CH(CH_3)OH$, $-CH_2CH_2OH$, $-CH_2CH_2OCH_3$, and $-CH_2CH_2OCH_2CH_3$;

with the proviso that said tolyl may have the methyl group attached at the ortho, meta, or para position.

3,873,278

GASOLINE

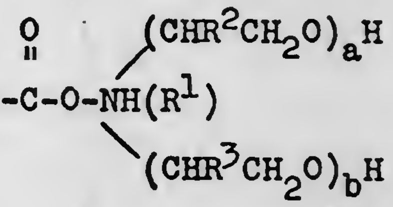
Perry Polss, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 29, 1973, Ser. No. 419,973

Int. Cl. C10l *1/22*

U.S. Cl. 44—66 **6 Claims**

1. Composition exhibitng good anti-stalling, anti-icing, anti-rust, detergent and water interaction properties and comprising a hydrocarbon mixture boiling in the gasoline range and 0.004–0.02% by weight, based on the weight of the hydrocarbon mixture, of an amine carboxylate salt of the formula



wherein R is C_{11-21} saturated or unsaturated aliphatic hydrocarbyl, R^1 is C_{8-24} saturated or unsaturated aliphatic hydrocarbyl, each of R^2 and R^3 is selected from H and CH_3, each of *a* and *b* is 1–14 and the sum of *a* and *b* is 3–15, said salt having 3–7 (CH_2CH_2O) groups, said composition having a Federal water rating of 1.

3,873,279

METHOD FOR THE CONTROL OF MICRO-ORGANISMS

Michael Singer, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 31, 1973, Ser. No. 384,393

Claims priority, application United Kingdom, Aug. 11, 1972, 37548/72

Int. Cl. C10l *1/30*

U.S. Cl. 44—76 **7 Claims**

1. A method for protecting a hydrocarbon subject to infection by micro-organisms which comprises contacting the hydrocarbon with an effective amount of 1-hydroxy-3H-1,2-benzoxaborole.

3,873,280

DESCALING OF STEEL STRIP

Aleck Block, Los Angeles, Calif.; Edward H. Frank, Washington, Pa., and Robert H. Shoemaker, Detroit, Mich., assignors to Merit Abrasive Products, Inc., Compton, Calif.

Continuation of Ser. No. 282,873, Aug. 22, 1972, abandoned. This application July 1, 1974, Ser. No. 484,574

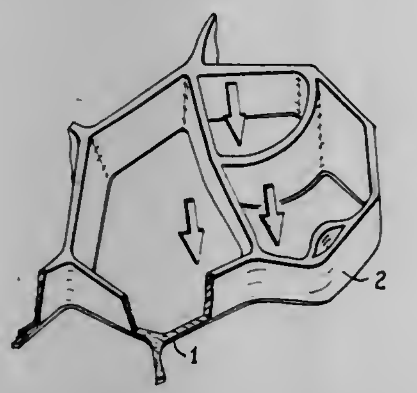
Int. Cl. B24b *1/00;* **B08b** *7/02;* **C23b** *1/06*

U.S. Cl. 51—322 **13 Claims**

1. A method of descaling stainless steel or hot rolled steel or hot rolled carbon steel strip containing a scale on the surface of the steel or the hot rolled steel strip comprising the steps of immersing such strip in a bath of molten material at a temperature of the order of 300° to 900° F. and passing the strip continuously through the bath at a substantially constant rate of movement; the material of said bath being chemically inert with respect to the metal of said strip but chemically reactive with respect to constituents of scale carried by said strip and the immersion of such strip in said bath being for a sufficient period of time to crack the scale, thereafter quenching said strip at a temperature of approximately 100° F. while said strip is moving at a substantially constant rate, and thereafter flailing the surface of said strip with flexible leaves of abrasive material to remove the scale from the surface of said strip without hardening the surface of the steel while said strip is moving at the substantially constant rate.

3,873,281
HIGH ENERGY GAS FILTRATION METHOD

Richard Carl Himes; Bruce Galvin Craig, and Walter Field Gulick, all of Littleton, Colo., assignors to Johns-Manville Corporation, Greenwood Village, Colo.
Filed Jan. 7, 1974, Ser. No. 431,462
Int. Cl. B01d *46/18*
U.S. Cl. 55—96 **24 Claims**

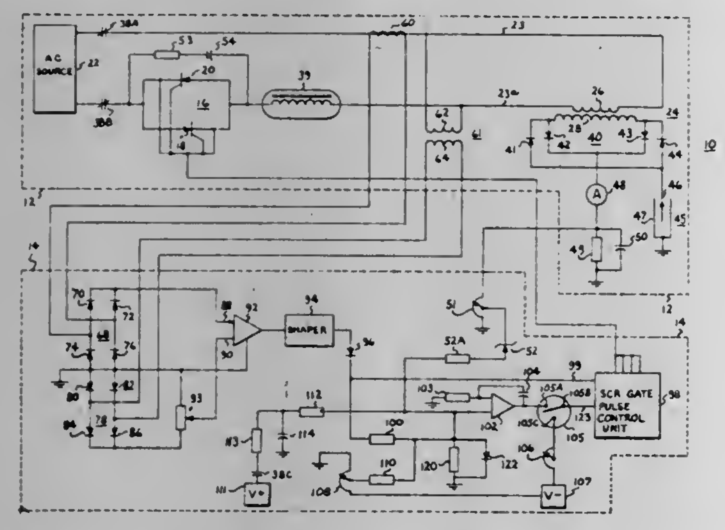


1. In a process for filtering micron and submicron size liquid and solid particulate matter from a gas stream by means of a filter medium; wherein the velocity of said gas stream at the upstream face of said filter medium is in the range of from 300 to 4,000 feet per minute and the pressure drop across said filter medium is in the range of from 7 to 60 inches of water; and wherein said filter medium is in the form of a movable, replaceable, porous, gas-pervious mat; a portion of said mat being moved into the gas stream; loaded with particulate matter, moved out of the gas stream and a fresh portion of said mat being moved into said gas stream to replace the spent portion, all without interrupting the filtering process; the improvement which comprises:

a. utilizing as said filter medium a mat comprising at least one layer of a flexible reticulated elastomeric foam having a void fraction of at least 90%;
b. passing spent filter medium into cleaning means and therein removing trapped particulate matter from said filter medium; and
c. thereafter returning the cleaned filter medium to a position in said gas stream for reuse therein.

3,873,282
AUTOMATIC VOLTAGE CONTROL FOR AN ELECTRONIC PRECIPITATOR

David C. Finch, Roanoke, Va., assignor to General Electric Company, Salem, Va.
Continuation of Ser. No. 275,820, July 27, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,413
Int. Cl. B03c *3/68;* **G05f** *1/64*
U.S. Cl. 55—105 **15 Claims**

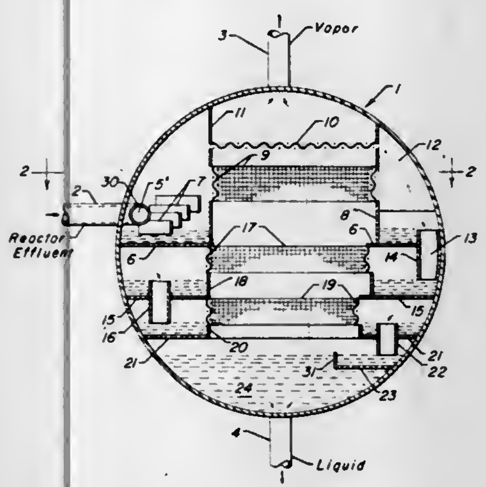


15. A control circuit for an electronic precipitator, said control circuit comprising:

first means for providing a progressively increasing voltage to said precipitator;
second means for detecting a conducting state of said precipitator and responsive thereto to provide an output signal corresponding to the time duration of said conducting state;
third means responsive to said output signal for inhibiting said voltage to said precipitator during said conducting state and for reducing said voltage as a function of the time duration of said conducting state upon the reapplication thereof.

3,873,283
VAPOR-LIQUID SEPARATOR

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 2, 1973, Ser. No. 375,968
Int. Cl. B01d *19/00*
U.S. Cl. 55—185 **6 Claims**



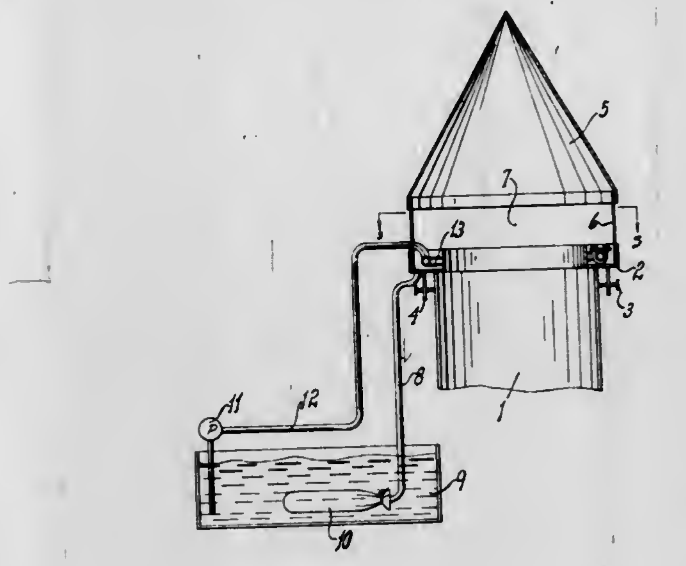
1. A vapor-liquid separation apparatus useful in separating a mixed-phase hydrocarbon conversion process stream which comprises:

a. a spherical vessel having an upper section, a middle section, a lower section and a spherical internal volume delineated by the inner surface of said spherical vessel;
b. a mixed-phase hydrocarbon stream inlet means, the inlet means being located in the middle section of the vessel and in communication with the internal volume of the vessel;
c. at least two substantially horizontal and vertically spaced apart open centered ring-shaped liquid holding trays, the trays being located below said mixed-phase inlet means and having a circular outer edge which adjoins the inner surface of the vessel over the entire circumference of the tray, the trays also having a raised lip surrounding the centrally located circular opening in the trays and delineating a ring-shaped liquid holding area upon the trays;
d. liquid downcomer means in each of said trays with the downcomer means of said uppermost tray comprising a weir on an upper surface of said uppermost tray and a vertical conduit extending downward from a perforation in the surface of the uppermost tray located within the weir to a point above a lower second tray, the downcomer means of said uppermost tray being located on the opposite side of the circular opening in the uppermost tray from the mixed-phase inlet means;
e. a centrally located cylindrical vapor conduit comprising an imperforate cylindrical wall attached to the inner surface of the vessel in the upper section of the vessel and extending downward to a point above the raised lip of the uppermost of the trays;
f. a plurality of cylindrical coalescing means, with a first coalescing means connecting the raised lip on the uppermost of the trays with the imperforate wall of the vapor conduit, and with a second coalescing means connecting a lower surface of the uppermost of the trays to the raised lip of the lower second tray;

g. a vapor phase outlet means located in the upper section of the vessel and in communication with the cylindrical vapor conduit; and,
h. a liquid phase outlet means located in the lower section of the vessel below all of the trays and in communication with the internal volume of the vessel.

3,873,284
SMOKE STACK WASHER

Cayetano Aguas, 214 1st St., Seal Beach, Calif. 90740
Filed Oct. 12, 1973, Ser. No. 405,783
Int. Cl. B01d *47/06*
U.S. Cl. 55—228 **1 Claim**

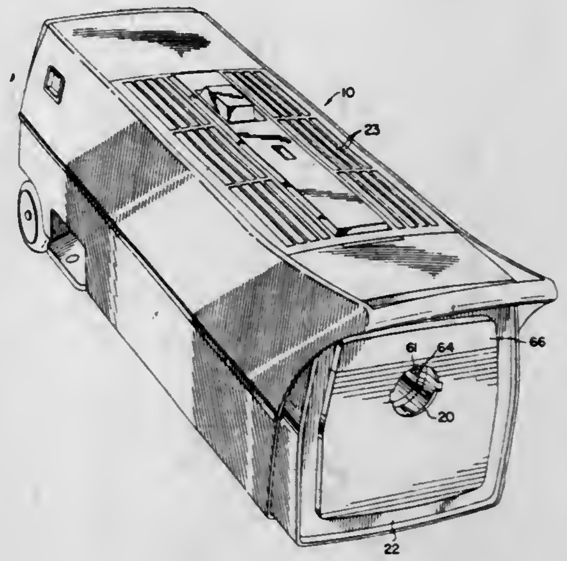


1. In combination with a smoke stack that has an upper open end portion which discharges smoke containing fine particles into the ambient atmosphere, a device for removing and collecting said particles, which device includes:

a. a hood disposed above said upper open end portion of said stack, with said hood being of such shape as to deflect said smoke downwardly and outwardly relative to said hood;
b. first means for supporting said hood in a fixed position above said upper open end portion of said stack, with said stack and hood cooperatively defining a circumferentially extending space;
c. a ring-shaped trough that extends around said upper open end portion and to which said first means is secured, said trough having a drain opening formed therein;
d. second means for securing said trough to said upper open end portion;
e. a reservoir containing a liquid, with said reservoir being located a substantial distance below said hood;
f. a circular tubular distributor disposed in a fixed elevated position in said trough, said tubular distributor having a number of spaced holes therein through which jets of said liquid may be discharged upwardly to span said space, which distributor has a liquid inlet formed therein;
g. a power-driven pump having a discharge and an inlet provided therein;
h. first conduit means connecting said pump inlet to liquid in said reservoir and said discharge of said pump to said inlet in said distributor;
i. a filter bag disposed in said reservoir; and
j. second conduit means connecting said drain opening to the interior of said bag, with said particles in said smoke becoming entrained with said liquid in said jets as said smoke discharges through said space into the ambient atmosphere, with said liquid and said entrained particles flowing into the interior of said bag by force of gravity, and with said liquid free of said entrained particles flowing through said bag whereupon it subsequently enters said pump and is again used to form said jets to remove additional particles from said smoke.

3,873,285
SUCTION CLEANER

Howard L. Allen, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Apr. 7, 1972, Ser. No. 241,910
Int. Cl. B01d *46/02*
U.S. Cl. 55—362 **9 Claims**



1. A suction cleaner including a suction inlet and a suction outlet and having a housing for partially forming a chamber for receiving a disposable, porous dirt-collecting bag;

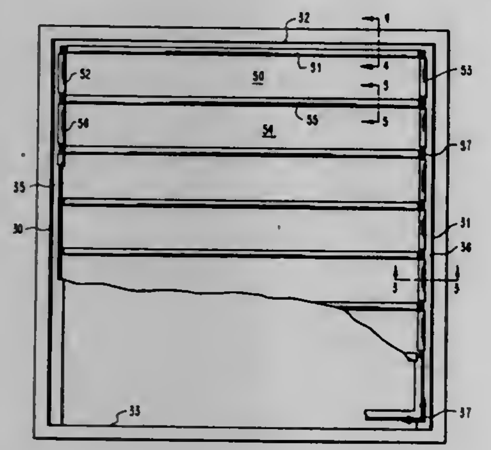
a disposable, porous dirt-collecting bag having a rigid collar with an aperture therein mounted on said suction inlet;
a body member separable from said housing for transportation apert from said housing, said body member being adapted to be affixed to said housing to form a portion of said chamber;
a mounting tube carried by said body member projecting its free end into said chamber and through said collar aperture supporting said dirt-collecting bag;
said mounting tube confluently communicating at its other end with an aperture in said body member forming the suction inlet for said suction cleaner;
moveable retaining means mounted on said body member having engaged and released positions, said engaged position holding said bag collar on said mounting tube to thereby fix said dirt-collecting bag to said body member; moveable actuating means mounted on said body member for moving said retaining means from an engaged to a released position to permit removal of said bag collar from said mounting tube;
said actuating means including pushing means simultaneously movable therewith and movably abutable with said rigid collar of said dirt-collecting bag means by movement of said actuating means in a releasing direction to define the released position of said retaining means for pushing said rigid collar towards the free end of said mounting tube to release it from the same.

3,873,286
GAS FILTER ASSEMBLY

Oscar A. Wurtenberg, 4224 Dolphin Rd., Louisville, Ky. 40220
Filed June 20, 1973, Ser. No. 371,900
Int. Cl. B01d *46/02*
U.S. Cl. 55—378 **2 Claims**

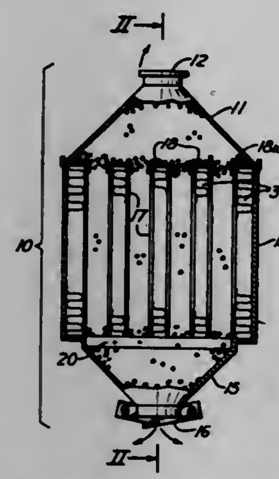
1. A gas filter assembly of modular construction comprising a rectangular duct having a pair of rails on opposite inner sides thereof, a rectangular cell frame slidable along said rails, said frame comprising a wall bent at one end to form a reentrant slot receiving said rails, a plurality of medium efficiency filter bags disposed within said cell frame and individually removable therefrom for replacement purposes, each of said bags having attached at its mouth a collar comprising a pair of elongated thin chipboard members with a central portion and

with end tab portions pivotally connected to said central portion manipulable long clips holding the central portions of each collar member to the adjacent central portion of the next bag of the assembly and manipulable long clips holding the central portion of the collar members of the outermost two bags of the assembly to the adjacent wall of said frame, and manipulable short clips holding the tab portions at the ends of the respective collars of each bag to each other and to said wall of said frame, thereby to provide a modular assembly having a plurality of generally symmetrical rectangular open mouth bags each of which is closely disposed to an adjacent bag and independently removable from said frame.



3,873,287
MODULAR FLUID FILTER CONSTRUCTION

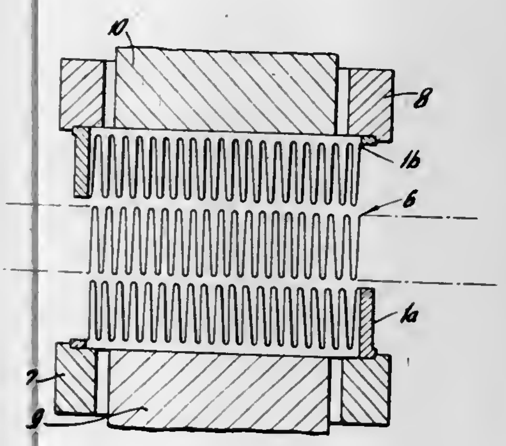
Herbert L. Barnebey, Columbus, Ohio, assignor to Barnebey-Cheney Co., Columbus, Ohio
Filed July 27, 1972, Ser. No. 275,564
Int. Cl. B01d *29/08*
U.S. Cl. 55—479 **5 Claims**



1. In a fluid-solids contacting assembly of the class of filters and adsorbers in the form of a series of generally vertical plane-surfaced layers of granular fluid-treating material alternately arranged between fluid inlet and fluid outlet spaces, the improvement comprising a combination of modular apparatus components adapted for factory or field assembly into adsorbers of selectable sizes and capacities, said combination being comprised of:
   a. a housing enclosure for said adsorber in laterally spaced relation to said layers of granular fluid-treating material providing a fluid inlet manifold on one side and a fluid outlet manifold on the opposite side thereof,
   b. a series of pairs of vertically extending perforate planar wall components assembled between said fluid inlet and fluid outlet manifolds within said housing, the two wall components of each pair being in spaced-apart, parallel planes and constituting means for confining a layer of granular fluid-treating material within each of said pairs, said pairs of perforate wall components being open within said housing along the top and bottom edges of said perforate wall components,
   c. caps spacing apart adjacent pairs of perforate wall components between the top edges thereof from fluid inlet to fluid outlet manifold within said housing, said caps covering the spaces between said pairs whereby said spaces remain open fluid inlet and fluid outlet spaces alternating between said pairs;
   d. edge strips extending between and fitting the side edges of said pairs of perforate wall components adjacent said fluid inlet and fluid outlet manifolds, said edge strips thus bounding the lateral edges of the layers of granular fluid-treating material contained within said pairs of wall components;
   e. means contiguous with the edges of said edge strips fitting the side edges of said pairs of perforate wall components, said means forming barriers preventing direct fluid flow from said fluid inlet manifold to said fluid outlet manifold through the open spaces between said pairs of perforate wall components
   f. said housing including granular material enclosure components above and below the assembled pairs of perforate wall components, namely
      i. means for retaining a top layer of granular material covering said caps and the layers of granular material confined within said pairs of perforate wall components, and
      ii means for retaining a bottom layer of granular material at the base of said perforate wall components, said bottom layer forming the bottom boundary of said fluid inlet and fluid outlet spaces covered by said caps and also supporting the granular material layers confined within said pairs of perforate wall components.

3,873,288
RESPIRATOR FILTER CONSTRUCTION

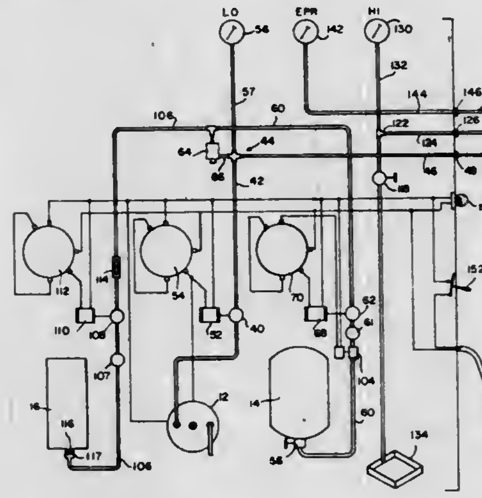
Karl August Wachter, and Horst Muller, both of Lubeck, Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany
Filed July 17, 1972, Ser. No. 272,690
Claims priority, application Germany, July 17, 1971, 2135813
Int. Cl. B01d *39/08*
U.S. Cl. 55—497 **4 Claims**



1. A respirator filter comprising a folded filter layer and a ring enclosing the periphery of said filter layer, said ring including two outer identical interengageable annular ring parts each ring part having opposed edges with complimentary projections and recesses corresponding to the folds of said filter layer which are correlated and interengaged together over the folds of the filter layer and bear tightly against respective sides of the filter layer, and a cement disposed on said projections and recesses and securing each ring to said filter layer.

3,873,289
AIR CONDITIONER SERVICING UNIT

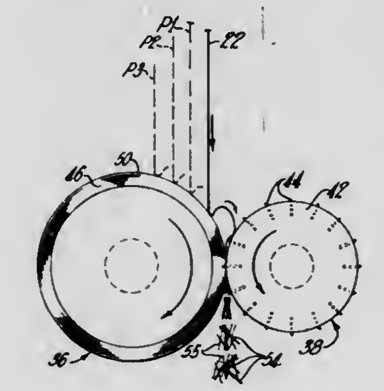
Kenneth R. White, c/o K-Whit Tools, Inc., 5144 E. 65th St., Indianapolis, Ind. 46220
Filed Jan. 2, 1974, Ser. No. 429,768
Int. Cl. F25b *45/00*
U.S. Cl. 62—149 **11 Claims**



1. A servicing unit for air conditioning systems comprising a charging line containing a constant flow metering device adapted to pass charging fluid at a regulated rate, said line extending from said source and leading to a connector for connection to a charging fitting of the air conditioning system, a source of liquid refrigerant under pressure, and a line containing a control valve connecting said source to the constant flow metering device, a source of oil under pressure and a line containing a control valve connecting said oil source to said same constant flow metering device, and timing means connected to said control valves and operative to control the time during which flow occurs through said lines to the system, and thereby to meter to the system a quantity of fluid determined by said rate and the time.

3,873,290
METHOD OF PRODUCING DISCONTINUOUS LENGTHS OF DISPERSED FILAMENT STRAND

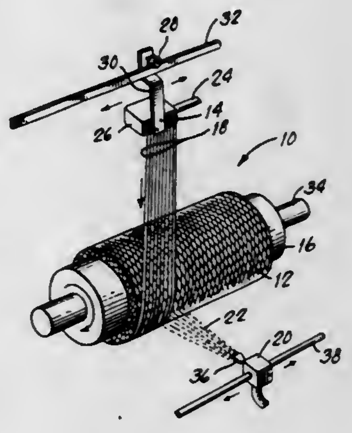
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed June 8, 1973, Ser. No. 368,423
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **7 Claims**



1. The method of producing discontinuous filament lengths comprising:
   linearly advancing filaments as a continuous linear bundle towards a severing zone;
   dispersing at least some of the filaments of the bundle during advancement by impinging the bundle against a surface moving towards the severing zone;
   moving the dispersed bundle from the impingement zone to the severing zone; and
   severing the dispersed bundle into discontinuous lengths in the zone.

3,873,291
METHOD OF PRODUCING GLASS FIBER MATS

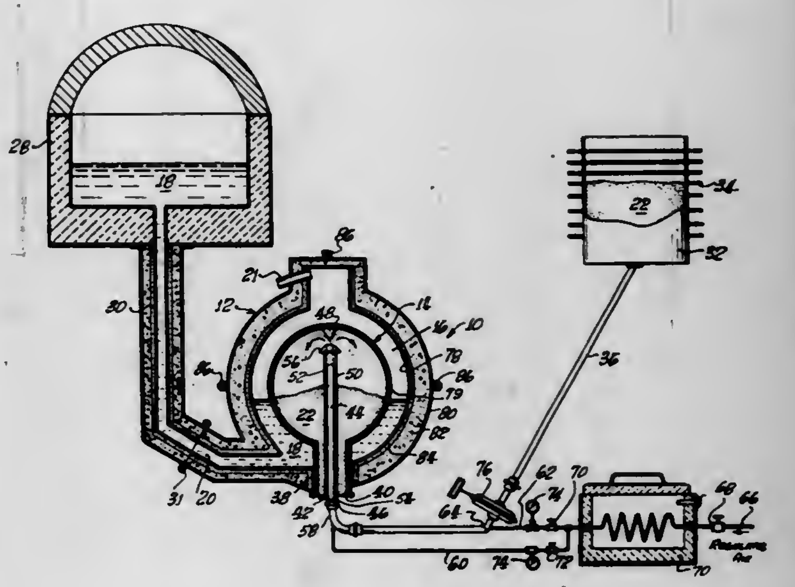
William R. Miller, Bremen, Ohio, assignor to Nicofibers, Inc., Shawnee, Ohio
Filed Mar. 29, 1974, Ser. No. 456,387
Int. Cl. C03b *37/02;* **C03c** *25/02*
U.S. Cl. 65—3 **9 Claims**



5. In a method of producing glass fiber mats by continuously winding glass filaments about a rotating drum, the improvement comprising applying a binder solution at predetermined intervals to the filaments on the drum to form a plurality of concentric integral mats on the drum during periods of time wherein the binder solution is being applied, the mats being separable at a location where no binder solution is applied for a predetermined period of time sufficient in duration to prevent the formation of an integral mat at said location.

3,873,292
GLASS CASTING APPARATUS AND METHOD

Harvey Larry Penberthy, 5624 Admiral Way, S.W., Seattle, Wash. 98116
Filed Mar. 18, 1974, Ser. No. 452,107
Int. Cl. C03c *19/00;* **C03b** *9/14, 9/38*
U.S. Cl. 65—68 **12 Claims**



1. A glass casting apparatus comprising:
an outside mold and an inside mold;
said molds being generally hollow spheres and being spaced from one another so as to form a generally spherical shell cavity;
means for supplying molten glass within said cavity;
a substantially vertical standpipe means mounted within the inside mold;
the top of the standpipe being located in the top half portion of the inside mold and spaced a short distance down from the top interior of the inside mold; and
means for supplying a granulated solid to the vertical standpipe;

whereby upon simultaneous introduction of the molten glass and granulated solid into the glass casting apparatus the granulated solid will fall down about the standpipe to counteract buoyancy forces of the molten glass on the exterior of the inside mold.

8. A method of constructing large glass hollow spheres comprising the steps of:

providing a pair of hollow generally spherical molds which form a generally spherical shell cavity;
progressively filling the cavity with molten glass; and
progressively filling the interior of the inside mold with hot ballast simultaneously with the filling of the cavity with molten glass to counteract buoyancy forces of the molten glass on the exterior of the inside mold.

3,873,293
METHOD AND APPARATUS FOR PRODUCTION OF GLASS TUBING

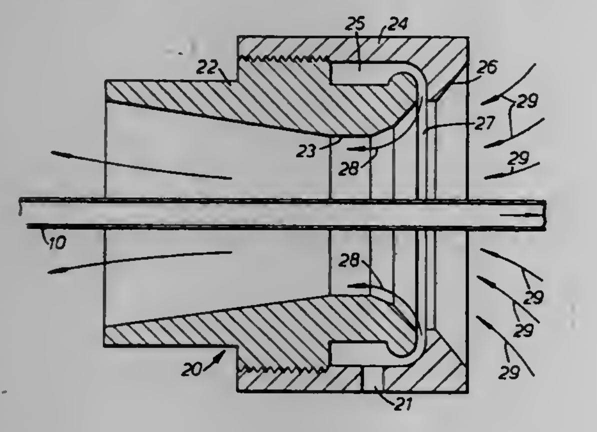
John Duncan Rudd, Newburgh, near Wigan; Michael Hill Davie, Crank, near St. Helens, and Malcolm James Rigby, Haydock, near St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Sept. 8, 1972, Ser. No. 287,384

Claims priority, application United Kingdom, Sept. 13, 1971, 42560/71

Int. Cl. C03b *15/14*

U.S. Cl. 65—84 **6 Claims**



1. Apparatus for producing tubing comprising means for drawing molten glass from an annular opening, at least one air induction device downstream of the annular opening for cooling the hot glass tubing, the air induction device having a first air inlet leading from the atmosphere to a venturi-shaped nozzle which is disposed substantially coaxially with the path of the hot glass tubing and which is formed with a narrow annular aperture downstream of its narrowest portion, said aperture forming a second air inlet for connection to a source of air under pressure and means are provided for injecting the flow of air under pressure into the nozzle through the annular aperture so as to induce a flow of atmospheric air through the first inlet, and an outlet facing in an upstream direction arranged to direct a flow of induced air over the external surface of the hot glass tubing.

3,873,294
APPARATUS FOR TEMPERING GLASS SHEETS

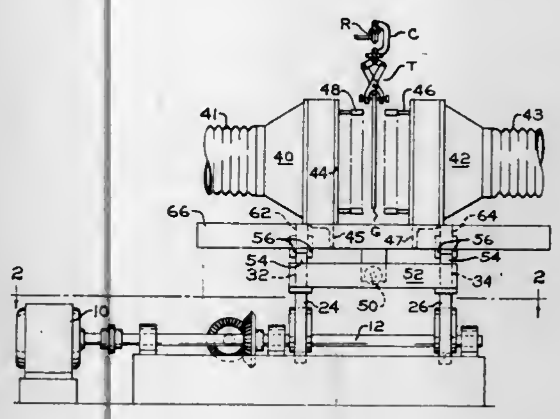
Dennis M. Goolsbay, Caracas, Venezuela, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 27, 1973, Ser. No. 419,469

Int. Cl. C03b *27/00*

U.S. Cl. 65—348 **3 Claims**

1. Appparatus for cooling glass sheets comprising a first means for supporting a pair of plenum chambers in spaced relation to one another for horizontal reciprocation thereof, each plenum chamber having an inward facing, vertical, apertured wall facing an inward facing, vertical, apertured wall of said other plenum chamber, means for supporting a glass sheet between said apertured walls in a vertical plane, means for imparting tempering medium under pressure to said plenum chambers for delivery through said apertured walls against the opposite surfaces of a heated glass sheet located between said apertured walls, a second means for supporting said first supporting means, means for imparting reciprocating motion to said first supporting means and its supported plenum chambers in unison relative to said second supporting means, and means for imparting vertical orbital motion to said second supporting means, said first supporting means and its supported plenum chambers in unison, said means for imparting reciprocating motion being operable independently of said means to impart vertical orbital, motion, whereby when said reciprocating motion imparting means is selectively actuated, said plenum chambers reciprocate in unison and, when said means for imparting vertical orbital motion is selectively actuated, said plenum chabers are moved in unison in closed orbital paths.



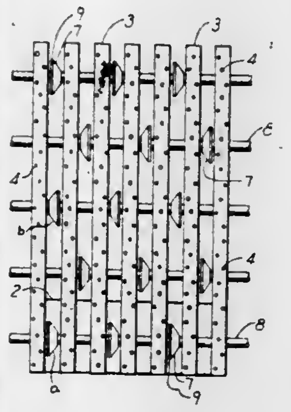
3,873,295
QUENCH APPARATUS FOR GLASS TEMPERING

William G. Bates, Sellersville, and William E. Marceau, Horsham, both of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Feb. 5, 1974, Ser. No. 439,729

Int. Cl. C03b *27/00*

U.S. Cl. 65—351 **4 Claims**



1. A quench for use in tempering glass plates moving in a given direction comprising means forming a plurality of chambers, each being provided with an elongated, narrow surface extending in said direction, said surfaces being provided with a plurality of jet orifices directed at various angles to said surfaces, means to mount some of said chambers with said elongated surfaces side by side and separated by a distance substantially equal to the width of the narrow portion of said surfaces with said surfaces horizontal and facing upwardly, means to mount others of said chambers in a similar fashion with said surfaces thereof horizontal and facing downwardly, the space between the upwardly and downwardly facing surfaces forming a passage through which glass sheets are moved, conveyor means including rollers having axes transverse to glass movement mounted between some of said upwardly facing surfaces to move the glass, and means to supply air under pressure to said chambers to be discharged as jets through said orifices against the glass.

3,873,296
INCREASING METALS IN BIOLOGICAL TISSUE

Harvey H. Ashmead, Kaysville, and Paul A. Little, Ogden, both of Utah, assignors to Harvey H. Ashmead, Kaysville, Utah, by said Paul A. Little

Continuation-in-part of Ser. No. 739,141, June 24, 1968,. This application Jan. 5, 1970, Ser. No. 799

Int. Cl. A01n *21/02*

U.S. Cl. 71—77 **4 Claims**

1. In a method of stimulating plant growth by preparing a plant-life sustaining medium and bathing a plant or seed in the medium, the improvement comprising adding at least one metal proteinate presenting a solubility of less than about 7.6 milligrams percent in a solution of pH 8 to the plant by associating the metal proteinate, in an amount adequate to stimulate plant growth, with the medium from which the plant otherwise sustains life, the metal proteinate comprising a metal selected from the group consisting of calcium, magnesium, zinc, iron, maganese, copper and cobalt.

3,873,297
PROCESS FOR INHIBITING BUD GROWTH

Robert Howard Kupelian, Yardley, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 28, 1973, Ser. No. 336,643

Int. Cl. A01n

U.S. Cl. 71—78 **10 Claims**

1. A method for inhibiting bud growth on plants, trees, and harvested bulbs tubers comprising contacting said plants, trees, harvested bulbs and tubers with a bud growth inhibiting amount of a lower alkyl ester of 1-(1,2,3,4-tetrahydro-1-naphthyl)-5-imidazolecarboxylic acid or the acid addition salt thereof.

3,873,298
SYNERGISTICALLY ACTIVE HERBICIDAL MIXTURES FOR THE CONTROL OF WEEDS IN RICE CROPS

Hermann Bieringer, Stein, and Ludwig Ebner, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

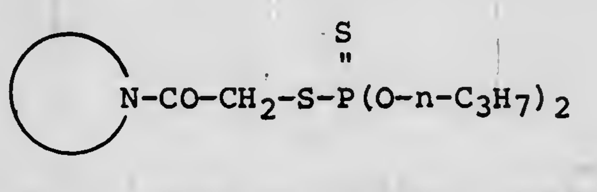
Filed Oct. 5, 1972, Ser. No. 295,408

Claims priority, application Switzerland, Oct. 21, 1971, 15338/71

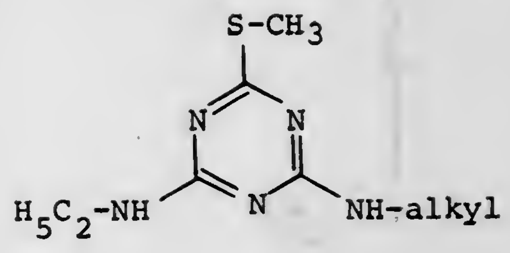
Int. Cl. A01n *9/36*

U.S. Cl. 71—87 **5 Claims**

1. A synergistic herbicidal mixture for the control of weeds in rice crops which comprises in an effective amount an active substance of the formula



wherein the N-containing ring represents a cyclohexamethyleneimine radical or the 2-methylpiperidyl group together with an active substance of the formula



wherein alkyl represents a C_2–C_5 alkyl radical; said active substances being present in a weight ratio of from 10:1 to 1:3.

3,873,299
1,2,4-THIODIAZOLYL-UREA HERBICIDAL AGENTS

Carl Metzger; Dieter Borrmann, both of Wuppertal-Elberfeld; Richard Wegler, Leverkusen; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

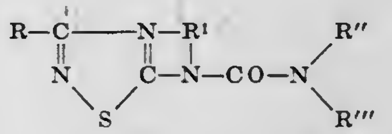
Division of Ser. No. 862,908, Oct. 1, 1969, Pat. No. 3,686,198, which is a continuation-in-part of Ser. No. 756,296, Aug. 29, 1968, abandoned. This application June 16, 1972, Ser. No. 263,488

Claims priority, application Germany, Sept. 19, 1967, 53530

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **11 Claims**

1. Method of combatting undesired vegetation which comprises applying to such vegetation or its habitat a herbicidally effective amount of a 1,2,4-thiadiazolyl urea of the formula



in which R is alkyl having 1–4 carbon atoms, R′ is selected from the group consisting of hydrogen and alkyl having 1–4 carbon atoms, R″ is selected from the group consisting of hydrogen and alkyl having 1–4 carbon atoms, and R‴ is alkyl having 1–4 carbon atoms.

3,873,300
DITHIOCARBAMATE HYDROCHLORIDE SALTS AS HERBICIDES

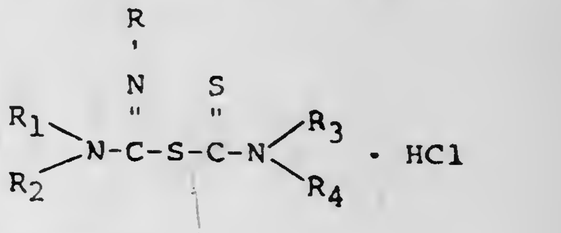
John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 160,556, July 7, 1971, abandoned. This application July 23, 1973, Ser. No. 381,820

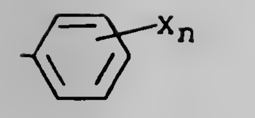
Int. Cl. A01n *9/12*

U.S. Cl. 71—98 **10 Claims**

1. A method of inhibiting the growth of unwanted vegetation which comprises applying to the area to be protected a herbicidally effective amount of a compound of the formula



wherein R is naphthyl or



wherein *n* is an integer of from 0 to 3 and X is halo, trihalomethyl, hydroxyl, lower alkyl, lower alkoxy, lower acylamido, lower alkacyl, or lower alkylcarbamoyloxy R_1 and R_2 are each lower alkyl, lower alkenyl, lower alkynyl or benzyl, and R_3 and R_4 are each lower alkyl or benzyl.

3,873,301

NITRO-OXIMINO ALKANOIC ACIDS AS PLANT GROWTH REGULANTS

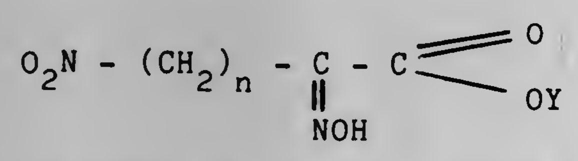
John B. O'Brien, Watertown, Conn.; John Pisanchyn, Morristown, N.J., and Robert Colby, Durham, N.H., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,054

Int. Cl. A01n *9/24*

U.S. Cl. 71—106 8 Claims

1. A method for increasing yield of plants which comprises applying to plants an effective amount of a compound selected from the group consisting of nitro-oximino alkanoic acids and derivatives having the general formula:



$$O_2N-(CH_2)_n-\underset{\underset{NOH}{\|}}{C}-C\genfrac{}{}{0pt}{}{=O}{\diagdown OY}$$

wherein *n* is an integer from 1 to 12 and Y is selected from the group consisting of R and R'' in which R is a member selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms, alkenyl of 3 to 12 carbon atoms and alkynyl of 3 to 12 carbon atoms and R'' is alkali metal.

3,873,302

HERBICIDAL USE AND COMPOSITION OF HALOPHENOXY BENZOIC CHLORIDES

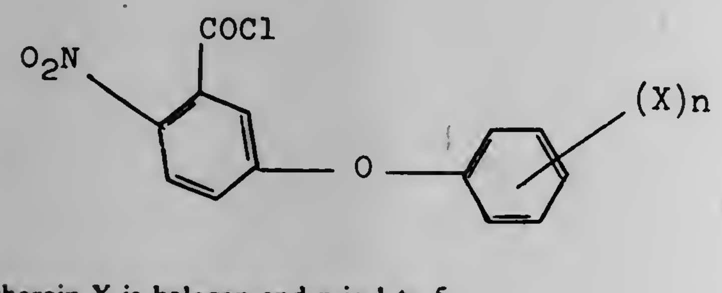
Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 194,479, Nov. 1, 1971, Pat. No. 3,776,715, which is a division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Sept. 12, 1973, Ser. No. 396,975

Int. Cl. A01n *9/24*

U.S. Cl. 71—115 10 Claims

1. The method for controlling plant growth that comprises applying an herbicidal amount of an herbicidal compound having the formula:



wherein X is halogen and n is 1 to 5.

3,873,303

HERBICIDAL USE AND COMPOSITION OF HALOPHENOXY BENZAMIDES

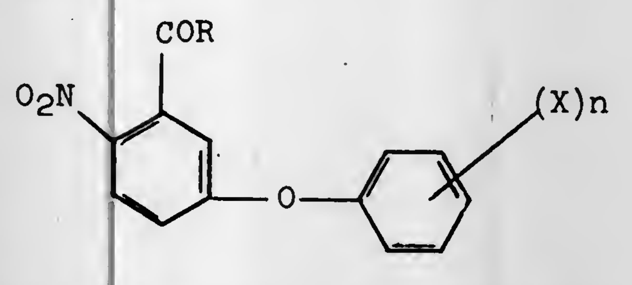
Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 194,479, Nov. 1, 1971, Pat. No. 3,776,715, which is a division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Sept. 12, 1973, Ser. No. 396,976

Int. Cl. A01n *9/20*

U.S. Cl. 71—118 14 Claims

1. The method for controlling plant growth that comprises applying an herbicidal amount of an herbicidal compound having the formula:



wherein X is halogen, n is 1 to 5, and R is amido, alkylamido (C_1–C_6), or dialkylamido (C_1–C_6).

3,873,304

PLANT GROWTH REGULANTS

Osamu Yamada; Akira Kurozumi; Shuichi Ishida; Fumio Futatsuya; Kensaku Ito, and Hiroshi Yamamoto, all of Saitama, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

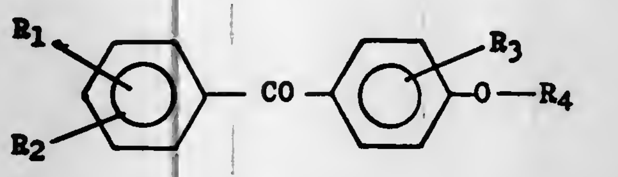
Filed Aug. 21, 1972, Ser. No. 282,270

Claims priority, application Japan, Aug. 24, 1971, 46-64658

Int. Cl. A01n *9/24*

U.S. Cl. 71—123 3 Claims

1. The method of combatting weeds comprising applying thereto an effective amount of one or more compounds of the general formula



(I)

wherein R_1 and R_2 are the same or different and each represent hydrogen atoms or lower alkyl groups, R_3 is a lower alkyl group or a chlorine atom and R_4 is a lower alkyl group or allyl group.

3,873,305

METHOD OF MELTING PARTICULATE METAL CHARGE

Raymond J. Claxton, Fox Chapel; Russell J. Logan, Sewickley, and Charles E. West, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 8, 1974, Ser. No. 458,552

Int. Cl. C22b *21/06*

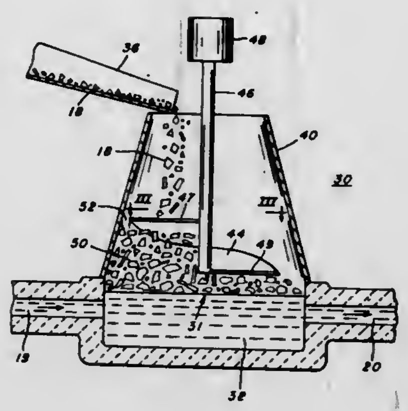
U.S. Cl. 75—68 R 24 Claims

1. A method of forcibly submerging a metal charge in molten melting media wherein said charge comprises pieces not capable of self-submergence said method comprising

a. continuously introducing a supply of said charge into a conduit of substantially circular cross section having a downwardly diverging portion and discharging into a body of molten melting media;

b. continuously urging said charge downwardly by the action of a rotating wedge blade situated in said diverging portion of said conduit, said wedge blade having an included arc describing a sector not substantially exceeding

360° and having at least one substantial opening therethrough such that said charge passes through said opening in said blade by gravity and is pressed downwardly by said blade into said molten melting media by the wedging action of said rotating wedge blade.



3,873,306

FERRITIC ALLOY WITH HIGH TEMPERATURE STRENGTH CONTAINING DISPERSED INTERMETALLIC TISI

Philip M. Giles, Bethlehem; Halle Abrams, Allentown, and Arnold R. Marder, Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed July 20, 1973, Ser. No. 381,288

Int. Cl. C22c *39/04*

U.S. Cl. 75—124 10 Claims

1. A high temperature high strength ferritic alloy characterized by a microstructure containing a small, well dispersed, spherical TiSi type intermetallic precipitate and consisting essentially of, by weight, up to about 0.1% carbon, from about 4.0 to about 8.2% aluminum, up to about 10.5% chromium, from about 0.2 to about 4.0% silicon, from about 0.05 to about 2.0% titanium, where the silicon content is at least equal to the titanium content to insure the development of said precipitate, with the balance iron.

3,873,307

PROCESS FOR THE PREPARATION OF YTTRIUM-SILICON COMPOUNDS OR MASTER ALLOYS BY SILICON CARBIDE REDUCTION OF YTTRIA

Edward Morrice, Jr., Reno, Nev., and Norman J. Whisler, Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 5, 1973, Ser. No. 412,845

Int. Cl. C22c *35/00, 31/00, 1/06*

U.S. Cl. 75—152 5 Claims

1. A process for the preparation of yttrium-silicon compounds or master alloys by silicon-carbide reduction of yttria comprising the steps:

a. mixing a charge consisting essentially of yttria and silicon carbide;

b. placing said charge in a vacuum furnace;

c. sintering and heating said charge at a temperature of from 1,200° to 2,500°C under dynamic vacuum conditions; [whereby the yttria is reduced and a yttrium-silicon compound is produced];

d. cooling said sintered charge under vacuum conditions.

3,873,308

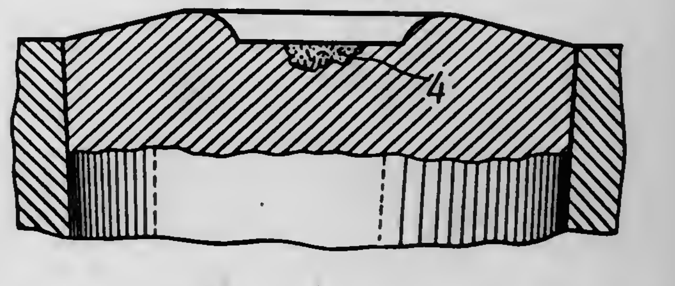
METHOD FOR THE ELIMINATION OF EROSION FAILURES ON THE SURFACES OF HIGH PRESSURE-HIGH TEMPERATURE DEVICES

Valentin Nikolaevich Bakul, ulitsa Kirova, 34a, kv. 12; Alexei Iosifovich Prikhna, ulitsa Vyshgorodskaya, 33, kv. 20; Alexandr Alexandrovich Shulzhenko, ulitsa Novo-Konstantinovskaya, 17, kv. 27; Alexandr Fedorovich Lyashenko, ulitsa Vyshgorodskaya, 52, korpus 3, kv. 62, and Vasily Ivanovich Zhitnetsky, ulitsa Vyshgorodskaya 100/14, kv. 58, all of Kiev, U.S.S.R.

Continuation-in-part of Ser. No. 104,303, Jan. 6, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,300

Int. Cl. B22f *1/00, 7/00, 7/08*

U.S. Cl. 75—208 R 1 Claim



1. A method of eliminating erosion failures on the surface of hard-alloy and steel components of devices operating under high pressure and at elevated temperature occuring at contact points between a reaction vessel and the surface of the die of said device, comprising the steps of (1) filling the site of erosion failure with a powdered refractory metal selected from the group consisting of nickel, iron, cobalt, manganese, molybdenum, tungsten, chromium, titanium, tantalum, niobium, and rhenium taken singly or in various combinations thereof, (2) placing into said device, a container with a reaction vessel provided with non-metallic electrically conductive components at the point of contact between said vessel and the dies, said vessel containing the reaction mixture used for synthesis of diamonds or cubic boron nitride, and (3) subjecting said container containing the reaction mixture to the action of a pressure of at least 40 kbar and a temperature of at least 1150°C for the time required for synthesis of diamonds or cubic boron nitride from said reaction mixture, so as to concurrently effect the process of synthesis and hot pressing of said powdered refractory metal.

3,873,309

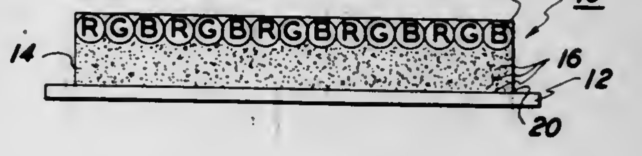
IMAGING METHOD USING MIGRATION MATERIAL

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 47,469, June 18, 1970, abandoned. This application Jan. 9, 1973, Ser. No. 322,274

Int. Cl. G03g *13/00, 13/04*

U.S. Cl. 96—1.2 35 Claims



1. An imaging method comprising:

a. providing an imaging member comprising an overlayer of softenable material on an opaque substrate, said softenable material having migration material dispersed at least in part in said softenable layer, and a fracturable electrically insulating light transmitting layer comprising individual laterally adjacent alternating areas of at least two colors, each of said alternating areas transmitting light of one of the three visual primary colors red, green and blue, said light transmitting layer contacting said softenable material and contiguous the surface of said softenable material opposite the softenable material surface contacting said substrate, said light transmitting layer being relatively non-photoconductive as compared to the photoconductive material below said light transmitting layer and wherein at least one of said migration material and said softenable material is photoconductive, said softenable material capable of having its resistance to migration of migration material and material from said light transmitting layer decreased sufficiently to allow migration of areas of said light transmitting layer and migration material in depth in in said softenable material;

b. electrostatically charging said imaging member;

c. exposing said photoconductive material through said light transmitting layer to an image pattern of activating electromagnetic radiation;

d. developing said imaging member by decreasing the resistance to migration of migration material and material from said light transmitting layer in depth in the softenable layer at least sufficent to allow imagewise migration of migration material and material from said light transmitting layer comprising imagewise areas of said light transmitting layer directly over said migration material whereby said migration material and material from said light transmitting layer migrate in imagewise configuration in depth in said softenable material; and

e. removing the unmigrated portion of said light transmitting layer from said imaging member.

3,873,310

METHOD OF CONTROLLING THE BRIGHTNESS ACCEPTANCE RANGE AND TONAL CONTRAST OF A XEROGRAPHIC PLATE

Lloyd F. Bean, 574 Hillside Ave., Rochester, N.Y. 14610

Continuation-in-part of Ser. No. 213,022, Dec. 28, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,725

Int. Cl. G03g *13/22, 13/14, 13/00*

U.S. Cl. 96—1.4 **9 Claims**

1. The method of controlling the tonal contrast and extending the brightness acceptance range of an electrostatographic plate having a conductive substrate, a photoconductive layer and an electrically insulating layer overlaying said photoconductive layer comprising the steps of:

applying uniformly a first electrostatic charge in a first polarity to said plate.

imagewise exposing said plate a first time to store a charge pattern representing a portion of the tonal information of an original,

applying a second electrostatic charge in said first polarity to said plate,

imagewise exposing said plate in registration with said first exposure at a lower amount a second time than that of the first time store an additional portion of tonal information in the plate,

applying a third electrostatic charge to said plate, and flood-exposing said plate to light to form a latent electrostatic image in said plate.

3,873,311

AGGREGATE PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS CONTAINING A STYRYL AMINO GROUP CONTAINING PHOTOCONDUCTOR

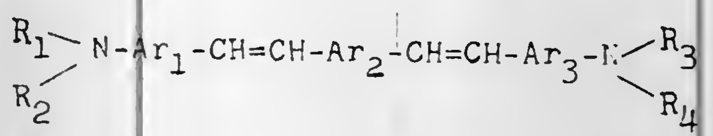
Lawrence E. Contois, Webster, and Louis J. Rossi, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 357,441, May 4, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,655

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **11 Claims**

1. An aggregate photoconductive composition comprising (a) a continuous electrically insulating polymer phase, said polymer having an alkylidene diarylene moiety in a recurring unit, (b) a discontinuous phase comprising a co-crystalline complex of (i) a pyrylium salt selected from the group consisting of thiapyrylium, selenapyrylium, and pyrylium dye salts and (ii) a carbonate polymer having an alkylidene diarylene moiety in a recurring unit, said discontinuous phase dispersed in said continuous phase, (c) at least one non-blue light absorbing organic photoconductor in solid solution with the continuous phase of said composition, and (d) from about 0.1 to about 15 weight percent based on the dry weight of said composition of a compound having the formula



$$\begin{array}{lcr} R_1 & & R_3 \\ & N-Ar_1-CH=CH-Ar_2-CH=CH-Ar_3-N & \\ R_2 & & R_4 \end{array}$$

wherein

R_1, R_2, R_3, and R_4 are each selected from the group consisting of an aryl radical and an alkyl radical,

Ar_1 and Ar_3 are each selected from the group consisting of an unsubstituted phenyl radical and a substituted phenyl radical having an alkyl, aryl, alkoxy, aryloxy, or halogen substituent, and Ar_2 is an aromatic radical containing 4–14 carbon atoms in the aromatic ring thereof, said aromatic radical being a member selected from the group consisting of unsubstituted carbocyclic aromatic radicals, unsubstituted sulfur heterocyclic aromatic radicals having a sulfur atom as the only heteroatom thereof, and said carbocyclic or said sulfur heterocyclic aromatic radicals having an alkyl, aryl, alkoxy, aryloxy or halogen substituent.

3,873,312

PHOTOCONDUCTIVE COMPOSITION AND ELEMENTS CONTAINING A STYRYL AMINO GROUP CONTAINING PHOTOCONDUCTOR

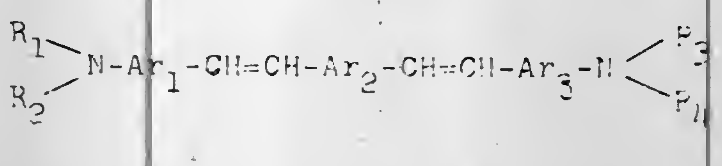
Lawrence E. Contois, Webster, and Louis J. Rossi, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 357,441, May 4, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,657

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **13 Claims**

1. A photoconductive composition comprising an electrically insulating polymeric binder and as a photoconductor an organic compound having the formula



$$\begin{array}{lcr} R_1 & & R_3 \\ & N-Ar_1-CH=CH-Ar_2-CH=CH-Ar_3-N & \\ R_2 & & R_4 \end{array}$$

wherein

R_1, R_2, R_3, and R_4 are each selected from the group consisting of an aryl radical and an alkyl radical,

Ar_1 and Ar_3 are each selected from the group consisting of an unsubstituted phenyl radical and a substituted phenyl radical having an alkyl, aryl, alkoxy, aryloxy, or halogen substituent, and Ar_2 is an aromatic radical containing 4–14 carbon atoms in the aromatic ring thereof, said aromatic radical being a member selected from the group consisting of unsubstituted carbocyclic aromatic radicals, unsubstituted sulfur heterocyclic aromatic radicals having a sulfur atom as the only heteroatom thereof, and said carbocylic or said sulfur heterocyclic aromatic radicals having an alkyl, aryl, alkoxy, aryloxy or halogen substituent.

3,873,313

PROCESS FOR FORMING A RESIST MASK

Richard S. Horst, Wappingers Falls; Leon H. Kaplan, Yorktown Heights, and David P. Merritt, Cold Spring, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1973, Ser. No. 362,637

Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **9 Claims**

1. A process for forming a resist mask on a substrate comprising the steps of:

forming a first layer of positive acting photoresist on a substrate, which photoresist becomes more soluble upon exposure to actinic radiation,

blanket exposing the first photoresist layer with actinic radiation so as to react substantially all of the photosensitive material in said photoresist which would cause heat induced cross-linking,

baking said first photoresist layer to improve the adhesion of said layer to said substrate while avoiding heat induced cross-linking of said layer,

forming a second layer of photoresist on top of the first layer,

imagewise exposing the second photoresist layer, and developing a relief image in the photoresist layers.

3,873,314

RECOVERY OF CLEAN POLYESTER MATERIALS FROM PHOTOGRAPHIC FILM

James T. K. Woo, Mentor-on-the-Lake; Donald E. Glowe, Solon, and J. Scott Thornton, Chagrin Falls, all of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed Nov. 7, 1972, Ser. No. 304,537

Int. Cl. G03c *5/26;* **C08g** *53/22*

U.S. Cl. 96—50 R **8 Claims**

1. A process for the recovery of valuable constituents of photographic film consisting of a polyester film base coated on at least one surface with a subbing layer of vinylidene terpolymer material to which a gelatin silver halide coating has been applied as an overcoating, which process consists of:

preheating small pieces of said film to a temperature sufficient to remove water from the gelatin layer;

contacting small pieces of said previously heated film with a polar aprotic solvent for dissolving the terpolymer subbing layer;

maintaining said pieces of film in contact with said polar aprotic solvent at about room temperature until dissolution of said terpolymer subbing layer is completed and the gelatin silver halide overcoating has been detached from the film base;

thereafter stirring the resulting mixture violently to break up the detached gelatin silver halide coating; and

separately recovering said (1) polyester film base, (2) detached gelatin coating and the silver therein, and (3) said terpolymer subbing material.

7. A process for the recovery of valuable constituents of photographic film consisting of a polyester film base coated on at least one surface with a subbing layer of terpolymer material to which a gelatin silver halide coating has been applied as an overcoating, which process consists of:

contacting small pieces of said film with a heated polar aprotic solvent for dissolving the terpolymer subbing layer;

maintaining said pieces of film in contact with said heated solvent at a temperature sufficient for a substantial evolution of water from said gelatin layer and until dissolution of the terpolymer subbing layer is completed and the gelatin silver halide overcoating has been detached from the film base; and

separately recovering (1) said polyester film base, (2) said detached gelatin coating and the silver therein, and (3) said terpolymer subbing material.

8. A process for the recovery of valuable constituents of photographic film consisting of a polyester film base coated on at least one surface with a subbing layer of a vinylidene terpolymer material to which a gelatin silver halide coating has been applied as an overcoating, which process consists of:

contacting small pieces of said film with a vaporized polar aprotic solvent for dissolving the terpolymer subbing layer;

maintaining said pieces of film in contact with said vaporized solvent at a temperature above the boiling point of the solvent until dissolution of the terpolymer subbing layer is completed and substantial amounts of water have been eliminated from the gelatin and the gelatin silver halide overcoating has been detached from the film base; and

separately recovering (1) said polyester film base, (2) said detached gelatin coating and the silver therein, and (3) said terpolymer subbing material.

3,873,315

METHOD OF DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL

Atsuaki Arai; Kinji Ohkubo; Tatsuya Tajima; Mitsugu Tanaka, and Yoshinori Tsuchiya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

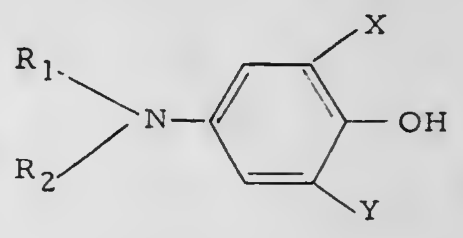
Continuation-in-part of Ser. No. 192,954, Oct. 27, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 446,079

Claims priority, application Japan, Oct. 27, 1970, 45-94883

Int. Cl. G03c *5/30, 1/06*

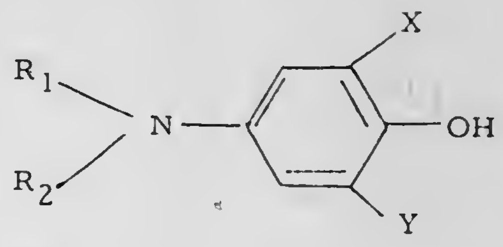
U.S. Cl. 96—66.3 **17 Claims**

1. A photographic developing process which comprises developing an imagewise exposed light-sensitive silver halide emulsion layer of a multilayer photographic element with an alkaline solution, hydroquinone and a derivative of p-aminophenol having the general formula:



wherein R_1 and R_2 are each an alkyl group having from 1 to 4 carbon atoms and each of X and Y is an alkoxyl group containing 1 or 2 carbon atoms or a chlorine atom, or a stable salt thereof.

17. An alkaline solution for photographic development which contains hydroquinone and from 0.01 to 20 grams per liter of said solution of a derivative or p-aminophenol having the general formula:



wherein R_1 and R_2 each is an alkyl group having from 1 to 4 carbon atoms and each of X and Y is an alkoxyl group containing 1 or 2 carbon atoms or a chlorine atom, said derivative of p-aminophenol illustrating a super-additive development effect in combination with hydroquinone.

3,873,316

PROCESS FOR THE PRODUCTION OF A LIGHT-SENSITIVE COPYING MATERIAL HAVING A COPPER-CONTAINING SUPPORT, AND COPYING MATERIAL SO PRODUCED

Otto Velten, Mainz, and Udo Moller, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed June 7, 1971, Ser. No. 150,748

Int. Cl. G03c *1/52*

U.S. Cl. 96—75 **14 Claims**

1. A presensitized negative-working copying material comprising a copper-containing support and a layer thereon, said layer including a compound selected from the group consisting of tetramethylthiuram disulfide and a sulfur-containing organic compound having at least one mercapto group, and, superposed on it or coated simultaneously with it, a light-sensitive compound selected from the group consisting of diazonium salts, diazo resins, aromatic azido compounds, nitrone compounds, photopolymerizable compounds, and bichromate-containing colloids.

3,873,317

IMAGE RECEIVING MATERIALS WITH WHITENING AGENTS FOR A SILVER SALT DIFFUSION TRANSFER PROCESS AND METHOD OF PREPARING THE SAME

Kazunobu Kato, and Kinji Ohkubo, both of Ashigara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed May 11, 1973, Ser. No. 359,382

Claims priority, application Japan, May 11, 1972, 47-46730

Int. Cl. G03c *1/48, 1/92*

U.S. Cl. 96—76 R **21 Claims**

1. Image receiving materials for a silver salt diffusion transfer process which comprises at least two layers comprising a cellulose ester layer which contains at least one fluorescent whitening agent and a hydrolyzed cellulose ester layer which contains silver depositing nuclei, the said two layers being superposed.

3,873,318

PRODUCTION OF LITHOGRAPHIC PLATES

Peter Geoffrey Sheasby, Banbury; Alan Martin Smith, Oxford; Christopher Robert Gilkes, Banbury, and Wolf Dieter Breit, Llanhennock, all of England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed June 1, 1973, Ser. No. 366,191

Claims priority, application United Kingdom, June 8, 1972, 26899/72

Int. Cl. G03c *1/94;* **C23b** *5/58;* **C23f** *17/00*

U.S. Cl. 96—86 P **3 Claims**

1. A method of preparing aluminium for use in the production of lithographic plates in which after an optical electrolytic or mechanical treatment the aluminium in continuous strip form is subjected to anodisation to develop a soft, porous, flexible, anodic oxide coating having a thickness in the range of 0.1 – 1 micron and essentially free of pits in a size range of 0.03 – 0.04 micron, said anodisation being performed during the passage of said strip through an aqueous sulphuric acid anodisation electrolyte held at a temperature above 70°C, said strip being subjected during passage through said electrolyte to an electrolytic treatment for a period of 10 – 60 seconds and involving a charge input of at least 500 coulombs/sq. ft.

3,873,319

DRY-FILM NEGATIVE PHOTORESIST HAVING AMIDIZED STYRENE-MALEIC ANHYDRIDE BINDER MATERIAL

Carl John Berg, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1974, Ser. No. 438,206

Int. Cl. G03c *1/70*

U.S. Cl. 96—87 R **6 Claims**

1. A dry-film negative photoresist comprising (1) a carrier film; (2) a photosensitive layer carried on the carrier film that is heat-softenable and adhereable to a metal substrate, reacts when exposed to an imagewise pattern of light to provide imagewise differential removability from the metal substrate in an aqueous developing bath, and comprises (a) 100 parts by weight of the reaction product of a styrene-maleic anhydride copolymer and dialkylamine in which the alkyl group has 4 to 8 carbon atoms, the styrene-maleic anhydride copolymer has a molecular weight of about 1,000 to 10,000, and between about one-third and two-thirds of the anhydride groups are reacted with the dialkylamine, (b) about 50 to 200 parts by weight of compatible photopolymerizable monomer dispersed in the binder material, and (c) a catalytic amount of a photoinitiator for initiating imagewise reaction of the photopolymerizable monomer upon imagewise exposure of the photosensitive layer to light; and (3) a protective cover film disposed over the photosensitive layer.

3,873,320

PHOTOGRAPHIC ELEMENT COMPRISING POLYURETHANE FILM SUPPORT

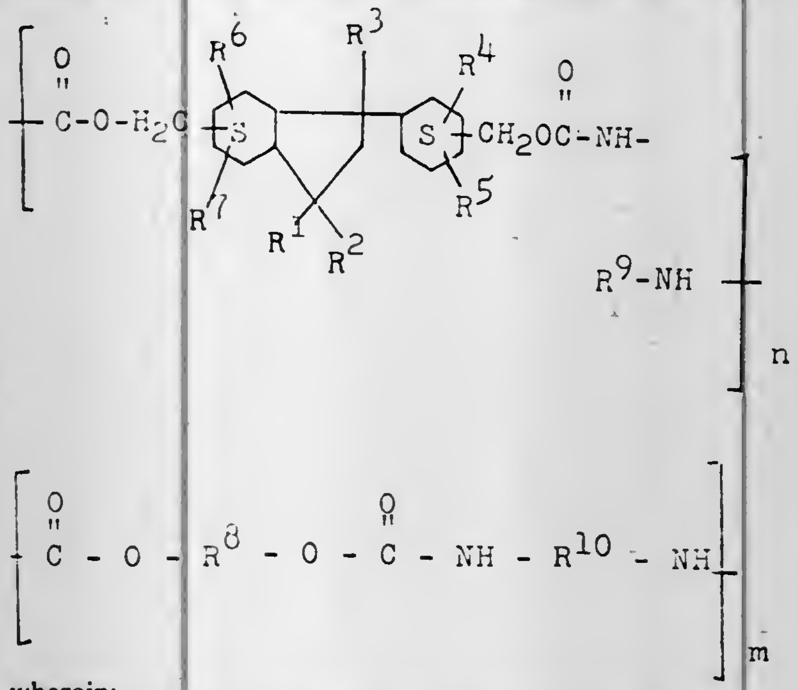
John Wilson, and Frederick T. Hamb, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 345,623, March 28, 1973, Pat. No. 3,842,042, which is a division of Ser. No. 194,506, Nov. 1, 1971, Pat. No. 3,769,264. This application Mar. 22, 1974, Ser. No. 453,745

Int. Cl. G03c *1/78*

U.S. Cl. 96—87 R **5 Claims**

1. A photographic element comprising a photographic emulsion coated on a film of a polymer having the structure:



wherein:

n is a mole fraction and is a positive number less than or equal to 1;

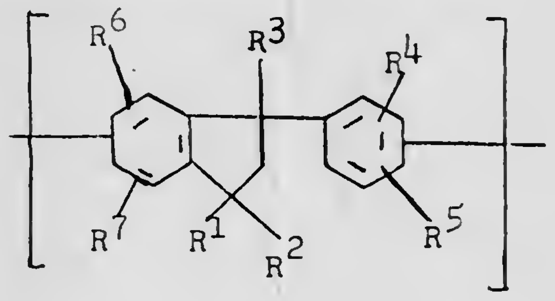
m is a mole fraction and equals $1 - n$;

R^1 and R^3 are independently selected from the group consisting of hydrogen and alkyl radicals, of from 1 to 6 carbon atoms;

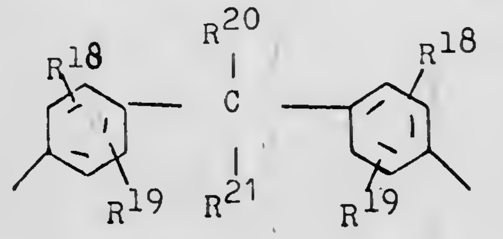
R^2 is an alkyl radical from 1 to 6 carbon atoms;

R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen, aryl radicals, halogen atoms, nitro radicals, cyano radicals, amino radicals, and alkoxy radicals;

R^8, R^9 and R^{10} are independently selected from the group consisting of alkylene radicals of from 2 to 10 carbon atoms, arylene radicals, arylenebisalkylene radicals wherein the alkylene portion has 1 to 6 carbon atoms, cycloalkylene radicals, alkylenebisarylene radicals wherein the alkylene portion contains 1 to 12 carbon atoms, alkylidenebisarylene radicals wherein the alkylidene portion contains 1 to 12 carbon atoms, arylenealkylene radicals, units having the formula:



and units having the formula:



wherein R^{18} and R^{19} are independently selected from the group consisting of hydrogen atoms, aryl radicals, halogen atoms, nitro radicals, amino radicals, cyano radicals and alkoxy radicals, and R^{20} and R^{21} are independently selected from the group consisting of hydrogen atoms, alkyl radicals of from 1 to 16 carbon atoms, cycloalkyl radicals of from 4 to 6 carbon atoms, aryl radicals having from 6 to 20 carbon atoms and wherein R^{20} and R^{21} taken together with the carbon atom to which they are attached can represent a monocyclic, polycyclic or heterocyclic moiety having from 4 to 15 atoms in the ring system.

3,873,321

PROCESS FOR PRODUCING SUPPORT FOR USE IN PHOTOGRAPHIC MATERIAL

Sumitaka Tatsuta, and Wataru Ueno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

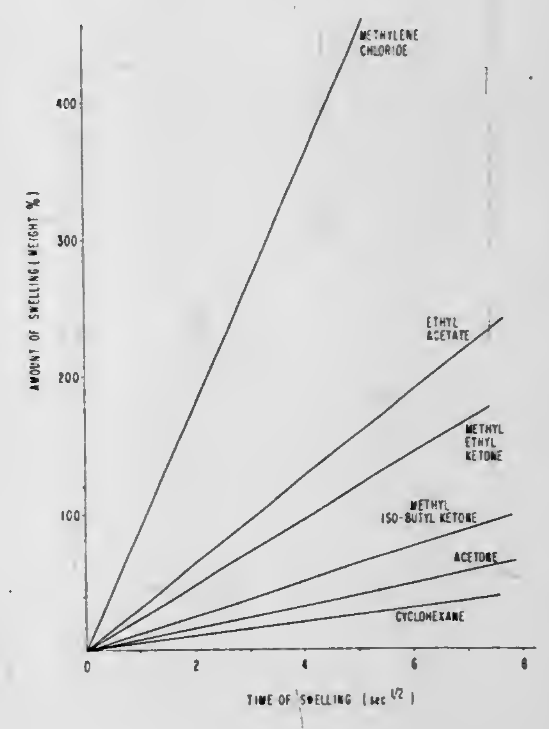
Filed Apr. 23, 1973, Ser. No. 353,817

Claims priority, application Japan, Apr. 21, 1972, 47-40206

Int. Cl. G03c *1/78;* **B44d** *1/092*

U.S. Cl. 96—87 R **10 Claims**

1. A process for producing a support for use in a photographic material, which consists essentially of the steps of (a) contacting one side of a polystyrene resin film containing dispersed therein a white pigment with a first liquid composition comprising a first liquid having a swelling power greater than that of methyl isobutyl ketone and capable of swelling or dissolving said polystyrene resin and producing an excellent gloss on said one side when dried; (b)contacting the other side of said polystyrene resin film with a mixed solution consisting of a second liquid having a stronger power of swelling or dissolving said polystyrene resin than the power of the first liquid composition of swelling or dissolving said polystyrene resin and a third liquid having no or an extremely small power of swelling or dissolving said polystyrene resin film and a smaller power of swelling or dissolving said polystyrene film than the power of said first liquid composition, said solution being capable of producing a coarse surface having a fine roughness on said other side; and drying the film to remove the liquid, where step (a) and (b) may be performed in any desired sequence, and drying may follow step (a), step (b) or both of steps (a) and (b).



8. A support produced by the process of claim **1**.

9. The support of claim **8** coated with a silver halide emulsion layer.

3,873,322

METHOD OF PREPARING PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Raymond Leopold Florens, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium

Filed May 11, 1973, Ser. No. 359,512

Claims priority, application United Kingdom, May 12, 1972, 22433/72

Int. Cl. G03c *1/02*

U.S. Cl. 96—114.8 **10 Claims**

1. In a method of preparing a photographic silver halide emulsion in which an emulsion incorporating an acid coagulable gelatin derivative is prepared and wherein the undesirable by-products of silver halide grain formation and physical ripening are removed by lowering the pH to bring about coagulation and by washing the coagulum, and the coagulum is redispersed and the silver halide emulsion formed is subsequently chemically sensitized, the improvement which comprises raising the pH of the silver halide emulsion to a value above 8 some time between the conclusion of the washing operation and the chemical sensitization.

3,873,323

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Yasuharu Nakamura; Yoshiyuki Nakazawa; Tohru Sueyoshi; Akira Sato, and Tadashi Ideda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

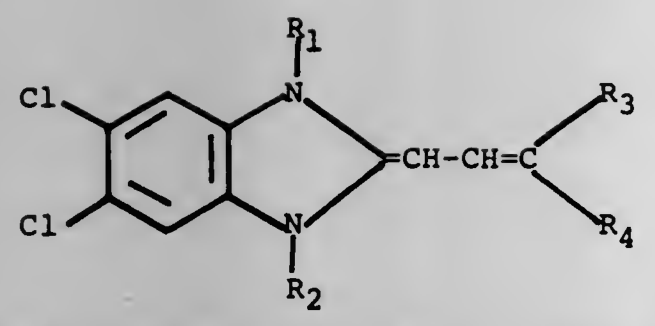
Filed May 31, 1973, Ser. No. 365,677

Claims priority, application Japan, May 31, 1972, 47-54497

Int. Cl. G03c *1/02*

U.S. Cl. 96—120 **7 Claims**

1. A silver halide photographic emulsion characterized by containing at least one sensitizing dye represented by the following general formula:

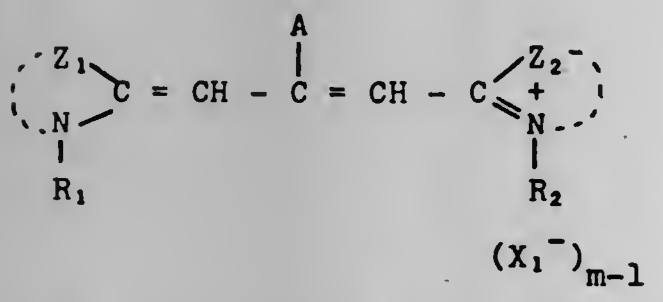


wherein R_1 and R_2 each represents an alkyl or substituted alkyl radical selected from the group consisting of carboxyalkyl, alkoxyalkyl, hydroxyalkyl, acyloxyalkyl, sulfoalkyl and aralkyl, and R_3 and R_4 each represents an acyl or alkoxycarbonyl radical.

3,873,324
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

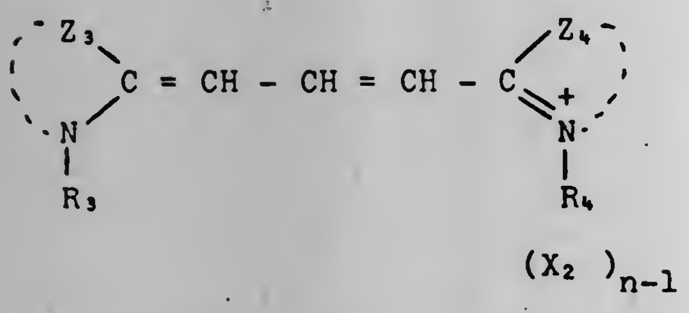
Masanao Hinata; Haruo Takei, and Keisuke Shiba, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 28, 1974, Ser. No. 447,114
Claims priority, application Japan, Feb. 28, 1973, 48-23987
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 **13 Claims**

1. A silver halide photographic emulsion containing a supersensitizing combination of at least one sensitizing dye represented by the following general formula (I)



(I)

wherein Z_1 represents the atoms necessary to form a benzothiazole ring, a benzoselenazole ring, a β-naphthothiazole ring or a β-naphthoselenazole ring; Z_2 represents the atoms necessary to form a benzoselenazole ring; A represents a hydrogen atom or an alkyl group; R_1 and R_2 each represents an alkyl group, at least one of R_1 and R_2 being a hydroxyalkyl group, a carboxy-substituted alkyl group or a sulfo-substituted alkyl group; X_1 represents an acid anion group; and m represents 1 or 2 and, when the dye forms an intramolecular salt, *m* represents 1; and at least one sensitizing dye represented by the general formula (II)



(II)

wherein Z_3 and Z_4 each represents the atoms necessary to form a halogen-substituted benzimidazole nucleus; R_3 and R_4 each represents an alkyl group, at least one of R_3 and R_4 being a hydroxyalkyl group, a carboxy-substituted alkyl group or a sulfosubstituted alkyl group; X_2 represents an acid anion; and *n* represents 1 or 2 and, when the dye forms an intramolecular salt, n represents 1.

3,873,325
PRESSURE FIXABLE ELECTROSCOPIC PRINTING POWDER METHOD

Virgil W. Westdale, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mt. Prospect, Ill.
Division of Ser. No. 244,925, April 17, 1972, Pat. No. 3,775,326. This application Aug. 2, 1973, Ser. No. 385,076
Int. Cl. G03g
U.S. Cl. 96—150 **6 Claims**

1. The method of producing a material image of a graphic original on a photoconductive member comprising the steps of:

charging the photoconductive member,
exposing the charged member to a pattern of light and shadow to produce a differential charge pattern thereon, developing the pattern by applying a granular developing powder having a formulation comprising:
a resin blend of a polyamide resin present in an amount ranging from 15 percent to 35 percent by weight of said granular powder, a thermoplastic frangible resin in the range of from 30 percent to 50 percent by weight selected from the group consisting of a rosin modified-phenol formaldehyde resin, maleic anhydride-polyhydric alcohol modified rosin, esterified diphenolic resins and a condensation resin formed by the reaction of cyclohexanone and formaldehyde and a polyolefin in the range of from 2 percent to 15 percent by weight selected from the group consisting of polyethylene and polymethylene; and
fixing the developed powder image by applying pressure thereto.

3,873,326
CONCRETE-CURING AND ANTISPALLING COMPOSITIONS

William L. Kubie, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Continuation-in-part of Ser. No. 183,652, Sept. 24, 1971, abandoned. This application June 1, 1973, Ser. No. 365,900
Claims priority, application Canada, Aug. 18, 1972, 149738
Int. Cl. C08h *9/00;* **C09k** *3/00*
U.S. Cl. 106—12 **9 Claims**

1. In a dual-purpose concrete-cure and antispalling composition of the aqueous emulsion type which normally contains a boiled linseed oil (LSO) oil phase, emulsifiers, and stabilizers, an improvement which comprises an aqueous emulsion in which the ratio of oil phase to water phase is from 55/45 to 45/55 1 volume/volume, and said oil phase contains from 50 to 90 volume percent boiled LSO and from 10 to 50 volume percent of a composition selected from the group consisting of heat-bodied LSO, having a Gardner-Holdt viscosity of from Z-2 to M-37, an acid number from 3 to 22, a saponification number from 187 to 194, and an iodine number from 115 to 175; raw tung oil having a Brookfield viscosity of 950 centipoises; and mixtures of the same.

3,873,327
DENTAL CEMENT AND FILLING MATERIAL

Edward John Duff, Watch Lane Farm, Moston, Sandbach, Chesire, England
Filed Feb. 28, 1974, Ser. No. 446,612
Claims priority, application United Kingdom, Mar. 6, 1973, 10938/73
Int. Cl. C09k *3/00*
U.S. Cl. 106—35 **3 Claims**

1. A dental cement and filling powder comprising zinc oxide, a fluorine-containing compound which dissolves or dissociates to yield fluoride ions and a calcium orthophosphate material selected from the group consisting of:

1. analytically pure fluorapatite (FA):
2. FA having the crystal morphology of Brushite;

3. FA having the crystal morphology of Monetite;
4. Hydroxyapatite (HA) having monofluorophosphate ions incorporated in the crystal lattice thereof;
5. HA having carbonate or bicarbonate ions incorporated in the crystal lattice thereof;
6. HA having a complex fluoro anion of a transition metal incorporated in the crystal lattice thereof;
7. Fluorohydroxyapatite (FHA);
8. FA wherein a portion of the calcium ion thereof is replaced by another divalent cation selected from the group consisting of alkaline earth metal cation and transition metal cation;
9. FHA wherein a portion of the calcium ion content thereof is replaced by another divalent cation selected from the group consisting of alkaline earth metal cation and transition metal cation;
10. HA wherein a portion of the calcium ion content thereof is replaced by another divalent cation selected from the group consisting of alkaline earth metal cation and transition metal cation
11. DCPD wherein a portion of the calcium ion content thereof is replaced by another divalent cation selected from the group consisting of alkaline earth metal cation and transition metal cation;
12. ADCP wherein a portion of the calcium ion content is replaced by another divalent cation selected from the group consisting of alkaline earth metal and transition metal cation.

3,873,328
CATALYTIC CRYSTALLINE GLASS FIBERS

Walter H. Brueggemann, Chagrin Falls, and Jack S. Gilhart, Salem, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Aug. 9, 1972, Ser. No. 279,210
Int. Cl. C03c *13/00;* **B01j** *11/32;* **C03c** *3/30*
U.S. Cl. 106—39.6 **8 Claims**

1. A catalytic oxidation-inducing glass fiber adapted to contact an oxidizable gas to catalyze the oxidation thereof at a temperature within the range of about 350°F to about 600°F, said glass fiber comprising a heat-treated, catalytic-oxidative fiber of normally amorphous glass having substantial crystallinity throughout the fiber by virtue of such heat treatment, and containing as part of the crystal structure from about 10 percent to about 70 percent by weight of an oxidation-inducing oxide defining sites of chemical activity to render the fiber catalytic for oxidation reactions, said oxide being selected from a group consisting of an oxide of cobalt, manganese, copper, chromium, and mixtures thereof.

3,873,329
GLASS-CERAMIC ARTICLE

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 2, 1973, Ser. No. 375,724
Int. Cl. C03c *3/04*
U.S. Cl. 106—39.8 **4 Claims**

1. A glass-ceramic article exhibiting a modulus of rupture value as formed between about 25,000-60,000 psi, a Knoop hardness measurement (KHN_{100}) greater than 800, and a coefficient of thermal expansion (25°-300°C.) between about 90–110 × 10^{-7}/°C. consisting predominantly of alpha-quartz and sapphirine homogeneously dispersed within a glassy matrix, the total crystallinity comprising at least 75 percent of the glass-ceramic article and being produced through the crystallization in situ of a glass article consisting essentially, by weight on the oxide basis, of about 10–16 percent MgO, 0.5–3.5% B_2O_3, 20–28 percent Al_2O_3, 44–58 percent SiO_2, 3–9% TiO_2, and 3–7% ZrO_2, the total $TiO_2 + ZrO_2$ being about 8–13%.

3,873,330
BI_2O_3 AND AL_2O_3 CONTAINING PBO-ZNO-B_2O_3 LOW TEMPERATURE SEALING GLASS

Thomas A. Sherk, West Hurley, and Rao R. Tummala, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 19, 1973, Ser. No. 417,347
Int. Cl. C03c *3/10, 3/12, 3/30*
U.S. Cl. 106—47 **1 Claim**

1. A sealing glass composition having a thermal coefficient of expansion (from room temperature to 300°C) of about 84 × 10^{-7} per °C consisting essentially of the following ingredients in the following proportions:

		Per cent by weight
Lead oxide	(PbO)	66.0
Boric oxide	(B_2O_3)	14.0
Zinc oxide	(ZnO)	10.5
Silicon oxide	(SiO_2)	2.0
Copper oxide	(CuO)	2.5
Bismuth oxide	(Bi_2O_3)	1.5
Alumina	(Al_2O_3)	3.5.

3,873,331
PROCESS FOR FLUID CALCINING CEMENT RAW MEAL

Marekata Kondo, Yono; Seiwa Fukuda, Kawagoe, and Toyohiko Yamamoto, Omiya, all of Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Tokyo, Japan
Filed Aug. 22, 1973, Ser. No. 390,401
Claims priority, application Japan, Aug. 31, 1972, 47-86612
Int. Cl. C04b *7/36*
U.S. Cl. 106—100 **1 Claim**

1. In a process for fluid calcining cement raw meal using a separate heat source combined with a suspension preheating type cement clinker burning process, the improvement comprising

regulating the height of a fluidized bed as low as possible while maintaining said bed in a stabilized state, said bed consisting mainly of a fluidizing medium and cement raw meal and the particle size distribution of said fluidizing medium being not overlapped with that of said cement raw meal,
dividing an air stream into two parts,
introducing one part of said air stream into said fluidized bed so as to burn fuel charged thereinto and to gasify the remainder of said fuel therein with heat generated by said burning of the fuel, and
introducing the other part of said air stream into a space above said fluidized bed so as to burn said gasified fuel dispersing uniformly in diluted concentration in said space for calcining said cement raw meal floating in dense concentration therein.

3,873,332
ENCAPSULATED SALT ADDITIVES

Louis R. McCreight, Wayne, Pa., assignor to General Electric Company, New York, N.Y.
Filed Apr. 12, 1973, Ser. No. 350,536
Int. Cl. C04b *11/00*
U.S. Cl. 106—109 **1 Claim**

1. In the process of preparing a heat-resistant composition comprising the steps of:

a. mixing plaster of paris (calcium sulphate hemihydrate) with particulate magnesium sulphate hydrate, $MgSO_4.7H_2O$, and water to form a slurry containing particles of the magnesium sulphate hydrate;
b. establishing the slurry in a desired form and permitting the same to harden with a content of included particles of the magnesium sulphate hydrate; the improvement comprising:

c. the step of completely covering the particles of the magnesium sulphate hydrate with a water-insoluble organic coating material prior to step a) and thereby preventing solution of the salt in the water.

3,873,333
ADHESIVES AND PASTES

Hiromi Hijiya, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama-ken, Japan

Filed Jan. 17, 1974, Ser. No. 434,298

Int. Cl. C08h *1/00, 7/00*

U.S. Cl. 106—130 **9 Claims**

1. An adhesive composition essentially consisting of a solution or dispersion of a derivative of pullulan having a molecular weight of 10,000 to 500,000 in an aqueous liquid,

a. said derivative being an ester of said pullulan with a fatty acid having up to four carbon atoms or an alkyl, hydroxyalkyl, or carboxyalkyl ether of said pullulan, alkyl in said ether having up to four carbon atoms,

b. said light being water or a mixture of water and acetone, and

c. the amount of said derivative being between 5 and 4 percent of the weight of said liquid.

3,873,334
ACETOXYSILICON ADHESION PROMOTER AND PRIMER COMPOSITION

Chi-Long Lee, Midland, and Jay R. Schulz, Bangor Township, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

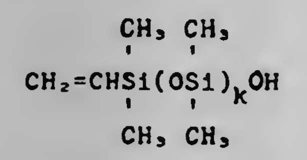
Division of Ser. No. 406,065, Oct. 12, 1973,. This application May 20, 1974, Ser. No. 471,386

Int. Cl. C09k *3/00*

U.S. Cl. 106—287 SE **7 Claims**

1. A composition consisting essentially of a reaction product obtained by mixing under essentially anhydrous conditions

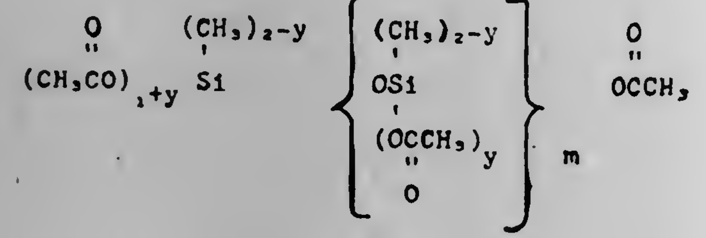
1. a vinylsiloxane of the formula



$$CH_2{=}CH\underset{CH_3}{\overset{CH_3}{Si}}(O\underset{CH_3}{\overset{CH_3}{Si}})_kOH$$

in which *k* has an average value of from 0 to 20 inclusive where the vinylsiloxane species having values of *k* above 20, if present, are in no more than minor amounts and

2. An acetoxysilicon compound of the formula



$$(CH_3\overset{O}{\overset{\|}{C}}O)_{1+y}\overset{(CH_3)_{2-y}}{Si}\left\{\begin{matrix}(CH_3)_{2-y}\\ OSi\\ (O\underset{O}{\underset{\|}{C}}CH_3)_y\end{matrix}\right]_m O\overset{O}{\overset{\|}{C}}CH_3$$

in which *m* has an average value of from 0 to 5 inclusive and *y* is 1 or 2,

(1) and (2) being mixed in proportions to provide a ratio of hydroxyl in (1) to acetoxy in (2) of from 1/14 to ⅔

3,873,335
PROCESS FOR THE MANUFACTURE OF FREE-FLOWING TITANIUM DIOXIDE PIGMENTS

Gunter Schmidt, Leverkusen, and Carlo Servais, Odenthal, both of Germany, assignors to Kronos Titan G.m.b.H., Leverkusen, Germany

Filed Aug. 20, 1973, Ser. No. 389,467

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **11 Claims**

1. Process for the manufacture of compacting resistant free-flowing titanium dioxide pigments of good dispersibility by screening and subsequent rolling characterized in that dry milled titanium dioxide pigment is screened prior to the addition of highly dispersed oxides selected from the group consisting of silicic acid, titanium dioxide and aluminum oxide and then subjected to rolling in the presence of said oxides, said oxides being added in amounts of 0.1 to 5.0%, and having a mean particle size of about 10–20 mm.

3,873,336
A METHOD OF TREATING CALCIUM CARBONATE PAPER FILLER

Brian Paul Lambert, Hurst, and James Lowes, Slough, both of England, assignors to Starch Products Limited, Langley, Slough, England

Filed June 30, 1972, Ser. No. 267,866

Claims priority, application United Kingdom, July 1, 1971, 30968/71

Int. Cl. C08b *27/04;* **C09c** *1/02*

U.S. Cl. 106—306 **4 Claims**

1. A method of treating particles of calcium carbonate filler to reduce its sensitivity to papermakers' alum which comprises dissolving cationic and anionic starch derivatives in water to form an aqueous solution, mixing said filler particles with said starch derivatives in the resulting aqueous solution, wherein the total weight of the anionic and cationic starch derivatives is at least about 4% of the weight of the filler particles, and wherein the weight ratio of anionic to cationic starch is from 1:1 to 2:1, and depositing said starch derivatives in mutually coagulated admixture on said particles.

3,873,337
PROCESS FOR THE HYDROPHOBIZATION OF HIGHER DISPERSED OXIDES

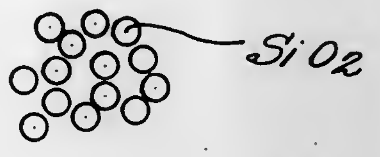
Siegmar Laufer, and Waldemar Roy, both of Rheinfelden, Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Aug. 7, 1973, Ser. No. 386,429

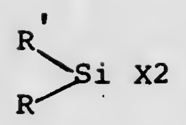
Claims priority, application Germany, Aug. 14, 1972, 2240014

Int. Cl. C09c *3/00;* **C08h** *17/04*

U.S. Cl. 106—308 Q **13 Claims**



1. A process of hydrophobization of a highly dispersed material which is an oxide, mixed oxide or oxide mixture of an element selected from the group consisting of zirconium, titanium, aluminum, vanadium, iron and silicon comprising subjecting particles of the dry oxide, mixed oxide or oxide mixture freed from bound water to a gaseous mixture of an organohalosilane of the formula



$$\begin{matrix}R'\\ R\end{matrix}\!>\!Si\ X2$$

and steam in the molar ratio of 1:1 at a temperature of 350°C. to 650°C. in a CO_2 atmosphere wherein R and R' are alkyl of 1 to 4 carbon atoms and aryl and X is halogen.

3,873,338
THERMAL STABILIZATION OF POLYAMIDE FIBERS

John Skelton, Sharon, Mass., and W. Denney Freeston, Jr., Doraville, Ga., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 28, 1973, Ser. No. 336,583

Int. Cl. B29d *7/24;* **D06m** *15/66*

U.S. Cl. 117—7 **1 Claim**

1. A process for treating an aromatic polyamide fiber material comprising the steps of (1) soaking said material in its relaxed state in a 10 percent by volume of a silicone solution composed of a 5:1 mixture of a dimethyl polysiloxane and a metal organic salt catalyst; (2) drying said soaked material in a relaxed state in air at about 300°F for about 15 minutes; (3) holding said material under tension at a fixed length and width dimension while simultaneously exposing it to a temperature of about 800°F for about 45 seconds; and (4) relieving the heat treated material of tension.

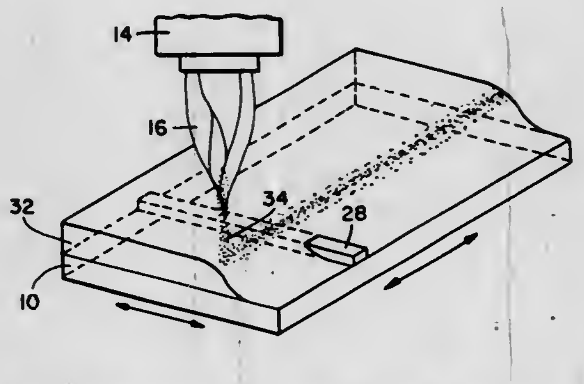
3,873,339
METHOD OF FORMING OPTICAL WAVEGUIDE CIRCUIT PATH

Marshall C. Hudson, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 239,745, March 30, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,527

Int. Cl. B44c *1/06;* **C03c** *7/04;* **C23d** *5/08*

U.S. Cl. 117—17 **14 Claims**



1. A method of forming a planar optical wave-guide comprising the steps of

providing a glass substrate having a predetermined desired index of refraction,

applying a first coating of glass particles having an index of refraction greater than that of said glass substrate to at least a portion of one surface of said substrate,

directing a beam of laser light onto said first coating to fuse those glass particles upon which said beam impinges due to absorption of light energy thereby,

moving said substrate relative to said beam to form a path of fused glass,

removing from said substrate the unfused portion of said first coating, and

disposing on the entire exposed surface of said path of fused glass and at least a portion of the exposed surface of said substrate which is adjacent thereto a continuous film of non-particulate glass having a refractive index less than that of said path of fused glass.

3,873,340
PRESSURE-SENSITIVE COPYING PAPER CONTAINING PHENOXAZINE COMPOUNDS

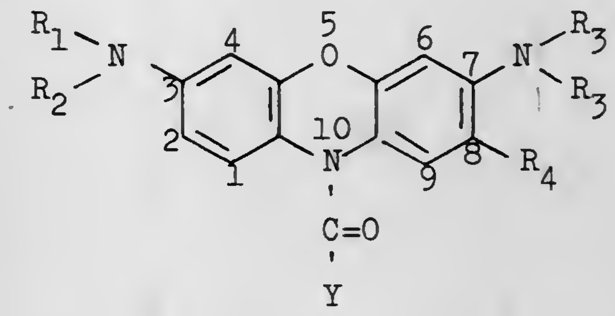
Yoshihide Miyazawa; Minoru Ozutsumi; Katsuichi Motohashi, all of Tokyo, and Shiro Kimura, Kanagawa, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed July 27, 1972, Ser. No. 275,583

Int. Cl. B41m *5/16*

U.S. Cl. 117—36.8 **2 Claims**

1. A pressure-sensitive copying paper comprising on a support a layer of an encapsulated color former and on the same or a different support a layer of an electron accepting solid, said color former being a phenoxazine compound represented by the formula



(I)

wherein R_1 and R_3 each represents a lower alkyl group; R_2 is a member selected from the group consisting of a lower alkyl group and a phenyl group; R_4 is a member selected from the group consisting of a hydrogen atom and a methyl group; and Y is a member selected from the group consisting of an alkyl group, an alkenyl group, a styryl group, a benzyl group, a phenoxymethylene group, a phenyl group, a naphthyl group, a furyl group, a thienyl group, a pyridyl group and a quinolyl group, wherein the styryl, benzyl, phenoxymethylene, phenyl, and naphthyl groups may be substituted in the nucleus thereof by a substituent selected from the group consisting of a lower alkyl group, a lower alkoxy group, a di-lower-alkylamino group, a hydroxy group, a chlorine atom and a nitro group and wherein the quinolyl group may be substituted in the 2-position thereof by a substituent selected from the group consisting of a lower alkyl group and a phenyl group.

3,873,341
RAPID CONVERSION OF AN IRON OXIDE FILM

Alan R. Janus, Pasadena, Calif., assignor to Material Sciences Corporation

Filed Dec. 26, 1972, Ser. No. 318,074

Int. Cl. C23c *15/00*

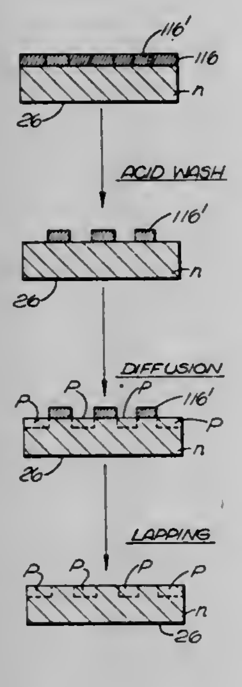
U.S. Cl. 117—37 R **14 Claims**

1. A process for forming a selected pattern of an iron oxide on the surface of a substrate, comprising:

depositing on said substrate a uniform layer of an amorphous iron oxide to a thickness of up to 3,000 A at a temperature below, but within 7% of, the crystallization temperature in °K of said amorphous iron oxide;

heating selected regions of said layer by exposure to a source of thermal energy imparting to said regions at least 100 Joules/cm² in less than 10 milliseconds to selectively convert said amorphous iron oxide to a crystalline form;

and
then removing remaining amorphous iron oxide to form a



pattern of said crystalline iron oxide on said substrate surface.

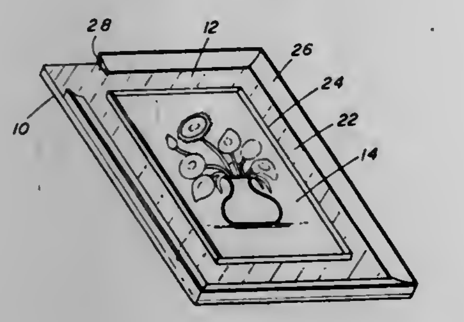
3,873,342
METHOD FOR RENDERING A BORDERED PAINTING AND FRAME THEREFOR

Albert C. Ellison, 305 Lake Seminary Cir., Maitland, Fla. 32751

Filed July 26, 1974, Ser. No. 492,270

Int. Cl. B44d *1/52*

U.S. Cl. 117—38 **8 Claims**



1. A method for rendering a painting and providing a frame therefor, comprising the steps of:

providing a stiff, unitary member having a flat surface suitable for rendering said painting thereon;

rendering said painting on an inner area of said surface so as to leave a border area of said surface around said rendering on said inner area;

applying a raised bordering strip along the interface between said rendering and said border area; and

applying a frame about the periphery of said member.

3,873,343
METHOD OF FORMING SECONDARY ELECTRON EMISSION PREVENTING LAYER FOR POST-DEFLECTION ACCELERATION TYPE COLOR PICTURE TUBE

Akira Misumi; Toshiaki Kasai; Kenji Fukuda, and Hiromitu Nakai, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 7, 1972, Ser. No. 286,948

Claims priority, application Japan, Sept. 8, 1971, 46-68891; Sept. 8, 1971, 46-68892; Sept. 8, 1971, 46-68893; Sept. 8, 1971, 46-68895

Int. Cl. C23c *11/00;* **B44d** *1/44*

U.S. Cl. 117—46 CA **12 Claims**

1. A method of forming a secondary electron emission preventing layer for a post-deflection acceleration type color picture tube, comprising: forming a first layer of water glass at least on a surface at which the formation of secondary electron emissions is to be prevented in a color picture tube on an electron gun side, forming a second layer of an organic binder containing graphite particles on said first layer, and thereafter burning away said organic binder in said second layer by a heat treatment, to form a secondary electron emission preventing layer on said surface.

3,873,344
CERAMIC TREATING PROCESS

Peter K. Church, and Oliver J. Knutson, both of Colorado Springs, Colo., assignors to Kaman Sciences Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 642,704, June 1, 1967, abandoned. This application May 21, 1973, Ser. No. 362,332The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.

Int. Cl. C04b *41/24*

U.S. Cl. 117—62 **22 Claims**

1. The method of producing a chemically hardened refractory ceramic body which comprises providing a core of a porous underfired partially vitrified machinable refractory ceramic oxide, impregnating said core with a solution of a chromium compound which compound is capable of being converted to an oxide on being heated to a temperature of at least 600°F and, curing said impregnated core at least once by raising the temperature thereof to at least 600°F but less than the vitrification temperature of the ceramic oxide over a period of time sufficient to convert the chromium compound impregnated therein to an oxide to harden the ceramic wherein at least one cure cycle is carried out at a temperture of at least 1,300°F but less than the vitrification temperature of the ceramic body.

3,873,345
METHOD OF FINISHING COATED PAPER

Jay H. Vreeland, Yarmouth, Maine, assignor to Scott Paper Company, Philadelphia, Pa.

Filed Feb. 12, 1973, Ser. No. 331,815

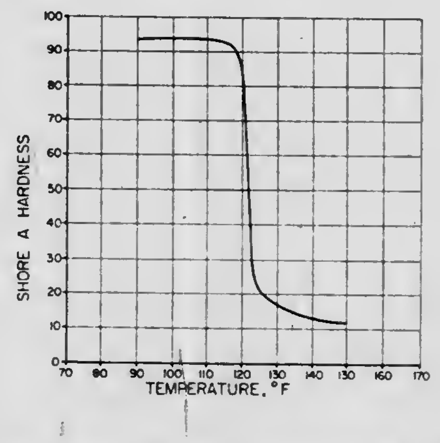
Int. Cl. B44d *1/44*

U.S. Cl. 117—65.2 **8 Claims**

1. In a method of finishing by heated calender means a paper web to which an aqueous coating composition has been applied, the steps of:

1. applying to the surface of at least one side of the paper web an aqueous composition comprising paper coating pigment and a binder consisting essentially of a polymer latex having a glass transition temperature greater than 100°F

2. drying the coating at a temperature below glass transition temperature of the polymer



3. finishing the coating by hot calendering at a temperature above glass transition temperature of the polymer.

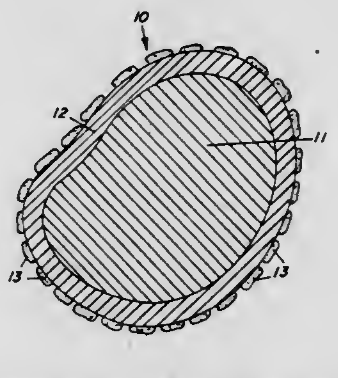
3,873,346
PROCESS OF FORMING SELF-DESTRUCTING PESTICIDAL FORMULATIONS

Keith H. Sweeny, West Covina, and James R. Fischer, Claremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 100,984, Dec. 23, 1970, Pat. No. 3,767,782. This application Oct. 11, 1973, Ser. No. 405,708

Int. Cl. B44d *1/14*

U.S. Cl. 117—69 **5 Claims**



1. A process for making a composite pesticidal composition having self-destructing properties which comprises:

depositing a layer of an acid-producing material comprising elemental sulfur upon a central particulate core, said core comprising a metallic reductant, said metallic reductant being capable of reacting with chlorinated organic pesticides in an acidic environment to produce relatively innocuous degradation products, and

adhesively depositing a pesticide chosen from the group consisting of DDT, toxaphene, lindane, methoxychlor, dieldrin, Kelthane, chlordane, Perthane, endrin, aldrin and heptachlor upon the exterior surface of said sulfur layer.

3,873,347
COATING SYSTEM FOR SUPERALLOYS

James L. Walker, and John R. Ross, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,919

Int. Cl. B44d *1/16*

U.S. Cl. 117—71 M **8 Claims**

1. A method of improving the high temperature oxidation and corrosion resistance of a nickel-base or a cobalt-base superalloy body comprising the steps of:

a. coating the superalloy body by physical vapor deposition with a composition consisting essentially of chromium, aluminum, a member selected from the group consisting of yttrium and the rare earth elements, and at least one element selected from the group consisting of iron, cobalt and nickel, and

b. subjecting the coated body to an aluminizing overcoating by pack cementation to increase the oxidation and corrosion resistance of the coating.

3,873,348
PAINTABLE RUBBER COMPOSITION AND PRODUCTS

Albert F. Reilly, Bloomfield Hills; Ivan C. Doddridge, Woodhaven, and Ming Chih Chen, Saint Clair Shores, all of Mich., assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed May 9, 1973, Ser. No. 358,514

Int. Cl. B32b *25/08;* **C08d** *13/24*

U.S. Cl. 117—72 **18 Claims**

1. A paintable rubber sightshield product for providing a filler structure on automotive vehicles and being operative to prevent fluttering and/or sagging during automotive usage and being resilient and recoverable to its original shape after deflection, comprising, percentages being by weight,

a. about 15% to about 90% of a cross-linkable rubber material selected from at least one of the group consisting of,
   styrene butadiene rubber, polybutadiene rubber, and isoprene rubber,
   said rubber material also including up to 50% of ethylene-propylene diene monomer rubber or neoprene rubber,
b. about 0.01% to about 40% of a polymeric stiffening agent for providing a high flex modulus for the product and being selected from at least one of the group consisting of,
   acrylonitrile butadiene styrene, polyvinyl chloride, a cellulosic resin, and a C_2-C_4 polyolefinic polymer material,
c. zero to about 50% of a plasticizing agent selected from at least one material of the group consisting of naphthenic and paraffinic oils,
d. zero to about 5% of an accelerating agent,
e. 0.01% to about 10% of a curing agent,
f. zero to about 10% of an activating agent,
g. zero to about 80% of a filler material, and

a colored paint coating layer on said product operative to provide a desired color and made of a flexible color stable paint, and said product being a cured product.

3,873,349
PROCESS OF TREATING SURFACES OF METALS

Tadao Kimura; Atuhiko Murao, and Toshigoro Kuwahara, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1972, Ser. No. 234,392

Claims priority, application Japan, Mar. 12, 1971, 46-13075

Int. Cl. B44d *1/50;* **C08f** *1/84*

U.S. Cl. 117—93.31 **8 Claims**

1. A method of coating metal substrates by applying a composition comprising an aqueous solution of water soluble vinyl monomer and an inorganic ionic material to said metal substrates, said inorganic ionic material containing a cation selected from the group consisting of Ca, Mg, Zn, Cr, Al, Fe and Ni; or an anion selected from the group consisting of chromate, bichromate, phosphate, borate, nitrate, sulfate, titanate, permanganate, fluosilicate and fluoborate; or mixtures thereof; drying the coated substrates, and irradiating the dried composition on the metal substrates with ionizing radiation.

3,873,350

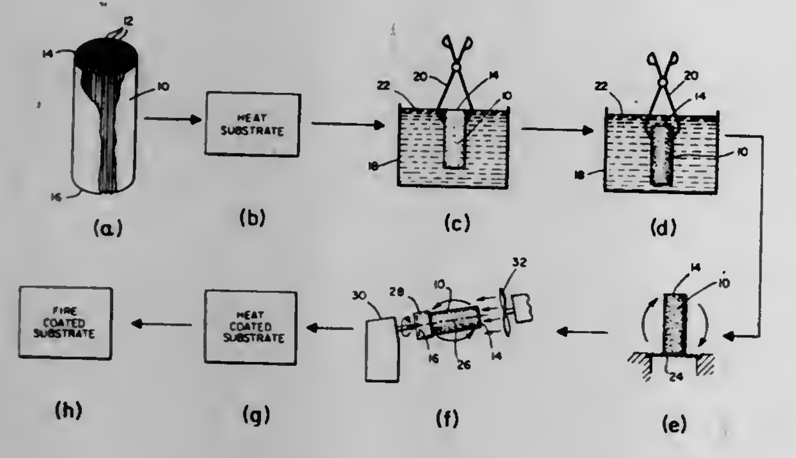
METHOD OF COATING HONEYCOMBED SUBSTRATES

Thomas J. Dwyer, Painted Post, and George P. Pesansky, Beaver Dams, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,641

Int. Cl. B44d *1/092*

U.S. Cl. 117—95 **20 Claims**



1. A method of uniformly coating relatively thin porous walls of a ceramic honeycombed substrate forming a multiplicity of elongated open-ended cells extending longitudinally from one end of the substrate to the other, said cells having substantially parallel cell axes with a cell density in excess of 20 cells per square inch of cross-sectional area transverse to the cell axes, said method comprising:

mixing a slurry comprising a liquid medium and solids maintained in substantially uniform suspension in said liquid medium;

heating said substrate to a temperature in excess of the boiling point of said liquid medium; and

dipping one end of said heated substrate in said slurry while maintaining a substantial angle between the axes of said cells and the surface of said liquid medium as said substrate is lowered in said slurry so as to substantially preclude said slurry from entering said cells from said other end of said substrate while the air is escaping from said other end as said slurry rises in said cells;

said heating of said slurry substantially negating the capillary action within said cells as said substrate is lowered in said slurry so as to allow the solids of said slurry to remain uniformly suspended in said liquid medium as said slurry coats the cell walls thereby achieving a substantially uniform coating of said solids on said cell walls.

3,873,351

PROCESS FOR THE PREPARATION OF NON-COMBUSTIBLE SHAPED ARTICLES

Harutoshi Ueda, Osaka; Naoyuki Suzuki, Nara; Masami Nagao, Takatsuki; Satoshi Shiroza, Ibaraki, and Hiroshi Hayashi, Ukyo, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 213,224, Dec. 28, 1971. This application Apr. 12, 1973, Ser. No. 350,635

Claims priority, application Japan, Dec. 29, 1970, 45-124,124.

Int. Cl. C03c *17/22;* **C04b** *41/24*

U.S. Cl. 117—123 A **11 Claims**

1. A process for the preparation of a non-combustible shaped article which is composed of a base material, and a surface material integrally bound on at least one surface of said base material, which is applied to said surface as an aqueous dispersion and then hardened under heating as an integral structure, which comprises the steps of:

1. adding to a hydraulic inorganic composition consisting of a water-insoluble inorganic substance composed predominantly of silica and another inorganic substance composed predominantly of calcium oxide, mineral fibers and water, and thoroughly mixing the components,
2. shaping the mixture,
3. separately preparing an aqueous dispersion by dispersing in water a hydraulic inorganic composition consisting of a water-insoluble inorganic substance composed predominantly of silica and another inorganic substance composed predominantly of calcium oxide.
4. applying the aqueous dispersion onto at least one surface of the base material shaped in above step (2),
5. removing the water content from the base material and the surface material thereto under a pressure of 50 to 500 kg/cm²,
6. converting the resulting structure of semi-hardened shaped article by a primary aging thereof at 60°–90°C under atmospheric pressure, for 5 to 10 hours,
7. and subjecting the semi-hardened shaped article further to a secondary aging at 150°–210°C under a steam pressure of 5 to 20 atmospheres, for 5 to 20 hours.

3,873,352

ABRASION RESISTANT ONE STEP GLASS COATING WITH EXCELLENT LABELABILITY

Walter Kitaj, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 209,367, Dec. 17, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,768

Int. Cl. C03c *17/30, 17/32*

U.S. Cl. 117—124 E **1 Claim**

1. A glass article having a coating over its major exterior surface to increase abrasion resistance, lubricity and label adhesion, said coating formed by spraying on the glass surface at a temperature below 450°F. an aqueous composition containing 0.5% by weight of polyethyleneiminepropyltrimethoxysilane with a molecular weight of about 1400 and 1% by weight of a polyethylene emulsion containing 20% by weight of polyethylene.

3,873,353

ANTISTATIC FIBER

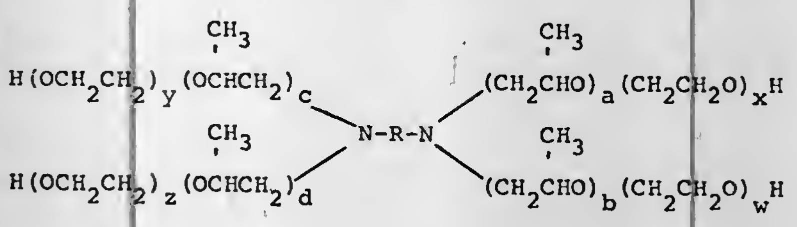
Robert Charles Wincklhofer, Richmond, and Judd Leonard Schwartz, Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,777

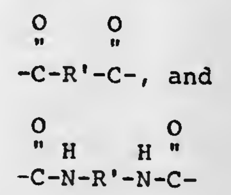
Int. Cl. B44d *1/22*

U.S. Cl. 117—138.8 A **4 Claims**

1. An antistatic fiber selected from the group consisting I polyamide, polyester, polyurea, polyurethane, and polysulfonamide, said fiber containing between about 1 and about 30 % by weight of an antistatic additive consisting of a predominantly branched, chain-extended polymer of the reaction product of a tetrol compound represented by the formula:



where *a*, *b*, *c*, *d*, *w*, *x*, *y*, and *z* are each a whole number and R is a difunctional radical from a hydrocarbon containing 1 to 13 carbon atoms, reacted with at least one chain-extending compound selected from the group consisting of diepoxides and compounds which yield the following divalent radicals:



$$-\overset{O}{\overset{\parallel}{C}}-R'-\overset{O}{\overset{\parallel}{C}}-\text{, and}$$

$$-\overset{O}{\overset{\parallel}{C}}-\overset{H}{N}-R'-\overset{H}{N}-\overset{O}{\overset{\parallel}{C}}-$$

where R′ is a difunctional radical derived from aromatic, hetrocyclic, cycloaliphatic or aliphatic hydrocarbons or combinations of them, said fiber having a coating thereon of between about 0.05 and about 6% by weight of said antistatic additive, based on the weight of the finished fiber, said antistatic additive having a melt viscosity of 1,600 to 17,500 centipoises at 100°C.

3,873,354

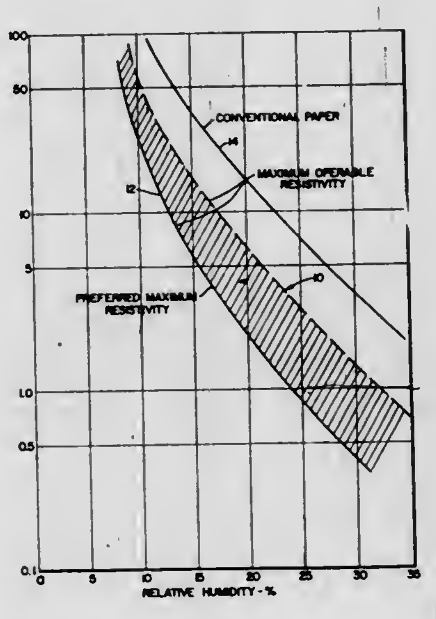
ELECTROSTATIC PRINTING

Wally Z. Walters, West Springfield, Mass., assignor to Preco Corporation, West Springfield, Mass.

Filed Mar. 24, 1972, Ser. No. 237,797

Int. Cl. D21n *1/10*

U.S. Cl. 117—201 **12 Claims**



1. A paper copy member having an image receiving surface for receiving a developed image in the form of a patterned distribution of pigmented toner particles and to which said toner particles are fusable by the application of heat, and means for making said image receiving surface counteractive to the retention of static charges which are transferred with said toner particles to said image receiving surface in a low humidity, high temperature environment in which the copy member is located while the toner particles are being fused thereto, said copy member also including a web of cellulosic material, and said means for making said image receiving surface counteractive to the retention of static charges thereon being an electrical conductivity imparting additive distributed on or in the web in an amount sufficient to reduce the surface resistivity of the image receiving surface to from not more than 3×10^{11}ohms/square at a relative hunidity of 25 percent up to not more than 60×10^{11}ohms/square at a relative humidity of 10 percent to thereby facilitate the dissipation of static charges therefrom in said low humidity, high temperature enviornment and thereby keep said charges from remaining on said image receiving surface and creating a tendency for the copy member to stick to another charged copy member or to parts of the copy making apparatus.

3,873,355

COATED CARRIER PARTICLES

Carl A. Queener; William G. Ralston; Thomas C. Smith, all of Lexington, Ky., and Joseph P. Welsh, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 110,756, Jan. 28, 1971, Pat. No. 3,778,262. This application Oct. 4, 1973, Ser. No. 403,589

Int. Cl. G03g *13/08, 9/02*

U.S. Cl. 117—201 **6 Claims**

1. Electrophotographic development carrier particles for use with toner particles including:

a plurality of core particles;

a substantially continuous film coating surrounding each of said core particles and firmly adhered thereto;

said coating being formed of an inherently triboelectrically negative fluoropolymer and a modifying resin in which said fluoropolymer is essentially insoluble, said fluoropolymer and said modifying resin being physically mixed with each other;

said carrier particles having a positive triboelectric charge characteristic with respect to toner particles formed of IBM part number 1162057 and with respect to the toner particles with which said carrier particles are used.

3,873,356

METHOD OF MANUFACTURING ELECTROPHOTOGRAPHIC CARRIERS

Carl A. Queener; William G. Ralston; Thomas C. Smith, all of Lexington, Ky., and Joseph P. Welsh, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 110,756, Jan. 28, 1971, Pat. No. 3,778,262. This application Oct. 4, 1973, Ser. No. 403,691

Int. Cl. G03g *13/08, 9/02*

U.S. Cl. 117—201 **6 Claims**

1. A method of making an electrophotographic development carrier for use with toner particles comprising the steps of:

coating core particles with a substantially continuous film of a mixture of an inherently triboelectrically negative fluoropolymer and a modifying resin in which the fluoropolymer is essentially insoluble;

and heating the coated core particles to a temperature less than about 700° F. at which the mixture firmly adheres to the core particles forming a cured film thereon having a positive triboelectric charge characteristic with respect to the toner particles with which the coated core particles are used as the carrier and with respect to toner particles formed of IBM part number 1162057.

3,873,357

METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 202,305, Nov. 26, 1971, Pat. No. 3,793,072. This application Aug. 16, 1973, Ser. No. 388,866

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **2 Claims**

1. A method of depositing a metal pattern on a surface of a substrate, which comprises:

a. impressing a colloidal activating sol pattern, corresponding to the metal pattern, on the surface, said activating sol comprising an insoluble hydrous oxide of an activating metal selected from the group of activating metals consisting of Pd, Pt, Ag and Au; and

b. treating said impressed pattern with a solution comprising ions capable of reducing an activating metal ion to an activating metal to deposit an activating metal thereon.

2. The method as defined in claim 1 which further comprises treating said activating metal-deposited pattern with an

electroless metal plating solution, catalyzed by said activating metal, to deposit an electroless metal thereon.

3,873,358
METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 202,305, Nov. 26, 1971, Pat. No. 3,793,072. This application Aug. 16, 1973, Ser. No. 388,841
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **3 Claims**

1. A method of depositing a metal pattern on a surface of a substrate, which comprises:
   a. coating the surface with a solution comprising ions capable of reducing an activating metal ion to an activating metal; and
   impressing an activating sol pattern, corresponding to the metal pattern, on said coated surface, said activating sol comprising insoluble, colloidal hydrous oxide particles of an activating metal selected from the group of activating metals consisting of Pd, Pt, Ag and Au, to reduce said activating metal hydrous oxide to the corresponding activating metal and deposit said reduced activating metal on said pattern.

2. The method as defined in claim 1 which further comprises electrolessly depositing a metal on said activating metal-deposited area.

3,873,359
METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 202,305, Nov. 26, 1971, Pat. No. 3,793,072. This application Aug. 16, 1973, Ser. No. 388,843
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **2 Claims**

1. A method of depositing a metal pattern on a surface of a substrate, which comprises:
   a. sensitizing the surface with a positive colloidal sensitizing sol comprising insoluble hydrous oxide particles of an element selected from the group consisting of Sn, Ti, Pb, V, Cr, Fe and Bi; and
   b. impressing said sensitized surface with a solution comprising an activating metal ion to delineate a pattern corresponding to the metal pattern, to reduce said activating metal ion to an activating metal within said pattern and to deposit said reduced activating metal on said pattern.

2. The method as defined in claim 1 which further comprises immersing said activating metal-deposited pattern in a suitable electroless plating bath, catalyzed by said deposited activating metal, to deposit an electroless metal thereon.

3,873,360
METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 202,305, Nov. 26, 1971, Pat. No. 3,793,072. This application Aug. 16, 1973, Ser. No. 388,844
Int. Cl. B44d *1/18;* **B32b** *15/00*
U.S. Cl. 117—212 **5 Claims**

3. A method of depositing a metal pattern on a surface of a substrate, which comprises:
   a. coating the surface with a colloidal wetting sol selected from the group of wetting sols consisting of (1) a positive sensitizer comprising insoluble hydrous oxide particles of an element in a low oxidation state selected from the group consisting of Ti^{+3}, V^{+4}, Cr^{+3}, Fe^{+2}, Sn^{+2}, Pb^{+2} and Bi^{+3} and (2) a negative sensitizer comprising insoluble hydrous oxide particles of an element in a high oxidation state selected from the group consisting of Fe^{+3} and Hg^{+2};
   b. impressing said coated surface with a suitable redox agent, selected from (1) an oxidizing agent when said wetting so comprises a positive sensitizer and (2) a reducing agent when said wetting sol comprises a negative sensitizer, to describe a pattern corresponding to the metal pattern capable of reducing an activating metal ion to an activating metal; and
   c. treating said described pattern with a solution comprising an activating metal ion to reduce an activating metal and deposit said reduced activating metal thereon.

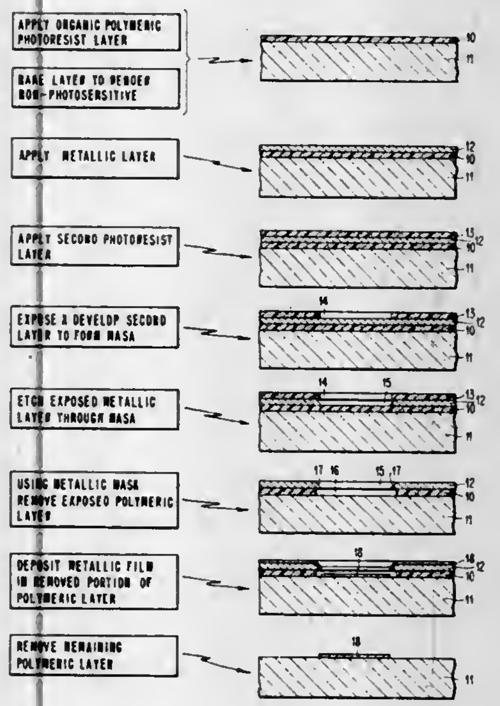
4. The method as defined in claim 3 wherein:
   said oxidizing agent is one selected from a permaganate salt and a dichromate salt; and
   said reducing agent is one selected from formaldehyde and a stannous salt.

5. The method as defined in claim 3 which further comprises treating said activating metal-deposited pattern with an electroless metal plating solution to deposit an electroless metal thereon.

3,873,361
METHOD OF DEPOSITING THIN FILM UTILIZING A LIFT-OFF MASK

Jack R. Franco, Poughkeepsie; Janos Havas, Hopewell Junction, and Harold A. Levine, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,034
Int. Cl. B44d *1/18;* **H05k** *1/00*
U.S. Cl. 117—212 **16 Claims**


APPLY ORGANIC POLYMERIC PHOTORESIST LAYER
BAKE LAYER TO RENDER NON-PHOTOSENSITIVE
APPLY METALLIC LAYER
APPLY SECOND PHOTORESIST LAYER
EXPOSE & DEVELOP SECOND LAYER TO FORM MASK
ETCH EXPOSED METALLIC LAYER THROUGH MASK
USING METALLIC MASK REMOVE EXPOSED POLYMERIC LAYER
DEPOSIT METALLIC FILM IN REMOVED PORTION OF POLYMERIC LAYER
REMOVE REMAINING POLYMERIC LAYER
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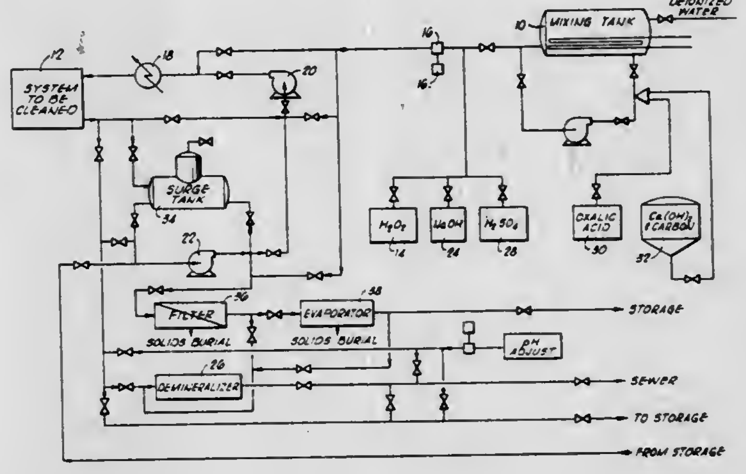
1. A method of depositing patterned thin films on an inorganic substrate comprising:
   forming on said substrate a first layer of non-photosensitive organic polymeric material which is adherent to said substrate,
   forming, on said first layer, a masking layer of an inorganic material, adherent to said first layer, having openings in a selected pattern,
   forming, by sputter etching, openings through said first layer extending to said substrate, said first layer openings being aligned with and laterally wider than said masking layer openings, and
   depositing said thin films onto said substrate through said aligned openings using said masking layer as a deposition mask.

3,873,362
PROCESS FOR CLEANING RADIOACTIVELY CONTAMINATED METAL SURFACES

Russell G. Mihram, and Gerald A. Snyder, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 29, 1973, Ser. No. 364,383
Int. Cl. C23g *1/08, 1/20*
U.S. Cl. 134—3 **27 Claims**



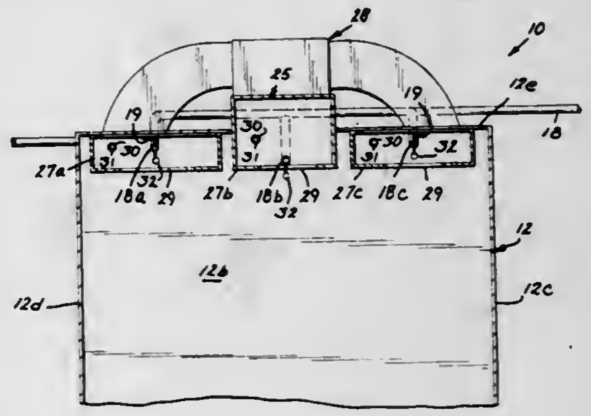
1. A process for cleaning radioactively contaminated ferrous metal surfaces with aqueous solutions, and removing the radioactive materials therefrom, comprising:
   contacting the metal surface with an aqueous solution containing an oxidizing agent to pre-condition the contaminants on the metal surface, and facilitate their removal in acid solution;
   contacting the metal surface with a mixture of an aqueous solution of mineral acid and a complexing agent at a temperature of at least about 180°F to dissolve the scale carried on the metal; then
   removing the spent mineral acid solution from contact with the metal surface; and
   adding to the spent acid solution, a material selected from the group consisting of (a) an alkali metal permanganate followed by a pH adjusting basic compound, (b) alkaline earth oxides and (c) alkaline earth hydroxides to form with solutes of the spent acid solution, precipitatable compounds; and
   precipitating solid compounds from the acid solution to remove a major portion of the raioactive materials therefrom.

3,873,363
METHOD FOR CLEANING MEAT PROCESSING FACILITIES

Richard L. Bakka, Egan, and Robert F. Sistowicz, Rosemount, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed July 11, 1972, Ser. No. 270,727
Int. Cl. B08b *3/08, 5/00*
U.S. Cl. 134—22 R **8 Claims**

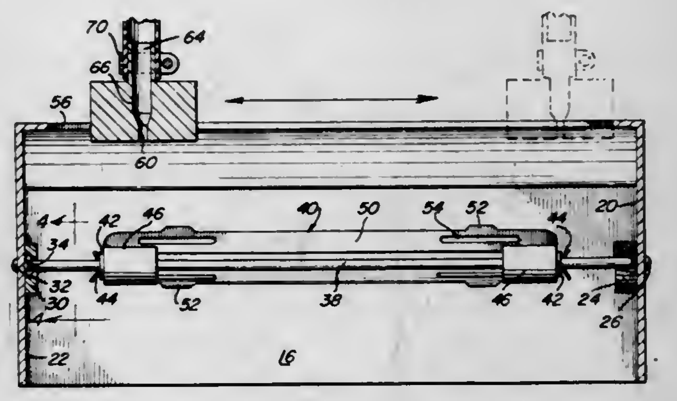
1. A method for cleaning food waste and soil from a roomlike enclosure defining an enclosed space, said method comprising:
   a. preheating the enclosed space to a temperature of about 110° - 160°F.;
   b. preheating a cleansing solution to a temperature of about 125° - 180°F.;
   c. injecting the cleansing solution into said enclosed space through a plurality of atomizing spray nozzles positioned within the enclosure to create an essentially saturated atmosphere of cleansing solution within said enclosed space;
   d. washing food waste and soil from said enclosed space by circulating the saturated atmosphere within said enclosed space so as to contact essentially all surface areas of said enclosed space with said essentially saturated atmosphere.



3,873,364
PAINT ROLLER SLEEVE WASHER

Joseph L. Smith, 1700 E st., S.E., Washington, D.C.

Filed June 7, 1973, Ser. No. 367,729
Int. Cl. B08b *3/02*
U.S. Cl. 134—138 **5 Claims**



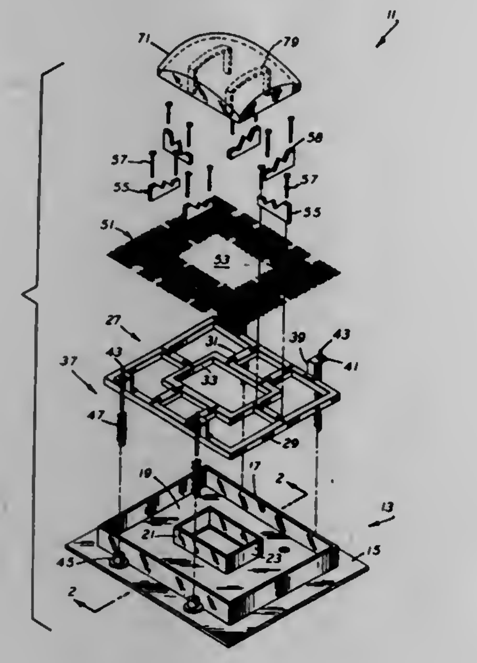
5. A paint roller sleeve washer comprising an elongated downwardly opening housing including an elongated top wall extending between and interconnecting the upper marginal portions of depending opposite side walls, support means carried by said housing for removably supporting a paint roller sleeve between said side walls and below said top wall for free rotation about its center axis and with the latter extending longitudinally of said housing, one of said walls having a longitudinal slot formed therein, nozzle body for traversing said slot and including a liquid passage therethrough with an inlet end adapted to have the discharge end of a liquid pressure supply line coupled thereto and an outlet end for discharging a spray of liquid along a path lying on a chord of a paint roller sleeve supported on said support means, said support means including a shaft and means journaled on the shaft adapted to have a paint roller sleeve supported therefrom with said sleeve concentrically disposed relative to said shaft, the end portions of said shaft and said housing including first and second coacting means removably supporting said shaft in said housing, said second coacting means comprising a pair of support blocks supported in spaced relation below the opposite end portions of said top wall, one of said blocks defining a bore opening toward the other block and the other block being constructed of resilient material and having a keyhole opening formed therein whose lower portion opens downwardly through the lower marginal portion of said resilient block, said first coacting means including end portions of said shaft means seatingly receivable in said bore and keyhole opening.

3,873,365

APPARATUS FOR CLEANING SEAL EDGE REGIONS OF CATHODE RAY TUBE PANELS

Joseph J. Dapolito, Lyons, and Gustav A. Stachelhaus, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 21, 1973, Ser. No. 343,391
Int. Cl. B08b *3/08*
U.S. Cl. 134—140 **6 Claims**



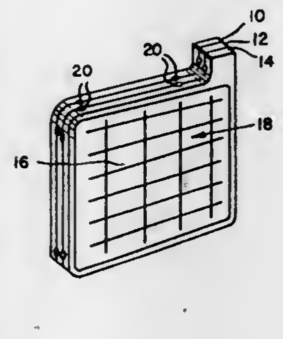
1. In relation to a cathode ray tube panel formed of a viewing area with a perimetrical sidewall terminated by a sealing edge therearound and having a coating disposed over the interior surface of the panel, an apparatus for cleaning the coating from substantially the sealing edge region of said panel sidewall, said apparatus comprising:
- panel supportive means for locating said panel in a horizontal position with said sidewall edge oriented in a downward direction;
- an open-top container oriented beneath said panel supportive means and adapted to contain a quantity of a solvent liquid at a predetermined level therein, said container including at least one substantially vertically and centrally oriented tubular-like venting means positioned to extend above said liquid level therein;
- a frame member formed for suspension within the confines of said container in a manner to effect predetermined and restricted vertical reciprocating movement therein, said frame being constructed of a perimetrical portion having a plurality of spatially related lateral structural elements connective therewith, said frame member having said panel supportive means associated therewith;
- supportive means for said frame formed of guided resilient elements located externally of the interior of said container;
- a mesh-like member positioned laterally on said frame member in a manner to be vertically movable therewith, said mesh-like member being oriented beneath said panel supportive means;
- a plurality of panel positioning means oriented atop said meshlike member in a spaced-apart relationship and affixed to said frame member in positions to make contact with said panel;
- a shielding member having an exterior contour related to that effected by the interior surface of said panel, said shielding member being spaced above and affixed to said frame member at a location substantially central thereto in a manner to be vertically movable therewith in the region above the level of said liquid, said venting means opening beneath said shielding member;
- apparatus support means associated with said container; and
- means for effecting relative movement between said panel and associated mesh-like member with said container to facilitate immersion and withdrawal of said mesh-like member and the edge-related area of said panel into and out of said liquid solvent solution.

3,873,366

ELECTRODE FOR ELECTRICAL LEAD ACCUMULATORS

Erik G. Sundberg, Stockholm, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed July 11, 1973, Ser. No. 378,232
Claims priority, application Sweden, July 11, 1972, 9109/72
Int. Cl. H01m *39/00*
U.S. Cl. 136—26 **11 Claims**



1. In a lead-acid storage battery comprising a plurality of electrode plates of like polarity connected in parallel in which said electrode plates comprise individual, flat, grid-like support structures having electrochemically active material secured over the surface of said grid-like structures, the improvement which comprises:
- unitary, composite electrode plates, each of said plates being comprised of two or more thin, flat grid units, each of said grid units having its own support grid of a lead or a lead alloy material and its own active material secured over the surface area of said grid, the active material on one of said units being selected to cause said unit to have similar polarity but different electrochemical properties from an adjacent unit; and means for securing said units together in a face-to-face relationship to produce a unitary electrode plate having a common electrical flag terminal portion.

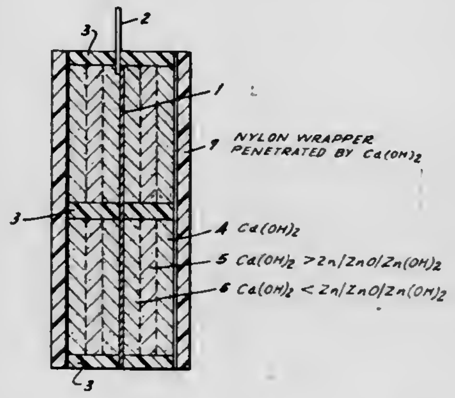
3,873,367

ZINC-CONTAINER ELECTRODE

Ludwig Kandler, Munich-Solln, Germany, assignor to Rheinisch-Westfalisches-Elektrizitatswerk Aktiengesellschaft, Essen, Germany

Continuation of Ser. No. 64,419, Aug. 17, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 340,307
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **8 Claims**

1. A negative electrode for an alkaline storage cell, comprising active material, selected from the group which consists of metallic zinc and zinc compounds, mixed with a further compound of an alkaline-earth reactant capable of forming low-solubility zincates upon the passage of zinc into solution on discharge of the electrode, the proportion of said active material decreasing outwardly from the interior of said mass to zero at the exterior thereof and the proportion of said reactant increasing outwardly from the interior of said mass to 100% at the exterior thereof.

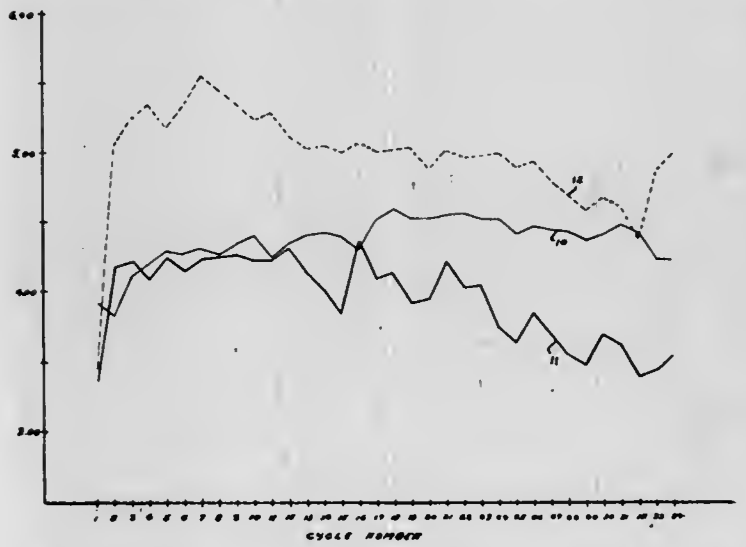

3
2
1
7 NYLON WRAPPER PENETRATED BY Ca(OH)2
3
4 Ca(OH)2
5 Ca(OH)2 > Zn/ZnO/Zn(OH)2
6 Ca(OH)2 < Zn/ZnO/Zn(OH)2
3

3,873,368

PRODUCTION OF CADMIUM ELECTRODES

David F. Pickett, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 29, 1973, Ser. No. 375,239
Int. Cl. C22d *1/22;* **H01m** *35/30*
U.S. Cl. 136—76 **7 Claims**



1. A method for preparing a cadmium electrode which comprises the steps of positioning in an aqueous solution of cadmium nitrate a sintered porous nickel plaque having a porosity of about 70 to 90% between a pair of cadmium sheets, the solution having a pH of 3 to 5 and being at a temperature ranging from 95° to 110°C; connecting the nickel plaque to the negative pole and the cadmium sheets to the positive pole of a source of direct current; and passing direct current through the solution at a current density of 1.2 to 1.6 amperes per square inch of geometric area of the sintered porous nickel plaque for a period of 8 to 20 minutes, thereby depositing cadmium metal and cadmium hydroxide in the pores of the nickel plaque.

3,873,369

TUNGSTEN OXIDE-CONTAINING CATHODE FOR NON-QUEOUS GALVANIC CELL

Karl F. Kamenski, Deepwater, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 14, 1973, Ser. No. 360,937
Int. Cl. H01m *17/02*
U.S. Cl. 136—83 R **10 Claims**

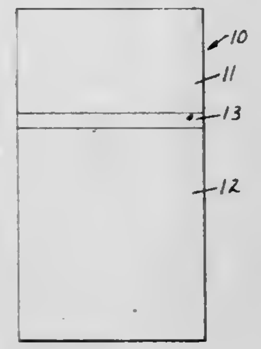
1. In a high energy density primary galvanic cell having a cathode containing cathodically active material, a light metal anode from Group IA or IIA of the Periodic Table, and a nonaqueous organic liquid electrolyte, the improvement in combination therewith which comprises,
- a cathode wherein the cathodically active material comprises WO_x, wherein x is between about 2.0 to 2.9.

3,873,370

THERMOELECTRIC GENERATORS HAVING PARTITIONED SELF-SEGMENTING THERMOELECTRIC LEGS

Edward F. Hampl, Jr., St. Paul; William C. Mitchell, Arden Hills, and Robert S. Reylek, Roseville, all of Minn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 291,938
Int. Cl. H01r *1/18*
U.S. Cl. 136—205 **7 Claims**



1. In a thermoelectric generator, a thermoelectric leg that
A. comprises at least two longitudinally separated full-transverse-area sections that each
  1. consist essentially of the same amounts of the same metal and nonmetal elements united in a distinct crystal lattice structure that is nonstoichiometric because of an excess or deficiency of atoms of at least the major metal element of the crystal lattice structure, said excess or deficiency of atoms providing the current carriers needed for a thermoelectric composition,
  2. have the property that atoms of said major metal element migrate from a first end of the section toward the second end under the influence of combined thermal and electrical gradients applied to the leg to form a gradation of inherently stable current carrier concentrations that is beneficial for thermoelectric conversion, and
  3. have substantially a single crystal phase; and

B. a barrier member that is disposed between the two sections, extends over at least the whole transverse area of the leg, is in compatible, low-resistance, electrical and thermal contact with each of the two sections, has good electrical conductivity, and prevents migration of said migrating metal element between the two sections.

3,873,371

SMALL GEOMETRY CHARGE COUPLED DEVICE AND PROCESS FOR FABRICATING SAME

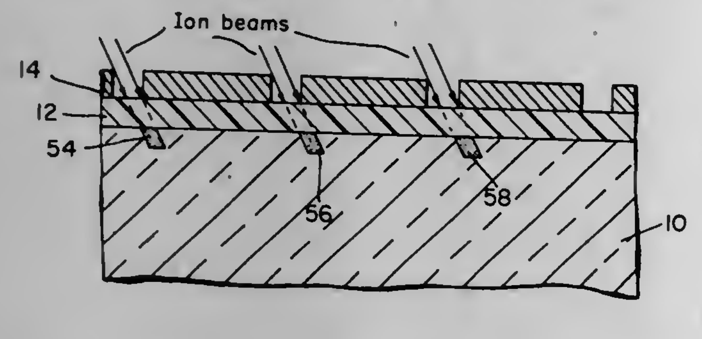
Edward D. Wolf, Northridge, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 7, 1972, Ser. No. 304,424
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **4 Claims**

1. A process for fabricating a semiconductor structure having a channel region therein for blocking the lateral flow of charge carriers, including the steps of:
- a. forming an oxide coating on the surface of a semiconductor substrate,
- b. forming a resist coating on said oxide coating,
- c. developing selected areas of said resist coating to thereby form a resist pattern,

d. depositing a metal film on the exposed areas of both said oxide coating and said resist pattern,

e. removing said resist pattern to thereby simultaneously remove the portions of said metal film lying thereon, whereby openings are formed in said metal film, and



f. accelerating conductivity-type determining ions through said openings and at a preselected angle with respect to the planar surface of said metallization pattern, whereby said ions are introduced into a region beneath said metallization pattern and there serve as a channel stop or carrier blocking region within said semiconductor substrate, and a separate masking step especially for forming said region is not required.

3,873,372

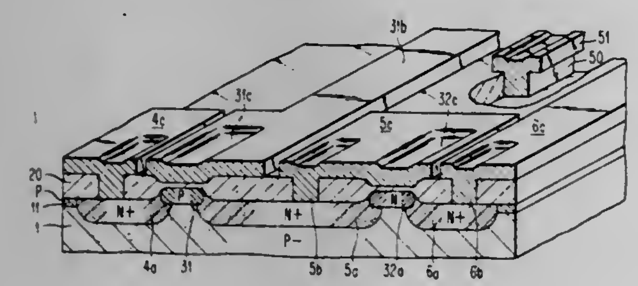
METHOD FOR PRODUCING IMPROVED TRANSISTOR DEVICES

William S. Johnson, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 9, 1973, Ser. No. 377,851

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **43 Claims**



1. A method of fabricating a semiconductor device having first, second and third spatially separated regions of a first conductivity type said regions respectively, lying on and within a planar surface of a semiconductor substrate of second conductivity type, said first conductivity type being opposite to said second conductivity type, a fourth region of said second conductivity type extending from said first region to said second region, and a fifth region of said first conductivity type extending from said second region to said third region, said method comprising:

A. forming a first relatively thin insulating layer of a first material on said planar surface of said semiconductor substrate,

B. forming a second relatively thin insulating layer of a second material on said first insulating layer,

C. forming a third relatively thick insulating layer of a third material on said second insulating layer,

D. removing first, second and third spatially separated portions of said third insulating layer to expose first, second and third areas of said second insulating layer,

E. bombarding the surface of said substrate with impurity ions of said first conductivity type at an energy sufficient to penetrate through said first and second insulating layers and insufficient to penetrate through said first, second and third insulating layers, whereby said first, second and third spatially separated regions of said first conductivity type are formed on and within said planar surface of said semiconductor substrate,

F. forming a fourth relatively thick insulating layer of a fourth material over the surface of said device,

G. removing all of said fourth insulating layer except for two discrete portions thereof, respectively covering a first predetermined precisely located area on the surface of said device and a second predetermined precisely located area on the surface of said device, said first portion wholly covering portions of said first, second and third insulating layers where said first, second and third insulating layers overlay an area of said planar surface of said semiconductor substrate extending from said first region to said second region, said second portion wholly covering portions of said first, second and third insulating layers, where said first, second and third insulating layers overlay an area of said planar surface of said semiconductor substrate extending from said second region to said third region,

H. removing said third insulating layer except for the portions underlying said first and second portions of said fourth insulating material,

I. removing said portions of said fourth insulating material,

J. bombarding the surface of said substrate with impurity ions of said second conductivity type at an energy sufficient to penetrate the planar surface of said semiconductor in the area covered solely by said first and second insulating layers whereby said first and second predetermined precisely located areas of said planar surface of said semiconductor substrate covered by said first, second and third layers of insulating material are not subjected to bombardment by impurity ions of said second conductivity type,

K. removing said second insulating layer from the planar surface area of said device only where the planar surface of said device is solely covered by said first and second insulating layers,

L. removing said first insulating layer from the planar surface of said device only where the planar surface of said device is solely covered by said first insulating layer,

M. removing said third layer of insulating material from the planar surface of said device where said planar surface of said device is solely covered by said first, second and third insulating layers,

N. forming a first relatively thick insulating coating on the entire area of said planar surface of said semiconductor device except for said first and second predetermined precisely located areas on the planar surface of said semiconductor device,

O. removing said second insulating layer from said first and second predetermined precisely located areas on the planar surface of said semiconductor device,

P. removing said first insulating layer from said first and second predetermined precisely located areas on the planar surface of said semiconductor device,

Q. forming a second relatively thin coating of insulating material over the entire planar surface area of the device,

R. bombarding the entire planar surface of said device with impurity ions of said second conductivity type at an energy sufficient only to form said fourth region of said second conductivity type lying on and within said planar surface of said semiconductor substrate and a sixth region of said second conductivity type lying on and within said planar surface of said semiconductor substrate, said fourth and said sixth regions of said second conductivity type respectively corresponding identically in area and location on said planar surface to said first and second predetermined precisely located areas on said planar surface of said semiconductor device,

S. forming a relatively thick fifth layer of insulating material over the planar surface of said device,

T. opening a window area in said fifth insulating area, said window at least fully encompassing said second predetermined precisely located area on said planar surface of said semiconductor device,

U. bombarding the entire planar surface of said device with impurity ions of said first conductivity type at an energy sufficient only to cause said sixth region of said second conductivity type to become said fifth region of said first conductivity type, said fifth region corresponding identically in area and location to said second predetermined precisely located area on said planar surface of said semiconductor substrate,

V. removing said fifth layer of insulating material,

W. cutting a plurality of discrete spatially displaced contact openings in said first relatively thick insulating coating to expose said planar surface of said semiconductor substrate at said openings,

X. forming a plurality of discrete electrical contacts on the resultant device.

3,873,373

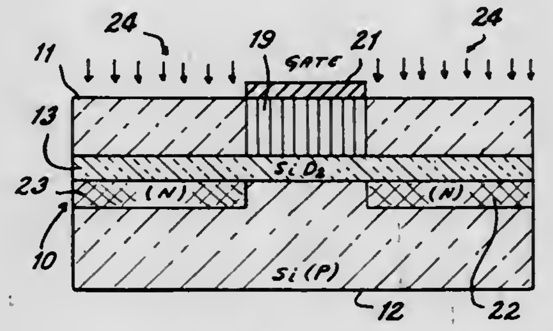
FABRICATION OF A SEMICONDUCTOR DEVICE

Bryan H. Hill, 2525 Steward Rd., Xenia, Ohio 45385

Continuation-in-part of Ser. No. 269,359, July 6, 1972, abandoned. This application Dec. 11, 1973, Ser. No. 423,854

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **3 Claims**



1. A method for fabricating an insulated gate, field effect transistor which comprises implanting oxygen ions below a surface of a semiconductor body of a first conductivity type; heating the body at a temperature in the range of about 1,100° to 1,300°C for a period of about 3 to 6 hours, thereby forming an oxide layer of the semiconductor below the surface of the body, masking at least a portion of the surface of the body; exposing the unmasked portion of the body to ion radiation so as to implant impurity ions in the region of the semiconductor body between its unmasked surface and the upper surface of the subsurface oxide layer; metallizing the surface above the ion implanted region of the body; removing the masking material; bombarding the surface of the body with high impurity ions so as to form source and drain areas adjacent the lower side of the subsurface oxide layer, the areas having a conductivity opposite the first conductivity type; heating the body at a temperature in the range of about 500° to 600°C for a period of about 0.5 to 1 hour; removing semiconductor material and subsurface oxide layer above the source and drain areas, thereby exposing at least a portion of the surfaces of the source and drain areas; masking the gate electrode; metallizing at least a portion of the exposed surfaces of the source and drain areas; and removing the mask from the gate electrode.

3,873,374

METHOD AND COMPOSITIONS FOR THE PREVENTION OR REDUCTION OF SPECK RUSTING OF COLD ROLLED, ANNEALED STEEL PRIOR TO TEMPER ROLLING

Juri Kolts, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed June 20, 1973, Ser. No. 371,715

Int. Cl. C10m *1/06;* **B21b** *45/02*

U.S. Cl. 148—12.1 **10 Claims**

1. In a process for making cold rolled steel comprising the steps of hot rolling to hot band, pickling, rinsing, cold rolling to final gauge, annealing, and temper rolling, the improvement comprising the steps of providing a conventional oil-water rolling emulsion for said steel during said colo rolling step, adding to said emulsion at least one material chosen from the class consisting of $NH_4H_2PO_4$, $(NH_4)_2\ H\ PO_4$, $(NH_4)_3\ PO_4$ and mixtures of H_3PO_4 and NH_4OH to said emulsion in an amount of from about 200 to about 500 ppm as PO_4 and maintaining the pH of said emulsion containing said addition above about 4.5 whereby to prevent the formation of speck rust on said steel prior to said temper rolling step.

3,873,375

METHOD OF MAKING STEEL CARTRIDGE CASES

Robert J. Bolen, Port Penn, Del.; Kelley R. Chadwick, Richfield Springs, N.Y., and Richard T. Gall, New Castle, Del., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Apr. 19, 1973, Ser. No. 352,559

Int. Cl. C21d *9/00*

U.S. Cl. 148—12.1 **8 Claims**

1. A method of manufacturing a cartridge case from low carbon steel comprising the steps of forming the steel into the shape of a cartridge case, carburizing the cartridge case to increase the carbon content of the steel, and cooling the cartridge case in a gaseous medium to give the steel a ferrite and pearlite structure.

3,873,376

METHOD FOR CASE HARDENING WORKPIECES

Karl Ritzka, Karlsruhe, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 16, 1973, Ser. No. 333,199

Claims priority, application Germany, Feb. 16, 1972, 2207148

Int. Cl. C23c *11/10, 11/12;* **B05b** *15/04*

U.S. Cl. 148—16.5 **10 Claims**

1. A method for case-hardening workpieces in which predetermined areas of the workpieces are protected against an excessive case-hardening depth by a cover body, said method comprising placing on a workpiece an integral already-formed cover body shaped to correspond with the portion of the workpiece to be protected and thereafter case-hardening said workpiece by means of a gas-carburization installation; said cover body being formed of a glass ceramic having a specific weight of about 2.54 g/cm^3, a tensile strength at a temperature of about 25°C of approximately 600 kg/cm^2, a shearing strength of about 240 kg/cm^2, a linear coefficient of expansion of about 63×10^{-7}/°c during a heating from about 25°C to about 400°C, a thermal conductivity at 25°C of about 3.1 Kcal/sec.cm.°C, and a heat resistance of up to about 1,200°C.

3,873,377

PROCESS FOR IMPROVING BATCH ANNEALED STRIP SURFACE QUALITY

Thomas W. Fisher, Bethlehem, and Edward D. Melcher, Whitehall, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 21, 1973, Ser. No. 417,852

Int. Cl. C21c *1/74, 9/46*

U.S. Cl. 148—16.7 **3 Claims**

1. A process of annealing a coil of steel strip, where adjacent convolutions thereof are in contact with one another, comprising the steps of placing said coil in an enclosure, introducing into said enclosure a non-oxidizing gas consisting of, by volume, hydrogen in an amount between about 4% to about 25%, about 3% to about 9% carbon dioxide, balance nitrogen, and heating said coil in said non-oxidizing gas to a temperature between about 1100° F. to about 1300° F.

3,873,378

STAINLESS STEELS

Donald Webster, Mercer Island, Wash., assignor to The Boeing Comppany, Seattle, Wash.

Division of Ser. No. 171,181, Aug. 12, 1971, Pat. No. 3,756,808. This application Dec. 13, 1972, Ser. No. 314,686

Int. Cl. C22c *39/10, 41/04;* **C21d** *1/18*

U.S. Cl. 148—37 **8 Claims**

1. A heat-treated stainless steel consisting essentially of:

Element	Weight Percent
Carbon	0.12 to 0.20
Nitrogen	0 to 0.07
Chromium	12 to 16
Molybdenum	0 to 7
Vanadium	0 to 0.6
Cobalt	12 to 16
Nickel	0.5 to 1.5
Niobium	0.1 to 0.3
Iron	Balance

said steel having been subjected to the following sequence of heat treatments:

a. austenitized at a temperature of from 1,600° to 1,800°F. and cooled to ambient temperature; and
b. austenitized at a temperature of from 1,950° to 2,300°F., cooled to and held at a lower temperature of from 1,800° to 2,000°F., and cooled to ambient temperature; and
c. tempered at a temperature of from 500° to 1,100°F.

3,873,379

METHOD OF PRODUCING RARE EARTH-COBALT PERMANENT MAGNET USING SPECIAL COOLING RATES

Kazuo Yamakawa, Tokyo; Tohru Oka, Kumagaya; Masaaki Tokunaga, Kumagaya; Takeshi Mizuhara, Kumagaya, and Chitoshi Hagi, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed July 10, 1973, Ser. No. 377,919

Claims priority, application Japan, July 12, 1973, 47-69106

Int. Cl. H01f *1/02*

U.S. Cl. 148—103 **6 Claims**

1. A method of producing a permanent magnet having a residual magnetic flux density of at least 8000 Gauss, a normal coercive force of at least 8000 Oersted, an intrinsic coercive force of at least 27,000 Oersted and a maximum energy product of at least 17.6×10^6 Gauss Oersted comprising the steps of:

1. preparing a powdery alloy from about 55–70% by weight of cobalt and about 30–45% by weight of at least one rare earth element, selected from the group consisting of Y, La, Ce, Pr, Sm, Nd, Gd, Ho and Er,
2. compacting said powdery alloy in a magnetic field,
3. sintering said compact at a temperature between 1,000° to 1,200°C.,
4. cooling said sintered body from said sintering temperature to a quenching temperature in the range of about 825° to 925°C. at a rate no greater than 7°C./min., and
5. cooling said sintered body immediately from said quenching temperature to room temperature at a rate of at least 20°C./min.

3,873,380

PROCESS FOR MAKING COPPER-CONTAINING ORIENTED SILICON STEEL

Frank A. Malagari, Jr., Freeport, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 229,233, Feb. 11, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,228

Int. Cl. H01f *1/04*

U.S. Cl. 148—111 **5 Claims**

1. A process for producing grain-oriented silicon steel which comprises:

A. hot rolling a silicon steel consisting essentially of from about 2.20–4.0% silicon and from about 0.24–0.75% copper to a thickness of from about 0.075–0.10 inches,
B. cold rolling the hot rolled steel in one cold reduction to 0.025 inch thickness or less, and
C. texture annealing the cold rolled steel at a temperature of from about 2,000°–2,300°F and for a time sufficient for secondary recrystallization and grain growth to be effected.

3,873,381

HIGH PERMEABILITY CUBE-ON-EDGE ORIENTED SILICON STEEL AND METHOD OF MAKING IT

John M. Jackson, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Mar. 1, 1973, Ser. No. 337,073

Int. Cl. H01f *1/04*

U.S. Cl. 148—112 **10 Claims**

1. A method of making cube-on-edge oriented silicon steel comprising the steps of preparing a silicon steel melt having a composition in weight percent consisting essentially of from about 2 to about 4 percent silicon, from about .01 to about 0.15 percent manganese, from about 0.02 to about 0.05 percent carbon, from about 0.01 to about 0.03 percent sulfur, from about 0.003 to about 0.010 percent boron, from about 0.003 to about 0.010 percent nitrogen, up to 0.008 percent aluminum, the balance being iron and impurities incident to the mode of manufacture, casting said silicon steel melt, reheating said silicon steel at a temperature of from about 2,300°F to about 2,550°F, hot rolling said silicon steel to an intermediate thickness of from about 0.050 to about 0.100 in., annealing said hot rolled silicon steel at a temperature of from about 1,500°F to about 2,100°F, pickling said annealed silicon steel and cold reducing it to final gauge, decarburizing said cold reduced silicon steel, providing an annealing separator for said decarburized silicon steel and subjecting said silicon steel to a final box anneal in dry hydrogen at a temperature of from about 2000°F to about 2,300°F for from about 8 to about 30 hours, whereby to provide a cube-on-edge oriented silicon steel having a permeability at H=10 oersteds greater than 1820.

3,873,382

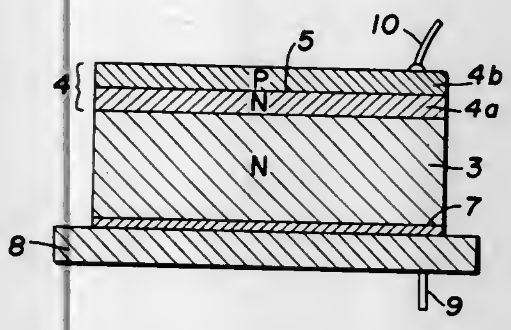
PROCESS FOR THE PREPARATION OF SEMICONDUCTOR MATERIALS AND DEVICES

Warren Olley Groves, Des Peres; Arno Henry Herzog, Magnus, and George Craford, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 158,312, June 30, 1971, Pat. No. 3,725,749. This application Dec. 8, 1972, Ser. No. 313,313

Int. Cl. H01l *7/36, 33/00*

U.S. Cl. 148—175 **5 Claims**



1. A process for the preparation of electroluminescent materials for light-emitting diodes, said process comprising:

a. providing in a reaction chamber a substrate of a single-crystal compound formed from Ga and one of the elements selected from the group consisting of As and P;
b. combining in a vapor phase reactant stream reactant material including impurity atoms, said materials being adapted for the formation of $GaAs_{1-x}P_x$, wherein x has an initial value within the range of from 0–1 inclusive and a final value within the range of greater than 0.2 to less than 1.0;
c. introducing said reactant stream into said reactant chamber;
d. epitaxially depositing on said substrate from said stream said reactant materials to form a first epitaxial layer of a first electrical conductivity type on said substrate, said layer constituting a bulk region substantially free of isoelectronic impurities;
e. introducing into said stream an isoelectronic impurity in vapor form;
f. epitaxially depositing on said substrate from said stream said reactant materials to form a second epitaxial layer of said first conductivity type on said first epitaxial layer, said second epitaxial layer providing a surface region containing said isoelectronic impurity atoms; and
g. forming a P-N junction in said surface region by introducing electronic impurity atoms of an electronic conductivity type opposite to that of said first conductivity type.

3,873,383

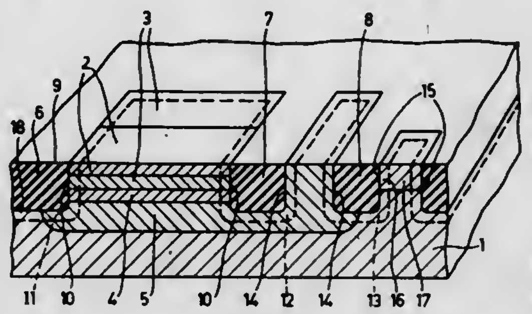
INTEGRATED CIRCUITS WITH OXIDATION-JUNCTION ISOLATION AND CHANNEL STOP

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 238,784, March 28, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,005

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **7 Claims**



1. In a method of making a semiconductor device comprising a semiconductor body having at a major surface an inset pattern of insulating material forming at least one layer-shaped, surface body part adjoining the inset pattern along its entire circumference and throughout its entire thickness, and having at least one circuit element with at least first and second regions of a first conductivity type separated by a third region of a second conductivity type with said first and third regions being located entirely in said one layer-shaped body part and said second region having at least a part located in said one layer-shaped body part and said second region part adjoining the inset pattern along its entire circumference, and having said third region adjoining the inset pattern along at least a part of its circumference and being separated from the major surface at least in part by the first region, in which an additional doped zone is provided adjacent to the inset pattern, the steps comprising prior to provision of the inset pattern, providing an oxidation and impurity masking layer pattern on the major surface with apertures over the semiconductor body portions at the areas where the inset pattern is to be formed, introducing second type forming impurities into the body through the apertures while the oxidation and impurity masking layer protects the body parts between the apertures to form the said additional zone, and thereafter oxidizing the body portions through the apertures while the oxidation masking layer protects the body parts between the apertures to form the inset pattern, the impurity introduction and oxidation steps being such that the additional doped zone which forms borders the whole of the inset pattern and contains a concentration of second type forming impurities which is smaller than the maximum concentration of first type forming impurities in the second region but still sufficiently large to prevent in the semiconductor adjacent the inset pattern undesired electrical connections between spaced first type regions.

3,873,384

METHOD OF STABILIZING A SILICON BASE MOS DEVICE WITH ZINC

Chun-Yen Chang, College of Engineering National Chiao Tung University, Hainchu, Taiwan

Division of Ser. No. 30,603, April 21, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,274

Int. Cl. H01l *7/34*

U.S. Cl. 148—188 **3 Claims**

1. A method of manufacturing a semi-conductor device having improved stability, which comprises providing a base of semi-conductive silicon material, forming a silicon dioxide layer on said base, depositing high-purity zinc metal upon said layer, and diffusing negative zinc ions into said layer by raising the temperature thereof to the order of 1,000°C.

3,873,385

SODIUM FLUORIDE IGNITION AID IN SOLID PROPELLANT COMPOSITIONS

Kenneth Henrich, 60 E. Union Tpke., Wharton, N.J. 07885; Edward Costa, 41-87 St., Brooklyn, N.Y. 11209, and Robert Wetton, Bartley Rd., Chester, N.J. 07930

Filed Mar. 11, 1968, Ser. No. 713,274

Int. Cl. C06d *5/06*

U.S. Cl. 149—18 **4 Claims**

1. An improved combustible composition of the type wherein low molecular weight metallic fuels and inorganic oxidizers are dispersed in a rubberized binder, wherein the improvement comprises: an alkali metal fluoride incorporated into said composition as a propagation aid enabling said composition to ignite and incinerate at altitudes above about 125,000 feet, said alkali metal fluoride being present in an amount between about 2 and 10 percent by weight based on the weight of the composition.

3,873,386

DOUBLE-BASE PROPELLANT CONTAINING POLY (CARBORANYL LOWER ALKYL ACRYLATE)

Donald E. Elrick, Rawlings, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 28, 1971, Ser. No. 160,076

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.2 **10 Claims**

1. A solid double-base rocket propellant comprising nitrocellulose, poly (carborane lower alkyl acrylate) and a nitrato constituent selected from the group consisting of a nitrato compound and mixtures of nitrato compounds.

3,873,387

STRAP LOOP SECURING AND SEVERING MEANS

Jerry M. Schoening, San Jose, Calif., assignor to FMC Corporation, Philadelphia, Pa.

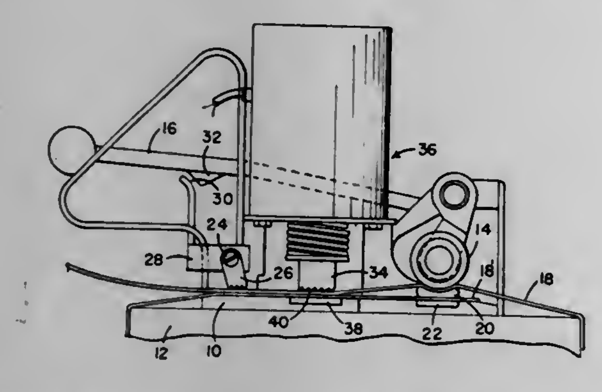
Filed July 5, 1973, Ser. No. 376,687

Int. Cl. B32b *31/20*

U.S. Cl. 156—73.5 **6 Claims**

1. The method of securing a loop of plastic strapping and severing the loop from a supply of strapping comprising overlapping an end portion of the strapping with a second portion which is between the end portion and the supply, pressing an area of the second portion against the end portion, rubbing said area of the second portion rapidly back and forth against and longitudinally of the end portion to cause the rubbed together faces of the strapping to melt, causing the second portion of the strapping to bend sharply transversely thereof about a predetermined line between said area and the supply

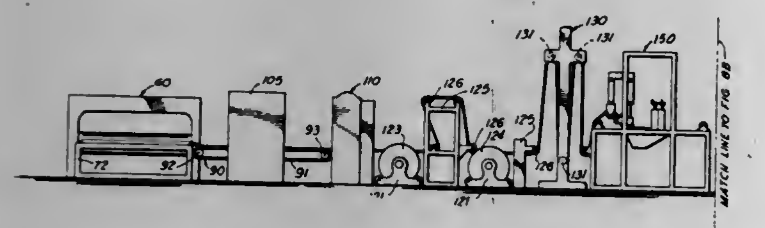
of strapping every time said area is rubbed back and forth whereby the strapping is caused to fail in fatigue and be severed along the predetermined line, stopping the rubbing action and continuing to press the rubbed together faces together until they fuse.



3,873,388
MATTRESS PAD AND METHOD AND APPARATUS FOR CONSTRUCTING THE SAME

Evandow W. Hunter, deceased, late of Atlanta, Ga. (Mildred B. Hunter and James R. Harland, Jr., co-executors), assignor to Mildred B. Hunter, Atlanta, Ga.

Filed Apr. 21, 1972, Ser. No. 246,320
Int. Cl. B32b *5/02*
U.S. Cl. 156—148 **11 Claims**



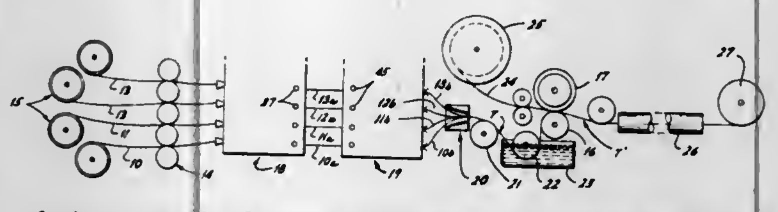
1. A method of forming a pad for use in covering a spring assembly used in the construction of a support, such as a mattress or seating means utilizing spring constructions, including the steps of:

a. forming a first web or batt of fiber material having a plurality of fiber elements;
b. reciprocally feeding said first web or batt of fiber material along equal opposite first and second directions a predetermined distance while advancing said material in a third angularly disposed direction along a predetermined path to form a first layer of fiber material having overlapping fiber elements;
c. forming a second web or batt of fiber material having a plurality of fiber elements;
d. reciprocally feeding said second web or batt of fiber material along said equal opposite first and second directions said predetermined distance while applying said second web or batt of fiber material to the upper surface of said first layer of fiber material moving said predetermined path to form a second layer of fiber material supported on said first layer of fiber material, each having a plurality of overlapping fiber elements;
e. needle punching said two layers of fiber material moving along said predetermined path so as to vertically engage certain of the fiber elements of said first and second layers whereby a single layer of more dense fiber material is formed;
f. forming a third web or batt of fiber material having a plurality of fiber elements;
g. reciprocally feeding said third web or batt of fiber material along equal opposite first and second directions a predetermined distance while applying said third web or batt of fiber material to the upper surface of said layer of more dense fiber material to form a first more dense layer of fiber material and a second resilient less dense layer of fiber material with said single resilient less dense layer supported on said more dense layer;
h. needle punching said two layers of fiber materials moving along said predetermined path so as to vertically engage certain of the fiber elements of said resilient less dense layer with certain of the fiber elements of said more dense layer;
i. applying synthetic backing forming material to at least a portion of an outer surface of said more dense layer of fiber material for forming a synthetic backing along said surface; and
j. curing said synthetic backing forming material.

3,873,389
PNEUMATIC SPREADING OF FILAMENTS

Clare G. Daniels, El Toro, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Division of Ser. No. 205,878, Dec. 8, 1971, Pat. No. 3,795,944. This application Nov. 13, 1972, Ser. No. 305,933
Int. Cl. D04h *3/12*
U.S. Cl. 156—181 **2 Claims**

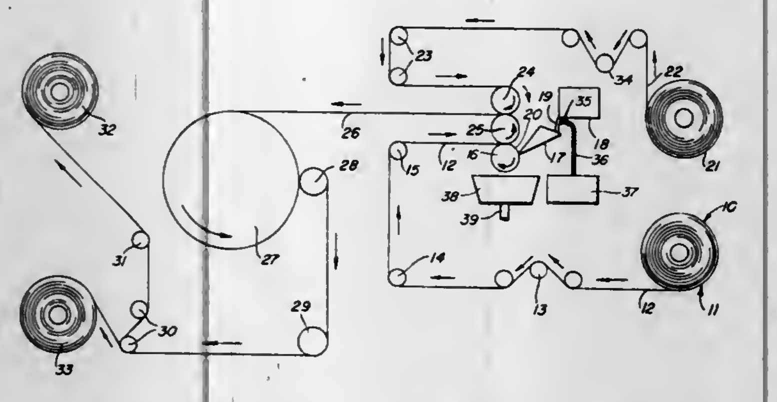


1. A process for forming a thin sheet of filamentary graphite material, from a batch of tapes of such material, comprising: forming a plurality of tapes of predetermined length substantially equal to the length dimension of the desired sheet, by spreading and collimating filaments of graphite tow by passing such tow through slot venturi spreader means while causing air to flow through the venturi spreader in a direction opposite to the movement of tow through said venturi spreader; positioning the resultant tapes in side-by-side coplanar relation in which they define a sheet of the desired width and length; and impregnating said tapes while in side-by-side coplanar relation with resinous material to bond the same into a unitary sheet.

3,873,390
PHOSPHORESCENT, FLUORESCENT AND REFLECTIVE COATED SHEETS OR FILMS AND COMPOSITIONS AND METHOD FOR MAKING THE SAME

Richard K. Cornell, 2880 Duffy Ln., Deerfield, Ill. 60015; Gerald J. Deddo, 513 Saint Charles Road, Elmhurst, Ill. 60126, and Henry L. Gianatasio, 1543 North Franklin, River Forest, Ill. 60305

Filed Sept. 27, 1972, Ser. No. 292,552
Int. Cl. B44c *1/16*
U.S. Cl. 156—230 **19 Claims**



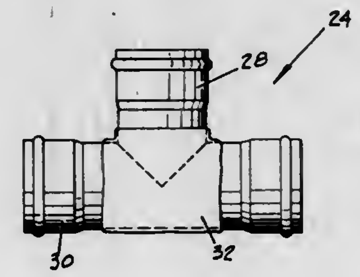
1. The method of making a flexible coated film or sheet which comprises the steps of:

a. forming a pigment adhesive coating composition by intimately mixing a finely divided pigment phase selected from the group consisting of phosphorescent and fluorescent pigments, and mixtures thereof, and an adhesive vehicle phase;
  1. the said adhesive vehicle phase of the said coating composition having a melting point of not substantially higher than 405°F and not substantially lower than 295°F and having a viscosity within the aforesaid temperature range of between 217 and 1,100 cps;
b. applying the aforesaid pigment adhesive coating composition within the aforesaid temperature and viscosity ranges to a flexible film base or carrier sheet;
c. transferring the aforesaid pigment adhesive coating composition while it is in a molten state, from the said flexible film base or carrier sheet to a flexible supporting film or sheet to complete the said flexible coated film or sheet; and then (d) cooling the flexible supporting film or sheet with the said pigment adhesive coating thereon in order to solidify said pigment adhesive coating.

3,873,391
METHOD OF FABRICATING A PLASTIC PIPE FITTING

John W. Plauka, Martinsville, and Edwin A. Cloud, Somerville, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed July 19, 1972, Ser. No. 273,088
Int. Cl. B29c *27/00;* **F16l** *41/02, 47/02*
U.S. Cl. 156—258 **18 Claims**



1. A method of fabricating a nonlinear plastic pipe fitting, comprising:

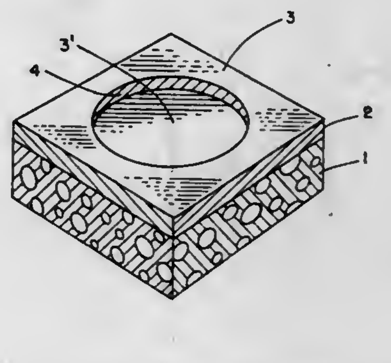
a. forming a plurality of predesigned complementary edges in at least two plastic pipe sections so that when said formed edges engage one another in a complementary fashion, the sections together take the shape of said fitting;
b. placing said formed edges into engagement with one another in said complementary fashion; and
c. permanently connecting said sections together by spraying a plurality of liquid mixture coatings of flexible resin to the external surfaces of said pipe sections over said engaging edges such that each of said coatings is a single continuous coating which extends circumferentially around at least a portion of each of said sections and allowing said applied liquid mixture to set.

3,873,392
PRESSURE CONTOURING AND BONDING OF METAL FOAMS

Leonard M. Niebylski, Birmingham, and Chester P. Jarema, Detroit, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 152,996, June 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 774,756, Nov. 12, 1968, Pat. No. 3,617,364, and a continuation-in-part of Ser. No. 818,582, April 23, 1969, abandoned. This application Jan. 22, 1973, Ser. No. 325,556
Int. Cl. B32b *31/20, 15/20, 5/18*
U.S. Cl. 156—306 **2 Claims**

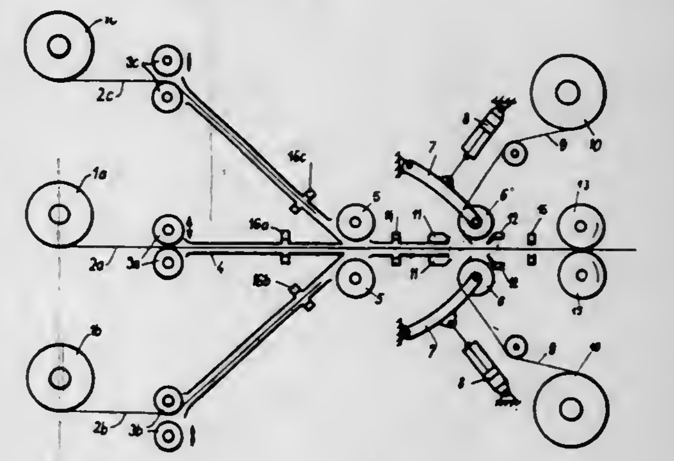
1. A process for changing the configuration of a surface of a foamed aluminum body and contemporaneously bonding an integral lamina to the surface being altered, said process comprising subjecting a surface of a foam of an aluminum base metal to a compressive action, said surface being pitted with cavities from foam cells having an average pore size of from about 1/32 to about ⅛ of an inch and being overlaid with a metal foil or plastic film having a thickness of from about ½ to about 5 mils, said compressive action being a mechanical force at least sufficient to overcome the compressive strength of said body where said force is being applied, said compressive action being further characterized in that an equal force is not applied to the entirety of said surface at the same time; whereby compression resultant from application of said force crushes said surface and forms a depression where said force is applied and contemporaneously bonds said foil or film by cladding to the resultant crushed surface.



3,873,393
MACHINE FOR SPLICING TAPE FORM MATERIAL

Herbert Bruck, Leverkusen; Josef Busch, Bensberg-Refrath; Hans Hofmann, Cologne; Gunter Von Der Kall, Leverkusen; Fritz Kreckeler, Cologne, and Hans Joachim Barke, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 11, 1973, Ser. No. 368,512
Claims priority, application Germany, June 13, 1972, 2228631
Int. Cl. B65h *19/18, 21/00;* **B31f** *5/06*
U.S. Cl. 156—351 **10 Claims**



1. An apparatus for splicing the trailing and leading ends of travelling tapes following each other in a predetermined path by applying pieces of adhesive tape having a travelling tape-securing adhesively-coated side to the contiguous trailing and leading ends of the travelling tapes comprising a splicing presser disposed on a side of the path of the travelling tapes, an adhesive tape supply mounted adjacent the splicing presser for supplying adhesive tape to the splicing presser with the travelling tape-securing adhesively coated side disposed remotely from the contacted surface of the splicing presser, means to hold the adhesive tape in contact with the splicing presser with the tip portion of the adhesive tape fed past the splicing presser and extending outwardly from the splicing presser, the splicing presser being mounted on a movable arm for movement toward and away from the path of the travelling tapes, a drive connected to the movable arm for actuating the

movement of the arm, a control system including sensors for detecting the trailing and leading ends of the travelling tapes to be spliced to each other, the control circuit connecting the sensors to the drive for actuating the movement of the splicing presser toward and away from the path of the travelling tapes just before the trailing end of the leading tape and after the leading end of the following tape respectively, a severing element disposed adjacent the path of the travelling tapes and in the path of a piece of adhesive tape, whereby said adhesive tape is adhered to the trailing end of the leading tape and the leading end of the following tape of the travelling tapes by movement of the splicing presser toward the travelling tapes and the piece of adhesive tape adhered to the travelling tapes is severed from the bulk of the adhesive tape on the adhesive tape supply by being drawn against the severing means by movement of the splicing presser away from the travelling tapes thereby leaving a tip portion of adhesive tape extending from the splicing presser for attachment to the next trailing end of the travelling tape.

3,873,394

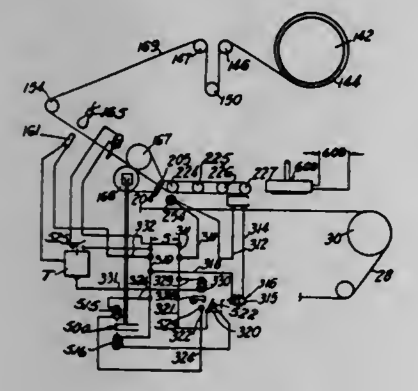
CARTON CLOSING AND LABELING METHOD AND APPARATUS

David L. Pearl, 2592 Briarcliff Rd., N. E., Atlanta, Ga. 30329; George E. Harris, P.O. Box 6065, Marietta, Ga. 30308; John G. Waller, 806 Cambridge Ave., College Park, Ga. 30337, and Beverly P. Head, Jr., 9 Rockdale Ln., Birmingham, Ala. 30274

Division of Ser. No. 737,601, June 17, 1968, Pat. No. 3,562,997. This application Feb. 16, 1971, Ser. No. 115,729

Int. Cl. B65c *3/16*

U.S. Cl. 156—353 **3 Claims**



1. Apparatus for applying thermoplastic labeling material to objects comprising:

first means for moving said object along a prescribed path;
second means for dispensing said labeling material toward said path;
third means for applying said labeling material to said object;
fourth means for partially severing said labeling material in a single, continuous, cut at selected positions along its length; and,
fifth means for stopping the dispensing of said labeling material after it has been applied to said object whereby the motion of said object as it continues to move along its path finishes the severing of said material.

3,873,395

APPARATUS FOR FORMING LAMINATED WALL STRUCTURES

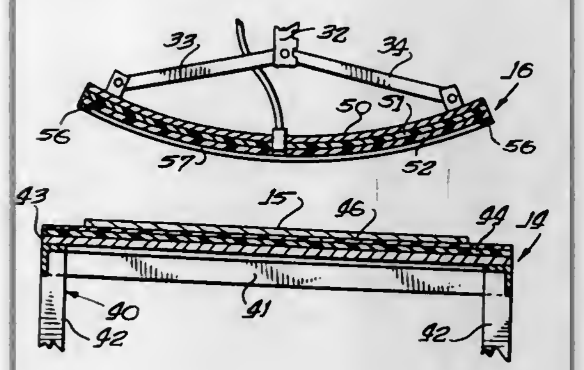
Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer Inc., Monon, Ind.

Filed Mar. 5, 1973, Ser. No. 337,958

Int. Cl. B32b *31/20*

U.S. Cl. 156—382 **5 Claims**

1. An apparatus for forming large generally rectangular laminated wall panels for trailer bodies and the like comprising a large substantially rigid rectangular bottom platen having a size and shape similar to a trailer body wall panel to be produced for supporting a wall panel thereon, a large rectangular resiliently bendable top platen similar in size and shape to said bottom platen, support means connected with the top platen for lowering said top platen to an operative position in registration with said bottom platen and for retracting the top platen to a raised position, seal means disposed around a peripheral portion of one of said platens for sealingly engaging the other of said platens when said top platen is lowered to said operative position, said support means being connected with opposite marginal portions of said top platen, a midportion of said top platen being substantially unsupported and bending downwardly from said opposite marginal portions under the top platens own weight when the top platen is in said raised position, said top platen upon being lowered to the operative position initially engaging a midportion of a panel on the bottom platen and then progressively bending and engaging the panel outwardly toward opposite margins thereof and also causing engagement of the seal means between the platens for defining a cavity between the platens, and means connected with said cavity for evacuating the cavity for causing ambiant air pressure to press the platens together and squeeze the panel therebetween.



3,873,396

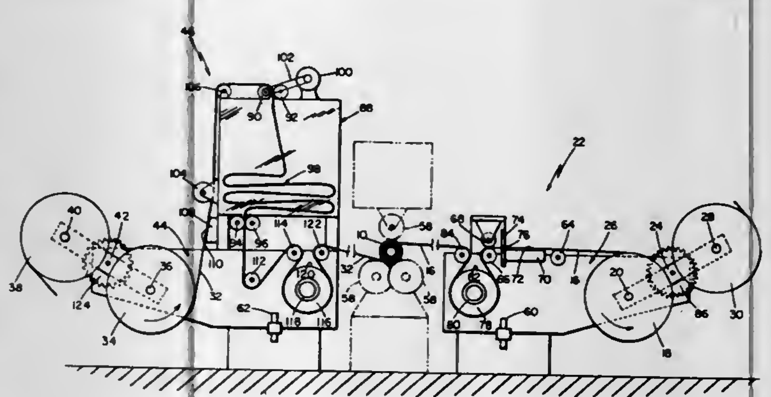
WEB SPLICING APPARATUS

Claude J. Rice, Barnsdall, Okla., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 12, 1973, Ser. No. 340,262

Int. Cl. B65h *81/00*

U.S. Cl. 156—392 **8 Claims**



1. In a stationary machine which applies a self-adhesive web as an outer coating to a length of moving pipe, the web being applied under tension, the machine including a web supply spindle and means defining a web delivery path from said spindle to said length of pipe, the improvement comprising retarding means disposed along said delivery path intermediate said spindle and said length of pipe operative to exert a retarding force on the web delivered to said length of pipe, and a splicing member including a splicing surface supported along said web delivery path intermediate said spindle and said retarding means, said surface being elongated in the direction of said path.

3,873,397

TIRE BUILDING APPARATUS

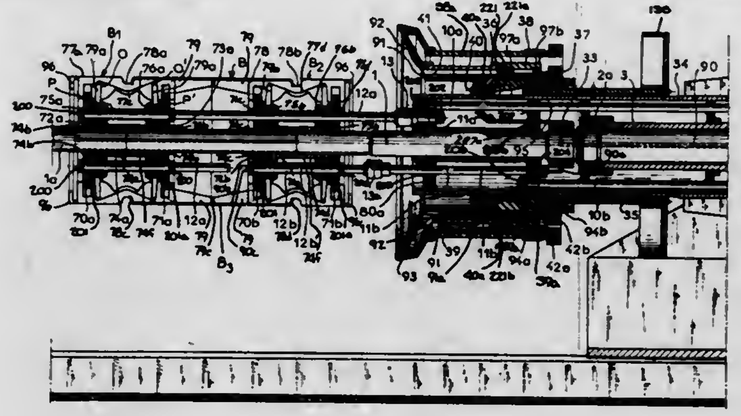
Jean Rene Leblond; Guy Emile Danneels, and Jean Armand Biet, all of Compiegne, France, assignors to Uniroyal a Societe Anonyme, Clairoix, Oise, France

Filed July 6, 1972, Ser. No. 269,341

Claims priority, application France, July 13, 1971, 71.25784

Int. Cl. B29h *17/22, 17/24*

U.S. Cl. 156—401 **24 Claims**



1. An apparatus for manufacturing a pneumatic tire having at least a pair of bead wire rings and apex strips on a cylindrically shaped carcass, comprising,

a radially and axially expandable and contractable tire building drum having an axis of rotation,
a plurality of pairs of rings adjacent each end of the drum and arranged concentric and coaxial with each other and the axis of rotation of the drum,
a first pair of the plurality of rings being movable axially inward with respect to the drum to contact a respective bead wire ring and apex strip to maintain and stabilize the ring and strip during the radial expansion of the carcass into a toroidal shape.

3,873,398

PLY-BAND BUILDING APPARATUS

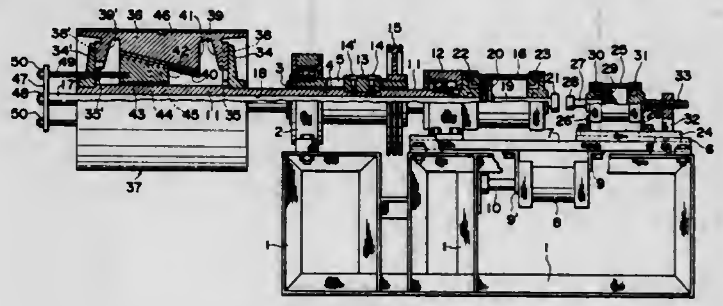
Masasuke Yokoo; Masayoshi Suzuki, both of Tokyo; Daitetsu Meguro, Sayama, and Shuichi Imai, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,915

Claims priority, application Japan, Apr. 11, 1972, 47-36187

Int. Cl. B29h *17/14, 17/18, 17/20*

U.S. Cl. 156—417 **4 Claims**



1. A ply-band building apparatus, which comprises:
a fixed frame structure;
a rotary shaft journaled on said fixed frame structure and having a bore axially extending therethrough;
a ply-band building drum including a plurality of arcuate segments collectively defining the drum surface thereof, each arcuate segment having a central projection at the radially inner wall thereof, a pair of guide flange members fastened on the periphery of said rotary shaft in face-to-face relation with each other, a conical hollow slide member interposed between said guide flange members to be slidably mounted through the hollow thereof on said rotary shaft with the peripheral surface of said conical hollow slide member slidably coupled with the radially inner wall of said central projection of each arcuate segment inclined from the periphery of said each arcuate segment through the same inclination as the peripheral surface of the conical hollow slide member in the axial direction of the building drum, and a pair of side projections radially inwardly extending and respectively radially slidably mounted on said guide flange members, so that said arcuate segments radially simultaneously move in accordance with axial movement of said conical hollow slide member;
drum control means including a control rod slidably inserted into said bore of the rotary shaft and connected at one end thereof to said conical hollow slide member, a fluid pressure operated main cylinder assembly having a cylinder bottomed at the both ends thereof and provided at each bottom thereof with a port and a central aperture, a piston slidably accommodated in said cylinder and a piston rod slidably inserted into the central apertures and connected to said piston, one end of said piston rod being connected to said control rod, and a fluid pressure operated subsidiary cylinder assembly having a cylinder bottomed at the both ends thereof and provided at one bottom thereof with a central aperture and a port and at the other bottom thereof with a port, a piston slidably accommodated in said cylinder and a piston rod connected to said piston and slidably coupled with said aperture, said main and subsidiary cylinder assemblies being so mounted on said frame structure that the other end of said piston rod of said main cylinder assembly and said piston rod of said subsidiary cylinder assembly abut on each other when said piston of the main cylinder assembly be in an intermediate position and said piston of the subsidiary cylinder assembly be in an utmost position nearer to said main cylinder assembly.

3,873,399

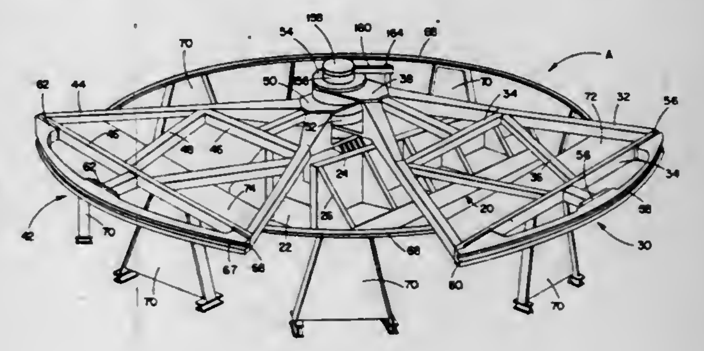
APPARATUS AND METHOD FOR PRODUCING ELONGATED REINFORCED PLASTIC ARTICLES

William Brandt Goldsworthy, Palos Verdes; Ethridge E. Hardesty, Pine Valley, and Harald E. Karlson, Santa Monica, all of Calif., assignors to Goldsworthy Engineering, Inc., Torrance, Calif.

Filed May 9, 1973, Ser. No. 358,665

Int. Cl. B32b *1/10, 31/26*

U.S. Cl. 156—441 **28 Claims**



1. Apparatus for pultruding a continuously formed nonlinear composite article comprised of filament containing reinforcing material and an impregnating curable matrix, said apparatus comprising:
a. pre-heating means operatively located to receive a reinforcing material impregnated with a curable matrix,
b. a forming and shaping die comprising a first and second cooperating die sections which are arcuately curved over their length forming a die cavity therebetween, said die cavity being operatively located in relation to said preheating means to receive the impregnated and pre-heated reinforcing material,
c. said die cavity being defined by said first and second die sections and curved over the greater portion of its length

in the direction of movement of the reinforcing material,
- d. and curing means operatively located with respect to said forming and shaping die to finally cure the curable matrix impregnated into said reinforcing material, to thereby form a rigid pultruded composite article,
- e. and pulling means for carrying said reinforcing material impregnated with said curable matrix through said preheating means and the die cavity of said forming and shaping die.

3,873,400

APPARATUS FOR BONDING BATTERY COVER TO BATTERY CONTAINER

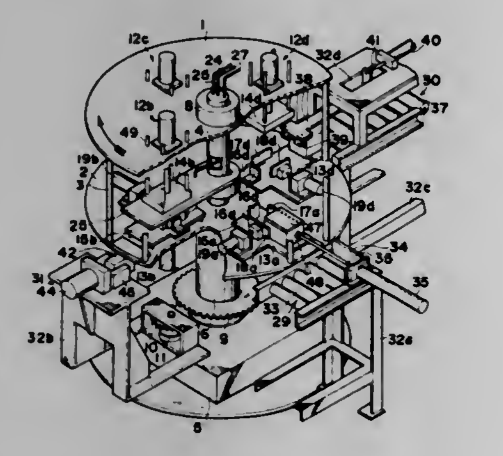
Takashi Tsuchida, Kosai; Minoru Tateno, Kawasaki; Nobuaki Fukuda, Kosai, and Takashi Shimada, Toyohashi, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Shimbashi, Tokyo and The Furukawa Battery Co., Ltd., Yokohama, both of Japan

Filed Mar. 18, 1974, Ser. No. 452,341

Claims priority, application Japan, Mar. 16, 1973, 48-30698

Int. Cl. B23b *31/00;* **B65c** *11/04;* **H01m** *35/18*

U.S. Cl. 156—499 **5 Claims**



1. In apparatus for bonding a cover member of a storage battery to a battery container, comprising:
- an upper table and a lower table arranged to rotate simultaneously about a center axis thereof;
- a plurality of upper press means concentrically arranged on said upper table with respective press heads projecting below said upper table, each of said press heads having means for lifting said battery cover;
- a plurality of lower press means concentrically arranged on said lower table with respective press heads projecting above said lower table to face with said press heads of said upper press means, each of said press heads of said lower means having means for setting the battery container to a predetermined position;
- means for operating both of said upper and lower press means in accordance with a predetermined time sequence; and
- stationary plate means for contacting at least one of the bonding faces of said battery cover and container by which said face is rendered capable of bonding, said plate means being disposed between one of the paired upper and lower press heads.

3,873,401

FILM SPLICER

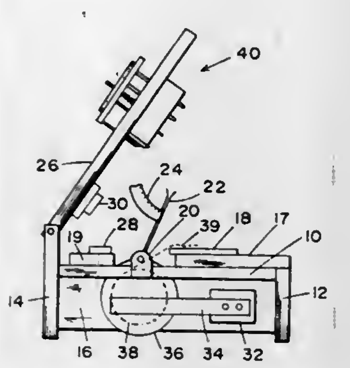
Axel E. Gustafson, 711 S. Summit Ave., Sioux Falls, S. Dak. 57104

Filed Apr. 22, 1974, Ser. No. 462,970

Int. Cl. B31f *5/06;* **G03d** *15/04*

U.S. Cl. 156—505 **6 Claims**

1. A film splicer comprising in combination:
- a base having a cutting surface and a splicing surface thereon;
- film holding means on said base between said cutting surface and said splicing surface, and pivotable about an axis running generally along said surface so as to be operable to carry the ends of two pieces of film in abutting relationship into position on the cutting surface and the splicing surface, said film holding means comprising a pair of proximate spring members extending up from the pivot axis in two branches, one for each of said two pieces of film;



- tape supply means on the base adapted to permit tape to be applied to the ends of the film on the splicing surface;
- a first cutting means on said base operable to make congruent cuts in the ends of said two pieces of film when said film is on said cutting surface; and
- a second cutting means mounted on said base operable to cut off excess tape when said film is on the splicing surface.

3,873,402

CERAMIC TILES

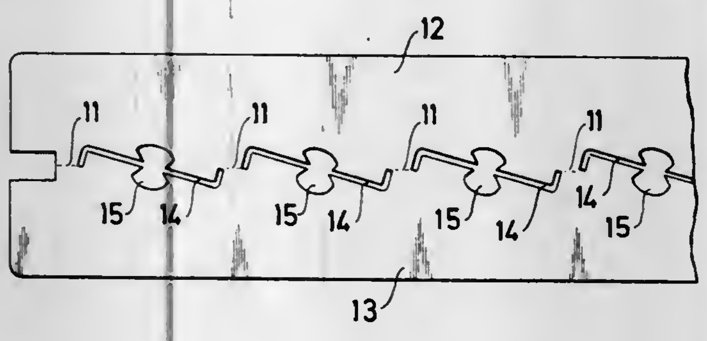
Karl Mrasek, Schwarzenfeld, Germany, assignor to Buchtal GmbH, Schwarzenfeld, Germany

Filed Feb. 22, 1973, Ser. No. 334,638

Claims priority, application Germany, Mar. 10, 1972, 2211747

Int. Cl. B32b *3/00;* **E04c** *1/00*

U.S. Cl. 161—37 **8 Claims**



1. In tiles of densely fired ceramic material formed in pairs arranged back to back with their back faces separated by a relatively thin channel extending lengthwise of the tiles, said channel at spaced points being interrupted by thin necks of material interconnecting the individual tiles, the improvement in said tiles comprising: laterally of said tiles said channel being undulated and forming alternating ribs and valleys extending lengthwise of said tiles, said necks being located intermediate the tops of said ribs and the bottoms of said valleys whereby when said necks are fractured to separate said tiles no portion of the fractured necks projects above the tops of said ribs on either tile; a longitudinal slot in each of the individual tiles positioned intermediate said necks and communicating with said channel for receiving a splitting tool for separating the individual tiles and said slot in each individual tile providing a deep groove for receiving the bonding material used to install the tile.

3,873,403

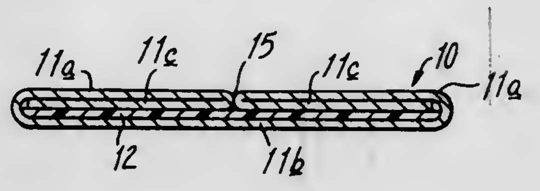
STRETCHABLE STRAP MATERIAL

Irving Edelman, Franklin Square, N.Y., assignor to Maid-Rite Novelty Corp., Long Island City, N.Y.

Filed July 2, 1973, Ser. No. 375,466

Int. Cl. A41f *15/00*

U.S. Cl. 161—76 **5 Claims**



1. A stretchable shoulder strap material for use in articles of feminine wearing apparel consisting of a rasheel-knitted fabric tape having a laid-in structure of spandex strands extending longitudinally therein so that said tape can be longitudinally extended against the elastic resistance of said spandex strands without significant narrowing of the tape, said tape being longitudinally folded to define an outer shell having confronting portions, and a non-woven, open randomly reticulate web of thermoplastic synthetic elastic fibers contained by said outer shell and bonding together said confronting portions of the latter without appreciably resisting the longitudinal extension of said tape forming the shell.

3,873,404

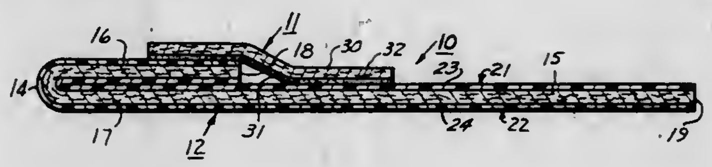
RELEASABLY MOUNTED APPLIQUE FOR USE IN GRAPHIC ARTS AND MARKING

William S. West, Pasadena, Calif., assignor to David P. Blacher; Jonathan E. Blacher and George J. Blacher, all of Pasadena, Calif., a part interest to each

Filed Jan. 5, 1973, Ser. No. 321,148

Int. Cl. B32b *3/04*

U.S. Cl. 161—102 **12 Claims**



1. In combination: a support member comprising an elongated flexible strip having a longitudinal axis and a longitudinal fold dividing the strip into a pair of flanges, said strip being folded to bring the flanges into surface-to-surface contact with one another, each flange having a free edge spaced from the fold, the first one of said flanges extending a lesser distance from the fold than the second one of said flanges, at least a portion of the exposed surface of the first flange having the property of releasing an adhesive which is brought into contact therewith; and an applique member comprising a flat body having a surface which is an adhesive, only a portion of said body being releasably fixed to that portion of the exposed surface of the first flange, said portion of said body being fixed to said portion of the exposed surface which has the property of releasing an adhesive, and the remainder of the applique member projecting beyond the free edge of the first flange so as to overlay at least a portion of the second flange.

3,873,405

MULTI-IMAGE FILM MASK

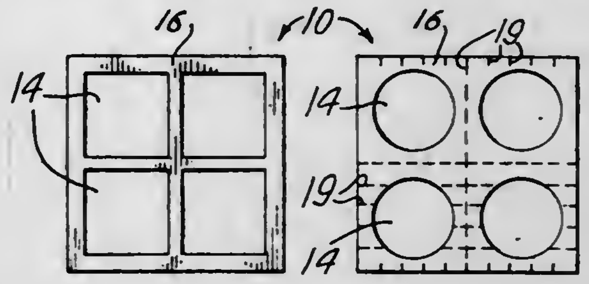
Frederick Alfred Wilkes, P.O. Box 695, Station N, Montreal, Quebec, Canada

Filed Sept. 22, 1971, Ser. No. 182,670

Int. Cl. G03b *21/64*

U.S. Cl. 161—113 **2 Claims**

1. A film mask having two or more discrete film apertures therein and adapted for use in a projectable film slide mount having a single projectable area capable of retaining said film mask in a flat plane therein, said mask comprising a flat body member of pliable paperboard material, said two or more apertures in said film mask being stamped through said body member within a single projectable area and each defining an aperture area section which is retained in the plane of said body whereby substantially no visible irregularities in the periphery of said apertures can be detected when said aperture area sections are removed, said body member having a reflective surface which will not absorb heat and which is non-transmitting to light, the opposite surface of said body having an adhesive thereon to secure the marginal edges of two or more discrete film images about a respective aperture for viewing two or more images on said film mask, said opposite surface having an adhesive thereon further including grid markings at least along one plane of said body whereby said one or more film images can be aligned in parallel planes, said opposite surface of said mask having a waxy coated protective paper sheet detachably adhered to said adhesive surface.



3,873,406

SYNTHETIC LEATHER AND METHOD OF PREPARING THE SAME

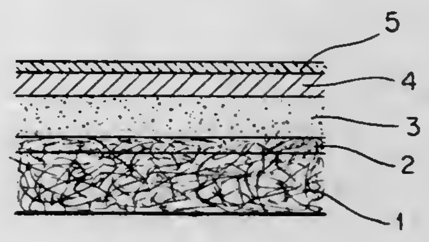
Kaoru Okazaki; Akira Higuchi, and Naoki Imaeda, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 6, 1973, Ser. No. 422,583

Claims priority, application Japan, Dec. 22, 1972, 47-128114; Feb. 22, 1973, 48-20708

Int. Cl. B32b *3/00, 27/12*

U.S. Cl. 161—159 **34 Claims**



1. Synthetic leather comprising a fibrous sheet layer and a coating layer, characterized in that
- A. said coating layer consists of a colored non-porous coating layer and a porous coating layer, said colored non-porous coating layer having a thickness of from about 0.005 mm to about 0.05 mm and said porous coating layer having a thickness of from about 0.05 mm to about 1.5 mm;
- B. said fibrous sheet layer consisting of
  - a. a boundary layer consisting of a fibrous sheet and a polymer having a porous structure united continuously with said coating layer, said boundary layer being substantially free of a polymeric binder and having a thickness of about 0.01 mm to about 0.2 mm, and
  - b. a fibrous substrate layer consisting of a fibrous sheet and said polymeric binder, being substantially free of said boundary layer in the direction of the thickness of about 0.5 mm to about 1.8 mm, and
- C. said synthetic leather having a flexibility resistance which is at least about 10×10^4 times, a water vapor permeability

of at least about 5 mg/cm^2·hr and a scuff resistance of at least about 500 grams.

12. In a method of preparing synthetic leather having a flexibility resistance of at least 10×10^4 times, a water vapor permeability of at least 5 mg/cm^2·hr and a scuff resistance of at least 500 grams, consisting of a polymer and a fibrous non-woven fabric, the steps which comprise

A. pre-treating a fibrous sheet material with a mixture consisting of a solvent and a non-solvent for the polymer coating composition at a weight ratio ranging from about 90/10 to about 65/35,

B. applying the polymer coating solution or dispersion to a support, lapping the resulting coating over the pre-treated fibrous sheet material obtained in step (A), uniting the overlapped pair by passing them between at least two rolls having a clearance conforming to the following expression:

$$0.5\,(X+Y) \leqq \text{clearance} < 1.0\,(X+Y)$$

(wherein X is the coat thickness of the polymer coating solution or dispersion and Y is the thickness of the fibrous sheet material), and thereafter coagulating said polymer coating solution or dispersion to unite the fabric with the resulting porous coating layer,

C. stripping off said support,

D. introducing a solution or dispersion of the polymeric binder to the surface, opposite to the coating surface of the fibrous sheet material,

E. coagulating said solution or dispersion of polymeric binder,

F. coating the solution or dispersion of polymeric material on top of said porous coating layer, and

G. heating the substrate to form a non-porous coating layer having a thickness from about 0.005 mm to about 0.05 mm.

3,873,407

SKIN POLYURETHANE FOAM

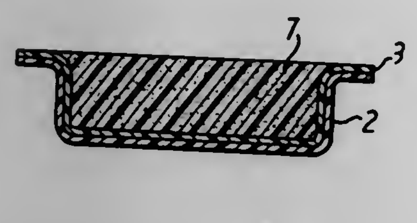
Koji Kumata, Kyota, and Kozaburo Nagata, Shiga, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Dec. 15, 1972, Ser. No. 315,647

Claims priority, application Japan, Dec. 18, 1971, 46-103020

Int. Cl. B32b *3/26*

U.S. Cl. 161—160 **4 Claims**



1. A skin urethane foam, which comprises:

a cover layer of an organic solvent soluble, substantially linear polyurethane of an average thickness of 0.01 – 1.0 mm formed by applying a solution of said substantially linear polyurethane which is formed by reacting a polyol having a molecular weight of 1,000 – 3,000 with an organic polyisocyanate and with a chain extender in amounts such that the ratio of isocyanate groups to active hydrogen containing groups is 0.95 – 1.1, said polyol being selected from the group consisting of polyester polyol, polyether polyol and polyester-polyether polyol, said polyisocyanate being selected from the group consisting of 4,4′-diphen methane diisocynate, tolylene diisocyanate, xylene diisocyanate, hexamethylene diisocyanate, isophorone diisocyanate, dicyclohexylmethane diisocyanate, said chain extender being selected from the group consisting of ethylene glycol, trimethylene glycol, 1,4-butylene glycol, diethylene glycol and neopentyl glycol, to the cavity of a mold and drying the applied solution:

an intermediate layer applied onto the cover layer and formed from a two component-type polyurethane consisting essentially of a polyurethane prepolymer having free isocyanate groups and a hardener which comprises a mixture of a polyol having a molecular weight of 800 – 3,000 per hydroxyl group with a cross-linking agent having a molecular weight less than 500; and

a urethane foam layer formed by introducing a urethane foam-forming mixture into the cavity of said mold onto said intermediate layer before said intermediate layer cures completely and allowing the urethane foam-forming mixture to foam, wherein said cover layer and said foam are integrally bound by said intermediate layer.

3,873,408

METHOD OF PRODUCING A REFRACTIVE INDEX GRADIENT IN GLASS

Joseph R. Hensler, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 868,267, Oct. 6, 1969, abandoned, which is a continuation of Ser. No. 703,282, Feb. 6, 1968, abandoned. This application Nov. 9, 1972, Ser. No. 304,970

Int. Cl. C03c *21/00*

U.S. Cl. 161—165 **7 Claims**

1. Method of increasing the refractive index of a surface layer of predetermined depth of a glass body consisting essentially of, by weight, batch basis, 51% to 71% silica, up to 26% alumina, 7% to 35% soda, up to 15% potash, up to 10% lime, up to 6% magnesia, and up to 6% boric acid, anhydrous basis comprising the step of maintaining the body in contact with a molten source of ions for at least 1 hour at a temperature between 800°F. and 1,100°F., the ions being selected from the group consisting of silver, thallium, and copper ions, and mixtures thereof, thereby to cause the selected ions to diffuse into the body to the predetermined depth.

3,873,409

HEAT SEALABLE SHEET MATERIAL

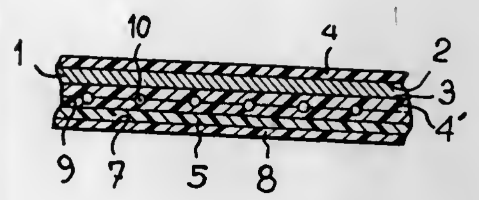
Andre Jehier, 49 120 Chemille, France

Filed Dec. 13, 1972, Ser. No. 314,723

Claims priority, application France, Dec. 13, 1971, 7144624

Int. Cl. B32b *15/08*

U.S. Cl. 161—214 **5 Claims**



1. A lightweight, nonflammable, heat-sealable sheet material comprising:

a first layer of polyester fabric;

a second layer comprised of a thin aluminum foil, said first and second layers being laminated to one another by the application of heat and pressure;

a reinforcing network of twisted multi-strand threads disposed between said first and second layers, each thread of said reinforcing network being comprised of a plurality of strands, the strands of said plurality including at least one strand of polyester and one strand of polyvinyl chloride; and

a coating of heat-sealable polyvinyl chloride on the exposed surface of at least one of said first and second layers.

3,873,410

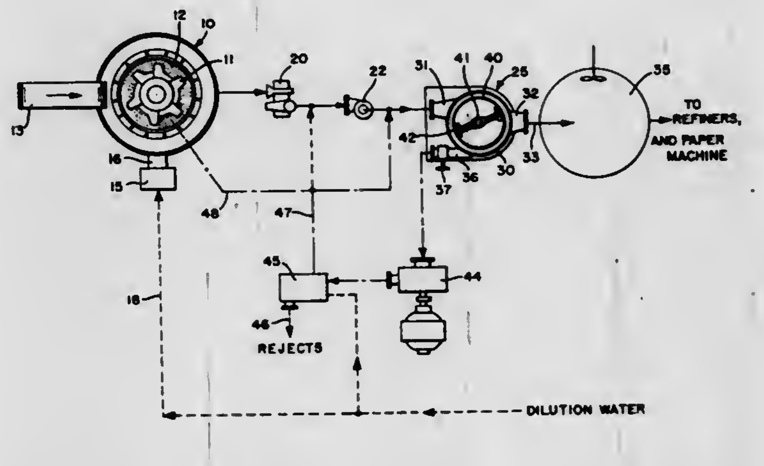
METHOD AND APPARATUS FOR RECOVERING PAPER FIBERS FROM WASTE PAPER CONTAINING MATERIALS

David E. Chupka, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Aug. 27, 1973, Ser. No. 391,589

Int. Cl. D21b *1/32*

U.S. Cl. 162—4 **12 Claims**



1. The method of treating materials containing waste paper to recover paper fibers therefrom for reuse which comprises the steps of:

a. supplying said materials and water to a vessel at rates maintaining the consistency of the resulting suspension in the range of approximately 2–8%,

b. continuously pulping said suspension in said vessel to reduce said materials to fragments,

c. continuously extracting from said vessel a slurry comprising liquid and such of said fragments as will pass through holes of the order of ½ to 2 inches in diameter,

d. subjecting said slurry to screening through relatively fine perforations sized to accept only substantially fully defibered paper without preliminary screening thereof,

e. controlling the accepted and rejected flows from said screening step to maintain at least approximately 20% of the solid materials in said slurry in the resulting rejected flow,

f. subjecting said flow of rejected materials to a defibering action,

g. substantially eliminating from the resulting defibered materials the non-fibrous constituents thereof, and

h. resubjecting the remaining material to said screening step.

3,873,411

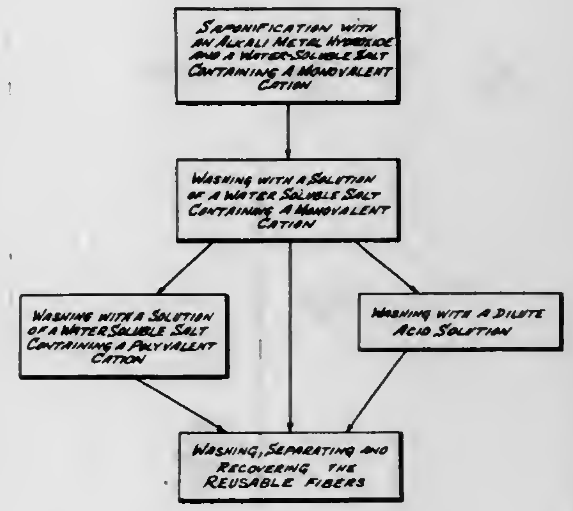
METHODS OF RECOVERING REUSABLE FIBERS

Arthur H. Drelich, Plainfield; Delmont K. Smith, East Brunswick, and Ulrich P. Strauss, Highland Park, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 29, 1973, Ser. No. 375,216

Int. Cl. D21c *5/02*

U.S. Cl. 162—8 **21 Claims**


SAPONIFICATION WITH AN ALKALI METAL HYDROXIDE AND A WATER-SOLUBLE SALT CONTAINING A MONOVALENT CATION
WASHING WITH A SOLUTION OF A WATER SOLUBLE SALT CONTAINING A MONOVALENT CATION
WASHING WITH A SOLUTION OF A WATER SOLUBLE SALT CONTAINING A POLYVALENT CATION
WASHING WITH A DILUTE ACID SOLUTION
WASHING, SEPARATING AND RECOVERING THE REUSABLE FIBERS

1. A method of recovering reusable fibers from mixtures of waste fibers and synthetic, cross-linked polyacrylate resins which comprises: heating at temperatures within the range of from about 85°C. to about 150°C. for from about ¼ hour to about 2 hours, a mixture of waste fibers and synthetic, cross-linked polyacrylate resins in an aqueous saponifying solution containing from about 1% by weight to about 5% by weight of an alkali metal hydroxide and from about 1% by weight to about 7% by weight of a water-soluble salt containing a monovalent cation which solution saponifies the synthetic, cross-linked polyacrylate resins and initiates their decomposition or solubilization without undesirably swelling the same; treating the mixture of waste fibers and synthetic, cross-linked, saponified, polyacrylate resins in an aqueous washing solution containing at least about 1% by weight of a water-soluble salt containing a monovalent cation to remove alkali therefrom; and recovering the reusable fibers from the mixture of waste fibers and decomposed or solubilized synthetic, cross-linked polyacrylate resins.

3,873,412

MECHANICALLY REFINING A MIXTURE OF KRAFT AND SEMICHEMICAL PULP

Michael T. Charters, and Franklin E. Landis, both of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio

Filed Apr. 1, 1974, Ser. No. 456,455

Int. Cl. D21b *1/16*

U.S. Cl. 162—25 **12 Claims**

1. A process of producing a pulp suited for use in the manufacture of kraft type products, for example linerboard and bag grade paper, comprising the steps of steaming small segments of fibrous material, defiberizing the same and elevating the temperature thereof and while the defiberized materials are still at elevated temperature mixing them with a hot kraft pulp and mechanically refining the mixture so obtained.

3,873,413

METHOD OF IMPROVING SMELT PROPERTIES AND REDUCING DISSOLVING TANK EXPLOSIONS DURING PULPING OF WOOD WITH SODIUM BASED LIQUORS

William E. Fisher, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1973, Ser. No. 406,498

Int. Cl. D21c *11/12*

U.S. Cl. 162—30 **13 Claims**

1. In a cyclic pulping and chemical recovery process for producing paper pulp from ligno cellulosic materials utilizing an aqueous sodium based cooking liquor at elevated temperatures and pressures wherein the aqueous filtrate is separated from the pulp by washing, then concentrated and ignited in a recovery furnace to form a smelt which is dissolved in water and reconstituted for further use, the improvement which comprises adding an alkali metal compound selected from the group consisting of LiOH, KOH, Li_2CO_3, K_2CO_3 and alkali metal borates or mixtures thereof to the pulping cycle in an amount sufficient to lower the melting point of the smelt to improve smelt fluidity and reduce dissolving tank explosions.

3,873,414

PROCESS FOR THE TREATMENT OF BLACK LIQUOR OF CELLULOSIC PULP WHEREIN OXIDATION IS PERFORMED BOTH BEFORE AND AFTER BLACK LIQUOR CONCENTRATION

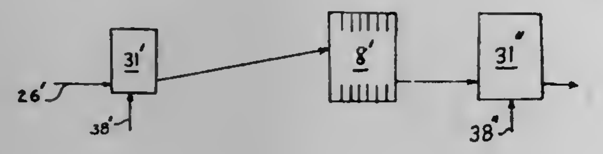
Jacques Rocher, Parly le Chesnay, France; Masamichi Hotta, Kobe, Japan; Mamoru Inomata, Kobe, Japan, and Kazuo Hanabusa, Kobe, all of Japan, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et Exploitation des Procedes George Claude, Paris, France

Continuation-in-part of Ser. No. 300,243, Oct. 24, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,770

Claims priority, application Japan, Oct. 25, 1971, 46-83997

Int. Cl. D21c *11/04, 11/10*

U.S. Cl. 162—30 **9 Claims**



9. In a process for the treatment of black liquor separated from cellulosic pulp produced by the Kraft process, so as to oxidize sulphide present in the black liquor with a view to recovering useful chemical elements which the black liquor contains, the steps comprising

a. in a first oxidation stage, blowing into black liquor leaving the Kraft process, 0.5 to 1 times the quantity of oxygen necessary to theoretically oxidize all the sodium sulfide to sodium thiosulfate to thereby oxidize a portion of the sodium sulphide present in the black liquor;

b. then concentrating the dilute black liquor to give a concentrated black liquor of about 1.5 to 15 g/l sulfide; and,

c. in a second oxidation stage following said concentrating step, blowing into the said concentrated black liquor a quantity of oxygen which is about 1.1 to 1.5 times greater than that quantity of oxygen necessary to convert by oxidation to sodium thiosulphate the residual sulphide in the said concentrated black liquor.

3,873,415

PROCESS FOR REDUCING THE AMOUNT OF CALCIUM CONTAINED IN SODIUM-BASE WASTE SULFITE LIQUOR BY THE USE OF A SODIUM AND/OR AN AMMONIUM COMPOUND AND ADDITIONAL CALCIUM

Bal Krishan Sethi, Rexdale, Ontario; Toivo Lahtvee, Scarborough, Ontario, and William Hubbard Stark, Toronto, Ontario, all of Canada, assignors to Spring Chemicals Limited, Toronto, Ontario, Canada

Filed May 3, 1973, Ser. No. 356,716

Int. Cl. D21c *11/02*

U.S. Cl. 162—36 **13 Claims**

1. A process for treating sodium-base waste sulfite liquor containing calcium in order to reduce the amount of calcium contained therein by precipitating calcium from the waste sulfite liquor as calcium sulfite, which process comprises:

a. dissolving in said waste sulfite liquor at least one member selected from the class consisting of sodium oxide, sodium sulfite, sodium carbonate, sodium bisulfite, sodium hydroxide, anhydrous ammonia, ammonium sulfite, aqueous ammonia, ammonium carbonate, ammonium magnesium carbonate, and ammonium hydroxide so as to obtain a waste sulfite liquor solution containing above about 14,000 ppm of sodium-ammonia cations dissolved therein prior to the completion of precipitation of said calcium sulfite;

b. increasing the calcium ion concentration in said waste sulfite liquor prior to the completion of precipitation of said calcium sulfite;

c. adding a source of sulfite ions to said waste sulfite liquor in at least an amount sufficient to cause the calcium contained therein to precipitate as calcium sulfite; and

d. separating said precipitated calcium sulfite from the remaining waste sulfite liquor solution.

3,873,416

SYSTEM FOR THE CONTINUOUS MEASUREMENT OF THE WEIGHT-AVERAGE FIBER LENGTH OF A PULP

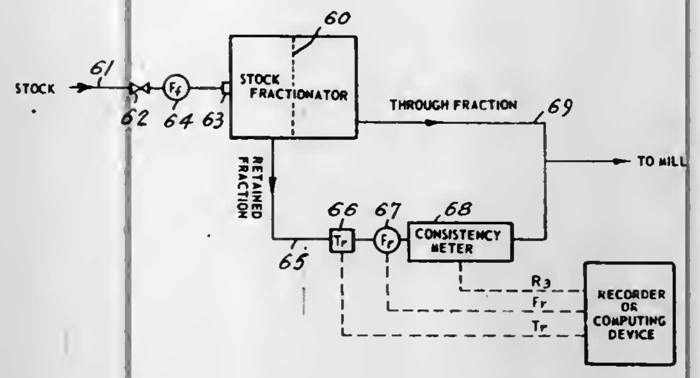
Otto L. Forgacs, 15 Apple Hill Rd., Baie d'Urfe, Quebec, and Alkibiadis Karnis, 487 Montcalm Ave., Dollard des Ormeaux, Quebec, both of Canada, assignors to Alkibiadis Karnis, Dollard des Ormeaux, Quebec, Canada

Continuation of Ser. No. 201,310, Nov. 23, 1971, Pat. No. 3,802,964. This application Oct. 3, 1973, Ser. No. 403,122

Claims priority, application Canada, Nov. 27, 1970, 99380

Int. Cl. G01n *1/18*

U.S. Cl. 162—49 **6 Claims**



1. The continuous method of providing a measurement of weight-average fibre length of a pulp comprising feeding a pulp suspension to a fractionator, dividing said pulp into a retained fraction and a through fraction in said fractionator, measuring the flow and consistency of said suspension, measuring the flow and consistency of one of said fractions thereby to obtain a ratio by weight of solids in said suspension and in said one fraction, said ratio being an indirect measure of the weight average fibre length of said pulp.

3,873,417

PITCH AND PIGMENT DISPERSANT IN AQUEOUS PULP SLURRIES

Joseph V. Otrhalek, Dearborn, Mich., and Gunther H. Elfers, Mutterstadt, Germany, assignors to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 31, 1974, Ser. No. 438,385

Int. Cl. C08f *15/40;* **D21h** *3/44*

U.S. Cl. 162—168 **11 Claims**

1. A composition for controlling the deposit of pitch and/or pigments in an aqueous slurry of cellulosic fibers consisting essentially of an alkali neutralized terpolymer produced by the free radical polymerization in water of

a. from about 60 to 88 parts by weight of at least one alpha, beta unsaturated acid containing three to four carbon atoms,

b. from about 6 to 28 parts by weight of at least one alkylate of an alpha, beta unsaturated acid containing three to four carbon atoms, said alkylate containing from one to 18 carbon atoms, and

c. from about 4.5 to about 20 parts by weight of allyl alcohol, the total of said parts being 100.

9. A method for controlling the deposition of pitch or pigment from an aqueous slurry of cellulosic fibers comprising adding to said slurry an aqueous solution containing from about 20 to about 50 weight percent polymer solids of the polymer of claim 1 and in an amount of polymer solids up to 1 percent by weight of cellulosic fibers in the slurry.

3,873,418

METHOD OF RECOVERING NOIL FIBRES AND SOLUBLE WOOD MATERIAL FROM WASTE WATER

Esko Kai Brax, Helsinki, Finland, assignor to Savo Oy, Kuopio, Finland

Continuation-in-part of Ser. No. 9,937, Feb. 9, 1970, abandoned. This application Feb. 29, 1972, Ser. No. 230,515

Int. Cl. D21f *1/66*

U.S. Cl. 162—190 **6 Claims**

1. A method of recovering noil fibres and soluble wood material in white water from a manufacturing process involving the formation of a pulp web by separating flocked out material from water to produce cleared water and returning the material flocked out to the pulp web for retention as a beneficial constituent of the manufactured product, comprising: Adding a sufficient quantity of an alkaline substance to white water to prevent premature coagulation of suspended material; then adding as a coagulating agent a material whose presence in the pulp web formed is beneficial selected from the group consisting of phenol-formaldehyde resin, carboxymethylcellulose, urea resin, melamine, linseed oil emulsion, polyvinylchloride-latex emulsion and acrylic latex emulsion; thoroughly mixing said white water with said coagulating agent to obtain a substantially homogeneous suspension; after said mixing, adding a sufficient quantity of an acidic substance to the suspension to lower the pH to form flocks incorporating said coagulating agent, noil fibres and soluble wood material from the white water; separating water from said flocks by gravity separation to obtain cleared water and recycling most of the cleared water for use in manufacturing processes; and returning the flocks to the pulp web to form constituent material in the final product of the manufacturing process.

3,873,419

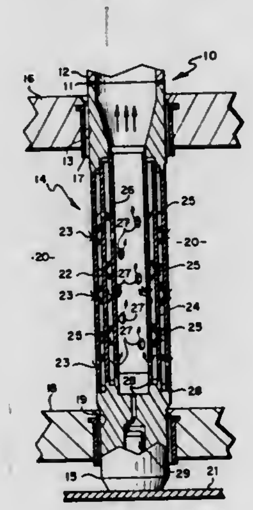
FLOW-THROTTLING ORIFICE NOZZLE

Harold L. Sletten, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed July 3, 1972, Ser. No. 268,330

Int. Cl. G21c *15/22, 15/24*

U.S. Cl. 176—61 **6 Claims**



1. In a nuclear reactor having at least a primary fuel assembly and at least a low power fuel assembly relative thereto, said assemblies obtaining their supply of coolant from a common high pressure plenum chamber of said reactor,

a flow-throttling nozzle communicating said coolant flow from said high pressure plenum chamber of said reactor through said nozzle to an array of fuel elements of said relatively low power fuel assembly, said fuel elements being located downstream from the coolant flow leaving said nozzle, while dissipating a high pressure differential between said plenum chamber and said array of fuel elements so as to substantially reduce the rate of coolant flow from said plenum chamber through said nozzle to said array of fuel elements, said nozzle comprising:

a first elongated housing spaced between a pair of grid plates, said grid plates defining said high pressure plenum chamber, said housing forming a plurality of orifices therethrough, said orifices extending around said housing in spaced and ordered arrays, and

at least a second elongated housing spaced from and positioned within said first housing to provide a continuous annular space defining a continuous fluid flow path within said annulus of said nozzle, said second housing forming a plurality of orifices therethrough, said orifices extending around said housing in spaced, ordered arrays, said arrays being positioned out of alignment in both an axial and circumferential direction with respect to said arrays of said orifices as defined by said first elongated housing, whereby fluid is caused to follow a tortuous path in series from said first elongated housing circumferentially and axially through said continuous annular space and then through said second elongated housing, said plurality of orifices in said first and second housing being so sized and positioned as to minimize their plugging by debris in the coolant while still serving to dissipate said high pressure differential between said high pressure plenum and said array of fuel elements so as to provide a substantial reduction in the rate of coolant flow through said nozzle to said array of fuel elements.

3,873,420

NUCLEAR FUEL ELEMENT ASSEMBLIES

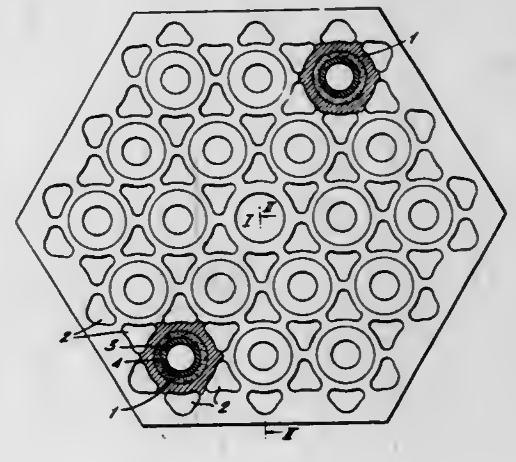
Eric Statham, Kirkham, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 5, 1972, Ser. No. 286,340

Claims priority, application United Kingdom, Sept. 28, 1971, 45181/71

Int. Cl. G21c *3/36, 3/00*

U.S. Cl. 176—77 **3 Claims**



1. A fuel element assembly for a high temperature nuclear reactor comprising a prismatic homogeneous block of graphite having discrete passages extending side-by-side through and between opposed ends of the block, a first group of passages being nuclear fuel containing bores and a second group of passages, formed interstitially of the fuel containing bores, being free of and forming gas coolant flow passages, the fuel containing bores being disposed in triangular lattice array to form tri-angular sub-groups of bores, each fuel containing bore being surrounded by a sub-group of equally spaced coolant flow passages, there being one coolant flow passage disposed with its longitudinal axis coincident with the longitudinal axis of each tri-angular sub-group of bores, the nuclear fuel comprising compacts of uranium oxide particles coated with pyrolytic graphite and supported in a matrix material comprising phenolic resin and graphite compound, said contacts being of annular form and stacked to line the bores and provide a sole coolant flow passage through each bore and stack of compacts.

3,873,421

PROPAGATION OF ATTENUATED RUBELLA VIRUS ON TURKEY EMBRYO TISSUE

Andre Chagnon, 417 Hillside St., Rosemere, Quebec, Canada
Filed Aug. 13, 1973, Ser. No. 387,817
Claims priority, application United Kingdom, Aug. 14, 1972, 37820/72
Int. Cl. A61k *23/00;* **C12k** *7/00*

U.S. Cl. 195—1.3 **7 Claims**

1. A method of propagating the HPV–77 strain of rubella virus, which comprises,

serially passing the virus in from one to four passages through fresh turkey embryo tissue culture by introducing the strain into the tissue, incubating the culture, harvesting the virus so propagated, introducing it into a further fresh turkey embryo tissue culture,

and recovering the virus so propagated having the characteristics of the starting virus.

3,873,422

VACCINE FOR NEONATAL CALF DIARRHEA

Charles A. Mebus, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.
Continuation-in-part of Ser. No. 302,179, Oct. 30, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,997
Int. Cl. C12k *5/00, 7/00*

U.S. Cl. 195—1.3 **4 Claims**

1. A process for attenuating a coronavirus-like calf diarrhea virus comprising passaging said virus from five to about 60 times in tissue culture which supports the growth of the virus until the virus, when inoculated into newborn calves, prevents the development of disease upon subsequent challenge with virulent virus.

3,873,423

METHOD FOR CULTURING CELLS

Paul Gerhard Munder, Emmendingen; Manuel Modolell, Bollschweil, both of Germany, and Donald Francis Hoelzl Wallach, Boston, Mass., assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany
Filed June 7, 1972, Ser. No. 260,629
Claims priority, application Germany, June 9, 1971, 2128744
Int. Cl. C12b *1/20*

U.S. Cl. 195—1.8 **11 Claims**

1. A method of culturing cells which comprises:

a. charging a container of a material permeable to gases, but impermeable to liquid, with an inoculum of said cells and with a liquid culture medium containing bicarbonate ions and capable of sustaining growth of said cells;

b. placing said container in an incubator enclosure;

c. sensing the partial pressure of oxygen in said enclosure outside said container and the pH value of said medium;

d. feeding carbon dioxide to said enclosure in response to the sensed pH value at a rate to maintain said pH value substantially constant; and

e. feeding oxygen to said enclosure at a rate to hold said partial pressure substantially constant,

1. said material being chemically inert to the contents of said container,
2. said pH value and said partial pressure being held sufficient for permitting said growth.

3,873,424

PRODUCTION OF CITRIC ACID, ISOCITRIC ACID AND MICROBIAL CELLS BY FERMENTATION

Kazuo Kimura, and Toru Nakanishi, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Division of Ser. No. 75,240, Sept. 24, 1970, Pat. No. 3,773,620. This application Sept. 11, 1973, Ser. No. 396,330
Claims priority, application Japan, Oct. 9, 1969, 44-80333; Nov. 21, 1969, 44-92925
Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **11 Claims**

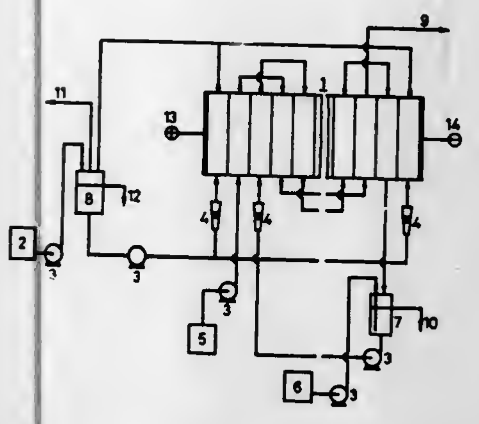
1. A process for producing citric acid and isocitric acid by fermentation which comprises culturing ahydrocarbon-assimilating yeast capable of producing citric acid and isocitric acid under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source in the presence of an alkali metal ferrocyanide to effect an increase in the amount of accumulation of isocitric acid and at the same time to decrease the accumulation of citric acid, accumulating isocitric acid and any citric acid formed in the resultant culture liquor and recovering the isocitric acid and any citric acid therefrom.

3,873,425

PROCESS FOR PRODUCING ITACONIC ACID

Tatsuyoshi Kobayashi, 5-7-38, Sobudai-danchi 1-Chome, Sagamihara; Isei Nakamura, 14-9, Arai 2-Chome, Nakano-ku, and Mitsutoshi Nakagawa, 1-3-4, Kamisoshigaya 4-Chome, Setagaya-ku, both of Tokyo, all of Japan
Filed Nov. 14, 1972, Ser. No. 306,203
Claims priority, application Japan, Nov. 19, 1971, 46-92345; Mar. 18, 1972, 47-27650
Int. Cl. C12d *1/02*

U.S. Cl. 195—36 R **11 Claims**



1. Process for the production of itaconic acid which comprises:

a. culturing an itaconic acid producing mold in a culture broth containing a sugar source, nitrogen source, and inorganic salts under aerobic conditions;

b. removing high molecular substances having the property to prevent electrodialysis of itaconic acid salts from said broth said;

c. contacting the filtrate thus obtained with a cation-exchange resin of an alkali metal salt form which is subsequently regenerated through the present process to the acid form;

d. neutralizing the thus produced cation-exchanged liquor;

e. feeding the neutralized liquor into the diluting compartment of an electrodialyzer which is composed of ion-exchange membranes, while an aqueous solution of alkali metal salt of a member of the group consisting of strong acid, itaconic acid, and mixtures thereof is fed into the concentrating compartment of the same, and then electrodialyzing the itaconic acid salts contained in the neutralized liquor;

f. incorporating the concentrate recovered in the electrodialysis with the retentate from step (b) which is refined prior to incorporation with the concentrate ;

g. crystallizing and isolating itaconic acid or alkali metal salt of itaconic acid from the resulting incorporated liquor, while, contacting the dialyzate recovered in the electrodialysis with about an equivalent quantity of cation-exchange resin of acid form regenerated in step (c); and

h. recycling the resulting cation-exchange liquor to form the raw material of the next fermentation medium.

3,873,426

INSOLUBLE ENZYMES

Ephraim Katchalski, Rehovot; Yehuda Levin, Tel-Aviv, and Beka Solomon, Rehovot, all of Israel, assignors to Miles Laboratories, Elkhart, Ind.
Filed July 2, 1973, Ser. No. 375,601
Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **7 Claims**

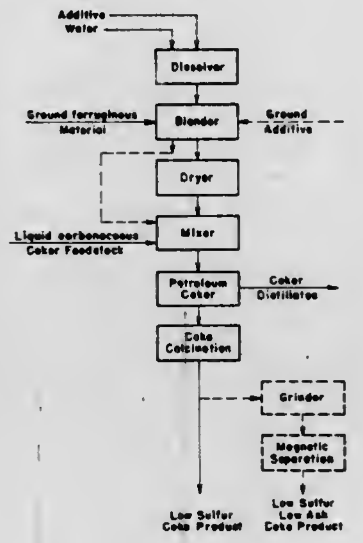
1. A process for insolubilizing enzymes which comprises adsorbing an enzyme selected from the class consisting of amyloglucosidase, lactase, bacterial amylase and fungal amylase and a halotriazine dye on an activated alumina carrier at a pH below about 7 to produce an insolubilized enzyme which retains significant amounts of desired enzyme activity.

3,873,427

DESULFURIZING COKE USING A FERRUGINOUS MATERIAL AND A METAL CHLORIDE

Raymond H. Long, Morristown, and Morgan C. Sze, Upper Montclair, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.
Continuation-in-part of Ser. No. 309,470, Nov. 24, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,575
Int. Cl. C10b *57/06*

U.S. Cl. 201—17 **18 Claims**



1. A process for desulfurizing coke, comprising:

heating coke in admixture with a desulfurizing amount of a desulfurizing additive to a temperature of at least 2100°F. said desulfurizing additive comprising a ferruginous material selected from the group consisting of iron, oxides of iron and mixtures thereof and a metal chloride selected from the group consisting of magnesium chloride, calcium chloride, ferrous chloride, ferric chloride and mixtures thereof, and ferruginous material being present in a ferruginous material to coke weight ratio from 1:4 to 1:30 and the metal chloride being present in a metal chloride to ferruginous material weight ratio from 4:1 to 1:100; and

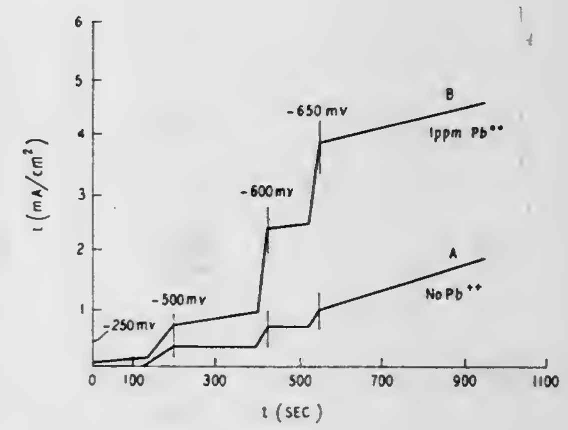
maintaining the coke at a temperature of at least 2100°F to produce a desulfurized coke containing no more than 0.85 percent sulfur.

3,873,428

PREFERENTIAL GOLD ELECTROPLATING

Earl Dallas Winters, Quakertown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 19, 1974, Ser. No. 443,625
Int. Cl. C23b *5/48, 5/24*

U.S. Cl. 204—15 **9 Claims**



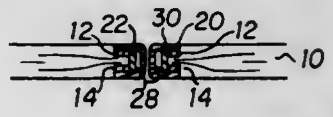
1. Method of selectively electroplating soft gold on a noble metal region of a composite surface including exposed titanium in accordance with which the said surface is immersed in an aqueous electroplating solution containing a soluble gold salt with said immersed surface being biased cathodically with reference to an immersed anode, characterized in that the said solution contains lead with the amount of lead in solution being maintained at a level of from about 20 ppb to 2 ppm based on the said solution, in that the said surface is biased at a level intermediate the onset potential for the said noble metal and titanium, and in that the absolute value of the cathode potential is increased to result in a current density of at least 1 ma/cm² before attainment of a deposited gold layer of 1 μm.

3,873,429

FLUSH PRINTED CIRCUIT APPARATUS

Elvin E. Brown, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.
Filed July 9, 1973, Ser. No. 377,884
Int. Cl. C23b *5/48*

U.S. Cl. 204—15 **2 Claims**



1. The process of producing plated through holes in a flush surface printed circuit board having conductive paths thereon comprising the steps of:

applying an electroless plated flash to the entire board including the openings defining the holes;

applying and developing a resist material on the board wherein the area in the immediate vicinity of the holes is left unprotected;

electroplating conductive material to the electroless flash material for plating the surface of the openings;

removing the photoresist and any extensions of the electroplated material from the surface of the board;

removing the exposed electroless flash material whereby the surface of the board and the conductive paths remain substantially flush;

removing conductive material from the paths and holes of the plated circuit board to a depth below the surface of the board; and

overplating the conductive material.

3,873,430

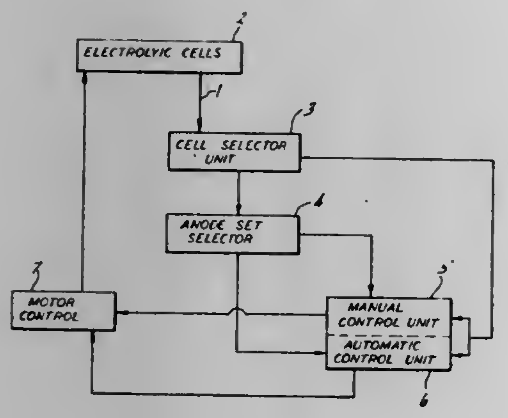
METHOD FOR AUTOMATIC ADJUSTMENT OF ANODES

Richard W. Ralston, Jr., Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 272,240, July 17, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,822

Int. Cl. C01d *1/14;* C22d *1/04;* B01k *3/00*

U.S. Cl. 204—99 19 Claims



1. In an electrolytic cell containing adjustable anodes, a liquid cathode and an aqueous electrolyte wherein a voltage is applied across said anodes and said cathode to develop an electric current from said anodes through said aqueous electrolyte to said cathode, the improved method for positioning a minor fraction of said anodes at an optimum distance from said cathode which comprises

- a. positioning a minor fraction of said anodes above said cathode at a distance apart so that when said minor fraction of anodes is moved in either direction an incremental distance, there is a relatively small change in current passing through said minor fraction of anodes,
- b. moving said minor fraction of anodes in the direction of said cathode at a substantially constant rate,
- c. measuring said current through said minor fraction of anodes and calculating the current density per unit of distance as said minor fraction of anodes moves toward said cathode, and
- d. discontinuing movement of said minor fraction of anodes towards said cathode when the change in said current density per unit of distance reaches a predetermined limit.

3,873,431

PROCESS FOR PRODUCING A RUBBER-LIKE CHLOROPRENE COPOLYMER

Masaaki Otsuru; Toshio Miyakawa; Mitsuo Yamada, and Michi Izuhara, all of Shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-Nanyo, Yamaguchi-ken, Japan

Filed Aug. 20, 1973, Ser. No. 389,673

Claims priority, application Japan, Sept. 22, 1972, 47-95525

Int. Cl. C08d *1/32, 3/14*

U.S. Cl. 204—159.24 10 Claims

1. In a process for producing a rubber-like elastomer which comprises copolymerizing chloroprene and an ester of an α, β-unsaturated carboxylic acid or a mixture of chloroprene, a second conjugated diene and an ester of an α, β-unsaturated carboxylic acid in the presence of an organoaluminum catalyst by exposure to ultraviolet radiation, the improvement which comprises incorporating a cocatalyst of water in amounts of 0.10 to 1.75 mole per gram atom of aluminum in said organoaluminum catalyst, whereby a catalyst composition is formed.

3,873,432

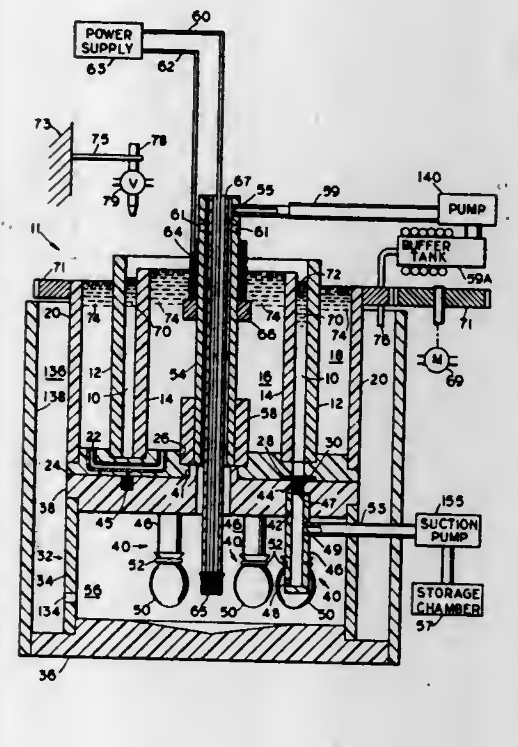
CONTINUOUS PREPARATIVE ELECTROPHORESIS METHOD

Louis Israel, 2453 Farmers Ave., Bellmore, N.Y. 11710, and Leslie Bernstein, 1 Aviemore Dr., New Rochelle, N.Y. 10804

Filed Oct. 30, 1972, Ser. No. 302,347

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 G 13 Claims



1. The method of continuously electrophoretically separating and collecting the individual components of a mixture where such components have differing electrophoretic mobility rates, comprising the steps of:

- a. depositing given amounts of said mixture in predetermined sequence into the input ends of a plurality of electrophoretic separating cells each also having an output end;
- b. applying an electric field to each of said cells in a direction extending between said input and output ends;
- c. collecting the outputs of said cells at said output ends in said same predetermined sequence, with the time intervals between the deposit into each cell and the collection from that same cell being all substantially equal and correlated to the particular component to be collected.

3,873,433

METHOD OF DEMONSTRATING NORMAL AND PATHOLOGICAL PLASM-LIPOPROTEIN PATTERNS IN HUMAN BODY LIQUIDS

Dietrich Seidel; Heinrich Wieland, both of Heidelberg, Germany; Johann Eibl, Vienna, Austria; Gerald Eder, Vienna, Austria, and Ewald Molinari, Vienna, Austria, assignors to Immuno Aktiengesellschaft Fur Chemisch medizinische, Vienna, Austria

Filed Dec. 19, 1973, Ser. No. 426,202

Claims priority, application Austria, Feb. 12, 1973, 1218/73

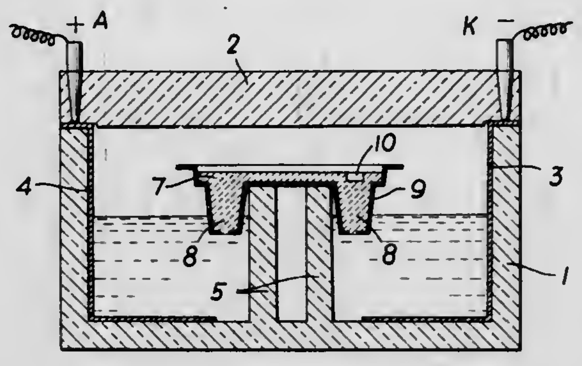
Int. Cl. B01k *5/00*

U.S. Cl. 204—180 G 10 Claims

1. A method of demonstrating normal and pathological plasm-lipoprotein patterns in human body liquids which comprises electrophoretically separating lipoproteins in a carrier medium or on foils,

upon occurrence of a desired electrophoretical separation effect, treating the carrier with a developing solution, comprising at least one of the following substances: polyanions, selected from the group consisting of heparin nd

dextran sulfate, sodium-dodecyl-sulfate (SOS), sodium-phosphotungstic acid, sodium oleate, sodium salts of bile



acids, low-soluble complex salts being formed with the lipoproteins.

3,873,434

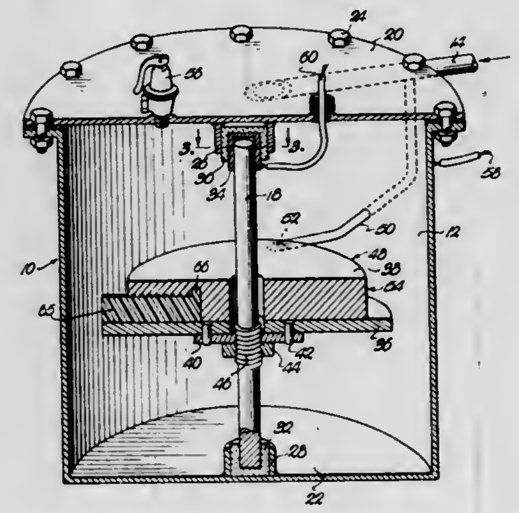
CORROSION CONTROL ASSEMBLY

Arthur S. King, 9013 W. 51st Ter., Prairie Village, Kans. 66203

Continuation-in-part of Ser. No. 173,874, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 876,971, Nov. 14, 1969, abandoned. This application June 28, 1972, Ser. No. 267,049

Int. Cl. C23f *13/00*

U.S. Cl. 204—212 17 Claims



1. In combination with a system utilizing electrolytic liquid, a self-energizing corrosion control assembly comprising:

a container for electrolytic liquid remotely located from said system and including a first member disposed for electrical contact with said liquid when the latter is in the container;

a second member carried by the container and disposed for electrical contact with said liquid when the latter is in the container, whereby said liquid in the container electrically interconnects said members;

first conductor means including conduit means coupling the container with the system for transferring liquid between the container and the system and for defining a first relatively low electrial resistance path between said first member and the liquid in the system;

second conductor means coupling said system with said second member for defining a second relatively low electrial resistance path between said second member and the liquid in the system,

said first and second conductor means thereby cooperating to complete a closed circuit when liquid is present in the container and the system,

said members being of dissimilar materials capable of acting as a galvanic couple to produce a flow of electrons therebetween along said closed circuit, whereby the galvanic action produces corrosion controlling cathodic action in said system; and

a relatively high electrical resistance interposed between said members preventing short-circuiting of said closed circuit.

3,873,435

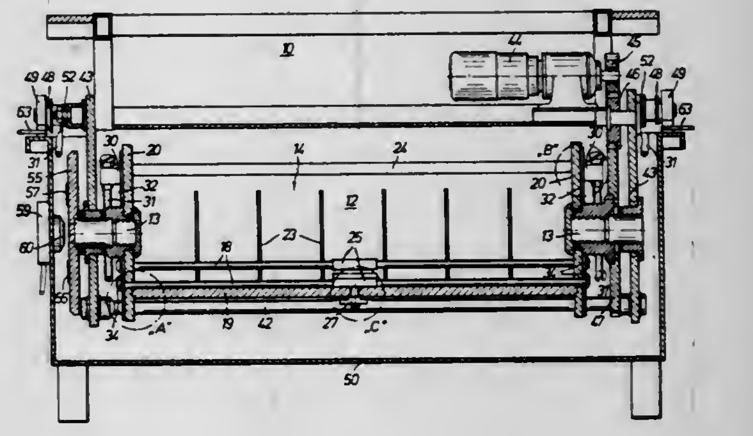
OSCILLATING BARRELS INCLUDING ELECTRICAL CONTACT MEANS

Paul Erich Ziebarth, Auf der Suelte 645, 4811 Hillegossen, and Reinhold Ritter, Elsener Strasse, 4900 Herford-Elverdissen, both of Germany

Continuation-in-part of Ser. No. 145,254, May 20, 1971, Pat. No. 3,723,284. This application Apr. 4, 1973, Ser. No. 347,890

Int. Cl. C23b *5/78*

U.S. Cl. 204—222 5 Claims

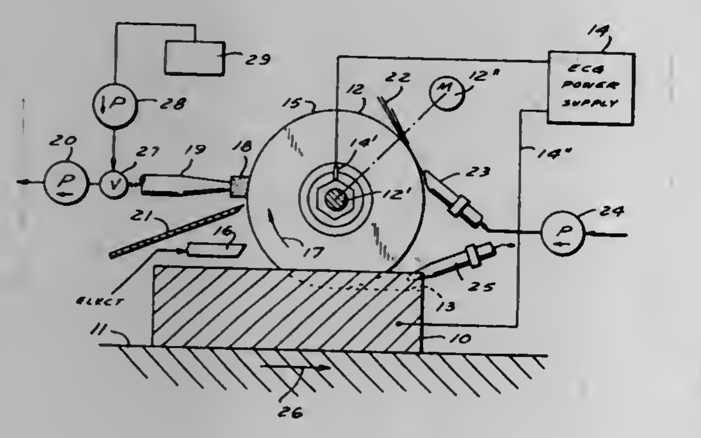


1. A galvanizing device comprising, in combination:

- a. a supporting frame;
- b. an oscillating drum mounted in said supporting frame for reciprocating, angular movement, said drum having passage apertures for a galvanic medium formed in the walls thereof;
- c. said oscillating drum in cross-section having several wall portions connected together so as to define a heart-shaped filling and emptying opening;
- d. said wall portions with their adjacent longitudinal edges each being rigidly secured to a reinforcing profile that extends over the whole length of said drum;
- e. said wall portions and said reinforcing profiles being rigidly secured to the end faces of said drum thereby closing said oscillating drum;
- f. said reinforcing profiles at the same time forming bearing points for contact rod assemblies located within said oscillating drum, said reinforcing profiles enclosing part of the cross-section of said contact rod assemblies;
- g. over the length of the drum two contact rods being arranged in rectilinear extension, said two contact rods being detachably secured by a bridge made of a non-conduting material and a screw connection to the inside surface in the region of said reinforcing profiles;
- h. the ends of each of the said contact rods extending through said end faces of the drum and being connected to an insulated contact member, having an electric coupling member, secured to the outer surface end wall of the drum;
- i. said contact member being formed by a metal plate member extending partially about the pivotal axis of the drum and an insulating layer enclosing the plate member with the exception of the contact points on all sides.

3,873,436
APPARATUS FOR INCREASING THE ACCURACY OF ELECTROCHEMICAL GRINDING PROCESSES

Kiyoshi Inoue, 3-16-8 Kamiyoga, Tokyo, Japan
Division of Ser. No. 14,841, Feb. 16, 1970, Pat. No. 3,816,291, which is a division of Ser. No. 830,263, June 4, 1969, Pat. No. 3,533,925, which is a division of Ser. No. 599,051, Dec. 5, 1966, Pat. No. 3,476,662. This application July 11, 1973, Ser. No. 378,342
Claims priority, application Japan, Dec. 16, 1965, 40-7767; Jan. 10, 1966, 41-1413; Jan. 29, 1966, 41-5331; Mar. 1, 1966, 41-12735; Mar. 2, 1966, 41-12687; Apr. 12, 1966, 41-23102; Apr. 12, 1966, 41-23103; May 7, 1966, 41-28730; Sept. 16, 1966, 41-61294; Sept. 24, 1966, 41-63165
Int. Cl. B23p *1/02, 1/12*
U.S. Cl. 204—224 M **6 Claims**

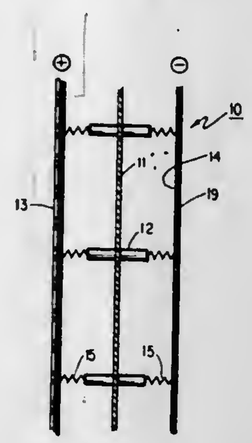


1. An electrochemical grinding apparatus, comprising:
- a tool electrode with a rotatable machining surface;
- means for positioning a workpiece in proximity with said machining surface, said workpiece being thereby constituted as a counterelectrode;
- means for supplying electrolyte to said machining surface; means for applying an electrochemically grinding electric current between said electrodes to electrochemically erode the workpiece at the region in which said tool electrode and said workpiece are in proximity; and
- a system for modifying the electrolyte on said machining surface prior to the entrainment thereof into the region of said workpiece to increase the accuracy of the electrochemical grinding of said workpiece, said system including a nozzle arrangement trained toward said machining surface including a nozzle arrangement trained toward said machining surface for directing a high-velocity gas jet thereagainst to strip excess electrolyte from said surface, said nozzle arrangement being located between said means for supplying electrolyte and said region and ahead of the latter in the direction of rotation of said machining surface.

3,873,437
ELECTRODE ASSEMBLY FOR MULTIPOLAR ELECTROLYTIC CELLS

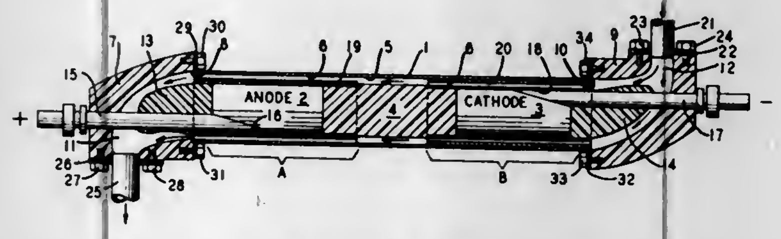
Dale R. Pulver, Bay Village, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Nov. 9, 1972, Ser. No. 305,063
Int. Cl. B01k *3/04;* **C01d** *1/06*
U.S. Cl. 204—254 **8 Claims**

1. A generally planar bipolar electrode assembly adapted for closely spaced parallel series arrangement intermediate to the terminal monopolar electrodes of a multipolar electrolytic cell having side, bottom and end walls, comprising:
- an electrically non-conducting, liquid tight partition, at least one rigid electrical conductor extending through said partition and beyond each lateral surface thereof;
- a dimensionally stable anode and a cathode connected to the rigid conductor on opposite sides of and parallel to the partition;
- movable, resilient, electrically conductive means connecting the non-working lateral surface of one electrode to the rigid conductor, the movable, resilient means being capable of causing movement of the lateral working surface of the electrode in a direction toward the working lateral surface of an opposed electrode of opposite charge of an adjacent bipolar assembly while maintaining intraelectrode electrical integrity.



3,873,438
ELECTROLYTIC CELL ASSEMBLY INCLUDING BIPOLAR CONCENTRIC ELECTRODES

Edward P. Anderson, Fond Du Lac, Wis., and Thomas J. Lamb, Mendham, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.
Continuation-in-part of Ser. Nos. 178,685, Sept. 8, 1971, abandoned, and Ser. No. 236,357, March 20, 1972, abandoned. This application May 7, 1973, Ser. No. 357,555
Int. Cl. B01k *3/00*
U.S. Cl. 204—268 **22 Claims**



1. An electrolytic cell assembly adapted to produce hypochlorites comprising:
- an anode having a first cylindrical surface and a cathode having a second cylindrical surface, said electrodes being substantially coaxial with one another and axially spaced from one another,
- a bi-polar electrode having a third cylindrical surface, said third surface being concentrically spaced from said first and second surfaces, said third surface being substantially coaxial with said first and second surfaces,
- said bi-polar electrode being stationary relative to said anode and said cathode,
- a flow channel defined on one side by said third surface and on the other side by said first and second surfaces,
- the sole electrical coupling between said bi-polar electrode on the one hand and said anode and cathode on the other hand being whatever electrolyte is contained within said flow channel.

5. The electrolytic cell assembly of claim 1 further comprising:
- an insulating member between said anode and said cathode, said insulating member having a cylindrical surface flush with said first and second cylindrical surfaces, said cylindrical surfaces of said anode, said insulating member and said cathode providing a substantially continuous smooth cylindrical surface spaced from said cylindrical surface of said bi-polar electrode, said flow channel being solely defined by two smooth substantially continuous concentric cylindrical surfaces.

17. A bank of electrolytic cell assemblies comprising:
- first, second, third and fourth electrolytic cell assemblies as set forth in claim 5,
- said electrolytic cell assemblies being connected in mechanical series to provide a plurality of flow passages in series through which electrolyte will flow in sequence,
- said cathode of said first and second cell assemblies being upstream from the corresponding ones of said anodes,
- said cathodes of said third and fourth cell assemblies being downstream from the corresponding ones of said anodes, said anode of said first cell being electrically connected to said cathode of said second cell,
- said anode of said fourth cell being electrically connected to said cathode of said third cell,
- a source of DC electricity, said source having a positive terminal and a negative terminal, said positive terminal connected to said anodes of said second and third cells, said negative terminal connected to the cathodes of said first and fourth cells.

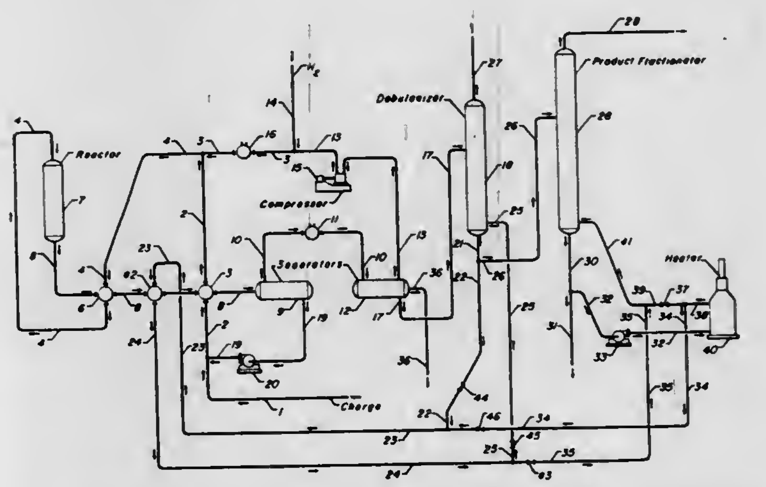
3,873,439
PROCESS FOR THE SIMULTANEOUS PRODUCTION OF AN AROMATIC CONCENTRATE AND ISOBUTANE

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 26, 1973, Ser. No. 335,964
Int. Cl. C10g *39/00*
U.S. Cl. 208—66 **10 Claims**

1. A process for the simultaneous production of an aromatic concentrate and isobutane, from a naphtha boiling range charge stock, which process comprises the steps of:
- a. reacting said charge stock, in a low-severity catalytic reforming zone, at reforming conditions including greater than about 90 mol percent conversion of naphthenes to aromatics and less than about 40 mol percent conversion of paraffins to aromatics, to produce a reformate containing aromatic and paraffin hydrocarbons;
- b. further reacting at least a portion of the resulting reformed product effluent with hydrogen, in a hydrocracking reaction zone, at hydrocracking conditions and in contact with a hydrocracking catalyst comprising a mordenite carrier material, a palladium component and a nickel component to form isobutane; and,
- c, recovering said aromatic concentrate and isobutane from the resulting hydrocracking reaction zone effluent.

3,873,440
STARTUP METHOD FOR EXOTHERMIC CATALYTIC REACTION ZONES

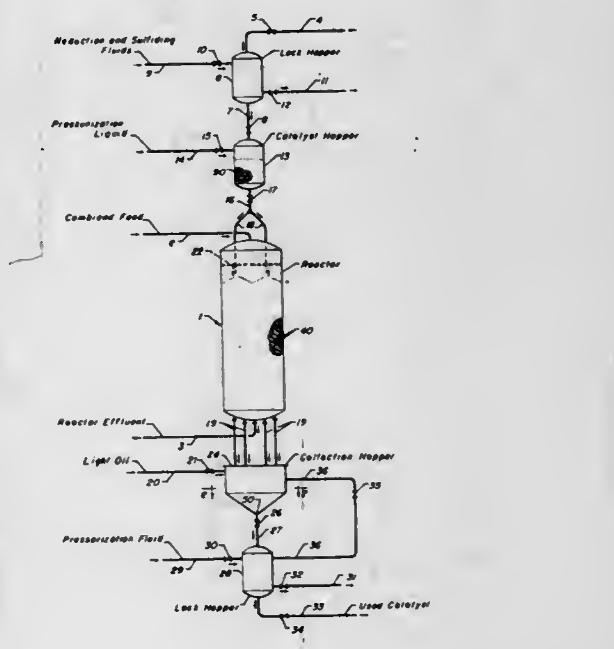
Newt M. Hallman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 14, 1973, Ser. No. 418,525
Int. Cl. C10g *13/16*
U.S. Cl. 208—108 **6 Claims**



1. A startup procedure for a reaction zone of a hydrocarbon conversion process, in which reaction zone an exothermic reaction is performed at a temperature in the range of from about 400°F. to about 900°F., which comprises the steps of:
- a. heating a hydrocarbon stream in a direct fired heater to form a heated hydrocarbon stream;
- b. passing said heated hydrocarbon stream through an indirect heat exchange means which is normally used to recover heat from the effluent of said reaction zone when the process is on-stream with the reaction zone being operated at a temperature within said range;
- c. passing through said reaction zone a charge stream for the hydrocarbon conversion process at a temperature substantially below said temperature in the 400° – 900°F. range while the reaction zone is at a temperature below the last-named temperature;
- d. passing an effluent stream from said reaction zone through said indirect heat exchange means to form a relatively warm stream of reaction zone effluent as compared to the reaction zone effluent then leaving said reaction zone;
- e. recycling at least a portion of said relatively warm reaction zone effluent to said reaction zone as at least a portion of said charge stream passed into said reaction zone and continuing such recycling until the temperature of said reaction zone is raised to said temperature in the 400° – 900°F. range; and,
- f. then discontinuing the passage of said heated hydrocarbon stream through said indirect heat exchange means when the charge stream entering said reaction zone has reached a temperature capable of propagating said exothermic reaction at a rate sufficient to produce a predetermined temperature rise through said reaction zone.

3,873,441
CATALYST TRANSFER METHOD FOR MOVING-BED REACTORS

Evan A. Jones, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 6, 1973, Ser. No. 394,871
Int. Cl. C10g *35/10*
U.S. Cl. 208—166 **14 Claims**



1. A process for withdrawing solid catalyst from a pressurized, mixed-phase hydroprocessing reaction zone which comprises the steps of:
- a. passing a quantity of catalyst downward from said reaction zone through each of a plurality of conduits into a liquid filled, vertically segmented catalyst collection hopper, said collection hopper being filled with a relatively light liquid hydrocarbon stream as compared to said effluent stream;

b. passing a liquid hydrocarbon stream upward through each of said conduits and into said reaction zone at a rate sufficient to prevent the further passage of catalyst downward through said conduits;
c. equalizing the hydrostatic pressure in the liquid filled catalyst collection hopper and in a liquid filled lock hopper means, and communicating the catalyst collection hopper and lock hopper means through a catalyst transfer conduit having a positive sealing valve means and effecting the transfer of catalyst contained within the catalyst collection hopper into the lock hopper means;
d. closing said positive sealing valve means and isolating the lock hopper means from the catalyst collection hopper; and,
e. reducing the flow rate of said liquid hydrocarbon stream through said conduits to effect the passage of additional quantities of catalyst into the segmented catalyst collection hopper.

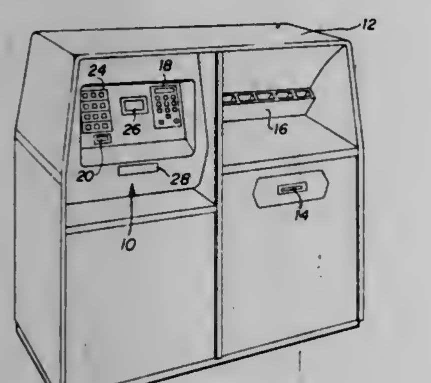
3,873,442
LOW PRESSURE PROCESS FOR SULFUR REMOVAL FROM HEATING OIL SOURCES

Robert Murphy Yarrington, Old Greenwich, Conn., assignor to American Cyanamid, Company, Stamford, Conn.
Filed Feb. 6, 1973, Ser. No. 330,168
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **10 Claims**

1. A process for reducing the sulfur content of a heating oil source which comprises: contacting said source at a temperature in the range of about 600° to 700°F. and a pressure in the range of about 50 to 250 pounds per square inch gauge with at least sufficient hydrogen to react with the sulfur present in said source in the presence of an activated formed catalyst composite comprising an alumina carrier obtained from a dried alumina powder promoted with from about 1 to 8 weight percent cobalt expressed as its oxide and from about 8 to 20 weight percent molybdenum expressed as its oxide, said percents being based on the weight of the activated composite, said promoting being carried out by use of an aqueous solution of a cobalt compound which upon activation provides cobalt oxide, a molybdenum compound which upon activation provides molybdenum oxide and at least 0.5 mole of urea per mole of cobalt employed and subsequent to drying of said alumina powder.

3,873,443
DEPOSITORY SYSTEM

Martin D. Cothran, Euless; Lewis J. O'Kelly, Fort Worth, both of Tex., and Russell L. Hall, Scottsdale, Ariz., assignors to Docutel Corporation, Dallas, Tex.
Filed Jan. 3, 1973, Ser. No. 320,718
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **8 Claims**



1. An automatic document depository responsive to commands from a central controller, comprising in combination: an entry gate to said depository responsive to a command from the central controller to be actuated from a locked closed position to an open position for receiving a deposit document,
transport means for moving a deposit document from said entry gate to a station displaced therefrom,
first sensor means responsive to a document moving through said transport means to generate a signal to the central controller when a document has passed through said entry gate,
a second sensor displaced downstream from the first sensor in said transport means and generating a signal representing a passing document wherein the generated signals from the first and second sensors are coupled to the central controller to actuate said entry gate from an open position to a closed locked position when a signal from the first sensor is representative of the absence of a passing document and a signal from the second sensor is at a level representative of a passing document, and
stacker means receiving a document from said transport means for storing the documents received.

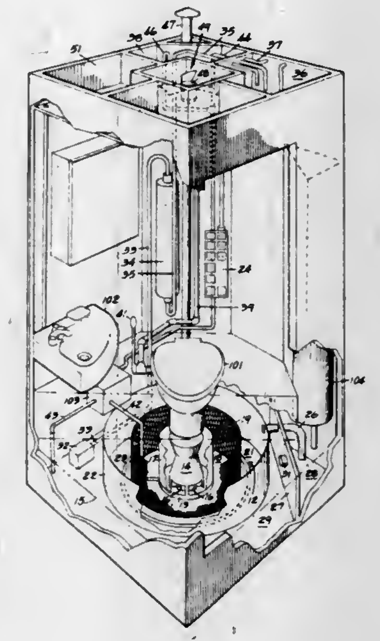
3,873,444
SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed June 28, 1973, Ser. No. 374,278
Int. Cl. A01n *9/02;* **C02b** *3/06*
U.S. Cl. 210—62 **8 Claims**

3. A method for controlling the growth of the microorganism Aerobacter aerogenes in an aqueous system which comprises adding to said system an effective amount of a composition comprised of 2-2-dibromo-3-nitrilopropionamide and t-butylhydroperoxide, as 70% solution, wherein the weight ratio of the amide to the peroxide ranges from about 95:5 to about 15:85 respectively.

3,873,445
APPARATUS FOR REDUCING TOILET EFFLUENTS TO USEABLE LIQUIDS

Willis A. Bussard, San Francisco, Calif., assignor to Altair Industries, Inc., San Francisco, Calif.
Filed Dec. 5, 1972, Ser. No. 312,303
Int. Cl. C02c *5/06*
U.S. Cl. 210—149 **7 Claims**

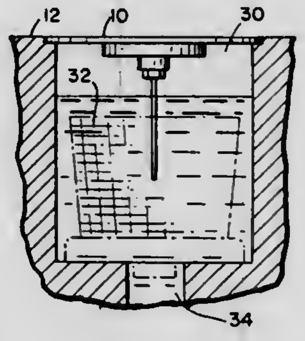


1. A toilet waste septic system contained within a housing to form a portable unit, said septic system producing utility water from the products of human waste, and comprising:
a first treatment area consisting of a digester provided with aerobic bacteria in sufficient quantities to digest the introduced waste products;
temperature control means connected to said first treatment area to maintain the temperature of said digester at from about 80°F to about 95°F;
liquid communicating means from said first treatment area to a second treatment area consisting of a chlorinated retention tank having a chlorine content sufficiently high to purify liquid effluent introduced therein from the first treatment area, said chlorinated retention tank being connected to a chlorine tank for the supply of chlorine thereto;
liquid communicating means from said second treatment area to a third treatment area consisting of a clear well tank;
liquid communicating means from said third treatment area to fourth treatment area consisting of a filter;
liquid communicating means from said fourth treatment area to a first storage and flush tank;
liquid communicating means from said first storage tank to a second storage and flush tank;
an air compressor in operable connection with the digester, clear well and storage tanks to supply air below the surface of liquids therein to thereby support aerobic bacterial action in the digester and to remove excess chlorine from liquids in said clear well and storage tanks so as to permit continued bacterial action in said digester.

4. A self-contained portable sanitation unit for treating toilet wastes comprising a toilet enclosed within an enclosure, an aerobic bacterial digester disposed within the enclosure and connected to said toilet for receiving wastes therefrom, temperature regulating means disposed in said digester, means disposed in said enclosure to introduce sparging air into said digester, a chlorinated retention tank, a filter in liquid communication with said clear clear well tank, at least one storage and flush tank in liquid communication with said filter, means associated with said clear well tank and said flush tank to purge excess chlorine from the liquids therein and reduce the chlorine to a level that will permit continued bacterial action in said digester, and means to cycle digested oxidized, clarified sanitized waste was to said flush tank and back through said toilet.

3,873,446
SWIMMING POOL THERMOMETER

Sanford F. Campbell, Redwood City, Calif., assignor to James L. Greenburg, Los Altos, Calif., a part interest
Filed June 1, 1973, Ser. No. 365,902
Int. Cl. G01k *1/16;* **E04h** *3/20*
U.S. Cl. 210—169 **6 Claims**

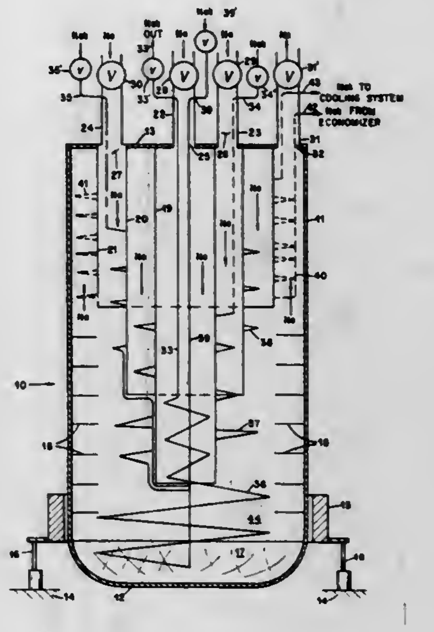


2. In swimming pool having a surrounding deck, a skimmer located below said deck, and a skimmer lid having an upper surface adapted to be mounted flush with said deck over said skimmer and removable to provide access to said skimmer, means for measuring and indicating the temperature of the water in said swimming pool comprising:
a recess in the upper surface of the skimmer lid, and an aperture from said recess extending downwardly through said skimmer lid; and
a thermometer having a casing conformed to the recess in the skimmer lid and adapted to be mounted therein, a transparent protective face substantially flush with the upper surface of the skimmer lid, a bulb shaft depending from the casing and projecting through the aperture in the skimmer lid and into the water in the skimmer, and means for indicating and displaying the temperature of water surrounding said bulb shaft immediately below said protective face so that the indicated temperature is readily visible.

4. A device for measuring and indicating the temperature of the water in a swimming pool comprising:
a rigid plate mounted in the decking of said pool, said plate having an upper surface adapted to be substantially flush with said decking, said plate further having a recess in the center thereof, and an aperture extending from said recess through the bottom of said plate;
a hollow tube extending from the aperture in the bottom of the plate to the interior surface of the side wall of the swimming pool below the water level in said pool; and
a thermometer having a casing conformed to the recess in the plate and adapted to be mounted therein, a transparent protective face substantially flush with the upper surface of the plate, a flexible bulb shaft depending from the casing and projecting through the aperture and through the tube to a point adjacent the interior surface of the side wall of said pool, and means for indicating the temperature of said bulb shaft immediately below the protective face so that the indicated temperature is readily visible.

3,873,447
COLD TRAP FOR LIQUID SODIUM IMPURITIES COLLECTION

Lawrence E. Pohl, Los Gatos, Calif., assignor to The United States as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Dec. 21, 1973, Ser. No. 427,392
Int. Cl. B01d *35/06*
U.S. Cl. 210—179 **7 Claims**



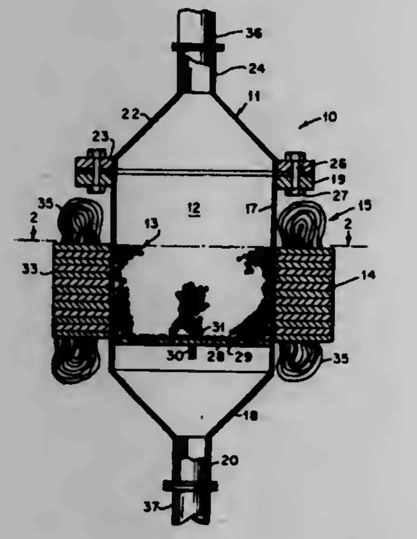
1. An apparatus for removing and collecting impurities in liquid metal coolant which precipitate out under prescribed temperature conditions and cause plugging of components in an associated system comprising: container means defining a cooler-crystallizer, a plurality of a coaxial cylinder-like members positioned within said container means, each of said cylinder-like members being secured in radial spaced relationship at one end thereof to said container means and being open at the opposite end, each of said cylinder-like members being of a different length and cross-section than an adjacent

cylinder-like member, means for selectively directing impurity containing liquid metal into each of said cylinder-like members, outlet means operatively connected to said container means for discharging purified liquid metal therefrom, each of said cylinder-like members being provided with a selectively controlled cooling circuit for cooling liquid metal passing therethrough, and means positioned intermediate said cylinder-like members and said container means for reheating liquid metal flowing toward said outlet means, whereby impurities are precipitated out of liquid metal flowing therethrough and collected within said container means.

3,873,448
MAGNETIC SEPARATOR

Reuben Albert Isberg, Berkeley; Hermas Nelson Beaudet, Concord, and William Harold Avery, Jr., El Cerrito, all of Calif., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed May 9, 1973, Ser. No. 358,469
Int. Cl. B01d ***35/06***
U.S. Cl. 210—222 **7 Claims**



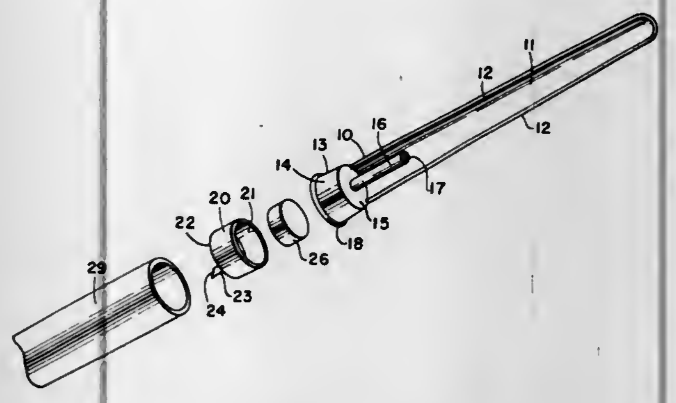
6. A magnetic separator including means defining a chamber having fluid inlet means to said chamber and fluid outlet means from said chamber, a ferromagnetic filter disposed across said chamber between said fluid inlet means and said fluid outlet means, an annular electromagnet having a gap surrounding said chamber adjacent the location of said filter and extending across said chamber transverse to the direction of flow through said filter between said fluid inlet means and said fluid outlet means, a plurality of annular laminae, each said lamina including a plurality of radial slots in the inner surface thereof at arcuate intervals thereabout, said laminae being stacked together with said radial slots in registry to define slots extending through said electromagnet, and an electromagnetic coil including a winding disposed between a pair of lengthwise slots on one side of said electromagnet and a winding disposed between a pair of lengthwise slots on the opposite side of said electromagnet, said windings being connected in opposing polarity whereby when said coil is energized a magnetic field is established across said gap in said filter transverse to said direction of flow through said filter.

3,873,449
FILTER SKIMMING APPARATUS

John J. Connelly, San Juan Capistrano, and Alan A. Di Stefano, Rialto, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grover, Ill.

Filed Apr. 5, 1973, Ser. No. 348,372
Int. Cl. B01d ***33/00***
U.S. Cl. 210—359 **2 Claims**

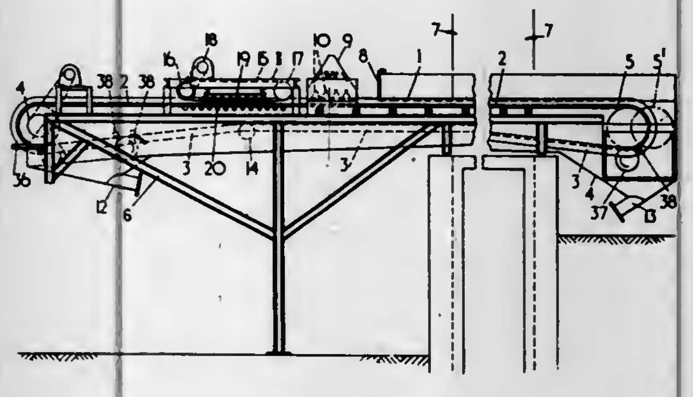
1. Filter skimming apparatus comprising a plunger having an elongated arm, an inverted cup-shaped piston head, a filter cup disposed in said piston and containing a filter element, said piston head having an annular projection on its inner top and said filter cup having an annular projection on its inner bottom whereby a cavity is formed above said filter element and a second cavity is formed below said filter element, said piston head having an upwardly disposed, small bore tubelike extension and said filter cup having a downwardly extending, small bore probe offset from the center of the bottom of said filter cup, said plunger having a peripheral rim at the piston zone adapted for slidable sealing engagement of the inner walls of a test tube.



3,873,450
SEPARATION OF LIQUIDS FROM WET SOLIDS

Alan Trevor Lovegreen, Wallingford, England, assignor to Harleyford Hydrosand Equipment Company Limited, Marlow, England

Filed Oct. 20, 1972, Ser. No. 299,382
Claims priority, application United Kingdom, Oct. 21, 1971, 49040/71
Int. Cl. B01d ***33/04***
U.S. Cl. 210—386 **4 Claims**



1. Equipment for separating liquid from solid material suspended therein such as sewage and the like, comprising:

- an endless dewatering belt formed as a single layer and having a flat receiving surface perforated with a plurality of transverse slits;
- a head drum located within said dewatering belt for driving it to define an upstream and a downstream direction;
- at least one station for loading onto said dewatering belt the liquid containing the suspended material;
- at least one pressing stage defined by an endless pressing belt arranged to bear against said dewatering belt downstream of said at least one loading station for compressing the material disposed thereon, said pressing belt being substantially impervious to the liquid, imperforate, and smooth-surfaced;
- a plurality of rollers located within said pressing belt and adapted to permit said pressing belt to run thereover;
- a corresponding plurality of biassing means each connected to one of said rollers located within said pressing belt;
- a plurality of support rollers located within said dewatering belt, each of said support rollers being arranged in cooperating opposed relation to a corresponding roller located within said pressing belt thereby establishing points of maximum pressure therebetween exerted on said belts by said biassing means through said rollers;
- each of said support rollers being substantially the same diameter as its corresponding pressure roller and having its axis of rotation vertically aligned with the respective axis of rotation thereof; and
- circumferential groove means formed in said support rollers for permitting free flow of liquid through said dewatering belt onto said grooved support rollers at said points of maximum pressure.

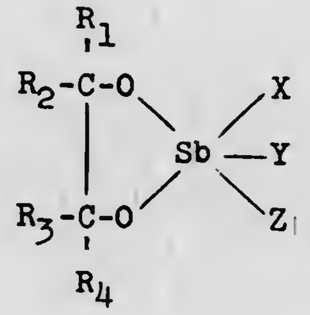
3,873,451
FLAME RETARDANT ANTIMONY COMPOUNDS

Charles Carmen Cumbo, and Paul C. Yates, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 93,832, Nov. 30, 1970, Pat. No. 3,763,202. This application Mar. 7, 1973, Ser. No. 338,686
Int. Cl. C09k ***3/28***
U.S. Cl. 252—8.1 **9 Claims**

1. A compound selected from the group consisting of

a. salts of zinc oxide and hydroxide and stannous oxide and hydroxide with esters of pentavalent antimony having the structural formula:

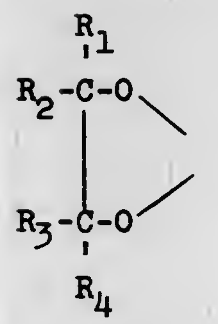


wherein

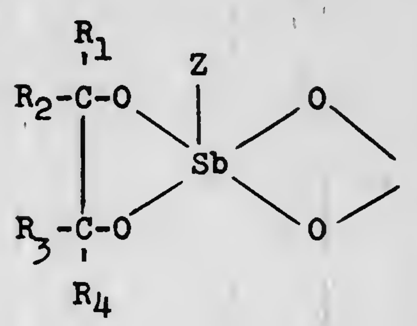
R_1, R_2, R_3 and R_4 are hydrogen, alkyl of 1 through 4 carbon atoms, or hydroxyalkyl of 1 through 4 carbon atoms, with the proviso that the total number of carbon atoms in R_1, R_2, R_3 and R_4 does not exceed 4;

Z is chloro, bromo, iodo, hydroxyl, or alkoxy of 1 through 4 carbon atoms;

X and Y when taken separately are the same or different and are chloro, bromo, iodo, or alkoxy of 1 through 4 carbon atoms and when taken together are



or



wherein

R_1, R_2, R_3, R_4 and Z are as defined above;

b. and mixed esters composed of pentavalent antimony esters of (a) in combination with trivalent antimony esters of aliphatic polyhydroxy compounds having vicinal hydroxyl groups and containing 2 through 6 carbon atoms, at least 20 mole percent of the antimony being present as pentavalent antimony ester.

3,873,452
ACIDIZING OIL WELLS

James E. Donham, Houston, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 95,905, Dec. 7, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 309,840
Int. Cl. C09k ***3/00;*** **E21b** ***21/04***
U.S. Cl. 252—8.55 C **14 Claims**

1. In a method of acidizing an oil-producing formation penetrated by a well in which method an aqueous solution of an acid is injected down said well and into said formation, the improvement comprising

- employing as the acidizing agent an aqueous acid solution containing a polyester and a quaternary ammonium compound,
- the weight of quaternary ammonium compound being from about 1 to 3 times the weight of polyester,
- the combined concentrations of polyester and quaternary amonium compound being from about 1 to about 0.4 percent by volume of said aqueous acid solution,
- said quaternary ammonium compound being selected from the group consisting of dimethyl dicoco ammonium chloride and dihydroxyethyl coco benzyl ammonium chloride, said polyester being the reaction product of trimellitic acid, a polyalkylene glycol, a dicarboxylic acid having a molecular weight between about 115 and about 730 and a detergent-forming monocarboxylic acid having a hydrocarbon radical containing from about 12 to about 24 carbon atoms in the radical,
- the ratio of moles of trimellitic acid to dicarboxylic acid being from about 1:1 to about 2:1,
- the moles of the polyalkylene glycol being equal to the moles of dicarboxylic acid plus from about 5/3 to about 2-½ times the moles of trimellitic acid,
- the moles of detergent-forming acid being sufficient to react with from about ⅓ to all the free hydroxyl radicals remaining after reaction of the polyalkylene glycol with the trimellitic and dicarboxylic acids,
- said polyalkylene glycol being selected from the group consisting of polyethylene glycol having a molecula weight from about 200 to about 2,000, polypropylene glycol having a molecular weight from about 1,000 to about 5,000 and polymers of both ethylene oxide and propylene oxide having a molecular weight from about 200 to about 5,000.

8. An emulsion-preventing composition suitable for addition to an aqueous stimulating liquid, such as acidizing solution, for use in an oil well, said composition consisting essentially of a polyester and a quaternary ammonium compound, the weight of quaternary ammonium compound being from about 1 to about 3 times the weight of polyester,

- said quaternary ammonium compound being selected from the group consisting of dimethyl dicoco ammonium chloride and dihydroxyethyl coco benzyl ammonium chloride, said polyester being the reaction product of trimellitic acid, a polyalkylene glycol, a dicarboxylic acid having a molecular between about 115 and about 730, and a detergent-forming monocarboxy,ic acid having a hydrocarbon radical containing from about 12 to about 24 carbon atoms in the radical,
- the ratio of moles of trimellitic acid to dicarboxylic acid being from about 1:1 to about 2:1,
- the moles of polyalkylene glycol being equal to the moles of dicarboxylic acid plus from about 5/3 to about 2-½times the moles of trimellitic acid,
- the moles of detergent-forming acid being sufficient to react with from about ⅓ to all the free hydroxyl radicals remaining after reaction of the polyalkylene glycol with the trimellitic and dicarboxylic acids,
- said polyalkylene glycol being selected from the group consisting of polyethylene glycol having a molecuclar weight from about 200 to about 2,000, polypropylene glycol having a molecular weight from about 200 to about 2,000, polypropylene glycol having a molecular weight

from about 1,000 to about 5,000 and polymers of both ethylene oxide and propylene oxide having a molecular weight from about 200 to about 5,000.

3,873,453
ANIONIC WATERFLOOD ADDITIVE AND METHOD OF USING SAME

Delmar D. Krehbiel, Lubbock, Tex.; Duane Gregory, Ponca City, Okla.; Charles R. Clark, Ponca City, Okla., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 307,920, Nov. 20, 1972, , which is a division of Ser. No. 208,020, Nov. 24, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 322,992

Int. Cl. E21c *41/10*

U.S. Cl. 252—8.55 D **6 Claims**

1. An anionic additive for use in waterflooding petroliferous formations to displace hydrocarbon therefrom consisting essentially of an overbased sulfonate derived form pale oil extract, said overbased sulfonate containing an excess of base component over that required to neutralize the sulfonic acid precursor to the sulfonate such that the ratio of the weight of excess base component to weight of sulfonate is about 0.03 to about 2.0 said base component being an alkali metal hydroxide and/or alkali metal carbonate.

3,873,454
LUBRICANT COMPOSITION

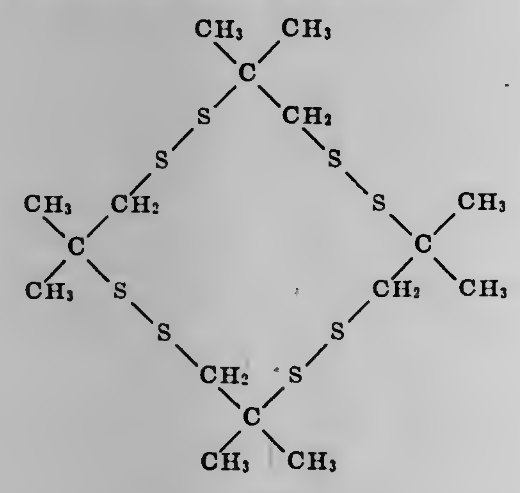
Andrew G. Horodysky, Henry Raich, both of Cherry Hill, N.J., assignors to Mobil Oil Company, New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,609

Int. Cl. C10m *1/38*

U.S. Cl. 252—27 **13 Claims**

1. A lubricant composition containing lubricating amounts of a member selected from the group consisting of mineral oil of lubricating viscosity, synthetic lubricating oils, greases and water emulsion lubricants based on said oils containing, in an amount sufficient to impart antiwear and extreme pressure properties, a compound having the structure:



3,873,455
FIVE-GRADE MOTOR OIL FOR INTERNAL COMBUSTION ENGINES

Richard D. Schieman, 188 Moorewood Ave., Avon Lake, Ohio 44012

Continuation-in-part of Ser. No. 202,650, Nov. 26, 1971, abandoned. This application Feb. 2, 1973, Ser. No. 329,033

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E **10 Claims**

1. A blended base oil composition for use in a five-grade SAE 5W–40 motor oil comprising a blend of the following mineral oil components:

component (A) which consists essentially of a mixture of

1. **from about** 70 to 85 parts by volume of a solvent extracted neutral oil of about 100–150 SSU viscosity at 100°F., and
2. **from about** 15 to 30 parts by volume of a solvent extracted neutral oil of about 700–800 SSU viscosity, at 100°F.,

said component (A) having a minimum viscosity at 300°F. of 2.5 centistokes, a minimum viscosity at 210°F. of 6.0 centistokes, a maximum viscosity at 0°F. of 20.0 poises, with little or none of the oil boiling below 725°F.; and

component (B) which consists essentially of HVI 75–90 dewaxed oil obtained from an essentially aromatic-free catalytically cracked stock said dewaxed oil having a minimum viscosity at 210°F. of 3.2 centistokes, a maximum viscosity at 0°F. of 5.9 poises and a maximum of 25 percent by volume of the dewaxed oil boiling below 725°F.,

and wherein component (B) comprises from about 70 to 85 percent by volume of the total base oil composition.

3,873,456
PHOSPHORUS-CONTAINING COMPOUNDS AND LUBRICANTS CONTAINING SAME

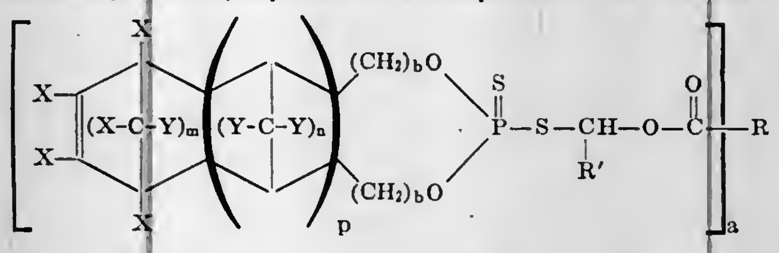
William F. Olszewski, 42 Knollwood Dr., Cherry Hill, N.J. 08034

Filed Mar. 22, 1973, Ser. No. 344,006

Int. Cl. C10m *1/48*

U.S. Cl. 252—46.7 **7 Claims**

1. A lubricant composition comprising a major proportion of a lubricant and an amount sufficient to give improved extreme pressure properties of a compound of the formula



wherein R is hydrogen, hydrocarbyl of from 1 to 22 carbon atoms or hydrocarbylene of from 1 to 22 carbon atoms, R′ is hydrocarbyl of from 1 to 22 carbon atoms or the halo-substituted members thereof, X is halogen, *y* is hydrogen, halogen or alkyl of from 1 to 10 carbon atoms, *m* is 1–4, *n* is 0–4, *p* is 0–4, *a* is 1 or 2 and *b* is 1 to 3.

3,873,457
N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne; Robert R. Mod, and Gene Sumrell, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 176,734, Aug. 31, 1971, Pat. No. 3,746,644. This application Feb. 21, 1973, Ser. No. 334,318. The portion of the term of this patent subsequent to July 17, 1990, has been disclaimed.

Int. Cl. C10m *1/38*

U.S. Cl. 252—47.5 **41 Claims**

1. A composition of matter useful as a base lubricant with low wear characteristics consisting of a paraffin base oil and an anti-wear additive selected from the group consisting of N-methyl-N-[2-(9,10-epithiostearoyloxy)-ethyl]9,10-epithiostearamide, N-[2-(9,10-epithiostearoyloxy)ethyl]-9,10-epithiostearamide, 1,3-di(9,10-epithiostearoyl)hexahydro-pyrimidine, 2-ethoxyethyl 9,10-epithiostearate, 2-(2-ethoxyethoxy)ethyl 9,10-epithiostearate, 1,3-bis-(9,10-epithiostearoyl)imidazolidine and epithioated soybean oil.

3,873,458
RESIN-CONTAINING LUBRICANT COATINGS

Robert E. Parkinson, Monroeville Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 18, 1973, Ser. No. 361,727

Int. Cl. C10m *1/06, 1/28*

U.S. Cl. 252—49.5 **20 Claims**

1. Process for cold forming or shaping metal comprising subjecting to deformation pressure against a solid surface metal which has been coated with a resin-oil layer by applying to its surface a single aqueous dispersion composition and drying said composition to remove water and other volatiles, said composition prepared by blending (a) a lubricant oil selected from mineral oil, animal or vegetable oils, fats, soaps, fatty esters, or other natural or synthetic oil, grease, or wax lubricant materials or mixtures thereof, and (b) a dispersion or solution of a normally solid copolymer of ethylene and acrylic acid, containing 15 to 25% acrylic acid, in water containing alkali sufficient to form a water-soluble or dispersable salt or ionomer of the copolymer, said lubricant oil comprising from about 1 to about 75% of the total nonvolatiles of the coating composition and being substantially insoluble in the resin.

3,873,459
ANTIDEGRADANT ADDITIVE FOR ORGANIC WORKING FLUIDS

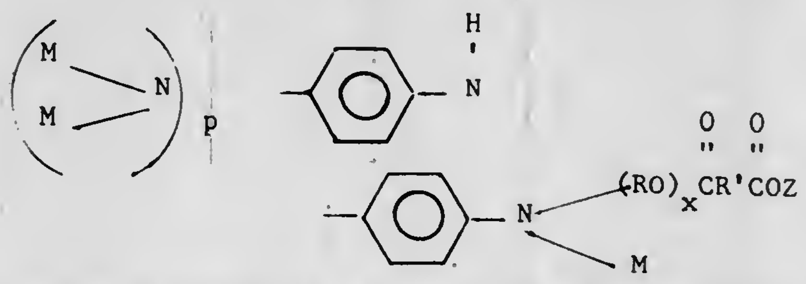
Joseph A. Pawlak, Buffalo; Charles W. West, Niagara Falls; James G. Colson, Williamsville, and Francis J. Bajer, Depew, all of N.Y., assignors to Hooker Chemical & Plastic Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 319,101, Dec. 27, 1972, which is a continuation-in-part of Ser. No. 155,297, Jan. 21, 1971,. This application July 2, 1973, Ser. No. 376,101

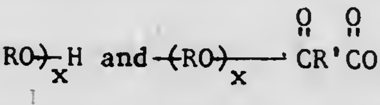
Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **22 Claims**

1. A method of inhibiting degradation of organic working fluids selected from the group consisting of natural and synthetic hydrocarbon and carboxylic acid ester oils and greases based thereon and hydrocarbon fuels, and substrates in contact therewith, which comprises incorporating into said organic working fluid an effective degradation inhibiting amount of a compound of the formula

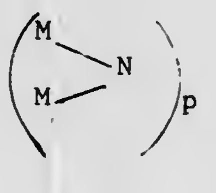


wherein *x* is an integer from 1–12; Z is a member of the group consisting of H, and alkyl; R is a member selected from the group consisting of ethylene, 1,2-propylene, 1,2-butylene, 2,3-butylene, styrylene and mixture thereof, R′ is selected from the group consisting of arylene, alkylene, alkenylene, cycloalkenylene and cycloalkylene containing at least two carbon atoms; M is a member individually selected from the group consisting of hydrocarbon of 1–18 carbon atoms,



$$-(RO)_x H \text{ and } -(RO)_x-\overset{O}{\overset{\|}{C}}R'\overset{O}{\overset{\|}{C}}OZ,$$

wherein R, *x*, R′ and Z are as above defined; and *p* is an integer from 0–1, providing when *p* is O,



is hydrogen.

3,873,460
LUBRICATING OIL COMPOSITION CONTAINING POLYAMINE DISPERSANTS

Marvin D. Coon, Novato, and Lewis R. Honnen, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 24, 1972, Ser. No. 256,241. The portion of the term of this patent subsequent to Jan. 15, 1991, has been disclaimed.

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **10 Claims**

1. A lubricating oil composition comprising an oil of lubricating viscosity and a detergent amount of the product of a hydrocarbyl-substituted polyamine, wherein the hydrocarbyl is of from 40 to 300 carbon atoms and is an aliphatic or alicyclic branched chain hydrocarbyl radical derived from petroleum hydrocarbons or polyolefins of monomers from 2 to 6 carbon atoms, with the proviso that when the monomer is ethylene, it is copolymerized with a higher homolog and a coupling agent selected from the group consisting of C_2–C_{20} hydrocarbyl polycarboxylic acids anhydrides or halides thereof, hydrocarbyl polyisocyanates, and C_2–C_{20} hydrocarbyl dihalides.

3,873,461
METHOD OF PRODUCING SOLID SOLUTIONS OF MAGNETIC OXIDES

Paul Mollard, Murianette; Jacques Paris, Lyon, and Abel Rousset, Caluire, all of France, assignors to Anvar-Agence Nationale de Valorisation de la Recherche, Courbevoire, France

Filed July 7, 1972, Ser. No. 269,838

Claims priority, application France, Apr. 21, 1972, 72.14215

Int. Cl. C04 *35/32*

U.S. Cl. 252—62.56 **6 Claims**

1. A method for the preparation of solid solutions of iron and cobalt of the type $(\gamma\text{ - }Fe_2O_3)_{1-y}(CoFe_2O_4)_y$ with $0 < y < 0.876$ by homogeneous and controlled substitution of divalent cobalt ions for Fe^{3+} ions in $\gamma\text{ - }Fe_2O_3$, comprising the following steps:

- a. preparing by co-precipitation a water insoluble mixed oxalate containing Fe^{2+} ions and divalent cobalt ions, said mixed oxalate corresponding to the formula: $Fe_{1-x}Co_x(C_2O_4)\,2H_2O$ wherein the value of *x* is such that the ratio of cobalt to iron in said oxalate is the same as the ratio of cobalt to iron in said solid solution;
- b. heating uniformly said mixed oxalate in air at a progressively increasing temperature in the range of 210°C to 300°C until it is decomposed and most of the resultant carbon is eliminated, said heating step being stopped before any formation of rhomboedric oxide $\alpha\text{ - }Fe_2O_3$ and of spinel oxide $CoFe_2O_4$;
- c. heating the product of step b) in a wet hydrogen atmosphere containing about 7 percent by volume of steam at such a temperature as to produce a substituted magnetite formed of crystallites and substantially free from residual carbon;
- d. and heating in air said substituted magnetite to a temperature such as to oxidize same, said temperature being between about 210°C and 380°C and increasing in direct proportion to the value of *y*.

3,873,462
COBALT MODIFIED IRON OXIDES

Roger Francis Trandell, Bridgewater, Mass., and Robert Glenn Fessler, Martinsville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 27, 1973, Ser. No. 355,241

Int. Cl. C01g *49/08;* **C04b** *35/26, 35/64*

U.S. Cl. 252—62.56 **1 Claim**

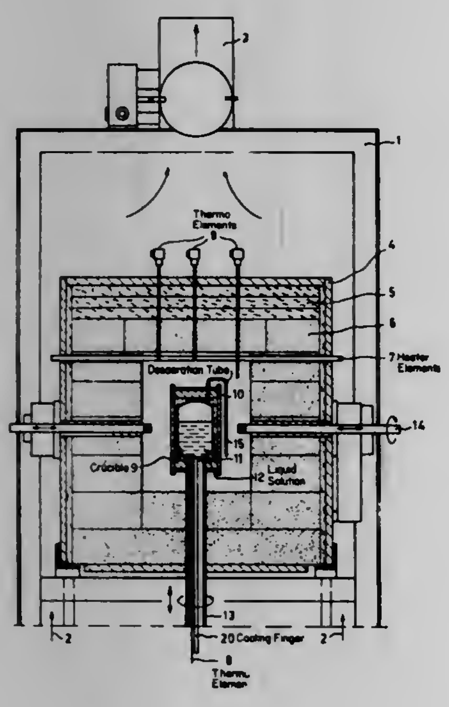
1. In the method of producing acicular cobalt doped ferromagnetic Fe_2O_3 by effecting an oxidation by passing an oxygen containing gas into a solution containing a water soluble ferrous salt and a water soluble cobaltous salt and then isolating

non-magnetic alpha ferric oxide hydrate containing cobalt which is subsequently dehydrated, reduced and then oxidized to acicular cobalt doped gamma Fe_2O_3; the improvement which comprises passing the oxygen containing gas into the solution at a temperature of 15° to 50°C. and at a pH between 6.5 and 8 until the pH drops to between 3.5 and 6, heating the resulting slurry mixture to between about 65° and 100°C. and completing the oxidation with a gaseous oxidant while maintaining the pH between about 4 and 5.2 by the addition of an aqueous base solution.

3,873,463
METHOD OF AND DEVICE FOR MANUFACTURING SUBSTITUTED SINGLE CRYSTALS

Wolfgang Tolksdorf, Tornesch, and Fritz Welz, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,033
Int. Cl. B01j *17/20;* **C04b** *35/40*
U.S. Cl. 252—62.57 **2 Claims**



1. A method of manufacturing substituted single crystals by crystallization from a liquid solution of the components of the crystal material in a crucible, if desired with the use of a seed crystal, in which during the crystallisation a temperature drop is adjusted and maintained in the liquid solution and quantities of the components are constantly added to the liquid solution, characterized in that, prior to the beginning of the crystallization, the solution is heated at a temperature above the point of the spontaneous nucleation then the solution is slowly cooled and, after the spontaneous nucleation has taken place, simultaneously

- a. the warmest zone of the solution is contacted with the quantity of the components to be added, and
- b. a seed crystal is introduced into the coolest zone of the solution, if desired,

by rotation of the crucible about its horizontal axis, that the crystallization is localized by cooling and the increasing insulating action of the growing crystal is compensated for and that the crystallization is terminated in that the liquid solution is separated from the crystals formed by rotation of the crucible about its horizontal axis.

3,873,464
FLAME RESISTANT HYDRAULIC FLUID

Henry E. Bieber, deceased, late of Mickleton, N.J., and by Mrs. Edward Sierer, executrix, State College, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 102,252, Dec. 28, 1970, abandoned. This application Feb. 3, 1972, Ser. No. 223,373
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **12 Claims**

1. A liquid flame resistant composition comprising from about 0.20 to about 5 percent by weight of a triaryl or trialkyl phosphate, from 2 to about 10 percent by weight of a chlorinated polyphenyl, the remainder being a polymerized olefin fluid containing at least 30 carbon atoms.

3,873,465
PHOSPHO-ESTER COMPOSITION FOR SCALE AND CORROSION INHIBITION

Ignazio Sergio Di Simone, Rome, Italy, assignor to Nalco Chemical Company, Chicago, Ill.

Filed Feb. 15, 1973, Ser. No. 332,968
Int. Cl. C02b *1/00*
U.S. Cl. 252—181 **9 Claims**

1. A phospho-ester scale and corrosion inhibition composition for alkaline-side cooling water treatments, said composition being characterized as having a low ortho-phosphate content and a high zinc stabilization, said phospho-ester scale and corrosion inhibition composition being formed by the following steps which comprise:

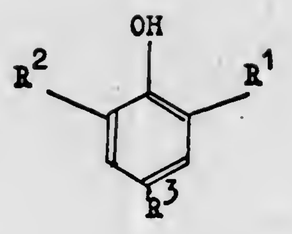
- A. heating an alkanol amine with an organic mixture to 75° to 85°C. with mixing, said organic mixture comprised of a polyhydroxy compound, ethylene glycol and a mono-ether of ethylene glycol wherein the ratio of alkanol amine to organic mixture is 60:40 to 40:60;
- B. adding from 150 to 300 percent by weight based on said amine of phosphorous pentoxide to the composition formed in step (A) over a period of 4 to 8 hours and incrementally increasing the reaction temperature at a constant rate to 120°C. over said time period;
- C. increasing the temperature of the composition formed in step (B) to 130° to 140°C. in ½ to 2 hours;
- D. heating the composition formed in step (C) at 140°C. for 1 hour;
- E. adding a mono-ether of ehylene glycol to the composition formed in step (D) and heating at 135° to 140°C. for ½ to 2 hours; and
- F. filtering and recovering the phospho-ester product.

3,873,466
STABILISATION OF FATS AND OILS WITH PHENOLIC ANTIOXIDANTS

Ronald Barrie Wright, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

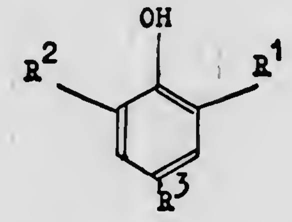
Filed Sept. 5, 1972, Ser. No. 286,137
Claims priority, application United Kingdom, Sept. 17, 1971, 43439/71
Int. Cl. C11b *5/00;* **A23d** *5/04*
U.S. Cl. 252—404 **10 Claims**

1. A composition for stabilising fats and oils which comprises a stabilising amount of a synergistic mixture of (i) a phenolic compound of the formula



in which R^1 is a tertiary alkyl group having 4 to 18 carbon atoms; R^2 is a hydrogen atom or a tertiary alkyl group having 4 to 18 carbon atoms and R^3 is a methyl, ethyl or methoxy group, and if R^3 is a methoxy group and R^1 and R^2 are tertiary alkyl groups a compound selected from Group (ii) or Group (iii) and in the case of other compounds of Group (i) a compound from each of Groups (ii) and (iii) in which Group (ii) is a thiodialkanoic acid ester of formula $R^4OOCC_pH_{2p}SC_qH_{2q}COOR^5$ in which *p* and *q* are integers in the range 1 to 6, and R^4 and R^5 are aliphatic hydrocarbon groups having 6 to 20 carbon atoms, and in which Group (iii) is a metal deactivating acid or a salt thereof of which the cations are of negligible toxicity existing in only one valency state.

10. A composition for stabilising fats and oils which comprises (i) a phenolic compound of the formula



in which R^1 is a tertiary alkyl group having 4 to 18 carbon atoms; R^2 is a hydrogen atom or a tertiary alkyl group having 4 to 18 carbon atoms and R^3 is a methyl, ethyl or methoxy group, and if R^3 is a methoxy group and R^1 and R^2 are tertiary alkyl groups a compound selected from Group (ii) or Group (iii) and in the case of other compounds of Group (i) a compound from each of groups (ii) and (iii) in which Group (ii) is a thiodialkanoic acid ester of formula $R^4OOCC_pH_{2p}SC_qH_{2q}COOR^5$ in which *p* and *q* are integers in the range 1 to 6, and R^4 and R^5 are aliphatic hydrocarbon groups having 6 to 20 carbon atoms, and in which Group (iii) is a metal deactivating acid or a salt thereof of which the cations are of negligible toxicity existing in only one valency state, said metal deactivating acid being citric acid, tartaric acid, ethylenediamine tetra-acetic acid or malic acid and component (ii) and/or component (iii) are present in ratios of between 10:1 and 1:10 parts by weight based on the weight of component (i).

3,873,467
HEMATOLOGIC REFERENCE CONTROL

Roger A. Hunt, Woodland, Wash., assignor to United Medical Laboratories, Inc., Portland, Oreg.

Filed Feb. 1, 1974, Ser. No. 438,542
Int. Cl. G01n *33/16*
U.S. Cl. 252—408 **8 Claims**

1. A hematologic reference control comprising a suspension of stabilized human red blood cells in a nonproteinaceous aqueous suspension fluid, said blood cells retaining ability to respond to a lysing agent by dissolution, and being conditioned in said suspension by the inclusion in said suspension fluid of a disulfonic acid salt of naphthol, and an alkaline tartrate.

3,873,468
METHOD OF REMOVING SUBSTANCE HARMFUL TO OXIDATION REACTION IN THE PRODUCTION OF BENZENECARBOXYLIC ACIDS BY OXIDATION

Sadao Kobinata, Ashiya; Takeo Satake, and Naonobu Hiramoto, both of Yokkaichi, all of Japan, assignors to Kuraray Yuka Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,465
Claims priority, application Japan, Dec. 9, 1970, 45-109780; Dec. 9, 1970, 45-109781; Dec. 9, 1970, 45-109782
Int. Cl. B01t *11/02;* **C07c** *63/02;* **C01g** *45/00, 51/00*
U.S. Cl. 252—413 **6 Claims**

1. A method of removing iron and tar-like by-products from the residue containing a heavy metal oxidation catalyst, said residue being derived by separating the formed benzene carboxylic acid and then recovering a solvent from the reaction mixture resulting from the liquid phase oxidation of an alkyl benzene with a molecular oxygen-containing gas using a heavy metal oxidation catalyst in the presence of a saturated lower aliphatic monocarboxylic acid having 2 to 4 carbon atoms as a solvent, wherein the reaction mixture is contaminated by iron and tar-like oxidation by-products which act as inhibitors for the oxidation reaction, said method comprising the steps of: subjecting said residue to extraction with water; separating the catalyst-containing aqueous phase from the so-treated water-insoluble residue, adding an alkali salt of a saturated lower aliphatic monocarboxylic acid plus a saturated lower aliphatic monocarboxylic acid to the aqueous phase to regulate the pH of the aqueous phase to a value more than 5 but not exceeding 8 to thereby separate the tar-like by-products as an oily float and iron as a precipitate of basic iron carboxylate; and removing said oily float and said precipitate from the aqueous phase.

2. The method of claim 1, wherein after separating the oily float and the precipitate from the aqueous phase, an alkali carbonate is added to the aqueous phase to separate and recover the catalyst heavy metal as a precipitate of carbonate.

3,873,469
SUPPORT COATINGS FOR CATALYSTS

Gordon F. Foster, Campbell, and Helmuth E. Meissner, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,417
Int. Cl. B01j *11/40, 11/32*
U.S. Cl. 252—455 R **13 Claims**

1. A catalytic device comprising a refractory support structure, a refractory metal oxide catalyst support coating covering at least a portion of said support structure, and a catalyst supported on said support coating, wherein the catalyst support coating consists of a multi-layer oxide coating of at least two layers which comprises a base layer and at least one covering layer differing in composition from said base layer, said base layer consisting of silica, alumina, and mixtures thereof, and each of said covering layers consisting essentially of an oxide selected from the group consisting of silica, titania, zirconia, tin oxide and manganese oxide.

3,873,470
METHOD OF MANUFACTURING A HYDRODESULFURIZATION CATALYST

John E. Conway, La Grange, and Robin J. Parker, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 105,699, Jan. 11, 1971, abandoned. This application May 7, 1973, Ser. No. 358,257
Int. Cl. B01j *11/08, 11/22*
U.S. Cl. 252—465 **5 Claims**

1. A method of catalyst preparation which comprises impregnating a preformed refractory inorganic oxide carrier material with an admixture of thermally decomposable salt or acid containing a metal of Group VIB and a thermally decomposable salt or acid containing a metal of Group VIII, initially

heating the impregnating carrier material to within less than about 100° F. of the decomposition temperature of said metal compound in an atmosphere comprising at least about 20% steam, and thereafter substituting substantially all of said steam with air and calcining the impregnated carrier material at a temperature of from about 800° to about 1,200° F. in a substantially dry oxidizing atmosphere.

3,873,471

CATALYSTS AND THEIR PRODUCTION

Edgar Koberstein, Alzenau, and Eduard Lakatos, Grossenhausen, both of Germany, assignors to Deutsche Gold-und-Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany

Filed Mar. 23, 1973, Ser. No. 344,458

Claims priority, application Germany, Mar. 25, 1972, 2214797

Int. Cl. B01j *11/08; 11/22*

U.S. Cl. 252—465 **15 Claims**

1. A catalyst composition for purifying exhaust gases from motor vehicles and industrial plants, said composition in the form of a molded element, which element comprises a monolithic system of a mixed catalyst through which at least one channel passes, said mixed catalyst comprising a mixture of (a) catalytically active aluminum oxide, and (b) more than 50% by weight of said mixture consisting of two components, the first component being chromium oxide and the second component being an oxide of another element of the First Transition Series.

3,873,472

CATALYST FOR THE PURIFICATION OF EXHAUST GASES AND PROCESS FOR PREPARING THE CATALYST

Hiroshi Oshima; Koji Saiki, and Hiroto Inoue, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Oct. 26, 1973, Ser. No. 409,690

Claims priority, application Japan, Oct. 28, 1972, 47-108278; Jan. 30, 1973, 48-12714

Int. Cl. B01f *11/08, 11/22*

U.S. Cl. 252—466 B **9 Claims**

1. A catalyst for purifying exhaust gases containing at least one of carbon monoxide, unburned hydrocarbon and nitrogen oxide which consists essentially of a base consisting of iron or steel, an iron-aluminum alloy provided on the surface of said base and a platinum group metal supported on said alloy; an average ratio of iron and aluminum in said alloy falling within the range of about 1:10 to about 10:1 by atomic ratio and said platinum group metal being supported in an amount of about 0.02 to about 20 g./square meter of apparent surface area, wherein the apparent surface area is less than the actual surface area.

3,873,473

SULPHIDE SOLID SOLUTION HAVING ROCK-SALT STRUCTURE AND METHOD OF PRODUCING THE SAME

Kenzo Susa, Hachioji; Masami Yajima, Koganei, and Satoshi Taniguchi, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,420

Claims priority, application Japan, May 15, 1972, 47-47184; May 26, 1972, 47-51645; Nov. 6, 1972, 47-110287; Nov. 13, 1972, 47-113006; Nov. 13, 1972, 47-113007

Int. Cl. G03c *1/72*

U.S. Cl. 252—501 **7 Claims**

1. A sulphide solid solution having a rock-salt structure at room temperature and normal atmospheric pressure, said solid solution being represented by the formula (Cd, A)S in which A is at least one element selected from the group consisting of Yb, Cr, Mg, Sr, Ca, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Lu, Y, Pb, Sn and Ge.

3,873,474

REGENERATION OF POLYMERIC MATERIAL

Stefan Ficker, Postfach 1150, 6074 Urberach, Germany

Filed Apr. 17, 1972, Ser. No. 244,749

Int. Cl. C08d *13/38;* **C08c** *17/38*

U.S. Cl. 260—2.3 **4 Claims**

1. A method of continuously regenerating previously vulcanized rubber scrap, comprising the steps of:

a. comminuting the scrap to be regenerated;
b. introducing the comminuted scrap into an elongate heating chamber;
c. maintaining said chamber at an operating temperature of 140° to 300°C;
d. advancing said scrap material through said chamber rotating feed screws with spacedly interleaved threads at substantially atmospheric pressure for a residence time of 3 to 30 minutes, said interleaved threads differing in pitch and said screws are being rotated with a compensatory difference in speed;
e. intermittently varying the relative speed of said screws for scraping adhering incrustations off the threads thereof;
f. continuously discharging said scrap from said chamber through a nonrestrictive outlet; and
g. homogenizing and consolidating the material issuing from said outlet.

3,873,475

COMPOSITION FOR FILLING, PATCHING AND THE LIKE

Alvin E. Pechacek, Mascoutah, Ill., and Eugene L. Baratto, White Bear, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 177,147, Sept. 1, 1971, abandoned. This application June 13, 1973, Ser. No. 369,735

Int. Cl. C08g *53/08*

U.S. Cl. 260—2.5 B **4 Claims**

1. A cured, unfoamed composition which, prior to curing, had a density of 0.4 to 1.2, displayed a peak viscosity of at least 25,000 cps, possessed particular utility for use in filling dents in damaged auto bodies in preparation for repainting, and consisted essentially of:

1. approximately ⅓ to ½ by volume of a liquid resin system consisting essentially of
   a. a major portion of thermosettable unsaturated polyester resin,
   b. a minor portion of liquid organic monomer which is a solvent for said polyester resin and reactive therewith, and
   c. ¼ to 10% by weight, based on the total weight of (a) + (b), of at least one mixed ester of cellulose which is soluble in said polyester resin and which is selected from the class consisting of cellulose acetate butyrate and cellulose acetate propionate,
2. correspondingly approximately ⅔ to ½ by volume of a particulate filler system consisting essentially of, on a volume basis,
   a. a major portion of particles selected from the class consisting of inorganic and synthetic resinous hollow microspheres having an average density of 0.03 – 0.6 and a mean diameter of less than 150 microns, substantially all of said particles having a diameter below 200 microns, and
   b. a minor portion of solid particulate inorganic filler having an average particle size of less than 50 microns and a density of less than 4, and
3. 0 to 1.0% by weight, based on the total composition, of an alkylene silane,

said composition, prior to curing being smoothly spreadable, self-leveling, and after curing being readily abradable to provide a surface which does not display pockmarks or blemishes when subsequently painted.

3,873,476

HYDROPHILIC POLYURETHANE FOAM

Gert Jabs, Schildgen, and Gunther Loew, Leichlingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 23, 1973, Ser. No. 408,983

Claims priority, application Germany, Nov. 3, 1972, 2253943

Int. Cl. C08g *22/44, 22/14, 22/28*

U.S. Cl. 260—2.5 AD **5 Claims**

1. An open-celled, hydrophilic polyurethane foam having a density from about 15 to about 40 kg/m^3, a compression strength of at least about 300 p/cm^2 and a water retention capacity of at least about 60 vol %, which polyurethane foam is obtained from the reaction of aliphatic polyhydroxyl compounds and a polyisocyanate while in admixture with a non-silicon containing emulsifier and a blowing agent where:

1. the polyhydroxyl compounds are a mixture of
   a. from about 50 to about 90% by weight, based upon the total quantity of polyhydroxyl compounds, of a polyhydroxyl compound which has an OH-number from about 300 to about 1820 and which has either
      1. at least about 50% of the hydroxyl groups in the form of primary hydroxyl groups,
      2. tertiary amino groups in the molecule, or
      3. both 50% primary hydroxyl groups and tertiary amino groups, and
   b. from about 50 to about 10% by weight, based upon the total quantity of polyhydroxyl compounds, of a polyhydroxyl polyether compound which is free from amine nitrogen atoms, which has an OH-number from about 25 to about 250, which contains at least about 20 mol % of ethylene oxide units and in which at least about 40% of the hydroxyl groups are secondary hydroxyl groups;
2. at least 50 mol % of said polyisocyanate contains biuret groups and said polyisocyanate is present in a quantity which corresponds to from about 35 to about 70% of the quantity theoretically required for reacting with all of the active hydrogen atoms in the reaction mixture with isocyanate groups; and
3. where the emulsifier is selected from the group consisting of neutral and ionic emulsifiers which increase the hydrophilic character of the foam and is present in a quantity from about 2 to about 20% by weight based upon the total reaction mixture.

3,873,477

METALLIC SALTS OF TETRAZOLES USED AS BLOWING AND INTUMESCENT AGENTS FOR THERMOPLASTIC POLYMERS

Walter Beck, Bedford, and John C. Blackwood, Melrose, both of Mass., assignors to Stepan Chemical Company (National Polychemicals Div.), Wilmington, Mass.

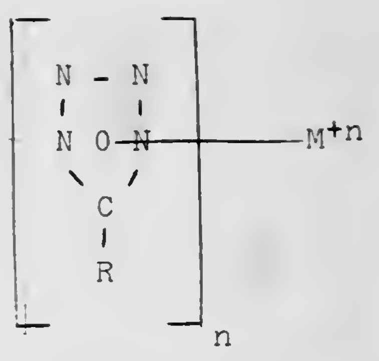
Filed Dec. 17, 1973, Ser. No. 425,068

Int. Cl. C08g *53/10;* **C08f** *47/10;* **C08j** *1/20*

U.S. Cl. 260—2.5 R **18 Claims**

1. A process of producing an expanded thermoplastic polymer having a processing temperature of greater than about 500°F, which process comprises:

a. incorporating into the polymer a blowing amount of a metal salt of a tetrazole having the formula:



wherein R is a phenyl radical or an alkyl, halogen or 5-tetrazoylsubstituted phenyl radical,
wherein *n* is 2 or 3, and
wherein M is metal selected from the group of barium, calcium, zinc, lead and aluminum; and

b. heating the polymer containing such metal salt tetrazole to a temperature sufficient to decompose the tetrazole.

3,873,478

POLYURETHANE-PROTEIN COMPOSITION AND PROCESS FOR MAKING SAME

Philippe Comte, Sainte Foy Les Lyon, France, and Wilhelm Fischer, Pirmasens, Germany, assignors to Centre Technique Du Cuir, Lyon, France and Pruf-und Forschungsinstitut Fur Die Schuh Herstellung, Pirmasens, Germany

Filed July 30, 1973, Ser. No. 383,501

Claims priority, application France, July 27, 1972, 72.27768

Int. Cl. C08g *41/04;* **C08h** *7/00*

U.S. Cl. 260—7.5 **8 Claims**

1. A process for producing a polyurethane composition which comprises the steps of:

forming a proteinic powder of a particle size of 100 to 250 microns;
mixing said proteinic powder with a polyurethane precursor selected from the group consisting of polyethylene oxide, polypropylene oxide and a polyester formed by reacting adipic acid or orthophthalic anhydride with a glycol or triol in an amount of substantially 0.1 to 1 part by weight of said powder per part by weight of said precursor; and
thereafter polymerizing the resulting mixture of the powder and precursor in the presence of an isocyanate selected from the group which consists of totylene di-isocyanate, diphenylmethane di-isocyanate and hexamethylene di-isocyanate to produce polyurethane with said powder chemically bonded therein.

3,873,479

THERMOSETTING PLASTICS FOR LOOM SHUTTLES AND OTHER DYNAMICALLY HEAVILY LOADED SHOCK ABSORBER AND ANTIFRICTION ARTICLES AND A METHOD FOR PRODUCING SAID PLASTICS

Mikhail Nikolaevich Zotov, Prospect Mira, 46, kv. 12; Vulf Kopelevich Peisakhov, 8 ulitsa Sokolinoi Gory, 7, kv. 48, and Iosif Naumovich Partsy, Sevanskaya ulitsa, 13, korpus 1, kv. 33, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 2,354, Jan. 12, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,225

Int. Cl. C08g *51/18*

U.S. Cl. 260—17.2 **12 Claims**

1. A thermosetting plastic for loom shuttles and other dynamically heavily loaded shock absorber and antifriction parts, comprising the homogeneous combination product of 35–50 parts by weight of a dry refined phenolic novolac resin having an Ubbelodhe melting point between 105° and 120°C. and a free phenol content not over 4 per cent by weight, 60–70 parts by weight of a polyamide having a bare-celled structure in the form of a net-type fabric, 4.2–6.0 parts by weight of hexamethylene tetramine, 1.2–1.8 parts by weight of a plasticizing agent, 0–20 parts by weight of cellulose, and 2.0–6.5 parts by weight of at least one of the group consisting of graphite, ferric oxide and talcum, and having the following physical and mechanical characteristics:

specific gravity	1.2–1.27
specific impact strength	10–120 kg.cm/cm²
Raschig flowability	40–120 mm
setting rate at 140–150°C.	0.5–1.5 min/mm
Martens temperature	120–130°C.

3,873,480
NOVEL PAPER COATING COMPOSITIONS CONTAINING 1,2 EPOXIDE MODIFIED FREE-CARBOXYL CONTAINING CO-POLYMERS

Emery V. Braidich, Tallmadge; George T. Gmitter, Akron, and William J. van Essen, Tallmadge, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 30, 1972, Ser. No. 310,754

Int. Cl. C08d *9/06*

U.S. Cl. 260—17.45 ST **10 Claims**

1. A paper-coating composition consisting essentially of an aqueous dispersion of

a latex copolymer prepared from at least 20 to 80 weight percent of at least one monovinyl aromatic hydrocarbon monomer, 15 to 60 weight percent of at least one aliphatic conjugated diene hydrocarbon monomer of 4 to 20 carbon atoms and 0.5 to 20 weight percent of at least one ethylenically unsaturated carboxylic acid containing no more than two carboxyl groups, a substantial number of the carboxyl groups having been modified by reaction with an epoxide containing from 1 to 2 oxirane rings, any other monomer being free of hydroxyl groups and being present in an amount no greater than 20 weight percent; at least one other colloidal water-dispersible polymer; and a pigment;

said latex copolymer and other colloidal water-dispersible polymer being present in a total amount of from about 5 to 20 weight percent of total solids, said pigment being present in a total amount of at least about 80 weight percent of total solids, and any other ingredients other than water being present in a total amount of from about 0.5 to 15 weight percent of total solids, said total solids being from 20 to 70 weight percent of said aqueous dispersion, the pH of said aqueous dispersion being in the range of 5 to 10.

3,873,481
PHTHALIC ANHYDRIDES ADDUCTS OF AMINO-AMIDES OF MONOMERIC FATTY COMPOUNDS

Michael A. Laudise, Spring Lake Park, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed May 10, 1973, Ser. No. 359,170

Int. Cl. C08f *19/14*

U.S. Cl. 260—18 PN **13 Claims**

1. A process of preparing a phthalic anhydride adduct of an amino-amide of an epoxidized fatty compound comprising dispersing in water an amino-amide of an epoxidized fatty compound having an amine number of about 150–700, adding to the resulting dispersion a phthalic anhydride in an amount of about 0.04–0.4 moles of anhydride per equivalent of amine in said amino-amide and reacting said amino-amide and said anhydride at a temperature below 100°C. to provide an adduct wherein one carboxylic group of said anhydride forms an amide linkage with said amino-amide and a second carboxylic group of said anhydride forms an acid salt with said amino-amide, said epoxidized fatty compound being selected from the group consisting of epoxidized fatty acids having from 8–22 carbon atoms, the alkyl esters thereof wherein the alkyl group contains from 1–8 carbon atoms, the glycerol esters thereof, and mixtures thereof with unepoxidized fatty acids having 8–22 carbon atoms so as to provide an oxirane oxygen content by weight of about 1–6%.

3,873,482
PYROLYZED TALL OIL PRODUCTS AS SYNTHETIC RUBBER TACKIFIERS

Ray F. Severson, and Walter H. Schuller, both of Lake City, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 26, 1973, Ser. No. 382,793

Int. Cl. C08d *9/12*

U.S. Cl. 260—27 R **3 Claims**

1. An improvement in tackifying vulcanized styrene-butadiene rubber, said improvement comprising incorporating into said rubber as tackifier a pyrolysate obtained by pyrolyzing an acidified tall oil soap in the presence of an inert gas at a temperature of about 400°C–700°C for about 1 to 20 seconds at from 1 to 15 parts pyrolysate per hundred parts of rubber.

3,873,483
ASPHALTIC COMPOSITION CONTAINING ELASTIC COPOLYMERS

Manfred Wolfgang Oelsner, Hamburg, and Erich Gunther Zenke, Halstenbek, both of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 8, 1973, Ser. No. 386,778

Claims priority, application Germany, Sept. 19, 1972, 2245962

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **16 Claims**

1. A process for the production of an asphaltic composition, which comprises

1. forming a mixture of:
   5–35% by weight, based on the total mixture of an elastomeric copolymer of ethylene, propylene and an cyclic olefin having more than one olefinic double bond and an endocyclic bridge comprising one or more methylene groups,
   65–95% by weight, of a high boiling hydrocarbon oil which is an aromatic extract from lubricating oil or high boiling coal tar fractions, and
2. blowing the mixture at 150° to 260°C with a gas which contains elemental oxygen to form a concentrate, and
3. dissolving said concentrate in unblown asphalt which is a distillation residue derived from crude oil.

3,873,484
LATEX OF QUATERNIZED POLYETHER-DIALKANOLAMINE POLYISOCYANATE PREPOLYMER CHAIN EXTENDED WITH WATER WITH ETHOXYLATED PHENOL, AND CURED PRODUCTS

Claire Bluestein, Glen Rock, and Peter Loewrigkeit, Wyckoff, both of N.J., assignors to Whitco Chemical Corporation, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,435

Int. Cl. C08g *51/24, 22/14;* **B32b** *27/40*

U.S. Cl. 260—29.2 TN **14 Claims**

1. A storage stable latex of a quaternized substantially linear polyetherurethane-urea, comprising the reaction product of a mixture of a polyoxyalkylene polyol and an N-lower alkyl diaklanolamine, said polyoxyalkylene polyol being selected from diols, triols, and mixtures thereof having a hydroxyl number in the range of about 10–200, with excess diisocyanate, quaternized with a di-lower alkyl sulfate, and chain extending the resultant quaternized isocyanate terminated polyetherurethane with water, and dispersing the resultant quaternized substantially linear polyetherurethane-urea in water, in the presence of from about 0.5 to 5.0%, based on the quaternized polyetherurethane, of an ethoxylated long chain alkyl phenol surfactant, having an HLB of about 14–16, said quaternized sustantially linear isocyanate terminated polyetherurethane comprising a proportion of equivalents in ranges of about 0.8–1.2:0.8–1.2:3–5:0.4–0.6 of said polyoxypropylene polyol, N-alkyl dialkanolamine, diisocyanate and

dialkyl sulfate, respectively, the equivalency of the dialkanolamine being the hydroxyl equivalency.

3,873,485
MOLDABLE AQUEOUS PLASTIC MASS OF POLYETHYLENE OXIDE FUMED SILICA AND POLYGLYCOL

A. Thomas Fichera, 1964 Bridgeport Ave., Claremont, Calif. 91711

Filed Apr. 3, 1974, Ser. No. 457,567

Int. Cl. A63h *9/00;* **A63b** *65/00;* **C08g** *51/24*

U.S. Cl. 260—29.2 EP **2 Claims**

1. A composition of matter in the form of a plastic mass comprising 0.01 to 0.5 percent by weight coagulant grade polyethylene oxide, 0.01 to 20 percent by weight fumed silica, 0.01 to 5 percent by weight polyglycol with an average molecular weight between 2000 and 10,000 and 70 and 90 percent water.

3,873,486
RESIN COMPOSITIONS

Arthur H. Drelich, Plainfield, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 65,880, Aug. 21, 1970, Pat. No. 3,720,562, which is a continuation-in-part of Ser. No. 800,265, Feb. 18, 1967, Pat. No. 3,649,330, which is a continuation-in-part of Ser. No. 618,317, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 623,797, March 10, 1967, Pat. No. 3,536,518, and a continuation-in-part of Ser. No. 817,177, April 17, 1969, , which is a continuation-in-part of Ser. No. 639,011, May 17, 1967, abandoned. This application Oct. 12, 1972, Ser. No. 297,165

Int. Cl. C08f *45/00*

U.S. Cl. 260—29.6 MM **14 Claims**

1. A binder composition for bonding porous, absorbent, fibrous materials comprising:

1. a colloidal aqueous dispersion of a synthetic resin, said aqueous dispersion being stable at an alkaline pH, said synthetic resin being obtained by polymerizing from about 92 percent by weight to about 99 percent by weight of a non-acidic vinyl monomer or a mixture of non-acidic vinyl monomers and from about 1 percent by weight to about 8 percent by weight of an unsaturated acid, said aqueous dispersion comprising from about 0.1 percent by weight to about 60 percent by weight of said synthetic resin;
2. at least 0.01 percent by weight, based on the weight of said synthetic resin, of a surfactant, at least one of said synthetic resin and surfactant components having a hydroxy-containing coordinating ligand; and
3. from about 0.1 percent by weight to about 3 percent by weight, based on the weight of said synthetic resin, of a metal complex coordination compound made by the addition of organic or inorganic atoms or groups to simple inorganic compounds containing a metal atom, said metal being selected from the group consisting of zinc, aluminum and zirconium.

3,873,487
SUBSTANTIALLY WATER-INSOLUBLE POLYMERIC SOIL CONDITIONER FOR IMPROVING THE PHYSICAL STRUCTURE OF SOILS

Takashi Minato; Shinsuke Takegami; Soichiro Kishimoto, and Katsutoshi Kanetsuki, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Mar. 30, 1973, Ser. No. 347,407

Claims priority, application Japan, Apr. 10, 1972, 47-035849

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 WB **10 Claims**

1. A soil conditioner consisting essentially of a water-swellable or water-insoluble polymer obtained by

a. adding a trivalent or higher valent polycation to an aqueous solution of a water-soluble synthetic polymer containing an acid group and having a molecular weight of at least 500 to produce an initial reaction product of the polymer and polycation, said water-soluble polymer being selected from the group consisting of a homo- or co-polymer of an acid group-containing unsaturated monomer, a copolymer of an acid group-containing unsaturated monomer and another neutral ethylenically unsaturated monomer and a hydrolyzed homo- or co-polymer of an unsaturated monomer selected from the group consisting of acrylonitrile, acrylamide, maleate and acrylate, and,

b. then flocculating said initial reaction product with an anionic high molecular weight flocculant, said flocculant being a synthetic organic polymer having a molecular weight of about 500,000 to 10,000,000 containing carboxyl groups or sulfonic acid groups and salts theref as the anionic moiety.

3,873,488
LATEXES FOR CATHODIC ELECTROCOATING

Dale S. Gibbs; Earl H. Wagener, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 139,249, April 30, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,105

Int. Cl. C08d *7/00;* **C09d** *5/02*

U.S. Cl. 260—29.7 H **9 Claims**

1. An aqueous dispersion comprising an aqueous medium having stably dispersed therein a water-insoluble film-forming copolymer of (1) an essentially hydrophobic, polymerizable, ethylenically unsaturated monomer or mixture of monomers consisting essentially of one or more neutral, electrically non-conductive, polymerizable, ethylenically unsaturated compounds which when in the form of homopolymers or copolymers with each other are water insoluble and (2) a polymerizable, water-soluble, ethylenically unsaturated sulfonium salt in an amount insufficient to make the copolymer water-soluble consisting of from about 0.5 part to about 10 parts for each 100 parts by weight of total monomers; wherein the dispersion stability is provided at least in part by the copolymerized sulfonium salt.

3,873,489
RUBBER COMPOSITIONS CONTAINING SILICA AND AN ORGANOSILANE

Friedrich Thurn, Bruhl; Kurt Burmester, Overath-Steinenbruck; Johannes Pochert, Walberberg, and Siegfried Wolff, Bruhl, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

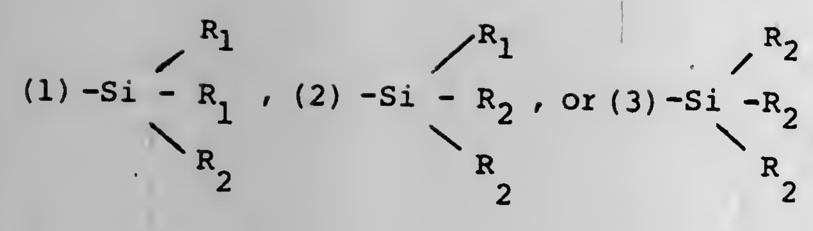
Continuation-in-part of Ser. No. 277,043, Aug. 1, 1972, Pat. No. 3,842,111. This application Nov. 12, 1973, Ser. No. 415,176

Claims priority, application Germany, Aug. 17, 1971, 2141159; Nov. 13, 1972, 2255577.

Int. Cl. C08c *11/10, 11/18, 11/22*

U.S. Cl. 260—33.6 AQ **31 Claims**

1. A composition comprisng an organosilane having the formula A—alk—S_n—alk—Z, in which Z is



$$(1)\ -\mathrm{Si}\begin{smallmatrix}\diagup R_1\\ -R_1\\ \diagdown R_2\end{smallmatrix},\quad (2)\ -\mathrm{Si}\begin{smallmatrix}\diagup R_1\\ -R_2\\ \diagdown R_2\end{smallmatrix},\ \text{or}\ (3)\ -\mathrm{Si}\begin{smallmatrix}\diagup R_2\\ -R_2\\ \diagdown R_2\end{smallmatrix}$$

wherein R_1 is alkyl of 1 to 4 carbon atoms, cyclohexyl or phenyl and R_2 is alkoxy of 1 to 8 carbon atoms, cycloalkoxy with 5 to 8 carbon atoms or alkylmercapto with 1 to 8 carbon atoms, alk is divalent hydrocarbon of 1 to 18 carbon atoms, *n* is a number of 3.0 to 6.0, a siliceous filler and a curable rubber polymer, the organosilane being present in an amount of 0.1 to 50 parts per 100 parts of polymer and the siliceous filler being present in an amount of 10 to 250 parts per 100 parts of polymer.

3,873,490

FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 188,598, Oct. 12, 1971, Pat. No. 3,781,241, which is a division of Ser. No. 872,753, Oct. 30, 1969, Pat. No. 3,658,751. This application Dec. 27, 1972, Ser. No. 319,109

Int. Cl. C08g *37/18, 51/10*

U.S. Cl. 260—38 **14 Claims**

1. A friction particle consisting essentially of the noncatalyzed product of the reaction at about 225 to about 400 degrees Fahrenheit of at least about 30 percent by weight of a non-hydroxyalkylated hydroxy aromatic hydrocarbon aldehyde resole containing substantially no etherified aromatic hydroxyl groups with at least about 5 percent by weight of a non-hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde novolac until the product is substantially insoluble in acetone, infusible, and does not soften slightly under mechanical force at a temperature below about 400 degrees Fahrenheit and has substantially no cohesive or bonding strength.

3,873,491

POLYALKYLENE TEREPHTHALATE MOLDING RESIN AND PROCESS FOR MAKING SAME

John S. Gall, 1310 Belmont Ave., North Haledon, N.J. 07508

Continuation of Ser. No. 46,823, June 16, 1970, abandoned. This application Feb. 14, 1974, Ser. No. 442,546

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **29 Claims**

1. A molding resin having reduced burning properties comprising an intimate blend of a polyalkylene terephthalate selected from the group consisting of polypropylene terephthalate and polybutylene terephthalate, the poloyalkylene terephthalate having an intrinsic viscosity in the range from about 0.2 to about 1.2 deciliters per gram, a reinforcing agent, an aromatic halide stable at temperature necessary for melt processing of the polyalkylene terephthalate and capable of decomposing at combustion temperatures of the polyalkylene terephthalate, and a Group V*b* metal containing compound, wherein the weight ratio of available halogen in the aromatic halide to the available Group V*b* metal in the Group V*b* metal containing compound ranges from about 0.3 to about 4.

3,873,492

GYPSUM COMPOSITIONS FOR GYPSUM-THERMOPLASTIC COMPOSITE

Masaaki Takehisa; Hirondo Kurihara; Toshiaki Yagi; Hiromasa Watanabe, and Sueo Machi, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,793

Claims priority, application Japan, Nov. 24, 1971, 46-93557; Nov. 24, 1971, 46-93558

Int. Cl. C08f *45/14;* **C04b** *11/16;* **B05c** *7/14*

U.S. Cl. 260—42.14 **11 Claims**

1. A method of imparting properties suitable for preparing a gypsum - thermoplastic resin composite to a gypsum powder, comprising adhering a polysulfone resin to the surface of each particle of said powder, said polysulfone resin being a polymer having —SO_2— groups in the main polymeric chain thereof and being a reaction product of SO_2 and a monomer selected from the group consisting of olefins of 2–12 carbon atoms, styrene, vinyl chloride, allyl chloride, and combinations thereof.

3,873,493

PROCESS FOR MAKING REINFORCED THERMOSETS FROM EPOXY-FUNCTIONAL COPOLYMERS AND CROSSLINKING AGENTS

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 209,348, Dec. 17, 1971, abandoned. This application Feb. 15, 1974, Ser. No. 443,041

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.28 **11 Claims**

1. In a method for producing reinforced, thermoset resin articles of manufacture wherein a particulate moldable material which, on a catalyst and fibrous material-free basis, consists essentially of an epoxy-functional copolymer of acrylic monomers, organic crosslinking agent for said copolymer and inorganic particulate solids and has an average maximum particle diameter above 10 microns is molded at elevated temperatures and pressures, the improvement wherein:

1. said epoxy functional copolymer of acrylic monomers consists of about 15 to about 40 weight percent glycidyl methacrylate which provides said copolymer with its epoxy-functionality, about 10 to about 30 weight percent methacrylonitrile and a remainder consisting essentially of methyl methacrylate;
2. said epoxy-functional copolymer of acrylic monomers has a softening point above 25°C and an average molecular weight in the range of about 1,500 to about 16,000 with less than 5 percent of the molecules of said copolymer having an average molecular weight below 1,000;
3. said epoxy-functional copolymer of acrylic monomers, said organic crosslinking agent for said copolymer and said inorganic particulate solids have been mechanically reduced to an average maximum particle diameter below about 10 microns prior to molding with less than 10 percent of the particles thereof having a maximum diameter above 25 microns and intimately mixed to form a molding powder; and
4. said molding powder is molded at a temperature in the range of 300°–400°F at a pressure in the range of about 500 to about 2,000 psi.

3,873,494

OIL-RESISTANT AND AGING-RESISTANT ELASTOMERS

Kathrine Johnson Lewis, West Los Angeles, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 358,370, May 8, 1973, abandoned. This application Apr. 9, 1974, Ser. No. 459,323

Int. Cl. C08d *9/08*

U.S. Cl. 260—42.37 **15 Claims**

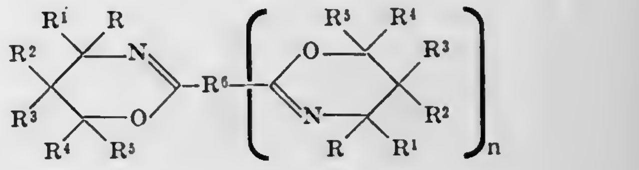
1. A curable blend of

1. an ethylene containing polymer and
2. a butadiene/acrylonitrile polymer containing about 25–50 weight percent of acrylonitrile, the proportion of said butadiene/acrylonitrile polymer being 1–30 parts per hundred parts by weight of said ethylene containing polymer; the ethylene containing polymer having at least 3.6 moles of ethylene per 1,000 grams of the ethylene containing polymer and being selected from the group consisting of:
   - a. an ethylene/alkyl acrylate or ethylene/alkyl methacrylate copolymer, wherein the alkyl group has 1–4 carbon atoms; the proportion of the acrylic ester being about 2.5–8 moles of ester groups per kilogram of the copolymer;
   - b. a terpolymer of ethylene with an alkyl acrylate or methacrylate wherein the alkyl group has 1–4 carbon atoms, and a third monomer selected from the group consisting of:
     - i. a C_1–C_{12} alkyl monoester or diester of a butenedioic acid,
     - ii. acrylic acid
     - iii. methacrylic acid,
     - iv. carbon monoxide,
     - v. acrylonitrile,
     - vi. a vinyl ester,
     - vii. an alkyl acrylate or methacrylate wherein the alkyl group has at least five carbon atoms, and
     - viii. maleic anhydride,

   the proportion of the acrylic ester being equivalent to 2.5–8.0 moles of ester groups per kilogram of the polymer, and the proportion of the third monomer being no higher than about 10 weight percent of the polymer.

the average molecular weight being from about 3,000 to 20,000 and

B. a compound of the formula



wherein n is 1 or 2; R, R^1, R^2, R^3, R^4 and R^5 are the same or different and are each hydrogen or hydrocarbon having from 1 to 6 carbon atoms and R^6 represents a bond or a radical from the following groups:

- i. a cycloaliphatic hydrocarbon radical with 3 to 10 carbon atoms, an optionally partially unsaturated alkylene radical with 1 to 18 carbon atoms which may optionally be interrupted by one or more aromatic hydrocarbon radicals containing 6 to 10 carbon atoms or by one or more heterocyclic radicals containing 5 to 14 carbon atoms, or
- ii. one or more optionally substituted aromatic hydrocarbon radicals containing 6 to 12 carbon atoms or a heterocyclic radical with 5 to 14 carbon atoms, the mixture containing from 5 to 25 parts by weight of (B) and from 95 to 75 parts by weight of (A).

3,873,495

POWDER FORM COATING AGENTS

Hansgunter Appel, Bergisch-Gladbach; Dieter Arlt, Cologne; Richard Muller, Bergisch Neukirchen, and Frank Wingler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 428,457, Dec. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 303,143, Nov. 2, 1972, abandoned. This application June 26, 1974, Ser. No. 483,233

Claims priority, application Germany, Nov. 6, 1971, 2155257

Int. Cl. C08f *45/04, 15/40*

U.S. Cl. 260—42.29 **9 Claims**

1. A coating agent in powder form comprising a mixture of

A. copolymerized units of

- I from 25 to 50% by weight of styrene, α-methyl styrene, o-chlorostyrene, p-chlorostyrene, p-tert.-butyl styrene, acrylonitrile, methacrylonitrile or a mixture thereof;
- II from 30 to 65% by weight of an acrylic acid ester containing from 1 to 12 carbon atoms in the alcohol radical or a methacrylic acid ester containing from 2 to 12 carbon atoms in the alcohol radical, or a mixture thereof;
- III from 0 to 25% by weight of methacrylic acid methyl ester and
- IV from 5 to 20% by weight of acrylic acid, methacrylic acid, itaconic acid, maleic or fumaric acid, crotonic acid or a mixture thereof,

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3,873,496

FLAME-RETARDANT POLYESTER COMPOSITIONS

William A. Hills, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,738

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.8 R **8 Claims**

1. A flame-retardant polyester composition comprising a linear polyester and from 5 to 25 percent by weight of 4-hydroxymethyl-1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]octane as the flame-retardant additive based on the combined weight of polyester and additive.

3,873,497

STABILIZATION OF POLYAMIDES

John Ernest Jackson, Crickhowell, Wales, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 2, 1971, Ser. No. 130,768

Claims priority, application United Kingdom, Apr. 13, 1970, 17385/70

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.75 R **8 Claims**

1. An improved fibre-forming synthetic polyamide wherein the improvement consists in that in said polyamide there have been incorporated from 5 to 100 parts per million parts by weight on the polyamide of reducing phosphorus in the form of a phosphorous acid or a salt or ester thereof and 100 to 10,000 parts per million by weight on the polyamide of a phosphorus-containing phenol of the general formula: $(HO\phi O)_3PO$ where ϕ represents a benzene ring, with the OH hydroxyl groups positioned para- or ortho- to the phosphorus atom and with on or two alkyl groups adjacent to the phenolic hydroxyl groups.

3,873,498

ESTERS OF 4-HYDROXYMETHYL-1-PHOSPHA-2,6,7-TRIOXABICYCLO [2,2,2] OCTANE AND P-HYDROXYPHENYLCARBOXYLIC ACIDS AS STABILIZERS FOR ORGANIC POLYMERS

Heimo Brunetti, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

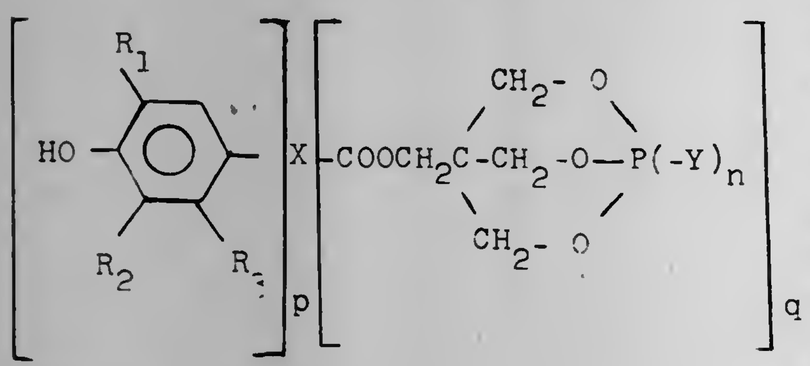
Division of Ser. No. 244,849, April 17, 1972, Pat. No. 3,808,296. This application July 25, 1973, Ser. No. 382,634

Claims priority, application Switzerland, Apr. 22, 1971, 5846/71; Nov. 3, 1971, 16044/71; Mar. 7, 1972, 3311/72

Int. Cl. C08f *45/58, 45/62*

U.S. Cl. 260—45.95 D **15 Claims**

1. A composition of matter comprising an organic polymer subject to thermo oxidative or light-induced degradation and from 0.005 to 5 percent by weight of a stabilizing compound of the general formula



wherein

X represents the radical of an alkane containing from 1–19 carbon atoms, and in which radical not more than three bonds are formed between the same carbon atoms and the carboxyl and phenol groups, the radical of an aralkane, alkene, oxaalkane or thiaalkane each containing from 2–19 carbon atoms, and in which radicals not more than three bonds are formed between the same carbon atom and the carboxyl and phenol groups or represents the direct bond,

R_1 and R_2 independently represent hydrogen, alkyl containing 1–8 carbon atoms, cycloalkyl containing from 6–8 carbon atoms or aralkyl containing from 7–9 carbon atoms,

R_3 represents hydrogen or methyl,

Y represents oxygen or sulphur,

p and *a* independently represent 1 or 2, and

n represents 0 or 1.

3,873,499

FAST CURING MERCAPTOALKYL VINYL SILOXANE RESINS

Keith W. Michael; Alan E. Mink, and Darrell D. Mitchell, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

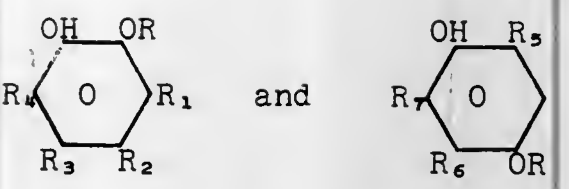
Filed Nov. 29, 1973, Ser. No. 420,180

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **4 Claims**

1. A composition of matter consisting essentially of

1. a copolymer of 10 to 30 mol percent $HSR'SiO_{3/2}$, 10 to 75 mol percent monopropyl siloxane, 5 to 35 mol percent dimethyl siloxane, and 5 to 43 mol percent monomethyl siloxane, in which R′ is a propylene or ethylene radical and
2. a methylvinylpolysiloxane compatible with (1) having an average of at least three vinyl groups per molecule in amount of from 0.8 vinyl per SH to 1.2 vinyls per SH, and
3. a gellation inhibitor of the group consisting of



in which R is hydrogen, an alkyl radical of 1 to 10 carbon atoms or acetyl and R_1 to R_7 are each independently hydrogen or an alkyl radical of 1 to 12 carbon atoms.

3,873,500

PHOTOSENSITIVE POLYMERS

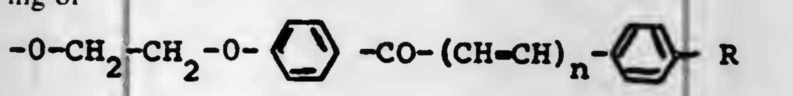
Masao Kato, Yokohama; Masaki Hasegawa, Tokyo, and Taro Ichijyo, Kamakura, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 46,836, June 16, 1970, abandoned. This application June 8, 1972, Ser. No. 272,931

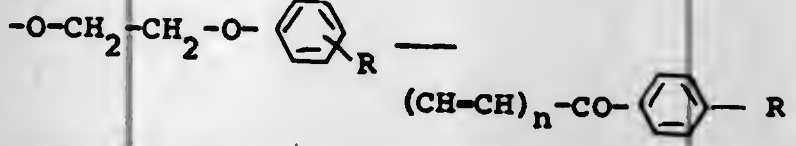
Int. Cl. C08f *3/40*

U.S. Cl. 260—47 UA **4 Claims**

1. A photosensitive polymer consisting of a polymerized vinyl chain of repetitive units selected from the group consisting of



and



wherein R is hydrogen, halogen, lower alkyl or lower alkoxy, and *n* is 1, 2 or 3.

3,873,501

1,2-EPOXY RESIN CURED WITH 3(β-METHYL-2-BUTENYL)-5-METHYL-1,2,3,6-TETRAHYDROPHTHALIC ANHYDRIDE

Motoo Saga, Ami-Machi, Japan, assignor to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 295,737, Oct. 6, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,926

Int. Cl. C08g *30/12*

U.S. Cl. 260—47 EA **3 Claims**

1. An epoxy resin composition which comprises a 1,2-polyepoxide resin which is cured with 0.1–10 moles per mole of epoxy in the epoxy resin of 3-(β-methyl-2-butenyl)-5-methyl-1,2,3,6-tetrahydrophthalic anhydride.

3,873,502

CYCLOALIPHATIC POLYTHIOLS AND COMPOSITIONS CONTAINING SAME

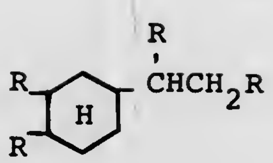
Richard A. Hickner, and Edward W. Goss, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 245,185, April 18, 1972, Pat. No. 3,828,100. This application Dec. 26, 1973, Ser. No. 427,606

Int. Cl. C08g *30/10*

U.S. Cl. 260—47 EC **10 Claims**

1. A curable composition comprising about 0.5 to 1.3 equivalents per equivalent of epoxide of a cycloaliphatic polythiol having the formula



in admixture with a polyepoxide resin having more than one 1,2-epoxide group per molecule where each R is —Cl, —Br, $—SR_1SH$ or $—OR_2SR_1SH$ provided that at least two of said R groups have a terminal thiol group, where R_1 is an alkylene group of 2 to 10 carbon atoms or an alkylene group of 2 to 10 carbon atoms having one or more —O— or —S— ether groups and where R_2 is an alkylene group of 2 to 4 carbon atoms.

3,873,503

PROCESS FOR THE PREPARATION OF A POLYAMIDE

Klaus Hoheisel, Wiesbaden-Biebrich; Gisela Jenik, Bensheim, and Walter Seifried, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden, Germany

Continuation-in-part of Ser. No. 46,794, June 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,515, Nov. 8, 1968, abandoned. This application Mar. 29, 1974, Ser. No. 456,364

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CB **4 Claims**

1. In the process for the preparation of a polyamide by reacting an organic diisocyanate with a dicarboxylic acid in an organic solvent, the improvement which comprises improving the solubility of the dicarboxylic acid and the polyamide in the inert solvent by reacting at least one organic diisocyanate selected from the group consisting of

decamethylene-1,10-diisocyanate,
toluene-2,4-diisocyanate,
toluene-2,6-diisocyanate,
3,3′-dimethyldiphenyl-4,4′-diisocyanate,
3,3′-dichlorodiphenyl-4,4′-diisocyanate,
diphenyl-4,4′-diisocyanate,
naphthalene-1,5-diisocyanate,
diphenylsulfone-4,4′-diisocyanate,
2,2-diphenylpropane-4,4′-diisocyanate,
diphenylmethane- 4,4′-diisocyanate,
diphenylether-4,4′-diisocyanate, and
hexamethylene-1,6-diisocyanate,

with at least one dicarboxylic acid selected from the group consisting of

-(4-methoxy-phenylcarboxy)-isophthalic acid
2,5-di(4-methoxy-phenylcarboxy)-terephthalic acid
2-(4-methoxy-phenylcarboxy)-terephthalic acid
2-(4-phenoxy-phenylcarboxy)-terephthalic acid
2-(2,4,6-trinitro-phenylcarboxy)-terephthalic acid
5-(4-N,N-dimethylamido-phenylcarboxy)-1,4-naphthalene dicarboxylic acid
4-(2-methoxy-phenylcarboxy)-1,5-naphthalene dicarboxylic acid
3-(3-methoxy-phenylcarboxy)-2,6-naphthalene dicarboxylic acid
2,5-(2-methoxy-ethylcarboxy)-1,4-naphthalene dicarboxylic acid
2,5-[2(2-methoxyethoxy)-ethylcarboxy]-1,4-naphthalene dicarboxylic acid
5,8-[2(2-methoxyethoxy)-ethylcarboxy]-1,4-naphthalene dicarboxylic acid
2,4-di2(2-methoxyethoxy)-ethylcarboxy -1,5-naphthalene dicarboxylic acid
4,10-di(4-methoxy-phenylcarboxy)-3,9-perylene dicarboxylic acid
1,8-di(2-methoxy-ethylcarboxy)-9,10-phenanthrene dicarboxylic acid
3,3′-di(2[2(2-methoxyethoxy)ethoxy]-ethylcarboxy)-2,2′-diphenyl dicarboxylic acid
3,3′-di(2-methoxy-ethylcarboxy)-4,4′-benzophenone dicarboxylic acid
3,4′-di(2-nitro-propylcarboxy)-3′,4-benzophenone dicarboxylic acid
3,4′-di(2-phenoxy-ethylcarboxy)-3′,4-benzophenone dicarboxylic acid
4,4′-di(2-ethoxy-ethylcarboxy)-3,3′-benzophenone dicarboxylic acid
2-(N,N-dimethylamido-methylcarboxy)2′,3-benzophenone dicarboxylic acid
2,3′-di(3-methoxy-phenylcarboxy)-3,4′-benzophenone dicarboxylic acid
3,5-di(4-methoxy-phenylcarboxy)-2,4-furan dicarboxylic acid
3,6-di(2-methoxy-phenylcarboxy)-2,5-pyrazine dicarboxylic acid
3,3′-di(2-ethylcarboxy)-4,4′-diphenyl sulfone dicarboxylic acid
3,3′-di(3-nitro-phenylcarboxy)-4,4′-diphenyl ether dicarboxylic acid
3,4′-di(4-methoxy-phenylcarboxy)-diphenyl-1,1-ethane-3′,4-dicarboxylic acid
3,3′-di(3-methoxy-phenylcarboxy)-dipheny-1,1-ethane-2,2′-dicarboxylic acid, and
5,4′-di(methoxy-phenylcarboxy)-dinaphthylketone-4,5′ dicarboxylic acid.

3,873,504

FLAME-RETARDANT COPOLYESTER RESIN CONTAINING DIALKYL TETRABROMO DIPHENOXYALKANE DICARBOXYLATES

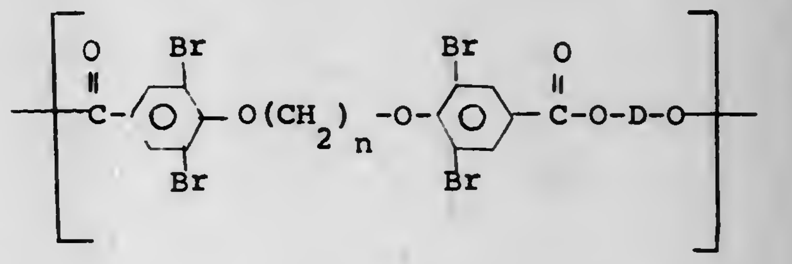
Richard R. Boettcher, and William N. Knopka, both of Wilmington, Del., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1973, Ser. No. 402,896

Int. Cl. C08g *17/04*

U.S. Cl. 260—47 C **6 Claims**

1. A filament-forming, copolyester resin of from at least 3 up to 15 mol percent of random ester units having the following general formula



wherein *n* is 2, 4 or 6 and D is the residue of a saturated diol, and from 97 to 85 mol percent of at least one different ester unit of a saturated organic dicarboxylic acid and a saturated diol, at least a major proportion of said organic dicarboxylic acid being an aromatic dicarboxylic acid.

3,873,505

NOVEL LIGHT-SENSITIVE COPOLYESTERS

Thomas M. Laakso, Rochester, N.Y., and Harold L. Van Nice, Pullman, Wash., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 247,069, April 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 19,064, March 12, 1970, abandoned. This application Nov. 16, 1973, Ser. No. 416,724

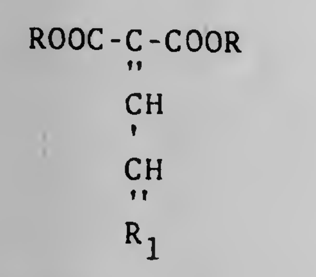
Claims priority, application France, Apr. 23, 1969, 69.12829

Int. Cl. C08g *17/10*

U.S. Cl. 260—75 UA **8 Claims**

1. A light-sensitive copolyester consisting of the condensation product of at least one alkylene glycol of 2 to 12 carbon atoms with a mixture of bis-esters of two-dicarboxylic acids, from 30 to 70 mole percent of the bis-esters being the bis-ester

of a non-light-sensitive aromatic dicarboxylic acid selected from the group consisting of terephthalic acid and isophthalic acid and, correspondingly, from 70 to 30 mole percent of the bis-esters being a light-sensitive bis-ester having the formula:



$$\begin{array}{c}\mathrm{ROOC{-}C{-}COOR}\\ \|\\ \mathrm{CH}\\ |\\ \mathrm{CH}\\ \|\\ \mathrm{R_1}\end{array}$$

wherein R is a lower alkyl group of 1 to 4 carbon atoms and R_1 is ethylidene, benzylidene, o-nitrobenzylidene, naphthylmethylene, furfurylidene, pyridylidene, quinolylidene, or benzothiazolylidene.

3,873,506
POLYTETRAHALOBENZENE DICARBOXYLIC ANHYDRIDES
James O. Knobloch, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed Jan. 21, 1974, Ser. No. 434,953
Int. Cl. C08f *5/00*
U.S. Cl. 260—78.4 R **5 Claims**

1. A resinous polytetrahalobenzene dicarboxylic anhydride, wherein the carboxylic groups are meta or para to each other.

3,873,507
PROCESS OF MANUFACTURING SULFUR-NITROGEN POLYMERS
Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Continuation-in-part of Ser. No. 839,084, July 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 732,840, May 29, 1968, abandoned. This application Oct. 8, 1970, Ser. No. 79,269
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **5 Claims**

1. The process of producing a polymeric material which comprises; forming a mixture of ethylamine and a polar solvent, containing ether linkages, adding thereto at least a stoichiometric amount of sulfur dichloride at a temperature of from about −100°C. to 80°C., and isolating the resultant polymeric material.

3,873,508
PREPARATION OF ACRYLONITRILE POLYMER
John J. Turner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 27, 1973, Ser. No. 428,809
Int. Cl. C08f *3/76, 15/02, 15/22*
U.S. Cl. 260—88.7 R **5 Claims**

1. In the preparation of acrylonitrile polymer containing at least 40 weight percent acrylonitrile by aqueous phase polymerization of monomer for extrusion into fibers and films; an improved process suitable for use in a coupled polymerization and extrusion process, wherein the improvement comprises initiating the polymerization in a reaction medium consisting essentially of water, free radical polymerization initiator, acrylonitrile monomer and optional comonomer in a pressure reactor maintained at a temperature within the range of about 120° to about 215°C. under at least autogenous pressure, continuously feeding water, polymerization initiator and acrylonitrile monomer and optional comonomer to the reactor at rates selected to give an average reactor working-volume hold-up time of 10 to 90 minutes and which provide a monomer/water ratio within the range of about 0.25 to about 4, and about 0.01 to about 1.0 percent of initiator based on the weight of monomer present, continuously removing acrylonitrile polymer-hydrate melt from the bottom of the reactor, and then removing free-phase water and any unconverted, volatile monomer from the polymer-hydrate melt.

3,873,509
PROCESS OF PREPARING PEPTIDES USING DIPHENYL PHOSPHORYL AZIDE
Masahiko Meguro, Takarasuka, Japan, assignor to Daiichi Pure Chemicals Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1973, Ser. No. 332,501
Claims priority, application Japan, Feb. 15, 1972, 47-15897
Int. Cl. C07c *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.5 **5 Claims**

1. A method for producing a peptide which comprises reacting a N-protected reactant peptide with an amino acid ester or a peptide ester in a solvent with diphenyl phosphoryl azide in the presence of triloweralkylamine.

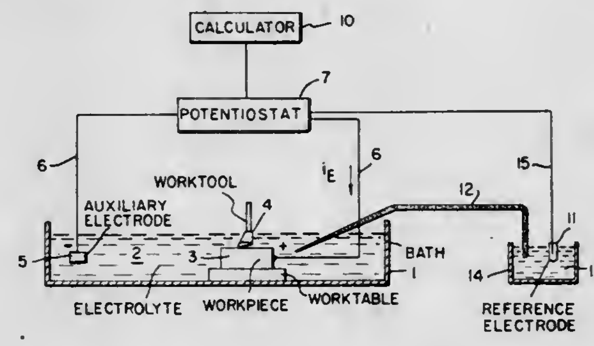
3,873,510
PEPTIDES OF ACTH ACTIVITY CONTAINING α-AMINOOXY CARBOXYLIC ACID ON THE N-TERMINAL MOIETY, AND A PROCESS FOR THE PREPARATION THEREOF
Lajos Kisfaludy; Miklos Low; Lajos Dancsi; Istvan Schon; Tamas Szirtes; Olga Nyeki; Maria Szirmai; Laszlo Szporny, and Gyorgy Hajos, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary
Filed Aug. 15, 1973, Ser. No. 388,546
Claims priority, application Hungary, Aug. 18, 1972, RI 480
Int. Cl. C07c *103/52;* **A61k** *17/06*
U.S. Cl. 260—112.5 **3 Claims**

1. A peptide having a complete ACTH sequence from the N-terminal amino acid at least to the sixteenth amino acid wherein the first amino acid is replaced by an α-aminooxy acid selected from the group consisting of the α-aminooxy acids corresponding to glycine, L-alanine, D-alanine, L-serine and D-serine, and wherein the second amino acid is tyrosine or phenylalanine, the third amino acid is serine or glycine, the fourth amino acid is methionine, leucine, norvaline, norleucine or amino butyric acid, the fifth amino acid is glutamic acid or glutamine, the fifteenth and sixteenth amino acids are lysine or ornithine, and a salt of the said peptide with hydrochloric, sulfuric phosphoric, formic, acetic, lactic, tartaric, citric or fatty acids, the amide of the said peptide and a complex of said peptides with gelatine, carboxymethylcellulose, alginates, polyphlorethynphosphate, polymeric amides, the hydroxides or phosphates or pyrophosphates of zinc or silicates.

3,873,511
(1-α-AMINOISOBUTYRIC ACID)-CORTICOTROPIN PEPTIDES
Hideo Otsuka, Mino, and Ken Inouye, Kobe, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
Filed Mar. 15, 1971, Ser. No. 124,549
Claims priority, application Japan, Mar. 16, 1970, 45-22190; May 7, 1970, 45-38878
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **3 Claims**

1. A member selected from the group consisting of α-aminoisobutyryl-L-tyroxyl-L-seryl-L-methionyl-L-glutamyl-L-histidyl-L-phenylalanyl-L-arginyl-L-tryptophyl-glycyl-L-lysyl-L-prolyl-L-valyl-glycyl-L-lysyl-L-lysyl-L-arginyl-L-arginine amide and non-toxic acid addition salts thereof.

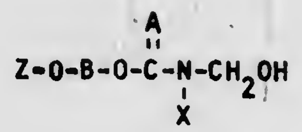
3,873,512
MACHINING METHOD
Ronald M. Latanision, Columbia, Md., assignor to Martin Marietta Corporation, New York, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,724
Int. Cl. B23p *1/04*
U.S. Cl. 204—129.46 **16 Claims**



1. A method of machining a metallic workpiece with a worktool comprising passing an electrolyte in contact with a workpiece; immersing an auxiliary electrode in said electrolyte; providing a reference electrode; passing a current between said auxiliary electrode and said workpiece sufficient to maintain a predetermined potential between said workpiece and said reference electrode, thereby controlling the mechanical and physical properties of the workpiece without significantly chemically deplating metal from the workpiece; and removing metal from the workpiece principally by the frictional movement of the worktool in direct contact with the workpiece.

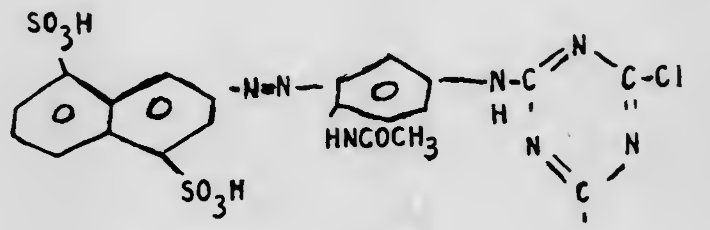
3,873,513
METHYLOLATED REACTION PRODUCT OF A HYDROXY CARBAMATE AND A CELLULOSE-DYEING AZO DYESTUFF CONTAINING A CHLOROTRIOZINYL GROUP
Russell M. H. Kullman, Metairie, and Robert M. Reinhardt, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Division of Ser. No. 751,697, Aug. 6, 1968, abandoned. This application May 13, 1971, Ser. No. 143,168
Int. Cl. C09b *62/06, 62/08;* **D06p** *3/66*
U.S. Cl. 260—146 T **3 Claims**

1. The dyestuff having the formula

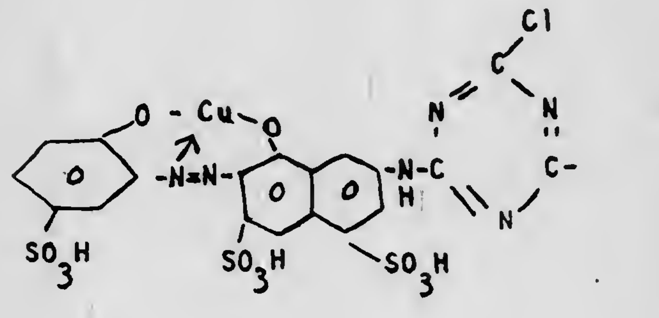


$$\mathrm{Z{-}O{-}B{-}O{-}\overset{\overset{\displaystyle A}{\|}}{C}{-}\underset{\underset{\displaystyle X}{|}}{N}{-}CH_2OH}$$

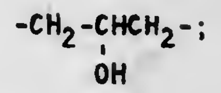
wherein Z is a chromophoric radical selected from the group consisting of



and

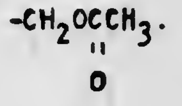


B is $-CH_2CH_2-$, $-CH_2CH_2CH_2-$, or



$$-\mathrm{CH_2{-}\underset{\underset{\displaystyle OH}{|}}{C}HCH_2{-}};$$

A is —O— or —S—; and X is —H, $-CH_2OH$, $-CH_2OCH_3$, or



$$-\mathrm{CH_2O\underset{\underset{\displaystyle O}{\|}}{C}CH_3}.$$

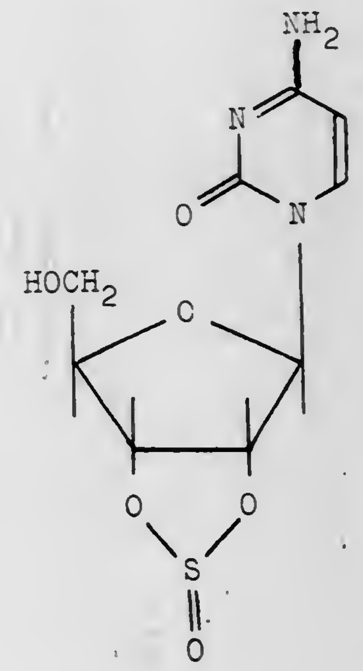
3,873,514
PREPARATION OF GEL FOR AFFINITY CHROMATOGRAPHY
Albert E. Y. Chu, El Cerrito, and Christopher J. Siebert, Berkeley, both of Calif., assignors to Bio-Rad Laboratories, Richmond, Calif.
Filed May 17, 1974, Ser. No. 470,775
Int. Cl. C08b *25/00*
U.S. Cl. 260—209.6 **11 Claims**

1. A method for improving the physical and chemical characteristics of agarose beads while obtaining improved flow and packing properties comprising:

a. combining in an aqueous medium under mild conditons at an alkaline pH agarose beads with 1,3-dihalopropanol-2, wherein halogen is of atomic number 17 to 35, in an amount of from about 0.5 to 50 mmole per gram of agarose, for a time sufficient to provide the desired degree of cross-linking; and
b. washing the cross-linked agarose beads free of unreacted 1,3-dihalopropanol-2.

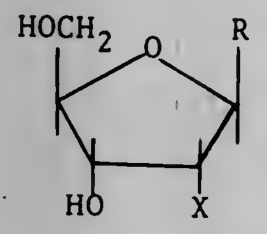
3,873,515
PROCESS FOR PRODUCING 2,2-ANHYDRO-(1-β-D-ARAINOFURANOSYL)CYTOSINE
Tuneo Sowa; Toshiatsu Kusaki; Kozo Tunoda; Norio Akimoto; Kunio Iithuka, and Teruo Miyaji, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Apr. 17, 1972, Ser. No. 244,557
Claims priority, application Japan, Apr. 15, 1971, 46-23482; Apr. 16, 1971, 46-23908
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **7 Claims**

1. 2′,3′-O-sulfinylcytidine represented by the formula,



3,873,516
PROCESS FOR THE PREPARATION OF 1-[β-D-2-SUBSTITUTED-2-DEOXYRIBOFURANOSYL]-PYRIMIDINES
Michael Paul Kotick, and Joseph Odo Polazzi, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed May 29, 1973, Ser. No. 364,701
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **4 Claims**

1. An improved method for preparing a 1-(β-D-2′-substituted-2′-deoxyribofuranosyl)-pyrimidine having the formula



in which R is selected from the group consisting of uracil, cytosine, and thymine, and X is sulfhydryl, wherein a first reactant selected from the group consisting of 2,2′-anhydro-1-(β-D-arabinofuranosyl)-uracil, -thymine, and -cytosine is reacted with anhydrous hydrogen sulfide, wherein the improvement consists essentally of:

reacting the first reactant with the second reactant in N,N-dimethylformamide at a temperature of from about 75°C to about 150°C.

3,873,517
MODIFIED NITROCELLULOSE PARTICLES
Thomas Liggett, Indian Head, and Gregory C. Cox, Marlow Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 17, 1974, Ser. No. 434,467
Int. Cl. C06b *19/02;* **C08b** *21/02*
U.S. Cl. 260—220 **11 Claims**

1. In a method for making plastisol nitrocellulose comprising
   a. mixing a nitrocellulose and a solvent for nitrocellulose to form a nitrocellulose lacquer;
   b. mixing the lacquer with water to form a mixture;
   c. emulsifying the mixture under high shear mixing conditions;
   d. recovering the nitrocellulose in particle form the improvement which comprises:
   dispersing a finely divided solid in the solvent prior to mixing the solvent with nitrocellulose; wherein the solid is
      1. dispersible in the solvent,
      2. compatible with nitrocellulose,
      3. insoluble in the solvent,
      4. non reactive with the solvent and
      5. present in an amount up to about 30% by weight of the nitrocellulose to distribute the solid therein.

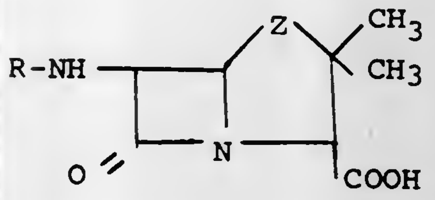
8. A plastisol nitrocellulose particle having finely divided solids uniformly distributed therethrough wherein:
   the solids are compatible with the nitrocellulose particle;
   the solids comprise up to 30% by weight of the nitrocellulose particle; and
   the solids have a particle size range up to 10% of the size of the plastisol nitrocellulose particle.

3,873,518
WATER SOLUBLE TERNARY CELLULOSE ETHERS
Carl P. Strange, Walker; Robert T. Sylvest, and Joseph G. Schell, Jr., both of Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 14, 1973, Ser. No. 425,041
Int. Cl. C08b *11/00*
U.S. Cl. 260—231 A **20 Claims**

1. A water soluble hydroxyethyl hydroxypropyl methyl cellulose having a total degree of substitution greater than about 1.5, a methoxyl content of about 6–12.5 wt. %, a hydroxypropoxyl content of about 14–32 wt. %, a hydroxyethoxyl content of about 10–22 wt. %, and a thermal gel point greater than about 70°C.

3,873,519
PREPARATION OF ESTERS OF PENICILLANIC ACIDS
Roy Bywood, Ulverston; John Charles Clayton, Harrow; George Ross Taylor, Grange over Sands, and Herbert James White, Chalfont St. Giles, all of England, assignors to Glaxo Laboratories Limited, Greenford, England
Continuation-in-part of Ser. No. 37,879, May 15, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,557
Claims priority, application United Kingdom, May 20, 1969, 25746/69; July 18, 1969, 36385/69
Int. Cl. C07d *99/22*
U.S. Cl. 260—239.1 **4 Claims**

1. A process for the preparation of a 2,2,2-trichloroethyl or t-butyl ester of a penicillanic acid of the formula

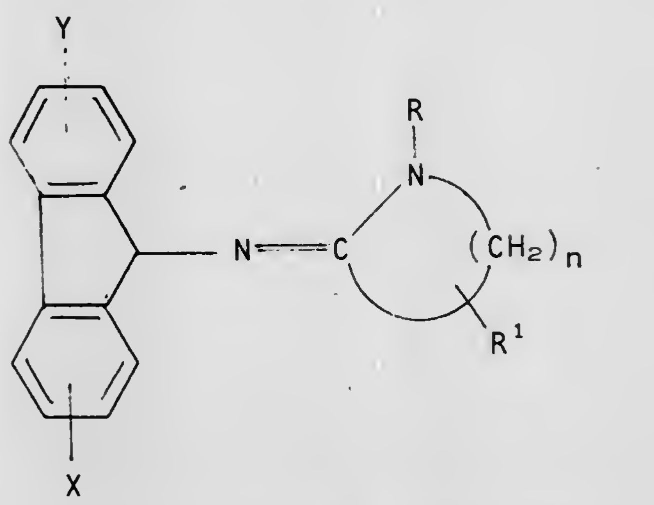


wherein R is phenylacetyl, phenoxyacetyl, thienylacetyl, phenylglyoxylyl or protected α - aminophenylacetyl and Z is S, SO or SO_2 which comprises contacting an alkali metal, tri (lower alkyl) ammonium, piperidinium, N-(lower alkyl) piperidinium or benzylammonium salt of said penicillanic acid with a chloroformic or bromoformic acid ester of 2,2,2-trichloroethanol or T-butanol in an inert, substantially anhydrous organic solvent selected from the group consisting of methylene chloride, chloroform, 1,2-dichloroethane, acetone, benzene, tetrahydrofuran and mixtures thereof at a temperature between about −20° and about +30°C, in the absence of any base other than is necessary to bring the penicillanic acid salt into solution, to form the corresponding mixed anhydride and then effecting decarboxylation of said mixed anhydride by contact with a weak tertiary base selected from the group consisting of pyridine and lower alkyl pyridines at a temperature from about −20° to about +50°C, the decarboxylation being effected in the presence of from about 0.1 to about 0.9 molar equivalents, based on the penicillin, of said chloroformic or bromoformic acid ester and from about 0.03 to about 0.3 molar equivalents, based on the penicillin, of water.

3,873,520
9-FLUORENYL LACTAMIMIDES
Thomas R. Blohm; Norbert L. Wiech, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Richardson-Merrell, Inc., Wilton, Conn.
Continuation-in-part of Ser. No. 143,257, May 13, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,996
Int. Cl. C07d *27/04, 29/28, 41/04*
U.S. Cl. 260—239 B **6 Claims**

1. A compound selected from

A. A compound of the formula

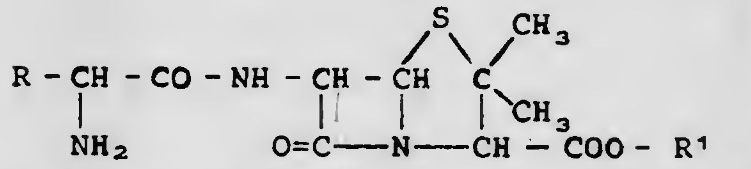


or

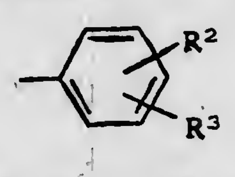
B. a pharmaceutically acceptable acid addition salt thereof, wherein *n* is an integer of 3 to 11, R is selected from hydrogen or lower alkyl of from 1 to 4 carbon atoms, R^1 is selected from hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms and X and Y which may be the same or different are each individually selected from hydrogen, halogen, lower alkyl of from 1 to 4 carbon atoms, lower alkoxy of from 1 to 4 carbon atoms, or nitro.

3,873,521
ESTERS OF α-AMINO PENICILLINS
Bertil Ake Ekstrom, and Berndt Olof Harald Sjoberg, both of Sodertalje, Sweden, assignors to Astra Lakemedal Aktiebolag, Sodertalje, Sweden
Filed Sept. 7, 1971, Ser. No. 178,426
Claims priority, application Sweden, Sept. 17, 1970, 12688/70; Nov. 20, 1970, 15720/70
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **14 Claims**

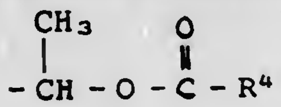
1. A compound of the structural formula



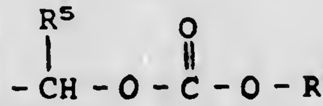
and pharmaceutically acceptable acid addition salts thereof in which formula R is the radical



wherein R^2 is selected from the group consisting of hydrogen and hydroxy and R^3 is selected from the group consisting of hydrogen and halogen, such as chlorine and fluorine, and wherein R^1 is selected from the group consisting of



$$-\overset{\overset{\displaystyle CH_3}{|}}{CH}-O-\overset{\overset{\displaystyle O}{\|}}{C}-R^4$$



$$-\overset{\overset{\displaystyle R^5}{|}}{CH}-O-\overset{\overset{\displaystyle O}{\|}}{C}-O-R^4$$

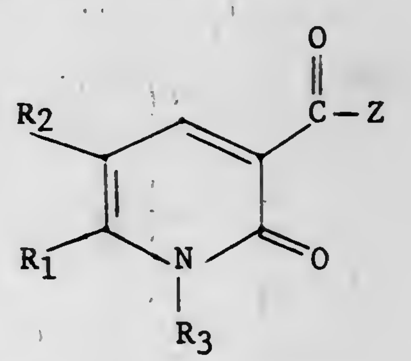
in which formulas R^4 is selected from the group consisting of alkyl groups containing one to four carbon atoms; and R^5 is selected from the group consisting of H and $—CH_3$.

3,873,522
METHOD FOR PRODUCING FREE FLOWING EPICILLIN
Michael Dudley Ward, Bromborough, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Oct. 10, 1972, Ser. No. 296,391
Claims priority, application United Kingdom, Nov. 22, 1971, 54162/71
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **9 Claims**

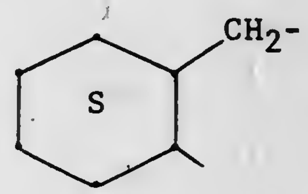
1. A method for producing free flowing epicillin which comprises precipitating epicillin from aqueous strong mineral acid solution at a pH below about 2 containing about 0.10 to 1.0 percent of cationic surface active agent by the addition of alkali at a temperature of about 15° to 20° C. and isolating said free flowing epicillin.

3,873,523
DERIVATIVES OF AMPICILLIN
Leonard Doub, and James S. Kaltenbronn, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Filed Dec. 15, 1972, Ser. No. 315,632
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 **9 Claims**

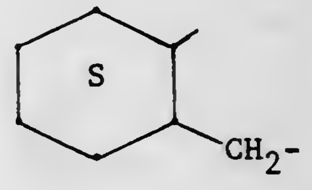
1. Amide compounds having the formula



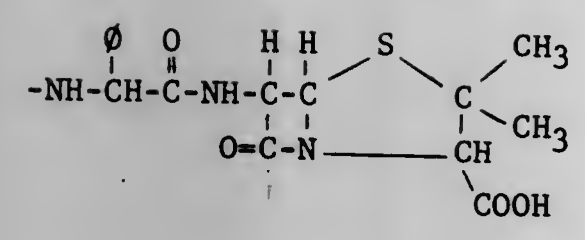
and pharmaceutically-acceptable salts thereof; where R_1 is cyclopentylmethyl, cyclopentenylmethyl, cyclohexyl, cyclohexylmethyl, benzyl, phenethyl, adamantyl, methoxybenzyl, hydroxybenzyl, chlorobenzyl, furfuryl, thenyl, pyridyl, furyl or thienyl; R_2 is hydrogen or together with R_1 represents the group



or the group



R_3 is hydrogen or methyl; and Z is an ampicillin residue having the formula



3,873,524
4-OXO-THIAZOL INO/IDINE-5-YLIDENEACETAMIDO PENICILLANIC ACIDS

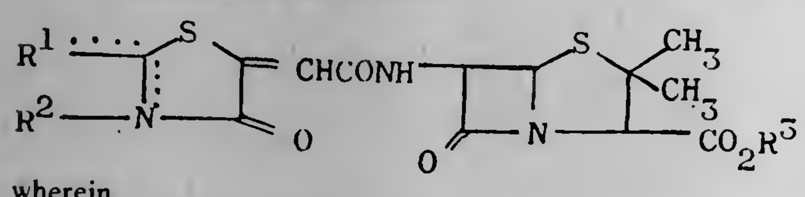
John H. Sellstedt, Pottstown; Daniel M. Teller, Devon, and Charles J. Guinosso, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,408

Int. Cl. C07d *99/14*

U.S. Cl. 260—239.1 **4 Claims**

1. A compound of the formula:



wherein

R^1 is a member selected from the group consisting of di(-lower)-alkylamino and (lower)alkylimino;

R^2 is a member selected from the group consisting of —H and (lower)alkyl; and

R^3 is a member selected from the group consisting of —H, and an alkali metal cation.

3,873,525
PREPARATION OF
1-ALKYL-1,4-BENZODIAZEPIN-2-ONES

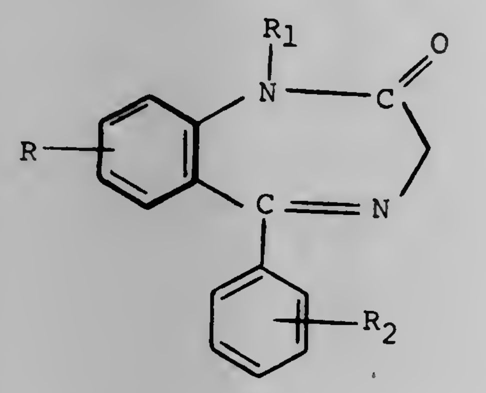
Leo Henryk Sternbach, Upper Montclair, and Robert Ye-Fong Ning, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1973, Ser. No. 392,598

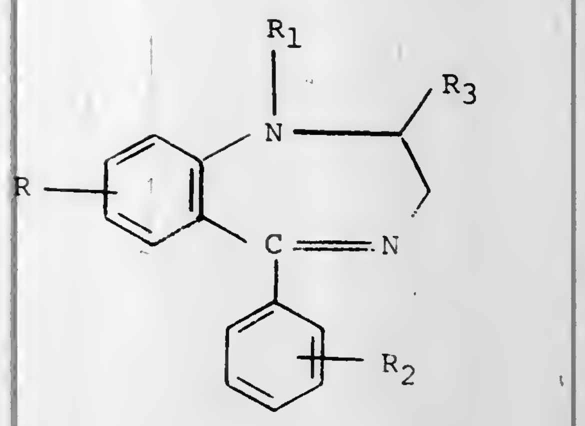
Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **1 Claim**

1. A process for preparing a compound of the formula



wherein R signifies hydrogen, halogen, nitro, or trifluoromethyl, R_1 signifies lower alkyl and R_2 signifies hydrogen or halogen comprising oxidizing a compound of the formula



wherein R, R_1 and R_2 are as described above and R_3 is selected from the group consisting of cyano, carboxamido, carboxyl, and lower alkoxy-carbonyl

with an oxidizing agent selected from the group consisting of alkali metal permanganates, chromic acid and chromium trioxide in aqueous acetic acid.

3,873,526
DIAZA-OXA-BICYCLODECANE DERIVATIVES AND PRODUCTION THEREOF

Takashi Kamiya, Suita; Shizuo Maeno, Osaka, and Masahi Hashimoto, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co. Ltd., Osaka, Japan

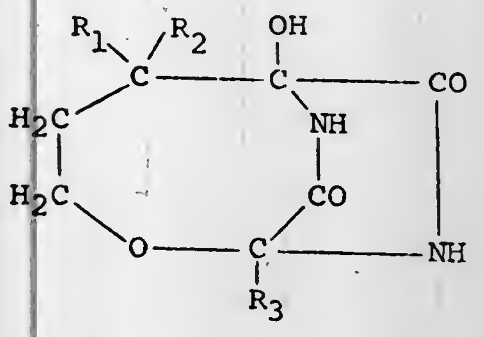
Filed Aug. 30, 1973, Ser. No. 392,944

Claims priority, application Japan, Sept. 8, 1972, 47-90675

Int. Cl. C12d *13/00;* **C07d** *99/02*

U.S. Cl. 260—239.3 B **7 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are linked together to form methylene or R_1 is hydrogen and R_2 is methyl; R_3 is formyl, hydroxymethyl, $—CH(OH)—C(OH)(CH_3)—CH_2OH$, or $—CH(OH)OR_4$ in which R_4 is hydrogen or a lower alkyl group, with the proviso that when R_3 is $—CH(OH)—C(OH)(CH_3)—CH_2OH$, R_1 is hydrogen and R_2 is methyl.

3,873,527
QUATERNARY AMMONIUM SALTS OF 17-PROPARGYLAMINES OF STEROIDAL DITHIOKETALS

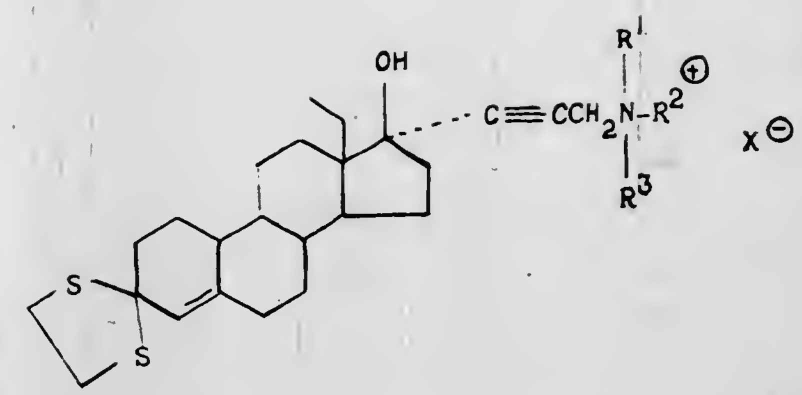
Gerhard R. Wendt, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 315,780, Dec. 15, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,828

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.5 **4 Claims**

1. A compound of the formula:



in which

R^1, R^2 and R^3 are independently lower alkyl radicals, and

X is a halogen

3,873,528
INDOLINE DYESTUFFS

Hans-Peter Kuhlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

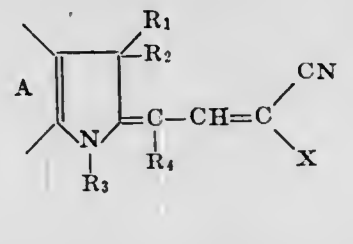
Filed Mar. 9, 1973, Ser. No. 339,828

Claims priority, application Germany, Mar. 11, 1972, 2211959

Int. Cl. C07d *27/36;* **C09b** *23/00*

U.S. Cl. 260—240 J **10 Claims**

1. Indoline dyestuff of the formula



in which

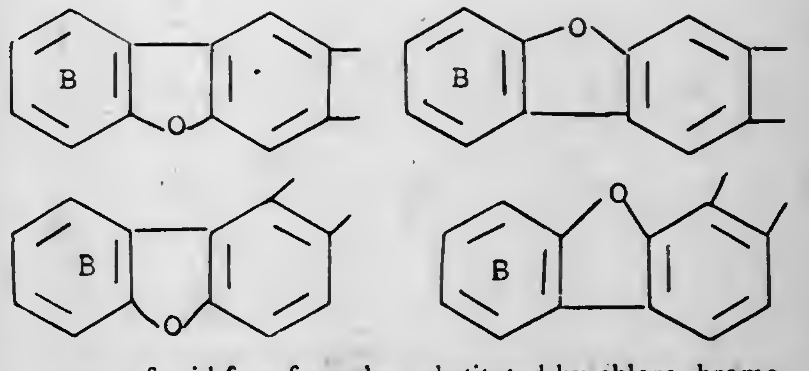
R_1 and R_2, independently of each other, are methyl, ethyl, cyclohexyl, phenylalkyl of 1–4 carbon atoms in the alkyl portion, or phenylalkyl of 1-4 carbon atoms in the alkyl portion wherein the phenyl portion is substituted by chloro, C_1-C_4-alkyl or C_1-C_4-alkoxy;

R_1 and R_2, when joined together are cyclopentyl or cyclohexyl;

R_3 is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkenyl, C_1-C_6-hydroxyalkyl, C_1-C_6-hydroxyalkenyl, C_1-C_6-chloroalkyl, C_1-C_6-chloroalkenyl, C_1-C_6-bromoalkyl, C_1-C_6-bromoalkenyl, C_1-C_6-cyanoalkyl, C_1-C_6-cyanoalkenyl, C_1-C_6-alkoxy, -alkylosubstituted by C_1-C_4-alkoxy, 1-C_6-alkenyl substituted by C_1-C_4-alkoxy, C_1-C_6-alkylosubstituted by $CONH_2$, C_1-C_6-alkenyl substituted by $CONH_2$, C_1-C_6-alkyl substituted by C_1-C_4-alkoxycarbonyl, C_1-C_6-alkenyl substituted by C_1-C_4-alkoxycarbonyl, C_1-C_6-alkenyl substituted by C_1-C_4-alkoxycarbonyl, C_1-C_6-alkyl substituted by C_1-C_4-alkylcarbonyloxy, C_1-C_6-alkenyl substituted by C_1-C_4-alkylcarbonyloxy, cyclohexyl, naphthyl, phenyl, chlorophenyl, bromophenyl, fluorophenyl, C_1-C_4-alkylphenyl, C_1-C_4-alkoxyphenyl, phenylalkyl of 1-4 carbon atoms in the alkyl portion, or phenylalkyl of 1-4 carbon atoms in the alkyl portion wherein the phenyl portion is substituted by chloro, C_1-C_4-alkyl, or C_1-C_4-alkoxy,

R_4 is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkenyl, cyano, carbamoyl, N-(C_1-C_4-alkyl) carbonyl, C_1-C_4-alkoxy-carbonyl, phenyl-(C_1-C_4-alkoxy) carbonyl, substituted C_1-C_6-alkyl or substituted C_1-C_6-alkenyl wherein the substituent in said alkyl or in said alkenyl is chloro, bromo, cyano, C_1-C_4-alkoxy, $CONH_2$, C_1-C_4-alkoxycarbonyl, or C_1-C_4-alkylcarbonyloxy,

A has the formula



or any of said four formulas substituted by chloro, bromo, fluoro, C_1-C_4-alkyl, benzyl, C_1-C_4-alkoxy, nitro, hydroxyl, cyano, CF_3, C_1-C_4-alkylcarbonyl, C_1-C_4-alkoxycarbonyl, carbamoyl, N-(C_1-C_4-alkyl) carbamoyl, C_1-C_4-alkylcarbonylamino, benzoylamino, toloylamino, sulphamoyl, N-(C_1-C_4-alkyl) sulphamoyl, N,N-di(C_1-C_4-alkyl) sulphamoyl, N,N-di(C_1-C_4-alkyl) sulphamoyl, C_1-C_4-alkylsulphonyl, phenylsulphonyl, tolysulphonyl, phenoxy, tolyloxy, or benzyloxy;

and additionally, ring B may be substituted by a fused benzene ring; and

X is cyano, $-CO_2Q$, or $-CONV_1V_2$ where Q is C_1-C_6-alkyl, C_1-C_6-alkenyl, C_1-C_6-hydroxyalkyl, C_1-C_6-hydroxyalkenyl, C_1-C_6-alkyl substituted by C_1-C_4-alkoxy, C_1-C_6-alkenyl substituted by C_1-C_4-alkoxy, phenoxy-C_1-C_6-alkyl, phenoxy-C_1-C_6-alkenyl, cyano-C_1-C_6-alkyl, cyano-C_1-C_6-alkenyl, cyclohexyl, methylcyclohexyl, cyclopentyl, furylmethyl, thienylmethyl, phenyl-C_1-C_4-alkyl, phenyl-C_1-C_4-alkenyl, substituted phenyl-C_1-C_4-alkyl, or substituted phenyl-C_1-C_4-alkenyl wherein said substituted phenyl portions are substituted in the phenyl rings by nitro, chloro, bromo, fluoro, methoxy or methyl;

V_1 and V_2, independently of each other, are hydrogen, C_1-C_6-alkyl, C_1-C_6-alkenyl, C_1-C_6-hydroxyalkyl, C_1-C_6-hydroxyalkenyl, C_1-C_6-alkyl substituted by C_1-C_4-alkoxy, C_1-C_6-alkenyl substituted by C_1-C_4-alkoxy, phenoxy-C_1-C_6-alkyl, phenoxy-C_1-C_6-alkenyl, cyano-C_1-C_6-alkyl, cyano-C_1-C_6-alkenyl, cyclohexyl, methylcyclohexyl, cyclopentyl, phenyl-C_1-C_4-alkyl, phenyl-C_1-C_4-alkenyl, substituted phenyl-C_1-C_4-alkyl, or substituted phenyl-C_1-C_4-alkenyl wherein said substituted phenyl portions are substituted on the phenyl ring by nitro, chloro, bromo, fluoro, methoxy or methyl; and

V_1 and V_2, when joined together with the N-atom, are morpholino, piperidino, N-methylpiperazino, thiomorpholino, or thiomorpholino dioxide.

3,873,529
NOVEL ANTIBIOTIC ASCOFURANONE AND PROCESS FOR THE PRODUCTION THEREOF

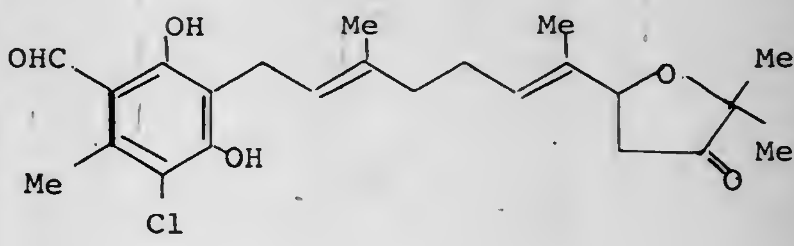
Hiroshi Sasaki; Tsuneo Okutomi; Tomoyoshi Hosokawa; Yoshiharu Nawata, and Kunio Ando, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1973, Ser. No. 364,033

Int. Cl. C07d *5/04*

U.S. Cl. 260—240 R **1 Claim**

1. A compound of the formula:



3,873,530
NOVEL IMMONIUM SALTS

Heinz Gunter Viehe, Beersel; Therese Van Vyve, Kraainhem, and Zdenek Janousek, Leuven, all of Belgium, assignors to Roussel UCLAF, Paris, France

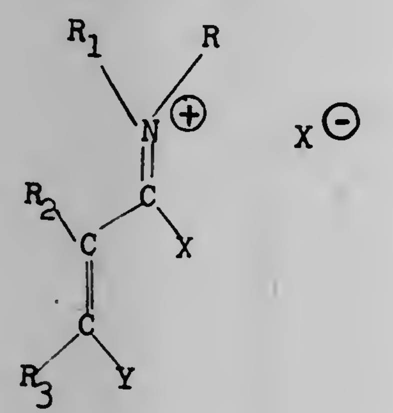
Filed June 21, 1973, Ser. No. 372,171

Claims priority, application France, June 28, 1972, 72.23349

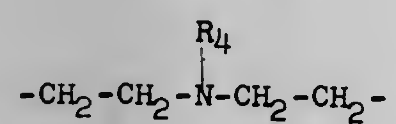
Int. Cl. C09b *23/00*

U.S. Cl. 260—240 R **12 Claims**

1. Immonium salts of the formula



wherein R and R_1 are individually selected from the group consisting of lower alkyl, phenyl optionally substituted with halogen and benzyl and taken together are selected from the group consisting of lower alkylene, $—CH_2—CH_2—O—CH_2—CH_2—$ and



$$-CH_2-CH_2-\overset{R_4}{N}-CH_2-CH_2-$$

where R_4 is alkyl of 1 to 5 carbon atoms, R_2 and R_3 are individually selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and phenyl and taken together are selected from the group consisting of alkylene of 3 to 5 carbon atoms and benzoalkylene of 7 to 10 carbon atoms, X is halogen and Y is selected from the group consisting of dilower alkylamino wherein the alkyl have 1 to 5 carbon atoms, morpholino, piperidino and 1-pyrrolidinyl.

3,873,531
2-{P-[2-(2-BENZOXAZOLYL)VINYL]PHENYL OXAZOLO} [5,4-B]PYRIDINE FLUORESCENT WHITENING AGENTS

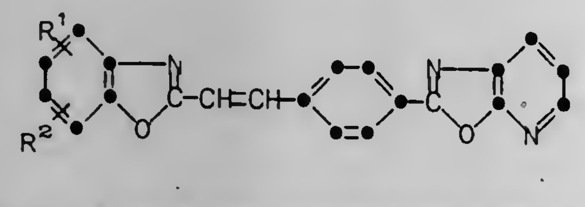
Edward U. Elam, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,399

Int. Cl. C07d *85/48*

U.S. Cl. 260—240 D **4 Claims**

1. The compounds having the formula



where R^1 and R^2 may be the same or different and are selected from hydrogen, alkyl containing from one to five carbon atoms, alkoxy containing from one to five carbon atoms, carbalkoxy containing from one to five carbon atoms in the alkyl moiety, and chlorine.

3,873,532
SULFUR DIOXIDE SCRUBBING PROCESS

Donald A. Dahlstrom, and Conrad F. Cornell, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 23, 1973, Ser. No. 353,260

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **23 Claims**

1. A continuous process for removing sulfur dioxide from a sulfur-dioxide bearing gas stream comprising the steps of:

a. passing the gas stream into and through a scrubbing zone and there scrubbing the gas by contact with an aqueous alkaline hydroxide scrubbing liquid to convert at least part of the sulfur-dioxide content of the stream to alkaline sulfite and sulfate ions in solution in the scrubbing liquid;

b. introducing a portion of said scrubbing liquid with said alkaline sulfite and sulfate ions into a first zone and there mixing it with solubilized calcium ions in the presence of finely divided calcium sulfite and calcium sulfate crystals to effect a reaction between said alkaline sulfite and sulfate ions and said calcium ions to precipitate additional calcium sulfite and calcium sulfate solids concomitantly with the regeneration of the aqueous scrubbing liquid by the formation of alkaline hydroxide therein;

c. separating said precipitated calcium sulfite and sulfate solids from said aqueous scrubbing liquid;

d. returning at least a portion of said separated calcium sulfite and sulfate solids to said first mixing zone;

e. reducing the calcium ion content of said regenerated scrubbing liquid by introducing said liquid into a second zone and there mixing it with carbonate ions in the presence of calcium carbonate solids to precipitate additional calcium as calcium carbonate; and

f. separating said aqueous scrubbing liquid from said calcium carbonate and introducing said regenerated liquid into said scrubbing zone to contact the sulfur-dioxide bearing gas stream therein.

17. A continuous process for removing sulfur dioxide from a sulfur-dioxide bearing gas stream comprising the steps of:

a. passing the gas stream into and through a scrubbing zone and there scrubbing the gas by contact with an aqueous alkaline hydroxide scrubbing liquid to convert at least part of the sulfur-dioxide content of the stream to alkaline sulfite and sulfate ions in solution in the scrubbing liquid;

b. separately introducing an oxygen-bearing material into said scrubbing liquid solution that contains said alkaline sulfite and sulfate ions to oxidize a portion of the sulfite ions to sulfate ions;

c. then in a first zone, mixing at least a portion of the resultant said solution with solubilized calcium ions in the presence of finely divided calcium sulfite and calcium sulfate crystals to effect a reaction between said alkaline sulfite and sulfate ions and said calcium ions to precipitate additional calcium sulfite and calcium sulfate solids concomitantly with the regeneration of the aqueous scrubbing liquid by the formation of alkaline hydroxide therein;

d. separating said precipitated calcium sulfite and calcium sulfate solids from said aqueous scrubbing liquid;

e. returning at least a portion of said separated calcium sulfite and sulfate solids to said first mixing zone;

f. reducing the calcium ion content of said regenerated scrubbing liquid by introducing said liquid into a second zone and there mixing it with carbonate ions in the presence of calcium carbonate solids to precipitate additional calcium as calcium carbonate; and

g. separating said aqueous scrubbing liquid from said calcium carbonate and introducing said regenerated liquid into said scrubbing zone to contact the sulfurdioxide bearing gas stream therein.

3,873,533
2-AMIDO-7-AMINO CEPHALOSPORANIC ACIDS AND RELATED COMPOUNDS

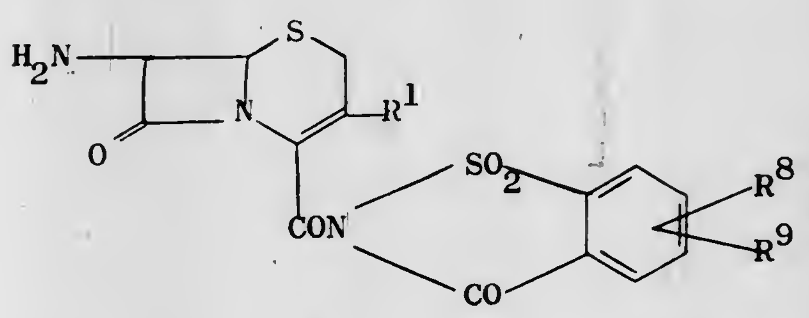
Richard Bogash, Philadelphia; Milton Wolf, West Chester, and John H. Sellstedt, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 843,783, July 22, 1969, Pat. No. 3,669,980. This application Jan. 18, 1971, Ser. No. 107,537

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula:



wherein

R^1 is a member selected from the group consisting of methyl, hydroxymethyl, and (lower)alkanoyloxymethyl;

R^8 and R^9 are independently members selected from the group consisting of hydrogen and lower alkyl;

and acid addition salts thereof.

3,873,534
[(PHENOTHIAZINYL)PROPYL]-PIPERIDYL-BENZIMIDAZOLINONES

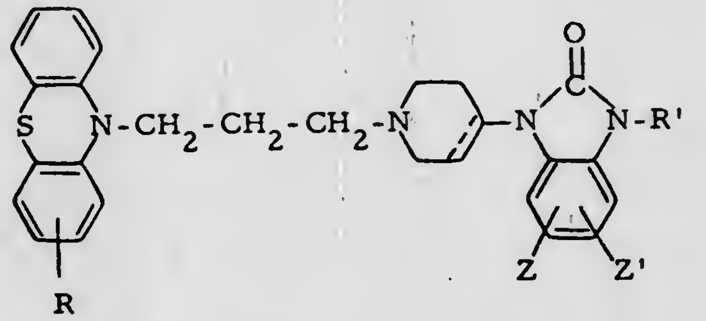
Willem Soudijn, Turnhout; Ineke Van Wijngaarden, Beerse, and Paul Adriaan Jan Janssen, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 333,855, Feb. 20, 1973, abandoned. This application Dec. 28, 1973, Ser. No. 429,245

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A **8 Claims**

1. A chemical compound selected from the group consisting of a [(phenothiazinyl)propyl]piperidyl-benzimidazolinone having the formula:



and the therapeutically active acid addition salts thereof, wherein R is a member selected from the group consisting of hydrogen, halo, trifluoromethyl and dimethylaminosulfonyl; Z and Z′ are selected from the group consisting of hydrogen, halo and methyl; R′ is selected from the group consisting of hydrogen and loweralkyl; and
the dotted line indicates an optional double bond.

3,873,535
2-SUBSTITUTED-3,4-DIHYDRO-3-OXO-2H-1,4-BENZOTHIAZINE-4-ACETIC ACID AND ESTERS THEREOF

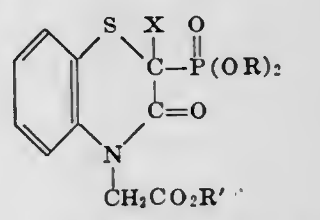
Jimmy Weldon Worley, and Kenneth Wayne Ratts, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 4, 1974, Ser. No. 439,511

Int. Cl. C07d *93/12*

U.S. Cl. 260—243 R **10 Claims**

1. A compound of the formula



wherein X is hydrogen or chlorine, and R and R′ are each independently hydrogen or lower alkyl.

3,873,536
2-(2-PYRIDYL)-H-TERTIARY AMINO METHYL-THIOACETAMIDES

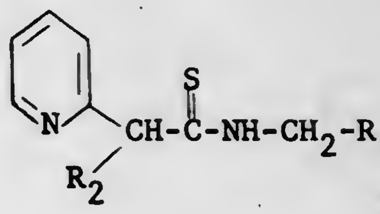
Henry C. Caldwell, Ambler, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 220,418, Jan. 24, 1972, abandoned. This application June 26, 1972, Ser. No. 266,181

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 M **10 Claims**

1. A compound of the formula



in which:

R_2 is hydrogen, lower alkyl, lower alkenyl or $—(CH_2)_n$-phenyl;

R_3 is di-lower alkylamino, N-lower alkyl-N-phenylamino, pyrrolidino, piperidino or morpholino and

n is 0 or 1

or a pharmaceutically acceptable acid addition salt thereof.

3,873,537
1-IMIDOCARBONYL-2-(1H)-PYRIDONES AND METHOD OF PREPARING SAME

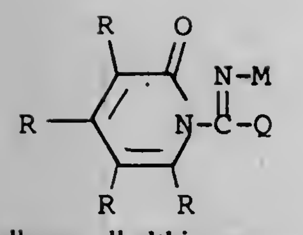
William Lawrence Parker, North Brunswick, and Saul Lewis Neidleman, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed May 28, 1971, Ser. No. 148,208

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **3 Claims**

1. A compound of the formula



wherein Q is alkyl, alkoxy, alkylthio, mono- or dicyclic carbocyclic aryl, mono- or dicyclic carbocyclic aryloxy, mono- or dicyclic carbocyclic arylthio, amino, monoalkylamino, dialkylamino, mono(mono- or dicyclic carbocyclic aryl)amino, di(monoor dicyclic carbocyclic aryl)amino, morpholino, piperidino, pyrrolidino, pyrrolino, pyrazolino, imidazolino, benzopyrrolidino, skatolino, 2-methylindolino, 2-phenylindolino, 1,2,3,4-tetrahydroquinolino, decahydroquinolino or carbazolino; and M is hydrogen, alkali metal, alkaline earth metal, Tl, CdQ, MgBr, MgQ or CaQ, with the proviso that together QM is a nucleophilic compound.

3,873,538

AMINO-9,10-DIHYDRO-9,10-DIOXO-2-ANTHROIC ACIDS

Alexander William Oxford, and Geoffrey Edward Gymer, both of London, England, assignors to Allen & Hansburys Limited, London, England

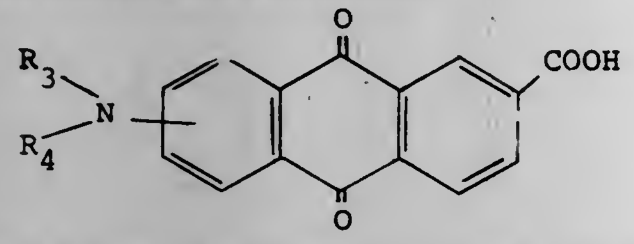
Filed July 19, 1971, Ser. No. 164,093

Claims priority, application United Kingdom, Aug. 5, 1970, 37724/70; Aug. 5, 1970, 37725/70

Int. Cl. C07d *29/24, 51/70, 87/36*

U.S. Cl. 260—247.2 R **12 Claims**

1. An anthraquinone of the formula:



wherein R_3 and R_4 are hydrogen, lower alkyl from 1 to 6 carbon atoms, hydroxyethyl or R_3 and R_4, together with the nitrogen atom, form a morpholino, piperidino, N-methylpiperazino or 2,6-dimethylmorpholi.10 group; or a pharmaceutically acceptable salt thereof.

3,873,539

SUBSTITUTED-4-AMINOACETYL ALKANOYLPHENONES

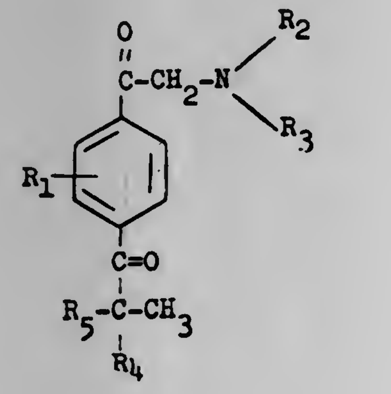
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 3, 1973, Ser. No. 403,009

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 R **9 Claims**

1. A compound of the formula

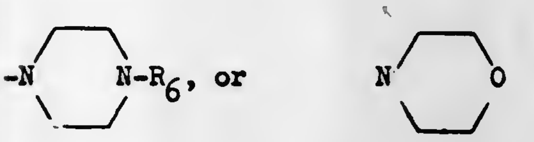


where

R_1 represents hydrogen, halo having an atomic weight of about 19 to 36, or straight chain lower alkoxy, and

R_2 and R_3 each independently represent alkyl having 1 to 2 carbon atoms, or

R_2 and R_3 together with N represent



where

R_6 represents alkyl having 1 to 2 carbon atoms, and

R_4 and R_5 each independently represent alkyl having 1 to 2 carbon atoms

or a pharmaceutically acceptable acid addition salt thereof.

3,873,540

1,3,5-TRIAZINEDIONES

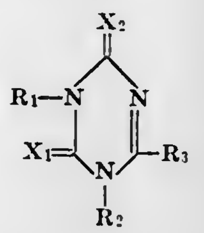
Julius Jakob Fuchs, Wilmington, and Kang Lin, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 325,358, Jan. 22, 1973, abandoned. This application Apr. 5, 1973, Ser. No. 348,322

Int. Cl. C07d *55/50*

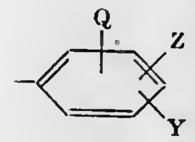
U.S. Cl. 260—248 NS **11 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 3through 8 carbon atoms, cycloalkyl of 3 through 8 carbon atoms, methylcyclopentyl, methylcyclohexyl, dimethylcyclohexyl, trimethylcyclohexyl, tetramethylcyclohexyl, cycloalkylalkyl of 4 through 7 carbon atoms, alkenyl of 3 through 4 carbon atoms, alkynyl of 3 through 4 carbon atoms, benzyl, or



where

Y is hydrogen, halogen, alkyl of 1 through 4 carbon atoms, nitro, alkoxy of 1 through 4 carbon atoms, alkylthio of 1 through 4 carbon atoms, cyano, or trifluoromethyl, and

Z is hydrogen, halogen, methyl, ethyl, nitro, alkoxy of 1 through 4 carbon atoms, or alkylthio of 1 through 4 carbon atoms; and

Q is hydrogen, halogen, or methyl;

R_2 is alkyl of 1 through 4 carbon atoms,

R_3 is SR_4 or OR_4 where

R_4 is alkyl of 1 through 6 carbon atoms, cycloalkyl of 3 through 6 carbon atoms, alkenyl of 3 through 4 carbon atoms, alkynyl of 3 through 4 carbon atoms, or benzyl, and

X_1 and X_2 are oxygen or sulfur.

3,873,541

AS-TRIAZINO[5,6-C]QUINOLINE DERIVATIVES

Edit Berenyi Nee Poldermann; Laszlo Pallos; Lujza E. Petocz; Peter Gorog; Zoltan Budai; Eniko Kiszelly, and Pal Benko, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

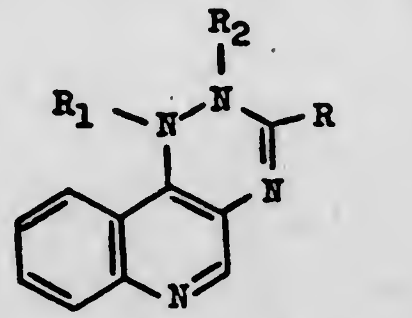
Filed May 1, 1973, Ser. No. 356,174

Claims priority, application Hungary, May 5, 1972, EE 2021

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 AS **1 Claim**

1. An as-triazino[5,6-c] qunoline derivative selected from the group consisting of a compound of the formula



(I)

in which R is a member selected from the group consisting of hydrogen and C_{1-4} alkyl, and R_1 and R_2 are each hydrogen or may form together a valence bond, and a pharmaceutically acceptable acid addition salt thereof.

3,873,542

3-AMINO-AS-TRIAZINO[6,5-C]QUINOLINE AND ITS 1-XIDE, AND A PROCESS FOR THE PREPARATION THEREOF

Edit Berenyi nee Poldermann; Laszlo Pallos; Lujza E. Petocz; Peter Gorog; Zoltan Budai; Eniko Kiszelly, and Pal Benko, all of Budapest, Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed May 1, 1973, Ser. No. 356,175

Claims priority, application Hungary, May 5, 1972, EE 2020

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 AS **2 Claims**

1. 3-Amino-as-triazino[6,5-c]quinoline or its salts.

3,873,543

3-SUBSTITUTED-AS-TRIAZINO(5,6-C) QUINOLINE DERIVATIVES

Edit Berenyi nee Poldermann; Laszlo Pallos; Pal Benko; Lujza E. Petocz; Peter Gorog; Zoltan Budai, and Eniko Kiszelly, all of Budapest, Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

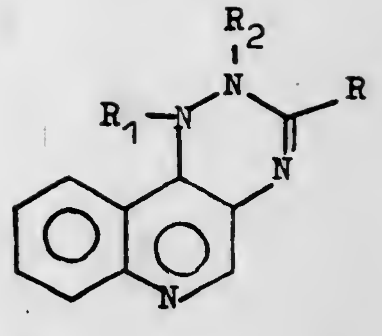
Filed May 7, 1973, Ser. No. 357,722

Claims priority, application Hungary, May 5, 1972, EE2022

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 AS **1 Claim**

1. A 3-substituted as-triazino[5,6-c]quinoline derivative selected from the group consisting of a compound of the formula



(I)

wherein

R is a member selected from the group consisting of phenyl, halophenyl, hydroxyphenyl, aminophenyl, methoxyphenyl, benzyl, methoxybenzyl and pyridyl;

R_1 to R_2 are each hydrogen or together form a chemical bond, and a pharmaceutically acceptable acid addition salt thereof.

3,873,544

CYANOALKYLAMINO-S-TRIAZINES

Manfred Kuehne, Pfeffingen, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 1, 1972, Ser. No. 276,995

Claims priority, application Switzerland, Aug. 5, 1971, 11526/71

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **4 Claims**

1. 2-chloro-4-(1′-cyano-1′-methyl-2′-methoxyethylamino)-6-ethylamino-s-triazine.

3,873,545

PYRIDO(2, 3d) PYRIMIDINES

Jean P. Osselaere, Alleur, and Charles L. Lapiere, Tongeren, both of Belgium, assignors to Les Laboratoires S.M.B., Anciens Etablissements J. Muelberger et R. Baudier, Molenbeek-St.-Jean, Belgium

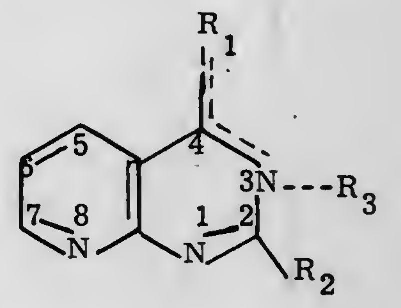
Filed Oct. 3, 1972, Ser. No. 294,650

Claims priority, application Luxembourg, Sept. 14, 1972, 66085; Oct. 5, 1971, 64010

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.5 R **15 Claims**

1. A substituted derivative of pyrido (2,3d) pyrimidine, having the formula:



I

wherein R_2 represents a pyridyl, phenyl, chlorophenyl, sulfonamidophenyl, sulfonamidochlorophenyl or nitrophenyl radical; R_1 represents a halogen, an alkoxy radical of 1 to 5 carbon atoms, an amino radical provided that R_2 is different from a 3-pyridyl radical, an alkylamino radical with 1 to 5 carbon atoms, a dialkylamino radical in which the alkyl radicals comprise 1 to 5 carbon atoms respectively, a morpholino, piperidino or pyrrolidino radical, a N-alkylpiperazino radical in which the alkyl radical comprises 1 to 5 carbon atoms, or an oxo or thio radical; and R_3 is nil when R_1 is a monovalent radical, or hydrogen (except when R_1 is oxo and R_2 is phenyl) or an alkyl radical having 1 to 5 carbon atoms.

3,873,546
CATALYTIC REDUCTION OF 4-METHYL-β,β-DIPHENYL-1-PIPERAZINE ETHANOL

Frank Carl Becker, Gurnee, and Frederik Hendrik Van Munster, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 6, 1974, Ser. No. 440,117

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **3 Claims**

1. The process of preparing a solution of N-(2-cyclohexyl-2-phenyl-2-hydroxyethyl)-N′-piperazine which is directly quaternizable, consisting essentially in hydrogenating a solution of N-(2,2-diphenyl-2-hydroxyethyl)-N′-methylpiperazine in anhydrous isopropanol in the presence of 1–5% by weight of finely divided rhodium based on said N-(2,2-dipehnyl-2-hydroxyethyl)-N′-methylpiperazine at a temperature of between room temperature and 85° C. at a hydrogen pressure of between 20 and 100 psi until 2.97 –3.3 molar equivalents of hydrogen are absorbed and removing the catalyst from said mixture.

3,873,547
THE SALT OF 3-NITRO-9-AMINOACRIDINE AND -(CIS)-1,2-EPOXYPROPYLPHOSPHONIC ACID

Burton G. Christensen, Scotch Plains; Nathan G. Steinberg, Plainfield, and Arthur A. Patchett, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 2, 1973, Ser. No. 356,525

Int. Cl. C07d *37/22*

U.S. Cl. 260—279 R **1 Claim**

1. The salt of (-)-cis-1,2-epoxypropylphosphonic acid and 3-nitro-9-aminoacridine.

3,873,548
2,9-DICARBOXYQUINACRIDONE AND METHODS FOR ITS PRODUCTION

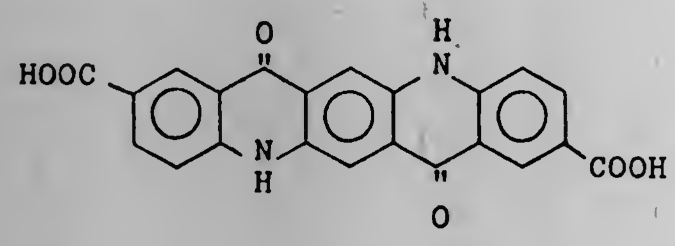
Felix Frederick Ehrich, Mexico City, Mexico, and Edward E. Jaffe, Union, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 140,984, May 6, 1971, Pat. No. 3,752,817. This application Mar. 7, 1973, Ser. No. 338,687

Int. Cl. C07d *39/00*

U.S. Cl. 260—279 R **2 Claims**

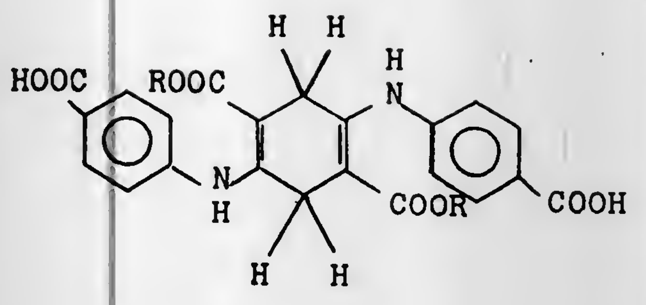
1. A process for the preparation of 2,9-dicarboxyquinacridone of the chemical formula



III

by the steps of

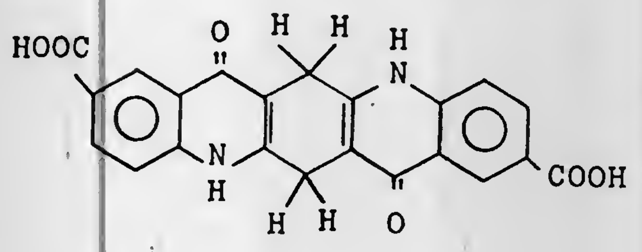
1. reacting dialkyl succinylsuccinate with p-aminobenzoic acid in a solvent at an elevated temperature under an inert atmosphere to yield dialkyl 2,5-di-(4-carboxyanilino)-3,6-dihydroterephthalate of chemical formula



IV

where R is alkyl of 1–4 carbons,

2. effecting the cyclization of IV in a high boiling solvent to yield 2,9-dicarboxy-(6,13-dihydroquinacridone) of chemical formula



VI

and

3. oxidizing VI in alcoholic NaOH in the presence of sodium m-nitrobenzene sulfonate to yield 2,9-dicarboxyquinacridone III.

3,873,549
PROCESSES AND INTERMEDIATES FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

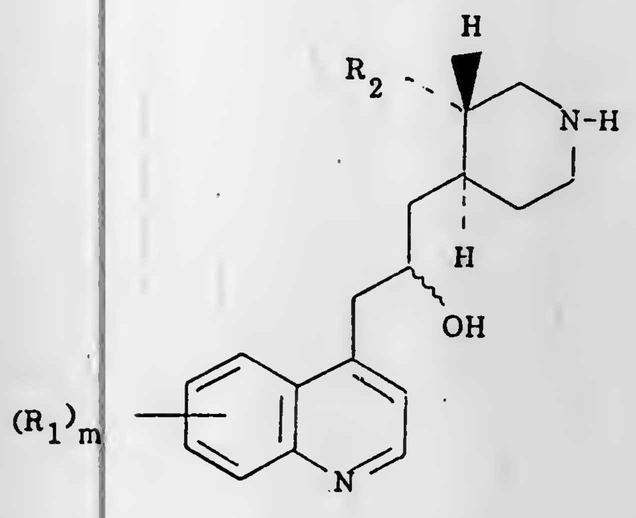
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,781

Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **1 Claim**

1. A compound of the formula



wherein *m* is 0, 1 or 2; R_1 is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl or butyl, or when *m* is 2, R_1, taken together with an adjacent R_1, is also methylenedioxy; R_2 is vinyl or ethyl; its antipode or racemate.

3,873,550
ANTIMICROBIAL BIS(DIHALONITRO-METHYL)PYRIDINES

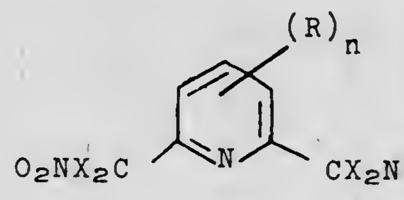
Emily J. Canada, and Henry Friedman, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 25, 1973, Ser. No. 409,557

Int. Cl. C07d *31/40*

U.S. Cl. 260—290 HL **5 Claims**

1. A compound of the formula



wherein

X represents chloro or bromo;

each of the R groups independently represents C_1–C_3 alkyl;

n represents 0–2.

3,873,551
4-ACETOXY-4′-SULFOXYDIPHENYL-(2-PYRIDYL)METHANE AND SODIUM SALT THEREOF

Tiberio Bruzzese; Giuseppe Ghielmetti, and Rodolfo Ferrari, all of Milan, Italy, assignors to SPA-Societa Prodotti Antibiotici S.p.A., Milan, Italy

Continuation of Ser. No. 153,434, June 15, 1971, abandoned. This application May 16, 1973, Ser. No. 360,941

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 R **2 Claims**

1. 4-Acetoxy-4′-sulphoxydiphenyl-(2-pyridyl)-methane.

3,873,552
PROCESS AND INTERMEDIATES FOR PREPARING 3-THIOLPICOLNIC ACID

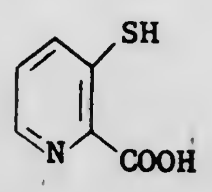
Benjamin Blank, Trevose, and John G. Gleason, Cornwell Heights, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed May 23, 1973, Ser. No. 363,237

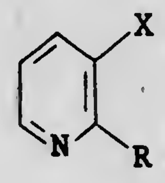
Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **4 Claims**

1. A process of preparing 3-thiolpicolinic acid of the formula:



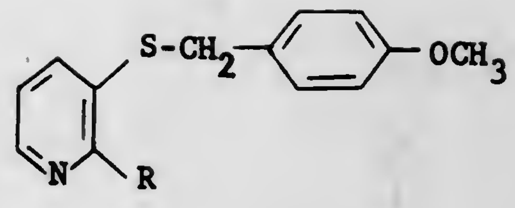
which comprises reacting a 3-halopyridine compound of the formula:



in which:

R is a group which is hydrolyzable to a carboxy group and
X is halo

with an alkali metal salt of p-methoxybenzyl mercaptan; hydrolyzing the 2-substituent of the resulting 2-R-3-(p-methoxybenzylthio)pyridine compound of the formula:



to a carboxy group and cleaving the p-methoxybenzyl group from the resulting 3-(p-methoxybenzyl)picolinic acid under non-reductive acid conditions in the presence of mercuric ion in formic acid or in trifluoroacetic acid and subsequent treatment with hydrogen sulfide.

3,873,553
PROCESS FOR PREPARING N-MONOSUBSTITUTED CARBAMATES

Colin John Hearsey, Surbiton, England, assignor to Quimco GmbH, Zurich, Switzerland

Filed Dec. 6, 1972, Ser. No. 312,752

Claims priority, application United Kingdom, Dec. 6, 1971, 56581/71

Int. Cl. C07c *125/06;* **C07d** *31/34*

U.S. Cl. 260—295 CA **11 Claims**

1. A process for making an N-monosubstituted carbamate which comprises introducing gaseous hydrogen chloride into a substantially anhydrous mixture at about 100° to 200°C. containing a trisubstituted urea having the formula

$$R(NHCONR'R'')_N$$

and an alcohol, phenol or naphthol having the formula

$$R'''OH$$

wherein R is alkyl having up to six carbon atoms, cyclohexyl, pyridyl, unsubstituted phenyl, 1,4 butylene, phenylene, methylene diphenylene or halogen, alkoxy, alkyl or nitrosubstituted phenyl, phenylene or methylene diphenylene, R′ and R″ are lower alkyl and R‴ is lower alkyl, 4-chlorobut-2-ynyl, phenyl, cyclohexyl or naphthyl and N is 1 or 2.

3,873,554
PREPARATION OF 1-ALKYL-1,4-DIHYDRO-7-SUBSTITUTED-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS VIA THE 3-CARBOXALDEHYDE ANALOGS

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 6, 1973, Ser. No. 338,613

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 B **4 Claims**

1. The process consisting of reacting 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine with phosphorus oxyhalide, phosphorus pentachloride, thionyl chloride, oxalyl chloride or phosphorus tribromide and dimethylformamide or N-methyl-N-phenylformamide followed by alkaline hydrolysis of the resulting 3-formiminium halide to produce 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxaldehyde, reacting the latter with a lower-alkylating agent to produce 1-(lower-alkyl)-1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxaldehyde, and reacting said 1-(lower-alkyl)-3-carboxaldehyde with an oxidizing agent capable of converting —CHO to —COOH to produce 1-(lower-alkyl)-1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxylic acid, where Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,873,555
PROCESS FOR THE MANUFACTURE OF BIPYRIDYLS

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 174,175, Aug. 23, 1971, abandoned, which is a division of Ser. No. 804,993, March 6, 1969, Pat. No. 3,651,071. This application Nov. 2, 1973, Ser. No. 412.093

Claims priority, application United Kingdom, Mar. 18, 1968, 13008/68; May 29, 1968, 25773/68; Dec. 20, 1968, 60714/68; Dec. 20, 1968, 60715/68; Dec. 20, 1968, 60716/68; Jan. 2, 1969, 246/69

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D **11 Claims**

1. A process for the manufacture of a bipyridyl selected from the group consisting of 4,4′-bipyridyls, 3,4′-bipyridyls and 2,4′-bipyridyls which comprises reacting the corresponding substituted pyridine with ammonia in the vapour phase at a temperature in the range of 250°C to 450°C and in the presence of a refractory oxide catalyst, the substituted pyridine being a substituted pyridine wherein the substituent is a group of the structural formula $-C(R)\ (R_1)\ (R_2)$ wherein R represents a hydrogen atom, and R_1 and R_2 each represents $-CH_2.CH_2(XR_4)$ or $-CH_2.CH(XR_4)_2$ wherein X represents an atom of sulphur or oxygen and R_4 represents a hydrogen atom, a lower alkyl, or vinyl.

3,873,556
AMINO DERIVATIVES OF PYRAZOLOPYRIDINE KETONES

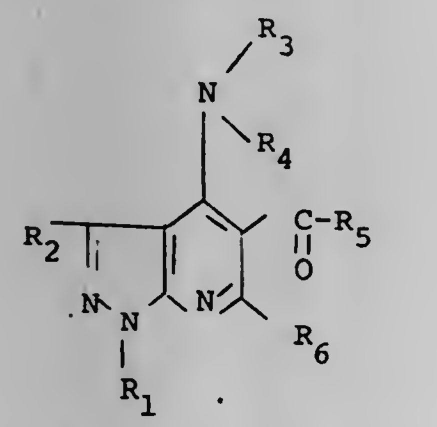
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 361,120, May 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 292,363, Sept. 26, 1972, Pat. No. 3,828,057, which is a continuation-in-part of Ser. No. 146,812, May 25, 1971, abandoned. This application Apr. 22, 1974, Ser. No. 462,846

Int. Cl. C07d *49/20*

U.S. Cl. 260—296 H **21 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or R_7, R_8-benzoyl, R_2 is hydrogen or lower alkyl, R_3 and R_4 each is hydrogen, lower alkyl, lower alkanoyl, halo-lower alkanoyl, cyclo-lower alkyl, R_7, R_8-phenyl, phenyl-lower alkylene, amino-lower alkylene, di-lower alkylamino-lower alkylene or R_3 and R_4 together with the nitrogen to which they are attached form one of the heterocyclics R_9, R_{10}-aziridinyl, R_9, R_{10}-pyrrolidino, R_7 and R_8 each is hydrogen, halogen, nitro, amino, lower alkoxy or trifluoromethyl, R_9 and R_{10} each is hydrogen, lower alkyl or hydroxy-lower alkyl, R_5 is alkyl up to 10 carbon atoms, cyclo-lower alkyl, phenyl or R_7-phenyl and R_6 is hydrogen or lower alkyl, and physiologically acceptable acid addition salts of said compound.

3,873,557
PROCESS FOR HYDROXY-METHYLATION OF A SUBSTITUTED 3-HYDROXY-PYRIDINE

Jean Abblard, Caluire & Cuire, and Rene Viricel, Lyon, both of France, assignors to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

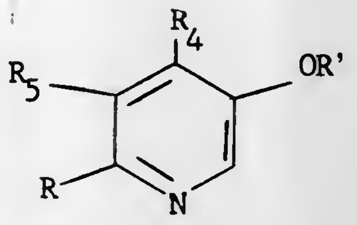
Filed Feb. 27, 1973, Ser. No. 336,187

Claims priority, application France, Mar. 1, 1972, 72.07772

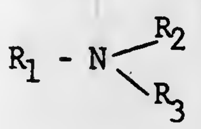
Int. Cl. C07D *31/28*

U.S. Cl. 260—297 R **8 Claims**

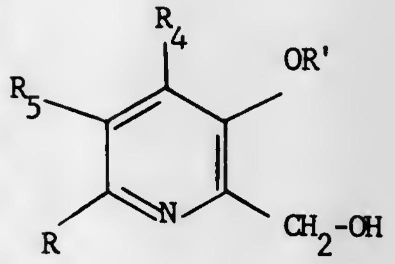
1. A process for the hydroxy-methylation in the 2-position of a 6-alkyl pyridine of the formula



wherein R is an alkyl of 1–4 carbons, R_4 is hydrogen or an alkyl of 1–4 carbons, R_5 is hydrogen and R′ is hydrogen; or when R_4 is hydrogen, R′ is hydrogen, an alkyl of 1–4 carbons or carboxy alkyl of 1–4 carbons, said process comprising reacting said 6-alkyl pyridine with formaldehyde in the presence of a tertiary amine of the formula



wherein R_1, R_2 and R_3 are alkyls of 1–3 carbons, to produce a 2-hydroxy methyl, 6-alkyl pyridine of the formula



3,873,558
PROCESS FOR PREPARING 1,5-SUBSTITUTED OR 1,6-SUBSTITUTED BENZIMIDAZOLES

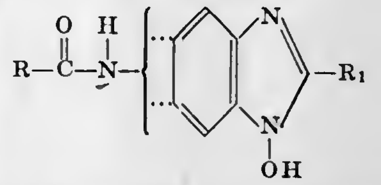
Victor J. Grenda, Warren, and Robert F. Czaja, Elizabeth, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 16,956, March 5, 1970, abandoned. This application Nov. 10, 1970, Ser. No. 88,493

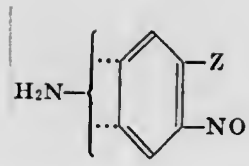
Int. Cl. C07d *99/10*

U.S. Cl. 260—302 H **4 Claims**

1. The process of preparing a 1-hydroxy-5-(or 6-) substituted benzimidazole, having the formula



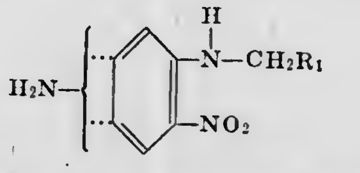
wherein R is lower alkoxy, phenyl, and p-fluorophenyl; and R_1 is a thiazolyl radical, which comprises (a) heating a nitrohaloaniline having the formula



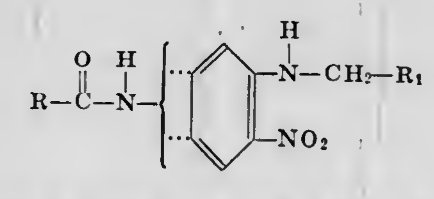
wherein Z is a halo group with an aminomethylthiazole of the formula

$$NH_2\text{-}CH_2\text{-}R_1$$

to prepare an N-(thiazolylmethyl)-aniline having the formula



(b) reacting one latter compound with a member selected from the group consisting of a loweralkylhaloformate, a benzoyl halide and a p-fluorobenzoyl halide in an organic solvent in the presence of an acid binding agent to prepare a compound of the formula



(c) and treating the latter compound with a strong base in a solvent to cyclize to the desired product;

the dotted lines in all the above formulas representing that the substituent is either on the 5-position or the 6-position of the final benzimidazole.

3,873,559
HETEROCYCLIC CARBOXAMIDO THIAZOLINYL INDOLES

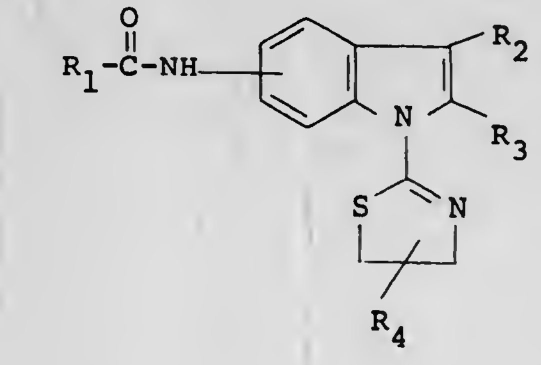
Venkatachala L. Narayanan, Highstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 30, 1973, Ser. No. 346,545

Int. Cl. 424 *246;* **C07d** *97/10*

U.S. Cl. 260—306.7 T **3 Claims**

1. An indole having the formula



or a physiologically acceptable acid-addition salt thereof, wherein R_1 is selected from the group consisting of furan, imidazole, isoxazole, oxazole, pyrazole, pyrrole, thiazine, thiazole and thiophene; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, $-(CH_2)_n1COOR_5$, cyano, halo, and di(lower alkyl)amino lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl and $-(CH_2)_n1COOR_5$; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl and phenyl; and n^1 is 0, 1, 2, 3, 4 or 5.

3,873,560
MANUFACTURE OF TETRAMISOLE

Michael Edward McMenim, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

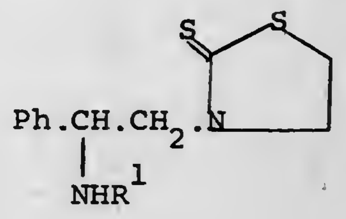
Filed May 3, 1973, Ser. No. 356,810

Claims priority, application United Kingdom, May 23, 1972, 24197/72

Int. Cl. C07d *99/10*

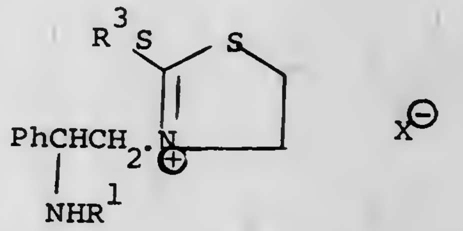
U.S. Cl. 260—306.7 T **6 Claims**

1. A process for the manufacture of tetramisole and pharmaceutically-acceptable salts thereof, which comprises reacting a compound of the formula:



I

wherein Ph stands for phenyl, and R^1 stands for hydrogen or $-COR^2$, wherein R^2 stands for hydrogen, alkyl of not more than 5 carbon atoms, phenyl, or phenylalkyl of not more than 10 carbon atoms, with triethyloxonium fluoroborate or R^3X, wherein R^3 stands for alkyl of not more than 12 carbon atoms, alkenyl of not more than 5 carbon atoms but excluding vinyl, or phenylalkyl of not more than 10 carbon atoms, and X stands for halogen, $-O.SO_2.R^4$ or $-O.SO_2.OR^5$, wherein R^4 stands for alkyl of not more than 5 carbon atoms, phenyl, or tolyl, and R^5 stands for alkyl of not more than 5 carbon atoms, and when R^3X has the formula $R^3O.SO_2.OR^5$ then R^3 and R^5 stand for the same alkyl of not more than 5 carbon atoms, the process being carried out under non-aqueous conditions up to the stage where there is formed an intermediate compound of the formula:



II

wherein Ph, R^1 and R^3 have the meanings stated above and X^- stands for an ion corresponding to X, the latter having the meaning stated above, or an equivalent intermediate compound in which X^- stands for a fluoroborate ion.

3,873,561
7-(4-ISOXAZOLLY)-5-OXO-HEPTANALS

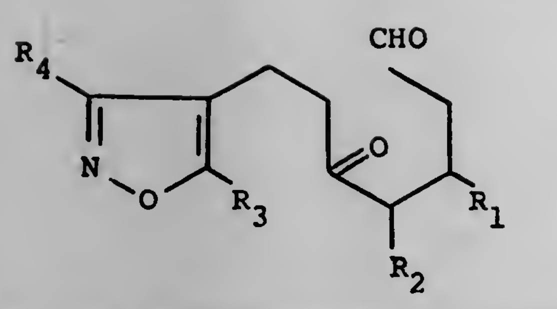
Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,813,411, which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,414

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H **2 Claims**

1. A compound of the formula



VIII

where R_1, R_2, and R_4 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of hydrogen, lower alkyl, lower alkyl phenyl and phenyl lower alkyl.

3,873,562
1-(4-ISOXAZOLYL)-7-HYDROXY-3-HEPTANONES

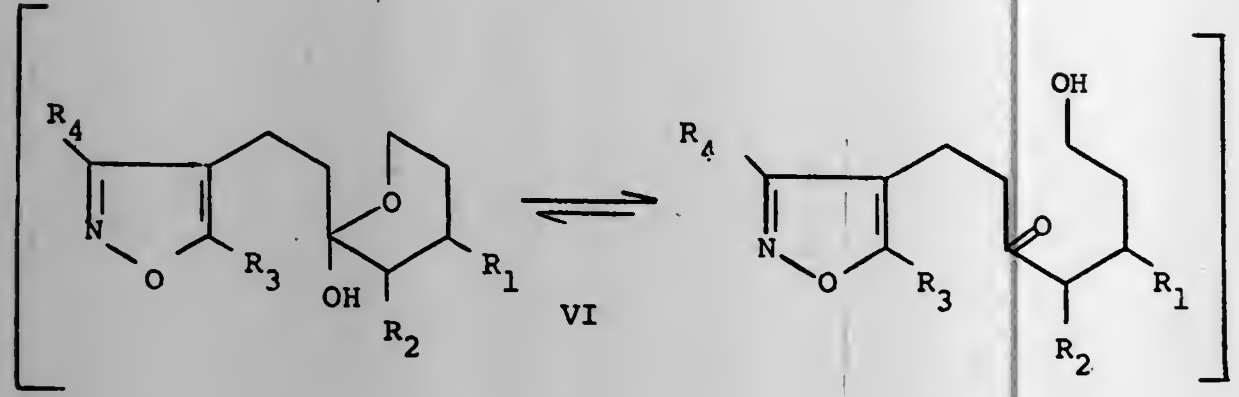
Gabriel Saucy, Essex Fells, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,813,411, which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,417

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H **2 Claims**

1. A compound of the formula



VI

where
- R_1, R_2 and R_4 are selected from the group consisting of hydrogen and lower alkyl and
- R_3 is selected from the group consisting of hydrogen, lower alkvl, lower alkyl phenyl and phenyl lower alkyl.

3,873,563
METHOD FOR MANUFACTURING 4-AMINO-1,2,4-TRIAZOLES

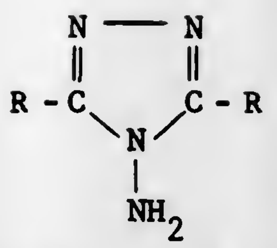
Akira Kotone, Nara; Masahiro Hoda; Takeshi Hori, both of Sakai, and Yoshihiko Nakane, Neyagawa, all of Japan, assignors to Sakai Chemical Industry Company Limlted, Osaka, Japan

Filed Sept. 29, 1972, Ser. No. 293,546

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **17 Claims**

1. In manufacturing a 4-amino-1,2,4-triazole having the formula



wherein R is (1) hydrogen, (2) a saturated or unsaturated aliphatic hydrocarbon group having 1 to 17 carbon atoms, (3) a cyclohexyl group, (4) a phenyl, (5) a naphthyl, (6) a pyridyl group, said saturatd or unsaturated aliphatic hydrocarbon group being substituted by a member selected from the group consisting of —H, —OH, —N(R^1)$_2$, —NO_2, —COOH, CHO, —$CONHNH_2$, —NHCOR², —OR², —SH and SR², R¹ being hydrogen, alkyl having 1 to 18 carbon atoms or phenyl, and R² being an alkyl having 1 to 18 carbon atoms or phenyl, said cyclohexyl group, phenyl group, naphthyl group and pyridyl group being substituted by a member selected from the group consisting of —H, a halogen, an alkyl of 1 to 18 carbon atoms, —OH, —N(R^1)$_2$, —NO_2, —COOH, —CHO, —CONHNH2, —NHCOR², —OR², —SH, SR² and —SO_3H, R¹ and R² being the same as defined above, a method which comrises treating hydrazine with a nitrile having the formula of

RCN

wherein R is the same as defined above, in the presence of at least one of sulfur, hydrogensulfide and a compound capable of liberating hydrogensulfide under the reaction conditions to produce 4-amino-1,2,4-triazole having the above formula and separating the product from the resultant reaction mixture.

3,873,564
2-IMIDAZOLINYL-3-OXIDE-1-OXYPROPIONIC ACID

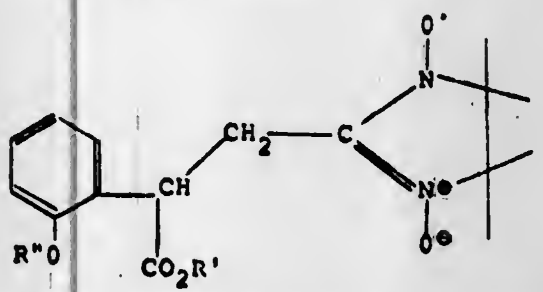
Richard S. Schneider, Sunnyvale, and Edwin F. Ullman, Atherton, both of Calif., assignors to Synvar Associates, Palo Alto, Calif.

Division of Ser. No. 120,726, March 3, 1971, Pat. No. 3,749,644. This application Sept. 7, 1972, Ser. No. 287,168

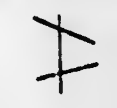
Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **3 Claims**

1. A compound of the formula:



wherein R′ is hydrocarbon of from 1 to 12 carbon atoms or cl$(CH_3)_3NCH_2CH_2$— and R″ is H, phosphate alkali metal salt, or hydrocarbon of from 1 to 12 carbon atoms, and



is tetramethylethylenyl.

3,873,565
PYRAZOLODIAZOCINE COMPOUNDS

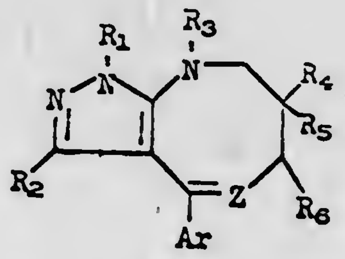
Horace A. De Wald, Ann Arbor, and Yvon J. L'Italien, Plymouth, both of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed May 16, 1973, Ser. No. 360,622

Int. Cl. C07d *57/02*

U.S. Cl. 260—310 R **9 Claims**

1. A member of the class consisting of pyrazolodiazocine compounds having the formula



and pharmaceutically-acceptable acid-addition salts thereof; where R_1 is methyl or ethyl, R_2 is nitro, methyl or ethyl, R_3 represents a member of the class consisting of hydrogen, methyl, ethyl, nitro, trifluoroacetyl and —$(CH_2)_nNR_7R_8$, R_4 and $R_5$are hydrogen or lower alkyl, R_6 is hydrogen, or methyl, Z is N or N O, Ar represents a member of the class consisting of phenyl, halophenyl, tolyl, methoxyphenyl, α,α,α-trifluorotolyl, 3,4-dichlorophenyl, cyclohexyl, 2-thienyl and 2-pyridyl, *n* is 2 or 3, and —NR_7R_8 represents a member of the class consisting of dimethylamino, diethylamino and 1-pyrrolidinyl, Z representing N when R_3 represents —$(CH_2)_nNR_7R_8$.

3,873,566
3-PYRAZOLIDINONES AND PYRAZOLIDINES

Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

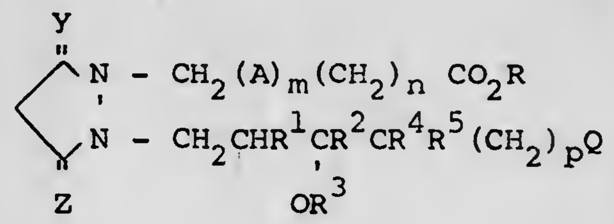
Continuation-in-part of Ser. No. 336,766, Feb. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 251,866, May 10, 1972, abandoned, and a continuation-in-part of Ser. No. 333,521, Feb. 20, 1973, abandoned. This application Oct. 30, 1973, Ser. No. 411,033

Int. Cl. C07d *49/02, 49/04*

U.S. Cl. 260—310 A **74 Claims**

1. A compound of the formula

a)



wherein
- A is CH=CH, C C, or C_6H_4;
- R is H, alkali metal, amine salt, alkyl, or cycloalkyl each of up to 12 carbon atoms;
- *m* is 0 or 1;
- *n* is 0 to 6;
- *p* is 0 to 6;
- Y and Z are O or H_2, with the proviso that where one is O, the other is H_2;
- R¹ is H, CH_3 or C_2H_5;
- R² is H, CH_3, C_2H_5, CH=CH_2, or C CH,
- R³ is H or alkanoyl of 2 to 4 carbon atoms;
- R⁴ is H, F, CH_3 or C_2H_5;
- R⁵ is H, F, CH_3 or C_2H_5; and
- Q is H, CH_3, CF_2CH_3 or CF_3; and

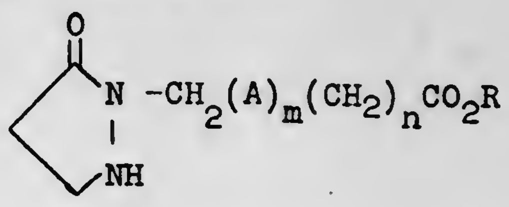
with the proviso that R¹, R⁴ and R⁵ are each H when R² is other than H; and

b) a salt of (a) with a pharmaceutically acceptable acid.

4. A compound of claim 1 in which Y = Z = H_2.

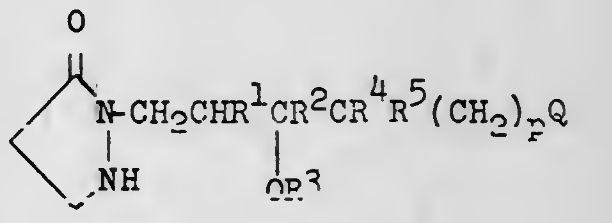
64. N-(6-Carboxy-n-hexyl)-N′-(3′-hydroxy-8′,8′,8′-trifluoro-n-octyl) pyrazolidine; the compound of claim 4 where $m = 0$, $n = 5$, $p = 3$, R = R¹ = R² = R³ = R⁴ = R⁵ = H and Q is CF_3.

66. A compound of the formula



wherein
- A is CH=CH, C C or C_6H_4;
- R is H, alkali metal, amine salt, alkyl or cycloalkyl each of up to 12 carbon atoms;
- m is 0 or 1; and
- n is 0 to 6.

67. A compound of the formula



wherein
- p is 0 to 6;
- R¹ is H, CH_3 or C_2H_5;
- R² is H, CH_3, C_2H_5, CH=CH_2 or C CH;
- R³ is H or alkanoyl of 2 to 4 carbon atoms;
- R⁴ is H, F, CH_3 or C_2H_5;
- R⁵ is is F, CH_3 or C_2H_5;
- Q is H, CH_3, CF_2CH_3 or CF_3; and with the proviso that R¹, R⁴ and R⁵ are each H when R² is other than H.

3,873,567
N-SUBSTITUTED POLYBROMOAROMATIC ORTHO-DICARBOXIMIDES

Henry A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

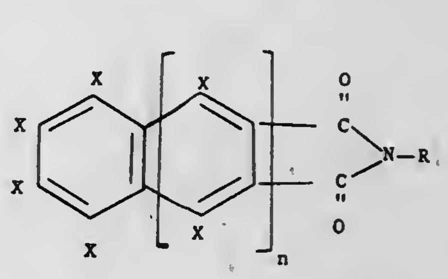
Filed Sept. 5, 1968, Ser. No. 757,802

Int. Cl. C07d *27/52*

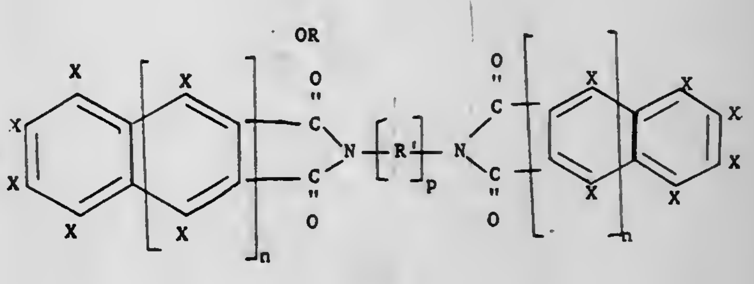
U.S. Cl. 260—326 C **2 Claims**

1. A compound having the formula

(I)



(II)



in which X is hydrogen or bromine, at least two X's being bromine; R is selected from the group consisting of

a. alkyl of from one to 20 carbon atoms,
b. unsubstituted of nuclearly substituted carbocyclic aryl having from one to three condensed rings and in which the nuclear substituents are one or two in number and are selected from the group consisting of lower alkyl, lower alkoxy, —Br and $-NH_2$,
c. unsubstituted or substituted cycloalkyl having from four to eight carbon atoms in the ring and in which the substituent is selected from the group consisting of lower alkyl and $-NH_2$,
d. benzyl,
e. $-NH_2$,
f. $-(CH_2)_x NH-A$ in which A is hydrogen or alkyl of from one to 20 carbon atoms and x ranges from two to six;
g. $-R''-(NH-R''-)_y NH_2$ in which R'' is alkylene of from two to eight carbon atoms and y ranges from one to four, and
h. guanyl;

R' is selected from the group consisting of alkylene of from two to four carbon atoms, phenylene and cyclohexylene;

n is one or two; and p is zero or one.

3,873,568
3-THIABICYCLO(3.2.0)HEPTANE-6,7-DICARBOXYLIC ANHYDRIDE 3,3-DIOXIDE

Jordan J. Bloomfield, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed July 26, 1972, Ser. No. 275,129
Int. Cl. C07d *65/04*
U.S. Cl. 260—332.1 **1 Claim**

1. 3-Thiabicyclo(3.2.0.)heptane-6,7-dicarboxylic anhydride 3,3-dioxide

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3,873,569
COMPLEXES OF A MACROCYCLIC POLYETHER WITH ONE OR MORE SULFUR-BEARING COMPOUNDS

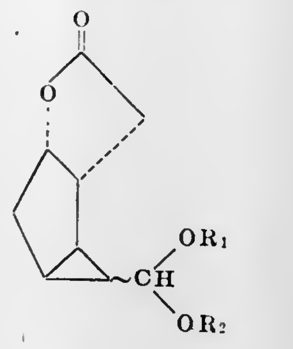
Charles John Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 27, 1970, Ser. No. 93,424
Int. Cl. C07d *19/00*
U.S. Cl. 260—340.3 **5 Claims**

1. A complex of (A) a thiourea and (B) a macrocyclic polyether having a macrocyclic ring of carbon and oxygen atoms totaling 15–60 ring atoms, each oxygen in the ring being separated from its adjoining oxygens in the ring by 2 or 3 carbon atoms, and the macrocyclic ring being fused by a pair of vicinal carbon atoms to 1–4 carbocyclic rings of the group: (a) phenylene, naphthylene, phenanthrylene, and anthrylene, (b) saturated analogs of (a), and (c) monosubstituted derivatives of (a) wherein the substituent is tertiary butyl.

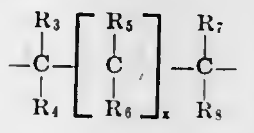
3,873,570
LACTONES

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970, abandoned. This application Dec. 15, 1972, Ser. No. 315,724
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.7 **5 Claims**

1. An optically active compound of the formula



or the mirror image thereof, or a result compound of that formula and the mirror image thereof, wherein R_1 and R_2 are alkyl of 1 to 4 carbon atoms, inclusive or, when taken together



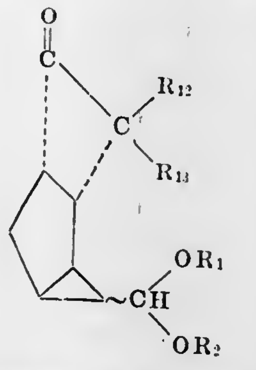
$$-\overset{R_3}{\underset{R_4}{C}}-\left[\overset{R_5}{\underset{R_6}{C}}\right]_x-\overset{R_7}{\underset{R_8}{C}}-$$

wherein R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen, alkyl or 1 to 4 carbon atoms, inclusive, or phenyl, with the proviso that not more than one of the R's is phenyl and the total number of carbon atoms is from 2 to 10, inclusive; x is zero or 1, and ~ indicates attachment of the moiety to the cyclopropane ring in exo or endo configuration.

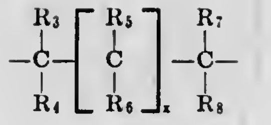
3,873,571
TRICYCLIC KETONE PG INTERMEDIATE

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970, abandoned. This application Dec. 15, 1972, Ser. No. 315,725
Int. Cl. C07d *15/04*
U.S. Cl. 260—340.7 **10 Claims**

1. An optically active compound of the formula



or the mirror image thereof, or a racemic compound of that formula and the mirror image thereof, wherein R_1 and R_2 are alkyl of one to 4 carbon atoms, inclusive, or, when taken together,



$$-\overset{R_3}{\underset{R_4}{C}}-\left[\overset{R_5}{\underset{R_6}{C}}\right]_x-\overset{R_7}{\underset{R_8}{C}}-$$

wherein R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or phenyl, with the proviso that not more than one of the R's is phenyl and the total number of carbon atoms is from 2 to 10, inclusive; x is zero or one; wherein each of R_{12} and R_{13} is hydrogen, bromo or chloro; and ~ indicates attachment of the moiety to the cyclopropane ring in exo or endo configuration.

3,873,572
PROCESS FOR THE PREPARATION OF 6,6-ALKYLENEDIOXYHEPTAN-2-ONE

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 53,281, July 8, 1970, Pat. No. 3,767,677. This application July 9, 1973, Ser. No. 377,494
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **4 Claims**

1. In a process for the preparation of 6,6-alkylenedioxyheptan-2-one, which process comprises in combination:

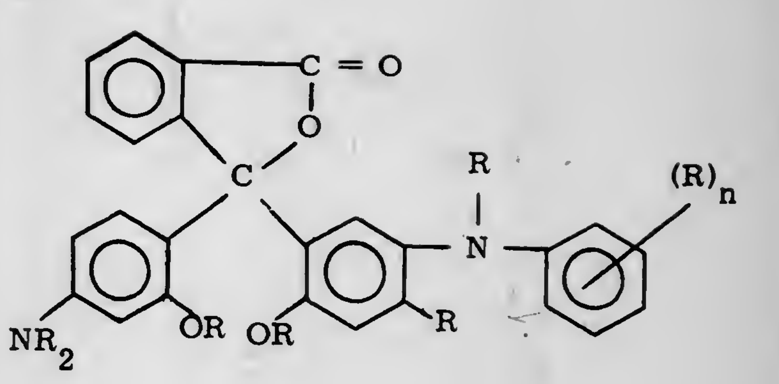
A. reacting 2,6-heptanedione with a molar excess of an alkylene glycol so as to selectively form 6,6-alkylenedioxyheptan-2-one;
B. removing product 6,6-alkylenedioxyheptan-2-one from the reaction medium by extraction with sodium bisulfite solution;

the improvement comprising (i) recovering from the extraction step (B) above 2,2,6,6-dialkylenedioxyheptane produced as a by-product in the ketalizing reaction of step (A) above; (ii) selectively hydrolyzing with dilute aqueous mineral acid to produce as a hydrolysis product 6,6-alkylenedioxyheptan-2-one; and (iii) recycling the product from said hydrolysis step (ii) to the sodium bisulfite extract of step (B) above.

3,873,573
PHTHALIDE COMPOUNDS

Sheldon Farber, Appleton, Wis.; Troy E. Hoover, Kettering, Ohio; David B. McQuain, and Arthur J. Wright, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio
Division of Ser. No. 176,296, Aug. 30, 1971, abandoned. This application June 29, 1973, Ser. No. 374,838
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.4 **2 Claims**

1. A phthalide represented by the formula:



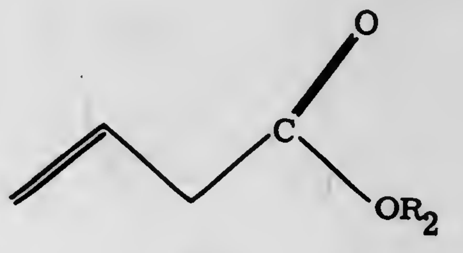
wherein each R is hydrogen or an alkyl radical having 1 to 4 carbon atoms and n is o or 1.

3,873,574
PROCESS FOR PREPARING SUBSTITUTED ALPHA-PYRONES

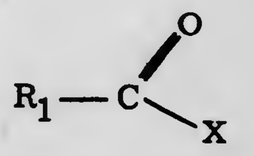
Erich Manfred Klaiber, Neptune, and Alan Owen Pittet, Atlantic Highlands, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed May 20, 1974, Ser. No. 471,756
Int. Cl. C07d *7/16*
U.S. Cl. 260—343.5 **8 Claims**

1. A process for producing a 6-alkyl-alpha-pyrone comprising the steps of:

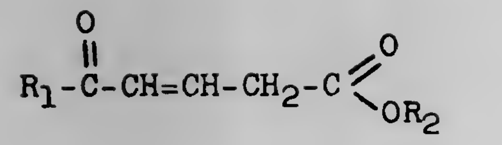
i. reacting an alkyl-3-butenoate having the structure:



with an acyl halide having the structure:

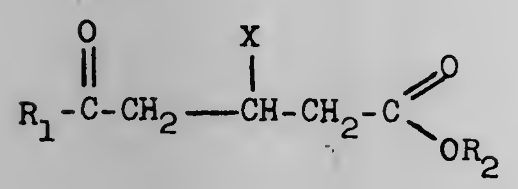


in the presence of a Friedel-Crafts catalyst whereby a mixture of keto-esters is formed having the structures:



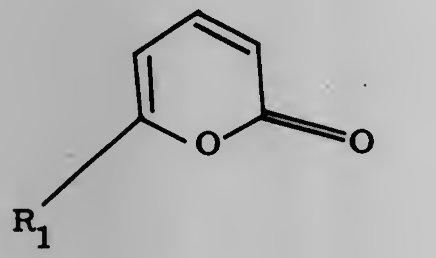
$$R_1-\overset{\overset{O}{\|}}{C}-CH=CH-CH_2-C\begin{matrix}\nearrow O\\ \searrow OR_2\end{matrix}$$

and



$$R_1-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{X}{|}}{C}H-CH_2-C\begin{matrix}\nearrow O\\ \searrow OR_2\end{matrix}$$

ii. contacting said keto-esters with a solid heat resistant catalyst selected from the group consisting of protruded copper packing, nickel packing, stainless steel packing and stone saddles at a temperature of from about 450°C up to about 600°C for a period of time sufficient to form a 6-alkyl-alpha-pyrone having the structure:



wherein R_1 is C_1–C_{10} alkyl, R_2 is lower alkyl and X is chloro or bromo.

3,873,575
γ-4-N-BUTOXYPHENYL-α,β-DIBROMOΔα,β-CROTONIC ACID LACTONE

Miroslav Semonsky; Viktor Zikan, and Vaclav Jelinek, all of Prague, Czechoslovakia, assignors to Spofa United Pharmaceutical Works, Prague, Czechoslovakia

Continuation of Ser. No. 705,927, Feb. 16, 1968, abandoned. This application Oct. 15, 1971, Ser. No. 189,764

Claims priority, application Czechoslovakia, Feb. 17, 1967, 1173-67; July 18, 1967, 5265-67

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 **1 Claim**

1. γ-4-n-butoxyphenyl-α, β-dibromo-Δ -crotonic acid lactone.

3,873,576
TETRAHYDRODIBENZOPYRANS

Theodor Petrzilka, Rigistrasse 6, 8703 Erlenbach, Switzerland

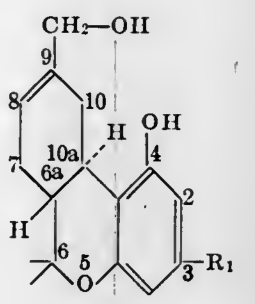
Filed Oct. 5, 1972, Ser. No. 295,262

Claims priority, application Switzerland, Oct. 14, 1971, 14966/71

Int. Cl. C07d *7/20*

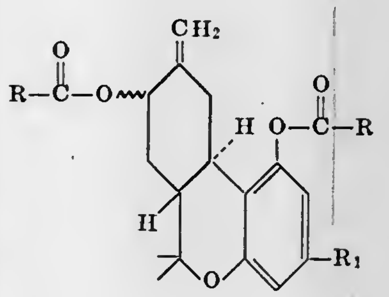
U.S. Cl. 260—345.3 **12 Claims**

1. A process for preparing a compound of the formula



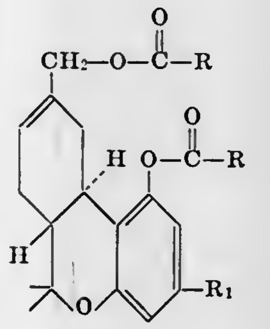
(1)

where R_1 is selected from the group consisting of straight and branched chain alkyl radicals containing from about 10 C-atoms, comprising the steps of (a) heating a compound of the formula



(2)

where R is selected from the group consisting of hydrogen and alkyl radicals of from 1 to about 5 C-atoms to form a compound of the formula



(3)

(b) reacting said formula (3) with a deacylation agent, and (c) recovering the formula (1) compound thus obtained.

3,873,577
METHOD OF RECOVERING PURE MALEIC ANHYDRIDE FROM A CRUDE MIXTURE CONTAINING SAME TOGETHER WITH AN ENTRAINER

Otto Ludwig Garkisch, Neuenhain; Gunther Ibing, Gladbeck; Gunther Kammholz, Gelsenkirchen-Buer; Hermann Schirrmacher, Gladbeck, and Kurt Lohbeck, Bottrop, all of Germany, assignors to Verba-Chemie AG, Gelsenkirchen-Buer and Metallgesellschaft AG, Frankfurt am Main, Germany, part interest to each

Filed Dec. 13, 1971, Ser. No. 207,024

Claims priority, application Germany, Dec. 12, 1970, 2061336

Int. Cl. C07c *57/14*

U.S. Cl. 260—346.8 M **7 Claims**

1. A maleic anhydride purification process comprising the steps of:

a. deriving a crude mixture of mostly maleic anhydride, with maleic acid as an impurity and a xylene entrainer from a system for the catalytic oxidation of benzene or a C_4 hydrocarbon after dehydration;

b. heating said mixture in at least two stages in cascade to split the maleic acid therein into maleic anhydride and water and producing a vapor from said mixture, while removing a forerunning of said vapor therefrom consisting of water and low boiling organic impurities, thereby producing a further mixture, said stages being carried out in agitation vessels wherein the pressure is maintained between 100 mm Hg and slightly above atmospheric pressure;

c. subjecting said further mixture from step (b) to column distillation to evaporate said xylene entrainer, and recovering said xylene entrainer from the head of the column of the distillation of the mixture produced in step (b) while producing a sump product substantially free from said xylene entrainer wherein the pressure ranges from between 60 and 500 mmHg; and

d. continuously distilling from said sump product pure maleic anhydride and recovering the maleic anhydride from a vapor phase above said said product wherein the pressure ranges from between 60 and 500 mmHg, step (b) being carried out at a higher pressure than steps (c) and (d).

3,873,578
OLEFIN EPOXIDATION

Charles S. Bell, Houston, Tex., and Harald P. Wulff, Ludwigshafen, Germany, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 153,834, June 16, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,202

Int. Cl. C07d *1/08*

U.S. Cl. 260—348.5 L **14 Claims**

1. A process for epoxidizing an olefinically unsaturated hydrocarbon of from 3 to 30 carbon atoms with a hydrocarbon hydroperoxide of from 3 to 20 carbon atoms by contacting a mixture thereof in liquid phase in inert solvent at a temperature of about 25°C to 200°C and a pressure in the range from 1 to 100 atmospheres, sufficient to maintain the mixture in liquid phase, with a polyorganotitanosiloxane polymer produced by hydrolysis in aqueous alkaline solution of (1) an alkyl ester of orthotitanic acid and (2) one or more silanes represented by formula

$(R')_nSi\ (X)_m$

wherein R′ is an alkyl group of 1 to 6 carbon atoms or an aryl group of 6 to 10 carbon atoms, X is chlorine, bromine, phenoxy or alkoxy of 1 to 6 carbon atoms, *n* is 1 to 2, *m* is 2 to 3, the sum of +*m* is 4, and the molar ratio of said silane to orthotitanic acid ester is from15:1 to 1:1.

3,873,579
ORGANIC AZIDES AND METHOD OF PREPARATION THEREOF

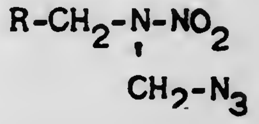
Ronald Rosher, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1969, Ser. No. 851,765

Int. Cl. C07c *117/00*

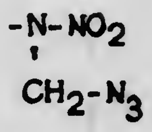
U.S. Cl. 260—349 **8 Claims**

1. Compounds of the formula



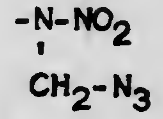
$$R-CH_2-\underset{\underset{CH_2-N_3}{|}}{N}-NO_2$$

wherein R is selected from the group consisting of H, alkyl of 1 to 6 carbon atoms,



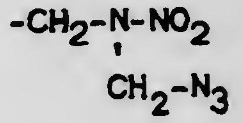
$$-\underset{\underset{CH_2-N_3}{|}}{N}-NO_2$$

and alkyl of 1 to 6 carbon atoms wherein at least one of the hydrogen atoms has been replaced by the



$$-\underset{\underset{CH_2-N_3}{|}}{N}-NO_2$$

radical to form the radical



$$-CH_2-\underset{\underset{CH_2-N_3}{|}}{N}-NO_2$$

3,873,580
OXIDATION PROCESS

Robert Allan Campbell Rennie, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 8, 1973, Ser. No. 321,981

Claims priority, application United Kingdom, Jan. 19, 1972, 2639/72

Int. Cl. C09b *1/00*

U.S. Cl. 260—362 **14 Claims**

1. A process for the liquid phase oxidation of an aromatic organic compound to the corresponding quinone which comprises contacting the said organic compound with an aqueous solution of a persulphate compound in the presence of a catalytic quantity of cerium, chromium or vanadium or a mixture thereof.

3,873,581
PROCESS FOR REDUCING THE LEVEL OF CONTAMINATING MERCURY IN AQUEOUS SOLUTIONS

Joseph William Fitzpatrick, Toms River; Carl Johannes Berninger, Pine Beach, and Dennis Osborne Lewis, Toms River, all of N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.

Continuation-in-part of Ser. No. 191,534, Oct. 21, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,397

Int. Cl. C09b *1/00*

U.S. Cl. 260—370 **15 Claims**

1. A process for removing mercury from aqueous solutions of anthraquinone sulfonic acids and their aqueous process

effluents which comprises treating the aqueous solution or effluent with

- a. at least one mercury-reactive factor selected from the group consisting of
  - i. tin, magnesium, copper, iron, zinc and aluminum,
  - ii. an alkali metal sulfide or thiosulfate, and a polysulfide composition obtained by treating a porous substrate with sulfur, sodium sulfide and water,
  - iii. thiourea, dithizone, dithiooxamide, thioacetamide, dithiobiuret, diphenylthiourea, thiosemicarbazide and trithiobiuret,
  - iv. an alkane dithio or hydroxyalkane dithiol containing 2 to 12 carbon atoms,
  - v. thio and mercapto derivatives of C_2–C_{10} organic acids,
  - vi. thiophenol, toluenethiol, benzenedithiol, toluenedithiol, xylene dithiol, dithioterephthalic acid and mercaptosalicyclic acid, .
  - vii. 2,3-quinoxaline dithiol, trithiocyanuric acid and 2-mercaptobenzthiazole,
  - viii. 8-hydroxyquinoline, 2-nitroso-1-naphthol and furan, and
- b. an adsorbent selected from the group consisting of titania, alumina, silica, ferric oxide, stannic oxide, magnesium oxide, kaolin, carbon, activated carbon, activated alumina, activated clay and diatomaceous earth.

3,873,582
PROCESS FOR ISOLATING AMINOANTHRAQUINONES

Istvan Szekely, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 5, 1973, Ser. No. 338,011

Claims priority, application Switzerland, Mar. 10, 1972, 3548/72

Int. Cl. C07c *97/12*

U.S. Cl. 260—378 **10 Claims**

1. A process for the separation of mixture of aminoanthraquinones which are mono- or di-aminated, wherein the amines are partitioned at a temperature above 60°C in a system of two liquid phases consisting of an acid, aqueous phase having a proton concentration greater than 1 mol/liter, and an organic phase which is immiscible with water, the two phases are separated, and the amines are isolated therefrom.

3,873,583
QUATERNARY AMMONIUM COMPOUNDS

Klaus Walz, Leverkusen; Klaus Gerlach, Koeln, and Max Schwarz, Bergisch-Neukirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

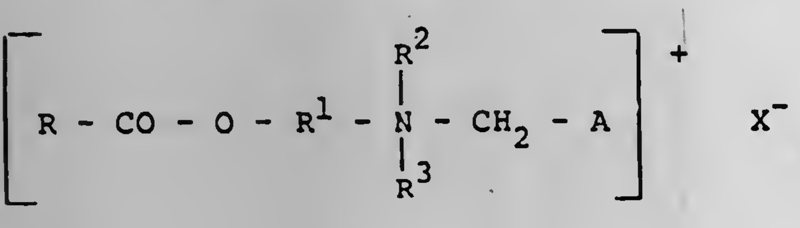
Filed Apr. 28, 1972, Ser. No. 248,714

Claims priority, application Germany, Apr. 29, 1971, 2121013

Int. Cl. C07c *69/00*

U.S. Cl. 260—404 **11 Claims**

1. Quaternary ammonium compound of the formula



$$\left[R - CO - O - R^1 - \underset{\underset{R^3}{|}}{\overset{\overset{R^2}{|}}{N}} - CH_2 - A \right]^+ X^-$$

in which

R represents a C_5–C_{21}-alkyl or -alkenyl radical;

R_1 represents an alkylene radical with 2 to 4 carbon atoms;

R_2 and R_3 independently of one another denote a C_1–C_4-alkyl or C_1–C_4-hydroxyalkyl group, or together with the nitrogen atom form a heterocyclic ring selected from the group consisting of pyrrolidine, piperidine and morpholine;

A represents a radical containing at least 2 isocyclic rings, selected from the group consisting of naphthyl, γ-naphthyl, tetrahydronaphthyl, γ-tetrahydronaphthyl, 4-methylnaphthyl, 4-chloronaphthyl, phenoxyphenyl, 4-γ-phenoxyphenyl, tolyloxytolyl, γ-tolyloxytolyl, chlorophenoxyphenyl, nitrophenoxyphenyl, (benzyloxymethyl)-phenyl, γ-(benzyloxy-methyl)-phenyl, 2,4,6-trimethyl-3-benzoylphenyl, diphenyl, γ-diphenyl, cyclohexylphenyl, benzylphenyl, and 4-[2-phenyl-propyl-(2)]phenyl, wherein γ is the radical [R—COO—R-^{1}—N—(R^2) (R^3)—CH_2—]X^-, wherein the R's are as defined above; and

X is an anion.

3,873,584
HYDROXYL CONTAINING UNSATURATED DRYING OIL POLYMERS AND PROCESSES FOR PREPARING POLYMERS

Oliver W. Burke, Jr., 1510 S.W. 13th Ct., Ft. Lauderdale, Fla. 33061; Joseph Austin A. Kizer, Pompano Beach, Fla., and Pauls Davis, Gibralter, Mich., assignors to said Burke, by said Kizer and Davis

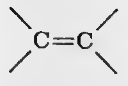
Continuation-in-part of Ser. No. 318,910, Dec. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 860,163, Sept. 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 594,947, Nov. 16, 1966, abandoned, which is a continuation-in-part of Ser. No. 447,530, April 12, 1965, abandoned, which is a continuation-in-part of Ser. No. 863,218, Dec. 31, 1959, abandoned. This application May 3, 1973, Ser. No. 356,722

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—407 **12 Claims**

1. A polymer product characterized in that:

- a. said product is comprised essentially of polymer which has a number average molecular weight of not over about 10,000;
- b. said polymer is an interpolymer of
  - 1. from 5–95 parts by weight of drying oil substance selected from the class consisting of the drying oils, the air-blown or bodied drying oils, and the fatty acids derived from the foregoing, and dimers, trimers, and tetramers thereof, and
  - 2. from 95–5 parts by weight of polymerizable material selected to consist essentially of from 2 to 100 percent by weight of material having a water solubility at 20°C. of no more than 3.5 weight percent and from 0 to 98 percent by weight of material having a water solubility at 20°C. greater than 3.5 weight percent, and selected from the ethylenically unsaturated monomers that have and are polymerizable with the aid of hydrogen peroxide through at least one



group and contain not more than 14 carbon atoms,

- c. said polymer, in addition to the polymerized monomer material and drying oil substance therein, comprises substituent groups derived from its having been polymerized at temperatures in the range of above 100°C to about 200°C from the materials (1) and (2) in a solution of hydrogen peroxide in liquid organic mutual solvent-diluent for said hydrogen peroxide, monomer material, drying oil substance and any water present therewith, which liquid organic mutual solvent-diluent comprises at least one compound having not more than 6 carbon atoms and which contains at least one group selected from the class consisting of carbinol, keto and ether groups, and combinations thereof.

3,873,585
PROCESS FOR THE RECOVERY OF POLYMERIC ACIDS FROM CLAYS

Robert J. Sturwold, and Hubert J. Sharkey, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed July 18, 1973, Ser. No. 380,261

Int. Cl. C09f *7/06;* **C11c** *3/00*

U.S. Cl. 260—407 **6 Claims**

1. A process for recovering polymeric fatty acids from crystalline clay minerals which comprises heating a mixture of said clay earth and water at a temperature from about 40°C to 100°C, the ratio of water to clay ranging from about 0.25:1 up to about 20:1, agitating the mixture during said treatment to displace the polymeric fatty acid and then recovering said fatty material from the clay and water phases.

3,873,586
INTERMEDIATES FOR 2,4-DIOLEFINIC FATTY ACIDS AND ESTERS

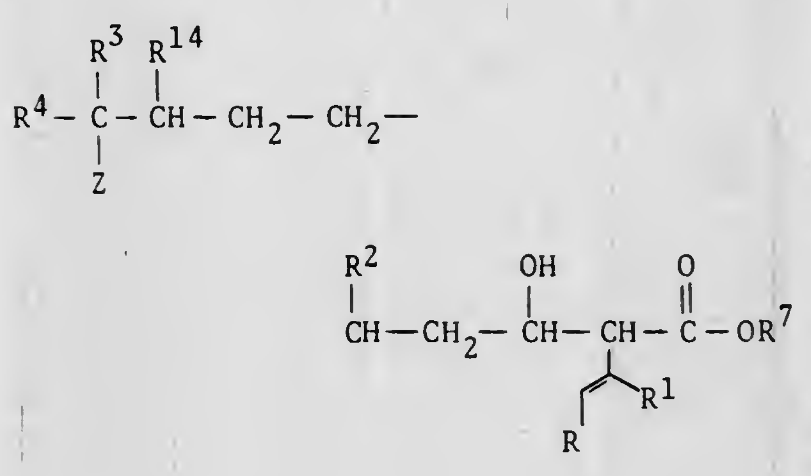
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 241,819, April 16, 1972, abandoned. This application Feb. 28, 1973, Ser. No. 336,666

Int. Cl. C07c *69/52, 59/18;* **A01n** *9/24*

U.S. Cl. 260—410.9 R **2 Claims**

1. A compound selected from those of the formula:



wherein,

Z is hydrogen or methoxy;

each of R^1, R^2, R^3 and R^4 is methyl or ethyl;

each of R and R^{14} is hydrogen or methyl; and

R^7 is hydrogen, methyl, ethyl or isopropyl.

3,873,587
PRODUCTION OF PEROXYTITANIUM COMPLEXES FROM ORGANIC HYDROPEROXIDES

Rudolph Rosenthal, Broomall; Giovanni A. Bonetti, Wynnewood, and Joseph A. Kieras, Lincoln University, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 20, 1973, Ser. No. 390,152

Int. Cl. C07f *7/28*

U.S. Cl. 260—429.5 **9 Claims**

1. A method for the production of peroxytitanium complexes which comprises reacting titanium sulfate with an organic hydroperoxide selected from the group consisting of tertiary butyl hydroperoxide, tertiary amyl hydroperoxide, ethylbenzene hydroperoxide, cyclohexyl hydroperoxide and cumene hydroperoxide, at a pH of below about 1.5 and at a temperature in the range of from 0° to 100°C.

3,873,588
ORALLY ADMINISTRABLE PHARMACEUTICAL IRON PREPARATION

Yoshio Osawa, Yokohama; Koichiro Ueno, Tokyo; Koichi Dobashi, Kawasaki, and Hideichi Asano, Yokohama, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 77,352, Oct. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 555,284, June 6, 1966, abandoned. This application Oct. 16, 1972, Ser. No. 297,741

Claims priority, application Japan, June 8, 1965, 40-33677; Nov. 17, 1965, 40-70174; Nov. 18, 1965, 40-70531

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 R **6 Claims**

1. An orally administrable pharmaceutical iron preparation having a gradually iron-releasing activity which consisting essentially of an iron salt of a water-soluble linear polymer containing from 2 to 16 millimoles of carboxylic groups per gram of the polymer, said salt containing bound iron in an amount of from about 2.5 to about 33% by weight based on the weight of the salt, said polymer being selected from the group consisting of (1) a polymer of at least one unsaturated monomer selected from the group consisting of acrylic acid and methacrylic acid, (2) a copolymer of maleic acid with at least one vinyl compound selected from the group consisting of vinyl acetate, a lower alkyl vinyl ether, acrylic acid, a lower alkyl ester of acrylic acid, methacrylic acid, a lower alkyl ester of methacrylic acid and vinyl alcohol, and (3) a copolymer of vinyl alcohol with an unsaturated monomer selected from the group consisting of acrylic acid and methacrylic acid, and at least 50% by weight of said bound iron being bivalent.

3,873,589
ISOCYANATE PURIFICATION PROCESS

Arthur J. Coury, St. Paul, and Douglas D. Cozad, Minneapolis, both of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Nov. 13, 1972, Ser. No. 306,070

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **8 Claims**

1. A process for increasing the stability of an organic isocyanate prepared by the azide process and containing free carboxylic acid as an impurity comprising heating such isocyanate for a sufficient length of time and a sufficiently high temperature to cause the free acid to react with a portion of the isocyanate to yield an amide product of higher molecular weight than the isocyanate.

3,873,590
METHYL ESTERS OF ORGANIC SULFONIC ACID OLIGOMERS

Alan E. Straus, El Cerrito; William A. Sweeney, Larkspur; Ralph House, El Sobrante, and Samuel H. Sharman, Kensington, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 858,097, Sept. 15, 1969, Pat. No. 3,721,707. This application July 28, 1972, Ser. No. 276,267

Int. Cl. C07c *143/68*

U.S. Cl. 260—456 R **1 Claim**

1. The methyl esters of the oligomeric sulfonic acid compositions obtained by the oligomerization process which comprises heating in the liquid phase a feed, wherein the heating is at a temperature above about 110°C. and below the carbonization temperature of the feed, is effected in the substantial absence of water, and is continued for a period of at least sufficient for a significant conversion of the feed to the corresponding oligomeric disulfonic acid, said feed being at least one compound having a carbon atom content in the range from 5 to 30 selected from the group of the type and formula

a. sultone, $R^2(OSO_2)$

b. hydroxysulfonic acid, $R^2(OH)(SO_3H)$

c. unsaturated sulfonic acid, R $R^2(-CH{=}CH-)$ SO_3H; wherein R is hydrogen or a monovalent hydrocarbon radical and R^2 is a divalent hydrocarbon radical, said radicals being free of nonaromatic carbon-carbon double- or triple-bond unsaturation.

3,873,591
HALO-SUBSTITUTED CYANOMETHYL BENZENESULFONATES

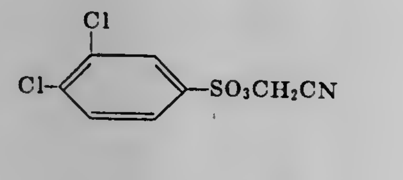
Herbert Q. Smith, Malvern, and Sameeh Said Toukan, Phoenixville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed July 5, 1973, Ser. No. 376,492

Int. Cl. C07c *143/40*

U.S. Cl. 260—456 P **2 Claims**

1. A halo-substituted cyanomethyl benzenesulfonate of the formula



3,873,592
OXYALYL CARBAZATES, AND OLIGOMERS THEREOF.

Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

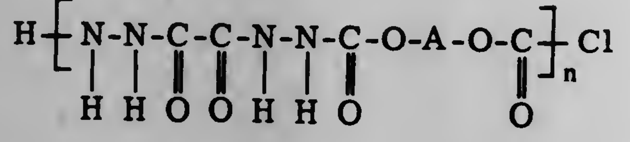
Division of Ser. No. 354,586, April 26, 1973, Pat. No. 3,819,545. This application Sept. 12, 1973, Ser. No. 396,633

Int. Cl. C07c *109/08*

U.S. Cl. 260—463 **4 Claims**

1. Oxalylbis(methyl carbazate).

2. An oligomer of the formula



$$H\left[\underset{H}{N}-\underset{H}{N}-\underset{O}{\overset{\|}{C}}-\underset{O}{\overset{\|}{C}}-\underset{H}{N}-\underset{H}{N}-\underset{O}{\overset{\|}{C}}-O-A-O-\underset{O}{\overset{\|}{C}}\right]_n Cl$$

wherein *n* is an integer from 1 to 100 and A is a divalent radical selected from the group consisting of methylene, ethylene, propylene, isopropylene, butylene, isobutylene, isobutylidene, pentamethylene, hexamethylene, phenylene, tolylene, naphthylene, oxydiethylene, oxydipropylene, oxydibutylene, oxydipentamethylene, oxydihexamethylene, oxydiphenylene, oxyditolylene, and oxydinaphthylene.

3,873,593
PROCESS FOR MAKING ARYLOXY COMPOSITIONS

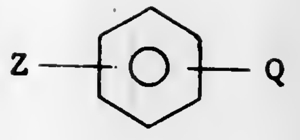
Darrell R. Heath, and Joseph G. Wirth, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 108,150, Jan. 20, 1971, Pat. No. 3,763,210. This application Jan. 19, 1973, Ser. No. 325,098

Int. Cl. C07c *69/76, 121/74*

U.S. Cl. 260—465 F **4 Claims**

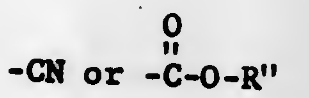
1. The process which comprises heating within the temperature range of from 50° to 150° C., in the presence of a dipolar aprotic solvent a mixture of ingredients comprising (1) a benzenoid compound of the general formula



and (2) an alkali-metal salt of the formula

Alk—A—R′—A—Alk

where R′ is a divalent aromatic radical selected from the class consisting of divalent aromatic hydrocarbon radicals of up to 20 carbon atoms, diarylene radicals in which two aryl nuclei are joined by a member of the class consisting of alkylene radicals, the sulfoxide group, the sulfonyl group, sulfur, the carbonyl group, oxygen and the $-C(CH_3)(CH_2CH_2CO_2H)-$ group, Q is selected from the class consisting of the



$$-CN \text{ or } -\overset{\overset{O}{\|}}{C}-O-R''$$

radical, where R″ is a hydrocarbon radical of from 1 to 12 carbon atoms, A is oxygen or sulfur, Z is the $-NO_2$ radical, Alk is an alkali metal atom, and Z is ortho or para to the Q radical, the ingredients being present in the molar ratio of at least 2 mols of the benzenoid compound per mol of the alkali-metal salt.

3,873,594
2-(6-METHOXYNAPHTH-2-YL) PROPIONITRILE

Francisco Sanchez Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama

Division of Ser. No. 151,921, June 10, 1971, Pat. No. 3,758,544, which is a division of Ser. No. 748,603, July 30, 1968, Pat. No. 3,637,767. This application Apr. 26, 1973, Ser. No. 354,537

Int. Cl. C07c *121/66*

U.S. Cl. 260—465 F **1 Claim**

1. 2-(6′-methoxynaphth-2-yl)propionitrile.

3,873,595
PRODUCTION OF O-PHTHALODINITRILE

Theodor Lussling; Hans Schaefer, both of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Division of Ser. No. 74,828, Sept. 23, 1970, abandoned. This application June 21, 1973, Ser. No. 372,104

Claims priority, application Germany, Sept. 26, 1969, 1948714

Int. Cl. C07c *121/02, 121/56*

U.S. Cl. 260—465 C **11 Claims**

1. A process for the production of o-phthalodinitirle from a mixture comprising o-xylene, ammonia and oxygen comprising heating said mixture in gaseous form in contact with a catalyst mixture containing β-antimony tetroxide and a member selected from the group consisting of vanadium oxide, antimony vanadate and mixtures thereof wherein the antimony and vanadium are present in the atomic ratios of from 1.1 to 1 up to 50 to 1.

3,873,596
PROCESS FOR PREPARING 1-DIALKYLAMINO-5-DIALKYL-IMONIA-2-CYANO-3-CHLORO-4-AZAPENTA-1,3-DIENE SALTS

Kurt Klemm, Allensbach, and Erhard Langenscheid, Konstanz, both of Germany, assignors to Byk-Gulden Chemische Fabrik GmbH, Konstanz, Germany

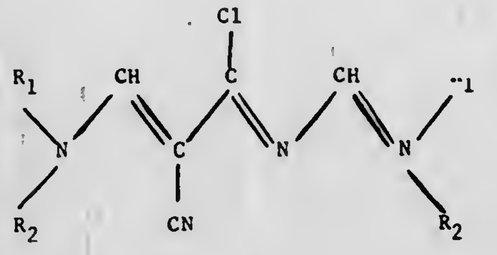
Continuation-in-part of Ser. No. 864,168, Oct. 6, 1969, abandoned. This application Nov. 29, 1972, Ser. No. 310,295

Claims priority, application Germany, Oct. 8, 1968, 1801862

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.5 R **13 Claims**

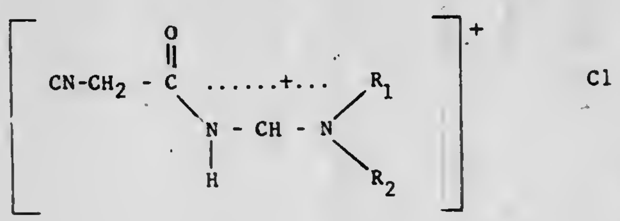
1. In a method of preparing a water-insoluble azapentadiene of the general formula



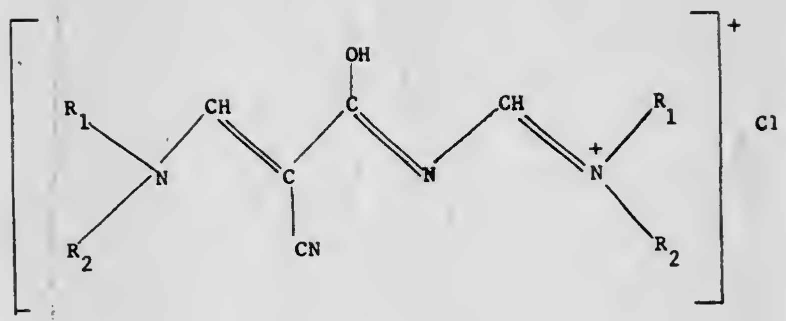
I

wherein R_1 and R_2 are alkyl of 1 to 6 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and recovering said azapentadiene, the improvement which comprises

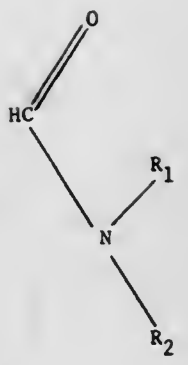
reacting a member selected from the group consisting of cycanoacetamide or a formamidine of the general formulae



and,



wherein R_1 and R_2 have the above definition, with a secondary acid amide of the general formula



wherein R_1 and R_2 have the above definition, and a chlorine generating acid chloride at temperatures from about −15°C to 100°C, to form the chloride salt of the azapentadiene of formula I.

3,873,597
2-BROMO-2-BROMOMETHYLGLUTARONITRILE

Ronald Harmetz, Randolph, and Roger J. Tull, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 131,445, April 5, 1971, abandoned, which is a division of Ser. No. 879,519, Nov. 24, 1969, Pat. No. 3,644,380. This application Nov. 20, 1973, Ser. No. 417,647

Int. Cl. C07c *121/20*

U.S. Cl. 260—465.7 **1 Claim**

1. 2-Bromo-2-bromomethylglutaronitrile.

3,873,598
4,5,10,13 PROSTATETRAENOIC ACID DERIVATIVES

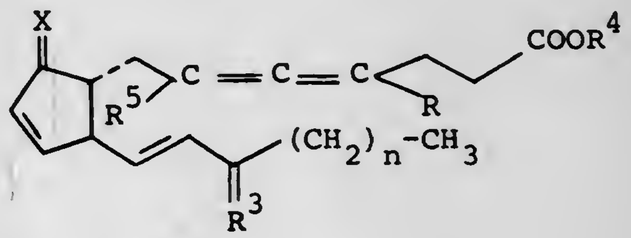
Pierre Crabbe; Grenoble, France; John H. Fried, Palo Alto, Calif., and Angel Guzman, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed July 6, 1973, Ser. No. 377,106

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D **35 Claims**

1. A compound selected from the group of those represented by the following formula:

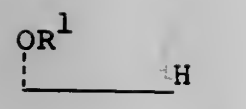


wherein the compounds are racemic mixtures or 8R-antimers;

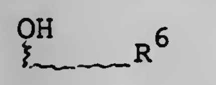
X is a keto group;

each of R and R^5 is hydrogen, methyl, ethyl or propyl;

R^3 is the grouping



in which R^1 represents hydrogen, hydroxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy group having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to twelve carbon atoms, nitro, amino and halogen, or the grouping

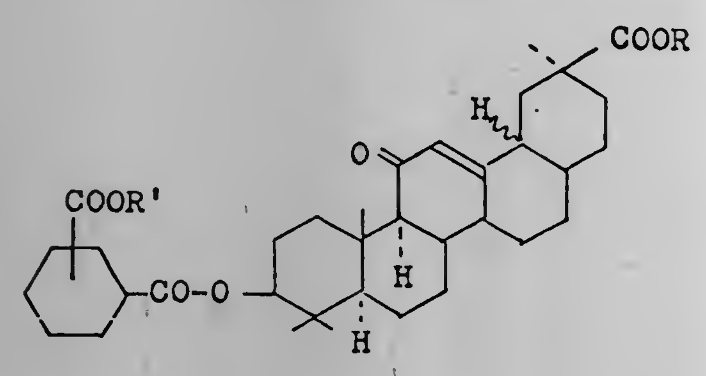


in which
- R^6 is methyl, ethyl or propyl;
- R^4 is hydrogen, a lower alkyl group of 1 to 3 carbon atoms or the pharmaceutically acceptable, non-toxic salts of compounds in which R^4 is hydrogen,
- n is an integer of from 2 to 9,
- and the wavy lines ( ) indicate the α or β configuration or mixtures thereof;
- provided that when R^6 is α the hydroxyl group, attached to the same carbon atom as R^6, is β; and when R^6 is β the hydroxyl group, attached to the same carbon atom as R^6, is α.

3,873,599
DERIVATIVES OF GLYCYRRHETINIC ACID

John Cameron Turner, West Wickham, Kent, England, assignor to Biorex Laboratories Limited, London, England
Filed Sept. 6, 1973, Ser. No. 394,858
Claims priority, application United Kingdom, Sept. 6, 1972, 41244/72
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 K **10 Claims**

1. Compounds of the general formula:

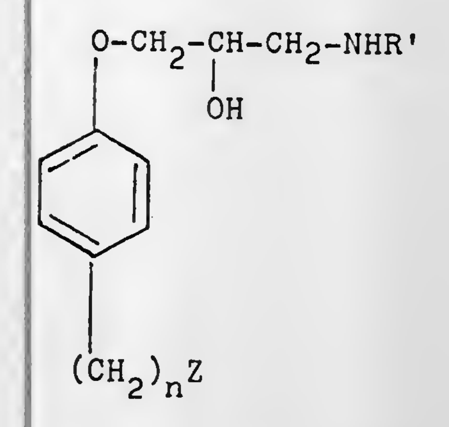


wherein R is a hydrogen atom or an alkyl radical containing up to 6 carbon atoms and R′ is a hydrogen atom or an alkyl radical containing up to 6 carbon atoms and the salts of compounds in which R and/or R′ is a hydrogen atom.

3,873,600
PHENOXYCARBAMATES

Arne Elof Brandstrom, Mattssonsgatan 13 B, S-415 06 Goteborg; Per Arvid Emil Carlsson, Torild Wulffsgatan 50, S-413 19 Goteborg; Stig Ake Ingemar Carlsson, Honekullavagen 43F, S-435 00 Molnlycke; Hans Rudolf Corrodi, Hogbergsgatan 1, S-151 33 Sodertalje; Lars Ek, Mansagarden PL 5102, S-430 34 Onsala, and Bengt Arne Hjalmar Ablad, Folke Bernadottes gata 2, S-411 28 Goteborg, all of Sweden
Continuation-in-part of Ser. No. 115,851, Feb. 16, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,749
Claims priority, application Sweden, Feb. 18, 1970, 2050/70
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **11 Claims**

1. A compound of formula

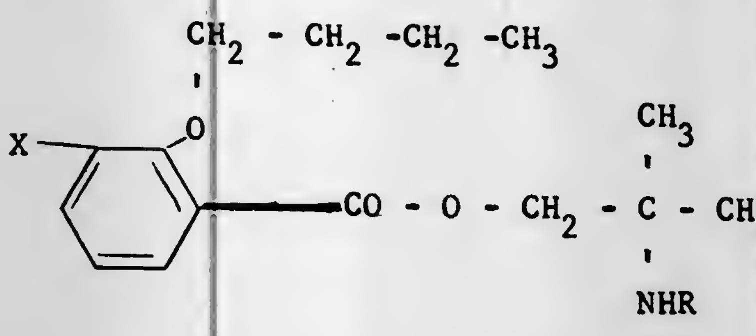


and pharmaceutically acceptable, non-toxic acid addition salts thereof, wherein R′ is an isopropyl or tertiary butyl radical; Z is -NHCOOR″, R″ being straight or branched alkyl radical having 1 to 3 carbon atoms; and n is 1, 2, or 3.

3,873,601
ANESTHETIC COMPOUNDS

Julian R. Reasenberg, Brooklyn, and Rubin Drucker, Rosedale, both of N.Y., assignors to Mizzy Inc., New York, N.Y.
Continuation of Ser. No. 110,299, Jan. 27, 1971, abandoned, which is a division of Ser. No. 28,295, April 22, 1970, abandoned, which is a continuation of Ser. No. 848,394, July 23, 1969, abandoned, which is a continuation of Ser. No. 379,375, June 30, 1964, abandoned. This application Aug. 13, 1973, Ser. No. 391,402
Int. Cl. C07c *101/54*
U.S. Cl. 260—472 **4 Claims**

1. A chemical compound of the class consisting of a free base and its non-toxic pharmaceutically acceptable acid addition salts, the free base having the structural formula:



wherein X is $—N_2$ or $—NO_2$ and R is lower alkyl, wherein said alkyl is a member selected from the group consisting of straight and branched chain saturated aliphatic hydrocarbon groups.

3,873,602
BETA HYDROXY ESTERS

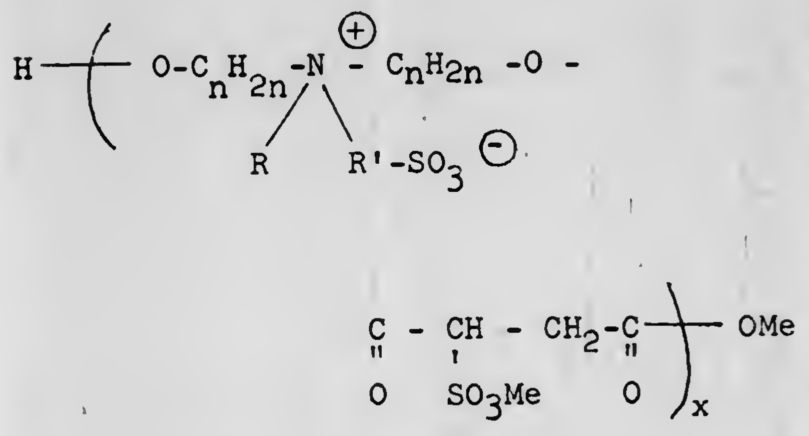
Arthur Katzakian, Jr., Sacramento; Roger B. Steele, Fair Oaks, and Joseph J. Scigliano, Sacramento, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Continuation-in-part of Ser. No. 73,589, Sept. 18, 1970, abandoned. This application Jan. 26, 1973, Ser. No. 327,029
Int. Cl. C07c *69/16, 69/54, 69/82*
U.S. Cl. 260—475 P **22 Claims**

1. An improved method for the reaction of mono oxiranes with mono, di and poly carboxylic acids and for the reaction of mono carboxylic acids with mono, di and polyfunctional oxiranes which comprises reacting at least one oxirane with at least one carboxylic acid in a solvent system consisting essentially of at least one neutral solvent, said neutral solvent being a solvent which is incapable of donating an unshared pair of electrons to metallic cations, and having a boiling point under 300°C., and at least one coordinating solvent, said coordinating solvent being a solvent which can donate an unshared pair of electrons to metallic cations, in the presence of an effective catalytic amount of an active chromium III tricarboxylate compound having available coordination sites, wherein the coordinating solvent comprises from 20 to about 80 percent of the solvent system.

3,873,603
POLYESTER SULFONATES CONTAINING QUATERNARY AMMONIUM GROUPS

Edmund Schmadel, Mettmann, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany
Filed Oct. 13, 1971, Ser. No. 188,887
Claims priority, application Germany, Nov. 4, 1970, 2054098
Int. Cl. C07c *143/14*
U.S. Cl. 260—481 R **2 Claims**

1. A polyester sulfonate containing quaternary ammonium groups, suitable for use in washing agents as a soil suspension agent, having the formula



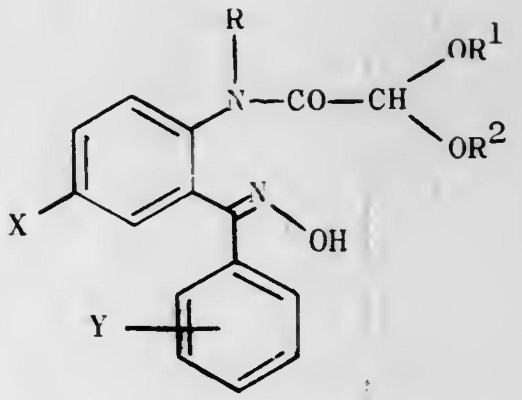
$$H\left(O-C_nH_{2n}-\underset{R\quad R'-SO_3^{\ominus}}{\overset{\oplus}{N}}-C_nH_{2n}-O-\underset{\underset{O}{\|}}{C}-\underset{\underset{SO_3Me}{|}}{CH}-CH_2-\underset{\underset{O}{\|}}{C}\right)_x OMe$$

wherein R represents a straight-chained alkyl with 8 to 20 carbon atoms, R′ represents an alkylene having 2 to 4 carbon atoms, Me represents a metal selected from the group consisting of sodium and potassium, n represents the integers 2, 3 or 4 and x represents a whole number from 10 to 1000.

3,873,604
SYNTHESIS OF 1,4-BENZODIAZEPIN-2-ONES

Ronald J. McGaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Oct. 3, 1972, Ser. No. 294,724
Int. Cl. C07c *69/08, 69/16, 69/28*
U.S. Cl. 260—490 **6 Claims**

1. The product obtained by treating a compound of formula



wherein R is hydrogen or alkyl of from 1 to 6 carbon atoms, R^1 and R^2 may be the same or different and are alkanoyl of from 1 to 6 carbon atoms, and X and Y may be the same or different and are selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, thiomethyl, cyano, alkyl of from 1 to 6 carbon atoms and alkoxy of from 1 to 6 carbon atoms; with substantially stoichiometric amount of alkali or alkaline earth metal hydroxide at about room temperature.

3,873,605
RESOLUTION OF AN IMPORTANT PROSTAGLANDIN INTERMEDIATE

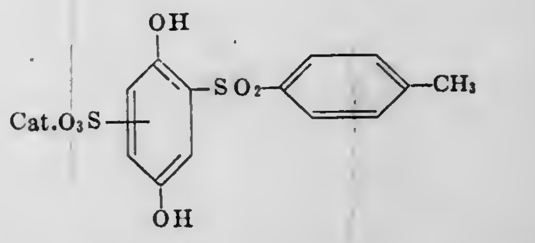
Susumu Nakanishi, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
Continuation-in-part of Ser. No. 188,766, Oct. 13, 1971, abandoned. This application Jan. 29, 1974, Ser. No. 437,699
Int. Cl. C07c *87/28*
U.S. Cl. 260—501.1 **7 Claims**

1. The process of resolving -(2β-benzyloxymethyl-3α-hydroxy-4-cyclopentene-1α-yl)acetic acid salt with d(+)-amphetamine which comprises fractionally crystallizing the d(+)-amphetamine salt of said acid from a solvent selected from the group consisting of ethylene dichloride; dioxane; ethylene dichloride-methylene chloride in a volume ratio of about 2:1 and tetramethylenedichloride-chloroform in a volume ratio of about 2:1 for a period of up to about 18 hours and then separating the resulting crystalline salt therefrom.

3,873,606
SULFONE SALTS DERIVING FROM 2,5-DIHYDROXY BENZENE MONOSULFONIC AND 2,5-DIHYDROXY BENZENE DISULFONIC ACIDS

Antonio Esteve-Subirana, Barcelona, Spain, assignor to Laboratories del Dr. Esteve S.A., Geneva, Switzerland
Filed May 14, 1973, Ser. No. 359,772
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 C **5 Claims**

1. A compound of formula



wherein the sulfo group $—SO_3$.cat is selected from those in the meta and para position to the sulfone group, and wherein cat is selected from the group consisting of an alkali metal cation, an equivalent of an alkaline earth metal cation, the ammonium ion.

3,873,607
3-OXA(AND THIA) 11-DEOXY PGE

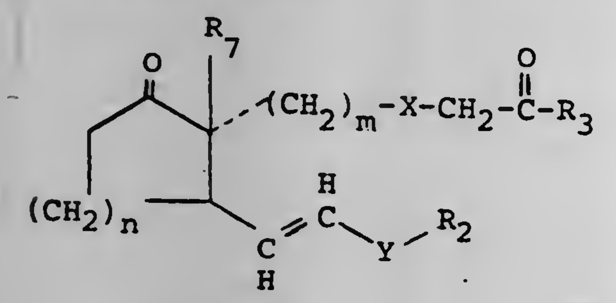
Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 274,768, July 24, 1972, abandoned. This application Apr. 27, 1973, Ser. No. 355,349

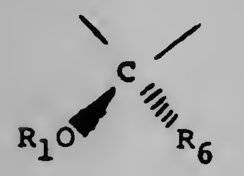
Int. Cl. C07c *149/26, 61/36*

U.S. Cl. 260—514 D **26 Claims**

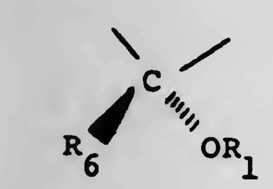
1. The racemate of a compound selected from the group consisting of those represented by the structural formula:



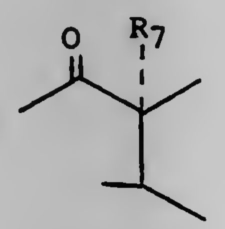
and its mirror image wherein *n* is the integer 1 or 2; R_7 is hydrogen or an alkyl group having up to 3 carbon atoms; *m* is an integer from 3 to 8, inclusive; X is oxa or thia; R_3 is hydroxy or an alkoxy group having from 1 to 12 carbon atoms; R_2 is a straight chain alkyl group having from 2 to 10 carbon atoms or a straight chain alkyl group having from 2 to 10 carbon atoms and substituted with one or two alkyl groups each having from 1 to 3 carbon atoms; Y is a divalent radical of the formulae:



or



wherein R_1 is hydrogen, triphenylmethyl, or triphenylmethyl having one or two of the phenyl rings substituted by an alkyl or an alkoxy group having up to 3 carbon atoms and R_6 is hydrogen or an alkyl group having up to 3 carbon atoms; with the proviso that when R_6 is alkyl then R_1 must be hydrogen and with the further proviso that when R_7 is alkyl then the C_8-position may be in the 8α-alkyl configuration of the formula:



and the pharmaceutically acceptable cationic salts thereof when R_3 is hydroxy.

3,873,608
HENKEL REACTION CONDITIONS

Patrick T. Laurence, and Henry Shuttleworth, both of Pointe-a-Pierre, Trinidad, assignors to Texaco Trinidad, Inc., Point-a-Pierre, Trinidad

Continuation-in-part of Ser. No. 69,456, Sept. 3, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 308,196

Int. Cl. C07c *63/38*

U.S. Cl. 260—515 P **5 Claims**

1. In the preparation of dipotassium naphthalene 2,6-dicarboxylate by heating potassium naphthoates in the presence of potassium carbonate and of a catalyst consisting of a salt or oxide of calcium, zinc or mercury to a temperature of about 300° to 530°C. under a carbon dioxide pressure of 50 to 7,000 psig; the steps of extracting the reaction mixture with hot water; concentrating the resulting aqueous extract; adding ethanol to the concentrate to form an extract system separating dipotassium naphthalene-2,6-dicarboxylate from said ethanol and recycling the salts thus obtained to the reaction mixture.

3,873,609
CONTINUOUS SLURRY PROCESS FOR FORMATION OF AROMATIC POLYCARBOXYLIC ACIDS

Yu-Lin Wu; Paul S. Hudson; Fred T. Sherk, and Donald M. Haskell, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 5, 1973, Ser. No. 321,523

Int. Cl. C07c *63/14, 63/26*

U.S. Cl. 260—515 P **8 Claims**

1. A process for the conversion of an alkali metal salt of an aromatic carboxylic acid to an aromatic polycarboxylic acid having at least one additional carboxyl group which comprises the steps:

A. dispersing said alkali metal salt of an aromatic carboxylic acid and a disproportionation catalyst, wherein said catalyst is an aromatic carboxylic acid salt of a metal selected from the group consisting of zinc, cadmium, mercury, lead, iron, manganese, magnesium, calcium and chromium, in a high-boiling organic dispersant to form a slurry;

B. heating the resulting slurry of (A) in a disproportionation zone under disproportionation conditions for a time sufficient to effect the disproportionation of said alkali metal salt of an aromatic carboxylic acid;

C. quenching the resulting disproportionation reaction mass with water whereby there is formed a dispersant phase and an aqueous phase having dissolved therein said alkali metal salt of an aromatic polycarboxylic acid and dispersed therein said solid disproportionation catalyst;

D. recovering said solid disproportionation catalyst from said phases in (C);

E. contacting the resulting aqueous phase filtrate with an aromatic carboxylic acid corresponding to the acid of step (A) whereby said alkali metal salt of an aromatic polycarboxylic acid is converted to an aromatic polycarboxylic acid and said aromatic carboxylic acid is converted to the alkali metal salt thereof;

F. filtering the resulting reaction mass of (E) to separate said aromatic polycarboxylic acid therefrom;

G. concentrating the resulting filtrate of (F);

H. adding additional dispersant to the resulting concentrate of (G) whereby there is formed a slurry of said dispersant and said alkali metal salt of an aromatic carboxylic acid;

I. recycling the resulting slurry of (H) to step (B);

J. contacting the removed disproportionation catalyst from step (D) with dispersant so as to form a slurry of said catalyst in said dispersant;

K. adding an aromatic carboxylic acid to the resulting slurry of (J) whereby there is formed a slurry of salt of said acid and catalyst in said dispersant, said acid corresponding to the acid of step (A); and

L. recycling the resulting slurry of (K) to step (B).

3,873,610
PROCESS FOR AROMATIC CARBOXYLIC ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., St. Davids, Pa.

Continuation-in-part of Ser. No. 223,306, Feb. 3, 1972, abandoned. This application May 17, 1973, Ser. No. 361,385

Int. Cl. C07c *63/00, 63/24, 63/26*

U.S. Cl. 260—515 P **11 Claims**

1. A process for making aromatic carboxylic acids from aromatic nitriles comprising the non-catalytic hydrolysis to equilibrium of an aqueous solution of said nitriles at 200° to 300°C in the presence of soluble recycled hydrolysis products of said nitrile separated from admixture with precipitated aromatic acids obtained in the process, the hydrolysis medium containing from about 0.45 to about 2.0 recycle carboxylic acid hydrolysis equivalents per mole of nitrile, venting steam and ammonia vapors at about 200° to about 300°C and at autogenous pressure, the amount of ammonia vented being more than 50% of that formed from said nitrile, cooling to precipitate free aromatic carboxylic acid, separating said solid acid from the solution of soluble products and recycling said aqueous solution to a subsequent hydrolysis.

3,873,611
PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

Yataro Ichikawa, Iwakuni, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Oct. 30, 1973, Ser. No. 411,293

Claims priority, application Japan, Nov. 6, 1972, 47-110227

Int. Cl. C07c *63/02, 63/26*

U.S. Cl. 260—524 R **14 Claims**

1. In the process for the preparation of terephthalic acid by oxidizing para-xylene and/or para-toluic acid with a molecular oxygen-containing gas in the liquid phase, the improvement which comprises carrying out said oxidation reaction

1. in the substantial absence of a lower fatty acid or halogen compound;
2. in the presence of a catalyst consisting essentially of a nickel compound and a manganese compound, which are at least partially soluble in the reaction mixture, the weight ratio, calculated as metals, of the nickel and manganese being 95:5–0.5.95.5; and
3. at a temperature in the range of 160°–280°C.

3,873,612
PRODUCTION OF TEREPHTHALIC ACID

Donald M. Haskell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 1, 1971, Ser. No. 148,737

Int. Cl. C07c *63/26*

U.S. Cl. 260—525 **3 Claims**

1. A process for recovering terephthalic acid from a first slurry thereof comprised of potassium benzoate, benzoic acid, potassium acid terephthalate and terephthalic acid, wherein said benzoic acid, said potassium acid terephthalate and said terephthalic acid are present in the undissolved state and said potassium benzoate is present in the dissolved state, which comprises

introducing said mixture into a first purification zone having an upper portion and a lower portion wherein said first slurry separates, with the materials in said undissolved state settling to said lower portion of said first purification zone and being recovered therefrom as a second slurry and the material in said dissolved state accumulating in the upper portion of said first purification zone and being recovered therefrom,

passing said second slurry comprised of benzoic acid, potassium acid terephthalate and terephthalic acid in the undissolved state to a heating zone wherein said second slurry is heated sufficiently to effect the dissolution of said benzoic acid and said potassium acid terephthalate thus to produce a third slurry comprised of benzoic acid and potassium acid terephthalate in the dissolved state and terephthalic acid in the undissolved state,

introducing said third slurry into a second purification zone having an upper portion and a lower portion wherein said benzoic acid and said potassium acid terephthalate react in the presence of said terephthalic acid to produce a fourth slurry comprised of terephthalic acid in the undissolved state and potassium benzoate in the dissolved state and wherein said fourth slurry separates, with material in said undissolved state settling to said lower portion of said second purification zone and being recovered therefrom as a fifth slurry and the material in said dissolved state accumulating in the upper portion of said purification zone and being removed therefrom,

and thereafter introducing said fifth slurry comprised essentially of terephthalic acid in the undissolved state into a drying zone wherein said terephthalic acid is recovered as a product of the process,

and wherein the temperature in said upper portion of said first purification zone is maintained in the range of 100° to 150° F. which is higher than the temperature maintained in said lower portion of said first purification zone, wherein the temperature in said upper portion of said second purification zone is maintained in the range of 150° to 250° F. which is higher than the temperature maintained in said lower portion of said second purification zone,

and wherein water is introduced into the lower portion of said first purification zone and said second purification zone whereby said water traverses said zones countercurrent to said material in said undissolved state so as to entrain material in said dissolved state and effect the removal thereof from the upper portions of said zones.

3,873,613
ISOLATION OF TETRACHLOROTEREPHTHALIC ACID

James O. Knobloch, Naperville, and James E. Latta, Hinsdale, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 20, 1973, Ser. No. 399,125

Int. Cl. C07c *63/26, 51/42*

U.S. Cl. 260—525 **10 Claims**

1. An improved method of isolating relatively pure tetrachloroterephthalic acid from a spent oleum chlorination mother liquor which comprises the steps of eliminating substantially all sulfur trioxide and chlorosulfonic acid from said mother liquor and partitioning tetrachloroterephthalic acid from the mother liquor, wherein said sulfur trioxide and chlorosulfonic acid are eliminated by (1) distilling off both compounds, or (2) by converting said compounds to the acids by reacting substantially stoichiometric amounts of water with said mother liquor or (3) distilling off said sulfur trioxide followed by reacting substantially stoichiometric amounts of water with said mother liquor to convert said chlorosulfonic acid to sulfuric acid and hydrochloric acid.

3,873,614
PROCESS FOR PREPARING OXIDIZED CARBOHYDRATES AND PRODUCTS

Vincent Lamberti, Upper Saddle River, and Susan L. Kogan, Fort Lee, both of N.J., assignors to Lever Brother Company, New York, N.Y.

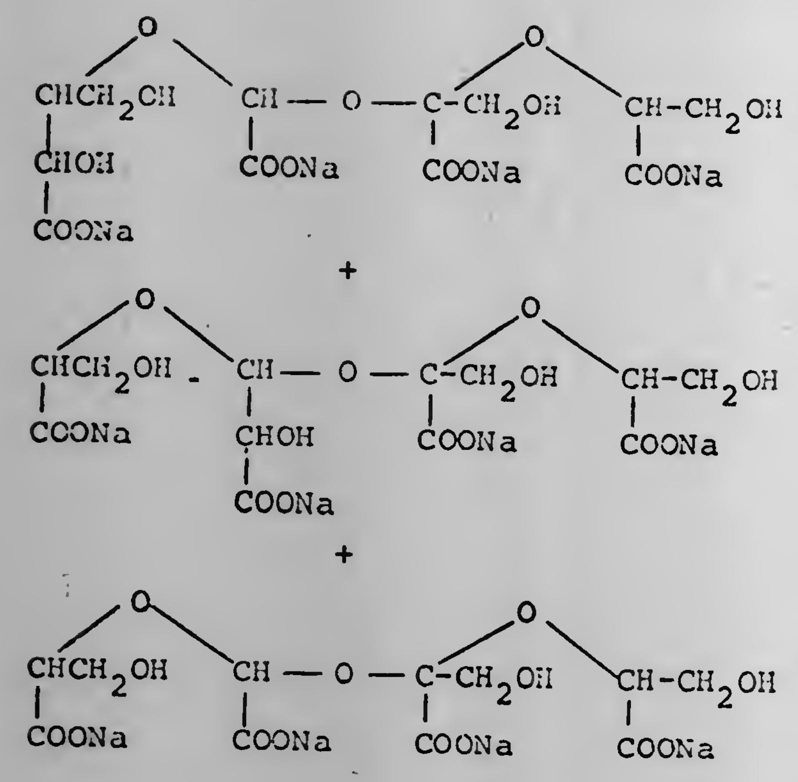
Continuation-in-part of Ser. No. 162,706, July 13, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,098

Int. Cl. C07c *51/28, 59/22*

U.S. Cl. 260—535 P **10 Claims**

1. A process for preparing an oxidized carbohydrate which comprises oxidizing a carbohydrate selected from the group consisting of disaccharides, polysaccharides, oligosaccharides, and alkyl glycosides with an oxidizing agent selected from the group consisting of silver oxide or a mixture of silver and silver oxide, in an aqueous alkali metal hydroxide solution at a temperature of from about 20°–90°C, wherein the molar ratio of alkali metal hydroxide to carbohydrate is from about 2:1 to 4:1 and the molar ratio of oxidizing agent to carbohydrate is from 0.001:1 to about 5:1.

10. Tetracarboxyl sucrose composed of the following



3,873,615
SPIRO COMPOUNDS

Paul Rys, Zurich, and Rolf Vogelsanger, Zumikon, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

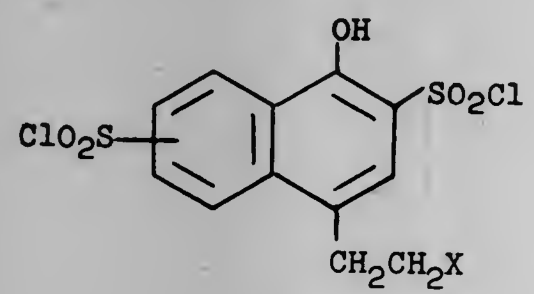
Filed Nov. 2, 1971, Ser. No. 195,031

Claims priority, application Switzerland, July 28, 1971, 11176/71

Int. Cl. C07c *143/40, 143/48, 143/70*

U.S. Cl. 260—543 R **2 Claims**

1. A compound of the formula



3,873,616
(AMINOALKOXY) PHENYLACETAMIDES AND DERIVATIVES THEREOF

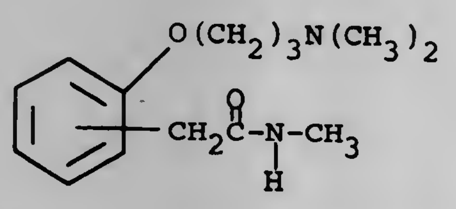
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 22, 1972, Ser. No. 317,844

Int. Cl. C07c *103/26*

U.S. Cl. 260—559 A **7 Claims**

1. A compound of the formula



and a pharmaceutically acceptable acid-addition salt or N-oxide thereof.

3,873,617
AMIDES OF 2-FLUORO-2,2-DINITROETHYL AMINES

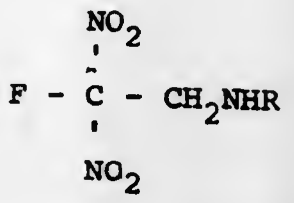
Horst G. Adolph, Beltsville, Md., and William H. Gilligan, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1971, Ser. No. 110,627

Int. Cl. C07c *103/12, 87/02*

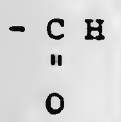
U.S. Cl. 260—561 R **12 Claims**

1. Compounds of the formula



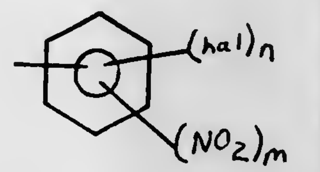
$$F-\underset{\underset{NO_2}{|}}{\overset{\overset{NO_2}{|}}{C}}-CH_2NHR$$

wherein R is selected from the group consisting of



$$-\underset{\underset{O}{\|}}{C}H$$

and



wherein *m* and *n* are intergers between 0 and 3 inclusive provided that $m + n$ is not less than 1 nor more than 3.

3,873,618
1-[4-(4-ACETAMIDOPHENYL)PHENOXY]-3-ISOPROPYL-2-PROPANOL

Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 18, 1969, Ser. No. 843,177

Int. Cl. C07c *103/28*

U.S. Cl. 260—562 P **1 Claim**

1. An amine derivative selected from 1-[4-(4-acetamidophenyl)phenoxy]-3-isopropylamino-2-propanol and the non-toxic, pharmaceutically acceptable acid-addition salts thereof.

3,873,619
PERFLUORO-ALIPHATIC SUBSTITUTED AMINOALCOHOLS

Louis Foulletier, Ouillins, and Jean-Pierre Lalu, La Mulatiere, both of France, assignors to Products Chimiques Ugine Kuhlmann, Paris, France

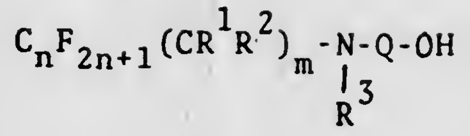
Continuation-in-part of Ser. No. 74,884, Sept. 23, 1970, abandoned, which is a continuation of Ser. No. 819,478, April 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 694,105, Dec. 28, 1967, abandoned. This application Apr. 29, 1971, Ser. No. 138,808

Claims priority, application France, Jan. 2, 1967, 67.89676; Sept. 15, 1967, 67.121188; Nov. 7, 1967, 67.127254; Apr. 29, 1969, 69.149848; Aug. 20, 1970, 70.030550The portion of the term of this patent subsequent to Sept., 1990, has been disclaimed.

Int. Cl. C07c *91/06*

U.S. Cl. 260—563 C **29 Claims**

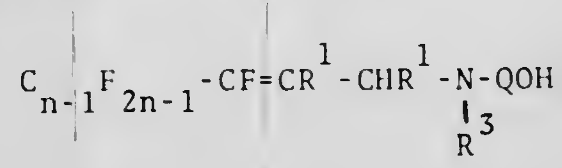
1. A perfluoroalkyl substituted aminoalcohol of the formula



$$C_nF_{2n+1}(CR^1R^2)_m-\underset{\underset{R^3}{|}}{N}-Q-OH$$

wherein *n* is an integer from 4 to about 20, *m* is 2 or 4, R^1 and R^2 each is a hydrogen atom or a lower alkyl containing 1 to 3 carbon atoms, Q is the radical $—(CHR)_q$ wherein R is a hydrogen atom or a lower alkyl containing 1 to 3 carbon atoms and *q* is an integer from 1 to 10, and R^3 is a hydrogen atom, an alkyl containing 1 to 20 carbon atoms, a cycloalkyl containing 3 to 12 carbon atoms, a cycloalkenyl radical containing 5 to 12 carbon atoms, an aryl radical containing from 6 to 12 carbon atoms, the radical —Q—OH, or the radical $C_nF_{2n+1}(CR^1R^2)_m$.

15. A perfluoroalkenyl substituted aminoalcohol of the formula



$$C_{n-1}F_{2n-1}-CF=CR^1-CHR^1-\underset{\underset{R^3}{|}}{N}-QOH$$

wherein R^1, R^3 and Q have the same meaning as defined in claim 1 and *n* is an integer from 4 to 20.

3,873,620
PHENOXYALKYLAMINES, PROCESS FOR THEIR PREPARATION AND APPLICATIONS THEREOF

Henri Pinhas, Paris, France, assignor to Laboratoires Laroche Navarron, Levallois, France

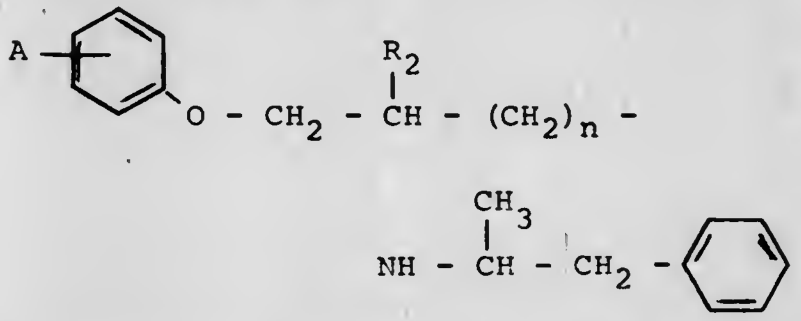
Filed Dec. 20, 1971, Ser. No. 210,107

Claims priority, application France, Dec. 28, 1970, 70.46875

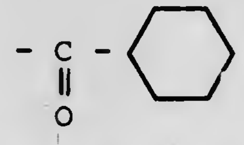
Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **2 Claims**

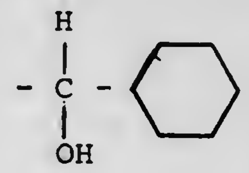
1. A compound selected from the group consisting of phenoxyalkylamines of formula



in which *n* is an integer selected from 0 and 1, R_2 is selected from the group consisting of hydrogen, and methyl, A is selected from the group consisting of the radicals



and



and their non-toxic acid addition salts.

3,873,621
METHOD FOR PREPARING AMINES

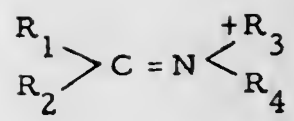
Maurice M. Kreevoy; Richard Frederic Borch, both of Minneapolis, Minn., and Jonathan Edward Colin Hutchins, Alhambra, Calif., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed May 22, 1972, Ser. No. 255,772

Int. Cl. C07c *85/08*

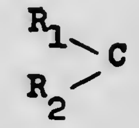
U.S. Cl. 260—583 R **16 Claims**

1. The method which comprises contacting a compound represented by the structural formula



$$\begin{matrix}R_1\\R_2\end{matrix}\!\!>C=N<\!\!\begin{matrix}{}^{+}R_3\\R_4\end{matrix}$$

with a substantially equivalent amount of a cyanoborohydride selected from the group consisting of lithium, sodium, potassium and quaternary ammonium cyanoborohydrides and their corresponding deuterides and tritides and mixtures thereof in a solvent selected from the group consisting of water, tetrahydrofuran, methanol, ethanol, diethyl ether and mixtures thereof and having pH between about 2 and 12 for a period of time sufficient to convert the imminium group to an amine group, R_1, R_2, R_3, and R_4 being selected from the group consisting of H, alkyl, aryl, cycloalkyl and cycloalkenyl groups,



$$\begin{matrix}R_1\\R_2\end{matrix}\!\!>C$$

forms a carbon ring, said compound being soluble in the selected solvent.

3,873,622
PREPARATON OF CYCLIC DIKETONES INCLUDING INTERMEDIATES THEREFOR

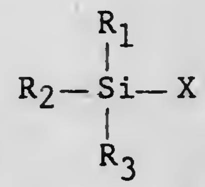
Donald S. Hetzel, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,940

Int. Cl. C07c *45/00*

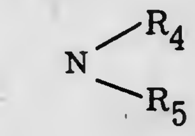
U.S. Cl. 260—586 P **6 Claims**

1. A process for preparing 4-substituted and 3,5-disubstituted cyclopentane-1,2-diones which comprises contacting 3-alkyl, 3-alkenyl, 3-benzyl, 2,4-dialkyl, 2,4-dialkenyl or 2,4-dibenzyl glutaric acid dialkyl, diphenyl or dibenzyl ester in an anhydrous, reaction-inert solvent with metallic sodium and a silyl compound of the formula



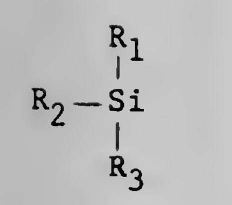
$$R_2-\underset{\underset{R_3}{|}}{\overset{\overset{R_1}{|}}{Si}}-X$$

to form the bis-silyl ether of the 1-cyclopentene-1,2-diol, isolating said ether from its reaction mixture and contacting said ether with an oxidizing agent selected from the group consisting of ferric chloride, bismuth oxide, chromic acid, cupric nitrate, cupric sulfate, cupric phosphate and cupric acetate in aqueous acid solution, wherein R_1, R_2 and R_3 are each selected from the group consisting of fluorine, bromine, chlorine, alkyl, phenyl, benzyl, tolyl and dimethylaminophenyl, at least one of said R_1, R_2 and R_3 being other than fluorine, bromine or chlorine and X is selected from the group consisting of fluorine, bromine, chlorine and



$$N\!<\!\begin{matrix}R_4\\R_5\end{matrix}$$

wherein R_4 is hydrogen or alkyl and R_5 is hydrogen, alkyl or



$R_2-\overset{R_1}{\underset{R_3}{\mathrm{Si}}}$

each of said alkyl moieties having from 1 to 6 to carbon atoms and each of said alkenyl moieties having from 2 to 6 carbon atoms.

3,873,623

PREPARATION OF ALPHA-NITROKETONES

Mahmoud S. Kablaoui, Wappingers Falls, and Donald R. Lachowicz, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 8, 1971, Ser. No. 206,198

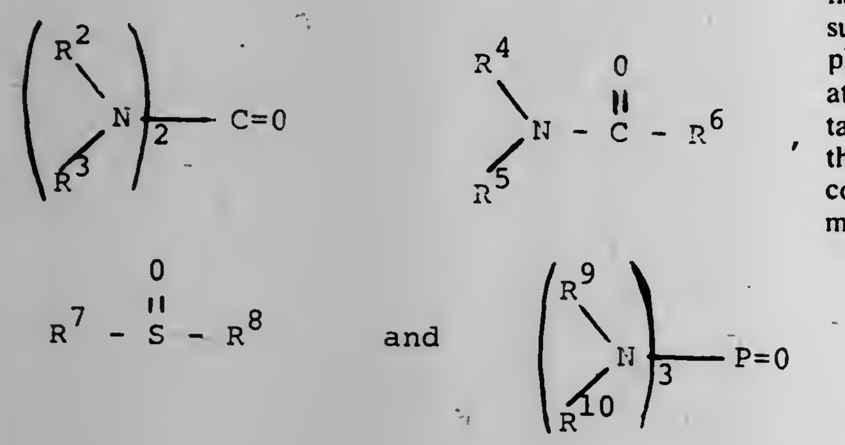
Int. Cl. C07c *45/02*

U.S. Cl. 260—597 R **16 Claims**

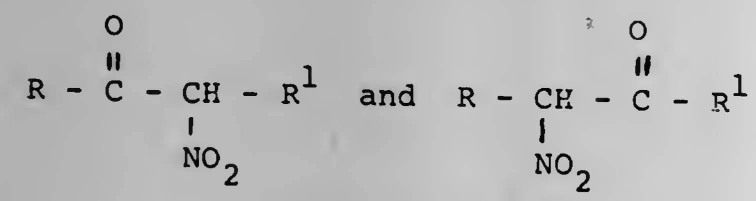
1. A method of preparing alpha-nitroketones which comprises simultaneously contacting a mixture of an alkene, said alkene corresponding to the formula:

$$R-CH=CH-R^1$$

where R and R¹ are alkyl groups having from 1 to 20 carbon atoms or aryl groups having from 6 to 20 carbon atoms, a denitrating agent selected from the group consisting of 2-pyrrolidinones,



where R^2, R^3, R^7, R^8, R^9 and R^{10} are alkyl of from 1 to 5 carbons and R^4, R^5 and R^6 are hydrogen or alkyl of from 1 to 5 carbon atoms and an aprotic organic solvent having a boiling point between about 30° to 100°C. with dinitrogen tetroxide and oxygen, where the mole ratio of said denitrating agent to said alkene is above 0.1:1 to about 2:1 thereby forming alpha-nitroketones corresponding to the formulae:



$R-\overset{O}{\overset{\|}{C}}-\underset{NO_2}{CH}-R^1$ and $R-\underset{NO_2}{CH}-\overset{O}{\overset{\|}{C}}-R^1$

where R and R^1 are as heretofore defined.

3,873,624

PROCESS OF PREPARING α-FORMYL SULFIDES AND 2-YKROCARBYL-THIOALDOXIMES THEREFROM

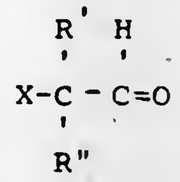
Chempolil Thomas Mathew, Randolph, and Harry Edwards Ulmer, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 30, 1973, Ser. No. 327,979

Int. Cl. C07c *47/00*

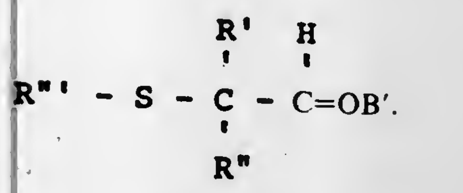
U.S. Cl. 260—601 R **5 Claims**

1. A process for preparing an α-formyl sulfide comprising reacting in an aqueous medium an α-haloaldehyde of the formula



$X-\overset{R'}{\underset{R''}{C}}-\overset{H}{C}=O$

wherein R′ and R″ independently are hydrogen, hydrocarbon radicals of 1 to 18 carbon atoms selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl and aryl or substituted hydrocarbon radicals of the above group wherein the substituted moieties are selected from the group consisting of alkyl of 1 to 18 carbon atoms, aryl of 6 to 18 carbon atoms, halogen, cyano, sulfo, mercapto, alkylthio of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, dialkoxy phosphino in which each alkoxy group contains 1 to 6 carbon atoms, dialkyl phosphonoxy in which each alkyl group contains 1 to 6 carbon atoms, carboxy, alkoxy carbonyl in which the alkoxy group contains 1 to 6 carbon atoms, nitro and combinations thereof, and X is a halogen selected from the group consisting of chlorine bromine and iodine, with a thiol salt of the formula R‴SM, wherein R‴ is a hydrocarbon radical of 1 to 18 carbon atoms selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl and aryl or a substituted hydrocarbon radical of the above group wherein the substituted moiety is selected from the group consisting of alkyl of 1 to 18 carbon atoms, aryl of 6 to 18 carbon atoms, halogen, cyano, alkylthio of 1 to 6 carbon atoms, amido, sulfo, sulfoamido, hydroxy, alkoxy of 1 to 6 carbon atoms, dialkoxy phosphino in which each alkoxy group contains 1 to 6 carbon atoms, dialkyl phosphonoxy in which each alkyl group contains 1 to 6 carbon atoms, carboxy, alkoxy carbonyl in which the alkoxy group contains 1 to 6 carbon atoms, nitro and combinations thereof, and M is an alkali or alkaline earth metal, thereby forming an α-formyl sulfide of the formula



$R'''-S-\overset{R'}{\underset{R''}{C}}-\overset{H}{C}=OB'.$

wherein said reaction is carried out under basic conditions and at a temperature range of about −20°C. to 90°C.

3,873,625

PREPARATION OF HYDROPEROXIDES BY AUTOXIDATION

Bruno J. Barone, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Apr. 28, 1971, Ser. No. 138,334

Int. Cl. C07c *73/06*

U.S. Cl. 260—610 B **5 Claims**

1. A process for preparing organic hydroperoxides comprising contacting a tertiary alkane, aralkane or cycloalkane selected from the group consisting of isobutane, isopentane, isohexane, isoheptane, isooctane, ethyl benzene, cumene, cyclopentane, cyclohexane and cycloheptane with molecular

oxygen in liquid phase at a temperature of 145°–170°C. in the presence of from about 0.025 to 1.0 weight percent based on the tertiary alkane, aralkane or cycloalkane feed of solid metal-free phthalocyanine as a fine powder below about 20 micron size dispersed in the reaction mixture.

3,873,626

PURIFICATION OF BIS(2-FLUORO-2,2-DINITROETHYL)FORMAL

Horst G. Adolph, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 29, 1971, Ser. No. 168,505

Int. Cl. C07c *43/30*

U.S. Cl. 260—615 A **10 Claims**

1. The method of purifying bis(2-fluoro-2,2-dinitroethyl)formal from a mixture comprising bis(2-fluoro-2,2-dinitroethyl) formal and its oxymethylene homolog 1,9-difluoro-1,1,9,9-tetranitro-3,5,7-trioxannonane comprising:

contacting said mixture in an inert solvent with dichromate which is dissolved in a relatively strong acid solution which is not attacked by dichromate.

3,873,627

CARBON-TO-CARBON NUCLEAR DIMER COUPLING OF p-ALKYLPHENOLS WITH FERRICYANIDE CATALYSIS

Richard J. Lee, Downers Grove, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,122

Int. Cl. C07c *37/14, 39/12*

U.S. Cl. 260—620 **2 Claims**

1. A method of nuclear carbon-to-carbon coupling of p-alkyl-substituted phenol, wherein the alkyl-substituent has a molecular weight in the range of 85 to 3,000, which method comprises combining equal molar proportions of said p-alkylphenol and potassium ferricyanide with a water-soluble lower alkanol and sodium or potassium carbonate and water to dissolve said carbonate and said ferricyanide and emulsify the p-alkyl-substituted phenol, maintaining said emulsion in the absence of oxygen at a temperature in the range of 25° to 300°F. for at least one hour, adding a C_6-C_{10} alkane hydrocarbon to the emulsion in an amount to dissolve the p-alkylphenol, separating the aqueous phase from the organic phase and removing the alkane to recover said nuclear coupled p-alkylphenol product.

3,873,628

PREPARATION OF ORTHO-ALKYLATED PHENOLS

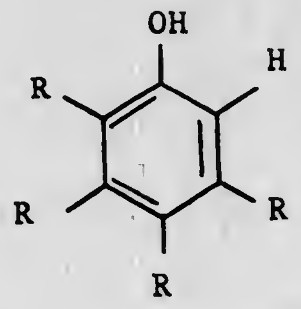
Bernardus J. Van Sorge, Selkirk, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 717,919, April 1, 1968, abandoned. This application May 12, 1971, Ser. No. 142,798

Int. Cl. C07c *37/16*

U.S. Cl. 260—621 R **8 Claims**

1. In a process for alkylating a phenol in the ortho position which comprises the vapor phase reaction in the presence of an alkylation catalyst, an alkyl alcohol and a phenol compound of the formula



where R is a monovalent substituent from the group consisting of hydrogen, alkyl, phenyl and alkyl substituted phenyl; the improvement comprising conducting the reaction in the presence of a catalyst comprising magnesium oxide in admixture with at least 1 percent by weight of manganese sulfate wherein the catalyst is maintained at a temperature of 420°–485°C.

3,873,629

SEPARATION OF CHLORODIFLUOROMETHANE AND HYDROGEN

James B. Jones, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Jan. 23, 1974, Ser. No. 435,871

Int. Cl. C07c *17/38*

U.S. Cl. 260—653 **4 Claims**

1. A process comprising bringing into contact, in a chamber having a lower and an upper end, a downward flowing stream consisting essentially of concentrated liquid sulfuric acid and an upward flowing stream consisting essentially of a gaseous mixture of hydrogen fluoride and chlorodifluoromethane, the chamber being maintained at a temperature above the boiling point of both hydrogen fluoride and chlorodifluoromethane, the lower end of the chamber being maintained at a temperature about from **25** to **100** Centigrade degrees higher than the upper end of the chamber; and removing purified chlorodifluoromethane from the upper end of the chamber and a mixture of concentrated sulfuric acid and hydrogen fluoride from the lower end of the chamber.

3,873,630

PROCESS FOR PYROLYZING TETRAFLUOROETHYLENE TO HEXAFLUOROPROPYLENE

Norman Eugene West, Vienna, W. Va., assignor to E. I. Du-Pont de Nemours and Company, Wilmington, Del.

Filed June 12, 1972, Ser. No. 261,629

Int. Cl. C07c *21/20*

U.S. Cl. 260—653.3 **6 Claims**

1. In a process for pyrolyzing in a reaction zone a feed mixture of tetrafluoroethylene (TFE) at a temperature between 700° and 900°C. to convert at least 20 percent of the TFE to hexafluoropropylene (HFP), with injection of a material selected from the class of HCl or HF into the pyrolysis mixture to prevent polymerization of unconverted TFE, followed by cooling and separation of HFP, and recycling of unconverted TFE with makeup TFE; the improvement which comprises diluting the feed to the pyrolysis with CO_2 at a TFE:CO_2 weight ratio of 1:1 to 25:1 so the TFE partial pressure is at least 360 mm Hg absolute and the total pressure is 0.75 to 2.0 atmospheres absolute.

3,873,631

STABILIZATION OF METHYL CHLOROFORM

Norman L. Beckers, Chardon, and Edward A. Rowe, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 243,071, April 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 5,101, Jan. 22, 1970, abandoned. This application May 2, 1974, Ser. No. 466,183

Int. Cl. C07c *17/40, 17/42*

U.S. Cl. 260—652.5 R **2 Claims**

1. A composition which consists essentially of methyl chloroform stabilized with a mixture of

a. 0.1 to 2.0 percent by weight of a nitroalkane of from 1 to 3 carbon atoms,
b. 0.05 to 0.5 percent by weight of an aliphatic epoxide selected from the group consisting of butylene oxide, propylene oxide, epichlorohydrin, and methyl glycidyl ether,
c. 0.1 to 3.0 percent by weight of propylene glycol monomethyl ether, and
d. 0.1 to 2.0 percent by weight of t-amyl alcohol.

3,873,632
ALKYLAROMATIC HYDROCARBON ISOMERIZATION PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 319,440, Dec. 29, 1972, Pat. No. 3,849,340, which is a division of Ser. No. 197,375, Nov. 10, 1971, Pat. No. 3,763,260, which is a continuation-in-part of Ser. No. 20,125, March 16, 1970, abandoned. This application July 22, 1974, Ser. No. 490,425

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A **9 Claims**

1. A process for isomerizing an isomerizable alkylaromatic hydrocarbon which comprises contacting said isomerizable hydrocarbon with a catalyst comprising a zeolite component having a mordenite crystal structure and having a silica to alumina mole ratio of at least 40:1 prepared by acid extracting alumina from an initial mordenite composition having a silica to alumina mole ratio of about 12:1 to about 30:1 and metal component selected from the group consisting of copper, silver, gold and zirconium, at alkylaromatic isomerization conditions.

3,873,633
PROCESSES FOR DEHYDROGENATION OF HYDROCARBONS

Robert S. Cichowski, San Luis Obispo, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 105,649, Jan. 11, 1971, abandoned. This application July 19, 1973, Ser. No. 380,590

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **12 Claims**

1. A process for the dehydrogenation of dehydrogenatable paraffinic feedstocks having from 3 to 12 carbon atoms to the corresponding diolefin and/or mono-olefin which comprises contacting said feedstock in the vapor phase in the presence of molecular oxygen and in the absence of halogen under dehydrogenation conditions with a catalyst consisting of bismuth, cobalt and phosphorus in association with oxygen, wherein the proportions of bismuth, cobalt and phosphorus correspond to the expression $Bi_xCo_yP_z$, in which expression the value of x is in the range of 0 to 10, the value of y is in the range of 0.1 to 10 and the value of z is in the range of 0.1 to 5 and wherein the feedstock:oxygen ratio is in the range of about 1:1 to about 1:4.

3,873,634
PROMOTION OF ETHYLENE/ISOPARAFFIN ALKYLATION

David M. Hoffman, Weston, Conn., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 257,090, May 26, 1972,. This application Oct. 17, 1973, Ser. No. 407,398

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.44 **16 Claims**

1. In the process for the alkylation of a first monoolefin comprising ethylene or propylene by C_4–C_8 isoparaffins in the presence of BF_3. H_3PO_4 catalyst, the improvement wherein said alkylation is carried out simultaneously with the alkylation of said isoparaffin by a second, different monoolefin havinf from 3 to 8 carbon atoms, wherein the mole ratio of first monoolefin to second monoolefin is at least 5:1.

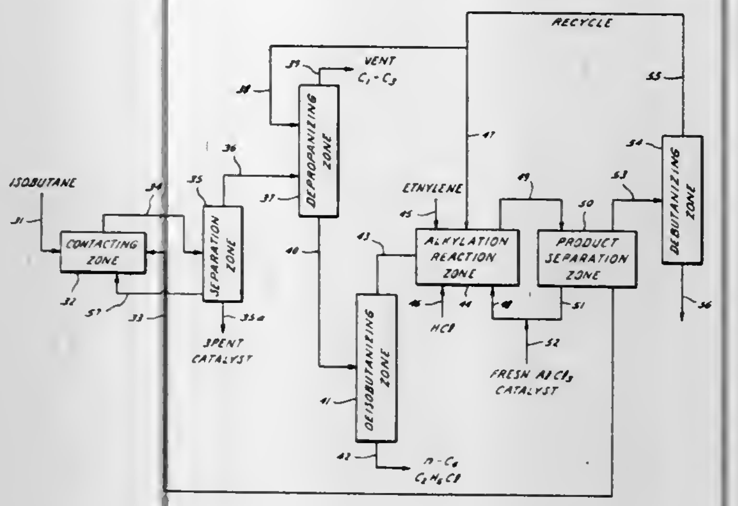
3,873,635
ISOBUTANE PRETREATMENT IN ALKYLATION WITH ETHYLENE UTILIZING ALUMINUM CHLORIDE HYDROCARBON COMPLEX, HYDROGEN CHLORIDE AND ETHYL CHLORIDE

Gerald F. Prescott, Port Arthur; Charles T. Lewis, Jr., and William R. Owens, both of Nederland, all of Tex., assignors to Texaco, Inc., New York, N.Y.

Continuation of Ser. No. 263,890, June 19, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,084

Int. Cl. C07c *3/56*

U.S. Cl. 260—683.57 **5 Claims**



1. In an aluminum chloride catalyzed alkylation process wherein isobutane and ethylene are contacted with an aluminum chloride-hydrocarbon complex catalyst and ethyl chloride in an alkylation reaction zone in the liquid phase, under alkylating conditions, and with agitation sufficient to form an emulsion of reactant hydrocarbons and catalyst, wherein ethylene charge to said process contains C_1-_{C3} range normal paraffin diluents, wherein fresh isobutane charge to said process contains C_3–C_4 range normal paraffin diluents and impurities which are reactive with aluminum chloride; the improvement which comprises:

a. reacting, in an alkylation reaction zone, an isobutane stream, substantially free of normal paraffin hydrocarbons and impurities which are reactive with aluminum chloride with an ethylene stream containing C_1–C_3 noral paraffin impurities in the presence of an aluminum chloride-hydrocarbon complex catalyst and hydrogen chloride catalyst activator for production of alkylated hydrocarbons;

b. separating, in a product separation zone, the reaction effluent from said alkylation reaction-zone into a hydrocarbon phase essentially free of aluminum chloride-hydrocarbon complex catalyst and a catalyst phase;

c. recycling a major portion of said catalyst phase from said product separation zone to said alkylation reaction zone for said reacting step (a);

d. fractionating, in a debutanizing zone, said hydrocarbon phase into a C_5 and heavier alkylated hydrocarbon product fraction and a recycle hydrocarbon fraction comprising isobutane with minor amounts of ethyl chloride, C_1–C_4 normal paraffin hydrocarbons and unreacted ethylene;

e. recycling a major portion of said recycle hydrocarbon fraction to said alkylation reaction zone for reaction of said isobutane with said unreacted ethylene in step (a);

f. contacting, in a contacting zone, a minor portion of said catalyst phase from said product separation zone with said fresh isobutane charge containing C_3–C_4 range normal paraffin diluents and impurities which reactive with aluminum chloride for conversion of said reactive impurities into compounds soluble in said catalyst phase;

g. separating, in a separation zone, the effluent from said contacting zone into a catalyst phase containing conversion products of said reactive impurities from said fresh isobutane charge and an isobutane phase containing C_3–C_4 normal paraffin impurities and substantially free of said reactive impurities;

h. fractionating, in a depropanizing zone, the isobutane phase from said separation zone and a minor portion of said recycle hydrocarbon fraction from said debutanizing zone into a C_1–C_3 fraction comprising C_1–C_3 normal paraffins and a minor portion of said unreacted ethylene and a depropanizing zone bottoms fraction comprising a major portion isobutane and minor amounts of normal butane and ethyl chloride;

i. fractionating, in a deisobutanizing zone, said depropanizing zone bottoms fraction into a butane fraction comprising normal butane and ethyl chloride and an isobutane fraction substantially free of C_1–C_4 normal paraffin diluents and said reactive impurities; and

j. charging said isobutane fraction from said deisobutanizing zone to said alkylation reaction zone as the isobutane stream of step (a).

3,873,636
BLOCK COPOLYMER OF A VINYL MONOMER AND A POLY-3,3,3-TRIFLUOROPROPYLMETHYLSILOXANE

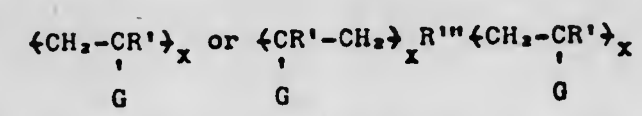
John C. Saam, and Frederick W. G. Fearon, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 66,896, Aug. 25, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 398,059

Int. Cl. C08f *33/08;* **C08g** *47/06, 47/10*

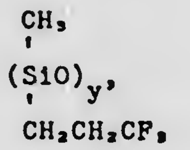
U.S. Cl. 260—827 **4 Claims**

1. A block copolymer consisting essentially of at least one organic block represented by the formula



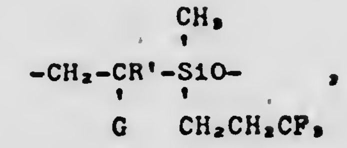
$$\left(CH_2-\underset{G}{CR'}\right)_x \text{ or } \left(\underset{G}{CR'}-CH_2\right)_x R''' \left(CH_2-\underset{G}{CR'}\right)_x$$

and at least one silicon containing block represented by the formula



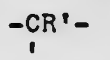
$$\left(\overset{CH_3}{\underset{CH_2CH_2CF_3}{SiO}}\right)_y,$$

said organic block being bonded to said silicon containing block through silicon-carbon bonds, represented by the formula



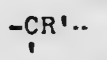
$$-CH_2-\underset{G}{CR'}-\overset{CH_3}{\underset{CH_2CH_2CF_3}{SiO}}- \quad ,$$

any organic block valence not bonded to a silicon containing block being bonded to R— and any silicon containing block valence not bonded to an organic block being bonded to —SiR''_2Z, in which R is a monovalent hydrocarbon radical having from 1 to 30 inclusive carbon atoms, R′ is a monovalent radical selected from the group consisting of a hydrogen atom and a methyl radical, each R″ is a monovalent hydrocarbon or halogenated hydrocarbon radical both having from 1 to 18 inclusive carbon atoms, R‴ is a divalent hydrocarbon radical having from 2 to 30 inclusive carbon atoms, Z is a monovalent radical selected from the group consisting of R″ radicals, hydroxyl radicals and hydrolyzable radicals, G is a monovalent radical selected from the group consisting of —$CH{=}CH_2$, —$C(CH_3){=}CH_2$, —$CH{=}CHCH_3$, —C_3H_4N, —$COOCH_3$, —$C \equiv N$, —$C(O)NR''_2$, —$COOCH_2CH_3$, and a monovalent aromatic radical consisting of from 1 to 3 benzenoid rings in which the benzenoid rings have up to 3 aliphatic organic substituents each of no more than six carbon atoms selected from the group consisting of alkyl radicals, cycloalkyl radicals and alkoxy radicals and no aliphatic organic substituent on said benzenoid ring bonded to the



$$-\underset{|}{CR'}-$$

group and which is ortho to the



$$-\underset{|}{CR'}\cdot\cdot$$

group has more than one carbon atom, *x* has an average value greater than 20, and *y* has an average value greater than 20, said block copolymer having a molecular weight greater than 3,000, 2 to 98 weight percent being silicon containing units and 2 to 98 weight percent being units of the organic block.

3,873,637
ADHESIVE COMPOSITION CONTAINING PHENOXY AND EPOXY RESINS AND A CROSS-LINKING AGENT THEREFOR

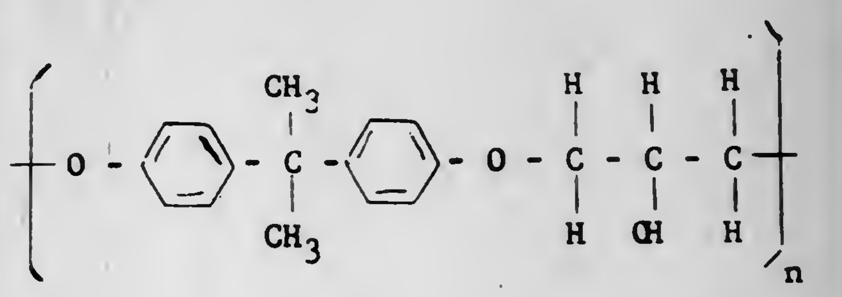
Yoshio Fujiwara; Keiichi Naito, and Toru Odajima, all of Utsunomiya, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 334,991, Feb. 23, 1973, abandoned, which is a division of Ser. No. 170,334, Aug. 9, 1971,. This application June 26, 1974, Ser. No. 483,428

Int. Cl. C08q *45/06*

U.S. Cl. 260—830 TW **7 Claims**

1. A structural adhesive composition comprising: a phenoxy resin having the formula



wherein *n* is 50 to 100, a low molecular epoxy resin having more than two epoxy groups and an epoxy value less than 4,000, and cross-linking cross- agent having at least two aziridine rings at the ends of the molecules thereof to react with the hydroxyl group (OH) of said phenoxy resin and with said low molecular epoxy resin for providing a high cross-linking density, said epoxy resin being present in the composition in an amount between 20 and 400 wt.% based on the amount of said phenoxy resin, and said cross-linking agent being present in the composition in an amount between 2 and 30 wt.% based on the amount of said phenoxy resin.

3,873,638
TACKY BLEND OF BUTADIENE-ACRYLONITRILE COPOLYMER THERMOSETTABLE MATERIAL HAVING ACRYLATE AND EPOXY GROUPS PEROXIDE AND EPOXY CURING AGENT

Melvin M. Olson, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

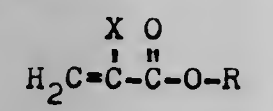
Division of Ser. No. 137,660, April 26, 1971, Pat. No. 3,753,755, which is a continuation-in-part of Ser. No. 855,361, Sept. 4, 1969, abandoned, which is a continuation-in-part of Ser. No. 785,839, Nov. 5, 1968, abandoned. This application June 13, 1973, Ser. No. 369,729

Int. Cl. C08g *45/04*

U.S. Cl. 260—837 R **7 Claims**

1. A normally tacky, heat-hardenable, substantially solvent-free, cold flow-resistant, coherent adhesive which essentially comprises a storable uniform blend of polymers which are mutually soluble at 95° C., said blend comprising a physical mixture of

1. 100 parts by weight of a thermosettable resin system containing both acrylic-type unsaturation and epoxy groups, one component of which is a pourable liquid at 95° C. having the formula



$$H_2C{=}\overset{X}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-R$$

wherein X is H or CH_3 and R is an organic radical containing either an additional acrylic-type unsaturated group or an epoxy group, said resin system being characterized by having a softening point less than 100° C. an epoxy equivalent weight of not more than 1,200, and containing from about ¼ to 6 equivalents of acrylic-type unsaturation per equivalent of epoxy,

2. from about 25 to 250 parts by weight of an elastomeric butadiene:acrylonitrile copolymer and
3. an effective amount of a dual curing system which is substantially inactive at room temperature and which contains about 1–5 percent, based on the total weight of the blend, of a peroxide curing agent for the unsaturated groups and at least a stoichiometric amount of an epoxy group curing agent,

said constituents being present in amounts such as to render said blend when formed per se in a 75 micron layer, tacky, flexible and self-sustaining, possessed of an internal strength value of at least about 5 minutes, retentive of an affinity for the surface of a smooth oriented polyester film equal to at least about 225 grams per 1.25 centimeters of width, when measured after storage at 50° C. for one year, and capable of displaying a tensile shear value of at least 70 kilograms per square centimeter after cure.

3,873,639

ANTISTATIC FIBER CONTAINING CHAIN-EXTENDED TETROLS BASED ON DIAMINES

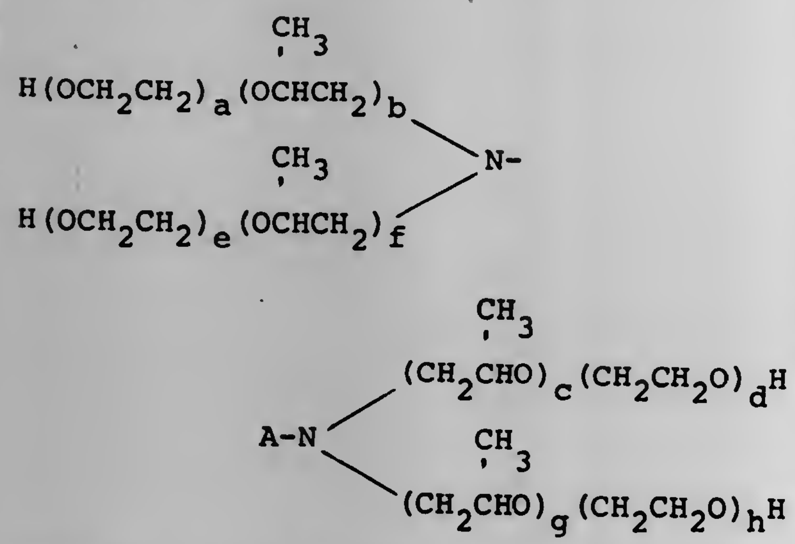
Lamberto Crescentini, and Rodney Lee Wells, both of Chester, Va., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed July 12, 1972, Ser. No. 271,316

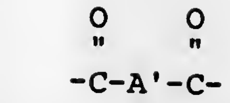
Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **10 Claims**

1. In a process for the formation of an antistatic polyamide fiber from a fiber-forming polyamide polymer containing about 1 to 12 percent by weight of an antistatic compound which is a chain-extended reaction product of a tetrol compound represented by the formula:

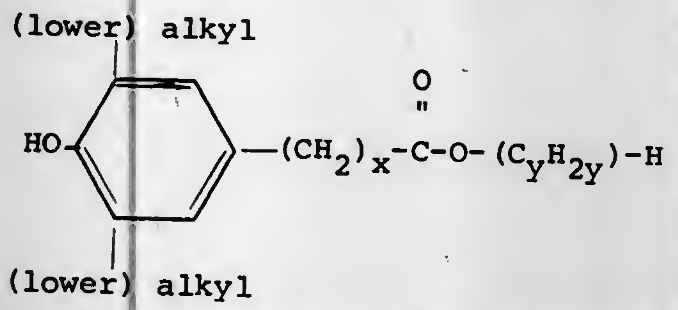


where *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h* are each a whole number and A is a difunctional radical from a hydrocarbon containing 1 to 13 carbon atoms, said tetrol compound having a molecular weight between about 4,000 and about 50,000 and at least one compound selected from the group consisting of compounds which yield the following divalent radical:

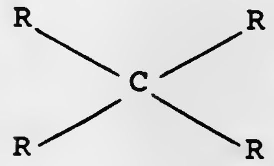


$$-\overset{O}{\overset{\|}{C}}-A'-\overset{O}{\overset{\|}{C}}-$$

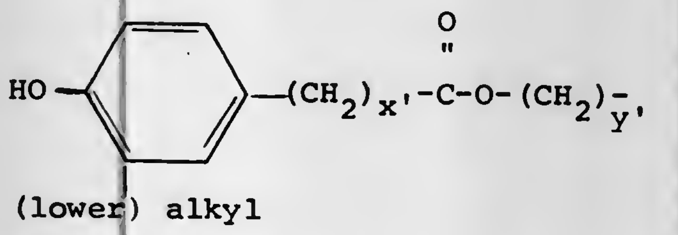
where A′ is a difunctional radical from a hydrocarbon containing 1 to 30 carbon atoms, by extruding the molten polymer through an orifice into a quenching medium and thereafter stretching the resulting filaments, the improvement comprising dissolving in the extrudate prior to extrusion at least 0.1 percent by weight, based on the weight of the antistatic compound, of a phenol compound selected rom the group consisting of:



in which *x* has a value of from 1 to 6 and y has a value of from 6 to 30; and



in which R is



wherein *x*′ has a value from 1 to 6 and *y*′ has a value of 1 to 6.

3,873,640

ADHESIVE BONDING OF POLYVINYL CHLORIDE AND OTHER SYNTHETIC RESIN SUBSTRATES

William J. Owston, Edinboro, and Dennis D. Howard, Girard, both of Pa., assignors to Lord Corporation, Erie, Pa.

Continuation-in-part of Ser. No. 246,201, April 21, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 343,667

Int. Cl. C08g *22/04*

U.S. Cl. 260—859 R **27 Claims**

1. A shelf-stable composition comprising:

A. a component selected from the group consisting of

1. a monomer selected from the group consisting of:

styrene,
methyl methacrylate,
ethyl methcarylate,
n-butyl methacrylate,
isobutyl methacrylate,
t-butyl methcarylate,
hexyl methacrylate, and
ethyl hexyl methacrylate,

2. a mixture of at least two of said monomers,
3. a partially polymerized syrup of one of said monomers, and
4. a partially polymerized syrup of at least two of said monomers;

B. an organic polyisocyanate capped with a hydroxy functional monomer containing at least one unit of polymerizable alpha-beta olefinic unsaturation, said capped polyisocyanate having substantially no free isocyanate functionality; and

C. a reducing component of a redox polymerization catalyst;

said composition containing about 10 to about 90% of (A), about 90 to about 10% of (B) and about 0.04 to about 4% of (C).

3,873,641

MOULDING COMPOSITIONS CONTAINING A MIXTURE OF A THERMOPLASTIC AROMATIC POLYCARBONATE, A BUTADIENE POLYMER AND A COPOLYMER BASED ON ETHYLENICALLY UNSATURATED MONOMERS

Dieter Margotte, Krefeld; Karl-Heinz Ott, Leverkusen; Hermann Schirmer, Krefeld; Gunther Kampf, Krefeld-Bockum; Gunter Peilstocker, Krefeld-Bockum, and Hugo Vernaleken, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 3, 1973, Ser. No. 421,488

Claims priority, application Germany, June 9, 1973, 2329546; Oct. 25, 1973, 2353383

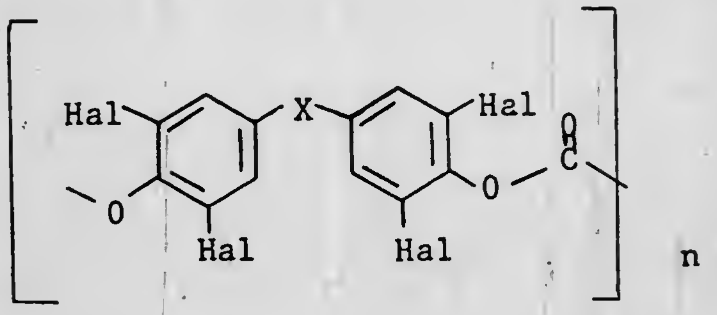
Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **5 Claims**

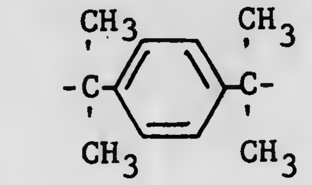
1. A thermoplastic moulding composition comprising

1. 70–30% by weight of a thermoplastic aromatic polycarbonate and
2. 30–70% by weight of a mixture of
   a. 10–40 parts by weight of a butadiene polymer having a butadiene content of at least 30%, the remainder being styrene, acrylonitrile, acrylic acid, methacrylic acid, a C_1–C_6 alkyl ester of acrylic acid, a C_1–C_6 alkyl ester of methacrylic acid, divinylbenzene or a mixture thereof and
   b. 90–60 parts by weight of a copolymer of
      i. 95–50 parts by weight of styrene, α-methylstyrene, methylmethacrylate or a mixture thereof and
      ii. 5–50 parts by weight of acrylonitrile, methacrylonitrile, methylmethacrylate or a mixture thereof,

said moulding composition containing at least 5% by weight of said butadiene polymer and said thermoplastic aromatic polycarbonate being a mixture of (I) 50–85% by weight of a polycarbonate based on a halogen-free phenol and (II) 15–50% by weight of a halogen-containing polycarbonate of the formula



wherein *n* is 15 to 200, X is alkylene or alkylidene having 1 to 5 carbon atoms; cyloalkylene or cycloalkylidene having 5 to 15 carbon atoms; a single bond; —0— **or**



and Hal is chlorine or bromine.

3,873,642

CRYSTALLINE OLEFIN BLOCK POLYMERS AND THEIR PREPARATION

James L. Jezl, Swarthmore, Pa., assignor to Avisun Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 90,173, Feb. 20, 1961, abandoned, which is a continuation-in-part of Ser. No. 816,714, May 29, 1959, abandoned, Continuation-in-part of Ser. No. 424,819, Jan. 11, 1965,. This application May 9, 1968, Ser. No. 728,039

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 B **3 Claims**

1. A polymeric product comprising polypropylene and copolymer consisting essentially of a block of propylene homopolymer terminally bonded to a block of an interpolymer of propylene and ethylene having the formula:

$$C_3H_7—C_3H_{6\,k}—C_2H_4,C_3H_{6\,m}—C_2H_{4\,n}—C_2H_5$$

wherein *k*, *m* and *n* are whole numbers, *k* is sufficiently large that said block of propylene homopolymer is predominantly insoluble in the polymerization medium, *m* is larger than *n* and *n* approaches or equals zero, said polymeric product being solid, substantially crystalline, and predominantly insoluble in acyclic hydrocarbons and said polymeric product having a brittle point below 30°F. and a weight proportion of ethylene:-propylene in the range from 0.2: 99.8 to 20: 80.

3,873,643

GRAFT COPOLYMERS OF POLYOLEFINS AND CYCLIC ACID AND ACID ANHYDRIDE MONOMERS

William C. L. Wu, Arlington Heights; Lawrence J. Krebaum, Palatine, and John Machonis, Jr., Schaumburg, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Dec. 18, 1972, Ser. No. 316,230

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **15 Claims**

1. A graft copolymer of about 70–99.95 weight percent of a polyethylene polymer and about 30–0.05 weight percent of at least one monomer selected from the group consisting of polymerizable cyclic ethylenically unsaturated carboxylic acids and carboxylic acid anhydrides.

3,873,644

GRAFT POLYMERS

Gottfried Pampus, Leverkusen; Josef Witte, Cologne-Stammheim, and Martin Hoffman, Bergedorf-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 72,790, Sept. 16, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,594

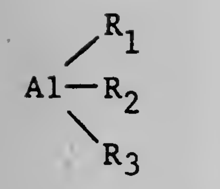
Claims priority, application Germany, Oct. 28, 1969, 1954092; Apr. 7, 1970, 2106471

Int. Cl. C08f *15/04, 19/08*

U.S. Cl. 260—879 **6 Claims**

1. A process for the production of graft polymers which comprises polymerizing, as graft monomer, a cyclic olefin containing 4, 5 or from 7 to 20 carbon atoms in the ring and having one carbon to carbon double bond or two or more unconjugated carbon to carbon double bonds onto a graft base polymer containing carbon to carbon double bonds, said polymerization being carried out in an inert organic solvent at —60° to 60°C. and in the presence of a catalyst comprising

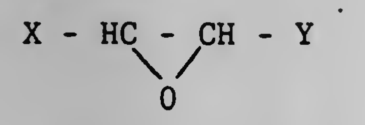
a. a tungsten, tantalum or molybdenum halide or oxyhalide,
b. an organoaluminum compound of the formula



wherein R_1 is alkyl having 1 to 12 carbon atoms and R_2 and R_3 independently are hydrogen, alkyl having 1 to 12 carbon atoms, halogen or alkoxy having 1 to 12 carbon atoms and

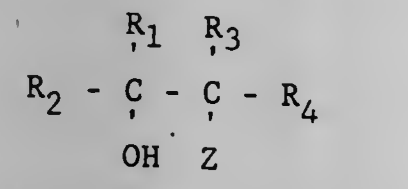
c. a cocatalyst which is

i. an epoxide of the formula



wherein X is hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms or aralkyl having 6 to 10 carbon atoms in the aryl moiety and 1 to 6 carbon atoms in the alkyl moiety and Y is hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms, aralkyl having 6 to 10 carbon atoms in the aryl moiety and 1 to 6 carbon atoms in the alkyl moiety, $—CH_2Hal$ wherein Hal is chlorine, bromine, or iodine or $—CH_2—O—R$ wherein R is alkyl having 1 to 6 carbon atoms or aryl having 6 to 10 carbon atoms or

ii. a halogen-containing alcohol of the formula



$$R_2-\underset{OH}{\overset{R_1}{C}}-\underset{Z}{\overset{R_3}{C}}-R_4$$

wherein Z is chlorine, bromine or iodine, R_1 and R_2 are the same or different and are hydrogen, alkyl having 1 to 6 carbon atoms, chloroalkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms or aralkyl having 6 to 10 carbon atoms in the aryl moiety and 1 to 6 carbon atoms in the alkyl moiety, R_3 and R_4 are the same or different and are chlorine, bromine, iodine, hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms or aralkyl having 6 to 10 carbon atoms in the aryl moiety and 1 to 6 carbon atoms in the alkyl moiety and R_1 and R_3, when taken together with the carbon atom to which they are attached, form a 5- or 6-membered hydrocarbon ring,

the molar ratio of (a) to (b) being 1:0.5 to 1:15 and the molar ratio of (a) to (c) being 1:0.3 to 1:10.

3,873,645
ANTISTATIC POLYSTYRENE

Leslie A. Muirhead, 9 Eden Close, Wilmslow, and William P. Millrine, 18 Romsey Dr., Cheadlehulme, both of England
Filed Jan. 9, 1973, Ser. No. 322,258
Claims priority, application United Kingdom, Jan. 14, 1972, 1878/72
Int. Cl. C08f *15/00*
U.S. Cl. 260—879 **5 Claims**

1. A toughened polystyrene composition having improved antistatic retention properties comprising a physical blend of

a. from about 20 to about 95% by weight of a polystyrene homopolymer or of a toughened polystyrene obtained by polymerization of styrene monomer in the presence of an elastomer,

b. from about 5 to about 40% by weight of a substantially uncross-linked elastomeric block copolymer having a general formula from the group consisting of

$$(A-B)_n \text{ or } (A-B)_n-A$$

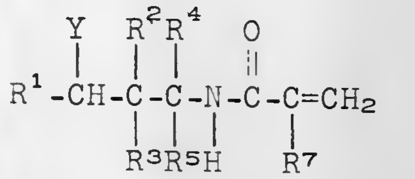
in which each A is a polymer block of a monovinyl aromatic hydrocarbon said block having an average molecular weight from about 5,000 to about 40,000 and B is a polymer block of a conjugated C_4–C_6 alkadiene having an average molecular weight from about 30,000 to about 200,000; n is a positive integer from 1 to 6; and

c. from about 0.3 to about 5% by weight of a compatible antistatic agent selected from long chain aliphatic acid amides and alkylene oxide derivatives thereof.

3,873,646
DYEABLE POLYPROPYLENE COMPOSITIONS CONTAINING POLYMERS OF N-AMINOALKYL ACRYLAMIDES

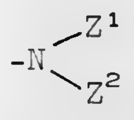
Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of Ser. No. 203,853, Dec. 1, 1971, , which is a division of Ser. No. 832,412, June 11, 1969, Pat. No. 3,666,810. This application Sept. 27, 1972, Ser. No. 292,565
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B **11 Claims**

1. A composition comprising a major amount of (A) polyethylene or polypropylene and a minor amount of (B) a polymer of a compound of the formula

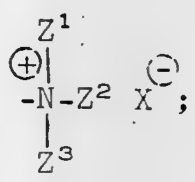


$$R^1-\overset{Y}{CH}-\underset{R^3}{\overset{R^2}{C}}-\underset{R^5}{\overset{R^4}{C}}-\underset{H}{N}-\overset{O}{\overset{\|}{C}}-\underset{R^7}{C}=CH_2$$

wherein each of R^1, R^2 and R^3 is hydrogen or a hydrocarbon radical; each of R^4 and R^5 is a hydrocarbon radical; R^7 is hydrogen or a lower alkyl radical; Y is

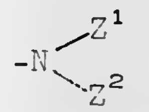


or



$$-\underset{Z^3}{\overset{Z^1}{\overset{\oplus}{N}}}-Z^2\quad \overset{\ominus}{X};$$

X is a salt forming anion; Z^1 is hydrogen or a hydrocarbon radical and Z^2 is hydrogen or an alkyl or cycloalkyl radical, or

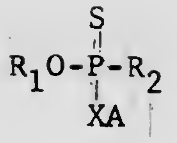


is a heterocyclic radical; and Z^3 is hydrogen or a lower alkyl radical.

3,873,647
METHOD OF ESTERIFICATION OF ALKYL PHOSPHONOTHIO DIHALIDES

Harold M. Pitt; Richard A. Zeleny, both of Lafayette, and Wendell E. Knoshaug, Albany, all of Calif., assignors to Stauffer Chemical Company, New York, N.Y.
Continuation of Ser. No. 784,209, Dec. 16, 1968, abandoned. This application Jan. 19, 1973, Ser. No. 324,912
Int. Cl. C07f *9/40*
U.S. Cl. 260—973 **12 Claims**

1. A process for the production of a mono- or di-thio phosphonic acid ester of the formula

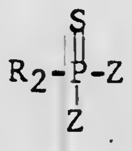


$$R_1O-\underset{XA}{\overset{S}{\overset{\|}{P}}}-R_2$$

wherein R_1 and R_2 are the same or different member selected from the group consisting of straight or branched chain alkyl containing from 1 to 6 carbon atoms inclusive, X is oxygen or sulfur, and A is a member selected from the group consisting of alkyl, cycloalkyl, phenyl or substituted phenyl wherein the substituents are selected from the group consisting of chlorine, bromine, iodine, lower alkyl, lower alkoxy, nitro and cyano, which comprises:

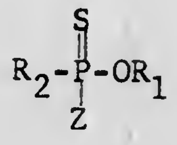
a. contacting a metal M_1, which is selected from Na, K, and Li, in an organic solvent at a temperature above the melting point of the metal, with a compound having the formula R_1OH, wherein R_1 is alkyl containing one through six carbon atoms, adding from about 0.1 percent to about 5 percent by weight water, based on the weight of the R_1OH, to form a slurry of M_1OR_1 dispersed in the organic solvent;

b. contacting the slurry with a compound having the formula



$$R_2-\underset{Z}{\overset{S}{\overset{\|}{P}}}-Z$$

wherein R_2 is alkyl containing one through six carbon atoms, and Z is Cl, Br, and I, in an organic solvent, at a temperature of from about −40°C. to about 110°C., to produce a monoester having the formula



$$R_2-\underset{Z}{\overset{S}{\overset{\|}{P}}}-OR_1$$

c. reacting said monoester, in a solvent, with a metal compound of the formula, M_2XA, wherein M_2 is a metal selected from the group consisting of Na, K, and Li, and A is a member selected from the group consisting of alkyl, cycloalkyl, phenyl or substituted phenyl wherein the substituents are selected from the group consisting of chlorine, bromine, iodine, lower alkyl, lower alkoxy, nitro and cyano, at a temperature of from about 60°C. to about 100°C. to form the corresponding mono- or dithiophosphonic acid ester.

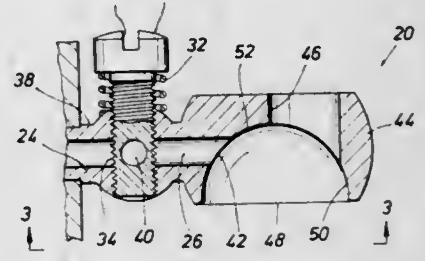
3,873,648
METHOD FOR SEPARATING MIXTURES OF ORTHOPHOSPHORIC ESTERS

Daniel Balde, Levallois-Perret, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France
Filed July 7, 1972, Ser. No. 269,619
Int. Cl. C07f *9/08*
U.S. Cl. 260—990 **8 Claims**

1. A method for separating mixtures of saturated orthophosphoric monoesters having less than 14 carbon atoms and saturated orthophosphoric diesters having less than 14 carbon atoms, said mixtures containing from about 30% of the monoesters and about 70% of the diesters to about 70% of the monoesters and about 30% of the diesters, which comprises passing a mixture of orthophosphoric monoester and orthophosphoric diester in a nonionizing solvent through an acid exchange resin possessing ions of the sulfonic type to preferentially retain the orthophosphoric monoester and thereafter washing the resin with an ionizing solvent to elute the orthophosphoric monoester and regenerate the resin.

3,873,649
CARBURETOR APPARATUS

Robert E. Cleary, 4054 Antoinette, Houston, Tex. 77017
Filed Aug. 2, 1973, Ser. No. 385,036
Int. Cl. F02m *19/08*
U.S. Cl. 261—71 **3 Claims**



1. An injection apparatus for a carburetor, comprising:

an elongate side wall supported member adapted to be connected at one end to a fuel line and further adapted to extend from a side wall into the flow path through a venturi throat, therebeing a passage means therethrough communicated with a source of fuel to be vaporized by such a carburetor equipped with a side wall adjacent to the venturi throat of the carberator;

an enlargement at or near the end of said elongate member and having an encircling portion about a passage which can be positioned in alignment with air in flow through the venturi throat during carberator operation;

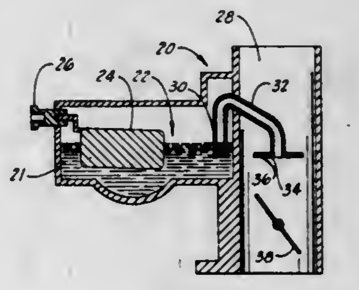
a downwardly facing shoulder in said passage, said shoulder overhanging an opening means communicated with said passage means such that fuel to be vaporized is introduced into said passage sheltered by said shoulder;

a valve in said passage means which includes

- a rotatable threaded stem;
- a mating threaded receptacle in said elongate member intercepting said passage means;
- a seat in said passage means at said receptacle;
- a hole in said stem selectively aligned and mis-aligned with said passage means;
- spring means bearing on said stem in a manner resisting unintended rotation thereof; and Wheresaid shoulder is formed by an off center non-concentric arc of a curve in said enlargement which extends at least partly around the passage in said enlargement.

3,873,650
CARBURETOR

Clifford L. Lamkin, 1602 Mills, Wichita, Kans. 67216
Filed Sept. 10, 1973, Ser. No. 395,567
Int. Cl. F02m *7/02*
U.S. Cl. 261—78 R **2 Claims**



1. In a carburetor having a body, a fuel reservoir in the body, a passageway for fuel and air through said body, and a throttle valve mounted in said passageway to vary the amount of fuel/air mixture passing through said carburetor, the improvement therein and therewith, comprising:

a. said passageway being essentially cylindrically shaped,

- b. a diffusion means mounted in said passageway upstream of said throttle valve,
- c. an arterial fluid conduit communicably connecting said diffusion means and said reservoir,
- d. said diffusion means having a cylindrical hollow member having a first end communicably connected to said arterial conduit and a second end generally axially positioned in said throat opening toward said throttle valve, and having an essentially circular flanged member rigidly secured in its center portion to said second end, and
- e. said flanged member having a plurality of apertures therethrough for the passage of air, with said apertures being in spaced relation.

3,873,651

FREEZE DRYING METHOD FOR PREPARING RADIATION SOURCE MATERIAL

Wilbur C. Mosley, Jr., New Ellenton, and Paul K. Smith, Aiken, both of S.C., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 12, 1972, Ser. No. 252,643

Int. Cl. G21c *21/00*

U.S. Cl. 264—0.5 **4 Claims**

1. A method of preparing radioisotopic source material comprising:

- a. atomizing a liquid solution of palladium and californium isotope values into an air flow to form a liquid mist;
- b. freezing said mist to form a layer of solid crystals including, within a solid solvent, a uniform mixture of said californium isotope and said palladium as dissociable salts;
- c. withdrawing solvent vapors from above said crystals to sublimate said solvent from said mixture of salts;
- d. heating said crystals to a sufficient temperature to decompose said mixture of dissociable salts to a uniform mixture of palladium metal and refractory californium isotope compound;
- e. consolidating said uniform mixture into a pellet;
- f. sintering said pellet to close said palladium metal into a matrix containing said refractory californium isotope compound; and
- g. shaping said sintered matrix into an elongated member that includes a uniform dispersion of said refractory californium isotope compound throughout the length of said palladium metal matrix.

3,873,652

PROCESS FOR RESTORING THE THICKNESS AND/OR THE INTEGRITY OF THE INNER REFRACTORY LINING OF A ROTARY REACTOR

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Apr. 25, 1972, Ser. No. 247,362

Claims priority, application Italy, May 27, 1971, 50638/71

Int. Cl. F27d *1/16*

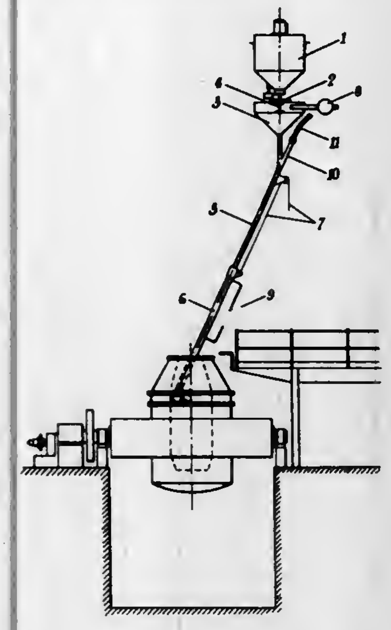
U.S. Cl. 264—30 **4 Claims**

1. A process for restoring the thickness and/or the integrity of the refractory lining of the walls of a reactor having a substantially vertical geometrical axis, comprising the steps of rotating the reactor about said axis, simultaneously projecting finely divided dry repair material against the regions of the inner surface of the refractory lining where repair is necessary while maintaining the following two relationships:

$$\tan\beta \qquad V_p^2/(g\,.\,r)$$

$$f \qquad [(V_p^2/r)\tan\beta + g]/[(V_p^2/r) - g\tan\beta],$$

and in which β is the angle of inclination of the surface of the internal wall of the reactor with respect to the vertical and is comprised between 0° and 35°, g is the acceleration of gravity, r is the radius of the inner wall of the reactor against which the repair material is projected, f is the coefficient of friction between the grains and the lining surface, and V_p is the peripheral speed of the reactor at the point of impact of the repair material against the lining surface, said repair material and said lining surface having substantially the same tangential velocity as each other in the direction of rotation of said reactor in a plane perpendicular to the axis of said reactor at the point of impact of said repair material and said wall, whereby the difference in velocity of said repair material and said inner surface is substantially zero, and then heating the lining to sinter the repair material thereto while continuing the rotation of the reactor about said axis.



3,873,653

PREPARATION OF HIGH FLUX CELLULOSE ACETATE MEMBRANES AND HOLLOW FIBERS FROM PREFABRICATED LOW FLUX SPECIMENS

Eberhard A. Meinecke, Akron, Ohio, and Devendra V. Mehta, South Bend, Ind., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 27, 1973, Ser. No. 383,233

Int. Cl. B29d *27/04*

U.S. Cl. 264—41 **3 Claims**

1. A method for preparing a high flux cellulose acetate reverse osmosis membrane consisting essentially of:

- a. Prefabricating a low flux specimen of said membrane;
- b. treating said specimen by annealing for a period of about 30 minutes in a plasticizer from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, polyethylene glycol, glycerine, and formamide at the temperature of incipient porosity of said plasticizer; and
- c. quenching the specimen in water at room temperature for a period of about 15 minutes.

3,873,654

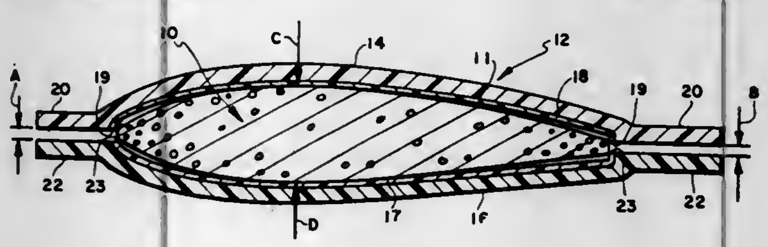
PROCESS OF FORMING A RIGID FOAM AIRFOIL SECTION

Robert G. Smith, 8941 Reseda Blvd., North Ridge, Calif. 91324

Filed Mar. 5, 1973, Ser. No. 338,143

Int. Cl. B29d *27/00*

U.S. Cl. 264—46.4A **6 Claims**



1. A method of forming a rigidized airfoil section in a split mold comprising the steps of:

forming a compressible mold insert, said insert being a low density, expanded bead cellular polystyrene foam to a size slightly larger than the depth of the cavity formed when said split mold halves are mated together,

inserting a covering means for said compressible mold insert in each half of said split mold,

applying bonding means to the inside surfaces of said covering means in said split mold to bond said insert in said mold,

inserting said mold insert into said cavity formed by said split mold halves before said bonding means on said covering means is cured,

clamping said split mold halves together to force said slightly larger compressible mold insert into intimate contact with said covering means thereby rigidizing the airfoil section at a critical structural point, and

curing fully said bonding means on said covering means to said compressible mold insert in said clamped split mold prior to removal therefrom.

3,873,655

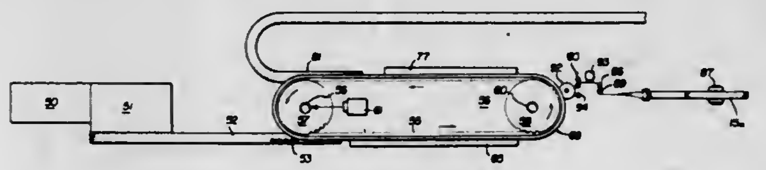
METHOD OF MAKING A PLASTIC-COVERED GLASS CONTAINER

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket; James A. Karabedian, Garden City, all of N.Y., and Clarence A. Heyne, Sun City, Ariz., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 158,480, June 30, 1971, Pat. No. 3,767,496. This application Mar. 29, 1973, Ser. No. 345,965

Int. Cl. B29d *27/03*

U.S. Cl. 264—48 **4 Claims**



1. A method comprising the steps of extruding a thermoplastic material in a longitudinal direction, forming the extrusion into flat sheet form extending in said longitudinal direction, applying longitudinal tension to said sheet form in the direction of extrusion to stretch the thermoplastic material and highly orient it in said longitudinal lengthwise direction that is at least twice the amount of any orientation in the width direction transverse thereto, trimming the oriented sheet to a predetermined width dimension, printing one surface of the sheet with a decoration, cutting the printed, trimmed sheet longitudinally into plural lengthwise strips such that the transverse dimension of said strips is equal to the height of a sleeve to be formed therefrom, and accumulating the individual plural strips in lengths for use in making such sleeves.

3,873,656

PRODUCTION OF LAMINAR ARTICLES

Paul Johnson Garner, Thorpe Bay, England, assignor to Imperial Chemical Industries Limited, London, England

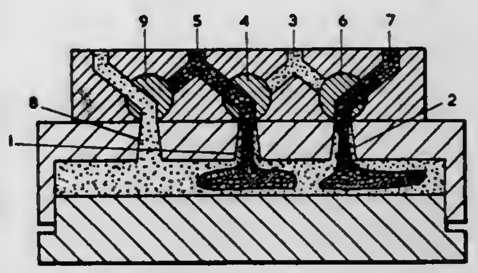
Continuation-in-part of Ser. No. 132,971, April 12, 1971, Pat. No. 3,733,156, which is a continuation-in-part of Ser. No. 202,457, Nov. 26, 1971, abandoned, and Ser. No. 202,458, Nov. 26, 1971, abandoned, which is a division of Ser. No. 781,763, Dec. 6, 1968, Pat. No. 3,599,290. This application Dec. 4, 1972, Ser. No. 311,518

Int. Cl. B29d *27/00*

U.S. Cl. 264—55 **10 Claims**

1. A process for the production of articles having a skin of plastics material enclosing a core of dissimilar plastics material comprising:

- i. injecting the skin material in a fluid state into a mold cavity through a first sprue channel; subsequently,
- ii. injecting the core material in a fluid state to within the skin material through said first sprue channel, while the skin material is fluid whereby the core material extends the enveloping skin material; and
- iii. injecting a further quantity of plastics material in a fluid state into the mold cavity, through a second sprue channel displaced from the first sprue channel.



3,873,657

METHOD FOR PRODUCING HIGHLY PURE SINTERED POLYCRYSTALLINE YTTRIUM OXIDE BODY HAVING HIGH TRANSPARENCY

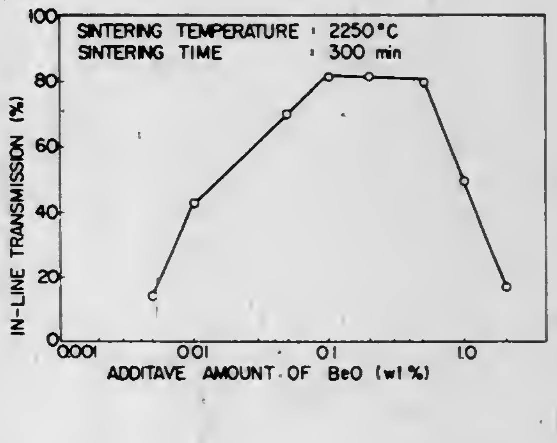
Gyozo Toda, Hino; Iwao Matsuyama, Hachioji, and Yasuo Tsukuda, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,839

Claims priority, application Japan, Aug. 25, 1972, 47-84546

Int. Cl. C04b *35/00, 35/64, 35/50;* **B29d** *11/00*

U.S. Cl. 264—56 **24 Claims**



2. A method for producing a transparent highly pure sintered polycrystalline body consisting essentially of yttrium oxide having a high in-line transmission for a wide range spectrum from visible to far infrared rays, comprising the steps of (1) press molding a mixture of highly pure yttrium oxide having a purity of at least 99.9% and 0.01 to 1.0% by weight, based on yttrium oxide and measured as beryllium oxide, of beryllium oxide and/or a beryllium compound easily convertible under sintering conditions to beryllium oxide under a molding pressure of at least 0.3 ton per square centimeter to form a molded body of a desired shape, and (2) subjecting said molded body to a sintering treatment comprising (a) heating the molded body in a dry hydrogen atmosphere having a dew point of about −5°C. or lower at a temperature 2050° to 2250°C. for at least about 30 minutes to thereby sinter the molded body and (b) refiring the resultant sintered body in a hydrogen atmosphere having a dew point of at least 0° C. and maintained at 1800° to 2250°C. for at least about 10 minutes to thereby effect decoloration of the sintered body, whereby a highly pure transparent polycrystalline sintered body of yttrium oxide having a high in-line transmission is obtained.

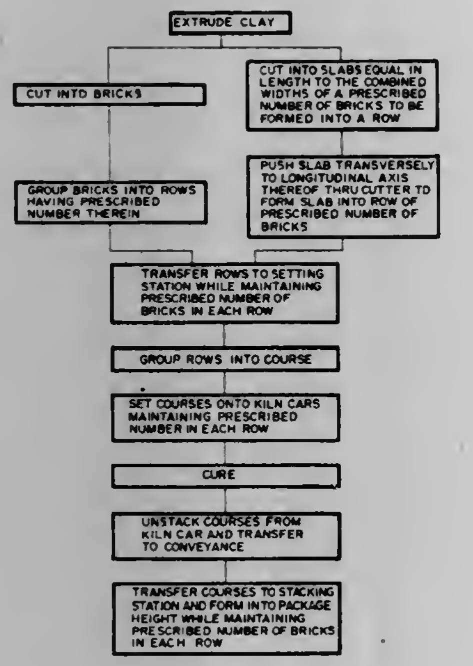
3,873,658
BRICK PROCESSING METHOD

William F. Milholen; John Jones Brown, Jr., and Gerald L. Stuart, all of Siler City, N.C., assignors to Forrest Paschal Machinery Co., Siler City, N.C.

Filed Dec. 22, 1972, Ser. No. 317,832

Int. Cl. C04b *33/32*

U.S. Cl. 264—58 **2 Claims**


EXTRUDE CLAY
CUT INTO BRICKS
CUT INTO SLABS EQUAL IN LENGTH TO THE COMBINED WIDTHS OF A PRESCRIBED NUMBER OF BRICKS TO BE FORMED INTO A ROW
GROUP BRICKS INTO ROWS HAVING PRESCRIBED NUMBER THEREIN
PUSH SLAB TRANSVERSELY TO LONGITUDINAL AXIS THEREOF THRU CUTTER TO FORM SLAB INTO ROW OF PRESCRIBED NUMBER OF BRICKS
TRANSFER ROWS TO SETTING STATION WHILE MAINTAINING PRESCRIBED NUMBER OF BRICKS IN EACH ROW
GROUP ROWS INTO COURSE
SET COURSES ONTO KILN CARS MAINTAINING PRESCRIBED NUMBER IN EACH ROW
CURE
UNSTACK COURSES FROM KILN CAR AND TRANSFER TO CONVEYANCE
TRANSFER COURSES TO STACKING STATION AND FORM INTO PACKAGE HEIGHT WHILE MAINTAINING PRESCRIBED NUMBER OF BRICKS IN EACH ROW

1. A method of processing brick between a clay extruding machine where raw clay is extruded and a strapping machine where finished bricks are formed into a final package having rows with a prescribed number of bricks therein comprising the steps of:

a. extruding a column of clay and cutting said column into bricks;
b. sequentially grouping the bricks by means of a grouping apparatus into rows having said prescribed number of bricks therein prior to loading on a kiln car;
c. grouping a plurality of said rows into a course and transferring said course as a single unit by means of a setter to a kiln car for delivery to a kiln;
d. firing the bricks in said kiln;
e. removing said course by means of a dehacker as a unit from said kiln car subsequent to removal from said kiln;
f. transferring said course as a unit along a conveyor apparatus to said strapping machine; and
g. maintaining said prescribed number of bricks in said rows at all times during steps (a) through (d) whereby the same bricks which are initially grouped into a row will be strapped together and form a row in the final package.

3,873,659
METHOD FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

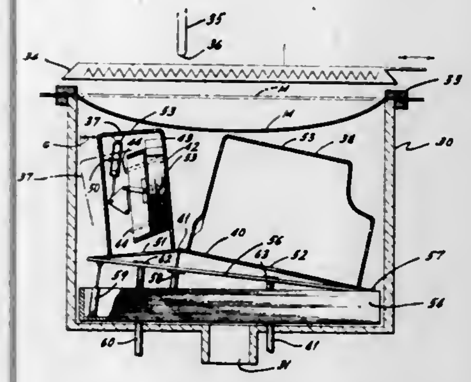
Robert J. Smith, Indianapolis, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Aug. 1, 1973, Ser. No. 384,636

Int. Cl. B29c *17/04*

U.S. Cl. 264—89 **4 Claims**

1. In a method of forming an article, comprising a pair of adjacent walled structures having unidirectionally presented openings, from a sheet of thermoplastic material, utilizing a pair of unidirectionally presented molds shaped in correspondence to the structures to be formed and so associated as to be movable on table structure between one position in which confronting walls thereof are closely spaced in accordance with the spacing of the structures to be formed and another position in which said confronting walls are spaced apart a substantially greater distance than in said one position, the steps which comprise: suspending a unitary, softened sheet of thermoplastic material over said molds, restraining at least one edge of said sheet, tilting said table structure about an axis extending transversely of the direction of relative movement of said molds and parallel to and spaced from said restrained edge thereby to increase the spacing between said restrained edge of said sheet and a confronting portion of one of said molds as said molds are moved into contact with said sheet; moving said molds to the mentioned other position in which the confronting walls of said molds are substantially spaced apart; causing said softened sheet to billow away from said molds; relatively translating said molds and said billowed sheet toward one another sufficient to engage the tilted and spaced apart molds therewith; moving said molds to horizontal nontilted position and to said one position in which they are closely spaced, and engaging said sheet with an assist-plug to stretch the softened sheet over said molds; and utilizing differential fluid pressure to cause said softened sheet to conform to the surface of said molds in said one, closely spaced position.



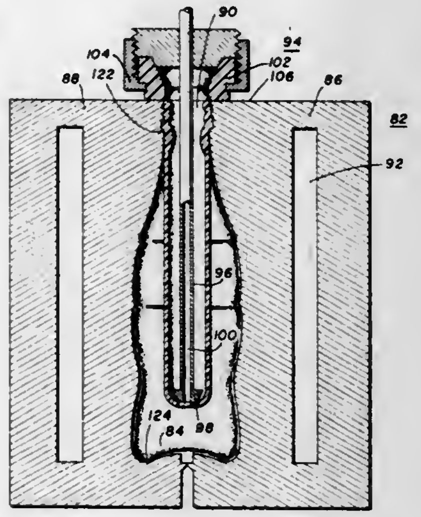
3,873,660
METHOD FOR FORMING MULTIAXIALLY ORIENTED CONTAINERS

Joseph R. Reilly, Naugatuck, and Thomas F. Sincock, Simsbury, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 148,544, June 1, 1971, Pat. No. 3,754,851. This application Feb. 26, 1973, Ser. No. 336,023

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **12 Claims**



10. A method of forming a molecularly oriented container which comprises:

a. extruding an unconfined, hollow thermoplastic parison at a temperature in excess of that at which substantial molecular orientation of the thermoplastic occurs on stretching;
b. closing sections of a parison conditioning and shaping mold on said parison to enclose said parison therein while pinching its end shut between the sections;

c. subjecting the enclosed parison to a deforming pressure while at said temperature to expand it outwardly against cooled molding surfaces of said conditioning and shaping mold to form a preform having a body portion and a molded finish;
d. transferring said preform while still in a pressure sensitive but dimensionally stable state from the conditioning and shaping mold to a temperature conditioning zone;
e. bringing the temperature of the thermoplastic of at least the body portion of the preform in the conditioning zone to within the range at which substantial molecular orientation of the thermoplastic occurs on stretching;
f. transferring the preform from the conditioning zone to a finishing mold after the temperature of the body portion thereof has reached such range; and
g. longitudinally stretching and radially expanding the body portion only of said preform while within said temperature range against molding surfaces of the finishing mold to form said molecularly oriented container.

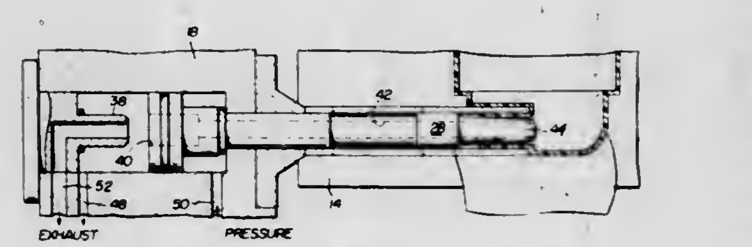
3,873,661
METHOD OF BLOW MOLDING AND EXHAUSTING A BLOWN ARTICLE THROUGH THE SAME BLOW NEEDLE

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 218,437, Jan. 17, 1972, Pat. No. 3,737,275. This application May 11, 1973, Ser. No. 359,413

Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—98 **5 Claims**



1. In a method of blow molding, comprising the steps of:

simultaneously (1) forming a blowable shape by closing a pair of blow mold halves defining a blow mold cavity onto a plastic tubular parison and (2) gripping the tubular parison in a piercing region with a pair of gripping surfaces carried by respective blow mold halves to define a cylindrical passage communicating with the blowable shape and having a radial wall;

introducing pressurized air against a rear flanged region of a blow needle having an axial bore, initially preventing the pressurized air from flowing through the needle axial bore, and advancing the needle relative to the blow mold cavity toward the blowable shape to pierce said radial wall and to project through said passage toward said blowable shape;

injecting the pressurized air through the needle bore for flow into said shape immediately after but only after said needle has pierced said radial wall to blow the shape to the configuration of a blown article conforming to the size and shape of the blow mold cavity;

maintaining full blow pressure within the blow mold cavity for a time interval to (a) fully inflate the blowable shape to the configuration of the mold cavity, (b) maintain the plastic material in firm contact with the mold cavity walls, and (c) enhance the cooling the blown article; and

simultaneously retracting said blow needle and rapidly exhausting blow air from the blown shape through the needle bore.

3,873,662
METHOD OF PRODUCING FIRE RETARDANT PARTICLEBOARD

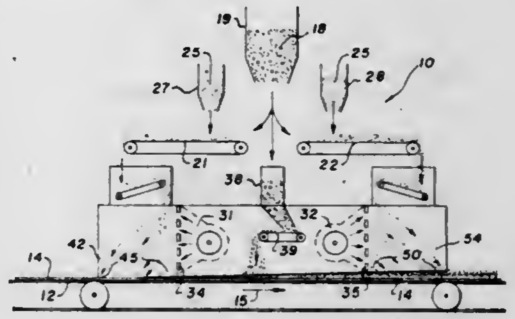
Dennis M. Cartlidge, North Delta, and Keith Sharpe, Langley, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed Nov. 6, 1972, Ser. No. 304,199

Claims priority, application Canada, Nov. 1, 1972, 155747

Int. Cl. B29j *5/00*

U.S. Cl. 264—113 **7 Claims**



1. The method of producing fire retardant particle-board with a minimum of fire retardant material, which comprises blowing particleboard furnish and dry fire retardant chemical particles substantially parallel to a moving caul plate in a direction opposite to the movement thereof, the density and particle size of said particles being such that the finest furnish particles travel outwardly the farthest to form a lower outer course while coarser furnish and chemical particles progressively, according to particle size and density, deposit on said outer course to form an inner course, blowing additional particleboard furnish and dry fire retardant chemical particles substantially parallel to the caul plate in the direction of movement thereof, the density and particle size of said additional particles being such that the coarser furnish and chemical particles travel outwardly progressively, according to particle size and density, to deposit on the inner course of the previously-blown particles and the finer furnish particles travel outwardly the farthest to form an upper outer course, subjecting the material to heat and pressure to consolidate all of said particles into a board, and sanding off particles of the outer courses to expose the particles of said inner courses at faces of the board.

3,873,663
METHOD OF MOLDING POWDERED MATERIAL

Elmer C. Bertolet, Jr., 101 E. Germania, Brenham, Tex. 77833

Continuation-in-part of Ser. No. 793,463, Jan. 23, 1969, abandoned. This application Feb. 17, 1971, Ser. No. 116,204The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.

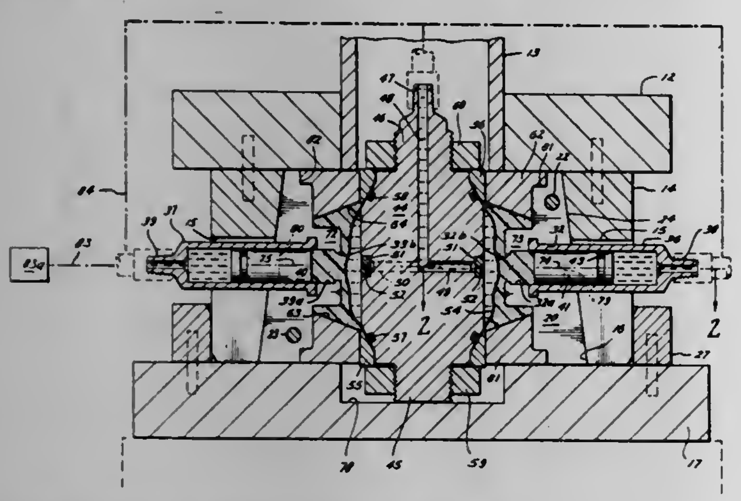
Int. Cl. B29c *3/06*

U.S. Cl. 264—120 **6 Claims**

1. The method of powder molding an article having a body wall and a substantially restricted lateral protrusion thereon which comprises the steps of

a. forming a mold having first, second, and third walls defining a mold cavity,
  - a-1. said first wall having an outward recess and reversely imaging said body wall,
  - a-2. said second wall comprising a flexible diaphragm sealingly secured to the mold and having parts, respectively, confronting said first wall and said recess, and
  - a-3. said third wall being movably mounted in said recess,
b. charging said cavity and said recess individually with powdered molding material,
c. applying fluid pressure to said diaphragm in opposition to said first wall,
d. applying pressure to said third wall substantially in direct opposition to the pressure applied to the part of said diaphragm confronting said recess so as to uniformly

compact the molding material into a unified body and avoid the formation of a shear plane between said cavity and said recess, and



e. removing the unified body from the mold.

3,873,664

HEAT TREATMENT OF POLYESTER ROLLS

James R. Curtis, Greenville, S.C.; Thomas A. Palmer, Notasulga, Ala., and Billy J. Wilson, Greenville, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,843

Int. Cl. B28b *11/16*

U.S. Cl. 264—146 **5 Claims**

1. In a process for producing polyethylene terephthalate film in which polyethylene terephthalate is melted and extruded through a die onto a cooled casting roll to form a cast sheet, the cast sheet drawn in both longitudinal and transverse directions to form a biaxially oriented film which is subsequently heat set, said heat set film wound into a master roll, said film on said master roll having a transverse direction gauge variation of not more than 7 percent, the film on said master roll then slit and wound on one or more slit rolls, the improvement which comprises exposing said slit rolls to an environment maintained at a temperature in the range of between about 15°C. and 35°C. above the temperature at which the film was slit and wound into said slit rolls for at least 24 hours.

3,873,665

PROCESS FOR PRODUCING A REVERSE OSMOSIS MODULE

Gilbert Segovia, Santa Ana, Calif., assignor to Oxy Metal Industries Corporation, Lyndhurst, N.J.

Filed Aug. 6, 1973, Ser. No. 386,086

Int. Cl. B29d *7/08*

U.S. Cl. 264—321 **6 Claims**

1. In a process for producing a reverse osmosis module in which a reverse osmosis membrane is wrapped about a coil form which generally includes the steps of: manufacturing a reverse osmosis membrane of a desired length; applying a porous supporting member to the exterior of the membrane to enable the membrane to withstand internal pressures; and applying couplings to the opposite ends of the membrane; the improvement comprising:

connecting one end of the membrane to a pressurized source of heat treatment fluid;

connecting the other end of the membrane to a flow restrictive device;

passing the heat treatment fluid through the membrane to pressurize the membrane to a level of about 10 psig;

increasing the temperature of the heat treatment fluid flowing through the membrane to about 60°C while maintaining the pressure established within the membrane at about 10 psig;

increasing the temperature and the pressure of the heat treatment fluid flowing through the membrane until the membrane has heat treatment fluid flowing therethrough having a temperature in the range of 72°C to 94°C and a pressure of 60 psig to 120 psig;

maintaining the temperature and the pressure established within the membrane by the last process step for a period of from 15 minutes to 45 minutes to heat treat the membrane and thereby establish the characteristics of the membrane for a reverse osmosis process;

winding the membrane on to the coil form to form a helical reverse osmosis module, the winding taking place while the membrane has the pressure and the temperature of heat treat steps still maintained therewithin;

cooling the wound membrane from its heat treat temperature by supplying cooled fluid for flow through the membrane, the pressure of the cooling fluid being maintained at heat treat pressure during this cooling; and

releasing the pressure of the heat treatment fluid on the membrane gradually to 0 psig when the membrane has cooled below about 30°C.

3,873,666

PROCESS FOR THE PREPARATION OF TRANSPARENCIES FOR USE IN PHOTOREPRODUCTION

Frank Lerman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 63,950, Aug. 14, 1970, abandoned, and Ser. No. 311,173, Dec. 1, 1972, Pat. No. 3,796,571. This application Dec. 11, 1972, Ser. No. 314,059

Int. Cl. B29c *1/02*

U.S. Cl. 264—219 **5 Claims**

1. A process for the preparation of transparencies for use in photoreproduction, which comprises:

a. providing a rough, highly textured substrate; applying to the substrate a smooth non-olefinic image constituted from one of the group consisting of fused xerographic toners, pigments and inks;

b. contacting the imaged side of said substrate with a polyethylene film;

c. heating the juxtaposed image and film layers to a temperature sufficient to soften the polyethylene film and thereby form textured impressions of the non-imaged areas of said substrate therein;

d. cooling the juxtaposed layers to fix the textured impressions in said film; and

e. stripping the thus imaged polyethylene film from said substrate to form a fixed transparency suitable for further use in photoreproduction.

3,873,667

PROCESS FOR PREPARING ARTICLES FABRICATED FROM POLYOLEFIN/POLYAMIDE BLENDS HAVING LOW PERMEABILITY TO GASES

Raymond J. Preto, Stickeny, and Eugene Z. Scheckman, Chicago, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,815

Int. Cl. B29c *25/00*

U.S. Cl. 264—234 **6 Claims**

1. A method of decreasing the gas permeability of shaped articles fabricated from blends of polyolefins and synthetic linear polyamides which comprises

a. fabricating a shaped article from a mixture comprised of about 40 to about 90 percent by weight of a polyolefin and about 10 to about 60 percent by weight of a synthetic linear polyamide and then

b. heating the fabricated article at about 140° to about 250°F for a time sufficient to effect a decrease in the gas permeability of the article.

3,873,668

CUPRIC, NICKELOUS AND ARGENTOUS ION-SELECTIVE CHELATING RESINS

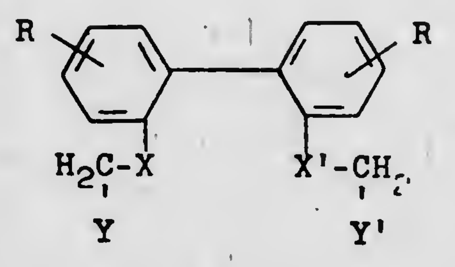
Lester Russell Melby, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1973, Ser. No. 345,314

Int. Cl. B01d *15/04;* **C08f** *27/08*

U.S. Cl. 423—24 **16 Claims**

1. A polymer-ligand comprising a high molecular weight water insoluble polymer containing about 0.3 to about 2 millimoles of a covalently bonded ligand per gram of polymer, the ligand having tne formula

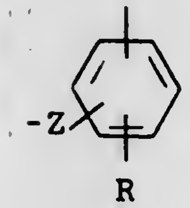


wherein

R is H or alkyl of 1–3 carbon atoms;

X and X' independently are NH, O or S:

Y is



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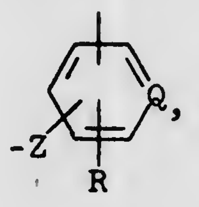

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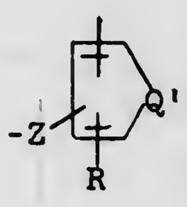
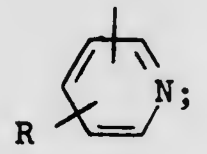


;

and

Y' is



;

in which

Z is $-O-$, $-S-$, $-S(CH_2)_n-$, $-O(CH_2)_n-$, $-NH-$, or $-NH(CH_2)_n-$ where $n = 1$ to 10;

Q is N; and

Q' is NH, O, or S;

with the priviso that at least three of X, X', Q and Q' are nitrogen;

said ligand being attached to the methylene carbon by the indicated valence bond and attached to the polymer through the Z group.

3,873,669

PROCESS FOR TREATMENT OF VANADIUM CONTAINING FLY ASH

Philippe Guillaud, le Giffre-Marignier, Bonneville, France

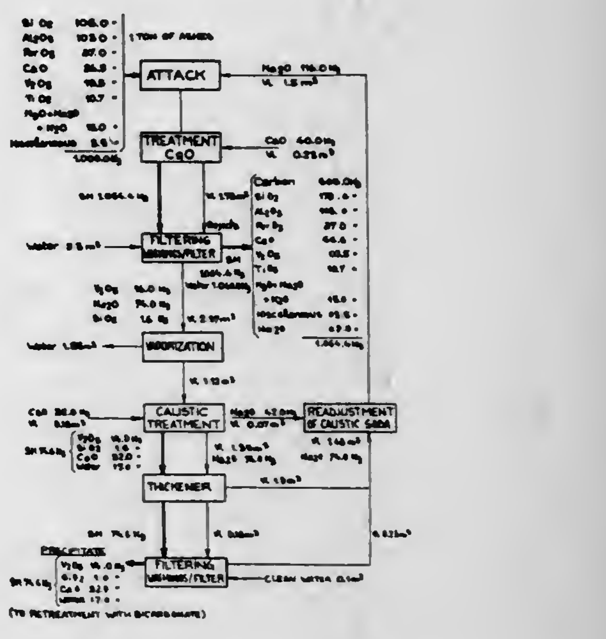
Filed June 8, 1973, Ser. No. 368,053

Claims priority, application France, June 9, 1972, 72.20907

Int. Cl. C01g *31/00*

U.S. Cl. 423—65 **8 Claims**

1. A process for the treatment of fly ash derived from petroleum of bituminous products to recover vanadium oxide present in the ash by the formation of a soluble vanadate, comprising reacting the ash with a solution of caustic soda containing 1 to 5 moles of Na_2O per liter for the period within the range of 4–8 hours and a temperature within the range of between 50°C and the boiling temperature of the solution, adding calcium oxide to the reacting solution in an amount within the range of 6–40 percent of the weight of the silica contained in the ash to precipitate silica in the form of a calcium salt, and recovering vanadium values.



3,873,670

FLUE GAS DESULFURIZATION IN MOLTEN MEDIA

John J. Dugan, and Israel S. Pasternak, both of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 14, 1972, Ser. No. 280,187

Int. Cl. B01d *47/00;* **B01j** *9/00;* **C01b** *17/00*

U.S. Cl. 423—210.5 **9 Claims**

1. A process for removing sulfur oxide from a hot combustion gas which comprises contacting said hot combustion gas with a molten media containing a glass-forming oxide selected from the group consisting of oxides of boron, molybdenum, tungsten, phosphorous and mixture thereof in combination with an alkali metal compound selected from the group consisting of alkali metal oxides, alkali metal hydroxides, alkaline earth metal oxides, alkaline earth metal hydroxides and mixtures thereof at a temperature in the range of from above about the melting point of said molten media to about 2000°F., the mole ratio of the alkali metal compound expressed as the oxide thereof to the glass-forming oxide being within the range from about 1 to about 3.0.

3,873,671

PROCESS FOR DISPOSAL OF OXIDES OF NITROGEN

Robert D. Reed; Eugene C. McGill, both of Tulsa, and Charles G. McConnell, Cyril, all of Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 158,058, June 29, 1971, abandoned, which is a continuation of Ser. No. 811,048, March 27, 1969, abandoned. This application Feb. 1, 1973, Ser. No. 328,785

Int. Cl. B01d *53/34*

U.S. Cl. 423—235 **12 Claims**

1. A process of converting gases containing oxides of nitrogen into gases which may be vented safely to the surrounding environment which comprises:

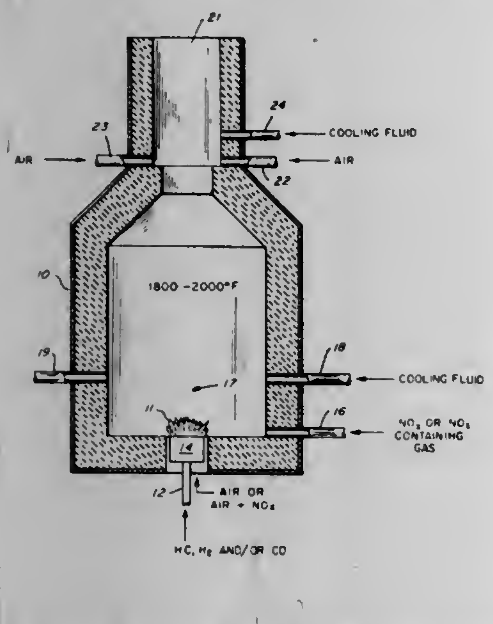
burning a fuel in a first zone in the presence of at least 65 percent but less than 100 percent of said fuel's stoichiometric requirements of oxygen;

mixing said gases containing oxides of nitrogen with the combustion products resulting from said burning in a ratio which provides an excess of oxidizable combustion products over oxygen available from said oxides;

cooling the aforesaid combustion mixture to maintain a temperature that is within the range between about 2000° Fahrenheit and about 1200° Fahrenheit;

mixing, in a second zone, the oxidizable combustion products remaining after substantially all of the oxides of nitrogen have been reduced, with sufficient oxygen to convert substantially all of the oxidizable combustion products remaining to carbon dioxide and water without reformation of oxides of nitrogen; and

venting the resultant gas product.



3,873,672

DESULFURIZATION OF GASES CONTAINING SULFUR COMPOUNDS USING ALKALINE HYPOCHLORITE SOLUTIONS

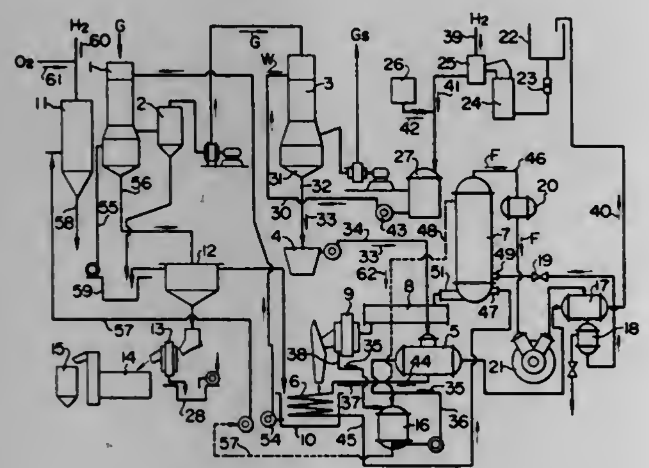
Yoshiharu Nishiba, Yokohama; Kazuhiko Ota, Abiko, and Hideya Inaba, Kawasaki, all of Japan, assignors to Daiki Engineering Co., Ltd., Tokyo and Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, both of, Japan

Filed Feb. 7, 1973, Ser. No. 330,282

Claims priority, application Japan, July 28, 1972, 47-75728

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 6 Claims



1. A process for the desulfurization of gases containing sulfur compounds, which comprises contacting a hot gas containing sulfur compounds with a scrubbing solution having a pH greater than 8.5 and containing sodium hypochlorite and calcium hydroxide in a scrubber, the sodium hypochlorite being produced by the electrolysis of sodium chloride solution, reacting said sulfur compounds with said scrubbing solution in said scrubber to form calcium sulfate and sodium chloride, filtering calcium sulfate as crystals from the effluent solution from said scrubber, and recycling the remaining solution from said filtration for further electrolysis to produce sodium hypochlorite.

3,873,673

WET SCRUBBING OF FLUE GAS FOR SOX REMOVAL

Richard K. Teague, St. Louis, Mo., and Phillip L. Hayden, Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 264,644, June 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 225,942, Feb. 14, 1972, abandoned, which is a continuation-part of Ser. No. 178,145, Sept. 7, 1971, abandoned. This application July 17, 1973, Ser. No. 380,030

Int. Cl. C01b *17/00*

U.S. Cl. 423—243 9 Claims

1. A process of SO_x removal from flue gas comprising:

Step a. of treating said flue gas with an aqueous solution consisting essentially of about 1 to 10 weight percent of an amine having a pK_a of about 7 to 11, the aqueous phase having a pH of about 4 to 8 entering this step (a); Step b. of withdrawing a portion of at least partially spent solution from step (a) and recirculating said portion to step (a) flue gas treatment;

Step c. of withdrawing at least a portion of the remaining at least partially spent solution from step (a) and treating the same with calcium ions in a proportion which is stoichiometrically not greater than the sulfite ion content thereof to precipitate calcium sulfite;

Step d. of withdrawing a portion of liquor from step (c) and recirculating said portion to step (a) flue gas treatment; Step e. of withdrawing all or another portion of the remaining liquor from step (c) together with from none to all of the calcium sulfite solids from step (c) and treating the sulfate ions and any remaining sulfite ions contained therein with at least a stoichiometrically equivalent proportion of calcium hydroxide to precipitate the calcium salts thereof; and

Step f. separating the solid calcium salts formed in step (e) from at least a major proportion of the aqueous phase resulting from step (e) and recirculating said separated aqueous phase and the calcium ions contained therein to step (c).

3,873,674

CONVERSION OF SULFUR DIOXIDE TO SULFUR TRIOXIDE BY PEROXYTITANIUM COMPLEXES

Rudolph Rosenthal, Broomall; Robert W. Rieve, Springfield; Joseph A. Kieras, Lincoln University, and Giovanni A. Bonetti, Wynnewood, all of Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Aug. 20, 1973, Ser. No. 389,934

Int. Cl. C01b *15/08, 17/60*

U.S. Cl. 423—244 5 Claims

1. A cyclic process for the removal of sulfur dioxide from sulfur dioxide-containing gaseous streams which comprises passing said stream through a bed of a peroxytitanium complex having one peroxy oxygen group per titanium atom supported on an inert support and produced by mixing titanium sulfate in the form of a slurry with said inert support, drying on said support and thereafter reacting with an organic hydroperoxide, extracting with a hydrocarbon solvent and drying, thereby converting said sulfur dioxide to sulfur trioxide and reducing said complex to titanium sulfate removing said sulfur trioxide from the effluent stream of said bed, stopping said flow of gas through said bed, regenerating said peroxytitanium complex by contacting said titanium sulfate with an organic hydroperoxide, extracting with a hydrocarbon solvent, drying and thereafter resuming the passage of said sulfur dioxide-containing gas through said bed of said complex.

3,873,675

CATALYST AND CATALYST ARRANGEMENT FOR THE PRODUCTION OF NITRIC ACID

Hans Roters, Hanau, Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Division of Ser. No. 288,332, Sept. 12, 1972,. This application Oct. 9, 1973, Ser. No. 404,207

Claims priority, application Germany, Sept. 14, 1971, 2146842

Int. Cl. C01b *21/26*

U.S. Cl. 423—403 6 Claims

1. In a process of forming oxides of nitrogen by the gas phase oxidation of ammonia with air in the presence of a platinum containing catalyst the improvement comprising employing as the catalyst a catalyst consisting essentially of 55 to 70 percent palladium, 1 to 6 percent of a member of the group consisting of rhodium and ruthenium and mixtures thereof, and the balance being platinum.

3,873,676

PROCESS FOR PREPARING STABLE CHLORINE TRIFLUORIDE DIOXIDE

Karl O. Christe, Calabasas, Calif., assignor to North American Rockwell Corporation, Canoga Park, Calif.

Filed Sept. 18, 1972, Ser. No. 290,031

Int. Cl. C01b *7/24*

U.S. Cl. 423—466 7 Claims

1. The method of producing stable chlorine trifluoride dioxide comprising the steps of:

reacting a $ClF_2O_2^+$ salt with a strong Lewis base compatible with ClF_3O_2.

3,873,677

IODINE PERCHLORATES

Karl O. Christe, Calabasas, and Carl J. Schack, Chatsworth, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1973, Ser. No. 363,708

Int. Cl. C01d *11/04;* **C01b** *7/00, 7/24*

U.S. Cl. 423—466 5 Claims

1. A method of preparing cesium tetraperchlorato iodate (III), $CsI(OClO_3)_4$, comprising:

contacting chlorine perchlorate and cesium iodide in an inert environment at a temperature in the range of −78°C to 30°C for 70 or more hours, provided that at least 4 moles of chlorine perchlorate are used per mole of cesium iodide.

3,873,678

METHOD FOR MAKING FERRIC CHLORIDE

Walter R. McCormick, Salt Lake City, and William J. Lewis, South Ogden, both of Utah, assignors to N L Industries, Inc., New York, N.Y.

Filed Aug. 2, 1973, Ser. No. 385,052

Int. Cl. C01g *49/10*

U.S. Cl. 423—493 1 Claim

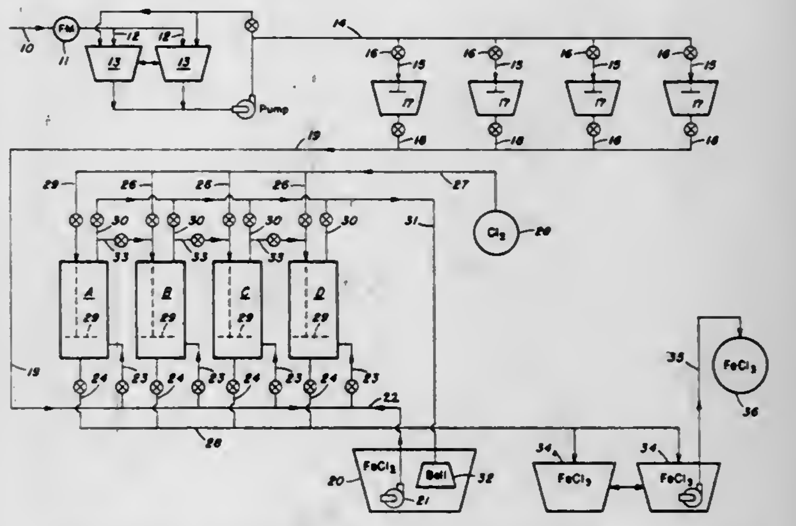
1. Method for making a ferric chloride solution from a weakly acidic aqueous solution of ferrous chloride comprising the steps of:

a. substantially continuously neutralizing in a plurality of neutralizing vessels the free acid in said aqueous solution of ferrous chloride by metallic iron to the point that the concentration of free acid is reduced therein below about 0.10%, on a solution weight basis;

b. substantially continuously concentrating the neutralized aqueous solutions of ferrous chloride by solar evaporation at ambient temperatures in a plurality of evaporators to at least about 32–35% ferrous chloride concentration;

c. substantially continuously feeding the concentrated ferrous chloride solutions to a receiving vessel and from thence to a battery of chlorinating vessels;

d. substantially continuously contacting the aqueous solutions of ferrous chloride with liquid chlorine in a predetermined sequence in each of the clorinating vessels at elevated temperatures and pressures to form aqueous solutions of ferric chloride, and wherein said liquid chlorine is introduced into each of the chlorinating vessels adjacent the bottom of the aqueous solutions of ferrous chloride therein;



e. substantially continuously discharging the said ferric chloride containing aqueous solutions from the said chlorinators and wherein any free chlorine remaining in the chlorinators, following the discharges of said ferric chloride containing aqueous solutions therefrom, is absorbed in the ferrous chloride solution in said receiving vessel.

3,873,679

REHEAT METHOD FOR USE IN SULFUR RECOVERY PROCESS

Kay L. Berry, and John W. Palm, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed May 29, 1973, Ser. No. 365,384

Int. Cl. C01b *17/04*

U.S. Cl. 423—574 8 Claims

7. The process of claim **2** wherein the H_2S content of said gaseous mixture ranges from about 5 to about 12 mol percent.

3,873,680

MERCAPTAN AND THIOKETAL COMPLEXES OF TECHNETIUM 99M FOR DIAGNOSTIC SCANNING

Richard A. Jackson, White Bear Lake, and Theodore F. Bolles, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 30, 1972, Ser. No. 285,079

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 13 Claims

1. A process for making a reaction product which can be liver specific in vivo comprising the steps of:

a. reducing a solution comprising at least 0.01 but less than 500 millicuries per milliliter of 99m-pertechnetate ion until more than 50 mole % of said 99m-pertechnetate ion has been reduced to a 99m-technetium species having an oxidation state greater than zero but less than +7,

b. reacting said 99m-technetium species with an excess, regardless of the stoichiometry of the resulting product, of a sulfur-containing compound selected from the group consisting of:

A. a lipophilic compound of the formula

$$HS - CR^1R^2 -_n X$$

wherein R^1 and R^2 are the same or different in each repeating unit and are selected from the group consisting of hydrogen, lower alkyl, and —SH,

n is an integer ranging from 1 to about 6, and

X is a mammalian blood-solubilizing polar group which only partially detracts from the liver specific and lipophilic properties of the said resulting reaction product;

B. a lipophilic compound of the formula

HS — A — X

where

A is a cycloaliphatic or heterocyclic aliphatic ring and X is as defined previously;

C. a lipophilic thioenol or thioketal substituted on the thioketal- or thioenol-carbon with a water solubilizing group and, on the carbon alpha to the thioketal- or thioenol carbon, wtih a lipophilic group; and

D. a carbocyclic or heterocyclic aromatic carboxylic, sulfonic, or phosphonic acid bearing a mercapto group substituted more remotely than ortho to the carboxylic, sulfonic, or phosphonic acid group.

3,873,681
DETERMINATION OF INCREASED AMOUNTS OF RESIN IN BODY FLUIDS

Richard P. Miller, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 226,744, Feb. 16, 1972, Pat. No. 3,784,686. This application May 21, 1973, Ser. No. 362,574

Int. Cl. G01n *33/00, 33/16;* **A61k** *27/00*

U.S. Cl. 424—9 **1 Claim**

1. A method of determining increased amounts of renin in mammalian body fluids wherein the body fluid is incubated with renin substrate and pepstatin, denatured proteins are removed and the supernate of said incubation is parenterally administered to a nephrectomized, pentolinium treated rat, with the lowered pressor effect of this incubation mixture being a measure of the amount of renin in said body fluid when compared with the pressor effect of adminstration of the supernate of the incubation of the same body fluid and renin substrate without the addition of pepstatin.

3,873,682
FILTER FOR URINE SAMPLES TO BE USED IN PREGNANCY TESTS AND METHOD OF USING SAME

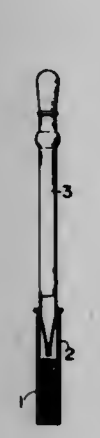
Nobuhisa Ogawa, Omiya, Japan, assignor to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1972, Ser. No. 225,971

Claims priority, application Japan, Feb. 23, 1972, 46-8537

Int. Cl. B01d *15.08;* **G01n** *31/00, 33/16*

U.S. Cl. 424—12 **2 Claims**



1. Method of filtering a urine sample preparatory to the immunological detection of human gonadotropin in said urine, which method comprises the step of filtering said urine through a fibrous mass consisting essentially of fibers selected from the group consisting of cellulose acetate fibers and polyacrylonitrile synthetic fibers which selectively adsorb a substantial proportion of those components in said urine which tend to interfere with the exact measurement of the gonadotropin content, without materially reducing the gonadotropin content of said sample.

3,873,683
PREGNANCY TEST COMPOSITION AND METHOD

Bernard Fishbein, Princeton, N.J., assignor to Princeton Laboratories, Inc., Princeton, N.J.

Continuation of Ser. No. 782,745, Dec. 10, 1968, abandoned. This application May 2, 1973, Ser. No. 356,628

Int. Cl. G01n *31/00, 33/16*

U.S. Cl. 424—12 **10 Claims**

1. A reagent for the detection of human chorionic gonadotrophin which consists essentially of an aqueous suspension of finely divided polystyrene latex particles having adsorbed thereon human chorionic gonadotrophin antibodies, said reagent being prepared by mixing an aqueous suspension of latex particles with whole blood human chorionic gonadotrophin antiserum containing anti-human chorionic gonadotrophin and heating said mixture at about 54° to about 57° C. for from about 1 to about 2 hours.

3,873,684
SENSITIZED CELL FOR USE IN THE PASSIVE AGGLUTINATION AND METHOD OF PREPARING THE SAME

Koichiro Fujita, Wako, Japan, assignor to Fujizoki Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 210,574, Dec. 21, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,005

Claims priority, application Japan, Dec. 26, 1970, 45-130693

Int. Cl. C12k *1/00;* **G01n** *31/06, 33/16*

U.S. Cl. 424—12 **7 Claims**

1. A method of preparing a sensitized cell for use in passive agglutination comprising subjecting a microorganism to cell wall fixation by treatment with formaldehyde at a concentration of from 0.2 to 20% at a temperature ranging between 0° and 37°C for a period of time varying up to about 12 hours followed by heating the formaldehyde treated organism at an elevated temperature varying between 90° and 135°C for a period of time ranging from 5 minutes to 5 hours, treating the cell with tannic acid and adsorbing on the surface of said tannic acid-treated microorganism, an antigen or antibody.

3,873,685
CONTIGUOUS SHAPED CHLORINE RELEASING STRUCTURE

William H. Kibbel, Jr., Pennington, and Roger C. Hollenbach, Kendall Park, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,612

Int. Cl. A61j *3/10;* **A61k** *9/00, 27/12*

U.S. Cl. 424—16 **2 Claims**

1. A structurally-strong, storage-stable, contiguous, layered-tablet consisting essentially of a layer of rapidly-soluble chlorine-releasing sodium dichloroisocyanurate dihydrate and another layer of slowly-soluble chlorine-releasing trichloroisocyanuric acid.

3,873,686
PROCESS FOR PREPARING ALCOHOL-SOLUBLE ALUMINUM CHLORHYDROXIDE-POLYOL COMPLEXES AND PRODUCT

Stewart M. Beekman, P.O. Box 277, Signal Mountain, Tenn. 37377

Continuation-in-part of Ser. No. 881,297, Dec. 1, 1969, This application Oct. 28, 1971, Ser. No. 193,557

Int. Cl. A61k *7/00*

U.S. Cl. 424—47 **4 Claims**

1. An effective antiperspirant composition comprising an aluminum chlorhydroxide-polyol complex having an alumina:-polyol ratio within the range from about 1:0.01 to about 1:0.5, prepared by blending solid aluminum chlorhydroxide in particulate form directly with a polyol in an amount of less than about 0.5 mole per mole of aluminum chlorhydroxide, calculated as Al_2O_3, and reacting the aluminum chlorhyroxide with the polyol to form the complex, the aluminum chlorhydroxide having the formula:

$Al_x(OH)_{y\,Cl3x-r}\cdot nH_2O$ where *n* is a number from zero to five, *x* is a number from 2 to 5, and y is a number from 2 to 14; and the polyol having from two to three hydroxy groups and being selected from the group consisting of 1,2-propylene glycol; 1,3-propylene glycol; 1,3-butylene glycol; glycerol; 2-methyl-2,4-pentanediol; 1,1,1-trimethylolpropane; neopentyl glycol; polyethylene glycol having a molecular weight within the range from 400 to about 1500; p-xylene-α, α-diol; polyepichlorohydrin; butyne-1,4-diol; 2-ethyl-1,3-hexane-diol; and polypropylene glycol having a molecular weight from 400 to 1000; and ethanol.

3,873,687
COSMETIC COLORING COMPOSITIONS

Ronald T. Demko, Chester, N.Y., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,499

Int. Cl. A61k *7/02;* **C09d** *13/00*

U.S. Cl. 424—64 **8 Claims**

1. A cosmetic coloring composition comprising a homogeneous mixture of coloring agents comprising of from about 0.001 to about 6 percent of at least one skin dye material capable of staining and coloring the skin of the user, from about 0.001 to about 6 percent of a colorant material exhibiting a different color than that exhibited by the dye material and which is capable of masking the color of said dye material while in applicator form in combination with a cosmetically acceptable base, said composition having substantially the colorant color in applicator form and substantially the dye color when applied to the skin of the user.

3,873,688
SURFACE ACTIVE COMPOSITIONS CONTAINING ASPARAGINE DERIVATIVES

Gregoire Kalopissis; Andre Viout, both of Paris, and Guy Vanlerberghe, Montjay-la-Tour, all of France, assignors to L'Oreal, Paris, France

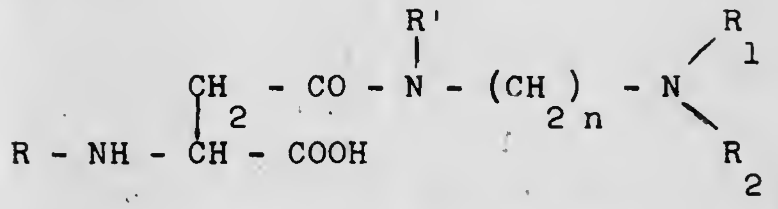
Continuation-in-part of Ser. No. 424,846, Jan. 11, 1965, Pat. No. 3,534,032. This application Feb. 12, 1970, Ser. No. 12,477

Claims priority, application France, Jan. 17, 1964, 64.60742

Int. Cl. A61k *7/06*

U.S. Cl. 424—70 **9 Claims**

1. A surface active composition having an acid pH comprising an effective amount of a surface active compound having the formula:



$$R-NH-\underset{\textstyle R-NH-CH-COOH}{}\quad \begin{array}{l} CH_2-CO-\overset{R'}{\overset{|}{N}}-(CH_2)_n-N\begin{array}{l}\diagup R_1\\ \diagdown R_2\end{array}\\ \,| \\ R-NH-CH-COOH\end{array}$$

or its sodium, potassium, or ammonium salt, wherein R and R′ are selected from the group consisting of alkyl having 10–18 carbon atoms and alkenyl having 10 to 18 carbon atoms;

R_1 and R_2 are lower alkyl or together with the nitrogen atom on which they are attached constitute morpholino;

and *n* is an integer of 2 to 5 and an aqueous carrier.

3,873,689
EVAPORATION INHIBITING ADDITIVE FOR CONCENTRATED DISPERSIONS OF PLANT PROTECTION PRODUCTS

Heinz Frensch, and Konrad Albrecht, both of Frankfurt, Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Main, Germany

Filed Feb. 5, 1973, Ser. No. 329,681

Claims priority, application Germany, Feb. 7, 1972, 2205590

Int. Cl. A01n *9/00*

U.S. Cl. 424—78 **6 Claims**

1. An evaporation inhibiting additive for concentrated dispersions of plant protection products which comprises:

from 20 to 60 percent by weight of an industrial grade aliphatic hydrocarbon mineral oil having at least twelve carbon atoms, a maximum content of 15 percent by weight of aromatic compounds, at least 85 percent residues which cannot be sulfonated, a viscosity of 3° to 5° Engler at 20°C, and a distillation end-point of more than 400°C under normal pressure,

from 1 to 5 percent by weight of tri-isobutyl phosphate defoamer,

from 0 to 5 percent by weight of 55 percent aqueous polyvinyl acetate dispersion adhesive,

from 0.5 to 5 percent by weight of a nonionic emulsifier selected from the group consisting of an alkylphenyl-polyalkoxyalkanone, an iso-octyphenyl-polyglycol ether, a tri-isobutylphenyl-polyglycol ether, an oleyl-polyglycol ether, a fatty acid ester of sorbitan and a polyoxyethylene derivative of sorbitan esters of fatty acids, said emulsifier having a hydrophilic-lipophilic balance value of from 10 to 12,

from 0.5 to 2.5 percent by weight of sodium salt of oleylmethyltauride,

from 0 to 30 percent by weight titanium dioxide pigment, from 0 to 40 percent by weight of a water soluble polyalcohol and at least 10 percent by weight water.

3,873,690
EQUINE INFECTIOUS ANEMIA VACCINE

James H. Rand, III, 25801 Lakeshore Dr., Euclid, Ohio 44110

Filed Jan. 23, 1974, Ser. No. 435,751

Int. Cl. A61k *23/00;* **C12k** *5/00*

U.S. Cl. 424—89 **4 Claims**

1. A process of producing a vaccine for treating horses against equine infectious anemia, consisting of the steps of:

a. mashing an organ of a sick animal contaminated with the virus of equine infectious anemia;

b. extracting the mashed matter by means of trichlorotrifluorethane in the cold at −4° C to −15° C centrifuged at 15,000 to 85,000 r.p.m. to obtain the undenatured protein of the virus;

c. mixing a given weight of said protein with substantially the same weight of a gamma globulin foreign to horses while stirring with a coupling agent chosen from the group consisting of bisdiazotized benzidine, m-xylilene diisocyanate, tolulene-2, 4-diisocyanate, bycyclohexile carboiimide, 3,3′-diamethlybenzidine, 3,3′-dichlorobenzidine, and a,a′-bis-p-toludine, in an amount of approximately 7.6 percent of said given weight to obtain a precipitate which is the desired antigen for the vaccine; and

d. lyophilizing said precipitate to a powder.

3,873,691

KILLED VACCINE FOR INFECTIOUS PORCINE ATROPHIC RHINITIS AND PROCESS FOR PREPARING THE SAME

Tadayoshi Kasuga, Tokyo; Yasukiyo Nakase, Yokohama, and Minoru Kawahira, Chiba, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,134

Claims priority, application Japan, May 12, 1971, 46-31213

Int. Cl. A61k *23/00*

U.S. Cl. 424—92 **2 Claims**

1. A killed vaccine for infectious porcine atrophic rhinitis incorporating an alumina gel or oil adjuvant which is prepared from a Phase I organism contained in the microorganism *Bordetella bronchiseptica* in a solid or liquid medium, and then killing the resulting cells or inactivating a lysate of the cells, said Phase I organism being a Gram-negative germ which possesses a K antigen and an antigen capable of giving to mice a protective potency against mouse intracerebral infection and exhibits on a blood agar medium a coccoid or coccobacillary form having capsules or envelopes and having no or slight flagella, and which has such properties as showing strong agglutination to anti-K serum but little or slight agglutination to anti-O serum, showing high virulence when injected into mouse brains, and showing significant necrotoxicity when intracutaneously injected into guinea-pigs.

3,873,692

ANTIBIOTICS PLATOMYCIN A AND B AND PROCESS FOR PRODUCTION THEREOF

Takashi Nara, Tokyo; Seigo Takasawa, Kawasaki; Ryo Okachi, Tokyo; Isao Kawamoto, Tokyo; Seiji Sato, Tokyo; Mitsuyoshi Yamamoto, Tokyo; Tomoyasu Sato, Tokyo, and Atsuko Morikawa, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1974, Ser. No. 441,838

Claims priority, application Japan, Feb. 22, 1973, 48-20624

Int. Cl. A61k *21/00*

U.S. Cl. 424—116 **6 Claims**

1. The antibiotic, platomycin A, the hydrochloride of which is characterized by:

a. Elementary analysis:
C: 37.48%, N: 15.02%
H: 5.57%, Cu: 3.90%;

b. Ultraviolet absorption spectrum (water) essentially as shown in FIG. 1;

c. Infrared absorption spectrum essentially as shown in FIG. 3;

d. A ratio of 1.31 of absorbance at at 244 mμ to that at 293 mμ in ultraviolet absorption (water);

e. Color reaction — positive Sakaguchi, Pauli, Ehrlich and potassium permanganate tests; negative ninhydrin, Elson-Morgan and ferric chloride tests;

f. Paper chromotography Rf values as shown in Table 4; and

g. Silaca gel thin layer chromatography Rf values as shown in Table 5.

3,873,693

IONOMYCIN

Edward Meyers, East Brunswick; Dorothy S. Slusarchyk, Belle Mead, and Wen-Chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb and Sons, Inc., Princeton, N.J.

Filed Mar. 11, 1974, Ser. No. 449,811

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **5 Claims**

1. The antibiotic ionomycin, said antibiotic having the infrared spectrum in FIG. 1; its calcium salt having the infrared spectrum in FIG. 2, the following approximate elemental analysis: C, 66.00, H, 9.17, Ca, 5.77, melting point 205°–206°, molecular weight 746 and soluble in hexane, benzene, chloroform and acetone.

3,873,694

DIRECT COMPRESSION TABLETTING COMPOSITION AND PHARMACEUTICAL TABLETS PRODUCED THEREFROM

Joseph L. Kanig, Westbury, N.Y., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Sept. 27, 1973, Ser. No. 401,322

Int. Cl. C13f *3/00*

U.S. Cl. 424—127 **25 Claims**

1. A method for producing a direct compression vehicle for tabletting comprising:

a. admixing a crystalline sugar with from about 10 to about 50% by weight, based upon the weight of said vehicle, of a maltodextrin having a measurable dextrose equivalent value not substantially above about 20 to form a uniform admixture,

b. concurrently agitating and spraying said admixture with an aqueous solution containing dissolved therein a maltodextrin having a measurable dextrose equivalent value not substantially above about 20, said aqueous solution of dissolved maltodextrin being present in an amount sufficient to provide a damp mass of said uniform admixture and to cause granulation of said uniform admixture, and

c. drying said granulated uniform admixture to a moisture content of less than about 10% by weight, based upon the weight of said vehicle.

3,873,695

REHYDRATING ANTI-DIARRHOEA COMPOSITION

Maurice Lionel Pastre, Lyon, France, assignor to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

Filed July 11, 1973, Ser. No. 378,057

Claims priority, application France, July 27, 1972, 72.27767

Int. Cl. A61k *27/00*

U.S. Cl. 424—131 **9 Claims**

1. A veterinary composition for controlling diarrhoea in young animals, comprising in unit dosage form a quantity sufficient to control diarrhoea of a combination of (1) at least one disinfectant selected from the derivatives of 8-hydroxy quinoline, (2) at least one astringent for intestinal dressing selected from the organic salts of bismuth or aluminum and (3) at least one rehydrating agent effective in acting on the cellular exchanges to re-establish the hydromineral metabolism, said rehydrating agents being selected from the magnesium, sodium, potassium or calcium salts of aspartic, fumaric or glutamic acids.

3,873,696

CLEANING AND STERILIZING SOFT CONTACT LENS

Kiran J. Randeri, Santa Ana, and Hampar L. Karageozian, Altadena, both of Calif., assignors to Allergan Pharmaceuticals, Irvine, Calif.

Filed Jan. 31, 1972, Ser. No. 222,379

Int. Cl. A01n *11/00*

U.S. Cl. 424—153 **2 Claims**

1. A method for cleaning and sterilizing soft contact lenses comprising contacting a soft contact lens with an effective amount of an aqueous, non-toxic, isotonic solution comprising about 0.001 to about 1 percent by weight $2KHSO_5.KHSO_4.K_2SO_4$.

3,873,697

HISTAMINE ANTIGEN

Geza Filipp, Saarbrucken, and Heinz Schneider, Riegelsverg-/Saar, both of Germany, assignors to Heinrich Mack Nachf. Chem.- pharmazeutische Fabrik, Illertissen, Germany

Continuation of Ser. No. 309,760, Nov. 11, 1972, , which is a continuation of Ser. No. 48,852, June 12, 1970, , which is a division of Ser. No. 796,624, Nov. 12, 1968, , which is a division of Ser. No. 537,297, March 25, 1966,. This application Aug. 10, 1973, Ser. No. 387,256

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 **4 Claims**

1. The method of treating such allergic diseases as bronchial asthma, urticaria, Quincke's disease and migraine headaches in humans which comprises administering to a human an effective amount of a compound formed as a coupled reaction product obtained by reacting one mole of human gamma-globulin with 3 moles of the salt diazonium benzene-azo-histamine chloride in a physiologically acceptable solution, said reaction being carried out with an excess of said gamma-globulin to inhibit the presence of unreacted salt in the final solution, the compound administered being histamine- <2 azo 1> -benzene- <4 azo> -gamma-globulin contained in a pharmaceutically acceptable aqueous solution at a concentration of about 2 mg/ml to 600 mg/ml of solution.

3,873,698

METHOD OF COMBATTING MORPHINE ADDICTION AND TOXIFICATION

Nathar W. Penn, Wyckoff, N.J., assignor to Addiction Research and Treatment Corporation, Brooklyn, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,025

Int. Cl. A01n *9/00, 9/28*

U.S. Cl. 424—180 **6 Claims**

1. A method for treatment of morphine addiction, or morphine toxification and morphine withdrawal symptoms which comprises administering to the subject suffering the same an effective amount of a composition consisting essentially of deoxycytidine.

3,873,699

PHARMACOLOGICALLY ACTIVE SUBSTANCES ISOLATED FROM *CADIA ELLISIANA*

Alfred Groebel, bad Soden, Taunus, and Ernst Lindner, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 27, 1973, Ser. No. 391,534

Claims priority, application Germany, Apr. 28, 1973, 2321566

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **8 Claims**

1. A pharmacologically active substance isolated from *Cadia ellisiana*, and its physiologically tolerated salts, said substance having the following properties:

Empirical formula:	$C_{20}H_{27}N_3O_3$
Melting point:	178°C.
Molecular weight:	375 (determined mass spectrographically and osmometrically in methanol)
Optical rotation:	$[\alpha]_{20}^{D} = +80°$ (in chloroform)
Ultraviolet spectrum:	λ_{max} at 268 mμ, log $\epsilon = 4.924$ (in methanol)
Infrared spectrum:	as in FIG. 1 of the drawings (in KBr).

2. A pharmacologically active substance isolated from *Cadia ellisiana*, and its physiologically tolerated salts, said substance having the following properties:

Empirical formula:	$C_{15}H_{24}N_2O_2$
Melting point:	170°C.
Molecular weight:	264 (determined mass spectrographically and osmometrically in acetone)
Optical rotation:	$[\alpha]_{20}^{D} = +68°$ (in water)
Ultraviolet spectrum:	λ_{max} at 270 mμ, log $\epsilon = 3.61$ (in methanol)
Infrared spectrum:	as in FIG. 2 of the drawings (in KBr).

3,873,700

FUNGICIDAL COMPOSITIONS AND METHOD FOR PROTECTING PLANTS BY THE USE THEREOF

Tomomasa Misato, Tokyo; Keng Tang Huang, Wako; Yasuo Homma, Kamifukuoka; Toshiro Shida, Lawasaki; Takashi Meguro, Zushi, and Hachiro Wakamatsu, Musashino, all of Japan, assignors to Ajinomoto Co., Ltd., Tokyo and Ajinomoto Co., Ltd., Rikagaku, Kenkyusho, Japan

Filed June 1, 1973, Ser. No. 366,094

Int. Cl. A01n *9/36*

U.S. Cl. 424—199 **3 Claims**

1. A method for combatting plant fungus which comprises applying to said fungus a fungicidally effective amount of a composition consisting essentially of from 0.1 to 90% by weight based on the weight of the composition of a phosphatide selected from the group consisting of soybean lecithin, corn phosphatide, peanut phosphatide and egg lecithin and an inert carrier.

3,873,701

O-ARYL OXIMES OF 3-KETO STEROIDS

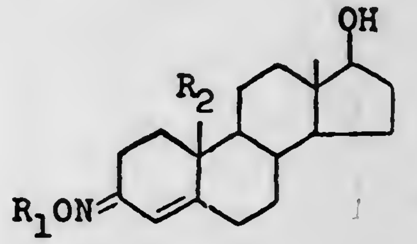
Allen Frederick Hirsch, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 342,903, March 19, 1973, Pat. No. 3,816,406. This application Dec. 27, 1973, Ser. No. 428,940

Int. Cl. A61k *17/06*

U.S. Cl. 424—238 **4 Claims**

1. A method for suppressing reproduction which comprises administering an effective amount of a compound of the formula:



wherein R_1 is pyridyl or phenyl and R_2 is hydrogen or methyl.

3,873,702

NOVEL STEROID ESTER

Andre Pierdet, Noisy-le-Sec, France, assignor to Roussel Uclaf, Paris, France

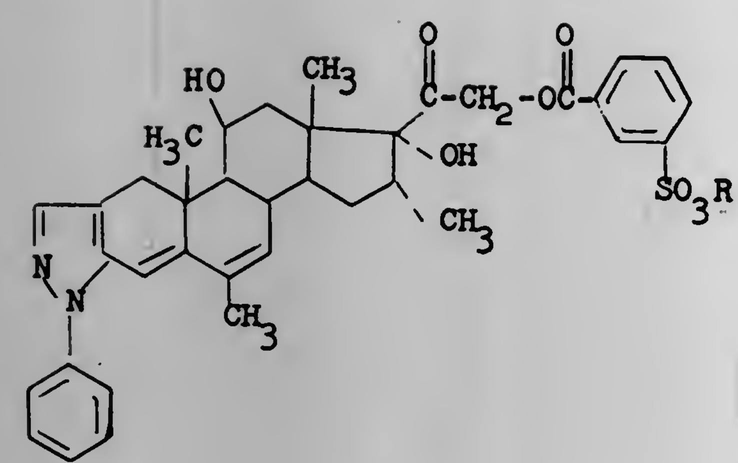
Division of Ser. No. 330,407, Feb. 7, 1973, Pat. No. 3,803,132. This application Dec. 11, 1973, Ser. No. 423,663

Claims priority, application France, Feb. 18, 1972, 72.05527

Int. Cl. A61k *17/00*

U.S. Cl. 424—241 **4 Claims**

1. An anti-inflammatory composition comprising an effective amount of a 21-m-sulfobenzoate of 6.16α-dimethyl-2_1-phenyl-$\Delta^{2,4,6}$-pregnatrieneolo [3,2-c]-pyrazol-11β,17,21-triol-20-one of the formula



wherein R is selected from the group consisting of hydrogen and alkali metal and a pharmaceutical carrier.

3,873,703

BACTERICIDAL AND FUNGICIDAL COMPOSITIONS AND METHODS OF KILLING BACTERIA AND FUNGI USING 8-OXYQUINOLINE- AND 8-OXYQUINALDINE ACRYLATES

Helmut Huber-Emden, Basel; Adolf Hubele, Riehen, and Guenter Klahre, Reinach/Baselland, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

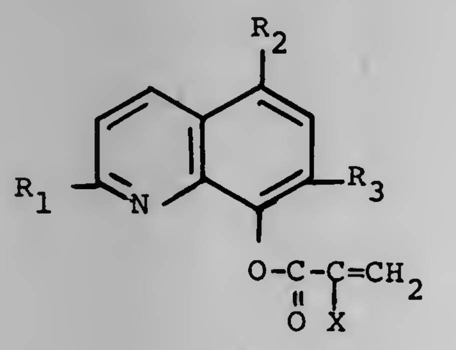
Division of Ser. No. 114,069, Feb. 9, 1971, Pat. No. 3,813,399. This application Mar. 14, 1974, Ser. No. 451,337

Claims priority, application Switzerland, Feb. 13, 1970, 2138/70

Int. Cl. A01n *9/22*

U.S. Cl. 424—258 **13 Claims**

1. A bactericidal or fungicidal composition comprising (1) a bactericidally or fungicidally effective amount of a compound of the formula



wherein

X is hydrogen or halogen, R_1 is hydrogen or methyl, and each of R_2 and R_3 is hydrogen or halogen, and (2) a carrier.

3,873,704

NOVEL TETRAHYDROISOQUINOLINE COMPOUNDS IN A PHARMACEUTICAL COMPOSITION

Eisakku Yamato, Yono; Masao Wada, Warabi; Toshio Sekiguchi, Omiya; Masanori Sato, Toda; Taku Nagao, Ageo; Hiromichi Nakajima, Yono; Akio Kiyomoto, and Masazumi Kawanishi, both of Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

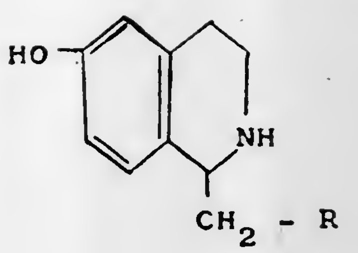
Division of Ser. No. 205,704, Dec. 7, 1971, Pat. No. 3,898,015. This application Sept. 4, 1973, Ser. No. 393,984

Claims priority, application Japan, Dec. 17, 1970, 45-113378

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **1 Claim**

1. A therapeutic composition which comprises a pharmaceutically effective amount of a compound of the formula;



wherein R is a trimethoxyphenyl or dimethoxyphenyl radical, or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

3,873,705

METHODS FOR REDUCING INFLAMMATORY REACTIONS USING CERTAIN S-TRIAZOLO-(3,4-A)-ISOQUINOLINES

Chester John Cavallito, Greenwich, Conn., and Allan Poe Gray, Essex Junction, Vt., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

Continuation of Ser. No. 140,198, May 4, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,696

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **13 Claims**

1. A method of reducing inflammation in a mammal having such a disorder which comprises administering to said mammal an amount, sufficient to exert an anti-inflammatory effect, of a compound selected from the group consisting of 3-trifluoromethyl-s-triazolo-[3,4-a]-isoquinoline, 3-(N-morpholinylmethyl)-s-triazolo-[3,4-a]-isoquinoline, 5-chloro-s-triazolo-[3,4-a]-isoquinoline, 7-nitro-s-triazolo-[3,4-a]-isoquinoline, 6-cyano-s-triazolo-[3,4-a]-isoquinoline, 6-methoxy-s-triazolo-[3,4-a]-isoquinoline, 7-nitro-3-trifluoromethyl-s-triazolo-[3,4-a]-isoquinoline, 3,6-dichloro-s-triazolo-[3,4-a]-isoquinoline, 3-styryl-s-triazolo-[3,4-a]-isoquinoline, 3-methylthio-s-triazolo-[3,4-a]-isoquinoline, 3-ethylthio-s-triazolo-[3,4-a]-isoquinoline, 8-methoxy-s-triazolo-[3,4-a]-isoquinoline, 3-phenyl-s-triazolo-[3,4-a]-isoquinoline, s-triazolo-[3,4-a]-isoquinoline, 3-oxo-s-triazolo-[3,4-a]-isoquinoline, 3-thioxo-s-triazolo-[3,4-a]-isoquinoline, a 3-lower alkyl-s-triazolo-[3,4-a]-isoquinoline, a 3-lower alkyl-6-halo-s-triazolo-[3,4-a]-isoquinoline, a 3-halo-s-triazolo-[3,4-a]-isoquinoline, a 6-halo-s-triazolo-[3,4-a]-isoquinoline, a 7-halo-s-triazolo-[3,4-a]-isoquinoline, 3-(N-morpholinylmethyl)-s-triazolo-[3,4-a] -isoquinoline dihydrochloride, 3styryl-s-triazolo-[3,4-a]-isoquinoline hydrochloride and 3-trifluoromethyl-s-triazolo-[3,4-a]-isoquinoline hydrochloride.

3,873,706

NOVEL BENZOMORPHAN AND THEIR SALTS AS ANALGESICS

Toshio Atsumi; Kenji Kobayashi; Yoshiaki Takebayashi, all of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

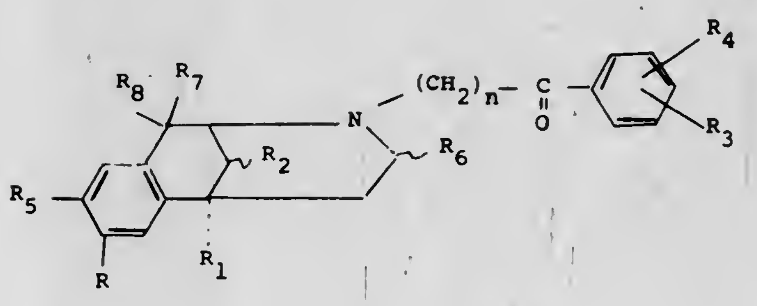
Division of Ser. No. 170,640, Aug. 10, 1971, Pat. No. 3,833,595, which is a continuation-in-part of Ser. No. 883,319, Dec. 8, 1969, abandoned. This application May 23, 1974, Ser. No. 472,840

Claims priority, application Japan, Dec. 26, 1968, 43-96270; Dec. 26, 1968, 43-96271; Jan. 29, 1971, 46-3397; Feb. 1, 1971, 46-3900; Aug. 14, 1970, 45-71637; Sept. 17, 1970, 45-81810; Sept. 17, 1970, 45-81811; Oct. 20, 1970, 45-92611; Dec. 26, 1968, 43-96279; Dec. 26, 1968, 43-71638; Oct. 30, 1970, 45-96301; Dec. 8, 1970, 45-109972; Dec. 8, 1970, 45-109973; Dec. 17, 1970, 45-114363; Dec. 24, 1970, 45-130369; Dec. 28, 1970, 45-129967; Dec. 28, 1970, 45-129968

Int. Cl. A61k *27/00*

U.S. Cl. 424—260 **36 Claims**

1. An analgesic composition consisting of an analgesically effective amount of a benzomorphan derivative of the formula:



[I]

wherein R is a hydrogen atom, a C^1–C^3 alkoxy group, an acetoxy group, a hydroxyl group, a nitro group, a halogen group, a cyano group, an amino group, a carboxyl group, a carbamoyl group or a sulfo group; R_1 is a hydrogen atom, a C^1–C^3 alkyl group or a group of the formula, $(CmH_{(2m-p)+1})-(R_9)_p$ (wherein *m* is an integer of 1 – 6; *p* is an integer of 1 – 2; and R_9 is a hydroxyl group or a C^1–C^3 alkoxy group); R_2 is a hydrogen atom or a C^1–C^3 alkyl group; R_3 and R_4 are independently a hydrogen atom, a halogen atom, a C^1–C^3 alkyl group, a C^1–C^3 alkoxy group, a C^1–C^3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxy group; R_5 is a hydrogen atom or a methyl group; R_6 is a hydrogen atom or a C^1–C^3 alkyl group; R_7 is a hydrogen atom, a C^1–C^3 alkyl group, a phenyl group or a C^1–C^3 alkoxyphenyl group; R_8 is a hydrogen atom or a hydroxyl group, or R_7 and R_8 may form a C^1–C^3 alkylidene group or a carbonyl group together with a carbon atom to which these substituents are bonded; and *n* is an integer of 2 – 4, provided that, when *n* is an integar of 2; R_1 and R_2 are methyl groups; R is a hydrogen atom or a hydroxyl group; and R_4, R_5, R_6, R_7 and R_8 are hydrogen atoms, R_3 must be a halogen atom, a C^1–C^3 alkyl group, a C^1–C^3 alkoxy group, a C^1–C^3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group as the active ingredient and a pharmaceutically acceptable carrier or diluent.

3,873,707

1-CYCLOPROPYL-3-MONO-(AND 2,3-DI) SUBSTITUTED-1-PROPANONES IN COMPOSITIONS AND METHOD FOR TREATING PAIN

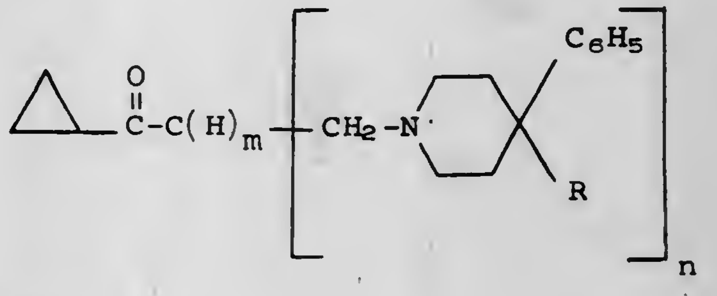
William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 293,888, Oct. 2, 1972, Pat. No. 3,808,217, which is a continuation-in-part of Ser. No. 144,634, May 18, 1971, abandoned. This application Feb. 12, 1974, Ser. No. 441,918

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **7 Claims**

1. A therapeutic composition comprising (1) an effective amount of 5.0 milligrams to 100.0 milligrams of an analgetically active compound selected from the group having the formula:



wherein:

R is selected from lower-alkanoyloxy and lower-alkoxycarbonyl,

m and *n* are each one and two with the proviso that when *m* is one *n* is two and when *m* is two *n* in one, and

a pharmaceutically acceptable acid addition salt thereof, and

2. a pharmaceutical carrier.

3,873,708

N-SULFAMOYL-SUBSTITUTED-PIPERIDINES AS ANTI-TUSSIVE AGENTS

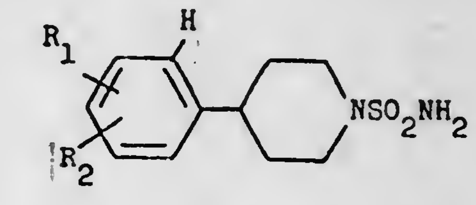
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 19, 1973, Ser. No. 342,464

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **4 Claims**

1. A method for treating coughs which comprises orally administering to a mammal in need of said treatment an anti-tussive effective amount of a compound of the formula



where

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or

R_1 and R_2 together represent methylenedioxy attached to adjacent carbon atoms.

3,873,709

METHOD OF TREATING PSYCHOSIS

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 19, 1974, Ser. No. 443,261

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **3 Claims**

1. The process of treating psychosis in a warm-blooded animal comprising administering to said animal an effective

dose of L-pyroglutamyl-L-histidyl-L-prolinamide to alleviate the symptoms of psychosis.

3,873,710
SYNERGISTIC COMPOSITIONS FOR THE CONTROL OF AEROBACTER AEROGENES

Robert H. Brink, Jr., Doylestown; Bernard F. Shema, Glenside; Roger L. Justice, Cornwells Heights, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 160,191, July 6, 1971, Pat. No. 3,829,305. This application Apr. 4, 1974, Ser. No. 457,743

Int. Cl. A01n *9/02*

U.S. Cl. 424—277 **5 Claims**

1. A method for controlling the growth of the microorganism Aerobacter Aerogenes in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4 -phenyl-one.2-dithiole-3-1 and 2-chloro-4-phenylphenol, wherein the weight ratio of the dithiole to the phenylphenol is from 5 to 95% to 95 to 5%.

3,873,711
SYNERGISTIC COMPOSITIONS FOR THE CONTROL OF AEROBACTER AEROGENES

Robert H. Brink, Jr., Doylestown; Bernard F. Shema, Glenside; Roger L. Justice, Cornwells Heights, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 160,191, July 6, 1971, Pat. No. 3,829,305. This application Apr. 4, 1974, Ser. No. 457,744

Int. Cl. A01n *9/02*

U.S. Cl. 424—277 **3 Claims**

1. A method for controlling the growth of the microorganism *Aerobacter aerogenes* in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4-phenyl-1,2-dithiole-3-one and 2,3,4,6-tetrachlorophenol, wherein the weight ratio of the dithiole to the tetrachlorophenol is from 60 to 5% and 40 to 95%.

3,873,712
SYNERGISTIC COMPOSITIONS FOR THE CONTROL OF AEROBACTER AEROGENES

Robert H. Brink, Jr., Doylestown; Bernard F. Shema, Glenside; Roger L. Justice, Cornwells Heights, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 160,191, July 6, 1971, Pat. No. 3,829,305. This application Apr. 4, 1974, Ser. No. 457,745

Int. Cl. A01n *9/02*

U.S. Cl. 424—277 **5 Claims**

1. A method for controlling the growth of the microorganism Aerobacter Aerogenes in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4-phenyl-1,2-dithiole-3-one and 4-chloro-2 cyclopentylphenol, where the weight ratio of the dithiole to the cyclopentylphenol is from 5 to 95% to 95 to 5%.

3,873,713
STABILIZED PARTICULATE VITAMIN C COMPOSITION

Walter Haas, and Hans-Gunther Zeller, both of Grenzach, Germany, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Continuation of Ser. No. 102,090, Dec. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 731,322, May 22, 1968, abandoned. This application July 2, 1973, Ser. No. 375,559

Int. Cl. A61k *27/00*

U.S. Cl. 424—280 **3 Claims**

1. A stable, vitamin C active composition consisting essentially of free-flowing, non-agglomerating, discrete particles comprising a vitamin C active substance selected from the group consisting of ascorbic acid, isoascorbic acid, a salt of ascorbic acid with a medicinally acceptable base, a salt of isoascorbic acid with a medicinally acceptable base, an ester of ascorbic acid with an aliphatic alcohol containing from one to seventeen carbon atoms and an ester of isoascorbic acid with an aliphatic alcohol containing from one to seventeen carbon atoms, each individual discrete particle having a substantially uniform coating consisting of an organic polysiloxane obtained by the in situ polymerization on each discrete particle, said particles being maintained physically separate, of a solution containing from about 10 percent by weight to about 50 percent by weight of a siloxane selected from the group consisting of methyl siloxane and phenyl siloxane in an inert, volatile organic solvent at a temperature of from about room temperature to about 150°C, said coating comprising from about 1 percent by weight to about 20 percent by weight of said composition.

3,873,714
XANTHONE CARBOXYLIC ACIDS AND DERIVATIVES

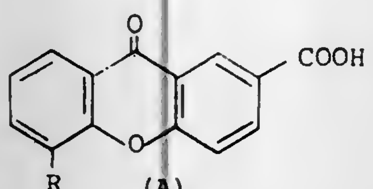
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 162,696, July 14, 1971, abandoned. This application Jan. 12, 1972, Ser. No. 217,383

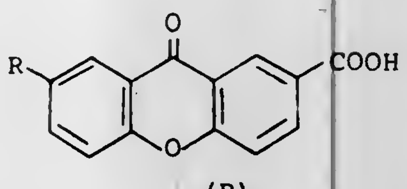
Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **10 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100 mg. per kg. of body weight per day sufficient to produce said inhibition of a compound represented by the formulas:

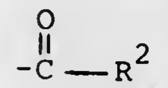


(A)



(B)

wherein each R is a group of the formula:



$$-\overset{\overset{\displaystyle O}{\|}}{C}—R^2$$

in which R^2 is hydrogen; lower alkyl; cycloalkyl; halomethyl; phenyl; substituted phenyl in which the substituent is halo, lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl, or cyano; or a pharmaceutically acceptable non-toxic alkyl or glycerol ester, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alkoxyalkyl or phenethyl substituted amide or salt thereof wherein said alkyl and alkoxy groups each contain 1 to 8 carbon atoms.

3,873,715
THERAPEUTIC AGENT FOR IMPROVING CARDIOVASCULAR FUNCTION

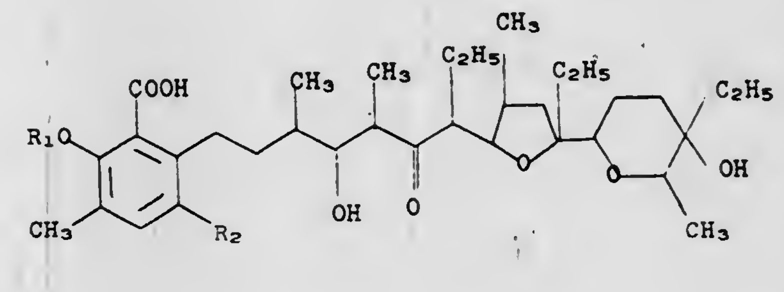
Berton Charles Pressman, Coral Gables, and Norberto Tumali de Guzman, Miami Beach, both of Fla., assignors to University of Miami

Filed Apr. 6, 1973, Ser. No. 348,809

Int. Cl. A61k *21/00*

U.S. Cl. 424—283 **10 Claims**

1. A method for improving cardiovascular function in a patient requiring such treatment which comprises administering to such patient an effective amount of a compound represented by the formula



wherein R_1 is hydrogen or acetyl; R_2 is hydrogen, bromine or chlorine
and the pharmaceutically acceptable salts thereof.

3,873,716
INSECTICIDAL ESTERS OF CHRYSANTHEMIC ACID AND ALCOHOLS RELATED TO 3-HYDROXYMETHYLBENZOFURAN

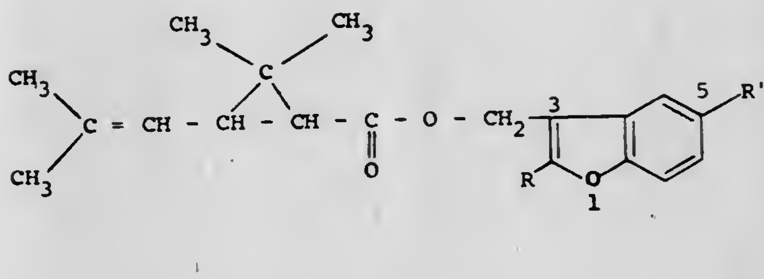
Wayne I. Fanta, Colerain Twp., Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 120,043, March 1, 1971, Pat. No. 3,816,469. This application Dec. 3, 1973, Ser. No. 420,810

Int. Cl. A01n *9/28*

U.S. Cl. 424—285 **1 Claim**

1. An insecticidal composition comprising an insecticidal amount of a compound of the formula



wherein R is a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, and butyl and wherein R′ is a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, methoxyl, ethoxyl, propoxyl, phenyl, chlorine, bromine, and iodine, and an insecticidal carrier.

3,873,717
CERTAIN 2,2-DIMETHYL-PROPANAL-CARBAMOYLOXIMES FUNGICIDES

Odd Kristiansen, Reinach/Baselland, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

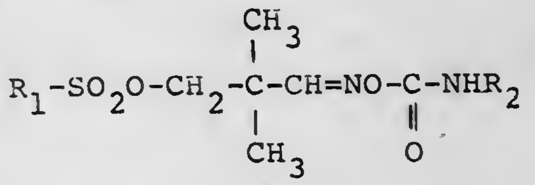
Division of Ser. No. 322,584, Jan. 10, 1973, Pat. No. 3,822,359, which is a division of Ser. No. 198,420, Nov. 12, 1971, Pat. No. 3,718,683. This application May 2, 1974, Ser. No. 466,330

Claims priority, application Switzerland, Nov. 20, 1970, 17206/70; Sept. 24, 1971, 13991/71

Int. Cl. A01n *9/14*

U.S. Cl. 424—303 **13 Claims**

1. A method for combatting phytophathogenic fungi which comprises applying to an area infested with said fungi a fungicidally effective amount of a compound of the formula



$$R_1-SO_2O-CH_2-\underset{\underset{\displaystyle CH_3}{|}}{\overset{\overset{\displaystyle CH_3}{|}}{C}}-CH{=}NO-\underset{\underset{\displaystyle O}{\|}}{C}-NHR_2$$

wherein R_1 represents C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl or phenyl optionally substituted by halogen, nitro or C_1–C_4 alkyl, and R_2 represents C_1–C_4 alkyl.

3,873,718
METHOD FOR DELAYING THE ONSET OF, OR POSTPONING, PARTURITION

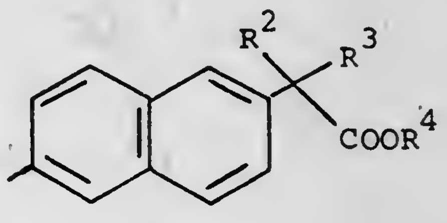
Milan R. Henzl, Palo Alto, and Adolph Roszkowski, Saratoga, both of Calif., assignors to Syntex Corporation, Panama, Panama

Filed Mar. 29, 1973, Ser. No. 345,878

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 **10 Claims**

1. A method comprising administering to a pregnant mammal a compound selected from the group of compounds represented by the formula:



where

- R^1 is alkyl having up to 8 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms, alkoxymethyl having up to 7 carbon atoms, trifluoromethyl, vinyl, ethynyl, halogen, alkoxy having up to 6 carbon atoms, difluoromethoxy, alkoxymethoxy having up to 7 carbon atoms, alkylthiomethoxy having up to 7 carbon atoms, alkylthio having up to 6 carbon atoms, difluoromethylthio, acetyl, alkoxymethylthio having up to 7 carbon atoms, alkylthiomethylthio having up to 7 carbon atoms, phenyl or alkylsubstituted phenyl having up to 8 carbon atoms;
- one of R^2 and R^3 is hydrogen, the other being hydrogen, methyl, ethyl or difluoromethyl, or R^2 and R^3 together are methylene or difluoromethylene;
- R^4 is hydrogen, alkyl having up to 22 carbon atoms, unsaturated alkyl having up to 22 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms, cycloalkylmethyl having from 4 to 9 carbon atoms, 2-cycloalkylethyl having from 5 to 10 carbon atoms, 3-cyclopentylpropyl, 3-cyclohexylpropyl, benzyl, 2-phenylethyl or 3-phenylpropyl; and the pharmaceutically acceptable salts of those compounds where R^4 is H; said compound being administered in a therapeutically effective amount

adapted to delay the onset of parturition or to postpone parturition.

3,873,719
METHOD OF IMPROVING BEEF PRODUCTION

Emil Lorz, Springfield, and Leicester T. Spence, Clever, both of Mo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 12, 1973, Ser. No. 331,853

Int. Cl. A61k *27/00*

U.S. Cl. 424—312 **7 Claims**

1. A method for improving beef quality of cattle weighing about from 60 to 1200 pounds, which comprises administering to said cattle about from 20 to 100 grams per day per animal of a choline-stearate containing composition consisting essentially of about from 50 to 100%, by wt., choline stearate and 0 to 50%, by wt., of a fatty acid salt of choline selected from the group of the salts of choline with fatty acids having from 14 to 22 carbon atoms and mixtures of such salts.

3,873,720
NUTRIENT FAT EMULSION

Akira Suzuki; Hiroshi Miura, both of Osaka; Katsuya Sawada, Inuyama, and Yoshiyuki Koida, Kawanishi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jan. 30, 1974, Ser. No. 437,921

Claims priority, application Japan, Feb. 12, 1973, 48-17331

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—312 **11 Claims**

1. An oil-in-water emulsion comprising 1–15 w/v% based on the emulsion of a fat selected from the group consisting of sesame seed oil, peanut oil, olive oil, safflower oil and soybean oil, 1–30 w/v% based on the emulsion of a carbohydrate selected from the group consisting of xylitol and sorbitol, 1–15 w/v% based on the emulsion of at least 2 amino acids selected from the group consisting of L-isoleucine, L-leucine, L-lysine, L-valine, L-methionine, L-threonine, L-tryptophan, L-phenylalanine, L-alanine, L-proline, L-glutamic acid, L-aspartic acid, L-serine, L-arginine, L-histidine, L-tyrosine, L-cystein, L-cystine and glycine, 0.05 to 0.30 g per g of fat of egg-yolk phospholipids, 0.02 to 3.0 per g of phospholipids of fatty acid having 12 to 20 carbon atoms or a salt thereof with arginine, lysine or ornithine and a sufficient amount of water to bring the emulsion up to 100 w/v%, said fat constituting the dispersed phase of said emulsion, particles of dispersed fat having an average diameter of less than 0.5 μ.

3,873,721
PHARYNGEAL AND NASOPHARYNGEAL TREATMENT

Edgar R. Hargett, 466 Woodlawn Ave., Springfield, Ohio 45504

Filed May 22, 1973, Ser. No. 362,791

Int. Cl. A61k *27/00*

U.S. Cl. 424—313 **3 Claims**

1. A method of treating conditions of the lower throat comprising;

a. holding approximately one teaspoonful of an aqueous 0.25% solution of dioctyl sodium sulfosuccinate in the mouth for approximately one minute with the head tilted back,
b. gargling with said aqueous solution while the head is tilted back, whereby bacteria is destroyed due to the lytic power of said dioctyl sodium sulfosuccinate and the mucus and plaque loosened due to the wetting ability of said dioctyl sodium sulfosuccinate,
c. spitting out most of the solution, and
d. swallowing the solution which remains in the mouth.

3,873,722
METHOD FOR TREATING SCHIZOPHRENIA

John Raymond Smythies, Birmingham, Ala., assignor to Nelson Research & Development Company, Irvine, Calif.

Filed May 31, 1974, Ser. No. 475,047

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **2 Claims**

1. A method for temporarily alleviating symptoms of schizophrenia comprising orally administering to a schizophrenic an effective amount of l-serine.

3,873,723
METHOD OF USE

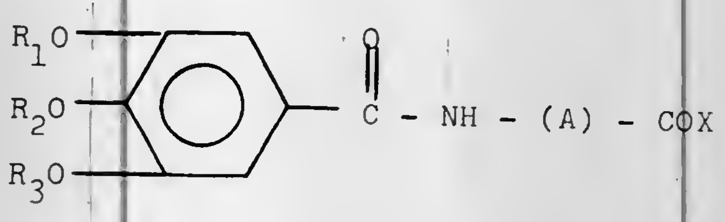
Frederick Coulston, Schenectady, and Ira Rosenblum, Rensselaer, both of N.Y., assignors to Istituto Chemioterapico Italiano, Milan, Italy

Filed Dec. 8, 1972, Ser. No. 313,344

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **8 Claims**

1. A method for reducing serum blood cholesterol comprising administering to a warm-blooded animal in which lowering of the serum blood cholesterol is desired an effective amount of a compound having the formula:



wherein R_1, R_2, and R_3 are hydrogen, methyl, ethyl, or propyl, and A is a saturated hydrocarbon radical of 3 to 8 carbon atoms or a saturated hydrocarbon radical substituted with one carboxylic acid group and containing 2 to 8 carbon atoms, and X is -OH, or $-OR_4$ where R_4 is lower alkyl, or a pharmaceutically-acceptable salt thereof.

3,873,724
METHOD FOR DISRUPTING NORMAL INSECT MATURATION

Morton Beroza, Silver Spring; Rafael Sarmiento, Laurel, and Terrence P. McGovern, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 21, 1973, Ser. No. 343,328

Int. Cl. A01n *9/24*

U.S. Cl. 424—341 **4 Claims**

1. A method of preventing the normal maturation of insects selected from the group consisting of the yellow mealworn, *Tenebrio molitor* (L.) and the confused flour beetle, *Tribolium confusum* Jacquelin duVal, comprising contacting said insects at an early pupal stage with an effective maturation inhibiting amount of 1-(p-ethylphenoxy)-3,7-dimethyl-7-propoxy-2-octene.

3,873,725
INSECT REPELLENT COMPOSITION CONTAINING C_{6-8} ALKYL MONOETHERS OF TRIETHYLENE GLYCOL

W. A. Skinner, Portola Valley; Howard L. Johnson; Joseph T. DeGraw, Jr., both of Sunnyvale, and Vernon H. Brown, Menlo Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 243,445, April 12, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,484

Int. Cl. A01n *9/24*

U.S. Cl. 424—342 **2 Claims**

1. A method of protecting man against attack by mosquitoes which comprises topically applying to exposed skin areas a mosquito-repelling amount of n-hexyl monoether of triethylene glycol.

3,873,726
METHOD AND COMPOSITION FOR REDUCING PLASMA LIPID LEVELS

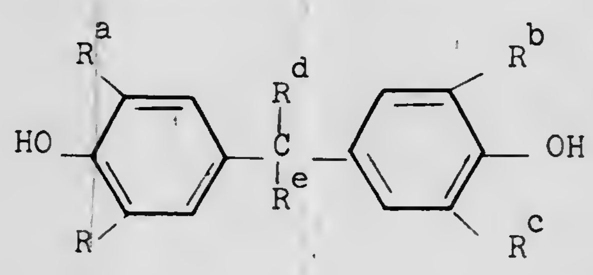
Sidney I. Lerner, Cincinnati, Ohio, assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 705,295, Feb. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 317,796, Oct. 21, 1963, abandoned. This application Nov. 10, 1972, Ser. No. 305,454

Int. Cl. A61k *27/00*

U.S. Cl. 424—347 **23 Claims**

1. A method of treating a mammal whose serum lipid level is to be reduced which comprises internally administering to said mammal, in unit dosage form a serum lipid-lowering amount of a compound having the formula



wherein

R^a and R^b are tert-butyl,
R and R^c are alkyl of 1 to 4 carbons, and
R^d and R^e are independently selected from hydrogen or methyl.

3,873,727
STABILIZATION OF MOLDED SUBLINGUAL NITROGLYCERIN TABLETS

Salvatore A. Fusari, St. Clair Shores, and Leslie M. Lueck, Oxford, both of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 149,072, June 1, 1971, Pat. No. 3,787,119. This application Nov. 8, 1973, Ser. No. 413,915

Int. Cl. A61k *27/12*

U.S. Cl. 424—366 **2 Claims**

1. In a process for the production of molded tablets capable of giving a rapid release of nitroglycerin upon sublingual administration, wherein the improvement in stability is the retaining of the original potency in each tablet during storage in sealed containers containing a plurality of such tablets and container stuffing capable of absorbing nitroglycerin, consisting of the steps

a. preparing a substantially dry mixture of one part by weight of nitroglycerin and 20 to 200 parts by weight of a solid, water-soluble pharmaceutical carrier of the class consisting of lactose, glucose, sucrose, mannitol and sorbitol
b. wetting that substantially dry mixture with a solvent mixture containing 0.5 to 0.9 parts by weight of a non-volatile, water-soluble solvent and a sufficient quantity of a volatile solvent selected from the group consisting of polyethylene glycols having an average molecular weight of from 300 to 7,500, tetramethylene glycol, and pentamethylene glycol.

3,873,728
METHOD OF FEEDING RUMINANTS A HIGH-ENERGY FEEDSTUFF ADMIXED WITH A NPN SUPPLEMENT

William Percy Moore, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 245,269, April 18, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,721

Int. Cl. A23k *1/14, 1/22*

U.S. Cl. 426—2 **3 Claims**

1. A process for improving the nutrition of a ruminant which comprises preparing a ground meal of nutritionally balanced quantites of (1) a high-energy ruminant feedstuff selected from the group consisting of grains, grain-mill by-products, cottonseed meal and fishmeal and (2) a slow-release nitrogen product wherein said nitrogen product is derived by a process comprising:

a. providing a liquid ruminant feed supplement comprising 4 to 8 percent by weight of ammonium sulfate, up to 20 percent by weight of molasses, 20 to 30 percent by weight of urea, and 15 to 25 percent by weight, on a dry basis, of an aqueous ammoniated superphosphoric acid having a nitrogen content of about 9 to 12 percent by weight, a total phosphorus content measured as P_2O_5 of 28 to 39% by weight, and wherein polymeric phosphates represent about 30 to 70 percent by weight based on the total phosphorus content;
b. mixing said feed supplement with a solid natural ruminant feedstuff consisting of a ruminant forage selected from the group consisting of hays, silages, straws and fodders, containing water-soluble and water-soluble polysaccharides, a sufficient quantity of said feed supplement being provided in the mixture to cause the mixture to have a total nitrogen content of 3 to 10 percent, on a dry basis, thereby providing an acid catalyst for hydrolysis of the polysaccharides to form carbonyl groups reactive to the urea;
c. drying and reacting the mixture from step (b) in a conventional gas fired dryer at a temperature within the range 180° to 240°F. for 5 to 60 minutes to obtain a dried, reacted, slow-release nitrogen product containing 6 to 12 percent by weight of water; and
d. cooling the slow-release nitrogen product to ambient temperature; and feeding to the ruminant the ground metal comprising said high-energy ruminant feedstuff and said slow-release nitrogen product.

3,873,729
PREPARATION OF A CHEESE-LIKE FERMENTED FOOD

Hayato Kubota, and Teizaburo Tateishi, both of Osaka, Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Continuation of Ser. No. 198,473, Nov. 12, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,457

Claims priority, application Japan, Nov. 17, 1970, 45-100694; Apr. 2, 1971, 46-19668

Int. Cl. A23c *19/02*

U.S. Cl. 426—40 **12 Claims**

1. A process for producing a cheese-like food, which comprises:

1. effecting interesterification by mixing mono-lower alcoholic, glycolic or glycerine esters of caproic acid, caprylic acid, capric acid and lauric acid with natural oils and fats, and then refining the esterification product to prepare a synthetic fat without a C_4 fatty acid component and containing from 1 to 20 percent by weight of caproic acid, from 0.5 to 10 percent by weight of caprylic acid, from 0.5 to 10 percent by weight of capric acid and from 0.5 to 10 percent by weight of lauric acid, calculated as acid, based on the total weight of the synthetic fat, respectively,
2. mixing homogeneously said synthetic fat with an aqueous solution containing milk solids to form an oil-in-water type emulsion, and

3. adding a starter to said emulsion for fermentation, followed further by a cheese-making procedure including coagulation by rennet, cutting, cooking, pressing, salting and aging of the fermented product.

3,873,730
PRODUCTION OF SOY SAUCE

Anthony J. Luksas, and Wilmore Williams, both of Chicago, Ill., assignors to Beatrice Foods Company, Chicago, Ill.

Continuation-in-part of Ser. No. 36,427, May 11, 1970, Pat. No. 3,711,303. This application Jan. 4, 1973, Ser. No. 320,842

Int. Cl. A23l *1/20*

U.S. Cl. 426—46 **28 Claims**

1. In a Koji and Maromi process for the production of soy sauce which consists essentially of inoculating Koji or Maromi with at least 10 organisms per cc. of liquid of a yeast selected from the group consisting of Saccaromyces, Debaryomyces, Maromi-isolated organisms and mixtures thereof, fermenting the inoculated Koji or Maromi for at least 3 days at a temperature of between about 60° and 110°F. under anaerobic-to-microaerophillic conditions and separating the liquid of the fermented Maromi from the solids, the improvement consisting essentially of inoculating the fermenting Koji or Maromi with at least 10 organisms per gram of fermenting Koji or Maromi with at least one member of the genus Torulopsis and continuing the fermentation thereof at temperatures of 60° to 110°F.

3,873,731
IMPARTING MEAT FLAVOR WITH 3-FURYLTHIOESTERS

William J. Evers, Atlantic Highlands; Howard H. Heinsohn, Jr., Hazlet; Bernard J. Mayers, Clifford Beach, and Elizabeth A. Karoll, Old Bridge, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 7, 1973, Ser. No. 386,451

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **20 Claims**

1. A process for altering the organoleptic properties of a foodstuff which comprises adding to said foodstuff a small but effective amount, to impart to said foodstuff a meaty aroma and taste, of a 3-furylthioester compound selected from the group consisting of:

3-Thioacetyl furan;
2-Methyl-3-thioacetyl furan;
2,5-Dimethyl-3-thioacetyl furan;
2-Methyl-3-thioisobutyryl furan;
2,5-Dimethyl-3-thioisobutyryl furan;
2-Methyl-3-thioisovaleryl furan;
2-Methyl-3-(2-thiofuroyl) furan;
2,5-Dimethyl-3(2-thiofuroyl) furan;
2-Methyl-3-thiooctanoyl furan;
2,5-Dimethyl-3-thiooctanoyl furan;
2,5-Dimethyl-3-thiobenzoyl furan;
2,5-Dimethyl-3-thiopropionyl furan;
2-Methyl-3-thiopivaloyl furan;
2,5-Dimethyl-3-thiopivaloyl furan;
2,5-Dimethyl-3-thiohexanoyl furan;
2-Propyl-3-thioacetyl furan;
2,5-Dimethyl-3-thio-(2-Methyl-2-pentenoyl) furan;
2,5-Dimethyl-3-thiocinnamoyl furan; and
2,5-Dimethyl-3-thio(m-toluyl) furan.

3,873,732
ALTERING THE FLAVOR OF FOODSTUFFS WITH 3-THIA ALKANE-1,4-DIONES

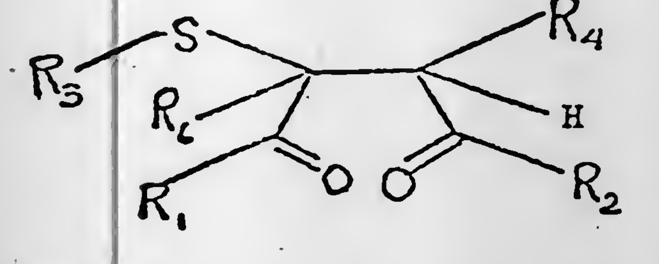
William J. Evers, Atlantic Hightlands; Howard H. Heinsohn, Jr., Hazlet; Bernard J. Mayers, Cliffwood Beach, and Christopher Giacino, Califon, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 386,455, Aug. 7, 1973, abandoned. This application June 11, 1974, Ser. No. 478,279

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **3 Claims**

1. A process for altering the flavor of a foodstuff which comprises adding to said foodstuff from about 0.02 to about 250 parts per million of at least one compound having the structure:



wherein R_1 and R_2 are the same or different and are either hydrogen or lower alkyl, R_3 is either hydrogen, lower alkyl, acyl, aroyl, benzyl or phenyl; each or R_4 and R_6 are the same or different and are either hydrogen or lower alkyl.

3,873,733
METHOD OF PRODUCING A PELLETED SLOW RELEASE NPN FEED FOR RUMINANTS

William Percy Moore, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 234,415, March 13, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,215

Int. Cl. A23k *1/14, 1/22*

U.S. Cl. 426—69 **3 Claims**

1. A process for preparing a pelleted ruminant feed, which comprises:

a. providing a liquid ruminant feed supplement comprising 4 to 8 percent by weight of ammonium sulfate, up to 20 percent by weight of molasses, 20 to 30 percent by weight of urea, and 15 to 25 percent by weight, on a dry basis, of an aqueous ammoniated superphosphoric acid having a nitrogen content of about 9 to 12 percent by weight, a total phosphorus content measured as P_2O_5 of 28 to 39 percent by weight, and wherein polymeric phosphates represent about 30 to 70 percent by weight based on the total phosphorus content;

b. admixing said liquid feed supplement with a solid carbohydrate material selected from the group consisting of alfalfa, orange pulp, bagasse, peanut hulls, and straw, said solid carbohydrate material comprising water-soluble and water-insoluble polysaccharides, a sufficient quantity of said feed supplement being provided in the admixture to cause the latter to have a total protein equivalent of 25 to 60 percent by weight on a dry basis, and provide an acid catalyst for hydrolysis of the polysaccharides to form carbonyl groups reactive to urea;

c. drying and reacting the admixture from step b in a conventional gas fired dryer at a temperature within the range 180° to 240°F. for 5 to 60 minutes to obtain a dried, reacted, solid material containing 6 to 12 percent by weight of water;

d. coating the dried, reacted solid material from step c with a concentrated aqueous urea-formaldehyde solution containing 60 to 90 percent total solids and 0.5 to 6.5 mols of formaldehyde for every mol of urea, at a ratio of about 5 to 20 parts by weight of said urea-formaldehyde solution per 100 parts by weight of said dried, reacted solid material;

e. pelleting and agglomerating the coated material from step d at a temperature of 140° to 300°F. to obtain an agglomerated pelleted product; and

f. cooling the resulting pelleted product to ambient temperature within 1 to 60 minutes after pelleting whereby a hard pelleted product is produced.

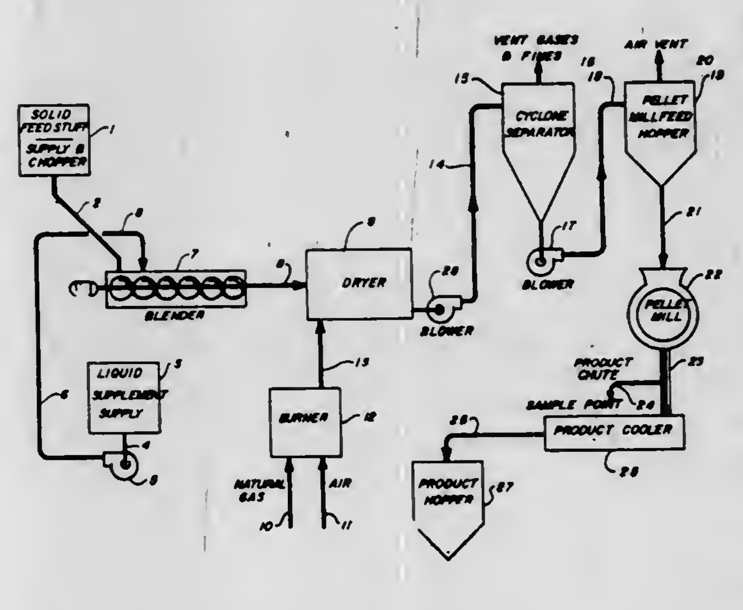
3,873,734
METHOD OF PRODUCING A PELLETED SLOW-RELEASE NPN FEED FOR RUMINANTS

John Francis Higgins, Schuyler, Nebr.; Dale Richard McDonald, Sterling, Colo.; Marvin Ardell Hanson, Ceresco, Nebr., and William Percy Moore, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 223,696, Feb. 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 163,305, July 16, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 437,435

Int. Cl. A23k *1/14, 1/22*

U.S. Cl. 426—69 **6 Claims**



1. A process of preparing a nontoxic pelleted ruminant feed having high nutritional value and improved storage characteristics, which comprises:

a. providing a liquid ruminant feed supplement comprising 4 to 8 percent by weight of a water-soluble sulfate, up to 20 percent by weight of molasses, 20 to 30 percent by weight of urea, and 15 to 25 percent by weight, on a dry basis, of an acid selected from the group consisting of superphosphoric acid, and aqueous ammoniated superphosphoric acid having a nitrogen content of about 9 to 12 percent by weight, a total phosphorus content measured as P_2O_5 of 28 to 38 percent by weight, and wherein polymeric phosphates represent about 30 to 70 percent by weight based on the total phosphorus content;

b. admixing said feed supplement with a solid natural ruminant feedstuff consisting essentially of water-soluble and water-insoluble polysaccharides and containing 25 to 75 weight percent of water, to impregnate the solid natural ruminant feedstuff and provide about 2 to 10 weight percent total nitrogen on a dry basis and provide an acid catalyst for hydrolysis of the polysaccharides to form aldehydic carbonyl groups reactive to urea;

c. drying and reacting the mixture from step (b) in a conventional gas fired dryer at a temperature within the range 180° to 240°F. for 5 to 60 minutes to obtain a dried, reacted, slow-release nitrogen product containing 6 to 12 percent by weight of water;

d. pelleting and agglomerating said dried impregnated solid feedstuff at a pressure of 500–20,000 psig while maintaining the temperature thereof at about 140° to 300°F.; and

e. cooling the resulting pelleted product to ambient temperature to form hard pellets wherein 50 to 90 percent of the total nitrogen is water-insoluble nitrogen.

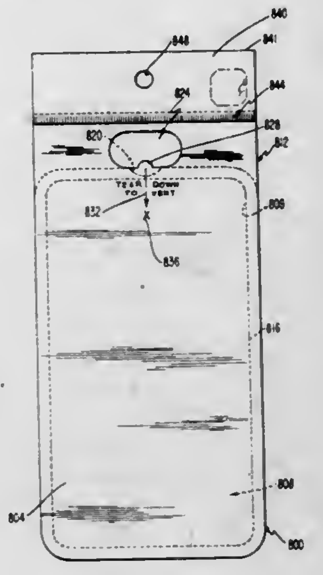
3,873,735
FOOD PACKAGE FOR HEATING AND VENTING

Manuel L. Chalin, Kendall Park, N.J., and Arthur E. Smith, Briarcliff Manor, N.Y., assignors to Nabisco, Inc., New York, N.Y.

Filed May 4, 1971, Ser. No. 140,103

Int. Cl. B65b *25/22*

U.S. Cl. 426—87 **4 Claims**



1. A sealed food package, for storing food and heating the food in situ, comprising a tray of heat-resistant, non-toxic, non-porous, relatively rigid sheet material having a depression filled with food, a sealing flange around the periphery of said depression, said sealng flange having an indent extending from a free edge of said flange toward and being spaced from said depression, and a cover of pliable, heat-resistant, thermally conductive, non-porous sheet material, overlying said depression, flange and indent, said cover being releasably sealed to said flange around the entire periphery of said depression and having both faces thereof exposed in the area which overlies said indent to provide a gripping area, whereby the package may be vented by tearing said cover inwardly from said gripping area prior to heating, said cover containing an extension outwardly from a free edge of said flange to provide a handle, said extension overlying said free edge having said indent, and said cover containing a hole in said extension adjacent said indent to facilitate gripping the cover overlying said indent to vent said package.

3,873,736
SEMI-MOIST MEAT RESEMBLING FOOD PRODUCT AND METHOD OF PREPARATION

Hugh Charles Palmer; Derek Horrocks, and Keith Buckley, all of Melton Mowbray, Leicestershire, England

Filed Apr. 19, 1972, Ser. No. 245,626

Claims priority, application United Kingdom, Apr. 20, 1971, 10214/71

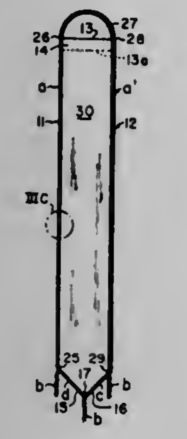
Int. Cl. A23l *1/31;* **A23j** *3/00*

U.S. Cl. 426—92 **15 Claims**

7. A process for the production of a proteinaceous food product having a chewy elastic texture comprising the steps of: preparing a mix consisting essentially of a comminuted pasteurised meat component, moisture sufficient to provide 15 to 45% by weight moisture in the total product, and a bacteriostatic water soluble component in quantity sufficient to impart a water activity in the range of about 0.65 to 0.85; incorporating a heat-coagulable protein in said mix in an amount of about 25 to about 40% by weight of the total product at a temperature below that at which it coagulates; and heating the resulting mixture to coagulate the heat-coagulable protein to produce a coherent elastic matric embedding said components.

3,873,737
METHOD OF MAKING AN ENCASED GROUND MEAT PRODUCT

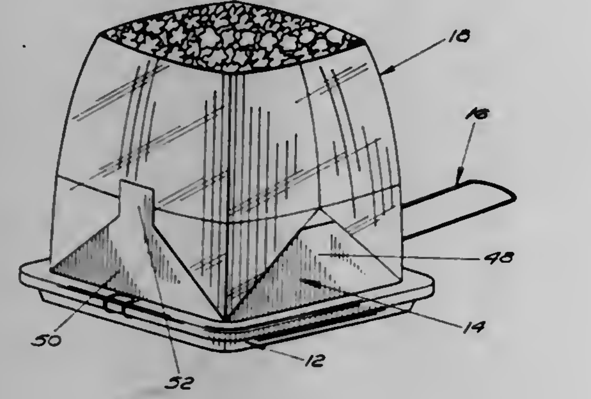
Richard E. Hofmann, 504 Wimer Cir., and Francis R. Walters, 8494 Lincoln Blvd., both of Pittsburgh, Pa. 15237
Filed Mar. 21, 1973, Ser. No. 343,366
Int. Cl. A22c *13/00*
U.S. Cl. 426—105 **6 Claims**



1. In a method of making an encased product of ground meat, folding-over a length of porous paperlike material and forming a pattern piece having a closed longitudinal side, an open opposed longitudinal side and open upper and lower ends; forming the lower end into a substantially triangular shape, applying an edge-overlapping stitching substantially fully along the sides and the lower end of the pattern piece to form a casing open at its upper end, pressure-stuffing ground meat into the casing from its upper open end, closing-off the upper end of the casing and forming a substantially symmetrical cylindrical-shaped product whose stitched portions have a substantially flattened relation along the outer surface of the casing, thereafter applying an edible liquid coating material about the casing of the product and solidifying the liquid as a substantially uniform coating thereon.

3,873,738
POPCORN POPPING PACKAGE

Richard J. Zoeller, Pittsburgh, Pa., and Frank S. Lazure, Richmond, Va., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 12, 1973, Ser. No. 331,799
Int. Cl. B65b *25/22*
U.S. Cl. 426—111 **3 Claims**



1. A package for popcorn comprising a metal pan with a bottom wall and an upstanding side wall therearound, kernels of popcorn in the pan and a flexible tubular envelope having open ends of approximately equal size with a peripheral edge portion on one end thereof secured to the side wall of the pan and the envelope extending freely therefrom providing a free end, with the envelope body folded inward over the popcorn in the pan to be expanded upward by the force of the kernels popping in the pan while confining the kernels under the envelope body, whereby the popped kernels of popcorn are accessible through the free end of the envelope.

3,873,739
FOODS CONTAINING RED DYE

Frederick Peter Jenkins, Bedford, England, assignor to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 248,179, April 27, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,330
Int. Cl. A23l *1/26*
U.S. Cl. 426—164 **4 Claims**

1. A foodstuff composition colored by a physiologically acceptable amount of a red dye selected from 8-acetamido-2-(azo-benzene-4′-sulphonic acid)-1-naphthol-3,6-disulphonic acid and edible salts thereof.

3,873,740
COARSE AND FINE, COMMINUTED, MEAT FOOD MIXES FOR MEAT FOOD EMULSIONS FOR CURED, SAUSAGE-TYPE, MEAT FOOD PRODUCTS, AND METHODS OF PRODUCING SAME

Robert N. Terrell, La Grange, Ill., assignor to The Griffith Laboratories, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 388,794, Aug. 16, 1973, abandoned. This application July 24, 1974, Ser. No. 491,266
Int. Cl. A22c *11/00;* **A23b** *1/02*
U.S. Cl. 426—212 **22 Claims**

1. The method of preparing a coarse or fine, comminuted, emulsified, sausage-type, meat food product to be cured and thereby provide a cured product having enhanced nutritional qualities, and a moisture to protein ratio of about 1.2 to 5.5:1, which comprises: coarsely or finely comminuting and emulsifying a meat food mix to be cured at a pH within the range of about 5.5 to 6.4 having (a) edible natural flesh, (b) edible, coarsely-divided, textured, extrusion-expanded protein, and (c) edible, finely-divided, non-textured, uniformly palatable, proteinaceous emulsifying agent in the weight ratio of about 0.59 to 24:0.15 to 1:0.85 to 0, respectively, and in a total amount so as to constitute about 46 to 82% of the entire mix, (d) edible, nitrogen-containing curing salt which provides nitric oxide during subsequent curing of the mix, (e) up to 3% added edible acidulent, (f) edible chloride salt of a member of the group consisting of alkali metal and alkaline earth metal, and (g) about 13 to 44% added water, to produce a coarsely or finely comminuted, emulsified, sausage-type, meat food product to be cured and thereby provide a cured product having enhanced nutritional qualities, and a moisture to protein ratio of about 1.2 to 5.5:1.

3,873,741
AIR REGULATION IN THE PYROLYSIS OF WOOD TO PRODUCE LIQUID SMOKE FOR THE TREATMENT OF FOOD PRODUCTS

Irving Melcer, Park Forest, and Louis Sair, Evergreen Park, both of Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.
Filed Feb. 5, 1973, Ser. No. 329,578
Int. Cl. A23l *1/27*
U.S. Cl. 426—221 **7 Claims**

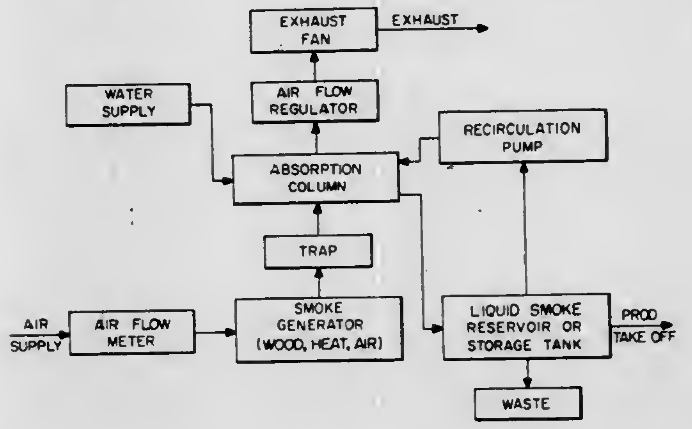
1. In the method of controlled carbonizing combustion of wood to produce a liquid smoke product for use in imparting a wood-smoke-stained appearance and a wood-smoke taste to comestibles treated with said product, which method includes the steps of:

heating wood in a chamber in the presence of an oxygen-controlled atmosphere to effect thermal decomposition of the wood and to generate smoke,

contacting said smoke with water to provide an aqueous extract thereof and to condense and to recover from said smoke a volatile distillate contained therein, and

separating from said condensed volatile distillate water-insoluble components entrained therein;

the improvement comprising providing, during heating of the wood in the chamber, air in a concentration of from about 3 to about 50 cubic feet of air for each pound of wood carbonized;



thereby to produce in high yield a clear, readily dilutable aqueous liquid smoke product free from carcinogenic compounds,

said liquid smoke product being further characterized by enhanced smoke taste, smoke aroma, and food coloring capacity.

3,873,742
PROCESS FOR PRODUCING WRAPPED FOODS

Kingo Miyahara, Tokyo, Japan, assignor to Kabushiki Kaisha Dowa, Tokyo, Japan
Filed Feb. 9, 1973, Ser. No. 330,985
Int. Cl. A23l *3/32*
U.S. Cl. 426—234 **10 Claims**

1. A process for producing a wrapped food, comprising charging a hard paste-like unprocessed foodstuff into a wrapping tube made of an electrically insulating material, and provided with a fibrous electrical contact member of nonmetallic material at each end thereof, said fibrous electrical contact member being previously impregnated with a salt solution having a concentration equal to or higher than that of the salt contained in said unprocessed foodstuff, closing the opposite ends of said wrapping tube by binding means in such a manner that said electrical contact member may be partially exposed to the outside from each end of said wrapping tube thereby to prepare a sealed unprocessed wrapped food, placing the sealed unprocessed wrapped food in a container with the outwardly exposed portions of said contact member projecting outwardly from both ends of said container, contacting electrode plates with the outwardly projecting portions of said contact member, and conducting a current across said electrode plates, whereby the unprocessed foodstuff sealed in said wrapping tube is ripened and sterilized by the heat generated therein as being wrapped.

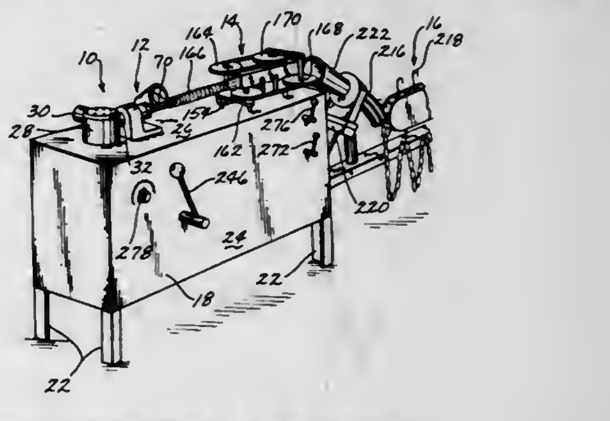
3,873,743
METHOD FOR PEELING CASHEW NUTS

Otto T. Aepli, Southgate, and Malachy E. Sorgenfrei, Ypsilanti, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
Continuation-in-part of Ser. No. 160,906, July 8, 1971, Pat. No. 3,796,817. This application Apr. 24, 1972, Ser. No. 247,153. The portion of the term of this patent subsequent to Mar. 12, 1991, has been disclaimed.
Int. Cl. B65b *55/06*
U.S. Cl. 426—253 **6 Claims**

1. A method for peeling nut kernels comprising:
- a. drying the kernels to a moisture content of under 3%,
- b. immersing the kernels for a period of about 0.5 minute to 15 minutes in a 1.1 to 17.0% by weight aqueous acid-surfactant solution, the solution being maintained at a temperature ranging from about 80° to 210°F., to loosen the skin from the kernel,
- c. washing the kernels to remove the skin therefrom,
- d. contacting the kernels with a decolorizing bath consisting essentially of
  - 1. from about 40 to 80% by weight of a water-miscible organic solvent,
  - 2. from about 0.1 to 5% by weight of a mineral acid, and
  - 3. the balance water, all weights based on the total weight of the bath, and
- e. drying the kernels.

3,873,744
METHOD OF ENCASING A MEAT PRODUCT

Ray T. Townsend, and Donald L. Beasley, both of Des Moines, Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed Dec. 14, 1972, Ser. No. 315,222
Int. Cl. A22c *11/00;* **B65b** *25/06*
U.S. Cl. 426—284 **2 Claims**



1. In a method of encasing a meat product,

supporting a folded casing on the discharge end of a product encasing machine stuffing tube,

said folded casing being selected from the group consisting of natural casings and artifical casings,

rotating said stuffing tube,

causing said stuffing tube to engage the interior of said casing so as to impart rotational movement thereto,

continuously moving a meat product through said stuffing tube and into said casing,

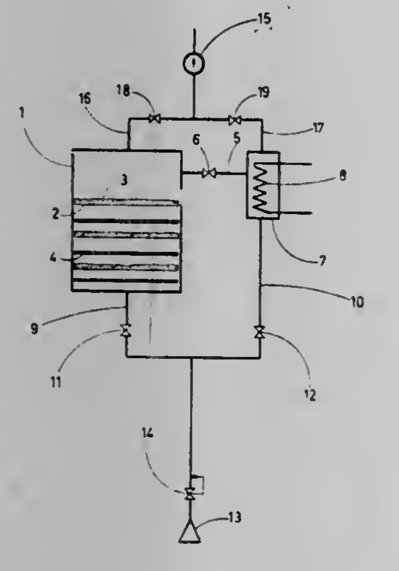
frictionally engaging the exterior of the casing with a bearing element mounted at a point adjacent the point where said stuffing tube engages the interior of said casing so as to impart a longitudinal external dragging force on said casing and so as to urge said casing into frictional engagement with said stuffing tube.

3,873,745
LYOPHILISATION PROCESS IN ATMOSPHERE OF CONDENSABLE GAS

Louis Rey, St. Legier; Jean-Pierre Bouldoires, La Tour-de-Peilz, and Dominique Rovero, Chailly sur Clarens, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Feb. 8, 1973, Ser. No. 330,755
Claims priority, application Switzerland, Feb. 15, 1972, 2164/72
Int. Cl. A23l *3/36*
U.S. Cl. 426—319 **9 Claims**

1. In a process for the separation of a solvent from a substance in solution or in suspension in this solvent, or containing this solvent, comprising solidifying the solvent and then separating it from the substance by sublimation at reduced pressure in a lyophilisation chamber, the improvement which comprises creating within the chamber an atmosphere consisting essentially of a gaseous medium capable of existing in condensed state at a temperature above −196°C and of having at that temperature a saturated vapour pressure not exceeding 2 torrs, condensing the medium on a cooled surface the temperature of which is such that the saturated vapour pressure

of the medium does not exceed 2 torrs whereby the pressure of the medium in the chamber is reduced to not more than 2 torrs, separating the solvent from the substance by sublimation and then condensing the solvent on the cooled surface.



3,873,746

PROCESS FOR AROMATIZING COFFEE

James P. Mahlmann, Wayne, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Oct. 5, 1972, Ser. No. 295,316

Int. Cl. A23 *1/04*

U.S. Cl. 426—319 **2 Claims**

1. A process for aromatizing soluble coffee, comprising:

a. obtaining a synthetic coffee aroma composition produced by reacting methyl mercaptan with a molar excess of carbonyl compounds;
b. subjecting said composition to an evaporative process to volatilize substantially all of said composition;
c. bubbling the vapors from said composition directly into a coffee extract; and
d. drying said aromatized extract.

3,873,747

METHOD FOR STERILIZING A FOOD PRODUCT IN A CONTAINER

Jan Thomassen Evert, Boxtel, Netherlands, assignor to Thomassen & Drijver-Verblifa N.V., Deventer, Netherlands

Continuation-in-part of Ser. No. 135,799, April 20, 1971, abandoned. This application July 5, 1973, Ser. No. 376,288

Claims priority, application Netherlands, Apr. 26, 1970, 7006062

Int. Cl. A23b *1/00*

U.S. Cl. 426—325 **1 Claim**

1. Method for sterilizing a food product in a container said food product being selected from the class consisting of meat, fish and poultry, and having a substantially fixed shape which differs from that of the container which consists of inserting the food product to be sterilized into the container so that said product only partially fills said container; introducing, before closing said container, from about 0.05% to about 5%, by volume of said container, of substantially pure ethanol; closing said container; and heating said container at such a temperature and for such a time that a sufficient sterilization of the food product by the combined effect of heat and ethanol is obtained, the latter being completely evaporated at the sterilization temperature.

3,873,748

PROCESS FOR MAKING HIGH-PROTEIN CEREAL

Edward C. Schwab, New Brighton; Warren D. Petersen, and Eric Bumbiers, both of Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed July 2, 1973, Ser. No. 375,420

Int. Cl. A23l *1/10;* **A21d** *2/00*

U.S. Cl. 426—346 **5 Claims**

1. A process for making a fluid bed puffed ready-to-eat cereal comprising:

combining a cooked, dried and ground dough consisting essentially of a cereal mixture including about 60 to 100 percent cereal selected from corn flour, rice flour and mixtures thereof with a protein consisting essentially of dry sodium caseinate in an amount whereby the total protein content is about 6 percent to 40 percent by weight in the final product,

combining water with the dried mixture in an amount to bring the moisture level to about 26 to 29 percent by weight of the total mixture,

kneading and pulling the resulting mixture into a semi-plastic, opaque, homogeneous mass, while maintaining the said mass at a temperature below about 145°F.,

extruding the resulting semi-plastic, opaque, homogeneous mass, said mass being maintained at a temperature below about 165°F. during extrusion,

drying the mass to a moisture content of about 7.5 to 12 percent by weight, and

puffing the dried mass by means of an air flow fluid bed.

3,873,749

PROCESS FOR PRODUCING A FISH PRODUCT

Roland Paul Carpenter, Stonehaven; Richard Braid Weddle, Aberdeen, both of Scotland, and Francis William Wood, Bedford, England, assignors to Lever Brothers Company, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,268

Claims priority, application United Kingdom, July 3, 1972, 3104/72

Int. Cl. A23j *3/00*

U.S. Cl. 426—350 **5 Claims**

1. A process for the preparation of a protein-containing foodstuff in the form of a thermostable gel, comprising the steps of:

a. admixing an edible protein ingredient and a propylene glycol ester of alginic acid at a pH above 7, said propylene glycol ester being such that at least 50 percent of the carboxyl groups of the alginic acid are esterified;
b. assisting the setting of the mixture of said protein ingredient and said propylene glycol ester by extrusion of said mixture into an aqueous solution of an alkali selected from the group consisting of sodium carbonate and sodium hydroxide and mixtures thereof; and
c. adjusting if necessary to a value in the range of 5 to 8 to pH of the thermostable gel so formed, by washing said gel with a dilute aqueous solution of an acid selected from the group consisting of acetic acid and hydrochloric acid, extraneous fluid being removed by centrifuging.

3,873,750

METHOD OF PREPARING A HOMOGENIZES FOOD PRODUCT USEFUL AS A PROTEIN SUPPLEMENT

David Torr, 3110 Hebard Ave., Las Vegas, Nev. 89109

Filed Nov. 14, 1973, Ser. No. 415,758

Int. Cl. A23l *1/34*

U.S. Cl. 426—518 **14 Claims**

1. A method of preparing a food product useful as a protein and mineral food supplement suitable for animal and human consumption which comprises supplying particle-form animal bone or other animal, fish or shellfish calcareous material to the surface of a pan, the surface of said pan moving relative to a heavy rotatable wheel positioned closely above or on the surface of said pan, the particle-form material being supplied to the surface of said pan so as to come under said wheel as it moves relative to the surface of said pan to crush the particle-form material to a particle size below about 50 microns and recovering the resulting crushed material as said food product.

3,873,751

PREPARATION OF A SIMULATED MILK PRODUCT

Robert H. Arndt, Red Wing, Minn., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 642,676, June 1, 1967, Pat. No. 3,642,492. This application Feb. 11, 1972, Ser. No. 225,611The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl. A23c *11/00*

U.S. Cl. 426—356 **10 Claims**

1. A method of preparing a simulated milk product comprising the steps of: preparing a neutralized aqueous suspension of an isolated vegetable protein ingredient and sweet dairy whey, having a solids content within the range of 3 – 50%, the isolated vegetable protein ingredient being present in an amount from about 6 – 52% by weight and the sweet dairy whey being present in an amount from about 94 – 48% by weight, controlling the pH of the suspension within the range of about 5.8 – 7.5, heating the suspension rapidly to temperatures of about 220° F. to about 400° F., and subjecting it to dynamic physical working, retaining the suspension for a brief period of time under a positive pressure sufficiently high to prevent volatilization of heated water vapor from the heated suspension, suddenly releasing the pressure to cause flash off volatilization of vapor laden with substances that possess undesirable flavor and odor characteristics, and separating the vapors from the treated suspension to form a simulated milk product.

3,873,752

PROCESS FOR PREPARING A TEA FLAVOURING AGENT

Dominique Reymond, La Tour-de-Peilz, Switzerland, and Jean-Paul Marion, Steisslingen, Germany, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Oct. 26, 1972, Ser. No. 301,099

Claims priority, application Switzerland, Nov. 15, 1971, 16570/71

Int. Cl. A23l *1/26;* **A23f** *3/00*

U.S. Cl. 426—369 **10 Claims**

1. A process for preparing a flavouring agent containing aromatic constituents of tea, comprising forming a solution of aromatic constituents extracted from tea leaf and a water-immiscible solvent therefor, said solvent solution also containing tea leaf extracted constituents which develop unpleasant odor or flavour, mixing said solvent solution with an aqueous solution of an alkaline substance in an amount sufficient to react said alkaline substance with said constituents of the solvent solution which develop unpleasant odor or flavour whereby said constituents which develop unpleasant odor or flavour are transferred from the solvent solution to said aqueous solution, and then separating the resultant mixture into an aqueous phase and a water-immiscible solvent phase containing aromatic constituents of tea.

3,873,753

METHOD FOR PROCESSING AND STORING TOMATOES

Philip E. Nelson, and Glenn H, Sullivan, both of West Lafayette, Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

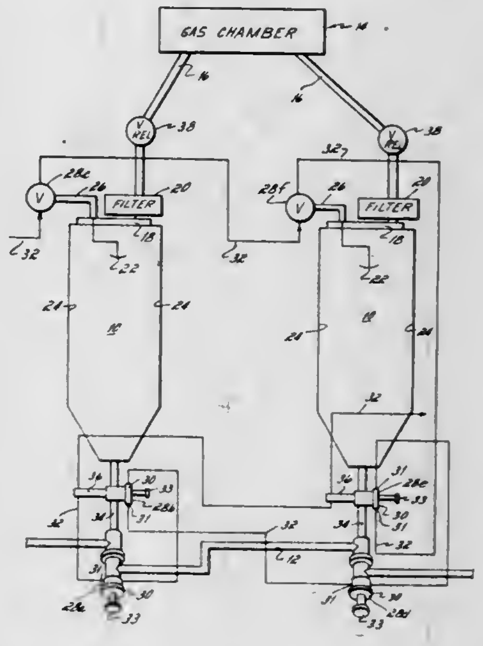
Continuation-in-part of Ser. No. 40,549, May 26, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,100

Int. Cl. A23b *7/00*

U.S. Cl. 426—373 **30 Claims**

1. A process for increasing the viscosity of a crushed, tomato product comprising,

a. washing uncooked tomatoes;
b. chopping said tomatoes;



c. cooling said tomatoes to a temperature of below about 50° F.; and maintaining said tomatoes at said temperature below 50° F. before
d. heating said tomatoes to a temperature of at least about 190° F.

3,873,754

FOAMED SUGAR PRODUCTS

Dietrich Gorny, Auf dem Muhlberg 33, 6 Frankfurt, Germany

Filed Dec. 4, 1972, Ser. No. 312,185

Claims priority, application Germany, Apr. 28, 1972, 2221067

Int. Cl. A23b *5/02*

U.S. Cl. 426—426 **3 Claims**

1. In a method of preparing albumen-containing foam for sweet-meat products in which an albumen-containing mass is foamed and its water content reduced, the improvement whereby the mass is treated with alcohol before the foaming operation.

3,873,755

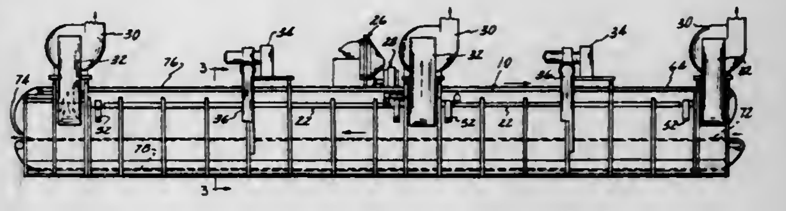
METHOD FOR PRECOOKING BACON

William C. McKay, Grosse Pointe, Mich., assignor to Haberstroh Farm Products, Inc., Mt. Clemens, Mich.

Continuation of Ser. No. 216,421, Jan. 10, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,405

Int. Cl. A22c *18/00*

U.S. Cl. 426—523 **8 Claims**



1. The method of precooking bacon strips such that upon subsequent serving the bacon need only be heated to the desired serving temperature without further cooking which comprises, arranging bacon strips in a flat horizontal plane between the upper and lower flights of a foraminous conveyor, maintaining the bacon strips substantially flat by permitting the weight of the upper conveyor flight to bear down on the bacon strips, advancing the bacon strips by means of said conveyor through a horizontally extending cooking zone located generally centrally between the upper and lower ends of an elongated oven while maintaining the strips in said flat horizontal plane, burning fuel at a heat source located adja-

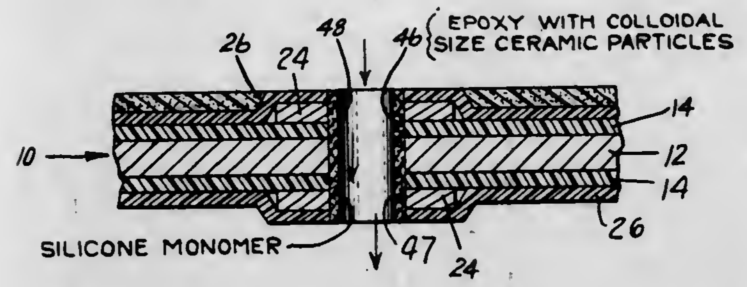
cent the upper end of the oven remote from the bacon in said cooking zone to produce hot gaseous products of combustion, the temperature of said gaseous products of combustion at said heat source being greatly in excess of the temperature adjacent the bacon while it is being cooked in said cooking zone, directing said gaseous products of combustion downwardly in said oven from said heat source, further directing said downwardly flowing gaseous product of combustion to zones vertically above and below the conveyor by means of a plurality of high velocity air jets within said oven directed toward said cooking zone from above and below the same with at least some of said air jets being oriented so that the combustion gases are directed generally toward the center of the cooking zone to promote lateral flow of a mixture of air and said gaseous combustion products uniformly and entirely across the lateral extent of the conveyor, then causing said air-gas mixture to be directed against the bacon on the conveyor by entraining the same into high velocity air streams produced by a second plurality of air jets which are uniformly spaced above and below the conveyor and which are oriented to direct air streams perpendicularly against the conveyor, the temperature of said heat source and the volume of air issuing from said two sets of air jets being controlled such that the temperature of the air-gas misture directly adjacent the conveyor is about 400°F. and the velocity of said air-gas mixture directly adjacent the conveyor is about 400 to 800 feet per minute, said bacon slices being about 1/12 inch thick and the speed of the conveyor being controlled so that the bacon remains in said cooking zone for about 4 to 4½ minutes and is rendered about 75 percent.

ELECTRICAL

3,873,756
INSULATING LINING FOR METALLIC CIRCUIT BOARD TERMINAL HOLES

Andrew S. Gall, Fort Wayne, and Joseph W. Cranmer, New Haven, both of Ind., assignors to Gridcraft, Inc., Ft. Wayne, Ind.

Division of Ser. No. 114,252, Feb. 10, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,568
Int. Cl. H05k *1/04*
U.S. Cl. 174—68.5 **6 Claims**

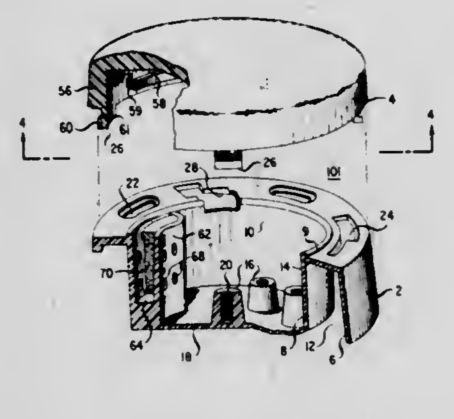


1. A circuit board including a supporting substrate of rigid metal, a conductive circuit, means securing said circuit to said substrate and insulating said circuit therefrom, said substrate and circuit having a terminal hole therethrough, and a lining of insulating material having a substantially uniform cross-section and being adhered to the wall of said hole, said material extending between the distal extremities of said hole, said insulating material including colloidal sized particles of ceramic homogeneously suspended in a hardened binder.

3,873,757
COMMUNICATIONS CIRCUIT PROTECTOR

Lawrence Richard Berke, Miramar, Fla., and John Alan De Ritter, Wayne, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1974, Ser. No. 458,870
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 R **8 Claims**

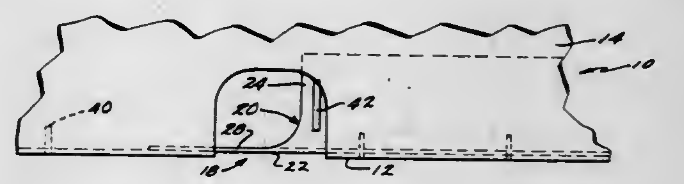


8. A communications circuit protector comprising, in combination:
- an insulative base having an upstanding wall integrally formed thereabout to define an inner chamber, said wall having an opening therethrough to define a wire entrance into said inner chamber;
- first mounting means within said inner chamber for mounting protector devices therein;
- sealing means sealing said wire entrance and adapted for receiving wires therethrough to access said inner chamber while providing a seal about said wires;
- second mounting means about the exterior of said wall for mounting said base to a support without requiring access to said inner chamber;
- a cover adapted for mounting over said base and forming a seal with said wall to seal said inner chamber; and
- means detachably mounting said cover to said second mounting means over said base.

3,873,758
WIRING WINDOW FOR DESKS AND THE LIKE

Robert C. VanGessel, Grand Rapids, and Dirk J. Van Kuik, Jenison, both of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed July 12, 1973, Ser. No. 378,707
Int. Cl. A47b *19/04*
U.S. Cl. 174—48 **18 Claims**

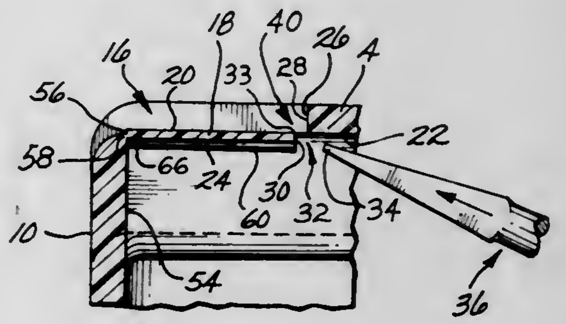


1. Wiring means for articles of furniture or the like having a supportive base portion, said wiring means comprising: said base having an open slot therein forming a wiring window opening, said slot extending from the bottom of said base whereby said wiring window is open and accessible through the bottom of said base; closure means for said window, said closure means being shiftable between open and closed positions and a position intermediate said open and closed positions with respect to said window; means mounting said closure means for movement between said open and said closed positions whereby when open said base portion may be positioned directly over wiring, said wiring passing through said open slot in said base; said closure means including at least one wall surface adapted to block and close said window opening when said closure is in said closed position; said closure means including a securing portion adapted to block and only partially close said window opening when said closure means is in said intermediate position whereby when wiring is located in said window, said closure means can be moved to said intermediate position with its said securing means blocking said window opening to hold wiring therein but leaving room for said wiring to pass through said window opening.

3,873,759
ELECTRICAL ENCLOSURE KNOCKOUT STRUCTURE

Edgar C. Schindler, and John C. McEachron, both of Puyallup, Wash., assignors to Nelco Corporation, Orting, Wash.

Continuation-in-part of Ser. No. 265,341, June 22, 1972, which is a division of Ser. No. 69,266, Sept. 3, 1970, Pat. No. 3,701,451, and a continuation-in-part of Ser. No. 280,720, Aug. 14, 1972. This application Oct. 30, 1973, Ser. No. 411,163
Int. Cl. H02g *3/08*
U.S. Cl. 174—65 R **21 Claims**



1. In an electrical outlet box having a wall structure defining front to rear walls and a back wall interconnected therebetween, which together define a chamber within the box that opens to the ambient surroundings of the box through the front thereof, an aperture in one of the aforesaid walls, and a substantially planiform knockout tongue that projects from

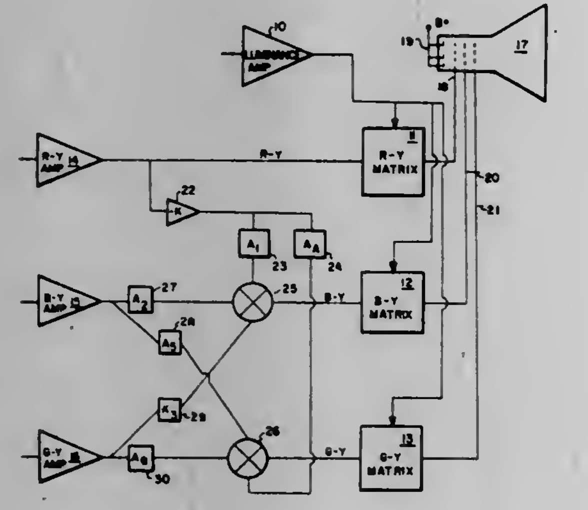
the wall structure adjacent the aperture, and is disposed so that a surface thereof faces relatively outside of the box at the aperture, and forms a portion of the outside surface of the box, said outer facing surface of the tongue extending in substantially coplanar relationship with the inside surface of the aforesaid one wall, and terminating at one edge of the tongue along a line disposed in a region between that portion of the rim of the aperture formed by one edge of the one wall and an area of said aperture inwardly from said rim, said region including the said rim portion of the aperture, said one edge of the tongue being inclined to the plane of the inside surface of the one wall at the line, and forming a corner-like indentation therewith, the apex of which is disposed on the line, said indentation facing into the chamber so as to be accessible to the pointed tip of a prying tool introduced into the chamber through the front opening of the box.

3,873,760
FLESH TONE CORRECTION USING COLOR DIFFERENCE SIGNALS
Robert Francis Worden, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Oct. 18, 1972, Ser. No. 298,650

Int. Cl. H04n *9/12*

U.S. Cl. 358—21 **8 Claims**



1. In a color television receiver including means for processing a received television signal and for deriving first, second and third color difference signals therefrom, said color difference signals being susceptible of fluctuation above and below a predetermined value, means for reducing aberrations in flesh tones displayed by the receiver, comprising:

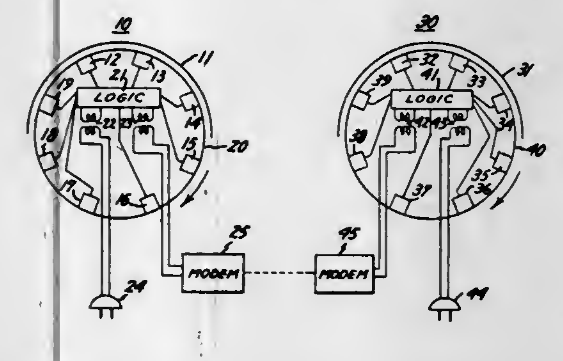
utilization means for receiving the color difference signals;
means for transmitting the first color difference signal to said utilization means;
amplifier means coupled to said means for transmitting the first color difference signals and inverting the polarity thereof with respect to said predetermined value;
means for combining the amplified, inverted first color difference signal and said second and third color difference signals to form two new color difference signals each comprising predetermined portions of said amplified, inverted first color difference signal and of said second and third color difference signals; and
means for applying said new color difference signals to said utilization means.

3,873,761
MULTIPLE SCANNING HEAD FACSIMILE SYSTEM
John E. Bigelow, Clifton Park, N.Y., and Paul A. Dodge, San Antonio, Tex., assignors to General Electric Company, Schenectady, N.Y.

Filed June 14, 1973, Ser. No. 369,849

Int. Cl. H04n *1/12*

U.S. Cl. 178—6 **10 Claims**



1. A facsimile system for scanning a document at one location and reproducing the information contained therein at another location comprising:

a plurality of sense heads for detecting information;
rotatable carrier means having said heads distributed approximately uniformly about the periphery thereof, said rotatable carrier means rotating at approximately constant speed to cause at least two of said plurality of heads to scan different segments of a line of said document simultaneously;
transmitting means for transmitting data to said other location;
first logic means coupled to said sense heads for selectively connecting one of said sense heads to said transmitting means; and
second logic means coupled to said sense heads and said first logic means for electronically increasing the scan rate by detecting blank segments and causing said first logic means to selectively connect a different sense head to said transmitting means.

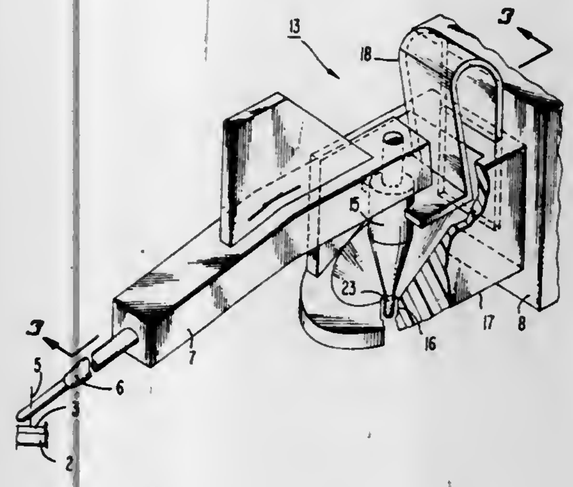
3,873,762
SPRING LOADED STYLUS ARM PIVOT
Byron Kent Taylor, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,411

Claims priority, application United Kingdom, Mar. 26, 1973, 14393/73

Int. Cl. H04n *5/82;* **G11b** *3/10*

U.S. Cl. 178—6.6 A **8 Claims**



1. In a video disc playback system including a board, a turntable mounted for rotation relative to said board and having a surface adapted to receive a disc having a spiral groove with information recorded therein, a stylus subject to positioning in said spiral groove for recovering said information, a stylus arm carrying said stylus, and a stylus arm carrying structure subject to motion relative to said board during disc playback in a direction substantially parallel to said turntable surface and oriented to permit movement of said stylus arm in a direction effectively tangential to said spiral groove at the point of engagement of said stylus with said groove to reduce errors in the relative stylus/groove velocity; a spring loaded stylus arm pivot coupling comprising:

a plug having one end attached to said stylus arm and having a substantially circular cross-section in a region remote from said one end;
a support member attached to said stylus arm carrying structure in such manner as to participate in said motion thereof, said support member having an opening with dimensions permitting only a partial entry of said plug and presenting annular surfaces for smooth engagement with a surface of said plug in said remote region; the dimensions of the engaging surfaces of said opening and said remote plug region differing sufficiently to permit a rocking movement of said plug in said opening, when received therein, in a direction providing rotation of said stylus arm about an axis parallel to said turntable surface and substantially perpendicular to the direction of motion of said support member; and
means for spring loading said plug in said opening in said direction tangential to said groove at the point of engagement of said stylus with said groove so as to effect transmission of said motion of said support member to said stylus arm without significant lag while permitting said rocking movement of said plug to accommodate disc surface undulations during playback;
said spring loading means comprising a spring having a first end supported by said stylus arm carrying structure, and a second end presenting an arcuate surface for engagement with a surface of said plug.

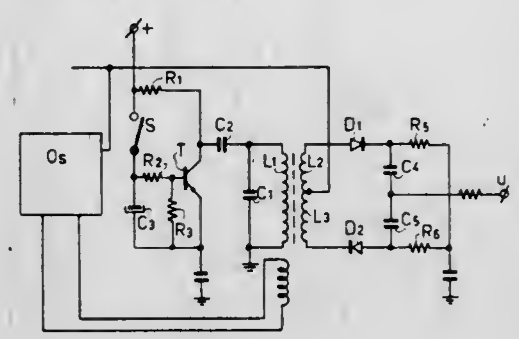
3,873,763
DISK-SHAPED RECORD CARRIER ON WHICH INFORMATION IS RECORDED IN THE FORM OF AN OPTICAL STRUCTURE
Peter Johannes Michiel Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,701

Claims priority, application Netherlands, Sept. 2, 1972, 7211998

Int. Cl. H04n *5/76;* **G11b** *11/00*

U.S. Cl. 178—6.6 R **6 Claims**



1. Apparatus for reading a disk-shaped radiation-reflecting record carrier on which information is recorded in at least one track having an optical structure, the record carrier being coated with an electrically conducting and optically reflecting layer, the apparatus comprising a radiation source for supplying a read beam, a radiation-sensitive detector for converting the read beam modulated by the record carrier into an electric signal, an objective system for forming an image of the part of the record carrier to be read on the detector, a plate made of an electrically conductive material being secured to the objective system and serving to form, together with the electrically conducting coating of the record carrier, a capacitive element with a capacitance depending on the distance between the objective and the record carrier, a fixed frequency oscillator, a passive frequency detection circuit connected to said capacitance element and having a natural frequency depending on said capacitive element, means for applying the output of the fixed frequency oscillator to the frequency detection circuit, and means connected to the frequency detection circuit for controlling the position of the objective system relative to the optical structure of the record carrier, the fixed frequency of said oscillator corresponding to the natural frequency of said frequency detection circuit when said record is at a desired distance from said objective.

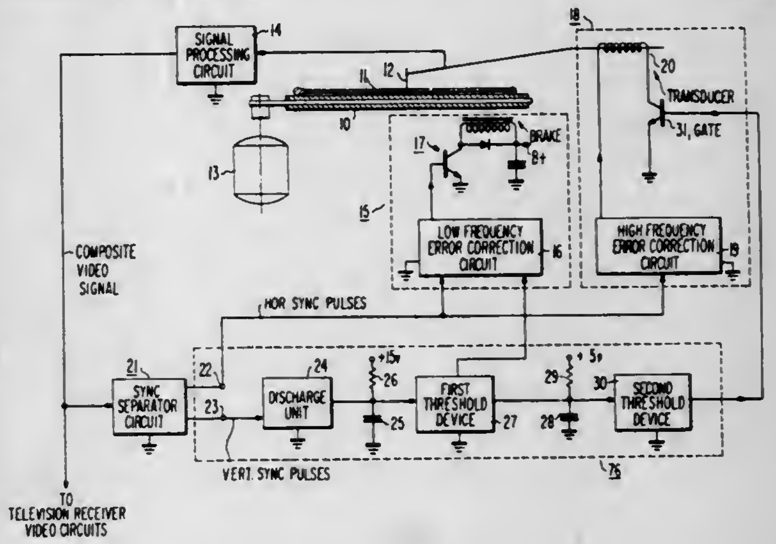
3,873,764
SPEED CORRECTION SYSTEM FOR A VIDEO DISK PLAYBACK SYSTEM
Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 5, 1973, Ser. No. 403,992

Claims priority, application United Kingdom, Mar. 20, 1973, 13265/73

Int. Cl. G11b *17/00, 19/28*

U.S. Cl. 178—6.6 R **11 Claims**



1. In a disc playback system including an apparatus for recovering recorded signals from a spirally grooved disc record, said apparatus including a pickup device subject to positioning in the disc record groove for developing a recorded signal output, and means for rotating said disc record to establish relative motion between said disc record groove and said pickup device, wherein a predetermined speed of said relative motion is desired for proper operation of said apparatus, a speed correction system comprising:

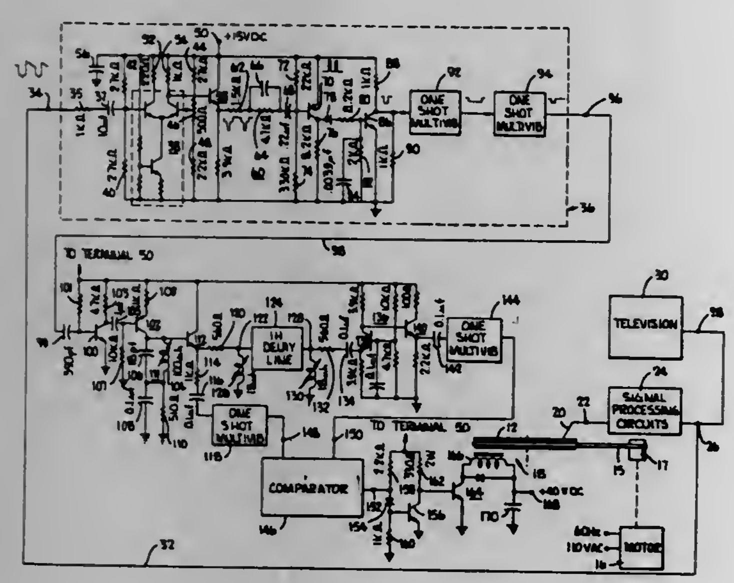
1. first speed error correction means for adjusting the speed of rotation of said record to maintain the average speed of said relative motion at substantially the predetermined speed when the operation of said first speed error correction means is initiated;
2. second speed error correction means for supplementing the speed error correction afforded by said first speed error correction means, said second speed error correction means including:
   - A. circuit means responsive to the signal output of said pickup device for developing an error signal representative of deviations of the instantaneous relative speed between said disc record groove and said pickup device from said predetermined speed; and
   - B. transducer means, coupled to said circuit means and normally responsive to said error signal, for varying the position of said pickup device in relation to said disc record groove in a manner that opposes said deviations; and
3. means responsive to the presence of said recorded signals in the output of said pickup device for delaying the operation of said transducer means relative to initiation of said first speed error correction means operation, thereby permitting (a) adjustment of the average speed of said relative motion to substantially the predetermined speed,

and (b) stabilization of said circuit means for developing an error signal, to precede the operation of said transducer means.

3,873,765
DISC PLAYBACK SYSTEM WITH SPEED CONTROL OF A BELT DRIVE

James Conrad Schoop, and Frederick Roland Stave, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 284,509, Aug. 29, 1972, abandoned.
This application June 18, 1974, Ser. No. 480,329
Int. Cl. H04n *5/76*; **G11b** *17/00*; **H02k** *7/10*
U.S. Cl. 178—6.6 A **8 Claims**



1. In a playback system wherein a prerecorded signal is recovered from a disc record by a pickup device when relative motion is established between said disc record and said pickup device by rotation of a turntable supporting said disc record, said playback system including braking means for controllably applying a braking force to said turntable, said braking means being responsive to the output of a speed detecting means for varying the effect of said braking force in accordance with deviations of the velocity of said relative motion from a desired operating velocity; a drive system comprising:

a pulley;

a motor, subject to substantially constant frequency energization independent of the output of said speed detecting means, for rotating said pulley;

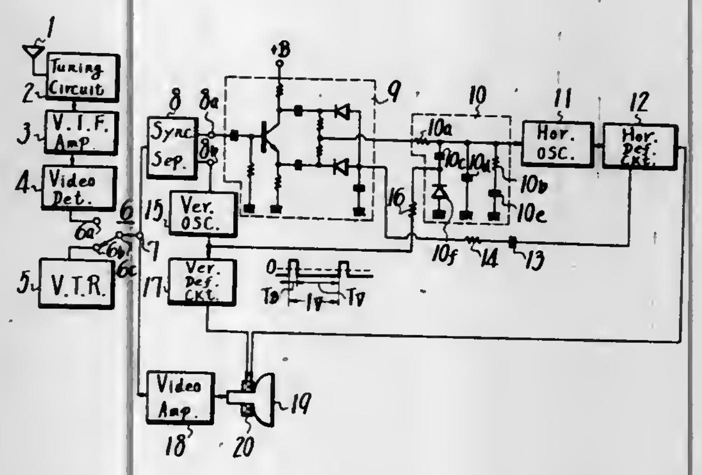
a belt of elastic material stretched to encircle respective cylindrical surfaces of said turntable and said pulley, the diameter of said cylindrical surface of said turntable exceeding the diameter of said cylindrical surface of said pulley, for transmitting rotational motion to said turntable in a manner establishing a given step-down ratio between the respective rotational rates of said pulley and turntable when said motor is subjected to said energization in the absence of operation of said braking means, said given ratio being chosen to establish said relative motion between said disc record and said pickup device at a given velocity exceeding said desired operating velocity; and

the length of said belt, the distance between the axes of rotation of said pulley and said turntable, and the elasticity of said belt material being so related as to permit the ratio of rotational rates of said pulley and turntabe to vary over a range of ratios differing from said given step-down ratio, when said motor is subject to said energization in the presence of operation of said braking means, without slippage between said belt and said cylindrical surfaces.

3,873,766
AUTOMATIC HORIZONTAL FREQUENCY CONTROL CIRCUITS FOR TELEVISION RECEIVERS

Akira Maeda, Chigasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 13, 1974, Ser. No. 441,937
Claims priority, application Japan, Feb. 20, 1973, 48-20531
Int. Cl. H04b *1/16*
U.S. Cl. 178—7.3 **7 Claims**



1. An automatic horizontal frequency control circuit for a television receiver comprising:

a. oscillator means for producing a horizontal frequency signal;

b. horizontal output circuit means connected to said oscillator means for producing a horizontal pulse in response to said horizontal frequency signal;

c. phase comparator means connected to be supplied with a horizontal sync signal in a video signal and said horizontal pulse for comparison and producing an output signal varying in response to the result of the comparison;

d. variable time constant circuit means connected between said phase comparator means and said oscillator means for producing a frequency control signal for said oscillator means from said output signal of said phase comparator means, said variable time constant circuit means having variable time constant; and

e. control circuit means connected to said variable time constant circuit means for controlling it so as to have a first time constant and a second time constant during a vertical blanking period and other periods, respectively, said first time constant being shorter than said second time constant.

3,873,767
VIDEO SIGNAL CONTROL CIRCUIT INCLUDING AUTOMATIC BRIGHTNESS AND CONTRAST CONTROL RESPONSIVE TO EXCESS CRT BEAM CURRENT

Takashi Okada, Yamato, and Yoshiaki Ogawara, Inagi-shi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1973, Ser. No. 392,201
Claims priority, application Japan, Aug. 28, 1972, 47-85947
Int. Cl. H04n *5/48*, *5/14*
U.S. Cl. 178—7.5 R **12 Claims**

1. A video signal control circuit, comprising:

Video amplifier means for amplifying a video signal supplied to an input terminal thereof;

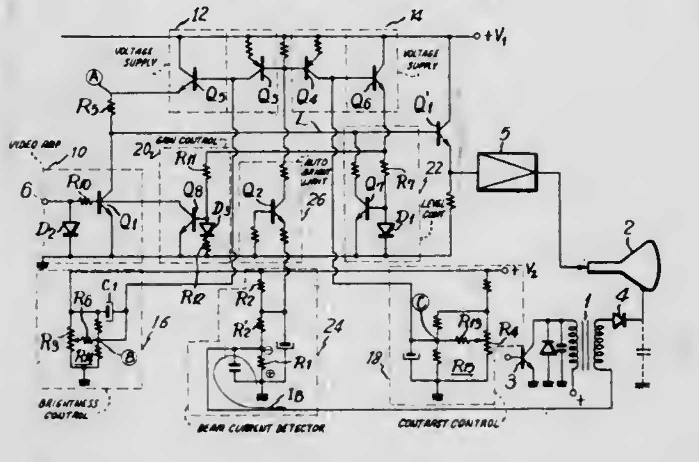
a signal transmission channel connected to said video amplifier means at a junction for transmitting a video signal applied thereto by said video amplifier means to a cathode ray tube;

gain control means coupled to said video amplifier means for controlling the gain of said video amplifier means in accordance with a gain determining voltage;

first voltage supply means coupled to said video amplifier means and said signal transmission channel for supplying a voltage thereto;

second voltage supply means coupled to said gain control means for supplying a voltage thereto;

brightness control means coupled to said first voltage supply means for varying the voltage supplied by said first voltage supply means to thereby vary the DC potential applied to said signal transmission channel, whereby the brightness of an image displayed by said cathode ray tube in response to said video signal is varied;



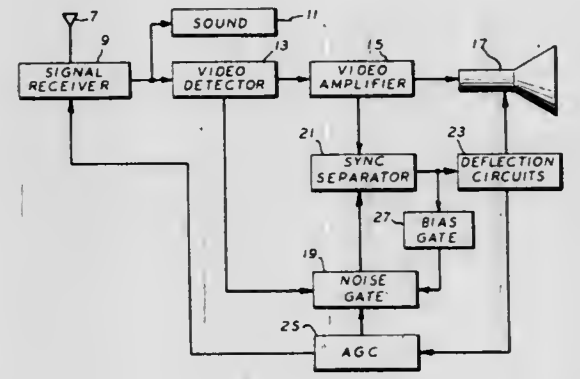
contrast control means coupled to said second voltage supply means for varying the voltage supplied by said second voltage supply means to thereby vary the gain of said video amplifier means determined by said gain control means, whereby the contrast of an image displayed by said cathode ray tube is varied; and

level control means coupled to said signal transmission channel and responsive to said voltage supplied by said second voltage supply means for varying the DC potential on said signal transmission channel.

3,873,768
GATED BIAS NOISE SUPPRESSION CIRCUITRY

Arthur Harold Klein, Oakfield, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 28, 1973, Ser. No. 419,860
Int. Cl. H04n *5/08*
U.S. Cl. 178—7.3 R **9 Claims**



6. Gated bias circuitry suitable for a signal receiver comprising:

a signal source providing video, blanking, and sync pulse signals;

sync pulse separator means coupled to said source;

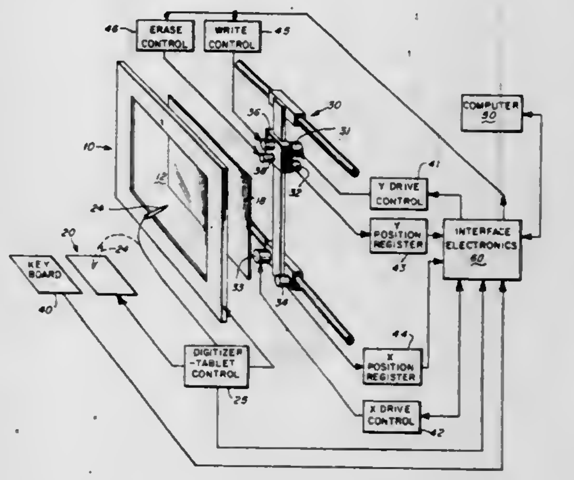
noise gate circuitry coupled to said source and to said sync pulse separator means, said circuitry providing a bias potential for said sync pulse separator means at a level intermediate said blanking and the tip of said sync pulse signals; and

bias gating means coupling the output of said sync pulse separator means to said noise gate circuitry to effect gating of said bias potential applied to said sync pulse separator means at a period coincident with the application thereto of a sync pulse signal from said signal source.

3,873,769
AUTOMATIC DRAWING SYSTEM

William L. Cotter, 70 Neptune St., Beverly, Mass. 02169

Filed Sept. 10, 1973, Ser. No. 395,822
Int. Cl. G06f *3/08*; **G06k** *15/20*
U.S. Cl. 178—18 **16 Claims**



1. An automatic drawing system comprising;

means for digitizing the position of a stylus on a platen having a working surface on one side and including means for registering position identification data,

means defining a plurality of different indicia each capable of being selectably associated with positions on the platen and including means for registering indicia identification data,

a recording medium positioned adjacent the other side of said platen,

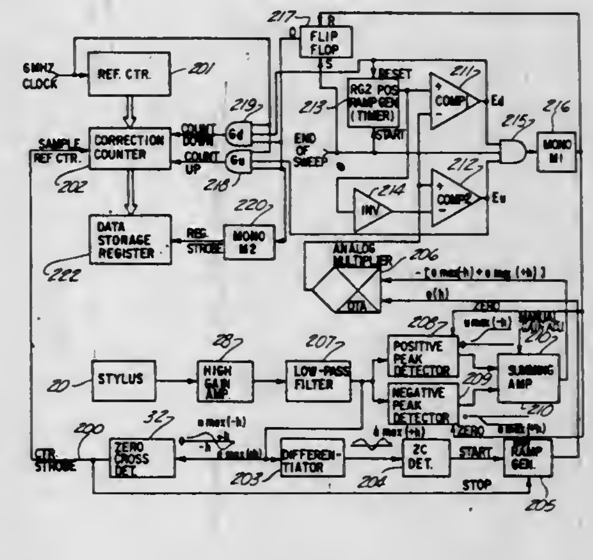
means for fixedly writing on said recording medium,

and processing means responsive to said position and indicia identification data for controlling said means for writing.

3,873,770
DIGITAL POSITION MEASUREMENT SYSTEM WITH STYLUS TILT ERROR COMPENSATION

John T. Ioannou, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 21, 1974, Ser. No. 453,660
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **5 Claims**



1. In a system for producing digital data representing the position of a stylus relative to a two-dimensional surface for receiving a work sheet, a plurality of closely spaced, parallel and coplanar conductors disposed parallel to said surface and spaced a distance Z_{p0} therefrom, means for energizing the conductors in sequence with a unidirectional current pulse thereby to produce a flux wave which travels across the surface in a direction perpendicular to the conductors, a stylus

having an end point freely positionable over the surface, pickup means carried by the stylus and responsive to flux produced by the energization of the conductors to produce an output representing the passage of the wave past the end point of the stylus on the surface, means responsive to the output to produce a signal quantity representing the position of the end point along an axis parallel to the direction of said flux wave, and means for compensating said signal quantity for the apparent position difference between the actual end position of the stylus along said axis and the projected end point in the plane of the conductors taken along the axis of the stylus.

3,873,771

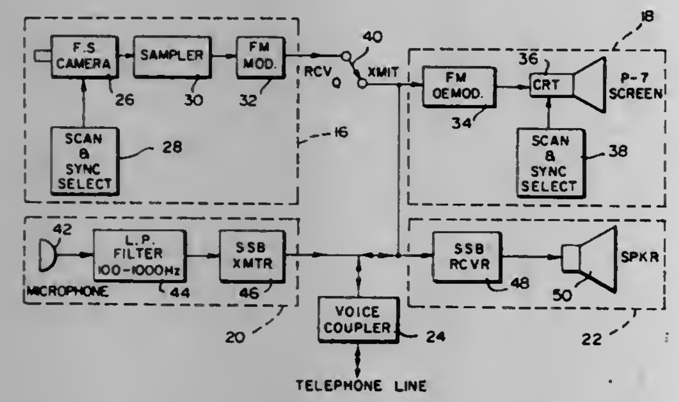
SIMULTANEOUS TRANSMISSION OF A VIDEO AND AN AUDIO SIGNAL THROUGH AN ORDINARY TELEPHONE TRANSMISSION LINE

Ben Kleinerman, New Hyde Park, and Meyer J. Geist, East Meadow, both of N.Y., assignors to Telescan Communications Systems, Inc., East Meadow, N.Y.

Filed Apr. 11, 1972, Ser. No. 242,946

Int. Cl. H04j *1/20, 9/00*

U.S. Cl. 179—2 TV **1 Claim**



1. A communication system for transmitting information through a telephone transmission line having a finite bandwidth of from 0 to 4,000 Hz, said bandwidth having two adjacent but separated segments, one extending over a lower frequency range than the second which extends over a higher frequency range, said system comprising:

a. means for transmitting an FM slow scan video signal through said transmission line in the second frequency range,

b. means for simultaneously transmitting an audio signal through said transmission line in said one frequency range,

c. the upper end of the lower segment being adjacent but spaced from the lower end of the upper segment, whereby said audio and FM signals are free of interference from one another,

d. means for receiving said FM slow scan video signal from said telephone transmission line coupled to said telephone transmission line and the output of said FM slow scan video transmitting means,

e. means for receiving said audio signal from said telephone transmission line coupled to said telephone transmission line and the output of said audio transmitting means,

f. a switch for disconnecting the output of said FM slow scan video transmitting means from said FM slow scan video receiving means and said telephone transmission line,

g. said audio transmitting means being always connected to said audio receiving means and said telephone transmission line,

h. a second audio transmitting means in the physical vicinity of the FM slow scan video receiving means,

i. a second audio receiving means in the physical vicinity of the first-named audio transmitting means,

j. a second means for transmitting an F-M slow scan video signal through said transmission line in the second frequency range located in the physical vicinity of the second audio transmitting means,

k. a second means for receiving an FM slow scan video signal from said telephone transmission line coupled to said telephone transmission line and the output of said second FM slow scan video signal transmitting means, said second FM receiving means located in the physical vicinity of said second audio receiving means,

l. a switch for disconnecting the output of the second FM slow scan video transmitting means from said second FM slow scan video receiving means and said telephone transmission line,

m. said second audio transmitting means and said second audio receiving means being connected to said telephone transmission line for transmitting an audio signal through said line over said one frequency range so that simultaneous voice communication in both directions through said telephone ne transmission line is possible,

n. whereby said switches ensure slow scan of video communication through said telephone transmission line in one direction only at a given time.

3,873,772

SPEECH CONTROLLED SWITCHING ARRANGEMENT

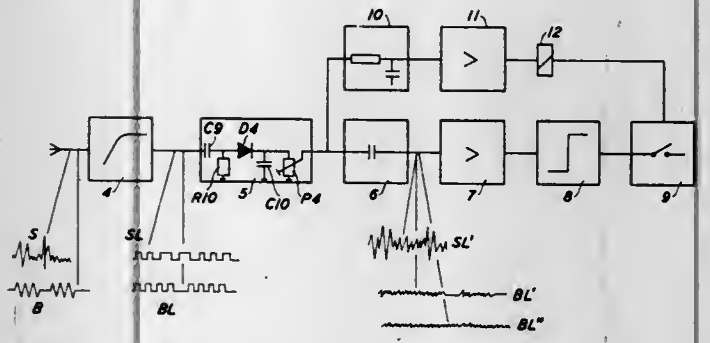
Ernst Dumler, Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany

Continuation of Ser. No. 206,798, Dec. 10, 1971, abandoned. This application July 30, 1973, Ser. No. 383,650

Claims priority, application Germany, Jan. 7, 1971, 2100522; June 8, 1971, 2128516

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **10 Claims**



1. Speech-operated switching apparatus for controlling a switch unit adapted to control a recording appliance in a telephone answering and message recording system, which apparatus is responsive to input speech signals and to other input signals of substantially constant frequency arriving from a telephone line, said apparatus comprising:

a. means responsive to said input signals for converting said input signals into signals which change in amplitude,

b. means responsive to the signals from said last named means for providing output signals which exceed a certain treshold when the frequency of said input signals changes at a rate corresponding to the rate of change of the frequency of said speech signals, and

c. means for operating said switch unit when the interval between successive ones of said output signals is less than a certain interval which is characteristic of time dependent variations in the frequency of said speech signals.

3,873,773

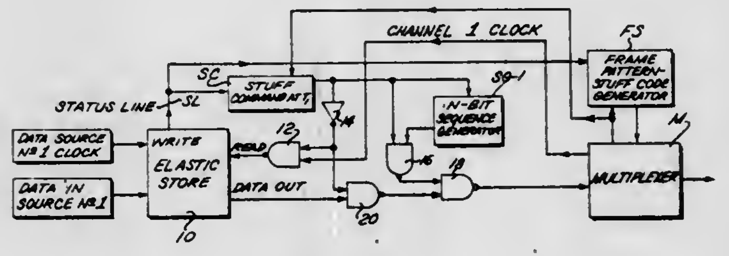
FORWARD BIT COUNT INTEGRITY DETECTION AND CORRECTION TECHNIQUE FOR ASYNCHRONOUS SYSTEMS

William V. Guy, Jr., Orlando, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 192,131, Oct. 26, 1971, abandoned. This application Mar. 16, 1973, Ser. No. 341,823

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BA **33 Claims**



1. In an asynchronous multiplex-demultiplex system in which there are provided means for transmitting a control code for each channel of the system, and for each transmitted control code, there are provided one or more associated sequence time slots in the transmitted data stream, the improvement comprising:

means for inserting into each of said associated sequence time slots, at least one bit of a known N bit sequence respectively associated with K transmitted control codes; and

means for receiving said control codes and said N bit sequences and including means for locally generating one of K known N bit sequences in the same sequence as that inserted into said sequence time slots in response to successive detections of said received control codes, and means for comparing each detected control code's associated N bit sequence with that generated in response to the detection of said control code and providing an output misalignment indication when said sequences differ.

3,873,774

EQUIPMENT FOR THE DETECTION AND EXTRACTION OF A TELEGRAPH CHANNEL

Alain Cabet, Paris; Gaston Pinier, Longjumeau, and Guy Eloy, Bagneux, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed June 27, 1973, Ser. No. 373,912

Claims priority, application France, June 27, 1972, 72.23211

Int. Cl. H04j *1/16*

U.S. Cl. 179—15 BF **10 Claims**

1. A system for detecting and extracting a telegraph transmission from a frequency multiplex telephone transmission system including a plurality of telephone channels, comprising analyzer means for analyzing said telephone channels including scanning means for scanning said telephone channels and means for transposing the transmission on each telephone channel susceptible of carrying a telegraph transmission into a fixed channel Fo ± 30 Hz,

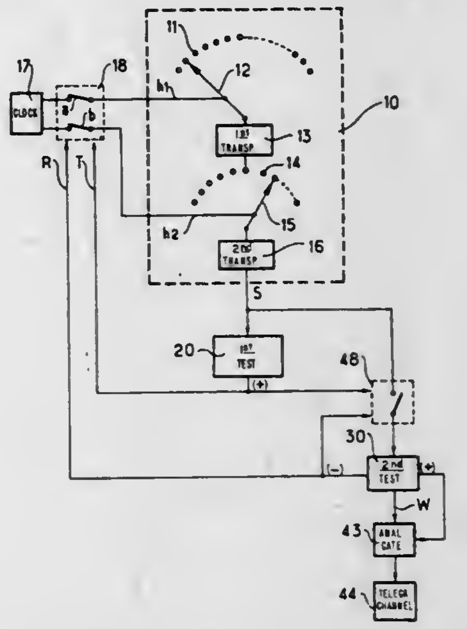
first telegraphy detector means connected to the output of said analyzer means for generating a signal upon detecting one of the sidebands of said fixed channel,

means for stopping said scanning means in response to said signal from said first telegraphy detector means,

second telegraphy detector means for detecting a polarity characteristic of a transmission which identifies it as a telegraph transmission, and

means responsive to said signal from said first telegraphy detector means for connecting said second telegraphy detector means to the output of said analyzer means,

said second telegraphy detector means including means for overriding said stopping means upon failure to detect said polarity characteristic of the channel, thereby permitting said scanning means to resume operation.



3,873,775

METHOD AND AN ARRANGEMENT TO INDICATE DETERIORATION OF PCM TRANSMISSION QUALITY

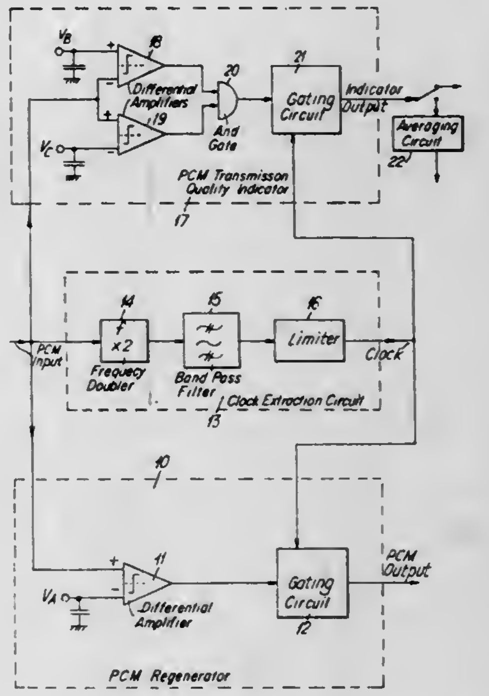
Martin Chown, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 426,789

Claims priority, application United Kingdom, Jan. 25, 1973, 3774/73

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **14 Claims**



9. A method of indicating deterioration of PCM signal transmission quality comprising the steps of:

producing two auxiliary threshold levels one on either side of a boundary level separating two adjacent signal states of said PCM signal;

determining when said PCM signal has an amplitude disposed between said two auxiliary threshold levels;

deriving from only the signal states of said PCM signal a clock signal occurring at timing instants corresponding to the beginning of each PCM pulse period of said PCM signal; and

sampling the results of said determining step by said clock signal at said timing instants, output pulses as the result of said sampling step indicating deterioration of said transmission quality.

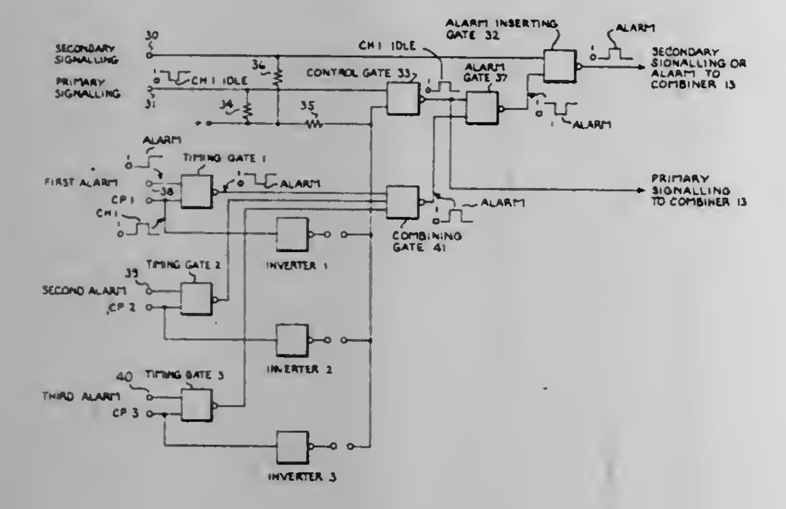
3,873,776
ALARM ARRANGEMENT FOR A TIME-DIVISION MULTIPLEX, PULSE-CODE MODULATION CARRIER SYSTEM

James S. Smith, Jr., and William R. Smith, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jan. 30, 1974, Ser. No. 437,728

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BY **3 Claims**



1. In a multi-channel, time-division multiplex, pulse-code modulation carrier system having a distant transmitter and a near receiver, wherein a predetermined number of pulses representing each channel are sequentially combined to form a frame, wherein a predetermined number of frames form a superframe in which one predetermined frame is used for primary signaling for each channel and another predetermined frame is used for secondary signaling for each channel, an improved arrangement for transmitting alarm information from said distant transmitter to said near receiver, said distant transmitter comprising:

- a. a plurality of input means, each of which is adapted to be supplied with a respective alarm signal at said distant transmitter;
- b. means connected to said input means for combining signals therefrom in a time sequence corresponding to the channel sequence of the carrier system;
- c. a control gate adapted to be connected to the source of primary signaling for producing an open signal in response to primary signaling indicating each idle channel and a close signal in response to primary signaling indicating each busy channel;
- d. an alarm gate connected to said combining means and connected to said control gate output for passing an alarm signal in response to each open signal and for blocking alarm signals in response to each close signal;
- e. and an inserting gate adapted to be connected to the source of secondary signaling and connected to said alarm gate for replacing said secondary signals in response to any alarm signals passed by said alarm gate;

and said near receiver comprising:

- f. a plurality of memory devices adapted to be supplied with primary signaling for respectively indicating which of said channels are idle for the duration of a superframe;
- g. and a plurality of alarm gates respectively connected to said memory devices and adapted to be connected to the source of secondary signaling, each of said alarm gates producing an alarm signal in response to an idle condition in its respective channel followed by an alarm signal in the same respective channel.

3,873,777
SIGNAL TRANSMISSION SYSTEM FOR TRANSMITTING A PLURALITY OF SERIES OF SIGNALS

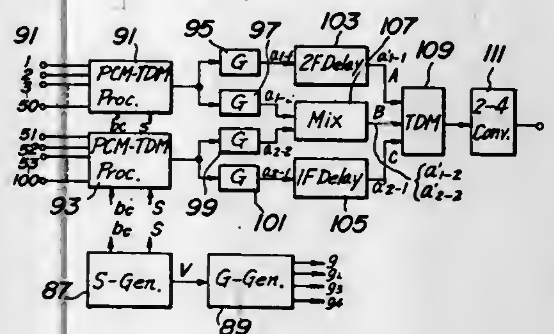
Takashi Uehara, Tokyo; Takehiko Yoshino, Yokohama; Eiichi Sawabe; Hisakichi Yamane, both of Tokyo; Akio Yanagimachi, Kawasaki; Masaaki Fukuda, Tokyo; Tatsuo Kayano, Tokyo; Teruhiro Takezawa, Tokyo; Michio Masuda, Tokyo, and Hiroaki Nabeyama, Yokohama, all of Japan, assignors to Nippon Hoso Kyokai; Hitachi Limited and Hitachi Electronics, Ltd., all of Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,209

Claims priority, application Japan, May 23, 1972, 47-50989; May 23, 1972, 47-50991; May 23, 1972, 47-50992

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 A **19 Claims**



1. A signal transmission system for transmitting a plurality of signals through a transmission path having a plurality of channels provided alternately with signal and pause periods at a predetermined time sequence, comprising, at the transmitter,

- gate means for dividing each series of signals among said plurality of signals into first signal parts the period of each of which is equal to said signal period and second signal parts the period of each of which is equal to said pause period,
- delay means for delaying either one of said first and second signal parts,
- signal combining means for forming a second signal series by combining sequentially only said second signal parts of said series of signals, and
- signal transmission means for transmitting a first signal series corresponding to said first signal parts and said second signal series obtained from said signal combining means by respective channels,

and further comprising, at the receiver,

- signal reproducing means for reproducing the first and second signal parts selected from the received signal series,
- delay means for delaying either one of said first and second signal parts which has not been delayed at the transmitter, and
- signal combining means for combining sequentially the delayed signal parts obtained from said delay means of the receiver with the other signal parts.

3,873,778
SIGNAL PROCESSING SYSTEM

Yoshimichi Mutsuura, Isehara-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,428

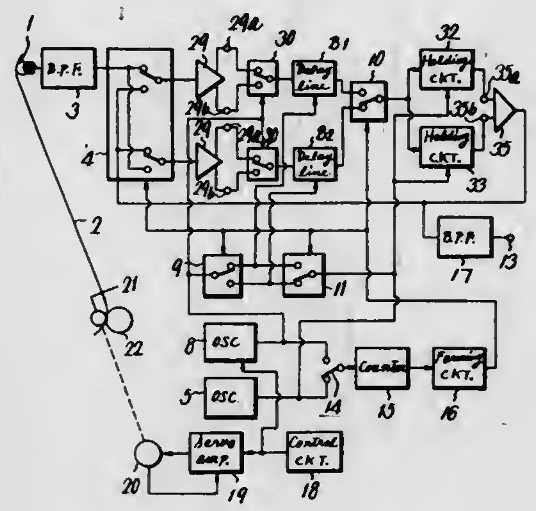
Claims priority, application Japan, June 7, 1972, 47-56722; June 7, 1972, 47-56724

Int. Cl. G06f *3/16*

U.S. Cl. 179—15.55 T **12 Claims**

1. A signal processing system for performing signal compression and/or expansion with respect to analog information signals which are being reproduced at a rate other than that at which said signals have been recorded comprising:

- a. delay line means for receiving said reproduced analog information signals and for propagating said analog information signals with controllable time transformation;



- b. means for controlling said delay line means to produce said time transformation; and
- c. means for compensating for a DC level-deviation of an output signal read out from said delay line means.

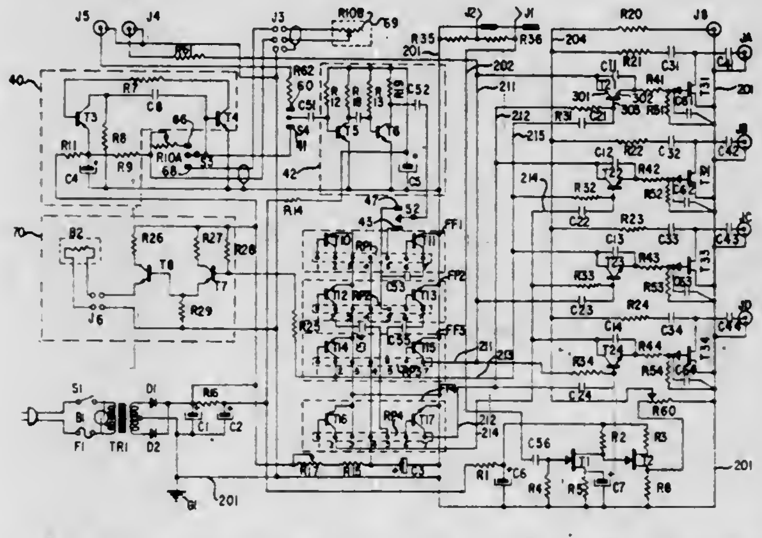
3,873,779
ELECTRONIC SOUND DISTRIBUTION SYSTEM

Gary L. Wedan, Duluth, Minn., assignor to Robert J. Urbick, Duluth, Minn., a part interest

Filed May 24, 1972, Ser. No. 256,516

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **18 Claims**



1. A sound distribution system for cyclically distributing sound radiation in a plurality of different directions comprising:

- a plurality of speakers located so as to define the perimeter of a listening area;
- an input for receiving an electrical input signal corresponding to a sound signal;
- means for connecting said input in parallel with said plurality of speakers;
- a plurality of switch means, individual to said speakers, for selectively actuating a corresponding said speaker responsive to a switching control signal;
- means connected to said switch means for generating a plurality of trains of said switching control signals, equal in number to the number of said speakers, which differ in phase such that the switching control signals from the individual trains are presented sequentially to individual of said switch means so that said switch means are cyclically actuated to cause sequential actuating of said speakers and hence produce a cyclical distribution of sound radiation from said plurality of speakers; and
- control means individual to said switch means and coupled to said generating means for selectively coupling one of said trains of switching signals to a corresponding said switch means, said control means being operably responsive to switching signals from a further of said trains of switching signals generated by said generating means.

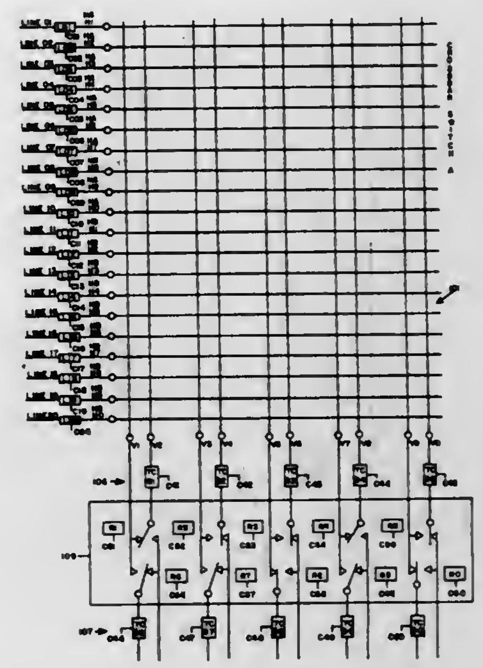
3,873,780
TELEPHONE SWITCHING SYSTEM

Peter Frederick Reeve, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed May 9, 1073, Ser. No. 358,587

Int. Cl. H04m *3/00;* **H04q** *3/42*

U.S. Cl. 179—18 GE **6 Claims**



1. In a telephone switching system, a first crossbar switch having at least a first and a second vertical path, a second crossbar switch having at least one pair of vertical paths, a first switching means for said first crossbar switch operable between a first and a second condition, said first switching means being operable in its first condition to connect said first vertical path to said second vertical path in said first crossbar switch, and being operable in its second condition to connect said second vertical path of the first crossbar switch to one of said pair of vertical paths in said second crossbar switch, and a second switching means for said second crossbar switch operable between a first and a second condition, said second switching means being operable in its first condition to connect said pair of vertical paths in said second crossbar switch to each other, and being operable in its second condition to connect one of said pair of vertical paths of said second crossbar switch to one of said vertical paths in said first crossbar switch.

3,873,781
PREVENTION OF UNAUTHORIZED USE OF TELEPHONE

Samuel Nissim, Malibu, Calif., assignor to Electronic Arrays, Inc., Woodland Hills, Calif.

Filed Feb. 16, 1973, Ser. No. 333,032

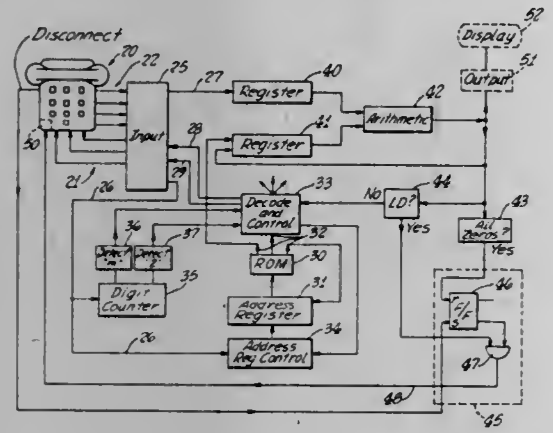
Int. Cl. H04m *1/66*

U.S. Cl. 179—81 R **8 Claims**

1. A locking system for a telephone subscriber's instrument having manual or automatic dialing facilities comprising:

- input means connected to the output of the dialing facility for receiving dialed signals as produced by the dialing facility,
- storage means for storing a security code number unrelated to and distinguished as a number from a telephone number,
- arithmetic means having a first input connected to the input means and a second input connected to the storage means for comparing the dialed signals with the security/code

number, and circuit means responsive to the arithmetic means for inhibiting effective dial out from the subscriber's instrument only if the security number did not precede a telephone number attempted to be dialed out.



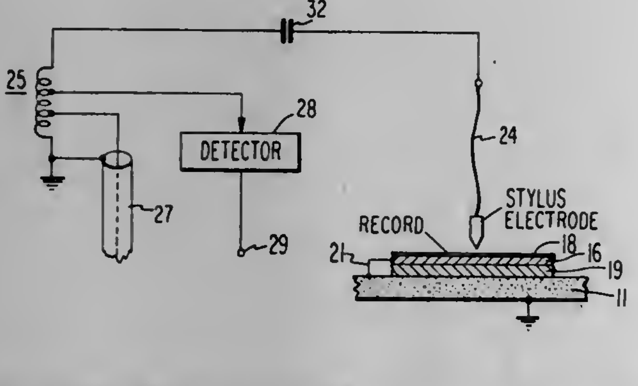
3,873,782
CAPACITIVE PROTECTION COUPLING ELEMENT FOR STYLUS ELECTRODE DISCHARGE

Richard Claxton Palmer, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,877

Int. Cl. G11b *3/44, 9/06*

U.S. Cl. 179—100.1 B **4 Claims**



4. In a video playback system for a video disc record having geometrical variations in a spiral groove on a major surface of said disc record, said record surface including a layer of conductive material covered with a coating of dielectric material, said conductive layer overlying a dielectric substrate, the combination comprising: a rotatable turntable comprising conductive material direct current conductively connected to a point of reference potential; a tracking stylus having a conductive electrode for engaging said spiral groove during rotation of said record in a playback position so that the capacitance exhibited between said conductive electrode and the conductive layer of said disc record varies as said record is rotated, said turntable being in supporting engagement with a surface of said record opposed to said major surface when said record is in said playback position; means for normally precluding the charging of capacitance between said conductive layer and the conductive material of said turntable, said charging precluding means comprising a conductor for providing a direct current conductive connection between the conductive layer of said disc record and said point of reference potential, said charging precluding means being ineffective, however, in precluding the accumulation of charge on any region of said conductive layer undesirably subject to DC isolation from said conductor; an inductive element; a discrete capacitive element; and means for electrically connecting said inductive element and said capacitive element in series between said stylus conductive electrode and said point of reference potential in such manner as to provide a tuned circuit having a resonant frequency which varies as said capacitance between said electrode and said conductive layer varies, with said capacitive element providing direct current isolation of said stylus electrode from said point of reference potential to limit the flow of discharging current through said stylus electrode in the event of stylus engagement with a groove surface overlying any region of said conductive layer subject to said DC isolation from said conductor, said capacitive element having a capacitance value more than an order of magnitude greater than the value of said varying capacitance between said stylus electrode and said conductive layer.

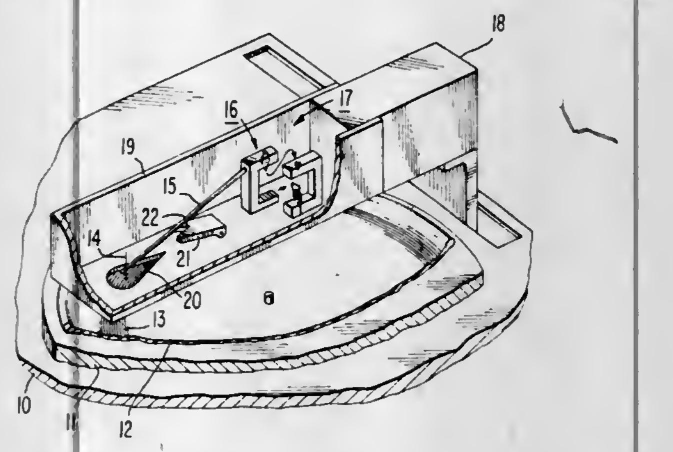
3,873,783
UNIVERSAL STYLUS AND PIVOT COUPLING

Marvin Allan Leedom, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,832

Int. Cl. G11b *3/00, 3/20*

U.S. Cl. 179—100.4 R **4 Claims**



1. In a playback system including a board, a turntable mounted for rotation relative to said board, said turntable having a surface adapted to receive a disc, said disc including a spiral groove with information recorded therein, a stylus arm, a stylus subject to positioning in said spiral groove for recovering said information, said stylus being affixed to a free end of said stylus arm, and a stylus arm carrying structure linked to said board; a universal stylus arm pivot coupling, comprising:

- a generally horseshoe-shaped stylus arm holder affixed to the end of said stylus arm remote from said free end;
- a plug having a tapered end with substantially circular cross-section, said plug being fastened to a first leg of said stylus arm holder;
- a generally horseshoe-shaped support member attached to said stylus arm carrying structure, an opening being disposed in a first leg of said support member and having dimensions permitting only a partial entry of and presenting complementary bearing surfaces for smooth engagement with said plug; and
- a spring member coupled between the second legs of said stylus arm holder and said support member, said spring member during operation of said coupling continuously urging said plug into said opening and further tending to align the axis of said plug with the axis of said spring member thereby tending to minimize the strain in said spring member.

3,873,784
ACOUSTIC TRANSDUCER

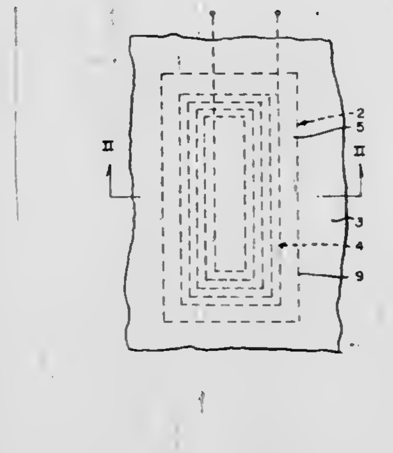
Antony Z. Doschek, Pittsburgh, Pa., assignor to Audio Arts, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 887,557, Dec. 23, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,171

Int. Cl. H04r *9/00*

U.S. Cl. 179—115.5 PV **58 Claims**

1. A planar acoustic transducer comprising: at least one magnetized member for creating at least one magnetic field, each magnetized member having at least one substantially planar pole face; at least one electric conductor means of substantially coil shape positioned in at least one said magnetic field of at least one magnetized member and positioned substantially parallel to and spaced from at least one said planar pole face; magnetically conductive material being interlaid with and insulated from said electric conductor means to increase magnetic flux lines of said magnetic fields traversing said electric conductor means; at least one diaphragm operably attached to each said electric conductor means and positioned substantially parallel to and spaced from at least one said planar pole face; and means for supporting each said magnetized member, each said diaphragm and each said electric conductor means.



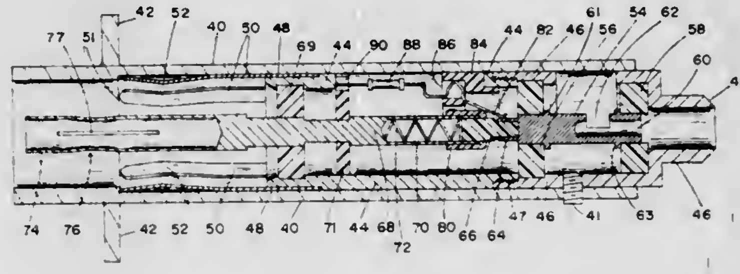
3,873,785
ELECTRICAL CONNECTOR

Walter G. Lieberman, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Oct. 25, 1973, Ser. No. 409,471

Int. Cl. H01r *33/30*

U.S. Cl. 200—51.1 **8 Claims**



1. An electrical connector especially suitable for higher frequency signals comprising, about a common axis, an outer cylindrical housing forming a first circuit path and a coaxial center conductor having first and second portions, both of said portions mounted in non-conducting spacers inside said housing forming a second circuit path, the first portion of said center conductor having a pin receiving means at one end and being slidable over a limited distance along said axis so as to be movable in and out of contact at its other end with the fixed second portion of said center conductor, an electrical contract means connecting said second portion to said outer cylindrical housing, said first portion of said center conductor including means operable to open the electrical contact means at the contacted end of the second portion of said center conductor upon movement of said first portion into contact with said remaining portion.

3,873,786
EXPLOSIVE TYPE SWITCH WITH CIRCUIT SERVING MEANS

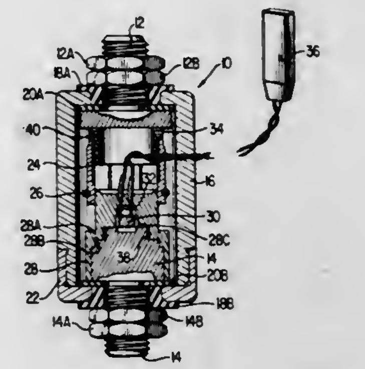
Guy Lagofun, Tarbes, France, assignor to Etat Francais represente par Le Delegue ministeriel pour L'armement, Paris, France

Filed May 8, 1973, Ser. No. 358,407

Claims priority, application France, June 26, 1972, 72.22959

Int. Cl. H01h *35/00*

U.S. Cl. 200—61.08 **8 Claims**



1. A device for severing a mechanical element comprising an electrical current conductor including a cylindrical portion and a coaxial annular portion extending outwardly from said cylindrical portion, the internal diameter of the annular portion being approximately equal to the external diameter of said cylindrical portion, said device comprising an explosive charge having an energy per unit of mass in excess of 1,000 joules/gram and a speed of propagation in excess of 3,000 ms, firing means for detonating said charge, housing means for housing and supporting the mechanical element and said explosive charge including a first electrical terminal connected to said annular portion of said mechanical element and a second electrical terminal connected to said cylindrical portion of said mechanical element, said mechanical element including means for initiating fracture comprising means defining first and second coaxial grooves located in the area joining said cylindrical portion and said annular portion, and said cylindrical portion including recess means for housing said explosive charge and said firing means such that the initial volume presented to the explosive gases, defined by the volume of said explosive charge and the housing therefor, is no greater than the volume swept by the gas during the useful displacement of the sheared portion of the mechanical element to be severed, said swept volume being equivalent to the volume of a cylinder having a diameter equal to the internal diameter of the annular portion and a height equal to the distance between the said first and second coaxial grooves.

3,873,787
AIR-PRESSURE SWITCH DEVICE FOR PNEUMATIC TIRES

Akio Nozi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,906

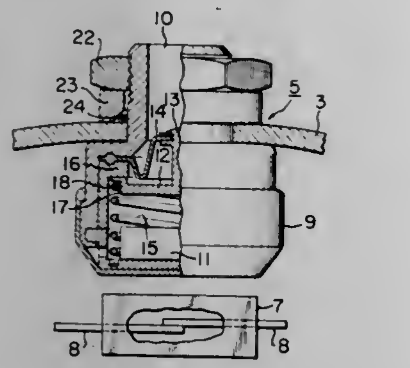
Claims priority, application Japan, Dec. 26, 1972, 47-129507

Int. Cl. H01h *35/24, 36/00;* **B60c** *23/06*

U.S. Cl. 200—61.25 **2 Claims**

1. An air-pressure alarm device for pneumatic tires, comprising pressure detector means (**5**) secured to portion (**3**) of a vehicle wheel (**1**) for detecting air pressure in the pneumatic tire of the wheel, and an alarm signalling circuit (**8**) including a magnetically operable switch (**7**) secured to a stationary component (**6**) of the vehicle in a position opposite to said detector means, the latter including a casing (**9**) fixed to the wheel portion, a magnet (**11**) secured to said casing, spring means (**15**) arranged in said casing, and a magnetic short-circuiting member (**12**) accommodated in said casing for

movement in a direction toward said magnet under the effect of the air pressure in the tire, and movable in the opposite direction, away from said magnet, under the combined effect of the bias of said spring means and the centrifugal force acting upon said magnetic member upon rotation of the wheel, said magnet being operable to close said switch to complete said signalling circuit upon separation of said magnetic member from said magnet.



3,873,788
STEERING COLUMN SWITCH

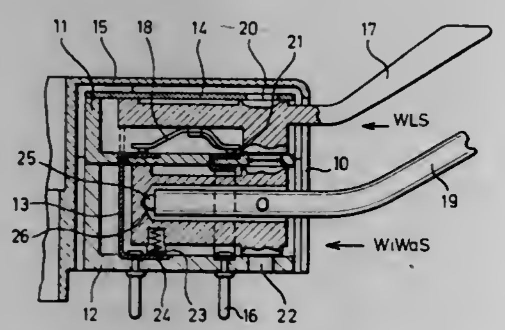
Otto Machalitzky, Pleidelsheim, and Herbert Erdelitsch, Bietigheim, both of Germany, assignors to SWF-Spezialfabrik fur Autozubehd Gustab Rau GmbH, Bietigheim, Germany

Filed Jan. 23, 1974, Ser. No. 435,897

Claims priority, application Germany, Feb. 1, 1973, 2304801

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.27 **10 Claims**



1. A steering column switch for motor vehicles comprising a common switch housing, a first switching device and a second switching device mounted in said common housing, said common switch housing comprising two separate and distinguishable chambers for receiving said first and second switching devices, and a separate switch lever for each of said first and second switching devices.

3,873,789
BELT POSITION INDICATOR SWITCH WITH FEELER ARM

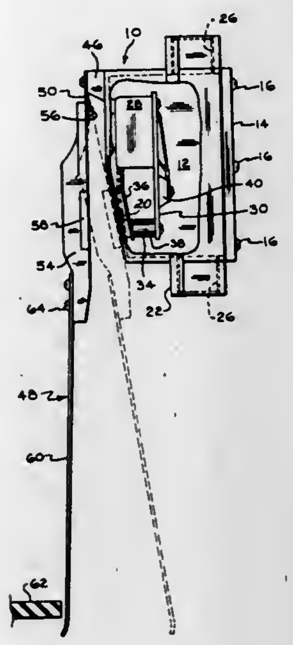
Achard L. Ward, Jackson, Mich., assignor to Ward Industries, Inc., Jackson, Mich.

Filed Nov. 19, 1973, Ser. No. 416,737

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.41 **5 Claims**

1. A position indicator for moving belt comprising, in combination, a housing defining a chamber, said housing having a nonmagnetic wall, an electric switch mounted within said housing, a magnetically responsive switch operating arm mounted on said switch movable between switch operating positions, a cantilever supported lever externally mounted on said housing movable toward said housing and said switch arm upon being engaged by the edge of a moving belt, said lever including a resilient support portion and a nonmagnetic portion, a magnet mounted on said lever nonmagnetic portion for attracting said switch arm to operate said switch upon said lever being disposed adjacent said housing and switch arm, said lever resilient support portion normally positioning said lever nonmagnetic portion and magnet spaced from said switch arm to prevent attraction of said switch arm by said magnet, said housing nonmagnetic wall being disposed between said lever and said switch operating arm.



3,873,790
ELECTRICALLY ACTUATED FLOOR CARE APPLIANCE HAVING A FLUID OR PNEUMATIC CONTROL ARRANGEMENT

Charles C. Coons, Laguna Hills, Calif., assignor to The Hoover Company, North Canton, Ohio

Filed Sept. 13, 1973, Ser. No. 397,151

Int. Cl. H01h *35/38*

U.S. Cl. 200—83 Z **7 Claims**

1. An electrically operated floor care appliance including;

a. a housing containing a driving motor for said floor care appliance,

b. an electric switch mounted adjacent said motor and having an on and off position for energizing and deenergizing said motor,

c. means for actuating said electric switch, at least a portion of which is remotely disposed relative to said electric switch,

d. said means for actuating said electric swtich including a collapsible chamber and an expansion chamber, at least one of which is manually operable, and a fluid conduit means diposed therebetween and in fluid communication with said collapsible chamber and said expansion chamber,

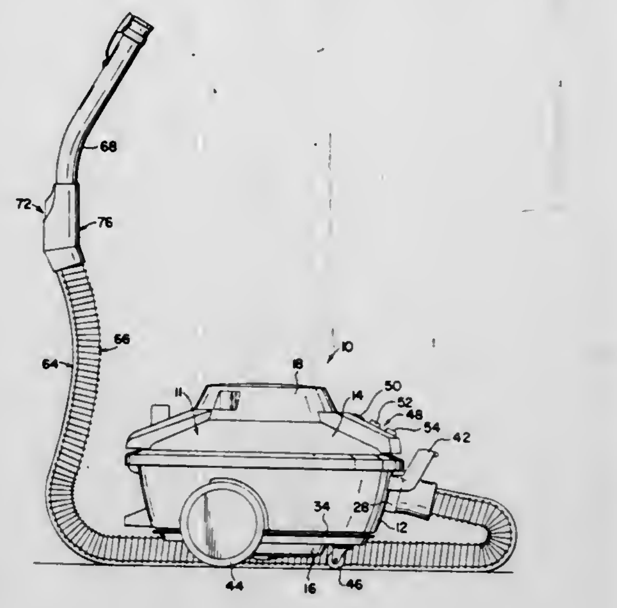
e. a handle for said electrically operated floor care appliance,

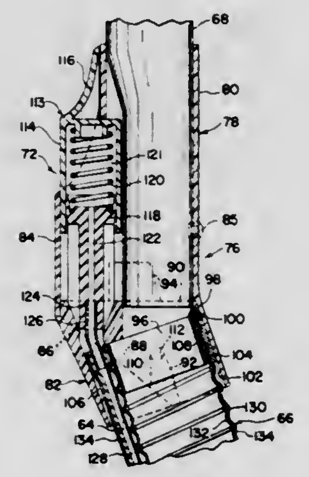
f. said handle mounting one of said collapsible chamber and said expansion chamber, remote from said floor care appliance housing, and said housing mounting the other of said collapsible and expansion chambers,

g. said handle also carrying at least a portion of said fluid conduit means extending between said collapsible and expansion chamber,

h. one of said collapsible and expansion chambers providing, upon manual actuation, a pressure wave for operation of the order of said chambers through said fluid conduit means, and

i. means for drivingly connecting one of said expansion and collapsible chambers to said electric switch for moving said electric switch from on and off position to the other of said positions, in response to remote manual operation of that one of said collapsible and expansion chambers mounted with said handle.





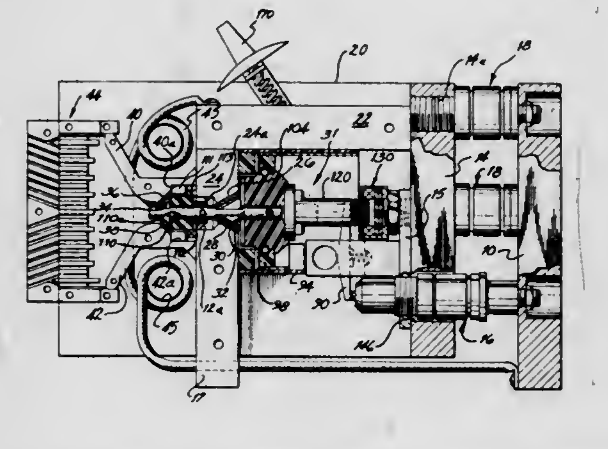
3,873,791
CURRENT LIMITING CIRCUIT BREAKER

Ralph Loyd Hurtle, West Hartford, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1973, Ser. No. 414,117

Int. Cl. H01h *33/00*

U.S. Cl. 200—144 R **22 Claims**



1. A current limiting circuit breaker comprising, in combination:

A. a line terminal;

B. a load terminal;

C. circuit interrupting stationary and movable contacts connected in series between said line and load terminals;

D. a carrier assembly mounting said movable contact for movement between open and closed positions relative to said stationary contacts;

E. a vapor-state current limiter having:

  1. a casing;

  2. at least one column of conductive, evaporable, current limiting material confined within said casing, said column being electrically connected to conduct at least a portion of the current flowing between said line and load terminals; and

  3. a ram mounted by said casing for reciprocating movement, said ram having one end portion disposed within said casing in operatively coupled relationship with said column and its other end extending exteriorly of said casing, wherein said ram executes a stroke in response to vaporization and resulting expansion of a portion of the current limiting material in said column due to conduction of current exceeding a predetermined level;

F. means operatively coupling said other end of said ram to said assembly, whereby to rapidly reciprocate said assembly from said closed contact position to said open contact position in response to the execution of a stroke by said ram; and

G. anti-rebound means automatically operative to gain control of said assembly upon its arrival at said open contact position thereby to prevent return movement of said assembly toward said closed position.

3,873,792
CONTACT ARRANGEMENT FOR A COMPRESSED-GAS CIRCUIT BREAKER

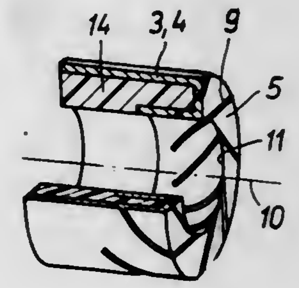
Marin Heiner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1973, Ser. No. 341,472

Claims priority, application Germany, Mar. 29, 1972, 2215929

Int. Cl. H01h *33/60*

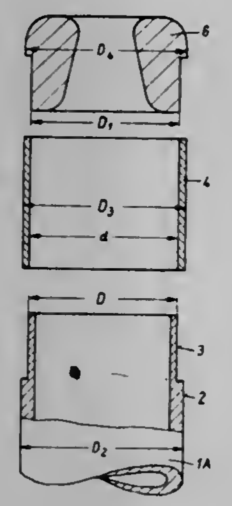
U.S. Cl. 200—148 R **4 Claims**



1. In a compressed-gas circuit breaker wherein the gas is blown through the arc developed when the breaker is switched, a contact arrangement whereat the circuit breaker is switched between open and closed positions, the contact arrangement comprising two contact pieces arranged on a common axis and having respective end faces mutually adjacent to conjointly define a gap therebetween, each of said contact pieces having a U-shaped section, and a switching member movable between the open and closed positions to electrically join said contact pieces in the closed position and to electrically separate said contact pieces in the open position whereby an arc is drawn when said gap is opened, each of said contact pieces having a hollow interior for accommodating the discharge of the gas blown through the arc and having an inlet surface defining an opening to said hollow interior, said inlet surface extending from said end face into said hollow interior, each one of said contact pieces having a plurality of even grooves formed in the end face and the inlet surface thereof, each of said grooves being skew at every increment thereof with respect to said common axis and extending tangentially into said opening at said inlet surface, and arc-resistant, insulating material filling said grooves.

3,873,793
CONTACT SYSTEM FOR A HIGH-VOLTAGE APPARATUS

Klaus-Peter Rolff, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed June 4, 1973, Ser. No. 366,295
Claims priority, application Germany, June 27, 1972, 2232314
Int. Cl. H61h *33/82*
U.S. Cl. 200—148 R **6 Claims**



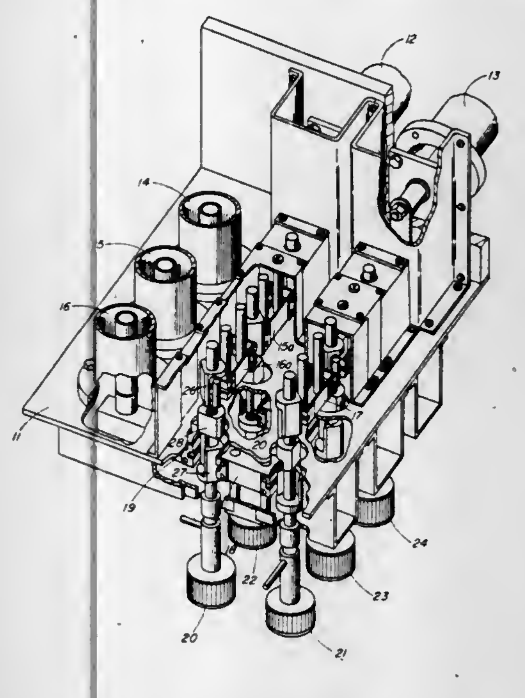
1. A contact system for an electrical high-voltage apparatus such as a high-voltage power circuit breaker or the like wherein a gaseous insulating medium is used, the contact system comprising at least one contact piece that includes a graphite electrode having a nozzle-like configuration for conducting away the gases produced when the apparatus is switched to the open position, an electrically conductive annular member having respective end-portions, said electrode being held in surrounding engagement by one of said end-portions of said annular member in a friction-tight manner, and a contact piece support member having a free end-portion, the other end-portion of said annular member surrounding and engaging said free end-portion of said support member to form a shrink joint therewith thereby establishing a good electrical connection between said members as well as a good mechanical connection for withstanding temperature changes occurring in the apparatus.

3,873,794
RADIO FREQUENCY MODULAR SWITCH SYSTEM

Kenneth Owen, 6201 Hebling Ave., Springfield, Va. 22150
Filed Apr. 20, 1973, Ser. No. 353,100
Int. Cl. H01h *63/00, 19/36, 9/08*
U.S. Cl. 200—153 S **20 Claims**

1. A high power radio frequency switch system for interconnecting a plurality of input lines to a plurality of output lines, said system comprising

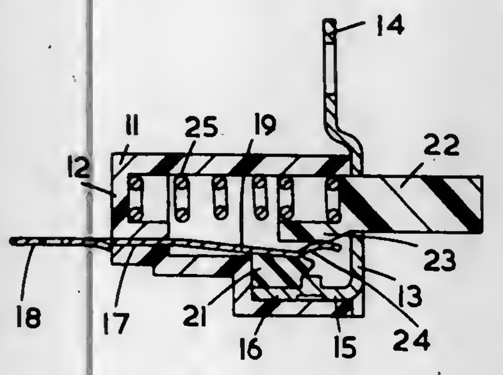
a. A base member,
b. A plurality of input line sections mounted on one side of said base,
c. A plurality of output line sections mounted on said base and aligned across said input line sections to form a crossover matrix,
d. A plurality of rotor means each of said means having a non-conductive shaft formed from an insulating material, said rotors being mounted within said base member at each crossover point of said matrix for connecting any given input line section to any given output line section at their respective crossover point,
e. A low inductance through connect contact means mounted on said shaft, each of said contacts providing a through connection for an input line and an output line when said rotor means is in a first through position.
f. A single cross connect contact means mounted on said insulating shaft, said means including a conductive hub mounted on said shaft between said input and said output line section, said means defining a pair of conductive cross connect contact rods on said hub, each of said rods having a longitudinal axis which is parallel to the longitudinal axis of said shaft, said rods being arranged 90° from one another around the axis of rotation of said shaft,



g. Means to prevent the interconnection of more than one output section to any given input line section, or more than one input line section to any given output line section.

3,873,795
ELECTRICAL SWITCH WITH RECIPROCATING CAM

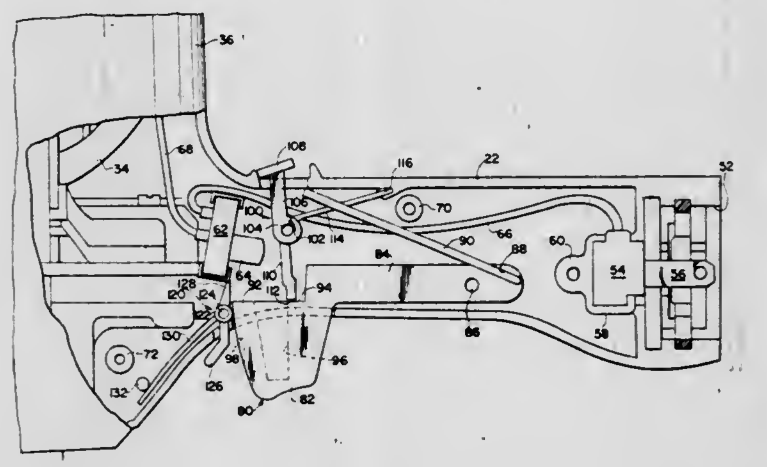
Peter Watson Leighton, and Neil Tomlinson, Burnley, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England
Filed Mar. 25, 1974, Ser. No. 454,431
Claims priority, application United Kingdom, Apr. 28, 1973, 20309/73
Int. Cl. H01h *1/02, 3/12*
U.S. Cl. 200—153 LA **9 Claims**



1. An electrical switch including a body, a first electrical contact supported by the body, a second electrical contact spaced from the first electrical contact, a switching element interposed between the first and second contacts, the switching element being formed from flexible, electrically insulating material containing discrete particles of electrically conducting material which are brought into contact to define conductive paths through the element when the element is compressed beyond a predetermined amount, an operating member mounted for sliding movement relative to the body, and cam means on the operating member and the second electrical contact whereby movement of the operating member relative to the body in one direction causes movement of the second contact towards the first contact compressing said element from a rest state wherein the element electrically insulates the second contact from the first contact, beyond said predetermined amount so that the element electrically interconnects the first and second contacts.

3,873,796
TRIGGER MECHANISM FOR HAND-OPERATED POWER DEVICE INCLUDING INDEPENDENTLY OPERABLE LOCKING DEVICES PROVIDING AUTOMATIC LOCK OFF AND MANUAL LOCK-ON OPERATION

Richard Worobec, Jr., Bel Air, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Continuation of Ser. No. 377,041, July 6, 1973, abandoned. This application June 12, 1974, Ser. No. 478,655
Int. Cl. H01h *3/20*
U.S. Cl. 200—157 **9 Claims**



1. A trigger mechanism for a hand-operated power device including a motor and a control operatively associated with the motor, comprising:

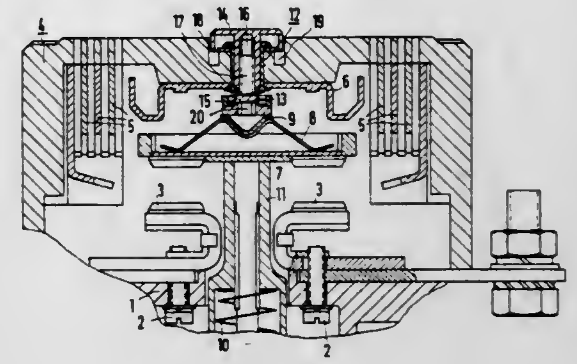
a trigger manually movable from an inoperative position to an operative position to actuate the control and operate the motor;
first locking means for normally locking said trigger in its inoperative position, said first locking means being movable from a first lock-off position, cooperatively engageable with said trigger to prevent movement of said trigger from its inoperative position to its operative position, toward a second, unlock position wherein said trigger is manually movable to its operative position to actuate the control; and
second locking means operable independently of said first locking means for locking said trigger in its operative position, said second locking means being movable from a first, unlock position out of the path of movement of said trigger to a second, lock-on position cooperatively engageable with said trigger to lock said trigger in its operative position to continuously actuate the control and operate the motor.

3,873,797
SWITCH POSITION INDICATOR FOR ELECTROMAGNETIC SWITCHGEAR

Joachim Hannich, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 7, 1973, Ser. No. 386,437
Claims priority, application Germany, Aug. 14, 1972, 7230068
Int. Cl. H01h *9/16*
U.S. Cl. 200—308 **8 Claims**

1. A switch position indicator for an electromagnetic switchgear of the type which has a detachable arcing chamber comprising:

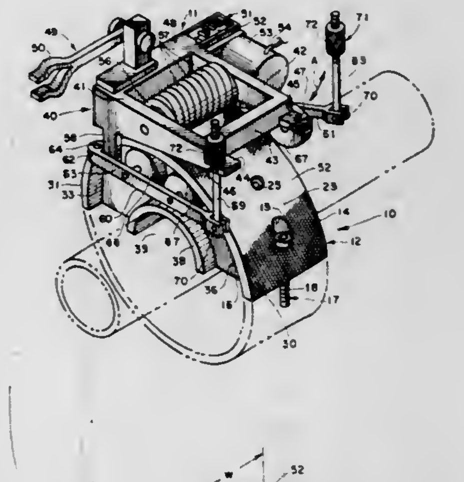
a. an indicating member guided in a suitable recess in the arcing chamber for limited motion in the direction of movement of the movable contact in the switchgear;
b. a spring acting upon said indicating member so as to tend to force it in the closing direction of the movable contacts, and
c. wherein said indicating member is comprised of:
  1. a first bottom part mechanically coupled with the movable contact of the switch;
  2. a second upper part which has at least a portion capable of protruding above the acring chamber; and

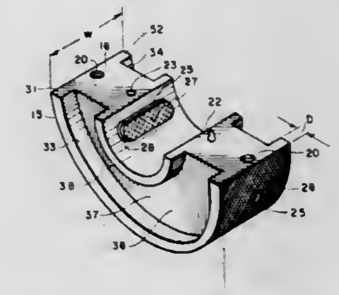


  3. means for adjustably coupling said two parts such that the overall length of the indicating member may be adjusted.

3,873,798
CRAWLING CARRIAGE

Robert Friedman, and Howard D. Lesher, both of Saugus, Calif., assignors to Dimetrics, Inc., N. Hollywood, Calif.
Filed Nov. 9, 1973, Ser. No. 414,286
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **20 Claims**





1. A carriage and track combination comprising:

a. a track unit with side parts defining undercut zones that constitute a pair of guide ways;
b. a carriage having a framework;
c. drive roller means coupled to the framework and arranged in rolling engagement with the track unit;
d. A motor coupled to the framework and operatively connected to the drive roller means for selectively causing movement of the drive roller means over the track unit;
e. a pair of swing arms pivotally coupled to opposing sides of the framework;
f. idler wheel means secured to the swing arms and positioned below the drive roller means for movement into rolling engagement with the pair of guide ways;
g. locking means for tightening the swing arms and thereby simultaneously forcing the drive roller means against the track unit and the idler wheel means against the guide ways
h. a cross framework coupled to an outside portion of said framework;
i. a slide and way system interconnecting said framework and the cross framework; and,

j. a reversible motor mounted to said framework and drivingly engaged with the slide and way system and arranged to shift the cross framework back and forth laterally relative to the path of movement of said framework, whereby the carriage may be caused to crawl along the track unit with the drive roller means exerting force against the track unit in one direction and the idler wheel means exerting force against the track unit in the opposite direction and whereby the cross framework may be caused to shift back and forth across the path of movement of the carriage.

19. A carriage and track assembly in combination with a pipe welding means comprising:

a. a track unit including a pedestal of substantially constant width, the pedestal having side parts of substantially constant depth and which define undercut zones said track unit being of generally annular shape and including mating split ring sections that are detachably fastened together, the track unit including a hub connected to the pedestal having a generally circular opening for accommodating a tubular work piece to be welded, and clamping means having at least three adjustable and substantially equiangularly spaced centering pads that extend radially through the split ring sections;
b. a central path of movement defined by an outer surface portion of the pedestal;
c. a pair of guide ways defined by the undercut zones;
d. a carriage for carrying said pipe welding means and including a framework;
e. dual drive rollers coupled to the framework and arranged in rolling engagement against the central path portion of the pedestal;
f. a motor coupled to the framework and operatively connected to the drive rollers for selectively causing movement of the drive rollers along the central path;
g. a pair of swing arms pivotally coupled to opposing sides of the framework, said swing arms being oriented to straddle the track unit and swing laterally inwardly towards the framework;
h. idler wheels secured to corresponding swing arms for movement into rolling engagement with corresponding guide ways at positions central of the dual drive rollers; and
i. locking means operable to tighten the swing arms and thereby simultaneously force the dual drive rollers against the track unit and the idler wheels against the guide ways; wherein the carriage may be caused to crawl along the track to follow an orbital path with the drive rollers exerting force against the track in one direction and the idler wheels exerting force against the track unit in the opposite direction as the welding means traverses a weld joint.

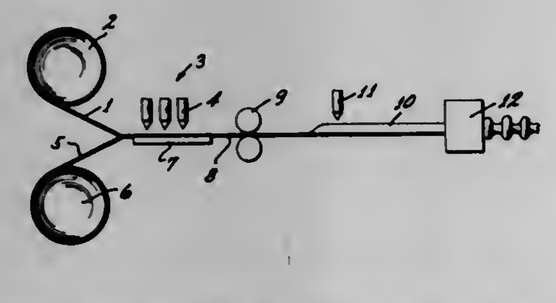
3,873,799
METHOD OF MAKING A COMPOSITE SUPERCONDUCTING TUBE

Ernst Scheffler, Langenhagen, and Gerhard Ziemek, Hannover, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Oct. 19, 1973, Ser. No. 408,042

Int. Cl. B23k *31/06*

U.S. Cl. 219—61 **13 Claims**



1. Method for making a superconductor assembly, comprising the steps of:

providing a copper strip;
providing at least one niobium strip of narrower width than the copper strip;
progressively overlaying the strips longitudinally to obtain surface to surface contact between them, so that the edges of the copper strip remain free from the niobium; providing localized arc-welding heating to the exposed surface of the copper strip as overlaying the niobium strip in at least one small spot with relative displacement between the welding arc and strip resulting in a welding seam line between niobium and copper strips, to obtain a metallurgical welding bond between the strips by generating diffusion in the area of surface contact between the strips along said line and adjacent to the portion as exposed to the welding arc;
impeding heat transfer from the exposed surface of the niobium strip during the arc welding to obtain spreading of the welding area beyond the area adjacent to the immediate exposure to the welding arc, transverse to said line;
longitudinally folding the welded together strips into a split tube, so that the edges of the copper strip abut; and
welding the adjoining copper edge portions together to close the tube.

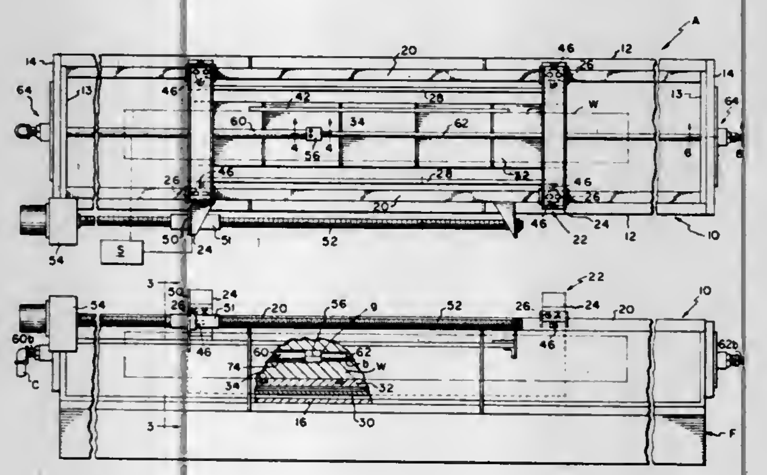
3,873,800
LONGHOLE ELECTRIC DISCHARGE MACHINING APPARATUS

Henry J. Brettrager, 5410 East St., Saginaw, Mich. 48601

Filed Jan. 2, 1974, Ser. No. 406,562

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 E **7 Claims**



1. Electric discharge machining apparatus for enlarging a passage extending entirely longitudinally through an elongate workpiece comprising a tank containing a body of electromachining fluid, carriage means for supporting and moving the workpiece along a given path through said tank with the passage immersed in said body of fluid, a machining electrode having a transverse cross section related to that of the enlarged passage to be formed in said workpiece, elongate support means mounted upon and extending between opposite walls of said tank and extending through said passage means coupling said electrode to said support means to support said electrode in said tank at a fixed position upon said given path such that movment of said workpiece along said path causes said electrode to be passed through said passage, and means on said support means for establishing an electrical potential difference between said electrode and said workpiece.

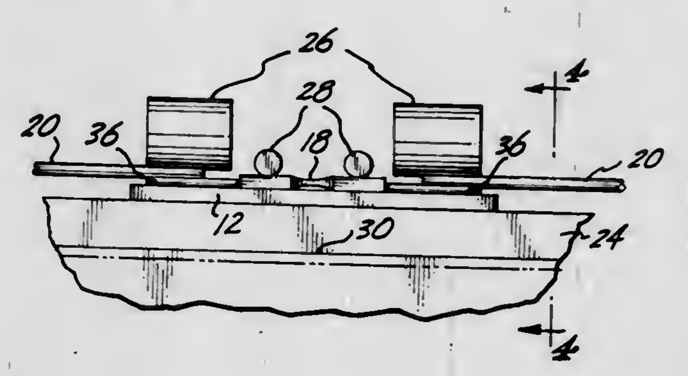
3,873,801
ASSEMBLY OF ELECTRICAL-DEFLECTION-SENSITIVE TRANSDUCER

Thomas B. Hutchins, IV, 310 N.W. Bywood Ln., Portland, Oreg. 97229

Filed June 15, 1973, Ser. No. 370,422

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **4 Claims**



1. In the fabrication of an electrical deflection-sensitive transducer comprising a piezoresistive element having a pair of opposite ends, and a carrier for said element, the method of simultaneously joining both ends of the element to the carrier at spaced-apart regions thereon, comprising

clamping the element and carrier together in the relative positions wherein it is desired they be joined by means including a first pair of spaced-apart clamping bodies, with each one of said first pair engaging a different end of the element,
positioning a mass of a solid, meltable bonding material on the carrier adjacent each region of intended joinder between it and an end of said element,
clamping said masses in place by means including a second pair of spaced-apart clamping bodies, with each one of said second pair engaging a different one of the masses, said second pair of bodies being of an electrically conductive material and connected for the conduction of an electrical current independent of any contact between either of said pair and that which they clamp,
substantially simultaneously passing electrical current through each of the second pair of clamping bodies,
by such passing, heating said bodies,
conducting heat from the heated bodies to the respective masses,
by such conducting, heating and melting said masses,
flowing the molten masses into intimate contact with the respective ends of said element and regions on the carrier,
shutting off the flow of electrical current through the second pair of clamping bodies, and
while retaining said first and second pairs of clamping bodies in place, allowing the flowed masses to cool and solidify, and form deposits joined to and joining each end of the element to respective spaced-apart regions on the carrier.

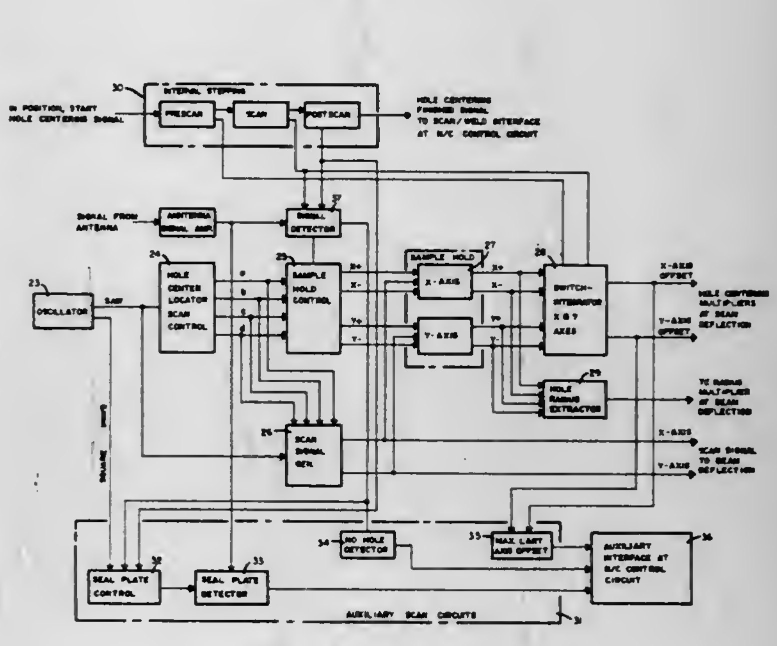
3,873,802
ELECTOR BEAM WELDING APPARATUS CHICORPORATING A HOLE CENTER LOCATING MEANS

Albert M. Sciaky, Palos Park, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Division of Ser. No. 166,008, July 26, 1971, which is a continuation of Ser. No. 369,264, June 12, 1973, Pat. No. 3,814,896. This application May 14, 1973, Ser. No. 360,323

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EB **3 Claims**



1. Apparatus for welding the ends of tubes along their line of adjoinment to the header plate of a heat exchanger which has been drilled with holes through its thickness and into which the ends of tubes to be welded to said header are inserted, comprising:

a chamber, capable of being evacuated, which is formed with two open sides opposite one another;
sliding carriage means mounted over one of said open sides; an electron beam welding gun comprising means for generating, focusing and deflecting an electron beam mounted on the said carriage;
means for translating the said carriage along two mutually perpendicular lines which are parallel to a plane passing through the borders of the said open side;
means for attaching the said chamber to the said header plate so that the second open side of the said chamber is covered by a portion of a surface of the said header plate which includes several of the said tube ends so that the space inside the said chamber and tubes may be evacuated;
means for sealing off the said tubes at their ends opposite the header plate to which they are to be welded;
means for directing the aforementioned electron beam essentially normal to a plane defined by the intersection of the edge of the hole in the header with the outer surface of the tube to be welded thereto so that at its rest position it is within an an area in the plane circumscribed by the said edge of the hole;
means for deflecting the said beam out from and back to the at rest position of the beam sequentially along four separate radial paths along mutually perpendicular axes lying on said plane;
means for generating an electrical pulse whenever the said beam strikes the inner edge of the said tube during each of said outward deflection;
means for generating separate voltages by the action of each of said pulses, which represent the distance and direction from the rest position of the beam to the inner edge of the said tube along each of the said paths;
electrical means for adding algebraically the voltages representing the said distances and directions on one of said axes and simultaneously adding alegebraically the voltages representing the said distances and direction on the other axis so as to obtain separate voltages which represent the deviation of the at rest position of the beam from the center of the tube along each of the said axes;
and means for causing the beam to be deflected along the said axes through the action of the last mentioned voltages so that the beam passes through the geometric center of the said tube.

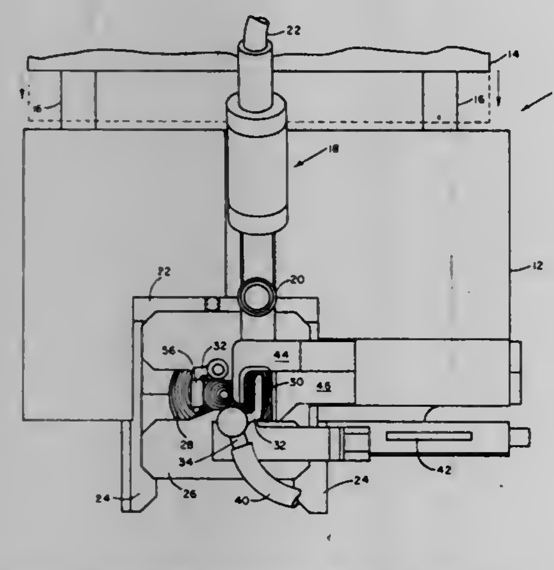
3,873,803
LEAD BATTERY WELDING APPARATUS

Roland L. Young, Denver; Donald H. McClelland, Littleton, and Edward O. Wolcott, Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 277,946, Aug. 4, 1972, Pat. No. 3,806,696. This application Nov. 8, 1973, Ser. No. 414,006

Int. Cl. B23k *9/00*

U.S. Cl. 219—125 R **9 Claims**



1. A battery welding apparatus having a source of welding current for welding lead components of a battery together comprising:
- a welding table having a slot, a cell assembly holding fixture inserted within said slot, said holding fixture containing a battery cell having exposed lead parts in close proximity to one another to form a weldable surface, ingot-like mold means having walls substantially surrounding said weldable surface, said walls having good thermal conductivity so as to act as a heat sink, a welding torch, energizable by said welding current, movable with respect to said weldable surface in an oscillatory path across the weldable surface producing a welding arc utilizing an inert-gas-shielded nonconsumable electrode, for joining said lead components.

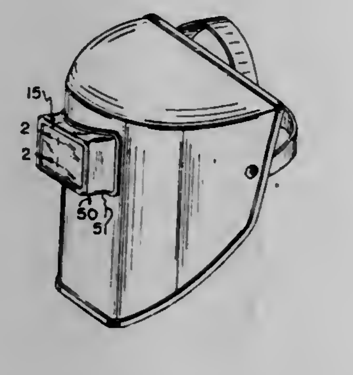
3,873,804
WELDING HELMET WITH EYE PIECE CONTROL

Mack Gordon, 29085 Solon Rd., Cleveland, Ohio 44139

Continuation-in-part of Ser. No. 244,180, April 14, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,988

Int. Cl. B23k *9/32*

U.S. Cl. 219—147 **12 Claims**



1. A protective welding lens assembly for use with an electrical welding machine having an electrical energizing circuit and having a welding electrode connected thereto by an electrical cable, said assembly being planar and fixedly mounted in a welder's helmet, and comprising a layer of liquid crystal material sandwiched between opposing parallel plates coated over their entire area with unbroken transparent conducting films, said films being pretreated by rubbing the same in parallel lines at right angles to each other whereby to control their polarizing effect upon said liquid crystal material, said plates with the enclosed liquid crystal material being disposed between and parallel to a pair of conventional cross polarizers so arranged that when a suitable electrical potential is established across said conducting films and said liquid crystal layer the lens assembly will change from a uniform light transmitting condition to a uniform high density approximately opaque condition, and means including a low voltage electrical circuit electrically associated with said electrical energizing circuit and responsive solely to approach of said welding electrode to the work to be welded by the wearer of the helmet for applying said suitable electrical potential across said conducting films and said liquid crystal layer in a period of approximately 1/500 of a second.

3,873,805
METHOD OF MAKING A HEAT EXCHANGER

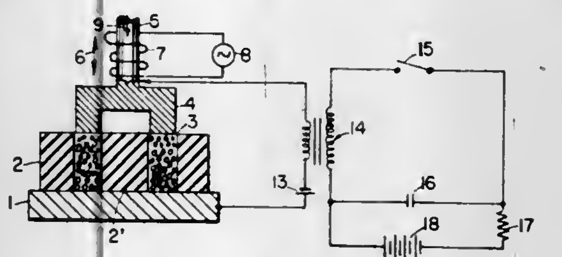
Kiyoshi Inoue, 16-8 3-chome, Kamiyoga, Tokyo, Japan

Division of Ser. No. 187,988, Oct. 12, 1971, Pat. No. 3,825,064, which is a continuation-in-part of Ser. No. 10,090, Feb. 16, 1970, Pat. No. 3,670,137, which is a continuation of Ser. No. 611,497, Nov. 30, 1966, abandoned, which is a division of Ser. No. 356,714, April 2, 1964, Pat. No. 3,340,052, which is a continuation-in-part of Ser. No. 247,387, Dec. 26, 1962, Pat. No. 3,250,892. This application Nov. 29, 1973, Ser. No. 420,271

Claims priority, application Japan, Dec. 26, 1961, 36-47409

Int. Cl. B21j *1/06*

U.S. Cl. 219—149 **12 Claims**



1. A method of making a heat-exchanger member comprising the steps of:
1. preparing a porous mass of thermally conductive particles monolithically bonded at their individual junctions; and
2. fusing said porous mass to a thermally conductive metallic substrate, said substrate and said porous mass fused together forming a heat-transfer interface, said particles being fused together and to said substrate by:
   - a. disposing a mass of the particles in a discrete noncoherent form between at least a pair of electrodes and in contact with said substrate;
   - b. applying across said electrodes at least one impulsive electric current of a magnitude sufficient to fuse said particles together and to said substrate progressively with a succession of pulses; and
   - c. compacting said particles against said substrate progressively while applying said succession of pulses.

3,873,806
VAPORIZER-HUMIDIFIER

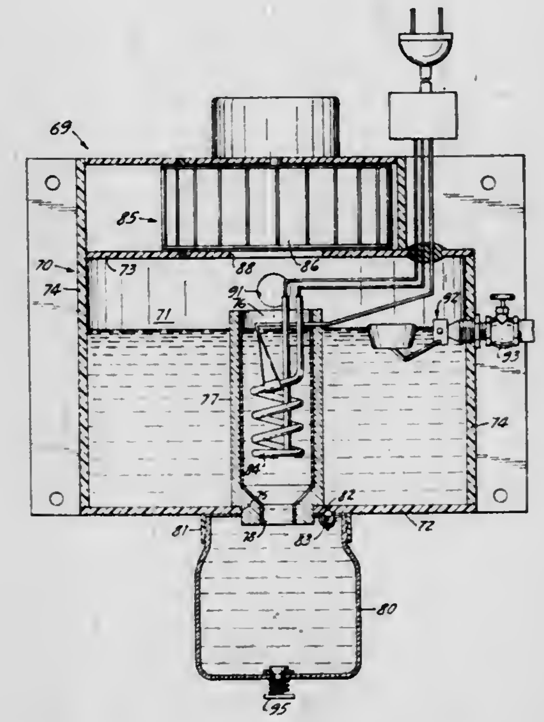
George W. Schossow, 2316 Lilac Ln., White Bear Lake, Minn. 55110

Division of Ser. No. 832,279, June 11, 1969, Pat. No. 3,809,374. This application Oct. 1, 1973, Ser. No. 402,288

Int. Cl. H05b *1/00;* **F02m** *31/12*

U.S. Cl. 219—273 **6 Claims**

1. A vaporizer-humidifier comprising
means defining a supply reservoir,
chamber means defining an insulated vaporization chamber within said supply reservoir, said chamber means comprising a tubular member having opposite open ends disposed in vertically spaced relationship, the lower open end being a reduced opening,
container means disposed beneath the lower open end of said tubular member, said container means being secured in fluid-tight condition with said tubular member and in communication with said chamber means through said lower open end for receiving minerals purged from a liquid therein,
passage means affording the flow of liquid from said supply reservoir to said vaporization chamber,



immersion heating means disposed in said vaporization chamber for heating liquid therein, and
blower means positioned with an inlet above said open upper end of said vaporization chamber and an outlet for removing vapor and ambient air therein from said vaporizer-humdifier.

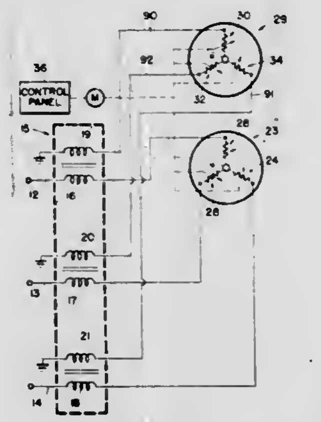
3,873,807
POWER MODULATING ARRANGEMENT FOR ELECTRIC FLUID HEATING APPARATUS

Glenn R. Mohr, Linthicum, Md., assignor to Mohr-Baker Co., West Chicago, Ill.

Continuation-in-part of Ser. No. 300,711, Oct. 25, 1972, abandoned. This application Jan. 4, 1973, Ser. No. 321,345

Int. Cl. H05b *3/60, 1/02*

U.S. Cl. 219—285 **11 Claims**



1. An apparatus for heating fluids comprising:
- A. Fluid container means adapted to receive electrically conductive fluid;
- B. Transformer means adapted to be connected to a source of alternating current and having primary and secondary winding means;
- C. A first pair of spaced electrode means carried by said container means and connected in series with said primary winding means and adapted to be immersed in said conductive fluid received in said container;
- D. A second pair of spaced electrode means carried by said container means and connected in series with said secondary winding means and adapted to be immersed in said conductive fluid received in said container; and
- E. Means for varying the impedance between said second pair of electrode means for controlling the energy delivered to said fluid within the container means.

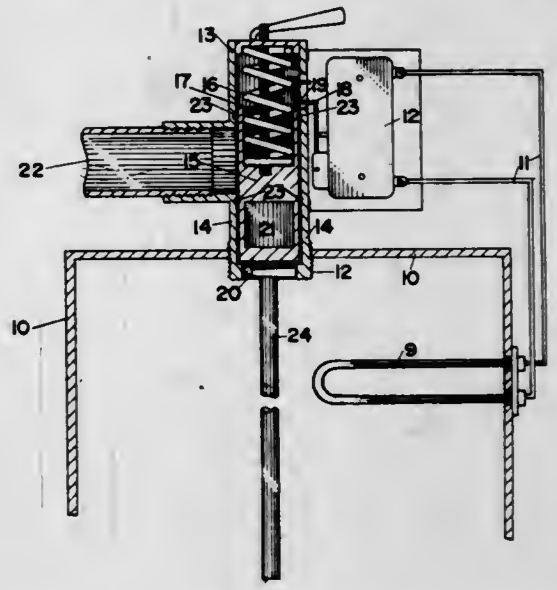
3,873,808
COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE WITH ENERGY CUTOFF SWITCH

Thayer E. Patton, Chattanooga, Tenn., assignor to Ronald E. Williams, Chattanooga, Tenn.

Filed June 13, 1974, Ser. No. 478,901

Int. Cl. H05b *1/02;* **F24h** *1/00*

U.S. Cl. 219—332 **2 Claims**



1. A device for limiting the temperature and pressure of a fluid by controlling the electric current to an element (9) for heating the fluid which comprises a tank (10), a support assembly (13) for the device adapted to be inserted through a wall of the tank, the assembly including a cylinder (14) a pressure responsive piston (15) movable within the cylinder, a compression spring (16) opposing movement of the piston, an actuator (19) extending within the cylinder through the support assembly and adapted to be operated by movement of the piston, a microswitch (17) operable by the actuator to break an electric circuit (11) to the heating element, and a temperature responsive element (24) mounted within the tank, the element being connected to the piston to push the piston against the actuator of the microswitch to break the electric circuit to the heating element and a discharge conduit (20) for the·overflow of fluid from the cylinder.

3,873,809
HIGH TEMPERATURE GAS FURNACE

Thorbjorn Skogland, Shelbyville, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Sept. 27, 1973, Ser. No. 401,250

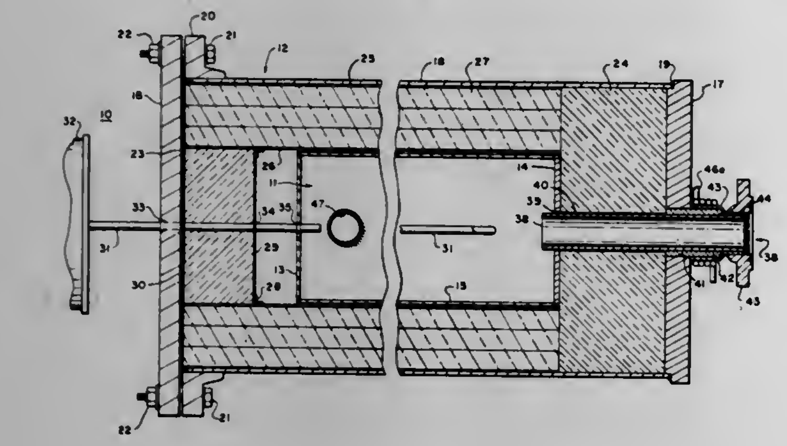
Int. Cl. H05b *1/00*

U.S. Cl. 219—380 **3 Claims**

1. A furnace for heating gas, including:
an elongated, generally cyclindrical inner container for receiving gas to be heated;
heating means extending into said inner container for heating gas therein;
conduit means communicating with said inner container for supplying gas to said inner container and for removing gas from said inner container after the gas has been heated;
an elongated, generally cyclindrical, gas tight outer pressure container positioned around said inner container in spaced relationship thereto;
gas pervious insulation substantially filling the space between said inner and said outer containers so that the

operating temperature of said outer container is substantially lower than the operating temperature of said inner container;

said insulation including an insulation insert removably received between the side walls of said inner and outer containers; said insert including coaxial, radially spaced apart cyclindrical members separated by a body of gas



pervious insulation; the inner of said members being spaced outwardly of the side wall of said inner container and axially shorter than said body of gas pervious insulation so that said body of gas pervious insulation is in communication with said inner container; and

said inner container having at least one opening communicating with said insulation so that said inner container is subjected to no more than a low pressure differential.

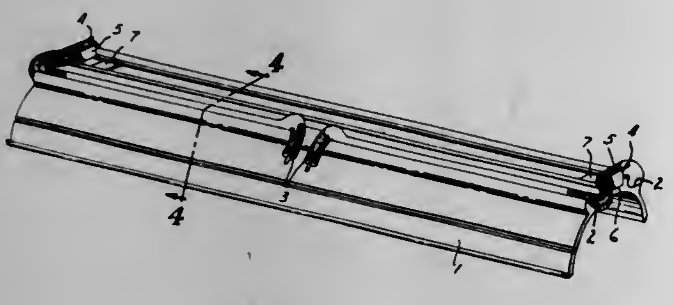
3,873,810
HEATER STRUCTURE

Roger L. Larson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1974, Ser. No. 451,568

Int. Cl. H05b *3/58*

U.S. Cl. 219—535 **2 Claims**



1. A heater for heat developing sheet materials comprising an insulated, flexible, sheathed, electrical resistance heating element; an open-faced, arcuate heat-conductive platen having spaced dual channels extending axially along the outward side of said platen receiving said heating element therein, said platen having a partially enclosed slot along the axial length of the outward side thereof between said channels; and at least one heat-conductive clip attached to one end portion of said platen, said clip having a channel therein supporting said heating element, a surface contacting said platen, and a retaining leg having a bend therein transverse to the length of said leg such that the height of said leg is slightly greater than the height of the enclosed portions of said slot, said leg having a width sufficient to contact said enclosed portions of said slot whereby said platen is conductively heated by said heating element to more uniformly heat the sheet material.

3,873,811
TAXIMETER HAVING DEVICE FOR ELECTRONICALLY SETTING INCREASED BASE FARE RATE

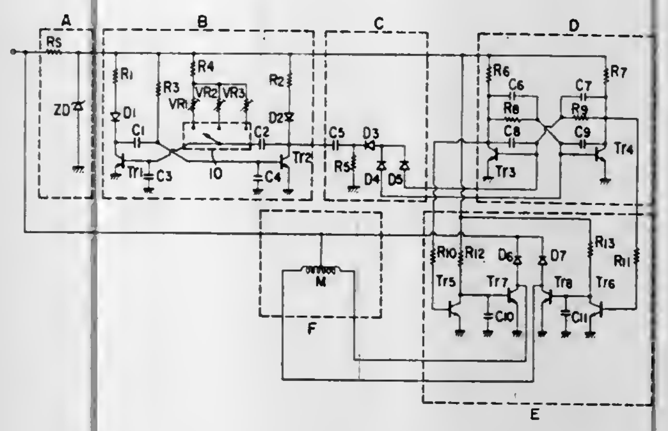
Noboru Ozaki, and Masatoshi Shimizu, both of Shimada, Japan, assignors to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1973, Ser. No. 415,680

Claims priority, application Japan, Dec. 1, 1972, 47-137578

Int. Cl. G07b *13/10*

U.S. Cl. 235—30 R **1 Claim**



1. A taximeter having fare indicating means and a device for electronically controlling a time signal generating mechanism to establish a base fare rate, comprising:
- an astable multivibrator, including a plurality of variable resistors selectively in connection with a capacitor through an operator-actuatable switch;
- a differentiator connected to the astable multivibrator, receiving and differentiating the output thereof;
- a bistable multivibrator connected to said differentiator and receiving the output thereof and accordingly producing a symetrical square wave;
- a motor for driving said fare indicating means; and
- a motor driving circuit interconnected between the motor and the bistable multivibrator for driving said motor at a rate commensurate with the frequency of the signal from the bistable multivibrator.

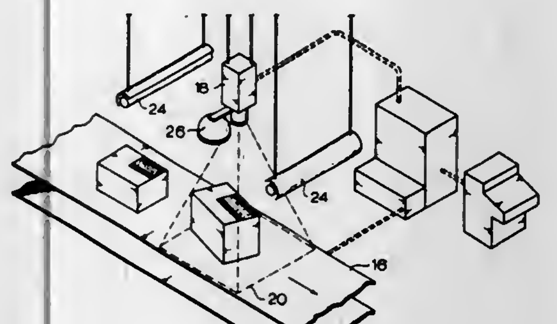
3,873,812
READER FOR CODED INFORMATION

Harold H. Stein, and Vickram Sondhi, both of Toronto, Ontario, Canada, assignors to Ferranti-Packard Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 276,362, July 31, 1972,. This application July 27, 1973, Ser. No. 383,285

Int. Cl. G06k *7/10;* **H04m** *5/38*

U.S. Cl. 235—61.11 E **17 Claims**



17. Means for using a television camera to extract information encoded on a surface by the provision of areas designed to contrast, in the illumination provided for such surface for viewing by said camera, with the background on said surface, comprising in combination:
- a television camera arranged to scan a field of view including the locus of said information,
- means for making a determination, from the characteristics of the scan output signal of said camera, whether such signal, at a plurality of predetermined regularly time-spaced intervals during the scanning along a line, whether the scan out-put signal of said camera corresponds to that resulting from location or information marks on the one hand or to that resulting from background on the other hand,
- means for analyzing the signals resulting from the presence and location of said marks.

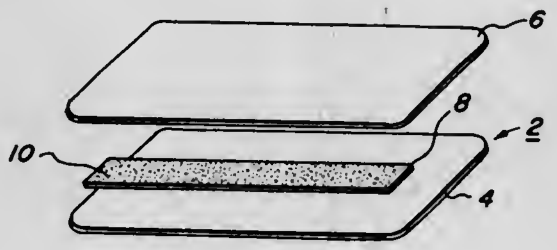
3,873,813
CREDIT CARD

Roy J. Lahr, Sierra Madre, and James M. Wilson, San Dimas, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 18, 1973, Ser. No. 361,741

Int. Cl. G06k *9/08, 19/02*

U.S. Cl. 235—61.12 N **14 Claims**



1. A credit card comprising
- a support layer, and
- a coating of heat-sensitive substance supported by said layer, said heat-sensitive subtance being responsive to energy from a remote source incident upon said substance and having a first optical reflectance characteristic when within a first temperature range, and a second, different optical reflectance characteristic when heated to a temperature beyond said first temperature range, said second optical reflectance characteristic of said substance being permanent even when exposed to said energy from said remote source once said substance is heated beyond said first temperature range.

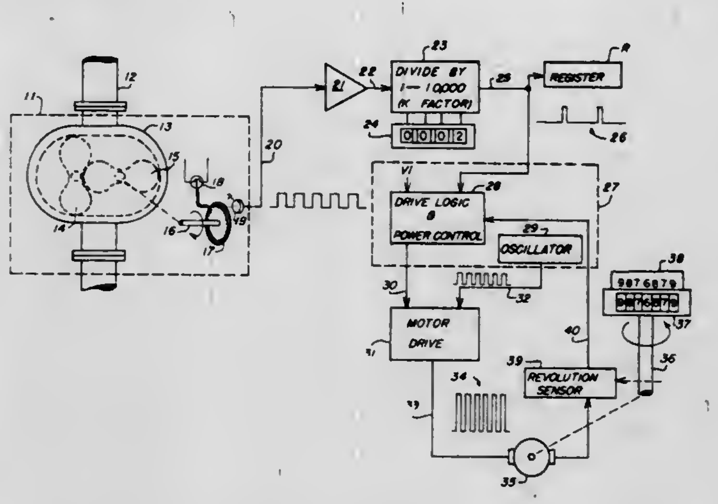
3,873,814
REMOTELY OPERATED NET OUTPUT TICKET PRINTER

Mohammad Kian Mirdadian, 7020 Atwell, Houston, Tex. 77036

Filed Feb. 20, 1973, Ser. No. 334,080

Int. Cl. G06m *1/276, 3/06*

U.S. Cl. 235—92 FL **23 Claims**



1. A metering system for forming a net output comprising:

a. meter means for producing a meter signal functionally related to the value of a monitored, variable value parameter;

b. measuring means connected with said meter signal for forming a net output signal each time said meter signal provides a predetermined input to said measuring means;

c. selector means included with said measuring means for selecting the value of said meter signal required to form a net output signal, said selector means including a factor control setting means which may be set at a value equal to the meter signal value desired for forming a net output signal;

d. register means supplied with said net output signal for accumulating a count of said net output signals,

e. ticket printing means included with said register means for selectively printing the accumulated register count of net output signals in said register means onto a recording medium;

f. power means connected with said register means for supplying power for mechanically advancing the count of said register means and for imprinting the register count onto said recording medium;

g. feedback control means connected with said power means for causing said power means to advance said register count when said net output signals are supplied to said control means and for causing said power means to stop advancing said register count when the accumulated count in said register has advanced by a preselected amount;

h. an incremental electrical motor included in said power means, said electrical motor having a rotor adapted to rotate one angular increment for each pulse of a pulsating electrical power supply applied to said motor;

i. a rotatable drive shaft included in said register means for mechanically driving said printing means and for advancing said register count by an amount related to the angular position of said drive shaft, said motor being mechanically connected with the rotor of said drive shaft to rotate said shaft when said rotor is rotated;

j. sensing means included in said control means for forming a sensing feedback signal indicating the angular position of said drive shaft; and

k. switching means further included in said control means for applying said pulsating power supply to said motor in response to the formation of net output signals by said measuring means and for removing said pulsating power supply from said motor when said sensing feedback signal indicates that said drive shaft is at a predetermined angular position.

3,873,815
FREQUENCY DIVISION BY AN ODD INTEGER FACTOR

Gary J. Summers, Mountain View, Calif., assignor to Farinon Electric, San Carlos, Calif.

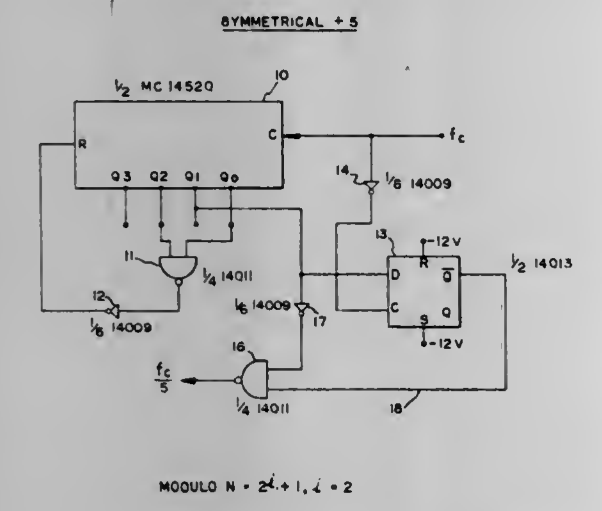
Filed Mar. 19, 1973, Ser. No. 342,795

Int. Cl. H03k *21/36*

U.S. Cl. 235—150.3 **11 Claims**

1. A divider circuit for dividing the frequency, f_c, of a cyclic input signal by an odd modulo, N, such input signal having a 50/50 duty cycle, comprising: a counter responsive to f_c for counting to N; means for sensing the reaching of said N count by sensing all logical 1 levels in the word N of said counter and for resetting said counter in response to said sensing of all of said 1 levels; means for inverting said input signal; and encod-

ing means responsive only to a single predetermined output of said counter and said inverted input signal for providing a



symmetrical output signal having a frequency of f_c divided by N.

3,873,816
AUTOMATIC ADAPTIVE CONTROLLER

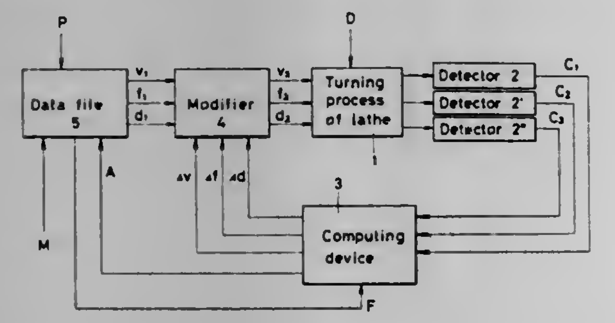
Hidehiko Takeyama, and Tsunenori Honda, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 886,470, Dec. 19, 1969, abandoned. This application May 18, 1972, Ser. No. 254,499

Claims priority, application Japan, Dec. 27, 1968, 43-95983

Int. Cl. G05b *13/02*; G06f *15/46*

U.S. Cl. 235—151.11 2 Claims



1. An automatic adaptive controller for managing tool life by controlling a cutting tool, comprising

cutting tool means,

data file means for storing a plurality of data including predetermined tool-feed rate, depth of cut and cutting speed representing a plurality of cutting conditons for a multiplicity of materials and for emitting corresponding data signals and information signals including a signal representing tool life,

modifier means connected between said data file means and said cutting tool means for receiving said data signals and for sending basic operational values to said cutting tool means for starting said cutting tool means to effect a cutting operation initially controlled solely by said data signals and subsequently by said data signals as modified by correction signals,

a plurality of detector means for detecting characteristics of said cutting operation of said cutting tool means, including operating force to detect tool wear, and providing respective detection signals, and

computing means for receiving said detection signals and for receiving said information signals from said data file means and for providing said correction signals to said modifier means, said modifier means for modifying said optimum data signals by said correction signals and for providing and sending corrected signals to said cutting tool means for controlling the cutting operation of said cutting tool means, said computing means including sampling means for collecting data relating to tool life over a plurality of cutting operations and producing a further correction signal representing same, and means for applying signals derived from said computing means to data file means for altering the data stored therein.

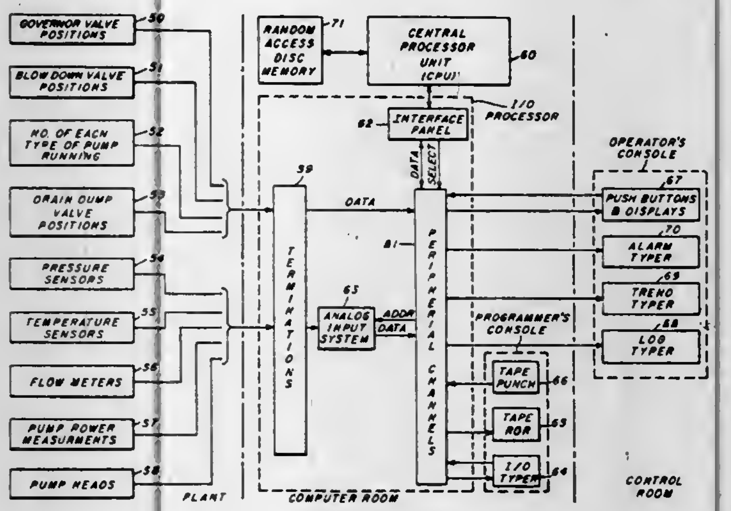
3,873,817
ON-LINE MONITORING OF STEAM TURBINE PERFORMANCE

Chu Yu Liang, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 249,898, May 3, 1972, abandoned. This application May 4, 1972, Ser. No. 250,337

Int. Cl. G06f *15/06*, *15/46*; F01d *21/14*

U.S. Cl. 235—151.21 23 Claims



1. A method for accurately detecting the operating conditions of a steam turbine system having a plurality of sections, comprising the steps of:

operating at least a portion of the plurality of sections of the turbine system under substantially similar conditions;

monitoring corresponding parameters representative of the operation of the plurality of sections operating under similar conditions;

generating electrical signals representative of the parameters monitored;

determining electrically the difference between the largest and smallest values of the corresponding monitoring signals;

comparing electrically this difference with a predetermined first design figure;

comparing electrically the difference between each of the signals and a bogie figure when the difference between the largest and smallest value exceeds the first design figure;

tagging electrically all monitoring signals which differ from the bogie figure by more than a second predetermined design figure; and

displaying, in real time, upon command, the tagged signal and an indication of the associated monitoring sensor as being unreliable.

3,873,818
ELECTRONIC TESTER FOR TESTING DEVICES HAVING A HIGH CIRCUIT DENSITY

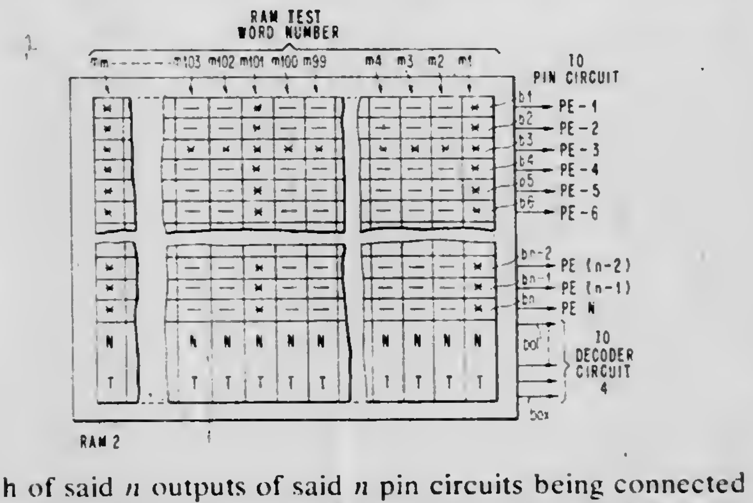
John Dudley Barnard, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,592

Int. Cl. G06f *15/20*; G01r *31/28*

U.S. Cl. 235—153 AC 51 Claims

1. An electronic test system for testing high density logic networks, said networks having *n* contact pins, each of said contact pins having associated therewith a function, where *n* is an integer having any value in the range of one hundred through five hundred, said test system employing at least one test pattern under control of a system test program, said test pattern including at least *m* test steps and each said test step utilizing a discrete test word having *n* discrete electrical manifestations of logical ones and/or logical zeros, where *m* is an integer having any value in the range of one hundred to one thousand, said test system including: a system controller operative under control of said test program for monitoring and controlling each test step of said test pattern, said system controller including bulk storage means for storing test data; a word oriented random access memory coupled to said system controller and having a capacity capable of storing *z* words of test data, where each word of test data has *n* discrete binary bits of test data and *z* is an integer less than said integer *m* in magnitude, said word oriented random access memory including operational code specifying means for specifying an operational code for each word of test data stored in said word oriented random access memory; *n* pin circuits each having at least a test data input, and an output, each of said pin circuits being settable to perform any one of a plurality of functions, each of said *n* outputs of said *n* pin circuits being connected to a discrete one of said *n* contact pins of a network under test; a closed loop high speed shift register having *n* stages, each stage of said shift register having at least an input coupled to a particular binary bit position of each of said *z* word storage positions of said word oriented random access memory, and an output coupled to a predetermined one of said *n* test data inputs of said *n* pin circuits; decode circuitry intercoupling said system controller, said operational code specifying means, said shift register and each of said *n* pin circuits, said decode circuitry being adapted to, during each test step, in response to an input from said operational code specifying means, and under control of said system controller, selectively control at least each of said *n* pin circuits and said shift register, whereby during each of said *m* test steps an *n* bit binary word is impressed on said *n* contact pins of a network under test, and whereby said word oriented random access memory contains in said *z* word storage positions thereof all of the test data required to subject a network under test to a test pattern having *m* test words.



3,873,819
APPARATUS AND METHOD FOR FAULT-CONDITION SIGNAL PROCESSING

Donald James Greenwald, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 10, 1973, Ser. No. 423,649

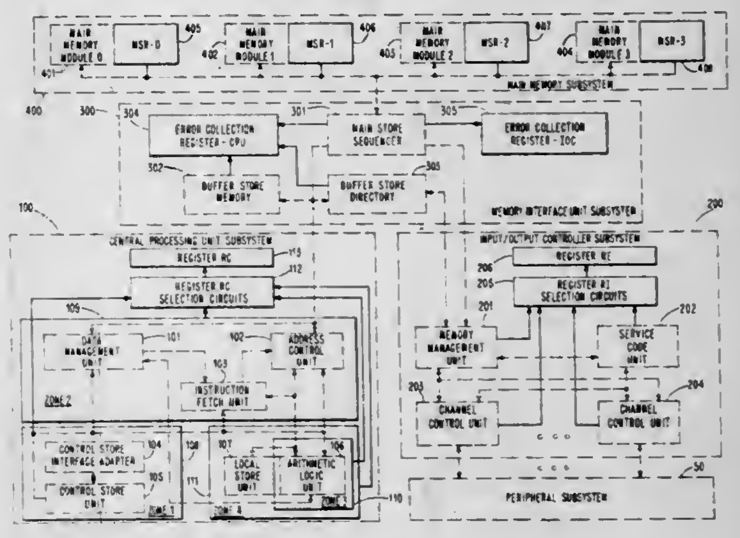
Int. Cl. G06f *11/04*

U.S. Cl. 235—153 AK 25 Claims

1. In combination with a data processing unit, apparatus for processing signals generated in response to a fault condition in said data processing unit, comprising:

a plurality of means for detecting fault conditions occurring in said data processing unit, each of said plurality of detection means generating specified error signals upon detection of a fault condition, said plurality of detection means arranged into groups of detection means, each of said groups of detecting means coupled to a specified portion of said data processing unit, said groups of detection means producing at least one error signal group in response to a detected fault condition, said error signal group identifying said detected fault condition;

means for selecting a one of said error signal groups, said selection means being coupled to said plurality of detection means, said selection means generating a predetermined primary error signal in response to each of said error signal groups applied to said selection means; and a register coupled to said selection means for storing said selected one error signal group and each of said predetermined primary error signals.



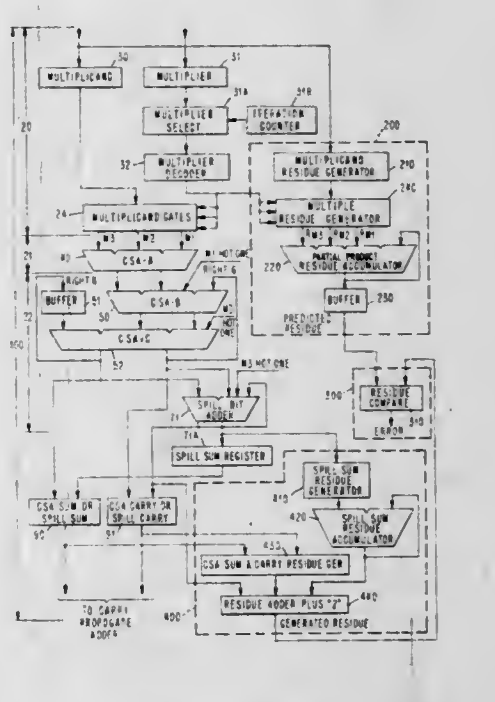
3,873,820
APPARATUS FOR CHECKING PARTIAL PRODUCTS IN ITERATIVE MULTIPLY OPERATIONS

Joseph Ward Parr, Derwood, and Kwang Yue Sih, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,511

Int. Cl. G06f *11/10*

U.S. Cl. 235—153 BD 5 Claims



1. Apparatus for detecting hardware errors in an iterative addition multiply unit of a digital computer wherein the operands for the multiply unit are determined by decoding a plurality of multiplier bits during each iteration comprising:

residue prediction means operating concurrently with said multiply unit including (a) residue generating means having a first input connected to said multiply unit for receiving the multiplicand bits therefrom and a second input connected to said multiply unit for receiving the decoded multiplier bits for the current iteration therefrom, said residue generating means operating on said multiplicand bits and decoded multiplier bits to generate current multiple residues, and (b) accumulator means connected to said residue generating means for combining said current multiple residues with the predicted residue for the previous iteration to yield the current predicted residue;

residue generator means connected to the output of said multiply unit for determining the actual residue of the partial product generated by the multiply unit for the current iteration; and

comparator means connected to said residue prediction means and said residue generator means for comparing the predicted residue with the actual residue and producing an error signal when the result of the compare is unequal.

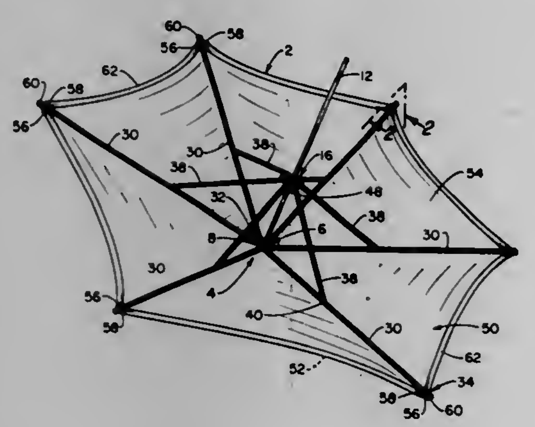
3,873,821
GROMMET SECURED AND REVERSIBLE LIGHT REFLECTING DEVICE

Raymond George Larson, 9731 Rainier Cir., Huntington Beach, Calif. 92646

Filed Nov. 9, 1973, Ser. No. 414,362

Int. Cl. F21

U.S. Cl. 240—1 R **8 Claims**



1. In a photographic light reflector device, the combination comprising: a selectively collapsible and erectible support structure including a first central hub member formed integrally with a first plurality of radially extending, spaced projections; an elongate rod member secured to the center of said first central hub; a second central hub member formed integrally with a second plurality of radially extending, spaced bifurcated projections equal in number to and aligned with said first plurality of radially spaced projections, said second central hub member being slidably disposed on said elongate rod member; means for fastening said second hub member to said rod member at selected points along the path of travel; a ray member of open channel configuration extending from and pivotally secured at one end to each of said first plurality of radially spaced projections, the opposite free ends of said ray members having notched configurations; a plurality of support members, each having one end pivotally secured between the bifurcations of each radially spaced projection of said second central hub member, with the opposed end of each being pivotally secured to an aligned ray member intermediate the ends thereof, each of said support members being of a size and shape to be received within the facing open channel of the aligned ray member to which each is pivotally secured; and a light reflective member of polygonal configuration having spaced apertures along the peripheral edge thereof corresponding in number to the number of rays in said plurality, said light reflective member being of sufficient size to be releasably retained by cooperation of said notched ends of said ray members being received by a respective spaced aperture, in taut secured relationship when said support structure is in the erected state, said aperture being of sufficient size to accommodate said notched ends but insufficient to allow the channel portions of said rays members to pass therethrough.

3,873,822
WATER-TIGHT ASSEMBLY FOR USE UNDER VERY HIGH PRESSURES

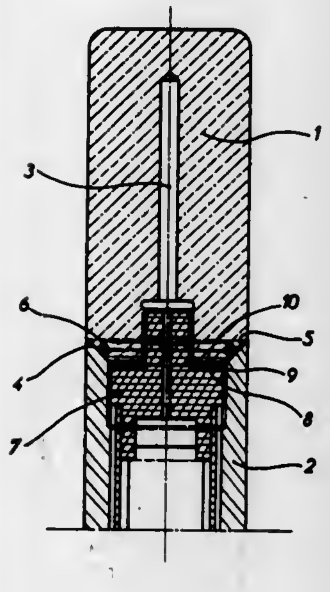
Humbert Garito, Marseille, France, assignor to Le Nickel; Centre National Pour L'Exploitation Des Oceans (CNEXO), both of Paris and ERJI, Marseille, all of, France

Filed Oct. 23, 1973, Ser. No. 408,484

Claims priority, application France, Oct. 25, 1972, 72.37748

Int. Cl. F21v *31/02*

U.S. Cl. 240—26 **7 Claims**



1. A water-tight assembly of a lamp-glass and a tubular body, for use under very high pressures, the assembly comprising a lamp-glass of translucent plastics material having a connecting end formed with an outer tapered surface and an inner planar face, a tubular metal body having a connecting end formed with a tapered surface which is of a shape complementary to that of the lamp-glass and which in contact with the latter, a toroidal seal in an annular groove formed in at least one of the tapered surfaces, an intermediate semi-rigid member formed with two parts of different diameter which thus provides an annular shoulder, the intermediate member being screwed axially into the lamp-glass by one of its parts and into the tubular body by the other of its parts, and a resilient shock-absorbing washer between said inner planar face of the lamp-glass and said shoulder on the intermediate member.

3,873,823
ALIGNMENT INDICATING BEACON

Richard M. Northrup, Nashua, and Philip M. Johnson, Windham, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

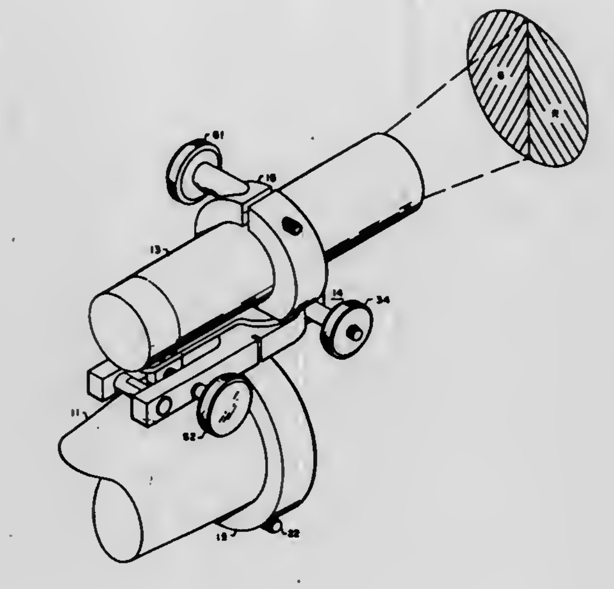
Continuation of Ser. No. 312,537, Dec. 6, 1972, abandoned.

This application Aug. 6, 1973, Ser. No. 385,762

Int. Cl. F21v *21/00*

U.S. Cl. 240—52 R **17 Claims**

1. A beacon, particularly suitable for use with a surveying instrument, for projecting into a region of space a pattern of radiant energy having different, distinguishable characteristics in different portions of said region and including mounting means for installing said beacon so that it can be positioned and oriented to project said pattern into a selected region of space, characterized in that said beacon includes a housing enclosing equipment for directing radiant energy about a projection axis toward said region, and in that said mounting means includes a clamp for engaging a tube, said clamp including means for selectively permitting or preventing rotation of said clamp around said tube, and in that said mounting means also includes support means for mounting said housing on said clamp for rotation about a pivot axis which intersects said projection axis and the axis of said tube.



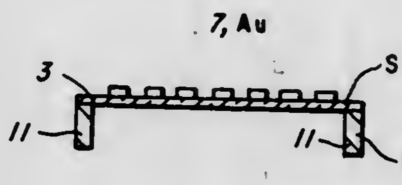
3,873,824
X-RAY LITHOGRAPHY MASK

Kenneth E. Bean, Richardson, and Francois A. Padovani, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1973, Ser. No. 402,419

Int. Cl. G01n *21/34*

U.S. Cl. 250—505 **24 Claims**



1. A Method of forming a mask for X-ray lithography, which comprises:

a. providing a substrate of a material capable of being etched by materials to which silicon carbide is inert and having a coefficient of thermal expansion similar to that of silicon carbide;

b. forming a layer of silicon carbide on said substrate which is sufficiently thin to be transparent to X-rays;

c. etching away predetermined portions of said substrate up to said layer of silicon carbide whereby the unetched portions provide a support for said silicon carbide layer; and,

d. forming an X-ray absorbing mask on said layer of silicon carbide.

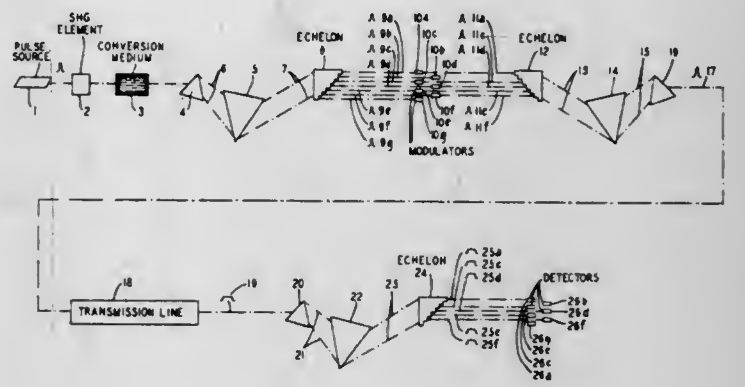
3,873,825
APPARATUS AND SYSTEMS USING BROAD BAND RADIATION PULSE SOURCE

Robert Patrick Jones, South Bound Brook, and Peter Michael Rentzepis, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 9, 1973, Ser. No. 358,734

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **30 Claims**



7. Apparatus of claim 1 in which said second means provides for phase separation.

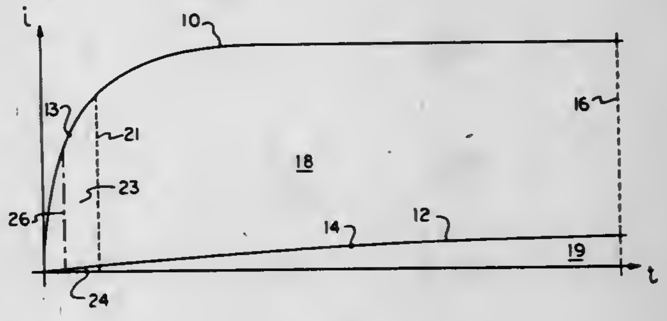
3,873,826
PHOTOELECTRIC METHODS AND APPARATUS WITH CONTRAST ENHANCEMENT

Sherman W. Duck, Glenview, Ill., and Frederick J. Jeffers, Altadena, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,261

Int. Cl. G01j ; H01j *39/00, 39/12*

U.S. Cl. 250—200 **16 Claims**



1. In a method of enhancing contrast of response of a photoelectric process to first and second light stimuli having first and second light intensities, respectively, with said first light intensity being higher than said second light intensity, the improvement comprising in combination the steps of:

providing a photoelectric system having a first rise time in response to said first intensity and a second rise time in response to said second intensity, said first rise time being shorter than said second rise time;

exposing said photoelectric system to said first and second stimuli for a period of time shorter than said second rise time; and

deriving an electric signal from said photoelectric system during said period of time.

3,873,827

CIRCUIT ARRANGEMENT FOR EXPOSURE MEASURING DEVICES

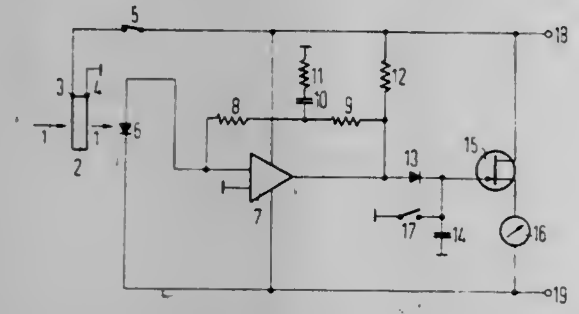
Gerhard Krause, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 2, 1973, Ser. No. 337,768

Claims priority, application Germany, Apr. 12, 1972, 2217659

Int. Cl. G01j *1/20*

U.S. Cl. 250—201 **20 Claims**



20. A circuit arrangement for exposure measuring devices, comprising: a photo detector for receiving light from an incident light beam path and operable for an exposure measuring time to measure and provide signals indicative of light conditions; a variable light screen disposed in front of said photo detector in the incident light beam path; a band pass amplifier connected to said photo detector to receive said signa; and means for changing the light transmission at said variable light screen from a first amount to a second amount and with a transient time between said two amounts that is shorter than the exposure measuring time, said means for changing the light transmission at said variable light screen including means for rendering the transient time to be less than 10 percent of the longest measuring time.

3,873,828

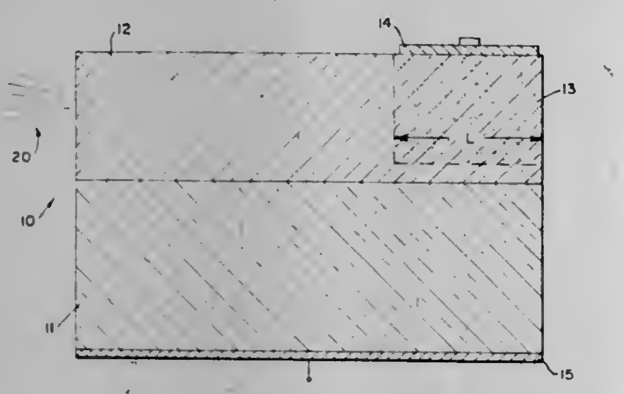
INTEGRATED OPTICAL DETECTOR

Robert G. Hunsperger, Malibu; Harold M. Stoll, Sierra Madre; Gregory L. Tangonan, and Amnon Yariv, both of Pasadena, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 23, 1973, Ser. No. 390,836

Int. Cl. H01j *39/12*

U.S. Cl. 250—211 J **5 Claims**



1. An integrated optical detector circuit comprising:
a. substrate having a semiconductor optical waveguide formed integrally therewith; and
b. photodetector made from semiconductor material having the same active atomic composition as that of said waveguide and integrally coupled to said waveguide, said photodetector comprising as active portion of said waveguide material having optically active defect centers therein which shift the absorption edge therein to a wavelength different from that of the rest of said waveguide material, and an ohmic contact made to one surface and a rectifying contact made to the opposite surface of said active portion whereby optical energy which is transmitted through said waveguide can be sensed as a photocurrent flowing across said rectifying contact through said active absorption edge shifted portion of said waveguide, said device thereby eliminating coupling energy losses between said waveguide and said photodetector.

3,873,829

PHOTO CATHODE WITH MEANS PROVIDED WHICH PRODUCE A REPEATED TOTAL REFLECTION OF THE INCIDENT LIGHT WITHOUT INTERFERENCE PHENOMENA

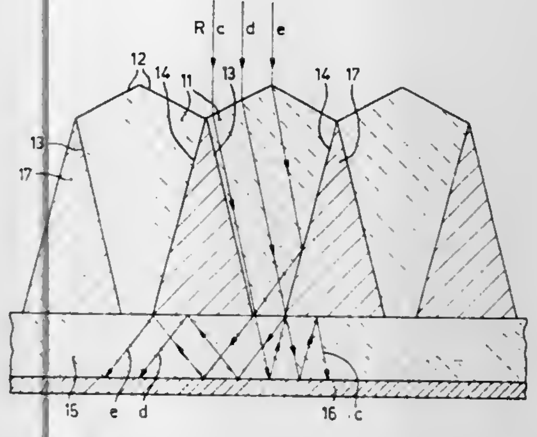
Robert Evrard, Paris, and Daniel Louis Poulain, Champigny S/Marne, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 147,808, May 28, 1971, abandoned. This application Nov. 30, 1973, Ser. No. 420,434

Claims priority, application France, May 29, 1970, 70.19727

Int. Cl. H01j *31/50*

U.S. Cl. 250—213 R **5 Claims**



1. A photoelectric device, comprising a transparent plane parallel support, a photocathode in the form of a layer on one side of the support, and a plurality of adjoining prisms arranged on the side of the support remote from the photocathode layer, each prism containing at least one end surface substantially parallel to the photoconductor layer, the generatrices of all the prisms being mutually parallel and parallel to the photocathode layer, the prisms each having totally reflective side faces adjoining the end faces and making an angle greater than zero with aid surface of the support, the prisms each having at least one transparent entrance face spaced from said one end surface for admitting radiation into the prism and for internally reflecting radiation reflected onto the entrance face from the totally reflecting side faces and from said one end face, the angles of the side faces being sufficient to produce multiple internal reflections within the device and thereby substantially eliminate retroreflection of the impinging radiation.

3,873,830

METHOD AND APPARATUS FOR MONITORING THE QUALITY OF WELDS IN SEAMED TUBES

Friedrich M. O. Forster, Grathwohlstrasse 4, Reutlingen, Germany

Filed Sept. 22, 1972, Ser. No. 291,297

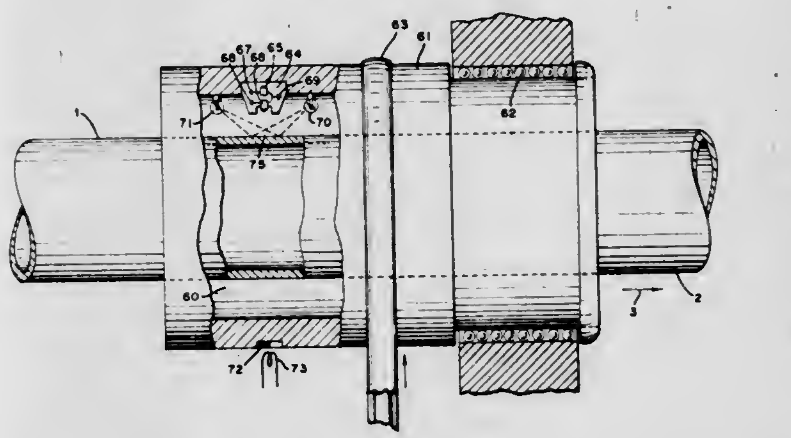
Claims priority, application Germany, Dec. 22, 1971, 2163627

Int. Cl. G01b *19/37*

U.S. Cl. 250—236 **4 Claims**

1. Apparatus for determining the quality of a longitudinally welded tube by investigating the dissipated heat energy responsive discoloration on the tube in the weld seam area during the manufacture thereof comprising:
a head adapted to rotate having a centrally disposed bore for receiving therein the welded tube which is fed axially through said bore while said head is rotating;

means coupled to said head for causing it to rotate;
photo responsive electrical sensing means disposed in said bore for rotation with said head and oriented to scan a surface portion of the tube in a direction transverse to the axis of the seam;



means disposed for illuminating the scanned surface portion whereby to cause said sensing means to receive light energy reflected from said scanned surface portion, and electrical circuit means coupled in circuit with said sensing means for producing, as the head is rotating and the tube is fed through the bore, an electrical signal indicative of the discoloration on the tube in the seam area produced during the preceding manufacture of the tube.

3,873,831

PARTICLE-BEAM DEVICE EQUIPPED WITH A FOUNDATION SUPPORTED TO PERMIT SWINGING MOVEMENT

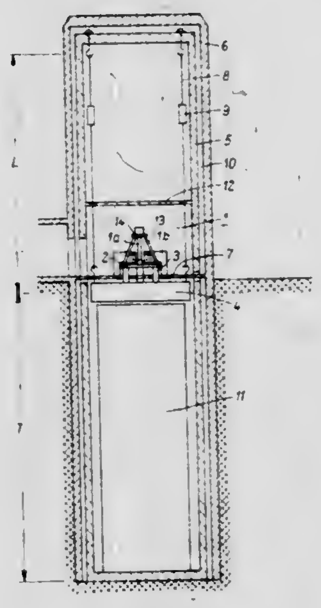
Ernst Ruska, and Franz Stocklein, both of Berlin, Germany, assignors to Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften e.V., Gottingen, Germany

Continuation of Ser. No. 162,767, July 15, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,754

Claims priority, application Germany, Feb. 5, 1971, 2106378

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 **10 Claims**



1. A charged particle-beam device such as an electron microscope or the like, comprising a column containing a beam generator, electron optical lenses and means for observing and registering an image, a foundation for carrying said column, supporting structure for said foundation to permit swinging movement at a low characteristic frequency of not more than 1 Hz, a platform, a control center configured as a desk console and arranged on said platform, said platform being separate from said foundation and having space sufficient for accommodating an operator of the particle-beam device, flexible transmission means for connecting said control center with said column, and pendular suspension means for pendulously suspending said foundation from said supporting structure, said pendular suspension means including a plurality of parallel cables.

3,873,832

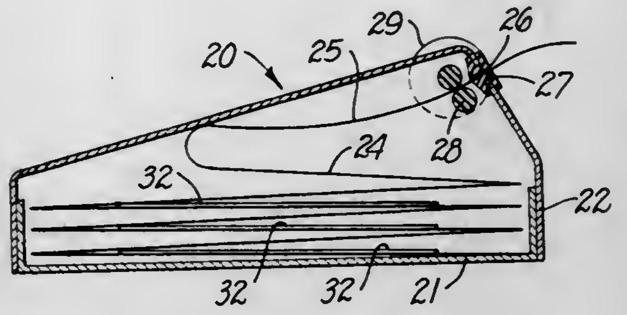
ELECTRON RADIOGRAPHIC RECEPTOR PACKAGE WITH DIELECTRIC PIECES ON A CONDUCTING SHEET

James R. Eseke, Mission Hills, and Stelios B. Papadopoulous, Northridge, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Nov. 28, 1973, Ser. No. 419,526

Int. Cl. G01n *23/04*

U.S. Cl. 250—315 **12 Claims**



1. A receptor package for an electron radiography system comprising a length of an electrically conducting sheet and a plurality of pieces of transparent dielectric plastic carried thereon with a separable adhesive with the electrical conducting sheet providing a conducting surface for the dielectric plastic pieces and providing for transporting said pieces through an imaging chamber of the electron radiography system.

3,873,833

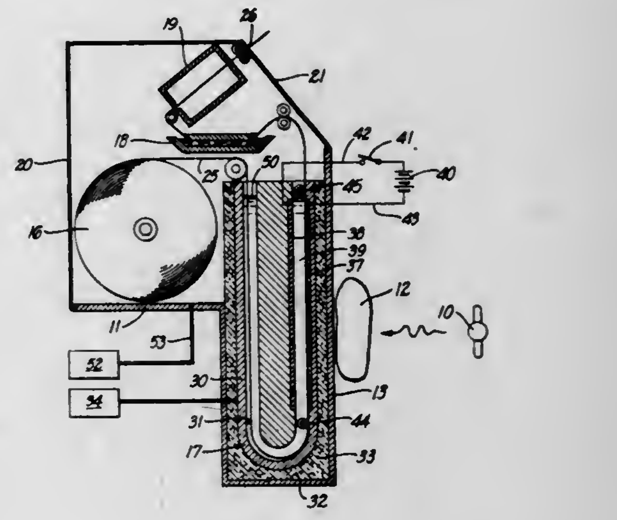
ELECTRON RADIOGRAPHIC SYSTEM WITH LIQUID ABSORBER

Frank V. Allan; John H. Lewis; Katherine J. Lewis; Arthur L. Morsell, all of Los Angeles; Eric P. Muntz, Pasadena; Paul B. Scott, Topanga, and Murray S. Welkowsky, Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Apr. 1, 1974, Ser. No. 456,532

Int. Cl. G03b *41/16*

U.S. Cl. 250—315 **12 Claims**



1. In a radiographic system for operation with a source of X-rays, the combination of:
a pair of electrodes comprising an anode and a cathode;

first means for supporting said electrodes in spaced relation with a small gap therebetween;
a dielectric sheet in said gap at one of said electrodes;
an X-ray absorber and electron and positive ion emitter in said gap between said anode and cathode for producing a charge image on said dielectric sheet, said emitter comprising an X-ray opaque electrically non-conducting liquid having atoms with an atomic number of at least 17; and
second means for connecting a high voltage electric power supply across said electrodes for attracting electrons toward said anode and positive ions toward said cathode for deposit of one of said types of charged particles on said dielectric sheet;
with the liquid in the gap moderating the energy of and reducing the mean free path of said electrons in the liquid to increase the quantity of and reduce the disperson of electrons moving through the liquid toward said anode and positive ions toward said cathode normal to said dielectric sheet.

3,873,834

METHOD OF PRODUCING THREE-DIMENSIONAL IMAGES FROM A SERIES OF INDIVIDUAL IMAGES IN DIFFERENT PERSPECTIVES

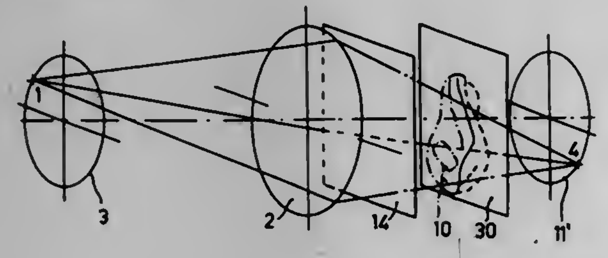
Hans Dammann, Tangstedt; Manfred Kock, Norderstedt, and Ulf Tiemens, Oldenburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,472

Claims priority, application Germany, Jan. 29, 1971, 2104229

Int. Cl. G01m *23/02*

U.S. Cl. 250—323 9 Claims



1. A method for producing a three-dimensional image comprising the steps of separately recording a plurality of views of an object by projecting a first cone of radiation through said object from different perspective viewpoints along a planar circular path on a plurality of planar recording mediums arranged parallel to the plane of the circle, arranging the recordings in the positions they occupied during the recording process and projecting with a further cone of incoherent radiation all the recordings in a superimposed manner on a common area of a viewing plane arranged parallel to the recordings and at selected distances therefrom, said further cone of radiation being the reverse of said first cone of radiation, whereby different planes of said recorded object may be selectively viewed from said plurality of recording mediums.

3,873,835

IONIZER

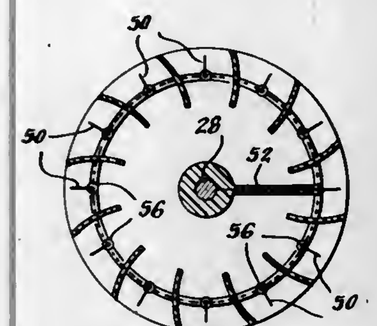
Vladimir Ignatjev, 39 Ledgewood Dr., Norwalk, Conn. 06850

Filed Nov. 2, 1973, Ser. No. 412,151

Int. Cl. H05b *3/00*

U.S. Cl. 250—324 5 Claims

1. An air ionizer for generating and dispersing ionized air, comprising, in combination,
a. a radial fan having a fan shaft,
b. a rotating cage-type fan blade means mounted on said fan shaft for rapidly moving a stream of air in a radial direction therefrom on the rotation of said fan,
c. ion-producing electrode means mounted on and positioned within said cage type fan blade means in conductive contact with said fan shaft for simultaneously generating air ions and rapidly dispersing said ions by said stream of air into the radial space surrounding said fan,
d. a source of high D.C. potential, and



e. means for conductively coupling said source of high D.C. potential to said fan shaft thereby applying said source of high D.C. potential to said ion-producing electrode means whereby air ions are generated by said ion-producing electrode means by corona discharge.

3,873,836

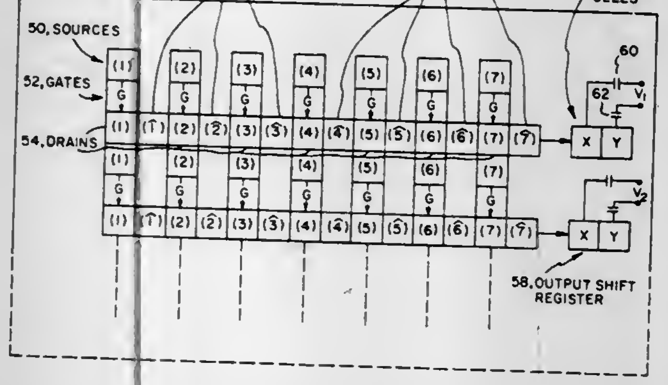
CHARGE COUPLED RADIATION DETECTOR IMAGING SYSTEM

Richard F. Greene, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1974, Ser. No. 462,483

Int. Cl. G01j *5/00*

U.S. Cl. 250—330 3 Claims



1. A device for suppression of inhomogeneous responses in the series of elements of a charge coupled imaging device comprising:
a first series of drain means for storing said responses of each said elements to a uniform blurred image;
a second series of drain means for storing said responses of said elements to said image in focus;
means for comparing said stored responses of said first series of drain means with said responses of said second series of drain means to eliminate inhomogeneity.

3,873,837

TIRE INSPECTION APPARATUS

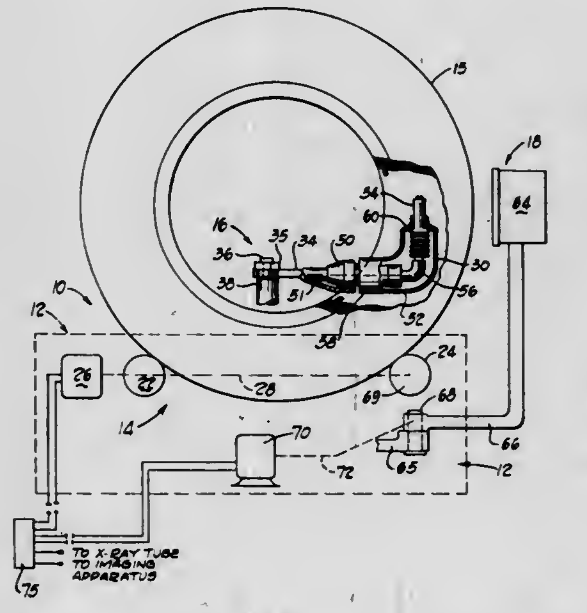
Anthony Palermo, Jr., South Euclid, Ohio, assignor to Picker Corporation, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,859

Int. Cl. G01n *23/00*

U.S. Cl. 250—360 43 Claims

1. A tire inspection mechanism comprising:
a. a tire support means for mounting a tire;
b. an X-ray source device for emitting a beam of X-rays;
c. An X-ray responsive device positioned to be impinged by X-rays after they have once passed through a wall of a mounted tire;
d. device support means carrying one of the devices for positioning in proximity to the beads of a supported tire and within an annulus of such tire, the device support means carrying the other device external of said annulus;
e. manipulating means operably connected to the support means to relatively move a supported tire and the devices to direct the beam of X-rays through the tire wall from bead rim to bead rim and about the entire circumference of the tire as the device and the tire are rotated relatively about a rotational axis of the tire and the tire and at least a portion of said one device are maintained otherwise relatively fixed; and,
f. said manipulating means maintaining sufficient alignment of the devices to develop output information with respect to the tire structure from bead rim to bead rim as the devices and tire are relatively moved and permitting all said information to be developed in a single mounting of the tire on the support means.



3,873,838

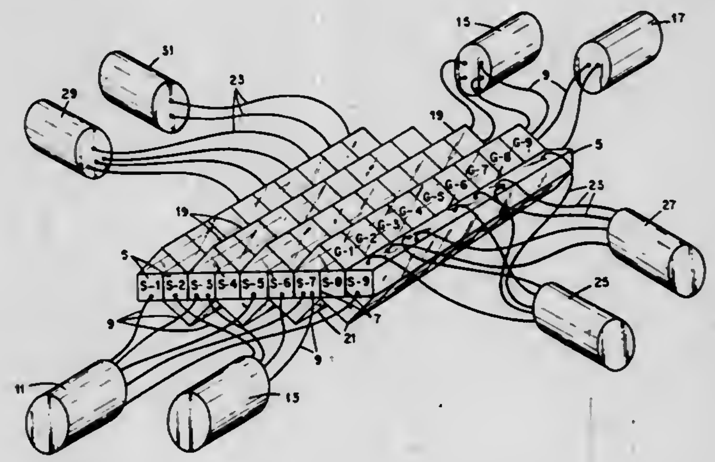
TWO-DIMENSIONAL READOUT SYSTEM FOR RADIATION DETECTOR

Lap Yen Lee, Houston, Tex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 22, 1974, Ser. No. 463,017

Int. Cl. G01t *1/20*

U.S. Cl. 250—366 4 Claims



1. A two-dimensional readout system for reading out locations of scintillations produced in a single layer array of scintillators for spatial detection of nuclear radiation, comprising:
a plurality of uniform width scintillator strips disposed in a parallel planar array to form a block having opposing parallel radiation-receiving surfaces;
a plurality of sets of light guides disposed adjacent said strips on said opposing surfaces of said block in adjacent rows perpendicular to said strips so that like rows at said opposite surfaces of said block are aligned and form one of said sets of light guides each of which includes,
a plurality of Porro prisms aligned in a corresponding one of said rows across said strips and having their lateral side forming the hypotenuse bonded to said strips so as to overlap substantial portions of adjacent strips and aligned so as to reflect light produced by a scintillation in one of said strips back and forth progressively through adjacent strips to the outermost oppositely disposed strips to indicate the row in which a scintillation occurred within said block; and
means responsive to light pulses received at the ends of said strips and the ends of said rows of light guides for indicating the position of a scintillation within said array produced by a radiation event detected within said scintillator array.

3,873,839

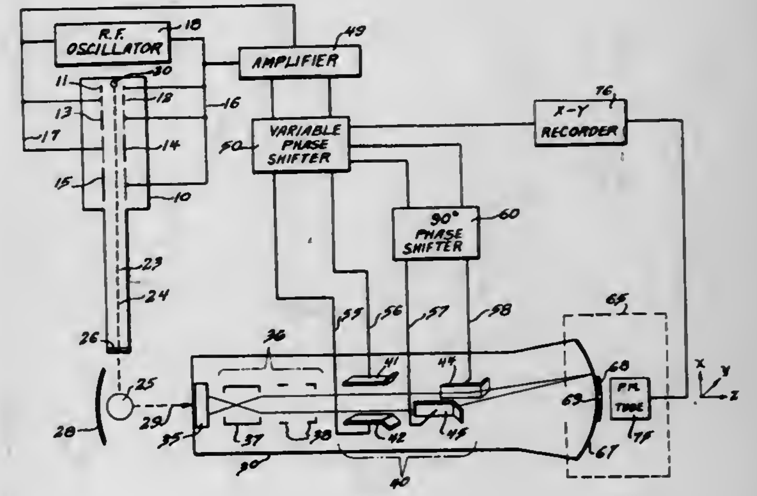
HIGH SPEED LINAC-BEAM ANALYZER

Kenneth W. Johnson, Lockport, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 10, 1974, Ser. No. 459,824

Int. Cl. G01j *39/18;* **G01n** *21/16;* **G01t** *1/20*

U.S. Cl. 250—369 7 Claims



1. A device for analyzing a charged particle beam developed by an accelerator having an RF driving signal, comprising:
a medium through which the particle beam passes at a speed sufficient to emit light from said medium by Cherenkov radiation of intensity proportional to the intensity of the particle beam;
means for developing an electron beam having an intensity proportional to the intensity of said light and including a photocathode positioned to receive said light and responsive thereto to emit electrons to form said electron beam, means for directing said electron beam along a Z-axis and focussing said electron beam at a point, and X-axis and Y-axis deflection means for deflecting said focussed electron beam from said Z-axis;
phase varying means coupled to the accelerator and to each of said deflection means and being responsive to the RF driving signal to develop first and second signals of equal frequency to said RF driving signal, said phase varying means for applying said first signal to one of said deflection means at a particular phase shift varying between 0° and 360° from the phase of the RF driving signal and for applying said second signal to the other of said deflection means at a phase constantly 90° out of phase with said first signal so that said electron beam precesses about and said point describes a circular path about said Z-axis;
a detector responsive to the quantity of electrons incident along a particular arc of said circular path to develop an output signal proportional to the intensity of said electron beam; and

recording means coupled to said phase varying means and to said detector to record the value of said output signal with respect to said particular phase shift of said first signal applied to one of said deflection means.

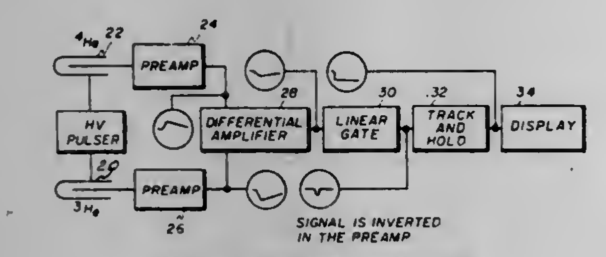
3,873,840
GAMMA COMPENSATED PULSED IONIZATION CHAMBER WIDE RANGE NEUTRON/REACTOR POWER MEASUREMENT SYSTEM

William H. Ellis, Gainesville, Fla., assignor to The United States of America and represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1973, Ser. No. 414,490

Int. Cl. G01t *3/00, 1/18*

U.S. Cl. 250—392 **8 Claims**



PIC SYSTEM FOR GAMMA COMPENSATION

1. In a nuclear atomic reactor power/neutron flux measurement system of the pulsed high voltage ionization chamber type the improvement comprising:

a. a single sensor system with separate chambers of neutron plus gamma and gamma-only sensitivity respectively for providing separate output voltages responsive to pulsed voltage ionization technique and including a single-pole high voltage pulser means and a charging network connected to a pulse generating timing means and delay means to provide a field-free period for ionization density build-up signal enhancement and pulsed voltage ionization collection polarization from said pulser means, and

b. differential circuit means connected to receive said output voltages and to provide as a difference voltage output signal a neutron only voltage value effecting gamma field compensation, constituting a compensated pulsed ion chamber channel.

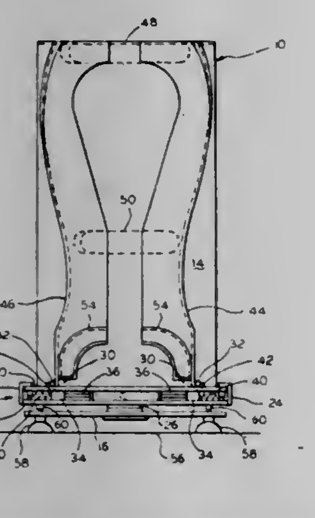
3,873,841
DEVICE FOR POSITIONING SUBJECT FOR X-RAY

Edwin Cabansag, 3937 Johnson St., Western Springs, Ill. 60558

Filed Nov. 28, 1973, Ser. No. 419,608

Int. Cl. G03b *41/16*

U.S. Cl. 250—439 **11 Claims**



1. In a positioner adapted to be disposed adjacent a sheet of X-ray film for restraining a child being X-rayed:

a base;

a seat member rotatably mounted on said base;

a pair of side-by-side radiotransparent restraining means contoured to the shape of said child's body and mounted to said seat member for pivotal rotation toward and away from each other about horizontal axes;

releasable attachment means associated with said restraining means to secure said restraining means in a position toward one another when attached;

whereby said pair of restraining means is adapted when positioned toward one another to substantially enclose and restrain a child placed therebetween and supported by said seat in a seated, upright position.

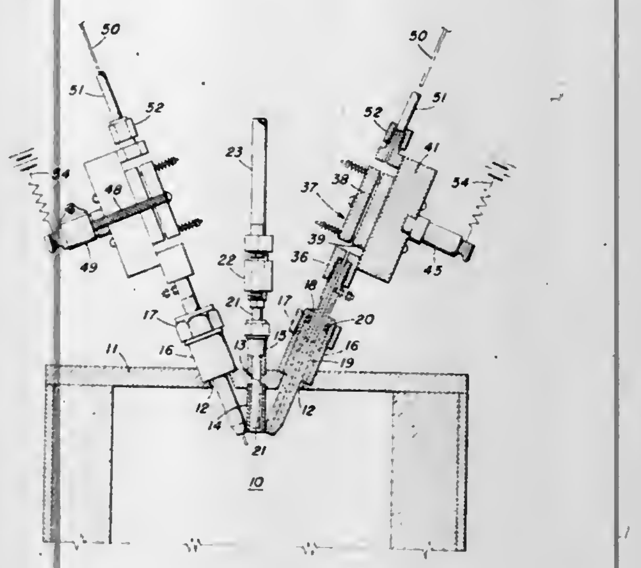
3,873,842
ELECTRODE-ATOMIZER ASSEMBLY FOR PRODUCTION OF GASEOUS METAL HALIDES

William C. Thackara, Brunswick, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,855

Int. Cl. C22d *7/08;* **C09c** *1/62;* **C01f** *7/00*

U.S. Cl. 250—544 **1 Claim**



1. A consumable wire electrode - atomizer assembly for producing gaseous metal halides in a reaction chamber having a cover plate, said consumable wire electrode - atomizer assembly comprising: support means fixedly secured to said cover plate exteriorly of said reaction chamber, said support means constructed and arranged (1) to support two wire electrode guide means in converging relationship and (2) a gas feed tube for feeding an atomizing gas into said reaction chamber, said gas feed tube support means being located between the support means of said two wire electrode guide means and arranged to support said gas feed tube with its inner end extending through an aperture in said cover plate into said reaction chamber, and a refractory sleeve secured on the underside of said cover plate and arranged to surround the said inner end of said gas feed tube; each of said wire electrode guide means being a composite structure comprising a tubular ceramic member, a tubular metal member and a metal sleeve wherein each of said tubular members has a bore dimensioned to accomodate a consumable wire electrode with a smooth sliding fit and the said metal sleeve is arranged to secure said tubular members in axial alignment with adjacent ends in abutting relationship, the tubular ceramic member of each wire electrode guide means being arranged to extend through an aperture in said cover plate into said reaction chamber to support a consumable wire electrode therein in proximity to the inner end of said gas feed tube; means arranged to assemble each of said wire electrode guide means in one of the fixed support means on said cover plate, each of said assembly means comprising a refractory sleeve arranged to fit snugly in its respective support means and having a bore dimensioned to receive one of said composite wire electrode guide means with a close fit, and packing in each support means arranged to form a gas tight seal between its refractory sleeve and its composite wire electrode guide means; and a pair of wire electrode contact means each arranged to maintain continuous electrical contact with one of said consumable wire electrodes, each of said wire electrode contact means comprising a pair of metal contact blocks arranged to be supported in superposed relationship on a terminal block secured to one of said wire electrode guide means, one of said wire electrode contact blocks of a pair of said blocks having a longitudinally extending wire electrode guiding and straightening groove in its face opposite the corresponding face of its second block, and resilient means arranged to urge the opposed faces of each pair of said electrode contact blocks together continuously thereby to slidingly embrace a consumable wire electrode therebetween; wire electrode feed means arranged to feed a consumable wire electrode continuously from a supply roll through each of the pair of resiliently mounted contact blocks and the corresponding electrode guide means into said reaction chamber; and electric current carrying means connected to each terminal block whereby current is conducted to each consumable wire electrode by way of its respective pair of contact blocks to form an arc between the consumable electrodes in said reaction chamber in the presence of said atomizing gas.

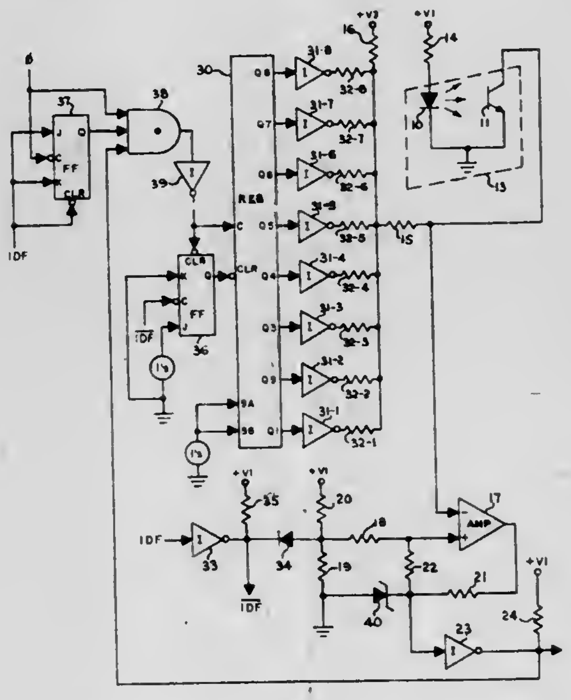
3,873,843
DOCUMENT DETECTION APPARATUS

Clifford E. Martin, Lansdale, Pa., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,127

Int. Cl. G01b *7/06*

U.S. Cl. 250—561 **4 Claims**



1. In document detection apparatus in which a source of radiant energy and a radiant energy responsive detector are positioned on opposite sides of a document detection station, said apparatus including a circuit for producing an alarm signal whenever the detector output signal amplitude exceeds by a predetermined amount a threshold value corresponding to the opacity of a single document; the improvement which comprises:

means responsive to the feed of the first document of a group of documents to measure the opacity of such first document;

said detector being a phototransistor;

collector resistance means coupling the phototransistor collector to a bias voltage source.

a bank of resistors, and

switching means responsive to the measured opacity to couple selected ones to said resistors in shunt with at least a portion of the collector resistance to adjust the phototransistor collector current to a senstivity level commensurate with the measured opacity.

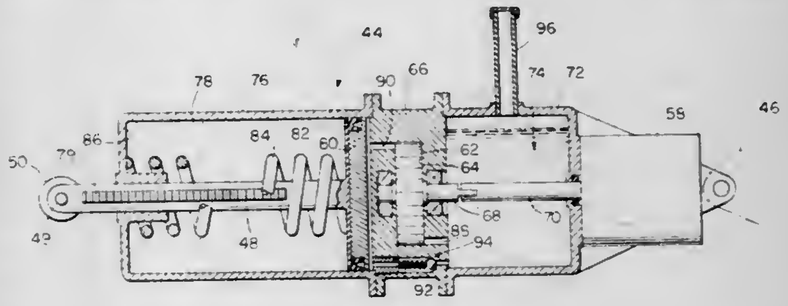
3,873,844
RADIO CALL UNIT

John G. Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Del.

Filed Sept. 24, 1973, Ser. No. 399,927

Int. Cl. H02p *9/04*

U.S. Cl. 290—1 E **10 Claims**



1. In a radio call unit comprising a signal generator and a power source for driving said generator, the improvement wherein said power source comprises a bladed rotatable member, first means linking said rotatable member to said generator for driving said generator, and second manually operable means operative to cause flow of a predetermined volume of fluid against the blades of said rotatable member to cause rotation thereof for a predetermined period of time.

3,873,845
METHOD OF PRODUCING ELECTRIC ENERGY INCLUDING COAL GASIFICATION

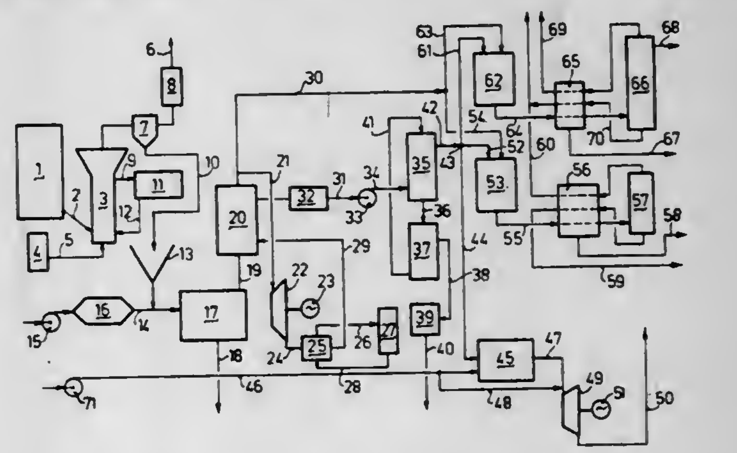
Kaspar Heinrich Osthaus, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 18, 1973, Ser. No. 398,543

Claims priority, application Germany, Sept. 21, 1972, 2246407

Int. Cl. C10j *3/00*

U.S. Cl. 290—2 **9 Claims**

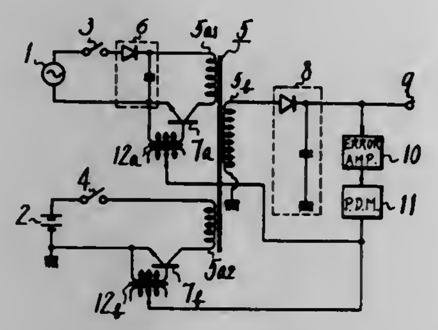


1. In a differential-cycle method of producing electric energy for peak and off-peak demand conditions, the steps of advancing coal dust in concurrent flow with a stream of heated air, and effecting its gasification at atmospheric pressure and at a temperature of substantially 1,500°C; cooling the resulting gases in a waste-heat boiler to substantially 150°C and concurrently producing steam by heat exchange with said gases; using only the thus produced steam to generate electric energy at such times as the electric energy which can be generated with the aid of the steam is sufficient to meet off-peak demands; removing dust electrostatically from the cooled gases, thereupon compressing the latter to a pressure of between substantially 20 – 50 atmospheres, and finally desulphurizing the compressed gases; and using at least some of the de-sulphurized compressed gases to generate additional electric energy only at such times as the peak demand for electric energy exceeds the amount thereof which can be

generated with the aid of the steam produced by cooling said combustion gases.

3,873,846
POWER SUPPLY SYSTEM

Minoru Morio, Kamakura, and Fumio Otaki, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 29, 1973, Ser. No. 392,412
Claims priority, application Japan, Sept. 7, 1972, 47-104703; Sept. 7, 1972, 47-105820; Sept. 7, 1972, 47-107959
Int. Cl. H02m *1/10*
U.S. Cl. 307—23 **20 Claims**



1. A DC power supply circuit of the switching type comprising:
- a. a transformer having a first primary winding, a second primary winding and a secondary winding;
- b. a first series circuit connected to said first primary winding and including rectifier means and first switching means;
- c. a first input terminal adapted to be connected to an AC power source for selectively supplying an input voltage to said first series circuit;
- d. a second series circuit connected to said second primary winding and including second switching means;
- e. a second input terminal adapted to be connected to a DC power source for selectively supplying an input voltage to said second series circuit;
- f. driving means for supplying a switching signal to at least one of said first and second switching means to intermittently interrupt at least one of said first and second series circuits such that the current flowing through a corresponding one of said first and second primary windings is intermittently interrupted so as to induce a voltage across said secondary winding; and
- g. output rectifier means connected to said secondary winding for rectifying said induced voltage and for producing an output DC voltage.

3,873,847
CONTROL SYSTEM FOR AN ELECTRIFIED FENCE

John H. Finch, P.O. Box 112, 102 McDonald St., and Marion A. Everett, Sycamore St., P.O. Box 83, both of Pavo, Ga. 31778
Filed Feb. 19, 1974, Ser. No. 443,753
Int. Cl. H02j *9/00*
U.S. Cl. 307—64 **15 Claims**

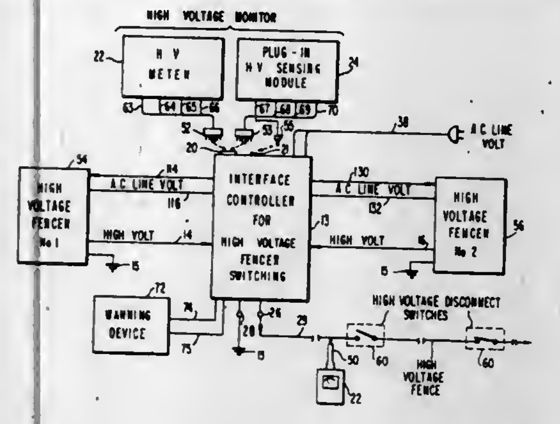
1. An automatic monitoring and switching system including energizing means for transferring an electrified fence from a first fencer unit to a second fencer unit, comprising in combination:

first circuit means including circuit transfer means coupled to and adapted to selectively receive a high voltage signal from each of said fencer units when respectively energized from said energizing means, said circuit transfer means having a first and second operating state and in said first operating state being operable to apply said high voltage signal from said first fencer unit;

switch means having a first and second operating state and in its first operating state initially energizing said first fencer unit and causing said circuit transfer means to assume its respective first operating state and couple said high voltage signal from said first fencer unit to said fence;

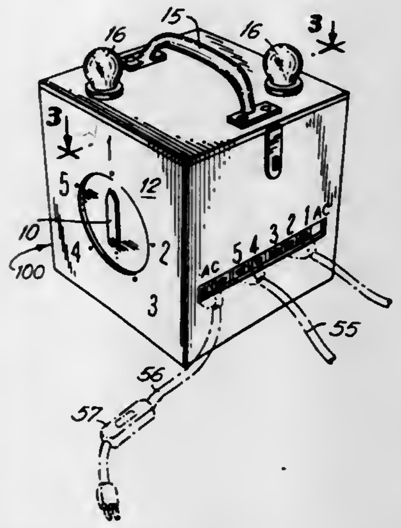
monitor circuit means coupled to and adapted to be responsive to the high voltage signal applied to the fence and being operable to provide a first type control signal during a predetermined normal operating state of the system and a second type control signal during a predetermined abnormal operating state of the system; and

second circuit means coupled to and being responsive to said control signals from said monitor circuit means and including circuit interruptor means coupled to said circuit transfer means, said circuit interruptor means being operable in response to said first type control signal from said monitor circuit means to maintain said circuit transfer means operable in said first operating state and said first fencer unit energized when said switch means is in its respective second operating state, said circuit interruptor means being further operable in response to said second type control signal to cause said circuit transfer means to assume its respective second operating state when said switch means is in its second operating state thereby energizing and coupling said second fencer unit to the fence while deenergizing and uncoupling said first fencer unit therefrom.



3,873,848
MULTI-CHANNEL CONTROLLER

Gerard J. O'Brien, 33 Pamrapo Ave., Jersey City, N.J.
Filed Sept. 13, 1973, Ser. No. 396,759
Int. Cl. H01h *19/14*
U.S. Cl. 307—114 **10 Claims**



1. A multi-channel control device, comprising:

drive means, including a shaft adapted to rotate at constant angular velocity;

a cam plate, rotating with said shaft and reciprocable thereon between a first axial position and a second axial position;

a projection on said cam plate;

positioning means, for translating said cam plate from said first into said second axial position;

a plurality of cam-actuated switching elements spaced around periphery of said cam plate in a plane orthogonal to axis of said shaft, said plane including said second axial position;

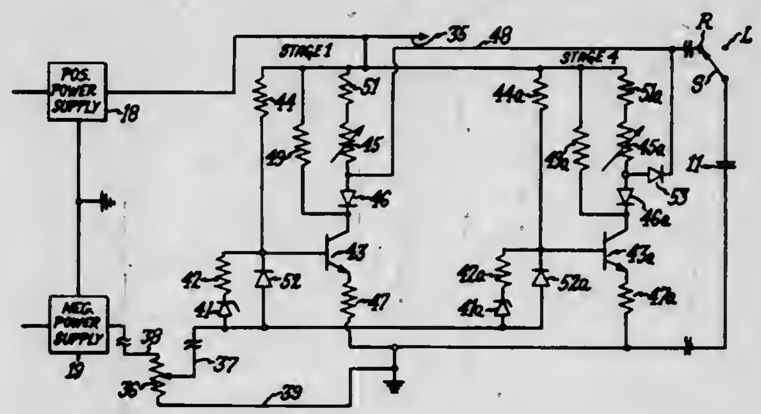
biasing means urging said cam plate toward said first axial position;

display means synchronized with rotation of said shaft, indicating instantaneous angular position of said projection; and

control means for energizing said positioning means, thereby translating said cam plate into said second axial position and causing said projection on the cam plate to actuate one or more of said switching elements while rotating upon its shaft, until said positioning means is de-energized and the cam plate returned to the first axial position under the influence of said biasing means.

3,873,849
REMOTE CONTROL CIRCUIT FOR CONSTANT CURRENT REGULATOR

Robert E. Babcock, Danville, Ill., and Wayne R. Neal, Hendersonville, N.C., assignors to General Electric Company
Division of Ser. No. 837,014, June 27, 1969, Pat. No. 3,609,515. This application Nov. 4, 1970, Ser. No. 87,010
Int. Cl. G05f *3/04*
U.S. Cl. 307—115 **4 Claims**



1. Adjustable control device comprising, in combination, a unidirectional current supply, a current control circuit comprising variable resistance means connected to said unidirectional current supply and a transistor connected at its base to said current supply and having its collector connected to said variable resistance means, a charging capacitor connected to the junction of said variable resistance means and said transistor collector and to the emitter of said transistor, said capacitor and said variable resistance means forming an RC time constant circuit, and means connected to said transistor for at least partially turning off the same for controlling the operation thereof and thereby the operation of the RC time constant circuit.

3,873,850
SOLID-STATE POTENTIOMETER FOR COUPLING CIRCUITS HAVING ISOLATED ELECTRICAL GROUNDS

Pierce Clark Roselle, Phoenix; David George Evans, Tempe; Theodore Conrad Ebbinga, Phoenix, all of Ariz., and Robert Franklin Vangen, Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 28, 1974, Ser. No. 437,130
Int. Cl. H01h *35/00*
U.S. Cl. 307—125 **12 Claims**

1. A solid-state potentiometer which couples an applied variable amplitude d.c. voltage signal from a function generator to a utilization apparatus while isolating electrical connections thereby comprising

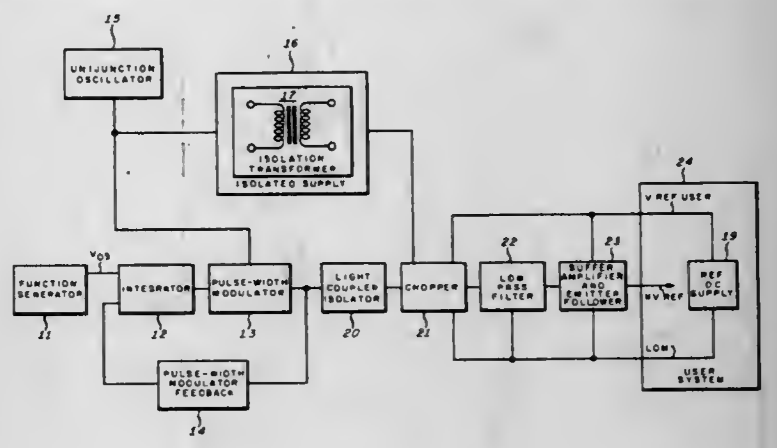
frequency source means for providing a reference frequency signal having a predetermined period,

first modulator means coupled to said frequency source means and said function generator for producing a first electrical pulse-width modulated signal having a frequency of said predetermined period and a duty cycle proportional to said variable amplitude of said applied d.c. voltage signal,

isolated coupler means responsive to said first electrical pulse-width modulated signal for producing a non-electrical modulated signal and including means responsive to said non-electrical modulated signal for producing a second electrical pulse-width modulated signal which is electrically isolated from said first electrical pulse-width modulated signal and has a duty cycle proportional to said variable amplitude of said applied d.c. voltage signal,

d.c. voltage source means coupled to said utilization apparatus and said isolated coupler means for applying a reference d.c. voltage to said isolated coupler means thereby producing a pulse-width modulated signal referenced to said reference d.c. voltage, and

converter means coupled to said isolated coupler means, said d.c. voltage source means and said utilization apparatus for converting said pulse-width modulated signal referenced to said reference d.c. voltage to a variable amplitude d.c. voltage signal referenced to said reference d.c. voltage and having an amplitude proportional to said variable amplitude of said applied direct current signal and an effective variable output resistance reflected into said utilization apparatus which varies in accordance with said variable amplitude in a fashion substantially similar to a potentiometer.



3,873,851
CHARGE TRANSFER DECODERS

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,625
Claims priority, application United Kingdom, Sept. 25, 1972, 44292/72
Int. Cl. G11c *19/00;* **H03k** *19/08*
U.S. Cl. 307—221 C **13 Claims**

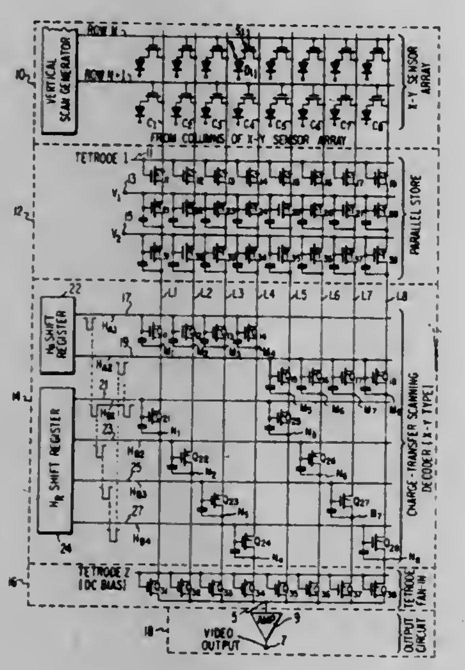
1. A charge transfer decoder comprising:

N input points, where N is an integer greater than 1, and an output terminal;

means for applying signals in parallel to said N input points; a plurality of charge transfer devices, each device having a conduction path and a control electrode;

N charge transfer paths, each path connected between a different one of a said N input points and said output terminal; each path including at least a first and a second one of said charge transfer devices having their conduction paths connected in series; and

means coupled to the control electrodes of said charge transfer devices for selectively enabling the first devices in selected ones of said N paths for transferring signals along said ones of said N paths and for transferring signals from a first device to a succeeding device along one of said selected ones of said N paths including means for turning off said first device and turning on said succeeding device in said one of said selected ones of said N paths for transferring a signal to said output terminal.



3,873,852

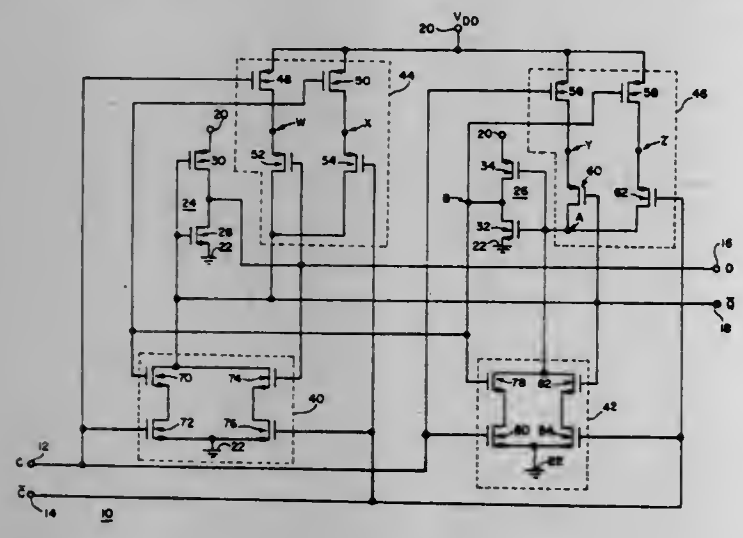
BINARY FREQUENCY DIVIDER CIRCUIT

R. Gary Daniels, Tempe, and Harry A. Kuhn, Jr., Phoenix, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 415,097

Int. Cl. H03k *21/00, 23/08*

U.S. Cl. 307—225 C **4 Claims**



1. A frequency divider circuit comprising:
first and second input terminals;
first and second output terminals;
first and second voltage conductor means;
first and second inverter circuit means each having an input terminal and an output terminal;
first and second combinational logic gates each of said first and second combinational logic gates including first and second voltage conductor means, an output terminal, first, second, third, and fourth input terminals, first switching circuit means coupled between said first voltage conductor means and said output terminal, second switching circuit means coupled between said output terminal and said second voltage conductor means, said first switching circuit means including first, second, third, and fourth electron control means of a first conductivity type each having first and second main electrodes and a control electrode thereof, said first electron control means having its first main electrode coupled to said first voltage conductor means, its second main electrode coupled to said first voltage conductor means, its second main electrode coupled to said first main electrode of said third electronic control means, and its control electrode coupled to said first input terminal, said third electron control means having its second main electrode coupled to said output terminal and its control electrode coupled to said third input terminal, said second electron control means having its first main electrode coupled to said first voltage conductor means, its second main electrode coupled to said first main electrode of said fourth electron control means, and its control electrode coupled to said second input terminal, said fourth electron control means having its second main electrode coupled to said output terminal and its control electrode coupled to said fourth input terminal, wherein said second main electrode of said first electron control means is not connected to said second main electrode of said second electron control means, said second switching circuit means including fifth, sixth, seventh, and eigth electron control means of a second conductivity type each having first and second main electrodes and a control electrode;
said input terminal of said first inverter circuit means being coupled to said output terminal of said first combinational logic gate and to said second output terminal of said frequency divider circuit and to one of said third and fourth input terminals of said second combinational logic gate;
said output terminal of said first inverter circuit means being coupled to said first output terminal of said frequency divider circuit and to one of said third and fourth input terminals of said first combinational logic gate;
said input terminal of said second inverter circuit means being coupled to said output terminal of said second combinational logic gate;
said output terminal of said second inverter circuit means being coupled to one of said first and second input terminals of said first combinational logic gate and to one of said first and second input terminals of said second combinational logic gate;
said first input terminal of said frequency divider circuit being coupled to the other of said first and second input terminals of said second combinational logic gate and to the other of said first and second input terminals of said first combinational logic gate; and
said second input terminal of said frequency divider circuit being coupled to the other of third and fourth input terminals of said first combinational logic gate and to the other of said third and fourth input terminals of said second combinational logic gate, said first and second voltage conductor means of said first and second combinational logic gates being coupled, respectively, to said first and second voltage conductor means of said frequency divider circuit.

3,873,853

COMPARATOR-KEYED OSCILLATOR

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

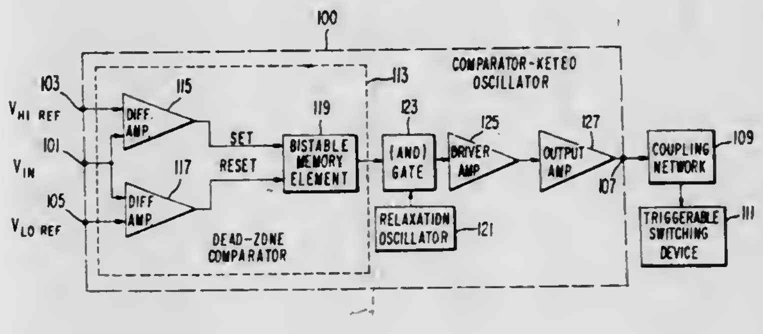
Filed Aug. 9, 1973, Ser. No. 387,170

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 R **3 Claims**

1. A voltage comparator comprising:
first and second differential amplifiers each having first and second input circuits and an output circuit, said first input circuits of said first and said second differential amplifiers being connected together for receiving an input voltage to be compared to first and second reference voltages applied to their respective said second input circuits;
a bistable memory element having a set circuit and a reset circuit respectively connected to separate ones of the output circuits of said first and said second differential

amplifiers, having an output circuit, and being operable to provide at its said output circuit an output signal at one of first and second levels, alternatively available in response to the comparison of said input voltage to said first and said second reference voltages by said first and said second differential amplifiers;



an oscillator having an output circuit from which oscillations are supplied; and
an AND gate having a first input circuit connected to receive said memory output signal, having a second input circuit connected to said oscillator output circuit, and having an output circuit for supplying said recurrent pulses.

3,873,854

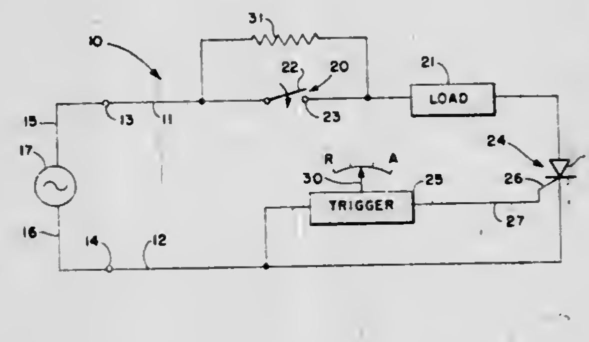
CIRCUIT FOR PREVENTING FALSE TURN ON OF ELECTRONIC SWITCHES OR THE LIKE

John T. Lamb, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Nov. 27, 1973, Ser. No. 419,270

Int. Cl. H03k *17/72, 17/66;* **H02h** *9/02, 9/04*

U.S. Cl. 307—252 N **11 Claims**



5. A circuit for controlling power to a load, comprising input means for receiving power from a power supply, controlled switch means coupled relative to the load for controlling power thereto, main switch means capable of being in respective non-conductive and conductive states coupled to said input means for selectively providing operating power to the load and said controlled switch means when in the latter state, and means for applying substantially full voltage from the power supply to said controlled switch means when said main switch means is in such non-conductive state, said means for applying comprising means for applying sufficient leakage current to said controlled switch means to maintain substantially full voltage across the latter when said main switch means is non-conductive, such leakage current being insufficient to operate the load.

6. A circuit for controlling power to a load as set forth in claim 5, wherein said means for applying is coupled in electrical parallel relation to said main switch means.

3,873,855

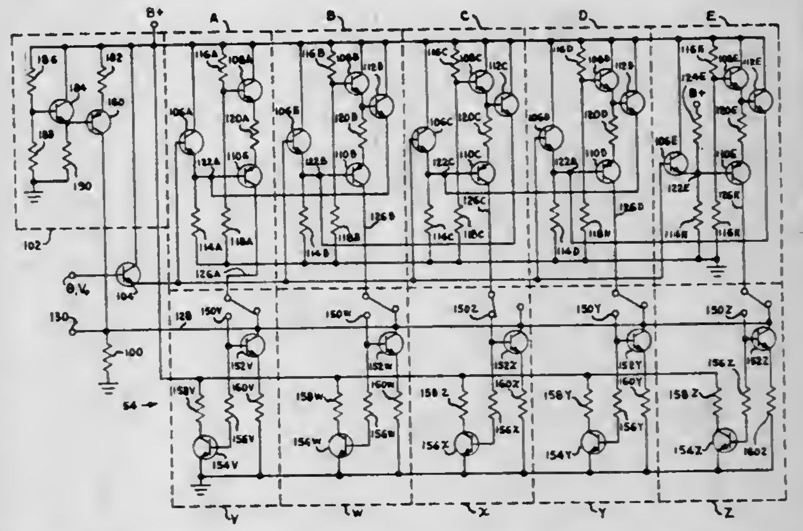
WAVEFORM GENERATOR PRODUCING OUTPUT CURRENT VARIATIONS AS A FUNCTION OF PREDETERMINED INPUT AND CONTROL SIGNAL VALUES

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 170,566, Aug. 10, 1971, abandoned. This application June 12, 1973, Ser. No. 384,481

Int. Cl. H03k *4/00*

U.S. Cl. 307—260 **11 Claims**



1. A circuit for providing a shaped output signal in response to variations in the magnitude of an input signal comprising: means for providing first, second, and third control signals, said second control signal having a magnitude intermediate the magnitude of said first and third control signals;
first signal generating means responsive to the input signal and the control signals for providing a first output signal having a value that varies in response to input signal variations only between first and second predetermined values determined by the values of said first and second control signals;
second signal generating means coupled to receive the input signal and said second and third control signals for providing a second output signal having a value that varies in response to input signal variations only between said second predetermined value and a third predetermined value determined by the value of said third control signal; and
means for combining the output signals to provide a resultant signal having a shape determined by the values of the control signals and variations of the input signal.

3,873,856

INTEGRATED CIRCUIT HAVING A VOLTAGE HYSTERESIS FOR USE AS A SCHMITT TRIGGER

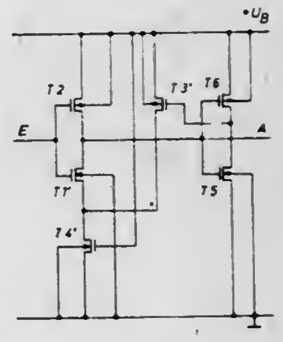
Albrecht Gerlach, Emmendingen; Gunter Lindstedt, Freiburg, and Wolfgang Gollinger, Gundelfingen, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,373

Claims priority, application Germany, Oct. 24, 1972, 2252130

Int. Cl. H03k *3/295*

U.S. Cl. 307—279 **3 Claims**



1. A monolithic integrated circuit having a voltage hysteresis for use as a Schmitt trigger comprising:

a source of supply voltage;

an insulated-gate field-effect driver transistor having source, gate and drain electrodes, said gate electrode for receiving an input singal;

a first insulated-gate field-effect transistor having source, gate and drain electrodes, said drain electrode coupled to said source of supply voltage, said gate electrode coupled to the gate electrode of said driver transistor, and the source electrode coupled to the drain electrode of said driver transistor;

a second insulated-gate field-effect transistor having source, drain and gate electrodes, said drain electrode coupled to said source of supply voltage and said source electrode coupled to the source electrode of said driver transistor for supplying additional current to the source of said driver transistor;

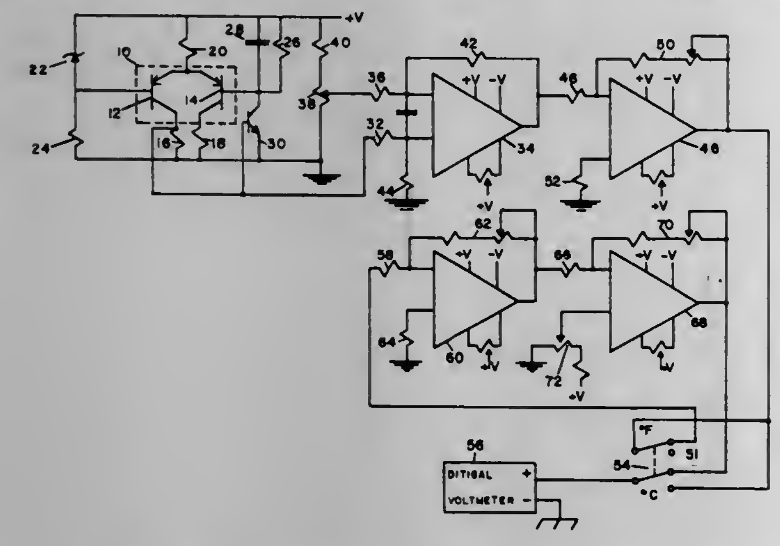
a third insulated-gate field-effect transistor having source, drain and gate electrodes, said gate electrode coupled to said source of supply voltage, said source electrode coupled to the zero point of the circuit, and said drain electrode coupled to the source electrode of said driver transistor and source electrode of said second transistor;

a fourth insulated-gate field-effect transistor having source, drain and gate electrodes, said drain electrode coupled to said source of supply voltage and said source electrode coupled to the gate electrode of said second transistor; and

a fifth insulated-gate field-effect transistor having source, drain and gate electrodes, said source electrode coupled to the zero point of the circuit, said drain electrode coupled to the source electrode of said fourth transistor and the gate electrode of said second transistor, and said gate electrode coupled to the gate electrode of said fourth transistor and the drain electrode of said driver transistor, said fourth and fifth transistor forming an inverter for controlling said second transistor.

3,873,857
TEMPERATURE SENSOR

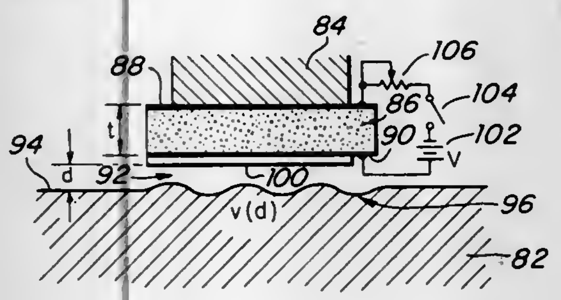
Dean T. Farrish, Parker, Colo., assignor to Sandoz Wander, Inc., Hanover, N.J.
Filed Jan. 10, 1974, Ser. No. 432,144
Int. Cl. H03k *17/00*
U.S. Cl. 307—310 **5 Claims**



1. A solid state temperature sensor comprising a silicon transistor having emitter, base, and collector electrodes, and a first differential amplifier circuit connected to said transistor for supplying a constant collector current thereto, said differential amplifier having a first active element provided with input and output terminals, and having reference voltage means connected to said first input terminal, and a second active element provided with second input and output terminals, a series circuit comprising a fixed resistor connected with said collector and emitter electrodes, said series circuit being connected across a source of potential and having the junction between said fixed resistor and said transistor connected to said second input terminal, and said first output terminal being coupled to the base electrode of said silicon transistor, wherein the base-emitter voltage of said transistor, at said first output terminal, varies at the rate of 2mV/℃ of the temperature of said silicon transistor while the collector current of said silicon transistor is maintained at a constant value by said differential amplifier.

3,873,858
ACOUSTIC SURFACE WAVE PHASE SHIFTER

Barry Ernest Burke, Newton; Ernest Stern, Concord, and Abraham Bers, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed May 23, 1972, Ser. No. 255,997
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **12 Claims**



1. An acoustic surface wave phase shifter comprising:

a first piezoelectric medium for propagating a surface wave;

a second piezoelectric medium proximate a surface of said first piezoelectric medium on which a surface wave propagates;

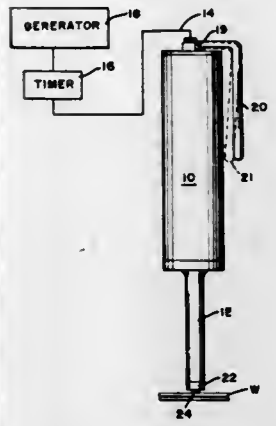
a conductor layer on a portion of said second piezoelectric medium proximate the surface of said first piezoelectric medium on which a surface wave propagates;

means for mounting said second piezoelectric medium in fixed relation to said first piezoelectric medium; and

means for applying an electric field across said second piezoelectric medium to produce a strain in said second piezoelectric medium which changes a dimension of that second piezoelectric medium and changes the distance between said conductor layer and said first piezoelectric medium for shifting the phase of a surface wave.

3,873,859
ULTRASONIC WELDING TOOL

Andrew Shoh, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Feb. 21, 1974, Ser. No. 444,304
Int. Cl. H04r *17/00;* **B23k** *1/06*
U.S. Cl. 310—8.1 **4 Claims**



1. A hand manipulated ultrasonic tool comprising:

a substantially cylindrical housing;

electroacoustic transducer means for converting electrical energy of predetermined high frequency applied to vibrations disposed in said housing;

means coupled to said transducer means for applying electrical energy thereto;

a resonator dimensioned to be resonant along its longitudinal axis at said predetermined frequency coupled with one end to said transducer means for receiving said vibrations and providing said vibrations to a workpiece in contact with the other end of said resonator;

pressure responsive switching means having a diaphragm coupled for controlling the application of electrical energy to said transducer means disposed in said housing, and

a plate having a set of upstanding prongs mounted for limited axial motion in said housing in cooperative relation with said pressure responsive switching means for moving axially responsive to an engagement force of sufficient magnitude between said other end and the workpiece until said prongs engage a surface of said housing, such engagement limiting said axial motion and causing said plate to press upon said diaphragm for operating said switching means.

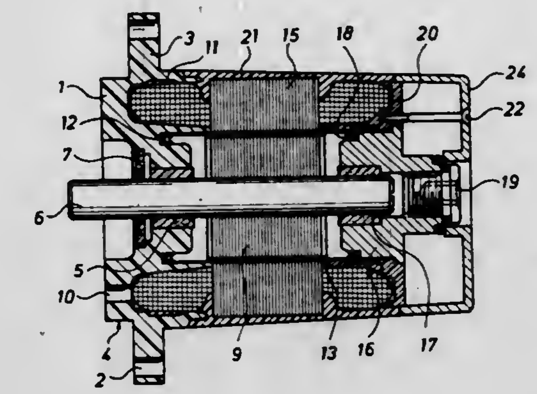
3,873,860
MHD POWER GENERATION

Perry D. Bergman, Pittsburgh, and Daniel Bienstock, Bruceton, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Nov. 21, 1973, Ser. No. 417,832
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **2 Claims**

1. In a method for producing electrical energy by passing a seeded high temperature gaseous combustion product, obtained by combustion of coal, at high velocity through a MHD duct, the improvement comprising employing as seeding material a mixture of potassium and cesium compounds in which the potassium comprises about 75 to 95 atomic percent of the total potassium-cesium content of the seed.

3,873,861
ELECTRIC MOTOR, ESPECIALLY A SQUIRREL-CAGE MOTOR

Richard Halm, Silcherstrasse 54, D 7061 Baltmannsweiler, Germany
Filed June 15, 1973, Ser. No. 370,541
Int. Cl. H02k *1/04*
U.S. Cl. 310—43 **3 Claims**



1. In an electric motor, especially a squirrel-cage motor, of the type having a rotor, a stator, a stator winding, bearings for rotatably supporting the rotor, a housing and end bushings for supporting and retaining bearing carriers and the bearings, the improvement comprising

means defining annular grooves in said end bushings extending radially at right angles to the rotor axis,

said housing being a cast mass integrally formed on said stator around said stator winding and in engagement with said grooves to retain said stator and bushings against relative axial movement,

said cast mass forming at least part of the exterior surface of said motor,

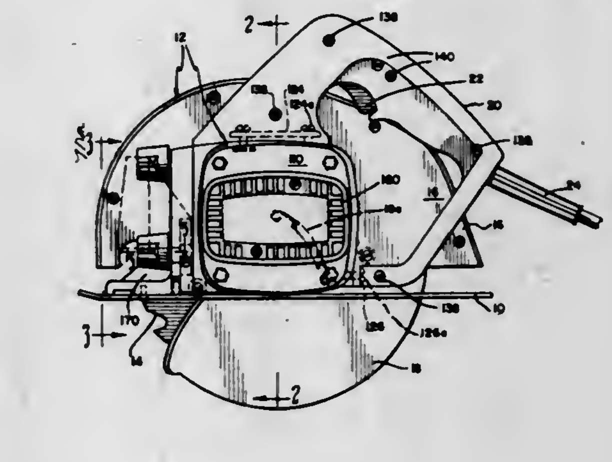
said end bushings each having an axially inwardly extending bore to receive a bearing carrier,

at least the portions of said end bushings adjacent said stator including electrically nonconductive material to electrically isolate said stator from said bearing carriers, and

means for retaining at least one of said carriers in said bushings.

3,873,862
ROTARY SAW

Thomas C. Butler, Naperville, Ill., assignor to G. W. Murphy Industries Inc., Houston, Tex.
Continuation of Ser. No. 36,862, May 13, 1970, abandoned. This application June 29, 1972, Ser. No. 267,592
Int. Cl. H02k *7/14*
U.S. Cl. 310—50 **3 Claims**



1. An electric power tool, comprising an electric motor unit and an output working head, said motor unit having a structural and electrically insulating housing generally cylindrical in shape with one end substantially closed and the opposite end generally open, a closure plate secured across the open end of the housing, opposed bearings supported in said housing at the substantially closed end thereof and in said closure plate, a motor shaft rotatably supported in said bearings and having an output end projected beyond the closure plate, said working head being of structural die cast and having a mounting wall and a circumferential wall and means connecting the closure plate and the mounting wall together to have the motor unit supported solely from the working head, an operable output member carried by the working head and means connecting the motor shaft output end with the working output member, a tool holding support secured directly and only to the working head circumferential wall, and cover means including a generally tubular element fitted over the motor housing and butted against the working head circumferential wall and an end cap secured to the generally closed end of the housing and maintaining the cover means in snug butted relation with the working head, and the cover means being of electrical insulating material and of such thickness as to be non-load bearing or non-supporting.

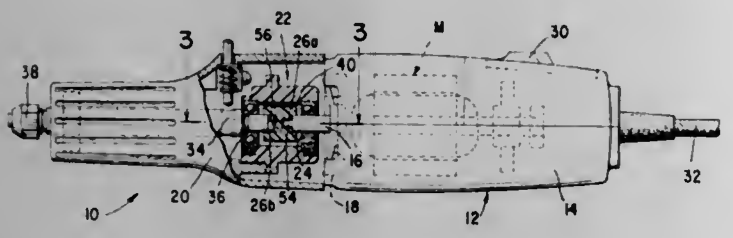
3,873,863
DOUBLE INSULATED ELECTRICALLY POWERED HAND TOOL AND COUPLER THEREFOR

John P. Pew, Greenville, S.C., assignor to The Singer Company, New York, N.Y.
Filed Feb. 25, 1974, Ser. No. 445,509
Int. Cl. H02k *7/14*
U.S. Cl. 310—50 **1 Claim**

1. A coupler assembly for a double insulated electrically powered hand grinder comprising:

a. a housing having a motor portion and a spindle portion interconnected to the motor portion,

b. the motor portion being made of dielectric material,
c. a motor mounted in the motor portion,
d. a metal armature shaft having its forward end tab-shaped and extending into the spindle portion,
e. the spindle portion being made of metal and having a substantially hollow rear section joined by a necked-down forward section adapted to be hand held,
f. a rigid hollow bearing block disposed in and connected to the spindle portion at the rear section thereof,
g. the bearing block being made of dielectric material,
h. a metal bearing journaling the tab-shaped end of the armature shaft within the bearing block,
i. a metal spindle disposed in the spindle portion and having its forward end journaled in and extending outwardly from the necked-down section,
j. the spindle having a tab-shaped rear end extending into the bearing block in the direction of and facing the tab-shaped end of the armature shaft,
k. a metal bearing journaling the tab-shaped end of the spindle within the bearing block,



l. a rigid coupler member disposed in spaced relationship to and within the hollow bearing block to interconnect the tab-shaped ends of the spindle and armature shaft in driving engagement with each other,
m. the coupler member being made of dielectric material,
n. the coupler member formed with a cylindrical periphery and having recesses extending inwardly from either end to be separated from each other by an axial barrier formed integrally with the coupler member,
o. each of the recesses is shaped to correspond to the respective tab-shaped end of the spindle and armature shaft to provide a tight engagement therebetween,
p. a short annular securing collar is integrally formed on the coupler member to extend outwardly from the recess on either side thereof, an axial distance less than one-half the axial depth of each of the recesses, and
q. the collars having an internal diameter substantially equal to the outer diameter of the respective spindle and armature shaft which engages the same to form a tight fit between the coupler member and the respective spindle and armature shaft whereby assembly and disassembly is made by a snap-like positive engagement or disengagement therebetween.

3,873,864
TWO-PIECE DYNAMOELECTRIC MACHINE HOUSING

Theodore G. Apostoleris, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1973, Ser. No. 428,527
Int. Cl. H02k *5/04*

U.S. Cl. 310—89 **5 Claims**

1. A molded housing for receiving and supporting the armature bearings and rotary armature of a dynamoelectric machine wherein the rotary armature includes means forming an electric commutator positionable in proximity to, and axially inwardly of, one of the armature bearings comprising:

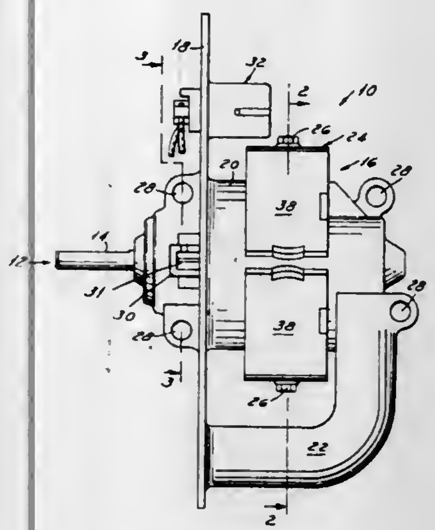
first and second molded housing sections joinable in a plane, said joining plane arranged to include the axis of rotation of the armature;

each housing section having a central portion arranged to define substantially one-half of a rotor receiving cavity;

a first pair of bearing retaining ridge means formed in said first housing section central portion, the members of said first pair being at locations axially remote from each other;

a second pair of bearing retaining ridge means formed in said second housing section central portion, the members of said second pair being at locations axially remote from each other;

the members of said first pair of ridge means being spatially arranged to cooperate with the members of said second pair of ridge means, upon joining of said first and second housing sections, to define first and second axially inwardly located bearing retaining walls, said bearing retaining walls providing substantially 360° of position defining surrounding support for the armature bearings



means for maintaining said first and second housing sections joined in assembled relation; and

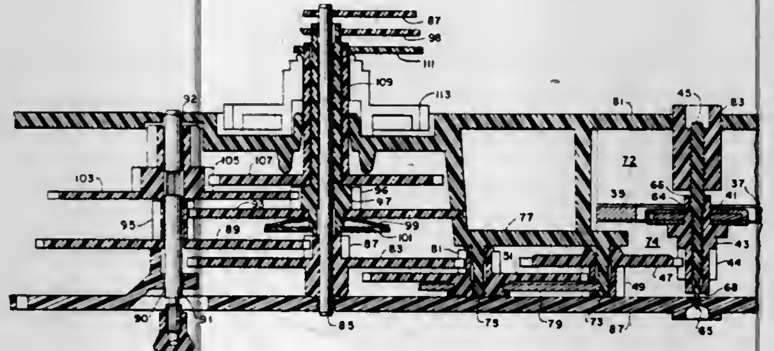
wall means defining first and second electrical brush channels directed generally perpendicularly to the joining plain and situated in proximity to, and axially inwardly of, one of said first and second bearing retaining walls, said first and second brush channels arranged to provide communicating passages from the exterior of said first and second housing sections to the interior of the housing in proximity to the armature commutator whereby electrical brush assembly and servicing may be accomplished which the dynamoelectric machine housing remains assembled.

3,873,865
LOW POWER SYNCHRONOUS MOTOR AND LINE CORD THEREFOR

Ralph H. Preiser, LaSalle, Ill.; Frank W. Stellwagen, Stamford, Conn., and Anthony W. Rigazio, Oglesby, Ill., assignors to General Time Corporation, Thomaston, Conn.

Continuation of Ser. No. 261,485, June 9, 1972, abandoned. This application Oct. 11, 1973, Ser. No. 405,550
Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **3 Claims**



1. A synchronous induction motor comprising

a polarized rotor including a pair of spaced rotor discs, said discs being notched at their periphery to provide a plurality of equally spaced rotor teeth, and a permanent magnet located between said discs and polarized such that one of said rotor discs is a north pole and the ohter a south pole, a collar, said collar providing a hole therethrough with a portion of the same being of cone-shaped outline,

a spindle having a complementary cone-shaped portion, said cone-shaped portions of said spindle and said collar hole providing a bearing surface for rotation of said rotor about said spindle,

a stator including an energizing winding, a core passing through said energizing winding, and a pair of complementary stator plates secured to said core at the opposite ends of said winding, said plates being bent to form a coplanar stator core portion, said coplanar stator core portion being notched in a circle to define a plurality of pole pieces on opposite sides of said rotor, and

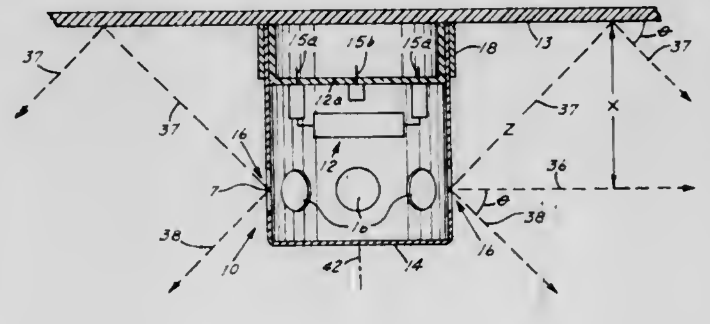
means for conveying electrical energy from a source to said energizing winding.

3,873,866
PIEZOELECTRIC TRANSDUCER ASSEMBLY AND METHOD FOR GENERATING AN UMBRELLA SHAPED RADIATION PATTERN

Ralph W. Goble, Eldora, Colo., assignor to Sontrix, Inc., Boulder, Colo.

Filed Nov. 5, 1973, Ser. No. 412,884
Int. Cl. H01v *7/00*

U.S. Cl. 310—9.1 **29 Claims**



1. A piezoelectric transducer assembly for generating a radiation pattern of acoustical energy having an umbrella shaped cross section relative to a selected axis, said assembly comprising:

a resonant chamber having side walls and closed ends and a selected resonant frequency, said chamber being positioned with its longitudinal axis parallel with the side walls and defining the selected axis of said assembly, said chamber having a plurality of spaced apart sound transmitting apertures defined in its side walls about its longitudinal axis, the centerpoints of said apertures defining a plane substantially perpendicular to said selected axis;

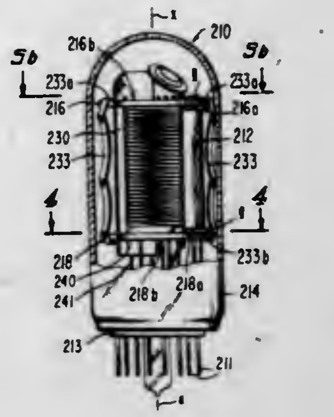
piezoelectric transducer means mounted within said chamber for generating therein along said selected axis a spherial radiation pattern of acoustical energy at the resonant frequency of said chamber whereby similar radiation patterns of said acoustical radiation are emitted from each of said apertures along their center axes; and, means defining a plane reflecting surface positioned to receive and reflect acoustical waves radiating from the centerpoints of said apertures towards said reflecting surface along a path of travel at a predetermined angle θ to the plane of the centerpoints of said apertures, said plane reflecting surface extending perpendicularly to said selected axis of said assembly and being spaced apart from the plane of the centerpoints of said apertures a predetermined distance X at which acoustical waves at said resonant frequency radiating from said apertures at said predetermined angle θ to the plane of their centerpoints towards said reflecting surface are reflected in phase with mirror image acoustical waves which radiate from said apertures away from said reflecting surface, where θ is the angle between the plane of the aperture centerpoints and the vector of the mirror image waves to be reinforced.

3,873,867
SUPPORT AND FOCUS STRUCTURE FOR PHOTOMULTIPLIER

Harold Hayes Girvin, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,654
Int. Cl. H01j *39/02, 39/14*

U.S. Cl. 313—95 **3 Claims**



1. A photomultiplier comprising, in combination:
a. a light transmissive evacuated glass envelope having an inner and outer wall surface,
b. a stem portion sealed to one end of the glass envelope, the stem portion including a plurality of lead-in pins extending within said envelope,
c. an electrode assembly, within the envelope, including a plurality of spaced-apart electrodes including: a photocathode, at least one dynode, and an anode; said electrodes being secured longitudinally, at their opposing ends, between two substantially parallel support plates of insulating material; various ones of the electrodes being interconnected by lead wires to respective ones of said lead-in pins,
d. a plurality of spring members each having a plurality of resilient portions fixably constrained between the inner wall surface of said glass envelope and portions of the electrode assembly which are electrically isolated from various ones of the electrodes, to retain the electrode assembly in substantially fixed mechanically aligned relation with the inner wall surface of said envelope, and to substantially electrically isolate the electrodes of the electrode assembly in spaced-apart relation from the inner wall surface of said envelope, and
e. a plurality of electron focusing electrodes, interposed between said support plates and ends of the electrodes of said assembly securred to said support plate; said focusing electrodes comprising conductive metallization regions on said support plates, overlying interelectrode regions between respective ones of the electrodes, through which electrons may be accelerated, whereby electrons may be substantially prevented from impinging upon said support plates.

3,873,868
DISPLAY TUBE WITH COLOR SELECTIVE FILTRATION

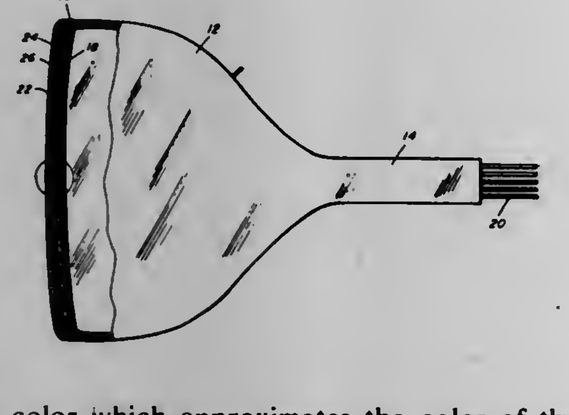
Ronald C. Robinder, Marshfield, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 25, 1974, Ser. No. 454,186
Int. Cl. H01j *5/16, 61/40*

U.S. Cl. 313—112 **5 Claims**

1. A display tube comprising an evacuated envelope having a transparent faceplate in one wall thereof, a light-generating layer disposed adjacent the inner side of said faceplate, and adapted to emit light of a predetermined color, a transparent protective panel adjacent the outer side of the faceplate and spaced therefrom, a layer of transparent bonding material in

said space between the faceplate and panel, and a light-filtering film disposed within said bonding material and having a selected color which approximates the color of the light emitted by said light-generating layer.



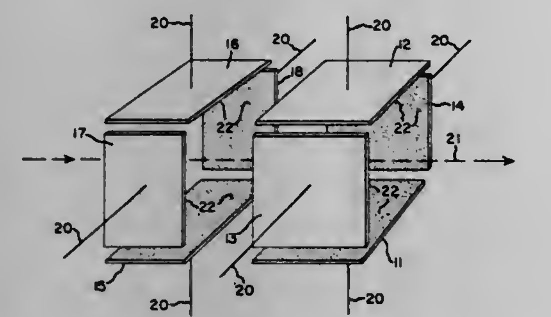
3,873,869
NON-CHARGEABLE ELECTRODES FOR USE IN CONTAMINATED ENVIRONMENT CONTAINING ORGANIC CONTAMINANTS

Patrick P. Coppola, Fayetteville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 833,001, June 13, 1969, abandoned. This application Dec. 18, 1972, Ser. No. 315,917

Int. Cl. H01j *1/48*

U.S. Cl. 313—178 **9 Claims**



1. In a light valve containing a layer of organic fluid, said fluid being deformable by impingement of an electron beam thereon and evolving organic vapors when undergoing bombardment by electrons, and means producing an electron beam directed toward said layer of fluid, a plurality of electrodes for use at temperatures below 100℃, said electrodes being situated between said means producing an electron beam and said layer of fluid in order to exert an electrical influence on said beam, each of said electrodes comprising:
- a metallic structure presenting a major surface toward said electron beam; and
- a chemically active, electrically conductive, sorbent material for said vapors covering at least a portion of said surface, said sorbent material having a rough-textured surface facing toward said electron beam to delay formation of a resistive film on said major surface.

3,873,870
FLAT DISPLAY PANEL

Masakazu Fukushima, and Seiichi Murayama, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

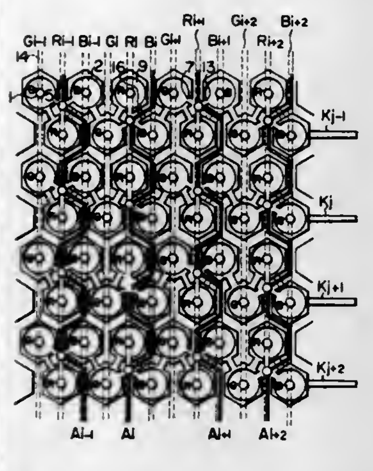
Filed June 28, 1973, Ser. No. 374,328

Claims priority, application Japan, July 7, 1972, 47-67478; Nov. 17, 1972, 47-114683

Int. Cl. H01j *17/04*

U.S. Cl. 313—217 **24 Claims**

1. A flat display panel comprising at least one first electrode, at least one second electrode, each said second electrodes surrounding at least one of said at least one first electrode to form therewith a main discharge space for gas discharge, and two insulating substrates for hermetically sealing said main discharge spaces, at least one of said insulating substrates being transparent, and said first and second electrodes having at least a portion in a common plane between said two insulating substrates such that the direction of discharge between said first and second electrodes is parallel to said one transparent insulating substrate.



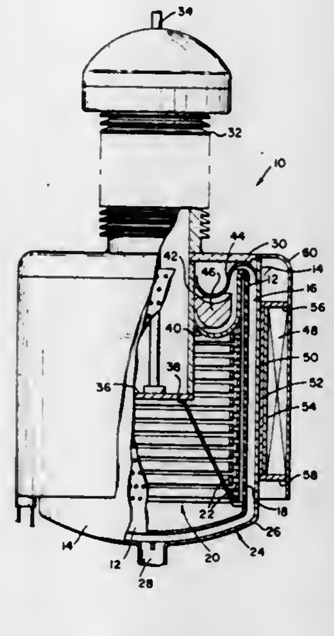
3,873,871
SWITCH FIELD COILS FOR CROSSED-FIELD INTERRUPTER

Gunter A. G. Hofmann, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 6, 1973, Ser. No. 386,116

Int. Cl. H01j *1/50*

U.S. Cl. 313—157 **1 Claim**



1. A crossed-field switch device comprising:
- a cylindrical anode and a cylindrical cathode therearound defining a cylindrical tubular annular interelectrode space therebetween, means for maintaining a subatmospheric gas pressure in said interelectrode space, electrical connections to said anode and said cathode for applying an electric field across said interelectrode space and means for applying a magnetic field to said interelectrode space to provide electrical conduction between said anode and said cathode by glow discharge therebetween, said means for applying a magnetic field comprising the improvement:
- main magnetic field winding means for providing a magnetic field in the interelectrode space above a critical value, an off-pulse magnetic field winding means for producing a bucking magnetic pulse in the interelectrode space for reducing the net magnetic field below the critical value, and a short circuit winding positioned between said magnetic field winding means, said off-pulse magnetic field winding means being wound around said cathode electrode, said short circuit winding being wound directly thereon and said main field winding being nested thereon, each in substantially radial contact.

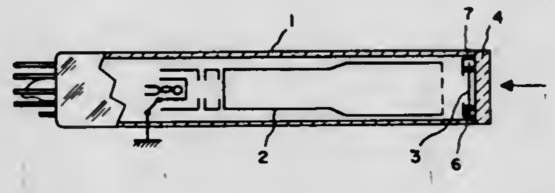
3,873,872
PYROELECTRIC VIDICON

Thomas Henry Conklin; Richard Liebert, both of Ridgefield, Conn., and Leonard Berandt, Croton-on-Hudson, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed May 16, 1974, Ser. No. 470,622

Int. Cl. H01j *29/02, 31/38, 31/45*

U.S. Cl. 313—388 **5 Claims**



1. A television camera tube comprising an envelope having a window at one end which is transparent to infra-red radiation, a pyroelectric target element disposed to receive on one surface thereof a thermal image and produce on an opposite surface a charge image corresponding to said thermal image, means within said envelope including a cathode for producing an electron beam, means to scan the surface of said target having the charge image with said electron beam to periodically reduce areas of said surface to cathode potential, and means to support said target free of strain on said window, said latter means comprising an annular layer of a first electrically conductive metal which adheres to said window and a plurality of spaced metal bodies on opposite sides of said target each constituted of a second metal which adheres to said first metal and a third metal which forms a eutectic with the second metal having a melting point below about 16° C, said eutectic flowing around the edge of said target whereby said target is floatingly supported by said metal bodies.

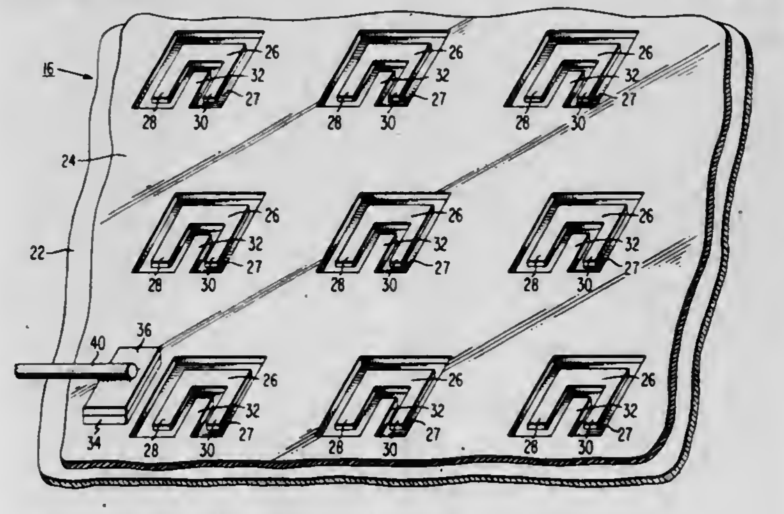
3,873,873
DIGITAL STORAGE TUBE TARGET STRUCTURE

Frank Jerome Marlowe, Kingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,663

Int. Cl. H01j *31/58, 29/45*

U.S. Cl. 313—391 **8 Claims**



1. A digital storage tube comprising:
- a. an envelope,
- b. an electron gun in said envelope for addressing an electron beam along a path, and
- c. a target electrode in the path of said beam within said envelope, said target electrode including:
  - l. a substrate of insulating material;
  - 2. a layer of conductive material on a major surface of said substrate; said layer including a major surface with a plurality of openings extending through said layer to said major surface of said substrate, and across which the path of said electron beam extends; and
  - 3. a plurality of electrical charge storage elements addressible with said electron beam, in the path of said beam across said conductive layer; each of said storage elements comprising a conductive region on said substrate within respective ones of said openings in said layer; said conductive regions being electrically isolated from said conductive layer, and each other, by said substrate and by a region of electrical insulation between each of said conductive regions and said layer; each of said conductive regions including a substantially horseshoe-shaped surface portion in the path of said beam across said conductive layer; said conductive layer including a plurality of finger-like projections, in the path of said beam, extending between leg portions of each of said horseshoe-shaped conductive regions; each of said conductive regions being surrounded by said conductive layer.

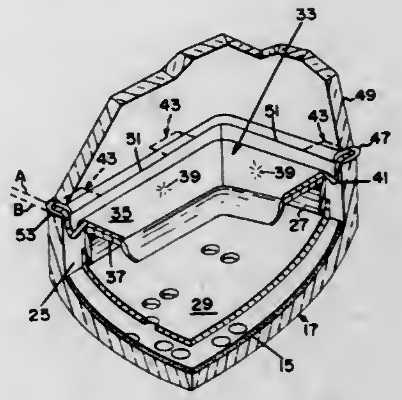
3,873,874
SHIELD ATTACHED BY SEALING TO PANEL SIDEWALL OF CATHODE RAY TUBE

Joseph B. Shinal, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 20, 1974, Ser. No. 443,978

Int. Cl. H01j *29/06, 31/20*

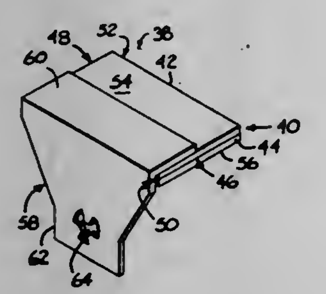
U.S. Cl. 313—402 **3 Claims**



1. An improvement in a color cathode ray tube having a patterned cathodoluminescent screen disposed on the viewing panel thereof in a manner to receive electrons beamed through a related multi-apertured mask member having perimetrical framing means supported within the panel by means relative to the panel sidewall in spatial relationship to said screen, and whereof the seating edge of the panel is bonded by a sealing substance to the mating edge of the funnel member of the tube envelope to provide a hermetically formed perimetric seal therearound, said improvement being a ruggedizing feature comprising:
- electron dispersion shielding means formed of a material lighter than that of said mask framing means and having a seating portion attached to said mask framing means and an expansive spanning portion having at least on hill and valley extending peripherally around said mask member in a substantially continuous manner to bridge the peripheral spacing between said member and said panel sidewall; and
- configurated projecting means of a material substantially matching the coefficient of thermal expansion of said sealing substance formed integral to said expansive spanning portion extending from the leading edge thereof as discrete spaced apart fin-like tab portions having edge-oriented indentations formed to effect only partial transversal embedment in selected regions of said perimetrical seal.

3,873,875
TEMPERATURE COMPENSATING PARALLAX BARRIER SUPPORTING SYSTEM FOR COLOR CATHODE RAY TUBES

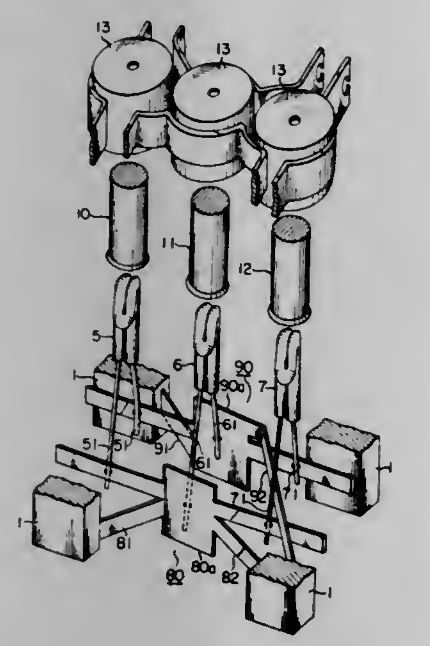
Larry R. Miller, Waynesboro, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Division of Ser. No. 61,163, Aug. 5, 1970, Pat. No. 3,639,798. This application Sept. 29, 1971, Ser. No. 184,860
Int. Cl. H01j *29/02, 31/20, 29/06*
U.S. Cl. 313—405 **2 Claims**



1. A parallax barrier supporting element formed for affixation to an inwardly projecting flange on said barrier comprising: a flat, planar, bimetallic element comprised of two dissimilar materials one of which has a higher thermal coefficient of expansion than the other and a depending spring affixed on one end of said element, said spring projecting from said plane of said element at an angle of substantially 90° and having formed therein means for engaging mating means.

3,873,876
COLOR CATHODE-RAY TUBE WITH TEMPERATURE EQUILIZATION FOR PLURALITY OF ELECTRON GUN FILAMENTS

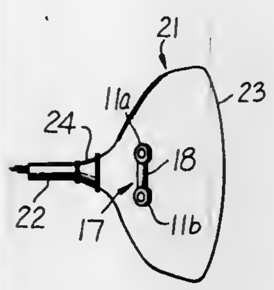
Masaaki Yamauchi, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 14, 1974, Ser. No. 451,285
Claims priority, application Japan, Sept. 21, 1973, 48-106035
Int. Cl. H01j *29/50, 29/04*
U.S. Cl. 313—409 **1 Claim**



1. An electron gun assembly for a color cathode-ray tube comprising three electron guns which are arranged approximately parallel in the same plane and each of which includes a heater, a cathode and a plurality of electrodes, at least one connection member to which the respective heaters are connected at substantially equal intervals, wherein the area of the connection member portion to which the heater belonging to the central one of the electron gun is connected is made larger than that of each of the areas of the connection member portions to which the heaters belonging to the other electron guns are connected, the area of the connection member portion to which the heater belonging to the central electron gun is connected being selected so as to maintain the rise in temperature of the cathode belonging to the central electron gun substantially the same as those of the cathodes belonging to the other electron guns.

3,873,877
MISLANDING CORRECTOR FOR COLOR CATHODE RAY TUBES

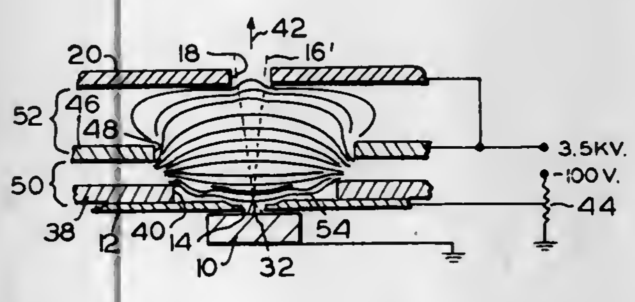
Hiromasa Machida, Tokyo; Hiroshi Ichigaya, Toda, and Kietsu Iwabuchi, Tagajo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 20, 1973, Ser. No. 417,591
Claims priority, application Japan, Nov. 20, 1972, 47-13353
Int. Cl. H01j *29/70*
U.S. Cl. 313—430 **8 Claims**



1. In combination with a color cathode ray tube having an envelope with a screen at one end thereof composed of arrays of different color phosphors, and in which electron beams are made to scan said screen for impingement on the respective color phosphors thereof; an arrangement for correcting temperature induced mislanding of said electron beams in respect to said respective color phosphors comprising elongated strap means of relatively high magnetic permeability, and temperature-responsive magnetic flux generating means attached to the opposite ends of said strap means and being effective to produce magnetic fields which vary in intensity with varying temperature and which are spread by said strap means, said strap means and magnetic flux generating means being disposed against said envelope of the cathode ray tube so that said magnetic flux generating means are influenced by the temperature of said tube and said magnetic fields act within the latter on said electron beams for correcting said temperature induced mislanding thereof.

3,873,878
ELECTRON GUN WITH AUXILLIARY ANODE NEARER TO GRID THAN TO NORMAL ANODE

Conrad J. Odenthal, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Continuation of Ser. No. 64,938, July 31, 1970, abandoned, which is a division of Ser. No. 720,035, April 10, 1968, Pat. No. 3,567,991. This application Jan. 5, 1973, Ser. No. 321,137
Int. Cl. H01j *29/02, 29/00*
U.S. Cl. 313—449 **3 Claims**

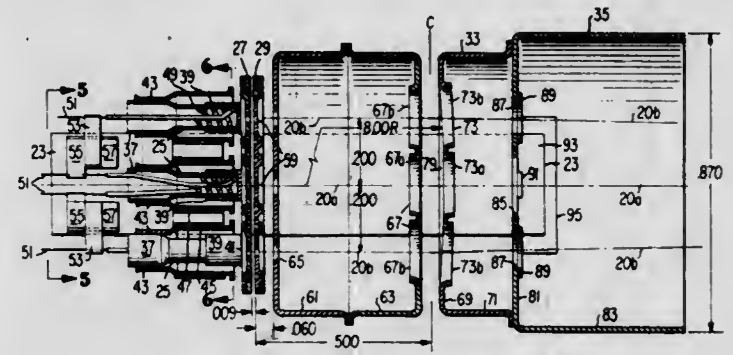


1. A cathode ray tube in which the improvement comprises an electron gun structure including:

- a cathode for emitting an electron beam,
- an anode electrode supported in alignment with said cathode having an anode aperture through which at least a portion of said beam passes,
- a grid electrode having a grid aperture therethrough supported between said anode and said cathode in axial alignment therewith for passage of said electron beam, said grid electrode having an annular shoulder portion on the side thereof opposite that facing the cathode, the shoulder portion having a substantially cylindrical inner aperture spaced from said grid aperture by a distance several times the diameter of said grid aperture, said inner aperture being substantially coaxial with the path of said electron beam,
- said anode aperture having a diameter of the same order of magnitude as said grid aperture, the diameter of said anode aperture being smaller than the diameter of said inner aperture of said shoulder,
- and an intermediate anode electrode supported next adjacent said grid electrode and the shoulder thereof between said grid electrode and said anode electrode in closer spaced relation to said grid electrode than to said anode electrode, said intermediate anode electrode having a large aperture therethrough in axial alignment with the aforementioned grid and anode apertures, the diameter of said large aperture being in the range of 1.25 to approximately 1.5 times larger than the inside diameter of the inner aperture of said annular shoulder portion while also being larger than the anode aperture.

3,873,879
IN-LINE ELECTRON GUN

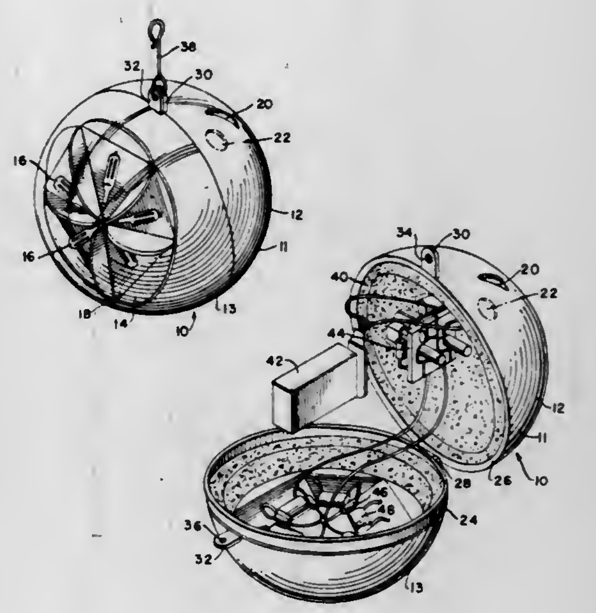
Richard Henry Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.
Division of Ser. No. 217,758, Jan. 14, 1972, Pat. No. 3,772,554. This application Mar. 28, 1973, Ser. No. 345,665
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 C **4 Claims**



1. In a color picture tube including an evacuated envelope comprising a faceplate and a neck connected by a funnel, a mosaic color phosphor screen on the inner surface of said faceplate, a multiapertured color selection electrode spaced from said screen, an in-line electron gun mounted in said neck for generating and directing three electron beams along coplanar paths through said electrode to said screen, and a deflection zone, located in the vicinity of the junction between said neck and said funnel, wherein said beams are subjected to vertical and horizontal magnetic deflection fields during operation of said tube for scanning said beams horizontally and vertically over said screen; said electron gun comprising:
a. means for generating and directing three electron beams along three co-planar paths towards said screen;
- b. means interposed between said first-named means and said deflection zone for focusing each beam near said screen and for converging the three beams near said screen; and
- c. a shielding member of magnetic material surrounding each of the outer ones only of said beam paths in siad deflection zone, for partially shielding only the two outer beams from said magnetic deflecting fields, thereby reducing the size of the rasters scanned by the outer beams without reducing the size of the raster scanned by the middle beam.

3,873,880
SELF-POWERED ILLUMINATED ORNAMENTAL DEVICE

Horace G. Riddell, 871 Azalea Dr., Rockville, Md. 20850
Filed Feb. 8, 1974, Ser. No. 440,809
Int. Cl. H01j *7/44*
U.S. Cl. 315—53 **10 Claims**



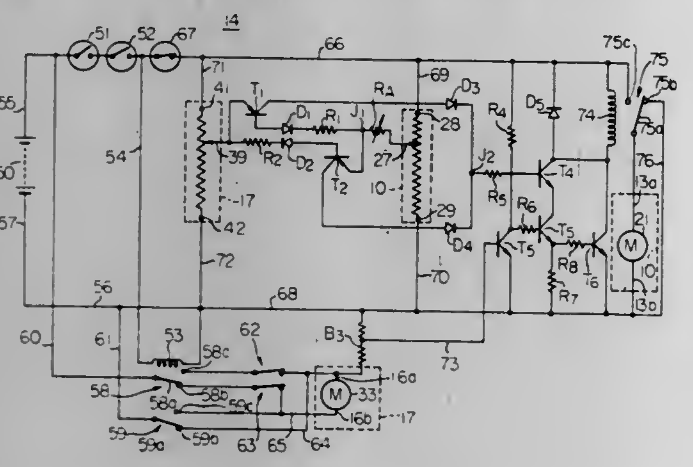
1. A self-powered illuminated ornamental device, comprising:
- a hollow housing having ornamentation on at least part of its outer surface, said housing being separable into at least two parts;
- a power supply disposed within said housing;
- a plurality of gas-discharge tubes; and,
- a plurality of individual circuit means respectively coupling individual ones of said gas-discharge tubes to said power supply for causing intermittent discharge in said tubes.

3,873,881
LIGHT AXIS ADJUSTING SYSTEM FOR MOTOR VEHICLE

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Yokohama, Japan
Filed Nov. 1, 1973, Ser. No. 411,894
Claims priority, application Japan, Nov. 2, 1972, 47-126729; Mar. 2, 1973, 48-25808
Int. Cl. B60q *1/10*
U.S. Cl. 315—82 **9 Claims**

1. A system for adjusting direction of the light axis of the head lamp of a motor vehicle, which comprises:
- an actuator for moving the light axis of the head lamp when it is energized, said actuator including a reciprocally movable rod mechanically connected to the light unit of the head lamp, a first d-c electric motor, and a mechanical linkage connected between said reciprocally movable rod and the rotary shaft of said motor for making said reciprocally movable rod move in accordance with the motion of said motor;

first detecting means for producing a first voltage signal having a voltage according to the tilt of the head lamp, said first detecting means including a first potentiometer having the slide contact thereof mechanically connected to said reciprocally movable rod, and a power supplying means connected to said first potentiometer for supplying a d-c power to said first potentiometer so as to build said first voltage signal at the slide contact, said power supplying means including a d-c power source, a first power line connecting between one output terminal of said power source and one terminal of said first potentiometer, a side marker lamp switch adapted to close when the side marker lamp is energized, a hand brake switch adapted to close when a hand brake of the vehicle is actuated and serially connected to said side marker lamp switch, an accelerator pedal depression switch adapted to open when an accelerator pedal of the vehicle is depressed and serially connected to said hand brake switch, and a second power line connecting through the series connection of said side marker lamp, hand brake and accelerator pedal depression switches between the other output terminal of said power source and the other terminal of said first potentiometer;



second detecting means for producing a second voltage signal having a voltage according to distance between the vehicle chassis and one of the wheel shafts of the vehicle, when energized;

detector control means connected to said second detecting means for energizing said second detecting means when the hand brake is actuated and for de-energizing said second detecting means when it completes its detecting operation; and

actuator energizing means electrically connected to said actuator and said detector control means, for energizing said actuator in accordance with said first and second voltage signals when said second detecting means is de-energized.

3,873,882
AUXILIARY LIGHTING SYSTEM FOR A GASEOUS DISCHARGE LAMP

Bernard J. Gershen, Centerport, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Oct. 5, 1973, Ser. No. 403,948

Int. Cl. H05b *41/46, 37/04*

U.S. Cl. 315—92 **6 Claims**

1. An auxilairy lighting system for use with a primary lighting system having a gaseous discharge lamp and a ballast connecting the gaseous discharge lamp to an alternating current source of voltage for igniting and operating said gaseous discharge lamp, said auxiliary lighting system comprising:

a. an auxiliary light source;

b. switch means connected in series with said auxiliary light source and an output from a ballast;

c. said switch means comprising an SCR and a bridge rectifier;

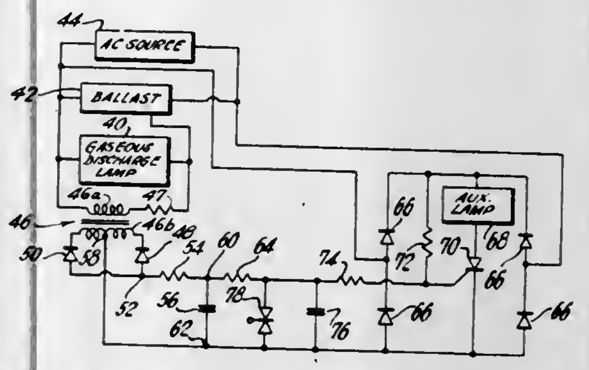
d. biasing means connected in series with said switch means and said auxiliary light source for producing an output voltage acting on said switch means and maintaining said switch means in a conductive condition;

e. said biasing means including a resistor connected between a gate electrode of said SCR and a source of positive voltage; and

f. control means responsive to a voltage across the discharge lamp for producing an output proportional to said lamp voltage and opposing the output voltage of the biasing means;

g. said control means includes a transformer and a rectifier connected across a gaseous discharge lamp for producing a negative output voltage proportional to the voltage applied to said discharge lamp;

h. said output voltage from the transformer and rectifier being connected to the gate electrode of the SCR;



i. said control means having an output voltage which is greater in magnitude than said output voltage from the biasing means during a period of time when said gaseous discharge lamp is operating at full illumination and said SCR is in a non-conductive condition, and causing said SCR to become conductive in response to application of a starting voltage to said gaseous discharge lamp;

j. said control means also including a filter circuit and a breakdown device connected between the output of the transformer and the rectifier and the gate electrode of the SCR;

k. said breakdown device producing a fixed low voltage after application of a high voltage thereto in response to the application of a starting voltage to the discharge lamp.

3,873,883
POSITIVE IGNITION POWER SUPPLY FOR A MAGNETRON

Carl J. Sievers, and Ronald C. Wagner, both of Highland, Ill., assignors to Basler Electric Company, Highland, Ill.

Filed Sept. 25, 1973, Ser. No. 400,546

Int. Cl. H03b *9/10*

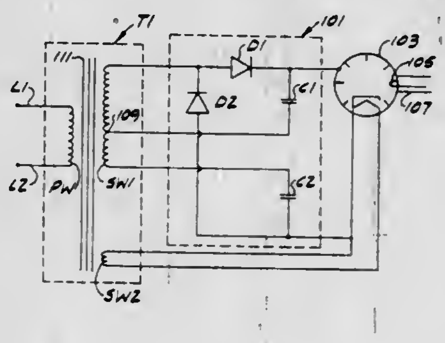
U.S. Cl. 315—105 **10 Claims**

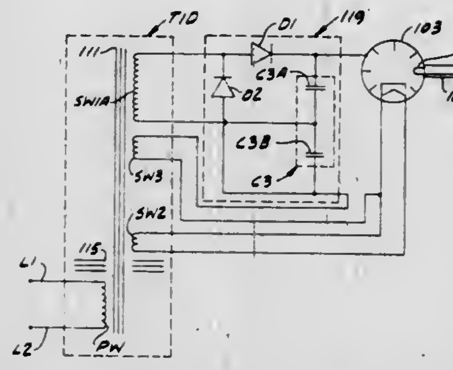
1. A power supply for a magnetron which provides a microwave output and has an anode, a cathode, and a filament circuit, said magnetron having proper and improper modes of oscillation, said supply comprising:

a high-leakage reactance step-up transformer having a primary winding for connection to an a.c. power source, at least one seconary winding, a magnetizable core having at least one window, and a high reluctance magnetizable shunt path bridging said window between said primary and secondary windings;

means for applying a continuous time-varying voltage across the anode-cathode circuit of said magnetron, said means including a full-wave voltage-multiplying rectifier circuit interconnected with said secondary winding and the anode-cathode circuit of the magnetron, said rectifier circuit having sufficient capacitive reactance to increase the voltage across said secondary winding so that the core in the vicinity of the secondary winding is driven into saturation; and

means for simultaneously energizing the filament circuit of said magnetron and the anode-cathode circuit thereof whereby the application of said time-varying voltage across said anode-cathode circuit insures that the magnetron goes into its proper mode of oscillation when the filament has substantially reached its operating temperature, and whereby said time-varying voltage is regulated so as to be substantially independent of voltage fluctuations in said a.c. power source.





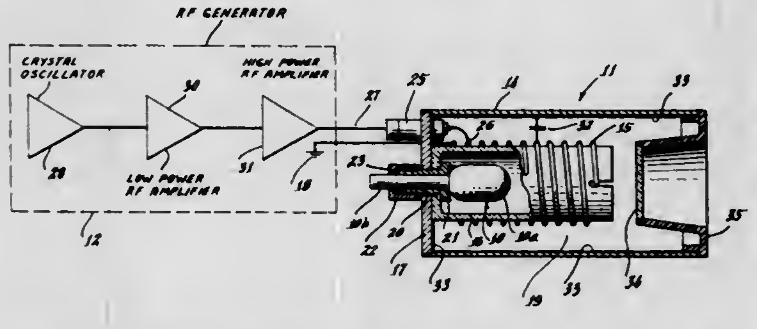
3,873,884
ELECTRODELESS DISCHARGE LAMP AND POWER COUPLER THEREFOR

Fred C. Gabriel, Stamford, Conn., assignor to The Perkins-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 337,060, March 1, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,600

Int. Cl. H05b *41/24*

U.S. Cl. 315—267 **12 Claims**



12. The combination of an electrodeless discharge lamp and a resonator coupler for coupling the lamp to a source of r-f electric power for starting and operating the lamp, said coupler comprising:

a coiled wire conductor grounded at one end and open circuited at the other,

a discharge lamp mounted with at least a major portion within the coil,

a generally tubular shield of electrically conductive material surrounding and spaced from the coil so as to be in a capacitor relationship therewith, said shield being grounded and being open at one end,

the wire of the coil being one quarter wave long relative to the wavelength of r-f power intended to be applied for operating said lamp, and

electrical connecting means for connecting to the coil a source of r-f electrical power that is sufficient to maintain a discharge in the lamp, said connecting means being tapped into the coil at a point intermediate the ends thereof, said point being selected such that, when the lamp is in operation by r-f power connected to the coil, the coupler is tuned to the frequency of said r-f power and the impedance of the lamp and coupler means at said tap point substantially matches the impedance of said r-f power source, whereby when said r-f power is applied to the coil, and before a discharge is ignited in the lamp, a voltage maximum occurs at the open circuited end of the coil and creates a potential extending through the lamp for ionizing the gas in the lamp.

3,873,885
ILLUMINATING DEVICE

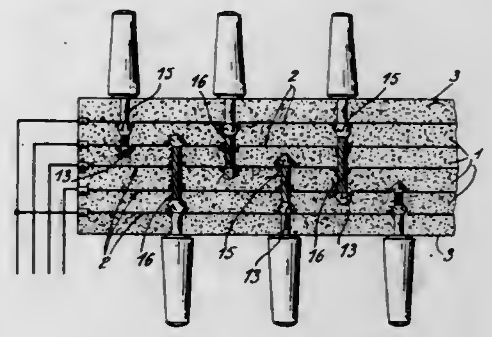
Goran Elfver Elfverson, 114 avenue de Suffren, Paris, France

Filed Aug. 6, 1973, Ser. No. 385,812

Claims priority, application France, Aug. 8, 1972, 72.28602

Int. Cl. H02b *1/02;* **H05b** *37/00*

U.S. Cl. 315—312 **12 Claims**



1. Device for luminous animation, comprising at least one panel constituted by a pile of insulating plates of uniform width each separated by an electrical conducting sheet and equally spaced by said insulating plates, electrical junction means electrically connected to each electrical conducting sheet and leading respectively to at least one side of said panel to electrically interconnect the conducting sheets of a panel to the sheets of another panel and to outputs of an electrical supplying unit for each conducting sheet and rotatable lighting plugs each comprising a lighting member and a pin axially protruding with respect to said lighting member, said pin having two conductors and an electrically insulating wall at least partially surrounding one of them, and two electrically conducting elements each connected to a respective one of said conductors carried by said pin and laterally protruding therefrom on at least one side, said conducting elements being separated by a distance equal to the thickness of selected insulating plates, whereby said pin is inserted through said insulating plates and conducting sheets together with said two protruding conducting elements penetrating said conducting sheets for electrical contact therewith upon substantially 90° rotation of said pin.

3,873,886
DEVICE FOR PREVENTING ACCUMULATION OF STATIC ELECTRICITY ON A SPINDLE AND BEARING ASSEMBLY THEREOF

Takashi Kato, Kariya, and Yoshihisa Suzuki, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken and Daiwa Boseki Kabushiki Kaisha, Osaka, both of Japan

Filed Nov. 14, 1973, Ser. No. 415,564

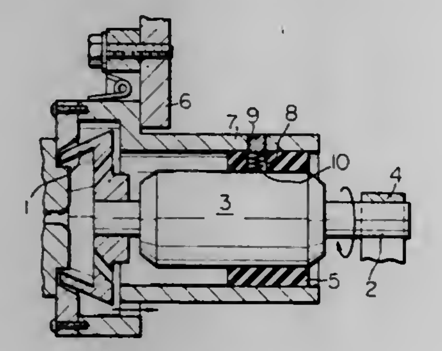
Claims priority, application Japan, Nov. 24, 1972, 47-135281

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **8 Claims**

1. In a device for supporting a spindle part of an open-end spinning device comprising a spindle and a spinning rotor rigidly mounted to an end of said spindle and a driving belt contacting another end of said spindle, wherein a bearing assembly rotatably supports the spindle or shaft, a bushing member envelops the bearing assembly, a machine frame rigidly supports the bushing member and is connected to the earth, and a non-conductive resiliently yieldable member is

interposed between the bearing assembly and the bushing member, a device for preventing the accumulation of the static electricity created by the slip or frictional contact of said driving belt with said spindle on said bearing assembly and



said spindle, comprising a conductive yieldable member connecting said bushing member and said bearing assembly in resilient condition, said bearing assembly and said bushing member being made of a conductive metallic material.

3,873,887

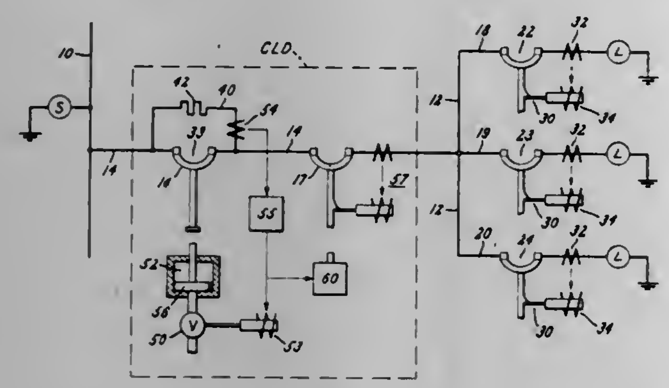
ALTERNATING-CURRENT POWER DELIVERY SYSTEM

Philip Barkan, and Thomas H. Lee, both of Media, Pa., assignors to General Electric Company, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,486

Int. Cl. H02h *3/08*

U.S. Cl. 317—20 **8 Claims**



1. An alternating-current power delivery system comprising:

a. a main circuit controller comprising current-limiting interrupting means for carrying the current through said controller when the controller is closed and a resistor shunting said interrupting means to provide a resistive conductive path shunting said interrupting means when the interrupting means operates to interrupt the current therethrough,

b. a plurality of branch circuit breakers connected in parallel with each other and in series with said main circuit controller,

c. each of said branch circuit breakers comprising relatively movable contacts that are separable to effect opening of the branch circuit breaker and each having a maximum current-interrupting capacity substantially lower than the prospective current of said system at the point in which said branch circuit breaker is connected,

d. means responsive to the flow of fault current through said main circuit controller and any one of said branch circuit breakers for causing said interrupting means to operate with a current-limiting action that: (1) limits the peak let-through current through said interrupting means to a value substantially below the peak of the prospective current of said system at the point of said main circuit breaker and (2) diverts the main circuit-controller current from a path through said interrupting means into a path through said shunting resistor,

e. means responsive to said fault current for normally causing the one branch circuit breaker through which said fault current flows to open within several cycles after the flow of fault current begins and while the main circuit-controller current is following a path through said shunting resistor,

f. means for reclosing said main circuit-controller interrupting means immediately after said one branch circuit breaker opens and interrupts the current therethrough,

g. and an additional normally-closed circuit breaker in series with said rsistor and said branch circuit breakers and operable in the event said one branch circuit breaker fails to interrupt for interrupting the current through said resistor,

h. said resistor having an impedance no higher than about 18 percent of normal load impedance but sufficiently high to limit fault current through said branch circuit breakers and said additional circuit breaker under short circuit conditions to a value within the maximum current-interrupting capacity of said branch circuit breakers and said additional circuit breaker,

i. said additional circuit breaker remaining closed during the period between opening and reclosing of said main circuit-controller interrupting means if said one branch circuit breaker is successful in interrupting the fault current therethrough.

3,873,888

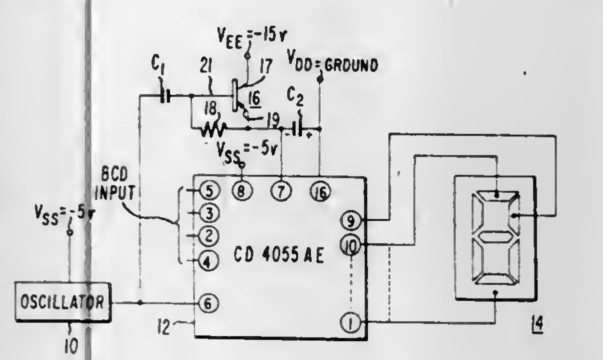
LIQUID CRYSTAL PROTECTION CIRCUIT

George Draper Hanchett, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,372

Int. Cl. H02h *3/24*

U.S. Cl. 317—31 **7 Claims**



1. In a circuit which includes: a liquid crystal display means having at least first and second conductors with a liquid crystal therebetween; an oscillator producing a unipolarity alternating voltage at a frequency at which excitation of the liquid crystal occurs; and driver circuit means receptive of alternating voltages derived from the alternating voltage produced by said oscillator for applying between said first and second conductors an alternating voltage for exciting said liquid crystal, a source of power for said driver circuit means comprising, in combination:

an operating voltage terminal;

a transistor having a conduction path, first and second electrodes, one at each end of said conduction path and a control electrode for controlling the conduction of said conduction path, said transistor connected at its first electrode to said driver circuit means and at its second electrode to said operating voltage terminal;

charge storage means connected between said first electrode and a point of reference potential;

means for alternating voltage coupling the alternating voltage produced by said oscillator to said control electrode; and

a direct current impedance means connecting said control electrode to said first electrode, whereby when said oscillator is operative, said storage means is charged once each period of said unipolarity voltage via the conduction path of said transistor, and when said oscillator becomes inoperative, said transistor cuts off and said charge storage means discharges via said driver circuit means.

3,873,889

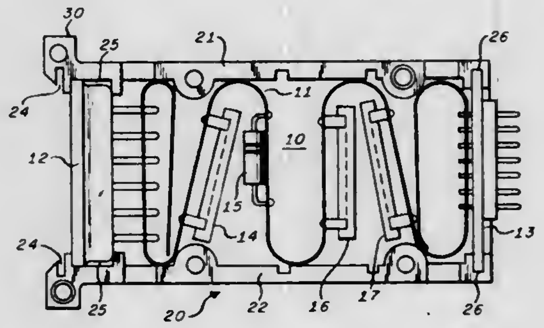
INDICATOR MODULE AND METHOD OF MANUFACTURING SAME

Manuel R. Leyba, Phoenix, Ariz., assignor to Sperry Rand Corporation, Fullerton, Calif.

Filed Aug. 8, 1973, Ser. No. 386,797

Int. Cl. H05k *5/00*

U.S. Cl. 317—101 R **5 Claims**



1. An indicator module comprising flexible circuit strip means having circuit wiring formed thereon, indicator element means, electrical contact connector means and circuit component means secured upon said strip means and electrically interconnected to said circuit wiring to form an indicator circuit,

said strip means being folded to form a folded assembly with said indicator element means and said electrical connector means at the periphery thereof,

and case means, said case means including a front portion having a first set of grooves formed therein, and a rear portion having a second set of grooves formed therein, said folded assembly being inserted into said case means with said indicator element means being inserted within said first set of grooves and said electrical connector means being inserted within said second set of grooves.

3,873,890

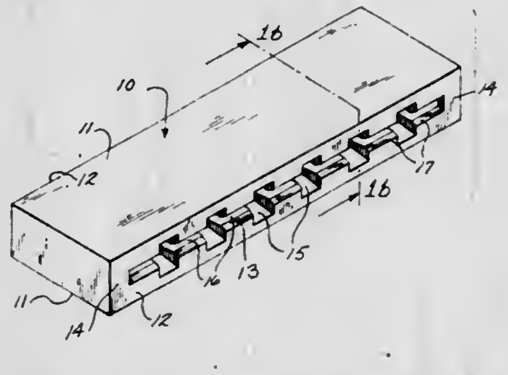
TERMINAL CONSTRUCTION FOR ELECTRICAL CIRCUIT DEVICE

Richard J. Beckman; John C. Blanchard, both of Milwaukee; Robert Marshall, Mequon; Orville R. Penrod, Muskego; Theodor von Alten, Grafton, and Oscar Denes, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 20, 1973, Ser. No. 389,765

Int. Cl. H05k *5/00*

U.S. Cl. 317—101 CC **9 Claims**



1. In an electrical circuit device including a substrate of electrically insulating material having a first planar surface upon which is disposed electrical circuit components:

a planar termination surface disposed in a plane angularly relative to said first mentioned circuit supporting surface, said termination surface defining a groove;

a plurality of laterally spaced terminal leads each having an end portion seated in said groove;

a plurality of laterally spaced continuous conducting edge termination coating areas each deposited transversely of said groove and underlying the end portion of one of said laterally spaced leads, each of said termination coating areas extending from its associated lead onto said first planar surface and in electrical contact with the electrical circuitry disposed thereon; and

a solder coating on each of said edge termination coating areas and the end portion of its associated lead to retain and anchor said lead in place.

3,873,891

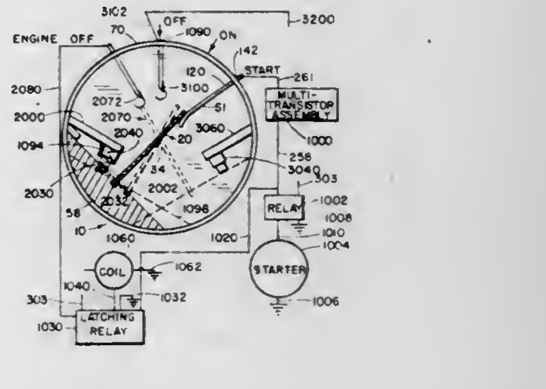
ELECTRIC LOCK AND KEY ASSEMBLY

Richard W. Gerber, 3000 University, Webster City, Iowa 50265

Division of Ser. No. 214,675, Jan. 3, 1972, Pat. No. 3,793,500. This application Oct. 1, 1973, Ser. No. 401,991The portion of the term of this patent subsequent to Feb. 19, 1991, has been disclaimed.

Int. Cl. B60n *25/04*

U.S. Cl. 317—134 **19 Claims**



1. A lock assembly comprising:

a rotatable key guide within a housing, said key guide being movable from a first position to a second position;

electrical contacts mounted within said housing to form a switching circuit;

a locking solenoid which is energized upon closing said contacts in said switching circuit;

a locking means which is moved from one position to another when said solenoid is energized;

the contacts of said switching circuit being closed when an easily duplicated conductive key having prearranged protrusions moves said key guide from said first position to said second position and said protrusions directly engage said contacts of said switching circuit completing an electrical circuit between said protrusions and said contacts of said switching circuit, whereby said locking solenoid is energized and said locking means is moved without use of a conventional pin-tumbler mechanism.

.3,873,892

HIGH SECURITY LOCK

Joseph R. Dettling, Santa Clara.and John P. Barry, Woodland Hills, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 248,196, April 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 881,094, Dec. 1, 1969, abandoned. This application Apr. 25, 1974, Ser. No. 464,013

Int. Cl. E05b *49/00*

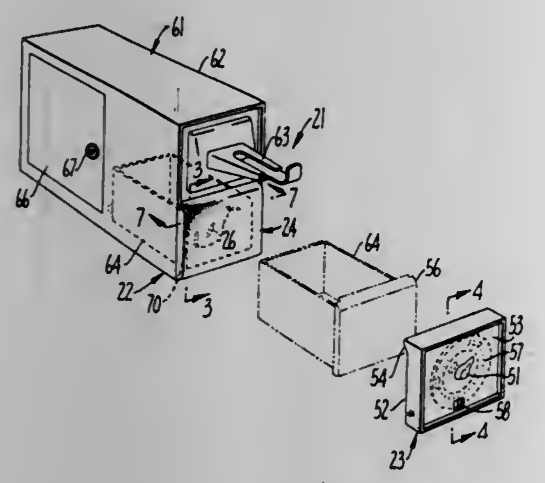
U.S. Cl. 317—134 **35 Claims**

1. An electromagnetic locking device having a lock portion and a key portion, comprising:

a. an array of magnetically actuatable switches within said lock portion,

b. an electromotive device within said lock portion, for performing a desired unlocking function upon energization, said electromotive device having first and second coils, said first coil being operative to actuate said device and said second coil be operative to produce a field blocking the operation of said first coil and preventing actuation of said device,

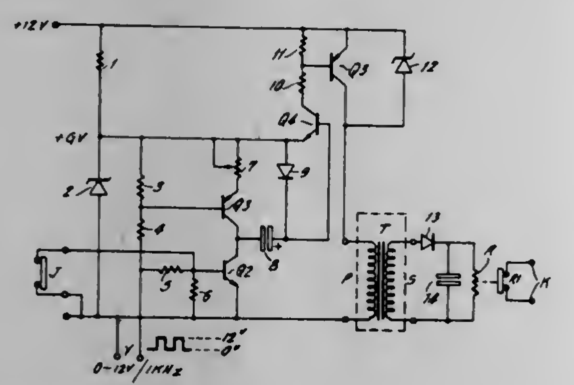
c. at least one of said plurality of switches being connected in series in the line of supply of power to said first coil,
d. at least one of said plurality of switches being connected in series in the line of supply of power to said second coil which switches, when more than one are employed, are



in parallel with each other, whereby closure of one of said switches actuates said second coil to produce a NOGO function and,
e. an array of magnets within said key portion positionable to actuate the desired switches of said plurality of switches.

3,873,893
FAIL-SAFE TIMING CIRCUIT

Gianni Bianchini, Reggio Emilia, Italy, assignor to Societa Italiana Elettronica S.p.A., Milan, Italy
Filed Feb. 27, 1974, Ser. No. 446,144
Claims priority, application Italy, May 30, 1973, 24809/73
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S 15 Claims

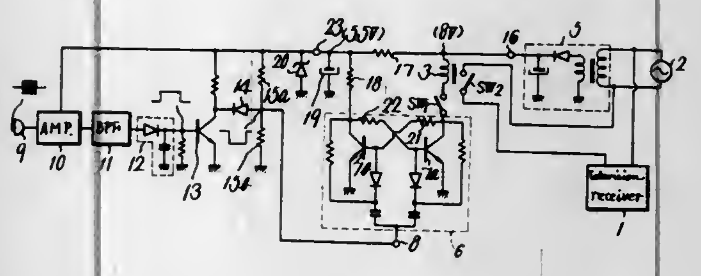


1. Means responsive to a predetermined input condition for obtaining a delayed output signal only when said input condition persists of over the entire first delay period comprising:
a source of electrical energy;
energy storage means;
output means having first quiescent and second active operating states;
amplifier means;
transfer means coupling said amplifier means to said output means;
charging means normally coupling said energy storage means to said energy source and responsive to said input condition to decouple said energy storage means from said energy source;
discharge control means responsive to said input condition for coupling said energy storage means to said amplifying means in a repetitive alternating fashion;
said transfer means comprising means for coupling only said alternating components of the output of said amplifier means to said output means;

said output means being operated in its active state upon occurrence of said input condition and being moved to its quiescent state only if said input condition persists after said energy storage means is fully discharged.

3,873,894
POWER SUPPLY CONTROL SYSTEM

Tadashi Sato, Yono, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 374,863, June 29, 1973. This application Sept. 18, 1973, Ser. No. 398,413
Claims priority, application Japan, July 6, 1972, 47-79886
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 6 Claims

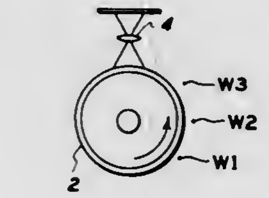


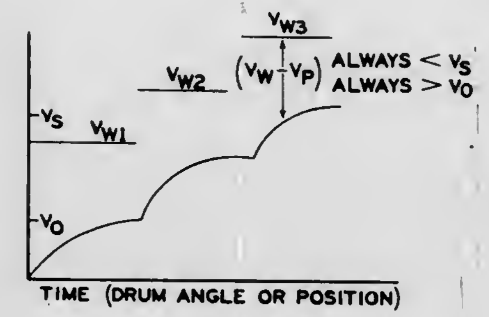
1. A system for controlling the supply of electric power to an electric apparatus from an external power source, the system comprising, a bistable flip-flop circuit comprising first and second switching elements; circuit means connected to said switching elements to make said first switching element preferentially conductive upon the application of operating voltage to said flip-flop circuit; a remotely controllable power switch controlled by the flip-flop circuit, the electric power source being connected to the electric apparatus through the remotely controllable power switch; a remote control signal processing circuit for supplying a remote control triggering signal to the flip-flop circuit to thereby control the remotely controllable power switch; and a manually controllable power switch connected in series with said second switching element of the flip-flop circuit to control the supply of power to the electric apparatus independently of the remotely controllable power switch.

3,873,895
TECHNIQUE FOR CHARGING DIELECTRIC SURFACES TO HIGH VOLTAGE

Charles F. Gallo, Jr., and Thomas J. Hammond, both of Penfield, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 5, 1973, Ser. No. 422,050
Int. Cl. H01t *19/00*
U.S. Cl. 317—262 A 3 Claims

1. A method of applying electrostatic charge to a stationary dielectric surface by means of a stationary corona electrode operatively disposed relative to said dielectric surface, said method including the steps of;
a. applying a voltage to said corona electrode at a level relative to that of said dielectric surface above the threshold level required to ionize the surrounding atmosphere and generate corona current, and below the breakdown level at which arcing occurs, so that corona current flows to said dielectric surface,
b. increasing the voltage on said corona electrode in relation to the increase of voltage on said dielectric surface according to the condition that the potential difference between said corona electrode and said dielectric surface remains between said breakdown level and said threshold level, while the voltage of said corona electrode is increased above the breakdown level,

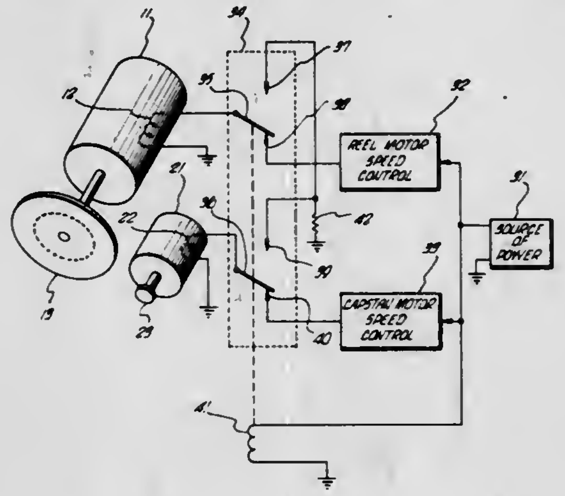




whereby the voltage of said dielectric surface may be increased above the breakdown level.

3,873,896
FAILSAFE SYSTEM FOR ENERGIZING THE CAPSTAN MOTOR OF A MAGNETIC TAPE TRANSPORT SYSTEM

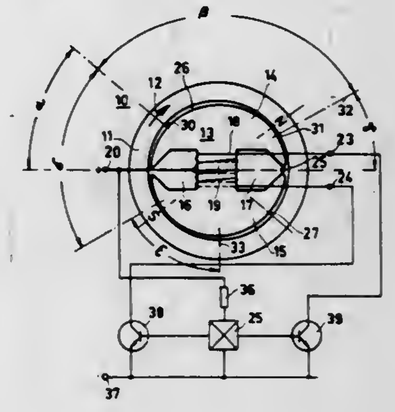
Thomas Edwin Jennings, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 5, 1973, Ser. No. 412,626
Int. Cl. B65h *25/22*
U.S. Cl. 318—7 10 Claims



1. In a magnetic tape transport system, the combination comprising:
a. at least one relatively high inertia reel means adapted for receiving or dispensing a roll of magnetic tape;
b. voltage generating means coupled to said reel means for producing a voltage varying according to the velocity of rotation of said reel means;
c. a relatively low inertia capstan motor for controlling the velocity of the magnetic tape passing over a magnetic head; and
d. switching means intercoupled between said voltage generating means and said capstan motor, said switching means being adapted to automatically couple said voltage varying according to the velocity of rotation of said reel means to said capstan motor upon the loss of power being supplied to said capstan motor for causing said capstan motor to continue to rotate in the same direction as prior to the loss of power with a velocity of rotation in accordance with the voltage varying according to the velocity of rotation of said reel means.

3,873,897
COLLECTOR-LESS D-C MOTOR

Rolf Muller, Saint Georgen, Germany, assignor to Papst-Motoren KG, Black Forest, Germany
Filed May 23, 1973, Ser. No. 363,290
Claims priority, application Germany, May 25, 1972, 2225442; Oct. 27, 1972, 2252727; Dec. 8, 1972, 2260069; Mar. 22, 1973, 2314259
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 35 Claims



1. Brushless d-c motor having a permanent magnet rotor (11);
a stator (13, 14, 15);
a winding (18, 19) on the stator to generate an electromagnetic field when energized;
and an air gap (26, 27, 111, 112, 116-119) separating the rotor and the stator;
controlled semiconductor switching means (38, 39) controlling pulsed current flow through the winding;
wherein the width of said air gap is non-uniform, in zones, so that the reluctance of the magnetic circuit which includes said stator, said air gap and said rotor varies with angular position over the circumference of the stator, said zones, in the direction of rotation of the motor being defined by:
a zone of increasing width of the air gap and hence increasing reluctance of the magnetic circuit extending over a first angular range (α) to a maximum (d_2), and then a zone of decreasing width of the air gap and hence decreasing reluctance of the magnetic circuit extending over a second angular range (β) to a minimum (d_1),
and means (25) synchronizing pulsed energization of the semiconductor switching means and hence of the winding with the angular position of the rotor to generate, electrodynamically, an interrupted, pulsed electromagnetic torque during such pulsed energization of the winding by interaction of the magnet of the rotor with the electromagnetic field, due to energization of the winding and to store during such pulsed energization of the winding a portion of said generating torque in form of magnetic reluctance torque by interaction of the magnet of the rotor with the magnetic structure of the stator when the magnet of the rotor is in an angular range which includes at least part of said zone of increasing width of the air gap, the reluctance torque stored in magnetic form being released to the rotor, during pulse gaps, or interruptions in the generated electromagnetic field, by interaction of the magnet of the rotor with the magnetic structure of the stator when the magnet of the rotor is in an angular range which includes at least part of said zone of decreasing width of the air gap, the alternating component of the electrodynamically generated torque and the magnetic reluctance torque being in phase opposition and, together,

providing a net driving torque to the rotor upon its rotation with respect to the stator.

3,873,898
PHYSICAL CONDITION RESPONSIVE TRANSDUCER SYSTEM, PARTICULARLY MAGNETIC FIELD TRANSDUCER SYSTEM ESPECIALLY FOR USE IN OR COMBINATION WITH BRUSHLESS D-C MOTORS

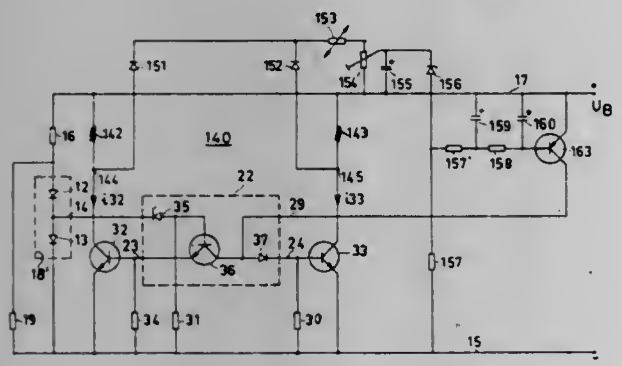
Rolf Muller, St. Georgen, Germany, assignor to Papst-Motoren KG, St. Georgen, Germany

Filed Dec. 21, 1973, Ser. No. 427,404

Claims priority, application Germany, Dec. 23, 1972, 2263242

Int. Cl. H02k *29/02*

U.S. Cl. 318—138 **24 Claims**



1. Magnetic field dependent transducer system for connection to supply terminals **15, 17** adapted to have a voltage appear thereacross, comprising

two serially connected transducer elements **12, 13** responsive to a magnetic field and changing their respective electrical impedances in opposite directions in response to a unidirectional change in the magnetic field incident thereon, connected to said supply terminals, the voltage appearing at the common junction **14** of said serially connected elements being a function of the direction of the magnetic field acting on said elements;

and a logic circuit **22** having two relatively opposite, complementary, essentially symmetrical outputs **23, 24** and having a supply terminal **29** connecting signals applied to said supply terminal, selectively, with one or the other of said outputs;

the voltage of said junction **14** of the serially connected transducer elements being connected to the logic circuit **22** to control which one of said outputs **23** or **24** will be connected to said supply terminal **29**.

3,873,899
AUTOMATIC INDEX AND OPERATING CYCLE REGULATOR FOR A PUNCH

Osamu Seo, and Genichi Tanabe, both of Komatsu-shi, Ishikawa-ken, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

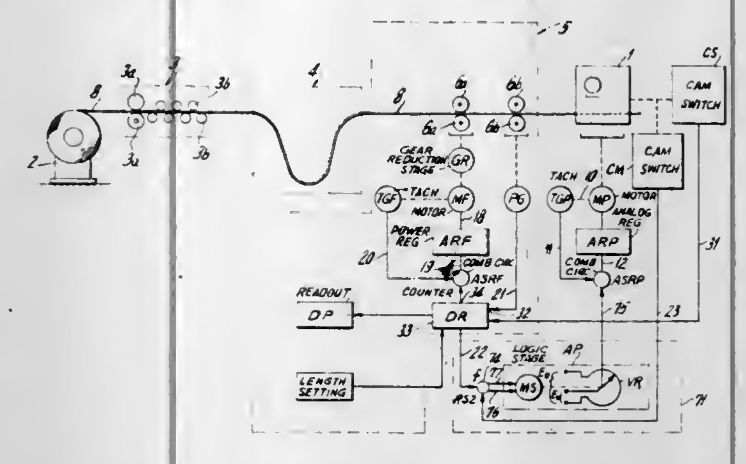
Continuation-in-part of Ser. No. 398,455, Sept. 18, 1973, abandoned, which is a continuation of Ser. No. 173,914, Aug. 23, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,505

Claims priority, application Japan, Aug. 25, 1970, 45-74031

Int. Cl. H02p *5/16*

U.S. Cl. 318—309 **7 Claims**

1. In a manufacturing line wherein successive ideally fixed-length segments of sheet material are advanced into a punch press operating at a variable and initially low cyclic rate, the improvement which comprises means rendered effective at the completion of advance of each segment into the press for generating a first output indication; means operative at a fixed point in each press cycle for generating a second output indication, each second output indication being initially delayed relative to the corresponding first output indication, normally disabled means rendered effective during each press cycle that the second output indication is delayed relative to the first output indication for increasing the cyclic rate to decrease the time delay between the first and second indications; and means responsive to a coincidence of the first and second output indications for disabling the rate increasing means.



3,873,900
SERVO DRIVE FOR A ROTATING SYSTEM

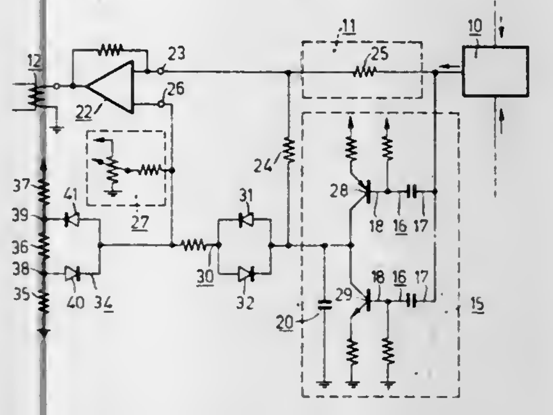
Friedrich Sommer, Vienna, and Uwe Jahnke, Klosterneuburg, both of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 268,731, July 3, 1972,. This application Jan. 7, 1974, Ser. No. 431,018

Claims priority, application Austria, July 8, 1971, 5947/71

Int. Cl. G05b *6/02;* **H02p** *5/50*

U.S. Cl. 318—314 **5 Claims**



1. Servo drive for a rotating system which comprises a phase detector for determining the phase difference between first and second input signals, one of said signals comprising a sawtooth signal, means coupled to said phase detector for generating said first input signal, said first signal comprising a measuring signal the frequency of which is representative of the speed of the rotating system, means coupled to said phase detector for generating said second input signal said second signal comprising a reference signal the frequency of which is representative of the desired speed, the output signal from the phase detector being applied, via a first transmission path, as a first control signal to a control device adapted to be coupled to said system for controlling the speed of the rotating system, the phase detector comprising means for sampling said sawtooth signal at sampling instants which are in synchronism with the other input signal and a means for storing the sampled values, said stored values comprising the output signal from the phase detector, a second transmission path shunting said first path, which second path comprises at least one differentiator for differentiating the output signal from the phase detector, the output of this differentiator being connected to a summing device in which the successive peak values of the output signal from this differentiator are summed, the resulting sum signal being applied to the control device as a second control signal.

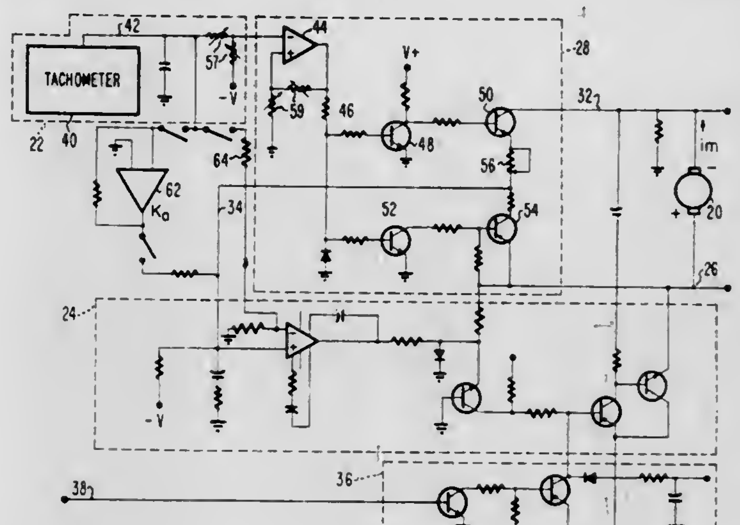
3,873,901
AUTOMATIC TORQUE CONTROL SYSTEM FOR MOTORS

Jack Beery, Farmington, and Arnold W. Brandt, Milford, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 30, 1973, Ser. No. 346,347

Int. Cl. H02p *7/00*

U.S. Cl. 318—332 **14 Claims**



1. A torque control system for a servo motor comprising:
speed sensing means;
a servo amplifier for providing input voltage to the motor; and
switching means responsive to said speed sensing means for switching the input to said servo amplifier from a voltage representing the motor voltage to a voltage representing the motor output current.

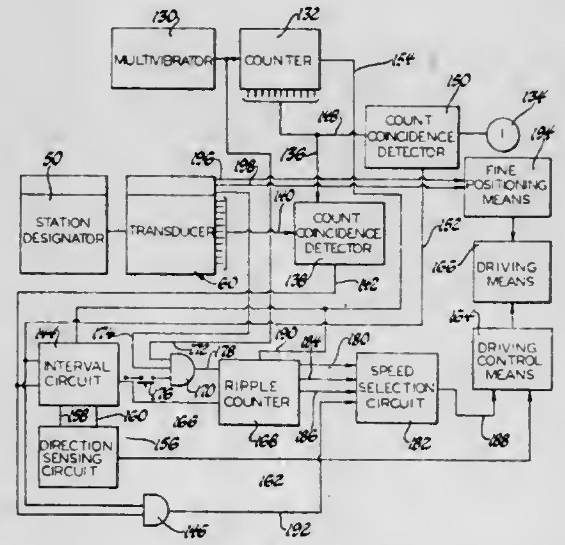
3,873,902
POSITIONING CONTROL SYSTEM FOR MATERIAL HANDLING VEHICLES

Arthur R. Burch, Plainwell, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 15, 1970, Ser. No. 46,001

Int. Cl. G05b *11/18*

U.S. Cl. 318—594 **12 Claims**



1. A vehicle control system adapted to control the movement of a vehicle into a predetermined position relative to a selected station comprising: motive power means on the vehicle for moving it forward and backward on a path extending past the station, first control means responsive to a destination station command signal for causing energization of the motive power means to move the vehicle in the direction of the selected station at a controlled speed, transition control means responsive to the arrival of the vehicle at the selected station for transferring control of the motive power means from the first control means to a second control means, said second control means including a signal device at the selected station and defining first and second limit positions in the forward and backward directions, sensing means including first and second spaced sensors on the vehicle and adapted to coact with the signal device to produced a binary signal when aligned with either the first or second limit positions of said signal device, said transition control means being connected with said sensing means and responsive to the occurrence of a binary signal from one of said sensors to cause energization of the motive power means for continued movement in the same direction, and a null responsive means connected with said sensing means and responsive to the simultaneous occurrence of binary signals from both of said sensors to interrupt the power to said motive power means and stop said vehicle.

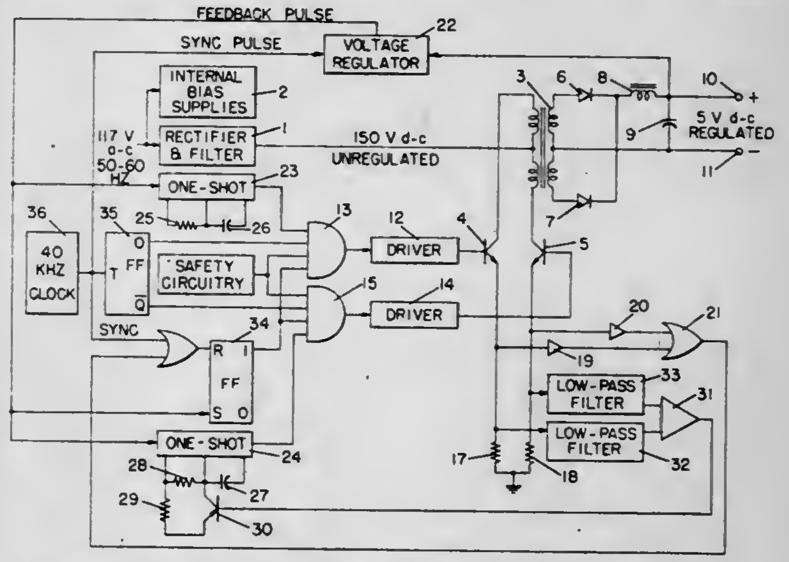
3,873,903
VOLT-SECOND BALANCING MEANS FOR A HIGH FREQUENCY SWITCHING POWER SUPPLY

Philip W. Koetsch, and Joseph C. Jensen, both of San Diego, Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 15, 1974, Ser. No. 443,941

Int. Cl. H02m *7/20;* **G05f** *1/56, 1/64*

U.S. Cl. 321—2 **2 Claims**



1. a high frequency switching power supply comprising:
A. a source of d-c having a high side and a common side;
B. a high frequency transformer including a primary winding having a center tap and first and second ends;
C. means coupling said high side of said d-c source to said center tap;
D. a first power switching transistor electrically disposed between said first end of said transformer and said common side of said d-c source;
E. a second power switching transistor electrically disposed between said second end of said transformer and said common side of said d-c source;
F. a clock pulse source;
G. enabling means responsive to clock pulses for alternately developing drive pulses to said first and second power switching transistors:
H. first and second current sensing means coupled, respectively, to said first and second power switching transistors for developing first and second current value signals corresponding to the instantaneous currents therethrough;
I. compensating means responsive to the difference between the first and second current value signals to alter the duration of said drive pulses to said first power switching transistor, said compensating means including:
  i. a monostable multivibrator coupled to said enabling means to provide an enabling signal thereto when said monostable multivibrator times out, said monostable multivibrator starting a cycle of operation in response to a timing pulse derived from a clock pulse; and
  ii. a variable timing resistance, the duration of delay through said monostable multivibration being depen-

dent upon said variable timing resistance, the valve of said variable timing resistance being responsive to the magnitude of the average difference between the first and second current value signals; and

J. first and second integration means coupled, respectively, between said first current sensing means and said compensating means and between said second current sensing means and said compensating means whereby said compensating means responds to an average difference between the first and second current value signals.

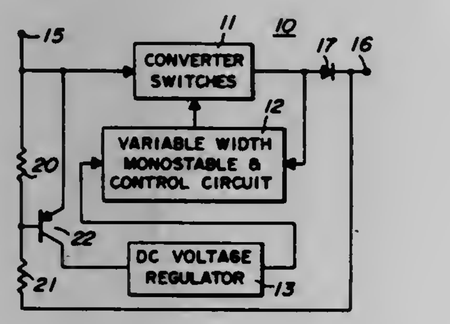
3,873,904
AUTOMATIC TURN-ON CIRCUIT FOR A DC TO DC DOWN CONVERTER

Rolf E. Kowalewski, Palatine, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 21, 1974, Ser. No. 453,458

Int. Cl. G05f *1/64;* H02m *3/32*

U.S. Cl. 321—2 5 Claims



1. In a DC to DC down converter having input and output terminals and a semiconductor switch coupled therebetween, which semiconductor switch is controlled by a variable pulse generator and adapted to be powered by a voltage source, an automatic turn-on circuit comprising:

a. voltage divider means coupled between the input and output terminals of said converter, and having at least one tap, for conducting a relatively small current through said divider means from the input terminal to the output terminal, with a power supply connected to the input terminal, upon the connection of a load to the output terminal;

b. switching means coupled to the tap of said divider means and operable in response to a voltage thereon, said switching means being further coupled between said pulse generator and said voltage source for supplying power from said voltage source to said pulse generator only during operation of said switching means; and

c. unidirectional current conducting means connected in the circuit between said semiconductor switch and the coupling of said voltage divider means to said output terminal for allowing the flow of current from said semiconductor switch to said output terminal but no flow of current from said output terminal to said semiconductor switch.

3,873,905
CONTROL CIRCUIT TO PROVIDE SHUNT PATH FOR LEAKAGE CURRENT

Albert J. Marek, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Mar. 18, 1974, Ser. No. 452,035

Int. Cl. G05f *1/60*

U.S. Cl. 323—9 4 Claims

1. A control circuit including:

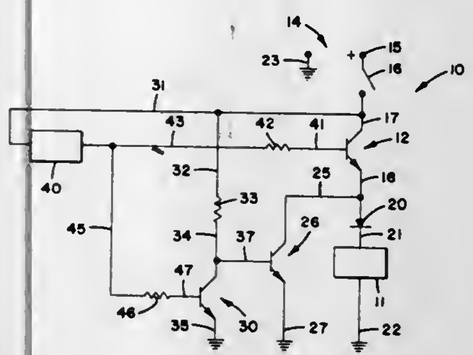
switch means providing a switch circuit having a low impedance in a first condition of said switch means and a high impedance in a second condition of said switch means;

a load;

a control device connected in series between said switch circuit and said load, said control device being rendered conductive when the voltage thereacross exceeds a predetermined value;

means for connecting said switch circuit, said control device and said load in series across an electric current input circuit;

shunt means connected between said control device and said switch circuit for shunting from the load currents flowing through said switch circuit when said switch means is in said second condition to prevent the voltage across said control device from exceeding said predetermined value;



control means operatively associated with said switch means for selectively placing said switch means in said first and second conditions; and,

means operatively associated with said control means for rendering said shunt means operative when said switch means is in said first condition and for rendering said shunt means inoperable when said switch means is in said second condition.

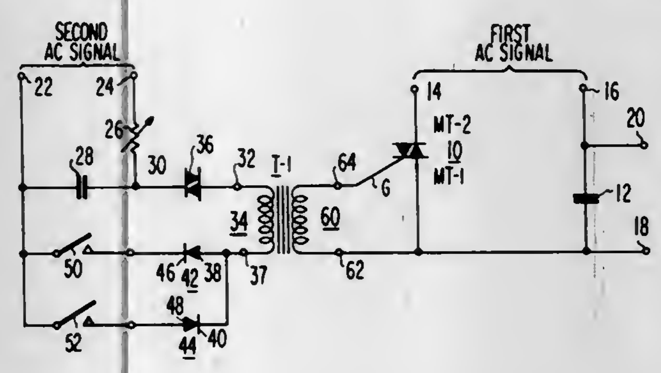
3,873,906
SIGNAL CONVERSION CIRCUITS

Stuart Stanley Perlman, and Joseph Henry McCusker, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,770

Int. Cl. G05f *3/08*

U.S. Cl. 323—19 13 Claims



1. In combination:

two input terminals for receiving an alternating current input signal;

a bidirectional switch;

a load capacitor in series with the switch, the series circuit being connected between said input terminals;

means including a phase shift circuit responsive to a first control signal manifestation for closing said bidirectional switch solely once each period of the alternating current input signal at a time to charge the capacitor in one sense and to a level dependent upon the amount of phase shift introduced by said phase shift circuit, said means being responsive to a second control signal manifestation for closing said bidirectional switch solely once each period of said alternating current input signal at a time to charge said capacitor in the opposite sense and to a level also dependent upon the phase shift introduced by said phase shift circuit thereby providing a direct current output signal of either polarity and of controllable level across said capacitor.

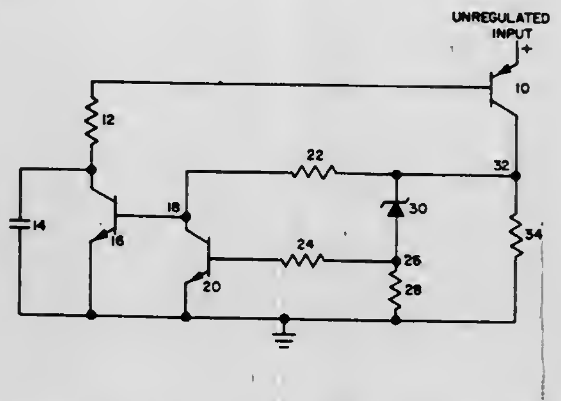
3,873,907
HIGH DYNAMIC RANGE VOLTAGE REGULATOR

Jon Hunt Bumgardner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 409,997

Int. Cl. G05f *1/56*

U.S. Cl. 323—22 T 3 Claims



1. An electronic voltage regulator for providing a regulated output voltage from an unregulated input, comprising:

a regulating transistor coupled to said unregulated input;

circuit means coupled to the base terminal of said regulating transistor for controlling the conductivity rate of said regulating transistor in response to the value of the regulators output; and

circuit means coupled to said rate controlling means for sensing the value of the regulator's output and providing an output to said rate controlling means in response thereto;

wherein said rate controlling means includes a transistor having the collector coupled to the base of said regulating transistor, said sensing and providing means is coupled to the base of the said transistor of the rate controlling means, and the collector of said regulating transistor is directly connected to the output terminal of the regulator, and

said sensing and providing means includes a transistor having its collector coupled to the base of the said transistor of the rate controlling means, and a diode coupled between the regulator's output terminal and the base of the said transistor of the sensing and providing means; and

wherein a resistor couples the collector of the said transistor of said rate controlling means to the base of said regulating transistor, and a capacitor is directly coupled between the collector and the emitter of the said transistor of the rate controlling means.

3,873,908
SELF-OSCILLATING OPTICALLY PUMPED MAGNETOMETER HAVING AUTOMATIC PHASE CORRECTION

Byron A. Young, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 361,081, May 17, 1973, abandoned. This application Dec. 17, 1973, Ser. No. 425,377

Int. Cl. G01r *33/08*

U.S. Cl. 324—.5 R 7 Claims

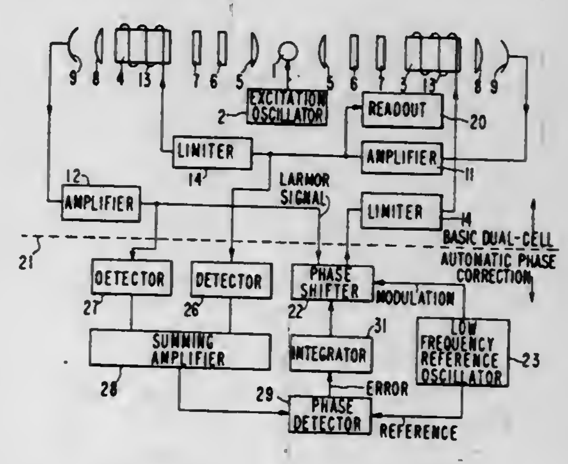
1. In an optically pumped magnetometer:

means having first and second optical absorption volumes, each containing an assemblage of quantum systems which may precess in a unidirectional magnetic field at a rate which is determined by the intensity of said field;

means for directing optical radiation to said absorption volumes with such spectral characteristics as to be differentially absorbed with respect to the magnetic sub-levels of said quantum systems, whereby the intensity of the optical radiation received from each volume is intensity modulated at a frequency which depends on said precession rate;

means for converting the intensity modulation of the radiation received from said absorption volumes into alternating electrical signals;

means for cross-coupling the alternating electrical signal derived from each absorption volume to the other absorption volume in the form of an alternating magnetic field which produces forced precession of said quantum systems, thereby effecting self-sustained oscillation of said electrical signals at a frequency determined by the intensity of said unidirectional magnetic field and at a frequency corresponding to an overlap of the envelopes of the resonance lines of said first and second quantum systems, each of said resonance lines corresponding to slightly different center frequency precessional rates in each of said volumes; and



phase control means for causing said overlap frequency of oscillation to occur at a frequency corresponding to substantially equal slope for the envelopes of each of said overlapping resonance lines, said phase control means including, means for modulating the phase of said self-oscillating frequency at a modulation frequency to effectuate a corresponding amplitude modulation in each of said first and second alternating electrical signals derived from each of said absorption volumes, means for comparing said amplitude modulation signals to derive an error signal proportional to the difference in slope of the first and second resonance lines at the self-oscillating frequency, and means for shifting the phase of said self-oscillating signal in response to said error signal to cause said self-oscillation frequency to occur at a frequency corresponding to equal slopes of said first and second resonance line envelopes.

3,873,909
GYROMAGNETIC APPARATUS EMPLOYING COMPUTER MEANS FOR CORRECTING ITS OPERATING PARAMETERS

Richard R. Ernst, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

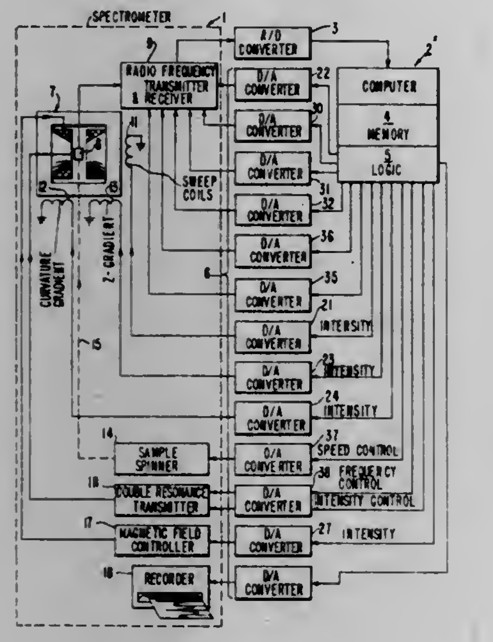
Filed Aug. 21, 1967, Ser. No. 661,985

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R 9 Claims

1. In a gyromagnetic resonance apparatus, means forming a gyromagnetic resonance spectrometer having certain operating parameters for exciting and detecting gyromagnetic resonance of a sample of matter to be investigated in a polarizing magnetic field to obtain gyromagnetic resonance data, means forming a computer having a memory in which to store resonance data and for performing logic operations on the stored data, means for feeding the gyromagnetic resonance data to said computer means for storage in the memory, the improvement comprising, means for processing said stored resonance data to derive an output for correcting at least one of the operating parameters of said gyromagnetic resonance

spectrometer, and means for feeding the corrective output to said gyromagnetic resonance spectrometer for correcting an

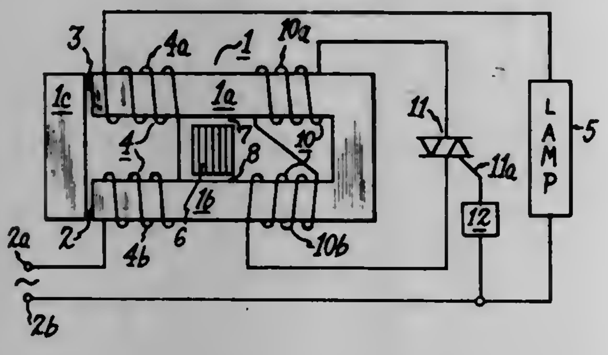


operating parameter thereof to obtain corrected gyromagnetic resonance spectral data.

3,873,910
BALLAST CONTROL DEVICE

Candler A. Willis, Jr., Zirconia, N.C., assignor to General Electric Company, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,455
Int. Cl. G05f *7/00*
U.S. Cl. 323—6 **9 Claims**

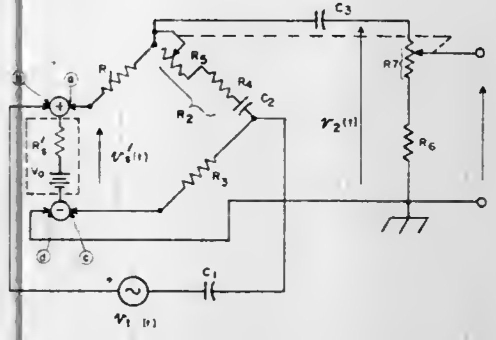


1. Electrical ballast control device comprising, in combination, a magnetic core forming a closed magnetic circuit and having spaced leg portions, magnetic shunt means extending between said spaced leg portions and spaced from at least one of said leg portions by non-magnetic gap means, a main winding arranged on said core on one side of said magnetic shunt means, means for connecting said main winding in series with an alternating current source and a gaseous discharge lamp for forming a single series loop thereof, and control means for controlling the power applied to the gaseous discharge lamp comprising a control winding on said core on the opposite side of said magnetic shunt means and having current induced therein when current passes through said main winding, and switch means connected in series with said control winding, whereby operation of said switch means controls the current in said control winding and thereby the reactance of the ballast control device and the power supplied to the gaseous discharge lamp.

3,873,911
ELECTRONIC BATTERY TESTING DEVICE

Keith S. Champlin, 5437 Elliot Ave., Minneapolis, Minn. 55417

Continuation of Ser. No. 180,340, Sept. 14, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,667
Int. Cl. G01n *27/42*; G08b *21/00*
U.S. Cl. 324—29.5 **25 Claims**



1. A measuring device for assessing the condition of a direct current source of electricity comprising:

a. means providing a time-varying signal;
b. electrical connecting means constructed and arranged to be connected to each output terminal of said direct current source of electricity, each of said connecting means containing both a first conductor and a second conductor separately contacting each of said terminals, said first and second conductors reducing the effects of contact and lead-wire resistance;
c. electrical means for applying a time-varying current derived from said time-varying signal through said direct current source of electricity by means of a pair of said first conductors, for sensing the resultant time-varying potential across said direct current source of electricity by means of a pair of said first conductors, for sensing the resultant time-varying potential across said direct current source of electricity by means of a pair of said second conductors, and for utilizing said time-varying potential to determine the reciprocal of the dynamic resistance of said direct current source of electricity at frequencies such that the reactive component of the ac impedance of said direct current source is substantially small in comparison with the resistive component of same;
d. and indicating means connected to said electrical means including pointer means and scale means, the position of said pointer means relative to said scale means during measurement being substantially proportional to the reciprocal of the dynamic resistance of said direct current source of electricity, said scale means subsequently relating said relative position to the condition of said direct current source of electricity.

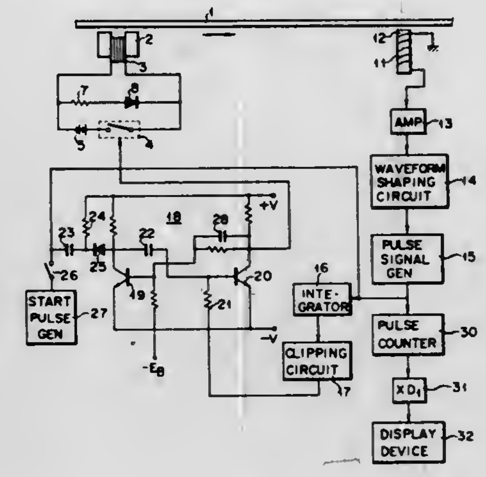
3,873,912
METHOD AND APPARATUS FOR FORMING ON A MOVING MAGNETIC MATERIAL A MAGNETIZED MARK OF PRESCRIBED WIDTH REGARDLESS OF VARIATIONS OF SPEED OF MOVING MAGNETIC BODY

Toshihiro Mori, Yokohama; Seigo Ando, Kawasaki; Katsujiro Watanabe, Tokyo, and Takeo Yamada, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,529
Claims priority, application Japan, Oct. 16, 1972, 47-103446
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 L **7 Claims**

1. An apparatus for locally magnetizing moving magnetic material comprising:

a magnetizing coil for forming a magnetized mark on the moving magnetic material;
at least one detector for detecting the magnetized mark, said magnetizing coil and detector being linearly arranged a fixed distance apart aside the magnetic material in its traveling direction;
means for supplying the magnetizing coil with pulse current having a fixed repetitive period;
means for extracting a signal denoting the speed of the traveling magnetic material out of a detection signal delivered from the magnetized mark detector; and

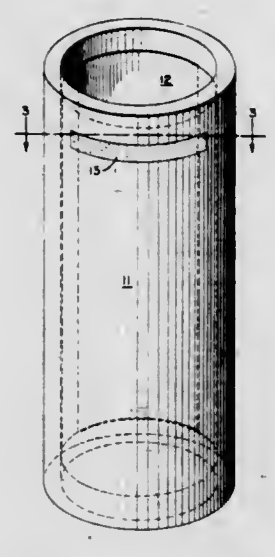


control means responsive to the extracted signal for controlling the time width of the pulse current so as to render said time width inversely proportional to the speed of the moving magnetic material thereby causing the magnetized mark to have a fixed length regardless of the speed of the material.

3,873,913
SHOCK RESISTANT MAGNETIC DETECTOR CORES

Arthur W. Obenschain, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1962, Ser. No. 184,648
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **1 Claim**

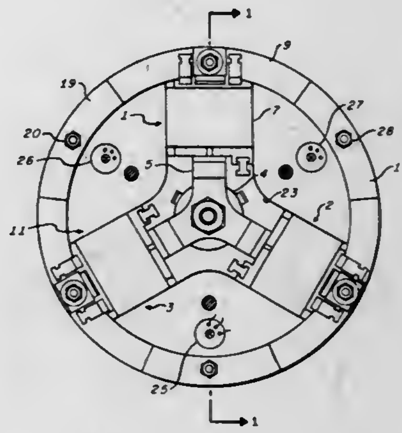


1. In a magnetometer, an open-ended cylindrical tube composed of a non-magnetic material and having an opening in the longitudinal sidewall thereof substantially closer to one of the open ends of the tube than to a point midway along the length of the longitudinal sidewall of the tube, a scrollwound core composed of high permeability magnetic material disposed within said tube substantially equidistant from the ends of said tube and substantially centrally thereof, said core having a deformed portion therein in registration with said opening, and a securing means within said opening adhering to the walls thereof and in anchor-like engagement with said deformed portion, whereby the scroll-wound core is secured to the tube in a zone of decreased magnetic sensitivity at a point of anchorage providing enhanced resistance to impact breakage of said tube.

3,873,914
FLUX VALVE APPARATUS FOR SENSING BOTH HORIZONTAL AND VERTICAL COMPONENTS OF AN AMBIENT MAGNETIC FIELD

Donald J. Kesselring, Phoenix, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 18, 1973, Ser. No. 380,523
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **12 Claims**



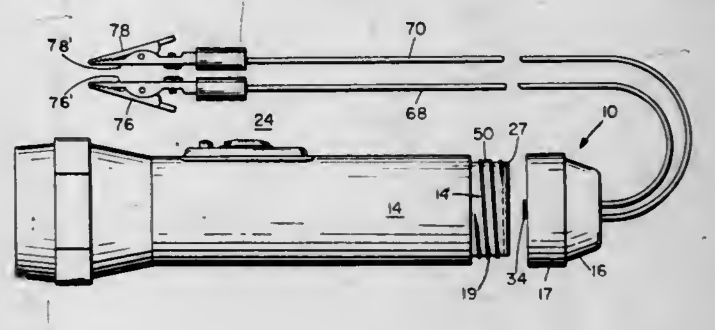
1. A magnetic field responsive device comprising

a. a first flux valve means including at least three magnetic field sensing elements equiangularly disposed in a common plane about a central axis for providing output signals proportional to correspondingly disposed components of said magnetic field lying in said plane, and
b. second flux valve means including at least three magnetic field sensing elements disposed symmetrically between said first flux valve elements and oriented normal to said common plane for supplying an output signal proportional to components of said magnetic field normal to said plane.

3,873,915
COMBINATION FLASHLIGHT AND ELECTRIC CIRCUIT TESTER

John C. Hayes, 8316 Lages Ln., Baltimore, Md. 21207

Filed Dec. 28, 1973, Ser. No. 429,385
Int. Cl. G01r *31/02*
U.S. Cl. 324—53 **1 Claim**



1. A combination electrical circuit tester and portable lamp comprising:

a. a hollow housing having a light bulb attached within a light reflector fixedly secured at one end of the housing and an attachable cap secured to the opposite end of the housing;
b. said housing being of suitable size and adapted to encase at least one electric producing dry cell including a positive pole at one end which contacts the light bulb, and a negative pole at the opposite end positioned toward the opposite end of the housing;
c. a resilient spring member positioned between the cap and the nagative pole of the dry cell;
d. a pair of electric conductor wires extending outwardly through an opening in the cap member wherein one end

of one of the wires extending through the cap is connected to an electric terminal element adapted to engage the negative pole of the dry cell, means for supporting the terminal element on an electric non-conducting member said member positioned on the inner end of the resilient spring member and insulating the terminal element from said spring member, the inner end of the resilient spring member being formed to encircle the non-conducting member for fixedly securing the non-conducting member to the inner end of the resilient spring member;

e. the other extended electric conductor wire extending through the cap being fixed directly to the resilient spring member;

f. means connecting the said resilient spring member to the positive end of the dry cell;

g. separate means associated with each of the electric conductor wires positioned immediately outside the cap and adjacent thereto for disengaging at said position each of said electric conductor wires from the housing, said disengaging means adapted to engage each other for completing the electric circuit to the light bulb;

h. clamp means attached to the outer end of the electric conductor wires for clamping the wires to elements through which the electric current from the dry cell will pass when the passage of electric current between the elements is uninterrupted.

3,873,916

CAPACITIVE SENSOR FOR MEASURING DISPLACEMENT OR POSITION

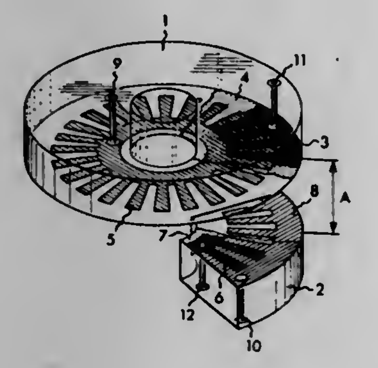
Armin Sterki, Thalwil, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Sept. 7, 1973, Ser. No. 395,132

Claims priority, application Switzerland, Sept. 7, 1972, 13173/72

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **12 Claims**



1. Scale reading apparatus comprising, two relatively movable parts, respective electrically conductive scalar reading patterns on said parts the relative positions of which patterns determine a reading, said reading patterns being electrically unconnected but at a spacing that provides a capacitive effect between them, electrical supply means and sensing means connected to said patterns to generate signals indicative of said capacitance effect and to detect variations in said capacitive effect with relative movement between the parts, the apparatus further comprising a further electrically conducting scalar pattern arranged on one of said parts to be electrically insulated from said two scalar reading patterns, the further scalar pattern having a pattern pitch corresponding to that of the scalar reading pattern on said one of said parts and being disposed 180° out of phase thereto, means holding said further pattern at a predetermined electrical potential for operation of said further pattern as an electrical screen for the stray capacitances set up between said scalar patterns.

3,873,917

MEASURING BRIDGE CIRCUIT

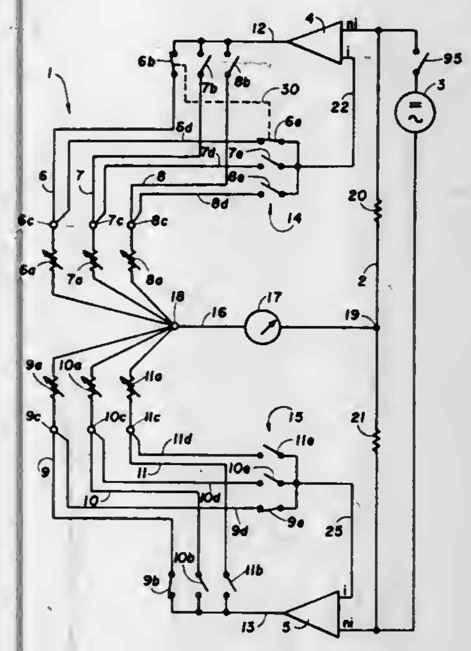
Manfred Kreuzer, Weiterstadt, Germany, assignor to Hottinger-Baldwin-Messtechnik GmbH, Darmstadt, Germany

Filed Mar. 6, 1974, Ser. No. 448,453

Claims priority, application Germany, Mar. 24, 1973, 2314754

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 **18 Claims**



1. A measuring bridge circuit arrangement, comprising a plurality of bridge branches, a respective plurality of measuring points one of which is arranged in each bridge branch, resistance means in each bridge branch, a voltage source providing a supply voltage, supply voltage switching means connected to said supply voltage source and to said bridge branches for selectively interconnecting any bridge branch and said supply voltage source, said resistance means in each bridge branch being connected through said supply voltage switching means to said supply voltage source, voltage tap means located between said resistance means and the respective one of said supply voltage switching means, supply voltage control means connected to said supply voltage source, and feedback circuit means connecting said supply voltage control means to said voltage tap means whereby said supply voltage available at said voltage tap means is adjusted to keep it at a predetermined value.

3,873,918

PARTICLE ANALYZING APPARATUS INCLUDING A SYSTEM FOR VISUALLY DISPLAYING A PARTICLE SIZE DISTRIBUTION CURVE ON A 100 PERCENT SCALE IRRESPECTIVE OF THE QUANTITY OF PARTICLES SAMPLED BY THE APPARATUS

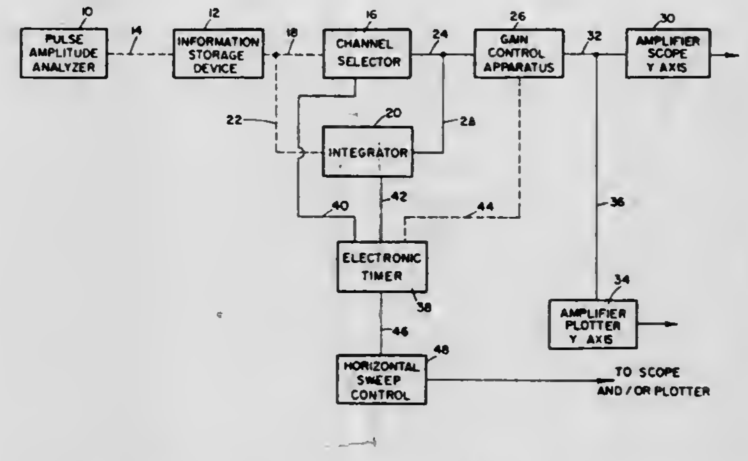
Robert L. Talbert, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 195,722, Nov. 4, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 434,895

Int. Cl. G01n *27/00;* **G01r** *15/08*

U.S. Cl. 324—71 CP **23 Claims**

1. In a method for presenting a visual display of particle size distribution and the integral thereof including the steps of passing a given amount of sample containing a plurality of particles through a sensing zone, generating a particle pulse for each particle sensed, each particle pulse having an amplitude related to the size of the particle sensed, segregating the particle pulses into a predetermined number of pulse amplitude ranges, generating in each range an output pulse for each particle pulse having an amplitude falling in that range, separately accumulating the output pulses in each range to obtain a plurality of signal levels each being indicative of the number or quantity of particles in a given size range, cyclically applying the signal levels in a timed sequence to a visual display device to present thereon a particle size distribution curve, and cyclically, sequentially and in cumulative timed steps applying the signal levels to the visual display device to present thereon an integral curve of the particle size distribution curve, the last two steps being repeatedly performed while output pulses are being accumulated, the improvement comprising the steps of cyclically and automatically adjusting the maximum amplitude of the integral curve with respect to a reference voltage related to the maximum voltage to be displayed on the visual display device for a given setting thereof.



3,873,919

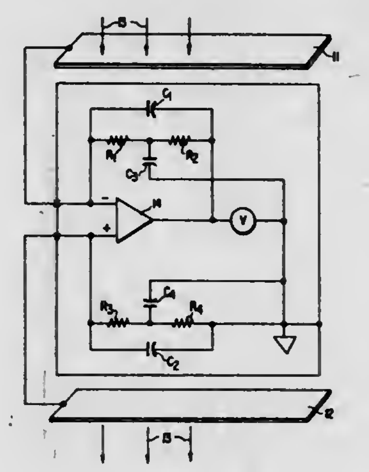
AC ELECTRIC FIELDMETER

Robert E. Vosteen, 315 W. Center St., Medina, N.Y. 14103

Filed Feb. 11, 1974, Ser. No. 441,067

Int. Cl. G01r *31/02*

U.S. Cl. 324—72 **20 Claims**



1. An instrument to measure the intensity of an AC electric field comprising:

first and second sensitive electrodes positionable in the electric field at the point at which the electric field intensity is desired to be determined to cause equal and opposite electrical charges to be induced thereon,

an operational amplifier having plus and minus inputs and an output, the first sensitive electrode being connected to the minus input and the second sensitive electrode being connected to the plus input,

first and second integrating means, the first integrating means being connected between the output of the operational amplifier and the minus input; a circuit common, the second integrating means being connected between the circuit common and the plus input to thereby provide a differential integrator circuit to produce an output voltlage between the output of the operational amplifier and the circuit common, proportional to the differential charge induced on the first and second sensitive electrodes.

3,873,920

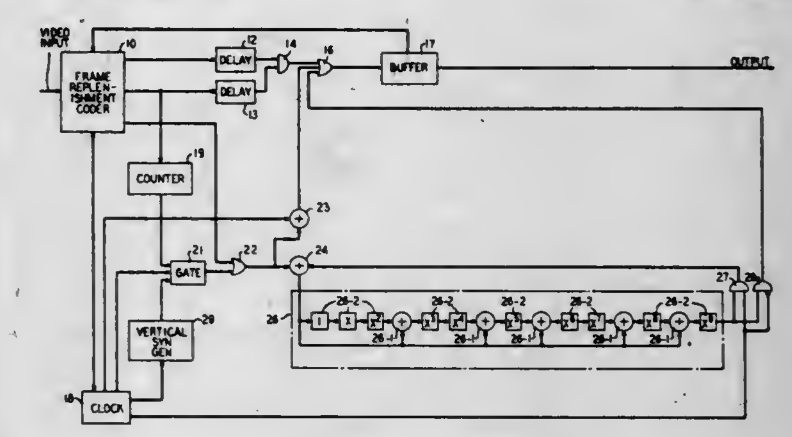
VARIABLE BLOCK LENGTH SYNCHRONIZATION SYSTEM

Garrett Gordon Apple, Jr., Worthington, Ohio, and Yau Chau Ching, Morganville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 12, 1973, Ser. No. 426,631

Int. Cl. G08c *25/00*

U.S. Cl. 325—41 **8 Claims**



1. In a variable block length synchronization system for use in the transmission of digital bits of message information grouped in blocks of highly variable length,

counting means for producing an output signal indicative of the number of bits in each block of message information;

encoding means responsive to the output of said counting means to produce an error correction synchronization word that includes information as to the number of bits in each block of message information; and

means for combining the synchronization words of said encoding means with the variable length blocks of message information to form a digital bit stream wherein each synchronization word precedes a block of message information, each synchronization word serving to indicate the bit-length of the succeeding block of message information so that the location of the next successive synchronization word can be determined.

3,873,921

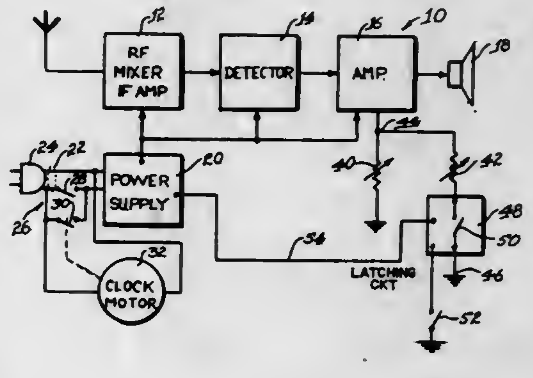
TWO LEVEL VOLUME CONTROL FOR CLOCK RADIO AND THE LIKE

Robert G. Petrinec, 617 S. East Ave., Oak Park, Ill. 60304

Filed Aug. 2, 1973, Ser. No. 385,034

Int. Cl. H04b *1/06*

U.S. Cl. 325—396 **10 Claims**



1. A radio receiver comprising: first means for receiving broadcast radio signals having audio frequency signal information associated therewith, second means coupled to said first means for detecting said audio frequency signal information, third means coupled to said second means for amplifying and reproducing said audio frequency signal information, a volume control circuit including a control knob for manually setting the desired volume level from said amplifying and

reproducing means said control knob being coupled to a first resistance element, a power supply coupled to said first, second, and third means for operating the same, on-off switch means for activating said power supply and thereby energizing said first, second, and third means, wherein the improvement comprises; a second resistance element having one end thereof coupled to said volume control circuit, and the other end thereof adapted to be connected to a reference potential, and an electronic latching circuit connected to said power supply to be initially in a first latched state to provide a first volume level from said third means when said on-off switch means is actuated, said latching circuit having a switching element connected to said other end of said second resistance element, said switching element having a first switching state for maintaining said other end of said second resistance element disconnected from said reference potential and having a second state for connecting said other end of said second resistance element to said reference potential, said second resistance element decreasing the volume obtained by said volume control circuit when said switching element is in said first state during one instance, and providing an increase in the volume when said switching element is in said second switching state during another instance.

3,873,922

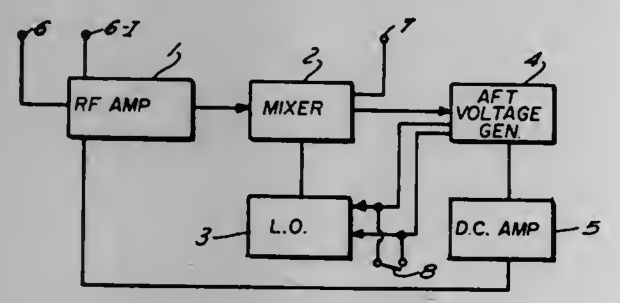
TELEVISION TUNER HAVING MEANS FOR GENERATING AFT AND AGC VOLTAGES AS WELL AS AN AUDIO SIGNAL

Hideo Aizawa, Furukawa, and Torao Morimoto, Soma, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1974, Ser. No. 430,152

Int. Cl. H04n *5/50;* H04b *1/28*

U.S. Cl. 325—422 **9 Claims**



1. A television receiver comprising a tuner having a radio frequency amplifier, a local oscillator and means for mixing the outputs of said amplifier and said oscillator to form an IF television signal; and intermediate frequency amplification and processing stages connected to said mixing means, said mixing means having means for separating a frequency component of said IF television signal from said signal proper prior to the transfer of said IF television signal to said intermediate frequency amplification and processing stages, means for detecting said separated component and generating a first voltage representative of frequency variations in said IF television signal, and means for controlling the output of said local oscillator in accordance with said first voltage to stabilize the oscillation frequency thereof.

3,873,923

FREQUENCY DETECTOR

Paul D. Iten, Oberrohrdorf, and Jiri Mastner, Niederrohrdorf, both of Switzerland, assignors to Brown, Boveri and Company, Ltd., Baden, Switzerland

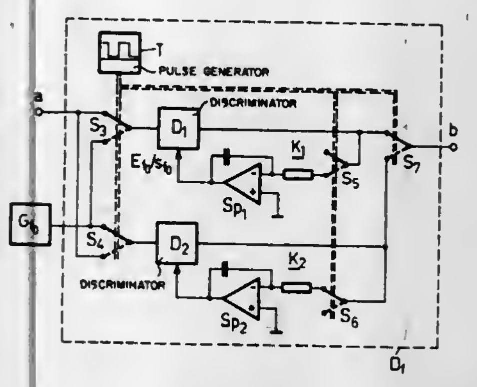
Filed Mar. 28, 1973, Ser. No. 345,784

Claims priority, application Switzerland, Mar. 30, 1972, 4663/72

Int. Cl. H04b *1/16*

U.S. Cl. 325—423 **13 Claims**

1. A frequency detector for producing a detector output in response to a detector input, comprising mixer means responsive to the input and the output for producing a beat frequency, frequency discriminator means defining a predetermined tuning frequency near the beat frequency and coupled to said mixer means for producing an analog signal in dependence upon the relationship between the beat frequency and the tuning frequency, variable oscillator means coupled to said discriminator means for producing the output at an output frequency which responds to the value of the analog signal, said oscillator means being coupled to said mixer means and forming a loop with said mixer means and said discriminator means, said discriminator means including a discriminator circuit tuned to the tuning frequency and a standard frequency generator for generating a reference frequency, compensating means for adjusting the tuning of said discriminator circuit, and switching means in said discriminator means for coupling said discriminator circuit into the loop while maintaining the discriminator circuit decoupled from said standard frequency generator and for periodically coupling said standard frequency generator to said discriminator circuit while coupling the compensating means to the output of said discriminator circuit, said compensating means when connected to the output of said discriminator circuit adjusting the tuning frequency to the standard frequency on the basis of the output of said discriminator circuit and maintaining the tuning of said discriminator circuit at the frequency determined by said compensating means when said switching means decouples said standard frequency generator and said compensating means from said discriminator circuit said discriminator means including a second discriminator circuit, said switching means being coupled to said second discriminator circuit and switching said second discriminator circuit into the loop when said switching means switches said first discriminator circuit out of the loop, said discriminator means including second compensating means, said switching circuit coupling said standard frequency generator to said second discriminator circuit when said second discriminator circuit is disconnected from the loop, said switching circuit connecting said second compensating means to the output of said second discriminator circuit when said second discriminator circuit is disconnected from the loop.



3,873,924

SIGNAL-SEEKING RADIO RECEIVERS

George H. Fathauer, Decatur, Ill., assignor to Masco Corporation of Indiana, Greensburg, Ind.

Filed Nov. 2, 1972, Ser. No. 303,016

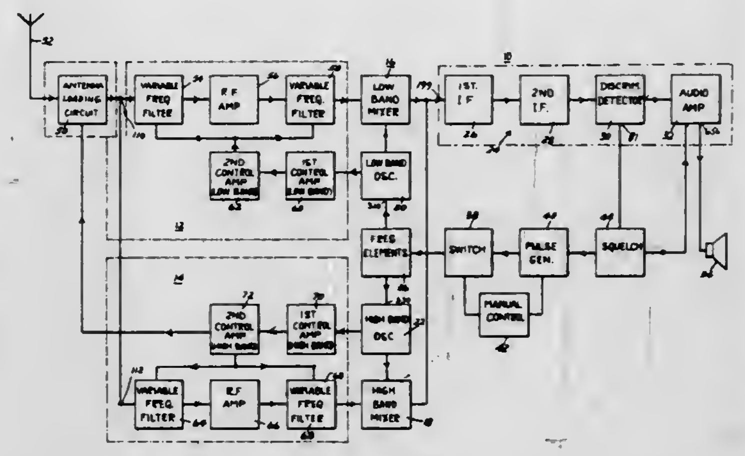
Int. Cl. H04b *1/34*

U.S. Cl. 325—470 **17 Claims**

1. For use in a signal-seeking radio receiver which includes an antenna, a receiver mixer and local oscillator means for generating a plurality of different frequency local oscillator signals automatically in seqence, thereby automatically and sequentially to tune said receiver to receive a predetermined spectrum of radio frequency signals, means for holding said receiver tuned to those signals in response to reception thereof, and means for reproducing the intelligence therein, a tuning circuit comprising:

a. first control signal generating means coupled to said local oscillator means to receive said different frequency local oscillator signals for generating a plurality of first control signals, there being one of said control signals generated in response to each of said local oscillator signals, said first control signal generating means including therein a resonant circuit having a predetermined impedance vs. frequency characteristic, the magnitude of each said control signal being proportional to the impedance of said resonant circuit at each of the respective frequencies of said local oscilator, said resonant circuit including means for selectively altering said characteristic thereby to selectively alter the relative magnitudes of said first control signals;

b. second control signal generating means coupled to said first control signal generating means to receive said first control signals for adding thereto a signal of predetermined magnitude to produce a plurality of second control signals corresponding to said first control signals but altered in magnitude by said predetermined signal; and



c. a radio frequency amplifier coupled between said antenna and said reproducing means, said amplifier including at least one tuned radio frequency circuit, said tuned circuit having a voltage-variable reactance device therein which determines the pass-band thereof coupled to said second control signal generating means to receive said second control signals, the reactance of said device corresponding to the magnitude of the signal applied thereto, whereby, the pass-band of said tuned circuit is automatically and sequentially tuned to pass a band of frequencies about each of said predetermined radio frequencies in synchronism with the tuning of said receiver thereto; said first control signals being alternating current signals, the second control signal generating means including means for rectifying said first control signals, said predetermined signal and said second control signals being direct current signals, said first control signal generating means including a first amplifier circuit having a load circuit, said resonant circuit being in said load circuit.

3,873,925

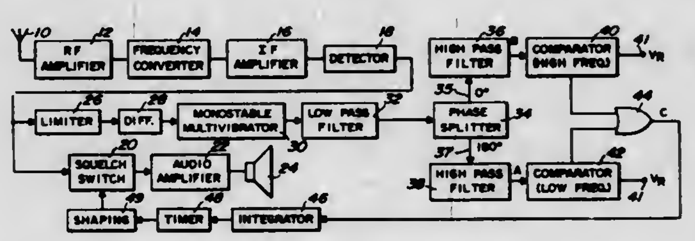
AUDIO FREQUENCY SQUELCH SYSTEM

Bruce C. Eastmond, Darien, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 7, 1974, Ser. No. 449,119

Int. Cl. H04b *1/10*

U.S. Cl. 325—478 **12 Claims**



1. A squelch circuit for controlling the transmission of voice signals in a given frequency range and which have a predetermined signal-to-noise characteristic, including in combination:

limiter means for receiving an audio signal and limiting the amplitude thereof,

a monostable multivibrator for providing a pulse of fixed amplitude and time duration, said multivibrator being coupled to said limiter means and triggered thereby each time the output thereof makes a transition from a given polarity to the opposite polarity,

filter means having a bandwidth to pass signals varying at a voice syllabic rate coupled to said multivibrator for filtering the pulse wave from said multivibrator,

first signal means coupled to said filter means including first comparator means for providing a first output signal representing a voice frequency peak having a frequency higher than the mean voice frequency,

second signal means coupled to said filter means including second comparator means for providing a second output signal representing a voice frequency peak having a frequency lower than the mean voice frequency,

output means connected to said first and second signal means for providing a control signal in response to one of said output signals from said comparator means, and squelch switch means connected to said output means for receiving the control signal therefrom and controlling the transmission of voice signals.

3,873,926

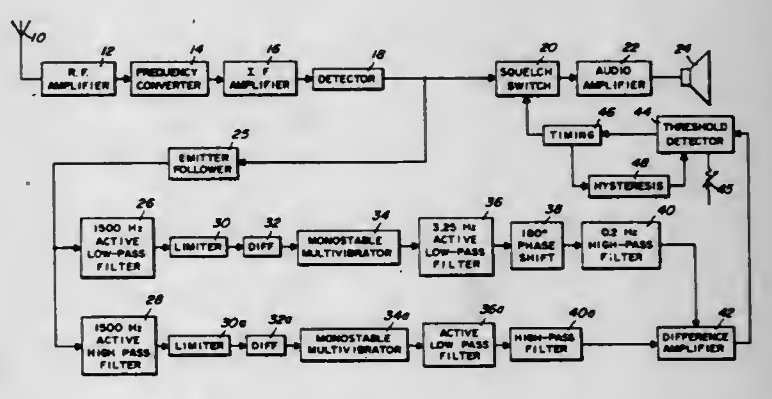
AUDIO FREQUENCY SQUELCH SYSTEM

Larry R. Wright, Glenview, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed May 3, 1974, Ser. No. 466,594

Int. Cl. H04b *1/10*

U.S. Cl. 325—478 **12 Claims**



1. A squelch circuit for controlling the transmission of audio signals in a given frequency range including in combination: filter means for receiving the signal and having a first output for passing signals in the lower portion of the given frequency range and a second output for providing signals in the upper portion of the given frequency range,

first and second outputs, respectively, and each including limiter means, differentiator means, monostable multivibrator means and low pass filter means coupled to each other in the order named, said low pass filter means having a bandwidth to pass signals varying at a voice syllabic rate,

means for comparing signals from said first and second signal processing circuits which have a frequency above a predetermined value to produce resultant signals representing processing circuits, and

detector means coupled to said comparing means for detecting peaks in the resultant signals which exceed a predetermined amplitude to produce a squelch control voltage.

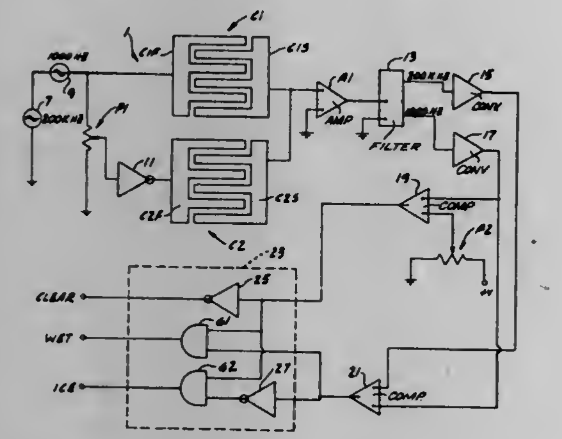
3,873,927
SYSTEM FOR DETECTING WET AND ICY SURFACE CONDITIONS

Wilson W. Overall, Warson Woods, Mo., assignor to Surface Systems, Inc., Warson Woods, Mo.

Filed Nov. 5, 1973, Ser. No. 412,909

Int. Cl. G01n *27/00*

U.S. Cl. 328—4 **8 Claims**



1. A system for detecting wet and icy conditions on the surface of highways, airport runways and the like comprising: a first capacitor adapted to be positioned on a surface the condition of which is to be detected, said capacitor having first and second spaced-apart electrodes adapted to be exposed to atmospheric precipitation thereby to affect the dielectric and capacitance thereof;
- a second capacitor comprising first and second spaced-apart electrodes adapted to be positioned so as not to be exposed to atmospheric precipitation;
- means for applying respective out-of-phase time-varying signals to the first electrodes of said capacitors, said second electrodes being commonly connected;
- a sensor circuit comprising a conductivity sensor having first and second spaced apart electrodes adapted to be exposed to atmospheric precipitation thereby to affect the resistance thereof, the resistance of said conductivity sensor being greater in the presence of ice than of water, said sensor circuit adapted to supply an output voltage the magnitude of which is a function of the resistance of said conductivity sensor; and
- an electrical logic circuit responsive to any signal coupled to the commonly connected second electrodes of the capacitors reaching a predetermined precipitation threshold magnitude and to the output voltage of said sensor circuit reaching a predetermined ice threshold magnitude to provide an output which indicates an icy surface condition.

3,873,928
REFERENCE WAVE GENERATOR USING LOGIC CIRCUITRY FOR PROVIDING SUBSTANTIALLY SINUSOIDAL OUTPUT

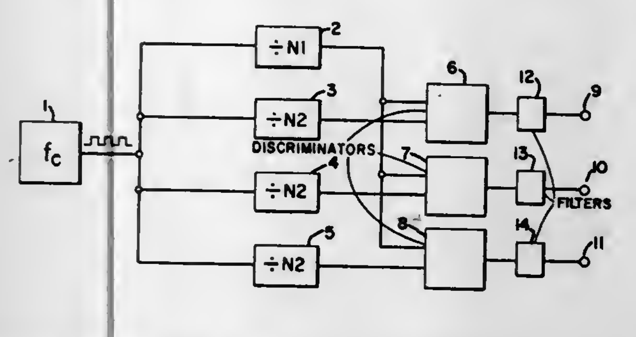
David Logan Lafuze, Fairview, Pa., assignor to General Electric Company, Wilmington, Mass.

Filed Mar. 8, 1972, Ser. No. 232,861

Int. Cl. H03d *13/00*

U.S. Cl. 328—14 **10 Claims**

1. A reference wave generator comprising, in combination:
- a. a source of clock pulses;
- b. first and second step wave generators for producing step waves of different frequencies, at least one of which produces a quasi-square wave having a positive excursion and a negative excursion and a period of zero dwell between said positive and negative excursions, both said first and second wave generators being coupled to and synchronized by said clock source and;
- c. a discriminator couple to the outputs of said first and second step wave generators for providing an output equal to the in-phase voltage minus the out-of-phase voltage of the outputs of said first and second step wave generators, whereby said discriminator provides an output whose average value is represented by a continuous wave of low harmonic content having a frequency equal to the difference between the frequencies of said first and second step wave generators.



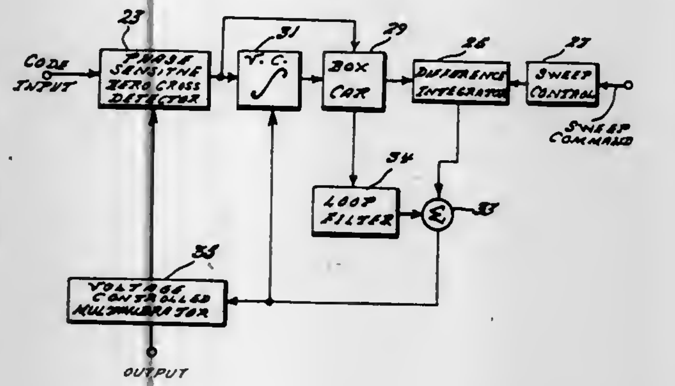
3,873,929
CLOCK SYNCHRONIZATION SYSTEM

Robert R. Willmore, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 1, 1970, Ser. No. 77,356

Int. Cl. H03k *1/16, 5/13*

U.S. Cl. 328—63 **2 Claims**



1. An apparatus for synchronizing a pseudo-random code comprising:
- a. phase sensitive zero crossing detection means fed by the code;
- b. a voltage control integrator fed by the zero crossing detecting means;
- c. a box car circuit fed by the integrator and zero crossing detecting means;
- d. a sweep control means;
- e. a difference integrator fed by the sweep control means and the box car circuit;
- f. a summing circuit fed by the difference integrator and the box car circuit an output of the summing circuit being fed to the voltage control integrator; and
- g. a voltage control multivibrator fed by the summing circuit with the output of the multivibrator fed to the zero crossing detector.

3,873,930
MAGNETICALLY INSULATED CAPACITOR, PROCESS FOR ELECTROSTATIC ENERGY STORAGE AND ITS APPLICATIONS

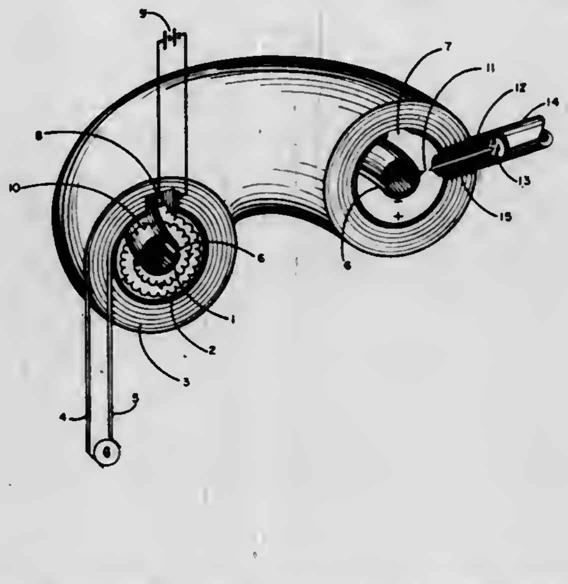
Friedwardt M. Winterberg, P.O. Box 14524, Keno Lake, Las Vegas, Nev. 89114

Filed Mar. 1, 1973, Ser. No. 336,899

Int. Cl. A01j *29/76*

U.S. Cl. 328—227 **12 Claims**

1. A magnetically insulated capacitor comprising, in combination, an outer torus; a coaxial inner torus accommodated with spacing in said outer torus and defining therewith a highly evacuated space; emitting means for introducing electrical charge carriers into said space and located in the region of said outer torus; magnetic means generating in said space a time-dependent magnetic field for forcing said electrical charge carriers onto said inner torus so as to accumulate a high electrical charge thereon, and for preventing discharge of said electrical charge from said inner torus to said outer torus; and discharge means pasing through said outer torus and defining with said inner torus a spark-over gap, said discharge means being adapted for conducting said high electrical charge outside the capacitor when said electrical charge reaches a spark-over value and traverses said gap.



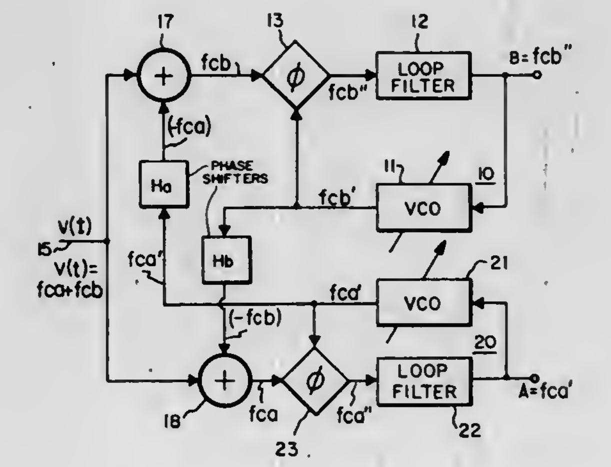
3,873,931
FM DEMODULATOR CIRCUITS

Philip Basse, and Ronald J. Juels, both of Freeport, N.Y., assignors to Comstron Corporation, Richmond Hill, N.Y.

Filed Oct. 5, 1973, Ser. No. 404,036

Int. Cl. H03d *3/18*

U.S. Cl. 329—122 **9 Claims**



1. Apparatus for demodulating first and second FM signals contained in a composite signal, said composite signal characterized in that said first and second FM signals each have their own separate and independent carrier frequency, comprising:
- a. first means for providing at an output a third FM signal substantially related to said first FM signal but of opposite phase,
- b. second means for providing at an output a fourth FM signal substantially related to said second FM signal but of opposite phase, and
- c. means responsive to said composite signal and said third and fourth signals to provide at one output said first FM signal and at separate output said second FM signal.

3,873,932
GAIN CONTROL CIRCUIT HAVING VARIABLE IMPEDANCE TO DETERMINE CIRCUIT GAIN AND TO CONTROL MINIMUM GAIN

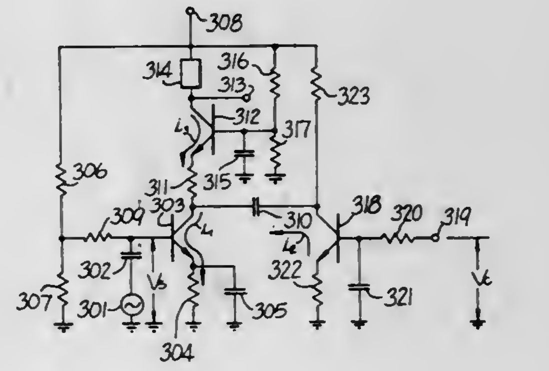
Yoshio Ishigaki; Masayuki Hongu, both of Tokyo, and Hiromi Kawakami, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 8, 1973, Ser. No. 413,897

Claims priority, application Japan, Nov. 9, 1972, 47-112309

Int. Cl. H03g *3/30*

U.S. Cl. 330—20 **12 Claims**



1. A gain control circuit comprising:
- a signal current source;
- a first transistor connected as a common base amplifier the gain of which is to be controlled;
- impedance means connecting the emitter of said first transistor to said signal current source;
- a load connected to the collector of said first transistor; and a variable impedance connected in parallel with said signal current source to control the ratio of signal current through said first transistor to the signal current through said source; said signal current source comprising a second transistor having its emitter-collector circuit connected in series between said impedance means and ground, and including a signal voltage source connected to the base of said second transistor.

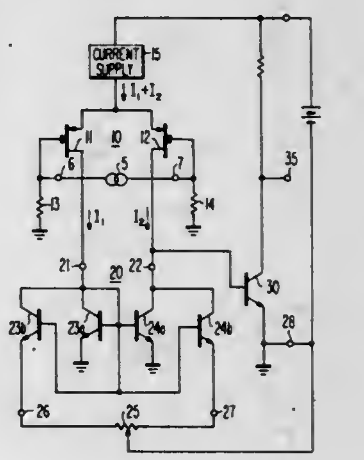
3,873,933
CIRCUIT WITH ADJUSTABLE GAIN CURRENT MIRROR AMPLIFIER

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 414,164

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **17 Claims**

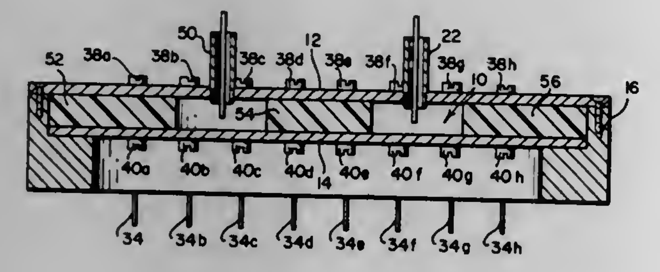


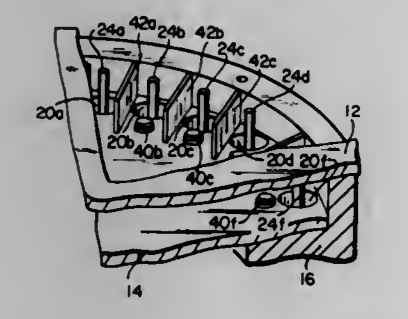
1. A composite current mirror amplifier having a current gain which can be trimmed, responding to an input current to supply an output current, and comprising:
- a fixed gain current mirror amplifier having an input circuit and an output circuit;

an adjustable gain direct-coupled current amplifier having an input circuit and an output circuit;
means connecting the input circuits of said fixed gain current mirror amplifier and of said adjustable gain current amplifier in parallel for splitting said input current between said input circuits; and
means connecting the output circuits of said fixed gain current mirror amplifier and of said adjustable gain current amplifier in parallel for supplying said output current.

3,873,934
DEVICES FOR COUPLING MICROWAVE DIODE OSCILLATORS AND AMPLIFIERS TO POWER ACCUMULATION STRUCTURES

Henry G. Oltman, Jr., Woodland Hills, and Richard J. Wagner, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed May 13, 1974, Ser. No. 469,577
Int. Cl. H03f *3/60*
U.S. Cl. 330—56 **6 Claims**



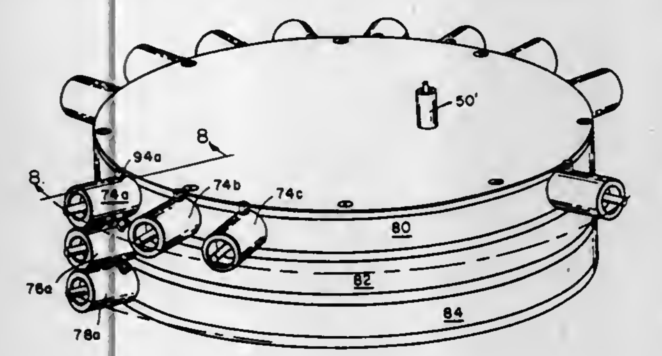


1. In combination with a substantially right cylindrical elliptical microwave cavity structure having means for introducing microwave energy at a first focus thereof and for removing energy from a second focus thereof, a plurality of amplifier modules formed in a plurality of tunable coaxial cavities disposed around the periphery of said elliptical microwave cavity structure and adapted for producing signals of a greater amplitude than received at the periphery from the first focus, each said amplifier module comprising a microwave diode mounted within said tunable coaxial cavity by means of a microwave choke, a probe electrically coupled to said diode and extending into said elliptical cavity structure, a tuning screw disposed in the wall of said cavity, and at least one coupling screw disposed between said probe and the main body of the elliptical structure so as to allow the adjustment of the electromagnetic coupling of each amplifier module to the elliptical cavity structure.

3,873,935
MICROWAVE POWER ACCUMULATION STRUCTURES COMPRISING A PLURALITY OF STACKED ELLIPTICAL CAVITIES

Henry G. Oltman, Jr., Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed May 13, 1974, Ser. No. 469,578
Int. Cl. H03f *3/60*
U.S. Cl. 330—56 **12 Claims**

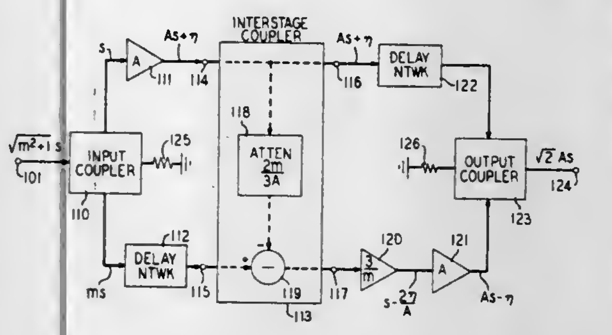
1. A power accumulation device adapted for responding to applied input signals to provide amplified signals at an output terminal thereof, said power accumulation device comprising:
a plurality of cavity structures with each cavity structure shaped substantially in the form of a right elliptical cylinder and having a plurality of signal amplifying devices disposed on the periphery thereof, whereby signals applied at one focus of said elliptical cavity structure are amplified by said amplifying devices and applied with power gain to the second focus of said elliptical cavity structure; said cavity structures being disposed one on top of another such that a first focus of each of said cavity structures are in substantial alignment with one another, and the second focus of each of said cavity structures are in substantial alignment with one another; and



signal coupling means for applying the input signal at the first focus of each of said stacked elliptical cavity structures and for removing the resulting amplified signals from the second focus of each of said stacked elliptical cavities with said signal coupling means including means for providing the same delay to the signals processed through all the cavity structures of the power accumulation device, whereby the amplified signals extracted from each of said stacked elliptical cavities structures are in phase at the output terminal of the power accumulation device.

3,873,936
APPARATUS FOR REDUCING DISTORTION IN A REPEATED TRANSMISSION SYSTEM

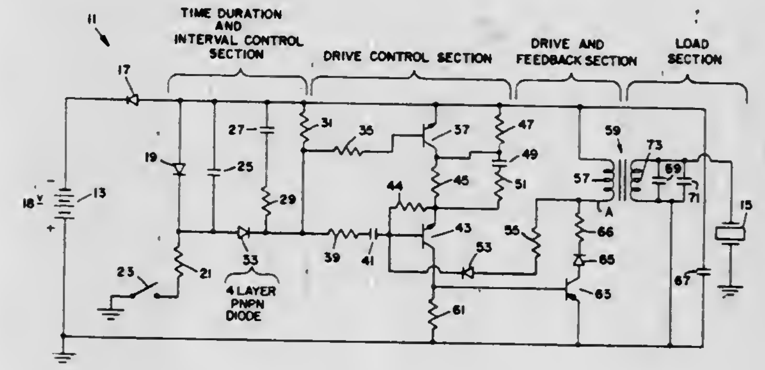
Yo-Sung Cho, North Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 7, 1974, Ser. No. 448,814
Int. Cl. H03f *3/68*
U.S. Cl. 330—124 R **6 Claims**



4. A feed-forward amplifier configuration for providing a substantially distortion-free amplification of an input signal comprising first and second amplifier means having substantially identical amplification and distortion characteristics, a first and second delay network means each having an input terminal and an output terminal, an input coupler means for coupling to an input of said first amplifier means a portion of said input signal and for coupling the remaining portion of said input signal to the input terminal of said first delay network, a four-port interstage coupling means for coupling a signal at the output of said first amplifier means substantially unaltered to the input terminal of said second delay network means and for coupling both a portion of the output signal from said first amplifier means and the signal at the output terminal of said first delay network means to the input of said second amplifier means, output coupling means for developing an output signal by combining signals at the output terminal of said second delay network means with the output of said second amplifier means, the phase characteristics of said input coupling means and said interstage coupling means being arranged such that the phase relationship between the amplified linear and distortion components at the output of said second amplifier means is opposite the phase relationship between the amplified linear and distortion components at the output of said first amplifier means.

3,873,937
TONE BURST GENERATOR

Alan L. Lindstrum, Port Blakley, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 2, 1973, Ser. No. 384,871
Int. Cl. H03b *11/10;* **H03k** *3/35*
U.S. Cl. 331—75 **7 Claims**

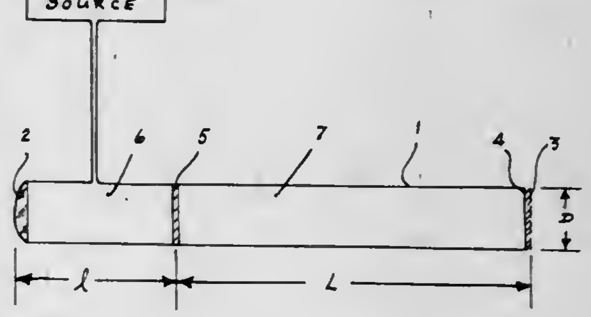


1. A tone burst generator comprising:
a. a time duration and interval control section;
b. a drive control section;
c. a drive and feedback section;
d. a load section including a tuned circuit;
e. a power source;
f. said time duration and interval control section including a first diode, one side of said first diode connected to one side of said power source, the other side of said first diode connected through a first resistor to the other side of said power source, a first capacitor connected in parallel with said first diode, the anode of a 4-layer diode connected to one side of said first capacitor, a second capacitor, the cathode of said 4-layer diode connected through a second resistor and said second capacitor to the other side of said first capacitor;
g. the cathode of said 4-layer diode, said second resistor and said second capacitor of said time duration and interval control section being operatively connected to said drive control section, the output of which is operatively connected to said drive and feedback section, the output of which is operatively connected to said load section; and
h. said drive and feedback section including feedback means operatively connected to said drive control section, and drive means operatively connected to said load section.

3,873,938
VERY HIGH POWER SHOCK WAVE GAS LASER

Robert W. Milling, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 16, 1973, Ser. No. 351,120
Int. Cl. H01s *1/06, 3/02, 3/09*
U.S. Cl. 331—94.5 **7 Claims**

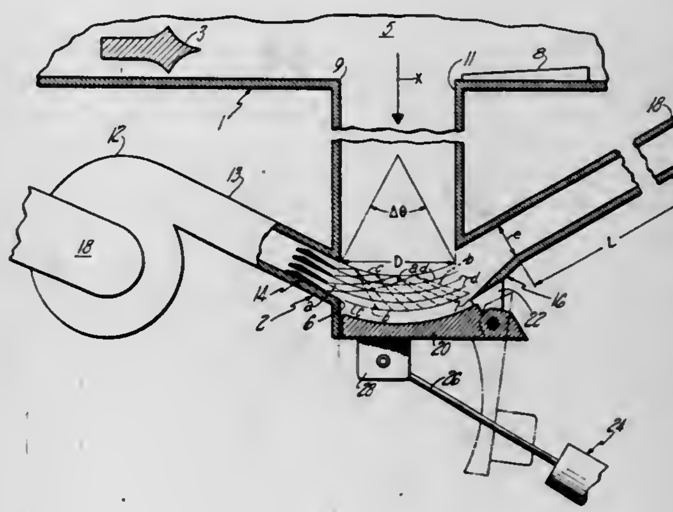
1. A very high power shock wave laser comprising a tube of preselected length and diameter, said tube having first and second ends, a first reflecting mirror positioned at said first end and hermitically sealing said tube thereat, a second reflecting mirror perforated with holes and positioned at said second end, a first frangible diaphragm in combination with said second mirror to seal said holes, said combination serving initially to hermetically seal said tube at said second end, a second frangible diaphragm disposed in said tube and separating said tube into first and second chambers and also hermetically sealing said first chamber from said second chamber, said first and second frangible diaphragms being capable of rupturing at preselected pressures, a gaseous medium capable of supporting population inversion disposed in said second



chamber, and means for charging said first chamber with a preselected light gas until rupture of said first frangible diaphragm permitting a generated shock wave and associated temperature to travel down said second chamber thus obtaining stimulated emission and amplification within the confocal optical cavity comprised of said first and second mirrors with output of radiation therefrom upon the rupture of said first diaphragm by said shock wave.

3,873,939
AERODYNAMIC WINDOW

Roy N. Guile, Wethersfield, and C. Edward Kepler, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 28, 1974, Ser. No. 437,121
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 R **7 Claims**



1. In combination in a gas laser device, a lasing region of low pressure, an outlet for an output laser beam in said laser device forming an exit to a second region of a different pressure, an outlet passageway connected to said laser device and extending away therefrom around said outlet, means having an array of nozzles for providing an arcuate gas flow across said passageway which is approximately the flow of a segment of a free-vortex flow field having a pressure differential which is equal to that between the lasing region and the second region.

3,873,940
LASER MEDIA CONTAINING RIGIDIZED DYES

Karl H. Drexhage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

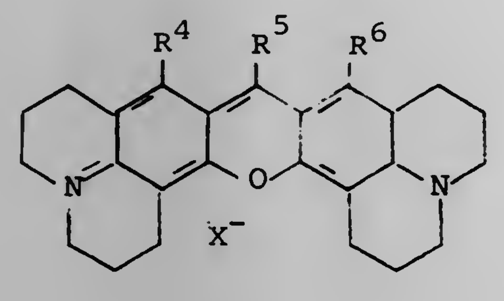
Filed Aug. 9, 1971, Ser. No. 170,348

Int. Cl. H01s *3/00*

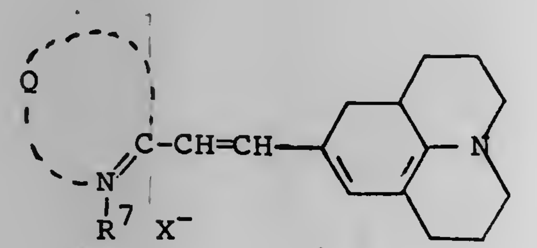
U.S. Cl. 331—94.5 L **6 Claims**

1. A method of producing coherent laser emission in the operation of a dye laser comprising a pumping energy source operably coupled with a laser dye solution for producing a population inversion therein and means coupled with the population inverted laser dye solution to stimulate therein the emission of a coherent beam of radiation, said method comprising the steps of optically pumping a laser dye solution to produce a population inversion in said solution and stimulating in the population inverted solution emission of a coherent beam of radiation, wherein said solution contains between about 10^{-2} and about 10^{-4} molar concentration of a lasing dye in a non-interfering solvent, said dye being selected from the group of materials having the formulas as follows:

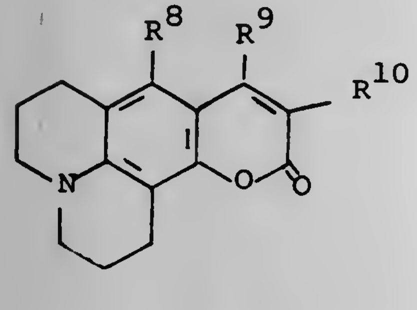
I.



II.



III.



wherein:

R^4 and R^6 are each selected from the group consisting of a hydrogen atom and an alkyl radical having from 1 to about 7 carbon atoms;

R^5 represents a member selected from the group consisting of a hydrogen atoms, an alkyl radical having from 1 to about 20 carbon atoms and an aryl radical;

R^7 represents a member selected from the group consisting of a hydrogen atom, an alkyl radical having from 1 to about 20 carbon atoms and an aryl radical;

R^8 represents a hydrogen atom, or an alkyl radical having from 1 to about 4 carbon atoms;

R^9 represents a hydrogen atom, an alkyl radical having from 1 to about 4 carbon atoms, or together with R^{10}, the carbon and hydrogen atom necessary to complete a 5- or 6-membered fused carbocyclic ring;

R^{10} represents a hydrogen atom, an alkyl radical having from 1 to about 4 carbon atoms, or together with R^9, the carbon and hydrogen atoms necessary to complete a 5- or 6-membered fused carbocyclic ring;

Q represents the non-metallic atoms necessary to complete a heterocyclic nucleus selected from the group consisting of an imidazole nucleus, an oxazole nucleus, a thiazole nucleus and a quinoline nucleus; and

X represents an anion.

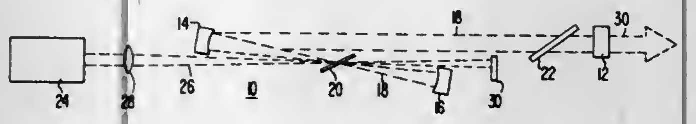
3,873,941
DYE LASER HAVING NON-COLINEAR OPTICAL PUMPING MEANS

J. Michael Yarborough, Santa Clara, and James L. Hobart, Los Altos Hills, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed May 30, 1973, Ser. No. 365,315

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 L **6 Claims**



1. A continuous wave dye laser comprising:

a. an optical resonator cavity which defines an optical path for dye laser oscillations;

b. a dye; means for directing said dye as an unsupported flowing film to intersect said optical path within said cavity;

c. a laser for providing a continuous wave pump beam for optically pumping said dye;

d. means for directing said pump beam at said dye by introducing said pump beam within said optical cavity obliquely with respect to said optical path, such that said pump beam is non-collinear with respect to the path of said dye laser oscillations.

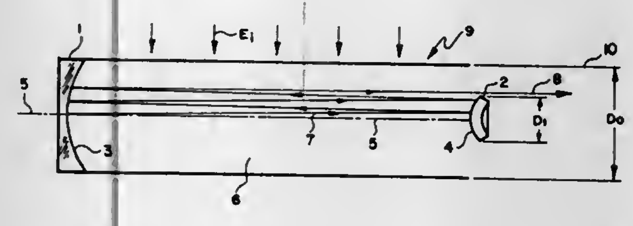
3,873,942
UNSTABLE OPTICAL RESONATOR

James P. Reilly, Lexington, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Aug. 20, 1973, Ser. No. 390,119

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 C **9 Claims**



1. An unstable optical cavity having an optical axis comprising,

a primary reflection surface at one end of the cavity,

a feedback reflection surface at the other end of the cavity, the primary surface intercepting the axis and tapering with respect to the axis toward the feedback surface, and the feedback surface being located so as not to intercept the axis and tapering with respect to the axis in the same direction as the primary surface.

3,873,943
LOW-DISTORTION CONSTANT-AMPLITUDE OSCILLATOR

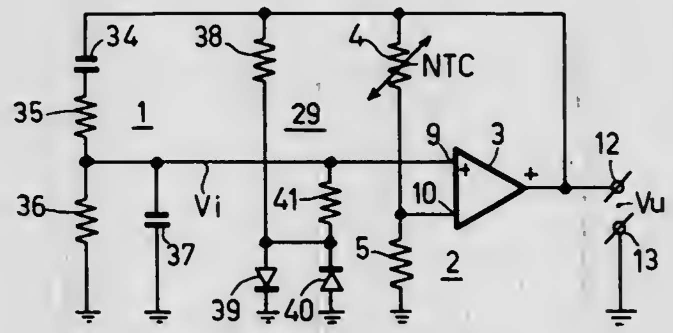
Joseph Lodewijk Maria Reijnders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,318

Claims priority, application Netherlands, Sept. 19, 1972, 7212655

Int. Cl. H03b *5/26*

U.S. Cl. 331—141 **10 Claims**



1. A low-distortion sinusoidal oscillator, comprising frequency selective means, an amplifier circuit connected thereto having means for compensating for rapid amplitude variations that includes means for operating the amplifier in the linear region of its characteristic and with a gain factor which is smaller than the gain factor required for undamping the frequency selective means to produce sinusoidal oscillations, said oscillator further comprising means coupled to the amplifier circuit for providing a slow-acting amplitude control relative to said rapid amplitude variations, a source of auxiliary oscillations of the same frequency as the sinusoidal oscillations and of constant amplitude, and means connecting said auxiliary oscillation source to the amplifier circuit to provide positive feedback so that the auxiliary oscillation source, in conjunction with the slow-acting amplitude control means, determines the value and stability of the amplitude of the sinusoidal oscillations.

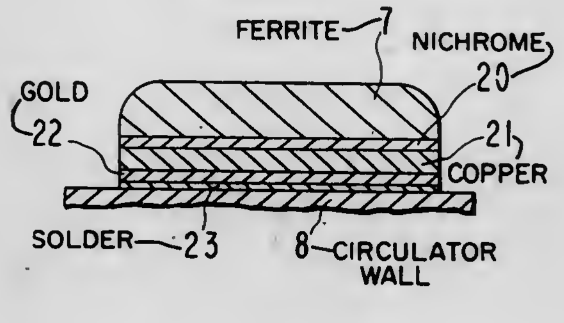
3,873,944
BONDING OF FERRITE TO METAL FOR HIGH-POWER MICROWAVE APPLICATIONS

Victor A. Vaguine, Palo Alto, and Dennis R. Nichols, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 1, 1973, Ser. No. 337,059

Int. Cl. H01p *1/32*

U.S. Cl. 333—1.1 **12 Claims**



1. A microwave circulator comprising a metal wall, a gyromagnetic ferrite button, and a bond affixing said button to said wall, said wall comprising at least three metal layers, each of said layers comprising a different metal from the others of said layers.

3,873,945
COMPRESSION AND EXPANSION SYSTEM USING A SUBTRACTION CIRCUIT

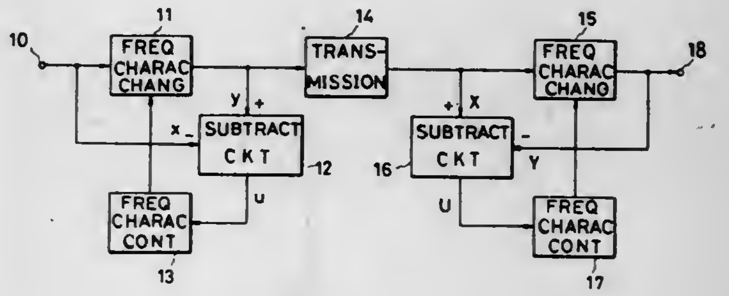
Teruo Muraoka, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Kokohama, Kanagawa-ken, Japan

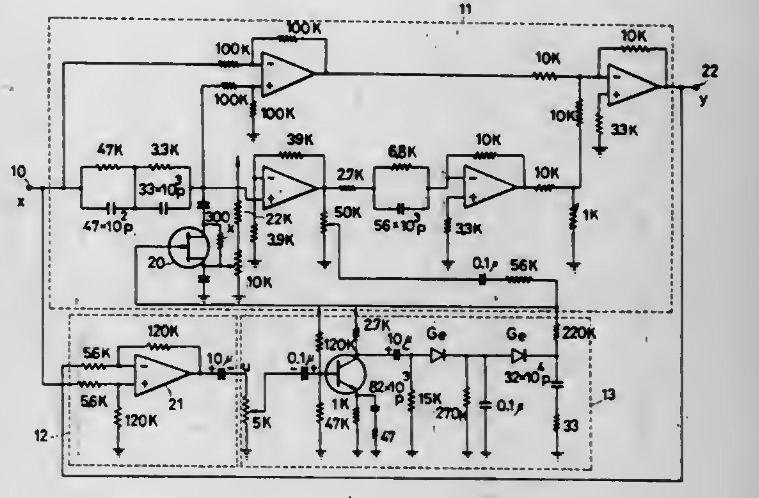
Filed June 25, 1974, Ser. No. 482,847

Claims priority, application Japan, June 28, 1973, 48-72222

Int. Cl. H04b *1/64*

U.S. Cl. 333—14 **13 Claims**





3. A compressing and expansion system comprising:

first frequency characteristic changing means for changing the frequency characteristic thereof in a manner such that,

with with respect to an input signal, the level of the high frequency band signal thereof is relatively increased as the level of the input signal is low;

first subtraction means for carrying out subtraction operation of an input signal to the first frequency characteristic changing means and the output signal of said frequency characteristic changing means;

first frequency characteristic control means supplied with the resulting output of the first subtraction means and operating to supply a control signal for changing the frequency characteristic to the first frequency characteristic changing means;

second frequency characteristic changing means for changing the frequency characteristic thereof in a manner to cause a decrease relatively in the level of the high frequency band signal of a signal produced as output and transmitted from the first frequency characteristic changing means;

second subtraction means for carrying out subtraction operation of an input signal to the second frequency characteristic changing means and the output signal of said second frequency characteristic changing means; and

second frequency characteristic control means supplied with the resulting output of the second subtraction means and operating to supply a control signal for changing the frequency characteristic to the second frequency characteristic changing means,

said first and second subtraction means producing respectively as output signals which are equivalently of high-pass filtering characteristic of which cut-off frequencies vary in accordance with the level of the input signal.

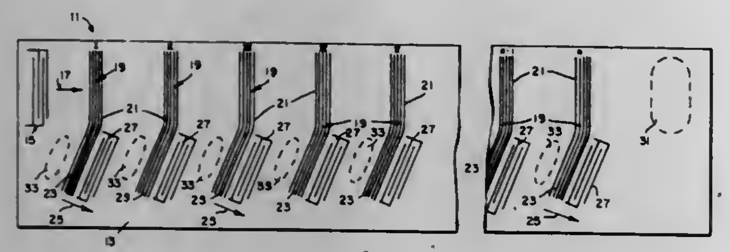
3,873,946
ACOUSTIC SURFACE WAVE TAPPED DELAY LINE

Rolf D. Weglein, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 4, 1973, Ser. No. 403,710

Int. Cl. H03h *9/26, 9/30*

U.S. Cl. 333—30 R **7 Claims**



1. An acoustic surface wave tapped delay line, comprising: a substrate of piezoelectric material, said material having a coincidence in at least two directions of a relatively high electromechanical coupling constant and collinear group and phase velocities of propagating acoustic surface wave energy; transducer means including at least one electroacoustic transducer disposed on said substrate for launching a main acoustic surface wave energy beam in the plane of said substrate in one of said directions;

- tapping means including at least one multistrip coupler disposed on said substrate, said coupler having a tapping portion in the path of said beam and having an angularly offset launching portion for propagating in another of said directions energy tapped from said beam; and
- receiving means including an electroacoustic receiving transducer disposed on said substrate in the path of said propagating energy launched from said angularly offset launching portion of said multistrip coupler for receiving said energy tapped from said beam.

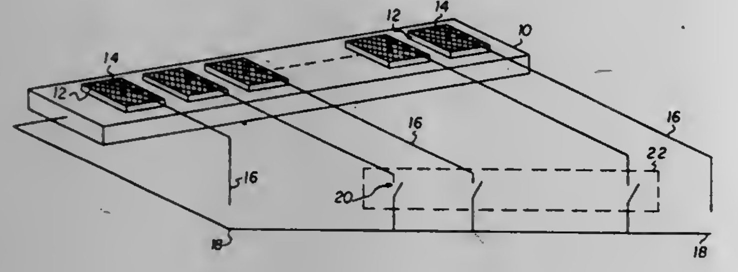
3,873,947
MULTIPLE FREQUENCY FLEXURE-MODE RESONATOR

Robert A. Johnson, Tustin, Calif., assignor to Rockwell International Corporation

Filed Apr. 22, 1974, Ser. No. 462,849

Int. Cl. H03h *9/26;* **H01v** *7/00*

U.S. Cl. 333—72 **6 Claims**



1. A multiple frequency flexure-mode resonator comprising: a metal bar having an electrode termination connected thereto, a plurality of piezoelectric transducers affixed to said bar along its length with each transducer having a metallically coated surface area with an electrode termination connected thereto and means for selectively shorting out said transducers individually or in combination by connecting the metal bar electrode termination to the electrode terminations of the transducers to be shorted out.

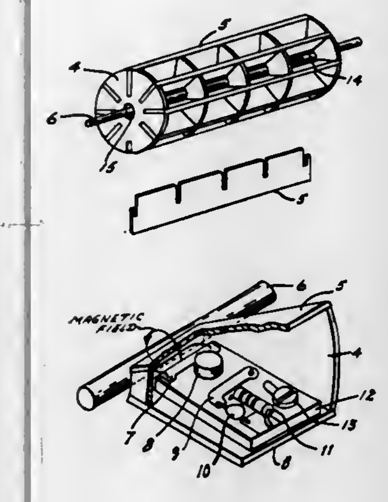
3,873,948
MULTICHANNEL MICROWAVE FILTER

Uve H. W. Lammers, Chelmsford, and Martin R. Stiglitz, Waltham, both of Mass., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Feb. 4, 1974, Ser. No. 439,670

Int. Cl. H01p *3/06, 7/04, 7/06*

U.S. Cl. 333—73 C **3 Claims**



1. A multichannel microwave filter housing structure comprising

- a conductor,
- a plurality of conductive sheet members transversely partitioning said conductor into sections, and
- a plurality of conductive sheet members disposed parallel to and extending radially from a proximate radial locus about said conductor,
- said transverse and parallel sheet members being engaged to define a multiplicity of compartments, and said conductor and the proximal edges of said parallel sheet members cooperating to define a coaxial transmission line.

3,873,949
TEMPERATURE STABILIZED RESONATOR

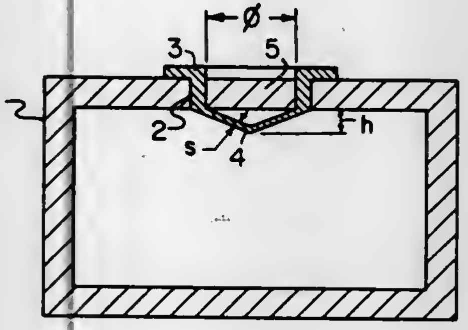
Domenico Dorsi, and Marco Panigata, both of Milan, Italy, assignors to GTE International Incorporated, Stamford, Conn.

Filed July 30, 1973, Ser. No. 383,940

Claims priority, application Italy, Jan. 15, 1973, 19201

Int. Cl. H01p *1/30*

U.S. Cl. 333—82 BT **12 Claims**



1. A temperature-compensated cavity resonator comprising a circuit for supporting electromagnetic fields, including an electrically conductive ground plane having an aperture therethrough,

- a hollow cup-shaped thermal compensation member sealing said aperture and having a bottom extending through said ground plane into the area of electromagnetic fields, the thickness of said bottom of said cup being less than that of said ground plane, said cup member being made of a material having a lower ccoefficient of linear thermal expansion than the material forming said ground plane, and
- a plug of the same material as said ground plane closing said cup and being substantially aligned in said cup with said ground plane.

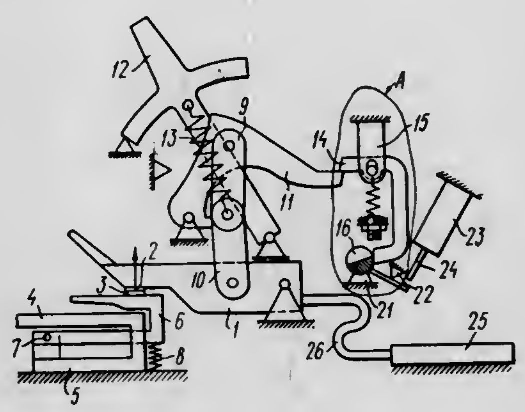
3,873,950
AIR CIRCUIT BREAKER

Vladislav Yakovlevich Guschin, Moskovsky prospekt 96, kv. 23, Kharkov, U.S.S.R.

Filed May 30, 1973, Ser. No. 365,102

Int. Cl. H01h *77/06*

U.S. Cl. 335—42 **4 Claims**



1. An air circuit breaker comprising: a manual operating mechanism; a system of moving contacts having open and closed positions; first means for balancing the electrodynamic forces of repulsion acting upon said moving contacts; emergency tripping devices; a free-trip mechanism adapted to effect control of said contacts;

- said free-trip mechanism including a latch for action on said first means and a tripping rod;
- said latch on being engaged with said tripping rod holding said free-trip mechanism in position corresponding to the closed position of said moving contacts, a support, a shaft displacably supported by said support, said latch being mounted on said shaft and being capable of travelling together with said shaft in a direction effecting disengagement of said latch from the tripping rod; second means resiliently tending to keep said latch engaged with said tripping rod; said second means including an adjusting means;
- said adjusting means providing for adjustment of the magnitude of the force keeping said latch engaged with the tripping rod, thus allowing selection of a value of circuit breaker operating current.

3,873,951
ELECTRICAL SAFETY DEVICE

William S. Blake, 12802 Taylor St., Garden Grove, Calif. 92020

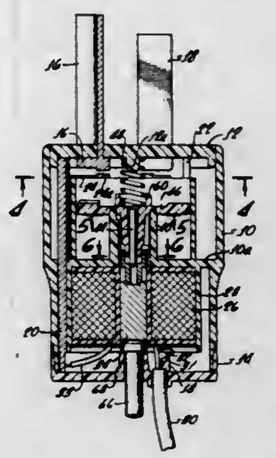
Filed Oct. 29, 1973, Ser. No. 410,373

Int. Cl. H01h *51/08*

U.S. Cl. 335—164 **10 Claims**

1. An electrical device comprising

- a plurality of electrical conductors;
- switch means connected to one or more of said conductors;
- a solenoid coil connected to be energized by a predetermined current through one of said conductors, and a solenoid plunger within the coil, axially movable upon energization of the coil from an initial position to an extended position;
- an actuator mounted to be rotated adjacent said switch means for operating said switch means;



- means positioned between the plunger and said actuator for cooperating with the actuator to convert the axial movement of said plunger into stepped rotary movement of said actuator; and
- means for maintaining the selected switch position after the solenoid plunger has been extended and returned to its initial position.

3,873,952
ELECTROMAGNETIC CONTACTOR

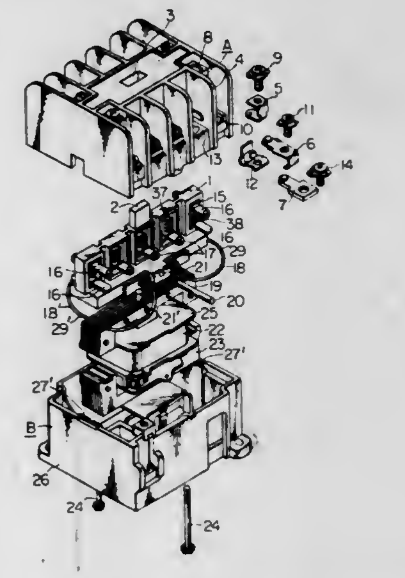
Hideya Kondo, Hirakata; Kunio Takemura, Kyoto, and Tamotsu Mori, Ibaraki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 5, 1973, Ser. No. 403,795

Claims priority, application Japan, Apr. 14, 1973, 48-42559

Int. Cl. H01h *45/00*

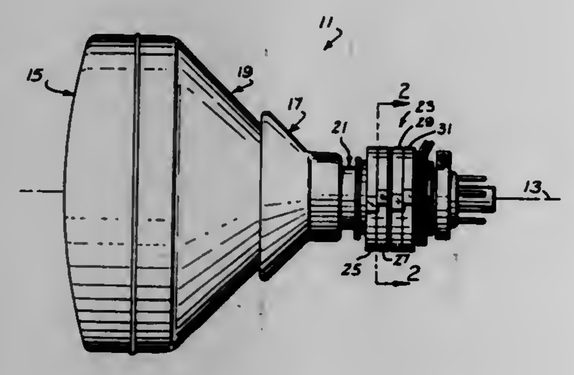
U.S. Cl. 335—192 **7 Claims**

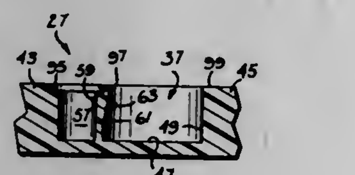


1. In an electromagnetic contactor comprising a fixed element including an outer shell body made of an insulative material, a plurality of fixed contact pieces fixed inside said outer shell body at a first side thereof and a fixed magnetizable core and a coil member therefor fixed inside the outer shell body at a second side thereof opposing said first side; a movable magnetizable element including a movable frame having at one side a plurality of movable contact pieces respectively opposing said fixed contacts and a movable core fixed to the other side of said movable frame, said movable element being movable in the direction between said first and second sides in the outer shell body as attracted and nonattracted by electromagnetic energization and non-energization of the fixed core with respect to the movable core; and a pair of wire springs compressed between said movable element and said fixed element substantially at said second side, the improvement wherein said wire spring are substantially in a C-shape

arranged symmetrically with respect to the center of the movable element and inclined with respect to the movable direction of the movable element, so that the returning force on the movable element is away from the fixed core, said returning force being smaller at the attracted position of the movable element than at the non-attracted position thereof.

3,873,953
MAGNET RETAINING MEANS FOR A CRT BEAM ADJUSTMENT DEVICE
Peter G. Puhak, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Feb. 14, 1974, Ser. No. 442,460
Int. Cl. H01f *7/00*
U.S. Cl. 335—212 **10 Claims**





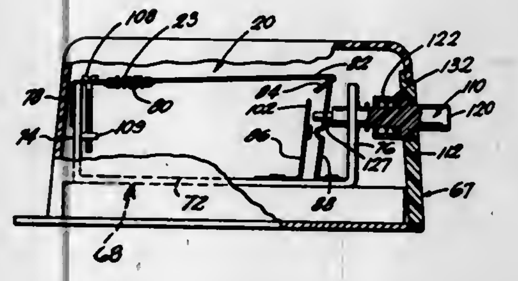
1. In an electron beam adjustment device having a plurality of separate magnets retentively inserted therein and formed for positioning on the neck portion of a cathode ray tube having an axis therethrough, magnet retaining means comprising:

- a substantially planar body member having an aperture therein of a size to facilitate slidable encompassment of said neck portion and having an axis related to said tube axis;
- a plurality of individual open-top magnet accommodating pockets separated from one another by intervening body material and formed inward as a recess from one surface of the said body member in substantially radial relationship to said aperture, each of said pockets having a bottom and a defining sidewall with an opening therein facing into said aperture;
- at least one cavity formed in the intervening body material separating two sequential pockets in a manner that each of the related pockets has a cavity formed adjacent thereto; each of said cavities having at least one discrete sidewall portion common to a sidewall portion of an adjacent pocket; and
- at least one substantially resilient protuberance formed on the pocket side of said common sidewall portion in a manner to extend from the sidewall of the pocket into said pocket to provide a compressive snap-in-means for retaining a compatibly shaped magnet member in said pocket.

3,873,954
LIGHT COLORED MAGNETIC RUBBER
Max Baermann, 506 Bensberg Bezirk, Cologne, Germany
Filed Aug. 5, 1974, Ser. No. 494,631
Claims priority, application Germany, Mar. 7, 1974, 2410902
Int. Cl. H01f *7/02*
U.S. Cl. 335—303 **9 Claims**

1. A light colored, rubber-like flexible permanent magnet comprised of a mixture of a rubber-like flexible binder, a permanent magnet material of high coercivity, as e.g., barium-, strontium-, or lead ferrite powder, and a material capable of giving the magnet a light color said permanent magnet material consisting essentially of relatively coarse grains having a grain size of 0.06 – 0.35 mm, the grain size mainly ranging from 0.1 – 0.3 mm, and the proportion of fine and finest permanent magnet powder particles, with respect to the grain size, being removed.

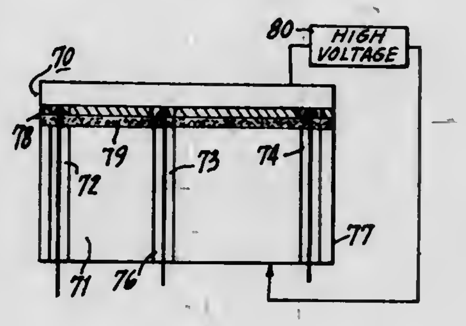
3,873,955
ELECTRICAL SWITCH FOR PRIMARY CONTROL SYSTEM FOR FURNACES
Frederick T. Bauer, 1587 S. Washington Ave., Holland, Mich. 49423
Continuation of Ser. No. 109,487, Jan. 25, 1971, abandoned, which is a division of Ser. No. 866,528, Oct. 15, 1969, Pat. No. 3,624,407. This application May 24, 1973, Ser. No. 363,325
Int. Cl. H01h *71/16*
U.S. Cl. 337—72 **1 Claim**



1. In an electrical switch for use in a primary control system for furnaces, the combination including a housing having an end wall, a U-shaped mounting base having a web portion and a pair of spaced flange portions disposed in said housing, first and second bimetallic blades, one end portion of said first blade being fixed to one of said flange portions, the other end portion of said first blade being fixed directly to one end portion of said second blade, said first and second blades bending in opposite directions upon an increase in temperature, stop means carried by the other end portion of said second blade, a pair of resilient contact members fixed to said web portion of said base, said contact members being in electrical contact with each other when one of said members is in engagement with said stop means, adjusting screw means threadably engaging said one flange portion and bearing against said first bimetallic blade, said adjusting screw means being effective to adjust the position of said stop means carried by the other end portion of said second blade relative to said one contact member, electrical heating means encompassing said first blade and being effective to heat said first blade to cause said stop means to be disengaged from said one contact member responsive to bending of said first blade, the directions of bending of said first and second blades responsive to a change in temperature being such that an increase in temperature of said second blade will tend to counteract deflection of said stop means responsive to an equivalent increase in temperature of said first blade, a manually operable plunger, said plunger being supported for axial movement by the other of said flange portions and said end wall of said housing, said plunger sequentially engaging said contact members upon the application of manual force thereto and maintaining separation of said members until said one contact member engages said stop means, and resilient spring means bearing against said other flange portion and said plunger and

biasing said plunger away from said one contact member and toward said end wall.

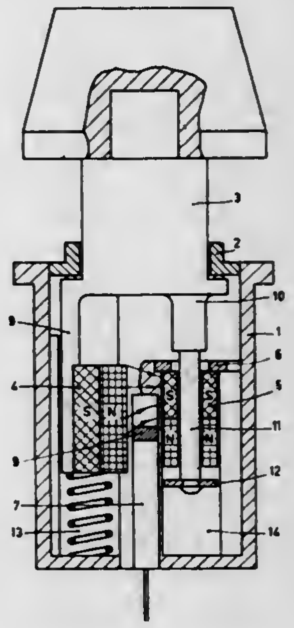
3,873,956
INTEGRATED TRANSDUCER ASSEMBLIES
Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Wood Ridge, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.
Filed Sept. 4, 1973, Ser. No. 393,804
Int. Cl. G01l *1/22*
U.S. Cl. 338—2 **6 Claims**



1. A transducer assembly comprising:

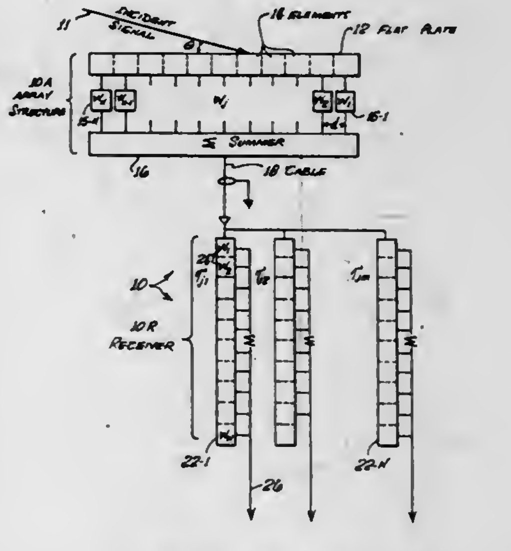
- a. a realtively thin diaphragm fabricated from a semiconductor material and having located on a surface at least one force responsive element in an active central area of said diaphragm, said central area surrounded by a peripheral non-active area,
- b. a tubular base member having a central aperture relatively congruent with said active area of said diaphragm and having on a surface thereof a plurality of wire accommodating apertures, said base member fabricated from a high dielectric material,
- c. a thin and relatively smooth metal ring, deposited about the periphery of said diaphragm, said ring having a plurality of apertures about the periphery thereof, said ring having a central aperture approximately congruent with said active area, and
- d. means including a glass bond of a thickness substantially less than the thickness of said thin diaphragm, coupling said ring between said diaphragm and said tubular base member with said apertures about the periphery of said ring communicating with said wire accommodating apertures of said base member.

3,873,957
PUSH BUTTON
Horst Wurscher; Rolf Blass, and Oskar Becker, all of Eiserfeld-/Sieg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 28, 1973, Ser. No. 401,718
Claims priority, application Germany, Oct. 20, 1972, 2251530
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 H **3 Claims**



1. A pushbutton of the type having a Hall element and magnets which are movable with respect thereto for generating pulses, comprising a housing, a button shaft slidably mounted in said housing for movement in a longitudinal direction between a non-depressed position and a switching position, a control magnet rigidly connected to said button shaft, a snap magnet, means for mounting said snap magnet in said housing for freely sliding movement parallel to said longitudinal direction, means for holding said snap magnet in a rest position when said button shaft is in the non-depressed position and for releasing said snap magnet upon movement of said button shaft to the switching position, a Hall element, means for fixing said Hall element in position between said magnets, the magnetization of the magnets being directed such that when the button shaft is in the non-depressed position the Hall element is outside the field, while when the button shaft is in a switching position the Hall element is in the field between the two magnets and the longitudinal movement of the snap magnet is determined only by the position change of the button shaft and the control magnet.

3,873,958
ACOUSTIC BEAM FORMER
Harper John Whitehouse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 26, 1973, Ser. No. 428,461
Int. Cl. G01s *3/80*
U.S. Cl. 340—6 R **4 Claims**



GENERALIZED CONCEPT OF BEAM FORMER

1. A beam former, including a receiving array which receives a signal which may be passive and a receiver which processes the received signal;

the receiving array including:

- a flat plate of material, capable of receiving reflected acoustic signals across its broad face;
- an array of receiving elements, for example transducing elements disposed parallel to each other on the surface of the plate, the distance d between two adjacent elements being less than the velocity of propagation C of waves in the flat plate divided by the bandwidth B determined by the highest operating frequency of the array;
- each element having a predetermined weight and polarity for its position in the array;
- a signal summer, whose inputs are the outputs of each of the elements of the array;

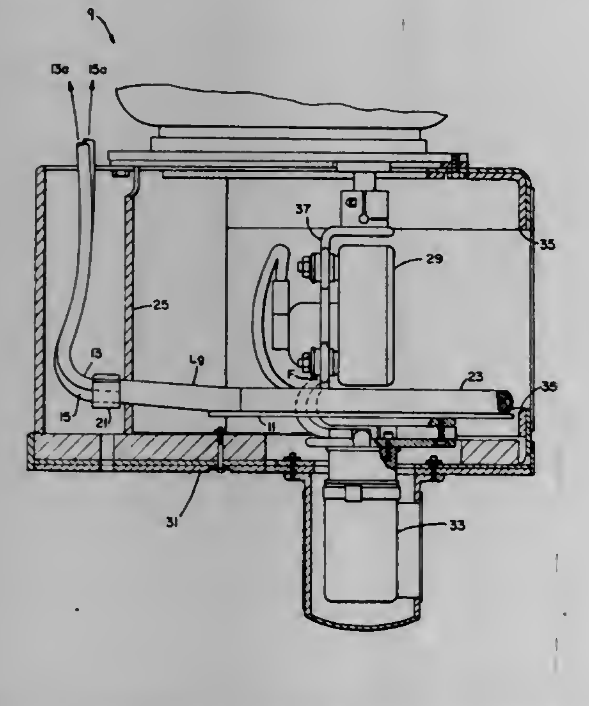
- a cable connected to the output of the signal summer; the beam former further comprising:
- a receiver, whose input is connected to the cable, comprising;
  - a plurality of transversal filters, each of whose inputs are connected to the cable, each filter having as many taps as there are elements in the array, the taps having the same weights and polarities, in the same order or in reversed order, as the elements of the array, corresponding taps in the various transversal filters having different time delays with respect to adjacent taps in the same filter;
  - the outputs of the filters thereby providing various compressions or expansions of the array element weights, it thereby being possible to determine the direction of the incident signal by observing which filter has the largest output.

3,873,959

SONAR WITH FLEXING DISTRIBUTION DEVICE FOR CONTINUOUSLY FLEXING CABLES

Arthur R. Harvey, Benicia, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 28, 1973, Ser. No. 401,917
Int. Cl. H01s *3/80*
U.S. Cl. 340—8 R **1 Claim**



1. A device comprising a rotatable sonar transducer having a frame and having at least two transducer cables maintaining an approximately equal distribution of the axial bending moments in said cables throughout the entire length of said cables:

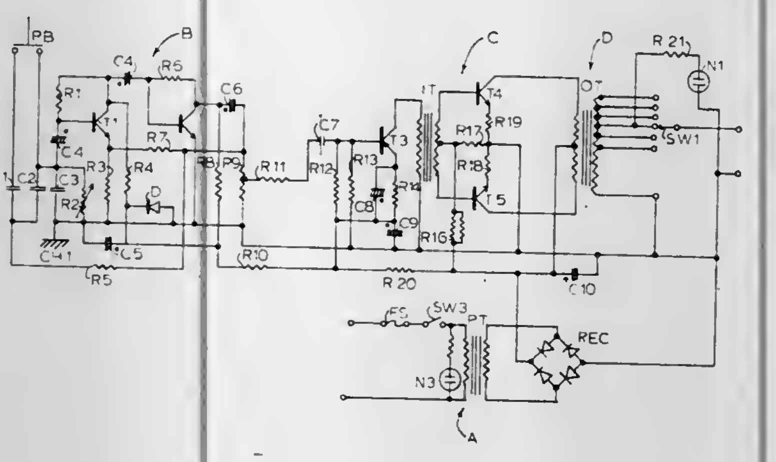
- a. a rotatable flat circular supporting table rotatably connected to said frame of said sonar transducer with said table having the same axis of rotation as said sonar transducer and traverses the same angle as said sonar transducer during the operation of said sonar transducer;
- b. said transducer cables supported by said table, one of said cables being in contact with said table and the other of said cables lying on top of said cable with their centerlines in parallel with every tangential plane which includes a point on each centerline at every tangent perpendicularly intersecting the supporting surface of said table;
- c. a form fitting sheath encasing said transducer cables maintaining said perpendicular relationship of said centerlines with respect to said table surface while said transducer and said table are in rotational motion;
- d. first means connecting one ends of said cables to said frame for rotation with said frame and second means maintaining the other ends of said cables in a fixed spacial position;
- e. said sheathed cables being positioned upon said table and forming a spiral loop configuration with the geometrical center of said loop being located at about the center of rotation of said table;
- f. concentric adjacent segments of said sheathed cables being spaced from each other through said spiral loop configuration; and
- g. whereby rotation of said spiral loop in one direction about said axis of rotation causes said spiral loop to tighten and, consequently, said spacing to decrease and rotation in the opposite direction causes said spiral loop to loosen and, consequently, said spacing to increase.

3,873,960

VERMIN CHASING AND CONTROLLING

Ronald E. Gates, Sr., 1645 Alencastre St., Honolulu, Hawaii 96816

Filed May 29, 1973, Ser. No. 364,871
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **13 Claims**



1. A vermin chasing and control ultrasonic wave generating system comprising a power source, an oscillator connected to the power source, an amplifier connected to the oscillator and to the power source, an output transformer having a primary connected to the amplifier and having a secondary, a plurality of output taps connected to the secondary at successively greater distances from the first end of the secondary, a multiple pole switch having an indexing pole connected to a second output line and having multiple poles connected severally to multiple taps of the secondary and having a selector for connecting the indexing pole with a selected pole of the multiple poles.

3,873,961

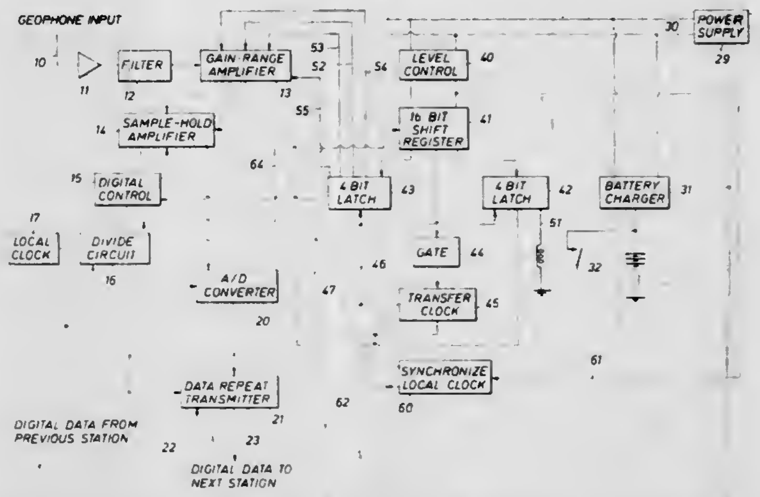
METHOD AND APPARATUS FOR SYNCHRONIZING MODULAR SEISMIC SYSTEM

Robert E. Lee, Houston, and William R. Orr, Bellaire, both of Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,904
Int. Cl. G01v *1/16, 1/26*
U.S. Cl. 340—15.5 TS **8 Claims**

1. A system for synchronizing a modular seismic system wherein the module for each seismic station includes a data acquisition system including sampling means, gain-ranging amplifying means and analog-to-digital converter and a data transmission system for receiving data from a previous station and re-transmitting the data to the next station while adding the data from the present station, both said data acquisition system and data transmission system being under the control of a local clock, said synchronizing system comprising:

- a power cable coupled to each module in parallel and a power supply to supply a power signal to each module, said power supply having a fixed frequency and positive and negative pulses, a synchronizing signal being included in said power supply by assignment of digital values to said positive and negative pulses and controlling the sequence of said pulses to produce said synchronizing signal;
- a decoder for each module, each decoder being coupled to said power cable and the local clock of each module to decode said synchronizing signal; and



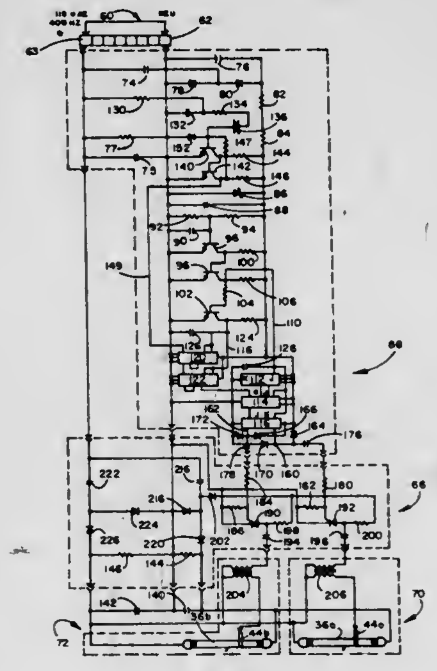
- a digital control for each module, said digital control being coupled to the sampling means of the module to control the time when the seismic data is sampled, said decoder also being coupled to said digital control to synchronize said digital control in response to a synchronizing signal transmitted over said power cable.

3,873,962

AIRCRAFT WARNING LAMP SYSTEM

Frederich W. Eggers, Huntington Beach, and Gerald K. Brewer, Anaheim, both of Calif., assignors to Symbolic Displays, Inc., Irvine, Calif.

Filed Nov. 28, 1973, Ser. No. 419,680
Int. Cl. G08g *5/00*
U.S. Cl. 340—25 **21 Claims**



1. An aircraft warning lamp system adapted to function with an alternating current power supply from said aircraft comprising:

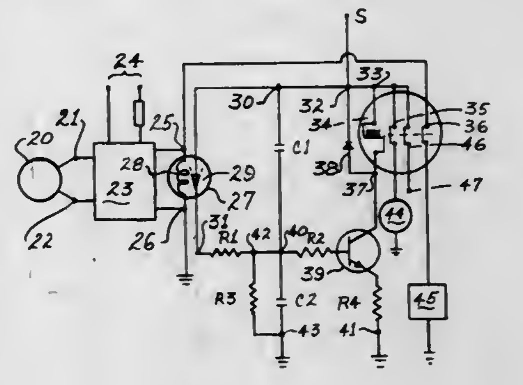
- means adapted to connect said system to the alternating source of current from said aircraft;
- A power supply module connected to said alternating current connection means;
- means connected to said power supply module for dividing the cyclical fluctuations of said alternating current for purposes of providing signal pulses; and,
- a high intensity light connected to and adapted to be driven by said power supply when triggered by said dividing means.

3,873,963

EMERGENCY VEHICLE WARNING SYSTEM

Joe L. Neal, 3836 Englewood Cir., Odessa, Tex. 79761, and John Stephen Roberson, 5504 Salem Hill Dr., Austin, Tex. 78745

Filed Jan. 5, 1973, Ser. No. 321,381
Int. Cl. G08g *1/00*
U.S. Cl. 340—34 **1 Claim**



1. An alarm system responsive to a predetermined narrow frequency range of sound waves comprising:

- sound detection means which generates an electrical signal in response to said predetermined narrow frequency range of sound waves being received by said sound detection means;
- resonant reed relay means having a coil and a switch means, circuit means connecting said electrical signal to said coil; said switch means being moved into the conducting configuration in response to current from said electrical signal flowing through said coil;
- second relay means including a second coil which actuates a switch means;
- a time delay circuit means for causing said second relay means to become deactuated after a predetermined lapse of time unless said sound detection means receives sound waves having a frequency which includes said narrow range of frequencies;
- said time delay circuit means including a source of current and a transistor connected to said second coil so that current flows from the source of current, through said second coil, and through said transistor when said transistor is in the current conducting configuration; means including circuitry by which the base of said transistor is energized by said resonant reed relay;
- circuit means electrically connecting said second coil to said switch means of said resonant reed relay means so that, when said sound detection means receives a signal to provide said electrical signal, the last said switch means is actuated; and an alarm means connected to be actuated by the last said switch means.

3,873,964

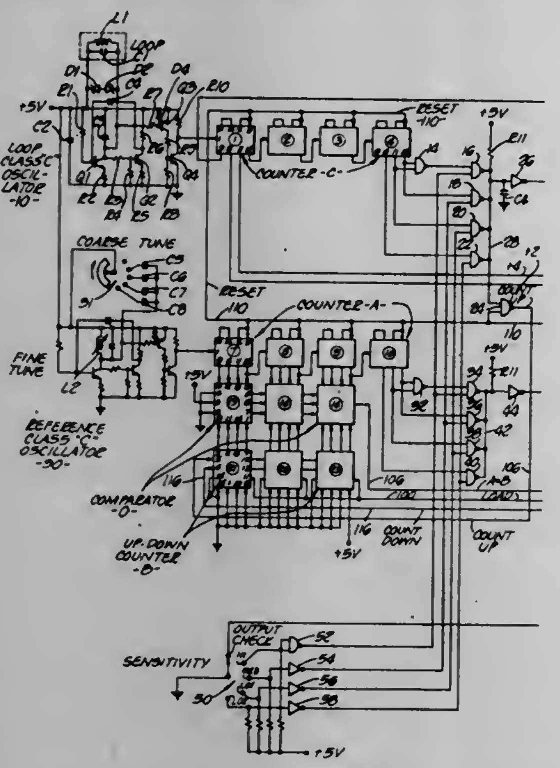
VEHICLE DETECTION

Thomas R. Potter, Los Alamitos, Calif., assignor to Indicator Controls Corp., Gardena, Calif.

Filed Feb. 19, 1974, Ser. No. 443,299
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 L **20 Claims**

1. A digital vehicle detection system including: an inductive loop to be placed in position to sense the presence of a vehicle; a first oscillator circuit connected to the signal loop for generating an output having a frequency controlled by the inductance of the loop; first counter means connected to the output of the first oscillator circuit for counting the cycles of the output signal generated by the first oscillator circuit; a second oscillator circuit for generating a reference frequency signal output; counter means coupled to said second oscillator circuit and responsive to said reference frequency output signal for generating a series of variable time frames; reset circuit means coupled to said last-named means to reset said

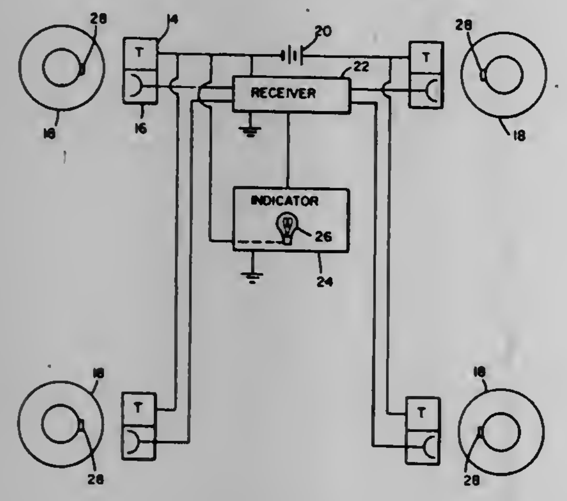
first counter means at the end of each such variable time frame so as to establish a series of time frames for the first counter means; and control circuit means coupled to said first



counter means to develop a control signal whenever the count of said first counter means exceeds a particular count during any of said time frames.

3,873,965
TIRE PRESSURE MONITORING SYSTEM

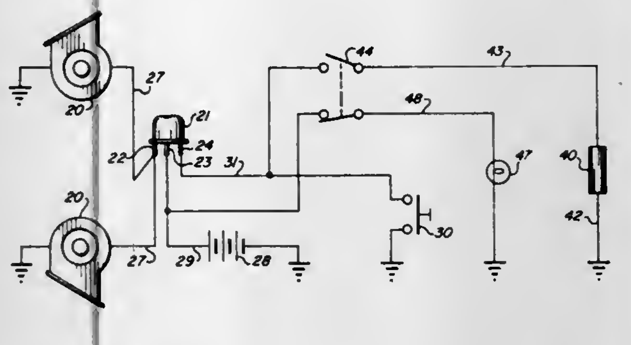
George E. Garcia, 2349 Spanish Trl., Tiburon, Calif. 94920
Filed Apr. 18, 1974, Ser. No. 462,082
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **12 Claims**



1. For use on a vehicle having a plurality of inflatable tires, a tire pressure monitoring system comprising:
a pressure sensitive device mounted within each of the tires, each said device having a normally shielded portion thereof which is extendable in response to a reduction in pressure within the tire and around the device, said extendable portion having a surface that is sensitive to R.F. energy;
an R.F. transmitter unit mounted on said vehicle adjacent each of its tires and positioned so as to direct a beam of R.F. energy toward an adjacent tire and said pressure sensitive device therein;
antenna means for sensing R.F. energy that is reflected from the tire;
receiver means connected to said antenna means for detecting the change in the reflected R.F. energy from a tire when its said device is activiated to extend its R.F. sensitive portion; and
display means connected to said receiver means for providing an indication of the reduced tire pressure when its said device is activated.

3,873,966
AUDIBLE ALARM FOR MOTOR VEHICLE

Michael D. Tanner, 1702 N. Trevor, Mesa, Ariz. 85203
Filed Jan. 30, 1974, Ser. No. 437,832
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **1 Claim**



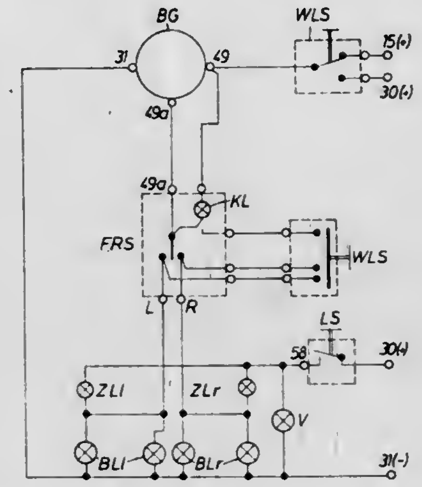
1. For use in combination with the horn circuit of a motor vehicle, which horn circuit includes
an electric horn,
an electrical energy source,
a normally open momentary contact switch, and
a relay interconnected between said horn, said electrical energy source and said momentary contact switch for completing the electrical circuit between said horn and said electrical energy source in response to closure of said momentary contact switch,
and which vehicle further includes
a liquid fuel storage tank,
a fuel tank filler neck extending from said fuel tank and having an inlet aperture at the free end thereof, and
a door hingedly secured to said vehicle and having a first position for normally covering the free end of said filler neck and a second position angularly displaced from said first position for exposing said filler neck,
improvements therein to provide an audible signal in response to an attempt to gain access to said filler neck when said access is not authorized by the operator of said vehicle, said improvements comprising:
a. a normally open gravity-actuated switch;
b. mounting means for rigidly securing said gravity switch to said door,
said gravity switch being normally open when said door is in said first position and closing as said door is displaced toward said second position;
c. an electrical lead communicating between said gravity switch and said relay; and
d. a selective open-closed switch positioned for control by the operator of said vehicle and in series with said electrical lead,
whereby said horn is energized as said door is moved toward said second position and said selective switch is closed.

3,873,967
DIRECTION-INDICATING AND WARNING BLINKER SYSTEM FOR VEHICLES, IN PARTICULAR MOTOR VEHICLES

Josef Swoboda, Bietigheim, Germany, assignor to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany
Filed Oct. 5, 1972, Ser. No. 295,104
Claims priority, application Germany, Nov. 23, 1971, 2157908
Int. Cl. B60q *1/00*
U.S. Cl. 340—66 **7 Claims**

1. A combined direction-indicating and warning blinker

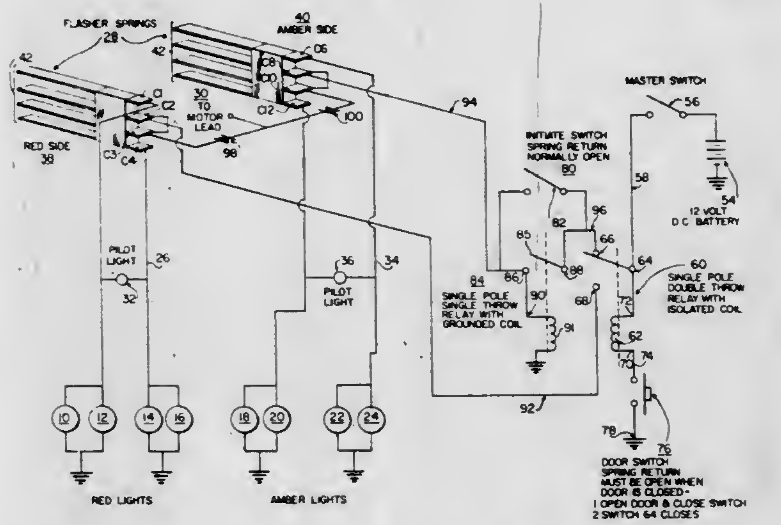
system for vehicles having head lamps and a power source, comprising:
switching arrangement connected to the power source and having a pair of output terminals each corresponding to one side of the vehicle;
said arrangement having direction indicator switch means for selectively directing flow of current to the terminals and blinker means for intermittently interrupting the current flow;
a first set of direction-indicating lamps coupled to one output terminal of the switching arrangement;
a second set of direction-indicating lamps coupled to the other output terminal of the switching arrangement;



a light switch connected to the power supply and in series with head lamps of the vehicle; and
a first and second set of additional lights, the first set being connected between said light switch and one of the output terminals and the second being connected between the light switch and the other of said output terminals
said additional lamps consuming substantially less power than either the direction-indicating lamps and the head lamps so that when an additional lamp or a head lamp and a direction-indicating lamp are connected in series only the additional lamp lights.

3,873,968
VEHICLE LIGHT WARNING SYSTEMS

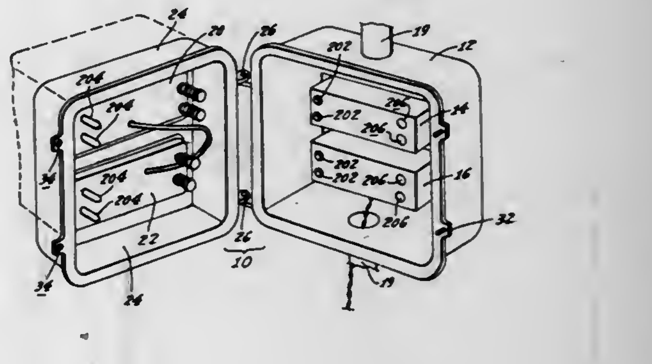
Joseph E. Baader, 333 Holiday Dr., Springfield, Ohio 45505
Continuation-in-part of Ser. No. 228,531, Feb. 23, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,472
Int. Cl. B60q *1/38, 1/46*
U.S. Cl. 340—72 **9 Claims**



1. In a vehicle light warning system for a vehicle having a door, caution indicating lights and stop indicating lights mounted on the vehicle, an electric power source, and an energizable electric circuit on the vehicle incorporating said lights for actuation thereof:
A. a dual flasher means having two sets of normally open contacts connected respectively to said caution and stop indicating lights and a rotor means operable upon rotation to intermittently and repetitively close and energize said contacts to cause flashing of said lights;
B. a first holding relay in said circuit;
C. a normally open spring return initiate switch operable upon closing activation to connect said first holding relay to said battery for energization and to hold said switch in closed position and thereby energize through said circuit said contacts in said flasher means connected to said caution lights;
D. a second holding relay in said circuit between said battery and said first relay having a contact movable from a first position for energizing said first relay to a second position connecting and energizing through said circuit said contacts in said flasher means connected to said stop lights;
E. a spring return door switch normally open when said door is closed and operable upon opening said door to so close and energize said second holding relay to move said contact thereof to connect and to operate said stop lights in direct circuit and de-energize said first relay to deactivate said caution lights;
F. said second relay being connected in said circuit through said door switch with a single wire to a vehicle ground.

3,873,969
ADAPTER UNIT FOR PEDESTRIAN TRAFFIC CONTROL SIGNAL

Samuel Gould, Los Angeles, and James S. Gould, Los Alamitos, both of Calif., assignors to Indicator Controls Corporation, Gardena, Calif.
Continuation-in-part of Ser. No. 77,654, Oct. 2, 1970, abandoned. This application Aug. 2, 1971, Ser. No. 168,011
Int. Cl. G08g *1/00*
U.S. Cl. 340—107 **2 Claims**

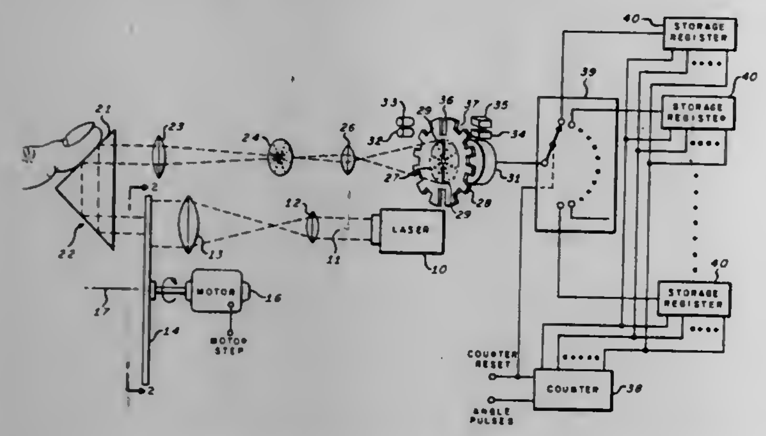


1. In combination: a pedestrian traffic control signal including a casing, and at least one transformer mounted in said casing; a signal illuminating capsule having a tray-like configuration extending across the face of the casing, said capsule having illuminating tubes mounted therein, and having electrodes extending therefrom to establish electrical connection with said transformer; support bracket means received in said casing over the top of said transformer, electrical socket means mounted on said support bracket means and electrically connected to said transformer, said electrodes of said signal illuminating capsule being removably received in said socket means to establish electrical connection with said transformer and also to support said capsule in position across said casing.

3,873,970
FINGERPRINT IDENTIFICATION APPARATUS

Donald H. McMahon, Carlisle, and William T. Maloney, Sudbury, Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 25, 1973, Ser. No. 382,596
Int. Cl. G06k *9/13*
U.S. Cl. 340—146.3 E **7 Claims**



1. Optical fingerprint identification apparatus comprising means for supporting a fingerprint to be identified,

means for illuminating a discrete segment of said fingerprint and producing a Fourier transform having diffraction lobes corresponding to the ridge lines in said illuminated discrete segment of said fingerprint,

means for angularly scanning through 180 degrees about the center of said Fourier transform for producing output data signals representative of the presence and angular position of said diffraction lobes and producing a reset signal indicative of completion of said 180° scan,

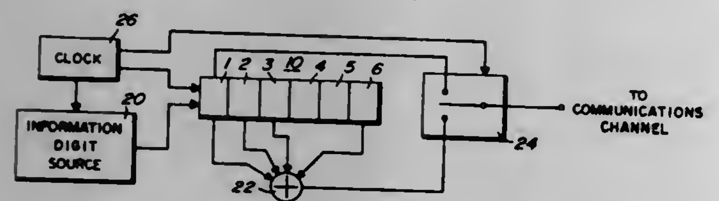
means coupled to said angular scanning means and responsive to said output data signals for storing said output data representative of the angular position of said diffraction lobes, and

means coupled between said illuminating means and said angular scanning means for directing said illuminating means onto a different discrete segment of said fingerprint in response to said reset signal.

3,873,971
RANDOM ERROR CORRECTING SYSTEM

John En, Palatine, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 31, 1973, Ser. No. 411,552
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **14 Claims**



1. An error correcting system having an encoder for generating parity bits from information bits applied thereto and applying said information bits and said parity bits to utilization means, said encoder including in combination:

sample and storage means having six stages for receiving and storing six successive information bits;

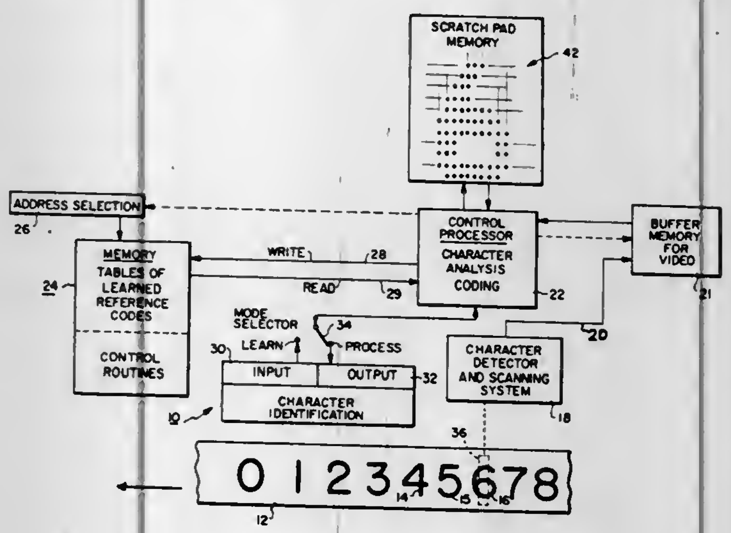
means for generating parity bits connected to said sample and storage means, said parity bit generating means including modulo 2 adder means for generating each parity bit by taking the modulo 2 sum of a predetermined one of said information bits, the two information bits immediately precedent thereto and the information bit five bits precedent to said predetermined information bit to thereby provide a parity bit associated with said predetermined information bit; and

switch means for alternately applying said information bits and the parity bits associated therewith to said utilization means.

3,873,972
ANALYTIC CHARACTER RECOGNITION SYSTEM

Theodore H. Levine, 8818 Fairfield St., Philadelphia, Pa. 19152

Continuation-in-part of Ser. No. 194,414, Nov. 1, 1971, abandoned. This application Apr. 25, 1973, Ser. No. 354,385
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 AC **11 Claims**

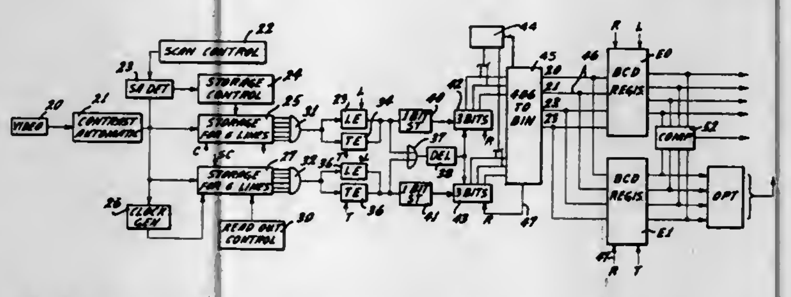


1. A character recognition system comprising:
a. means for scanning a character and forming an image therefrom,
b. means for analyzing said image in a plurality of linear slices and developing information signals indicative of the existence of character segments in each linear slice,
c. means responsive to said information signals for generating transition signals which are a function of the positions of all character segment bounds, with respect to the position of a reference point, within each linear slice,
d. means responsive to said transition signals for measuring the number of character segments, and the lengths and positions of character segments within each slice, and means for generating measurement signals indicative thereof, and
e. codifying means responsive to said measurement signals for devloping codified information representative of the character geometry within each slice.

3,873,973
SELF-CORRECTING READING OF CONTRAST INFORMATION

Norbert K. Acker, Buchschlag, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed June 8, 1973, Ser. No. 368,238
Int. Cl. G06k *9/18*
U.S. Cl. 340—146.3 Z **12 Claims**



1. In an apparatus for reading contrasting information defined by contrasting markings of particular dimensions and defining characters, the markings arranged in spaced apart relation in at least one track, while extending transverse to the track, the apparatus including means for optically scanning along scanning lines traversing the markings, the apparatus further including optical pick-up means for providing a read signal representing the contrasts along said scanning lines, the improvement comprising:

first circuit means connected to be responsive to said read signal and providing first signals representative of passage of the scanning across leading edges of the contrasting markings; second circuit means connected to the first circuit means and delaying each of the first signals by a period about equal to a period of scanning time covering the width of the markings;

third circuit means connected to be responsive to said read signal and providing second signals representative of passage of the scanning across trailing edges of the markings;

logic OR-circuit means combining the delayed first signals and the second signals to obtain representation of the markings; and

decode means connected to receive the combined signals to obtain a decoding.

3. In an apparatus for reading contrasting information defined by plural markings arranged in at least one track along a first direction in a data field and extending individually in a second direction transverse to the first direction, comprising: first means for scanning the markings in plural parallel scanning lines in the first direction;

pick-up means responsive to said scanning and providing read signals;

storage means for storing the read signals of sequential scanning lines, so that signals representing data field read out for corresponding positions as aligned transversely to the direction of scanning are stored for presentation in parallel by the storage means upon retrieval;

third means for processing the read signals in parallel as stored and as having resulted from scanning in the plural scanning lines, and identifying each marker on the basis of coincident signal portions having resulted from passage over the same marker in different ones of said plural scanning lines, but not necessarily all of the scanning lines fourth means included in said third means for establishing criteria of accepting and rejecting signals as representing passage of scanning over a marking, including the rejection of a signal portion in a single line that represents passage over an edge of a marking while signals in said corresponding positions in other scanning lines do not indicate such passage and

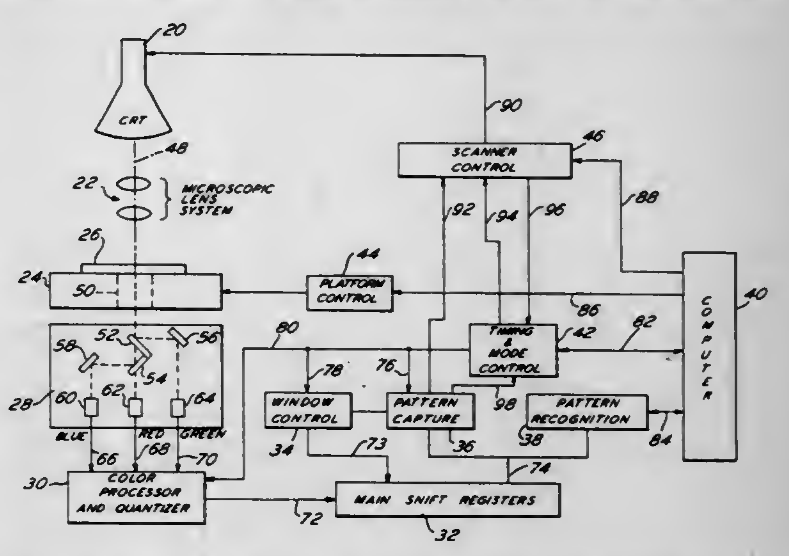
means for decoding markers as identified by the third means on basis of the criteria established by the fourth means.

3,873,974
SCANNING SYSTEM FOR LOCATION AND CLASSIFICATION OF PATTERNS

John C. Bouton, Doylestown, and Melvin E. Partin, Newtown Square, both of Pa., assignors to Geometric Data Corporation, Wayne, Pa.

Filed Oct. 12, 1973, Ser. No. 406,071
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 AC **13 Claims**

1. A pattern recognition system having means for scanning a field, said field having a plurality of classes of patterns therein, said classes of patterns being of different color densities and sizes, said means for scanning traversing said field in a first direction in a fast scan and in a second direction in a slow scan, means responsive to said scanning means for generating a signal corresponding to the colors of said field at the positions scanned, detection means responsive to said signal for detecting when said means for scanning has reached the location of a pattern from one of said classes of patterns, said detection means including threshold means responsive to said signal for indicating when said signal represents a predetermined color density and, size discrimination means for determining whether a pattern is a predetermined size, said detection means detecting patterns from only one of said classes of patterns in accordance with the color, threshold density and size of said pattern, said scanning means traversing said second direction at a first speed until said detection means responsive to said signal detects said pattern from one of said classes of patterns, and control means responsive to said detection for backing up said scanning means in said second

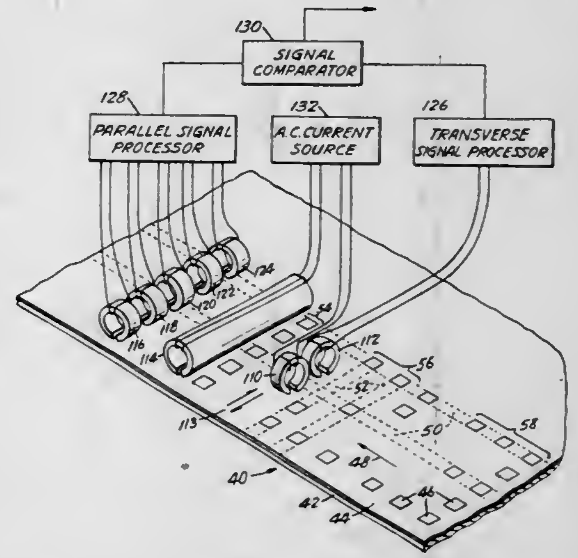


direction and causing said scanning means to traverse said pattern at a second speed slower than said first speed so that said pattern recognition system is required to examine for discrimination among the patterns only patterns of said one of said classes.

3,873,975
SYSTEM AND METHOD FOR AUTHENTICATING AND INTERROGATING A MAGNETIC RECORD MEDIUM SYSTEMS

Richard L. Miklos, Maplewood, and Jack E. Blackburn, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1973, Ser. No. 356,604
Int. Cl. G06k *7/08;* **G11b** *5/00*
U.S. Cl. 340—149 A **16 Claims**



9. An information processing system for interrogating a record medium, comprising:

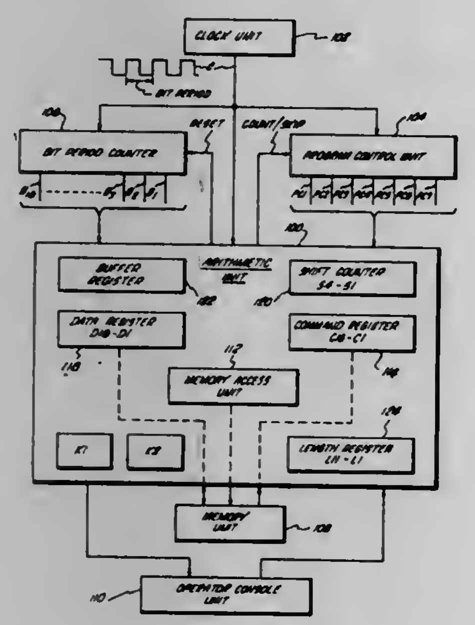
a magnetic record medium having a magnetic recording layer containing uniformly dispersed magnetizable material having magnetic anisotropy which magnetizable material at selected locations on the layer is differently aligned from the alignment of the magnetizable material in the remainder of the layer to provide a magneticallly detectable permanent fixed information pattern,

means for applying a first substantially unidirectional magnetic field to differently magnetize said magnetizable material depending upon the alignment thereof, and

sensor means for sensing the magnetization of the differently magnetized material upon traversing said record medium to provide a signal representative of said fixed information pattern.

3,873,976
MEMORY ACCESS SYSTEM

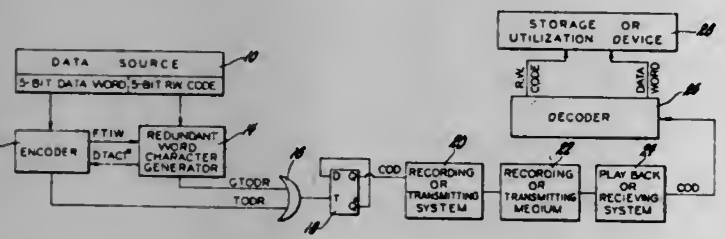
James McCabe Morris, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed July 30, 1973, Ser. No. 383,913
Int. Cl. G06f *13/06*
U.S. Cl. 340—172.5 **14 Claims**



1. In a word organized computer, a memory accessing system capable of accessing a bit field, comprising:
- an addressor for the word which contains an end bit of the field;
- an identifier of the field length;
- a register;
- means responsive to said addressor to fill said register with the addressed word;
- an indicator of whether or not the end bit is aligned in the first or last bit position of said register;
- a justifier responsive to said addressor and an indication of non-alignment from said alignment indicator to shift the word in said register toward the end of said register to which the end bit is closest until said alignment indicator indicates alignment;
- a buffer;
- an identifier of the bit positions of said register containing bits of the field; and
- means responsive to said field-length and field-bit-position identifiers to transfer serially by bit from said register to said buffer only field bits.

3,873,977
DATA COMPRESSION METHOD AND APPARATUS

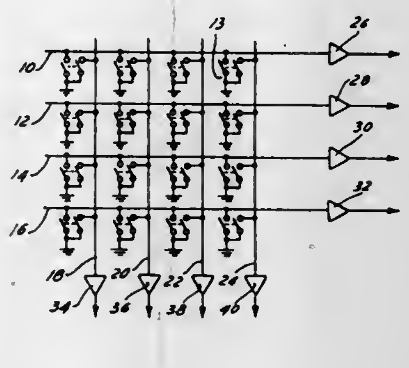
Duane E. McIntosh, Santa Ynez, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed May 1, 1974, Ser. No. 465,854
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **7 Claims**


DATA SOURCE
5-BIT DATA WORD
5-BIT RW CODE
ENCODER
FTIW
DTACT
REDUNDANT WORD CHARACTER GENERATOR
GTODR
TODR
D
T
CDD
RECORDING OR TRANSMITTING SYSTEM
RECORDING OR TRANSMITTING MEDIUM
PLAY BACK OR RECIEVING SYSTEM
CDD
DECODER
R.W. CODE
DATA WORD
STORAGE OR UTILIZATION DEVICE

1. Data compression apparatus comprising:
- a source of binary data providing a data word and an accompanying code word identifying the number of additional data words which are identical within a predefined tolerance with the data word,
- first logic means responsive to said data word for providing a coded bistable output signal containing transitions between two separately identifiable states of said output signal at the beginning or middle of selected ones of bit cells containing the bits of said data word to thereby code both the binary character of the bit in the selected one of the bit cells and the bit in the bit cell immediately following said selected bit cells, said first logic means responding to those bits in said data word of one binary characterization by providing a transition at the beginning or middle of each corresponding bit cell depending upon whether said corresponding bit cell is immediately followed by a bit cell containing a bit of said one binary characterization or the other binary characterization respectively, whereby the shortest interval between transitions is 1½ bit cells and occurs between a transition at the middle of the bit cell which is followed by a transition at the beginning of a bit cell,
- redundant word character generating means for generating a three bit cell transitional pattern containing a transition at the beginning of a bit cell followed by a transition at the middle of the next bit cell,
- control logic means responsive to said code word and the production of a transition by said first logic means for disabling said first logic means and for enabling said character generating means to insert said transition pattern in said output signal delayed from the end of the bit cell immediately following said selected bit cell by one bit cell, if the number of additional data words is one and by 2 bit cells if the number of additional data words is two or more, said character generating means inserting successive transitional patterns delayed from the previous pattern by a minimum of 1 bit cell and a maximum of 3 bit cells until the total number of bit cell delays corresponds to the number of additional data words, said control means disabling said character generating means and enabling said first logic means in response to the insertion of the last of said transitional patterns.

3,873,978
KEYBOARD CIRCUIT

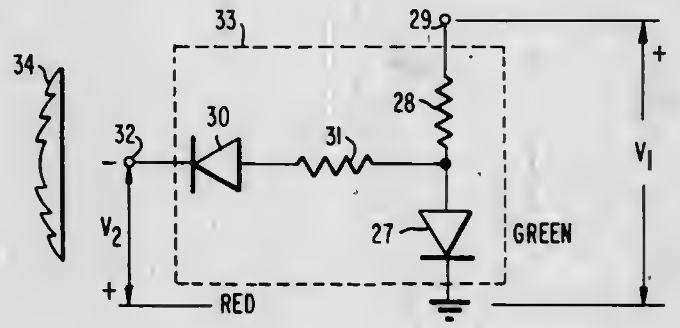
Shuji Niki, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1974, Ser. No. 442,312
Claims priority, application Japan, Mar. 16, 1973, 48-30684
Int. Cl. H04l *15/06*
U.S. Cl. 340—365 R **14 Claims**



1. A keyboard circuit comprising a first conductor and a second conductor, switch means capable of electrically coupling said first conductor to said second conductor, first and second signal generating means operably connected to said first and second conductors, respectively, said first and said second signal generating means normally generating a signal of a given level and being effective, when electrically coupled through said switch means, to respectively generate signals of a second level.

3,873,979
LUMINESCENT SOLID STATE STATUS INDICATOR

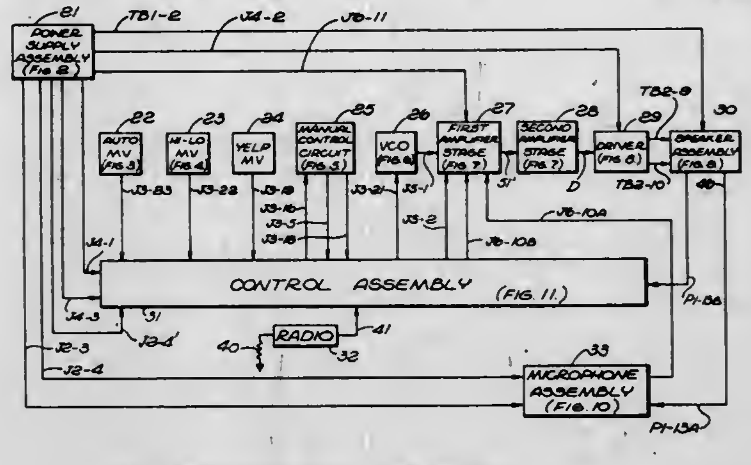
Magnus G. Craford, St. Louis, and David L. Keune, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Sept. 28, 1973, Ser. No. 401,775
Int. Cl. H05b *33/00*
U.S. Cl. 340—366 R **13 Claims**



1. A luminescent solid state status indicator characterized by:
- at least first and second light emitting diodes mounted on a single header;
- first terminal means on said header connected to both light emitting diodes and adapted to be connected to a first terminal of a direct current energizing voltage;
- second terminal means on said header connected to at least one of the light emitting diodes and adapted to be connected to a second terminal of said direct current energizing voltage; and
- said light emitting diodes being adapted to emit light the color of which shifts as a function of relative change in magnitude of said direct current energizing voltage.

3,873,980
SOUND COMMUNICATION SYSTEM

Gordon S. Carroll, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,776
Int. Cl. H04q *3/10*
U.S. Cl. 340—384 E **9 Claims**

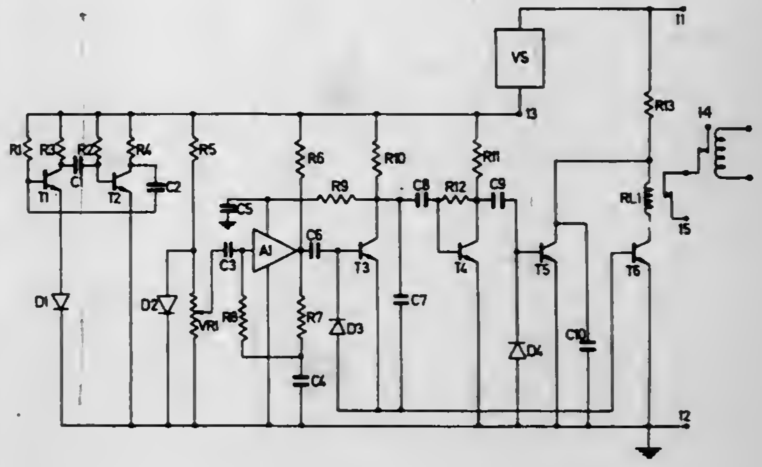

POWER SUPPLY ASSEMBLY (FIG 8)
TB1-2
J4-2
J6-11
AUTO MV (FIG 3)
HI-LO MV (FIG 4)
YELP MV
MANUAL CONTROL CIRCUIT (FIG 5)
VCO (FIG 6)
FIRST AMPLIFIER STAGE (FIG 7)
SECOND AMPLIFIER STAGE (FIG 7)
DRIVER (FIG 8)
SPEAKER ASSEMBLY (FIG 8)
TB2-9
TB2-10
CONTROL ASSEMBLY (FIG. 11.)
RADIO
MICROPHONE ASSEMBLY (FIG. 10)
P1-13A
P1-8B

SOUND COMMUNICATION SYSTEM 20

1. A multipurpose sound communication system comprising: first and second D.C. voltage sources having first and second output leads, respectively, connected to first and second output junctions, respectively, said first and second sources being adapted to produce respective first and second output signals on said first and second leads thereof, respectively, said first and second signals having first and second respective first and second magnitudes which are functions of time different from each other; a voltage controlled oscillator (VCO) having an input lead and an output lead, said VCO being adapted to produce an output signal on said output lead thereof having at least an A.C. of an audio frequency controlled in accordance with the magnitude of the input signal applied to the said input lead thereof; first and second connection means connected from said first and second output junctions, respectively, to said VCO input lead, said first connection means being actuatable to produce effectively an open circuit between said first source output junction and said VCO input lead when said first source output junction is short circuited to ground, said first connection means being actuable to produce effectively a conductive path between said first source output junction and said VCO input lead when said first source output junction is not short circuited to ground, said second connection means being actuable to produce effectively an open circuit between said second source output junction and said VCO input lead when said second source output junction is short circuited to ground, said second connection means being actuable to produce effectively a conductive path between said second source output junction and said VCO input lead when said second source output junction is not short circuited to ground; manually actuable means connected from said first and second output junctions, respectively, to ground, said manually actuatable means being selectively operable to short circuit one but not the other of said first and second output junctions to ground; and output means having an input lead connected from said VCO output lead for broadcasting audible sound in accordance with the amplitude and frequency of said VCO output signal component on said VCO output lead.

3,873,981
MICROWAVE RADIATION MONITOR

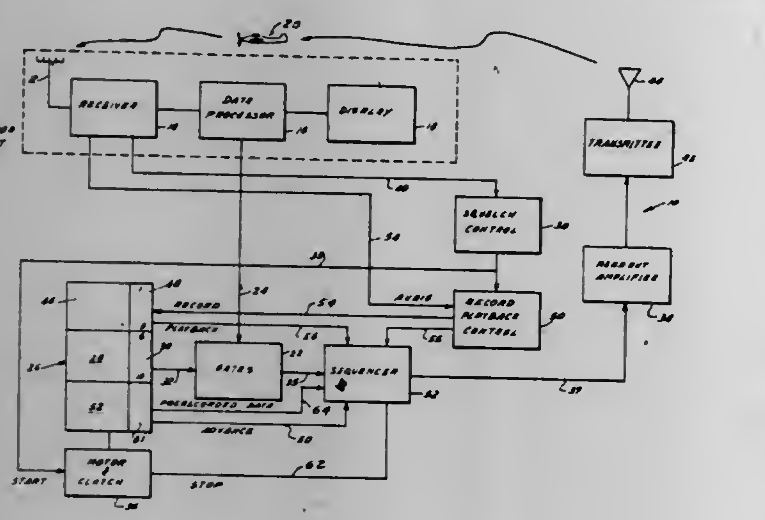
John Anthony Bloice, Richmond, Surrey, England, assignor to Peak Technologies Limited, Isleworth, Middlesex, England
Filed Sept. 7, 1973, Ser. No. 395,164
Claims priority, application United Kingdom, Sept. 20, 1972, 43542/72
Int. Cl. G01s *7/40;* **G08b** *13/22*
U.S. Cl. 343—5 PD **10 Claims**



9. A microwave intruder detector system, comprising: a microwave radar unit arranged to provide cover of an area under surveillance and a microwave monitor comprising: a microwave receiver antenna; a microwave diode contained in said antenna; a first monitor circuit for monitoring the microwave energy level within said antenna, connected to said microwave diode and adapted to respond to said level falling below a predetermined value by providing an alarm signal; and a second monitor circuit connected to said microwave diode and responding to the presence in the output thereof of a frequency in a predetermined range of relatively low frequencies by providing said alarm signal, said monitor being arranged in use at the edge of the field of surveillance to receive microwave energy transmitted thereto from said radar unit, the outputs of said unit and said monitor being so interconnected that an alarm is generated in response to the appearance of the monitor alarm signal, independently of the operation of said radar unit.

3,873,982
TALKING DIRECTION FINDER

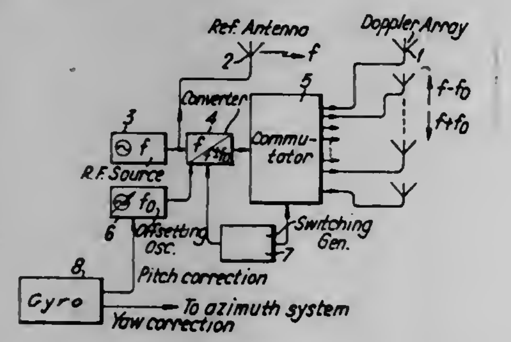
Jules Cardon, Dix Hills; Frederick Richter, Huntington Station, and Henry Hagedorn, Hicksville, all of N.Y., assignors to Servo Corporation of America, Hicksville, N.Y.
Filed May 29, 1973, Ser. No. 364,828
Int. Cl. G08g *5/00*
U.S. Cl. 343—100 CS **6 Claims**



1. In a system for providing a direction finder bearing in response to a radio request for such bearing of the type including processor means to extract bearing information from a radio transmission and generate a digitalized output signal representative of said information the improvement comprising: storage means comprising a first plurality of tracks containing theron prerecorded verbal digits and a second plurality of tracks, playback means operatively associated with said storage means to produce output electrical signals representative of said verbal digits, speech amplifier means adapted to convert said electrical signals into verbal reproductions of said prerecorded digits connected to said playback output through gate means, gate means interposed between said playback means and said amplifier means, means connecting said processor output in gate control relationship with said gate means, record/playback means associated with said second plurality of tracks, means for switching said record/playback means to their record mode when said radio transmission begins and to their playback mode when said radio transmission ends.

3,873,983
RADIO NAVIGATION BEACON

Peter Sothcott, London, and Stanley B. Marsh, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,152
Claims priority, application United Kingdom, Aug. 20, 1971, 39158/71
Int. Cl. G01s *1/44, 1/16*
U.S. Cl. 343—106 D **5 Claims**

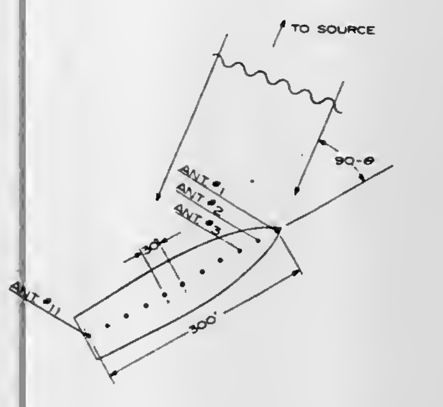


1. In a radio navigation approach beacon system mounted on an astable platform for radiating energy from an array commutated to simulate constant velocity linear motion of a radiating source of radio frequency energy whereby an apparent Doppler modulated signal is received by a remote station, the combination comprising:

first means for radiating a radio frequency reference signal;
  second means providing a radio frequency excitation signal to said commutated array at a frequency offset from the frequency of said reference signal, thereby to radiate which said remote station can extract a beat frequency signal which varies with the cosine of the angular approach path to provide approach angle data;
third means for sensing variations in the orientation of said astable platform to generate an error signal representative of said variations;
and fourth means connected to said third means for controlling the frequency offset of said array excitation signal to compensate for angular movement of said platform in the approach plane corresponding to the plane containing said approach angle data.

3,873,984
PASSIVE RANGING TECHNIQUE

Henry T. Weisbrich, Jr., China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 7, 1972, Ser. No. 216,301
Int. Cl. G01s *5/14*
U.S. Cl. 343—112 D **3 Claims**

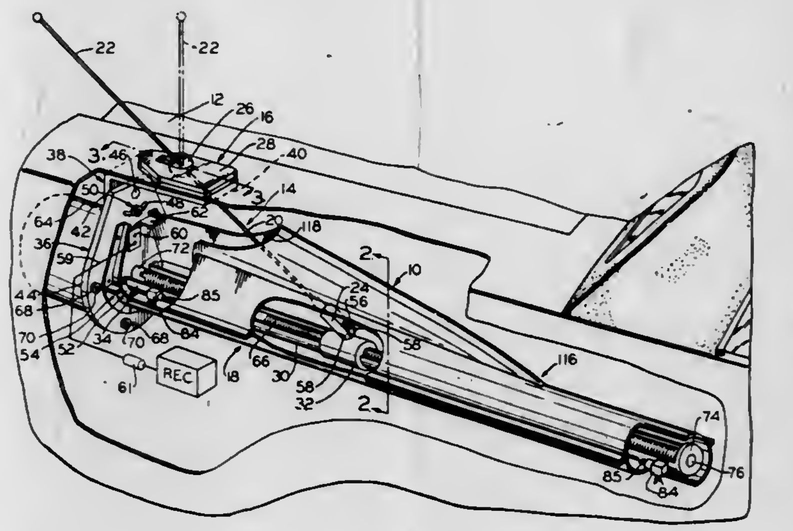


1. In a passive ranging system for use on a slow moving platform incorporating means for determining range to an emitting source which comprise at least two physically separated antenna means for receiving signals from a radiating source; receiver means operatively connected to said at least two antenna means for producing output video signals and intermediate frequency signals; time of arrival computing means operatively connected to said receiver means and receiving said video signals and measuring the difference in time of arrival between the signals received at said at least two antenna means and producing a signal corresponding to bearing to the source; phase rate computer means operatively coupled to the output of said receiver means for receiving the intermediate frequency signals therefrom and producing sum signal and a quadrature sum signal; means operatively connected to said phase rate computer means for computing a phase rate beat frequency; modifying means operatively receiving the bearing signal and modifying said bearing signal for various measured parameters; and combining means operatively connected to said modifying means and said phase rate computing means combining said modified bearing signal and said phase rate beat frequency and outputting a signal representative of range to the emitting source;

the improvement comprising a multiplicity of sets of receiving antennas at spaced intervals along the slow moving platform so that an induced velocity is added to the received signals.

3,873,985
EXTENDIBLE AND RETRACTABLE ANTENNA

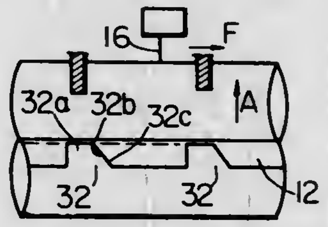
John Altmayer, Cape Coral, Fla., assignor to New-Tronics Corp., Brook Park, Ohio
Continuation-in-part of Ser. No. 368,280, June 8, 1973, abandoned. This application May 10, 1974, Ser. No. 468,665
Int. Cl. H01q *1/32*
U.S. Cl. 343—714 **13 Claims**



1. An extendible and retractable vehicle antenna mounted on and beneath a generally horizontal vehicle panel having inner and outer sides comprising, an antenna rod having inner and outer ends with respect to said panel, a track having opposite ends, said track being closely spaced beneath said panel and extending generally parallel thereto, a rider supported by said track for reciprocation therealong, means pivotally interconnecting said inner end of said antenna rod with said rider, antenna rod guide means supported by said panel for pivotal movement about an axis, said guide means supporting said antenna rod intermediate the ends thereof for reciprocation transverse to said axis, means interconnecting said track and guide means with said axis spaced from and overlying one end of said track, said other end of said track being horizontally spaced from said one end, and means to displace said rider in opposite directions along said track to displace said inner end of said antenna rod along said track and move said antenna rod between retracted and extended positions relative to said panel, said antenna rod in the extended position being generally vertical, said track having a length between said ends substantially greater than the spacing thereof from said guide means axis, and said track length and spacing providing for said antenna in the retracted position to be disposed at an angle more acute with respect to horizontal than vertical.

3,873,986
RECORDING NEEDLE PROTECTION ARRANGEMENT FOR FACSIMILE RECORDER

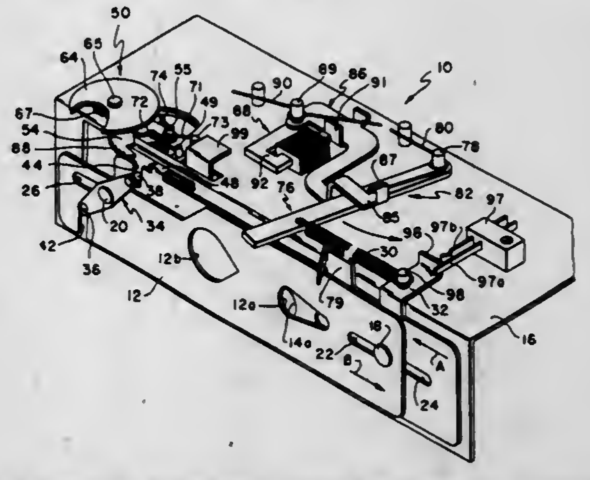
Toshihiko Misawa, and Mitsuru Kondo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 1, 1974, Ser. No. 465,794
Claims priority, application Japan, May 8, 1973, 48-53919
Int. Cl. G01d *15/28*
U.S. Cl. 346—138 **4 Claims**



1. In a recording device having a rotary drum carrying a recording medium and a recording instrument movable along the circumference of the recording medium substantially parallel to the axis of the drum, the recording medium being secured to the drum by a clamp formed with a cutout to prevent interference of the clamp with a member for removing the recording medium from the drum, an improvement to prevent the recording instrument from being damaged by engaging with a side of the cutout of the clamp, the improvement being that the cutout has a slanted edge determined by the rotational speed of the drum and the speed of movement of the recording instrument.

3,873,987
DIAPHRAGM SHUTTER

Gerhard Brauning, Stuttgart, and Wolfgang Ort, Stuttgart-Bad Cannstatt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 13, 1973, Ser. No. 397,187
Claims priority, application Germany, Sept. 23, 1972, 7235116
Int. Cl. G03b *7/08*
U.S. Cl. 354—26 **4 Claims**



1. In a camera, exposure control apparatus comprising:

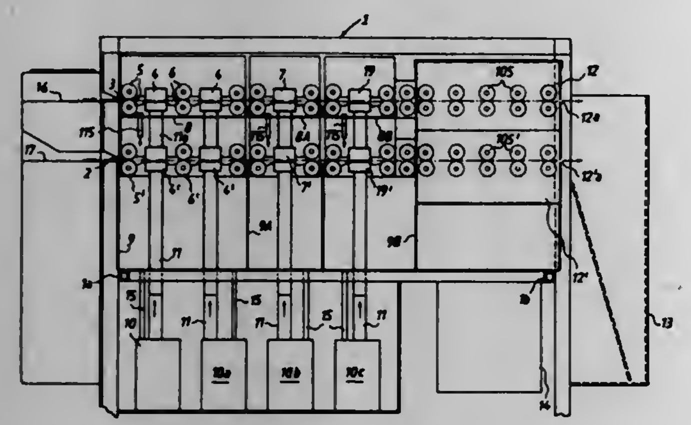
diaphragm means, mounted for movement to form an exposure aperture of varied size;
means for retaining said diaphragm means in a position to form an aperture of minimum size;
means for urging said diaphragm means toward a position to form an aperture of maximum size;
means for releasing said diaphragm means to permit said urging means to move said diaphragm means toward said position to form said maximum aperture;
inertial delay means, located to be engaged by said diaphragm means after an unimpeded movement of said diaphragm means towards said position to form said maximum aperture and after an exposure aperture has been formed which would permit exposure, for retarding the opening of said diaphragm means between said minimum and maximum aperture sizes; and
light responsive means for moving said diaphragm means to said position of minimum aperture after said diaphragm means has moved to form an aperture of a size which permits exposure in relation to the intensity of received light.

3,873,988
APPARATUS FOR PROCESSING PHOTOGRAPHIC SHEET MATERIAL

Josef Pfeifer, and Helmut Schausberger, both of Unterhaching, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 15, 1974, Ser. No. 433,444
Claims priority, application Germany, Jan. 16, 1973, 2301884
Int. Cl. G03d *3/08*
U.S. Cl. 354—319 **13 Claims**

1. In an apparatus for processing photographic sheet material, a combination comprising a support; a plurality of processing units disposed in said support at different levels and each comprising discrete advancing means operable to advance a series of sheets along a separate path and at least one processing device arranged to subject the sheets in the respective path to the action of a liquid, said units including an upper

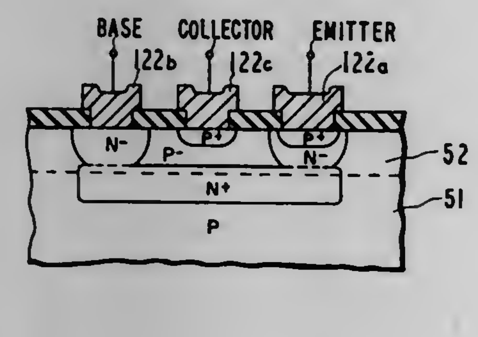
unit and a lower unit; a common source of liquid for said one device of each of said units, said source including a pump; a first tank which is disposed below and collects liquid issuing from the one processing device forming part of said upper



unit; a second tank which is disposed below and collects fluid issuing from the one processing device forming part of said lower unit; and means for connecting one of said tanks with said pump.

3,873,989
DOUBLE-DIFFUSED, LATERAL TRANSISTOR STRUCTURE

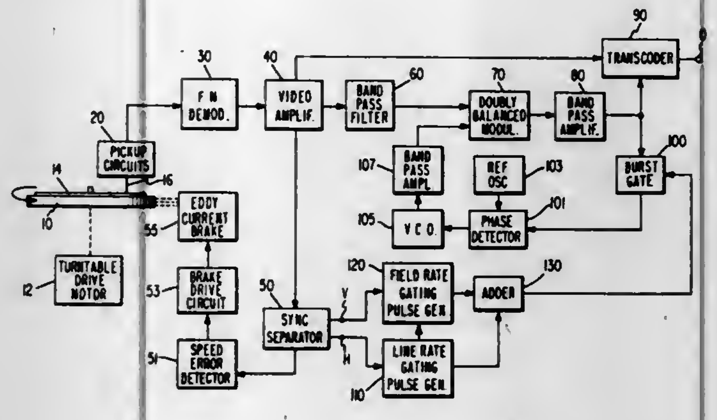
Richard D. Schinella, Mountain View, and Michael P. Anthony, San Carlos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed May 7, 1973, Ser. No. 357,968
Int. Cl. H01l *19/00*
U.S. Cl. 357—35 **4 Claims**



1. A semiconductor device fabricated from semiconductor material having one surface which is substantially flat and having overlying insulating material, comprising:
- a base region formed in a first portion of said semiconductor material adjacent said surface, said base region having a graded impurity concentration;
- a collector region formed in a second portion of said semiconductor material adjacent said surface, said second portion being adjacent said first portion in lateral relationship along said surface so that a collector-base junction is formed therebetween;
- an emitter region formed in a third portion of said semiconductor material, said third portion being spaced from said second portion in lateral relationship along said surface; a remote base region surrounding said emitter region thereby isolating said emitter region from said collector region and forming an emitter-base junction;
- means to electrically contact said base, collector and emitter regions through said insulating material; and
- a buried conducting channel electrically communicating said base region with said remote base region.

3,873,990
CHROMINANCE SIGNAL CORRECTION

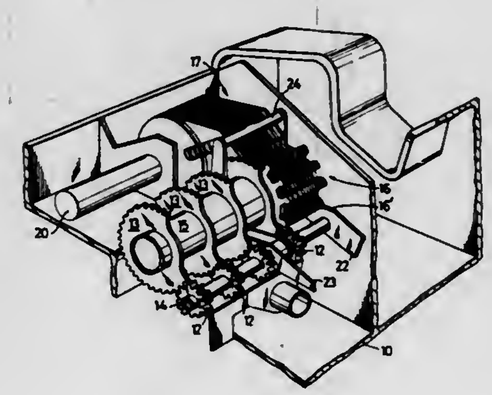
James Albert Wilber, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,626
Claims priority, application United Kingdom, Sept. 6, 1972, 41428/72
Int. Cl. H04n *5/76*
U.S. Cl. 358—8 **4 Claims**



1. In a video disc player including video disc playback apparatus for developing a composite color television signal having recurring horizontal and vertical blanking intervals and interspersed picture intervals, and including a luminance signal component, a chrominance signal component occupying a first band of frequencies, said chrominance signal component comprising sidebands of a color subcarrier, and an accompanying color synchronizing component comprising (1) short bursts of oscillations at subcarrier frequency, said short bursts having a reference phase and occurring during said recurring horizontal blanking intervals, and (2) elongated bursts of oscillations at subcarrier frequency, said elongated bursts having said reference phase and occurring during said recurring vertical blanking intervals, the time duration of each of said elongated bursts being long relative to the time duration of each of said short bursts; apparatus for deriving from said developed composite signal a frequency shifted version of said chrominance signal component and accompanying color synchronizing component, said frequency shifted version occupying a second band of frequencies different from said first band and having stabilized signal frequencies substantially independent of spurious variations of the signal frequencies of said composite signal that may occur during the development thereof by said video disc playback apparatus, said deriving apparatus comprising, in combination:
- a reference oscillator operating at a reference frequency differing from the nominal color subcarrier frequency of said developed composite signal, said reference frequency lying within said second frequency band and outside said first frequency band;
- a voltage controlled oscillator having an output frequency subject to variation in accordance with a control voltage input, said output frequency falling outside both of said first and second frequency bands;
- a modulator coupled to said video disc playback apparatus and to said voltage controlled oscillator for heterodyning said chrominance and accompanying color synchronizing components of said developed composite signal with the output of said voltage controlled oscillator;
- frequency selective means, coupled to an output of said modulator and having a passband encompassing said second frequency band to the substantial exclusion of said first frequency band, for selecting a difference frequency product of modulation comprising said frequency shifted version of said chrominance and accompanying color synchronizing components of said developed composite signal;
- phase detector means having first and second inputs for developing said control voltage input for said voltage controlled oscillator in accordance with phase differences, if any, between said first and second inputs;
- means for supplying an output of said reference oscillator to said phase detector means as said first input thereof; and
- gating means coupled to said frequency selective means for selectively passing the output of said frequency selective means to said phase detector means as said second input during the times of occurrence of said short bursts within said recurring horizontal blanking intervals and during the times of occurrence of said elongated bursts within said recurring vertical blanking intervals.

3,873,991
APPARATUS FOR RECORDING CHARACTERS, PREFERABLY CODE CHARACTERS ON A CARRIER

Gill Gustav Soderstrom, Stockholm, and Nils Evert Johan Stahl, Stocksund, both of Sweden, assignors to AB Almex, Stockholm, Sweden
Filed Sept. 4, 1973, Ser. No. 393,877
Int. Cl. G01d *15/12*
U.S. Cl. 360—4 **3 Claims**

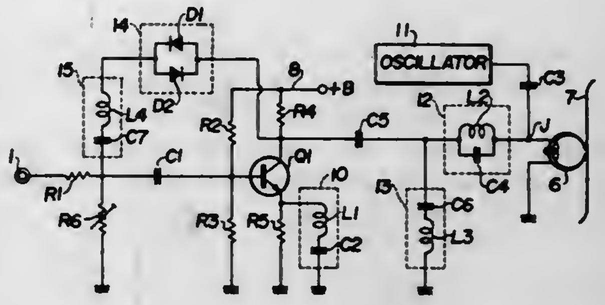


1. Apparatus for recording characters, such as code characters, on a magnetizable carrier, comprising a series of manually operable setting members for selecting characters to be recorded on said carrier and arranged side by side, a series of independently rotatable toothed character wheels of a magnetizable material arranged side by side, an individual character being arranged upon the top of each tooth, movement transmission wheels mechanically coupling each setting member with a corresponding character wheel for setting the selected character tooth in a ready-to-record position relative to said carrier, a permanent magnet shaft with a constant magnetic flow rotatably supporting said character wheels, a common manually operable actuator, means comprising an aligning rod cooperating with the tooth gaps of said character weels and operable upon actuation of said actuator to align all selected characters of the character wheels mutually as well as in relation to said carrier, and means operable upon further actuation of the actuator to move said carrier into contact with said aligned characters.

3,873,992
MAGNETIC RECORDING SYSTEM WITH REDUCTION OF HIGH FREQUENCY SIGNAL DISTORTION IN VICINITY OF SATURATION LEVEL

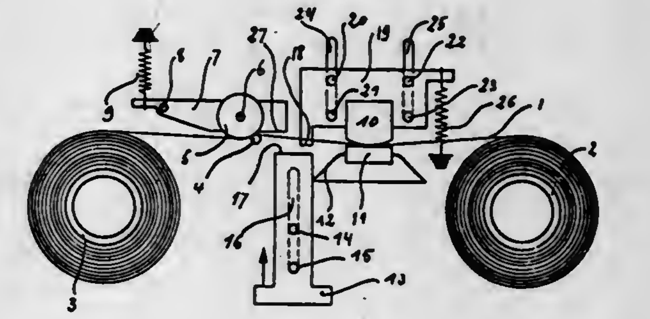
Fujio Sato; Eisuke Fujimoto; Keisuke Sato, and Bunichiro Tanaka, all of Tokyo, Japan, assignors to Akai Electric Company Limited, Tokyo, Japan
Filed Jan. 8, 1973, Ser. No. 321,944
Claims priority, application Japan, Jan. 8, 1972, 47-4894; Feb. 11, 1972, 47-14481; Feb. 11, 1972, 47-14483; Feb. 22, 1972, 47-21762
Int. Cl. G11b *5/02, 5/45*
U.S. Cl. 360—24 **18 Claims**

1. A magnetic recording and reproducing apparatus comprising:
- a recording amplifier including at least one element for amplifying a signal containing high frequency components to be recorded on a magnetic recording medium and a peaking circuit connected to said element for providing the amplified signal with high frequency compensation,
- a gain control circuit connected to said recording amplifier and consisting of a variable impedance circuit whose impedance is decreased when said high frequency components exceed a saturation level of said recording medium and a resonant circuit adapted to resonate at the frequency selected in the vicinity of the resonant frequency of the peaking circuit,
- whereby the level of high frequency components of the signal is suppressed to the vicinity of a saturation level of the recording medium.



3,873,993
TAPE TRANSPORT WITH FAST FORWARD SPEED

Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S. A., Brussels, Belgium
Filed Oct. 10, 1973, Ser. No. 404,990
Claims priority, application Belgium, Jan. 10, 1973, 126290
Int. Cl. G11b *5/54, 15/24*
U.S. Cl. 360—90 **5 Claims**



1. In a transport mechanism for driving a tape from reel to reel selectively at recording-playback speed or fast speed, said transport mechanism having a capstan drive for driving the tape at recording-playback speed and a take-up drive means for one of the reels to drive the tape at a fast speed, said take-up drive means including a friction device which slips when said capstan drive is engaged to absorb the varying differential between recording-playback speed and the higher speed at which said one reel is driven via said take-up drive means, the combination comprising:
- a capstan drive for the tape including a capstan and a shiftable pressure roller movable into and out of engagement with said capstan,
- a movable lever carrying said pressure roller for shifting movement, said lever being displaceable from a first position in which said capstan drive is engaged with said pressure roller pressing the tape against said capstan, to a second position in which said tape is released from said capstan drive and said pressure roller is located away from the tape,
- a magnetic head for recording or playback of sound recording on the tape,
- a support for said head movably carried for movement independently of said lever, said support being displaceable from a first position in which said head is engaged

with the tape, to a second position in which said head is located away from the tape,

and actuator means for sequentially shifting said support and said lever from their first to their second positions to move the head away from the tape before releasing the tape from said capstan drive for transport at fast speed from reel to reel by said take-up drive means.

3,873,994
MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH GROOVED RECORDING MEDIUM AND TRACKING GUIDE

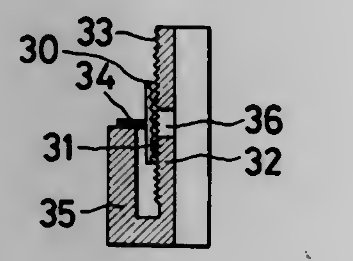
Norikazu Sawazaki, Yokohama; Mamoru Kuriyagawa, Kamakura, and Motoi Yagi, Zushi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 28, 1973, Ser. No. 336,487

Claims priority, application Japan, Mar. 3, 1972, 47-21447

Int. Cl. G11b *15/60, 5/22, 5/78*

U.S. Cl. 360—130 **5 Claims**



1. A magnetic recording and reproducing apparatus comprising:

an elongated tape-shaped magnetic recording medium having a surface provided with a magnetic recording plane, and a plurality of juxtaposed grooves formed on a surface opposite to said surface which is provided with said magnetic recording plane, said grooves being directed in the longitudinal direction of said tape-shaped recording medium;

a tracking guide having a plurality of projections engaging with said grooves;

a magnetic head;

supporting means integrated with said tracking guide for supporting said magnetic head so that said magnetic head is in contact with said magnetic recording plane; and

means for moving said recording medium relative to said tracking guide so that said projections of said tracking guide travel along said grooves of said recording medium.

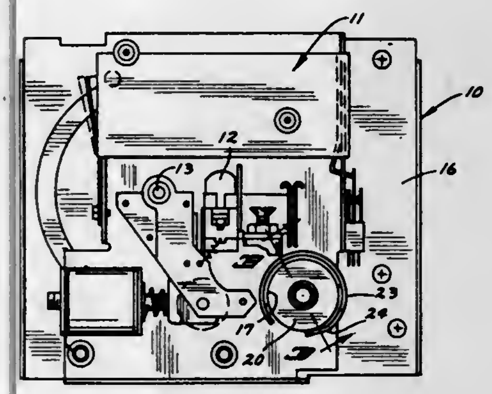
3,873,995
MAGNETIC SHIELDING MOTOR MOUNT

Wayne E. Schober, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.

Filed May 29, 1973, Ser. No. 364,744

Int. Cl. G11b *5/00;* **H02k** *5/26;* **F16m** *11/08*

U.S. Cl. 360—137 **4 Claims**



1. An adjustable motor mount for a tape deck having a chassis, a capstan, a cartridge receiver and a tape head, comprising:

an arcuate shield member mounted on said chassis intermediate the tape head and an aperture in the chassis for receiving the shaft of a drive motor;

motor means rotatably disposed on the shield member and having a drive shaft extending through the aperture in said chassis; and

spring means disposed around the outside of said shield member and said motor means and having one portion thereof in engagement with said shield member and another portion thereof in engagement with said motor.

DESIGN PATENTS
GRANTED MARCH 25, 1975

ERRATA

For CLASS	See PATENT NO.
61–15	234,554
23–150	234,606
30–14	234,615
8–70	234,624
19–53	234,635
19–36	234,636

DESIGNS

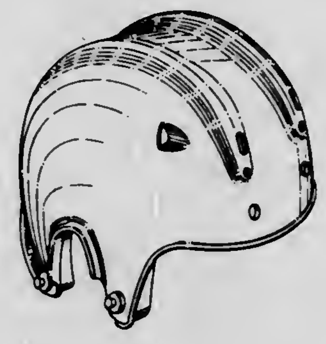
MARCH 25, 1975

234,549

HOCKEY HELMET

John F. Bell, Paris, Ontario, and William Murray, Ontario, Canada, assignors to Questor Corporation, Toledo, Ohio

Filed Apr. 30, 1973, Ser. No. 355,461
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231

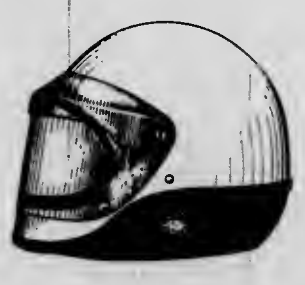


234,550

HELMET

Eitaro Kamata, 17 Mejirodai 1-chome, Bunkyo-ku, Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,912
Claims priority, application Japan Jan. 22, 1973
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232

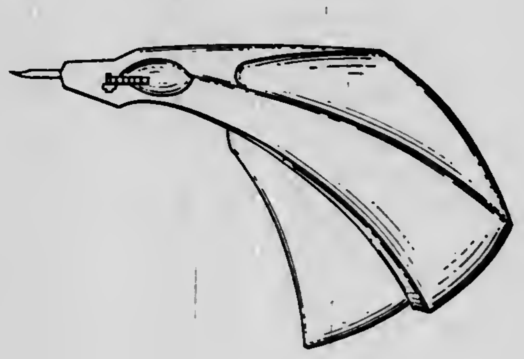


234,551

ATTACHING APPARATUS OR SIMILAR ARTICLE

Gregory F. Fossella, Marshfield, and Lawrence R. Hoffman, Burlington, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed June 22, 1973, Ser. No. 372,820
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D3—19 A

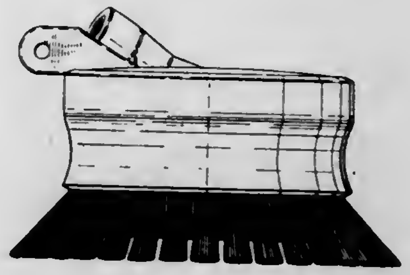


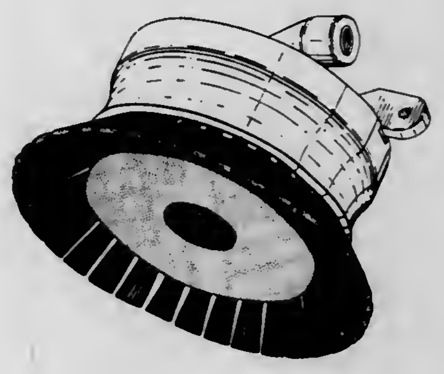
234,552

ROTATING BRUSH

Kenneth Geoffrey Beattie, Thomastown, Victoria, Australia, assignor to Sylon International Limited, Thomastown, Victoria, Australia

Filed Nov. 2, 1972, Ser. No. 303,287
Claims priority, application New Zealand May 8, 1972
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—2



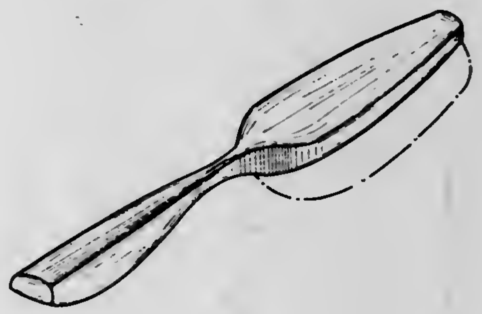


234,553

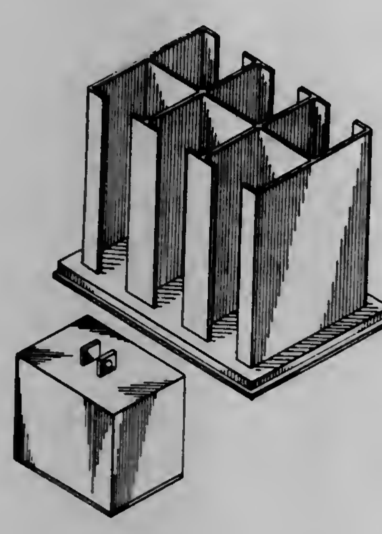
HANDLE FOR A BRUSH

Robert A. Lardenois, Hermes, France, assignor to S.A. Ets Lardenois, Hermes, Oise, France

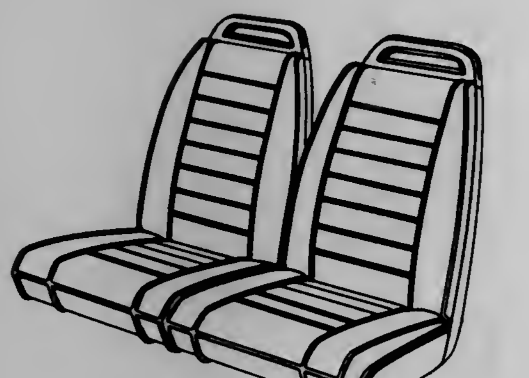
Filed Sept. 18, 1972, Ser. No. 289,844
Claims priority, application France June 12, 1972
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35



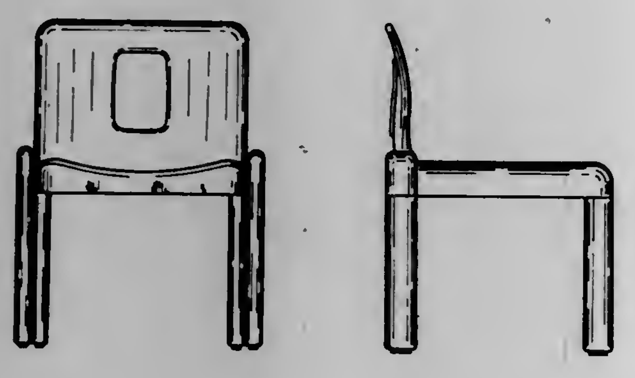
234,554
SLIDE HOLDER
Jon Wilm, Sacramento, Calif.
(4557 Aldrich Road, Bellingham, Wash. 98225)
Filed Mar. 14, 1973, Ser. No. 341,082
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—15



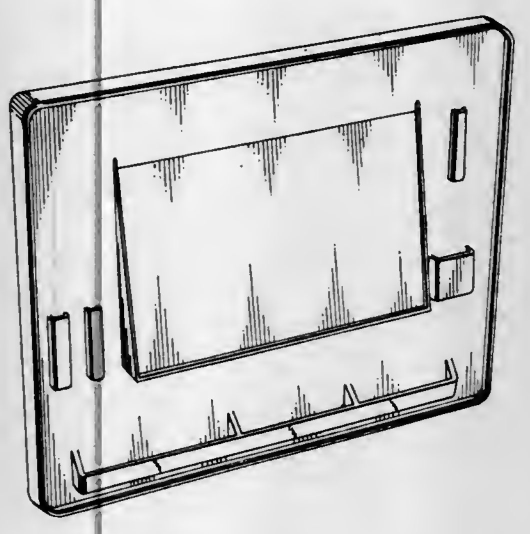
234,555
SEAT FOR A TRANSIT VEHICLE
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed May 14, 1973, Ser. No. 360,019
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



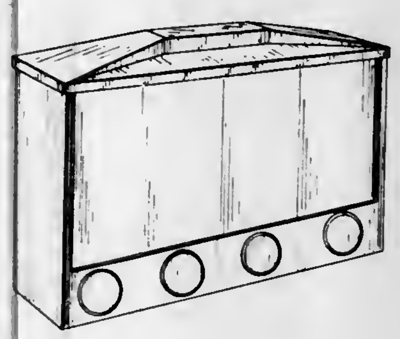
234,556
CHAIR
Carlo Hauner, Mompiano, Brescia, Italy
Filed June 8, 1973, Ser. No. 368,242
Claims priority, application Italy Mar. 30, 1973
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



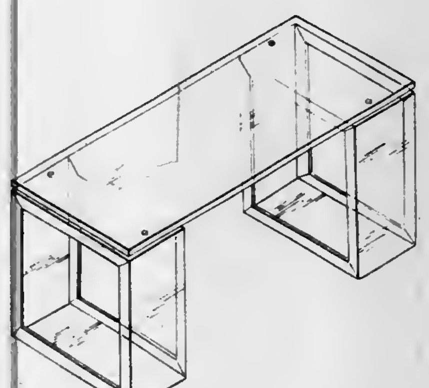
234,557
EASEL OR SIMILAR ARTICLE
Anita Tiburzi, 140 E. 82nd St., New York, N.Y. 10028
Filed Jan. 22, 1973, Ser. No. 325,593
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



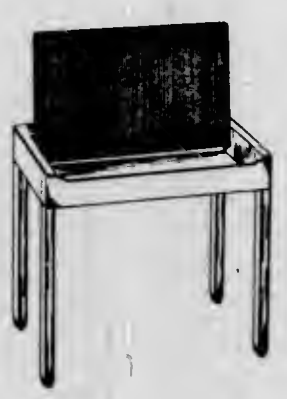
234,558
DISPENSER FOR TOILETRIES OR THE LIKE
Philip K. Scheeler, 9350 Lowell Blvd., Westminster, Colo. 80030
Filed May 2, 1973, Ser. No. 356,512
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



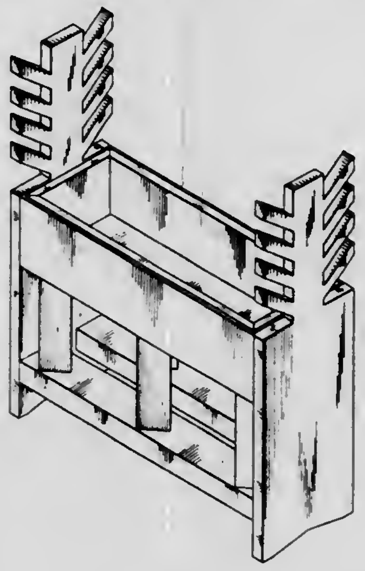
234,559
DESK
Simon V. Waitzman, 195 Hicks St., Brooklyn, N.Y. 10469
Filed May 9, 1973, Ser. No. 358,720
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



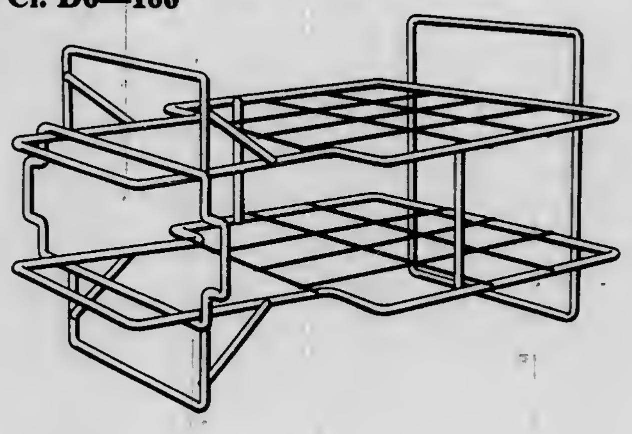
234,560
TABLE
Carlo Hauner, Mompiano, Brescia, Italy
Filed June 8, 1973, Ser. No. 368,241
Claims priority, application Italy Mar. 30, 1973
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



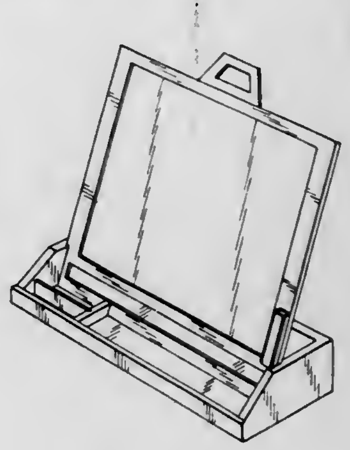
234,561
COMBINED PLANTER AND TRELLIS
Guiseppe Marra, 274 Jefferson St., Paterson, N.J. 07512
Filed June 6, 1973, Ser. No. 367,550
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02*
U.S. Cl. D6—183



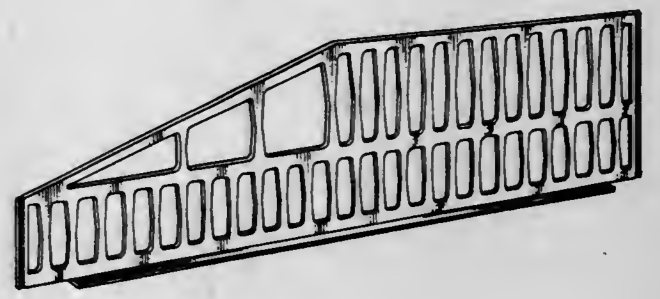
234,562
TESTING FRAME FOR BREATHING AND RESCUE APPARATUS
Robert Donkin, Rotherham, England, assignor to Coal Industry (Patents) Limited, London, England
Filed Mar. 22, 1973, Ser. No. 343,951
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



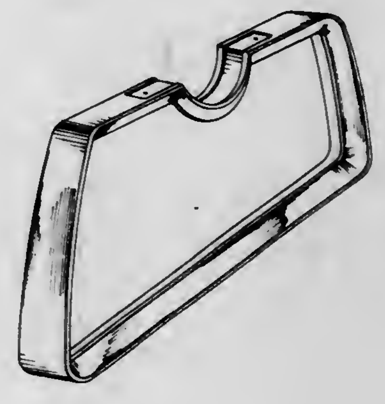
234,563
PORTABLE EASEL
Marion K. Williams, 800 1st Drive NW. 205, Austin, Minn. 55912
Filed Mar. 7, 1973, Ser. No. 339,386
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188



234,564
COUNTER DIVIDER
David M. Moore, Pittsburgh, Pa., assignor to Armstrong Store Fixtures Corp., Pittsburgh, Pa.
Filed Mar. 5, 1973, Ser. No. 338,094
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



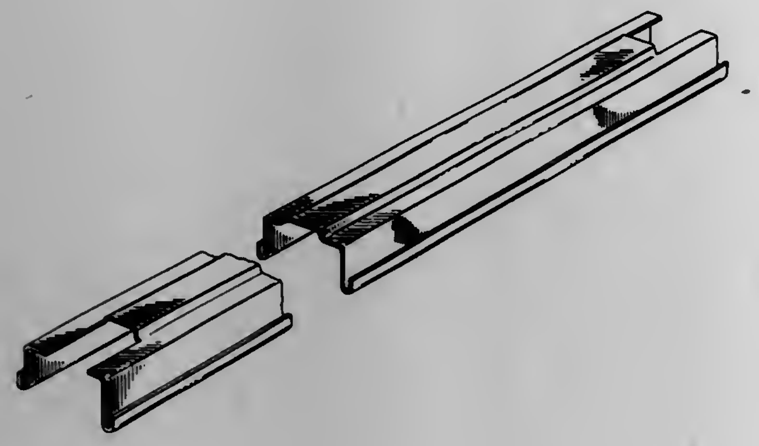
234,565
LEG UNIT
William C. Andrus, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Apr. 23, 1973, Ser. No. 353,322
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



234,566

BED FRAME SLAT

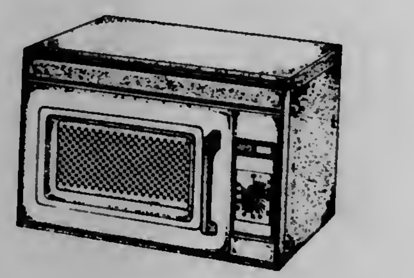
Edwin B. Watts, Lombard, Ill., assignor to Sealy, Incorporated, Chicago, Ill.
Filed Nov. 26, 1971, Ser. No. 202,720
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



234,567

MICROWAVE OVEN

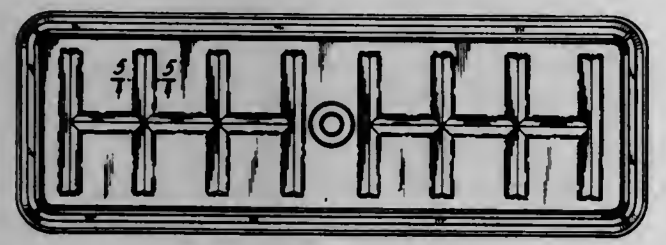
Hiroshi Kikuchi, Ikeda, and Akiyoshi Koshiro, Yoshiaki Kawata, and Masami Ueda, Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 6, 1973, Ser. No. 367,403
Claims priority, application Japan Dec. 13, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



234,568

CRISPER

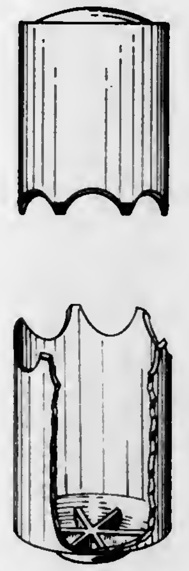
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 13, 1973, Ser. No. 350,871
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—16



234,569

WEED KILLER

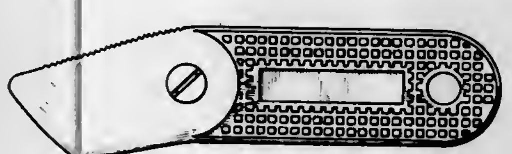
Peter Kilham, Barrington, R.I., assignor to Droll Yankees Inc., Foster, R.I.
Filed Oct. 30, 1972, Ser. No. 302,263
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—1



234,570

COMBINED HANDLE AND HOLDER FOR A BLADE

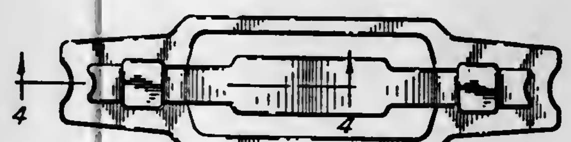
Peter James Craddock, Woodside, S3 9PD, Sheffield, England
Filed Nov. 27, 1972, Ser. No. 309,759
Claims priority, application Great Britain May 26, 1972
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—98



234,571

COMBINED PULL AND ESCUTCHEON

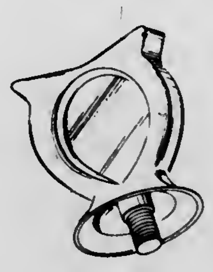
Raymond U. H. Tegner, Lodi, Wis. (℅ Amerock Corporation, 400 Auburn St., Rockford, Ill. 61101)
Original design application Dec. 6, 1972, Ser. No. 312,781, which is a continuation-in-part of abandoned design application Ser. No. 209,501, Dec. 17, 1971. Divided and this application Oct. 24, 1973, Ser. No. 409,169
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—167



234,572

KNOB FOR AUTOMOTIVE CIGARETTE LIGHTER OR THE LIKE

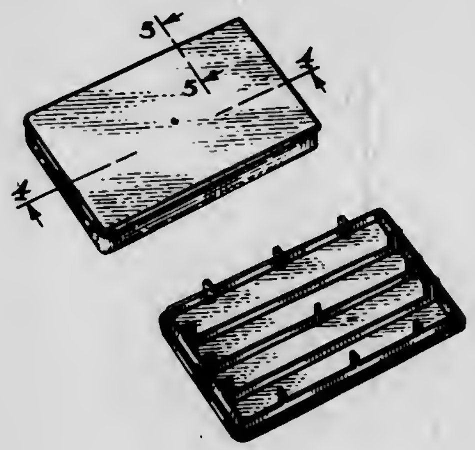
Arthur A. Fisher, Scottsdale, Ariz.
(11676 Lakia Drive, Cypress, Calif. 90630)
Filed Mar. 22, 1973, Ser. No. 343,630
Term of patent 14 years
Int. Cl. D8—*06;* D27—*05*
U.S. Cl. D8—138



234,573

PALETTE STORAGE CONTAINER

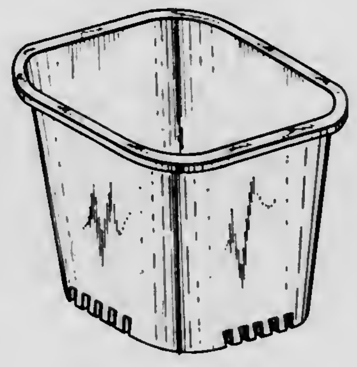
William J. Maxwell, 7001 E. Virginia, Scottsdale, Ariz. 85257
Filed Jan. 22, 1973, Ser. No. 325,538
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



234,574

PACKAGING CONTAINER FOR FOOD OR THE LIKE

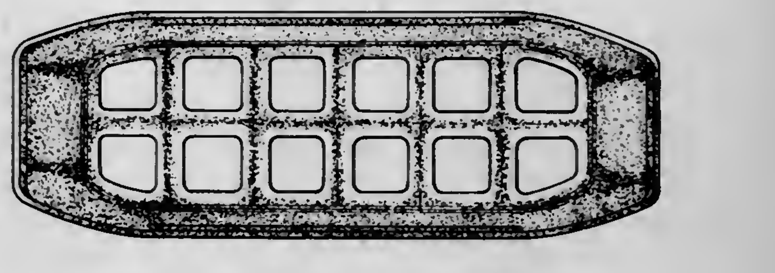
Erwin H. Schimkat, 204 Nassau Blvd., Garden City, N.Y. 11530
Filed July 3, 1972, Ser. No. 268,521
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



234,575

MOLDED PACKAGING TRAY FOR PRODUCE OR THE LIKE

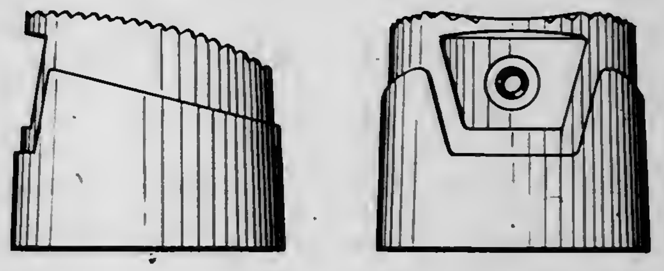
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Oct. 30, 1972, Ser. No. 301,762
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—243



234,576

ACTUATOR CAP FOR A PRESSURIZED CONTAINER

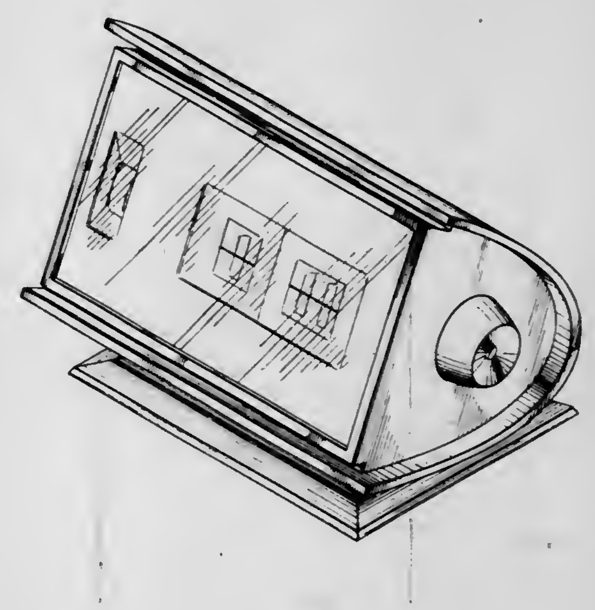
Stanley T. Mandeltort, Highland Park, Ill., assignor to VCA Corporation, Greenwich, Conn.
Filed Apr. 25, 1973, Ser. No. 354,345
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



234,577

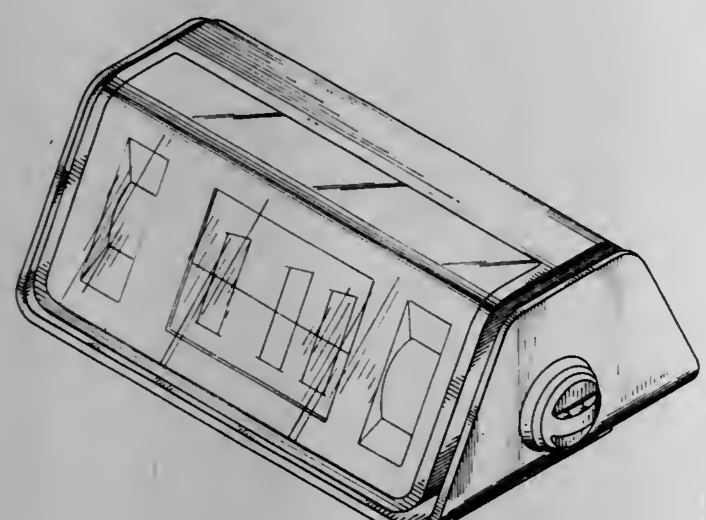
DIGITAL CLOCK

James R. Powers, Los Angeles, Calif., assignor to Ropat-Caslon, Inc., El Segundo, Calif.
Filed Nov. 3, 1972, Ser. No. 303,639
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



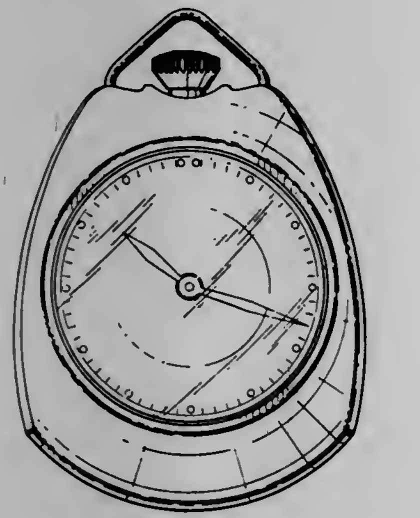
234,578
DIGITAL CLOCK

James R. Powers, Los Angeles, Calif., assignor to Ropat-Caslon, Inc., El Segundo, Calif.
Filed Nov. 3, 1972, Ser. No. 303,640
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



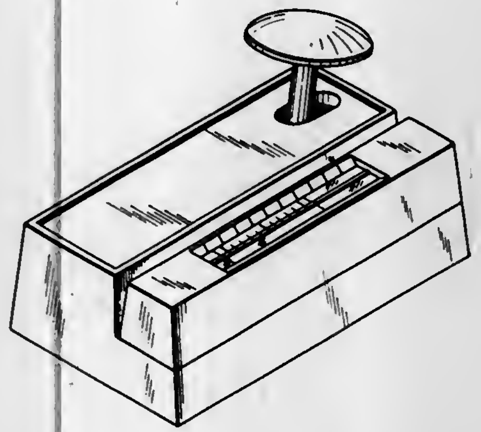
234,579
POCKET WATCH

Cecil Leslie Boult, Quarr-Rise, Clydach, near Swansea, Glamorgan, Wales, and David Brian Jenkins, Alameda, 32 Wind Road, Ystradgynlais, Glamorgan, Wales
Filed Feb. 1, 1973, Ser. No. 328,578
Claims priority, application Great Britain Aug. 3, 1972
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D10—37



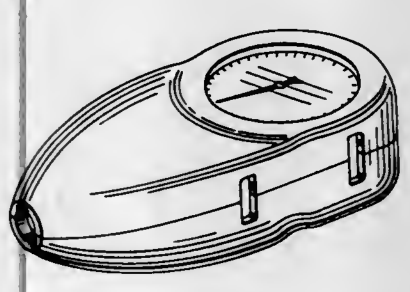
234,580
STYLUS-LIFE TIMER

Sidney Becker, Melville, and Bernard Kantor, South Farmingdale, N.Y., assignors to Pickering & Company, Inc., Plainview, N.Y.
Filed Apr. 4, 1973, Ser. No. 347,777
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



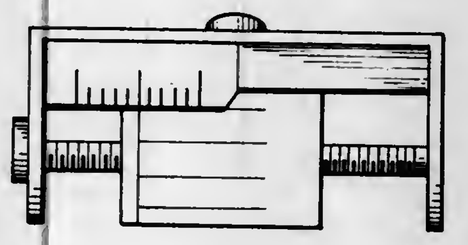
234,581
COMBINED DEPTH AND PRESSURE GAUGE FOR SCUBA DIVERS

Carlton L. Koehler, Box 236, Avalon, Calif. 90704
Filed July 19, 1972, Ser. No. 273,200
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—85



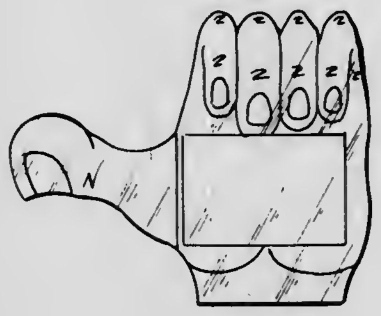
234,582
MICROMETER POISE

Samuel S. Leotta, Jenkintown, Pa., and Earl D. Myers, Scotch Plains, N.J., assignors to Ohaus Scale Corporation
Filed Apr. 11, 1972, Ser. No. 243,105
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—95



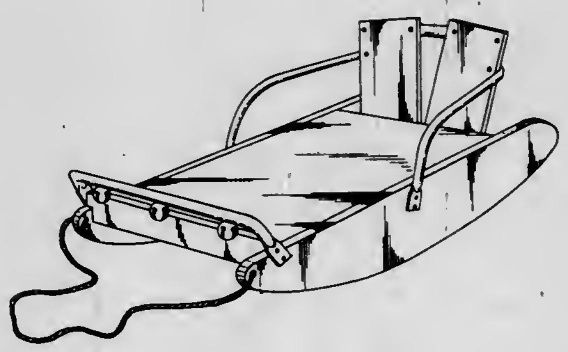
234,583
SIGNAL

Arnold Ehrlich, Mattapan, Mass., assignor to Insanity, Inc., Mattapan, Mass.
Filed Aug. 24, 1972, Ser. No. 283,554
Term of patent 3½ years
Int. Cl. D29—*99;* D20—*03*
U.S. Cl. D10—109



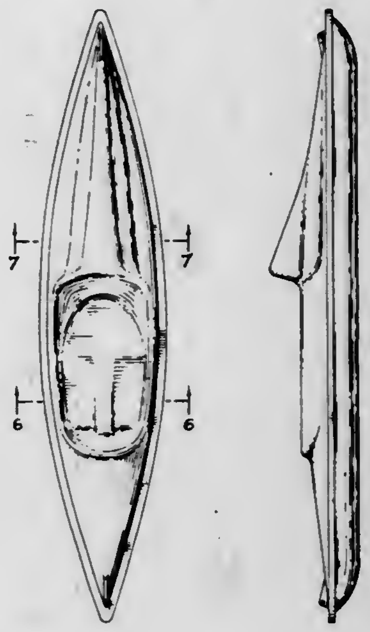
234,584
SLED

George M. Morris, Independence, Mo., assignor to G. M. Morris Boat Co., Inc., El Dorado Springs, Mo.
Filed Oct. 12, 1973, Ser. No. 406,952
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—6



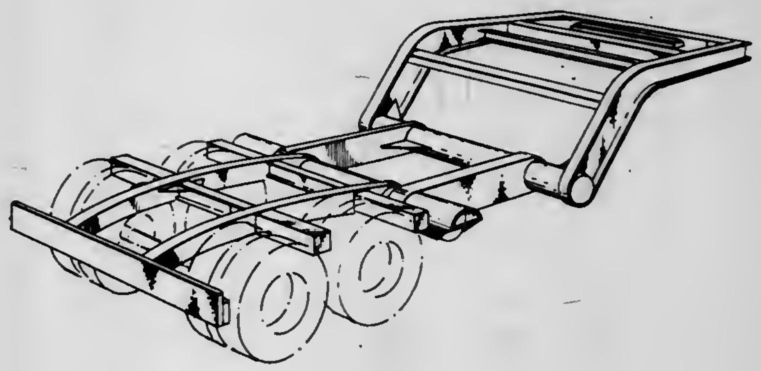
234,585
KAYAK

Clement Lacasse, 416 3rd St., Daveluyville, Quebec, Canada
Filed Jan. 26, 1973, Ser. No. 327,062
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63

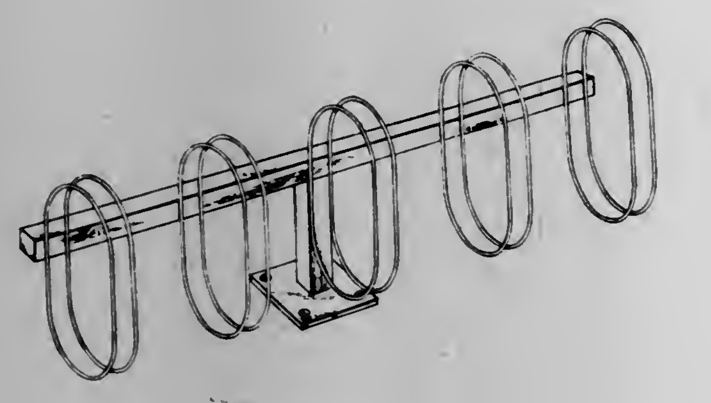


234,586
TRAILER BODY

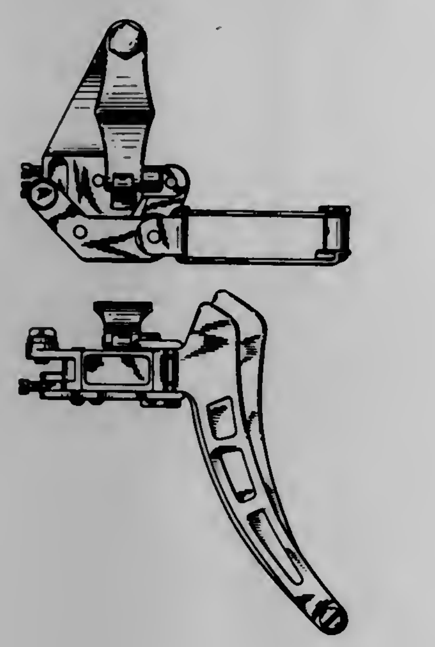
Russell E. Breazeale, 11732 12th Ave. NE., Seattle, Wash. 98125
Filed Dec. 11, 1972, Ser. No. 313,778
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—97



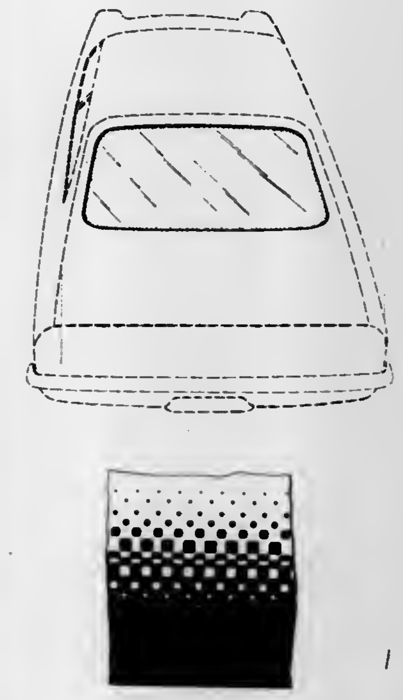
234,587
BICYCLE STAND
Ridgely C. Harris, 4705 Macafee Road, and John L. Johnston, 5214 Zakon Road, both of Torrance, Calif. 90505
Filed May 14, 1973, Ser. No. 360,045
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



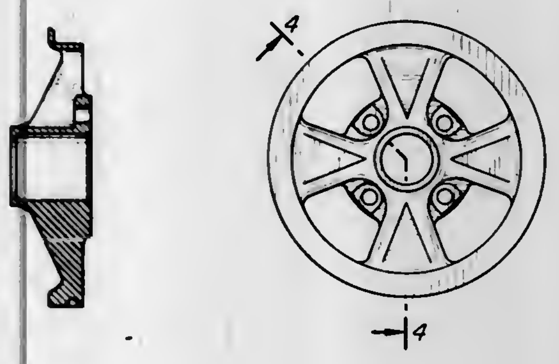
234,588
DERAILLEUR
Lucian Charles Hippolyte Juy, 75 Rue General Fauconnet, Dijon, France
Filed Aug. 13, 1973, Ser. No. 387,811
Claims priority, application France Feb. 22, 1973
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124



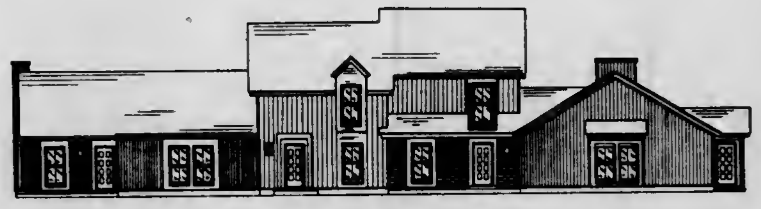
234,589
AUTOMOBILE WINDOW
John H. Hilsher, Jr., Williamsport, Pa., assignor to Howard E. Morehart, Williamsport, Pa.
Filed Nov. 14, 1972, Ser. No. 306,511
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—183



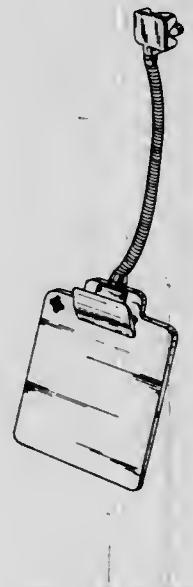
234,590
VEHICLE WHEEL CENTER UNIT
Dalton M. Davis, Palos Verdes Estates, Calif., assignor to Pyramid Enterprises, Inc., Torrance, Calif.
Filed Dec. 6, 1971, Ser. No. 205,478
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



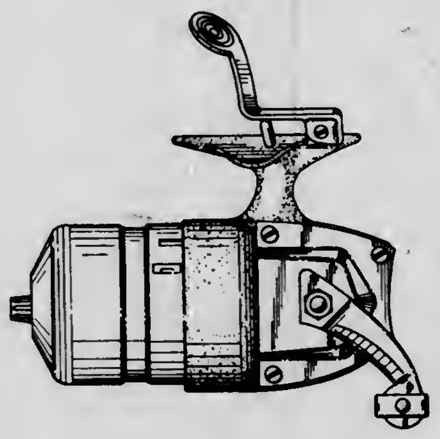
234,591
BUILDING OR THE LIKE
Floyd P. Jenkins, Jr., Fayetteville, N.C., assignor to American Classic Industries, Fayetteville, N.C.
Filed May 30, 1973, Ser. No. 365,114
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



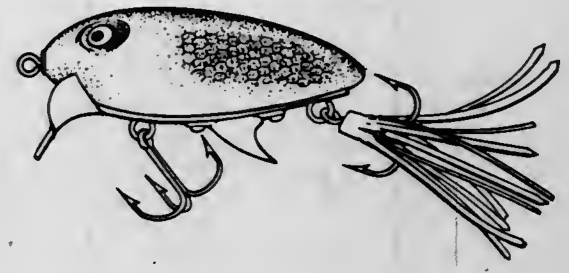
234,592
ADJUSTABLE CLIPBOARD FOR ATTACHMENT TO AN AUTOMOBILE MIRROR
Jack L. Callaway, 8000 Pioneer, Lincoln, Nebr. 68506
Filed Apr. 17, 1972, Ser. No. 245,008
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D19—88



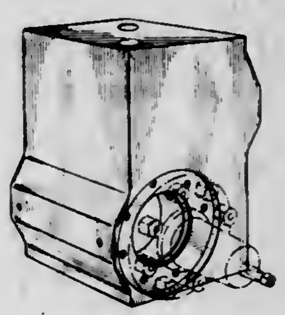
234,593
FISHING REEL OR SIMILAR ARTICLE
Morris E. Wood, Bronson, Mich., assignor to True Temper Corporation, Cleveland, Ohio
Filed Dec. 6, 1973, Ser. No. 422,310
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



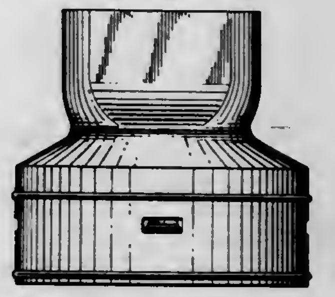
234,594
FISHING LURE OR SIMILAR ARTICLE
Charles Spence, Memphis, Tenn., assignor to Strike-King Lure Co., Inc., Memphis, Tenn.
Filed Feb. 7, 1974, Ser. No. 440,487
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



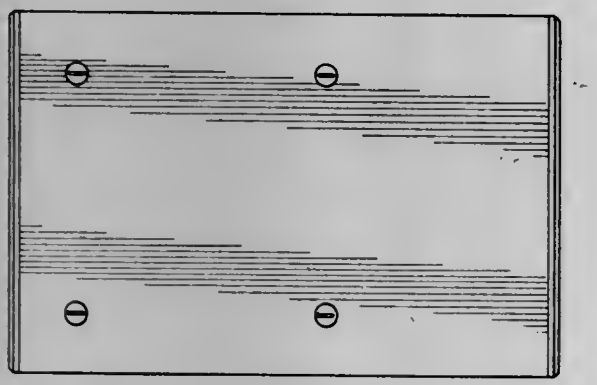
234,595
VALVE BODY
Allen W. Cochrum, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Dec. 19, 1972, Ser. No. 316,603
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

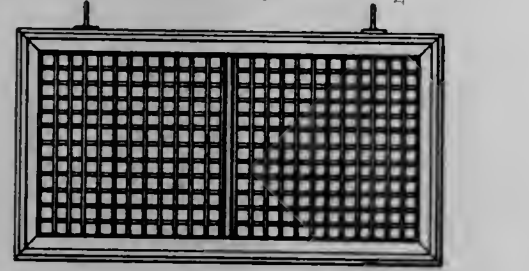


234,596
DOWN SPOUT ADAPTER
Marty E. Sixt, Iowa City, Iowa, assignor to Advanced Drainage Systems, Inc., Columbus, Ohio
Filed Mar. 29, 1973, Ser. No. 345,855
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

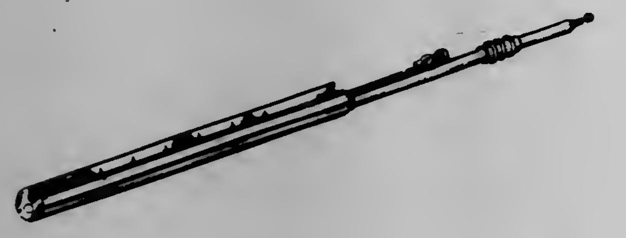


234,597
AIR FILTERING APPLIANCE
Wolodymyr Diachuk, 3000 S. Highway 100,
St. Louis Park, Minn. 55416
Filed Jan. 12, 1973, Ser. No. 322,955
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—149

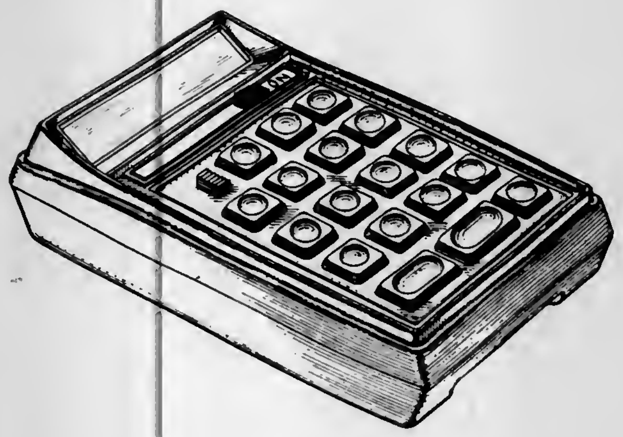




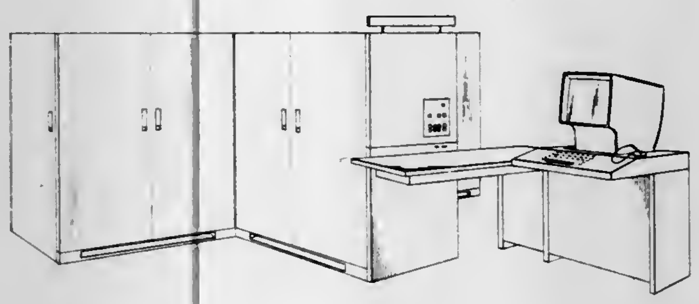
234,598
STATIC ELIMINATOR
Toshio Saito, 12–11, 7-chome, Ikagami, Ota-ku,
Tokyo, Japan
Filed Sept. 1, 1972, Ser. No. 285,866
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D26—1 L



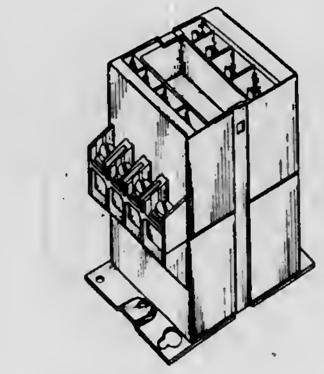
234,599
CALCULATOR
Gregory F. Fossella, Marshfield, John W. Forrest, West Acton, James B. Jordan, Townsend, and Richard J. Johnson, Framingham, Mass., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.
Filed Apr. 12, 1972, Ser. No. 243,539
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

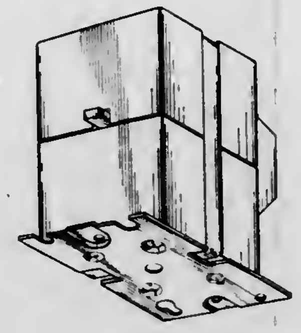


234,600
DATA PROCESSOR
Eugene N. Giancarlo, Wappingers Falls, and John V. Stram and Joseph F. Talerico, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 1, 1973, Ser. No. 384,521
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

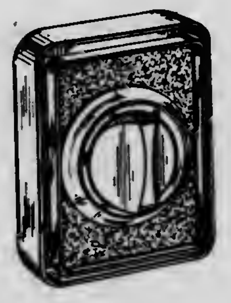


234,601
ELECTRICAL RELAY OR SIMILAR ARTICLE
Ewart S. Hague, Cranston, R.I., and Larry W. Shaw, Norton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 23, 1972, Ser. No. 228,793
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

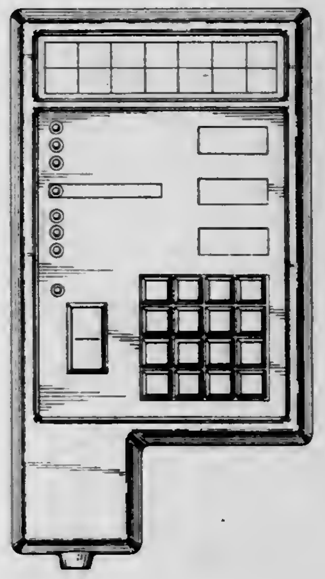




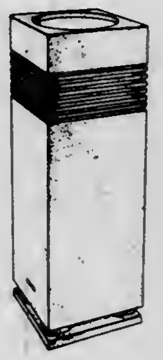
234,602
COMBINED HOUSING AND DIMMER
Lawrence P. Mellyn, Glocester, R.I., assignor to
General Electric Company
Filed Nov. 23, 1973, Ser. No. 418,374
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



234,603
COMPUTER INPUT-OUTPUT CONTROLLER FOR DIAGNOSTIC TESTING
Richard F. Snow, Southfield, and David A. Thomasson, Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 6, 1973, Ser. No. 383,943
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



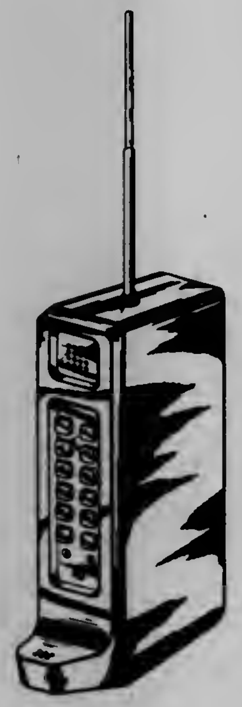
234,604
SPEAKER ENCLOSURE
Yuji Shimizu, Suita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Suita, Osaka, Japan
Filed Nov. 3, 1972, Ser. No. 303,445
Claims priority, application Japan June 2, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



234,605

PORTABLE RADIO TELEPHONE

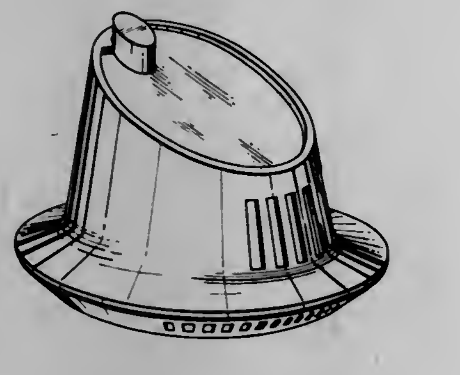
Kenneth W. Larson, Elmhurst, Ill., assignor to
Motorola, Inc., Chicago, Ill.
Filed May 31, 1973, Ser. No. 365,772
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



234,606

ROOM DEODORIZER BODY

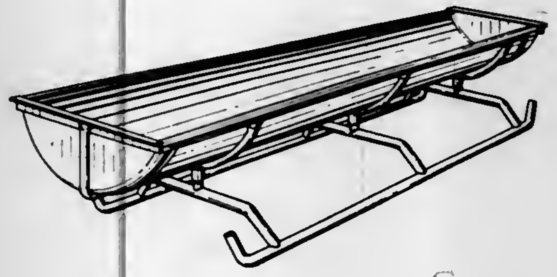
William L. Gamble, 1 Waterville Road,
Farmington, Conn. 06032
Filed June 6, 1973, Ser. No. 367,489
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



234,607

COMBINED CATTLE FEEDING TROUGH AND SUPPORT THEREFOR

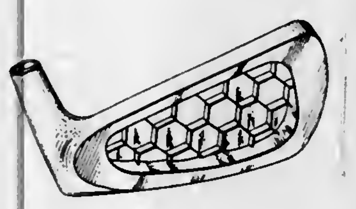
George Doyle Clugston, Box 581, R.R. 3,
Pittsburg, Kans. 66762
Filed Sept. 4, 1973, Ser. No. 393,887
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



234,608

GOLF CLUB HEAD

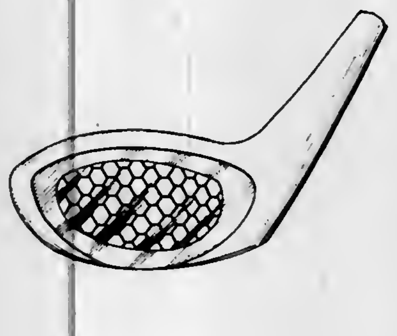
William R. Raymont, Palos Verdes Peninsula, Calif.
(25001 El Cortijo, Mission Viejo, Calif. 92675)
Filed Jan. 5, 1973, Ser. No. 321,368
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



234,609

GOLF CLUB HEAD

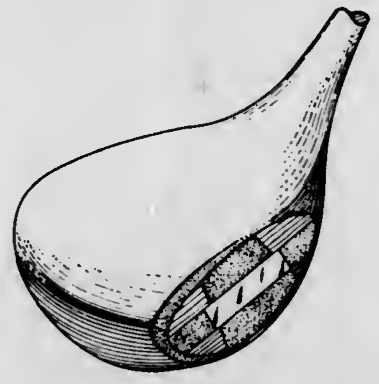
William R. Raymont, Palos Verdes Peninsula, Calif.
(25001 El Cortijo, Mission Viejo, Calif. 92675)
Filed Jan. 5, 1973, Ser. No. 321,369
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



234,610

GOLF CLUB HEAD

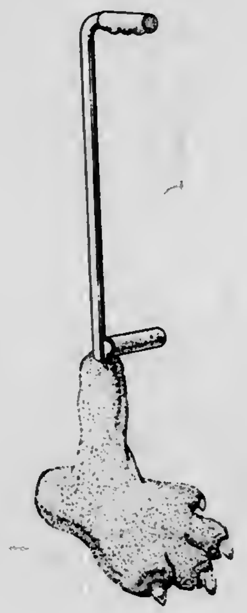
William R. Raymont, Palos Verdes Peninsula, Calif.
(25001 El Cortijo, Mission Viejo, Calif. 92675)
Filed Apr. 9, 1973, Ser. No. 349,618
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



234,611

STILT

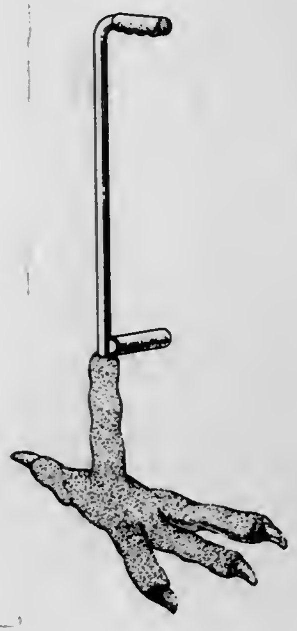
Robert Ricca, 325 Keyes St., San Jose, Calif. 95112
Filed Jan. 26, 1973, Ser. No. 327,187
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E



234,612

STILT

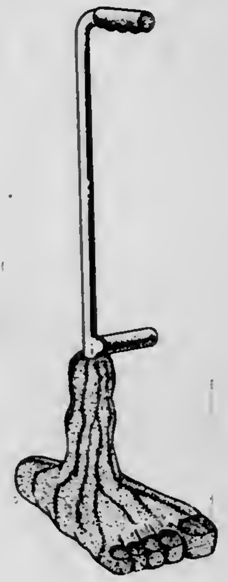
Robert Ricca, 325 Keyes St., San Jose, Calif. 95112
Filed Jan. 26, 1973, Ser. No. 327,188
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E



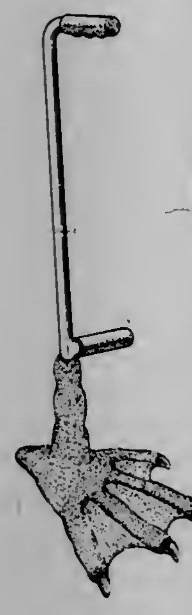
234,613

STILT

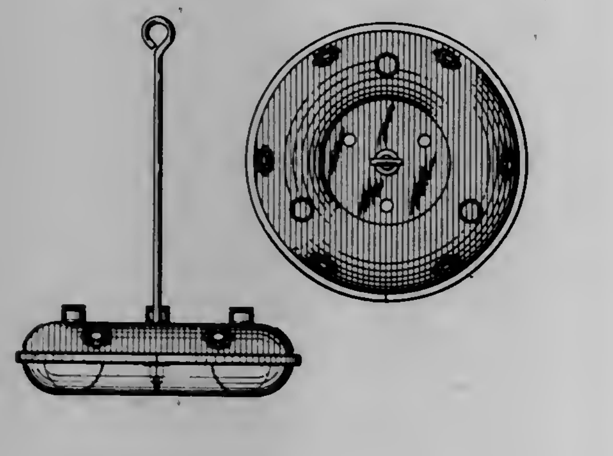
Robert Ricca, 325 Keyes St., San Jose, Calif. 95112
Filed Jan. 26, 1973, Ser. No. 327,189
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E



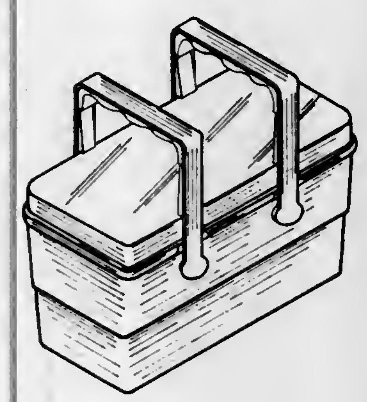
234,614
STILT
Robert Ricca, 325 Keyes St., San Jose, Calif. 95112
Filed Jan. 26, 1973, Ser. No. 327,190
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E



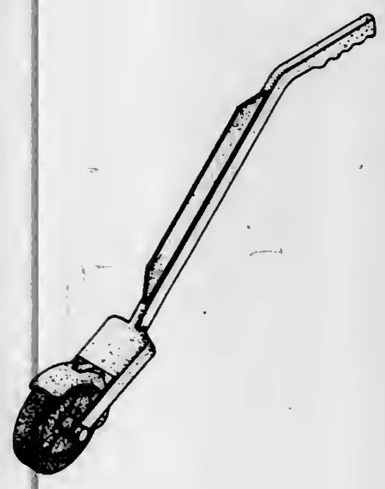
234,615
HUMMINGBIRD FEEDER
Peter Kilham, Barrington, R.I., assignor to Droll Yankees, Inc., Foster, R.I.
Filed Apr. 9, 1973, Ser. No. 348,965
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—14



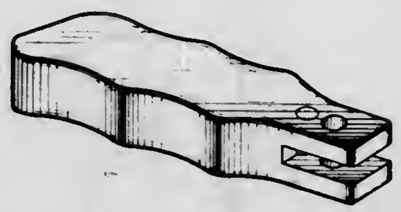
234,616
TOY
Michael R. Meyers, 18 Lyncrest Drive, Munsey, N.Y., and Michael Langieri, 8 Cedar St., Butler, N.J. 07405
Filed Oct. 2, 1972, Ser. No. 294,335
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A



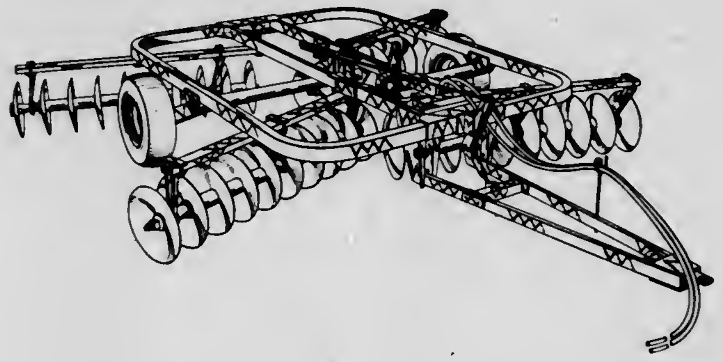
234,617
WHEELED TOY
Henry Lamb, 51 Bradford Drive, Feeding Hills, Mass. 01030
Filed Apr. 6, 1973, Ser. No. 348,724
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



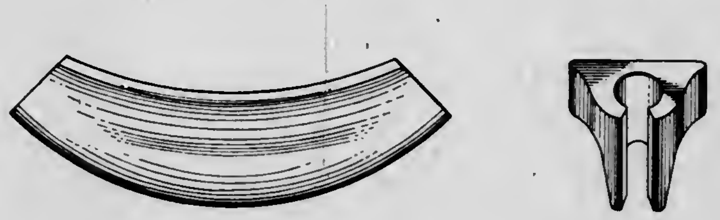
234,618
TOP LAUNCHER OR SIMILAR ARTICLE
John R. Hedger, 4958 E. Carmen, Fresno, Calif. 93727
Filed Aug. 16, 1973, Ser. No. 388,821
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AH



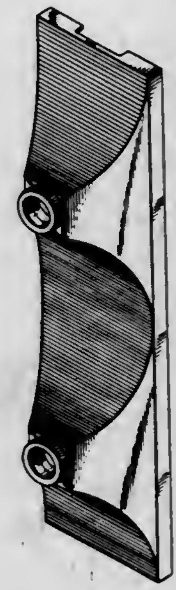
234,619
DISK HARROW
George Frederick Oelschlaeger, Rock Island, and Charles Harold Youngberg, Moline, Ill., assignors to Deere & Company, Moline, Ill.
Filed Oct. 23, 1973, Ser. No. 408,944
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D39—1 A



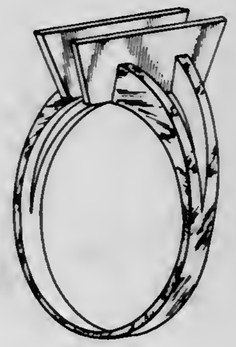
234,620
RING ADJUSTER
William Wolfberg, 809 Hummingbird Way W., Apt. 4C, North Palm Beach, Fla.
Filed Apr. 3, 1972, Ser. No. 240,890
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 R



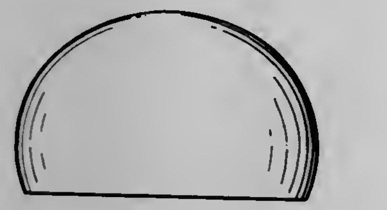
234,621
WALL MOUNTED LIGHTING FIXTURE OR SIMILAR ARTICLE
Henry Muller, Rego Park, N.Y., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Oct. 9, 1973, Ser. No. 404,753
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B



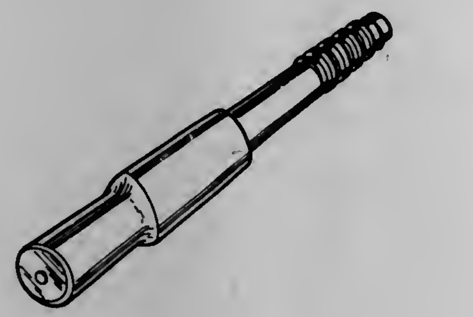
234,622
RING
Sidney Frederick Mobell, 330 Bridge Road, Hillsborough, Calif. 94010
Filed Sept. 6, 1973, Ser. No. 394,693
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 A



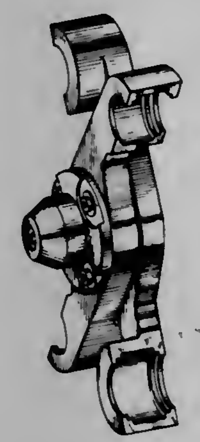
234,623
FLOODLIGHT
Fred M. Gore, Dallas, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed Apr. 11, 1973, Ser. No. 350,171
Term of patent 14 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—20 K



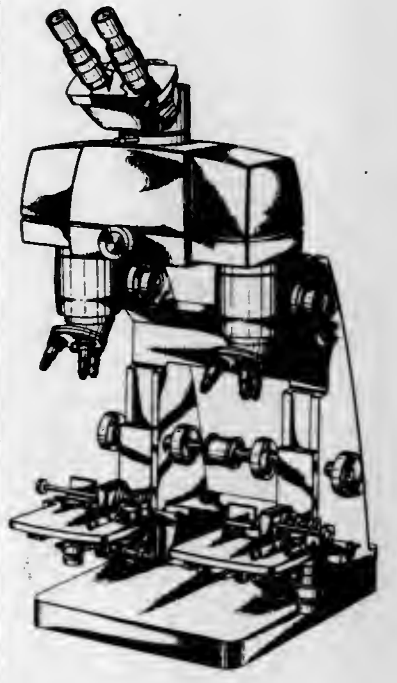
234,624
SHANK ADAPTER FOR DRILLING APPARATUS
Ebbe Sigfrid Adolfsson, Handen, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Jan. 4, 1973, Ser. No. 320,955
Claims priority, application Sweden July 7, 1972
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D55—1 H



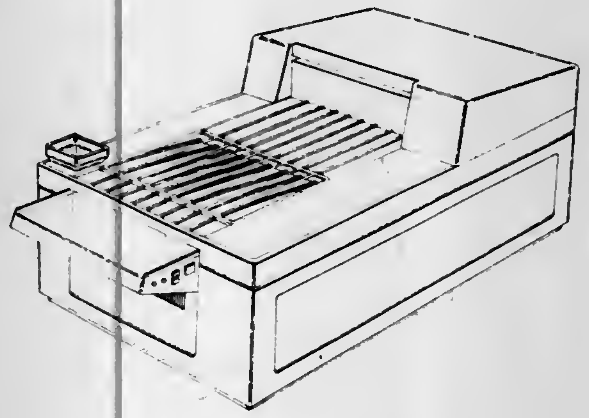
234,625
TOOL CHANGE ARM FOR TRANSFERRING TOOLS BETWEEN A TOOL STORAGE MAGAZINE AND A TOOL OPERATOR
Earl R. Lohneis, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Nov. 9, 1972, Ser. No. 305,058
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 A



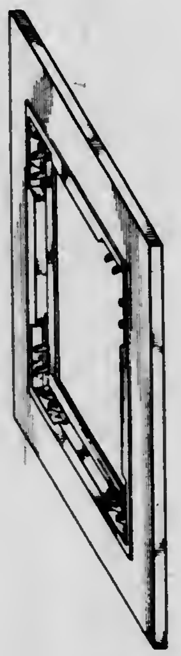
234,626
COMPARISON MICROSCOPE
Howard A. Maier, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 14, 1972, Ser. No. 226,367
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



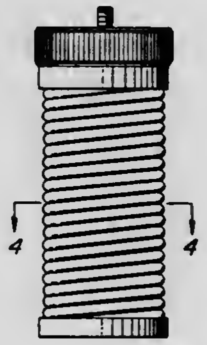
234,627
PHOTOGRAPHIC PROCESSOR
Ralph M. Vigna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 23, 1973, Ser. No. 381,648
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



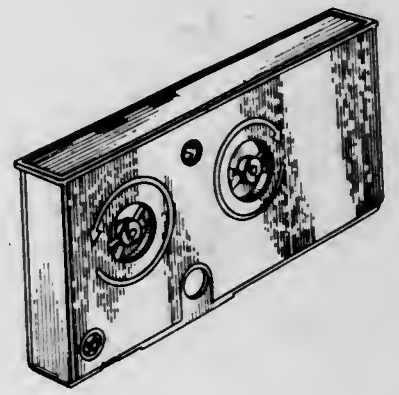
234,628
FRAME FOR A FILM TRANSPARENCY
Heinrich Hrabik, Waldmullergang 10b, A-4020 Linz, Austria
Filed Feb. 8, 1973, Ser. No. 330,503
Term of patent 7 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 S



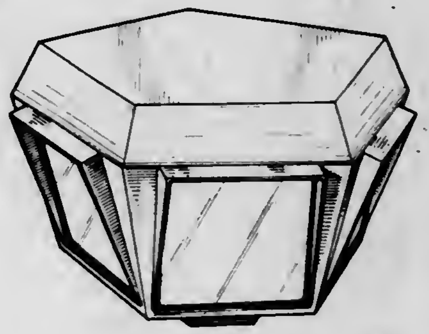
234,629
FLEXIBLE CAMERA MOUNT
Mac L. Olds, 7175 W. 94th St., Los Angeles, Calif. 90045
Filed Mar. 29, 1973, Ser. No. 346,143
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G



234,630
MOTION PICTURE FILM CASSETTE
James M. Conner, Mamaroneck, N.Y., Henry J. Salvador, Whittier, Calif., and John F. Batter, Jr., Lincoln, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of design application Ser. No. 260,061, June 5, 1972. This application May 25, 1973, Ser. No. 364,153
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T



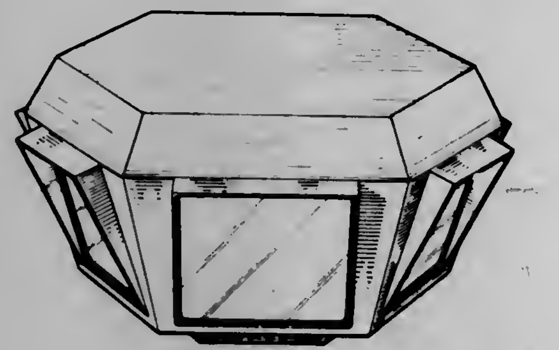
234,631
MULTI-SCREEN FILM PROJECTOR
Per Erik Gustaf Ljung, Vallentuna, Nils Gunnar Lindell, Vasby, and Stig Bertil Hogdal, Bromma, Sweden, assignors to Videogram Production AB, Scheelegatan, Malmo, Sweden
Filed June 5, 1973, Ser. No. 367,207
Claims priority, application Sweden Dec. 7, 1972
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



234,632

MULTI-SCREEN FILM PROJECTOR

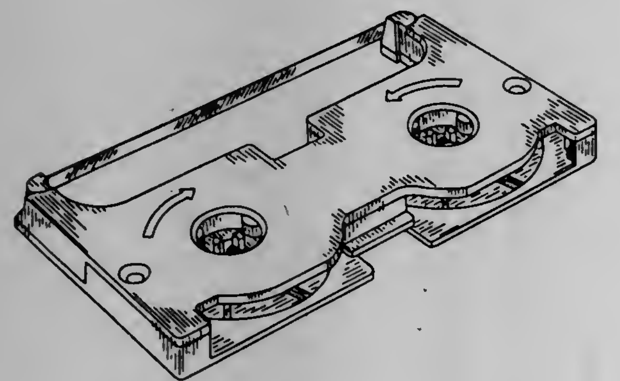
Per Erik Gustaf Ljung, Vallentuna, Nils Gunnar Lindell, Vasby, and Stig Bertil Hogdal, Bromma, Sweden, assignors to Videogram Production AB, Scheelegatan, Malmo, Sweden
Filed June 5, 1973, Ser. No. 367,209
Claims priority, application Sweden Dec. 7, 1972
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



234,633

INK RIBBON CARTRIDGE

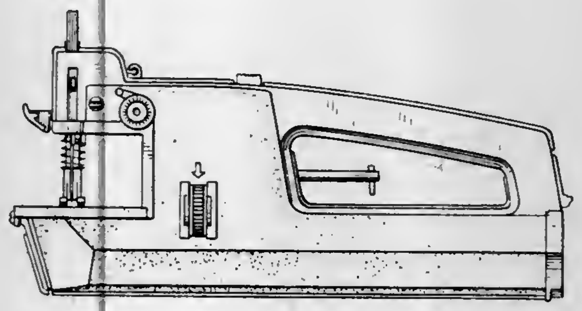
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy
Filed Apr. 10, 1973, Ser. No. 350,215
Claims priority, application Italy Oct. 16, 1972
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



234,634

HAND-HELD SEWING MACHINE

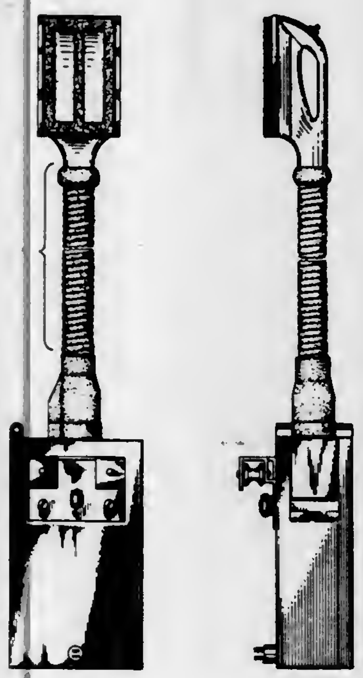
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Jan. 24, 1973, Ser. No. 326,416
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



234,635

CHALKBOARD VACUUM ERASER

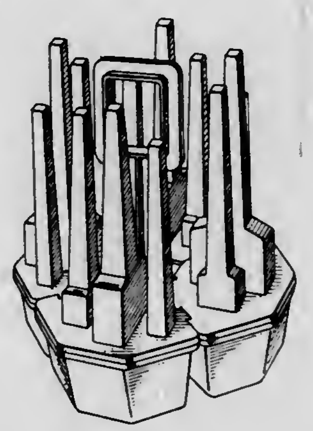
Ha-Yung Lee, Flushing, N.Y. (1235 Broadway, New York, N.Y. 10001)
Filed May 25, 1973, Ser. No. 364,103
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—53

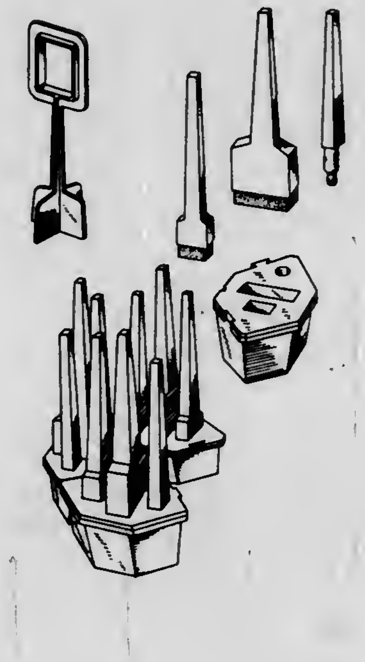


234,636

COMBINED FELT-TIP MARKER SET AND CARRYING HOLDER THEREFOR

Joseph A. Burgard, Jr., Newark, Calif., assignor to Primark Corporation
Filed Oct. 13, 1972, Ser. No. 297,231
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—36

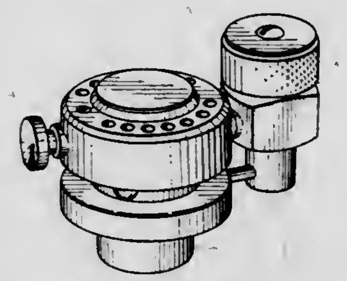




234,637

RESPIRATOR VALVE

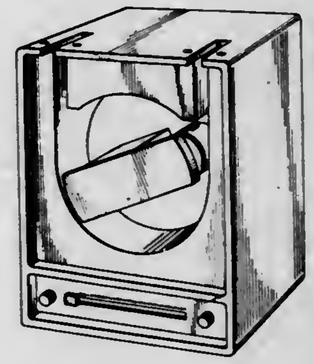
Stephen Donald Flynn, Caledonia, Ontario, Canada (36 Prince Arthur Ave., Toronto, Ontario, Canada)
Filed July 5, 1972, Ser. No. 269,192
Claims priority, application Canada Jan. 5, 1972
Term of patent 14 years
Int. Cl. D24—*02;* D23—*01*
U.S. Cl. D83—1 G



234,638

BLOOD PUMP

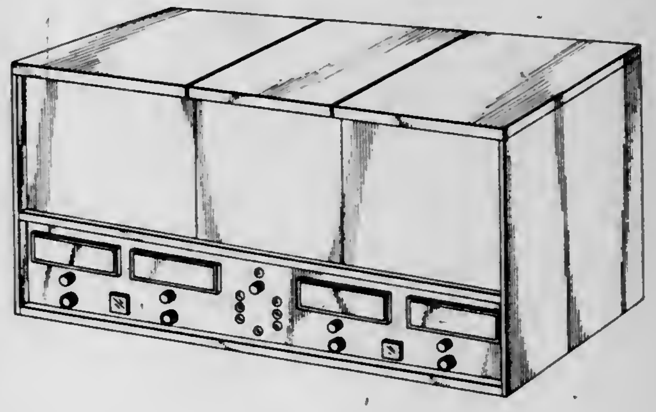
Clarence Edwin Schmidt, 2741 E. Palmyra, Orange, Calif. 92669
Filed Dec. 6, 1972, Ser. No. 312,761
Term of patent 14 years
Int. Cl. D24—*01;* D15—*02*
U.S. Cl. D83—1 F



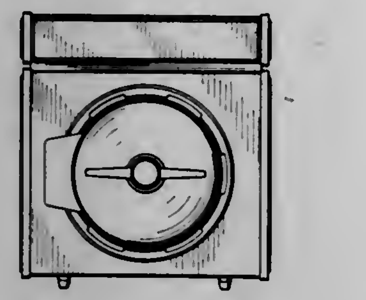
234,639

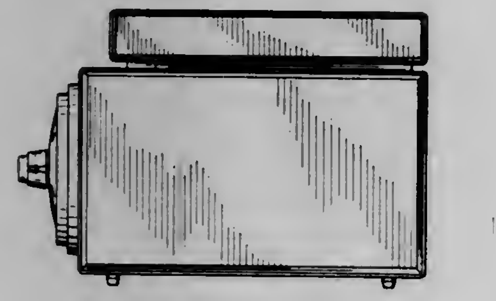
HEMODIALYSIS MACHINE

Clarence Edwin Schmidt, 2741 E. Palmyra, Orange, Calif. 92669
Filed Dec. 6, 1972, Ser. No. 312,762
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

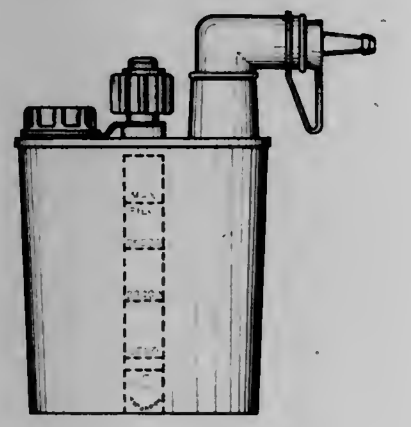


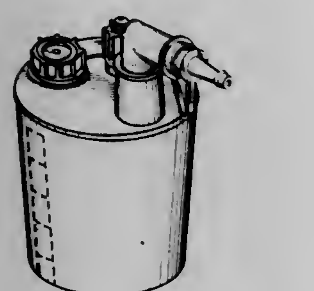
234,640
STERILIZER
Frank A. Zagara, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Dec. 7, 1972, Ser. No. 313,184
Term of patent 14 years
Int. Cl. D23—*04*; D24—*01*
U.S. Cl. D83—1 W



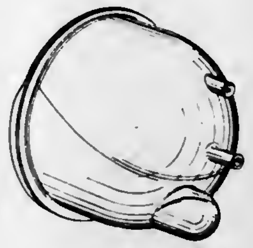


234,641
COMBINED NEBULIZER-HUMIDIFIER
William R. King, Denver, and Richard K. Sampson, Littleton, Colo., assignors to Sandoz-Wander, Inc., Hanover, N.J.
Continuation-in-part of design application Ser. No. 203,504, Nov. 30, 1971, which is a continuation-in-part of design application Ser. No. 151,170, June 8, 1971, now abandoned. This application Aug. 27, 1973, Ser. No. 391,789
Term of patent 14 years
Int. Cl. D24—*02, 04*
U.S. Cl. D83—1 N

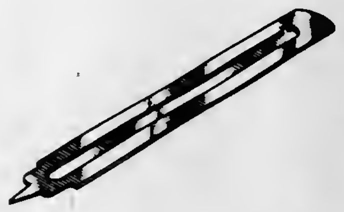


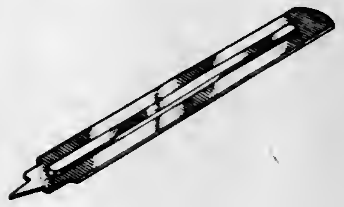


234,642
CUP FOR A BREAST PUMP OR SIMILAR ARTICLE
Ineyoung Lee, 2227 S. 17th Ave., Broadview, Ill. 60153
Filed Apr. 23, 1973, Ser. No. 351,136
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 R

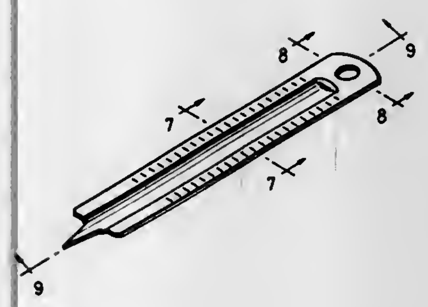


234,643
BLOOD TEST LANCET
Sten Einar Nilsson, Lund, Sweden, assignor to Jarund Devello AB, Fjallbacka, Sweden
Filed Dec. 21, 1973, Ser. No. 427,223
Claims priority, application Sweden June 28, 1973
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

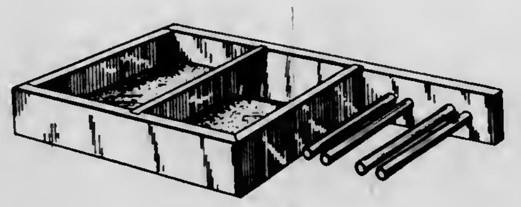




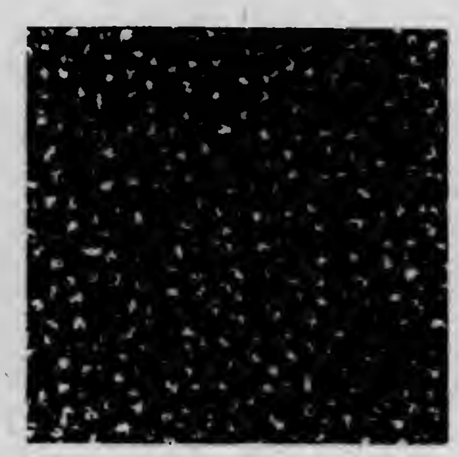
234,644
BLOOD LANCET
Tsuneyoshi Sugiyama, Seki, Japan, assignor to Feather Kogyo Kabushiki Kaisha
Filed Apr. 22, 1974, Ser. No. 462,890
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



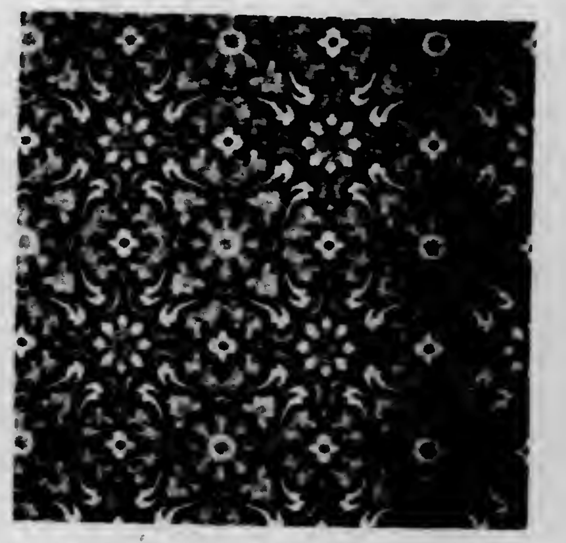
234,645
STORAGE TRAY FOR GAME DEVICES
Donald W. Miller, 3211 S. Logan St., Englewood, Colo. 80110
Filed Aug. 2, 1973, Ser. No. 385,152
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



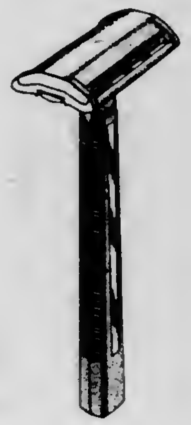
234,646
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Philip Nugent, New York, N.Y., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Feb. 15, 1973, Ser. No. 332,780
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



234,647
SOFT SURFACE FLOOR COVERING
Gerald E. White, Albertson, N.Y., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Mar. 12, 1973, Ser. No. 340,309
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



234,648
RAZOR
Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed May 8, 1973, Ser. No. 358,420
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. H. Robins Company, Incorporated: *See—*
  - Welstead, William John, Jr., 3,873,707.
- A. Kettenbach Fabrik Chemischer Erzeugnisse: *See—*
  - Jahn, Ulrich W. K., 3,873,008.
- A. & M. Cousin & Cie Etablissements Cousin Freres: *See—*
  - Cousin, Maurice Claude, 3,872,740.
- AB Almex: *See—*
  - Soderstrom, Gill Gustav; and Stahl, Nils Evert Johan, 3,873,991.
- AB Svensk Varmematning: *See—*
  - Karlsson, Stig Ingvar, 3,872,722.
- Abblard, Jean; and Viricel, Rene, to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques. Process for hydroxy-methylation of a substituted 3-hydroxy-pyridine. 3,873,557, Cl. 260-297.00R.
- Abbott Laboratories: *See—*
  - Becker, Frank Carl; and Van Munster, Frederik Hendrik, 3,873,546.
  - Plotnikoff, Nicholas Peter, 3,873,709.
- Ablad, Bengt Arne Hjalmar: *See—*
  - Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne Hjalmar, 3,873,600.
- Abrams, Halle: *See—*
  - Giles, Philip M.; Abrams, Halle; and Marder, Arnold R., 3,873,306.
- ACF Industries, Incorporated: *See—*
  - Malo, Lowell L., 3,872,798.
- Acker, Norbert K., to Scanner, Inc. Self-correcting reading of contrast information. 3,873,973, Cl. 340-146.30Z.
- Acme United Corporation: *See—*
  - Cummings, Clinton M., 3,872,708.
- Acorn Building Components, Inc.: *See—*
  - Di Fazio, Joseph, 3,872,638.
- Acorn Engineering Company: *See—*
  - Morris, Earl Lavern; and Sally, Theodore J., 3,873,151.
- Adams, Donald L.: *See—*
  - Johnson, Jerry Lynn; and Adams, Donald L., 3,873,062.
- Adams, Kenneth D.; and Petronchak, John, to Singer Company, The. Needle bar release device. 3,872,809, Cl. 112-221.000.
- Adams, William N., to Raymond Lee Organization, Inc., The, a part interest. Trailer safety hitch. 3,873,131, Cl. 280-456.00R.
- Addiction Research and Treatment Corporation: *See—*
  - Penn, Nathar W., 3,873,698.
- Addressograph-Multigraph Corporation: *See—*
  - Westdale, Virgil W., 3,873,325.
- Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., to United States of America, Navy. Cable grapple. 3,873,145, Cl. 294-66.00R.
- Adler, Franklin P.; and Miller, Roy W., to Pullman Incorporated and Pullman Transport Leasing Company. Door operating mechanism. 3,872,796, Cl. 105-241.00C.
- Adolph, Horst G.; and Gilligan, William H., to United States of America, Navy. Amides of 2-fluoro-2,2-dinitroethyl amines. 3,873,617, Cl. 260-561.00R.
- Adolph, Horst G., to United States of America, Navy. Purification of bis(2-fluoro-2,2-dinitroethyl)formal. 3,873,626, Cl. 260-615.00A.
- Adragna, Alfredo. Rotary machine. 3,872,840, Cl. 123-8.330.
- Advanced Techology Center, Inc.: *See—*
  - Chivian, Jay S.; and Eden, Dayton D., 3,873,181.
- Aepli, Otto T.; and Sorgenfrei, Malachy E., to BASF Wyandotte Corporation. Method for peeling cashew nuts. 3,873,743, Cl. 426-253.000.
- Aerojet-General Corporation: *See—*
  - Katzakian, Arthur, Jr.; Steele, Roger B.; and Scigliano, Joseph J., 3,873,602.
- Aeronca, Inc.: *See—*
  - Myers, Paul Eugene; and Carroll, Omer L., 3,872,564.
- Agency of Industrial Science & Technology: *See—*
  - Kato, Masao; Hasegawa, Masaki; and Ichijyo, Taro, 3,873,500.
  - Takeyama, Hidehiko; and Honda, Tsunenori, 3,873,816.
- Agfa-Gevaert: *See—*
  - Florens, Raymond Leopold, 3,873,322.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.
  - Ettelbruck, Rudiger; Hartwig, Karl; Schnall, Gunther; and Weiss, Werner, 3,873,198.
  - Hartwig, Karl; and Vossnacke, Juergen, 3,872,828.
  - Pfeifer, Josef; and Schausberger, Helmut, 3,873,988.
  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
- Agfa-Gevaert Aktiengesellshcaft: *See—*
  - Weinert, Volker, 3,873,199.
- Aguas, Cayetano. Smoke stack washer. 3,873,284, Cl. 55-228.000.
- Ahmed, Adel Abdel Aziz, to RCA Corporation. Comparator-keyed oscillator. 3,873,853, Cl. 307-235.00R.
- Aichinger, Dietmar; and Beck, Reinhold, to Albert Obrist & Co. Closure cap for a container having a protruding rim opening. 3,872,993, Cl. 215-320.000.
- Aikawa, Hiroshi: *See—*
  - Ito, Naganori; and Aikawa, Hiroshi, 3,873,121.
  - Ito, Naganori; and Aikawa, Hiroshi, 3,873,124.
- Aizawa, Hideo; and Morimoto, Torao, to Alps Electric Co., Ltd. Television tuner having means for generating AFT and AGC voltages as well as an audio signal. 3,873,922, Cl. 325-422.000.
- Ajinomoto Co., Ltd.: *See—*
  - Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; Meguro, Takashi; and Wakamatsu, Hachiro, 3,873,700.
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- Akai Electric Company Limited: *See—*
  - Sato, Fujio; Fujimoto, Eisuke; Sato, Keisuke; and Tanaka, Bunichiro, 3,873,992.
- Akasaka, Shigeo: *See—*
  - Iida, Yozo; Nozawa, Hideyo; and Akasaka, Shigeo, 3,873,193.
- Akimoto, Norio: *See—*
  - Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, 3,873,515.
- Aktiebolaget Atomenergi: *See—*
  - Margen, Peter Heinrich Erwin, 3,872,673.
- Aktiebolaget Tudor: *See—*
  - Sundberg, Erik G., 3,873,366.
- Aktien-Gesellschaft "Weser": *See—*
  - Harms, Horst; and Kunsch, Hans-Jurgen, 3,873,039.
- Akzona Incorporated: *See—*
  - Jacoby, Charles H., 3,873,156.
- Alarcon, Ernesto J.: *See—*
  - Carpio, Raul M.; and Alarcon, Ernesto J., 3,873,067.
- Albert Obrist & Co.: *See—*
  - Aichinger, Dietmar; and Beck, Reinhold, 3,872,993.
- Albrecht, Konrad: *See—*
  - Frensch, Heinz; and Albrecht, Konrad, 3,873,689.
- Alcan Research and Development Limited: *See—*
  - Sheasby, Peter Geoffrey; Smith, Alan Martin; Gilkes, Christopher Robert; and Breit, Wolf Dieter, 3,873,318.
- Alderson Research Laboratories, Inc.: *See—*
  - Smrcka, Joseph G., 3,872,609.
- Alfa-Laval AB: *See—*
  - Thylefors, Henric Wilhelm, 3,873,061.
- Ali, Frank F. Sanding and buffing wheel. 3,872,630, Cl. 51-334.000.
- Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., to Xonics, Inc. Electron radiographic system with liquid absorber. 3,873,833, Cl. 250-315.000.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Malagari, Frank A., Jr., 3,873,380.
- Allen-Bradley Company: *See—*
  - Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.
- Allen & Hansburys Limited: *See—*
  - Oxford, Alexander William; and Gymer, Geoffrey Edward, 3,873,538.
- Allen, Howard L., to Hoover Company, The. Suction cleaner. 3,873,285, Cl. 55-362.000.
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- Allen, Robert E., Jr. Double syringe. 3,872,864, Cl. 128-218.00M.
- Allergan Pharmaceuticals: *See—*
  - Randeri, Kiran J.; and Karageozian, Hampar L., 3,873,696.
- Allied Chemical Corporation: *See—*
  - Crescentini, Lamberto; and Wells, Rodney Lee, 3,873,639.
  - Flower, Thomas A., 3,873,044.
  - Gomez, Climaco Alberto; Lewis, Marvin Dennis; and Twilley, Ian Charles, 3,872,558.
  - Higgins, John Francis; McDonald, Dale Richard; Hanson, Marvin Ardell; and Moore, William Percy, 3,873,734.
  - Mathew, Chempolil Thomas; and Ulmer, Harry Edwards, 3,873,624.
  - Moore, William Percy, 3,873,728.
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  - O'Brien, John B.; Pisanchyn, John; and Colby, Robert, 3,873,301.
  - Wincklhofer, Robert Charles; and Schwartz, Judd Leonard, 3,873,353.
- Allis-Chalmers Corporation: *See—*
  - Callahan, Thomas R., 3,873,231.
- Alps Electric Co., Ltd.: *See—*
  - Aizawa, Hideo; and Morimoto, Torao, 3,873,922.

  - Niki, Shuji, 3,873,978.
- Altair Industries, Inc.: *See—*
  - Bussard, Willis A., 3,873,445.
- Altamira, Anthony F.; and Hoyt, Donald L., to Texaco Inc. Tertiary recovery operation. 3,872,922, Cl. 166-245.000.
- Altherr, Russell George, to Amsted Industries Incorporated. Knuckle structure for railway vehicle coupler. 3,872,978, Cl. 213-151.000.
- Altmayer, John, to New-Tronics Corp. Extendible and retractable antenna. 3,873,985, Cl. 343-714.000.
- Altosaar, Heino, to Domtar Limited. Flax decorticator. 3,872,545, Cl. 19-26.000.
- Altosaar, Heino; and Meiel, Samuel P., to Domtar Limited. Partition mounting. 3,872,633, Cl. 52-127.000.
- Aluminum Company of America: *See—*
  - Claxton, Raymond J.; Logan, Russell J.; and West, Charles E., 3,873,305.
  - Zoeller, Richard J.; and Lazure, Frank S., 3,873,738.
- Alvarez, Francisco Sanchez, to Syntex Corporation. 2-(6-Methoxynaphth-2-yl) propionitrile. 3,873,594, Cl. 260-465.00F.
- Amano, Tadashi, to Konishiroku Photo Industry Co., Ltd. Method of determining exposure amounts in photographic printing. 3,873,201, Cl. 355-77.000.
- Amaya, Toshiyuki, to Pioneer Electronic Corporation. Chord selection apparatus for an electronic musical instrument. 3,872,765, Cl. 84-1.010.
- Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., to Owens-Illinois, Inc. Method of making a plastic-covered glass container. 3,873,655, Cl. 264-48.000.
- Ambrosiani, Vincent F., to VF Corporation. Lady's panelled undergarment and method of making same. 3,872,512, Cl. 2-73.000.
- Ambrosio, Biagio F., to Electronic Memories & Magnetics Corporation. Printer with print wheels having coded perforations for selective positioning. 3,872,789, Cl. 101-93.290.
- Amdahl Corporation: *See—*
  - Beall, Robert J.; and Zasio, John J., 3,872,583.
- Amerace Corporation: *See—*
  - Basile, Peter A., 3,872,747.
  - Mihaly, Michael F., 3,873,029.
- Amerace Esna Corporation: *See—*
  - Heenan, Sidney A., 3,873,184.
- American Cyanamid Company: *See—*
  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,873,607.
  - Kupelian, Robert Howard, 3,873,297.
  - Trandell, Roger Francis; and Fessler, Robert Glenn, 3,873,462.
  - Yarrington, Robert Murphy, 3,873,442.
- American Flange & Manufacturing Co., Inc.: *See—*
  - Czerwiak, Marian A., 3,873,132.
- American Home Products Corporation: *See—*
  - Bogash, Richard; Wolf, Milton; and Sellstedt, John H., 3,873,533.
  - McGaully, Ronald J., 3,873,604.
  - Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,873,524.
  - Wendt, Gerhard R., 3,873,527.
- American Medical Products Corp.: *See—*
  - Lasker, Norman; and Jarrell, Bruce E., 3,872,863.
- American Metal Products Corporation: *See—*
  - Zanias, Theodore, 3,872,780.
- American Seating Company: *See—*
  - Barecki, Chester J., 3,873,155.
- American Sterilizer Company: *See—*
  - Patrie, James H., 3,872,686.
- AMF Incorporated: *See—*
  - Durdin, Peter Robert, 3,872,823.
  - Elliott, James D., 3,872,785.
  - Fiore, Joseph V.; Kelly, T. Kenneth; and Nellen, William J., 3,872,871.
  - Panepinto, Louis J., 3,873,088.
- Amiot, Felix. Propulsion installations for boats, more particularly for high-speed launches. 3,872,675, Cl. 60-718.000.
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  - Berry, Kay L.; and Palm, John W., 3,873,679.
  - Donham, James E., 3,873,452.
- AMP Incorporated: *See—*
  - Broske, William Franklin, 3,872,707.
  - Cea, Carmen Achille; and Tucci, John James, 3,872,567.
  - Chick, Joseph James; Bozek, Thomas Joseph, Jr.; and Hammond, James Woodrow, 3,872,584.
  - Paullus, Clarence Leonard, 3,873,172.
- Ampex Corporation: *See—*
  - Bousky, Samuel, 3,873,180.
- Amsted Industries Incorporated: *See—*
  - Altherr, Russell George, 3,872,978.
  - Tack, Carl E., 3,872,795.
- Anderson, Edward P.; and Lamb, Thomas J., to Engelhard Minerals & Chemicals Corporation. Electrolytic cell assembly including bipolar concentric electrodes. 3,873,438, Cl. 204-268.000.
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- Anderson, Marshall N., to Sellstrom Manufacturing Co. Adjustable temple for eyeglasses. 3,873,192, Cl. 351-118.000.
- Anderson, Neil P.: *See—*
  - Lea, James M.; and Anderson, Neil P., 3,872,525.
- Anderson, Norman G.; and Willis, Damous D., to United States of America, Atomic Energy Commission. Simplified rotor for fast analyzer of rotary cuvette type. 3,873,217, Cl. 356-246.000.
- Anderson, Ronald Colquhoun, to Weir Pumps Limited. Fluid machines. 3,873,242, Cl. 417-360.000.
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- Ando, Kunio: *See—*
  - Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,873,529.
- Ando, Seigo: *See—*
  - Mori, Toshihiro; Ando, Seigo; Watanabe, Katsujiro; and Yamada, Takeo, 3,873,912.
- Anhalt, John W., to International Telephone and Telegraph Corporation. Electrical connector assembly. 3,873,173, Cl. 339-17.0CF.
- Annable, Thomas Michael; and Heieis, Gerhard. Lift connector for precast members. 3,873,147, Cl. 294-89.000.
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- Anthony, Michael P.: *See—*
  - Schinella, Richard D.; and Anthony, Michael P., 3,873,989.
- Anthony, William H.; and Popplewell, James M., to Swiss Aluminum Limited. Erosion-corrosion resistant aluminum radiator clad tubing. 3,872,921, Cl. 165-152.000.
- Anvar-Agence Nationale de Valorisation de la Recherche: *See—*
  - Mollard, Paul; Paris, Jacques; and Rousset, Abel, 3,873,461.
- Apostoleris, Theodore G., to Ford Motor Company. Two-piece dynamoelectric machine housing. 3,873,864, Cl. 310-89.000.
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- Aragilian, Oleg Ashotovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, to Fuji Photo Film Co., Ltd. Method of developing silver halide photosensitive material. 3,873,315, Cl. 96-66.300.
- Arlt, Dieter: *See—*
  - Appel, Hansgunter; Arlt, Dieter; Muller, Richard; and Wingler, Frank, 3,873,495.
- Arman, Dario. Support for windshield wiper blades. 3,872,535, Cl. 15-250.420.
- Armco Steel Corporation: *See—*
  - Jackson, John M., 3,873,381.
  - Kolts, Juri, 3,873,374.
  - Wehner, Byrom T., 3,873,105.
- Armour and Company: *See—*
  - Hansen, Leo J., 3,872,716.
- Armstrong, Blair D.: *See—*
  - Moore, David M.; Armstrong, Blair D.; and Kallas, William, 3,872,976.
- Armstrong, Currie; and Christophersen, Clarence B., to said Currie Armstrong, by said Clarence E. Christophersen. Map vending machine. 3,872,997, Cl. 221-20.000.
- Armstrong Store Fixture Corp.: *See—*
  - Moore, David M.; Armstrong, Blair D.; and Kallas, William, 3,872,976.
- Arndt, Robert H., to Ralston Purina Company. Preparation of a simulated milk product. 3,873,751, Cl. 426-356.000.
- Arnoldi, Robert Alfred: *See—*
  - Mikolajczak, Alojzy Antoni; and Arnoldi, Robert Alfred, 3,873,229.
- Arshansky, Mikhail Iosipovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, 3,873,515.
- Asano, Hideichi: *See—*
  - Osawa, Yoshio; Ueno, Koichiro; Dobashi, Koichi; and Asano, Hideichi, 3,873,588.
- Asburry, Robert L.: *See—*
  - Smithson, Howard W.; Smithson, Emory L.; and Asburry, Robert L., 3,872,989.
- Ashfield, Herbert Edward; and Moorhouse, Stephen, to David Brown Tractors Limited. Vibration damper for tractor roll-bar. 3,872,950, Cl. 188-1.00B.
- Ashley, Holvor Walter: *See—*
  - Moran, John Joseph; Wolff, Sverre; and Ashley, Holvor Walter, 3,873,273.

- Ashmead, Harvey H.; and Little, Paul A., to Ashmead, Harvey H., by said Paul A. Little. Increasing metals in biological tissue. 3,873,296, Cl. 71-77.000.
- Ashmead, Harvey H.: *See—*
  - Ashmead, Harvey H.; and Little, Paul A. (said Paul A. Little assors. to), 3,873,296.
- Astra Lakemedal Aktiebolag: *See—*
  - Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, 3,873,521.
- Atkinson, William W.; and Leathem, Albert, to Southern Pacific Transportation Company. Remote testing system for railroad air brakes. 3,872,711, Cl. 73-39.000.
- Atlantic Richfield Company: *See—*
  - Rosenthal, Rudolph; Bonetti, Giovanni A.; and Kieras, Joseph A., 3,873,587.
  - Rosenthal, Rudolph; Rieve, Robert W.; Kieras, Joseph A.; and Bonetti, Giovanni A., 3,873,674.
- Atlas Copco Aktiebolag: *See—*
  - Andersson, Sture R.; and Elmessaar, Heino, 3,872,933.
- Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Novel benzomorphan and their salts as analgesics. 3,873,706, Cl. 424-260.000.
- Atwood, Hyatt B.; and McLean, James N., to Herr Manufacturing Company, Inc. Spinning and twisting ring construction. 3,872,662, Cl. 57-120.000.
- Audio Arts, Inc.: *See—*
  - Doschek, Antony Z., 3,873,784.
- Austin, Glenn M.: *See—*
  - Seiferth, Oscar E.; and Austin, Glenn M., 3,873,003.
- Automata, Inc.: *See—*
  - Kaszuba, Robert J.; and Nawrocki, Raymond T., 3,872,784.
- Autoquip Corporation: *See—*
  - Richards, Lawrence I., 3,872,948.
- Avco Corporation: *See—*
  - Parks, William E., 3,872,898.
  - Stein, Wolfgang J.; Straniti, Salvatore; and Exley, John T., 3,873,232.
- Avco Everett Research Laboratory, Inc.: *See—*
  - Reilly, James P., 3,873,942.
- Avery, William Harold, Jr.: *See—*
  - Isberg, Reuben Albert; Beaudet, Hermas Nelson; and Avery, William Harold, Jr., 3,873,448.
- Avisun Corporation: *See—*
  - Jezl, James L., 3,873,642.
- Avon Products, Inc.: *See—*
  - Demko, Ronald T., 3,873,687.
- Axelrod, Lev Mikhailovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Axmann, Felix. Sand slinger. 3,872,912, Cl. 164-20.000.
- Ayres, Waldemar A., to Becton, Dickinson and Company. Constrictionless thermometer provided with adhesive. 3,872,729, Cl. 73-371.000.
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- B. F. Goodrich Company, The: *See—*
  - Jean, Roger Burl, 3,872,969.
- B/W Metals Company, Inc.: *See—*
  - Weddendorf, Elmer R., 3,872,801.
- Baader, Joseph E. Vehicle light warning systems. 3,873,968, Cl. 340-72.000.
- Babbit, John H., Jr.; and Wait, John D., Jr., to Caterpillar Tractor Co. Roll-over protective structure mounting. 3,873,222, Cl. 403-253.000.
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- Bachman, Robert Theophil, to Luwa AG. Pneumatic Control. 3,872,876, Cl. 137-118.000.
- Bachner, Ernst; Bumberger, Herbert; and Hoscher, Rudolf, to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft. Apparatus for measuring the wall thickness of a solidifying case body in casting hot liquid metal in a mould. 3,872,598, Cl. 33-169.00R.
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- Bainard, Dean R., to International Packings Corporation. Seal. 3,873,104, Cl. 277-134.000.
- Bair, Eugene C., to General Electric Company. Apparatus for manufacturing slotted core structures. 3,872,705, Cl. 72-393.000.
- Bajer, Francis J.: *See—*
  - Pawlak, Joseph A.; West, Charles W.; Colson, James G.; and Bajer, Francis J., 3,873,459.
- Baker, Richard E., Jr. Chair structure and method of forming the same. 3,873,154, Cl. 297-445.000.
- Baker, William R.; and Peisner, Israel D., to Whitehead & Kales Company. Trailer hitch tie-down assembly. 3,872,797, Cl. 105-368.00T.
- Bakka, Richard L.; and Sistowicz, Robert F., to Economics Laboratory, Inc. Method for cleaning meat processing facilities. 3,873,363, Cl. 134-22.00R.
- Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; Lyashenko, Alexandr Fedorovich; and Zhitnetsky, Vasily Ivanovich. Method for the elimination of erosion failures on the surfaces of high pressure-high temperature devices. 3,873,308, Cl. 75-208.00R.
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- Ball Corporation: *See—*
  - Ratliff, Floyd A., 3,873,258.
- Balmes, George M.: *See—*
  - Joyce, Michael F.; and Balmes, George M., 3,872,728.
- Balzer & Droll K G: *See—*
  - Droll, Hans; and Muskulus, Willi, 3,872,897.
- Ban, Kazuo: *See—*
  - Motomura, Mitsuteru; Futamata, Masayuki; Hirose, Kazuyuki; and Ban, Kazuo, 3,873,252.
- Baratto, Eugene L.: *See—*
  - Pechacek, Alvin E.; and Baratto, Eugene L., 3,873,475.
- Barecki, Chester J., to American Seating Company. Transit seat with contoured plastic shell. 3,873,155, Cl. 297-445.000.
- Barkan, Philip; and Lee, Thomas H., to General Electric Company. Alternating-current power delivery system. 3,873,887, Cl. 317-20.000.
- Barke, Hans Joachim: *See—*
  - Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.
- Barlow, John W. Flex coupling fastener. 3,872,904, Cl. 145-50.00A.
- Barnard, John Dudley, to International Business Machines Corporation. Electronic tester for testing devices having a high circuit density. 3,873,818, Cl. 235-153.0AC.
- Barnebey-Cheney Co.: *See—*
  - Barnebey, Herbert L., 3,873,287.
- Barnebey, Herbert L., to Barnebey-Cheney Co. Modular fluid filter construction. 3,873,287, Cl. 55-479.000.
- Barone, Bruno J., to Petro-Tex Chemical Corporation. Preparation of hydroperoxides by autoxidation. 3,873,625, Cl. 260-610.00B.
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- Barry, John P.: *See—*
  - Dettling, Joseph R.; and Barry, John P., 3,873,892.
- BASF Wyandotte Corporation: *See—*
  - Aepli, Otto T.; and Sorgenfrei, Malachy E., 3,873,743.
  - Otrhalek, Joseph V.; and Elfers, Gunther H., 3,873,417.
- Basile, Peter A., to Amerace Corporation. Hand tool for installing wire fabric fence clamps. 3,872,747, Cl. 81-426.000.
- Basler Electric Company: *See—*
  - Sievers, Carl J.; and Wagner, Ronald C., 3,873,883.
- Basse, Philip; and Juels, Ronald J., to Comstron Corporation. FM demodulator circuits. 3,873,931, Cl. 329-122.000.
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- Batterson, Norman D.: *See—*
  - Reeder, Wilbur C.; and Batterson, Norman D., 3,873,031.
- Bauer Bros. Co., The: *See—*
  - Charters, Michael T.; and Landis, Franklin E., 3,873,412.
- Bauer, Frederick T. Electrical switch for primary control system for furnaces. 3,873,955, Cl. 337-72.000.
- Baum, Joerg P.; and Pearce, Jai K., to Pennsylvania Engineering Corporation. Apparatus for processing molten metal. 3,873,073, Cl. 266-16.000.
- Baumann, Arthur; and Langenegger, Werner, to Metter Instrumente AG. Weighing apparatus including pulse counter means having a relatively small capacity. 3,872,936, Cl. 177-15.000.
- Bausch & Lomb Incorporated: *See—*
  - Hensler, Joseph R., 3,873,408.
- Baxter Laboratories, Inc.: *See—*
  - Connelly, John J.; and Di Stefano, Alan A., 3,873,449.
  - Wakefield, Elisabeth D.; and Friedman, Patricia A., 3,873,272.
- Bayer Aktiengesellschaft: *See—*
  - Appel, Hansgunter; Arlt, Dieter; Muller, Richard; and Wingler, Frank, 3,873,495.
  - Jabs, Gert; and Loew, Gunther, 3,873,476.
  - Kuhlthau, Hans-Peter, 3,873,528.
  - Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.
  - Pampus, Gottfried; Witte, Josef; and Hoffmann, Martin, 3,873,644.
  - Walz, Klaus; Gerlach, Klaus; and Schwarz, Max, 3,873,583.
- Beall, George H., to Corning Glass Works. Glass-ceramic article. 3,873,329, Cl. 106-39.800.
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- Bean, Lloyd F. Method of controlling the brightness acceptance range and tonal contrast of a xerographic plate. 3,873,310, Cl. 96-1.400.
- Beasley, Donald L.: *See—*
  - Townsend, Ray T.; and Beasley, Donald L., 3,873,744.

Beaton, Philip J., Sr.: *See—*
  Wallis, Victor B.; and Beaton, Philip J., Sr., 3,872,800.
Beatrice Foods Company: *See—*
  Luksas, Anthony J.; and Williams, Wilmore, 3,873,730.
Beaudet, Hermas Nelson: *See—*
  Isberg, Reuben Albert; Beaudet, Hermas Nelson; and Avery, William Harold, Jr., 3,873,448.
Beaudin, Gerald P., Jr.; and McClain, Dale E. Pull away safety neckwear. 3,872,513, Cl. 2-155.000.
Beausoleil, William F.; and Uberbacher, Edward C., to International Business Machines Corporation. Tape cartridge storage device with dynamic ordering. 3,872,998, Cl. 221-79.000.
Beck, Harold D., to International Harvester Company. Fan shroud exit structure. 3,872,916, Cl. 165-1.000.
Beck, Reinhold: *See—*
  Aichinger, Dietmar; and Beck, Reinhold, 3,872,993.
Beck, Ronald A.; and Breu, Dennis L., to Sperry Rand Corporation. Core patch stringing method. 3,872,581, Cl. 29-604.000.
Beck, Walter; and Blackwood, John C., to Stepan Chemical Company (National Polychemicals Div.). Metallic salts of tetrazoles used as blowing and intumescent agents for thermoplastic polymers. 3,873,477, Cl. 260-2.50R.
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Becker, Kunibert: *See—*
  Floter, Manfred; Beulker, Franz; Plevak, Lubomir; and Becker, Kunibert, 3,873,158.
Becker, Oskar: *See—*
  Wurscher, Horst; Blass, Rolf; and Becker, Oskar, 3,873,957.
Beckers, Norman L.; and Rowe, Edward A., to Diamond Shamrock Corporation. Stabilization of methyl chloroform. 3,873,631, Cl. 260-652.50R.
Beckman Instruments, Inc.: *See—*
  Gropper, Lee; and Thurber, Walter W., 3,873,216.
Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, to Allen-Bradley Company. Terminal construction for electrical circuit device. 3,873,890, Cl. 317-101.0CC.
Becton, Dickinson and Company: *See—*
  Ayres, Waldemar A., 3,872,729.
  Ayres, Waldemar A., 3,872,822.
  Ringrose, Michael Andrew; and Coy, John Ronald, 3,872,730.
Beekman, Stewart M. Process for preparing alcohol-soluble aluminum chlorhydroxide-polyol complexes and product. 3,873,686, Cl. 424-47.000.
Beery, Jack; and Brandt, Arnold W., to Burroughs Corporation. Automatic torque control system for motors. 3,873,901, Cl. 318-332.000.
Beken Engineering Limited: *See—*
  Beken, Horace Fritz; and Beken, John Michael, 3,873,070.
Beken, Horace Fritz; and Beken, John Michael, to Beken Engineering Limited. Continuous mixing machines. 3,873,070, Cl. 259-6.000.
Beken, John Michael: *See—*
  Beken, Horace Fritz; and Beken, John Michael, 3,873,070.
Belcher, Willard Leslie: *See—*
  Kennedy, William Edward; and Belcher, Willard Leslie, 3,872,602.
Bell, Charles S.; and Wulff, Harald P., to Shell Oil Company. Olefin epoxidation. 3,873,578, Cl. 260-348.50L.
Bell & Howell Company: *See—*
  Duck, Sherman W.; and Jeffers, Frederick J., 3,873,826.
Bell Telephone Laboratories, Incorporated: *See—*
  Apple, Garrett Gordon, Jr.; and Ching, Yau Chau, 3,873,920.
  Berke, Lawrence Richard; and De Ritter, John Alan, 3,873,757.
  Cho, Yo-Sung, 3,873,936.
  Jones, Robert Patrick; and Rentzepis, Peter Michael, 3,873,825.
  Schinke, David Paul; and Smith, Richard Grant, 3,873,209.
  Winters, Earl Dallas, 3,873,428.
Bendix Corporation, The: *See—*
  Ioannou, John T., 3,873,770.
  Reddy, Junuthula N., 3,873,855.
  Taplin, Lael B.; Seitz, William R.; and Leung, Chun Keung, 3,872,846.
Bendler, Hellmut; Flach, Egon; and Homburg, Axel, to Dynamit Nobel Aktiengesellschaft. Safety device for automotive vehicles. 3,873,125, Cl. 280-150.0AB.
Benko, Pal: *See—*
  Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.
  Berenyi nee Poldermann, Edit; Pallos, Laszlo; Benko, Pal; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; and Kiszelly, Eniko, 3,873,543.
  Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,541.
Bennett, Charlotte S.: *See—*
  Bennett, Robert Br.; and Bennett, Charlotte S., 3,872,522.
Bennett, Richard C., to Whiting Corporation. Crystallization apparatus and method. 3,873,275, Cl. 23-273.00R.
Bennett, Robert Br.; and Bennett, Charlotte S. Protective cover for pools. 3,872,522, Cl. 4-172.120.
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Benzaquen, Sociedad Anonima, Industrial, Comercial, Immobiliaria y Financiera: *See—*
  Benzaquen, Jose, 3,872,557.
Berandt, Leonard: *See—*
  Conklin, Thomas Henry; Liebert, Richard; and Berandt, Leonard, 3,873,872.
Berchtold, Donald R.; and Gebhardt, Charles F., to Caterpillar Tractor Co. Differential gear assembly. 3,872,741, Cl. 74-713.000.
Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, to EGYT Gyogyszervegyeszeti Gyar. 3-Amino-as-triazino[6,5-c]quinoline and its 1-oxide, and a process for the preparation thereof. 3,873,542, Cl. 260-248.0AS.
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Berg, Lawrence F.; and Prillinger, Peter F. M., to Caterpillar Tractor Company. Sealed self-adjusting bearing. 3,873,166, Cl. 308-36.100.
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  Mastis, Victor, 3,872,777.
Bergman, Perry D.; and Bienstock, Daniel, to United States of America, Interior. MHD power generation. 3,873,860, Cl. 310-11.000.
Beringer, Monique: *See—*
  Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, 3,872,870.
Berk, Kurt, to Eaton Corporation. Automatic drive for sliding doors. 3,872,622, Cl. 49-118.000.
Berke, Lawrence Richard; and De Ritter, John Alan, to Bell Telephone Laboratories Incorporated. Communications circuit protector. 3,873,757, Cl. 174-52.00R.
Berkel, Albert J., Jr.: *See—*
  Pasideris, Stamos I.; Berkel, Albert J., Jr.; and Hagen, Paul D., 3,872,991.
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. 3-Oxa(and thia) 11-deoxy PGE. 3,873,607, Cl. 260-514.00D.
Bernard, Denis, to C.E.M.E.T. Societe Anonyme. Cutting device. 3,872,901, Cl. 144-34.00R.
Bernd, Hubert; and Liedhegener, Friedel, to G.L. Rexroth GmbH. Copy control for use in tool machines. 3,872,750, Cl. 82-14.00A.
Berninger, Carl Johannes: *See—*
  Fitzpatrick, Joseph William; Berninger, Carl Johannes; and Lewis, Dennis Osborne, 3,873,581.
Bernstein, Leslie: *See—*
  Israel, Louis; and Bernstein, Leslie, 3,873,432.
Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., to United States of America, Agriculture. Method for disrupting normal insect maturation. 3,873,724, Cl. 424-341.000.
Berry, Kay L.; and Palm, John W., to Amoco Production Company. Reheat method for use in sulfur recovery process. 3,873,679, Cl. 423-574.000.
Berry Metal Company: *See—*
  Chang, Yi-Chung, 3,873,074.
Bers, Abraham: *See—*
  Burke, Barry Ernest; Stern, Ernest; and Bers, Abraham, 3,873,858.
Bertolet, Elmer C., Jr. Method of molding powdered material. 3,873,663, Cl. 264-120.000.
Beskrone, Israel. Word game and apparatus therefor. 3,873,093, Cl. 273-135.00D.
Bethlehem Steel Corporation: *See—*
  Fisher, Thomas W.; and Melcher, Edward D., 3,873,377.
  Giles, Philip M.; Abrams, Halle; and Marder, Arnold R., 3,873,306.
Betts, Paul J., to Inter Dyne. Vibratory water bed. 3,872,526, Cl. 5-348.0WB.
Betz Laboratories, Inc.: *See—*
  Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,710.
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  Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,712.
  Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,873,444.
Beulker, Franz: *See—*
  Floter, Manfred; Beulker, Franz; Plevak, Lubomir; and Becker, Kunibert, 3,873,158.
Beus, Michael J.; and Phillips, Earl L., to United States of America, Interior. Rock bolt tension load cell. 3,872,719, Cl. 73-88.00F.
Beyer, Herbert: *See—*
  Linke, Horst; Holtrup, Bernard; and Beyer, Herbert, 3,872,677.
Bianchetta, Donald L.; and Hufeld, Francis X., to Caterpillar Tractor Co. Spool-type relief valve. 3,872,883, Cl. 137-491.000.
Bianchi, Angelo, to Trapez Anstalt. Windscreen wiper. 3,872,537, Cl. 15-250.420.

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Bieber, Henry E., deceased; and by Sierer, Mrs. Edward, executrix, to Mobil Oil Corporation. Flame resistant hydraulic fluid. 3,873,464, Cl. 252-78.000.
Bienstock, Daniel: *See—*
  Bergman, Perry D.; and Bienstock, Daniel, 3,873,860.
Bieringer, Hermann; and Ebner, Ludwig, to Ciba-Geigy Corporation. Synergistically active herbicidal mixtures for the control of weeds in rice crops. 3,873,298, Cl. 71-87.000.
Bierley, Howard L.; and Witmer, Phares B., III, to Frick Company. Temperature modifying method utilizing a double conveyor contact freezer. 3,872,681, Cl. 62-63.000.
Biet, Jean Armand: *See—*
  Leblond, Jean Rene; Danneels, Guy Emile; and Biet, Jean Armand, 3,873,397.
Bifora-Uhren J. Bidlingmaier GmbH: *See—*
  Meitinger, Heinz, 3,872,663.
Bigelow, John E.; and Dodge, Paul A., to General Electric Company. Multiple scanning head facsimile system. 3,873,761, Cl. 178-6.000.
Binder, Edmund: *See—*
  Marr, Fritz; Schlapp, Albert; Hattass, Rainer; and Binder, Edmund, 3,873,150.
Bio/Physics Systems, Inc.: *See—*
  Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,873,204.
Bio-Rad Laboratories: *See—*
  Chu, Albert E. Y.; and Siebert, Christopher J., 3,873,514.
Biorex Laboratories Limited: *See—*
  Turner, John Cameron, 3,873,599.
Bird, William H.; and Caffrey, Richard F., to Johnson & Johnson. Disposable head covering garment. 3,872,516, Cl. 2-202.000.
Bitney, Robert H. Pallet box. 3,872,542, Cl. 16-171.000.
Bittman, Jesse C.; and Long, Ralph B., Jr., to Wean United, Inc., by said Jesse C. Bittman Jesse. Coiling Elongated Materials. 3,872,702, Cl. 72-145.000.
Bjalme, Bengt G.; and Brown, Thomas G., to Reed Manufacturing Company. Tool for bevelling plastic pipe. 3,872,748, Cl. 82-4.00C.
Blacher, David P.: *See—*
  West, William S., 3,873,404.
Blacher, George J.: *See—*
  West, William S., 3,873,404.
Blacher, Jonathan E.: *See—*
  West, William S., 3,873,404.
Blachly, Donald L.: *See—*
  Brundage, Richard B.; Palmer, John A.; and Blachly, Donald L., 3,872,654.
Black Clawson Company, The: *See—*
  Chupka, David E., 3,873,410.
Black and Decker Manufacturing Company, The: *See—*
  Hastings, Charles Russell, Jr., 3,872,951.
  Worobec, Richard, Jr., 3,873,796.
Blackburn, Jack E.: *See—*
  Miklos, Richard L.; and Blackburn, Jack E., 3,873,975.
Blackmon, Lawrence E., to Monsanto Company. Melt extrusion. 3,873,072, Cl. 259-192.000.
Blackwood, John C.: *See—*
  Beck, Walter; and Blackwood, John C., 3,873,477.
Blake, William S. Electrical safety device. 3,873,951, Cl. 335-164.000.
Blanchard, John C.: *See—*
  Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.
Blank, Benjamin; and Gleason, John G., to SmithKline Corporation. Process and intermediates for preparing 3-thiolpicolnic acid. 3,873,552, Cl. 260-294.80G.
Blanton, Bobby D., to Texas Instruments Incorporated. Refrigeration defrost system. 3,872,683, Cl. 62-140.000.
Blass, Rolf: *See—*
  Wurscher, Horst; Blass, Rolf; and Becker, Oskar, 3,873,957.
Blatt, David H., to Franklin Container Corporation. Corrugated polygonal container. 3,873,017, Cl. 229-41.00C.
Bloch, Paul P., to Moodus Sports Products. Fish hook holder and knot tying device. 3,873,140, Cl. 289-17.000.
Block, Aleck; Frank, Edward H.; and Shoemaker, Robert H., to Merit Abrasive Products, Inc. Descaling of steel strip. 3,873,280, Cl. 51-322.000.
Block, Thomas S., to Clarke-Gravely Corporation. Sweeper pickup head. 3,872,540, Cl. 15-345.000.
Blohm, Thomas R.; Wiech, Norbert L.; and Roberts, Edward M., to Richardson-Merrell Inc. 9-Fluorenyl lactamimides. 3,873,520, Cl. 260-239.00B.
Bloice, John Anthony, to Peak Technologies Limited. Microwave radiation monitor. 3,873,981, Cl. 343-5.0PD.
Blomgren, Oscar C., Jr.: *See—*
  Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., 3,872,917.
Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., to Inter-Probe, Inc. Cooling apparatus and method for heat exchangers. 3,872,917, Cl. 165-1.000.
Bloomfield, Jordan J., to Monsanto Company. 3-Thiabicyclo(3.2.0)heptane-6,7-dicarboxylic anhydride 3,3-dioxide. 3,873,568, Cl. 260-332.100.
Blue, Donald Edward, to Caterpillar Tractor Co. Anti-skid assembly for rolling machines. 3,872,699, Cl. 72-88.000.
Bluestein, Claire; and Loewrigkeit, Peter, to Whitco Chemical Corporation. Latex of quaternized polyether-dialkanolamine polyisocyanate prepolymer chain extended with water with ethoxylated phenol, and cured products. 3,873,484, Cl. 260-29.2TN.
Board of Regents of the University of Nebraska, The: *See—*
  Mebus, Charles A., 3,873,422.
Bock, John J., to General Electric Company. Method of forming beaded lead-in wires for lamps. 3,872,560, Cl. 29-25.160.
Bockau, Guenter; and Schaefer, Horst, to Klein Schanzlin & Becker Aktiengesellshaft. Supporting structure for motors of vertical centrifugal pumps. 3,873,052, Cl. 248-20.000.
Bodemar, Klaus: *See—*
  Icking, Freidrich; and Bodemar, Klaus, 3,873,020.
Boeing Comppany, The: *See—*
  Webster, Donald, 3,873,378.
Boes, Jean. Rotary piston machines. 3,873,247, Cl. 418-36.000.
Boettcher, Richard R.; and Knopka, William N., to FMC Corporation. Flame-retardant copolyester resin containing dialkyl tetrabromo diphenoxyalkane dicarboxylates. 3,873,504, Cl. 260-47.00C.
Bogash, Richard; Wolf, Milton; and Sellstedt, John H., to American Home Products Corporation. 2-amido-7-amino cephalosporanic acids and related compounds. 3,873,533, Cl. 260-243.00C.
Bogaty, Herman, to Warner-Lambert Company. Razor blade with spaced cutout portions along the cutting edge. 3,872,588, Cl. 30-50.000.
Bolanz, Gerrit Martin. Christmas tree cover. 3,872,906, Cl. 150-52.00R.
Bolen, Robert J.; Chadwick, Kelley R.; and Gall, Richard T., to Remington Arms Company, Inc. Method of making steel cartridge cases. 3,873,375, Cl. 148-12.100.
Bolex International SA: *See—*
  Thevenaz, Louis, 3,873,046.
Bolles, Theodore F.: *See—*
  Jackson, Richard A.; and Bolles, Theodore F., 3,873,680.
Boltz, Charles D., Jr., to RCA Corporation. Speed correction system for a video disk playback system. 3,873,764, Cl. 178-6.60R.
Bone, Arnold R., to Dennison Manufacturing Company. Fastener attachment insertion device needle construction. 3,872,806, Cl. 112-104.000.
Bonetti, Giovanni A.: *See—*
  Rosenthal, Rudolph; Bonetti, Giovanni A.; and Kieras, Joseph A., 3,873,587.
  Rosenthal, Rudolph; Rieve, Robert W.; Kieras, Joseph A.; and Bonetti, Giovanni A., 3,873,674.
Boone, Jack L.: *See—*
  Miner, Kenneth G.; Boone, Jack L.; and Talbot, Wilfred F., 3,872,515.
Borch, Richard Frederic: *See—*
  Kreevoy, Maurice M.; Borch, Richard Frederic; and Hutchins, Jonathan Edward Colin, 3,873,621.
Borom, Marcus P.; and Johnson, Lyman A., to General Electric Company. Miniaturized automatic decompression computer. 3,872,731, Cl. 73-432.00R.
Boros, Steve: *See—*
  Anderson, John R.; and Boros, Steve, 3,873,175.
Borrmann, Dieter: *See—*
  Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,873,299.
Bostic, James A. Stamp soaker. 3,873,080, Cl. 269-237.000.
Bottum, Edward W.; and Kozinski, Richard C., to Refrigeration Research, Inc., by said Edward W. Bottum; and Chrysler Corp., by said Richard C. Kozinski. Vehicle air conditioning system. 3,872,687, Cl. 62-243.000.
Bottum, Edward W. Suction accumulator. 3,872,689, Cl. 62-503.000.
Bouldoires, Jean-Pierre: *See—*
  Rey, Louis; Bouldoires, Jean-Pierre; and Rovero, Dominique, 3,873,745.
Bousky, Samuel, to Ampex Corporation. Light beam scanning system with scan angle demagnification. 3,873,180, Cl. 350-7.000.
Bouton, John C.; and Partin, Melvin E., to Geometric Data Corporation. Scanning system for location and classification of patterns. 3,873,974, Cl. 340-146.3AC.
Bowden, Roy Dennis, to Imperial Chemical Industries Limited. Process for the manufacture of bipyridyls. 3,873,555, Cl. 260-296.00D.
Bozek, Thomas Joseph, Jr.: *See—*
  Chick, Joseph James; Bozek, Thomas Joseph, Jr.; and Hammond, James Woodrow, 3,872,584.
Braginetz, Paul A., to Philip Morris Incorporated. Injector razor and head assembly. 3,872,589, Cl. 30-62.000.
Braidich, Emery V.; Gmitter, George T.; and van Essen, William J., to General Tire & Rubber Company, The. Novel paper coating compositions containing 1,2 epoxide modified free-carboxyl containing co-polymers. 3,873,480, Cl. 260-17.4ST.
Brandenberger, Albert: *See—*
  Wildi, Edwin; and Brandenberger, Albert, 3,873,043.
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne Hjalmar. Phenoxycarbamates. 3,873,600, Cl. 260-471.00C.
Brandt, Arnold W.: *See—*
  Beery, Jack; and Brandt, Arnold W., 3,873,901.
Branson, Charles D., to Robertshaw Controls Company. Fuel control system and pressure regulator construction therefor and method for operating the same. 3,872,877, Cl. 137-118.000.
Branson Instruments, Incorporated: *See—*
  Shoh, Andrew, 3,873,859

- Braun Aktiengesellschaft: *See—*
  - Pogrell, Walter, 3,873,262.
- Brauning, Gerhard; and Ort, Wolfgang, to Eastman Kodak Company. Diaphragm shutter. 3,873,987, Cl. 354-26.000.
- Brax, Esko Kai, to Savo Oy. Method of recovering noil fibres and soluble wood material from waste water. 3,873,418, Cl. 162-190.000.
- Brazhnikov, Nikolai Vasilievich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Breit, Wolf Dieter: *See—*
  - Sheasby, Peter Geoffrey; Smith, Alan Martin; Gilkes, Christopher Robert; and Breit, Wolf Dieter, 3,873,318.
- Brettrager, Henry J. Longhole electric discharge machining apparatus. 3,873,800, Cl. 219-69.00E.
- Breu, Dennis L.: *See—*
  - Beck, Ronald A.; and Breu, Dennis L., 3,872,581.
- Brewer, Gerald K.: *See—*
  - Eggers, Frederich W.; and Brewer, Gerald K., 3,873,962.
- Bricker, Robert E.: *See—*
  - Price, Ralph E.; and Bricker, Robert E., 3,872,738.
- Bridgestone Tire Company Limited: *See—*
  - Yokoo, Masasuke; Suzuki, Masayoshi; Meguro, Daitetsu; and Imai, Shuichi, 3,873,398.
- Briggs, George Oliver, to International Basic Economy Corporation. Method for adjusting temperature and pressure of a fluid. 3,872,605, Cl. 34-14.000.
- Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, to Betz Laboratories, Inc. Synergistic compositions for the control of aerobacter aerogenes. 3,873,710, Cl. 424-277.000.
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- Brink, Robert H., Jr.: *See—*
  - Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,873,444.
- British Petroleum Company Limited, The: *See—*
  - Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, 3,873,483.
- British Ropes Limited: *See—*
  - Campbell, Robert Edward; Sherwin, Cyril Duncan Ralph; and Turner, Charles Leslie, 3,872,659.
- Broadfoot, John T. Method and apparatus for installing or replacing flotation in existing marine structures. 3,872,813, Cl. 114-0.50F.
- Brooks, Robert E., to TRW Inc. Light modulator array and method of making it. 3;873,187, Cl. 350-160.00R.
- Broske, William Franklin, to AMP Incorporated. Crimped connection for flared end conduit. 3,872,707, Cl. 72-430.000.
- Brown, Boveri and Company, Ltd.: *See—*
  - Iten, Paul D.; and Mastner, Jiri, 3,873,923.
- Brown, Bruce T.: *See—*
  - Brown, William H.; and Brown, Bruce T., 3,872,563.
- Brown, Clifford R.: *See—*
  - Fjermestad, Arnold R.; and Brown, Clifford R., 3,872,882.
- Brown, Elvin E., to Rockwell International Corporation. Flush printed circuit apparatus. 3,873,429, Cl. 204-15.000.
- Brown, John Jones, Jr.: *See—*
  - Milholen, William F.; Brown, John Jones, Jr.; and Stuart, Gerald L., 3,873,658.
- Brown, Rilma L. Portable container apparatus. 3,873,114, Cl. 280-30.000.
- Brown & Root, Inc.: *See—*
  - Nicholson, William B; and Tisdale, Benjamin C., 3,872,680.
  - Rochelle, William R.; Larenzo, Leroy N.; and Ranft, Eberhard V., 3,873,057.
- Brown, Thomas G.: *See—*
  - Bjalme, Bengt G.; and Brown, Thomas G., 3,872,748.
- Brown, Vernon H.: *See—*
  - Skinner, W. A.; Johnson, Howard L.; DeGraw, Joseph T., Jr.; and Brown, Vernon H., 3,873,725.
- Brown, William H.; and Brown, Bruce T., to United Aircraft Corporation. Method of blade construction. 3,872,563, Cl. 29-156.80H.
- Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, to Agfa-Gevaert Aktiengesellschaft. Machine for splicing tape form material. 3,873,393, Cl. 156-351.000.
- Brueggemann, Walter H.; and Gilhart, Jack S., to Ferro Corporation. Catalytic crystalline glass fibers. 3,873,328, Cl. 106-39.600.
- Brundage, Richard B.; Palmer, John A.; and Blachly, Donald L., to Emerson Electric Co. Mobile leaf shredding and bagging machine. 3,872,654, Cl. 56-13.100.
- Brunetti, Heimo, to Ciba-Geigy Corporation. Esters of 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo [2,2,2] octane and p-hydroxyphenylcarboxylic acids as stabilizers for organic polymers. 3,873,498, Cl. 260-45.95D.
- Brush, John B., to Procter & Gamble Company, The. Storage and display package. 3,872,967, Cl. 206-45.330.
- Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, to SPA-Societa Prodotti Antibiotici S.p.A. 4-Acetoxy-4′-sulfoxydiphenyl-(2-pyridyl)methane and sodium salt thereof. 3,873,551, Cl. 260-294.80R.
- Bryant, Earl Ruskin; Sears, Russell Leo; and Katz, Martin Samuel, to Inmont Corporation. Sealant. 3,872,548, Cl. 24-73.0HS.
- Bryngdahl, Olof, to Xerox Corporation. Polarizing interferometer. 3,873,207, Cl. 356-106.00R.
- Bryzinsky, Frank M.: *See—*
  - Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,873,490.
- Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, to Tamag Basel AG. Process for shaping a pulp, mash or slurry into smokable fibers. 3,872,870, Cl. 131-140.00C.
- Buchtal GmbH: *See—*
  - Mrasek, Karl, 3,873,402.
- Buckley, Keith: *See—*
  - Palmer, Hugh Charles; Horrocks, Derek; and Buckley, Keith, 3,873,736.
- Budai, Zoltan: *See—*
  - Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.
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- Bueler, Richard C.: *See—*
  - Fleagle, Joseph E.; and Bueler, Richard C., 3,872,720.
- Buffet, Philippe: *See—*
  - Nedelec, Joseph Marie; Buffet, Philippe; and Michel, Alain, 3,872,874.
- Buike, Melvin L.: *See—*
  - Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,873,490.
- Bull, George S.: *See—*
  - Herr, Charles H.; Schulz, Gunter W.; and Bull, George S., 3,872,956.
- Bumberger, Herbert: *See—*
  - Bachner, Ernst; Bumberger, Herbert; and Hoscher, Rudolf, 3,872,598.
- Bumbiers, Eric: *See—*
  - Schwab, Edward C.; Petersen, Warren D.; and Bumbiers, Eric, 3,873,748.
- Bumgardner, Jon Hunt, to United States of America, Navy. High dynamic range voltage regulator. 3,873,907, Cl. 323-22.00T.
- Burch, Arthur R., to Clark Equipment Company. Positioning control system for material handling vehicles. 3,873,902, Cl. 318-594.000.
- Burchfield and Turner Enterprises: *See—*
  - McKee, Dale P.; and McKee, Richard D., 3,873,054.
- Burgin Electronic Grade Control, Inc.: *See—*
  - Burgin, Luther B., 3,872,601.
- Burgin, Luther B., to Burgin Electronic Grade Control, Inc. Apparatus for sensing twisting of a paving machine screed. 3,872,601, Cl. 33-185.00V.
- Burkart, Jacob W.; and Mayer, John F., to General Mills Fun Group Inc. Occupant propelled rotary amusement device. 3,873,087, Cl. 272-33.00R.
- Burke, Barry Ernest; Stern, Ernest; and Bers, Abraham, to Massachusetts Institute of Technology. Acoustic surface wave phase shifter. 3,873,858, Cl. 310-8.100.
- Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls, to said Burke, by said Kizer and Davis. Hydroxyl containing unsaturated drying oil polymers and processes for preparing polymers. 3,873,584, Cl. 260-407.000.
- Burke, Oliver W., Jr.: *See—*
  - Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls (assors. to said Burke, by said Kizer and Davis), 3,873,584.
- Burke, William Joseph, to RCA Corporation. Lithium niobate hologram readout using continuous incoherent noise erasing light. 3,873,179, Cl. 350-3.500.
- Burmester, Kurt: *See—*
  - Thurn, Friedrich; Burmester, Kurt; Pochert, Johannes; and Wolff, Siegfried, 3,873,489.
- Burroughs Corporation: *See—*
  - Beery, Jack; and Brandt, Arnold W., 3,873,901.
  - Jennings, Thomas Edwin, 3,873,896.
  - Konopka, John P., 3,873,210.
  - Morris, James McCabe, 3,873,976.
- Busch, Josef: *See—*
  - Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.
- Busch, Ulrich, to Hewlett-Packard GmbH. Method and apparatus for measuring the average liquid flow of a reciprocatory pump. 3,872,723, Cl. 73-194.00R.
- Busdiecker, Wayne S.; Lansky, Zdenek J.; and Russell, John G., to Parker-Hannifer Corporation. Excess flow check valve. 3,872,884, Cl. 137-498.000.
- Busek, Josef. Wringer. 3,872,695, Cl. 69-47.000.
- Bussard, Willis A., to Altair Industries, Inc. Apparatus for reducing toilet effluents to useable liquids. 3,873,445, Cl. 210-149.000.
- Butler, Thomas C., to G. W. Murphy Industries Inc. Rotary saw. 3,873,862, Cl. 310-50.000.

- Byk-Gulden Chemische Fabrik GmbH: *See—*
  - Klemm, Kurt; and Langenscheid, Erhard, 3,873,596.
- Byles, Clauriste H. Grapple arrangement for vehicle. 3,872,987, Cl. 214-147.00G.
- Byron Jackson Inc.: *See—*
  - Kuus, Felix, 3,873,079.
- Bywood, Roy; Clayton, John Charles; Taylor, George Ross; and White, Herbert James, to Glaxo Laboratories Limited. Preparation of esters of penicillanic acids. 3,873,519, Cl. 260-239.100.
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  - Bernard, Denis, 3,872,901.
- C. F. Ploucquet: *See—*
  - Hummel, Paul, 3,872,524.
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  - Peterson, Francis C., 3,872,541.
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  - Tilby, Sydney Edward, 3,873,033.
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  - Hudson, Arthur C.; and Trollope, Brian J., 3,872,858.
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  - Pearson, Eugene W., 3,872,756.
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  - Berg, Lawrance F.; Hogg, Theodore B.; and Lichti, Robert W., 3,873,133.
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  - Bianchetta, Donald L.; and Hufeld, Francis X., 3,872,883.
  - Blue, Donald Edward, 3,872,699.
  - Campbell, Trevor G., 3,872,986.
  - Copeland, Kermit L., 3,872,941.
  - Dezelan, Joseph E.; Junck, John A.; and Nelson, Walter I., 3,872,670.
  - Gee, James E., 3,872,612.
  - Griffiths, Edward J.; and Loyd, Lee R., 3,873,138.
  - Herr, Charles H.; Schulz, Gunter W.; and Bull, George S., 3,872,956.
  - Kennicuit, Robert B., 3,873,148.
  - Miller, Lawrence J.; and Smith, Roger M., 3,872,881.
  - Moser, Raymond L.; and Stedman, Robert N., 3,872,984.
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  - Johnson, John A., 3,872,646.
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  - Curtis, James R.; Palmer, Thomas A.; and Wilson, Billy J., 3,873,664.
- Centre National Pour L'Exploitation Des Oceans (CNEXO): *See—*
  - Garito, Humbert, 3,873,822.
- Centre Technique Du Cuir: *See—*
  - Comte, Philippe; and Fischer, Wilhelm, 3,873,478.
- Centro Sperimentale Metallurgico S.p.A.: *See—*
  - Ramacciotti, Aldo, 3,873,652.
- CH Electronics, Inc.: *See—*
  - Holcomb, Daniel C., 3,873,019.
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  - Bolen, Robert J.; Chadwick, Kelley R.; and Gall, Richard T., 3,873,375.
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  - Crete, Darrel R.; and McDonald, Kenneth A., 3,873,200.
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  - Wu, William C. L.; Krebaum, Lawrence J.; and Machonis, John, Jr., 3,873,643.
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  - Lee, Tzuo-Chang; and Chen, Di, 3,873,183.
- Chen, Ming Chih: *See—*
  - Reilly, Albert F.; Doddridge, Ivan C.; and Chen, Ming Chih, 3,873,348.
- Chester, Frederic J.; and Krygowski, Richard P., to Ford Motor Company. Engine fuel vaporizer. 3,872,849, Cl. 123-122.0AA.
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  - Coon, Marvin D., 3,873,277.
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  - Fischer, William, 3,872,679.
  - Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,873,590.
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  - McCabe, John Stanton, 3,873,139.
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  - Apple, Garrett Gordon, Jr.; and Ching, Yau Chau, 3,873,920.
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  - Hawkins, John L.; and McIntyre, Newman, 3,872,968.
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- Christophersen, Clarence B.: *See—*
  - Armstrong, Currie; and Christophersen, Clarence B., 3,872,997.
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  - Bottum, Edward W.; and Kozinski, Richard C. (said Richard C. Kozinski assors. to), 3,872,687.
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- Chu, Ge Yao: *See—*
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  - Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,873,529.
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- Churchman, Mildred, administratrix: *See—*
  - Churchman, Henry W., deceased, 3,873,149.
- Ciba-Geigy AG: *See—*
  - Huber-Emden, Helmut; Hubele, Adolf; and Klahre, Guenter, 3,873,703.
  - Rys, Paul; and Vogelsanger, Rolf, 3,873,615.
  - Szekely, Istvan, 3,873,582.
- Ciba-Geigy Corporation: *See—*
  - Bieringer, Hermann; and Ebner, Ludwig, 3,873,298.
  - Brunetti, Heimo, 3,873,498.
  - Kristiansen, Odd, 3,873,717.
  - Kuehne, Manfred; and Vogel, Christian, 3,873,544.
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  - Krehbiel, Delmar D.; Gregory, Duane; Clark, Charles R.; and Kennedy, Carl D., 3,873,453.
- Clark Equipment Company: *See—*
  - Burch, Arthur R., 3,873,902.
  - McIntyre, Duane E., 3,872,955.
  - Riedner, William E., 3,872,979.
  - Snyder, James H., 3,872,949.
  - York, Donald W., 3,872,990.
- Clarke-Gravely Corporation: *See—*
  - Block, Thomas S., 3,872,540.
- Claxton, Raymond J.; Logan, Russell J.; and West, Charles E., to Aluminum Company of America. Method of melting particulate metal charge. 3,873,305, Cl. 75-68.00R.
- Clayton, John Charles: *See—*
  - Bywood, Roy; Clayton, John Charles; Taylor, George Ross; and White, Herbert James, 3,873,519.
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- Cloud, Edwin A.: *See—*
  - Plauka, John W.; and Cloud, Edwin A., 3,873,391.
- Cober Fabbrica Articoli Sportivi S.p.A.: *See—*
  - Covini, Lorenzo, 3,873,112.
- Coburn, John F., Jr.: *See—*
  - Young, Dale A.; Miller, Alfred H.; and Coburn, John F., Jr., 3,873,271.
- Coherent Radiation: *See—*
  - Yarborough, J. Michael; and Hobart, James L., 3,873,941.
- Colby, Robert: *See—*
  - O'Brien, John B.; Pisanchyn, John; and Colby, Robert, 3,873,301.
- Collins, Charles A.: *See—*
  - Griffin, Anselm C., Jr.; Collins, Charles A.; and Ferriss, Joe S., Jr., 3,873,164.
- Colson, James G.: *See—*
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  - Yarnall, Donald I., 3,872,804.
- Compagnie Honeywell Bull (Societe Anonyme): *See—*
  - Palombo, Gaston Albert, 3,872,788.
- Compagnie Industrielle Des Telecommunications Cit-Alcatel: *See—*
  - Cabet, Alain; Pinier, Gaston; and Eloy, Guy, 3,873,774.
- Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
  - Dumler, Ernst, 3,873,772.
- Comstron Corporation: *See—*
  - Basse, Philip; and Juels, Ronald J., 3,873,931.
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  - White, Philip H., 3,872,626.
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  - Preto, Raymond J.; and Scheckman, Eugene Z., 3,873,667.
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  - Krehbiel, Delmar D.; Gregory, Duane; Clark, Charles R.; and Kennedy, Carl D., 3,873,453.
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  - Lee, Charles Benjamin; and Ucko, Franz, 3,872,575.
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  - Kozel, James A.; and DeLew, Charles A., 3,872,878.
  - Matthis, Alan A., 3,872,685.
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  - Gates, Alfred C., 3,872,844.
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- Coppola, Patrick P., to General Electric Company. Non-chargeable electrodes for use in contaminated environment containing organic contaminants. 3,873,869, Cl. 313-178.000.
- Cornelius, Friedrich; and Pulpanek, Erich, to said Cornelius, by said Pulpanek. Prefabricated bridge. 3,872,532, Cl. 14-17.000.
- Cornelius, Friedrich: *See—*
  - Cornelius, Friedrich; and Pulpanek, Erich (assors. to said Cornelius, by said Pulpanek), 3,872,532.
- Cornell, Conrad F.: *See—*
  - Dahlstrom, Donald A.; and Cornell, Conrad F., 3,873,532.
- Cornell-Dubilier Electric Corporation: *See—*
  - Papadopoulos, George S., 3,872,579.
- Cornell, Richard K.; Deddo, Gerald J.; and Gianatasio, Henry L. Phosphorescent, fluorescent and reflective coated sheets or films and compositions and method for making the same. 3,873,390, Cl. 156-230.000.
- Corning Glass Works: *See—*
  - Beall, George H., 3,873,329.
  - Dwyer, Thomas J.; and Pesansky, George P., 3,873,350.
  - Foster, Gordon F.; and Meissner, Helmuth E., 3,873,469.
  - Hudson, Marshall C., 3,873,339.
- Corrodi, Hans Rudolf: *See—*
  - Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne Hjalmar, 3,873,600.
- Costa, Edward: *See—*
  - Henrich, Kenneth; Costa, Edward; and Wetton, Robert, 3,873,385.
- Cote, Paul T., to General Electric Company. Photoflash lamp. 3,873,260, Cl. 431-95.000.
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  - Talbert, Robert L., 3,873,918.
- Coury, Arthur J.; and Cozad, Douglas D., to General Mills Chemicals, Inc. Isocyanate purification process. 3,873,589, Cl. 260-453.0SP.
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- Cox, Gregory C.: *See—*
  - Liggett, Thomas; and Cox, Gregory C., 3,873,517.
- Coy, John Ronald: *See—*
  - Ringrose, Michael Andrew; and Coy, John Ronald, 3,872,730.
- Cozad, Douglas D.: *See—*
  - Coury, Arthur J.; and Cozad, Douglas D., 3,873,589.
- CPC International Inc.: *See—*
  - Kanig, Joseph L., 3,873,694.
- Crabbe, Pierre; Fried, John H.; and Guzman, Angel, to Syntex (U.S.A.) Inc. 4,5,10,13 Prostatetraenoic acid derivatives. 3,873,598, Cl. 260-468.00D.
- Craford, George: *See—*
  - Groves, Warren Olley; Herzog, Arno Henry; and Craford, George, 3,873,382.
- Craford, Magnus G.; and Keune, David L., to Monsanto Company. Luminescent solid state status indicator. 3,873,979, Cl. 340-366.00R.
- Craig, Bruce Galvin: *See—*
  - Himes, Richard Carl; Craig, Bruce Galvin; and Gulick, Walter Field, 3,873,281.
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- Cranmer, Joseph W.: *See—*
  - Gall, Andrew S.; and Cranmer, Joseph W., 3,873,756.
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- Crestmark Products Company Incorporated: *See—*
  - Goethe, Robert L.; and Green, Robert R., 3,873,227.
- Crete, Darrel R.; and McDonald, Kenneth A., to Charles A. Crete. Photographic color enlarging system. 3,873,200, Cl. 355-38.000.
- Crosa, Valentin L., to H. K. Porter Company, Inc. Fastener applying tool. 3,872,570, Cl. 29-267.000.
- Cross Company, The: *See—*
  - Westervelt, James T.; and Swis, Philip E., 3,872,712.
- Cross, Kenneth O.: *See—*
  - Hohwart, George; Toth, Paul; and Cross, Kenneth O., 3,873,107.
- Crouser, Darwin S., to Hoover Company, The. Tool Storage rack. 3,872,538, Cl. 15-323.000.
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- Cummins, Claire J.: *See—*
  - Cummins, Richard D.; and Cummins, Claire J., 3,872,972.
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- Curry, John R., to Square D Company. Anti-twist service fitting for use with underfloor wiring duct. 3,873,136, Cl. 285-189.000.
- Curtis, James R.; Palmer, Thomas A.; and Wilson, Billy J., to Celanese Corporation. Heat treatment of polyester rolls. 3,873,664, Cl. 264-146.000.
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- Cyclone Seeder Company, Inc., The: *See—*
  - Ullom, William L., 3,872,578.
- Czaja, Robert F.: *See—*
  - Grenda, Victor J.; and Czaja, Robert F., 3,873,558.
- Czerwiak, Marian A., to American Flange & Manufacturing Co., Inc. Plastic container closure flange. 3,873,132, Cl. 285-21.000.
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  - Munch, Walter, Jr.; Uetrecht, Dale M.; and Studer, Richard L., 3,872,764.
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- Dahl, Einar S., to Outboard Marine Corporation. Safety shutter door assembly for rotary lawnmower grass catcher chute. 3,872,656, Cl. 56-202.000.
- Dahlstrom, Donald A.; and Cornell, Conrad F., to Envirotech Corporation. Sulfur dioxide scrubbing process. 3,873,532, Cl. 423-242.000.
- Daifuku Machinery Works, Ltd.: *See—*
  - Yasutake, Nobuo, 3,872,803.
- Daiichi Pure Chemicals Co., Ltd.: *See—*
  - Meguro, Masahiko, 3,873,509.
- Daiki Engineering Co., Ltd.: *See—*
  - Nishiba, Yoshiharu; Ota, Kazuhiko; and Inaba, Hideya, 3,873,672.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Forster, Hans-Joachim M.; Katz, Klaus; and Scheuter, Anton, 3,872,774.
  - Gotz, Hans, 3,872,900.
  - Ritzka, Karl, 3,873,376.
- Daiwa Boseki Kabushiki Kaisha: *See—*
  - Kato, Takashi; and Suzuki, Yoshihisa, 3,873,886.
- Dammann, Hans; Kock, Manfred; and Tiemens, Ulf, to U.S. Philips Corporation. Method of producing three-dimensional images from a series of individual images in different perspectives. 3,873,834, Cl. 250-323.000.
- Dancsi, Lajos: *See—*
  - Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
- Danfoss A/S: *See—*
  - Hansen, Gunnar Lyshoj, 3,873,246.
  - Valbjorn, Knud Vagn; Spies, Volker; and Dyhr-Mikkelsen, Poul Christian, 3,872,946.
- Daniels, Clare G., to Philco-Ford Corporation. Pneumatic spreading of filaments. 3,873,389, Cl. 156-181.000.
- Daniels, R. Gary; and Kuhn, Harry A., Jr., to Motorola, Inc. Binary frequency divider circuit. 3,873,852, Cl. 307-225.00C.
- Danneels, Guy Emile: *See—*
  - Leblond, Jean Rene; Danneels, Guy Emile; and Biet, Jean Armand, 3,873,397.
- Danov, John; Hawkinson, Warren S.; and Miller, Vivian E., to Delux Check Printers, Inc. Sequential numbering and type-holding device. 3,872,787, Cl. 101-76.000.
- Dapolito, Joseph J.; and Stachelhaus, Gustav A., to GTE Sylvania Incorporated. Apparatus for cleaning seal edge regions of cathode ray tube panels. 3,873,365, Cl. 134-140.000.
- Dart Industries Inc.: *See—*
  - Daenen, Robert, 3,872,620.
  - Daugherty, Barney R.; and Letawa, John R., 3,873,264.
- Daugherty, Barney R.; and Letawa, John R., to Dart Industries Inc. Bottle coating sensitizer and method thereof. 3,873,264, Cl. 432-18.000.
- David Brown Tractors Limited: *See—*
  - Ashfield, Herbert Edward; and Moorhouse, Stephen, 3,872,950.
- Davidson, James R., to Xerox Corporation. Particle concentration detector. 3,872,825, Cl. 118-7.000.
- Davidson, James R.; and Walter, Carol A., to Xerox Corporation. Toner dispenser logic control. 3,873,002, Cl. 222-56.000.
- Davidson, William E.; and Walker, Wendell C., to General Electric Company. Self-cleaning surge iron. 3,872,613, Cl. 38-77.830.
- Davie, Michael Hill: *See—*
  - Rudd, John Duncan; Davie, Michael Hill; and Rigby, Malcolm James, 3,873,293.
- Davis, Pauls: *See—*
  - Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls, 3,873,584.
- Davis, William E., Sr. Pneumatic tobacco harvester. 3,872,655, Cl. 56-27.500.
- Day, Fred L., to United States of America, Navy. Missile loader. 3,872,988, Cl. 214-394.000.
- DCA Food Industries, Inc.: *See—*
  - Fries, Edward W.; and White, Gordon Joseph, 3,872,783.
- DeCaussin, David Edward, to Fadal Engineering Company, Inc. Removable attachment for automating milling machines. 3,872,743, Cl. 74-817.000.
- Decker, Hans; Hurtmanns, Heinz; Jakobs, Willy; and Stockmann, Helmut. Gyratory crusher. 3,873,037, Cl. 241-211.000.
- Decker, Norman E., executor: *See—*
  - Willis, Henry Paul, deceased, 3,873,097.
- DeCroix, Paul Marcel Edmond. Device for adjusting the burning time and luminosity of the flame of a wick-type lighting device such as a candle. 3,873,263, Cl. 431-290.000.
- Deddo, Gerald J.: *See—*
  - Cornell, Richard K.; Deddo, Gerald J.; and Gianatasio, Henry L., 3,873,390.
- De Gaudemaris, Gabriel: *See—*
  - Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,873,276.
- DeGraw, Joseph T., Jr.: *See—*
  - Skinner, W. A.; Johnson, Howard L.; DeGraw, Joseph T., Jr.; and Brown, Vernon H., 3,873,725.
- DeGroot, Charles F. Convertible ground and snow traveling vehicle. 3,872,938, Cl. 180-5.00R.
- de Guzman, Norberto Tumali: *See—*
  - Pressman, Berton Charles; and de Guzman, Norberto Tumali, 3,873,715.
- DeLew, Charles A.: *See—*
  - Kozel, James A.; and DeLew, Charles A., 3,872,878.
- de Ligt, John; and Shelor, Clifford D., to Westvaco Corporation. Conveyor for assembling panels from elongated strips. 3,872,962, Cl. 198-24.000.
- Delux Check Printers, Inc.: *See—*
  - Danov, John; Hawkinson, Warren S.; and Miller, Vivian E., 3,872,787.
- Demko, Ronald T., to Avon Products, Inc. Cosmetic coloring compositions. 3,873,687, Cl. 424-64.000.

Denes, Oscar: *See—*
  Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.
Denker, James M., to Nutron Corporation. Position controlling. 3,872,773, Cl. 91-388.000.
Dennison Manufacturing Company: *See—*
  Bone, Arnold R., 3,872,806.
Dentsply Research Development Corporation: *See—*
  Thornton, Henry M., Jr.; Stram, George H.; and Plowman, Richard E., 3,872,593.
Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Amino derivatives of pyrazolopyridine ketones. 3,873,556, Cl. 260-296.00H.
De Ritter, John Alan: *See—*
  Berke, Lawrence Richard; and De Ritter, John Alan, 3,873,757.
Derner, William J., to FMC Corporation. Seal carrier assembly. 3,873,103, Cl. 277-66.000.
Desirat, Andre: *See—*
  Lecomte, Camille; and Desirat, Andre, 3,873,120.
Desnoyers, George J., Jr. Tool and method of using same. 3,872,760, Cl. 83-743.000.
Desoutter Brothers Limited: *See—*
  States, Ronald Frederick, 3,872,742.
Despins, Leroy H.: *See—*
  Sebo, Alexander; and Despins, Leroy H., 3,873,094.
Dettling, Joseph R.; and Barry, John P., to United Aircraft Corporation. High security lock. 3,873,892, Cl. 317-134.000.
Deutsche Gold-und-Silber-Scheideanstalt Vormals Roessler: *See—*
  Koberstein, Edgar; and Lakatos, Eduard, 3,873,471.
  Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, 3,873,595.
  Roters, Hans, 3,873,675.
  Thurn, Friedrich; Burmester, Kurt; Pochert, Johannes; and Wolff, Siegfried, 3,873,489.
Deutsche Gold-und Silber-Scheidenstaft vormals Roessler: *See—*
  Laufer, Siegmar; and Roy, Waldemar, 3,873,337.
Deutschmann, Herbert. Cooling water circulation for a supercharged internal combustion piston engine. 3,872,835, Cl. 123-41.310.
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Dezelan, Joseph E.; Junck, John A.; and Nelson, Walter I., to Caterpillar Tractor Company. Selectively actuatable shock absorbing system for an implement control circuit. 3,872,670, Cl. 60-413.000.
Diamler-Benz Aktiengesellschaft: *See—*
  Steinmuller, Hans-Jochem, 3,872,843.
Diamond Shamrock Corporation: *See—*
  Beckers, Norman L.; and Rowe, Edward A., 3,873,631.
  Pulver, Dale R., 3,873,437.
Diatek, Inc.: *See—*
  Kauffeld, Ludwig; and Holst, Perry V., 3,872,726.
Diepeveen, John C. Die holding tool and method of using same. 3,873,144, Cl. 294-64.00R.
Diestel, Victor Robert: *See—*
  LaBantschnig, Victor; and Diestel, Victor Robert, 3,872,652.
Di Fazio, Joseph, to Acorn Building Components, Inc. Glazing block. 3,872,638, Cl. 52-476.000.
Dimetrics, Inc.: *See—*
  Friedman, Robert; and Lesher, Howard D., 3,873,798.
Dinsmore, Daniel, Jr.; and Williams, George Nelmes, to United States of America, Navy. Multiple transducer mounting. 3,872,971, Cl. 211-13.000.
Di Simone, Ignazio Sergio, to Nalco Chemical Company. Phosphoester composition for scale and corrosion inhibition. 3,873,465, Cl. 252-181.000.
Di Stefano, Alan A.: *See—*
  Connelly, John J.; and Di Stefano, Alan A., 3,873,449.
Dobashi, Koichi: *See—*
  Osawa, Yoshio; Ueno, Koichiro; Dobashi, Koichi; and Asano, Hideichi, 3,873,588.
Docutel Corporation: *See—*
  Cothran, Martin D.; O'Kelly, Lewis J.; and Hall, Russell L., 3,873,443.
Doddridge, Ivan C.: *See—*
  Reilly, Albert F.; Doddridge, Ivan C.; and Chen, Ming Chih, 3,873,348.
Dodge, Paul A.: *See—*
  Bigelow, John E.; and Dodge, Paul A., 3,873,761.
Dogliotti, Amilcare, to P. Ferrero & C.S.p.A. Container for granular materials. 3,872,996, Cl. 220-254.000.
Doherty, Thomas E.: *See—*
  Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,873,655.
Domtar Limited: *See—*
  Altosaar, Heino, 3,872,545.
  Altosaar, Heino; and Meiel, Samuel P., 3,872,633.
Donham, James E., to Amoco Production Company. Acidizing oil wells. 3,873,452, Cl. 252-8.55C.
Donnay, James A., to Minnesota Mining and Manufacturing Company. Easily rupturable band of tape. 3,873,018, Cl. 229-51.0TS.
Dorman, Isidore, to NB Jackets Company, a Division of Bell & Howell Company. Reader-filler machine for microfiche jackets. 3,872,645, Cl. 53-123.000.
Dorsi, Domenico; and Panigata, Marco, to GTE International Incorporated. Temperature stabilized resonator. 3,873,949, Cl. 333-82.0BT.
Doschek, Antony Z., to Audio Arts, Inc. Acoustic transducer. 3,873,784, Cl. 179-115.5PV.
Doshi, Niranjan Kumar, to Nastol Research, Inc. Steam-driven engine. 3,873,245, Cl. 418-5.000.
Doub, Leonard; and Kaltenbronn, James S., to Parke, Davis & Company. Derivatives of ampicillin. 3,873,523, Cl. 260-239.100.
Douri, Hisashi, to Yoshida Kogyo Kabushiki Kaisha. Method of and apparatus for finishing sliding clasp fasteners. 3,872,571, Cl. 29-408.000.
Dousset, Remy, to Societe Nouvelle des Ateliers de Venissieux. Shock absorbing apparatus. 3,872,799, Cl. 105-492.000.
Dow Chemical Company, The: *See—*
  Gibbs, Dale S.; Wagener, Earl H.; and Wessling, Ritchie A., 3,873,488.
  Hickner, Richard A.; and Goss, Edward W., 3,873,502.
  Strange, Carl P.; Sylvest, Robert T.; and Schell, Joseph G., Jr., 3,873,518.
Dow Corning Corporation: *See—*
  Lee, Chi-Long; and Schulz, Jay R., 3,873,334.
  Michael, Keith W.; Mink, Alan E.; and Mitchell, Darrell D., 3,873,499.
  Miner, Kenneth G.; Boone, Jack L.; and Talbot, Wilfred F., 3,872,515.
  Saam, John C.; and Fearon, Frederick W. G., 3,873,636.
Doyel, John S. Hand-held cleaning device utilizing air flow and broom action. 3,872,539, Cl. 15-344.000.
Drabier, Jacques P.: *See—*
  Pitzen, Sylvester A.; Drabier, Jacques P.; and Liljegren, Dale H., 3,872,859.
Dragerwerk Aktiengesellschaft: *See—*
  Wachter, Karl August; and Muller, Horst, 3,873,288.
Dreher, Karl: *See—*
  Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
Drelich, Arthur H.; Smith, Delmont K.; and Strauss, Ulrich P., to Johnson & Johnson. Methods of recovering reusable fibers. 3,873,411, Cl. 162-8.000.
Drelich, Arthur H., to Johnson & Johnson. Resin compositions. 3,873,486, Cl. 260-29.6MM.
Drexhage, Karl H., to Eastman Kodak Company. Laser media containing rigidized dyes. 3,873,940, Cl. 331-94.50L.
Droll, Hans; and Muskulus, Willi, to Balzer & Droll K G. Process and device for the winding of coils for stators of electric machines. 3,872,897, Cl. 140-92.100.
Drucker, Rubin: *See—*
  Reasenberg, Julian R.; and Drucker, Rubin, 3,873,601.
Drutchas, Gilbert H.; and Shaw, Garrett D., to TRW Inc. Torque equilibrium skid control system employing a power source independent of wheel speed. 3,873,165, Cl. 303-21.00F.
Duck, Sherman W.; and Jeffers, Frederick J., to Bell & Howell Company. Photoelectric methods and apparatus with contrast enhancement. 3,873,826, Cl. 250-200.000.
Duff, Edward John. Dental cement and filling material. 3,873,327, Cl. 106-35.000.
Duff-Norton Company, Inc.: *See—*
  Opyrchal, Martin A., 3,873,066.
Dugan, John J.; and Pasternak, Israel S., to Exxon Research and Engineering Company. Flue gas desulfurization in molten media. 3,873,670, Cl. 423-210.500.
Dumler, Ernst, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Speech controlled switching arrangement. 3,873,772, Cl. 179-6.00R.
Dumovich, Matt J. Mathematics teaching apparatus. 3,872,610, Cl. 35-30.000.
Duncan, Thomas W. Rack system for neckties or the like. 3,872,973, Cl. 211-115.000.
Dunder, David; and Wiley, Sheldon, to Trans World Products, Inc. Drive transmission for a bicycle or the like. 3,873,128, Cl. 280-236.000.
Dunham, Richard. Street roller. 3,873,228, Cl. 404-128.000.
Dunlop Limited: *See—*
  White, Harold William, 3,873,055.
Dunn, Elman R., to Litton Industries, Inc. Disc grinding machine. 3,872,628, Cl. 51-215.0HM.
du Pont de Nemours, E. I., and Company: *See—*
  Cumbo, Charles Carmen; and Yates, Paul C., 3,873,451.
  Ehrich, Felix Frederick; and Jaffe, Edward E., 3,873,548.
  Fuchs, Julius Jakob; and Lin, Kang, 3,873,540.
  Jones, James B., 3,873,629.
  Kamenski, Karl F., 3,873,369.
  Lewis, Kathrine Johnson, 3,873,494.
  Melby, Lester Russell, 3,873,668.
  Paulsen, W. Charles, 3,873,021.
  Pedersen, Charles John, 3,873,569.
  Polss, Perry, 3,873,278.
  Rosenlund, Iver Theodore, 3,872,667.
  Scribner, Richard M., 3,873,566.
  Turner, John J., 3,873,508.
  West, Norman Eugene, 3,873,630.
Durdin, Peter Robert, to AMF Incorporated. Time switches. 3,872,823, Cl. 116-124.00L.
Duriaux, Jean-Marc: *See—*
  Lacarrau, Philippe; and Duriaux, Jean-Marc, 3,873,108.
Durrenberger, Pierre: *See—*
  Veret, Claude; and Durrenberger, Pierre, 3,873,191.

Duryea, Charles S. Dual offset rudder system. 3,872,817, Cl. 114-163.000.
Dwyer, Thomas J.; and Pesansky, George P., to Corning Glass Works. Method of coating honeycombed substrates. 3,873,350, Cl. 117-95.000.
Dyhr-Mikkelsen, Poul Christian: *See—*
  Valbjorn, Knud Vagn; Spies, Volker; and Dyhr-Mikkelsen, Poul Christian, 3,872,946.
Dynamit Nobel Aktiengesellschaft: *See—*
  Bendler, Hellmut; Flach, Egon; and Homburg, Axel, 3,873,125.
Dzaack, Heinz; and Krook, Hans, to LKB-Produkter AB. Device for moving the piston rod of a piston pump. 3,872,732, Cl. 74-25.000.
E. B. Eddy Company, The: *See—*
  Gladish, Herbert E., 3,873,163.
E. R. Squibb & Sons, Inc.: *See—*
  Denzel, Theodor; and Hoehn, Hans, 3,873,556.
  Krapcho, John, 3,873,616.
  Meyers, Edward; Slusarchyk, Dorothy S.; and Liu, Wen-Chih, 3,873,693.
  Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., 3,873,559.
  Parker, William Lawrence; and Neidleman, Saul Lewis, 3,873,537.
  Ward, Michael Dudley, 3,873,522.
Eastman Kodak Company: *See—*
  Brauning, Gerhard; and Ort, Wolfgang, 3,873,987.
  Contois, Lawrence E.; and Rossi, Louis J., 3,873,311.
  Contois, Lawrence E.; and Rossi, Louis J., 3,873,312.
  Drexhage, Karl H., 3,873,940.
  Elam, Edward U., 3,873,531.
  Howe, John Gerald; and Glover, Edward Charles Timothy Samuel, 3,872,827.
  Laakso, Thomas M.; and Van Nice, Harold L., 3,873,505.
  Watson, Robert L., 3,873,211.
  Wilson, John; and Hamb, Frederick T., 3,873,320.
Eastmond, Bruce C., to Motorola, Inc. Audio frequency squelch system. 3,873,925, Cl. 325-478.000.
Eaton Corporation: *See—*
  Berk, Kurt, 3,872,622.
  Fisher, Ferdinand W.; and Sweet, Clifton D., Jr., 3,872,580.
  Ward, Harold R., 3,872,669.
Eaton, George H.; and McDonald, Roy A., to Moore Dry Kiln Company of Canada Ltd. Stick depositor with surface actuated escapement mechanism. 3,873,000, Cl. 221-298.000.
Eaves, Ronald Spencer, to Ernest Scragg & Sons Limited. Textile apparatus. 3,872,661, Cl. 57-77.400.
Ebbinga, Theodore Conrad: *See—*
  Roselle, Pierce Clark; Evans, David George; Ebbinga, Theodore Conrad; and Vangen, Robert Franklin, 3,873,850.
Ebner, Ludwig: *See—*
  Bieringer, Hermann; and Ebner, Ludwig, 3,873,298.
Eckert, Herbert L., to Harnischfeger Corporation. Modular final drive for track type vehicles. 3,872,939, Cl. 180-6.480.
Economics Laboratory, Inc.: *See—*
  Bakka, Richard L.; and Sistowicz, Robert F., 3,873,363.
Edelman, Irving, to Maid-Rite Novelty Corp. Stretchable strap material. 3,873,403, Cl. 161-76.000.
Eden, Dayton D.: *See—*
  Chivian, Jay S.; and Eden, Dayton D., 3,873,181.
Eder, Gerald: *See—*
  Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, 3,873,433.
Edison, Jack Roger, to Eli Lilly and Company. Child-resistant blister package. 3,872,970, Cl. 206-532.000.
Eggers, Frederich W.; and Brewer, Gerald K., to Symbolic Displays, Inc. Aircraft warning lamp system. 3,873,962, Cl. 340-25.000.
Egi, Mario. Automatic coffee-making machine. 3,872,782, Cl. 99-289.000.
Egyt Gyogyszervegycszeti Gyar: *See—*
  Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,541.
EGYT Gyogyszervegyeszeti Gyar: *See—*
  Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.
  Berenyi nee Poldermann, Edit; Pallos, Laszlo; Benko, Pal; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; and Kiszelly, Eniko, 3,873,543.
Ehrich, Felix Frederick; and Jaffe, Edward E., to du Pont de Nemours, E. I., and Company. 2,9-Dicarboxyquinacridone and methods for its production. 3,873,548, Cl. 260-279.00R.
Ehrlich, Donald J., to Monon Trailer Inc. Apparatus for forming laminated wall structures. 3,873,395, Cl. 156-382.000.
Eibl, Johann: *See—*
  Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, 3,873,433.
Eickhorst, Manfred. Box-like casing cell. 3,872,995, Cl. 220-4.00R.
Eickmann, Karl. Vane seal means in rotary vane machines. 3,873,253, Cl. 418-147.000.
Einarsson, Einar. Retractable studded tire. 3,872,908, Cl. 152-208.000.
Einson Freeman & De Troy Corporation: *See—*
  Anstatt, Peter Jan, 3,872,974.
Ek, Lars: *See—*
  Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne Hjalmar, 3,873,600.
Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, to Astra Lakemedal Aktiebolag. Esters of α-amino penicillins. 3,873,521, Cl. 260-239.100.
Elam, Edward U., to Eastman Kodak Company. 2- P-[2-(2-benzoxazolyl)vinyl]phenyl oxazolo [5,4-b]pyridine fluorescent whitening agents. 3,873,531, Cl. 260-240.00D.
Electricite de France (Service National): *See—*
  Nedelec, Joseph Marie; Buffet, Philippe; and Michel, Alain, 3,872,874.
Electronic Arrays, Inc.: *See—*
  Nissim, Samuel, 3,873,781.
Electronic Engineering Company of California: *See—*
  Ross, Philip C., 3,873,177.
Electronic Memories & Magnetics Corporation: *See—*
  Ambrosio, Biagio F., 3,872,789.
Elfarr, Johnnie A. Method and apparatus for flowing crude oil from a well. 3,873,238, Cl. 417-54.000.
Elfers, Gunther H.: *See—*
  Otrhalek, Joseph V.; and Elfers, Gunther H., 3,873,417.
Elfverson, Goran Elfver. Illuminating device. 3,873,885, Cl. 315-312.000.
Eli Lilly and Company: *See—*
  Canada, Emily J.; and Friedman, Henry, 3,873,550.
  Edison, Jack Roger, 3,872,970.
  Miller, Richard P., 3,873,681.
Elliott, James D., to AMF Incorporated. Dual pressure refuse compactor. 3,872,785, Cl. 100-48.000.
Ellis, William H., to United States of America, Navy. Gamma compensated pulsed ionization chamber wide range neutron/reactor power measurement system. 3,873,840, Cl. 250-392.000.
Ellison, Albert C. Method for rendering a bordered painting and frame therefor. 3,873,342, Cl. 117-38.000.
Elmessaar, Heino: *See—*
  Andersson, Sture R.; and Elmessaar, Heino, 3,872,933.
Eloi, Christian; and Riquart, Christian, to Societe Anonyme D.B.A. Pressure failure switch. 3,872,885, Cl. 137-554.000.
Eloy, Guy: *See—*
  Cabet, Alain; Pinier, Gaston; and Eloy, Guy, 3,873,774.
Elrick, Donald E., to United States of America, Navy. Double-base propellant containing poly (carboranyl lower alkyl acrylate). 3,873,386, Cl. 149-19.200.
Elyea, Charles M. Drop cloth holder. 3,872,549, Cl. 24-73.00B.
Emerson Electric Co.: *See—*
  Brundage, Richard B.; Palmer, John A.; and Blachly, Donald L., 3,872,654.
  Hildebrandt, Eugene F., 3,872,691.
Emery Industries, Inc.: *See—*
  Sturwold, Robert J.; and Sharkey, Hubert J., 3,873,585.
Emil Fauth, Firma: *See—*
  Fauth, Emil, 3,872,744.
En, John, to Motorola, Inc. Random error correcting system. 3,873,971, Cl. 340-146.1AQ.
Engelhard Minerals & Chemicals Corporation: *See—*
  Anderson, Edward P.; and Lamb, Thomas J., 3,873,438.
Entreprise De Recherches Et D'Activites Petrolieres (ELF): *See—*
  Louvel, Bernard, 3,872,710.
Entreprise de Recherches et d'Activities Petrolieres: *See—*
  Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,873,276.
Envirotech Corporation: *See—*
  Dahlstrom, Donald A.; and Cornell, Conrad F., 3,873,532.
Erdelitsch, Herbert: *See—*
  Machalitzky, Otto; and Erdelitsch, Herbert, 3,873,788.
ERJI: *See—*
  Garito, Humbert, 3,873,822.
Ernest Scragg & Sons Limited: *See—*
  Eaves, Ronald Spencer, 3,872,661.
Ernst, Richard John; and Neumayer, George Anton, to Illinois Tool Works Inc. Fastening device. 3,872,768, Cl. 85-3.00R.
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  Vanotti, Guy, 3,873,257.

- ETAT Francais: *See—*
  - Pierre, Bernard; Segas, Lucien; Simon, Georges; and Volle, Rene, 3,872,771.
- Etat Francais represente par Le Delegue ministeriel pour L'armement: *See—*
  - Lagofun, Guy, 3,873,786.
- Ethyl Corporation: *See—*
  - Lerner, Sidney I., 3,873,726.
  - Niebylski, Leonard M.; and Jarema, Chester P., 3,873,392.
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  - Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,873,299.
- Evans, David George: *See—*
  - Roselle, Pierce Clark; Evans, David George; Ebbinga, Theodore Conrad; and Vangen, Robert Franklin, 3,873,850.
- Evans, Orde R. Annular bumper guard for floating vessels. 3,873,076, Cl. 267-140.000.
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  - Chapman, Harvey W., 3,872,983.
- Evans, R. O.: *See—*
  - Taylor, Ewing A., 3,872,953.
- Everett, Marion A.: *See—*
  - Finch, John H.; and Everett, Marion A., 3,873,847.
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  - Stein, Wolfgang J.; Straniti, Salvatore; and Exley, John T., 3,873,232.
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  - Ilfrey, William T.; McLain, John D.; and Todd, William W., 3,872,713.
  - Ilfrey, William T., 3,872,721.
- Exxon Research and Engineering Company: *See—*
  - Dugan, John J.; and Pasternak, Israel S., 3,873,670.
  - Young, Dale A.; Miller, Alfred H.; and Coburn, John F., Jr., 3,873,271.
- Factory Mutual Research Corporation: *See—*
  - Livingston, William L., 3,872,928.
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  - DeCaussin, David Edward, 3,872,743.
- Fagan, Richard D. Method of playing a keno-zodiac game. 3,873,092, Cl. 273-135.00B.
- Fairchild Camera and Instrument Corporation: *See—*
  - Schinella, Richard D.; and Anthony, Michael P., 3,873,989.
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  - Hickman, Arthur D.; and Hickman, Raymond H., 3,872,945.
- Falkenberg, Johan Caspar. Constructional element. 3,872,641, Cl. 52-618.000.
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  - Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,873,299.
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  - Summers, Gary J., 3,873,815.
- Farrington, Robert C., to Timeline Inc. Fluid dispensing apparatus. 3,872,892, Cl. 138-103.000.
- Farrish, Dean T., to Sandoz Wander, Inc. Temperature sensor. 3,873,857, Cl. 307-310.000.
- Fathauer, George H., to Masco Corporation of Indiana. Signal-seeking radio receivers. 3,873,924, Cl. 325-470.000.
- Fauth, Emil, to Emil Fauth, Firma. Self-emptying punching tool. 3,872,744, Cl. 76-107.00C.
- Fearon, Frederick W. G.: *See—*
  - Saam, John C.; and Fearon, Frederick W. G., 3,873,636.
- Fedders Corporation: *See—*
  - Pestel, Clarence V., 3,872,562.
- Fedorov, Mikhail Ivanovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Feild, Eugene P. High pressure hot water spray system. 3,873,004, Cl. 222-135.000.
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- Felix, Andre. Assembling device for two tubular profiles. 3,872,642, Cl. 52-758.00C.
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  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
- Ferranti-Packard Limited: *See—*
  - Stein, Harold H.; and Sondhi, Vickram, 3,873,812.
- Ferrari, Rodolfo: *See—*
  - Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, 3,873,551.
- Ferriss, Joe S., Jr.: *See—*
  - Griffin, Anselm C., Jr.; Collins, Charles A.; and Ferriss, Joe S., Jr., 3,873,164.
- Ferro Corporation: *See—*
  - Brueggemann, Walter H.; and Gilhart, Jack S., 3,873,328.
- Fessler, Robert Glenn: *See—*
  - Trandell, Roger Francis; and Fessler, Robert Glenn, 3,873,462.
- Festerling, Heinz, to Weltpat Anstalt. Apparatus for the automatic fitting of a captive member on a mechanical part. 3,872,530, Cl. 10-155.00A.
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  - Johnson, Robert B.; and Robert, Louis F., 3,872,643.
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- Ficker, Stefan. Regeneration of polymeric material. 3,873,474, Cl. 260-2.300.
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  - Rumpf, Robert J.; and Higbee, Wallace C., 3,873,041.
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  - Murphy, Donald J., 3,872,637.
- Fischer, Friedhelm. Automatic levelling arrangement for vehicles and the like. 3,873,122, Cl. 280-124.00F.
- Fischer, James R.: *See—*
  - Sweeny, Keith H.; and Fischer, James R., 3,873,346.
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  - Comte, Philippe; and Fischer, Wilhelm, 3,873,478.
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  - Bendler, Hellmut; Flach, Egon; and Homburg, Axel, 3,873,125.
- Fleagle, Joseph E.; and Bueler, Richard C., to Wagner Electric Corporation. Assembly line method for testing anti-skid installations. 3,872,720, Cl. 73-121.000.
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  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
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- Flower, Thomas A., to Allied Chemical Corporation. Dual function in-line tensiometer-yarn tension controller. 3,873,044, Cl. 242-147.00R.

- Floyd, Middleton Brawner, Jr.: *See—*
  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,873,607.
- FMC Corporation: *See—*
  - Boettcher, Richard R.; and Knopka, William N., 3,873,504.
  - Derner, William J., 3,873,103.
  - Hills, William A., 3,873,496.
  - Kibbel, William H., Jr.; and Hollenbach, Roger C., 3,873,685.
  - Knight, Houston W., 3,872,899.
  - Schoening, Jerry M., 3,873,387.
- Focht, Claude K.: *See—*
  - Rowland-Hill, Edward W.; and Focht, Claude K., 3,872,982.
- Folser, Karl: *See—*
  - Teurer, Josef; and Folser, Karl, 3,872,929.
- Ford Motor Company: *See—*
  - Apostoleris, Theodore G., 3,873,864.
  - Batten, Cyril J., 3,873,250.
  - Batten, Cyril J., 3,873,251.
  - Charron, William W.; Root, Lyman V.; and Simmons, Calvin J., 3,872,847.
  - Chester, Frederic J.; and Krygowski, Richard P., 3,872,849.
  - Labana, Santokh S.; and Theodore, Ares N., 3,873,493.
  - Rao, Vemulapalli D. N., 3,873,249.
  - Schultz, Thomas C., 3,872,845.
- Forgacs, Otto L.; and Karnis, Alkibiadis, to Karnis, Alkibiadis. System for the continuous measurement of the weight-average fiber length of a pulp. 3,873,416, Cl. 162-49.000.
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  - Curtiss, Walter W., Jr.; Forney, Joseph M.; and Hampshire, William J., 3,872,907.
- Forrest Paschal Machinery Co.: *See—*
  - Milholen, William F.; Brown, John Jones, Jr.; and Stuart, Gerald L., 3,873,658.
- Forster, Friedrich M. O. Method and apparatus for monitoring the quality of welds in seamed tubes. 3,873,830, Cl. 250-236.000.
- Forster, Hans-Joachim M.; Katz, Klaus; and Scheuter, Anton, to Daimler-Benz Aktiengesellschaft. Disconnecting valve mechanism for a servo-steering system of vehicles. 3,872,774, Cl. 91-400.000.
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- Foster Wheeler Corporation: *See—*
  - Gorzegno, Walter P.; and Stevens, William D., 3,872,836.
- Foulletier, Louis; and Lalu, Jean-Pierre, to Products Chimiques Ugine Kuhlmann. Perfluoro-aliphatic substituted aminoalcohols. 3,873,619, Cl. 260-563.00C.
- Foust, Charles E. Device for picking up litter. 3,873,143, Cl. 294-61.000.
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- Fox, Nathaniel S. Soil testing method and apparatus. 3,872,717, Cl. 73-84.000.
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  - Block, Aleck; Frank, Edward H.; and Shoemaker, Robert H., 3,873,280.
- Franklin Container Corporation: *See—*
  - Blatt, David H., 3,873,017.
- Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H.: *See—*
  - Teurer, Josef; and Folser, Karl, 3,872,929.
- Fred T. Roberts & Company: *See—*
  - Roberts, Robert E., 3,872,893.
- Freeston, W. Denney, Jr.: *See—*
  - Skelton, John; and Freeston, W. Denney, Jr., 3,873,338.
- Freidenzon, Evgeny Zakharovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
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  - Bierley, Howard L.; and Witmer, Phares B., III, 3,872,681.
- Fried, John H.: *See—*
  - Crabbe, Pierre; Fried, John H.; and Guzman, Angel, 3,873,598.
  - Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,873,714.
- Friedman, Harry. Drain trap and cleaner. 3,872,521, Cl. 4-255.000.
- Friedman, Henry: *See—*
  - Canada, Emily J.; and Friedman, Henry, 3,873,550.
- Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, to Bio/-Physics Systems, Inc. Optical extinction photoanalysis apparatus for small particles. 3,873,204, Cl. 356-39.000.
- Friedman, Patricia A.: *See—*
  - Wakefield, Elisabeth D.; and Friedman, Patricia A., 3,873,272.
- Friedman, Robert; and Lesher, Howard D., to Dimetrics, Inc. Crawling carriage. 3,873,798, Cl. 219-60.00A.
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- Frost Engineering Development Corporation: *See—*
  - Frost, Richard H., 3,872,556.
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- Fuchs, Julius Jakob; and Lin, Kang, to du Pont de Nemours, E. I., and Company. 1,3,5-Triazinediones. 3,873,540, Cl. 260-248.0NS.
- Fudge, William L., to Larsen's Manufacturing Company. Fire extinguisher cabinet. 3,872,999, Cl. 220-270.000.
- Fuhrman, Richard C. Animal capturing and restraining device. 3,872,834, Cl. 119-151.000.
- Fuji Electrochemical Co., Ltd.: *See—*
  - Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, 3,873,400.
- Fuji Oil Company, Limited: *See—*
  - Kubota, Hayato; and Tateishi, Teizaburo, 3,873,729.
- Fuji Photo Film Co., Ltd.: *See—*
  - Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,873,315.
  - Hinata, Masanao; Takei, Haruo; and Shiba, Keisuke, 3,873,324.
  - Kato, Kazunobu; and Ohkubo, Kinji, 3,873,317.
  - Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, 3,873,323.
  - Tatsuta, Sumitaka; and Ueno, Wataru, 3,873,321.
- Fujimoto, Eisuke: *See—*
  - Sato, Fujio; Fujimoto, Eisuke; Sato, Keisuke; and Tanaka, Bunichiro, 3,873,992.
- Fujimoto, Sakae, to Ricoh Co., Ltd. Apparatus for distributing and sorting discharged sheets. 3,873,083, Cl. 271-64.000.
- Fujisawa Pharmaceutical Co. Ltd.: *See—*
  - Kamiya, Takashi; Maeno, Shizuo; and Hashimoto, Masahi, 3,873,526.
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  - Fujita, Koichiro, 3,873,684.
- Fukuda, Kenji: *See—*
  - Misumi, Akira; Kasai, Toshiaki; Fukuda, Kenji; and Nakai, Hiromitu, 3,873,343.
- Fukuda, Masaaki: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Fukuda, Nobuaki: *See—*
  - Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, 3,873,400.
- Fukuda, Seiwa: *See—*
  - Kondo, Marekata; Fukuda, Seiwa; and Yamamoto, Toyohiko, 3,873,331.
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- Fukushima, Masakazu; and Murayama, Seiichi, to Hitachi, Ltd. Flat display panel. 3,873,870, Cl. 313-217.000.
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- Furukawa Battery Co., Ltd., The: *See—*
  - Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, 3,873,400.
- Fusari, Salvatore A.; and Lueck, Leslie M., to Parke, Davis & Company. Stabilization of molded sublingual nitroglycerin tablets. 3,873,727, Cl. 424-366.000.
- Futamata, Masayuki: *See—*
  - Motomura, Mitsuteru; Futamata, Masayuki; Hirose, Kazuyuki; and Ban, Kazuo, 3,873,252.
- Futatsuya, Fumio: *See—*
  - Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.
- G.L. Rexroth GmbH: *See—*
  - Bernd, Hubert; and Liedhegener, Friedel, 3,872,750.
- G. W. Murphy Industries Inc.: *See—*
  - Butler, Thomas C., 3,873,862.
- Gabor, Andrew, to Xerox Corporation. High-speed printer with drift compensated cable for carriage. 3,872,960, Cl. 197-53.000.
- Gabriel, Fred C., to Perkins-Elmer Corporation, The. Electrodeless discharge lamp and power coupler therefor. 3,873,884, Cl. 315-267.000.
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- Galileo Argentina, Comercial, Industrial Y Financiera, Sociedad Anonima: *See—*
  - Passeri, Jorge, 3,872,724.
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- Gall, John S. Polyalkylene terephthalate molding resin and process for making same. 3,873,491, Cl. 260-40.00R.
- Gall, Richard T.: *See—*
  - Bolen, Robert J.; Chadwick, Kelley R.; and Gall, Richard T., 3,873,375.

- Gall, William, to General Electric Company. Fan with variable pitch blades and translating bearing actuation system. 3,873,236, Cl. 416-162.000.
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- Galli, Anton, to Siemens Aktiengesellschaft. Terminal clamp for electrical conductors. 3,873,178, Cl. 339-274.000.
- Gallo, Charles F., Jr.; and Hammond, Thomas J., to Xerox Corporation. Technique for charging dielectric surfaces to high voltage. 3,873,895, Cl. 317-262.00A.
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- Garas, John. Adjustable orthopedic lounger. 3,873,152, Cl. 297-68.000.
- Garcia, George E. Tire pressure monitoring system. 3,873,965, Cl. 340-58.000.
- Garito, Humbert, to Le Nickel; Centre National Pour L'Exploitation Des Oceans (CNEXO); and ERJI. Water-tight assembly for use under very high pressures. 3,873,822, Cl. 240-26.000.
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- Garner, Paul Johnson, to Imperial Chemical Industries Limited. Production of laminar articles. 3,873,656, Cl. 264-55.000.
- Garza, Larry R. Sofa bed. 3,872,523, Cl. 5-43.000.
- Garza, Roberto Cavazos; and Martin, John, to Vidriera Monterrey, S.A. Opener tool. 3,872,745, Cl. 81-3.46R.
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- Gates, Ronald E., Sr. Vermin chasing and controlling. 3,873,960, Cl. 340-15.000.
- Gates Rubber Company, The: *See—*
  - Young, Roland L.; McClelland, Donald H.; and Wolcott, Edward O., 3,873,803.
- Gauss, Wolfgang: *See—*
  - Espenschied, Helmut; and Gauss, Wolfgang, 3,873,060.
- GCA Corporation: *See—*
  - Pedrotti, Donald G., 3,872,566.
- Gearhart-Owen Industries, Inc.: *See—*
  - Owen, Harrold D.; and Terrell, Jamie B., 3,872,925.
- Gebhardt, Charles F.: *See—*
  - Berchtold, Donald R.; and Gebhardt, Charles F., 3,872,741.
- Gee, James E., to Caterpillar Tractor Co. Dump linkage for rear powered elevating scraper. 3,872,612, Cl. 37-8.000.
- Geiger, Fritz: *See—*
  - Maurer, Gerhard; and Geiger, Fritz, 3,872,957.
- Geist, Meyer J.: *See—*
  - Kleinerman, Ben; and Geist, Meyer J., 3,873,771.
- Gel Monte Corporation: *See—*
  - Vandre, Herbert M., 3,872,599.
- General Dynamics Corporation: *See—*
  - Pardubsky, James A., 3,872,596.
- General Electric Company: *See—*
  - Anderson, John R.; and Boros, Steve, 3,873,175.
  - Babcock, Robert E.; and Neal, Wayne R., 3,873,849.
  - Bair, Eugene C., 3,872,705.
  - Barkan, Philip; and Lee, Thomas H., 3,873,887.
  - Bigelow, John E.; and Dodge, Paul A., 3,873,761.
  - Bock, John J., 3,872,560.
  - Borom, Marcus P.; and Johnson, Lyman A., 3,872,731.
  - Coppola, Patrick P., 3,873,869.
  - Cote, Paul T., 3,873,260.
  - Cote, Paul T., 3,873,261.
  - Davidson, William E.; and Walker, Wendell C., 3,872,613.
  - Finch, David C., 3,873,282.
  - Gall, William, 3,873,236.
  - Heath, Darrell R.; and Wirth, Joseph G., 3,873,593.
  - Hurtle, Ralph Loyd, 3,873,791.
  - Lafuze, David Logan, 3,873,928.
  - McCreight, Louis R., 3,873,332.
  - Mendelson, Irwin, 3,873,235.
  - Skogland, Thorbjorn, 3,873,809.
  - Smith, James S., Jr.; and Smith, William R., 3,873,776.
  - Van Sorge, Bernardus J., 3,873,628.
  - Viola, Olivo L.; and Smith, Wilbert H., 3,873,168.
  - Walker, James L.; and Ross, John R., 3,873,347.
  - Willis, Candler A., Jr., 3,873,910.
  - Worden, Robert Francis, 3,873,760.
- General Foods Corporation: *See—*
  - Mahlmann, James P., 3,873,746.
- General Mills Chemicals, Inc.: *See—*
  - Coury, Arthur J.; and Cozad, Douglas D., 3,873,589.
  - Laudise, Michael A., 3,873,481.
- General Mills Fun Group Inc.: *See—*
  - Burkart, Jacob W.; and Mayer, John F., 3,873,087.
- General Mills, Inc.: *See—*
  - Remde, Richard H.; and Liedman, Stanley G., 3,872,752.
  - Schwab, Edward C.; Petersen, Warren D.; and Bumbiers, Eric, 3,873,748.
- General Motors Corporation: *See—*
  - King, Jack B., 3,872,848.
  - McIntosh, Duane E., 3,873,977.
- General Signal Corporation: *See—*
  - Carlson, William L., Jr., 3,872,714.
- General Time Corporation: *See—*
  - Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., 3,873,865.
- General Tire & Rubber Company, The: *See—*
  - Braidich, Emery V.; Gmitter, George T.; and van Essen, William J., 3,873,480.
  - Van Gils, Gerard E., 3,872,937.
- General Trailer Company, Inc.: *See—*
  - Schmidt, Kenneth J., 3,873,129.
- Geometric Data Corporation: *See—*
  - Bouton, John C.; and Partin, Melvin E., 3,873,974.
- Gerber, Richard W. Electric lock and key assembly. 3,873,891, Cl. 317-134.000.
- Geringer, Arthur V. Combination lock and fail-safe latch for exit doors. 3,872,696, Cl. 70-145.000.
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- Gerlach, Klaus: *See—*
  - Walz, Klaus; Gerlach, Klaus; and Schwarz, Max, 3,873,583.
- Gershen, Bernard J., to Leviton Manufacturing Co., Inc. Auxiliary lighting system for a gaseous discharge lamp. 3,873,882, Cl. 315-92.000.
- Gerteisen, Jerome M. Rotary burnishers. 3,872,594, Cl. 32-59.000.
- Gewerkschaft Eisenhutte Westfalia: *See—*
  - Floter, Manfred; Beulker, Franz; Plevak, Lubomir; and Becker, Kunibert, 3,873,158.
  - Linke, Horst; Holtrup, Bernard; and Beyer, Herbert, 3,872,677.
  - Stoltefuss, Wilhelm; and Melis, Egon, 3,873,157.
- Ghielmetti, Giuseppe: *See—*
  - Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, 3,873,551.
- Giacino, Christopher: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Giacino, Christopher, 3,873,732.
- Gianatasio, Henry L.: *See—*
  - Cornell, Richard K.; Deddo, Gerald J.; and Gianatasio, Henry L., 3,873,390.
- Giannestras, Nicholas J.; and Sammarco, Giacomo J. Total ankle prosthesis. 3,872,519, Cl. 3-1.000.
- Gibbs, Dale S.; Wagener, Earl H.; and Wessling, Ritchie A., to Dow Chemical Company, The. Latexes for cathodic electrocoating. 3,873,488, Cl. 260-29.70H.
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- Gilhart, Jack S.: *See—*
  - Brueggemann, Walter H.; and Gilhart, Jack S., 3,873,328.
- Gilkes, Christopher Robert: *See—*
  - Sheasby, Peter Geoffrey; Smith, Alan Martin; Gilkes, Christopher Robert; and Breit, Wolf Dieter, 3,873,318.
- Gillette Company, The: *See—*
  - Wellinger, Roger Paul, 3,872,587.
- Gilligan, William H.: *See—*
  - Adolph, Horst G.; and Gilligan, William H., 3,873,617.
- Giraudi, Giorgio A. M.; and Imperiale, Nino, to W. R. Grace & Co. Apparatus for packaging random-sized articles. 3,872,644, Cl. 53-52.000.
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- Gladish, Herbert E., to E. B. Eddy Company, The. Air conveyor. 3,873,163, Cl. 302-2.00R.
- Glaxo Laboratories Limited: *See—*
  - Bywood, Roy; Clayton, John Charles; Taylor, George Ross; and White, Herbert James, 3,873,519.
- Gleason, John G.: *See—*
  - Blank, Benjamin; and Gleason, John G., 3,873,552.
- Global Marine Inc.: *See—*
  - Rodriguez, Joaquin R., 3,872,814.
- Glover, Edward Charles Timothy Samuel: *See—*
  - Howe, John Gerald; and Glover, Edward Charles Timothy Samuel, 3,872,827.
- Glowe, Donald E.: *See—*
  - Woo, James T. K.; Glowe, Donald E.; and Thornton, J. Scott, 3,873,314.
- Gmitter, George T.: *See—*
  - Braidich, Emery V.; Gmitter, George T.; and van Essen, William J., 3,873,480.
- Goble, Ralph W., to Sontrix, Inc. Piezoelectric transducer assembly and method for generating an umbrella shaped radiation pattern. 3,873,866, Cl. 310-9.100.
- Goethe, Robert L.; and Green, Robert R., to Crestmark Products Company Incorporated. Paving crack sealer machine. 3,873,227, Cl. 404-107.000.
- Goffe, William L., to Xerox Corporation. Imaging method using migration material. 3,873,309, Cl. 96-1.200.
- Gogarty, William B.: *See—*
  - Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,872,923.
- Goldberg, Harold; and Sanders, Milton, to United States of America, Army. Fuze. 3,872,792, Cl. 102-70.20P.

- Goldsworthy Engineering, Inc.: *See—*
  - Goldsworthy, William Brandt; Hardesty, Ethridge E.; and Karlson, Harald E., 3,873,399.
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- Gollinger, Wolfgang: *See—*
  - Gerlach, Albrecht; Lindstedt, Gunter; and Gollinger, Wolfgang, 3,873,856.
- Gomez, Climaco Alberto; Lewis, Marvin Dennis; and Twilley, Ian Charles, to Allied Chemical Corporation. Method of heat-setting twisted polycarbonamide yarn. 3,872,558, Cl. 28-74.00P.
- Goode, William P., to LTV Aerospace Corporation. Vehicle steering system. 3,872,794, Cl. 104-247.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Curtiss, Walter W., Jr.; Forney, Joseph M.; and Hampshire, William J., 3,872,907.
- Goolsbay, Dennis M., to PPG Industries, Inc. Apparatus for tempering glass sheets. 3,873,294, Cl. 65-348.000.
- Gordon, Mack. Welding helmet with eye piece control. 3,873,804, Cl. 219-147.000.
- Gordon, Yale J.; and Koley, John V., to Stanley Works, The. Container assembly with individually priceable carded packages therein. 3,872,966, Cl. 206-45.310.
- Gorny, Dietrich. Foamed sugar products. 3,873,754, Cl. 426-426.000.
- Gorog, Peter: *See—*
  - Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.
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- Gorzegno, Walter P.; and Stevens, William D., to Foster Wheeler Corporation. Coal-fired generator of medium to large capacity. 3,872,836, Cl. 122-406.00S.
- Goss, Edward W.: *See—*
  - Hickner, Richard A.; and Goss, Edward W., 3,873,502.
- Gosselin, Jean-Charles, to Institut Francais du Petrole des Carburants et Lubrifiants. Process and apparatus for automatic drilling. 3,872,932, Cl. 173-1.000.
- Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Filler pipe for a fuel tank of a motor vehicle. 3,872,900, Cl. 141-392.000.
- Gotze, Christian: *See—*
  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
- Goudreau, Noel G., to Maltby, Willis G., a part interest. Ball holder. 3,873,009, Cl. 224-5.00D.
- Gould, James S.: *See—*
  - Gould, Samuel; and Gould, James S., 3,873,969.
- Gould, Samuel; and Gould, James S., to Indicator Controls Corporation. Adapter unit for pedestrian traffic control signal. 3,873,969, Cl. 340-107.000.
- Grandy, Andrew J. Ammunition and weapon systems. 3,872,615, Cl. 42-49.00R.
- Graphic Arts Mfg. Co., Inc.: *See—*
  - Childers, Warren; and Zipps, David L., 3,873,214.
- Gray, Allan Poe: *See—*
  - Cavallito, Chester John; and Gray, Allan Poe, 3,873,705.
- Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemicals & Plastics Corp. Friction particle for brake lining. 3,873,490, Cl. 260-38.000.
- Green, Bernard S. Mixing and dispensing device. 3,872,879, Cl. 137-268.000.
- Green, Derek, to United Kingdom Atomic Energy Authority. Extrusion. 3,872,703, Cl. 72-262.000.
- Green, Robert R.: *See—*
  - Goethe, Robert L.; and Green, Robert R., 3,873,227.
- Greenbaum, George. Horticultural cell system. 3,872,621, Cl. 47-1.200.
- Greene, Richard F., to United States of America, Navy. Charge coupled radiation detector imaging system. 3,873,836, Cl. 250-330.000.
- Greenfield, Gordon Stewart, to Steel Equipment Company Limited. Frame joint. 3,873,221, Cl. 403-189.000.
- Greenwald, Donald James, to Honeywell Information Systems Inc. Apparatus and method for fault-condition signal processing. 3,873,819, Cl. 235-153.0AK.
- Greenwald, Harry; and Iglio, Salvatore, to Walter, Kidde & Company, Inc. Slide extension assembly. 3,872,958, Cl. 194-1.00R.
- Gregory, Duane: *See—*
  - Krehbiel, Delmar D.; Gregory, Duane; Clark, Charles R.; and Kennedy, Carl D., 3,873,453.
- Grenda, Victor J.; and Czaja, Robert F., to Merck & Co., Inc. Process for preparing 1,5-substituted or 1,6-substituted benzimidazoles. 3,873,558, Cl. 260-302.00H.
- Gridcraft, Inc.: *See—*
  - Gall, Andrew S.; and Cranmer, Joseph W., 3,873,756.
- Griffin, Anselm C., Jr.; Collins, Charles A.; and Ferriss, Joe S., Jr., to United States of America, Agriculture. Pneumatic valve for airborne materials. 3,873,164, Cl. 302-28.000.
- Griffith Laboratories, Inc., The: *See—*
  - Melcer, Irving; and Sair, Louis, 3,873,741.
  - Terrell, Robert N., 3,873,740.
- Griffiths, Edward J.; and Loyd, Lee R., to Caterpillar Tractor Company. Quick disconnect sealed coupling. 3,873,138, Cl. 285-233.000.
- Griggs, Raymond Keith: *See—*
  - McNichol, Murray C., Jr.; and Griggs, Raymond Keith, 3,873,127.
- Grimmett, Earl S.: *See—*
  - Fox, Michael R.; and Grimmett, Earl S., 3,872,909.
- Groebel, Alfred; and Lindner, Ernst, to Hoechst Aktiengesellschaft. Pharmacologically active substances isolated from cadia ellisiana. 3,873,699, Cl. 424-195.000.
- Gropper, Lee; and Thurber, Walter W., to Beckman Instruments, Inc. Calibration of photoelectric scanner for analytical ultracentrifuge. 3,873,216, Cl. 356-243.000.
- Groves, Warren Olley; Herzog, Arno Henry; and Craford, George, to Monsanto Company. Process for the preparation of semiconductor materials and devices. 3,873,382, Cl. 148-175.000.
- Gruett, Monte D.: *See—*
  - Lesher, George Y.; and Gruett, Monte D., 3,873,554.
- GTE International Incorporated: *See—*
  - Dorsi, Domenico; and Panigata, Marco, 3,873,949.
- GTE Sylvania Incorporated: *See—*
  - Dapolito, Joseph J.; and Stachelhaus, Gustav A., 3,873,365.
  - Klein, Arthur Harold, 3,873,768.
  - Miller, Larry R., 3,873,875.
  - Puhak, Peter G., 3,873,953.
  - Shinal, Joseph B., 3,873,874.
- Guile, Roy N.; and Kepler, C. Edward, to United Aircraft Corporation. Aerodynamic window. 3,873,939, Cl. 331-94.50R.
- Guillaud, Philippe. Process for treatment of vanadium containing fly ash. 3,873,669, Cl. 423-65.000.
- Guinosso, Charles J.: *See—*
  - Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,873,524.
- Gulick, Walter Field: *See—*
  - Himes, Richard Carl; Craig, Bruce Galvin; and Gulick, Walter Field, 3,873,281.
- Gunnerman, Robert J.: *See—*
  - Hartzell, George W.; and Gunnerman, Robert J., 3,872,758.
- Guschin, Vladislav Yakovlevich. Air circuit breaker. 3,873,950, Cl. 335-42.000.
- Gustafson, Axel E. Film splicer. 3,873,401, Cl. 156-505.000.
- Gutowski, Antoni P.; and Ryan, Donald P., to Stanley Works, The. Mitre box with improved indexing means. 3,872,761, Cl. 83-767.000.
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- Guy, William V., Jr., to Martin Marietta Corporation. Forward bit count integrity detection and correction technique for asynchronous systems. 3,873,773, Cl. 179-15.0BA.
- Guzman, Angel: *See—*
  - Crabbe, Pierre; Fried, John H.; and Guzman, Angel, 3,873,598.
- Gymer, Geoffrey Edward: *See—*
  - Oxford, Alexander William; and Gymer, Geoffrey Edward, 3,873,538.
- H. K. Porter Company, Inc.: *See—*
  - Crosa, Valentin L., 3,872,570.
- H. K. Porter, Inc.: *See—*
  - Porter, Thomas M., 3,872,528.
- H. T. Golde GmbH: *See—*
  - Marr, Fritz; Schlapp, Albert; Hattass, Rainer; and Binder, Edmund, 3,873,150.
- Haas, Eduard. Apparatus for cutting an endless, continuously fed elongated element into desired lengths. 3,872,754, Cl. 83-355.000.
- Haas, Walter; and Zeller, Hans-Gunther, to Hoffmann-LaRoche Inc. Stabilized particulate vitamin c composition. 3,873,713, Cl. 424-280.000.
- Haberstroh Farm Products, Inc.: *See—*
  - McKay, William C., 3,873,755.
- Hack, Helmuth: *See—*
  - Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,873,299.
- Hackman, Donald J.: *See—*
  - Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., 3,873,145.
- Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, to Institut Francais du Petrole, des Carburants, et Lubrifiants; and Entreprise de Recherches et d'Activities Petrolieres. Organic compounds for use as additives for motor-fuels. 3,873,276, Cl. 44-63.000.
- Haeny & Cie: *See—*
  - Jaggi, Hans, 3,873,244.
- Hagan, Vincent de P. Concrete batching plant module and method. 3,872,980, Cl. 214-2.000.
- Hagedorn, Henry: *See—*
  - Cardon, Jules; Richter, Frederick; and Hagedorn, Henry, 3,873,982.
- Hagen, Paul D.: *See—*
  - Pasideris, Stamos I.; Berkel, Albert J., Jr.; and Hagen, Paul D., 3,872,991.
- Hagi, Chitoshi: *See—*
  - Yamakawa, Kazuo; Oka, Tohru; Tokunaga, Masaaki; Mizuhara, Takeshi; and Hagi, Chitoshi, 3,873,379.

Hahn, Jerome S. Method of assembling knife handle and blade. 3,872,572, Cl. 29-432.100.

Hajos, Gyorgy: *See—*
Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.

Hall, Russell L.: *See—*
Cothran, Martin D.; O'Kelly, Lewis J.; and Hall, Russell L., 3,873,443.

Halliburton Company: *See—*
Mihram, Russell G.; and Snyder, Gerald A., 3,873,362.

Hallman, Newt M., to Universal Oil Products Company. Startup method for exothermic catalytic reaction zones. 3,873,440, Cl. 208-108.000.

Halm, Richard. Electric motor, especially a squirrel-cage motor. 3,873,861, Cl. 310-43.000.

Hamb, Frederick T.: *See—*
Wilson, John; and Hamb, Frederick T., 3,873,320.

Hamblin, Robert J. J., to Universal Oil Products Company. Vapor-liquid separator. 3,873,283, Cl. 55-185.000.

Hamilton, Horace E.; and Wallace, Jack E., to United States of America, Air Force. Determination of methadone in biological specimens. 3,873,270, Cl. 23-230.00B.

Hammond, James Woodrow: *See—*
Chick, Joseph James; Bozek, Thomas Joseph, Jr.; and Hammond, James Woodrow, 3,872,584.

Hammond, Thomas J.: *See—*
Gallo, Charles F., Jr.; and Hammond, Thomas J., 3,873,895.

Hampl, Edward F., Jr.; Mitchell, William C.; and Reylek, Robert S., to United States of America, Atomic Energy Commission. Thermoelectric generators having partitioned self-segmenting thermoelectric legs. 3,873,370, Cl. 136-205.000.

Hampshire, William J.: *See—*
Curtiss, Walter W., Jr.; Forney, Joseph M.; and Hampshire, William J., 3,872,907.

Hanabusa, Kazuo: *See—*
Rocher, Jacques; Hotta, Masamichi; Inomata, Mamoru; and Hanabusa, Kazuo, 3,873,414.

Hanchett, George Draper, to RCA Corporation. Liquid crystal protection circuit. 3,873,888, Cl. 317-31.000.

Hannich, Joachim, to Siemens Aktiengesellschaft. Switch position indicator for electromagnetic switchgear. 3,873,797, Cl. 200-308.000.

Hansen, Gunnar Lyshoj, to Danfoss A/S. Vane-type pump. 3,873,246, Cl. 418-16.000.

Hansen, Leo J., to Armour and Company. Measuring the tenderness of meat. 3,872,716, Cl. 73-81.000.

Hanson, Marvin Ardell: *See—*
Higgins, John Francis; McDonald, Dale Richard; Hanson, Marvin Ardell; and Moore, William Percy, 3,873,734.

Hanson, William J., to Xerox Corporation. Development system seal. 3,872,826, Cl. 118-8.000.

Harada, Masanori, to Nissan Motor Company, Limited. Catalytic converter failure alarm device. 3,872,821, Cl. 116-106.000.

Hardesty, Ethridge E.: *See—*
Goldsworthy, William Brandt; Hardesty, Ethridge E.; and Karlson, Harald E., 3,873,399.

Hare, Terence G., to Masco Corporation of Indiana. Single handle faucet valve. 3,872,890, Cl. 137-625.410.

Hargadon, Charles D. Improved biscuit cutter and method of making same. 3,872,757, Cl. 83-691.000.

Hargett, Edgar R. Pharyngeal and nasopharyngeal treatment. 3,873,721, Cl. 424-313.000.

Harland, Mildred B. Hunger and James R., Jr., co-executors: *See—*
Hunter, Evandow W., deceased, 3,873,388.

Harleyford Hydrosand Equipment Company Limited: *See—*
Lovegreen, Alan Trevor, 3,873,450.

Harlin, Herbert. Tracing apparatus for a non-circular template. 3,872,595, Cl. 33-23.00H.

Harmetz, Ronald; and Tull, Roger J., to Merck & Co., Inc. 2-Bromo-2-bromomethylglutaronitrile. 3,873,597, Cl. 260-465.700.

Harms, Horst; and Kunsch, Hans-Jurgen, to Aktien-Gesellschaft "Weser". Winch. 3,873,039, Cl. 242-54.00R.

Harnischfeger Corporation: *See—*
Eckert, Herbert L., 3,872,939.

Harris, George E.: *See—*
Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., 3,873,394.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,873,714.

Hartwig, Karl; and Vossnacke, Juergen, to Agfa-Gevaert Aktiengesellschaft. Xerographic copying apparatus with intercepting means for carrier particles. 3,872,828, Cl. 118-637.000.

Hartwig, Karl: *See—*
Ettelbruck, Rudiger; Hartwig, Karl; Schnall, Gunther; and Weiss, Werner, 3,873,198.

Hartzell, George W.; and Gunnerman, Robert J., to Hertzell Industries, Inc. Sawmill. 3,872,758, Cl. 83-708.000.

Harvey, Arthur R., to United States of America, Navy. Sonar with flexing distribution device for continuously flexing cables. 3,873,959, Cl. 340-8.00R.

Hasegawa, Masaki: *See—*
Kato, Masao; Hasegawa, Masaki; and Ichijyo, Taro, 3,873,500.

Hashimoto, Masahi: *See—*
Kamiya, Takashi; Maeno, Shizuo; and Hashimoto, Masahi, 3,873,526.

Haskell, Donald M., to Phillips Petroleum Company. Production of terephthalic acid. 3,873,612, Cl. 260-525.000.

Haskell, Donald M.: *See—*
Wu, Yu-Lin; Hudson, Paul S.; Sherk, Fred T.; and Haskell, Donald M., 3,873,609.

Haslam, Bryan S.: *See—*
Whitaker, Raymond; and Haslam, Bryan S., 3,873,189.

Hastings, Charles Russell, Jr., to Black and Decker Manufacturing Company, The. Spindle locking mechanism for rotary power device. 3,872,951, Cl. 188-69.000.

Hattass, Rainer: *See—*
Marr, Fritz; Schlapp, Albert; Hattass, Rainer; and Binder, Edmund, 3,873,150.

Haugwitz, Rudiger D.: *See—*
Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., 3,873,559.

Hauser, Stephen G.: *See—*
Seitz, Lamont J.; and Hauser, Stephen G., 3,872,614.

Havas, Janos: *See—*
Franco, Jack R.; Havas, Janos; and Levine, Harold A., 3,873,361.

Hawkins, John L.; and McIntyre, Newman, to Christie Manufacturing Company. Shoelace package. 3,872,968, Cl. 206-278.000.

Hawkinson, Warren S.: *See—*
Danov, John; Hawkinson, Warren S.; and Miller, Vivian E., 3,872,787.

Hayashi, Hiroshi: *See—*
Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,873,351.

Hayashibara Biochemical Laboratories, Incorporated: *See—*
Hijiya, Hiromi; and Shiosaka, Makoto, 3,873,333.

Hayden, Phillip L.: *See—*
Teague, Richard K.; and Hayden, Phillip L., 3,873,673.

Hayes, John C. Combination flashlight and electric circuit tester. 3,873,915, Cl. 324-53.000.

Hazard, Robert E., to Polytop Corporation. Dispensing closure with spout mounted in closure skirt. 3,873,005, Cl. 222-153.000.

HCH. Bertrams Aktiengesellschaft: *See—*
Kuhnlein, Hans, 3,872,910.

Head, Beverly P., Jr.: *See—*
Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., 3,873,394.

Hearsey, Colin John, to Quimco GmbH. Process for preparing N-monosubstituted carbamates. 3,873,553, Cl. 260-295.0CA.

Heath, Darrell R.; and Wirth, Joseph G., to General Electric Company. Process for making aryloxy compositions. 3,873,593, Cl. 260-465.00F.

Hedlund, Junior M. Manure handling system. 3,872,981, Cl. 214-16.00R.

Heenan, Sidney A., to Amerace Esna Corporation. Reflector with interspersed angled reflex elements. 3,873,184, Cl. 350-103.000.

Heieis, Gerhard: *See—*
Annable, Thomas Michael; and Heieis, Gerhard, 3,873,147.

Heiner, Marin, to Siemens Aktiengesellschaft. Contact arrangement for a compressed-gas circuit breaker. 3,873,792, Cl. 200-148.00R.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Osthaus, Kaspar Heinrich, 3,873,845.

Heinrich Mack Nachf. Chem.- pharmazeutische Fabrik: *See—*
Filipp, Geza; and Schneider, Heinz, 3,873,697.

Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,873,731.
Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Giacino, Christopher, 3,873,732.

Helbling, Edward. Infusion apparatus. 3,872,781, Cl. 99-282.000.

Helger, Roland: *See—*
Kraffczyk, Friedrich; and Helger, Roland, 3,873,269.

Helix Corporation: *See—*
Churchman, Henry W., deceased, 3,873,149.

Henkel & Cie GmbH: *See—*
Schmadel, Edmund, 3,873,603.

Henrich, Kenneth; Costa, Edward; and Wetton, Robert. Sodium fluoride ignition aid in solid propellant compositions. 3,873,385, Cl. 149-18.000.

Henrick, Clive A., to Zoecon Corporation. Intermediates for 2,4-diolefinic fatty acids and esters. 3,873,586, Cl. 260-410.90R.

Hensler, Joseph R., to Bausch & Lomb Incorporated. Method of producing a refractive index gradient in glass. 3,873,408, Cl. 161-165.000.

Henzl, Milan R.; and Roszkowski, Adolph, to Syntex Corporation. Method for delaying the onset of, or postponing, parturition. 3,873,718, Cl. 424-308.000.

Herbert, Earl. Dog collar. 3,872,833, Cl. 119-106.000.

Herr, Charles H.; Schulz, Gunter W.; and Bull, George S., to Caterpillar Tractor Co. Fluid operated centrifugal clutch. 3,872,956, Cl. 192-85.00F.

Herr Manufacturing Company, Inc.: *See—*
Atwood, Hyatt B.; and McLean, James N., 3,872,662.

Hertzell Industries, Inc.: *See—*
Hartzell, George W.; and Gunnerman, Robert J., 3,872,758.

Herzog, Arno Henry: *See—*
Groves, Warren Olley; Herzog, Arno Henry; and Craford, George, 3,873,382.

Hess, Christian F. Car position spotting device in garages. 3,872,820, Cl. 116-28.00R.

Hess, Peter, to Metallwerk Max Brose & Co. Mounting assembly for external vehicle rear view mirror. 3,873,190, Cl. 350-289.000.

Hetzel, Donald S., to Pfizer Inc. Preparaton of cyclic diketones including intermediates therefor. 3,873,622, Cl. 260-586.00P.

Hewett, John C. Device for supporting part of a wheeled vehicle. 3,873,126, Cl. 280-150.500.

Hewlett-Packard GmbH: *See—*
Busch, Ulrich, 3,872,723.

Heyne, Clarence A.: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,873,655.

Hickman, Arthur D.; and Hickman, Raymond H., to Falcon Research and Development Co. Motorized walker. 3,872,945, Cl. 180-65.00R.

Hickman, Raymond H.: *See—*
Hickman, Arthur D.; and Hickman, Raymond H., 3,872,945.

Hickner, Richard A.; and Goss, Edward W., to Dow Chemical Company, The. Cycloaliphatic polythiols and compositions containing same. 3,873,502, Cl. 260-47.0EC.

Higbee, Wallace C.: *See—*
Rumpf, Robert J.; and Higbee, Wallace C., 3,873,041.

Higgins, John Francis; McDonald, Dale Richard; Hanson, Marvin Ardell; and Moore, William Percy, to Allied Chemical Corporation. Method of producing a pelleted slow-release NPN feed for ruminants. 3,873,734, Cl. 426-69.000.

Higgins, Lester A., to Scandia Packaging Machinery Company. Assembly for detecting irregular feed conditions. 3,872,964, Cl. 198-232.000.

Higuchi, Akira: *See—*
Okazaki, Kaoru; Higuchi, Akira; and Imaeda, Naoki, 3,873,406.

Hijiya, Hiromi; and Shiosaka, Makoto, to Hayashibara Biochemical Laboratories, Incorporated. Adhesives and pastes. 3,873,333, Cl. 106-130.000.

Hikai, Akio: *See—*
Kawai, Takashi; Mikizawa, Kiyoshi; Tomita, Shigeo; Tatsui, Yoshio; and Hikai, Akio, 3,872,815.

Hildebrandt, Eugene F., to Emerson Electric Co. Rotating metal shaft and plastic sleeve mounting. 3,872,691, Cl. 64-27.00R.

Hilgemann, Hans, to Tour Agenturer Aktiebolag. Regulating station. 3,873,022, Cl. 237-8.00R.

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Hill, James L. Electricians tools. 3,872,590, Cl. 30-90.600.

Hill, Maynard L., to Johns Hopkins University, The. Attitude sensing method and apparatus. 3,873,050, Cl. 244-77.00R.

Hillringhaus, Paul: *See—*
Wolfertz, Gunther; Kramer, Friedhelm; and Hillringhaus, Paul, 3,872,554.

Hills, William A., to FMC Corporation. Flame-retardant polyester compositions. 3,873,496, Cl. 260-45.80R.

Himes, Richard Carl; Craig, Bruce Galvin; and Gulick, Walter Field, to Johns-Manville Corporation. High energy gas filtration method. 3,873,281, Cl. 55-96.000.

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Hiramoto, Naonobu: *See—*
Kobinata, Sadao; Satake, Takeo; and Hiramoto, Naonobu, 3,873,468.

Hirose, Kazuyuki: *See—*
Motomura, Mitsuteru; Futamata, Masayuki; Hirose, Kazuyuki; and Ban, Kazuo, 3,873,252.

Hirsch, Allen Frederick, to Ortho Pharmaceutical Corporation. O-aryl oximes of 3-keto steroids. 3,873,701, Cl. 424-238.000.

Hitachi Electronics, Ltd.: *See—*
Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.

Hitachi, Ltd.: *See—*
Fukushima, Masakazu; and Murayama, Seiichi, 3,873,870.
Misumi, Akira; Kasai, Toshiaki; Fukuda, Kenji; and Nakai, Hiromitu, 3,873,343.
Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,169.
Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,171.
Sikamori, Tamotu; and Kaito, Haruyuki, 3,872,694.
Susa, Kenzo; Yajima, Masami; and Taniguchi, Satoshi, 3,873,473.
Toda, Gyozo; Matsuyama, Iwao; and Tsukuda, Yasuo, 3,873,657.
Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
Yamauchi, Masaaki, 3,873,876.

Hitachi Metals, Ltd.: *See—*
Yamakawa, Kazuo; Oka, Tohru; Tokunaga, Masaaki; Mizuhara, Takeshi; and Hagi, Chitoshi, 3,873,379.

Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Nishiba, Yoshiharu; Ota, Kazuhiko; and Inaba, Hideya, 3,873,672.

Hnatek, Josef, to Hoxtersche Gummifaden-Fabrik Emil Arntz KG. Power transmitting belting material. 3,872,735, Cl. 74-231.00R.

Hoag, Charles R., to Wittek Golf Range Supply Co., Inc. Golf club head washing apparatus. 3,872,534, Cl. 15-21.00B.

Hobart, James L.: *See—*
Yarborough, J. Michael; and Hobart, James L., 3,873,941.

Hoda, Masahiro: *See—*
Kotone, Akira; Hoda, Masahiro; Hori, Takeshi; and Nakane, Yoshihiko, 3,873,563.

Hodges, Ronald R.: *See—*
Scheerhorn, Douglas; and Hodges, Ronald R., 3,873,170.

Hodogaya Chemical Co., Ltd.: *See—*
Miyazawa, Yoshihide; Ozutsumi, Minoru; Motohashi, Katsuichi; and Kimura, Shiro, 3,873,340.

Hoechst Aktiengesellschaft: *See—*
Frensch, Heinz; and Albrecht, Konrad, 3,873,689.
Groebel, Alfred; and Lindner, Ernst, 3,873,699.
Kleber, Rolf; Smerz, Otto; and Trapp, Gunther, 3,873,265.

Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,873,556.

Hoesch Werke Aktiengesellschaft: *See—*
Joneleit, Knut, 3,873,123.

Hofer, Kurt; Keller, Robert Christian; and Zingg, Alfred Emil, to Sandoz Ltd. (a/k/a Sandoz AG). Solutions of polyalkylene polyamine-cyanamide condensation products. 3,873,266, Cl. 8-74.000.

Hoffman, David M., to Sun Ventures, Inc. Promotion of ethylene/isoparaffin alkylation. 3,873,634, Cl. 260-683.440.

Hoffman-La Roche Inc.: *See—*
Saucy, Gabriel, 3,873,562.

Hoffmann-La Roche Inc.: *See—*
Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,873,549.
Sternbach, Leo Henryk; and Ye-Fong Ning, Robert, 3,873,525.
Wehrli, Pius Anton, 3,873,572.

Hoffmann-LaRoche Inc.: *See—*
Haas, Walter; and Zeller, Hans-Gunther, 3,873,713.
Saucy, Gabriel, 3,873,561.

Hoffmann, Martin: *See—*
Pampus, Gottfried; Witte, Josef; and Hoffmann, Martin, 3,873,644.

Hofius, David V., to Textron Inc. Slide fasteners and method of making the same. 3,872,552, Cl. 24-205.11F.

Hofmann, Gunter A. G., to Hughes Aircraft Company. Switch field coils for crossed-field interrupter. 3,873,871, Cl. 313-157.000.

Hofmann, Hans: *See—*
Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.

Hofmann, Richard E.; and Walters, Francis R. Method of making an encased ground meat product. 3,873,737, Cl. 426-105.000.

Hogg, Theodore B.: *See—*
Berg, Lawrance F.; Hogg, Theodore B.; and Lichti, Robert W., 3,873,133.

Hoheisel, Klaus; Jenik, Gisela; and Seifried, Walter, to Kalle Aktiengesellschaft. Process for the preparation of a polyamide. 3,873,503, Cl. 260-47.0CB.

Hohwart, George; Toth, Paul; and Cross, Kenneth O., to N. A. Woodworth Company. Adjustable work holder with front and rear work holding jaws. 3,873,107, Cl. 279-1.00D.

Hoke, Donald Irvin, to Lubrizol Corporation, The. Dyeable polypropylene compositions containing polymers of n-aminoalkyl acrylamides. 3,873,646, Cl. 260-897.00B.

Holcomb, Daniel C., to CH Electronics, Inc. Controlling and recording fuel dispensing. 3,873,019, Cl. 235-92.0CT.

Hollenbach, Roger C.: *See—*
Kibbel, William H., Jr.; and Hollenbach, Roger C., 3,873,685.

Holmes, John T.: *See—*
Nelson, Paul A.; Kolba, Verne M.; and Holmes, John T., 3,872,718.

Holst, Perry V.: *See—*
Kauffeld, Ludwig; and Holst, Perry V., 3,872,726.

Holton, Morris J. Fluid actuator device. 3,872,786, Cl. 100-218.000.

Holtrup, Bernard: *See—*
Linke, Horst; Holtrup, Bernard; and Beyer, Herbert, 3,872,677.

Homburg, Axel: *See—*
Bendler, Hellmut; Flach, Egon; and Homburg, Axel, 3,873,125.

Homma, Yasuo: *See—*
Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; Meguro, Takashi; and Wakamatsu, Hachiro, 3,873,700.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Nozi, Akio, 3,873,787.

Honda, Tsunenori: *See—*
Takeyama, Hidehiko; and Honda, Tsunenori, 3,873,816.

Hondo, Masao: *See—*
Nakata, Kunii; and Hondo, Masao, 3,872,915.

Honeywell Inc.: *See—*
Lee, Tzuo-Chang; and Chen, Di, 3,873,183.

Honeywell Information Systems Inc.: *See—*
Greenwald, Donald James, 3,873,819.

Hongu, Masayuki: *See—*
Ishigaki, Yoshio; Hongu, Masayuki; and Kawakami, Hiromi, 3,873,932.

Honma, Yoshio; and Takahashi, Junichi, to Tokyo Shibaura Electric Co., Ltd.; and Tobshiba Engineering Co., Ltd. Descaling system for the cooling tubes of a steam condenser. 3,872,920, Cl. 165-95.000.

Honnen, Lewis R.: *See—*
Coon, Marvin D.; and Honnen, Lewis R., 3,873,460.

Hooker Chemical & Plastic Corp.: *See—*
Pawlak, Joseph A.; West, Charles W.; Colson, James G.; and Bajer, Francis J., 3,873,459.

- Hooker Chemicals & Plastics Corp.: *See—*
  - Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,873,490.
- Hoover Company, The: *See—*
  - Allen, Howard L., 3,873,285.
  - Coons, Charles C., 3,873,790.
  - Crouser, Darwin S., 3,872,538.
- Hoover, Troy E.: *See—*
  - Farber, Sheldon; Hoover, Troy E.; McQuain, David B.; and Wright, Arthur J., 3,873,573.
- Hopeman Brothers, Inc.: *See—*
  - Shiflet, Frank L., 3,873,115.
- Horecky, Stanley V.; and Sebastian, Robert W., to Molex Incorporated. Antenna board assembly with wire receptacle and switch. 3,873,174, Cl. 339-95.00D.
- Hori, Takeshi: *See—*
  - Kotone, Akira; Hoda, Masahiro; Hori, Takeshi; and Nakane, Yoshihiko, 3,873,563.
- Horizons Incorporated, a Division of Horizons Research Incorporated: *See—*
  - Woo, James T. K.; Glowe, Donald E.; and Thornton, J. Scott, 3,873,314.
- Horodysky, Andrew G.; and Raich, Henry, to Mobil Oil Company. Lubricant composition. 3,873,454, Cl. 252-27.000.
- Horrocks, Derek: *See—*
  - Palmer, Hugh Charles; Horrocks, Derek; and Buckley, Keith, 3,873,736.
- Horsdal, Paul V. Flying machine. 3,873,049, Cl. 244-17.230.
- Horst, Richard S.; Kaplan, Leon H.; and Merritt, David P., to International Business Machines Corporation. Process for forming a resist mask. 3,873,313, Cl. 96-36.000.
- Horsting, Albertus G.: *See—*
  - Randolph, Arthur J.; and Horsting, Albertus G., 3,872,869.
- Hoscher, Rudolf: *See—*
  - Bachner, Ernst; Bumberger, Herbert; and Hoscher, Rudolf, 3,872,598.
- Hosokawa, Tomoyoshi: *See—*
  - Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,873,529.
- Hotta, Masamichi: *See—*
  - Rocher, Jacques; Hotta, Masamichi; Inomata, Mamoru; and Hanabusa, Kazuo, 3,873,414.
- Hottinger-Baldwin-Messtechnik GmbH: *See—*
  - Kreuzer, Manfred, 3,873,917.
- Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Substituted-4-aminoacetyl alkanoylphenones. 3,873,539, Cl. 260-247.70R.
- Houlihan, William J., to Sandoz-Wander, Inc. N-sulfamoyl-substituted-piperidines as anti-tussive agents. 3,873,708, Cl. 424-267.000.
- House, Ralph: *See—*
  - Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,873,590.
- Houshar, Glen Nicholas, to Campbell Industries. Tether release device. 3,873,146, Cl. 294-83.00R.
- Houvouras, Michael P. Cycle transmission. 3,872,736, Cl. 74-337.000.
- Howard, Dennis D.: *See—*
  - Owston, William J.; and Howard, Dennis D., 3,873,640.
- Howe, John Gerald; and Glover, Edward Charles Timothy Samuel, to Eastman Kodak Company. Roller applicator. 3,872,827, Cl. 118-223.000.
- Hoxtersche Gummifaden-Fabrik Emil Arntz KG: *See—*
  - Hnatek, Josef, 3,872,735.
- Hoyt, Donald L.: *See—*
  - Altamira, Anthony F.; and Hoyt, Donald L., 3,872,922.
- Huang, Keng Tang: *See—*
  - Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; Meguro, Takashi; and Wakamatsu, Hachiro, 3,873,700.
- Hubele, Adolf: *See—*
  - Huber-Emden, Helmut; Hubele, Adolf; and Klahre, Guenter, 3,873,703.
- Huber-Emden, Helmut; Hubele, Adolf; and Klahre, Guenter, to Ciba-Geigy AG. Bactericidal and Fungicidal compositions and methods of killing bacteria and fungi using 8-oxyquinoline- and 8-oxyquinaldine acrylates. 3,873,703, Cl. 424-258.000.
- Hudson, Arthur C.; and Trollope, Brian J., to Canadian Patents and Development . Limited. Echoencephalograph. 3,872,858, Cl. 128-2.00V.
- Hudson, Marshall C., to Corning Glass Works. Method of forming optical waveguide circuit path. 3,873,339, Cl. 117-17.000.
- Hudson, Paul S.: *See—*
  - Wu, Yu-Lin; Hudson, Paul S.; Sherk, Fred T.; and Haskell, Donald M., 3,873,609.
- Hudson, Roger Paul; and Trione, Jack Michael. Throttle resistor. 3,872,739, Cl. 74-513.000.
- Hufeld, Francis X.: *See—*
  - Bianchetta, Donald L.; and Hufeld, Francis X., 3,872,883.
- Hughes Aircraft Company: *See—*
  - Hofmann, Gunter A. G., 3,873,871.
  - Hunsperger, Robert G.; Stoll, Harold M.; Tangonan, Gregory L.; and Yariv, Amnon, 3,873,828.
  - Oltman, Henry G., Jr.; and Wagner, Richard J., 3,873,934.
  - Oltman, Henry G., Jr., 3,873,935.
  - Weglein, Rolf D., 3,873,946.
  - Wolf, Edward D., 3,873,371.
- Hughes, Richard Henry, to RCA Corporation. In-line electron gun. 3,873,879, Cl. 315-13.00C.
- Hume, Michael. Dressing and support combination for the treatment of indolent ulcers. 3,872,862, Cl. 128-165.000.
- Hummel, Paul, to C. F. Ploucquet. Baby cover. 3,872,524, Cl. 5-334.00C.
- Hunsperger, Robert G.; Stoll, Harold M.; Tangonan, Gregory L.; and Yariv, Amnon, to Hughes Aircraft Company. Integrated optical detector. 3,873,828, Cl. 250-211.00J.
- Hunt, Roger A., to United Medical Laboratories, Inc. Hematologic reference control. 3,873,467, Cl. 252-408.000.
- Hunter, Byron A., to Uniroyal, Inc. Oxyalyl carbazates, and oligomers thereof. 3,873,592, Cl. 260-463.000.
- Hunter, Evandow W., deceased (Harland, Mildred B. Hunger and James R., Jr., co-executors), to Hunter, Mildred B. Mattress pad and method and apparatus for constructing the same. 3,873,388, Cl. 156-148.000.
- Hunter, Mildred B.: *See—*
  - Hunter, Evandow W., deceased, 3,873,388.
- Hurtle, Ralph Loyd, to General Electric Company. Current limiting circuit breaker. 3,873,791, Cl. 200-144.00R.
- Hurtmanns, Heinz: *See—*
  - Decker, Hans; Hurtmanns, Heinz; Jakobs, Willy; and Stockmann, Helmut, 3,873,037.
- Huta "Zygmunt": *See—*
  - Salajczyk, Jan, 3,872,690.
- Hutchins, Jonathan Edward Colin: *See—*
  - Kreevoy, Maurice M.; Borch, Richard Frederic; and Hutchins, Jonathan Edward Colin, 3,873,621.
- Hutchins, Thomas B., IV. Assembly of electrical-deflection-sensitive transducer. 3,873,801, Cl. 219-85.000.
- Hycel, Inc.: *See—*
  - Moran, John Joseph; Wolff, Sverre; and Ashley, Holvor Walter, 3,873,273.
- Hyde, Robert W. Collapsible can. 3,872,994, Cl. 220-1.00R.
- Ibing, Gunther: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,873,577.
- Ichigaya, Hiroshi: *See—*
  - Machida, Hiromasa; Ichigaya, Hiroshi; and Iwabuchi, Kietsu, 3,873,877.
- Ichijyo, Taro: *See—*
  - Kato, Masao; Hasegawa, Masaki; and Ichijyo, Taro, 3,873,500.
- Ichikawa, Yataro, to Teijin Limited. Process for the preparation of terephthalic acid. 3,873,611, Cl. 260-524.00R.
- ICI United States Inc.: *See—*
  - Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,872,923.
- Icking, Freidrich; and Bodemar, Klaus, to Westfalia Separator AG. Safety device for separators. 3,873,020, Cl. 233-1.00B.
- Ideda, Tadashi: *See—*
  - Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, 3,873,323.
- Iga, Atsushi: *See—*
  - Matsuoka, Michio; Itakura, Gen; Iga, Atsushi; and Masuyama, Takeshi, 3,872,582.
- Iglio, Salvatore: *See—*
  - Greenwald, Harry; and Iglio, Salvatore, 3,872,958.
- Ignatjev, Vladimir. Ionizer. 3,873,835, Cl. 250-324.000.
- Ihara Koatsu Tsugite Kogyo Kabushiki Kaisha: *See—*
  - Kayahara, Isao, 3,872,763.
- Iida, Yozo; Nozawa, Hideyo; and Akasaka, Shigeo, to Nippon Kogaku K.K. Film rewind device in a cinecamera. 3,873,193, Cl. 352-72.000.
- Iithuka, Kunio: *See—*
  - Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, 3,873,515.
- Ilfrey, William T.; McLain, John D.; and Todd, William W., to Exxon Production Research Company. Casing seal tester for subsea completions. 3,872,713, Cl. 73-40.50R.
- Ilfrey, William T., to Exxon Production Research Company. Downhole gas detector system. 3,872,721, Cl. 73-151.000.
- Illing, Henry, to Kieley & Mueller, Inc. Aspirated balance piston. 3,873,063, Cl. 251-282.000.
- Illinois Tool Works Inc.: *See—*
  - Ernst, Richard John; and Neumayer, George Anton, 3,872,768.
  - Pomernacki, Henry, 3,872,561.
- Imaeda, Naoki: *See—*
  - Okazaki, Kaoru; Higuchi, Akira; and Imaeda, Naoki, 3,873,406.
- Imagawa, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Connection for ski-binding. 3,873,111, Cl. 280-11.35R.
- Imai, Shuichi: *See—*
  - Yokoo, Masasuke; Suzuki, Masayoshi; Meguro, Daitetsu; and Imai, Shuichi, 3,873,398.
- Imaizjmi, Kotaro; and Nitta, Katsukuni, to Kabushiki Kaisha Oji Yuka Goseiski Kenkyusho. Synthetic paper folding device. 3,873,082, Cl. 270-68.00A.
- Immuno Aktiengesellschaft Fur Chemisch medizinische: *See—*
  - Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, 3,873,433.
- Imperial Chemical Industries Limited: *See—*
  - Bowden, Roy Dennis, 3,873,555.
  - Garner, Paul Johnson, 3,873,656.
  - Jackson, John Ernest, 3,873,497.
  - McMenim, Michael Edward, 3,873,560.
  - Rennie, Robert Allan Campbell, 3,873,580.
  - Singer, Michael, 3,873,279.

  - Smith, Leslie Harold, 3,873,618.
  - Wright, Ronald Barrie, 3,873,466.
- Imperiale, Nino: *See—*
  - Giraudi, Giorgio A. M.; and Imperiale, Nino, 3,872,644.
- Inaba, Hideya: *See—*
  - Nishiba, Yoshiharu; Ota, Kazuhiko; and Inaba, Hideya, 3,873,672.
- Indicator Controls Corporation: *See—*
  - Gould, Samuel; and Gould, James S., 3,873,969.
  - Potter, Thomas R., 3,873,964.
- Ing. C. Olivetti & C., S.p.A.: *See—*
  - Rattin, Luciano, 3,872,829.
- Inmont Corporation: *See—*
  - Bryant, Earl Ruskin; Sears, Russell Leo; and Katz, Martin Samuel, 3,872,548.
- Inomata, Mamoru: *See—*
  - Rocher, Jacques; Hotta, Masamichi; Inomata, Mamoru; and Hanabusa, Kazuo, 3,873,414.
- Inoue, Hiroto: *See—*
  - Oshima, Hiroshi; Saiki, Koji; and Inoue, Hiroto, 3,873,472.
- Inoue, Kiyoshi. Apparatus for increasing the accuracy of electrochemical grinding processes. 3,873,436, Cl. 204-224.00M.
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- Inoue, Yoshio. Device for mounting polychrome halftone negatives on sheet film. 3,873,202, Cl. 355-88.000.
- Inouye, Ken: *See—*
  - Otsuka, Hideo; and Inouye, Ken, 3,873,511.
- Inpaco: *See—*
  - Christine, William C.; and Watt, William E. R., 3,873,007.
- Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
  - Gosselin, Jean-Charles, 3,872,932.
  - Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,873,276.
- Inter Dyne: *See—*
  - Betts, Paul J., 3,872,526.
- Inter-Probe, Inc.: *See—*
  - Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., 3,872,917.
- International Basic Economy Corporation: *See—*
  - Briggs, George Oliver, 3,872,605.
- International Business Machines Corporation: *See—*
  - Barnard, John Dudley, 3,873,818.
  - Beausoleil, William F.; and Uberbacher, Edward C., 3,872,998.
  - Franco, Jack R.; Havas, Janos; and Levine, Harold A., 3,873,361.
  - Horst, Richard S.; Kaplan, Leon H.; and Merritt, David P., 3,873,313.
  - Johnson, William S., 3,873,372.
  - Parr, Joseph Ward; and Sih, Kwang Yue, 3,873,820.
  - Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,355.
  - Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,356.
  - Sherk, Thomas A.; and Tummala, Rao R., 3,873,330.
- International Business Supplies: *See—*
  - St. James, Marc Antony, 3,872,961.
- International Flavors & Fragrances Inc.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,873,731.
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Giacino, Christopher, 3,873,732.
  - Klaiber, Erich Manfred; and Pittet, Alan Owen, 3,873,574.
- International Harvester Company: *See—*
  - Beck, Harold D., 3,872,916.
- International Packings Corporation: *See—*
  - Bainard, Dean R., 3,873,104.
- International Standard Electric Corporation: *See—*
  - Chown, Martin, 3,873,775.
  - Sothcott, Peter; and Marsh, Stanley B., 3,873,983.
  - Wolf, Heribert, 3,873,078.
- International Telephone and Telegraph Corporation: *See—*
  - Anhalt, John W., 3,873,173.
  - Carroll, Gordon S., 3,873,980.
- Ioannou, John T., to Bendix Corporation, The. Digital position measurement system with stylus tilt error compensation. 3,873,770, Cl. 178-18.000.
- Irti, Ernest: *See—*
  - Smith, William J.; and Irti, Ernest, 3,872,889.
- Isberg, Reuben Albert; Beaudet, Hermas Nelson; and Avery, William Harold, Jr., to Tenneco Chemicals, Inc. Magnetic separator. 3,873,448, Cl. 210-222.000.
- Ishammar, Nils Gosta Sigvard. Disposer with a sacking device. 3,872,648, Cl. 53-126.000.
- Ishida, Shuichi: *See—*
  - Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.
- Ishigaki, Yoshio; Hongu, Masayuki; and Kawakami, Hiromi, to Sony Corporation. Gain control circuit having variable impedance to determine circuit gain and to control minimum gain. 3,873,932, Cl. 330-20.000.
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- Istituto Chemioterapico Italiano: *See—*
  - Coulston, Frederick; and Rosenblum, Ira, 3,873,723.
- Isuzu Motors Limited: *See—*
  - Kimbara, Motoyasu; and Yoshida, Yoshitaka, 3,872,841.
- Itakura, Gen: *See—*
  - Matsuoka, Michio; Itakura, Gen; Iga, Atsushi; and Masuyama, Takeshi, 3,872,582.
- Iten, Clemens A., to Philip Morris Incorporated. Twin blade injector unit. 3,872,592, Cl. 30-346.580.
- Iten, Paul D.; and Mastner, Jiri, to Brown, Boveri and Company, Ltd. Frequency detector. 3,873,923, Cl. 325-423.000.
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- Ito, Kensaku: *See—*
  - Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.
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- ITT Industries, Inc.: *See—*
  - Gerlach, Albrecht; Lindstedt, Gunter; and Gollinger, Wolfgang, 3,873,856.
- Iwabuchi, Kietsu: *See—*
  - Machida, Hiromasa; Ichigaya, Hiroshi; and Iwabuchi, Kietsu, 3,873,877.
- Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, to Chisso Corporation. Apparatus for producing synthetic pulp. 3,873,034, Cl. 241-55.000.
- Izuhara, Michi: *See—*
  - Otsuru, Masaaki; Miyakawa, Toshio; Yamada, Mitsuo; and Izuhara, Michi, 3,873,431.
- J. C. Case Company: *See—*
  - Short, Arthur G., 3,872,985.
- J. I. Case Company: *See—*
  - Nordstrom, Leroy A.; and Ruffalo, Peter D., 3,872,954.
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- Jackson, Brian Laurence, to Kent Cambridge Medical Limited. Microtomes. 3,872,759, Cl. 83-718.000.
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- Jackson, Richard A.; and Bolles, Theodore F., to Minnesota Mining and Manufacturing Company. Mercaptan and thioketal complexes of technetium 99M for diagnostic scanning. 3,873,680, Cl. 424-1.000.
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- Jaffe, Edward E.: *See—*
  - Ehrich, Felix Frederick; and Jaffe, Edward E., 3,873,548.
- Jaggi, Hans, to Haeny & Cie. Electrical variable-speed drive. 3,873,244, Cl. 417-424.000.
- Jahn, Ulrich W. K., to A. Kettenbach Fabrik Chemischer Erzeugnisse. Package type metering device for high viscosity fluid products. 3,873,008, Cl. 222-390.000.
- Jahnke, Uwe: *See—*
  - Sommer, Friedrich; and Jahnke, Uwe, 3,873,900.
- Jakob Wollenhaupt Werkmittel, K. G.: *See—*
  - Letzel, Helmut; and Letzel, Wolfgang, 3,873,224.
- Jakobs, Willy: *See—*
  - Decker, Hans; Hurtmanns, Heinz; Jakobs, Willy; and Stockmann, Helmut, 3,873,037.
- Jakobsen, Karna; and Jakobsen, Otto Maurus. Paving stones. 3,873,225, Cl. 404-41.000.
- Jakobsen, Otto Maurus: *See—*
  - Jakobsen, Karna; and Jakobsen, Otto Maurus, 3,873,225.
- James L. Greenburg: *See—*
  - Campbell, Sanford F., 3,873,446.
- Jamieson, Arthur A. Compressor control. 3,873,239, Cl. 417-281.000.
- Janes, Manfred, to Organisation Europeenne de Recherches Spatiales. Louver system with hinged blades. 3,872,911, Cl. 160-1.000.
- Janousek, Zdenek: *See—*
  - Viehe, Heinz Gunter; Van Vyve, Therese; and Janousek, Zdenek, 3,873,530.
- Janssen, Paul Adriaan Jan: *See—*
  - Soudijn, Willem; Wijngaarden, Ineke Van; and Janssen, Paul Adriaan Jan, 3,873,534.
- Janssen, Peter Johannes Michiel, to U.S. Philips Corporation. Disk-shaped record carrier on which information is recorded in the form of an optical structure. 3,873,763, Cl. 178-6.60R.
- Janssen Pharmaceutica, N.V.: *See—*
  - Soudijn, Willem; Wijngaarden, Ineke Van; and Janssen, Paul Adriaan Jan, 3,873,534.
- Jansson, Einar: *See—*
  - Sjostrand, Gunnar; and Jansson, Einar, 3,872,767.
- Janus, Alan R., to Material Sciences Corporation. Rapid conversion of an iron oxide film. 3,873,341, Cl. 117-37.00R.
- Japan Atomic Energy Research Institute: *See—*
  - Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi, Sueo, 3,873,492.

- Japan Exlan Company Limited: *See—*
  - Minato, Takashi; Takegami, Shinsuke; Kishimoto, Soichiro; and Kanetsuki, Katsutoshi, 3,873,487.
- Jarema, Chester P.: *See—*
  - Niebylski, Leonard M.; and Jarema, Chester P., 3,873,392.
- Jarrell, Bruce E.: *See—*
  - Lasker, Norman; and Jarrell, Bruce E., 3,872,863.
- Jarry, Philippe, to Le Moteur Moderne. Underwater pulse jet motor. 3,872,665, Cl. 60-221.000.
- Jean, Roger Burl, to B. F. Goodrich Company, The. Collapsible self-storing shipping carton. 3,872,969, Cl. 206-303.000.
- Jeffers, Frederick J.: *See—*
  - Duck, Sherman W.; and Jeffers, Frederick J., 3,873,826.
- Jeffery, Robin Douglas, to Stelmo Limited. Moulding apparatus. 3,873,058, Cl. 249-161.000.
- Jehier, Andre. Heat sealable sheet material. 3,873,409, Cl. 161-214.000.
- Jelinek, Vaclav: *See—*
  - Semonsky, Miroslav; Zikan, Viktor; and Jelinek, Vaclav, 3,873,575.
- Jellis, James C., Jr. Material feeding apparatus. 3,873,032, Cl. 239-658.000.
- Jenik, Gisela: *See—*
  - Hoheisel, Klaus; Jenik, Gisela; and Seifried, Walter, 3,873,503.
- Jenkins, Frederick Peter, to Lever Brothers Company. Foods containing red dye. 3,873,739, Cl. 426-164.000.
- Jennings, Thomas Edwin, to Burroughs Corporation. Failsafe system for energizing the capstan motor of a magnetic tape transport system. 3,873,896, Cl. 318-7.000.
- Jensen, Joseph C.: *See—*
  - Koetsch, Philip W.; and Jensen, Joseph C., 3,873,903.
- Jezl, James L., to Avisun Corporation. Crystalline olefin block polymers and their preparation. 3,873,642, Cl. 260-878.00B.
- Joh. A. Benckiser GmbH: *See—*
  - Keller, Herbert, 3,872,604.
- John Zink Company: *See—*
  - Reed, Robert D.; McGill, Eugene C.; and McConnell, Charles G., 3,873,671.
- Johns Hopkins University, The: *See—*
  - Hill, Maynard L., 3,873,050.
- Johns-Manville Corporation: *See—*
  - Himes, Richard Carl; Craig, Bruce Galvin; and Gulick, Walter Field, 3,873,281.
  - Plauka, John W.; and Cloud, Edwin A., 3,873,391.
- Johnson, Gene A. Disposable electrical thermometer system and components. 3,872,727, Cl. 73-362.0AR.
- Johnson, Howard L.: *See—*
  - Skinner, W. A.; Johnson, Howard L.; DeGraw, Joseph T., Jr.; and Brown, Vernon H., 3,873,725.
- Johnson, Jerry Lynn; and Adams, Donald L. Air hose quick coupler. 3,873,062, Cl. 251-149.600.
- Johnson, John A., to Cedar Sales Company. Carton dating apparatus. 3,872,646, Cl. 53-131.000.
- Johnson & Johnson: *See—*
  - Bird, William H.; and Caffrey, Richard F., 3,872,516.
  - Drelich, Arthur H.; Smith, Delmont K.; and Strauss, Ulrich P., 3,873,411.
  - Drelich, Arthur H., 3,873,486.
  - Kalwaites, Frank, 3,873,255.
- Johnson, Kenneth W., to United States of America, Atomic Energy Commission. High speed linac-beam analyzer. 3,873,839, Cl. 250-369.000.
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- Johnson, Louis W. Impact crusher. 3,873,047, Cl. 241-275.000.
- Johnson, Lyman A.: *See—*
  - Borom, Marcus P.; and Johnson, Lyman A., 3,872,731.
- Johnson, Oliver W. Valving means for a gerotor assembly. 3,873,248, Cl. 418-61.00B.
- Johnson, Philip M.: *See—*
  - Northrup, Richard M.; and Johnson, Philip M., 3,873,823.
- Johnson, Robert A., to Rockwell International Corporation. Multiple frequency flexure-mode resonator. 3,873,947, Cl. 333-72.000.
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- Jones, Evan A., to Universal Oil Products Company. Catalyst transfer method for moving-bed reactors. 3,873,441, Cl. 208-166.000.
- Jones, James B., to du Pont de Nemours, E. I., and Company. Separation of chlorodifluoromethane and hydrogen. 3,873,629, Cl. 260-653.000.
- Jones, Robert Patrick; and Rentzepis, Peter Michael, to Bell Telephone Laboratories, Incorporated. Apparatus and systems using broad band radiation pulse source. 3,873,825, Cl. 250-199.000.
- Jorn, Raoul. Composite spring element. 3,873,077, Cl. 267-152.000.
- Joseph Lucas (Industries) Limited: *See—*
  - Littlehales, Herbert James, 3,872,850.
- Joyce, Michael F.; and Balmes, George M. Electronic temperature measuring instrument. 3,872,728, Cl. 73-362.0AR.
- Juels, Ronald J.: *See—*
  - Basse, Philip; and Juels, Ronald J., 3,873,931.
- Junck, John A.: *See—*
  - Dezelan, Joseph E.; Junck, John A.; and Nelson, Walter I., 3,872,670.
- Justice, Roger L.: *See—*
  - Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,710.
  - Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,711.
  - Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,712.
- Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
  - Scheffler, Ernst; and Ziemek, Gerhard, 3,873,799.
- Kablaoui, Mahmoud S.; and Lachowicz, Donald R., to Texaco Inc. Preparation of alpha-nitroketones. 3,873,623, Cl. 260-597.00R.
- Kabushiki Kaisha Akita: *See—*
  - Nakata, Kunii; and Hondo, Masao, 3,872,915.
- Kabushiki Kaisha Daiken Seisakusho: *See—*
  - Tokunaga, Masayoshi, 3,873,237.
- Kabushiki Kaisha Dowa: *See—*
  - Miyahara, Kingo, 3,873,742.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
  - Motomura, Mitsuteru, 3,873,241.
  - Motomura, Mitsuteru; Futamata, Masayuki; Hirose, Kazuyuki; and Ban, Kazuo, 3,873,252.
  - Seo, Osamu; and Tanabe, Genichi, 3,873,899.
- Kabushiki Kaisha Nakamura Seisakujo: *See—*
  - Nakamura, Masaya, 3,873,085.
- Kabushiki Kaisha Oji Yuka Goseiski Kenkyusho: *See—*
  - Imaizjmi, Kotaro; and Nitta, Katsukuni, 3,873,082.
- Kabushiki Kaisha Ricoh: *See—*
  - Misawa, Toshihiko; and Kondo, Mitsuru, 3,873,986.
- Kabushiki Kaisha Sakurakurepasu: *See—*
  - Yoshida, Kisaburo, 3,873,218.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Oguchi, Isao, 3,872,586.
- Kabushiki Kaisha Tatebe Seishudo: *See—*
  - Tatebe, Noriyasu, 3,873,071.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
  - Kato, Takashi; and Suzuki, Yoshihisa, 3,873,886.
- Kadus Werk Ludwig Kegel KG: *See—*
  - Klaus, Benedikt, 3,872,607.
- Kahler, Richard W., to Surf and Psych, Inc. Compact water pipe. 3,872,872, Cl. 131-173.000.
- Kain's Research and Development Company, Inc.: *See—*
  - McNichol, Murray C., Jr.; and Griggs, Raymond Keith, 3,873,127.
- Kaito, Haruyuki: *See—*
  - Sikamori, Tamotu; and Kaito, Haruyuki, 3,872,694.
- Kalinin, Alexandr Ivanovich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Kallas, William: *See—*
  - Moore, David M.; Armstrong, Blair D.; and Kallas, William, 3,872,976.
- Kalle Aktiengesellschaft: *See—*
  - Hoheisel, Klaus; Jenik, Gisela; and Seifried, Walter, 3,873,503.
  - Velten, Otto; and Moller, Udo, 3,873,316.
- Kalopissis, Gregoire; Viout, Andre; and Vanlerberghe, Guy, to L'Oreal. Surface active compositions containing asparagine derivatives. 3,873,688, Cl. 424-70.000.
- Kaltenbronn, James S.: *See—*
  - Doub, Leonard; and Kaltenbronn, James S., 3,873,523.
- Kalwaites, Frank, to Johnson & Johnson. Apparatus for producing nonwoven fabric. 3,873,255, Cl. 425-83.000.
- Kaman Sciences Corporation: *See—*
  - Church, Peter K.; and Knutson, Oliver J., 3,873,344.
- Kamenski, Karl F., to du Pont de Nemours, E. I., and Company. Tungsten oxide-containing cathode for non-aqueous galvanic cell. 3,873,369, Cl. 136-83.00R.
- Kamentsky, Louis A.: *See—*
  - Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,873,204.
- Kamiya, Takashi; Maeno, Shizuo; and Hashimoto, Masahi, to Fujisawa Pharmaceutical Co. Ltd. Diaza-oxa-bicyclodecane derivatives and production thereof. 3,873,526, Cl. 260-239.30B.
- Kammholz, Gunther: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,873,577.
- Kampf, Gunther: *See—*
  - Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.
- Kandler, Ludwig, to Rheinisch-Westfalisches-Elektrizitatswerk Aktiengesellschaft. Zinc-container electrode. 3,873,367, Cl. 136-30.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Oshima, Hiroshi; Saiki, Koji; and Inoue, Hiroto, 3,873,472.
- Kanetsuki, Katsutoshi: *See—*
  - Minato, Takashi; Takegami, Shinsuke; Kishimoto, Soichiro; and Kanetsuki, Katsutoshi, 3,873,487.
- Kanig, Joseph L., to CPC International Inc. Direct compression tabletting composition and pharmaceutical tablets produced therefrom. 3,873,694, Cl. 424-127.000.

- Kaplan, Leon H.: *See—*
  - Horst, Richard S.; Kaplan, Leon H.; and Merritt, David P., 3,873,313.
- Karabedian, James A.: *See—*
  - Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,873,655.
- Karageozian, Hampar L.: *See—*
  - Randeri, Kiran J.; and Karageozian, Hampar L., 3,873,696.
- Karll, Robert E.: *See—*
  - Lee, Richard J.; and Karll, Robert E., 3,873,627.
- Karlson, Harald E.: *See—*
  - Goldsworthy, William Brandt; Hardesty, Ethridge E.; and Karlson, Harald E., 3,873,399.
- Karlsson, Stig Ingvar, to AB Svensk Varmematning. Low drain pulse generator. 3,872,722, Cl. 73-193.00R.
- Karnis, Alkibiadis: *See—*
  - Forgacs, Otto L.; and Karnis, Alkibiadis, 3,873,416.
- Karoll, Elizabeth A.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,873,731.
- Kartridg Pak Co., The: *See—*
  - Leonard, George E., 3,872,651.
- Kasai, Toshiaki: *See—*
  - Misumi, Akira; Kasai, Toshiaki; Fukuda, Kenji; and Nakai, Hiromitu, 3,873,343.
- Kashiwabara, Mikio, to Nihon Space Union Co., Ltd. Tube joint. 3,873,220, Cl. 403-172.000.
- Kashul, George E. Turntable feeder and cooler apparatus. 3,872,606, Cl. 34-166.000.
- Kasuga, Tadayoshi; Nakase, Yasukiyo; and Kawahira, Minoru, to Kitasato Institute, The. Killed vaccine for infectious porcine atrophic rhinitis and process for preparing the same. 3,873,691, Cl. 424-92.000.
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- Katz, Klaus: *See—*
  - Forster, Hans-Joachim M.; Katz, Klaus; and Scheuter, Anton, 3,872,774.
- Katz, Martin Samuel: *See—*
  - Bryant, Earl Ruskin; Sears, Russell Leo; and Katz, Martin Samuel, 3,872,548.
- Katzakian, Arthur, Jr.; Steele, Roger B.; and Scigliano, Joseph J., to Aerojet-General Corporation. Beta hydroxy esters. 3,873,602, Cl. 260-475.00P.
- Katzman, Allison W.; and Nix, Donald F., to Marvin Glass & Associates. Projector, projectile and target of increasing difficulty. 3,873,091, Cl. 273-95.00R.
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- Kawada Kogyo Kabushiki Kaisha: *See—*
  - Kawata, Tadao, 3,872,855.
- Kawahira, Minoru: *See—*
  - Kasuga, Tadayoshi; Nakase, Yasukiyo; and Kawahira, Minoru, 3,873,691.
- Kawai, Takashi; Mikizawa, Kiyoshi; Tomita, Shigeo; Tatsui, Yoshio; and Hikai, Akio, to Nippon Kokan Kabushiki Kaisha. Apparatus for assembling blocks of a hull. 3,872,815, Cl. 114-65.00R.
- Kawakami, Hiromi: *See—*
  - Ishigaki, Yoshio; Hongu, Masayuki; and Kawakami, Hiromi, 3,873,932.
- Kawamoto, Isao: *See—*
  - Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
- Kawanishi, Masazumi: *See—*
  - Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
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- Kayahara, Isao, to Ihara Koatsu Tsugite Kogyo Kabushiki Kaisha. Circular saw. 3,872,763, Cl. 83-835.000.
- Kayano, Tatsuo: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Keller, Herbert, to Joh. A. Benckiser GmbH. Process of treating laundry in laundry driers. 3,872,604, Cl. 34-9.000.
- Keller, Robert Christian: *See—*
  - Hofer, Kurt; Keller, Robert Christian; and Zingg, Alfred Emil, 3,873,266.
- Kelly, Robert C., to Upjohn Company, The. Lactones. 3,873,570, Cl. 260-340.700.
- Kelly, Robert C., to Upjohn Company, The. Tricyclic ketone PG intermediate. 3,873,571, Cl. 260-340.700.
- Kelly, T. Kenneth: *See—*
  - Fiore, Joseph V.; Kelly, T. Kenneth; and Nellen, William J., 3,872,871.
- Kelly, William S. Board game apparatus. 3,873,101, Cl. 273-131.00K.
- Kendall Company, The: *See—*
  - Rice, Claude J., 3,873,396.
- Kennedy, Carl D.: *See—*
  - Krehbiel, Delmar D.; Gregory, Duane; Clark, Charles R.; and Kennedy, Carl D., 3,873,453.
- Kennedy, Frank, to United States Steel Corporation. Mold segment. 3,873,259, Cl. 425-470.000.
- Kennedy, Rudolph S. Time delay release device. 3,873,051, Cl. 244-155.00R.
- Kennedy, William Edward; and Belcher, Willard Leslie, to Microdot, Inc. Gauge. 3,872,602, Cl. 33-199.00R.
- Kennicuit, Robert B., to Caterpillar Tractor Co. Vehicle frame. 3,873,148, Cl. 296-28.00R.
- Kent Cambridge Medical Limited: *See—*
  - Jackson, Brian Laurence, 3,872,759.
- Kepler, C. Edward: *See—*
  - Guile, Roy N.; and Kepler, C. Edward, 3,873,939.
- Kesselring, Donald J., to Sperry Rand Corporation. Flux valve apparatus for sensing both horizontal and vertical components of an ambient magnetic field. 3,873,914, Cl. 324-43.00R.
- Keune, David L.: *See—*
  - Craford, Magnus G.; and Keune, David L., 3,873,979.
- Kibbel, William H., Jr.; and Hollenbach, Roger C., to FMC Corporation. Contiguous shaped chlorine releasing structure. 3,873,685, Cl. 424-16.000.
- Kieley & Mueller, Inc.: *See—*
  - Illing, Henry, 3,873,063.
- Kieras, Joseph A.: *See—*
  - Rosenthal, Rudolph; Bonetti, Giovanni A.; and Kieras, Joseph A., 3,873,587.
  - Rosenthal, Rudolph; Rieve, Robert W.; Kieras, Joseph A.; and Bonetti, Giovanni A., 3,873,674.
- Killinger, Fred M., to Upjohn Company, The. Wet-dry additive assembly. 3,872,867, Cl. 128-272.000.
- Kimbara, Motoyasu; and Yoshida, Yoshitaka, to Isuzu Motors Limited. Construction arrangement of combustion chamber for use in direct fuel injection type diesel engines. 3,872,841, Cl. 123-32.00A.
- Kimura, Kazuo; and Nakanishi, Toru, to Kyowa Hakko Kogyo Co., Ltd. Production of citric acid, isocitric acid and microbial cells by fermentation. 3,873,424, Cl. 195-28.00R.
- Kimura, Shiro: *See—*
  - Miyazawa, Yoshihide; Ozutsumi, Minoru; Motohashi, Katsuichi; and Kimura, Shiro, 3,873,340.
- Kimura, Tadao; Murao, Atuhiko; and Kuwahara, Toshigoro, to Nippon Kokan Kabushiki Kaisha. Process of treating surfaces of metals. 3,873,349, Cl. 117-93.310.
- King, Arthur S. Corrosion control assembly. 3,873,434, Cl. 204-212.000.
- King, Jack B., to General Motors Corporation. Fuel vapor and air mixing device with fuel-air ratio limiting means. 3,872,848, Cl. 123-119.00R.
- Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Peptides of ACTH activity containing α-aminooxy carboxylic acid on the N-terminal moiety, and a process for the preparation thereof. 3,873,510, Cl. 260-112.500.
- Kishimoto, Soichiro: *See—*
  - Minato, Takashi; Takegami, Shinsuke; Kishimoto, Soichiro; and Kanetsuki, Katsutoshi, 3,873,487.
- Kiszelly, Eniko: *See—*
  - Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.
  - Berenyi nee Poldermann, Edit; Pallos, Laszlo; Benko, Pal; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; and Kiszelly, Eniko, 3,873,543.
  - Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,541.
- Kitaj, Walter, to Owens-Illinois, Inc. Abrasion resistant one step glass coating with excellent labelability. 3,873,352, Cl. 117-124.00E.
- Kitasato Institute, The: *See—*
  - Kasuga, Tadayoshi; Nakase, Yasukiyo; and Kawahira, Minoru, 3,873,691.
- Kiyomoto, Akio: *See—*
  - Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
- Kizer, Joseph Austin A.: *See—*
  - Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls, 3,873,584.
- Klahre, Guenter: *See—*
  - Huber-Emden, Helmut; Hubele, Adolf; and Klahre, Guenter, 3,873,703.
- Klaiber, Erich Manfred; and Pittet, Alan Owen, to International Flavors & Fragrances Inc. Process for preparing substituted alpha-pyrones. 3,873,574, Cl. 260-343.500.

Klaus, Benedikt, to Kadus Werk Ludwig Kegel KG. Hair drier. 3,872,607, Cl. 34-99.000.

Kleber, Rolf; Smerz, Otto; and Trapp, Gunther, to Hoechst Aktiengesellschaft. Vat or reactive dyes or mixtures thereof and acrylamide or methylene bis-acrylamide in alkaline crosslinking and dyeing. 3,873,265, Cl. 8-17.000.

Klein, Arthur Harold, to GTE Sylvania Incorporated. Gated bias noise suppression circuitry. 3,873,768, Cl. 178-7.30R.

Klein Schanzlin & Becker Aktiengesellshaft: *See*—

Bockau, Guenter; and Schaefer, Horst, 3,873,052.

Kleinerman, Ben; and Geist, Meyer J., to Telescan Communications Systems, Inc. Simultaneous transmission of a video and an audio signal through an ordinary telephone transmission line. 3,873,771, Cl. 179-2.0TV.

Klemm, Kurt; and Langenscheid, Erhard, to Byk-Gulden Chemische Fabrik GmbH. Process for preparing 1-dialkylamino-5-dialkylimonia-2-cyano-3-chloro-4-azapenta-1,3-diene salts. 3,873,596, Cl. 260-465.50R.

Klett, Stanley D.: *See*—

Charland, Terrence D.; and Klett, Stanley D., 3,872,830.

Kline, Joel B. Universal hospital container. 3,872,868, Cl. 128-272.000.

Klinger, Isaac: *See*—

Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,873,204.

Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., to ICI United States Inc. Use of radiation-induced polymers as temporary or permanent diverting agent. 3,872,923, Cl. 166-247.000.

Knight, Houston W., to FMC Corporation. Vapor recovery fluid loading arm with dripless discharge spout. 3,872,899, Cl. 141-59.000.

Knobloch, James O., to Standard Oil Company. Polytetrahalobenzene dicarboxylic anhydrides. 3,873,506, Cl. 260-78.40R.

Knobloch, James O.; and Latta, James E., to Standard Oil Company. Isolation of tetrachloroterephthalic acid. 3,873,613, Cl. 260-525.000.

Knopka, William N.: *See*—

Boettcher, Richard R.; and Knopka, William N., 3,873,504.

Knoshaug, Wendell E.: *See*—

Pitt, Harold M.; Zeleny, Richard A.; and Knoshaug, Wendell E., 3,873,647.

Knutson, Oliver J.: *See*—

Church, Peter K.; and Knutson, Oliver J., 3,873,344.

Kobayashi, Kenji: *See*—

Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,873,706.

Kobayashi, Tatsuyoshi; Nakamura, Isei; and Nakagawa, Mitsutoshi. Process for producing itaconic acid. 3,873,425, Cl. 195-36.00R.

Koberstein, Edgar; and Lakatos, Eduard, to Deutsche Gold-und-Silber-Scheideanstalt Vormals Roessler. Catalysts and their production. 3,873,471, Cl. 252-465.000.

Kobinata, Sadao; Satake, Takeo; and Hiramoto, Naonobu, to Kuraray Yuka Co., Ltd. Method of removing substance harmful to oxidation reaction in the production of benzenecarboxylic acids by oxidation. 3,873,468, Cl. 252-413.000.

Koch, Clyde M. Bowling ball cart. 3,873,119, Cl. 280-47.13R.

Kock, Manfred: *See*—

Dammann, Hans; Kock, Manfred; and Tiemens, Ulf, 3,873,834.

Koetsch, Philip W.; and Jensen, Joseph C., to National Cash Register Company, The. Volt-second balancing means for a high frequency switching power supply. 3,873,903, Cl. 321-2.000.

Kogan, Susan L.: *See*—

Lamberti, Vincent; and Kogan, Susan L., 3,873,614.

Koida, Yoshiyuki: *See*—

Suzuki, Akira; Miura, Hiroshi; Sawada, Katsuya; and Koida, Yoshiyuki, 3,873,720.

Kolba, Verne M.: *See*—

Nelson, Paul A.; Kolba, Verne M.; and Holmes, John T., 3,872,718.

Koley, John V.: *See*—

Gordon, Yale J.; and Koley, John V., 3,872,966.

Kolk, Howard A.; and Kolk, Robert D. Planting machine. 3,872,805, Cl. 111-2.000.

Kolk, Robert D.: *See*—

Kolk, Howard A.; and Kolk, Robert D., 3,872,805.

Kolts, Juri, to Armco Steel Corporation. Method and compositions for the prevention or reduction of speck rusting of cold rolled, annealed steel prior to temper rolling. 3,873,374, Cl. 148-12.100.

Kondo, Hideya; Takemura, Kunio; and Mori, Tamotsu, to Matsushita Electric Works, Ltd. Electromagnetic contactor. 3,873,952, Cl. 335-192.000.

Kondo, Marekata; Fukuda, Seiwa; and Yamamoto, Toyohiko, to Mitsubishi Mining & Cement Company, Ltd. Process for fluid calcining cement raw meal. 3,873,331, Cl. 106-100.000.

Kondo, Mitsuru: *See*—

Misawa, Toshihiko; and Kondo, Mitsuru, 3,873,986.

Kongelbeck, Sverre, to United States of America, Navy. Missile launcher. 3,872,776, Cl. 92-12.000.

Konishiroku Photo Industry Co., Ltd.: *See*—

Amano, Tadashi, 3,873,201.

Konopka, John P., to Burroughs Corporation. Optical device for vehicular docking. 3,873,210, Cl. 356-138.000.

Kontz, Robert F., to Owens-Illinois, Inc. Method of blow molding and exhausting a blown article through the same blow needle. 3,873,661, Cl. 264-98.000.

Kooi, Else, to U.S. Philips Corporation. Integrated circuits with oxidation-junction isolation and channel stop. 3,873,383, Cl. 148-187.000.

Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich. Continuous ingot casting machine. 3,872,914, Cl. 164-147.000.

Kostiainen, Lauri: *See*—

Reijonen, Olavi; Robez, Roland Gabriel; and Kostiainen, Lauri, 3,873,256.

Kotick, Michael Paul; and Polazzi, Joseph Odo, to Miles Laboratories, Inc. Process for the preparation of 1-[β-D-2-substituted-2-deoxyribofuranosyl]-pyrimidines. 3,873,516, Cl. 260-211.50R.

Kotone, Akira; Hoda, Masahiro; Hori, Takeshi; and Nakane, Yoshihiko, to Sakai Chemical Industry Company Limited. Method for manufacturing 4-amino-1,2,4-triazoles. 3,873,563, Cl. 260-308.00R.

Kowalewski, Rolf E., to Motorola, Inc. Automatic turn-on circuit for a DC to DC down converter. 3,873,904, Cl. 321-2.000.

Koyama, Masaharu: *See*—

Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,169.

Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,171.

Kozel, James A.; and DeLew, Charles A., to Controls Company of America. Anti-contaminant diaphragm valve. 3,872,878, Cl. 137-242.000.

Kozinski, Richard C.: *See*—

Bottum, Edward W.; and Kozinski, Richard C., 3,872,687.

Kraffczyk, Friedrich; and Helger, Roland, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Indicator for the determination of urea. 3,873,269, Cl. 23-230.00B.

Kramer, Friedhelm: *See*—

Wolfertz, Gunther; Kramer, Friedhelm; and Hillringhaus, Paul, 3,872,554.

Krapcho, John, to E. R. Squibb & Sons, Inc. (Aminoalkoxy) phenylacetamides and derivatives thereof. 3,873,616, Cl. 260-559.00A.

Krause, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for exposure measuring devices. 3,873,827, Cl. 250-201.000.

Krauss-meffei Aktiengesellschaft: *See*—

Wohlrab, Walter, 3,872,887.

Krautkramer-Branson, Incorporated: *See*—

Pittaro, Richard J., 3,872,715.

Krebaum, Lawrence J.: *See*—

Wu, William C. L.; Krebaum, Lawrence J.; and Machonis, John, Jr., 3,873,643.

Kreckeler, Fritz: *See*—

Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.

Kreevoy, Maurice M.; Borch, Richard Frederic; and Hutchins, Jonathan Edward Colin, to Regents of the University of Minnesota. Method for preparing amines. 3,873,621, Cl. 260-583.00R.

Krehbiel, Delmar D.; Gregory, Duane; Clark, Charles R.; and Kennedy, Carl D., to Continental Oil Company. Anionic waterflood additive and method of using same. 3,873,453, Cl. 252-8.55D.

Kreitzberg, James S., to Microflect Co., Inc. Waveguide boot. 3,873,135, Cl. 285-177.000.

Kress Corporation: *See*—

Medley, Jackson C., 3,872,842.

Kretschmer, Paul. Fastening arrangement for decorative wheel rings. 3,873,161, Cl. 301-37.00P.

Kreuzer, Manfred, to Hottinger-Baldwin-Messtechnik GmbH. Measuring bridge circuit. 3,873,917, Cl. 324-62.000.

Kristiansen, Odd, to Ciba-Geigy Corporation. Certain 2,2-dimethylpropanal-carbamoyloximes fungicides. 3,873,717, Cl. 424-303.000.

Kronos Titan G.m.b.H.: *See*—

Schmidt, Gunter; and Servais, Carlo, 3,873,335.

Krook, Hans: *See*—

Dzaack, Heinz; and Krook, Hans, 3,872,732.

Krug Blocker, Inc.: *See*—

Krug, Donald G., 3,873,089.

Krug, Donald G., to Krug Blocker, Inc. Athletic training apparatus. 3,873,089, Cl. 273-55.00R.

Krygowski, Richard P.: *See*—

Chester, Frederic J.; and Krygowski, Richard P., 3,872,849.

Kubie, William L., to United States of America, Agriculture. Concrete-curing and antispalling compositions. 3,873,326, Cl. 106-12.000.

Kubota, Hayato; and Tateishi, Teizaburo, to Fuji Oil Company, Limited. Preparation of a cheese-like fermented food. 3,873,729, Cl. 426-40.000.

Kuehne, Manfred; and Vogel, Christian, to Ciba-Geigy Corporation. Cyanoalkylamino-s-triazines. 3,873,544, Cl. 260-249.800.

Kugler, Tibor; and Rieger, Hans Wolfhart, to Swiss Aluminium Ltd. Method of manufacture of a conductor rail. 3,872,577, Cl. 29-492.000.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Indoline dyestuffs. 3,873,528, Cl. 260-240.00J.

Kuhn, Harry A., Jr.: *See*—

Daniels, R. Gary; and Kuhn, Harry A., Jr., 3,873,852.

Kuhn, Henry S. Writing guide for training purposes and use by the blind. 3,872,611, Cl. 35-38.000.

Kuhnlein, Hans, to HCH. Bertrams Aktiengesellschaft. Method of concentrating caustic solutions. 3,872,910, Cl. 159-49.000.

Kulite Semiconductor Products, Inc.: *See*—

Kurtz, Anthony D.; and Mallon, Joseph R., 3,873,956.

Kullman, Russell M. H.; and Reinhardt, Robert M., to United States of America, Agriculture. Methylolated reaction product of a hydroxy carbamate and a cellulose-dyeing azo dyestuff containing a chlorotriozinyl group. 3,873,513, Cl. 260-146.00T.

Kumata, Koji; and Nagata, Kozaburo, to Sanyo Chemical Industries, Ltd. Skin polyurethane foam. 3,873,407, Cl. 161-160.000.

Kunsch, Hans-Jurgen: *See*—

Harms, Horst; and Kunsch, Hans-Jurgen, 3,873,039.

Kupelian, Robert Howard, to American Cyanamid Company. Process for inhibiting bud growth. 3,873,297, Cl. 71-78.000.

Kuraray Yuka Co., Ltd.: *See*—

Kobinata, Sadao; Satake, Takeo; and Hiramoto, Naonobu, 3,873,468.

Kurihara, Hirondo: *See*—

Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi, Sueo, 3,873,492.

Kurita, Mitsuo: *See*—

Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, 3,873,034.

Kuriyagawa, Mamoru: *See*—

Sawazaki, Norikazu; Kuriyagawa, Mamoru; and Yagi, Motoi, 3,873,994.

Kurozumi, Akira: *See*—

Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.

Kurtz, Anthony D.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Integrated transducer assemblies. 3,873,956, Cl. 338-2.000.

Kusaki, Toshiatsu: *See*—

Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, 3,873,515.

Kuus, Felix, to Byron Jackson Inc. Belleville spring cartridge. 3,873,079, Cl. 267-162.000.

Kuwahara, Toshigoro: *See*—

Kimura, Tadao; Murao, Atuhiko; and Kuwahara, Toshigoro, 3,873,349.

Kwik, John H., Jr., to United States of America, Army. Ring to stud converter. 3,873,053, Cl. 105-476.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—

Kimura, Kazuo; and Nakanishi, Toru, 3,873,424.

Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.

Laakso, Thomas M.; and Van Nice, Harold L., to Eastman Kodak Company. Novel light-sensitive copolyesters. 3,873,505, Cl. 260-75.0UA.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Process for making reinforced thermosets from epoxy-functional copolymers and crosslinking agents. 3,873,493, Cl. 260-42.280.

LaBantschnig, Victor; and Diestel, Victor Robert, to Orchard Container Corporation. Gluing machine. 3,872,652, Cl. 53-376.000.

Laboratoires Laroche Navarron: *See*—

Pinhas, Henri, 3,873,620.

Laboratories del Dr. Esteve S.A.: *See*—

Esteve-Subirana, Antonio, 3,873,606.

Lacarrau, Philippe; and Duriaux, Jean-Marc. Ski brake. 3,873,108, Cl. 280-11.13B.

Lachowicz, Donald R.: *See*—

Kablaoui, Mahmoud S.; and Lachowicz, Donald R., 3,873,623.

Lafuze, David Logan, to General Electric Company. Reference wave generator using logic circuitry for providing substantially sinusoidal output. 3,873,928, Cl. 328-14.000.

Lagofun, Guy, to Etat Francais represente par Le Delegue ministeriel pour L'armement. Explosive type switch with circuit serving means. 3,873,786, Cl. 200-61.080.

Lahr, Roy J.; and Wilson, James M., to Xerox Corporation. Credit card. 3,873,813, Cl. 235-61.12N.

Lahtvee, Toivo: *See*—

Sethi, Bal Krishan; Lahtvee, Toivo; and Stark, William Hubbard, 3,873,415.

L'Air Liquide, Societe Anonyme Pour l'Etude et Exploitation des Procedes George Claude: *See*—

Rocher, Jacques; Hotta, Masamichi; Inomata, Mamoru; and Hanabusa, Kazuo, 3,873,414.

Lakatos, Eduard: *See*—

Koberstein, Edgar; and Lakatos, Eduard, 3,873,471.

Lalu, Jean-Pierre: *See*—

Foulletier, Louis; and Lalu, Jean-Pierre, 3,873,619.

Lamb, John T., to Tappan Company, The. Circuit for preventing false turn on of electronic switches or the like. 3,873,854, Cl. 307-252.00N.

Lamb, Thomas J.: *See*—

Anderson, Edward P.; and Lamb, Thomas J., 3,873,438.

Lambert, Brian Paul; and Lowes, James, to Starch Products Limited. A method of treating calcium carbonate paper filler. 3,873,336, Cl. 106-306.000.

Lamberti, Vincent; and Kogan, Susan L., to Lever Brother Company. Process for preparing oxidized carbohydrates and products. 3,873,614, Cl. 260-535.00P.

Lamkin, Clifford L. Carburetor. 3,873,650, Cl. 261-78.00R.

Lammers, Uve H. W.; and Stiglitz, Martin R., to United States of America, Air Force. Multichannel microwave filter. 3,873,948, Cl. 333-73.00C.

Landis, Franklin E.: *See*—

Charters, Michael T.; and Landis, Franklin E., 3,873,412.

Landis Tool Company: *See*—

Price, Ralph E.; and Bricker, Robert E., 3,872,738.

Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,873,357, Cl. 117-212.000.

Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,873,358, Cl. 117-212.000.

Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,873,359, Cl. 117-212.000.

Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,873,360, Cl. 117-212.000.

Lane, Lee, to Raymond Lee Organization, Inc., The, a part interest. Faucet handle removing tool. 3,872,569, Cl. 29-257.000.

Lange, Frederick W. Power driven fish scaler. 3,872,544, Cl. 17-64.000.

Langen, Jacobus J.: *See*—

Langen, Marinus J. M.; and Langen, Jacobus J., 3,872,647.

Langen, Marinus J. M.; and Langen, Jacobus J. Carton loader. 3,872,647, Cl. 53-157.000.

Langenegger, Werner: *See*—

Baumann, Arthur; and Langenegger, Werner, 3,872,936.

Langenscheid, Erhard: *See*—

Klemm, Kurt; and Langenscheid, Erhard, 3,873,596.

Lansky, Zdenek J.: *See*—

Busdiecker, Wayne S.; Lansky, Zdenek J.; and Russell, John G., 3,872,884.

Lapiere, Charles L.: *See*—

Osselaere, Jean P.; and Lapiere, Charles L., 3,873,545.

Laplume, Jacques, to Societe D'Etudes Techniques et D'Enterprises Generales (SODETEG). Teaching machine. 3,872,608, Cl. 35-9.00A.

Larcher, Angelo C.: *See*—

Nichols, Charles E., 3,872,511.

Larenzo, Leroy N.: *See*—

Rochelle, William R.; Larenzo, Leroy N.; and Ranft, Eberhard V., 3,873,057.

Larsen's Manufacturing Company: *See*—

Fudge, William L., 3,872,999.

Larson, Raymond George. Grommet secured and reversible light reflecting device. 3,873,821, Cl. 240-1.00R.

Larson, Roger L., to Minnesota Mining and Manufacturing Company. Heater structure. 3,873,810, Cl. 219-535.000.

Larson, Roger R., to Pharmaco, Inc. Medicament vial stopper piercing and needle positioning device. 3,872,992, Cl. 215-249.000.

Laserplane Corporation: *See*—

Teach, Ted L., 3,873,226.

Lasker, Norman; and Jarrell, Bruce E., to American Medical Products Corp. Peritoneal dialysis apparatus. 3,872,863, Cl. 128-213.000.

Latanision, Ronald M., to Martin Marietta Corporation. Machining method. 3,873,512, Cl. 204-129.460.

Latta, James E.: *See*—

Knobloch, James O.; and Latta, James E., 3,873,613.

Laudise, Michael A., to General Mills Chemicals, Inc. Phthalic anhydrides adducts of amino-amides of monomeric fatty compounds. 3,873,481, Cl. 260-18.0PN.

Laufer, Siegmar; and Roy, Waldemar, to Deutsche Gold-und Silber-Scheidenstaft vormals Roessler. Process for the hydrophobization of higher dispersed oxides. 3,873,337, Cl. 106-308.00Q.

Laurence, Patrick T.; and Shuttleworth, Henry, to Texaco Trinidad, Inc. Henkel reaction conditions. 3,873,608, Cl. 260-515.00P.

Lazure, Frank S.: *See*—

Zoeller, Richard J.; and Lazure, Frank S., 3,873,738.

Le Moteur Moderne: *See*—

Jarry, Philippe, 3,872,665.

Le Nickel: *See*—

Garito, Humbert, 3,873,822.

Lea, James M.; and Anderson, Neil P. Inflatable foam pad. 3,872,525, Cl. 5-348.00R.

Lear Siegler, Inc.: *See*—

Tersch, Richard W., 3,872,701.

Leathem, Albert: *See*—

Atkinson, William W.; and Leathem, Albert, 3,872,711.

Leblond, Jean Rene; Danneels, Guy Emile; and Biet, Jean Armand, to Uniroyal a Societe Anonyme. Tire building apparatus. 3,873,397, Cl. 156-401.000.

Lecomte, Camille; and Desirat, Andre, to Societe Anonyme de Vehicules Industries et d'Equipement Mechanique Saviem. Modular frame assembly for vehicle. 3,873,120, Cl. 280-106.00R.

Leduc, Gerard; and Leduc, Michel. Hydraulic swash plate pump. 3,873,240, Cl. 417-222.000.

Leduc, Michel: *See*—

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  - Wilcock, William Leslie, 3,873,206.
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- Le Maout, Theophile Francois: *See—*
  - Camboulives, Andre Alphonse Mederic Leon; Le Maout, Theophile Francois; Vandenbroucke, Roger Alfred Jules; and Zibette, Bernard Arthur, 3,873,027.
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- Leptien, Helmut: *See—*
  - Vogelsang, Gustav; and Leptien, Helmut, 3,872,838.
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  - Osselaere, Jean P.; and Lapiere, Charles L., 3,873,545.
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- Lesher, Howard D.: *See—*
  - Friedman, Robert; and Lesher, Howard D., 3,873,798.
- Letawa, John R.: *See—*
  - Daugherty, Barney R.; and Letawa, John R., 3,873,264.
- Letzel, Helmut; and Letzel, Wolfgang, to Jakob Wollenhaupt Werkmittel, K. G. Key receivable in a t-groove of a support. 3,873,224, Cl. 403-381.000.
- Letzel, Wolfgang: *See—*
  - Letzel, Helmut; and Letzel, Wolfgang, 3,873,224.
- Leung, Chun Keung: *See—*
  - Taplin, Lael B.; Seitz, William R.; and Leung, Chun Keung, 3,872,846.
- Lever Brother Company: *See—*
  - Lamberti, Vincent; and Kogan, Susan L., 3,873,614.
- Lever Brothers Company: *See—*
  - Carpenter, Roland Paul; Weddle, Richard Braid; and Wood, Francis William, 3,873,749.
  - Jenkins, Frederick Peter, 3,873,739.
- Levin, Yehuda: *See—*
  - Katchalski, Ephraim; Levin, Yehuda; and Solomon, Beka, 3,873,426.
- Levine, Harold A.: *See—*
  - Franco, Jack R.; Havas, Janos; and Levine, Harold A., 3,873,361.
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- Leviton Manufacturing Co., Inc.: *See—*
  - Gershen, Bernard J., 3,873,882.
- Lewis, Charles T., Jr.: *See—*
  - Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,873,635.
- Lewis, Dennis Osborne: *See—*
  - Fitzpatrick, Joseph William; Berninger, Carl Johannes; and Lewis, Dennis Osborne, 3,873,581.
- Lewis, John H.: *See—*
  - Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.
- Lewis, Katherine J.: *See—*
  - Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.
- Lewis, Kathrine Johnson, to du Pont de Nemours, E. I., and Company. Oil-resistant and aging-resistant elastomers. 3,873,494, Cl. 260-42.370.
- Lewis, Marvin Dennis: *See—*
  - Gomez, Climaco Alberto; Lewis, Marvin Dennis; and Twilley, Ian Charles, 3,872,558.
- Lewis, William J.: *See—*
  - McCormick, Walter R.; and Lewis, William J., 3,873,678.
- Leyba, Manuel R., to Sperry Rand Corporation. Indicator module and method of manufacturing same. 3,873,889, Cl. 317-101.00R.
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- Lichti, Robert W.: *See—*
  - Berg, Lawrance F.; Hogg, Theodore B.; and Lichti, Robert W., 3,873,133.
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- Lieberman, Walter G., to Magnetic Controls Company. Electrical connector. 3,873,785, Cl. 200-51.100.
- Liebert, Richard: *See—*
  - Conklin, Thomas Henry; Liebert, Richard; and Berandt, Leonard, 3,873,872.
- Liedhegener, Friedel: *See—*
  - Bernd, Hubert; and Liedhegener, Friedel, 3,872,750.
- Liedman, Stanley G.: *See—*
  - Remde, Richard H.; and Liedman, Stanley G., 3,872,752.
- Liggett, Thomas; and Cox, Gregory C., to United States of America, Navy. Modified nitrocellulose particles. 3,873,517, Cl. 260-220.000.
- Liljegren, Dale H.: *See—*
  - Pitzen, Sylvester A.; Drabier, Jacques P.; and Liljegren, Dale H., 3,872,859.
- Lin, Kang: *See—*
  - Fuchs, Julius Jakob; and Lin, Kang, 3,873,540.
- Linck, Drew W., to United States of America, Navy. Double slotted circulation control airfoil. 3,873,233, Cl. 416-90.00A.
- Lindner, Ernst: *See—*
  - Groebel, Alfred; and Lindner, Ernst, 3,873,699.
- Lindstedt, Gunter: *See—*
  - Gerlach, Albrecht; Lindstedt, Gunter; and Gollinger, Wolfgang, 3,873,856.
- Lindstrum, Alan L., to United States of America, Navy. Tone burst generator. 3,873,937, Cl. 331-75.000.
- Link, Robert O.; and Smith, David W., to Value Engineering Company. Freight container coupler. 3,872,555, Cl. 24-221.00R.
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- L'Italien, Yvon J.: *See—*
  - De Wald, Horace A.; and L'Italien, Yvon J., 3,873,565.
- Little, Paul A.: *See—*
  - Ashmead, Harvey H.; and Little, Paul A., 3,873,296.
- Littlehales, Herbert James, to Joseph Lucas (Industries) Limited. Fuel injection systems. 3,872,850, Cl. 123-139.0AW.
- Litton Industries, Inc.: *See—*
  - Dunn, Elman R., 3,872,628.
- Liu, Wen-Chih: *See—*
  - Meyers, Edward; Slusarchyk, Dorothy S.; and Liu, Wen-Chih, 3,873,693.
- Livingston, William L., to Factory Mutual Research Corporation. Fluid discharge assembly having a tiltable discharge portion and a discharge control system incorporating a plurality of said assemblies. 3,872,928, Cl. 169-56.000.
- LKB-Produkter AB: *See—*
  - Dzaack, Heinz; and Krook, Hans, 3,872,732.
- Loev, Bernard: *See—*
  - Caldwell, Henry C.; and Loev, Bernard, 3,873,536.
- Loew, Gunther: *See—*
  - Jabs, Gert; and Loew, Gunther, 3,873,476.
- Loewrigkeit, Peter: *See—*
  - Bluestein, Claire; and Loewrigkeit, Peter, 3,873,484.
- Logan, Russell J.: *See—*
  - Claxton, Raymond J.; Logan, Russell J.; and West, Charles E., 3,873,305.
- Lohbeck, Kurt: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,873,577.
- Lohikoski, Timo Jorma Juhani, to Outokumpu Oy. Continuous method and apparatus for upwards casting. 3,872,913, Cl. 164-64.000.
- Lohmann, Robert P.; and Markowski, Stanley J., to United Aircraft Corporation. Swirl combustor with vortex burning and mixing. 3,872,664, Cl. 60-39.650.
- Long, Ralph B., Jr.: *See—*
  - Bittman, Jesse C.; and Long, Ralph B., Jr., 3,872,702.
- Long, Raymond H.; and Sze, Morgan C., to Lummus Company, The. Desulfurizing coke using a ferruginous material and a metal chloride. 3,873,427, Cl. 201-17.000.
- Lord Corporation: *See—*
  - Owston, William J.; and Howard, Dennis D., 3,873,640.
- L'Oreal: *See—*
  - Kalopissis, Gregoire; Viout, Andre; and Vanlerberghe, Guy, 3,873,688.
- Lorz, Emil; and Spence, Leicester T., to Syntex (U.S.A.) Inc. Method of improving beef production. 3,873,719, Cl. 424-312.000.
- Lotze, Thomas H.; and Tompkins, James Robert, to Sybron Corporation. Sanitary thermoelement assembly. 3,873,102, Cl. 277-2.000.
- Louvel, Bernard, to Entreprise De Recherches Et D'Activites Petrolieres (ELF). Apparatus for measuring the index of filterability of a liquid. 3,872,710, Cl. 73-17.00R.
- Lovegreen, Alan Trevor, to Harleyford Hydrosand Equipment Company Limited. Separation of liquids from wet solids. 3,873,450, Cl. 210-386.000.

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  - Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
- Lowes, James: *See—*
  - Lambert, Brian Paul; and Lowes, James, 3,873,336.
- Loyd, Lee R.: *See—*
  - Griffiths, Edward J.; and Loyd, Lee R., 3,873,138.
- LTV Aerospace Corporation: *See—*
  - Goode, William P., 3,872,794.
  - Marek, Albert J., 3,873,905.
- Lubrizol Corporation, The: *See—*
  - Hoke, Donald Irvin, 3,873,646.
- Lucas Electrical Company Limited, The: *See—*
  - Leighton, Peter Watson; and Tomlinson, Neil, 3,873,795.
- Lueck, Leslie M.: *See—*
  - Fusari, Salvatore A.; and Lueck, Leslie M., 3,873,727.
- Luksas, Anthony J.; and Williams, Wilmore, to Beatrice Foods Company. Production of soy sauce. 3,873,730, Cl. 426-46.000.
- Lummus Company, The: *See—*
  - Long, Raymond H.; and Sze, Morgan C., 3,873,427.
- Lundman, Philip L., to Petersen Industries, Inc. Vehicle ramp. 3,873,064, Cl. 254-88.000.
- Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Production of o-phthalodinitrile. 3,873,595, Cl. 260-465.00C.
- Luwa AG: *See—*
  - Bachman, Robert Theophil, 3,872,876.
- Lyashenko, Alexandr Fedorovich: *See—*
  - Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; Lyashenko, Alexandr Fedorovich; and Zhitnetsky, Vasily Ivanovich, 3,873,308.
- Lyczko, Felix J.: *See—*
  - Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., 3,872,917.
- Maag Gear-Wheel & Machine Company Limited: *See—*
  - Sterki, Armin, 3,873,916.
- Maag, Gustav A., to Proctor & Gamble Company, The. Controllable-profile roll. 3,872,919, Cl. 165-30.000.
- Machalitzky, Otto; and Erdelitsch, Herbert, to SWF-Spezialfabrik fur Autozubehor Gustab Rau GmbH. Steering column switch. 3,873,788, Cl. 200-61.270.
- Machi, Sueo: *See—*
  - Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi. Sueo, 3,873,492.
- Machida, Hiromasa; Ichigaya, Hiroshi; and Iwabuchi, Kietsu, to Sony Corporation. Mislanding corrector for color cathode ray tubes. 3.873.877, Cl. 313-430.000.
- Machonis, John, Jr.: *See—*
  - Wu, William C. L.; Krebaum, Lawrence J.; and Machonis, John, Jr., 3,873,643.
- Mackintosh, Charles. Movable audience chair. 3,873,153, Cl. 297-334.000.
- MacMillan Bloedel Limited: *See—*
  - Cartlidge, Dennis M.; and Sharpe, Keith, 3,873,662.
- Maeda, Akira, to Sony Corporation. Automatic horizontal frequency control circuits for television receivers. 3,873,766, Cl. 178-7.300.
- Maeno, Shizuo: *See—*
  - Kamiya, Takashi; Maeno, Shizuo; and Hashimoto, Masahi, 3,873,526.
- Magne, Frank C.; Mod, Robert R.; and Sumrell, Gene, to United States of America, Agriculture. N-substituted fatty acid amide lubricants. 3,873,457, Cl. 252-47.500.
- Magnetic Controls Company: *See—*
  - Lieberman, Walter G., 3,873,785.
- Mahlmann, James P., to General Foods Corporation. Process for aromatizing coffee. 3,873,746, Cl. 426-319.000.
- Maid-Rite Novelty Corp.: *See—*
  - Edelman, Irving, 3,873,403.
- Malagari, Frank A., Jr., to Allegheny Ludlum Industries, Inc. Process for making copper-containing oriented silicon steel. 3,873,380, Cl. 148-111.000.
- Malikov, Konstantin Alexeevich: *See—*
  - Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
- Mallinckrodt Chemical Works: *See—*
  - Cavallito, Chester John; and Gray, Allan Poe, 3,873,705.
- Mallon, Joseph R.: *See—*
  - Kurtz, Anthony D.; and Mallon, Joseph R., 3,873,956.
- Malloy, John F., to Norton Company. Splicing of coated abrasive materials. 3,872,629, Cl. 51-295.000.
- Malo, Lowell L., to ACF Industries, Incorporated. Bulkhead trolley and locking device. 3,872,798, Cl. 105-376.000.
- Maloney, William T.: *See—*
  - McMahon, Donald H.; and Maloney, William T., 3,873,970.
- Maltby, Willis G.: *See—*
  - Goudreau, Noel G., 3,873,009.
- Marceau, William E.: *See—*
  - Bates, William G.; and Marceau, William E., 3,873,295.
- Marchello, Maurice J.: *See—*
  - Crumbaugh, John H.; and Marchello, Maurice J., 3,872,639.
- Marder, Arnold R.: *See—*
  - Giles, Philip M.; Abrams, Halle; and Marder, Arnold R., 3,873,306.
- Marek, Albert J., to LTV Aerospace Corporation. Control circuit to provide shunt path for leakage current. 3,873,905, Cl. 323-9.000.
- Margen, Peter Heinrich Erwin, to Aktiebolaget Atomenergi. Accumulation power station. 3,872,673, Cl. 60-650.000.
- Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Moulding compositions containing a mixture of a thermoplastic aromatic polycarbonate, a butadiene polymer and a copolymer based on ethylenically unsaturated monomers. 3,873,641, Cl. 260-873.000.
- Marion, Jean-Paul: *See—*
  - Reymond, Dominique; and Marion, Jean-Paul, 3,873,752.
- Markowski, Stanley J.: *See—*
  - Lohmann, Robert P.; and Markowski, Stanley J., 3,872,664.
- Marlowe, Frank Jerome, to RCA Corporation. Digital storage tube target structure. 3,873,873, Cl. 313-391.000.
- Marr, Fritz; Schlapp, Albert; Hattass, Rainer; and Binder, Edmund, to H. T. Golde GmbH. Sliding roof construction for a motor vehicle. 3,873,150, Cl. 296-137.00H.
- Marsh, Stanley B.: *See—*
  - Sothcott, Peter; and Marsh, Stanley B., 3,873,983.
- Marsh, Walter G.; Mercier, Melvin K.; and Rhoades, James J., to Tapco Products Company, Inc. Saw table. 3,872,755, Cl. 83-471.300.
- Marshall, Robert: *See—*
  - Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.
- Martin, Charles L.: *See—*
  - Nichols, Paul E.; and Martin, Charles L., 3,872,573.
- Martin, Clifford E., to Mohawk Data Sciences Corporation. Document detection apparatus. 3,873,843, Cl. 250-561.000.
- Martin, John: *See—*
  - Garza, Roberto Cavazos; and Martin, John, 3,872,745.
- Martin Marietta Corporation: *See—*
  - Guy, William V., Jr., 3,873,773.
  - Latanision, Ronald M., 3,873,512.
- Marvin Glass & Associates: *See—*
  - Katzman, Allison W.; and Nix, Donald F., 3,873,091.
- Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method of producing discontinuous lengths of dispersed filament strand. 3,873,290, Cl. 65-2.000.
- Maschinenfabrik Benninger AG: *See—*
  - Wildi, Edwin; and Brandenberger, Albert, 3,873,043.
- Masco Corporation of Indiana: *See—*
  - Fathauer, George H., 3,873,924.
  - Hare, Terence G., 3,872,890.
- Mason, Austin C. F.: *See—*
  - Cashen, Norton A.; and Mason, Austin C. F., 3,872,693
- Mason, Donald L.: *See—*
  - McKillip, William R.; and Mason, Donald L., 3,872,762.
- Massachusetts Institute of Technology: *See—*
  - Burke, Barry Ernest; Stern, Ernest; and Bers, Abraham, 3,873,858.
- Mastis, Victor, to Berg Manufacturing Company, The. Diaphragm. 3,872,777, Cl. 92-101.000.
- Mastner, Jiri: *See—*
  - Iten, Paul D.; and Mastner, Jiri, 3,873,923.
- Masuda, Michio: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Masuyama, Takeshi: *See—*
  - Matsuoka, Michio; Itakura, Gen; Iga, Atsushi; and Masuyama, Takeshi, 3,872,582.
- Matej, Ronald J., to Prutton Corporation. Lock thread die set and method. 3,872,700, Cl. 72-91.000.
- Material Sciences Corporation: *See—*
  - Janus, Alan R., 3,873,341.
- Mathew, Chempolil Thomas; and Ulmer, Harry Edwards, to Allied Chemical Corporation. Process of preparing α-formyl sulfides and 2-hydrocarbyl-thioaldoximes therefrom. 3,873,624, Cl. 260-601.00R.
- Matsuhisa, Koh, to Ricoh Co., Ltd. Sheet intermittent feed device. 3,873,014, Cl. 226-162.000.
- Matsumoto, Hirofumi; and Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply device for an internal combustion engine. 3,872,851, Cl. 123-180.00R.
- Matsuoka, Michio; Itakura, Gen; Iga, Atsushi; and Masuyama, Takeshi, to Matsushita Electric Industrial Co., Ltd. Process for making a voltage dependent resistor. 3,872,582, Cl. 29-621.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Matsuoka, Michio; Itakura, Gen; Iga, Atsushi; and Masuyama, Takeshi, 3,872,582.
  - Omiya, Shoji; and Yoshimatsu, Toshio, 3,873,100.
- Matsushita Electric Works, Ltd.: *See—*
  - Kondo, Hideya; Takemura, Kunio; and Mori, Tamotsu, 3,873,952.
- Matsuyama, Iwao: *See—*
  - Toda, Gyozo; Matsuyama, Iwao; and Tsukuda, Yasuo, 3,873,657.
- Matthis, Alan A., to Controls Company of America. Evaporator temperature control for refrigeration systems. 3,872,685, Cl. 62-196.000.

- Maurer, Gerhard; and Geiger, Fritz, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Fluid-supply system for hydraulic coupling. 3,872,957, Cl. 192-113.00B.
- Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
  - Munder, Paul Gerhard; Modolell, Manuel; and Wallach, Donald Francis Hoelzl, 3,873,423.
  - Ruska, Ernst; and Stocklein, Franz, 3,873,831.
- Mayer, John F.: *See—*
  - Burkart, Jacob W.; and Mayer, John F., 3,873,087.
- Mayers, Bernard J.: *See—*
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,873,731.
  - Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Giacino, Christopher, 3,873,732.
- Mayrand, James L. Device for protecting a wheel during removal and installation of lug nuts. 3,873,160, Cl. 301-5.00R.
- Maytag Company, The: *See—*
  - Smith, Thomas R., 3,873,036.
- McCabe, John Stanton, to Chicago Bridge & Iron Company. Pipe joint. 3,873,139, Cl. 285-286.000.
- McCann, Robert G. Vehicle safety jacking apparatus. 3,873,065, Cl. 254-100.000.
- Mc[illegible]ain, Dale E.: *See—*
  - Beaudin, Gerald P., Jr.; and McClain, Dale E., 3,872,513.
- McClelland, Donald H.: *See—*
  - Young, Roland L.; McClelland, Donald H.; and Wolcott, Edward O., 3,873,803.
- McConnell, Charles G.: *See—*
  - Reed, Robert D.; McGill, Eugene C.; and McConnell, Charles G., 3,873,671.
- McCormick, Walter R.; and Lewis, William J., to N L Industries, Inc. Method for making ferric chloride. 3,873,678, Cl. 423-493.000.
- McCreight, Louis R., to General Electric Company. Encapsulated salt additives. 3,873,332, Cl. 106-109.000.
- McCusker, Joseph Henry: *See—*
  - Perlman, Stuart Stanley; and McCusker, Joseph Henry, 3,873,906.
- McDonald, Dale Richard: *See—*
  - Higgins, John Francis; McDonald, Dale Richard; Hanson, Marvin Ardell; and Moore, William Percy, 3,873,734.
- McDonald, Kenneth A.: *See—*
  - Crete, Darrel R.; and McDonald, Kenneth A., 3,873,200.
- McDonald, Roy A.: *See—*
  - Eaton, George H.; and McDonald, Roy A., 3,873,000.
- McEachron, John C.: *See—*
  - Schindler, Edgar C.; and McEachron, John C., 3,873,759.
- McGaully, Ronald J., to American Home Products Corporation. Synthesis of 1,4-benzodiazepin-2-ones. 3,873,604, Cl. 260-490.000.
- McGill, Eugene C.: *See—*
  - Reed, Robert D.; McGill, Eugene C.; and McConnell, Charles G., 3,873,671.
- McGovern, Terrence P.: *See—*
  - Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., 3,873,724.
- McGuire, Charles H., to Motorola, Inc. Arming system safety device. 3,872,770, Cl. 89-1.50D.
- McIlwain, Ivy. Rat trap. 3,872,619, Cl. 43-60.000.
- McIntosh, Duane E., to General Motors Corporation. Data compression method and apparatus. 3,873,977, Cl. 340-347.0DD:
- McIntyre, Duane E., to Clark Equipment Company. Connecting mechanism. 3,872,955, Cl. 192-67.00R.
- McIntyre, Newman: *See—*
  - Hawkins, John L.; and McIntyre, Newman, 3,872,968.
- McIvor, John H., to United States of America, Army. Fuze. 3,872,790, Cl. 102-70.00R.
- McKay, William C., to Haberstroh Farm Products, Inc. Method for precooking bacon. 3,873,755, Cl. 426-523.000.
- McKee, Dale P.; and McKee, Richard D., to Burchfield and Turner Enterprises. Adjustably positionable seat support. 3,873,054, Cl. 248-371.000.
- McKee, Richard D.: *See—*
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  - Hess, Peter, 3,873,190.
- Metalmeccanica S.p.A.: *See—*
  - Comerio, Ercole, 3,872,812.
- Metter Instrumente AG: *See—*
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  - Kennedy, William Edward; and Belcher, Willard Leslie, 3,872,602.
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  - Michael, Keith W.; Mink, Alan E.; and Mitchell, Darrell D., 3,873,499.
- Minnesota Mining and Manufacturing Company: *See—*
  - Baeker, Robert B., 3,873,188.
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  - Michael, Keith W.; Mink, Alan E.; and Mitchell, Darrell D., 3,873,499.
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  - Hampl, Edward F., Jr.; Mitchell, William C.; and Reylek, Robert S., 3,873,370.
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  - Kondo, Marekata; Fukuda, Seiwa; and Yamamoto, Toyohiko, 3,873,331.
- Mitsubishi Petrochemical Co. Ltd.: *See—*
  - Saga, Motoo, 3,873,501.
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  - Reasenberg, Julian R.; and Drucker, Rubin, 3,873,601.
- MKT-tehtaat Oy: *See—*
  - Reijonen, Olavi; Robez, Roland Gabriel; and Kostiainen, Lauri, 3,873,256.
- Mobil Oil Company: *See—*
  - Horodysky, Andrew G.; and Raich, Henry, 3,873,454.
- Mobil Oil Corporation: *See—*
  - Bieber, Henry E., deceased; and Sierer, Mrs. Edward, executrix, 3,873,464.
  - Theissen, Robert J., 3,873,302.
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- Mochida Seiyaku Kabushiki Kaisha: *See—*
  - Ogawa, Nobuhisa, 3,873,682.
- Mod, Robert R.: *See—*
  - Magne, Frank C.; Mod, Robert R.; and Sumrell, Gene, 3,873,457.
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  - Munder, Paul Gerhard; Modolell, Manuel; and Wallach, Donald Francis Hoelzl, 3,873,423.
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  - Martin, Clifford E., 3,873,843.
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  - Mohr, Glenn R., 3,873,807.
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  - Horecky, Stanley V.; and Sebastian, Robert W., 3,873,174.
- Molinari, Ewald: *See—*
  - Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, 3,873,433.
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  - Velten, Otto; and Moller, Udo, 3,873,316.
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  - Ehrlich, Donald J., 3,873,395.
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  - Blackmon, Lawrence E., 3,873,072.
  - Bloomfield, Jordan J., 3,873,568.
  - Craford, Magnus G.; and Keune, David L., 3,873,979.
  - Groves, Warren Olley; Herzog, Arno Henry; and Craford, George, 3,873,382.
  - Olin, John F., 3,873,300.
  - Reilly, Joseph R.; and Sincock, Thomas F., 3,873,660.
  - Teague, Richard K.; and Hayden, Phillip L., 3,873,673.
  - Worley, Jimmy Weldon; and Ratts, Kenneth Wayne, 3,873,535.
- Moodus Sports Products: *See—*
  - Bloch, Paul P., 3,873,140.
- Moody, Roy A.: *See—*
  - Caveney, Jack E.; and Moody, Roy A., 3,872,547.
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  - Eaton, George H.; and McDonald, Roy A., 3,873,000.
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  - Sieurin, Donald; and Leger, Alfred R., 3,873,040.
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  - Kondo, Hideya; Takemura, Kunio; and Mori, Tamotsu, 3,873,952.
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  - Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
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  - Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.
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  - Miyazawa, Yoshihide; Ozutsumi, Minoru; Motohashi, Katsuichi; and Kimura, Shiro, 3,873,340.
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  - Daniels, R. Gary; and Kuhn, Harry A., Jr., 3,873,852.
  - Eastmond, Bruce C., 3,873,925.
  - En, John, 3,873,971.
  - Kowalewski, Rolf E., 3,873,904.
  - McGuire, Charles H., 3,872,770.
  - Ritchie, Kim, 3,873,186.
  - Stevenson, Alden, 3,873,203.
  - Wright, Larry R., 3,873,926.
- Motoyoshi, Minoru: *See—*
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  - Wachter, Karl August; and Muller, Horst, 3,873,288.
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- Murakami, Gen: *See—*
  - Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,169.
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- Murao, Atuhiko: *See—*
  - Kimura, Tadao; Murao, Atuhiko; and Kuwahara, Toshigoro, 3,873,349.
- Muraoka, Teruo, to Victor Company of Japan, Ltd. Compression and expansion system using a subtraction circuit. 3,873,945, Cl. 333-14.000.
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  - Fukushima, Masakazu; and Murayama, Seiichi, 3,873,870.
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- Murray, J. Reese: *See—*
  - Thomas, Dalton A., 3,872,737.
- Murray, William K.: *See—*
  - Thomas, Dalton A., 3,872,737.
- Musikindustriell Forskning Mifo AB: *See—*
  - Sjostrand, Gunnar; and Jansson, Einar, 3,872,767.
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  - Hohwart, George; Toth, Paul; and Cross, Kenneth O., 3,873,107.
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  - McCormick, Walter R.; and Lewis, William J., 3,873,678.
  - Thackara, William C., 3,873,842.
- Nabeyama, Hiroaki: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Nabisco, Inc.: *See—*
  - Chalin, Manuel L.; and Smith, Arthur E., 3,873,735.
- Nadelson, Jeffrey: *See—*
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,873,539.
- Nagao, Masami: *See—*
  - Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,873,351.
- Nagao, Taku: *See—*
  - Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
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  - Kumata, Koji; and Nagata, Kozaburo, 3,873,407.
- Nagel, Erich: *See—*
  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
- Naito, Keiichi: *See—*
  - Fujiwara, Yoshio; Naito, Keiichi; and Odajima, Toru, 3,873,637.
- Nakada, Masahiko: *See—*
  - Matsumoto, Hirofumi; and Nakada, Masahiko, 3,872,851.
- Nakagawa, Mitsutoshi: *See—*
  - Kobayashi, Tatsuyoshi; Nakamura, Isei; and Nakagawa, Mitsutoshi, 3,873,425.
- Nakai, Hiromitu: *See—*
  - Misumi, Akira; Kasai, Toshiaki; Fukuda, Kenji; and Nakai, Hiromitu, 3,873,343.
- Nakajima, Hiromichi: *See—*
  - Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
- Nakamura, Isei: *See—*
  - Kobayashi, Tatsuyoshi; Nakamura, Isei; and Nakagawa, Mitsutoshi, 3,873,425.
- Nakamura, Masaya, to Kabushiki Kaisha Nakamura Seisakujo. Spectator-stand with central display section and individually rotatable capsules movable relative to display section. 3,873,085, Cl. 272-2.000.
- Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsions. 3,873,323, Cl. 96-120.000.
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  - Kotone, Akira; Hoda, Masahiro; Hori, Takeshi; and Nakane, Yoshihiko, 3,873,563.
- Nakanishi, Susumu, to Pfizer Inc. Resolution of an important prostaglandin intermediate. 3,873,605, Cl. 260-501.100.
- Nakanishi, Toru: *See—*
  - Kimura, Kazuo; and Nakanishi, Toru, 3,873,424.
- Nakase, Yasukiyo: *See—*
  - Kasuga, Tadayoshi; Nakase, Yasukiyo; and Kawahira, Minoru, 3,873,691.
- Nakata, Kunii; and Hondo, Masao, to Kabushiki Kaisha Akita. Vacuum sealed molding apparatus. 3,872,915, Cl. 164-160.000.

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- Nakazawa, Yoshiyuki: *See—*
  - Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, 3,873,323.
- Nalco Chemical Company: *See—*
  - Di Simone, Ignazio Sergio, 3,873,465.
- Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, to Kyowa Hakko Kogyo Co., Ltd. Antibiotics platomycin A and B and process for production thereof. 3,873,692, Cl. 424-116.000.
- Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Heterocyclic carboxamido thiazolinyl indoles. 3,873,559, Cl. 260-306.70T.
- Nastol Research, Inc.: *See—*
  - Doshi, Niranjan Kumar, 3,873,245.
- National Cash Register Company, The: *See—*
  - Koetsch, Philip W.; and Jensen, Joseph C., 3,873,903.
- National Distillers and Chemical Corporation: *See—*
  - Lerman, Frank, 3,873,666.
- Nawata, Yoshiharu: *See—*
  - Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,873,529.
- Nawrocki, Raymond T.: *See—*
  - Kaszuba, Robert J.; and Nawrocki, Raymond T., 3,872,784.
- NB Jackets Company, a Division of Bell & Howell Company: *See—*
  - Dorman, Isidore, 3,872,645.
- NCR Corporation: *See—*
  - Farber, Sheldon; Hoover, Troy E.; McQuain, David B.; and Wright, Arthur J., 3,873,573.
- Neal, Joe L.; and Roberson, John Stephen. Emergency vehicle warning system. 3,873,963, Cl. 340-34.000.
- Neal, Wayne R.: *See—*
  - Babcock, Robert E.; and Neal, Wayne R., 3,873,849.
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- Nehre, John. Three-in-a-row game apparatus. 3,873,095, Cl. 273-130.00B.
- Neidleman, Saul Lewis: *See—*
  - Parker, William Lawrence; and Neidleman, Saul Lewis, 3,873,537.
- Neisius, Karlheinz, to Merck Patent Gesellschaft mit beschrankter Haftung. Titrator. 3,873,274, Cl. 23-259.000.
- Nelco Corporation: *See—*
  - Schindler, Edgar C.; and McEachron, John C., 3,873,759.
- Nellen, William J.: *See—*
  - Fiore, Joseph V.; Kelly, T. Kenneth; and Nellen, William J., 3,872,871.
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- Nelson, Philip E.; and Sullivan, Glenn H., to Purdue Research Foundation. Method for processing and storing tomatoes. 3,873,753, Cl. 426-373.000.
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  - Smythies, John Raymond, 3,873,722.
- Nelson, Walter I.: *See—*
  - Dezelan, Joseph E.; Junck, John A.; and Nelson, Walter I., 3,872,670.
- Nemoto, Tsuneo; and Urayama, Kiyoshi, to Sony Corporation. Tape cassette. 3,873,045, Cl. 242-199.000.
- Netta, Louis A.: *See—*
  - Wittes, James M.; and Netta, Louis A., 3,872,746.
- Neumayer, George Anton: *See—*
  - Ernst, Richard John; and Neumayer, George Anton, 3,872,768.
- New-Tronics Corp.: *See—*
  - Altmayer, John, 3,873,985.
- NHK Spring Co., Ltd.: *See—*
  - Yoshimura, Shigeru, 3,872,896.
- Nichols, Charles E., to Larcher, Angelo C. Protective headgear. 3,872,511, Cl. 2-3.00R.
- Nichols, Dennis R.: *See—*
  - Vaguine, Victor A.; and Nichols, Dennis R., 3,873,944.
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- Nicholson, William B; and Tisdale, Benjamin C., to Brown & Root, Inc. Method and apparatus for laying pipelines. 3,872,680, Cl. 61-72.300.
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  - Miller, William R., 3,873,291.
- Nicosia, Joseph A., to Pacenti, Robert A. Light weight load bearing metal structural panel. 3,872,636, Cl. 52-364.000.
- Niebylski, Leonard M.; and Jarema, Chester P., to Ethyl Corporation. Pressure contouring and bonding of metal foams. 3,873,392, Cl. 156-306.000.
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  - Kashiwabara, Mikio, 3,873,220.
- Niki, Shuji, to Alps Electric Co., Ltd. Keyboard circuit. 3,873,978, Cl. 340-365.00R.
- Nilsson, Philip. Wood-chip cutting machine. 3,872,902, Cl. 144-176.000.
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  - Imagawa, Katsuhiko, 3,873,111.
- Nippon Hoso Kyokai: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Nippon Kayaku Kabushiki Kaisha: *See—*
  - Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.
- Nippon Kogaku K.K.: *See—*
  - Furuhashi, Hidehiko, 3,873,182.
  - Iida, Yozo; Nozawa, Hideyo; and Akasaka, Shigeo, 3,873,193.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Kawai, Takashi; Mikizawa, Kiyoshi; Tomita, Shigeo; Tatsui, Yoshio; and Hikai, Akio, 3,872,815.
  - Kimura, Tadao; Murao, Atuhiko; and Kuwahara, Toshigoro, 3,873,349.
  - Mori, Toshihiro; Ando, Seigo; Watanabe, Katsujiro; and Yamada, Takeo, 3,873,912.
- Nippon Pneumatic Manufacturing Company Limited: *See—*
  - Terada, Hiromu, 3,872,934.
- Nippon Steel Corporation: *See—*
  - Ohya, Tatsuo; Sakuma, Eizo; Motoyoshi, Minoru; Okamoto, Masafumi; and Tanaka, Kiyoshi, 3,872,704.
  - Takubo, Koreyasu, 3,872,753.
- Nishiba, Yoshiharu; Ota, Kazuhiko; and Inaba, Hideya, to Daiki Engineering Co., Ltd.; and Hitachi Shipbuilding and Engineering Co., Ltd. Desulfurization of gases containing sulfur compounds using alkaline hypochlorite solutions. 3,873,672, Cl. 423-242.000.
- Nissan Motor Company: *See—*
  - Inoue, Naohiko, 3,873,881.
- Nissan Motor Company, Limited: *See—*
  - Harada, Masanori, 3,872,821.
  - Ito, Naganori; and Aikawa, Hiroshi, 3,873,121.
  - Ito, Naganori; and Aikawa, Hiroshi, 3,873,124.
- Nissim, Samuel, to Electronic Arrays, Inc. Prevention of unauthorized use of telephone. 3,873,781, Cl. 179-81.00R.
- Nitta, Katsukuni: *See—*
  - Imaizjmi, Kotaro; and Nitta, Katsukuni, 3,873,082.
- Nix, Donald F.: *See—*
  - Katzman, Allison W.; and Nix, Donald F., 3,873,091.
- Noblitt, Niles L., to Orthopedic Equipment Company, Inc. Pelvic traction belt. 3,872,860, Cl. 128-75.000.
- Noly, Jean, to Potain. Crane with rocking mast and telescopic jib. 3,872,977, Cl. 212-46.00A.
- Nordisk Ventilator Co., A/S: *See—*
  - Christiansen, Palle Hein, 3,872,778.
- Nordstrom, Leroy A.; and Ruffalo, Peter D., to J. I. Case Company. Clutch and brake assembly. 3,872,954, Cl. 192-18.00A.
- Norris, James Reynolds; and Pendoley, Frederick Mathew, to United Aircraft Corporation. Stator vane actuating mechanism. 3,873,230, Cl. 415-162.000.
- North American Philips Corporation: *See—*
  - Conklin, Thomas Henry; Liebert, Richard; and Berandt, Leonard, 3,873,872.
- North American Rockwell Corporation: *See—*
  - Christe, Karl O., 3,873,676.
- North Electric Company: *See—*
  - Reeve, Peter Frederick, 3,873,780.
- Northfield Freezing Systems, Inc.: *See—*
  - Shook, Hugh Thomas, 3,872,682.
- Northrup, Richard M.; and Johnson, Philip M., to Sanders Associates, Inc. Alignment indicating beacon. 3,873,823, Cl. 240-52.00R.
- Norton Company: *See—*
  - Malloy, John F., 3,872,629.
- Norton, Richard V., to Sun Research and Development Co. Process for aromatic carboxylic acids. 3,873,610, Cl. 260-515.00P.
- Nowell, William M. Expansible modular structure with supplemental structural support. 3,872,631, Cl. 52-67.000.
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  - Iida, Yozo; Nozawa, Hideyo; and Akasaka, Shigeo, 3,873,193.
- Nozi, Akio, to Honda Giken Kogyo Kabushiki Kaisha. Air-pressure switch device for pneumatic tires. 3,873,787, Cl. 200-61.250.
- Nusser, Hermann; and Speck, Hans-Reimer, to Robert Bosch GmbH. Fuel pump assembly. 3,873,243, Cl. 417-368.000.
- Nutron Corporation: *See—*
  - Denker, James M., 3,872,773.
- Nyeki, Olga: *See—*
  - Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
- Obenschain, Arthur W., to United States of America, Navy. Shock resistant magnetic detector cores. 3,873,913, Cl. 324-43.00R.
- O'Brien, Gerard J. Multi-channel controller. 3,873,848, Cl. 307-114.000.
- O'Brien, John B.; Pisanchyn, John; and Colby, Robert, to Allied Chemical Corporation. Nitro-oximino alkanoic acids as plant growth regulants. 3,873,301, Cl. 71-106.000.
- Ochs, Cyril C. Musical lawn sprinkler. 3,873,026, Cl. 239-240.000.
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  - Fujiwara, Yoshio; Naito, Keiichi; and Odajima, Toru, 3,873,637.
- Odaka, Toyokazu: *See—*
  - Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,169.

Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,171.

Odenthal, Conrad J., to Tektronix, Inc. Electron gun with auxilliary anode nearer to grid than to normal anode. 3,873,878, Cl. 313-449.000.

Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, to British Petroleum Company Limited, The. Asphaltic composition containing elastic copolymers. 3,873,483, Cl. 260-28.5AS.

Office National d'Etudes et de Recherches Aerospatiales (O.N-.E.R.A.): *See—*

Veret, Claude; and Durrenberger, Pierre, 3,873,191.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic copier of transfer type. 3,873,196, Cl. 355-3.00R.

Ogawa, Nobuhisa, to Mochida Seiyaku Kabushiki Kaisha. Filter for urine samples to be used in pregnancy tests and method of using same. 3,873,682, Cl. 424-12.000.

Ogawara, Yoshiaki: *See—*

Okada, Takashi; and Ogawara, Yoshiaki, 3,873,767.

Oguchi, Isao, to Kabushiki Kaisha Suwa Seikosha. Mounting structure for comb of dry shaver. 3,872,586, Cl. 30-43.910.

Ohkubo, Kinji: *See—*

Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,873,315.

Kato, Kazunobu; and Ohkubo, Kinji, 3,873,317.

Ohya, Tatsuo; Sakuma, Eizo; Motoyoshi, Minoru; Okamoto, Masafumi; and Tanaka, Kiyoshi, to Nippon Steel Corporation. Method for manufacturing grain-oriented electrical steel sheet and strip in combination with continuous casting. 3,872,704, Cl. 72-364.000.

Oka, Tohru: *See—*

Yamakawa, Kazuo; Oka, Tohru; Tokunaga, Masaaki; Mizuhara, Takeshi; and Hagi, Chitoshi, 3,873,379.

Okachi, Ryo: *See—*

Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.

Okada, Hisao: *See—*

Sato, Tadashi; and Okada, Hisao, 3,873,894.

Okada, Takashi; and Ogawara, Yoshiaki, to Sony Corporation. Video signal control circuit including automatic brightness and contrast control responsive to excess crt beam current. 3,873,767, Cl. 178-7.50R.

Okamoto, Masafumi: *See—*

Ohya, Tatsuo; Sakuma, Eizo; Motoyoshi, Minoru; Okamoto, Masafumi; and Tanaka, Kiyoshi, 3,872,704.

Okazaki, Kaoru; Higuchi, Akira; and Imaeda, Naoki, to Toray Industries, Inc. Synthetic leather and method of preparing the same. 3,873,406, Cl. 161-159.000.

O'Kelly, Lewis J.: *See—*

Cothran, Martin D.; O'Kelly, Lewis J.; and Hall, Russell L., 3,873,443.

Okutomi, Tsuneo: *See—*

Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,873,529.

Olin Corporation: *See—*

Ralston, Richard W., Jr., 3,873,430.

Olin, John F., to Monsanto Company. Dithiocarbamate hydrochloride salts as herbicides. 3,873,300, Cl. 71-98.000.

Olson, Lloyd C., to R. M. Wade & Co. Drive unit. 3,872,943, Cl. 180-24.080.

Olson, Melvin M., to Minnesota Mining and Manufacturing Company. Tacky blend of butadiene-acrylonitrile copolymer thermosettable material having acrylate and epoxy groups peroxide and epoxy curing agent. 3,873,638, Cl. 260-837.00R.

Olszewski, William F. Phosphorus-containing compounds and lubricants containing same. 3,873,456, Cl. 252-46.700.

Oltman, Henry G., Jr.; and Wagner, Richard J., to Hughes Aircraft Company. Devices for coupling microwave diode oscillators and amplifiers to power accumulation structures. 3,873,934, Cl. 330-56.000.

Oltman, Henry G., Jr., to Hughes Aircraft Company. Microwave power accumulation structures comprising a plurality of stacked elliptical cavities. 3,873,935, Cl. 330-56.000.

Omiya, Shoji; and Yoshimatsu, Toshio, to Matsushita Electric Industrial Co., Ltd. Record disk loading and retrieving system. 3,873,100, Cl. 244-9.00B.

Opyrchal, Martin A., to Duff-Norton Company, Inc. Self-contained mechanical actuator. 3,873,066, Cl. 254-103.000.

Orchard Container Corporation: *See—*

LaBantschnig, Victor; and Diestel, Victor Robert, 3,872,652.

Organisation Europeenne de Recherches Spatiales: *See—*

Janes, Manfred, 3,872,911.

Orr, William R.: *See—*

Lee, Robert E.; and Orr, William R., 3,873,961.

Ort, Wolfgang: *See—*

Brauning, Gerhard; and Ort, Wolfgang, 3,873,987.

Ortho Pharmaceutical Corporation: *See—*

Hirsch, Allen Frederick, 3,873,701.

Orthopedic Equipment Company, Inc.: *See—*

Noblitt, Niles L., 3,872,860.

Osawa, Yoshio; Ueno, Koichiro; Dobashi, Koichi; and Asano, Hideichi, to Teikoku Hormone Mfg. Co., Ltd. Orally administrable pharmaceutical iron preparation. 3,873,588, Cl. 260-439.00R.

Osburn, Coy D.: *See—*

Ver Nooy, Burton; and Osburn, Coy D., 3,872,880.

Oscar Mayer & Co. Inc.: *See—*

Seiferth, Oscar E.; and Austin, Glenn M., 3,873,003.

Oshima, Hiroshi; Saiki, Koji; and Inoue, Hiroto, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Catalyst for the purification of exhaust gases and process for preparing the catalyst. 3,873,472, Cl. 252-466.00B.

Osselaere, Jean P.; and Lapiere, Charles L., to Les Laboratoires S.M.B., Anciens Etablissements J. Muelberger et R. Baudier. Pyrido(2, 3d) pyrimidines. 3,873,545, Cl. 260-256.50R.

Ostermann, Max, to W. & M. Ostermann. Apparatus for applying filamentary material to a workpiece. 3,872,658, Cl. 57-13.000.

Osthaus, Kaspar Heinrich, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Method of producing electric energy including coal gasification. 3,873,845, Cl. 290-2.000.

Ota, Kazuhiko: *See—*

Nishiba, Yoshiharu; Ota, Kazuhiko; and Inaba, Hideya, 3,873,672.

Otaki, Fumio: *See—*

Morio, Minoru; and Otaki, Fumio, 3,873,846.

Otrhalek, Joseph V.; and Elfers, Gunther H., to Basf Wyandotte Corporation. Pitch and pigment dispersant in aqueous pulp slurries. 3,873,417, Cl. 162-168.000.

Otsuka, Hideo; and Inouye, Ken, to Shionogi & Co., Ltd. (1-α-Aminoisobutyric acid)-corticotropin peptides. 3,873,511, Cl. 260-112.500.

Otsuka, Kanji: *See—*

Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,169.

Miyamoto, Akio; Koyama, Masaharu; Odaka, Toyokazu; Otsuka, Kanji; and Murakami, Gen, 3,873,171.

Otsuru, Masaaki; Miyakawa, Toshio; Yamada, Mitsuo; and Izuhara, Michi, to Toyo Soda Manufacturing Co., Ltd. Process for producing a rubber-like chloroprene copolymer. 3,873,431, Cl. 204-159.240.

Ott, Karl-Heinz: *See—*

Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.

Otterman, Glenn E.: *See—*

Ritz, William C.; and Otterman, Glenn E., 3,872,565.

Otto, Robert B., to Minnesota Mining and Manufacturing Company. Slide tray. 3,873,195, Cl. 353-117.000.

Outboard Marine Corporation: *See—*

Dahl, Einar S., 3,872,656.

Outokumpu Oy: *See—*

Lohikoski, Timo Jorma Juhani, 3,872,913.

Overall, Wilson W., to Surface Systems, Inc. System for detecting wet and icy surface conditions. 3,873,927, Cl. 328-4.000.

Owen, Harrold D.; and Terrell, Jamie B., to Gearhart-Owen Industries, Inc. Through-tubing bridge plug. 3,872,925, Cl. 166-286.000.

Owen, Kenneth. Radio frequency modular switch system. 3,873,794, Cl. 200-153.00S.

Owens-Corning Fiberglas Corporation: *See—*

Marzocchi, Alfred, 3,873,290.

Owens-Illinois, Inc.: *See—*

Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,873,655.

Fisher, William E., 3,873,413.

Kitaj, Walter, 3,873,352.

Kontz, Robert F., 3,873,661.

Southwell, William H., 3,873,208.

Owens, William R.: *See—*

Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,873,635.

Owston, William J.; and Howard, Dennis D., to Lord Corporation. Adhesive bonding of polyvinyl chloride and other synthetic resin substrates. 3,873,640, Cl. 260-859.00R.

Oxford, Alexander William; and Gymer, Geoffrey Edward, to Allen & Hansburys Limited. Amino-9,10-dihydro-9,10-dioxo-2-anthroic acids. 3,873,538, Cl. 260-247.20R.

Oxy Metal Industries Corporation: *See—*

Segovia, Gilbert, 3,873,665.

Ozaki, Noboru; and Shimizu, Masatoshi, to Yazaki Sogyo Kabushiki Kaisha. Taximeter having device for electronically setting increased base fare rate. 3,873,811, Cl. 235-30.00R.

Ozutsumi, Minoru: *See—*

Miyazawa, Yoshihide; Ozutsumi, Minoru; Motohashi, Katsuichi; and Kimura, Shiro, 3,873,340.

P. Ferrero & C.S.p.A.: *See—*

Dogliotti, Amilcare, 3,872,996.

Pacenti, Robert A.: *See—*

Nicosia, Joseph A., 3,872,636.

Pacific Scientific Company: *See—*

Yang, Elmer Chensheng, 3,872,550.

Pack, Marvin L.: *See—*

Ramacher, Barry; and Pack, Marvin L., 3,872,657.

Padovani, Francois A.: *See—*

Bean, Kenneth E.; and Padovani, Francois A., 3,873,824.

Pagano, Victor H., to United States of America, Army. Fracture resistance testing method. 3,872,709, Cl. 73-12.000.

Palermo, Anthony, Jr., to Picker Corporation. Tire inspection apparatus. 3,873,837, Cl. 250-360.000.

Pallos, Laszlo: *See—*

Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.

Berenyi nee Poldermann, Edit; Pallos, Laszlo; Benko, Pal; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; and Kiszelly, Eniko, 3,873,543.

Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,541.

Palm, John W.: *See—*

Berry, Kay L.; and Palm, John W., 3,873,679.

Palmer, George William, to Stateside Machinery Co. Ltd. Profile stitching machines. 3,872,807, Cl. 112-121.120.

Palmer, Hugh Charles; Horrocks, Derek; and Buckley, Keith. Semi-moist meat resembling food product and method of preparation. 3,873,736, Cl. 426-92.000.

Palmer, John A.: *See—*

Brundage, Richard B.; Palmer, John A.; and Blachly, Donald L., 3,872,654.

Palmer, Richard Claxton, to RCA Corporation. Capacitive protection coupling element for stylus electrode discharge. 3,873,782, Cl. 179-100.10B.

Palmer, Thomas A.: *See—*

Curtis, James R.; Palmer, Thomas A.; and Wilson, Billy J., 3,873,664.

Palombo, Gaston Albert, to Compagnie Honeywell Bull (Societe Anonyme). Hammer flight time aligning system for impact printers. 3,872,788, Cl. 101-93.140.

Pamer, Karl A., to McNeil Corporation. Fluid pressure device. 3,873,075, Cl. 267-116.000.

Pampus, Gottfried; Witte, Josef; and Hoffmann, Martin, to Bayer Aktiengesellschaft. Graft polymers. 3,873,644, Cl. 260-879.000.

Panduit Corp.: *See—*

Caveney, Jack E.; and Moody, Roy A., 3,872,547.

Panepinto, Louis J., to AMF Incorporated. Chest pull type exercisers. 3,873,088, Cl. 272-83.00R.

Panigata, Marco: *See—*

Dorsi, Domenico; and Panigata, Marco, 3,873,949.

Papadopoulos, George S., to Cornell-Dubilier Electric Corporation. Method of making electrolytic capacitors. 3,872,579, Cl. 29-570.000.

Papadopoulous, Stelios B.: *See—*

Eseke, James R.; and Papadopoulous, Stelios B., 3,873,832.

Papst-Motoren KG: *See—*

Muller, Rolf, 3,873,897.

Muller, Rolf, 3,873,898.

Pardubsky, James A., to General Dynamics Corporation. Cutter path simulator with adjustable pen holder. 3,872,596, Cl. 33-27.00L.

Paris, Jacques: *See—*

Mollard, Paul; Paris, Jacques; and Rousset, Abel, 3,873,461.

Parke, Davis & Company: *See—*

De Wald, Horace A.; and L'Italien, Yvon J., 3,873,565.

Doub, Leonard; and Kaltenbronn, James S., 3,873,523.

Fusari, Salvatore A.; and Lueck, Leslie M., 3,873,727.

Parker-Hannifer Corporation: *See—*

Busdiecker, Wayne S.; Lansky, Zdenek J.; and Russell, John G., 3,872,884.

Parker, Robin J.: *See—*

Conway, John E.; and Parker, Robin J., 3,873,470.

Parker, William Lawrence; and Neidleman, Saul Lewis, to E. R. Squibb & Sons, Inc. 1-Imidocarbonyl-2-(1H)-pyridones and method of preparing same. 3,873,537, Cl. 260-247.20A.

Parkinson, Robert E., to United States Steel Corporation. Resin-containing lubricant coatings. 3,873,458, Cl. 252-49.500.

Parkinson, Roger W., to Textron, Inc. Mold for making a retaining ring for an antifriction bearing. 3,873,056, Cl. 249-142.000.

Parks, William E., to Avco Corporation. Multiple component preformer. 3,872,898, Cl. 140-105.000.

Parr, Joseph Ward; and Sih, Kwang Yue, to International Business Machines Corporation. Apparatus for checking partial products in iterative multiply operations. 3,873,820, Cl. 235-153.0BD.

Partin, Melvin E.: *See—*

Bouton, John C.; and Partin, Melvin E., 3,873,974.

Partsy, Iosif Naumovich: *See—*

Zotov, Mikhail Nikolaevich; Peisakhov, Vulf Kopelevich; and Partsy, Iosif Naumovich, 3,873,479.

Pasideris, Stamos I.; Berkel, Albert J., Jr.; and Hagen, Paul D., to Caterpillar Tractor Company. Vehicle loader linkage means. 3,872,991, Cl. 214-770.000.

Passeri, Jorge, to Galileo Argentina, Comercial, Industrial Y Financiera, Sociedad Anonima. Gas meters. 3,872,724, Cl. 73-267.000.

Pastelak, Eugene, to Raybestos-Manhattan Inc. Jointless packing ring and method of making same. 3,873,106, Cl. 277-203.000.

Pasternak, Israel S.: *See—*

Dugan, John J.; and Pasternak, Israel S., 3,873,670.

Pastre, Maurice Lionel, to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques. Rehydrating anti-diarrhoea composition. 3,873,695, Cl. 424-131.000.

Patchett, Arthur A.: *See—*

Christensen, Burton G.; Steinberg, Nathan G.; and Patchett, Arthur A., 3,873,547.

Patin, Pierre. Guided transport system. 3,872,793, Cl. 104-130.000.

Patrie, James H., to American Sterilizer Company. Refrigerator dietary module. 3,872,686, Cl. 62-237.000.

Patterson, Richard J. Desk top storage unit for vehicles. 3,873,010, Cl. 224-42.42A.

Patton, Thayer E., to Williams, Ronald E. Combination temperature and pressure relief valve with energy cutoff switch. 3,873,808, Cl. 219-332.000.

Paullus, Clarence Leonard, to AMP Incorporated. Flat multiconductor cable holder. 3,873,172, Cl. 339-17.00F.

Paulsen, W. Charles, to du Pont de Nemours, E. I., and Company. Wire frame centrifuge. 3,873,021, Cl. 233-26.000.

Pawlak, Joseph A.; West, Charles W.; Colson, James G.; and Bajer, Francis J., to Hooker Chemical & Plastic Corp. Antidegradant additive for organic working fluids. 3,873,459, Cl. 252-51.50A.

Peak Technologies Limited: *See—*

Bloice, John Anthony, 3,873,981.

Pearce, Jai K.: *See—*

Baum, Joerg P.; and Pearce, Jai K., 3,873,073.

Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr. Carton closing and labeling method and apparatus. 3,873,394, Cl. 156-353.000.

Pearson, Eugene W., to Canron, Inc. Rake angle and related stroke control for a shear or the like. 3,872,756, Cl. 83-522.000.

Pechacek, Alvin E.; and Baratto, Eugene L., to Minnesota Mining and Manufacturing Company. Composition for filling, patching and the like. 3,873,475, Cl. 260-2.50B.

Pedersen, Charles John, to du Pont de Nemours, E. I., and Company. Complexes of a macrocyclic polyether with one or more sulfur-bearing compounds. 3,873,569, Cl. 260-340.300.

Pedrotti, Donald G., to GCA Corporation. Multiplexed integrated circuit chip bonding system. 3,872,566, Cl. 29-203.00B.

Peilstocker, Gunter: *See—*

Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.

Peisakhov, Vulf Kopelevich: *See—*

Zotov, Mikhail Nikolaevich; Peisakhov, Vulf Kopelevich; and Partsy, Iosif Naumovich, 3,873,479.

Peisner, Israel D.: *See—*

Baker, William R.; and Peisner, Israel D., 3,872,797.

Penberthy, Harvey Larry. Glass casting apparatus and method. 3,873,292, Cl. 65-68.000.

Pendoley, Frederick Mathew: *See—*

Norris, James Reynolds; and Pendoley, Frederick Mathew, 3,873,230.

Penn, Nathar W., to Addiction Research and Treatment Corporation. Method of combatting morphine addiction and toxification. 3,873,698, Cl. 424-180.000.

Pennsylvania Engineering Corporation: *See—*

Baum, Joerg P.; and Pearce, Jai K., 3,873,073.

Pennwalt Corporation: *See—*

Smith, Herbert Q.; and Toukan, Sameeh Said, 3,873,591.

Penny, Robert Noel. Turbine rotor. 3,873,234, Cl. 416-97.000.

Penrod, Orville R.: *See—*

Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.

PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques: *See—*

Abblard, Jean; and Viricel, Rene, 3,873,557.

Pastre, Maurice Lionel, 3,873,695.

Perego, Gianluca, to Perego-Pines S.p.A. Baby carriage construction. 3,873,116, Cl. 280-36.00B.

Perego, Giuseppe. Foldable baby carriage construction. 3,873,117, Cl. 280-36.00B.

Perego-Pines S.p.A.: *See—*

Perego, Gianluca, 3,873,116.

Perkins-Elmer Corporation, The: *See—*

Gabriel, Fred C., 3,873,884.

Perkins Engines Limited: *See—*

Chamberlain, Noel Christopher, 3,872,891.

Perlman, Stuart Stanley; and McCusker, Joseph Henry, to RCA Corporation. Signal conversion circuits. 3,873,906, Cl. 323-19.000.

Pesansky, George P.: *See—*

Dwyer, Thomas J.; and Pesansky, George P., 3,873,350.

Pestel, Clarence V., to Fedders Corporation. Method of compressor assembly. 3,872,562, Cl. 29-156.40R.

Petersen, Harry, Jr. Apparatus and method for retrieving a fish hook. 3,872,618, Cl. 43-53.500.

Petersen Industries, Inc.: *See—*

Lundman, Philip L., 3,873,064.

Petersen, Warren D.: *See—*

Schwab, Edward C.; Petersen, Warren D.; and Bumbiers, Eric, 3,873,748.

Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Hinge capable of transmitting pressurized air. 3,872,541, Cl. 16-137.000.

Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Door securing apparatus having remotely controlled means to hold its latch bolt in a retracted position. 3,873,141, Cl. 292-40.000.

Petocz, Lujza E.: *See—*

Berenyi nee Poldermann, Edit; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,542.

Berenyi nee Poldermann, Edit; Pallos, Laszlo; Benko, Pal; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; and Kiszelly, Eniko, 3,873,543.

Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, 3,873,541.

Petrinec, Robert G. Two level volume control for clock radio and the like. 3,873,921, Cl. 325-396.000.

- Petro-Tex Chemical Corporation: *See—*
  - Barone, Bruno J., 3,873,625.
- Petronchak, John: *See—*
  - Adams, Kenneth D.; and Petronchak, John, 3,872,809.
- Petrzilka, Theodor. Tetrahydrodibenzopyrans. 3,873,576, Cl. 260-345.300.
- Pew, John P., to Singer Company, The. Double insulated electrically powered hand tool and coupler therefor. 3,873,863, Cl. 310-50.000.
- Pfeifer, Josef; and Schausberger, Helmut, to AGFA-Gevaert Aktiengesellschaft. Apparatus for processing photographic sheet material. 3,873,988, Cl. 354-319.000.
- Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Xanthone carboxylic acids and derivatives. 3,873,714, Cl. 424-283.000.
- Pfizer Inc.: *See—*
  - Hetzel, Donald S., 3,873,622.
  - McKie, James E., Jr., 3,873,268.
  - Nakanishi, Susumu, 3,873,605.
- Pflugbeil, Mathias: *See—*
  - Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
- Pharmaco, Inc.: *See—*
  - Larson, Roger R., 3,872,992.
- Philco-Ford Corporation: *See—*
  - Daniels, Clare G., 3,873,389.
  - Smith, Robert J., 3,873,659.
- Philip Morris Incorporated: *See—*
  - Braginetz, Paul A., 3,872,589.
  - Iten, Clemens A., 3,872,592.
- Phillips, Earl L.: *See—*
  - Beus, Michael J.; and Phillips, Earl L., 3,872,719.
- Phillips Petroleum Company: *See—*
  - Cichowski, Robert S., 3,873,633.
  - Clampitt, Richard L., 3,872,924.
  - Haskell, Donald M., 3,873,612.
  - Wu, Yu-Lin; Hudson, Paul S.; Sherk, Fred T.; and Haskell, Donald M., 3,873,609.
- Phillips, Raymond Jeffery: *See—*
  - Dabell, Kenneth Hazelton; and Phillips, Raymond Jeffery, 3,873,159.
- Pickens, George O., to United States of America, Navy. Wave-actuated horizontal array stretcher. 3,872,819, Cl. 115-4.000.
- Picker Corporation: *See—*
  - Palermo, Anthony, Jr., 3,873,837.
- Pickett, David F., to United States of America, Air Force. Production of cadmium electrodes. 3,873,368, Cl. 136-76.000.
- Piel, Ralph H.: *See—*
  - Shapiro, Lawrence S.; and Piel, Ralph H., 3,872,944.
- Pierdet, Andre, to Roussel Uclaf. Novel steroid ester. 3,873,702, Cl. 424-241.000.
- Pierre, Bernard; Segas, Lucien; Simon, Georges; and Volle, Rene, to ETAT Francais. Automatic firearm with gas actuated breech mechanism. 3,872,771, Cl. 89-190.000.
- Pilkington Brothers Limited: *See—*
  - Rudd, John Duncan; Davie, Michael Hill; and Rigby, Malcolm James, 3,873,293.
- Pinhas, Henri, to Laboratoires Laroche Navarron. Phenoxyalkylamines, process for their preparation and applications thereof. 3,873,620, Cl. 260-570.700.
- Pinier, Gaston: *See—*
  - Cabet, Alain; Pinier, Gaston; and Eloy, Guy, 3,873,774.
- Pioneer Electronic Corporation: *See—*
  - Amaya, Toshiyuki, 3,872,765.
  - Fukui, Tutomu, 3,872,766.
- Pisanchyn, John: *See—*
  - O'Brien, John B.; Pisanchyn, John; and Colby, Robert, 3,873,301.
- Pitt, Harold M.; Zeleny, Richard A.; and Knoshaug, Wendell E., to Stauffer Chemical Company. Method of esterification of alkyl phosphonothio dihalides. 3,873,647, Cl. 260-973.000.
- Pittaro, Richard J., to Krautkramer-Branson, Incorporated. Ultrasonic pulse-echo gate circuit. 3,872,715, Cl. 73-67.900.
- Pittet, Alan Owen: *See—*
  - Klaiber, Erich Manfred; and Pittet, Alan Owen, 3,873,574.
- Pitzen, Sylvester A.; Drabier, Jacques P.; and Liljegren, Dale H., to Sono-Therapy Institute, Inc. Method and device for stimulating the organs associated with the human scalp. 3,872,859, Cl. 128-24.500.
- Platou, Anders S., to United States of America, Army. Projectile boattails. 3,873,048, Cl. 244-3.100.
- Plauka, John W.; and Cloud, Edwin A., to Johns-Manville Corporation. Method of fabricating a plastic pipe fitting. 3,873,391, Cl. 156-258.000.
- Plevak, Lubomir: *See—*
  - Floter, Manfred; Beulker, Franz; Plevak, Lubomir; and Becker, Kunibert, 3,873,158.
- Plotnikoff, Nicholas Peter, to Abbott Laboratories. Method of treating psychosis. 3,873,709, Cl. 424-274.000.
- Plowman, Richard E.: *See—*
  - Thornton, Henry M., Jr.; Stram, George H.; and Plowman, Richard E., 3,872,593.
- Plumadorf, John David, to Scott Paper Company. Method and apparatus for detecting data on a photographic recording medium. 3,873,213, Cl. 356-209.000.
- Plummer, William T., to Polaroid Corporation. Ruling engine for generating dies to mold anamorphic fresnel optics. 3,872,749, Cl. 82-12.000.
- Pochert, Johannes: *See—*
  - Thurn, Friedrich; Burmester, Kurt; Pochert, Johannes; and Wolff, Siegfried, 3,873,489.
- Pofferi, Giancarlo. Demountable structure. 3,873,219, Cl. 403-171.000.
- Poggie, Joseph L. Anti-skid apparatus. 3,872,952, Cl. 188-181.00T.
- Pogrell, Walter, to Braun Aktiengesellschaft. Windproof lighter with hot filament. 3,873,262, Cl. 431-132.000.
- Pohl, Lawrence E., to United States of America, Atomic Energy Commission. Cold trap for liquid sodium impurities collection. 3,873,447, Cl. 210-179.000.
- Poland, Maurice D. Fishing device. 3,872,616, Cl. 43-5.000.
- Polaroid Corporation: *See—*
  - Plummer, William T., 3,872,749.
  - Rogers, Howard G., 3,873,185.
- Polazzi, Joseph Odo: *See—*
  - Kotick, Michael Paul; and Polazzi, Joseph Odo, 3,873,516.
- Poldermann, Edit Berenyi Nee; Pallos, Laszlo; Petocz, Lujza E.; Gorog, Peter; Budai, Zoltan; Kiszelly, Eniko; and Benko, Pal, to Egyt Gyogyszervegycszeti Gyar. As-triazino[5,6-C]quinoline derivatives. 3,873,541, Cl. 260-248.0AS.
- Poletto, John Frank: *See—*
  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,873,607.
- Pollard, Kenneth E.: *See—*
  - Probst, Richard O.; and Pollard, Kenneth E., 3,873,024.
- Pollitzer, Ernest L., to Universal Oil Products Company. Process for the simultaneous production of an aromatic concentrate and isobutane. 3,873,439, Cl. 208-66.000.
- Pollitzer, Ernest L., to Universal Oil Products Company. Alkylaromatic hydrocarbon isomerization process. 3,873,632, Cl. 260-668.00A.
- Polss, Perry, to du Pont de Nemours, E. I., and Company. Gasoline. 3,873,278, Cl. 44-66.000.
- Polytop Corporation: *See—*
  - Hazard, Robert E., 3,873,005.
- Pomernacki, Henry, to Illinois Tool Works Inc. Metal cutting and finishing tool. 3,872,561, Cl. 29-95.100.
- Pope, William S.: *See—*
  - Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., 3,873,145.
- Popplewell, James M.: *See—*
  - Anthony, William H.; and Popplewell, James M., 3,872,921.
- Porter, Elmer D., to Essex International, Inc. Means for mounting a control device on a fuel supply manifold. 3,872,888, Cl. 137-608.000.
- Porter, Thomas M., to H. K. Porter, Inc. Compound leverage tool. 3,872,528, Cl. 7-5.300.
- Porvair Limited: *See—*
  - Warwicker, Eric Albert, 3,873,254.
- Potain: *See—*
  - Noly, Jean, 3,872,977.
- Potter, Thomas R., to Indicator Controls Corp. Vehicle detection. 3,873,964, Cl. 340-38.00L.
- Poulain, Daniel Louis: *See—*
  - Evrard, Robert; and Poulain, Daniel Louis, 3,873,829.
- PPG Industries, Inc.: *See—*
  - Goolsbay, Dennis M., 3,873,294.
- Preco Corporation: *See—*
  - Walters, Wally Z., 3,873,354.
- Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., to General Time Corporation. Low power synchronous motor and line cord therefor. 3,873,865, Cl. 310-90.000.
- Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., to Texaco, Inc. Isobutane pretreatment in alkylation with ethylene utilizing aluminum chloride hydrocarbon complex, hydrogen chloride and ethyl chloride. 3,873,635, Cl. 260-683.570.
- Pressman, Berton Charles; and de Guzman, Norberto Tumali, to University of Miami. A therapeutic agent for improving cardiovascular function. 3,873,715, Cl. 424-283.000.
- Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
  - Feinberg, Irving, 3,872,698.
- Preto, Raymond J.; and Scheckman, Eugene Z., to Continental Can Company, Inc. Process for preparing articles fabricated from polyolefin/polyamide blends having low permeability to gases. 3,873,667, Cl. 264-234.000.
- Price, Ralph E.; and Bricker, Robert E., to Landis Tool Company. Machine tool. 3,872,738, Cl. 74-424.80B.
- Prikhna, Alexei Iosifovich: *See—*
  - Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; Lyashenko, Alexandr Fedorovich; and Zhitnetsky, Vasily Ivanovich, 3,873,308.
- Prillinger, Peter F. M.: *See—*
  - Berg, Lawrence F.; and Prillinger, Peter F. M., 3,873,166.
- Princeton Laboratories, Inc.: *See—*
  - Fishbein, Bernard, 3,873,683.
- Probst, Richard O.; and Pollard, Kenneth E., to Ransburg Corporation. Apparatus for spraying a plurality of different powders. 3,873,024, Cl. 239-15.000.
- Probst, Richard O.: *See—*
  - Moss, Albert H.; and Probst, Richard O., 3,873,023.
- Procter & Gamble Company, The: *See—*
  - Brush, John B., 3,872,967.
  - Fanta, Wayne I., 3,873,716.

- Proctor & Gamble Company, The: *See—*
  - Maag, Gustav A., 3,872,919.
- Products Chimiques Ugine Kuhlmann: *See—*
  - Foulletier, Louis; and Lalu, Jean-Pierre, 3,873,619.
- Produits Chimiques Ugine Kuhlmann: *See—*
  - Balde, Daniel, 3,873,648.
- Proffit, Lester M. Swimming pool cleaner with rotary scrubbing action. 3,872,533, Cl. 15-1.700.
- Progressive Engineering, Inc.: *See—*
  - Slinger, George A., 3,872,546.
- Pruf-und Forschungsinstitut Fur Die Schuh Herstellung: *See—*
  - Comte, Philippe; and Fischer, Wilhelm, 3,873,478.
- Prutton Corporation: *See—*
  - Matej, Ronald J., 3,872,700.
- Puhak, Peter G., to GTE Sylvania Incorporated. Magnet retaining means for a CRT beam adjustment device. 3,873,953, Cl. 335-212.000.
- Pullman Incorporated and Pullman Transport Leasing Company: *See—*
  - Adler, Franklin P.; and Miller, Roy W., 3,872,796.
- Pulpanek, Erich: *See—*
  - Cornelius, Friedrich; and Pulpanek, Erich, 3,872,532.
- Pulver, Dale R., to Diamond Shamrock Corporation. Electrode assembly for multipolar electrolytic cells. 3,873,437, Cl. 204-254.000.
- Purdue Research Foundation: *See—*
  - Nelson, Philip E.; and Sullivan, Glenn H., 3,873,753.
- Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., to International Business Machines Corporation. Coated carrier particles. 3,873,355, Cl. 117-201.000.
- Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., to International Business Machines Corporation. Method of manufacturing electrophotographic carriers. 3,873,356, Cl. 117-201.000.
- Quenot, Michel. Knife handle. 3,872,591, Cl. 30-162.000.
- Questor Corporation: *See—*
  - Bentley, David R., 3,872,666.
- Quimco GmbH: *See—*
  - Hearsey, Colin John, 3,873,553.
- Quinlan, Kenneth P., to United States of America, Air Force. Radiometer. 3,873,215, Cl. 356-218.000.
- Quinn, Clara, to Raymond Lee Organization, Inc., a part interest. Indoor cat house. 3,872,832, Cl. 119-1.000.
- Qvarnstrom, Bengt, to Stora Kopparbergs Bergslags Aktiebolag. Method and apparatus for atomizing a liquid medium and for spraying the atomized liquid medium in a predetermined direction. 3,873,025, Cl. 239-220.000.
- R. Hoe & Co., Inc.: *See—*
  - McKillip, William R.; and Mason, Donald L., 3,872,762.
- R. M. Wade & Co.: *See—*
  - Olson, Lloyd C., 3,872,943.
- Raich, Henry: *See—*
  - Horodysky, Andrew G.; and Raich, Henry, 3,873,454.
- Raidl, John H., Jr. Relief valve isolating means. 3,872,875, Cl. 137-71.000.
- Ralston Purina Company: *See—*
  - Arndt, Robert H., 3,873,751.
- Ralston, Richard W., Jr., to Olin Corporation. Method for automatic adjustment of anodes. 3,873,430, Cl. 204-99.000.
- Ralston, William G.: *See—*
  - Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,355.
  - Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,356.
- Ramacciotti, Aldo, to Centro Sperimentale Metallurgico S.p.A. Process for restoring the thickness and/or the integrity of the inner refractory lining of a rotary reactor. 3,873,652, Cl. 264-30.000.
- Ramacher, Barry; and Pack, Marvin L., to Ramacher Manufacturing Company. Harvester pick-up. 3,872,657, Cl. 56-328.00R.
- Ramacher Manufacturing Company: *See—*
  - Ramacher, Barry; and Pack, Marvin L., 3,872,657.
- Ramaswamy, Kannusami S., to Carborundum Company, The. Curved vane for throwing wheels. 3,872,624, Cl. 51-9.000.
- Ramillon, Rene. Heel holddown for ski binding. 3,873,110, Cl. 280-11.35T.
- Rand, James H., III. Equine infectious anemia vaccine. 3,873,690, Cl. 424-89.000.
- Randeri, Kiran J.; and Karageozian, Hampar L., to Allergan Pharmaceuticals. Cleaning and sterilizing soft contact lens. 3,873,696, Cl. 424-153.000.
- Randolph, Arthur J.; and Horsting, Albertus G. Poultry semen collecting apparatus. 3,872,869, Cl. 128-276.000.
- Ranft, Eberhard V.: *See—*
  - Rochelle, William R.; Larenzo, Leroy N.; and Ranft, Eberhard V., 3,873,057.
- Rank Xerox Ltd.: *See—*
  - Ito, Haruhiro, 3,873,084.
  - Whitaker, Raymond; and Haslam, Bryan S., 3,873,189.
- Ransburg Corporation: *See—*
  - Moss, Albert H.; and Probst, Richard O., 3,873,023.
  - Probst, Richard O.; and Pollard, Kenneth E., 3,873,024.
- Rao, Vemulapalli D. N., to Ford Motor Company. Seal for rotary combustion engine. 3,873,249, Cl. 418-113.000.
- Raser, William H. Sunlight concentrator for energy conversion. 3,872,854, Cl. 126-270.000.
- Ratliff, Floyd A., to Ball Corporation. Apparatus for applying a sealing gasket to a surface. 3,873,258, Cl. 425-113.000.
- Rattin, Luciano, to Ing. C. Olivetti & C., S.p.A. Unit for the magnetic brush development of latent electrostatic images. 3,872,829, Cl. 118-637.000.
- Ratts, Kenneth Wayne: *See—*
  - Worley, Jimmy Weldon; and Ratts, Kenneth Wayne, 3,873,535.
- Raybestos-Manhattan Inc.: *See—*
  - Pastelak, Eugene, 3,873,106.
- Raychem Corporation: *See—*
  - Nichols, Paul E.; and Martin, Charles L., 3,872,573.
- Raymond Lee Organization, Inc., The: *See—*
  - Adams, William N., 3,873,131.
  - Lane, Lee, 3,872,569.
  - Liebelt, Emanuel, 3,872,514.
  - Quinn, Clara, 3,872,832.
- Raytheon Company: *See—*
  - Robinder, Ronald C., 3,873,868.
- RCA Corporation: *See—*
  - Ahmed, Adel Abdel Aziz, 3,873,853.
  - Boltz, Charles D., Jr., 3,873,764.
  - Burke, William Joseph, 3,873,179.
  - Girvin, Harold Hayes, 3,873,867.
  - Hanchett, George Draper, 3,873,888.
  - Hughes, Richard Henry, 3,873,879.
  - Leedom, Marvin Allan, 3,873,098.
  - Leedom, Marvin Allan, 3,873,783.
  - Marlowe, Frank Jerome, 3,873,873.
  - Palmer, Richard Claxton, 3,873,782.
  - Perlman, Stuart Stanley; and McCusker, Joseph Henry, 3,873,906.
  - Schoop, James Conrad; and Stave, Frederick Roland, 3,873,765.
  - Taylor, Byron Kent, 3,873,762.
  - Weimer, Paul Kessler, 3,873,851.
  - Wheatley, Carl Franklin, Jr., 3,873,933.
  - Wilber, James Albert, 3,873,990.
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  - Bjalme, Bengt G.; and Brown, Thomas G., 3,872,748.
- Reed, Robert D.; McGill, Eugene C.; and McConnell, Charles G., to John Zink Company. Process for disposal of oxides of nitrogen. 3,873,671, Cl. 423-235.000.
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- Refrigeration Research, Inc.: *See—*
  - Bottum, Edward W.; and Kozinski, Richard C. (said Edward W. Bottum assors. to), 3,872,687.
- Regents of the University of Minnesota: *See—*
  - Kreevoy, Maurice M.; Borch, Richard Frederic; and Hutchins, Jonathan Edward Colin, 3,873,621.
- Reid, Paul W. Latch. 3,873,142, Cl. 292-66.000.
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- Reinhardt, Robert M.: *See—*
  - Kullman, Russell M. H.; and Reinhardt, Robert M., 3,873,513.
- Remde, Richard H.; and Liedman, Stanley G., to General Mills, Inc. Snack cutter. 3,872,752, Cl. 83-100.000.
- Remington Arms Company, Inc.: *See—*
  - Bolen, Robert J.; Chadwick, Kelley R.; and Gall, Richard T., 3,873,375.
- Rennie, Robert Allan Campbell, to Imperial Chemical Industries Limited. Oxidation Process. 3,873,580, Cl. 260-362.000.
- Rentzepis, Peter Michael: *See—*
  - Jones, Robert Patrick; and Rentzepis, Peter Michael, 3,873,825.
- Rey, Louis; Bouldoires, Jean-Pierre; and Rovero, Dominique, to Societe d'Assistance Technique pour Produits Nestle S.A. Lyophilisation process in atmosphere of condensable gas. 3,873,745, Cl. 426-319.000.
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  - Hampl, Edward F., Jr.; Mitchell, William C.; and Reylek, Robert S., 3,873,370.
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- Rheinisch-Westfalisches-Elektrizitatswerk Aktiengesellschaft: *See—*
  - Kandler, Ludwig, 3,873,367.

- Rhoades, James J.: *See—*
  - Marsh, Walter G.; Mercier, Melvin K.; and Rhoades, James J., 3,872,755.
- Rhudy, John S.: *See—*
  - Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,872,923.
- Rice, Claude J., to Kendall Company, The. Web splicing apparatus. 3,873,396, Cl. 156-392.000.
- Richards, Lawrence I., to Autoquip Corporation. Vehicle safety stop for platform of vertical rising lift. 3,872,948, Cl. 187-8.520.
- Richardson-Merrell Inc.: *See—*
  - Blohm, Thomas R.; Wiech, Norbert L.; and Roberts, Edward M., 3,873,520.
- Richter, Frederick: *See—*
  - Cardon, Jules; Richter, Frederick; and Hagedorn, Henry, 3,873,982.
- Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
  - Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
- Ricoh Co., Ltd.: *See—*
  - Fujimoto, Sakae, 3,873,083.
  - Matsuhisa, Koh, 3,873,014.
- Riddell, Horace G. Self-powered illuminated ornamental device. 3,873,880, Cl. 315-53.000.
- Riedner, William E., to Clark Equipment Company. Order picker backstop with offload feature in either direction. 3,872,979, Cl. 214-1.0BB.
- Rieger, Hans Wolfhart: *See—*
  - Kugler, Tibor; and Rieger, Hans Wolfhart, 3,872,577.
- Riethmeier, William C., to Rockwell International Corporation. Hold-down/extraction apparatus. 3,872,734, Cl. 74-89.150.
- Rieve, Robert W.: *See—*
  - Rosenthal, Rudolph; Rieve, Robert W.; Kieras, Joseph A.; and Bonetti, Giovanni A., 3,873,674.
- Rigazio, Anthony W.: *See—*
  - Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., 3,873,865.
- Rigby, Malcolm James: *See—*
  - Rudd, John Duncan; Davie, Michael Hill; and Rigby, Malcolm James, 3,873,293.
- Ringrose, Michael Andrew; and Coy, John Ronald, to Becton, Dickinson and Company. Sampling apparatus. 3,872,730, Cl. 73-421.00B.
- Riquart, Christian: *See—*
  - Eloi, Christian; and Riquart, Christian, 3,872,885.
- Ritchie, Kim, to Motorola, Inc. Liquid crystal display. 3,873,186, Cl. 350-160.0LC.
- Ritter, Reinhold: *See—*
  - Ziebarth, Paul Erich; and Ritter, Reinhold, 3,873,435.
- Ritz, William C.; and Otterman, Glenn E., to United States of America, Atomic Energy Commission. Reactor vessel seal service fixture. 3,872,565, Cl. 29-200.00P.
- Ritzka, Karl, to Daimler-Benz Aktiengesellschaft. Method for case hardening workpieces. 3,873,376, Cl. 148-16.500.
- Rival Manufacturing Company: *See—*
  - McLean, Robert E., 3,872,585.
- Roberson, John Stephen: *See—*
  - Neal, Joe L.; and Roberson, John Stephen, 3,873,963.
- Robert Bosch GmbH: *See—*
  - Nusser, Hermann; and Speck, Hans-Reimer, 3,873,243.
- Robert, Louis F.: *See—*
  - Johnson, Robert B.; and Robert, Louis F., 3,872,643.
- Robert Rosch G.m.b.H.: *See—*
  - Espenschied, Helmut; and Gauss, Wolfgang, 3,873,060.
- Roberts, Edward M.: *See—*
  - Blohm, Thomas R.; Wiech, Norbert L.; and Roberts, Edward M., 3,873,520.
- Roberts, Robert E., to Fred T. Roberts & Company. Self-reinforced plastic hose and method for molding same. 3,872,893, Cl. 138-121.000.
- Robertshaw Controls Company: *See—*
  - Branson, Charles D., 3,872,877.
- Robez, Roland Gabriel: *See—*
  - Reijonen, Olavi; Robez, Roland Gabriel; and Kostiainen, Lauri, 3,873,256.
- Robinder, Ronald C., to Raytheon Company. Display tube with color selective filtration. 3,873,868, Cl. 313-112.000.
- Rochelle, William R.; Larenzo, Leroy N.; and Ranft, Eberhard V., to Brown & Root, Inc. Apparatus for weight coating pipe segments. 3,873,057, Cl. 249-144.000.
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  - Brown, Elvin E., 3,873,429.
  - Johnson, Robert A., 3,873,947.
  - Riethmeier, William C., 3,872,734.
  - Sletten, Harold L., 3,873,419.
- Rodriguez, Joaquin R., to Global Marine Inc. Twin-hull ship for drilling in ice-covered waters. 3,872,814, Cl. 114-40.000.
- Rogers, George W., to Micro-Data Corp. Apparatus for dispensing xerographic toner particles. 3,872,837, Cl. 222-407.000.
- Rogers, Howard G., to Polaroid Corporation. Variable light-filtering device. 3,873,185, Cl. 350-147.000.
- Rolff, Klaus-Peter, to Siemens Aktiengesellschaft. Contact system for a high-voltage apparatus. 3,873,793, Cl. 200-148.00R.
- Root, Lyman V.: *See—*
  - Charron, William W.; Root, Lyman V.; and Simmons, Calvin J., 3,872,847.
- Roselle, Pierce Clark; Evans, David George; Ebbinga, Theodore Conrad; and Vangen, Robert Franklin, to Sperry Rand Corporation. Solid-state potentiometer for coupling circuits having isolated electrical grounds. 3,873,850, Cl. 307-125.000.
- Rosenblum, Ira: *See—*
  - Coulston, Frederick; and Rosenblum, Ira, 3,873,723.
- Rosenlund, Iver Theodore, to du Pont de Nemours, E. I., and Company. Thermal-exhaust gas reactor. 3,872,667, Cl. 60-282.000.
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- Rosling, Thomas H., to United States of America, Navy. Cartridge actuated flame system. 3,872,769, Cl. 89-1.00A.
- Ross, John R.: *See—*
  - Walker, James L.; and Ross, John R., 3,873,347.
- Ross, Philip C., to Electronic Engineering Company of California. Junction box connector assembly. 3,873,177, Cl. 339-91.00R.
- Rossi, Louis J.: *See—*
  - Contois, Lawrence E.; and Rossi, Louis J., 3,873,311.
  - Contois, Lawrence E.; and Rossi, Louis J., 3,873,312.
- Roszkowski, Adolph: *See—*
  - Henzl, Milan R.; and Roszkowski, Adolph, 3,873,718.
- Roters, Hans, to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Catalyst and catalyst arrangement for the production of nitric acid. 3,873,675, Cl. 423-403.000.
- Roussel Uclaf: *See—*
  - Pierdet, Andre, 3,873,702.
  - Viehe, Heinz Gunter; Van Vyve, Therese; and Janousek, Zdenek, 3,873,530.
- Rousset, Abel: *See—*
  - Mollard, Paul; Paris, Jacques; and Rousset, Abel, 3,873,461.
- Rovero, Dominique: *See—*
  - Rey, Louis; Bouldoires, Jean-Pierre; and Rovero, Dominique, 3,873,745.
- Rowe, Edward A.: *See—*
  - Beckers, Norman L.; and Rowe, Edward A., 3,873,631.
- Rowland-Hill, Edward W.; and Focht, Claude K., to Sperry Rand Corporation. Grain unloading assembly. 3,872,982, Cl. 214-17.00D.
- Roy, Waldemar: *See—*
  - Laufer, Siegmar; and Roy, Waldemar, 3,873,337.
- Rudd, John Duncan; Davie, Michael Hill; and Rigby, Malcolm James, to Pilkington Brothers Limited. Method and apparatus for production of glass tubing. 3,873,293, Cl. 65-84.000.
- Ruffalo, Peter D.: *See—*
  - Nordstrom, Leroy A.; and Ruffalo, Peter D., 3,872,954.
- Rumpf, Robert J.; and Higbee, Wallace C., to Firestone Tire & Rubber Company, The. Pawl lock for retractors. 3,873,041, Cl. 242-107.400.
- Ruska, Ernst; and Stocklein, Franz, to Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften e.V. Particle-beam device equipped with a foundation supported to permit swinging movement. 3,873,831, Cl. 250-306.000.
- Russell, Charles R.; and Woods, James R., II. Rotary piston engine. 3,872,839, Cl. 123-8.310.
- Russell, John G.: *See—*
  - Busdiecker, Wayne S.; Lansky, Zdenek J.; and Russell, John G., 3,872,884.
- Ryan, Donald P.: *See—*
  - Gutowski, Antoni P.; and Ryan, Donald P., 3,872,761.
- Rys, Paul; and Vogelsanger, Rolf, to Ciba-Geigy AG. Spiro compounds. 3,873,615, Cl. 260-543.00R.
- Saam, John C.; and Fearon, Frederick W. G., to Dow Corning Corporation. Block copolymer of a vinyl monomer and a poly-3,3,3-trifluoropropylmethylsiloxane. 3,873,636, Cl. 260-827.000.
- Saga, Motoo, to Mitsubishi Petrochemical Co. Ltd. 1,2-Epoxy resin cured with 3(β-methyl-2-butenyl)-5-methyl-1,2,3,6-tetrahydrophthalic anhydride. 3,873,501, Cl. 260-47.0EA.
- Saiki, Koji: *See—*
  - Oshima, Hiroshi; Saiki, Koji; and Inoue, Hiroto, 3,873,472.
- St. James, Marc Antony, to International Business Supplies. Means and methods for cleaning type faces of impact printing machines. 3,872,961, Cl. 197-184.000.
- Sair, Louis: *See—*
  - Melcer, Irving; and Sair, Louis, 3,873,741.
- Sakai Chemical Industry Company Limited: *See—*
  - Kotone, Akira; Hoda, Masahiro; Hori, Takeshi; and Nakane, Yoshihiko, 3,873,563.
- Sakamoto, Minoru. Instrument for taking impressions of nasal septums. 3,872,857, Cl. 128-2.00S.
- Sakuma, Eizo: *See—*
  - Ohya, Tatsuo; Sakuma, Eizo; Motoyoshi, Minoru; Okamoto, Masafumi; and Tanaka, Kiyoshi, 3,872,704.

- Salajczyk, Jan, to Huta "Zygmunt". Universal type spindle coupling. 3,872,690, Cl. 64-9.00R.
- Sally, Theodore J.: *See—*
  - Morris, Earl Lavern; and Sally, Theodore J., 3,873,151.
- Salvarezza, Robert M. Rat guard. 3,872,818, Cl. 114-221.00R.
- Sammarco, Giacomo J.: *See—*
  - Giannestras, Nicholas J.; and Sammarco, Giacomo J., 3,872,519.
- Sammaritano, Michael. Apparatus for joining preformed conduits. 3,873,134, Cl. 285-137.00R.
- Sanders Associates, Inc.: *See—*
  - Northrup, Richard M.; and Johnson, Philip M., 3,873,823.
- Sanders, Milton: *See—*
  - Goldberg, Harold; and Sanders, Milton, 3,872,792.
- Sanderson, James C. Motion transmitting apparatus. 3,872,733, Cl. 74-66.000.
- Sandoz Ltd. (a/k/a Sandoz AG): *See—*
  - Hofer, Kurt; Keller, Robert Christian; and Zingg, Alfred Emil, 3,873,266.
- Sandoz Wander, Inc.: *See—*
  - Farrish, Dean T., 3,873,857.
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,873,539.
  - Houlihan, William J., 3,873,708.
- Sanyo Chemical Industries, Ltd.: *See—*
  - Kumata, Koji; and Nagata, Kozaburo, 3,873,407.
- Sarmiento, Rafael: *See—*
  - Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., 3,873,724.
- Sarraille, Lynn E.: *See—*
  - Gaiser, Conrad J.; and Sarraille, Lynn E., 3,872,905.
- Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, to Chugai Seiyaku Kabushiki Kaisha. Novel antibiotic ascofuranone and process for the production thereof. 3,873,529, Cl. 260-240.00R.
- Satake, Takeo: *See—*
  - Kobinata, Sadao; Satake, Takeo; and Hiramoto, Naonobu, 3,873,468.
- Sato, Akira: *See—*
  - Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, 3,873,323.
- Sato, Fujio; Fujimoto, Eisuke; Sato, Keisuke; and Tanaka, Bunichiro, to Akai Electric Company Limited. Magnetic recording system with reduction of high frequency signal distortion in vicinity of saturation level. 3,873,992, Cl. 360-24.000.
- Sato, Keisuke: *See—*
  - Sato, Fujio; Fujimoto, Eisuke; Sato, Keisuke; and Tanaka, Bunichiro, 3,873,992.
- Sato, Masanori: *See—*
  - Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
- Sato, Seiji: *See—*
  - Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
- Sato, Tadashi; and Okada, Hisao, to Sony Corporation. Power supply control system. 3,873,894, Cl. 317-148.500.
- Sato, Tomoyasu: *See—*
  - Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
- Saucy, Gabriel, to Hoffmann-LaRoche Inc. 7-(4-Isoxazolyl)-5-oxoheptanals. 3,873,561, Cl. 260-307.00H.
- Saucy, Gabriel, to Hoffman-La Roche Inc. 1-(4-Isoxazolyl)-7-hydroxy-3-heptanones. 3,873,562, Cl. 260-307.00H.
- Savo Oy: *See—*
  - Brax, Esko Kai, 3,873,418.
- Sawabe, Eiichi: *See—*
  - Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
- Sawada, Katsuya: *See—*
  - Suzuki, Akira; Miura, Hiroshi; Sawada, Katsuya; and Koida, Yoshiyuki, 3,873,720.
- Sawazaki, Norikazu; Kuriyagawa, Mamoru; and Yagi, Motoi, to Tokyo Shibaura Electric Co., Ltd. Magnetic recording and reproducing apparatus with grooved recording medium and tracking guide. 3,873,994, Cl. 360-130.000.
- Scandia Packaging Machinery Company: *See—*
  - Higgins, Lester A., 3,872,964.
- Scanner, Inc.: *See—*
  - Acker, Norbert K., 3,873,973.
- Schack, Carl J.: *See—*
  - Christe, Karl O.; and Schack, Carl J., 3,873,677.
- Schaefer, Hans: *See—*
  - Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, 3,873,595.
- Schaefer, Horst: *See—*
  - Bockau, Guenter; and Schaefer, Horst, 3,873,052.
- Schaeffer-Homberg GmbH, Firma: *See—*
  - Wolfertz, Gunther; Kramer, Friedhelm; and Hillringhaus, Paul, 3,872,554.
- Schaub, Robert Eugene: *See—*
  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,873,607.
- Schausberger, Helmut: *See—*
  - Pfeifer, Josef; and Schausberger, Helmut, 3,873,988.
- Scheckman, Eugene Z.: *See—*
  - Preto, Raymond J.; and Scheckman, Eugene Z., 3,873,667.
- Scheerhorn, Douglas; and Van Gessel, Robert C., to Steelcase Inc. Filing cabinet. 3,872,802, Cl. 108-61.000.
- Scheerhorn, Douglas; and Hodges, Ronald R., to Steelcase, Inc. Attachment means for modular furniture construction. 3,873,170, Cl. 312-280.000.
- Scheffler, Ernst; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of making a composite superconducting tube. 3,873,799, Cl. 219-61.000.
- Schell, Joseph G., Jr.: *See—*
  - Strange, Carl P.; Sylvest, Robert T.; and Schell, Joseph G., Jr., 3,873,518.
- Scheuter, Anton: *See—*
  - Forster, Hans-Joachim M.; Katz, Klaus; and Scheuter, Anton, 3,872,774.
- Schieman, Richard D. Five-grade motor oil for internal combustion engines. 3,873,455, Cl. 252-32.70E.
- Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Electrical enclosure knockout structure. 3,873,759, Cl. 174-65.00R.
- Schinella, Richard D.; and Anthony, Michael P., to Fairchild Camera and Instrument Corporation. Double-diffused, lateral transistor structure. 3,873,989, Cl. 357-35.000.
- Schinke, David Paul; and Smith, Richard Grant, to Bell Telephone Laboratories, Inc. Measurement of thin films by optical waveguiding technique. 3,873,209, Cl. 356-135.000.
- Schirmer, Hermann: *See—*
  - Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.
- Schirrmacher, Hermann: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,873,577.
- Schlapp, Albert: *See—*
  - Marr, Fritz; Schlapp, Albert; Hattass, Rainer; and Binder, Edmund, 3,873,150.
- Schmadel, Edmund, to Henkel & Cie GmbH. Polyester sulfonates containing quaternary ammonium groups. 3,873,603, Cl. 260-481.00R.
- Schmidt, Gunter; and Servais, Carlo, to Kronos Titan G.m.b.H. Process for the manufacture of free-flowing titanium dioxide pigments. 3,873,335, Cl. 106-300.000.
- Schmidt, Kenneth J., to General Trailer Company, Inc. Steerable Trailer. 3,873,129, Cl. 280-404.000.
- Schmidt, Volker. Counting means for material cutting apparatus. 3,872,751, Cl. 83-69.000.
- Schnall, Gunther: *See—*
  - Ettelbruck, Rudiger; Hartwig, Karl; Schnall, Gunther; and Weiss, Werner, 3,873,198.
- Schneider, Heinz: *See—*
  - Filipp, Geza; and Schneider, Heinz, 3,873,697.
- Schneider, Richard S.; and Ullman, Edwin F., to Synvar Associates. 2-Imidazolinyl-3-oxide-1-oxypropionic acid. 3,873,564, Cl. 260-309.600.
- Schober, Wayne E., to Telex Communications, Inc. Magnetic shielding motor mount. 3,873,995, Cl. 360-137.000.
- Schoening, Jerry M., to FMC Corporation. Strap loop securing and severing means. 3,873,387, Cl. 156-73.050.
- Schon, Istvan: *See—*
  - Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
- Schoop, James Conrad; and Stave, Frederick Roland, to RCA Corporation. Disc playback system with speed control of a belt drive. 3,873,765, Cl. 178-6.60A.
- Schossow, George W. Vaporizer-humidifier. 3,873,806, Cl. 219-273.000.
- Schuette, Henry W.: *See—*
  - Williams, Norman H.; and Schuette, Henry W., 3,872,603.
- Schuller, Walter H.: *See—*
  - Severson, Ray F.; and Schuller, Walter H., 3,873,482.
- Schultz, Thomas C., to Ford Motor Company. EGR system built into carburetor. 3,872,845, Cl. 123-119.00A.
- Schulz, Gunter W.: *See—*
  - Herr, Charles H.; Schulz, Gunter W.; and Bull, George S., 3,872,956.
- Schulz, Jay R.: *See—*
  - Lee, Chi-Long; and Schulz, Jay R., 3,873,334.
- Schuster, Gordon L., to Timesavers, Inc. Wide belt sanding machine with improved dust collector. 3,872,627, Cl. 51-135.00R.
- Schwab, Edward C.; Petersen, Warren D.; and Bumbiers, Eric, to General Mills, Inc. Process for making high-protein cereal. 3,873,748, Cl. 426-346.000.
- Schwartz, Judd Leonard: *See—*
  - Wincklhofer, Robert Charles; and Schwartz, Judd Leonard, 3,873,353.
- Schwartz, Theodore F. Photo negative projector. 3,873,194, Cl. 353-110.000.
- Schwarz, Max: *See—*
  - Walz, Klaus; Gerlach, Klaus; and Schwarz, Max, 3,873,583.
- Sciaky, Albert M., to Welding Research, Inc. Elector beam welding apparatus chicorporating a hole center locating means. 3,873,802, Cl. 219-121.0EB.
- Science Research Council: *See—*
  - Gallagher-Daggitt, George Edward, 3,872,660.

Scigliano, Joseph J.: *See—*

Katzakian, Arthur, Jr.; Steele, Roger B.; and Scigliano, Joseph J., 3,873,602.

Scott, John L. Water vapor cooling system for air cooled condenser coils. 3,872,684, Cl. 62-181.000.

Scott Paper Company: *See—*

Plumadorf, John David, 3,873,213.

Vreeland, Jay H., 3,873,345.

Scott, Paul B.: *See—*

Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.

Scribner, Richard M., to du Pont de Nemours, E. I., and Company. 3-Pyrazolidinones and pyrazolidines. 3,873,566, Cl. 260-310.00A.

Seaman Corporation: *See—*

Seaman, Norman R., 3,872,634.

Seaman, Norman R., to Seaman Corporation. Rigid frame, tensioned fabric structure. 3,872,634, Cl. 52-222.000.

Sears, Russell Leo: *See—*

Bryant, Earl Ruskin; Sears, Russell Leo; and Katz, Martin Samuel, 3,872,548.

Sebastian, Robert W.: *See—*

Horecky, Stanley V.; and Sebastian, Robert W., 3,873,174.

Sebo, Alexander; and Despins, Leroy H. Putter-type golf club. 3,873,094, Cl. 273-163.00R.

Segas, Lucien: *See—*

Pierre, Bernard; Segas, Lucien; Simon, Georges; and Volle, Rene, 3,872,771.

Segawa, Takashi, to Shimano Industrial Company, Limited. Hub mounting means for bicycle. 3,873,162, Cl. 301-105.00B.

Segovia, Gilbert, to Oxy Metal Industries Corporation. Process for producing a reverse osmosis module. 3,873,665, Cl. 264-321.000.

Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, to Immuno Aktiengesellschaft Fur Chemisch medizinische. Method of demonstrating normal and pathological plasm-lipoprotein patterns in human body liquids. 3,873,433, Cl. 204-180.00G.

Seiferth, Oscar E.; and Austin, Glenn M., to Oscar Mayer & Co. Inc. Dome-bottomed container. 3,873,003, Cl. 222-95.000.

Seifried, Walter: *See—*

Hoheisel, Klaus; Jenik, Gisela; and Seifried, Walter, 3,873,503.

Seitz, Lamont J.; and Hauser, Stephen G. Rack for diagnostic diffusion plates. 3,872,614, Cl. 40-64.00R.

Seitz, William R.: *See—*

Taplin, Lael B.; Seitz, William R.; and Leung, Chun Keung, 3,872,846.

Sekiguchi, Toshio: *See—*

Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*

Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,873,351.

Selas Corporation of America: *See—*

Bates, William G.; and Marceau, William E., 3,873,295.

Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., to American Home Products Corporation. 4-Oxo-thiazol ino/idine-5-ylideneacetamido penicillanic acids. 3,873,524, Cl. 260-239.100.

Sellstedt, John H.: *See—*

Bogash, Richard; Wolf, Milton; and Sellstedt, John H., 3,873,533.

Sellstrom Manufacturing Co.: *See—*

Anderson, Marshall N., 3,873,192.

Semonsky, Miroslav; Zikan, Viktor; and Jelinek, Vaclav, to Spofa United Pharmaceutical Works. γ-4-N-butoxyphenyl-α,β-dibromoΔαβ-crotonic acid lactone. 3,873,575, Cl. 260-343.600.

Seo, Osamu; and Tanabe, Genichi, to Kabushiki Kaisha Komatsu Seisakusho. Automatic index and operating cycle regulator for a punch. 3,873,899, Cl. 318-309.000.

Servais, Carlo: *See—*

Schmidt, Gunter; and Servais, Carlo, 3,873,335.

Servo Corporation of America: *See—*

Cardon, Jules; Richter, Frederick; and Hagedorn, Henry, 3,873,982.

Sethi, Bal Krishan; Lahtvee, Toivo; and Stark, William Hubbard, to Spring Chemicals Limited. Process for reducing the amount of calcium contained in sodium-base waste sulfite liquor by the use of a sodium and/or an ammonium compound and additional calcium. 3,873,415, Cl. 162-36.000.

Severson, Ray F.; and Schuller, Walter H., to United States of America, Agriculture. Pyrolyzed tall oil products as synthetic rubber tackifiers. 3,873,482, Cl. 260-27.00R.

Shandon Southern Instruments Ltd.: *See—*

Thompson, Kenneth Clive, 3,873,205.

Shapiro, Lawrence S.; and Piel, Ralph H. Quick-connect coupling structures embodied in motorcycle for rapid take down. 3,872,944, Cl. 180-33.00R.

Sharkey, Hubert J.: *See—*

Sturwold, Robert J.; and Sharkey, Hubert J., 3,873,585.

Sharman, Samuel H.: *See—*

Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,873,590.

Sharpe, Keith: *See—*

Cartlidge, Dennis M.; and Sharpe, Keith, 3,873,662.

Shaw, Garrett D.: *See—*

Drutchas, Gilbert H.; and Shaw, Garrett D., 3,873,165.

Sheasby, Peter Geoffrey; Smith, Alan Martin; Gilkes, Christopher Robert; and Breit, Wolf Dieter, to Alcan Research and Development Limited. Production of lithographic plates. 3,873,318, Cl. 96-86.00P.

Shell, Forney L., to United States of America, Air Force. Optical comparator. 3,873,212, Cl. 356-168.000.

Shell Oil Company: *See—*

Bell, Charles S.; and Wulff, Harald P., 3,873,578.

Lee, Robert E.; and Orr, William R., 3,873,961.

Sheller-Globe Corporation: *See—*

Reilly, Albert F.; Doddridge, Ivan C.; and Chen, Ming Chih, 3,873,348.

Shelor, Clifford D.: *See—*

de Ligt, John; and Shelor, Clifford D., 3,872,962.

Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions and their use. 3,873,444, Cl. 210-62.000.

Shema, Bernard F.: *See—*

Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,710.

Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,711.

Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,712.

Sherk, Fred T.: *See—*

Wu, Yu-Lin; Hudson, Paul S.; Sherk, Fred T.; and Haskell, Donald M., 3,873,609.

Sherk, Thomas A.; and Tummala, Rao R., to International Business Machines Corporation. B_2O_3 Al_2O_3 containing PbO-ZnO-B_2O_3 low temperature sealing glass. 3,873,330, Cl. 106-47.000.

Sherwin, Cyril Duncan Ralph: *See—*

Campbell, Robert Edward; Sherwin, Cyril Duncan Ralph; and Turner, Charles Leslie, 3,872,659.

Sherwood, Clyde L. Freight handling system. 3,872,963, Cl. 198-38.000.

Shiba, Keisuke: *See—*

Hinata, Masanao; Takei, Haruo; and Shiba, Keisuke, 3,873,324.

Shida, Toshiro: *See—*

Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; Meguro, Takashi; and Wakamatsu, Hachiro, 3,873,700.

Shiflet, Frank L., to Hopeman Brothers, Inc. Portable stowage rack for beverage containers. 3,873,115, Cl. 280-33.99H.

Shim, Kyung S., to Stauffer Chemical Company. Process of manufacturing sulfur-nitrogen polymers. 3,873,507, Cl. 260-79.000.

Shimada, Takashi: *See—*

Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, 3,873,400.

Shimano Industrial Company, Limited: *See—*

Segawa, Takashi, 3,873,162.

Shimizu, Masatoshi: *See—*

Ozaki, Noboru; and Shimizu, Masatoshi, 3,873,811.

Shinal, Joseph B., to GTE Sylvania Incorporated. Shield attached by sealing to panel sidewall of cathode ray tube. 3,873,874, Cl. 313-402.000.

Shionogi & Co., Ltd.: *See—*

Otsuka, Hideo; and Inouye, Ken, 3,873,511.

Shiosaka, Makoto: *See—*

Hijiya, Hiromi; and Shiosaka, Makoto, 3,873,333.

Shiroza, Satoshi: *See—*

Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,873,351.

Shoemaker, Robert H.: *See—*

Block, Aleck; Frank, Edward H.; and Shoemaker, Robert H., 3,873,280.

Shoh, Andrew, to Branson Instruments, Incorporated. Ultrasonic welding tool. 3,873,859, Cl. 310-8.100.

Shook, Hugh Thomas, to Northfield Freezing Systems, Inc. Closed system refrigeration or heat exchange. 3,872,682, Cl. 62-114.000.

Shoptaugh, Philip L., to Carlisle, William. Interconnected puzzle blocks. 3,873,096, Cl. 273-156.000.

Short, Arthur G., to J. C. Case Company. Hydraulic control valve circuit. 3,872,985, Cl. 214-138.00R.

Shotmeyer, Albert. Combined water removing and contents indicating device for underground liquid fuel containing tanks. 3,872,886, Cl. 137-558.000.

Shulman, Burt H. Safety closure cap. 3,873,001, Cl. 222-48.000.

Shulzhenko, Alexandr Alexandrovich: *See—*

Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; Lyashenko, Alexandr Fedorovich; and Zhitnetsky, Vasily Ivanovich, 3,873,308.

Shuttleworth, Henry: *See—*

Laurence, Patrick T.; and Shuttleworth, Henry, 3,873,608.

Shuttleworth, Peter. Mine roof supports. 3,872,678, Cl. 61-45.00D.

Siebert, Christopher J.: *See—*

Chu, Albert E. Y.; and Siebert, Christopher J., 3,873,514.

Siemens Aktiengesellschaft: *See—*

Galli, Anton, 3,873,178.

Hannich, Joachim, 3,873,797.

Heiner, Marin, 3,873,792.

Krause, Gerhard, 3,873,827.

Rolff, Klaus-Peter, 3,873,793.

Siemund, Herbert A. Reversible sponge rubber mop, brush or duster. 3,872,536, Cl. 15-244.0CH.

Sierer, Mrs. Edward, executrix: *See—*

Bieber, Henry E., deceased; and Sierer, Mrs. Edward, executrix, 3,873,464.

Sieurin, Donald; and Leger, Alfred R., to Morgan Construction Company. Pouring reel. 3,873,040, Cl. 242-82.000.

Sievers, Carl J.; and Wagner, Ronald C., to Basler Electric Company. Positive ignition power supply for a magnetron. 3,873,883, Cl. 315-105.000.

Sigmatex, A.G.: *See—*

Weman, Per Olaf, 3,873,042.

Sih, Kwang Yue: *See—*

Parr, Joseph Ward; and Sih, Kwang Yue, 3,873,820.

Sikamori, Tamotu; and Kaito, Haruyuki, to Hitachi, Ltd. Washing machine. 3,872,694, Cl. 68-12.00R.

Sillion, Bernard: *See—*

Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,873,276.

Silver, Arnold. Three-dimensional geometric manipulative device. 3,872,975, Cl. 211-178.00R.

Siminsky, Konstantine George. Gauges and the like. 3,872,600, Cl. 33-178.00R.

Simmons, Calvin J.: *See—*

Charron, William W.; Root, Lyman V.; and Simmons, Calvin J., 3,872,847.

Simon, Georges: *See—*

Pierre, Bernard; Segas, Lucien; Simon, Georges; and Volle, Rene, 3,872,771.

Sincock, Thomas F.: *See—*

Reilly, Joseph R.; and Sincock, Thomas F., 3,873,660.

Singer Company, The: *See—*

Adams, Kenneth D.; and Petronchak, John, 3,872,809.

Pew, John P., 3,873,863.

Wurst, John W., 3,872,808.

Singer, G.m.b.H.: *See—*

Weber, Karl, 3,872,811.

Singer, Michael, to Imperial Chemical Industries Limited. Method for the control of micro-organisms. 3,873,279, Cl. 44-76.000.

Sintokogio, Ltd.: *See—*

Fuma, Toyoji; and Takeda, Hitosi, 3,872,625.

Sistowicz, Robert F.: *See—*

Bakka, Richard L.; and Sistowicz, Robert F., 3,873,363.

Sjoberg, Berndt Olof Harald: *See—*

Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, 3,873,521.

Sjostrand, Gunnar; and Jansson, Einar, to Musikindustriell Forskning Mifo AB. Musical instrument with piano keyboard. 3,872,767, Cl. 84-255.000.

Skelton, John; and Freeston, W. Denney, Jr., to United States of America, Air Force. Thermal stabilization of polyamide fibers. 3,873,338, Cl. 117-7.000.

Skinner, W. A.; Johnson, Howard L.; DeGraw, Joseph T., Jr.; and Brown, Vernon H., to United States of America, Army. Insect repellent composition containing C_6-C_8 alkyl monoethers of triethylene glycol. 3,873,725, Cl. 424-342.000.

Skogland, Thorbjorn, to General Electric Company. High temperature gas furnace. 3,873,809, Cl. 219-380.000.

Sletten, Harold L., to Rockwell International Corporation. Flow-throttling orifice nozzle. 3,873,419, Cl. 176-61.000.

Slinger, George A., to Progressive Engineering, Inc. Sliver guide for spinning frame cradle assembly. 3,872,546, Cl. 19-291.000.

Slusarchyk, Dorothy S.: *See—*

Meyers, Edward; Slusarchyk, Dorothy S.; and Liu, Wen-Chih, 3,873,693.

Smerz, Otto: *See—*

Kleber, Rolf; Smerz, Otto; and Trapp, Gunther, 3,873,265.

Smith, Alan Martin: *See—*

Sheasby, Peter Geoffrey; Smith, Alan Martin; Gilkes, Christopher Robert; and Breit, Wolf Dieter, 3,873,318.

Smith, Arthur E.: *See—*

Chalin, Manuel L.; and Smith, Arthur E., 3,873,735.

Smith, David W.: *See—*

Link, Robert O.; and Smith, David W., 3,872,555.

Smith, Delmont K.: *See—*

Drelich, Arthur H.; Smith, Delmont K.; and Strauss, Ulrich P., 3,873,411.

Smith, Herbert Q.; and Toukan, Sameeh Said, to Pennwalt Corporation. Halo-substituted cyanomethyl benzenesulfonates. 3,873,591, Cl. 260-456.00P.

Smith, James S., Jr.; and Smith, William R., to General Electric Company. Alarm arrangement for a time-division multiplex, pulse-code modulation carrier system. 3,873,776, Cl. 179-15.0BY.

Smith, Joseph L. Paint roller sleeve washer. 3,873,364, Cl. 134-138.000.

Smith, Leslie Harold, to Imperial Chemical Industries Limited. 1-[4-(4-Acetamidophenyl)phenoxy]-3-isopropyl-2-propanol. 3,873,618, Cl. 260-562.00P.

Smith, Paul K.: *See—*

Mosley, Wilbur C., Jr.; and Smith, Paul K., 3,873,651.

Smith, Richard Grant: *See—*

Schinke, David Paul; and Smith, Richard Grant, 3,873,209.

Smith, Robert G. Process of forming a rigid foam airfoil section. 3,873,654, Cl. 264-46.40A.

Smith, Robert H. Surgical support. 3,873,081, Cl. 269-328.000.

Smith, Robert J., to Philco-Ford Corporation. Method for forming articles from plastic sheet material. 3,873,659, Cl. 264-89.000.

Smith, Roger M.: *See—*

Miller, Lawrence J.; and Smith, Roger M., 3,872,881.

Smith, Thomas C.: *See—*

Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,355.

Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,356.

Smith, Thomas R., to Maytag Company, The. Support and seal for waste disposer. 3,873,036, Cl. 241-100.500.

Smith, Wilbert H.: *See—*

Viola, Olivo L.; and Smith, Wilbert H., 3,873,168.

Smith, William J.; and Irti, Ernest, to Teledyne, Inc. Rotary selector valve. 3,872,889, Cl. 137-625.210.

Smith, William R.: *See—*

Smith, James S., Jr.; and Smith, William R., 3,873,776.

SmithKline Corporation: *See—*

Blank, Benjamin; and Gleason, John G., 3,873,552.

Caldwell, Henry C.; and Loev, Bernard, 3,873,536.

Smithson, Emory L.: *See—*

Smithson, Howard W.; Smithson, Emory L.; and Asburry, Robert L., 3,872,989.

Smithson, Howard W.; Smithson, Emory L.; and Asburry, Robert L. Vehicle transport loader. 3,872,989, Cl. 214-450.000.

Smrcka, Joseph G., to Alderson Research Laboratories, Inc. Resuscitation training dummy. 3,872,609, Cl. 35-17.000.

Smythies, John Raymond, to Nelson Research & Development Company. Method for treating schizophrenia. 3,873,722, Cl. 424-319.000.

Snam Progetti, S.p.A.: *See—*

Gambini, Arnaldo, 3,872,940.

Snibbe, Richard W. Suspended structure. 3,872,632, Cl. 52-73.000.

Snyder, Gerald A.: *See—*

Mihram, Russell G.; and Snyder, Gerald A., 3,873,362.

Snyder, James H., to Clark Equipment Company. Overspeed prevention system for elevator cars. 3,872,949, Cl. 187-89.000.

Societa Italiana Elettronica S.p.A.: *See—*

Bianchini, Gianni, 3,873,893.

Societe Anonyme D.B.A.: *See—*

Eloi, Christian; and Riquart, Christian, 3,872,885.

Societe Anonyme de Vehicules Industries et d'Equipement Mechanique Saviem: *See—*

Lecomte, Camille; and Desirat, Andre, 3,873,120.

Societe Anonyme dite: Richier: *See—*

Metailler, Roger, 3,872,942.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*

Rey, Louis; Bouldoires, Jean-Pierre; and Rovero, Dominique, 3,873,745.

Reymond, Dominique; and Marion, Jean-Paul, 3,873,752.

Societe D'Etudes Techniques et D'Enterprises Generales (SODETEG): *See—*

Laplume, Jacques, 3,872,608.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*

Camboulives, Andre Alphonse Mederic Leon; Le Maout, Theophile Francois; Vandenbroucke, Roger Alfred Jules; and Zibette, Bernard Arthur, 3,873,027.

Societe Nouvelle des Ateliers de Venissieux: *See—*

Dousset, Remy, 3,872,799.

Soderstrom, Gill Gustav; and Stahl, Nils Evert Johan, to AB Almex. Apparatus for recording characters, preferably code characters on a carrier. 3,873,991, Cl. 360-4.000.

Solid State Technology, Inc.: *See—*

Willis, John G., 3,873,844.

Solomon, Beka: *See—*

Katchalski, Ephraim; Levin, Yehuda; and Solomon, Beka, 3,873,426.

Sommer, Friedrich; and Jahnke, Uwe, to U.S. Philips Corporation. Servo drive for a rotating system. 3,873,900, Cl. 318-314.000.

Sondhi, Vickram: *See—*

Stein, Harold H.; and Sondhi, Vickram, 3,873,812.

Sono-Therapy Institute, Inc.: *See—*

Pitzen, Sylvester A.; Drabier, Jacques P.; and Liljegren, Dale H., 3,872,859.

Sontrix, Inc.: *See—*

Goble, Ralph W., 3,873,866.

Sony Corporation: *See—*

Fujiwara, Yoshio; Naito, Keiichi; and Odajima, Toru, 3,873,637.

Ishigaki, Yoshio; Hongu, Masayuki; and Kawakami, Hiromi, 3,873,932.

Machida, Hiromasa; Ichigaya, Hiroshi; and Iwabuchi, Kietsu, 3,873,877.

Maeda, Akira, 3,873,766.

Morio, Minoru; and Otaki, Fumio, 3,873,846.

Mutsuura, Yoshimichi, 3,873,778.

Nemoto, Tsuneo; and Urayama, Kiyoshi, 3,873,045.

Okada, Takashi; and Ogawara, Yoshiaki, 3,873,767.

Sato, Tadashi; and Okada, Hisao, 3,873,894.

Sorgenfrei, Malachy E.: *See—*

Aepli, Otto T.; and Sorgenfrei, Malachy E., 3,873,743.

Sothcott, Peter; and Marsh, Stanley B., to International Standard Electric Corporation. Radio navigation beacon. 3,873,983, Cl. 343-106.00D.

Soudijn, Willem; Wijngaarden, Ineke Van; and Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica, N.V. [(Phenothiazinyl)propyl]-piperidyl-benzimidazolinones. 3,873,534, Cl. 260-243.00A.

Southern Pacific Transportation Company: *See—*

Atkinson, William W.; and Leathem, Albert, 3,872,711.

Southwell, William H., to Owens-Illinois, Inc. Measuring the index of refraction. 3,873,208, Cl. 356-128.000.
Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing 2,2-anhydro-(1-β-D-arabinofuranosyl)cytosine. 3,873,515, Cl. 260-211.50R.
SPA-Societa Prodotti Antibiotici S.p.A.: *See—*
  Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, 3,873,551.
Spaulding, Charles A., Jr. Entrance door construction for handball and racquetball courts. 3,872,623, Cl. 49-169.000.
Speck, Hans-Reimer: *See—*
  Nusser, Hermann; and Speck, Hans-Reimer, 3,873,243.
Spence, Leicester T.: *See—*
  Lorz, Emil; and Spence, Leicester T., 3,873,719.
Sperry Rand Corporation: *See—*
  Beck, Ronald A.; and Breu, Dennis L., 3,872,581.
  Kesselring, Donald J., 3,873,914.
  Leyba, Manuel R., 3,873,889.
  McMahon, Donald H.; and Maloney, William T., 3,873,970.
  Roselle, Pierce Clark; Evans, David George; Ebbinga, Theodore Conrad; and Vangen, Robert Franklin, 3,873,850.
  Rowland-Hill, Edward W.; and Focht, Claude K., 3,872,982.
  Wagstaff, Robert A., 3,873,038.
Sperry Rand Limited: *See—*
  Walters, Ronald Bernard, 3,872,772.
Spies, Volker: *See—*
  Valbjorn, Knud Vagn; Spies, Volker; and Dyhr-Mikkelsen, Poul Christian, 3,872,946.
Spofa United Pharmaceutical Works: *See—*
  Semonsky, Miroslav; Zikan, Viktor; and Jelinek, Vaclav, 3,873,575.
Sporri, Heinz: *See—*
  Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, 3,872,870.
Sprague, Stephen A. Boat deck windlass with powered-manual drive. 3,873,069, Cl. 254-187.00R.
Spring Chemicals Limited: *See—*
  Sethi, Bal Krishan; Lahtvee, Toivo; and Stark, William Hubbard, 3,873,415.
Square D Company: *See—*
  Curry, John R., 3,873,136.
Staar, S. A.: *See—*
  Staar, Theophiel Clement Jozef Lodewijk, 3,873,993.
Staar, Theophiel Clement Jozef Lodewijk, to Staar, S. A. Tape transport with fast forward speed. 3,873,993, Cl. 360-90.000.
Stachelhaus, Gustav A.: *See—*
  Dapolito, Joseph J.; and Stachelhaus, Gustav A., 3,873,365.
Stahl, Nils Evert Johan: *See—*
  Soderstrom, Gill Gustav; and Stahl, Nils Evert Johan, 3,873,991.
Stalker Corporation, The: *See—*
  Stalker, Edward A., deceased, 3,872,918.
Stalker, Edward A., deceased (by Stalker, Otillia J., executrix), to Stalker Corporation, The. Heat exchanger. 3,872,918, Cl. 165-5.000.
Stalker, Otillia J., executrix: *See—*
  Stalker, Edward A., deceased, 3,872,918.
Standard Oil Company: *See—*
  Knobloch, James O., 3,873,506.
  Knobloch, James O.; and Latta, James E., 3,873,613.
  Lee, Richard J.; and Karll, Robert E., 3,873,627.
Stanley Works, The: *See—*
  Gordon, Yale J.; and Koley, John V., 3,872,966.
  Gutowski, Antoni P.; and Ryan, Donald P., 3,872,761.
Starch Products Limited: *See—*
  Lambert, Brian Paul; and Lowes, James, 3,873,336.
Stark, William Hubbard: *See—*
  Sethi, Bal Krishan; Lahtvee, Toivo; and Stark, William Hubbard, 3,873,415.
States, Ronald Frederick, to Desoutter Brothers Limited. Power driven rotary tool. 3,872,742, Cl. 74-785.000.
Stateside Machinery Co. Ltd.: *See—*
  Palmer, George William, 3,872,807.
Statham, Eric, to United Kingdom Atomic Energy Authority. Nuclear fuel element assemblies. 3,873,420, Cl. 176-77.000.
Stauffer Chemical Company: *See—*
  Pitt, Harold M.; Zeleny, Richard A.; and Knoshaug, Wendell E., 3,873,647.
  Shim, Kyung S., 3,873,507.
Stave, Frederick Roland: *See—*
  Schoop, James Conrad; and Stave, Frederick Roland, 3,873,765.
Stedman, Robert N.: *See—*
  Moser, Raymond L.; and Stedman, Robert N., 3,872,984.
Steel Equipment Company Limited: *See—*
  Greenfield, Gordon Stewart, 3,873,221.
Steelcase Inc.: *See—*
  Scheerhorn, Douglas; and Van Gessel, Robert C., 3,872,802.
  Scheerhorn, Douglas; and Hodges, Ronald R., 3,873,170.
  VanGessel, Robert C.; and Van Kuik, Dirk J., 3,873,758.
Steele, Roger B.: *See—*
  Katzakian, Arthur, Jr.; Steele, Roger B.; and Scigliano, Joseph J., 3,873,602.
Stein, Harold H.; and Sondhi, Vickram, to Ferranti-Packard Limited. Reader for coded information. 3,873,812, Cl. 235-61.11E.
Stein, Wolfgang J.; Straniti, Salvatore; and Exley, John T., to Avco Corporation. Two-piece channel diffuser. 3,873,232, Cl. 415-207.000.
Steinberg, Nathan G.: *See—*
  Christensen, Burton G.; Steinberg, Nathan G.; and Patchett, Arthur A., 3,873,547.
Steinmuller, Hans-Jochem, to Diamler-Benz Aktiengesellschaft. Exhaust gas channel system. 3,872,843, Cl. 123-52.0MV.
Stellwagen, Frank W.: *See—*
  Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., 3,873,865.
Stelmo Limited: *See—*
  Jeffery, Robin Douglas, 3,873,058.
Stepan Chemical Company (National Polychemicals Div.): *See—*
  Beck, Walter; and Blackwood, John C., 3,873,477.
Sterki, Armin, to Maag Gear-Wheel & Machine Company Limited. Capacitive sensor for measuring displacement or position. 3,873,916, Cl. 324-61.00R.
Sterling Drug Inc.: *See—*
  Lesher, George Y.; and Gruett, Monte D., 3,873,554.
Stern, Ernest: *See—*
  Burke, Barry Ernest; Stern, Ernest; and Bers, Abraham, 3,873,858.
Sternbach, Leo Henryk; and Ye-Fong Ning, Robert, to Hoffmann-La Roche Inc. Preparation of 1-alkyl-1,4-benzodiazepin-2-ones. 3,873,525, Cl. 260-239.30D.
Stevens, William D.: *See—*
  Gorzegno, Walter P.; and Stevens, William D., 3,872,836.
Stevenson, Alden, to Motorola, Inc. Durable high resolution silicon template. 3,873,203, Cl. 355-133.000.
Stibbe, Paul H., to TEC Systems, Inc. High velocity web floating air bar having center exhaust means. 3,873,013, Cl. 226-97.000.
Stiglitz, Martin R.: *See—*
  Lammers, Uve H. W.; and Stiglitz, Martin R., 3,873,948.
Stocklein, Franz: *See—*
  Ruska, Ernst; and Stocklein, Franz, 3,873,831.
Stockmann, Helmut: *See—*
  Decker, Hans; Hurtmanns, Heinz; Jakobs, Willy; and Stockmann, Helmut, 3,873,037.
Stoll, Harold M.: *See—*
  Hunsperger, Robert G.; Stoll, Harold M.; Tangonan, Gregory L.; and Yariv, Amnon, 3,873,828.
Stoltefuss, Wilhelm; and Melis, Egon, to Gewerkschaft Eisenhutte Westfalia. Mobile mine tunnelling machine having cooperable cutter, trough, loader and converyors. 3,873,157, Cl. 299-31.000.
Stone Container Corporation: *See—*
  Vickers, James L., 3,872,650.
Stora Kopparbergs Bergslags Aktiebolag: *See—*
  Qvarnstrom, Bengt, 3,873,025.
Stram, George H.: *See—*
  Thornton, Henry M., Jr.; Stram, George H.; and Plowman, Richard E., 3,872,593.
Strange, Carl P.; Sylvest, Robert T.; and Schell, Joseph G., Jr., to Dow Chemical Company, The. Water soluble ternary cellulose ethers. 3,873,518, Cl. 260-231.00A.
Straniti, Salvatore: *See—*
  Stein, Wolfgang J.; Straniti, Salvatore; and Exley, John T., 3,873,232.
Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., to Chevron Research Company. Methyl esters of organic sulfonic acid oligomers. 3,873,590, Cl. 260-456.00R.
Strauss, Ulrich P.: *See—*
  Drelich, Arthur H.; Smith, Delmont K.; and Strauss, Ulrich P., 3,873,411.
Streit, Kenneth F., to 3-D Ducts, Inc. Light weight cable housing. 3,872,894, Cl. 138-155.000.
Stuart, Gerald L.: *See—*
  Milholen, William F.; Brown, John Jones, Jr.; and Stuart, Gerald L., 3,873,658.
Studer, Richard L.: *See—*
  Munch, Walter, Jr.; Uetrecht, Dale M.; and Studer, Richard L., 3,872,764.
Stults, Howard C. Foam restraining barrier. 3,872,927, Cl. 169-48.00C.
Sturwold, Robert J.; and Sharkey, Hubert J., to Emery Industries, Inc. Process for the recovery of polymeric acids from clays. 3,873,585, Cl. 260-407.000.
Sueyoshi, Tohru: *See—*
  Nakamura, Yasuharu; Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Ideda, Tadashi, 3,873,323.
Suhner, Willy. Ski safety binding for the toe of a ski boot. 3,873,113, Cl. 280-11.35T.
Sullivan, Glenn H,: *See—*
  Nelson, Philip E.; and Sullivan, Glenn H,, 3,873,753.
Sumitomo Chemical Company, Limited: *See—*
  Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,873,706.
Summers, Gary J., to Farinon Electric. Frequency division by an odd integer factor. 3,873,815, Cl. 235-150.300.
Sumrell, Gene: *See—*
  Magne, Frank C.; Mod, Robert R.; and Sumrell, Gene, 3,873,457.
Sun Research and Development Co.: *See—*
  Norton, Richard V., 3,873,610.
Sun Ventures, Inc.: *See—*
  Hoffman, David M., 3,873,634.
Sundberg, Erik G., to Aktiebolaget Tudor. Electrode for electrical lead accumulators. 3,873,366, Cl. 136-26.000.

Surf and Psych, Inc.: *See—*
  Kahler, Richard W., 3,872,872.
Surface Systems, Inc.: *See—*
  Overall, Wilson W., 3,873,927.
Susa, Kenzo; Yajima, Masami; and Taniguchi, Satoshi, to Hitachi, Ltd. Sulphide solid solution having rock-salt structure and method of producing the same. 3,873,473, Cl. 252-501.000.
Suwa Tekko Sho Co., Ltd.: *See—*
  Nakatani, Kiyoshi, 3,872,853.
Suzuki, Akira; Miura, Hiroshi; Sawada, Katsuya; and Koida, Yoshiyuki, to Tanabe Seiyaku Co., Ltd. Nutrient fat emulsion. 3,873,720, Cl. 424-312.000.
Suzuki, Masayoshi: *See—*
  Yokoo, Masasuke; Suzuki, Masayoshi; Meguro, Daitetsu; and Imai, Shuichi, 3,873,398.
Suzuki, Naoyuki: *See—*
  Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,873,351.
Suzuki, Yoshihisa: *See—*
  Kato, Takashi; and Suzuki, Yoshihisa, 3,873,886.
Swartz, Allen Irving: *See—*
  Swartz, Mitchell R., 3,873,267.
Swartz, Mitchell R., to Swartz, Allen Irving, a part interest. Oxygen or carbon monoxide detector. 3,873,267, Cl. 23-230.00B.
Sweeney, William A.: *See—*
  Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,873,590.
Sweeny, Keith H.; and Fischer, James R., to United States of America, Interior. Process of forming self-destructing pesticidal formulations. 3,873,346, Cl. 117-69.000.
Sweet, Clifton D., Jr.: *See—*
  Fisher, Ferdinand W.; and Sweet, Clifton D., Jr., 3,872,580.
Swered, Paul: *See—*
  Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,710.
  Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,711.
  Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,873,712.
  Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,873,444.
SWF-Spezialfabrik fur Autozubehor Gustab Rau GmbH: *See—*
  Machalitzky, Otto; and Erdelitsch, Herbert, 3,873,788.
SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH: *See—*
  Swoboda, Josef, 3,873,967.
Swis, Philip E.: *See—*
  Westervelt, James T.; and Swis, Philip E., 3,872,712.
Swiss Aluminium Ltd.: *See—*
  Kugler, Tibor; and Rieger, Hans Wolfhart, 3,872,577.
Swiss Aluminum Limited: *See—*
  Anthony, William H.; and Popplewell, James M., 3,872,921.
Swoboda, Josef, to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH. Direction-indicating and warning blinker system for vehicles, in particular motor vehicles. 3,873,967, Cl. 340-66.000.
Sybron Corporation: *See—*
  Lotze, Thomas H.; and Tompkins, James Robert, 3,873,102.
Sylvest, Robert T.: *See—*
  Strange, Carl P.; Sylvest, Robert T.; and Schell, Joseph G., Jr., 3,873,518.
Symbolic Displays, Inc.: *See—*
  Eggers, Frederich W.; and Brewer, Gerald K., 3,873,962.
Syntex Corporation: *See—*
  Alvarez, Francisco Sanchez, 3,873,594.
  Henzl, Milan R.; and Roszkowski, Adolph, 3,873,718.
Syntex (U.S.A.) Inc.: *See—*
  Crabbe, Pierre; Fried, John H.; and Guzman, Angel, 3,873,598.
  Lorz, Emil; and Spence, Leicester T., 3,873,719.
  Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,873,714.
Synvar Associates: *See—*
  Schneider, Richard S.; and Ullman, Edwin F., 3,873,564.
Sze, Morgan C.: *See—*
  Long, Raymond H.; and Sze, Morgan C., 3,873,427.
Szekely, Istvan, to Ciba-Geigy AG. Process for isolating aminoanthraquinones. 3,873,582, Cl. 260-378.000.
Szirmai, Maria: *See—*
  Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
Szirtes, Tamas: *See—*
  Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
Szporny, Laszlo: *See—*
  Kisfaludy, Lajos; Low, Miklos; Dancsi, Lajos; Schon, Istvan; Szirtes, Tamas; Nyeki, Olga; Szirmai, Maria; Szporny, Laszlo; and Hajos, Gyorgy, 3,873,510.
T. D. Williamson, Inc.: *See—*
  Ver Nooy, Burton; and Osburn, Coy D., 3,872,880.
Tack, Carl E., to Amsted Industries Incorporated. Resiliently frictionally roll stabilized railway car. 3,872,795, Cl. 105-199.00A.
Tajima, Tatsuya: *See—*
  Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,873,315.
Takada, Takezo, to Takatao Kojyo Co., Ltd. Woven fabric for safety belts of high energy-absorbency. 3,872,895, Cl. 139-383.00R.
Takagi, Shozo. Manual carrier. 3,873,118, Cl. 280-47.200.
Takahashi, Junichi: *See—*
  Honma, Yoshio; and Takahashi, Junichi, 3,872,920.
Takasawa, Seigo: *See—*
  Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
Takatao Kojyo Co., Ltd.: *See—*
  Takada, Takezo, 3,872,895.
Takebayashi, Yoshiaki: *See—*
  Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,873,706.
Takeda, Hitosi: *See—*
  Fuma, Toyoji; and Takeda, Hitosi, 3,872,625.
Takegami, Shinsuke: *See—*
  Minato, Takashi; Takegami, Shinsuke; Kishimoto, Soichiro; and Kanetsuki, Katsutoshi, 3,873,487.
Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi, Sueo, to Japan Atomic Energy Research Institute. Gypsum compositions for gypsum-thermoplastic composite. 3,873,492, Cl. 260-42.140.
Takei, Haruo: *See—*
  Hinata, Masanao; Takei, Haruo; and Shiba, Keisuke, 3,873,324.
Takemura, Kunio: *See—*
  Kondo, Hideya; Takemura, Kunio; and Mori, Tamotsu, 3,873,952.
Takeyama, Hidehiko; and Honda, Tsunenori, to Agency of Industrial Science & Technology. Automatic adaptive controller. 3,873,816, Cl. 235-151.110.
Takezawa, Teruhiro: *See—*
  Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
Takubo, Koreyasu, to Nippon Steel Corporation. Flying shear. 3,872,753, Cl. 83-317.000.
Talbert, Robert L., to Coulter Electronics, Inc. Particle analyzing apparatus including a system for visually displaying a particle size distribution curve on a 100 percent scale irrespective of the quantity of particles sampled by the apparatus. 3,873,918, Cl. 324-71.0CP.
Talbot, Wilfred F.: *See—*
  Miner, Kenneth G.; Boone, Jack L.; and Talbot, Wilfred F., 3,872,515.
Tamag Basel AG: *See—*
  Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, 3,872,870.
Tamnv, Sandi R.: *See—*
  Tamny, Simon; and Tamny, Sandi R., 3,872,861.
Tamny, Simon; and Tamny, Sandi R. Contractable finger trap. 3,872,861, Cl. 128-84.00R.
Tanabe, Genichi: *See—*
  Seo, Osamu; and Tanabe, Genichi, 3,873,899.
Tanabe Seiyaku Co., Ltd.: *See—*
  Suzuki, Akira; Miura, Hiroshi; Sawada, Katsuya; and Koida, Yoshiyuki, 3,873,720.
  Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
Tanaka, Bunichiro: *See—*
  Sato, Fujio; Fujimoto, Eisuke; Sato, Keisuke; and Tanaka, Bunichiro, 3,873,992.
Tanaka, Kiyoshi: *See—*
  Ohya, Tatsuo; Sakuma, Eizo; Motoyoshi, Minoru; Okamoto, Masafumi; and Tanaka, Kiyoshi, 3,872,704.
Tanaka, Mitsugu: *See—*
  Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,873,315.
Tanaka, Yukio: *See—*
  Miyagawa, Yoshiaki; and Tanaka, Yukio, 3,872,692.
Tangonan, Gregory L.: *See—*
  Hunsperger, Robert G.; Stoll, Harold M.; Tangonan, Gregory L.; and Yariv, Amnon, 3,873,828.
Taniguchi, Satoshi: *See—*
  Susa, Kenzo; Yajima, Masami; and Taniguchi, Satoshi, 3,873,473.
Tanner, Michael D. Audible alarm for motor vehicle. 3,873,966, Cl. 340-63.000.
Tapco Products Company, Inc.: *See—*
  Marsh, Walter G.; Mercier, Melvin K.; and Rhoades, James J., 3,872,755.
Taplin, Lael B.; Seitz, William R.; and Leung, Chun Keung, to Bendix Corporation, The. Exhaust gas recirculation (EGR) internal combustion engine roughness control system. 3,872,846, Cl. 123-119.00A.
Tappan Company, The: *See—*
  Lamb, John T., 3,873,854.
Tatebe, Noriyasu, to Kabushiki Kaisha Tatebe Seishudo. Ultrasonic wave cleaning apparatus. 3,873,071, Cl. 259-72.000.
Tateishi, Teizaburo: *See—*
  Kubota, Hayato; and Tateishi, Teizaburo, 3,873,729.
Tateno, Minoru: *See—*
  Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, 3,873,400.
Tatsui, Yoshio: *See—*
  Kawai, Takashi; Mikizawa, Kiyoshi; Tomita, Shigeo; Tatsui, Yoshio; and Hikai, Akio, 3,872,815.
Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Process for producing support for use in photographic material. 3,873,321, Cl. 96-87.00R.

Taub Family Trust U/A: *See—*
  Taub, Ronald H., 3,872,965.
Taub, Ronald H., to Taub Family Trust U/A. Pivotally articulated container. 3,872,965, Cl. 206-44.000.
Taylor, Byron Kent, to RCA Corporation. Spring loaded stylus arm pivot. 3,873,762, Cl. 178-6.60A.
Taylor, Ewing A., to Evans, R. O. Hydraulic brake system and valve structure. 3,872,953, Cl. 188-353.000.
Taylor, George Ross: *See—*
  Bywood, Roy; Clayton, John Charles; Taylor, George Ross; and White, Herbert James, 3,873,519.
Teach, Ted L., to Laserplane Corporation. Laser beam control system for road paving machines. 3,873,226, Cl. 404-84.000.
Teague, Richard K.; and Hayden, Phillip L., to Monsanto Company. Wet scrubbing of flue gas for sox removal. 3,873,673, Cl. 423-243.000.
TEC Systems, Inc.: *See—*
  Stibbe, Paul H., 3,873,013.
Teijin Limited: *See—*
  Ichikawa, Yataro, 3,873,611.
Teikoku Hormone Mfg. Co., Ltd.: *See—*
  Osawa, Yoshio; Ueno, Koichiro; Dobashi, Koichi; and Asano, Hideichi, 3,873,588.
Tektronix, Inc.: *See—*
  Odenthal, Conrad J., 3,873,878.
Teledyne, Inc.: *See—*
  Smith, William J.; and Irti, Ernest, 3,872,889.
Telescan Communications Systems, Inc.: *See—*
  Kleinerman, Ben; and Geist, Meyer J., 3,873,771.
Telex Communications, Inc.: *See—*
  Schober, Wayne E., 3,873,995.
Teller, Daniel M.: *See—*
  Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,873,524.
Tennant, Wayne W. Perspective machine. 3,872,597, Cl. 33-77.000.
Tenneco Chemicals, Inc.: *See—*
  Isberg, Reuben Albert; Beaudet, Hermas Nelson; and Avery, William Harold, Jr., 3,873,448.
Terada, Hiromu, to Nippon Pneumatic Manufacturing Company Limited. Impact tool. 3,872,934, Cl. 173-134.000.
Terrell, Jamie B.: *See—*
  Owen, Harrold D.; and Terrell, Jamie B., 3,872,925.
Terrell, Robert N., to Griffith Laboratories, Inc., The. Coarse and fine, comminuted, meat food mixes for meat food emulsions for cured, sausage-type, meat food products, and methods of producing same. 3,873,740, Cl. 426-212.000.
Tersch, Richard W., to Lear Siegler, Inc. Method for roll finishing spur gears. 3,872,701, Cl. 72-102.000.
Teurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H. Method and apparatus for stablizing the sub-grade of a railroad ballast bed. 3,872,929, Cl. 171-16.000.
Texaco Inc.: *See—*
  Altamira, Anthony F.; and Hoyt, Donald L., 3,872,922.
  Kablaoui, Mahmoud S.; and Lachowicz, Donald R., 3,873,623.
  Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,873,635.
Texaco Trinidad, Inc.: *See—*
  Laurence, Patrick T.; and Shuttleworth, Henry, 3,873,608.
Texas Instruments Incorporated: *See—*
  Bean, Kenneth E.; and Padovani, Francois A., 3,873,824.
  Blanton, Bobby D., 3,872,683.
Textron Inc.: *See—*
  Hofius, David V., 3,872,552.
  Moertel, George B., 3,872,551.
  Moertel, George B., 3,872,553.
  Parkinson, Roger W., 3,873,056.
Thackara, William C., to N L Industries, Inc. Electrode-atomizer assembly for production of gaseous metal halides. 3,873,842, Cl. 250-544.000.
Theissen, Robert J., to Mobil Oil Corporation. Herbicidal use and composition of halophenoxy benzoic chlorides. 3,873,302, Cl. 71-115.000.
Theissen, Robert J., to Mobil Oil Corporation. Herbicidal use and composition of halophenoxy benzamides. 3,873,303, Cl. 71-118.000.
Theodore, Ares N.: *See—*
  Labana, Santokh S.; and Theodore, Ares N., 3,873,493.
Thevenaz, Louis, to Bolex International SA. Projection cassette. 3,873,046, Cl. 242-199.000.
Thomas & Betts Corporation: *See—*
  Wittes, James M.; and Netta, Louis A., 3,872,746.
Thomas, Dalton A., to Thomas, Hazel Beasley; Thompson, Woodford R., Jr.; Carter, Hugh P.; Murray, William K.; and Murray, J. Reese, part interest to each. Selector for a transmission. 3,872,737, Cl. 74-339.000.
Thomas, Hazel Beasley: *See—*
  Thomas, Dalton A., 3,872,737.
Thomassen & Drijver-Verblifa N.V.: *See—*
  Evert, Jan Thomassen, 3,873,747.
Thompson, James A. Apparatus. 3,872,653, Cl. 54-44.000.
Thompson, Kenneth Clive, to Shandon Southern Instruments Ltd. Assembly for use in atomic absorption spectroscopy. 3,873,205, Cl. 356-85.000.
Thompson, Stanley C. Graphite shaft connection to golf club hosel. 3,873,090, Cl. 273-80.800.
Thompson, Woodford R., Jr.: *See—*
  Thomas, Dalton A., 3,872,737.
Thornton, Henry M., Jr.; Stram, George H.; and Plowman, Richard E., to Dentsply Research Development Corporation. Dental console. 3,872,593, Cl. 32-22.000.
Thornton, J. Scott: *See—*
  Woo, James T. K.; Glowe, Donald E.; and Thornton, J. Scott, 3,873,314.
Thurber, Walter W.: *See—*
  Gropper, Lee; and Thurber, Walter W., 3,873,216.
Thum, Friedrich; Burmester, Kurt; Pochert, Johannes; and Wolff, Siegfried, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Rubber compositions containing silica and an organosilane. 3,873,489, Cl. 260-33.6AQ.
Thylefors, Henric Wilhelm, to Alfa-Laval AB. Device for transferring fluids between stationary and rotary parts. 3,873,061, Cl. 251-139.000.
Tiemens, Ulf: *See—*
  Dammann, Hans; Kock, Manfred; and Tiemens, Ulf, 3,873,834.
Tilby, Sydney Edward, to Canadian Cane Equipment Ltd. Methods and apparatus for preparing sugarcane stalks for subsequent processing. 3,873,033, Cl. 241-19.000.
Tillman, Harry Lucian, to Whirlpool Corporation. Refrigeration apparatus divider wall mounting means. 3,872,688, Cl. 62-329.000.
Timeline Inc.: *See—*
  Farrington, Robert C., 3,872,892.
Timesavers, Inc.: *See—*
  Schuster, Gordon L., 3,872,627.
Tisdale, Benjamin C.: *See—*
  Nicholson, William B; and Tisdale, Benjamin C., 3,872,680.
Tobshiba Engineering Co., Ltd.: *See—*
  Honma, Yoshio; and Takahashi, Junichi, 3,872,920.
Toda, Gyozo; Matsuyama, Iwao; and Tsukuda, Yasuo, to Hitachi, Ltd. Method for producing highly pure sintered polycrystalline yttrium oxide body having high transparency. 3,873,657, Cl. 264-56.000.
Todd, William W.: *See—*
  Ilfrey, William T.; McLain, John D.; and Todd, William W., 3,872,713.
Tokunaga, Masaaki: *See—*
  Yamakawa, Kazuo; Oka, Tohru; Tokunaga, Masaaki; Mizuhara, Takeshi; and Hagi, Chitoshi, 3,873,379.
Tokunaga, Masayoshi, to Kabushiki Kaisha Daiken Seisakusho. Impeller wheel for torque converter or fluid coupling. 3,873,237, Cl. 416-180.000.
Tokyo Plywood Kabushiki Kaisha: *See—*
  Megumi, Naomitsu, 3,872,640.
Tokyo Shibaura Electric Co., Ltd.: *See—*
  Honma, Yoshio; and Takahashi, Junichi, 3,872,920.
  Sawazaki, Norikazu; Kuriyagawa, Mamoru; and Yagi, Motoi, 3,873,994.
Tolksdorf, Wolfgang; and Welz, Fritz, to U.S. Philips Corporation. Method of and device for manufacturing substituted single crystals. 3,873,463, Cl. 252-62.570.
Tomita, Shigeo: *See—*
  Kawai, Takashi; Mikizawa, Kiyoshi; Tomita, Shigeo; Tatsui, Yoshio; and Hikai, Akio, 3,872,815.
Tomlinson, Neil: *See—*
  Leighton, Peter Watson; and Tomlinson, Neil, 3,873,795.
Tompkins, James Robert: *See—*
  Lotze, Thomas H.; and Tompkins, James Robert, 3,873,102.
Toms River Chemical Corporation: *See—*
  Fitzpatrick, Joseph William; Berninger, Carl Johannes; and Lewis, Dennis Osborne, 3,873,581.
Toray Industries, Inc.: *See—*
  Okazaki, Kaoru; Higuchi, Akira; and Imaeda, Naoki, 3,873,406.
Torr, David. Method of preparing a homogenizes food product useful as a protein supplement. 3,873,750, Cl. 426-518.000.
Torrents, Eduardo. Device for continuous half-automatic production of cork soles for footwears. 3,872,531, Cl. 12-1.00A.
Toth, Paul: *See—*
  Hohwart, George; Toth, Paul; and Cross, Kenneth O., 3,873,107.
Totten, Jerry D.: *See—*
  Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., 3,873,145.
Toukan, Sameeh Said: *See—*
  Smith, Herbert Q.; and Toukan, Sameeh Said, 3,873,591.
Tour Agenturer Aktiebolag: *See—*
  Hilgemann, Hans, 3,873,022.
Townsend Engineering Company: *See—*
  Townsend, Ray T.; and Beasley, Donald L., 3,873,744.
Townsend, Ray T.; and Beasley, Donald L., to Townsend Engineering Company. Method of encasing a meat product. 3,873,744, Cl. 426-284.000.
Toyo Boseki Kabushiki Kaisha: *See—*
  Miyagawa, Yoshiaki; and Tanaka, Yukio, 3,872,692.
Toyo Soda Manufacturing Co., Ltd.: *See—*
  Otsuru, Masaaki; Miyakawa, Toshio; Yamada, Mitsuo; and Izuhara, Michi, 3,873,431.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  Matsumoto, Hirofumi; and Nakada, Masahiko, 3,872,851.
Trandell, Roger Francis; and Fessler, Robert Glenn, to American Cyanamid Company. Cobalt modified iron oxides. 3,873,462, Cl. 252-62.560.
Trans World Products, Inc.: *See—*
  Dunder, David; and Wiley, Sheldon, 3,873,128.
Trapez Anstalt: *See—*
  Bianchi, Angelo, 3,872,537.

Trapp, Gunther: *See—*
  Kleber, Rolf; Smerz, Otto; and Trapp, Gunther, 3,873,265.
Tregoning, Robert L. Lug nut wrench tool. 3,872,527, Cl. 7-1.00G.
Trione, Jack Michael: *See—*
  Hudson, Roger Paul; and Trione, Jack Michael, 3,872,739.
Trollope, Brian J.: *See—*
  Hudson, Arthur C.; and Trollope, Brian J., 3,872,858.
TRW Inc.: *See—*
  Anderson, Lawrence G., 3,873,167.
  Brooks, Robert E., 3,873,187.
  Drutchas, Gilbert H.; and Shaw, Garrett D., 3,873,165.
Tsuchida, Takashi; Tateno, Minoru; Fukuda, Nobuaki; and Shimada, Takashi, to Fuji Electrochemical Co., Ltd.; and Furukawa Battery Co., Ltd., The. Apparatus for bonding battery cover to battery container. 3,873,400, Cl. 156-499.000.
Tsuchiya, Yoshinori: *See—*
  Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,873,315.
Tsuk, Janos A. Method and appliance for recording information. 3,873,011, Cl. 225-93.000.
Tsukuda, Yasuo: *See—*
  Toda, Gyozo; Matsuyama, Iwao; and Tsukuda, Yasuo, 3,873,657.
Tucci, John James: *See—*
  Cea, Carmen Achille; and Tucci, John James, 3,872,567.
Tull, Roger J.: *See—*
  Harmetz, Ronald; and Tull, Roger J., 3,873,597.
Tummala, Rao R.: *See—*
  Sherk, Thomas A.; and Tummala, Rao R., 3,873,330.
Tunoda, Kozo: *See—*
  Sowa, Tuneo; Kusaki, Toshiatsu; Tunoda, Kozo; Akimoto, Norio; Iithuka, Kunio; and Miyaji, Teruo, 3,873,515.
Tup! (Panama) S.A.: *See—*
  Tupper, Earl Silas, 3,872,873.
Tupper, Earl Silas, to Tup! (Panama) S.A. Grooming implements. 3,872,873, Cl. 132-159.000.
Turner, Charles Leslie: *See—*
  Campbell, Robert Edward; Sherwin, Cyril Duncan Ralph; and Turner, Charles Leslie, 3,872,659.
Turner, John Cameron, to Biorex Laboratories Limited. New derivatives of glycyrrhetinic acid. 3,873,599, Cl. 260-468.00K.
Turner, John J., to du Pont de Nemours, E. I., and Company. Preparation of acrylonitrile polymer. 3,873,508, Cl. 260-88.70R.
Twilley, Ian Charles: *See—*
  Gomez, Climaco Alberto; Lewis, Marvin Dennis; and Twilley, Ian Charles, 3,872,558.
Tyagunov, Vladimir Arkadievich: *See—*
  Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Fedorov, Mikhail Ivanovich; Malikov, Konstantin Alexeevich; Brazhnikov, Nikolai Vasilievich; Kalinin, Alexandr Ivanovich; Axelrod, Lev Mikhailovich; Arshansky, Mikhail Iosipovich; Tyagunov, Vladimir Arkadievich; and Aragilian, Oleg Ashotovich, 3,872,914.
Tyconik, William. Curtain support. 3,872,520, Cl. 4-154.000.
Tysko, Leon Albert: *See—*
  Erny, Daniel Richard; and Tysko, Leon Albert, 3,872,824.
Uberbacher, Edward C.: *See—*
  Beausoleil, William F.; and Uberbacher, Edward C., 3,872,998.
Ucko, Franz: *See—*
  Lee, Charles Benjamin; and Ucko, Franz, 3,872,575.
Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of non-combustible shaped articles. 3,873,351, Cl. 117-123.00A.
Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, to Nippon Hoso Kyokai; Hitachi Limited; and Hitachi Electronics, Ltd. Signal transmission system for transmitting a plurality of series of signals. 3,873,777, Cl. 179-15.00A.
Ueno, Koichiro: *See—*
  Osawa, Yoshio; Ueno, Koichiro; Dobashi, Koichi; and Asano, Hideichi, 3,873,588.
Ueno, Wataru: *See—*
  Tatsuta, Sumitaka; and Ueno, Wataru, 3,873,321.
Uetrecht, Dale M.: *See—*
  Munch, Walter, Jr.; Uetrecht, Dale M.; and Studer, Richard L., 3,872,764.
Ullman, Edwin F.: *See—*
  Schneider, Richard S.; and Ullman, Edwin F., 3,873,564.
Ullom, William L., to Cyclone Seeder Company, Inc., The. Method of connecting a rotating member to a shaft. 3,872,578, Cl. 29-525.000.
Ulmer, Harry Edwards: *See—*
  Mathew, Chempolil Thomas; and Ulmer, Harry Edwards, 3,873,624.
Unger, Paul. Releasable heel hold-down device for a ski. 3,873,109, Cl. 280-11.35T.
Uniroyal a Societe Anonyme: *See—*
  Leblond, Jean Rene; Danneels, Guy Emile; and Biet, Jean Armand, 3,873,397.
Uniroyal, Inc.: *See—*
  Hunter, Byron A., 3,873,592.
United Aircraft Corporation: *See—*
  Brown, William H.; and Brown, Bruce T., 3,872,563.
  Dettling, Joseph R.; and Barry, John P., 3,873,892.
  Guile, Roy N.; and Kepler, C. Edward, 3,873,939.
  Lohmann, Robert P.; and Markowski, Stanley J., 3,872,664.
  Mikolajczak, Alojzy Antoni; and Arnoldi, Robert Alfred, 3,873,229.
  Norris, James Reynolds; and Pendoley, Frederick Mathew, 3,873,230.
United Kingdom Atomic Energy Authority: *See—*
  Green, Derek, 3,872,703.
  Statham, Eric, 3,873,420.
United Medical Laboratories, Inc.: *See—*
  Hunt, Roger A., 3,873,467.
United States Gypsum Company: *See—*
  Crumbaugh, John H.; and Marchello, Maurice J., 3,872,639.
United States of America
  Agriculture: *See—*
    Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., 3,873,724.
    Cashen, Norton A.; and Mason, Austin C. F., 3,872,693.
    Griffin, Anselm C., Jr.; Collins, Charles A.; and Ferriss, Joe S., Jr., 3,873,164.
    Kubie, William L., 3,873,326.
    Kullman, Russell M. H.; and Reinhardt, Robert M., 3,873,513.
    Magne, Frank C.; Mod, Robert R.; and Sumrell, Gene, 3,873,457.
    Mielke, Lloyd N., 3,872,935.
    Severson, Ray F.; and Schuller, Walter H., 3,873,482.
  Air Force: *See—*
    Hamilton, Horace E.; and Wallace, Jack E., 3,873,270.
    Lammers, Uve H. W.; and Stiglitz, Martin R., 3,873,948.
    Milling, Robert W., 3,873,938.
    Pickett, David F., 3,873,368.
    Quinlan, Kenneth P., 3,873,215.
    Shell, Forney L., 3,873,212.
    Skelton, John; and Freeston, W. Denney, Jr., 3,873,338.
    Willmore, Robert R., 3,873,929.
  Army: *See—*
    Goldberg, Harold; and Sanders, Milton, 3,872,792.
    Kwik, John H., Jr., 3,873,053.
    McIvor, John H., 3,872,790.
    Pagano, Victor H., 3,872,709.
    Platou, Anders S., 3,873,048.
    Redcay, Paul Wilson, 3,872,791.
    Skinner, W. A.; Johnson, Howard L.; DeGraw, Joseph T., Jr.; and Brown, Vernon H., 3,873,725.
  Atomic Energy Commission: *See—*
    Anderson, Norman G.; and Willis, Damous D., 3,873,217.
    Fox, Michael R.; and Grimmett, Earl S., 3,872,909.
    Hampl, Edward F., Jr.; Mitchell, William C.; and Reylek, Robert S., 3,873,370.
    Johnson, Kenneth W., 3,873,839.
    Lee, Lap Yen, 3,873,838.
    Mosley, Wilbur C., Jr.; and Smith, Paul K., 3,873,651.
    Nelson, Paul A.; Kolba, Verne M.; and Holmes, John T., 3,872,718.
    Pohl, Lawrence E., 3,873,447.
    Ritz, William C.; and Otterman, Glenn E., 3,872,565.
  Interior: *See—*
    Bergman, Perry D.; and Bienstock, Daniel, 3,873,860.
    Beus, Michael J.; and Phillips, Earl L., 3,872,719.
    Meinecke, Eberhard A.; and Mehta, Devendra V., 3,873,653.
    Morrice, Edward, Jr.; and Whisler, Norman J., 3,873,307.
    Sweeny, Keith H.; and Fischer, James R., 3,873,346.
  Navy: *See—*
    Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., 3,873,145.
    Adolph, Horst G.; and Gilligan, William H., 3,873,617.
    Adolph, Horst G., 3,873,626.
    Bumgardner, Jon Hunt, 3,873,907.
    Christe, Karl O.; and Schack, Carl J., 3,873,677.
    Day, Fred L., 3,872,988.
    Dinsmore, Daniel, Jr.; and Williams, George Nelmes, 3,872,971.
    Ellis, William H., 3,873,840.
    Elrick, Donald E., 3,873,386.
    Greene, Richard F., 3,873,836.
    Harvey, Arthur R., 3,873,959.
    Kongelbeck, Sverre, 3,872,776.
    Liggett, Thomas; and Cox, Gregory C., 3,873,517.
    Linck, Drew W., 3,873,233.
    Lindstrum, Alan L., 3,873,937.
    Obenschain, Arthur W., 3,873,913.
    Pickens, George O., 3,872,819.
    Rein, Charles R., 3,872,672.
    Rosher, Ronald, 3,873,579.
    Rosling, Thomas H., 3,872,769.
    Weisbrich, Henry T., Jr., 3,873,984.
    Whitehouse, Harper John, 3,873,958.
    Wojewski, Thomas, 3,872,725.
U.S. Philips Corporation: *See—*
  Cukrowski, Georg, 3,873,099.
  Dammann, Hans; Kock, Manfred; and Tiemens, Ulf, 3,873,834.
  Evrard, Robert; and Poulain, Daniel Louis, 3,873,829.
  Janssen, Peter Johannes Michiel, 3,873,763.
  Kooi, Else, 3,873,383.
  Reijnders, Joseph Lodewijk Maria, 3,873,943.
  Sommer, Friedrich; and Jahnke, Uwe, 3,873,900.
  Tolksdorf, Wolfgang; and Welz, Fritz, 3,873,463.
  Wurscher, Horst; Blass, Rolf; and Becker, Oskar, 3,873,957.

United States Steel Corporation: *See—*
  Kennedy, Frank, 3,873,259.
  Parkinson, Robert E., 3,873,458.
Universal Cooperatives, Inc.: *See—*
  Fjermestad, Arnold R.; and Brown, Clifford R., 3,872,882.
Universal Oil Products Company: *See—*
  Conway, John E.; and Parker, Robin J., 3,873,470.
  Cyba, Henry A., 3,873,567.
  Hallman, Newt M., 3,873,440.
  Hamblin, Robert J. J., 3,873,283.
  Jones, Evan A., 3,873,441.
  Pollitzer, Ernest L., 3,873,439.
  Pollitzer, Ernest L., 3,873,632.
University of Miami: *See—*
  Pressman, Berton Charles; and de Guzman, Norberto Tumali, 3,873,715.
Uno, Mitsumasa: *See—*
  Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, 3,873,034.
Upjohn Company, The: *See—*
  Kelly, Robert C., 3,873,570.
  Kelly, Robert C., 3,873,571.
  Killinger, Fred M., 3,872,867.
Urayama, Kiyoshi: *See—*
  Nemoto, Tsuneo; and Urayama, Kiyoshi, 3,873,045.
Urbick, Robert J.: *See—*
  Wedan, Gary L., 3,873,779.
Uskokovic, Milan Radoje: *See—*
  Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,873,549.
Vaguine, Victor A.; and Nichols, Dennis R., to Varian Associates. Bonding of ferrite to metal for high-power microwave applications. 3,873,944, Cl. 333-1.100.
Valbjorn, Knud Vagn; Spies, Volker; and Dyhr-Mikkelsen, Poul Christian, to Danfoss A/S. Duct system with built-in volume regulator. 3,872,946, Cl. 181-36.00B.
Value Engineering Company: *See—*
  Link, Robert O.; and Smith, David W., 3,872,555.
Van Dyk Research Corporation: *See—*
  Erny, Daniel Richard; and Tysko, Leon Albert, 3,872,824.
Vandenbroucke, Roger Alfred Jules: *See—*
  Camboulives, Andre Alphonse Mederic Leon; Le Maout, Theophile Francois; Vandenbroucke, Roger Alfred Jules; and Zibette, Bernard Arthur, 3,873,027.
Vandre, Herbert M., to Gel Monte Corporation. Bent empty can detector and method. 3,872,599, Cl. 33-174.00R.
van Essen, William J.: *See—*
  Braidich, Emery V.; Gmitter, George T.; and van Essen, William J., 3,873,480.
Vangen, Robert Franklin: *See—*
  Roselle, Pierce Clark; Evans, David George; Ebbinga, Theodore Conrad; and Vangen, Robert Franklin, 3,873,850.
VanGessel, Robert C.; and Van Kuik, Dirk J., to Steelcase, Inc. Wiring window for desks and the like. 3,873,758, Cl. 174-48.000.
Van Gessel, Robert C.: *See—*
  Scheerhorn, Douglas; and Van Gessel, Robert C., 3,872,802.
Van Gils, Adrianus W. Method for retrieving a severed pipe string from a well. 3,872,926, Cl. 166-301.000.
Van Gils, Gerard E., to General Tire & Rubber Company, The. Composite of polyamide bonded to rubber. 3,872,937, Cl. 117-72.000.
Van Kuik, Dirk J.: *See—*
  VanGessel, Robert C.; and Van Kuik, Dirk J., 3,873,758.
Vanlerberghe, Guy: *See—*
  Kalopissis, Gregoire; Viout, Andre; and Vanlerberghe, Guy, 3,873,688.
Van Munster, Frederik Hendrik: *See—*
  Becker, Frank Carl; and Van Munster, Frederik Hendrik, 3,873,546.
Van Nice, Harold L.: *See—*
  Laakso, Thomas M.; and Van Nice, Harold L., 3,873,505.
Vanotti, Guy, to Etablissements Vape. Automatic mould for the continuous moulding of chains made of ductile materials. 3,873,257, Cl. 425-112.000.
Van Sorge, Bernardus J., to General Electric Company. Preparation of ortho-alkylated phenols. 3,873,628, Cl. 260-621.00R.
Van Vyve, Therese: *See—*
  Viehe, Heinz Gunter; Van Vyve, Therese; and Janousek, Zdenek, 3,873,530.
Varian Associates: *See—*
  Ernst, Richard R., 3,873,909.
  Vaguine, Victor A.; and Nichols, Dennis R., 3,873,944.
  Williams, Norman H.; and Schuette, Henry W., 3,872,603.
  Young, Byron A., 3,873,908.
Velten, Otto; and Moller, Udo, to Kalle Aktiengesellschaft. Process for the production of a light-sensitive copying material having a copper-containing support, and copying material so produced. 3,873,316, Cl. 96-75.000.
Verba-Chemie AG: *See—*
  Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,873,577.
Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
  Bachner, Ernst; Bumberger, Herbert; and Hoscher, Rudolf, 3,872,598.
Veret, Claude; and Durrenberger, Pierre, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Uniform optical surfaces and elements. 3,873,191, Cl. 350-293.000.
Verlinde, August, to Verlinde S.A. Control device for a hydraulic drive motor. 3,872,671, Cl. 60-460.000.
Verlinde, Auguste P., to Verlinde S.A. Device for regulating the operation of two hydraulic motors mounted in series. 3,872,674, Cl. 60-706.000.
Verlinde S.A.: *See—*
  Verlinde, August, 3,872,671.
  Verlinde, Auguste P., 3,872,674.
Vernaleken, Hugo: *See—*
  Margotte, Dieter; Ott, Karl-Heinz; Schirmer, Hermann; Kampf, Gunther; Peilstocker, Gunter; and Vernaleken, Hugo, 3,873,641.
Ver Nooy, Burton; and Osburn, Coy D., to T. D. Williamson, Inc. Plugging apparatus. 3,872,880, Cl. 137-317.000.
VF Corporation: *See—*
  Ambrosiani, Vincent F., 3,872,512.
Vickers, James L., to Stone Container Corporation. Packaging machine using two blank carton system. 3,872,650, Cl. 53-207.000.
Victor Company of Japan, Ltd.: *See—*
  Muraoka, Teruo, 3,873,945.
Victor Equipment Company: *See—*
  Miller, Richard W., 3,873,028.
Vidriera Monterrey, S.A.: *See—*
  Garza, Roberto Cavazos; and Martin, John, 3,872,745.
Viehe, Heinz Gunter; Van Vyve, Therese; and Janousek, Zdenek, to Roussel UCLAF. Novel immonium salts. 3,873,530, Cl. 260-240.00R.
Vigotec Ag.: *See—*
  Wimmer, Walter, 3,872,649.
Viola, Olivo L.; and Smith, Wilbert H., to General Electric Company. Laminated composite article with improved bearing portion. 3,873,168, Cl. 308-238.000.
Viout, Andre: *See—*
  Kalopissis, Gregoire; Viout, Andre; and Vanlerberghe, Guy, 3,873,688.
Viricel, Rene: *See—*
  Abblard, Jean; and Viricel, Rene, 3,873,557.
Vogel, Christian: *See—*
  Kuehne, Manfred; and Vogel, Christian, 3,873,544.
Vogelsang, Gustav; and Leptien, Helmut, to Volkswagenwerk Aktiengesellschaft. Combustion engine having a rotary type piston arrangement. 3,872,838, Cl. 123-8.090.
Vogelsanger, Rolf: *See—*
  Rys, Paul; and Vogelsanger, Rolf, 3,873,615.
Volkswagenwerk Aktiengesellschaft: *See—*
  Vogelsang, Gustav; and Leptien, Helmut, 3,872,838.
Volle, Rene: *See—*
  Pierre, Bernard; Segas, Lucien; Simon, Georges; and Volle, Rene, 3,872,771.
von Alten, Theodor: *See—*
  Beckman, Richard J.; Blanchard, John C.; Marshall, Robert; Penrod, Orville R.; von Alten, Theodor; and Denes, Oscar, 3,873,890.
Von Der Kall, Gunter: *See—*
  Bruck, Herbert; Busch, Josef; Hofmann, Hans; Von Der Kall, Gunter; Kreckeler, Fritz; and Barke, Hans Joachim, 3,873,393.
Vossnacke, Juergen: *See—*
  Hartwig, Karl; and Vossnacke, Juergen, 3,872,828.
Vosteen, Robert E. AC electric fieldmeter. 3,873,919, Cl. 324-72.000.
Vreeland, Jay H., to Scott Paper Company. Method of finishing coated paper. 3,873,345, Cl. 117-65.200.
W. & M. Ostermann: *See—*
  Ostermann, Max, 3,872,658.
W. R. Grace & Co.: *See—*
  Giraudi, Giorgio A. M.; and Imperiale, Nino, 3,872,644.
Wachter, Karl August; and Muller, Horst, to Dragerwerk Aktiengesellschaft. Respirator filter construction. 3,873,288, Cl. 55-497.000.
Wada, Masao: *See—*
  Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,873,704.
Wagener, Earl H.: *See—*
  Gibbs, Dale S.; Wagener, Earl H.; and Wessling, Ritchie A., 3,873,488.
Wagner Electric Corporation: *See—*
  Fleagle, Joseph E.; and Bueler, Richard C., 3,872,720.
Wagner, Richard J.: *See—*
  Oltman, Henry G., Jr.; and Wagner, Richard J., 3,873,934.
Wagner, Ronald C.: *See—*
  Sievers, Carl J.; and Wagner, Ronald C., 3,873,883.
Wagstaff, Robert A., to Sperry Rand Corporation. Direction vanes for the cutting blades of a forage harvester. 3,873,038, Cl. 241-282.200.
Wainwright, Richard A. Warning device. 3,872,529, Cl. 9-9.000.
Wait, John D., Jr.: *See—*
  Babbit, John H., Jr.; and Wait, John D., Jr., 3,873,222.
Wakamatsu, Hachiro: *See—*
  Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; Meguro, Takashi; and Wakamatsu, Hachiro, 3,873,700.
Wakefield, Elisabeth D.; and Friedman, Patricia A., to Baxter Laboratories, Inc. Reagent and method for albumin determination. 3,873,272, Cl. 23-230.00B.
Walker, James L.; and Ross, John R., to General Electric Company. Coating system for superalloys. 3,873,347, Cl. 117-71.00M.
Walker, Wendell C.: *See—*
  Davidson, William E.; and Walker, Wendell C., 3,872,613.

Wallace, Jack E.: *See—*
  Hamilton, Horace E.; and Wallace, Jack E., 3,873,270.
Wallach, Donald Francis Hoelzl: *See—*
  Munder, Paul Gerhard; Modolell, Manuel; and Wallach, Donald Francis Hoelzl, 3,873,423.
Waller, John G.: *See—*
  Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., 3,873,394.
Wallis, Victor B.; and Beaton, Philip J., Sr. Desk-top drafting table. 3,872,800, Cl. 108-6.000.
Walter, Carol A.: *See—*
  Davidson, James R.; and Walter, Carol A., 3,873,002.
Walter, Kidde & Company, Inc.: *See—*
  Greenwald, Harry; and Iglio, Salvatore, 3,872,958.
Walters, Francis R.: *See—*
  Hofmann, Richard E.; and Walters, Francis R., 3,873,737.
Walters, Ronald Bernard, to Sperry Rand Limited. Electro-hydraulic actuator. 3,872,772, Cl. 91-47.000.
Walters, Wally Z., to Preco Corporation. Electrostatic printing. 3,873,354, Cl. 117-201.000.
Walz, Klaus; Gerlach, Klaus; and Schwarz, Max, to Bayer Aktiengesellschaft. Quaternary ammonium compounds. 3,873,583, Cl. 260-404.000.
Wang, An; Chu, Ge Yao; and Wu, Edward S., to Wang Laboratories, Inc. Positioning typewriter. 3,872,959, Cl. 197-19.000.
Wang Laboratories, Inc.: *See—*
  Wang, An; Chu, Ge Yao; and Wu, Edward S., 3,872,959.
Ward, Achard L., to Ward Industries, Inc. Belt position indicator switch with feeler arm. 3,873,789, Cl. 200-61.410.
Ward, Harold R., to Eaton Corporation. Hydrostatic transmission control system. 3,872,669, Cl. 60-395.000.
Ward Industries, Inc.: *See—*
  Ward, Achard L., 3,873,789.
Ward, Michael Dudley, to E. R. Squibb & Sons, Inc. Method for producing free flowing epicillin. 3,873,522, Cl. 260-239.100.
Warner-Lambert Company: *See—*
  Bogaty, Herman, 3,872,588.
Warwicker, Eric Albert, to Porvair Limited. Apparatus for making water vapour permeable polymer sheet materials. 3,873,254, Cl. 425-71.000.
Watanabe, Hiromasa: *See—*
  Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi, Sueo, 3,873,492.
Watanabe, Katsujiro: *See—*
  Mori, Toshihiro; Ando, Seigo; Watanabe, Katsujiro; and Yamada, Takeo, 3,873,912.
Watson, Robert L., to Eastman Kodak Company. Hole measurer controller. 3,873,211, Cl. 356-156.000.
Watt, William E. R.: *See—*
  Christine, William C.; and Watt, William E. R., 3,873,007.
Wean United, Inc.: *See—*
  Bittman, Jesse C.; and Long, Ralph B., Jr. (said Jesse C. Bittman Jesse assors. to), 3,872,702.
Weber, Karl, to Singer, G.m.b.H. Darning and embroidery attachment. 3,872,811, Cl. 112-236.000.
Webster, Donald, to Boeing Comppany, The. Stainless steels. 3,873,378, Cl. 148-37.000.
Wedan, Gary L., to Urbick, Robert J., a part interest. Electronic sound distribution system. 3,873,779, Cl. 179-1.0GQ.
Weddendorf, Elmer R., to B/W Metals Company, Inc. Drive system for a rotating cafeteria type food service counter. 3,872,801, Cl. 108-20.000.
Weddle, Richard Braid: *See—*
  Carpenter, Roland Paul; Weddle, Richard Braid; and Wood, Francis William, 3,873,749.
Weglein, Rolf D., to Hughes Aircraft Company. Acoustic surface wave tapped delay line. 3,873,946, Cl. 333-30.00R.
Wegler, Richard: *See—*
  Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,873,299.
Wehner, Byrom T., to Armco Steel Corporation. High pressure joint and sealing ring therefor. 3,873,105, Cl. 277-171.000.
Wehrli, Pius Anton, to Hoffmann-La Roche Inc. Process for the preparation of 6,6-alkylenedioxyheptan-2-one. 3,873,572, Cl. 260-340.900.
Weigert, Wolfgang: *See—*
  Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, 3,873,595.
Weimer, Paul Kessler, to RCA Corporation. Charge transfer decoders. 3,873,851, Cl. 307-221.00C.
Weinert, Volker, to Agfa-Gevaert Aktiengesellshcaft. Method and arrangement for adjustment of photographic copying apparatus. 3,873,199, Cl. 355-38.000.
Weir Pumps Limited: *See—*
  Anderson, Ronald Colquhoun, 3,873,242.
Weisbrich, Henry T., Jr., to United States of America, Navy. Passive ranging technique. 3,873,984, Cl. 343-112.00D.
Weiss, Martin Joseph: *See—*
  Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,873,607.
Weiss, Werner: *See—*
  Ettelbruck, Rudiger; Hartwig, Karl; Schnall, Gunther; and Weiss, Werner, 3,873,198.
Welding Research, Inc.: *See—*
  Sciaky, Albert M., 3,873,802.
Welkowsky, Murray S.: *See—*
  Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.
Wellekens, John F. Lock mechanism. 3,872,697, Cl. 70-370.000.
Wellinger, Roger Paul, to Gillette Company, The. Electric shaver with longitudinally split cutter. 3,872,587, Cl. 30-43.920.
Wells, Rodney Lee: *See—*
  Crescentini, Lamberto; and Wells, Rodney Lee, 3,873,639.
Welsh, Joseph P.: *See—*
  Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,355.
  Queener, Carl A.; Ralston, William G.; Smith, Thomas C.; and Welsh, Joseph P., 3,873,356.
Welstead, William John, Jr., to A. H. Robins Company, Incorporated. 1-Cyclopropyl-3-mono-(and 2,3-di) substituted-1-propanones in compositions and method for treating pain. 3,873,707, Cl. 424-267.000.
Weltpat Anstalt: *See—*
  Festerling, Heinz, 3,872,530.
Welz, Fritz: *See—*
  Tolksdorf, Wolfgang; and Welz, Fritz, 3,873,463.
Weman, Per Olaf, to Sigmatex, A.G. Safety belt locking with conical inertia member. 3,873,042, Cl. 242-107.400.
Wendt, Gerhard R., to American Home Products Corporation. Quaternary ammonium salts of 17-propargylamines of steroidal dithioketals. 3,873,527, Cl. 260-239.500.
Wessling, Ritchie A.: *See—*
  Gibbs, Dale S.; Wagener, Earl H.; and Wessling, Ritchie A., 3,873,488.
West, Charles E.: *See—*
  Claxton, Raymond J.; Logan, Russell J.; and West, Charles E., 3,873,305.
West, Charles W.: *See—*
  Pawlak, Joseph A.; West, Charles W.; Colson, James G.; and Bajer, Francis J., 3,873,459.
West, Norman Eugene, to du Pont de Nemours, E. I., and Company. Process for pyrolyzing tetrafluoroethylene to hexafluoropropylene. 3,873,630, Cl. 260-653.300.
West, William S., to Blacher, David P.; Blacher, Jonathan E.; and Blacher, George J., a part interest to each. Releasably mounted applique for use in graphic arts and marking. 3,873,404, Cl. 161-102.000.
Westdale, Virgil W., to Addressograph-Multigraph Corporation. Pressure fixable electroscopic printing powder method. 3,873,325, Cl. 96-150.000.
Western Electric Company, Incorporated: *See—*
  Lando, David Jacob, 3,873,357.
  Lando, David Jacob, 3,873,358.
  Lando, David Jacob, 3,873,359.
  Lando, David Jacob, 3,873,360.
Westervelt, James T.; and Swis, Philip E., to Cross Company, The. Dynamic air flow comparator system. 3,872,712, Cl. 73-40.000.
Westfalia Separator AG: *See—*
  Icking, Freidrich; and Bodemar, Klaus, 3,873,020.
Westinghouse Electric Corporation: *See—*
  Liang, Chu Yu, 3,873,817.
Westvaco Corporation: *See—*
  de Ligt, John; and Shelor, Clifford D., 3,872,962.
Wetton, Robert: *See—*
  Henrich, Kenneth; Costa, Edward; and Wetton, Robert, 3,873,385.
Wheatley, Carl Franklin, Jr., to RCA Corporation. Circuit with adjustable gain current mirror amplifier. 3,873,933, Cl. 330-30.00D.
Whirlpool Corporation: *See—*
  Tillman, Harry Lucian, 3,872,688.
Whisler, Norman J.: *See—*
  Morrice, Edward, Jr.; and Whisler, Norman J., 3,873,307.
Whitaker, Powell. Apparatus for prefabricating building walls. 3,873,015, Cl. 227-7.000.
Whitaker, Raymond; and Haslam, Bryan S., to Rank Xerox Limited. Adjustable-position optical system. 3,873,189, Cl. 350-255.000.
Whitco Chemical Corporation: *See—*
  Bluestein, Claire; and Loewrigkeit, Peter, 3,873,484.
White, Gordon Joseph: *See—*
  Fries, Edward W.; and White, Gordon Joseph, 3,872,783.
White, Harold William, to Dunlop Limited. Damping and guidance systems. 3,873,055, Cl. 248-399.000.
White, Herbert James: *See—*
  Bywood, Roy; Clayton, John Charles; Taylor, George Ross; and White, Herbert James, 3,873,519.
White, Kenneth R. Air conditioner servicing unit. 3,873,289, Cl. 62-149.000.
White, Philip H., to Cone-Blanchard Machine Company. Grinding machine with tilting table. 3,872,626, Cl. 51-129.000.
Whited, Charles A., to Xerox Corporation. Apparatus for regulating the toner concentration in a electrophotographic device. 3,873,197, Cl. 355-3.0DD.
Whitehead & Kales Company: *See—*
  Baker, William R.; and Peisner, Israel D., 3,872,797.
Whitehouse, Harper John, to United States of America, Navy. Acoustic beam former. 3,873,958, Cl. 340-6.00R.
Whiting Corporation: *See—*
  Bennett, Richard C., 3,873,275.
Whitley, William P., Jr. Guide and support mechanism for boat trailers. 3,873,130, Cl. 214-84.000.

Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, to Agfa-Gevaert Aktiengesellschaft. Photographic copying machine. 3,873,012, Cl. 226-44.000.
Wiech, Norbert L.: *See—*
  Blohm, Thomas R.; Wiech, Norbert L.; and Roberts, Edward M., 3,873,520.
Wieland, Heinrich: *See—*
  Seidel, Dietrich; Wieland, Heinrich; Eibl, Johann; Eder, Gerald; and Molinari, Ewald, 3,873,433.
Wijngaarden, Ineke Van: *See—*
  Soudijn, Willem; Wijngaarden, Ineke Van; and Janssen, Paul Adriaan Jan, 3,873,534.
Wilber, James Albert, to RCA Corporation. Chrominance signal correction. 3,873,990, Cl. 358-8.000.
Wilcock, William Leslie, to Leeds & Noethrup Company. Method for determining a specific characteristic of fluid suspended particles. 3,873,206, Cl. 356-103.000.
Wildi, Edwin; and Brandenberger, Albert, to Maschinenfabrik Benninger AG. Yarn guide- and monitoring apparatus for a bobbin creel. 3,873,043, Cl. 242-131.100.
Wiley, Sheldon: *See—*
  Dunder, David; and Wiley, Sheldon, 3,873,128.
Wilkes, Frederick Alfred. Multi-image film mask. 3,873,405, Cl. 161-113.000.
Williams, George Nelmes: *See—*
  Dinsmore, Daniel, Jr.; and Williams, George Nelmes, 3,872,971.
Williams, Norman H.; and Schuette, Henry W., to Varian Associates. Apparatus for drying materials employing spaced microwave heating and transverse-flow moisture flushing stations. 3,872,603, Cl. 34-1.000.
Williams, Ronald E.: *See—*
  Patton, Thayer E., 3,873,808.
Williams, Wilmore: *See—*
  Luksas, Anthony J.; and Williams, Wilmore, 3,873,730.
Willis, Candler A., Jr., to General Electric Company. Ballast control device. 3,873,910, Cl. 323-6.000.
Willis, Damous D.: *See—*
  Anderson, Norman G.; and Willis, Damous D., 3,873,217.
Willis, Henry Paul, deceased (Decker, Norman E., executor). Golf putting device. 3,873,097, Cl. 273-185.00R.
Willis, John G., to Solid State Technology, Inc. Radio call unit. 3,873,844, Cl. 290-1.00E.
Willmore, Robert R., to United States of America, Air Force. Clock synchronization system. 3,873,929, Cl. 328-63.000.
Wilson, Billy J.: *See—*
  Curtis, James R.; Palmer, Thomas A.; and Wilson, Billy J., 3,873,664.
Wilson, James M.: *See—*
  Lahr, Roy J.; and Wilson, James M., 3,873,813.
Wilson, John; and Hamb, Frederick T., to Eastman Kodak Company. Photographic element comprising polyurethane film support. 3,873,320, Cl. 96-87.00R.
Wimmer, Walter, to Vigotec Ag. Envelope filling machine. 3,872,649, Cl. 53-187.000.
Wincklhofer, Robert Charles; and Schwartz, Judd Leonard, to Allied Chemical Corporation. Antistatic fiber. 3,873,353, Cl. 117-138.80A.
Wingler, Frank: *See—*
  Appel, Hansgunter; Arlt, Dieter; Muller, Richard; and Wingler, Frank, 3,873,495.
Winterberg, Friedwardt M. Magnetically insulated capacitor, process for electrostatic energy storage and its applications. 3,873,930, Cl. 328-227.000.
Winters, Earl Dallas, to Bell Telephone Laboratories, Incorporated. Preferential gold electroplating. 3,873,428, Cl. 204-15.000.
Wirth, Joseph G.: *See—*
  Heath, Darrell R.; and Wirth, Joseph G., 3,873,593.
Wischhoefer, Larry L.: *See—*
  Adkins, David E.; Hackman, Donald J.; Pope, William S.; Totten, Jerry D.; and Wischhoefer, Larry L., 3,873,145.
Witmer, Phares B., III: *See—*
  Bierley, Howard L.; and Witmer, Phares B., III, 3,872,681.
Witte, Josef: *See—*
  Pampus, Gottfried; Witte, Josef; and Hoffmann, Martin, 3,873,644.
Wittek Golf Range Supply Co., Inc.: *See—*
  Hoag, Charles R., 3,872,534.
Wittes, James M.; and Netta, Louis A., to Thomas & Betts Corporation. Adjustable wire stripper. 3,872,746, Cl. 81-9.50R.
Wohlrab, Walter, to Krauss-meffei Aktiengesellschaft. Apparatus for selectively establishing a multiplicity of discrete flow rates. 3,872,887, Cl. 137-567.000.
Wojewski, Thomas, to United States of America, Navy. Expandable depthometer. 3,872,725, Cl. 73-300.000.
Wolcott, Edward O.: *See—*
  Young, Roland L.; McClelland, Donald H.; and Wolcott, Edward O., 3,873,803.
Wolf, Edward D., to Hughes Aircraft Company. Small geometry charge coupled device and process for fabricating same. 3,873,371, Cl. 148-1.500.
Wolf, Heribert, to International Standard Electric Corporation. Mechanical bistable device. 3,873,078, Cl. 267-159.000.
Wolf, Milton: *See—*
  Bogash, Richard; Wolf, Milton; and Sellstedt, John H., 3,873,533.
Wolfertz, Gunther; Kramer, Friedhelm; and Hillringhaus, Paul, to Schaeffer-Homberg GmbH, Firma. Closure for articles of clothing, valises, pockets or the like with overlapping closure parts. 3,872,554, Cl. 24-206.00B.
Wolff, Siegfried: *See—*
  Thurn, Friedrich; Burmester, Kurt; Pochert, Johannes; and Wolff, Siegfried, 3,873,489.
Wolff, Sverre: *See—*
  Moran, John Joseph; Wolff, Sverre; and Ashley, Holvor Walter, 3,873,273.
Woo, James T. K.; Glowe, Donald E.; and Thornton, J. Scott, to Horizons Incorporated, a Division of Horizons Research Incorporated. Recovery of clean polyester materials from photographic film. 3,873,314, Cl. 96-50.00R.
Wood, Francis William: *See—*
  Carpenter, Roland Paul; Weddle, Richard Braid; and Wood, Francis William, 3,873,749.
Woods, James R., II: *See—*
  Russell, Charles R.; and Woods, James R., II, 3,872,839.
Worden, Howard L. Method of fabricating a glass lampshade. 3,872,574, Cl. 29-469.000.
Worden, Robert Francis, to General Electric Company. Flesh tone correction using color difference signals. 3,873,760, Cl. 358-21.000.
Worley, Jimmy Weldon; and Ratts, Kenneth Wayne, to Monsanto Company. 2-Substituted-3,4-dihydro-3-oxo-2h-1,4-benzothiazine-4-acetic acid and esters thereof. 3,873,535, Cl. 260-243.00R.
Worobec, Richard, Jr., to Black and Decker Manufacturing Company, The. Trigger mechanism for hand-operated power device including independently operable locking devices providing automatic lock off and manual lock-on operation. 3,873,796, Cl. 200-157.000.
Wright, Arthur J.: *See—*
  Farber, Sheldon; Hoover, Troy E.; McQuain, David B.; and Wright, Arthur J., 3,873,573.
Wright, Larry R., to Motorola, Inc. Audio frequency squelch system. 3,873,926, Cl. 325-478.000.
Wright, Ronald Barrie, to Imperial Chemical Industries Limited. Stabilisation of fats and oils with phenolic antioxidants. 3,873,466, Cl. 252-404.000.
Wu, Edward S.: *See—*
  Wang, An; Chu, Ge Yao; and Wu, Edward S., 3,872,959.
Wu, William C. L.; Krebaum, Lawrence J.; and Machonis, John, Jr., to Chemplex Company. Graft copolymers of polyolefins and cyclic acid and acid anhydride monomers. 3,873,643, Cl. 260-878.00R.
Wu, Yu-Lin; Hudson, Paul S.; Sherk, Fred T.; and Haskell, Donald M., to Phillips Petroleum Company. Continuous slurry process for formation of aromatic polycarboxylic acids. 3,873,609, Cl. 260-515.00P.
Wulff, Harald P.: *See—*
  Bell, Charles S.; and Wulff, Harald P., 3,873,578.
Wurscher, Horst; Blass, Rolf; and Becker, Oskar, to U.S. Philips Corporation. Push button. 3,873,957, Cl. 338-32.00H.
Wurst, John W., to Singer Company, The. Sewing machine stitch pattern selection from data stored in a multiple pattern static memory. 3,872,808, Cl. 112-158.00E.
Wurtenberg, Oscar A. Gas filter assembly. 3,873,286, Cl. 55-378.000.
Xerox Corporation: *See—*
  Bryngdahl, Olof, 3,873,207.
  Davidson, James R., 3,872,825.
  Davidson, James R.; and Walter, Carol A., 3,873,002.
  Gabor, Andrew, 3,872,960.
  Gallo, Charles F., Jr.; and Hammond, Thomas J., 3,873,895.
  Goffe, William L., 3,873,309.
  Hanson, William J., 3,872,826.
  Lahr, Roy J.; and Wilson, James M., 3,873,813.
  Whited, Charles A., 3,873,197.
Xonics, Inc.: *See—*
  Allan, Frank V.; Lewis, John H.; Lewis, Katherine J.; Morsell, Arthur L.; Muntz, Eric P.; Scott, Paul B.; and Welkowsky, Murray S., 3,873,833.
  Eseke, James R.; and Papadopoulous, Stelios B., 3,873,832.
Yagi, Motoi: *See—*
  Sawazaki, Norikazu; Kuriyagawa, Mamoru; and Yagi, Motoi, 3,873,994.
Yagi, Toshiaki: *See—*
  Takehisa, Masaaki; Kurihara, Hirondo; Yagi, Toshiaki; Watanabe, Hiromasa; and Machi, Sueo, 3,873,492.
Yajima, Masami: *See—*
  Susa, Kenzo; Yajima, Masami; and Taniguchi, Satoshi, 3,873,473.
Yamada, Mitsuo: *See—*
  Otsuru, Masaaki; Miyakawa, Toshio; Yamada, Mitsuo; and Izuhara, Michi, 3,873,431.
Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, to Nippon Kayaku Kabushiki Kaisha. Plant growth regulants. 3,873,304, Cl. 71-123.000.
Yamada, Takeo: *See—*
  Mori, Toshihiro; Ando, Seigo; Watanabe, Katsujiro; and Yamada, Takeo, 3,873,912.
Yamaguchi, Seiichi. Bellows-type joint assembly. 3,873,137, Cl. 285-226.000.
Yamakawa, Kazuo; Oka, Tohru; Tokunaga, Masaaki; Mizuhara, Takeshi; and Hagi, Chitoshi, to Hitachi Metals, Ltd. Method of producing rare earth-cobalt permanent magnet using special cooling rates. 3,873,379, Cl. 148-103.000.
Yamamoto, Hiroshi: *See—*
  Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,873,304.

Yamamoto, Hisao: *See—*
  Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,873,706.
Yamamoto, Mitsuyoshi: *See—*
  Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Sato, Seiji; Yamamoto, Mitsuyoshi; Sato, Tomoyasu; and Morikawa, Atsuko, 3,873,692.
Yamamoto, Toyohiko: *See—*
  Kondo, Marekata; Fukuda, Seiwa; and Yamamoto, Toyohiko, 3,873,331.
Yamane, Hisakichi: *See—*
  Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
Yamato, Eisakku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, to Tanabe Seiyaku Co., Ltd. Novel tetrahydroisoquinoline compounds in a pharmaceutical composition. 3,873,704, Cl. 424-258.000.
Yamauchi, Masaaki, to Hitachi, Ltd. Color cathode-ray tube with temperature equilization for plurality of electron gun filaments. 3,873,876, Cl. 313-409.000.
Yanagimachi, Akio: *See—*
  Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
Yang, Elmer Chensheng, to Pacific Scientific Company. Safety belt webbing adjustor. 3,872,550, Cl. 221-170.000.
Yarborough, J. Michael; and Hobart, James L., to Coherent Radiation. Dye laser having non-colinear optical pumping means. 3,873,941, Cl. 331-94.50L.
Yariv, Amnon: *See—*
  Hunsperger, Robert G.; Stoll, Harold M.; Tangonan, Gregory L.; and Yariv, Amnon, 3,873,828.
Yarnall, Donald I., to Commercial Plastics & Supply Co., Inc. Composite panel projectile barrier. 3,872,804, Cl. 109-49.500.
Yarrington, Robert Murphy, to American Cyanamid Company. Low pressure process for sulfur removal from heating oil sources. 3,873,442, Cl. 208-216.000.
Yasutake, Nobuo, to Daifuku Machinery Works, Ltd. Handcart. 3,872,803, Cl. 108-136.000.
Yates, Paul C.: *See—*
  Cumbo, Charles Carmen; and Yates, Paul C., 3,873,451.
Yazaki Sogyo Kabushiki Kaisha: *See—*
  Ozaki, Noboru; and Shimizu, Masatoshi, 3,873,811.
Ye-Fong Ning, Robert: *See—*
  Sternbach, Leo Henryk; and Ye-Fong Ning, Robert, 3,873,525.
Yokoo, Masasuke; Suzuki, Masayoshi; Meguro, Daitetsu; and Imai, Shuichi, to Bridgestone Tire Company Limited. Ply-band building apparatus. 3,873,398, Cl. 156-417.000.
York, Donald W., to Clark Equipment Company. Loader bucket position maintaining system. 3,872,990, Cl. 214-763.000.
Yoshida, Kisaburo, to Kabushiki Kaisha Sakurakurepasu. Writing instrument for low-viscous ink without an absorbing fibrous bundle. 3,873,218, Cl. 401-292.000.
Yoshida Kogyo Kabushiki Kaisha: *See—*
  Douri, Hisashi, 3,872,571.
Yoshida, Yoshitaka: *See—*
  Kimbara, Motoyasu; and Yoshida, Yoshitaka, 3,872,841.
Yoshimatsu, Toshio: *See—*
  Omiya, Shoji; and Yoshimatsu, Toshio, 3,873,100.
Yoshimura, Shigeru, to NHK Spring Co., Ltd. Apparatus for twisting wave form wire springs. 3,872,896, Cl. 140-71.00R.
Yoshino, Takehiko: *See—*
  Uehara, Takashi; Yoshino, Takehiko; Sawabe, Eiichi; Yamane, Hisakichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Takezawa, Teruhiro; Masuda, Michio; and Nabeyama, Hiroaki, 3,873,777.
Young, Byron A., to Varian Associates. Self-oscillating optically pumped magnetometer having automatic phase correction. 3,873,908, Cl. 324-.50R.
Young, Dale A.; Miller, Alfred H.; and Coburn, John F., Jr., to Exxon Research and Engineering Company. Method and apparatus for detecting free water in hydrocarbon fuels. 3,873,271, Cl. 23-230.0HC.
Young, Roland L.; McClelland, Donald H.; and Wolcott, Edward O., to Gates Rubber Company, The. Lead battery welding apparatus. 3,873,803, Cl. 219-125.00R.
Zahn, Wolfgang: *See—*
  Wick, Richard; Fergg, Berthold; Zahn, Wolfgang; Nagel, Erich; Pflugbeil, Mathias; Gotze, Christian; Fleck, Adolf; and Dreher, Karl, 3,873,012.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
  Maurer, Gerhard; and Geiger, Fritz, 3,872,957.
Zalonis, Victor J. Trolling sinker. 3,872,617, Cl. 43-43.130.
Zanias, Theodore, to American Metal Products Corporation. Triple wall chimney pipe assembly. 3,872,780, Cl. 98-60.000.
Zaoui, Raymond. Retainers for belts or straps. 3,872,518, Cl. 2-236.000.
Zasio, John J.: *See—*
  Beall, Robert J.; and Zasio, John J., 3,872,583.
Zeleny, Richard A.: *See—*
  Pitt, Harold M.; Zeleny, Richard A.; and Knoshaug, Wendell E., 3,873,647.
Zeller, Hans-Gunther: *See—*
  Haas, Walter; and Zeller, Hans-Gunther, 3,873,713.
Zenke, Erich Gunther: *See—*
  Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, 3,873,483.
Zhitnetsky, Vasily Ivanovich: *See—*
  Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; Lyashenko, Alexandr Fedorovich; and Zhitnetsky, Vasily Ivanovich, 3,873,308.
Zibette, Bernard Arthur: *See—*
  Camboulives, Andre Alphonse Mederic Leon; Le Maout, Theophile Francois; Vandenbroucke, Roger Alfred Jules; and Zibette, Bernard Arthur, 3,873,027.
Ziebarth, Paul Erich; and Ritter, Reinhold. Oscillating barrels including electrical contact means. 3,873,435, Cl. 204-222.000.
Ziemek, Gerhard: *See—*
  Scheffler, Ernst; and Ziemek, Gerhard, 3,873,799.
Zikan, Viktor: *See—*
  Semonsky, Miroslav; Zikan, Viktor; and Jelinek, Vaclav, 3,873,575.
Zingg, Alfred Emil: *See—*
  Hofer, Kurt; Keller, Robert Christian; and Zingg, Alfred Emil, 3,873,266.
Zipps, David L.: *See—*
  Childers, Warren; and Zipps, David L., 3,873,214.
Zoecon Corporation: *See—*
  Henrick, Clive A., 3,873,586.
Zoeller, Richard J.; and Lazure, Frank S., to Aluminum Company of America. Popcorn popping package. 3,873,738, Cl. 426-111.000.
Zotov, Mikhail Nikolaevich; Peisakhov, Vulf Kopelevich; and Partsy, Iosif Naumovich. Thermosetting plastics for loom shuttles and other dynamically heavily loaded shock absorber and antifriction articles and a method for producing said plastics. 3,873,479, Cl. 260-17.200.
3-D Ducts, Inc.: *See—*
  Streit, Kenneth F., 3,872,894.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aktiebolaget Electrolux : *See*—
  - Svantesso, Sven Elis A. Re. 28,378.
- Backhurst, John R., M. Fleischmann, F. Goodridge, and R. E. Plimley, to National Research Development Corp. Electrochemical process of coating using a fluidized bed. Re. 28,370, 3–25–75, Cl. D204—20.
- Bell Telephone Laboratories, Inc. : *See*—
  - Maydan, Dan, Cohen, and Kerwin. Re. 28,375.
- Bond, William C. : *See*—
  - Sparlin, Derry D., and Bond. Re. 28,372.
- Cohen, Melvin I. : *See*—
  - Maydan, Dan, Cohen, and Kerwin. Re. 28,375.
- Colvin, Alex D. : *See*—
  - Warnick, Alan, and Colvin. Re. 28,376.
- Colvin, Alex D., and A. Warnick, to Ford Motor Co. Chemiluminescent instrument. Re. 28,374, 3–25–75, Cl. 23—254.
- Continental Oil Co. : *See*—
  - Sparlin, Derry D., and Bond. Re. 28,372.
- Dresser Industries, Inc. : *See*—
  - Van Winkle, Roy L. Re. 28,371.
- Fleischmann, Martin : *See*—
  - Backhurst, John R., Fleischmann, Goodridge, and Plimley. Re. 28,379.
- Ford Motor Co. : *See*—
  - Colvin, Alex D., and Warnick. Re. 28,374.
  - Warnick, Alan, and Colvin. Re. 28,376.
- Fuchs, Francis J., Jr., to Western Electric Co., Inc. Apparatus and method for continuous material feedring and deformation. Re. 28, 373, 3–25–75, Cl. 72—60.
- Goodridge, Francis : *See*—
  - Backhurst, John R., Fleischmann, Goodridge, and Plimley. Re. 28,379.
- Kendall Co., The : *See*—
  - Samour, Carlos M., and Vida. Re. 28,377.
- Kerwin, Robert E. : *See*—
  - Maydan, Dan, Cohen, and Kerwin. Re. 28,35.
- Maydan, Dan, M. I. Cohen, and R. E. Kerwin, to Bell Telephone Laboratories, Inc. Recording and display method and apparatus. Re. 28,375, 3–25–75, Cl. 178—6.60.
- National Research Development Corp. : *See*—
  - Backhurst, John R., Fleischmann, Goodridge, and Plimley. Re. 28,379.
- Plimley, Raymond E. : *See*—
  - Backhurst, John R., Fleischmann, Goodridge, and Plimley. Re. 28,379.
- Samour, Carlos M., and J. A. Vida, by The Kendall Co. Selected 5-substituted-5-phenylalkyl barbituric acids. Re. 28,377, 3–25–75, Cl. 260—257.
- Sanchez, Anastacio V. Method of and apparatus for repairing deformed yieldable structures. Re. 28,370, 3–25–75, Cl. 72—293.
- Sparlin, Derry D., and W. C. Bond, to Continental Oil Co. Method for placing gravel packs. Re. 28,372, 3–25–75, Cl. 166—278.
- Svantesso, Sven Elis A., to Aktiebolaget Electrolux. Apparatus for effecting purification of liquids by flotation. Re. 28,378, 3–25–75, Cl. 210—109.
- Van Winkle, Roy L., to Dresser Industries, Inc. Pipe handling apparatus. Re. 28,371, 3–25–75, Cl. 173—164.
- Vida, Julius A. : *See*—
  - Samour, Carlos M., and Vida. Re. 28,377.
- Warnick, Alan, and A. D. Colvin, to Ford Motor Co. Chemiluminescent process. Re. 28,376, 3–25–75, Cl. 23—232.
- Warnick, Alan : *See*—
  - Colvin, Alex D., and Warnick. Re. 28,374.
- Western Electric Co., Inc. : *See*—
  - Fuchs, Francis J., Jr. Re. 28,373.

LIST OF PLANT PATENTEES

- Frampton Nurseries Ltd. : *See*—
  - Machin, Barrie J. 3,696.
- Machin, Barrie J., to Frampton Nurseries Ltd. Chrysanthemum plant. 3,696, 3–25–75, Cl. 77.
- Sheridan Nuseries Ltd. : *See*—
  - Slater, Leonard K. 3,694.
  - Slater, Leonard K. 3,695.
- Slater, Leonard K., assignor of a fractional part interest to Sheridan Nurseries Ltd. Lilac plant. 3,694, 3–25–75, Cl. 66.
- Slater, Leonard K., assignor of a fractional part interest to Sheridan Nurseries Ltd. Lilac plant. 3,695, 3–25–75, Cl. 66.

LIST OF DESIGN PATENTEES

- ACF Industries, Inc. : *See*—
  - Cochrum, Allen W. 234,595.
- Adolfsson, Ebbe S., to Atlas Copco Aktiebolag. Shank adapter for drilling apparatus. 234,624,3–25–75, Cl. D55—1.
- Advanced Drainage Systems, Inc. : *See*—
  - Sixt, Marty E. 234,596.
- American Classic Industries : *See*—
  - Jenkins, Floyd P., Jr. 234,591.
- American Seating Co. : *See*—
  - Barecki, Chester J. 234,555.
- American Optical Corp. : *See*—
  - Maier, Howard A. 234,626.
- Andrus, William C., to Steelcase Inc. Leg unit. 234,565, 3–25–75, Cl. D6—194.
- Armstrong Store Fixtures Corp. : *See*—
  - Moore, David M. 234,564.
- Atlas Copco Aktiebolag : *See*—
  - Adolfsson, Ebbe S. 234,624.
- Barecki, Chester J., to American Seating Co. Seat for a transit vehicle. 234,555, 3–25–75, Cl. D6—48.
- Batter, John F., Jr. : *See*—
  - Conner, James M., Salvador, and Batter. 234,630.
- Beattie, Kenneth G., to Sylon International Ltd. Rotating brush. 234,552, 3–25–75, Cl. D4—2.
- Becker, Sidney, and B. Kantor, to Pickering & Co., Inc. Stylus life timer. 234,580, 3–25–75, Cl. D10—40.
- Bell, John F., and W. Murray, to Questor Corp. Hockey helmet. 234,549, 3–25–75, Cl. D2—231.
- Bellini, Mario, to Ing. C. & C. Olivetti, S.p.A. Ink ribbon cartridge. 234,633, 3–25–75, Cl. D64—11.
- Bixler, Kenneth D. : *See*—
  - Reifers, Richard F., and Bixler. 234,575.
- Bowmar Instrument Corp. : *See*—
  - Fossella, Gregory F., Forrest, Jordan, and Johnson. 234,599.
- Boult, Cecil L., and D. B. Jenkins. Pocket watch. 234,579, 3–25–75, Cl. D10—37.
- Breazeale, Russell E. Trailer body. 234,586, 3–25–75, Cl. D12—97.
- Burgard, Joseph A., Jr., to Primark Corp. Combined felt-tip marker set and carrying holder therefor. 234,636, 3–25–75, Cl. D74—17.
- Callaway, Jack L. Adjustable clipboard for attachment to an automobile mirror. 234,592, 3–25–75, Cl. D19—88.
- Clugston, George D. Combined cattle feeding trough and support therefor. 234,607, 3–25–75, Cl. D30—13.
- Coal Industry (Patents) Ltd. : *See*—
  - Donkin, Robert. 234,562.
- Cochrum, Allen W., to ACF Industries, Inc. Valve body. 234,595, 3–25–75, Cl. D23—32.
- Conner, James M., H. J. Salvador, and J. F. Batter, Jr., to Polaroid Corp. Motion picture film cassette. 234,630, 3–25–75, Cl. D61—1.
- Craddock, Peter J. Combined handle and holder for a blade. 234,570, 3–25–75, Cl. D8—98.
- Dart Industries, Inc. : *See*—
  - Swett, James B. 234,568.
- Davis, Dalton M., to Pyramid Enterprises, Inc. Vehicle wheel center unit. 234,590, 3–25–75, Cl. D12—211.
- Deere & Co. : *See*—
  - Oelschlaeger, George F., and Youngberg. 234,619.
- Dennison Mfg. Co. : *See*—
  - Fossella, Gregory F., and Hoffman. 234,551.

- Diachuk, Wolodymyr. Air filtering appliance. 234,597, 3–25–75, Cl. D23—149.
- Diamond International Corp. : *See*—
  - Reifers, Richard F., and Bixler. 234,575.
- Donkin, Robert, to Coal Industry (Patents) Ltd. Testing frame for breathing and rescue apparatus. 234,562, 3–25–75, Cl. D6—186.
- Doyel, John S. New and ornamental design for a hand-held sewing machine. 234,634, 3–25–75, Cl. D70—1.
- Droll Yankees Inc. : *See*—
  - Kilham, Peter. 234,569.
  - Kilham, Peter. 234,615.
- Eastman Kodak Co. : *See*—
  - Vigua, Ralph M. 234,627.
- Ehrlich, Arnold, to Insanity, Inc. Signal. 234,583, 3–25–75, Cl. D10—109.
- Esquire, Inc. : *See*—
  - Gore, Fred M. 234,623.
- Fisher, Arthur A. Knob for automotive cigarette lighter or the like. 234,572, 3–25–75, Cl. D8—138.
- Flynn, Stephan D. Respirator valve. 234,637, 3–25–75, Cl. D83—1.
- Ford Motor Co. : *See*—
  - Snow, Richard F., and Thomasson. 234,603.
- Forrest, John W. : *See*—
  - Fossella, Gregory F., Forrest, Jordan, and Johnson. 234,599.
- Fossella, Gregory F., and L. R. Hoffman, to Dennison Mfg. Co. Attaching apparatus or similar article. 234,551, 3–25–75. Cl. D3—19.
- Fossella, Gregory F., J. W. Forrest, J. B. Jordan, and R. J. Johnson, to Bowmar Instrument Corp. Calculator. 234,599, 3–25–75, Cl. D26—5.
- Gamble, William L. Room deodorizer body. 234,606, 3–25–75, Cl. D23—150.
- General Electric Co. : *See*—
  - Mellyn, Lawrence P. 234,602.
- Giancarlo, Eugene N., J. V. Stram, and J. F. Talerico, to International Business Machines Corp. Data processor. 234,600, 3–25–75, Cl. D26—5.
- Gore, Fred M., to Esquire, Inc. Floodlight. 234,623, 3–25–75, Cl. D48—20.
- Hague, Ewart S., and L. W. Shaw, to Texas Instruments, Inc. Electrical relay or similar article. 234,601, 3–25–75, Cl. D26—13.
- Harris, Ridgely C., and J. L. Johnston. Bicycle stand. 234,587, 3–25–75, Cl. D12—115.
- Hauner, Carlo. Chair. 234,556, 3–25–75, Cl. D6—66.
- Hauner, Carlo. Table. 234,560, 3–25–75, Cl. D6—179.
- Hedger, John R. Top launcher or similar article. 234,618, 3–25–75, Cl. D34—15.
- Hilsher, John H., Jr., to Howard E. Morehart. Automobile window. 234,589, 3–25–75, Cl. D12—183.
- Hoffman, Lawrence R. : *See*—
  - Fossella, Gregory F., and Hoffman. 234,551.
- Hogdal, Stig B. : *See*—
  - Ljung, Per E. G., Lindell, and Hogdal. 234,631.
  - Ljung, Per E. G., Lindell, and Hogdal. 234,632.
- Hrabik, Heinrich. Frame for a film transparency. 234,628, 3–25–75, Cl. D61—1.
- Insanity, Inc. : *See*—
  - Ehrlich, Arnold. 234,583.
- International Business Machines Corp. : *See*—
  - Giancarlo, Eugene N., Stram, and Talerico. 234,600.
- Jenkins, David B. : *See*—
  - Boult, Cecil L., and Jenkins. 234,579.
- Jenkins, Floyd P., Jr., to American Classic Industries. Building or the like. 234,591, 3–25–75, Cl. D13—1.
- Johnson, Richard J. : *See*—
  - Fossella, Gregory F., Forrest, Jordan, and Johnson. 234,599.
- Johnston, John L. : *See*—
  - Harris, Ridgely C., and Johnston. 234,587.
- Jordan, James B. : *See*—
  - Fossella, Gregory F., Forrest, Jordan, and Johnson. 234,599.
- Juy, Lucien C. H. Derailleur. 234,588, 3–25–75, Cl. D12—124.
- Kamata, Eitaro. Helmet. 234,550, 3–25–75, Cl. D2—232.
- Kantor, Bernard : *See*—
  - Becker, Sidney, and Kantor. 234,580.
- Kawata, Yoshiaki : *See*—
  - Kikuchi, Hiroshi, Koshiro, Kawata, and Ueda. 234,567.
- Kearney & Trecker Corp. : *See*—
  - Lohneis, Earl R. 234,625.
- Kikuchi, Hiroshi, A. Koshiro, Y. Kawata, and M. Ueda, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 234,567, 3–25–75, Cl. D7—128.
- Kilham, Peter, to Droll Yankees Inc. Weed killer. 234,569, 3–25–75, Cl. D8—1.
- Kilham, Peter, to Droll Yankees, Inc. Hummingbird feeder. 234,615, 3–25–75, Cl. D30—14.
- Koehler, Carlton L. Combined depth and pressure gauge for scuba divers. 234,581, 3–25–75, Cl. D10—85.
- Koshiro, Akiyoshi : *See*—
  - Kikuchi, Hiroshi, Koshiro, Kawata, and Ueda. 234,567.
- Lacasse, Clement. Kayak type boat. 234,585, 3–25–75, Cl. D12—63.
- Lamb, Henry. Wheeled toy. 234,617, 3–25–75, Cl. D34—15.
- Langieri, Michael : *See*—
  - Meyers, Michael R., and Langieri. 234,616.
- Lardenois, Robert A., to S.A. ets Lardenois. Handle for a brush. 234,553, 3–25–75, Cl. D4—35.
- Larson, Kenneth W., to Motorola, Inc. Portable radio telephone. 234,605, 3–25–75, Cl. D26—14.
- Lee, Ha-Yung. Chalkboard vacuum eraser. 234,635, 3–25–75, Cl. D74—7.
- Leotta, Samuel S., and E. D. Myers, to Ohaus Scale Corp. Micrometer poise. 234,582, 3–25–75, Cl. D10—95.
- Lightolier Inc. : *See*—
  - Muller, Henry. 234,621.
- Lindell, Nils G. : *See*—
  - Ljung, Per E. G., Lindell, and Hogdal. 234,631.
  - Ljung, Per E. G., Lindell, and Hogdal. 234,632.
- Ljung, Per E. G., N. G. Lindell, and S. B. Hogdal, to Videogram Production AB. Multi-screen film projector. 234,631, 3–25–75, Cl. D61—1.
- Ljung, Per E. G., N. G. Lindell, and S. B. Hogdal, to Videogram Production AB. Multi-screen film projector. 234,632, 3–25–75, Cl. D61—1.
- Lohneis, Earl R., to Kearney & Trecker Corp. Tool change arm for transferring tools between a tool storage magazine and a tool operator. 234,625, 3–25–75, Cl. D54—13.
- Maier, Howard A., to American Optical Corp. Comparison microscope. 234,626, 3–25–75, Cl. D57—1.
- Mandeltort, Stanley T., to VCA Corp. Actuator cap for a pressurized container. 234,576, 3–25–75, Cl. D9—258.
- Marra Guiseppe. Combined planter and trellis. 234,561, 3–25–75, Cl. D6—183.
- Matsushita Electric Industrial Co., Ltd. : *See*—
  - Kikuchi, Hiroshi, Koshiro, Kawata, and Ueda. 234,567.
  - Shimizu, Yuji. 234,604.
- Maxwell, William J. Palette storage container. 234,573, 3–25–75, Cl. D9—184.
- Mellyn, Lawrence P., to General Electric Co. Combined housing and dimmer. 234,602, 3–25–75, Cl. D26—13.
- Meyers, Michael R., and M. Langieri. Toy. 234,616, 3–25–75, Cl. D34—15.
- Mobell, Sidney F. Ring. 234,622, 3–25–75, Cl. D45—10.
- Moore, David M., to Armstrong Store Fixtures Corp. Counter divider. 234,564, 3–25–75, Cl. D6—193.
- Morehart, Howard E. : *See*—
  - Hilsher, John H., Jr. 234,589.
- Morris, G. M., Boat Co., Inc. : *See*—
  - Morris, George M. 234,584.
- Morris, George M., to G. M. Morris Boat Co., Inc. Children's sled. 234,584,3–25–75, Cl. D12—6.
- Motorola, Inc. : *See*—
  - Larson, Kenneth W. 234,605.
- Muller, Henry, to Lightolier Inc. Wall mounted lighting fixture or similar article. 234,621, 3–25–75, Cl. D48—4.
- Murray, William : *See*—
  - Bell, John F., and Murray. 234,549.
- Myers, Earl D. : *See*—
  - Leotta, Samuel S., and Myers. 234,582.
- Oelschlaeger, George F., and C. H. Youngberg, to Deere & Co. Disk harrow. 234,619, 3–25–75, Cl. D39—1.
- Ohaus Scale Corp. : *See*—
  - Leotta, Samuel S., and Myers. 234,582.
- Olds, Mac L. Flexible camera mount. 234,629, 3–25–75, Cl. D61—1.
- Olivetti, C. & C., Ing., S.p.A. : *See*—
  - Bellini, Mario. 234,633.
- Pickering & Co., Inc. : *See*—
  - Becker, Sidney, and Kantor. 234,580.
- Polaroid Corp. : *See*—
  - Conner, James M., Salvador, and Batter. 234,630.
- Powers, James R., to Ropat-Caslon, Inc. Digital clock. 234,577, 3–25–75, Cl. D10—15.
- Powers, James R., to Ropat-Caslon, Inc. Digital clock. 234,578, 3–25–75, Cl. D10—15.
- Primark Corp. : *See*—
  - Burgard, Joseph A., Jr. 234,636.
- Pyramid Enterprises, Inc. : *See*—
  - Davis, Dalton M. 234,590.
- Questor Corp. : *See*—
  - Bell, John F., and Murray. 234,549.
- Raymont, William R. Golf club head. 234,608, 3–25–75, Cl. D34—5.
- Raymont, William R. Golf club head. 234,609, 3–25–75, Cl. D34—5.
- Raymont, William R. Golf club head. 234,610, 3–25–75, Cl. D34—5.
- Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for produce or the like. 234,575, 3–25–75, Cl. D9—243.
- Ricca, Robert. Stilt. 234,611, 3–25–75, Cl. D34—14.
- Ricca, Robert. Stilt. 234,612, 3–25–75, Cl. D34—14.
- Ricca, Robert. Stilt. 234,613, 3–25–75, Cl. D34—14.
- Ricca, Robert. Stilt. 234,614, 3–25–75, Cl. D34—14.
- Ropat-Caslon, Inc. : *See*—
  - Powers, James R. 234,577.
  - Powers, James R. 234,578.
- S.A. ets Lardenois : *See*—
  - Lardenois, Robert A. 234,553.
- Saito, Toshio. Static eliminator. 234,598, 3–25–75, Cl. D26—1.
- Salvador, Henry J. : *See*—
  - Conner, James M., Salvador, and Batter. 234,630.
- Schimkat, Erwin H. Packaging container for food or the like. 234,574, 3–25–75, Cl. D9—219.
- Schmidt, Clarence E. Blood pump. 234,638, 3–25–75, Cl. D83—1.
- Schmidt, Clarence E. Hemodialysis machine. 234,639, 3–25–75, Cl. D83—1.
- Sealy, Inc. : *See*—
  - Watts, Edwin B. 234,566.
- Shaw, Larry W. : *See*—
  - Hague, Ewart S., and Shaw. 234,601.
- Shimizu, Yuji, to Matsushita Electric Industrial Co., Ltd. Speaker enclosure. 234,604, 3–25–75, Cl. D26—14.
- Sixt, Marty E., to Advanced Drainage Systems, Inc. Down spout adapter. 234,596, 3–25–75, Cl. D23—45.
- Snow, Richard F., and D. A. Thomasson, to Ford Motor Co. Computer input-output controller for diagnostic testing. 234,603, 3–25–75, Cl. D26—13.
- Spence, Charles, to Strike-King Lure Co., Inc. Fishing lure or similar article. 234,594, 3–25–75, Cl. D22—28.

Steelcase Inc.: *See*—
Andrus, William C. 234,565.

Stram, John V.: *See*—
Giancarlo, Eugene N., Stram, and Talerico. 234,600.

Strike-King Lure Co., Inc.: *See*—
Spence, Charles. 234,594.

Swett, James B., to Dart Industries, Inc. Crisper. 234,568, 3–25–75, Cl. D7—16.

Sybron Corp.: *See*—
Zagara, Frank A. 234,640.

Sylon International Ltd.: *See*—
Beattie, Kenneth G. 234,552.

Talerico, Joseph F.: *See*—
Giancarlo, Eugene N., Stram, and Talerico. 234,600.

Tegner, Raymond U. H. Combined pull and escutcheon. 234,571, 3–25–75, Cl. D8—167.

Texas Instruments, Inc.: *See*—
Hague, Ewart S., and Shaw. 234,601.

Thomasson, David A.: *See*—
Snow, Richard F., and Thomasson. 234,603.

Tiburzi, Anita. Easel or similar article. 234,557, 3–25–75, Cl. D6—85.

True Temper Corp.: *See*—
Wood, Morris E. 234,593.

Ueda, Masami: *See*—
Kikuchi, Hiroshi, Koshiro, Kawata, and Ueda. 234,567.

VCA Corp.: *See*—
Mandeltort, Stanley T. 234,576.

Videogram Production AB: *See*—
Ljung, Per E. G., Lindell, and Hogdal. 234,631.
Ljung, Per E. G., Lindell, and Hogdal. 234,632.

Vigna, Ralph M., to Eastman Kodak Co. Photographic processor. 234,627, 3–25–75, Cl. D61—1.

Waitzman, Simon V. Desk. 234,559, 3–25–75, Cl. D6—177.

Watts, Edwin B., to Sealy, Inc. Bed frame slat. 234,566, 3–25–75, Cl. D6—198.

Williams, Marion K. Portable easel. 234,563, 3–25–75, Cl. D6—188.

Wilm, Jon. Slide holder. 234,554, 3–25–75, Cl. D61—1.

Wolfberg, William. Ring adjuster. 234,620, 3–25–75, Cl. D45—1.

Wood, Morris E., to True Temper Corp. Fishing reel or similar article. 234,593, 3–25–75, Cl. D22—25.

Youngberg, Charles H.: *See*—
Oelschlaeger, George F., and Youngberg. 234,619.

Zagara, Frank A., to Sybron Corp. Sterilizer. 234,640, 3–25–75, Cl. D83—1.

CLASSIFICATION OF PATENTS

ISSUED MARCH 25, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
3R	3,872,511
73	3,872,512
155	3,872,513
159	3,872,514
168	3,872,515
202	3,872,516
207	3,872,517
236	3,872,518
CLASS 3	
1	3,872,519
CLASS 4	
154	3,872,520
172.12	3,872,522
255	3,872,521
CLASS 5	
43	3,872,523
334C	3,872,524
348WB	3,872,526
348R	3,872,525
CLASS 7	
1G	3,872,527
5.3	3,872,528
CLASS 8	
17	3,873,265
74	3,873,266
CLASS 9	
9	3,872,529
CLASS 10	
155A	3,872,530
CLASS 12	
1A	3,872,531
CLASS 14	
17	3,872,532
CLASS 15	
1.7	3,872,533
21B	3,872,534
244CH	3,872,536
250.42	3,872,535
	3,872,537
323	3,872,538
344	3,872,539
345	3,872,540
CLASS 16	
137	3,872,541
171	3,872,542
CLASS 17	
33	3,872,543
64	3,872,544
CLASS 19	
26	3,872,545
291	3,872,546
CLASS 23	
230HC	3,873,271
230B	3,873,267
	3,873,269
	3,873,270
	3,873,272
230R	3,873,268
232R	Re.28,376
253R	3,873,273
254R	Re.28,374
259	3,873,274
273R	3,873,275
CLASS 24	
16PB	3,872,547
73HS	3,872,548
73B	3,872,549
170	3,872,550
205.11F	3,872,552
205.11R	3,872,551
205.15R	3,872,553
206B	3,872,554
221R	3,872,555
230A	3,872,556
CLASS 26	
28	3,872,557
CLASS 28	
74P	3,872,558
CLASS 29	
25.16	3,872,560
95.1	3,872,561
156.4R	3,872,562
156.8H	3,872,563
191	3,872,564
200P	3,872,565
203MW	3,872,567
203.006	3,872,566
205D	3,872,568
257	3,872,569
267	3,872,570
408	3,872,571
432.1	3,872,572
447	3,872,573
469	3,872,574
471.7	3,872,576
475	3,872,575
492	3,872,577
525	3,872,578
570	3,872,579
596	3,872,580
604	3,872,581
621	3,872,582
624	3,872,583
630A	3,872,584
CLASS 30	
4R	3,872,585
43.91	3,872,586
43.92	3,872,587
50	3,872,588
62	3,872,589
90.6	3,872,590
162	3,872,591
346.58	3,872,592
CLASS 32	
22	3,872,593
59	3,872,594
CLASS 33	
23H	3,872,595
27L	3,872,596
77	3,872,597
169R	3,872,598
174R	3,872,599
178R	3,872,600
185V	3,872,601
199R	3,872,602
CLASS 34	
1	3,872,603
9	3,872,604
14	3,872,605
99	3,872,607
166	3,872.606
CLASS 35	
9A	3,872,608
17	3,872,609
30	3,872,610
38	3,872,611
CLASS 37	
8	3,872,612
CLASS 38	
77.83	3,872,613
CLASS 40	
64R	3,872,614
CLASS 42	
49R	3,872,615
CLASS 43	
5	3,872,616
43.13	3,872,617
53.5	3,872,618
60	3,872,619
CLASS 44	
63	3,873,276
64	3,873,277
66	3,873,278
76	3,873,279
CLASS 46	
31	3,872,620
CLASS 47	
1.2	3,872,621
CLASS 49	
118	3,872,622
169	3,872,623
CLASS 51	
9M	3,872,625
9	3,872,624
129	3,872,626
135R	3,872,627
215HM	3,872,628
295	3,872,629
322	3,873,280
334	3,872,630
CLASS 52	
67	3,872,631
73	3,872,632
127	3,872,633
222	3,872,634
227	3,872,635
364	3,872,636
408	3,872,637
476	3,872,638
495	3,872,639
586	3,872,640
618	3,872,641
758C	3,872,642
CLASS 53	
26	3,872,643
52	3,872,644
123	3,872,645
126	3,872,648
131	3,872,646
157	3,872,647
187	3,872,649
207	3,872,650
319	3,872,651
376	3,872,652
CLASS 54	
44	3,872,653
CLASS 55	
96	3,873,281
105	3,873,282
185	3,873,283
228	3,873,284
362	3,873,285
378	3,873,286
479	3,873,287
497	3,873,288
CLASS 56	
13.1	3,872,654
27.5	3,872,655
202	3,872,656
328R	3,872,657
CLASS 57	
13	3,872,658
33	3,872,659
58.3	3,872,660
77.4	3,872,661
120	3,872,662
CLASS 58	
115	3,872,663
CLASS 60	
39.65	3,872,664
221	3,872,665
277	3,872,666
282	3,872,667
337	3,872,668
395	3,872,669
413	3,872,670
460	3,872,671
649	3,872,672
650	3,872,673
706	3,872,674
718	3,872,675
CLASS 61	
12	3,872,676
45D	3,872,677
	3,872,678
46.5	3,872,679
72.3	3,872,680
CLASS 62	
63	3,872,681
114	3,872,682
140	3,872,683
149	3,873,289
181	3,872,684
196	3,872,685
237	3,872,686
243	3,872,687
329	3,872,688
503	3,872,689
CLASS 64	
9R	3,872,690
27R	3,872,691
CLASS 65	
2	3,873,290
3	3,873.291
68	3,873,292
84	3,873,293
348	3,873,294
351	3,873,295
CLASS 66	
151	3,872,692
CLASS 68	
6	3,872,693
12R	3,872,694
CLASS 69	
47	3,872,695
CLASS 70	
145	3,872,696
370	3,872,697
459	3,872,698
CLASS 71	
77	3,873,296
78	3,873,297
87	3,873,298
90	3,873,299
98	3,873,300
106	3,873,301
115	3,873,302
118	3,873,303
123	3,873,304
CLASS 72	
60	Re.28,373
88	3,872,699
91	3,872,700
102	3,872,701
145	3,872,702
262	3,872,703
293	Re.28,370
364	3,872,704
393	3,872,705
409	3,872,706
430	3,872,707
470	3,872,708
CLASS 73	
12	3,872,709
17R	3,872,710
39	3,872,711
40	3,872,712
40.5R	3,872,713
46	3,872,714
67.9	3,872,715
81	3,872,716
84	3,872,717
86	3,872,718
88F	3,872,719
121	3,872,720
151	3,872,721
193R	3,872,722
194R	3,872,723
267	3,872,724
300	3,872,725
362AR	3,872,726
	3,872,727
	3,872,728
371	3,872,729
421B	3,872,730
432R	3,872,731
CLASS 74	
25	3,872,732
66	3,872,733
89.15	3,872,734
231R	3,872,735
337	3,872,736
339	3,872,737
424.8B	3,872,738
513	3,872,739
533	3,872,740
713	3,872,741
785	3,872,742
817	3,872,743
CLASS 75	
68R	3,873,305
124	3,873,306
152	3,873,307
208R	3,873,308
CLASS 76	
107C	3,872,744
CLASS 81	
3.46R	3,872,745
9.5R	3,872,746
426	3,872,747
CLASS 82	
4C	3,872,748
12	3,872,749
14A	3,872,750
CLASS 83	
69	3,872,751
100	3,872,752
317	3,872,753
355	3,872,754
471.3	3,872,755
522	3,872,756
691	3,872,757
708	3,872,758
718	3,872,759
743	3,872,760
767	3,872,761
820	3,872,762
835	3,872,763
CLASS 84	
1.01	3,872,764
	3,872,765
115	3,872,766
255	3,872,767
CLASS 85	
3R	3,872,768
CLASS 89	
1A	3,872,769
1.5D	3,872,770
190	3,872,771
CLASS 91	
47	3,872,772
388	3,872,773
400	3,872,774
486	3,872,775
CLASS 92	
12	3,872,776
101	3,872,777
165R	3,872,778
CLASS 93	
1C	3,872,779
CLASS 96	
1SD	3,873,325
1.2	3,873,309
1.4	3,873,310
1.6	3,873,311
	3,873,312
36	3,873,313
50R	3,873,314
66.3	3,873,315
75	3,873,316
76R	3,873,317
86P	3,873,318
87R	3,873,319
	3,873,320
	3,873,321
114.8	3,873,322
120	3,873,323
124	3,873,324
CLASS 98	
60	3,872,780
CLASS 99	
282	3,872,781
289	3,872,782
407	3,872,783
CLASS 100	
45	3,872,784
48	3,872,785
218	3,872,786
CLASS 101	
76	3,872,787
93.14	3,872,788
93.29	3,872,789
CLASS 102	
70R	3,872,790
70.2P	3,872,791
	3,872,792
CLASS 104	
130	3,872,793
247	3,872,794
CLASS 105	
199A	3,872,795
241C	3,872,796
368T	3,872,797
376	3,872,798
476	3,873,053
492	3,872,799
CLASS 106	
12	3,873,326
35	3,873,327
39.6	3,873,328
39.8	3,873,329
47	3,873,330
100	3,873,331
109	3,873,332
130	3,873,333
287SE	3,873,334
300	3,873,335
306	3,873,336
308Q	3,873,337
CLASS 108	
6	3,872,800
20	3,872,801
61	3,872,802
136	3,872,803
CLASS 109	
49.5	3,872,804
CLASS 111	
2	3,872,805
CLASS 112	
104	3,872,806
121.12	3,872,807
158E	3,872,808
221	3,872,809
227	3,872,810
236	3,872,811
255	3,872,812
CLASS 114	
.5F	3,872,813
40	3,872,814
65R	3,872,815
106	3,872,816
163	3,872,817
221R	3,872,818
CLASS 115	
4	3,872,819
CLASS 116	
28R	3,872,820
106	3,872,821
114.5	3,872,822
124L	3,872,823
CLASS 117	
7	3,873,338
17	3,873,339
36.8	3,873,340
37R	3,873,341
38	3,873,342
46CA	3,873,343
62	3,873,344
65.2	3,873,345
69	3,873,346
71M	3,873,347
72	3,872,937
	3,873,348
93.31	3,873,349
95	3,873,350
123A	3,873,351
124E	3,873,352
138.8A	3,873,353
201	3,873,354
	3,873,355
	3,873,356
212	3,873,357
	3,873,358
	3,873,359
	3,873,360
	3,873,361
CLASS 118	
7	3,872,824
	3,872,825
8	3,872,826
223	3,872,827
637	3,872,828
	3,872,829
	3,872,830
CLASS 119	
1	3,872,831
	3,872,832
106	3,872,833
151	3,872,834
CLASS 122	
406S	3,872,836

CLASS 123
8.09 3,872,838
8.31 3,872,839
8.33 3,872,840
32A 3,872,841
41.12 3,872,842
41.31 3,872,835
52MV 3,872,843
90.13 3,872,844
119A 3,872,845
3,872,846
119F 3,872,847
119R 3,872,848
139AW 3,872,850
180R 3,872,851
193R 3,872,852
CLASS 124
22 3,872,853
CLASS 126
270 3,872,854
271.2B 3,872,855
CLASS 128
1.2 3,872,856
2S 3,872,857
2V 3,872,858
24.5 3,872,859
75 3,872,860
84R 3,872,861
152 3,872,559
165 3,872,862
213 3,872,863
218M 3,872,864
233 3,872,865
3,872,866
272 3,872,867
3,872,868
276 3,872,869
CLASS 131
140C 3,872,870
140P 3,872,871
173 3,872,872
CLASS 132
159 3,872,873
CLASS 134
3 3,873,362
22R 3,873,363
138 3,873,364
140 3,873,365
CLASS 136
26 3,873,366
30 3,873,367
76 3,873,368
83R 3,873,369
205 3,873,370
CLASS 137
68 3,872,874
71 3,872,875
118 3,872,876
3,872,877
242 3,872,878
268 3,872,879
317 3,872,880
355.17 3,872,881
381 3,872,882
491 3,872,883
498 3,872,884
554 3,872,885
558 3,872,886
567 3,872,887
608 3,872,888
625.21 3,872,889
625.41 3,872,890
CLASS 138
103 3,872,892
121 3,872,893
155 3,872,894
177 3,872,891
CLASS 139
383R 3,872,895
CLASS 140
71R 3,872,896
92.1 3,872,897
105 3,872,898
CLASS 141
59 3,872,899
392 3,872,900
CLASS 144
34R 3,872,901
176 3,872,902
309R 3,872,903
CLASS 145
50A 3,872,904
CLASS 148
1.5 3,873,371
3,873,372
3,873,373
12.1 3,873,374
3,873,375
16.5 3,873,376
16.7 3,873,377
37 3,873,378

103 3,873,379
111 3,873,380
112 3,873,381
175 3,873,382
187 3,873,383
188 3,873,384
CLASS 149
18 3,873,385
19.2 3,873,386
CLASS 150
8 3,872,905
52R 3,872,906
CLASS 152
158 3,872,907
208 3,872,908
CLASS 156
73.5 3,873,387
148 3,873,388
181 3,873,389
230 3,873,390
258 3,873,391
306 3,873,392
351 3,873,393
353 3,873,394
382 3,873,395
392 3,873,396
401 3,873,397
417 3,873,398
441 3,873,399
499 3,873,400
505 3,873,401
CLASS 159
47 3,872,909
49 3,872,910
CLASS 160
1 3,872,911
CLASS 161
37 3,873,402
76 3,873,403
102 3,873,404
113 3,873,405
159 3,873,406
160 3,873,407
165 3,873,408
214 3,873,409
CLASS 162
4 3,873,410
8 3,873,411
25 3,873,412
30 3,873,413
3,873,414
36 3,873,415
49 3,873,416
168 3,873,417
190 3,873,418
CLASS 164
20 3,872,912
64 3,872,913
147 3,872,914
160 3,872,915
CLASS 165
1 3,872,916
3,872,917
5 3,872,918
30 3,872,919
95 3,872,920
152 3,872,921
CLASS 166
245 3,872,922
247 3,872,923
261 3,872,924
278 Re.28,372
286 3,872,925
301 3,872,926
CLASS 169
48 3,872,927
56 3,872,928
CLASS 171
16 3,872,929
CLASS 172
15 3,872,930
387 3,872,931
CLASS 173
1 3,872,932
38 3,872,933
134 3,872,934
164 Re.28,371
CLASS 174
48 3,873,758
52R 3,873,757
65R 3,873,759
68.5 3,873,756
CLASS 175
58 3,872,935
CLASS 176
61 3,873,419
77 3,873,420
CLASS 177
15 3,872,936

CLASS 178
6 3,873,761
6.6A 3,873,762
3,873,765
6.6R Re.28,375
3,873,763
3,873,764
7.3R 3,873,766
3,873,768
7.5R 3,873,767
18 3,873,769
3,873,770
CLASS 179
1GQ 3,873,779
2TV 3,873,771
6R 3,873,772
15BA 3,873,773
15BF 3,873,774
3,873,775
15BY 3,873,776
15A 3,873,777
15.55T 3,873,778
18GE 3,873,780
81R 3,873,781
100.1B 3,873,782
100.4R 3,873,783
115.5PV 3,873,784
CLASS 180
5R 3,872,938
6.48 3,872,939
9.5 3,872,940
3,872,941
20 3,872,942
24.08 3,872,943
33R 3,872,944
65R 3,872,945
82 3,872,947
CLASS 181
36B 3,872,946
CLASS 187
8.52 3,872,948
89 3,872,949
CLASS 188
1B 3,872,950
69 3,872,951
181T 3,872,952
353 3,872,953
CLASS 192
18A 3,872,954
67R 3,872,955
85F 3,872,956
113B 3,872,957
CLASS 194
1R 3,872,958
CLASS 195
1.3 3,873,421
3,873,422
1.8 3,873,423
28R 3,873,424
36R 3,873,425
63 3,873,426
CLASS 197
19 3,872,959
53 3,872,960
184 3,872,961
CLASS 198
24 3,872,962
38 3,872,963
232 3,872,964
CLASS 200
51.1 3,873,785
61.08 3,873,786
61.25 3,873,787
61.27 3,873,788
61.41 3,873,789
83Z 3,873,790
144R 3,873,791
148R 3,873,792
3,873,793
153LA 3,873,795
153S 3,873,794
157 3,873,796
308 3,873,797
CLASS 201
17 3,873,427
CLASS 204
15 3,873,428
3,873,429
20 Re.28,379
99 3,873,430
129.46 3,873,512
159.24 3,873,431
180G 3,873,432
3,873,433
212 3,873,434
222 3,873,435
224M 3,873,436
254 3,873,437
268 3,873,438
CLASS 206
44 3,872,965

45.31 3,872,966
45.33 3,872,967
278 3,872,968
303 3,872,969
532 3,872,970
CLASS 208
66 3,873,439
108 3,873,440
166 3,873,441
216 3,873,442
CLASS 209
111.7 3,873,443
CLASS 210
62 3,873,444
109 Re.28,378
149 3,873,445
169 3,873,446
179 3,873,447
222 3,873,448
359 3,873,449
386 3,873,450
CLASS 211
13 3,872,971
17 3,872,972
115 3,872,973
134 3,872,974
178R 3,872,975
184 3,872,976
CLASS 212
46A 3,872,977
CLASS 213
151 3,872,978
CLASS 214
1BB 3,872,979
2 3,872,980
16R 3,872,981
17D 3,872,982
38R 3,872,983
83.3 3,872,984
84 3,873,130
138R 3,872,985
146E 3,872,986
147G 3,872,987
394 3,872,988
450 3,872,989
763 3,872,990
770 3,872,991
CLASS 215
249 3,872,992
320 3,872,993
CLASS 219
60A 3,873,798
61 3,873,799
69E 3,873,800
85 3,873,801
121EB 3,873,802
125R 3,873,803
147 3,873,804
149 3,873,805
273 3,873,806
285 3,873,807
332 3,873,808
380 3,873,809
535 3,873,810
CLASS 220
1R 3,872,994
4R 3,872,995
254 3,872,996
270 3,872,999
CLASS 221
20 3,872,997
79 3,872,998
298 3,873,000
CLASS 222
48 3,873,001
56 3,873,002
95 3,873,003
135 3,873,004
153 3,873,005
3,873,006
309 3,873,007
390 3,873,008
407 3,872,837
CLASS 224
5D 3,873,009
42.42A 3,873,010
CLASS 225
93 3,873,011
CLASS 226
44 3,873,012
97 3,873,013
162 3,873,014
CLASS 227
7 3,873,015
83 3,873,016
CLASS 229
41C 3,873,017
51TS 3,873,018
CLASS 233
1B 3,873,020

26 3,873,021
CLASS 235
30R 3,873,811
61.11E 3,873,812
61.12N 3,873,813
92CT 3,873,019
92FL 3,873,814
150.3 3,873,815
151.11 3,873,816
151.21 3,873,817
153AC 3,873,818
153AK 3,873,819
153BD 3,873,820
CLASS 237
8R 3,873,022
CLASS 239
3 3,873,023
15 3,873,024
220 3,873,025
240 3,873,026
265.33 3,873,027
413 3,873,028
518 3,873,029
542 3,873,030
3,873,031
658 3,873,032
CLASS 240
1R 3,873,821
26 3,873,822
52R 3,873,823
CLASS 241
19 3,873,033
55 3,873,034
100 3,873,035
100.5 3,873,036
211 3,873,037
275 3,873,047
282.2 3,873,038
CLASS 242
54R 3,873,039
82 3,873,040
107.4 3,872,849
3,873,041
3,873,042
131.1 3,873,043
147R 3,873,044
199 3,873,045
3,873,046
CLASS 244
3.1 3,873,048
17.23 3,873,049
77R 3,873,050
155R 3,873,051
CLASS 248
20 3,873,052
371 3,873,054
399 3,873,055
CLASS 249
142 3,873,056
144 3,873,057
161 3,873,058
CLASS 250
199 3,873,825
200 3,873,826
201 3,873,827
211J 3,873,828
213R 3,873,829
236 3,873,830
306 3,873,831
315 3,873,832
3,873,833
323 3,873,834
324 3,873,835
330 3,873,836
360 3,873,837
366 3,873,838
369 3,873,839
392 3,873,840
439 3,873,841
505 3,873,824
544 3,873,842
561 3,873,843
CLASS 251
11 3,873,059
129 3,873,060
139 3,873,061
149.6 3,873,062
282 3,873,063
CLASS 252
8.1 3,873,451
8.55C 3,873,452
8.55D 3,873,453
27 3,873,454
32FE 3,873,455
46.7 3,873,456
47.5 3,873,457
49.5 3,873,458
51.5A 3,873,459
3,873,460
62.56 3,873,461
3,873,462
62.57 3,873,463

78 3,873,464
181 3,873,465
404 3,873,466
408 3,873,467
413 3,873,468
455R 3,873,469
465 3,873,470
3,873,471
466B 3,873,472
501 3,873,473
CLASS 254
88 3,873,064
100 3,873,065
103 3,873,066
131 3,873,067
3,873,068
187R 3,873,069
CLASS 259
6 3,873,070
72 3,873,071
192 3,873,072
CLASS 260
2.3 3,873,474
2.5AD 3,873,476
2.5B 3,873,475
2.5R 3,873,477
7.5 3,873,478
17.2 3,873,479
17.4ST 3,873,480
18PN 3,873,481
27R 3,873,482
28.5AS 3,873,483
29.2EP 3,873,485
29.2TN 3,873,484
29.6MM 3,873,486
29.6WB 3,873,487
29.7H 3,873,488
33.6AQ 3,873,489
38 3,873,490
40R 3,873,491
42.14 3,873,492
42.28 3,873,493
42.29 3,873,495
42.37 3,873,494
45.75R 3,873,497
45.8R 3,873,496
45.95R 3,873,498
46.5E 3,873,499
47CB 3,873,503
47EA 3,873,501
47EC 3,873,502
47UA 3,873,500
47C 3,873,504
75UA 3,873,505
78.4R 3,873,506
79 3,873,507
88.7R 3,873,508
112.5 3,873,509
3,873,510
3,873,511
146T 3,873,513
209.6 3,873,514
211.5R 3,873,515
3,873,516
220 3,873,517
231A 3,873,518
239B 3,873,520
239.1 3,873,519
3,873,521
3,873,522
3,873,523
3,873,524
239.3B 3,873,526
239.3D 3,873,525
239.5 3,873,527
240D 3,873,531
240J 3,873,528
240R 3,873,529
3,873,530
243A 3,873,534
243C 3,873,533
243R 3,873,535
247.1M 3,873,536
247.2A 3,873,537
247.2R 3,873,538
247.7R 3,873,539
248AS 3,873,541
3,873,542
3,873,543
248NS 3,873,540
249.8 3,873,544
256.5R 3,873,545
257 Re.28,377
268R 3,873,546
279R 3,873,547
3,873,548
288R 3,873,549
290HL 3,873,550
294.8G 3,873,552
294.8R 3,873,551
295CA 3,873,553
295.5B 3,873,554
296D 3,873,555
296H 3,873,556
297R 3,873,557

302H 3,873,558
306.7T 3,873,559
3,873,560
307H 3,873,561
3,873,562
308R 3,873,563
309.6 3,873,564
310A 3,873,566
310R 3,873,565
326C 3,873,567
332.1 3,873,568
340.3 3,873,569
340.7 3,873,570
3,873,571
340.9 3,873,572
343.4 3,873,573
343.5 3,873,574
343.6 3,873,575
345.3 3,873,576
346.8M 3,873,577
348.5L 3,873,578
349 3,873,579
362 3,873,580
370 3,873,581
378 3,873,582
404 3,873,583
407 3,873,584
3,873,585
410.9R 3,873,586
429.5 3,873,587
439R 3,873,588
453SP 3,873,589
456P 3,873,591
456R 3,873,590
463 3,873,592
465C 3,873,595
465F 3,873,593
3,873,594
465.5R 3,873,596
465.7 3,873,597
468D 3,873,598
468K 3,873,599
471C 3,873,600
472 3,873,601
475P 3,873,602
481R 3,873,603
490 3,873,604
501.1 3,873,605
512C 3,873,606
514D 3,873,607
515P 3,873,608
3,873,609
3,873,610
524R 3,873,611
525 3,873,612
3,873,613
535P 3,873,614
543 3,873,615
559A 3,873,616
561R 3,873,617
562P 3,873,618
563C 3,873,619
570.7 3,873,620
583R 3,873,621
586P 3,873,622
597R 3,873,623
601R 3,873,624
610B 3,873,625
615A 3,873,626
620 3,873,627
621R 3,873,628
652.5R 3,873,631
653 3,873,629
653.3 3,873,630
668A 3,873,632
680E 3,873,633
683.44 3,873,634
683.57 3,873,635
827 3,873,636
830TW 3,873,637
837R 3,873,638
857PG 3,873,639
859R 3,873,640
873 3,873,641
878B 3,873,642
878R 3,873,643
879 3,873,644
3,873,645
897B 3,873,646
973 3,873,647
990 3,873,648
CLASS 261
71 3,873,649
78R 3,873,650
CLASS 264
.5 3,873,651
30 3,873,652
41 3,873,653
46.4A 3,873,654
48 3,873,655
55 3,873,656
56 3,873,657
58 3,873,658
89 3,873,659
3,873,660
98 3,873,661

113 3,873,662
120 3,873,663
146 3,873,664
219 3,873,666
234 3,873,667
321 3,873,665
CLASS 266
16 3,873,073
35 3,873,074
CLASS 267
116 3,873,075
140 3,873,076
152 3,873,077
159 3,873,078
162 3,873,079
CLASS 269
237 3,873,080
328 3,873,081
CLASS 270
68A 3,873,082
CLASS 271
64 3,873,083
169 3,873,084
CLASS 272
2 3,873,085
8N 3,873,086
33R 3,873,087
83R 3,873,088
CLASS 273
55R 3,873,089
80.8 3,873,090
95R 3,873,091
130B 3,873,095
131K 3,873,101
135B 3,873,092
135D 3,873,093
156 3,873,096
163R 3,873,094
185R 3,873,097
CLASS 274
1R 3,873,098
3,873,099
9B 3,873,100
CLASS 277
2 3,873,102
66 3,873,103
134 3,873,104
171 3,873,105
203 3,873,106
CLASS 279
1D 3,873,107
CLASS 280
11.13B 3,873,108
11.35R 3,873,111
11.35T 3,873,109
3,873,110
3,873,112
3,873,113
30 3,873,114
33.99H 3,873,115
36A 3,873,117
36B 3,873,116
47.13R 3,873,119
47.2 3,873,118
106R 3,873,120
124F 3,873,121
3,873,122
3,873,123
3,873,124
150AB 3,873,125
150.5 3,873,126
202 3,873,127
236 3,873,128
404 3,873,129
456R 3,873,131
CLASS 285
21 3,873,132
136 3,873,133
137R 3,873,134
177 3,873,135
189 3,873,136
226 3,873,137
233 3,873,138
286 3,873,139
CLASS 289
17 3,873,140
CLASS 290
1E 3,873,844
2 3,873,845
CLASS 292
40 3,873,141
66 3,873,142
CLASS 294
61 3,873,143
64R 3,873,144
66R 3,873,145
83R 3,873,146
89 3,873,147
CLASS 296
28R 3,873,148
56 3,873,149

137H 3,873,150
CLASS 297
14 3,873,151
68 3,873,152
334 3,873,153
445 3,873,154
3,873,155
CLASS 299
4 3,873,156
31 3,873,157
64 3,873,159
CLASS 301
5R 3,873,160
37P 3,873,161
105B 3,873,162
CLASS 302
2R 3,873,163
28 3,873,164
CLASS 303
21F 3,873,165
CLASS 307
23 3,873,846
64 3,873,847
114 3,873,848
115 3,873,849
125 3,873,850
221C 3,873,851
225C 3,873,852
235R 3,873,853
252N 3,873,854
260 3,873,855
279 3,873,856
310 3,873,857
CLASS 308
36.1 3,873,166
74 3,873,167
238 3,873,168
CLASS 310
8.1 3,873,858
3,873,859
9.1 3,873,866
11 3,873,860
43 3,873,861
50 3,873,862
3,873,863
89 3,873,864
90 3,873,865
CLASS 312
280 3,873,170
CLASS 313
95 3,873,867
112 3,873,868
157 3,873,871
178 3,873,869
217 3,873,870
388 3,873,872
391 3,873,873
402 3,873,874
405 3,873,875
409 3,873,876
430 3,873,877
449 3,873,878
CLASS 315
13C 3,873,879
53 3,873,880
82 3,873,881
92 3,873,882
105 3,873,883
267 3,873,884
312 3,873,885
CLASS 316
20 3,873,169
3,873,171
CLASS 317
2R 3,873,886
20 3,873,887
31 3,873,888
101CC 3,873,890
101R 3,873,889
134 3,873,891
3,873,892
3,873,893
141S 3,873,894
148.5 3,873,895
262A
CLASS 318
7 3,873,896
138 3,873,897
3,873,898
309 3,873,899
314 3,873,900
332 3,873,901
594 3,873,902
CLASS 321
2 3,873,903
3,873,904
CLASS 323
6 3,873,910
9 3,873,905
19 3,873,906
22T 3,873,907

CLASS 324
.5R 3,873,908
3,873,909
29.5 3,873,911
34L 3,873,912
43R 3,873,913
3,873,914
53 3,873,915
61R 3,873,916
62 3,873,917
71CP 3,873,918
72 3,873,919
CLASS 325
41 3,873,920
396 3,873,921
422 3,873,922
423 3,873,923
470 3,873,924
478 3,873,925
3,873,926
CLASS 328
4 3,873,927
14 3,873,928
63 3,873,929
227 3,873,930
CLASS 329
122 3,873,931
CLASS 330
20 3,873,932
30D 3,873,933
56 3,873,934
3,873,935
124R 3,873,936
CLASS 331
75 3,873,937
94.5C 3,873,942
94.5L 3,873,940
3,873,941
94.5R 3,873,939
94.5 3,873,938
141 3,873,943
CLASS 333
1.1 3,873,944
14 3,873,945
30R 3,873,946
72 3,873,947
73C 3,873,948
82BT 3,873,949
CLASS 335
42 3,873,950
164 3,873,951
192 3,873,952
212 3,873,953
303 3,873,954
CLASS 337
72 3,873,955
CLASS 338
2 3,873,956
32H 3,873,957
CLASS 339
17CF 3,873,173
17F 3,873,172
59L 3,873,176
91R 3,873,177
95D 3,873,174
144R 3,873,175
274 3,873,178
CLASS 340
6R 3,873,958
8R 3,873,959
15 3,873,960
15.5TS 3,873,961
25 3,873,962
34 3,873,963
38L 3,873,964
58 3,873,965
63 3,873,966
66 3,873,967
72 3,873,968
107 3,873,969
146.1AQ 3,873,971
146.3AC 3,873,972
3,873,974
146.3E 3,873,970
146.3Z 3,873,973
149A 3,873,975
172.5 3,873,976
347DD 3,873,977
365R 3,873,978
366R 3,873,979
384E 3,873,980
CLASS 343
5PD 3,873,981
100CS 3,873,982
106D 3,873,983
112D 3,873,984
714 3,873,985
CLASS 346
138 3,873,986
CLASS 350
3.5 3,873,179

3,873,181
7 3,873,180
39 3,873,182
96WG 3,873,183
103 3,873,184
147 3,873,185
160LC 3,873,186
160R 3,873,187
211 3,873,188
255 3,873,189
289 3,873,190
293 3,873,191
CLASS 351
118 3,873,192
CLASS 352
72 3,873,193
CLASS 353
110 3,873,194
117 3,873,195
CLASS 354
26 3,873,987
319 3,873,988
CLASS 355
3DD 3,873,197
3R 3,873,196
14 3,873,198
38 3,873,199
3,873,200
77 3,873,201
88 3,873,202
133 3,873,203
CLASS 356
39 3,873,204
85 3,873,205
103 3,873,206
106R 3,873,207
128 3,873,208
135 3,873,209
138 3,873,210
156 3,873,211
168 3,873,212
209 3,873,213
213 3,873,214
218 3,873,215
243 3,873,216
246 3,873,217
CLASS 357
35 3,873,989
CLASS 358
8 3,873,990
21 3,873,760
CLASS 360
4 3,873,991
24 3,873,992
90 3,873,993
130 3,873,994
137 3,873,995
CLASS 401
292 3,873,218
CLASS 403
171 3,873,219
172 3,873,220
189 3,873,221
253 3,873,222
341 3,873,223
381 3,873,224
CLASS 404
41 3,873,225
84 3,873,226
107 3,873,227
128 3,873,228
CLASS 415
119 3,873,229
162 3,873,230
195 3,873,231
207 3,873,232
CLASS 416
90 3,873,233
97 3,873,234
154 3,873,235
162 3,873,236
180 3,873,237
CLASS 417
54 3,873,238
222 3,873,240
281 3,873,239
283 3,873,241
360 3,873,242
368 3,873,243
424 3,873,244
CLASS 418
5 3,873,245
16 3,873,246
36 3,873,247
61B 3,873,248
113 3,873,249
123 3,873,250
3,873,251
126 3,873,252
147 3,873,253

CLASS 423
24 3,873,668
65 3,873,669
210.5 3,873,670
235 3,873,671
242 3,873,532
3,873,672
243 3,873,673
244 3,873,674
403 3,873,675
466 3,873,676
3,873,677
493 3,873,678
574 3,873,679
CLASS 424
1 3,873,680
9 3,873,681
12 3,873,682
3,873,683
3,873,684
16 3,873,685
47 3,873,686
64 3,873,687
70 3,873,688
78 3,873,689
89 3,873,690
92 3,873,691
116 3,873,692
122 3,873,693
127 3,873,694
131 3,873,695
153 3,873,696
177 3,873,697
180 3,873,698
195 3,873,699
199 3,873,700
238 3,873,701
241 3,873,702
258 3,873,703
3,873,704
3,873,705
260 3,873,706
267 3,873,707
3,873,708
274 3,873,709
277 3,873,710
3,873,711
3,873,712
280 3,873,713
283 3,873,714
3,873,715
285 3,873,716
303 3,873,717
308 3,873,718
309 3,873,723
312 3,873,719
3,873,720
313 3,873,721
319 3,873,722
341 3,873,724
342 3,873,725
347 3,873,726
366 3,873,727
CLASS 425
71 3,873,254
83 3,873,255
84 3,873,256
112 3,873,257
113 3,873,258
470 3,873,259
CLASS 426
2 3,873,728
40 3,873,729
46 3,873,730
65 3,873,731
3,873,732
69 3,873,733
3,873,734
87 3,873,735
92 3,873,736
105 3,873,737
111 3,873,738
164 3,873,739
212 3,873,740
221 3,873,741
234 3,873,742
253 3,873,743
284 3,873,744
319 3,873,745
3,873,746
325 3,873,747
346 3,873,748
350 3,873,749
356 3,873,751
369 3,873,752
373 3,873,753
426 3,873,754
518 3,873,750
523 3,873,755
CLASS 431
95 3,873,260
3,873,261
132 3,873,262
290 3,873,263
CLASS 432
18 3,873,264

CLASSIFICATION OF DESIGNS

D2—	231	234,549
	232	234,550
D3—	19A	234,551
D4—	2	234,552
	35	234,553
D6—	48	234,555
	66	234,556
	85	234,557
	95	234,558
	177	234,559
	179	234,560
	183	234,561
	186	234,562
	188	234,563
	193	234,564
	194	234,565
	198	234,566
D7—	16	234,568
	128	234,567
D8—	1	234,569
	70	234,624
	98	234,570
	138	234,572
	167	234,571
D9—	184	234,573
	219	234,574
	243	234,575
	258	234,576
D10—	15	234,577
		234,578
	37	234,579
	40	234,580
	85	234,581
	95	234.582
	109	234,583
D12—	6	234,584
	63	234,585
	97	234,586
	115	234,587
	124	234,588
	183	234,589
	211	234,590
D13—	1A	234,591
D19—	36	234,636
	53	234,635
	88	234,592
D22—	25	234,593
	28	234,594
D23—	32	234,595
	45	234,596
	149	234,597
	150	234,606
D26—	1L	234,598
	5C	234,599
		234,600
	13	234,603
	R	234,601
		234,602
	14G	234,604
	K	234,605
D30—	13	234,607
	14	234,615
D34—	5GH	234,608
		234,609
		234,610
	14E	234,611
		234,612
		234.613
		234,614
	15AH	234,618
	A	234,616
	D	234,617
D39—	1A	234,619
D45—	R	234,620
	10A	234,622
D48—	4B	234,621
	20K	234,623
D54—	13A	234,625
D57—	1E	234,626
D61—	G	234,629
	N	234,631
		234,632
	Q	234,627
	S	234,554
		234,628
	T	234,630
D64—	11A	234,633
D70—	1	234,634
D83—	F	234,638
		234,639
	G	234,637
	N	234,641
	W	234,640
	12R	234,642
		234,643
		234,644
D87—	1	234,645
D92—	4	234,646
		234,647
D95—	3A	234,648

CLASSIFICATION OF PLANTS

P. —	66	3.694
P. —		3,695
P. —	77	3.696

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,872,737
	3,872,898
	3,873,072
	3,873,722
4 :	3,872,859
	3,872,866
	3,873,186
	3,873,194
	3,873,203
	3,873,819
	3,873,850
	3,873,852
	3,873,889
	3,873,914
	3,873,966
6 :	Re.28,370
	3,872,517
	3,872,533
	3,872,542
	3,872,550
	3,872,559
	3,872,566
	3,872,573
	3,872,583
	3,872,590
	3,872,596
	3,872,597
	3,872,610
	3,872,613
	3,872,614
	3,872,635
	3,872,637
	3,872,643
	3,872,657
	3,872,679
	3,872,682
	3,872,696
	3,872,711
	3,872,725
	3,872,726
	3,872,727
	3,872,734
	3,872,739
	3,872,743
	3,872,756
	3,872,780
	3,872,789
	3,872,800
	3,872,814
	3,872,818
	3,872,819
	3,872,839
	3,872,854
	3,872,869
	3,872,899
	3,872,904
	3,872,905
	3,872,927
	3,872,960
	3,872,963
	3,872,989
	3,872,997
	3,873,004
	3,873,010
	3,873,016
	3,873,026
	3,873,031
	3,873,054
	3,873,062
	3,873,069
	3,873,079
	3,873,081
	3,873,090
	3,873,092
	3,873,095
	3,873,096
	3,873,097
	3,873,128
	3,873,144
	3,873,146
	3,873,151
	3,873,153
	3,873,154
	3,873,166
	3,873,173
	3,873,177
	3,873,180
	3,873,187
	3,873,200
	3,873,207
	3,873,212
	3,873,216
	3,873,272
	3,873,277
	3,873,280
	3,873,284
	3,873,341
	3,873,346
	3,873,371
	3,873,387
	3,873,389
	3,873,399
	3,873,404
	3,873,419
	3,873,445
	3,873,446
	3,873,447
	3,873,448
	3,873,449
	3,873,460
	3,873,485
	3,873,494
	3,873,514
	3,873,564
	3,873,586
	3,873,590
	3,873,594
	3,873,602
	3,873,633
	3,873,647
	3,873,654
	3,873,665
	3,873,676
	3,873,677
	3,873,696
	3,873,714
	3,873,718
	3,873,725
	3,873,781
	3,873,790
	3,873,798
	3,873,813
	3,873,815
	3,873,821
	3,873,828
	3,873,832
	3,873,833
	3,873,871
	3,873,892
	3,873,896
	3,873,903
	3,873,907
	3,873,908
	3,873,909
	3,873,934
	3,873,935
	3,873,941
	3,873,944
	3,873,946
	3,873,947
	3,873,951
	3,873,958
	3,873,959
	3,873,962
	3,873,964
	3,873,965
	3,873,969
	3,873,976
	3,873,977
	3,873,980
	3,873,984
	3,873,989
8 :	3,872,556
	3,872,923
	3,873,281
	3,873,344
	3,873,803
	3,873,857
	3,873,866
9 :	3,872,576
	3,872,609
	3,872,664
	3,872,708
	3,872,715
	3,872,761
	3,872,785
	3,872,871
	3,872,893
	3,872,921
	3,872,966
	3,872,971
	3,873,021
	3,873,056
	3,873,140
	3,873,182
	3,873,229
	3,873,230
	3,873,232
	3,873,268
	3,873,301
	3,873,442
	3,873,592
	3,873,605
	3,873,622
	3,873,634
	3,873,660
	3,873,705
	3,873,791
	3,873,835
	3,873,859
	3,873,872
	3,873,913
	3,873,939
10 :	3,873,278
	3,873,375
	3,873,451
	3,873,504
	3,873,508
	3,873,540
	3,873,566
	3,873,610
	3,873,629
	3,873,668
11 :	3,872,619
	3,872,791
	3,872,792
	3,873,364
12 :	3,872,522
	3,872,563
	3,872,616
	3,872,634
	3,872,672
	3,872,767
	3,872,952
	3,872,994
	3,873,006
	3,873,065
	3,873,086
	3,873,089
	3,873,130
	3,873,227
	3,873,342
	3,873,482
	3,873,530
	3,873,715
	3,873,757
	3,873,773
	3,873,840
	3,873,918
	3,873,985
13 :	3,872,717
	3,872,873
	3,873,142
	3,873,388
	3,873,394
	3,873,847
15 :	3,872,857
	3,873,960
16 :	3,872,909
17 :	3,872,511
	3,872,534
	3,872,536
	3,872,547
	3,872,549
	3,872,561
	3,872,599
	3,872,611
	3,872,612
	3,872,628
	3,872,636
	3,872,639
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